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SEQUENCE & BATCH LANGUAGE PROGRAMS & ALARM RELATED C PROGRAMS FOR THE 242A MCS [SEC 1 OF 6 PAGE 1 TO 126]

Pages: 132

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-534-CSWL-001

Section 1 **of** 6

Title: Sequence and Batch Language programs and Alarm Related "C" Programs for the 242-A MCS

Date: 4/15/96 **Revision:** 3

Originator: Berger, J.T.
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ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 627504

Proj. ECN ——

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	5. Project Title/No./Work Order No. 242-A MCS SABL Programs	6. Bldg./Sys./Fac. No. 242-A	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-534-CSWL-001, REV. 2	9. Related ECN No(s). N/A	10. Related PO No. N/A

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[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

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SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
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Cog. Mgr.	RJ Nicklas	4/11/96	QA	
QA			Safety	
Safety			Design	
Environ.			Environ.	
Other	Informal Reviewer M. C. Dent	4-11-96	Other	
			DEPARTMENT OF ENERGY	
			Signature or a Control Number that tracks the Approval Signature	
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SEQUENCE AND BATCH LANGUAGE PROGRAMS AND ALARM RELATED "C" PROGRAMS FOR THE 242-A MCS

John F Berger
Westinghouse Hanford Company, Richland, WA 99352
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Abstract: A Distributive Process Control system was purchased by Project B-534, "242-A Evaporator/Crystallizer Upgrades". This control system, called the Monitor and Control system (MCS), was installed in the 242-A evaporator located in the 200 East Area. The purpose of the MCS is to monitor and control the Evaporator and monitor a number of alarms and other signals from various Tank Farm facilities. Applications software for the MCS was developed by the Waste Treatment Ststems Engineering (WTSE) group of Westinghouse.

The standard displays and alarm scheme provide for control and monitoring, but do not directly indicate the singal location or depict the overall process. To do this, WTSE developed a scond alarm scheme

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SEQUENCE AND BATCH LANGUAGE PROGRAMS

AND ALARM-RELATED 'C' PROGRAMS

FOR THE 242-A MCS

Prepared By:

EPPE

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1.0 INTRODUCTION

A GSE Process Solutions Inc. (GSE) D/3[1] Distributive Process Control system was purchased by Project B-534, "242-A Evaporator/Crystallizer Upgrades". This control system, called the Monitor and Control System (MCS), was installed in the 242-A Evaporator located in the 200 East Area. The purpose of the MCS is to monitor and control the Evaporator and monitor a number of alarms and other signals from various Tank Farm facilities. Applications software for the MCS was developed by the Waste Treatment Systems Engineering (WTSE) group of Westinghouse.

The standard GSE displays and alarm scheme provide for control and monitoring, but do not directly indicate the signal location or depict the overall process. To do this, WTSE developed a second alarm scheme which uses special programs, annunciator keys, and process graphics. The special programs are written in two languages; Sequence and Batch Language[1] (SABL), which is a proprietary language of GSE, and "C" language. The WTSE-developed alarm scheme works as described below:

- SABL relates signals and alarms to the annunciator keys, called SKID keys. When an alarm occurs, a SABL program causes a SKID key to flash, and if the alarm is of yellow or white priority then a "C" program turns on an audible horn (the D/3 system uses a different audible horn for the red priority alarms). The horn and flashing key draws the attention of the operator.

- The SKID keys relate the alarms to custom graphic displays, which depict the process much like the Process and Instrumentation Engineering Diagrams (P&IDs). When an operator presses a flashing SKID key, a graphic showing an alarm message is displayed.

- Each graphic contains a menu, which may be used to direct the operator to other more detailed displays.

- When an alarm is acknowledged from a graphic display, user-written "C" code manages the acknowledgement of all alarm messages in that graphic and sequence unit throughout the system (on other D/3 displays such as faceplates, P1, and P2 displays). Likewise, when an alarm is acknowledged from a faceplate display or other D/3 displays the corresponding alarm messages are acknowledged in the appropriate graphics.

The engineering tools used to develop the alarm scheme includes following GSE D/3 utilities; the Management of Database Elements (MDL) utility, the Recipe Management Subsystem (RMS), the Unit Prototype File (UPF) utility, the Sequence Database (SDB) utility, the Sequence Instruction

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1 Trademark of GSE Process Solutions Inc.

Compiler (SIC) utility, the String Editor (SED), and the Sequence Key Interactive Definer Utility (SKID). Additionally, the source code of user-written "C" programs are compiled to create task images. Finally, a custom graphics development package installed on a personal computer is used to develop the graphics for the D/3 system. Development of the WTSE alarm scheme from scratch is summarized below. Once developed, modifications will involve some combination of the steps below depending the extent of the modification.

- Signals are defined in the continuous database using the MDL utility. Signals in the continuous database are grouped into process areas or systems by declaring the Internal Point Number (IPN) for each signal. Usually, the IPN of a signal should not be defaulted.

- Variables used in sequence programs are defined using the RMS and UPF utilities. The unit prototype files declare the associated recipe prototype files.

- The sequence databases are built using the SDB utility, which defines the sequence units, the first External Point Name (EPN) of each signal type (analog or digital), the total number of each signal type in a sequence unit, and the associated UPF.

- SABL programs are written and compiled.

- String packets are created using SED. The string packets contain the custom alarm messages for the graphics.

- The annunciator key layout is defined.

- Graphics are created on a personal computer, down-loaded to the D/3, and compiled.

- "C" programs are written and compiled.

- All databases are loaded and all programs are installed and run. At this point, the alarm scheme may be tested to verify functionality.

2.0 PURPOSE

The purpose of this document is to provide a hardcopy of the software for the alarm scheme developed by WTSE. Revision 1 of this document contains listings of software contained in revision 0 of the magnetic media (WHC-SD-534-CSWD-008).

3.0 SCOPE

This document provides the following information:

- o A list of the IPN order of the signals required to construct the sequence databases, and lists the EPNs contained in each sequence unit.
- o A list of the sequence databases.
- o A list of the sequence program variables. These variables are defined in the unit prototype files (UPF) and recipe prototype files (RPF).
- o Listings of SABL and "C" programs that manage alarms in the WTSE alarm scheme and control the MCS graphics.
- o The custom alarm messages (string packets) created with SED for the graphics.
- o The layout of the annunciator keys.
- o Listings of "C" programs for inhibiting and de-inhibiting certain evaporator process signals.
- o Discussion of programs and databases where appropriate.

The Tag List (WHC-SD-534-SWD-001) defines any alarms associated with a signal.

It is assumed that the reader has some programming background and has a good understanding of the process of developing applications for the MCS. It is assumed that the reader is already familiar with the GSE continuous control package for D/3 version 3.3, is familiar with the operating system of the host computer, and understands SABL coding. Additionally, the reader should be familiar with "C" language programming. Although not necessary for this document, the reader should be familiar with the development of graphics, the string packets, and annunciator key layout.

4.0 DEFINITIONS

Analog Input (AI):
A signal indicting analog values such as temperature, pressure, or liquid flows. Usually a 4 to 20 mA or 0 to 100 mV signal which is converted by the MCS to engineering units whose range represents 0 to 100% of the calibrated range of a transmitter. Sometimes used to control flow rates, pump speeds, liquid levels, or temperatures by analog loop which provides a 4 - 20 mA output signal. For thermocouples (T/Cs) or resistance temperature devices (RTDs), the input range is roughly -10 to 100 mV, where negative base volts corresponds to freezing temperatures.

Analog chain:
An arrangement of software process control blocks, or database blocks, to handle analog signal addressing, scaling, alarming, and process control.

Continuous control database:
An arrangement of digital and analog signals into AI inputs, digital inputs (DINs), master devices (MDVs), and device (DEVs) which are named by EPN and ordered by IPN. Includes alarm limits for the critical (red) and non-critical (yellow) alarms. Alarm limits for informational supervisory (white) alarms are imbedded in SABL programs.

Device (DEV):
For control of valves and motors by means of fixed logic, including interlock logic (see also master device). Uses some combination of analog inputs, digital inputs, and command (operator) keyboard inputs. Provides one or more digital output (DO) signals, and/or provides a software input to another logic device or analog chain. Devices usually have more than two statuses.

Digital Input (DIN):
A discrete (on or off) signal using 24 VDC or 110 VAC. Used for leak detectors, radiation alarms, valve positions, motor statuses, and so on.

Display Control Modules (DCM):
A computer which communicates with the process control modules and creates all displays appearing on the operator workstations.

External Point Name (EPN):
A name, up to nine characters long, assigned to each AI, DIN, MDV, and DEV defined in the continuous control database.

Faceplate:
A standard GSE display that shows the primary indications of a single EPN. Up to 16 EPNs can be grouped together and displayed simultaneously on one operator workstation screen. A grouping of up to 16 EPNs in a single display is sometimes called a faceplate group, or just faceplate. The faceplate group display is also a standard GSE display.

Graphic:
A display created by engineering using a graphics development package installed on a personal computer to show the relationship of signals to each other and their alarms. Usually, the graphic appears much like a process flow diagram.

Internal Point Number (IPN):
A number assigned to each signal type (AI, DIN, MDV, or DEV) which locates the EPN within the continuous database. Sequence programs scan signals of one type in order of the IPN.

Master Device (MDV):
A block of database containing the actual boolean logic programming for control of valves and motors. The boolean logic program statements usually are a series of gates (EQUATE, AND, OR, XOR, NOT, FLIP FLOP, TDE, TDD, or OS).

Operator Control Module (OCM):
An operator console, or workstation, used to monitor and control Evaporator and Tank Farm signals. An OCM displays information such as faceplates, alarm lists, graphics, and trends.

Process Control Module (PCM):
Redundant computers that monitors all signals and runs all SABL programs and certain user-written "C" programs (DOG0A, DOG0B, DOG1A, DOG1B). A PCM performs all process control functions.

Recipe Prototype File:
A file which lists flags, integers, floating points, pointers, timers, and string variables used in sequence programs. The file name is 4 characters long. Each SABL program uses variables found in one UPF or one RPF.

Sequence and Batch Language (SABL):
A GSE proprietary language that can access all blocks of the continuous database with puts and fetches.

Sequence Database (SDB):
A utility that relates continuous control database signals to sequence variables and sequence units. The SDB utility defines the sequence units, the first EPN of each signal type, the total number of each signal type in a sequence unit, and the associated UPF.

Sequence Key Interactive Definer Utility (SKID):
Usually relates displays to one of 64 annunciator keys on an OCM. A SKID key can be defined to run a sequence program, run a "C" program, change a sequence variable, command a device, and bring up a display by pressing the key. The light of each key can be off, on, or flashing as commanded by a SABL program.

Sequence Unit:
All signals in one process area or system are ordered into a sequence unit to allow access by the sequence database. Example sequence units are PB1, PB2, CA1, EA1, and EC1.

Signal type:
AI, DIN, MDV, or DEV.

String Editor (SED):
A utility used to create alarm messages, or strings, in graphics that change depending on the value of an integer variable in the sequence database. The application of SED is the only way to create flashing alarm messages in a graphic.

Unit Prototype File (UPF):
A file which lists scratch pad variable flags, integers, floating points, timers, pointers, and string variables used by SABL programs. The file name is 6 characters long. Each UPF must have a RPF assigned to it. Each SABL program uses variables found in one UPF or one RPF.

5.0 DESCRIPTION

5.1 Alarm Schemes

GSE provided a standard D/3 alarm scheme and WTSE developed a new alarm scheme. The new scheme adds functionality to the scheme provided by GSE. Both schemes are used (the new scheme does not replace the GSE scheme) in the complete management of alarms.

5.1.1 GSE Alarm Scheme

The MCS has two alarm systems, P1 (critical, red) and P2 (non-critical, yellow), that are part of the GSE package. Critical alarms are indicated by a flashing red P1 on all OCM screens and produce an audible alarm. The audible alarm is silenced by pressing the "Silence" key on the OCM keyboard. A red alarm summary list, up to 4 pages long, is displayed by pressing the P1 operator console key. Non-critical alarms are indicated by a flashing yellow P2 on all OCM screens. There is no audible alarm for the P2 alarms as defined in the GSE software package. A yellow alarm summary list, up to 4 pages long, is displayed by pressing the P2 operator console key. In the P1 and P2 alarm summary lists, acknowledged alarms appear steady, unacknowledged alarms flash, and unacknowledged alarms which have cleared appear flashing green.

5.1.2 New Alarm Scheme

The GSE alarm package was considered inadequate by itself, requiring the development of an additional alarm scheme. The new alarm scheme had to satisfy the following 4 requirements:

- Graphics must roughly identify alarm locations.
- Graphics must display alarms using customized flashing alarm messages that are acknowledgeable from the graphic.
- Include a third alarm priority level called informational, or advisory (white) alarms.
- Provide audible alarms for the yellow and white alarms.

The D/3 system critical alarm horn is activated for red alarms. The new alarm scheme commands a device to turn on a separate horn if a yellow or white alarm occurs, and to flash a SKID key for any alarm that occurs. Both horns are silenced by pressing the "Silence" key on the OCM keyboard. Graphics are displayed by pressing one of 64 annunciator keys. When any alarm occurs, the SKID key associated with the alarm flashes. Pressing this key displays the graphic. The alarm is shown by a flashing message in the appropriate alarm

color; red, yellow, or white. At the same time, an alarm message is printed at system alarm typer. The Tank Farm graphics show a list of the last 5 alarms at the bottom of each screen. All alarms on one graphic are acknowledged system wide by pressing the acknowledge key. Conversely, alarms acknowledged at the faceplate or alarm list level are also acknowledged on the graphic. White alarms also light a White Alarm annunciator key. Pressing this key displays up to three pages of white alarms.

5.2 Sequence Units and IPN Order

Forty SKID keys have been assigned to 40 graphics involving 33 sequence units using the new alarm scheme described in Section 5.1.2. For the Evaporator, EPNs in each graphic are assigned to one sequence unit, are controlled by one SABL program, and are associated with one SKID key. Tank farm graphics differ somewhat in that one SABL program usually controls 4, and up to 5, separate SKID keys.

The continuous database is structured by the order in which EPNs are defined. This order is established by the IPN of each EPN. This structure creates the foundation for the sequence database and sequence units. A table of EPNs, IPNs, and Sequence Units is found in the IPN order list (Appendix A). Appendix A is arranged by sequence unit and IPN. The "First Graph" column shows the graphic number where the EPNs are found. The column "ACAD File Name" indicates the personal computer (PC) file name for the graphic. The PC files are found in directory D:\A386\DRAW with ".DWG" extensions. The column "Number per Seq Unit" shows the total IPNs allowed in each unit for the AI, DIN, and DEV signal types. The total allowable IPNs are defined in the sequence database (see Appendix B, and Section 5.5). The "PCM", "MCS EPN", "SIG TYPE", and "IPN" columns are self explanatory. The remaining contents of Appendix A are discussed as needed in the remainder of this document. The relationship between the IPN order (and EPNs) and graphic alarms through the use of pointers is discussed further in Section 5.6.1.

Usually, the continuous database is setup with spare IPNs (or EPNs not defined) at the end of each sequence unit. Therefore, there are fewer EPNs in a sequence unit than the maximum allowed by the sequence database. Hopefully as signals are added to the continuous database over time, these "spare" IPNs are sufficient in quantity to add new signals without having to reshuffle the entire IPN order, which is a major undertaking. It would be nice to add plenty of spares to the continuous database to handle all future needs. However, there is a tradeoff between the number of spares available and the additional memory consumed by having more spares. Generally, 5 to 10% is a reasonable amount of spare IPNs to last a long time.

5.3 RPFs

Recipe Prototype Files (RPF) define all flags, integers, analog variables, second timers, minute timers, and string variables that can be modified from the OCM. All RPFs are found in Appendix C. SABL requires defining RPFs, but these variables are only used in the new alarm scheme as an extension to the UPF scratch pad variables table.

5.4 UPFs

Unit Prototype Files (UPF) define all scratchpad variables used by the sequence programs. All UPFs are found in Appendix D. Each UPF has one RPF associated with it. The UPF for PCM0 is slightly different from the UPF for PCM1. Because of this, the variables used by the programs running in the two PCMs are slightly different.

The following table lists the sequence unit names, numbers, program names, and their associated PCM, RPF, and UPF. Note the similarity between sequence unit names and sequence program names.

SEQUENCE UNIT NAME	SEQUENCE UNIT NUMBER	SEQUENCE PROGRAM NAME	PCM	RPF	UPF
WHOLEO	0	TAG.SEQ	0	ALLO	TOTALO
WHOLEO	0	TIMEINHA.SEQ	0	ALLO	TOTALO
A244	1	244BATCH.SEQ	0	FARM	SHORTO
HVC244	2	244HVAC.SEQ	0	FARM	SHORTO
WASTE	3	WSTXFR.SEQ	0	FARM	SHORTO
A350	4	350BATCH.SEQ	0	FARM	SHORTO
FEED	5	FEEDBATCH.SEQ	0	242A	PRCESS
CA1	6	CA1BATCH.SEQ	0	242A	PRCESS
PB1	7	PB1BATCH.SEQ	0	242A	PRCESS
PB2	8	PB2BATCH.SEQ	0	242A	PRCESS
EA1	9	EA1BATCH.SEQ	0	242A	PRCESS
EC1	10	EC1BATCH.SEQ	0	242A	PRCESS
RWATER	11	RWBATCH.SEQ	0	242A	PRCESS
URW	12	URWBATCH.SEQ	0	242A	PRCESS
VVENT	13	VENTBATCH.SEQ	0	242A	PRCESS
PC	14	PCBATCH.SEQ	0	242A	PRCESS
IX	15	IXBATCH.SEQ	0	242A	PRCESS
SC	16	SCBATCH.SEQ	0	242A	PRCESS
BASINS	17	BASINBAT.SEQ	0	242A	PRCESS
UTIL	18	UTILBATCH.SEQ	0	242A	PRCESS
ROOMS	19	----------	0	242A	PRCESS
AMU	20	AMUBATCH.SEQ	0	242A	PRCESS
LERF	21	LERFBATCH.SEQ	0	242A	PRCESS
EVAP	22	CASSBATCH.SEQ	0	242A	OVRVEW
VAPOR	23	----------	0	242A	OVRVEW

SEQUENCE UNIT NAME	SEQUENCE UNIT NUMBER	SEQUENCE PROGRAM NAME	PCM	RPF	UPF
COND	24	----------	0	242A	OVRVEW
BLANK0	25	PGM0A.SEQ	0	EMTY	BLANKK
WHOLE1	0	WHITE1.SEQ	1	ALL1	TOTAL1
ANFARM	1	ANBATCH.SEQ	1	FARM	TNKFRM
APFARM	2	APBATCH.SEQ	1	FARM	TNKFRM
AWFARM	3	AWBATCH.SEQ	1	FARM	TNKFRM
XYZFRM	4	XYZBATCH.SEQ	1	FARM	TNKFRM
BLNDG	5	242BATCH.SEQ	1	FARM	TNKFRM
BLANK1	6	PGM1A.SEQ	1	EMTY	BLANKK

5.5 Sequence Database

The SDB utility associates a number of AI, DIN, and DEVs with a unit prototype file. SDB output files for PCM0 and PCM1 are found in Appendix B. These listings give the sequence unit number, sequence unit name, UPF name, the total quantity of DEVs and EPN of the first DEV, total quantity of AIs and EPN of the first AI, and total quantity of DINs and EPN of the first DIN.

5.6 Pointers, Tables, And How The Programs Work

5.6.1 Pointers

Analog and digital signal values are all accessed through pointers. The first DEV, DIN, and AI in a sequence unit are assigned to pointers. The first integer and flag, also called variables, of a table are also assigned to pointers. By arranging variables into tables and comparing the value of integers and flags in the tables to the value of the EPNs, alarms are found, acknowledged, or cleared. Pointers start with the first EPN in a sequence unit and are stepped by one through all signals, which are arranged by IPN, in the unit. Therefore, the IPN order and use of pointers determines the relationship between alarm messages in graphics and EPNs associated with the graphics and SKID keys.

Alarm programs work by assigning the first DEV, DIN, or AI in a sequence unit to a pointer, checking its alarm status, and then moving on to the next EPN by stepping the pointer. Each EPN has one integer (TYPEn where n is a number, or pointer PTYPE) assigned to it that defines the type (red, yellow, white, etc.) of alarms it has. Each EPN also has another integer that indicates the status of that alarm (INTn, or pointer PSTAT). It is the INTn variables that are declared in a graphic file in association with an alarm message string (or string packet conversion number) for a DIN. The string packets are defined using the SED utility, which generates the D/3 file STRING.BIN and list file STRING.OUT. The string packet listing is found is Appendix G.

The association of the INTn batch variables to the EPNs within each unit are found in the IPN order list ("SDB Int" column of Appendix A). The association of the TYPEn batch variables to the EPNs within each unit follow the same order. For example, by referring to Appendix A one can see that the DIN LDS-PP, in unit A244 (unit 1 of PCM0), is associated with INT17. Likewise, LDS-PP is also associated with TYPE17. The actual TYPEn designations (0 for none, 1 for white, etc.) are inferred from the Tag List (WHC-SD-534-CSCM-001), which defines all alarms associated with a signal.

Programs running in PCM0 and PCM1 work the same way with a few subtle differences, particularly the use of pointer PSKID. In addition, the names of variables used in PCM0 differ somewhat from the names of variables in PCM1 programs because different UPFs are involved. These differences are presented below and in Sections 5.6.3, 5.6.4, and 5.6.5.

Despite these differences, the meaning of the values of the program variables are identical. The values of some common pointers are described below. Differences in the variable names whose attributes are assigned (ie: ASSIGN PTYPE = TYPE0) to the pointers are also noted.

Values of pointer PTYPE (TYPEn for PCM0, IALMn for PCM1) are:

0 = no alarm is defined
1 = white alarm
2 = yellow alarm
3 = yellow and white alarm combination
4 = red alarm
6 = red and yellow alarm combination

Values of pointer PSTAT (INTn for all programs) are:

0 = no alarm
1 = alarm found but not acknowledged, results in flashing message in graphic
2 = alarm is acknowledged
3 = alarm is inhibited (INHA)
4 = signal is off scan or disabled (OSCN, or DIS)
5 = signal has a bad input (IBAD)

Values of pointer PREV (FRVn for PCM0, FXn for PCM1) when associated with DINs are:

0 = alarm when DIN_VAL is 0
1 = alarm when DIN_VAL is 1

Note: For digital inputs, alarms occur if PREV = PEPN:DIN_VAL

Values for pointer PREV (FRVn for PCM0, FXn for PCM1) when associated with AIs are:

0 = Hi or HiHi alarm
1 = Lo or LoLo alarm

The attribute of variable FPASn (for all programs) is assigned to pointer PPASS. If PPASS equals 1, the SKID light turns off (provided there are no other alarms on the graphic) and graphic alarm message disappears after the alarm is acknowledged.

5.6.2 Procedure Used By All Programs

The same procedure is used by all programs to handle alarms, although subtle variations may exist between programs. The commented code listings of each sequence program are found in Appendix E. The procedure used by the programs for alarm management is summarized below.

1. Does the EPN have an alarm defined? If so, PTYPE is greater than zero. The type (TYPEn, or IALMn) is a constant defined in the initialization section of a program.

2. If an alarm is defined, is the EPN inhibited? If so, PSTAT is less than 3.

3. If not inhibited, is there an alarm present? Check by comparing PDIN:DIN_VAL and PREV.

4. If an alarm is present, does the system know of the alarm and has it been acknowledged (PSTAT equals 2 if true)? If not, then go to the Alarm Subroutine, ALM.

5. What type of alarm is it (red, yellow, or white)? Check the PTYPE.

6. For PCM1 programs, what graphic is it found in? Check the PSKID.

7. If acknowledged, should the alarm message vanish and the SKID lamp turn off? If so, PPASS equals 1. PPASS is a constant defined in the initialization section of a program. Note that if other alarms exist in the graphic, the message for an alarm may vanish but the lamp may remain on.

8. Has the alarm been acknowledged either from graphics or the system? Check by bitwise AND (AND (PDIN:DIN_ALMCT,32)).

9. Summarize all alarms in this unit and flash the skid key accordingly. For example, CURENT = OR (CURENT,NXT).

The primary variations between programs include:

- A few programs handle alarms found in a PCM other than the PCM the program is running in. In these cases, the program must fetch the data from the other PCM. This programming is hard-coded. PCM fetches are performed in RWBATCH, WSTXFR, WHITE1, XYZBATCH, 242BATCH, and CASSBATCH.

- A few programs manage alarms associated with logic devices (see Section 5.6.7).

- Reset CAL block output for totalizers. Programs that do this are RWBATCH, ANBATCH, APBATCH, and AWBATCH.

- A permissive always involves an Input-Output Switch (IOS) block. For loops having a permissive, set the PID output % (the O/C display bar % value) to zero when a permissive is lost (value of the TOGGLE goes to zero) to match the loop output. Programs that do this are FEEDBATCH, PB2BATCH, EA1BATCH, and VENTBATCH.

- Synchronizing of cascades to provide a bumpless transfer of a cascaded loop setpoint. Programs where this is done includes PCBATCH, FEEDBATCH, and PB2BATCH.

- EPN statuses, of DEVs and DINs, for the interlock graphics.

5.6.3 PCM1 DIN Alarms

The pointer PSKID in PCM1 programs, which are mainly for Tank Farms, is used to indicate which graphic has an active alarm, and pointer PSN (variable FSNn) is a flag for the graphic to acknowledge. The reason these pointers are needed is because one Tank Farm sequence program in PCM1 may control 4 or 5 SKID lamps. In PCM0 programs, one sequence program controls one lamp. The following is a sample of the pointer table used in the ANBATCH program for 241-AN Tank Farm signals. Pointer names are in parenthesis. Similar pointer tables are used for the other Tank Farm programs; APBATCH, AWBATCH, and XYZBATCH. There is no column for pointer PSN in the table below because 1) the FSNn variables are assigned to a graphic and not to individual EPNs, and 2) only 4 or 5 FSNn variables (FSN0 to FSN3 or FSN4) are used in each program, one for each graphic.

EPN (PDIN)	TYPE (PTYPE)	STATUS (PSTAT)	DIRECTION (PREV)	VANISH (PPASS)	GRAPHIC (PSKID)
YS-AN-101	IALM0	INT0	FX0	FPAS0	SKID0
RSH-AN101	IALM1	INT1	FX1	FPAS1	SKID1
RSH-AN01C	IALM2	INT2	FX2	FPAS2	SKID2
YS-AN-102	IALM3	INT3	FX3	FPAS3	SKID3
RSH-AN102	IALM4	INT4	FX4	FPAS4	SKID4

EPN (PDIN)	TYPE (PTYPE)	STATUS (PSTAT)	DIRECTION (PREV)	VANISH (PPASS)	GRAPHIC (PSKID)
RSH-AN02C	IALM5	INT5	FX5	FPAS5	SKID5
YS-AN-103	IALM6	INT6	FX6	FPAS6	SKID6
RSH-AN103	IALM7	INT7	FX7	FPAS7	SKID7
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

The first EPN and the attributes of the first integer and flag found on the first row of the above table are assigned to their corresponding pointer. For example, these assignments are made in the code as follows:

```
ASSIGN PDIN  = 'YS-AN-101'
ASSIGN PTYPE = IALM0
ASSIGN PSTAT = INT0
ASSIGN PREV  = FX0
ASSIGN PPASS = FPAS0
ASSIGN PSKID = SKID0
```

Alarms are found by comparing the 'EPN':DIN VAL values to values in the PREV column of the table. The program looks at all DINs, AIs, and sometimes the DEVs in a unit. When a white or yellow alarm occurs, an audible alarm horn (different from the critical alarm horn) is turned on. This is done by setting the flag FALMON in any sequence unit. This flag is scanned by a "C" program running in the PCM. The subsequent actions of this and other "C" programs are discussed in Section 5.10.

Within the sequence program, the SKID key status is the result of performing a logical "OR" on the PSTAT column and converting it to the appropriate SKID key function number where:

0 = SKID lamp off
1 = SKID lamp steady
2 = SKID lamp flash
3 = SKID lamp off-synchronized flash

5.6.4 PCM0 DIN Alarms

PCM0 digital inputs, which are primarily Evaporator signals, are handled the same way as the PCM1 DINs, which are predominately Tank Farm signals, but are associated with a different UPF. Because of this, some variable names change. The following pointer table is a sample of PB1 digital signals showing the different variable names. Pointer names are in parenthesis. Similar pointer tables exist for the other PCM0 sequence units and DINs.

EPN (PDIN)	TYPE (PTYPE)	STATUS (PSTAT)	DIRECTION (PREV)	VANISH (PPASS)	IPN
YS-PC-105	TYPE0	INT0	FRV0	FPAS0	70
YS-PC105A	TYPE1	INT1	FRV1	FPAS1	71
ZS-CA1-7N	TYPE2	INT2	FRV2	FPAS2	72
YS-PB1-1	TYPE3	INT3	FRV3	FPAS3	73
ZS-CA1-7C	TYPE4	INT4	FRV4	FPAS4	74
LDS-SMPL2	TYPE5	INT5	FRV5	FPAS5	75
ZS-CA1-8N	TYPE6	INT6	FRV6	FPAS6	76
ZS-CA1-8C	TYPE7	INT7	FRV7	FPAS7	77
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

5.6.5 PCMO AI Red and Yellow Alarms

As with PCMO DINs, the PCMO analog inputs are primarily Evaporator signals.

The type of analog alarm is always checked for each EPN prior to executing the analog alarm code. If TYPEn for an EPN is initialized as zero, then there are no defined alarms for the EPN and the bulk of the analog alarm coding is bypassed.

A new analog alarm exists if the analog alarm count (AI_ALMCT) number is less than 16 but greater than zero. Evaporator graphics use PSKID to indicate the previous analog alarm status. A new alarm occurs when PSKID does not equal PAI:AI_ALMCT, and the signal in not inhibited, and the alarm is current. In addition, if the PAI:AI_ALMCT is less than 3, then the alarm is non-critical and the yellow-white audible horn is activated. Hi and Lo alarms are generally yellow (non-critical). HiHi and LoLo alarms are always red (critical), meaning an audible alarm will be set off on an OCM by the D/3 software provided by GSE. AI_ALMCT values are:

0 = no alarm
1 = Hi alarm
2 = Lo alarm
3 = HiHi alarm
4 = LoLo alarm
16 = all alarms are inhibited
32 = all alarms are acknowledged

A sample of the pointer table for analog signals in sequence unit PB1 is summarized below. Pointer names are in parenthesis. Usually PSTAT, PREV, and PPASS are not used in the code for analog red and yellow alarms. In almost all PCMO programs PAI, PTYPE, and PSKID are used. Similar pointer tables exist for the other PCMO sequence units and AIs.

EPN (PAI)	TYPE (PTYPE)	STATUS (PSTAT)	DIRECTION (PREV)	VANISH (PPASS)	AI_ALMCT (PSKID)
KY-PB1-1	TYPE10	INT10	FRV10	FPAS10	SKID10
FI-CA1-7	TYPE11	INT11	FRV11	FPAS11	SKID11
II-PB1-1	TYPE12	INT12	FRV12	FPAS12	SKID12
VI-PB1-2A	TYPE13	INT13	FRV13	FPAS13	SKID13
VI-PB1-1A	TYPE14	INT14	FRV14	FPAS14	SKID14
VI-PB1-3A	TYPE15	INT15	FRV15	FPAS15	SKID15
FI-CA1-1	TYPE16	INT16	FRV16	FPAS16	SKID16
PI-CA1-9	TYPE17	INT17	FRV17	FPAS17	SKID17
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

There are a few minor differences in the pointer tables and code used in some of the PCM0 sequence programs. First, in PCBATCH and IXBATCH the pointer PTYPE is not used. Instead, PALARM (or FALMn) is used for the same purpose as PTYPE, but in different direction. In most programs, if PTYPE is set then the section of code is executed. However in PCBATCH and IXBATCH, if PALARM is not set, which is the case for all EPNs in these units, then the section of code is executed. Although a column for PALARM in the above table is not shown, the variable assignments in PCBATCH are similar (ie: for II-A-C100, the attribute of FALM5 is assigned to PALARM, and so on).

Secondly, sequence programs in PCM0 do not all require similar sections of code to handle the different types of alarms; red, yellow, and white. Some units do not have white alarms, so there may not be a section of code in the program for that unit to handle white alarms. Similarly, some units do not have red or yellow alarms, so there may not be a section of code in the program to handle them.

Finally, there are some code inconsistencies between programs. These are relatively minor and it is not the intent of this document to discuss them, but the reader needs to be aware that they exist. Just as there usually are several ways to arrive at the correct solution to a mathematical problem, there are even more possible combinations of code that will result in the same desired outcome. For example, the initialization of variables for analog signals may be done inside the same loop as the digitals, or the analogs may be initialized in a separate loop.

5.6.6 PCM0 AI White Alarms

All white alarms for analog signals are in PCM0. Most of these are Evaporator signals, but several are Tank Farm signals. PCM1 contains some white alarms, but these are only digital inputs. The white alarm summary page program runs in PCM1 and is discussed in Section 5.7.

Coding for white analog alarms use variables not used in the coding for analog red and yellow alarms. The type (TYPEn) of alarm is a constant defined during program initialization. TYPEn equals one (1) for white alarms. As with other programs, the alarm status (INTn) integer variables are related to an EPN and graphic alarm message. An EPN is assigned to pointer PAI before running analog white alarm subroutine, ANLG. The ANLG subroutine consists of two primary loops; one for handling the Hi and HiHi alarms, and second nearly identical loop for the Lo and LoLo alarms. The proper loop for each EPN is defined by the reverse flag variables (FRVn), which are constants established in the initialization section of a program. Values of the FRVn variables follow the convention:

0 = HI or HIHI alarm
1 = LO or LOLO alarm

Some EPNs have more than one white alarm. In such cases, EPNs will be associated with multiple FRV variables. The white alarm setpoints are controlled by the Tag List (WHC-SD-534-SWD-001). The total number of white alarms for each EPN can be determined from the Tag List, from sequence code listings, or from the IPN order (Appendix A). For example, Appendix A shows two white alarms for PI-EA1-13 in unit EA1. If an alarm must disappear after it is acknowledged, then the constant FPASn is set equal to one (1) during initialization. To determine if an alarm exists, analog measured value AI_MEAS is compared to floating point value AIn. For example, the measured value of PI-EA1-13 is compared to AI0, and so on. The white alarm setpoints, AIn, are defined in the initialization section of a program. The pointer table for EA1 unit white alarms is listed below. Similar pointer tables are used for other units.

EPN (PAI)	TYPE (PTYPE)	STATUS (PSTAT)	DIRECTION (PREV)	VANISH (PPASS)	ALARM (PALARM)
PI-EA1-13	TYPE26	INT26	FRV26	FPAS26	AI0
PI-EA1-13	TYPE27	INT27	FRV27	FPAS27	AI1
FIC-EA1-1	TYPE28	INT28	FRV28	FPAS28	AI2
PI-EA1-1	TYPE29	INT29	FRV29	FPAS29	AI3
PI-EA1-1	TYPE30	INT30	FRV30	FPAS30	AI4
TI-EA1-5	TYPE31	INT31	FRV31	FPAS31	AI5

Values of these variables as found in EA1BATCH.SEQ are:

EPN (PAI)	TYPE (PTYPE)	STATUS (PSTAT)	DIRECTION (PREV)	VANISH (PPASS)	ALARM (PALARM)
PI-EA1-13	1	INT26	1 (LoLo)	0	75.0
PI-EA1-13	1	INT27	1 (Lo)	0	80.0
FIC-EA1-1	1	INT28	1 (Lo)	0	3000.0
PI-EA1-1	1	INT29	1 (Lo)	0	17.7
PI-EA1-1	1	INT30	0 (Hi)	0	29.7
TI-EA1-5	1	INT31	0 (Hi)	0	190.0

When one EPN has more than one white alarm, the more extreme alarm has priority. This means that a HiHi has priority over a Hi alarm, and a LoLo has priority over a Lo. When the more extreme alarm resets, the less extreme alarm becomes active again. A Lo alarm resets when the measured value is greater than the Lo alarm limit plus AI scan block deadband, and a Hi alarm resets when the measured value is less than the Hi alarm limit minus the deadband.

5.6.7 Device Alarms

A few programs handle alarms associated with logic devices. The code for device alarms is very similar to the code for the digital alarms, except that a) the code for device alarms is usually hard-coded, whereas the code for most DINs use pointers and tables, and b) device alarm programming uses DEV_STAT and DEV_ALMCT, whereas the code for DINs use DIN_VAL and DIN_ALMCT.

5.7 White Alarm Summary Program

The white alarm summary page program running in PCM1 and found in unit WHOLE1 is called WHITE1. This program runs independently of all other batch programs. The alarm values are hard-coded into this lengthy SABL program. Signals reset as described in the last paragraph of Section 5.6.6. As new alarms occur, they are displayed at the top of the list, much like P1 and P2 alarms, and cause SKID key 60 to flash. Pressing SKID key 60 causes it to return to a dark-board condition. White alarms are eliminated from the list when inhibited or when they clear.

The flags and integers listed below are used differently than other programs. Pointer names are in parenthesis. The maximum of the range, 191, is the total number of each variable in the UPF. Currently, 177 of each variable are being used, with many of these being spares or old, abandoned white alarms. The letter "n" in the variable name indicates a number between 1 and 177.

VARIABLE (POINTER)	TYPE	RANGE	PURPOSE
FXn (PSTAT)	FLAG	0 - 191	For DINs, is the real-time digital input value. For AIs, is set to 1 if AI is in an alarm state.
FRVn (PREV)	FLAG	0 - 191	FRV is the predetermined value of a digital input when in the alarm state. An alarm exists when PREV equals PSTAT. Set equal to 1 for all analog alarms.

FDSn (PTYPE)	FLAG	0 - 191	If equal to 1, then alarm is inhibited.
FALn (PALARM)	FLAG	0 - 191	Set to 1 when an alarm is found to prevent repeat. Is reset to 0 when alarm clears.
INTn (PLINE)	INTEGER	0 - 191	Is the line in the white alarm list display where the alarm message resides. If 0, then no alarm.

The white alarm program first initializes all alarm conditions by setting flags FRVn and FDSn. The inhibit flag, FDSn, for each signal is initialized as a 1. For signals that have white alarms, the program then reads the DIN_ALMCT, AI_ALMCT, or DEV_ALMCT bit values (at the start of the program repeat loop, AGAIN:) to determine if they are really inhibited or not and sets FDSn accordingly. Next, it determines the real-time signal status and sets flags FXn to the value of each DIN or analog alarm. If a signal is not inhibited (if not, PTYPE = FDSn = 0), then the program checks if to see if the signal was previously alarmed (if not, PALARM = FALn = 0). If not inhibited and not previously alarmed, then the program checks to see if a new alarm exists. A new alarm exists when FXn equals FRVn (when PREV = PSTAT). If a new alarm is found, then the program does the following:

- Set PALARM (FALn) equal to 1
- Set PLINE (INTn) equal to ILOOP
- Flash the SKID lamp
- Index, or bump, all messages in the white alarm summary graphics by 1.

If a signal is inhibited (PTYPE = FDSn = 1) and it was previously alarmed (PALARM = FALn = 1) then the program clears the alarm messages for that signal from the alarm summary graphic. To accomplish this the program does the following:

- Set PALARM (FALn) equal to 0
- Step to the alarm message line displayed in the graphic. That is, step down ILOOP lines from first line (STEP PLINE BY ILOOP).
- Step all message lines backwards to erase the alarm message and set PLINE (INTn) equal to 0.

A signal that once had a white alarm which was deleted is handled in a unique fashion. This is because it was felt that some white alarms might be reinstated later. For all signals, FDSn (PTYPE) is a constant set equal to 1 (PTYPE = 1 for inhibited) in the initialization section of the code. When the inhibit flag, PTYPE, is set the program bypasses the alarm status checking code contained in the program loop labeled "LOP:", and alarm messages of inhibited signals are kept out of the white alarm summary graphics. By taking

advantage of this, white alarms are essentially deleted by commenting specific lines of code pertaining to the individual EPNs. Reinstating deleted white alarms is a simple programming matter of removing semi-colons in commented lines. An example of lines of code that have been commented to delete AW Farm pump device white alarms are listed below (see Appendix E for the actual code). Similar lines of code would be commented for deleted analog or digital white alarms.

- In the initialization section, definition of FRV70 through FRV75
- In the AGAIN program loop, current settings of FDS70 through FDS75 which reads the DEV_ALMCT bit values for inhibit checking
- In the AGAIN program loop, current device statuses FX70 through FX75
- In the alarm subroutine, "ALM:", graphic message strings from labels "S70:" through "S75:"

Appendix A indicates the EPNs which have white alarms associated with them. This is indicated in the "White Numb" column. For example, the digital signal PSH-FP in unit A244 is a white alarm. The number "084" refers to the variable number or label (ie: FX84, FRV84, FDS84, FAL84, INT84, and "S84:") in the white alarm program that deals with this signal.

5.8 Unit Relative Feature of Programs

All MCS SABL programs using the same UPF are unit relative, which means several things. First, the code from one program to the next is similar if not identical, which is wonderful from a programmers standpoint. However, the 242-A process does not lend itself to unit relativity because there is no similarity between process units as in a production facility. As a result, there is a down-side to this unit relativity. For example, ANBATCH can run in unit APFARM, or CA1BATCH can run in unit AMU. This is highly undesirable because if this were to happen false alarms would be presented to the operator. To prevent this, a GETUNIT command early in each program determines which sequence unit a program is running in. If a program is running in the wrong unit then the program aborts, a SKID key (key 48 labeled "Program Status") flashes, and a message is printed at the system alarm typer.

5.9 Program Statuses, Diagnostics, and Corrective Action

Two SABL programs, one in each PCM, monitor the status of all sequence programs. PGM0A runs in the PCM0 processors, and PGM1A runs in the PCM1 processors. Program statuses are displayed on graphic 43. Normal or healthy statuses (RUNNING, WAIT, or CRITICAL) are shown in a steady green color. Abnormal statuses (NOT-RUNNING, TRAPPED, or FAULT on AUDALARM0) are displayed in a flashing red color on the graphic and cause the Program Status SKID key (key 48) to flash. The abnormal statuses, NOT-RUNNING and TRAPPED, require corrective action (aborting, unloading, reloading, and running the indicated

program). Command files in directory D3DATA:[100001] of the CDCM are used to correct these problems.

In the Program Status graphic, error lines and error codes are shown in white for diagnostics. Error number 187 (COULD NOT DO REMOTE ACCESS) is the most common error code shown, if any. A few SABL programs must get data from another PCM (ie: PCM0A program RWBATCH must get the status of DIN TSL242A81 from PCM1A). If the requesting PCM cannot communicate with the other PCM for any reason, then error 187 will occur. Error 187 will occur anytime one PCM is offline or in load-request. There are a host of other reasons why communications may be lost. Most are temporary. Temporary loss of communications usually indicates some hardware problem exists, but could be the result of a data highway that is too busy.

Another occasional problem occurs when the yellow-white alarm horn becomes stuck and cannot be shut off for some reasonable duration. To diagnose this, access the Program Diagnostic display, graphic 133, and observe the flags FALMON, ACK, FLGACK, and FSLO. These flags should normally be green or temporarily red.

5.10 "C" Programs Related To Alarm Scheme

There are six alarm-related "C" programs that enhance the alarm management scheme. These all work together to minimize operator time and effort to find and acknowledge alarms. The standard GSE D/3 package requires that each alarm in a graphic be selected and acknowledged individually. The six "C" programs get around this feature so that pressing the operator console "ACK" key once acknowledges all alarms in the graphic. The only requirement for this to work is that the alarm acknowledge device in a graphic must be selected. The alarm acknowledge device is automatically selected when a graphic is called up. However, the operator may have to re-select this device (using Quick Select key 0) if another EPN was temporarily selected. The alarms in a graphic are also acknowledged throughout the entire D/3 system.

Four of the "C" programs run in the PCMs. One program runs in each PCM for redundancy. The other two programs run on the CDCM. One of these two tasks watches flags in the PCM sequence databases, and the other acknowledges all alarms in a graphic. The programs are named as follows:

Micro Name	Program Name
PCM0A	DOG0A
PCM0B	DOG0B
PCM1A	DOG1A
PCM1B	DOG1B
CDCM	WATCH (installed as task DOG)

Appendix F contains the code listings of these programs.

The relationships between these programs are illustrated in Figure 1. When a white or yellow alarm occurs, a sequence program sets the flag FALMON to a value of one. This flag is scanned by a "C" program running in the PCM called DOG0A, DOG0B, DOG1A, or DOG1B (hereafter referred to as DOGxx) depending on the PCM. If a DOGxx program finds FALMON set, then DOGxx commands the audible alarm device (AUDALARM0) on to turn on the horn, and resets the FALMON flag. Also, DOG0A and DOG0B look at flag ACK (in PCM0 units), and DOG1A and DOG1B look at the FLGACK flag (in PCM1 units). If ACK is set to a value of one, then either DOG0A or DOG0B (depending on the PCM selected) sets flag FSL0 to a value of one in unit BLANK0. If FLGACK is set to a value of one, then either DOG1A or DOG1B (depending on the PCM selected) sets flag FSL0 to a value of one in unit BLANK1. The WATCH program scans the FSL0 flag in each of these two BLANKx units. If WATCH finds that either flag is set, then WATCH resets the flag and runs function ACKFLG. The function ACKFLG acknowledges all flashing alarms in the displayed graphic from which the operator console "Alarm ACK" key was pressed. Conversely, if the "Alarm ACK" key was pressed from a P1 or P2 display, then those alarms are acknowledged in the graphics where they are found.

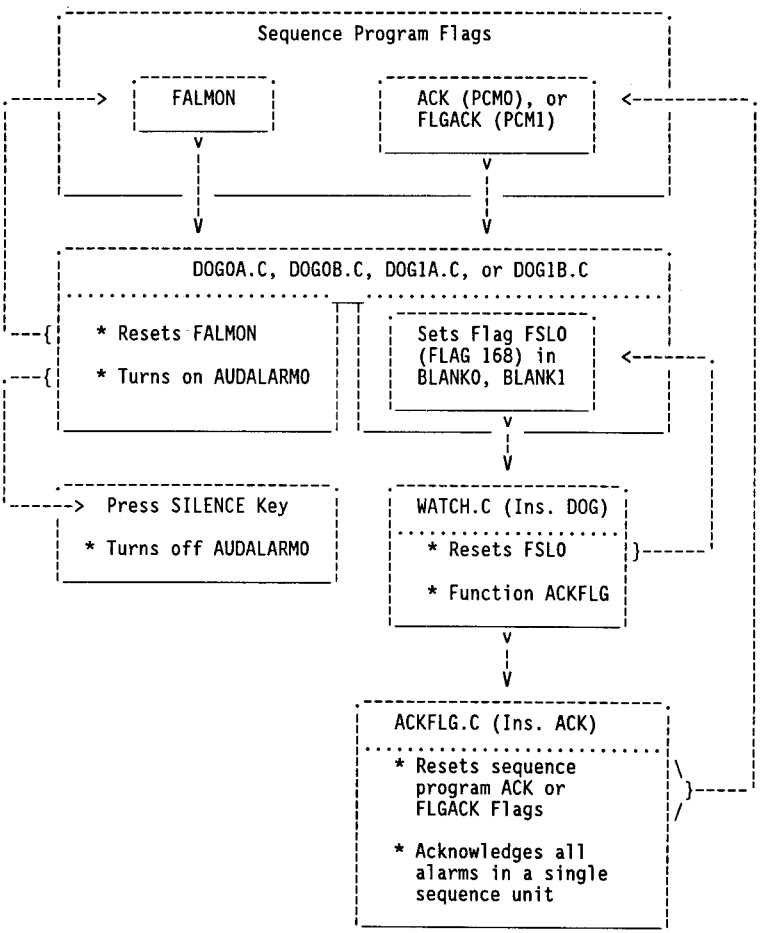

FIGURE 1. Program Relationships

5.11 Other Alarm-Related "C" Programs

There are four other programs that deal with inhibited alarms. The code listings of these programs are found in Appendix F. One of these is INHA.C, which is installed on a DCM as task INHALM. Task INHALM is run from an annunciator SKID panel by pressing key number 53, which is labeled "INHA". This task provides a list of inhibited alarms for graphics 80 through 84. It works in conjunction with SABL program TIMEINHA, which provides the date and time that the program was run. The date and time are displayed on each of the graphics numbered 80 through 84. TIMEINHA is also activated by pressing SKID key 53.

The other three programs are user key functions (UKFs), or General Functions (GFs). General Functions 43 and 44 are activated after the Evaporator is shut down to inhibit select alarms. UKF43 is run only on the CDCM and inhibits the alarms and clears the CDCM alarm summary pages. UKF44 is then run on DCMO to clear its alarm summary pages. General Function 14 (provided by GSE) is then run on the CDCM to recreate the alarms in the alarm summary pages.

Conversely, UKF34 is activated prior to starting the Evaporator up and cancels the inhibited status of the same select EPNs. After UKF34 is run, no other tasks or user key functions need to be run.

5.12 SKID Key Configuration

The annunciator key configuration for each OCM is built from command files in directory D3DATA:[100010] of the CDCM. These files are named CDCMSKO.CMD, CDCMSK1.CMD, DCMOSKO.CMD, DCMOSK1.CMD, and DCMOSK2.CMD. These five files are identical. Appendix I contains a listing of CDCMSKO.CMD.

6.0 REBUILDING DATABASES AND PROGRAMS

A word about rebuilding databases is appropriate at this point. Whenever the continuous database is rebuilt, a new serial number is automatically assigned to that database. This serial number is the fine thread that is associated with the sequence database and graphics. Its purpose is to warn when something has been rebuilt, but something else has not. When such discrepancies occur a large flashing red message, such as "... SERIAL MISMATCH", will appear in a graphic.

When the continuous database is rebuilt, usually most everything else must be rebuilt. The nice thing about the RPFs and UPFs is that unless they have been modified, they do not need to be rebuilt. However, the sequence database, sequence programs, and graphics must be rebuilt. If only one continuous database is rebuilt, it is safest to <u>also</u> rebuild the sequence database, programs, and graphics for the continuous database that was <u>not</u> rebuilt. This will take quite a bit more time, but in the long run it could save some grief. The reason for taking the extra time is that the same cross-reference files (D3DATA:[300001]SDBMASTER.XRF, SDBSHORT.XRF) are written to when the SDB utility is run for PCM0 or PCM1. It is best to start off clean by renaming the "XRF" files to "OLD" files, and let SDB write new files. A procedure for rebuilding the entire applications software is found in Appendix H.

7.0 APPENDICES

APPENDIX A - IPN ORDER

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
0 - W H O L E O					**217-DEV; 379-AIN; 348-DIN**		
244ALARM	DEV	0	-	-	-	-	0
YS244AIL	DI	0	-	-	-	-	0
II-P244A1	AI	0	-	-	-	-	0
1 - A 2 4 4					**15-DEV; 30-AIN; 50-DIN**		
244ALARM	DEV	0	-	-	340	244A	0
P-244-A1	DEV	1	-	-	340	244A	0
SPARE	DEV	2	-	-	340	244A	0
P-244-A3	DEV	3	-	-	340	244A	0
SPARE	DEV	4	-	-	-	-	0
SPARE	DEV	5	-	-	-	-	0
SPARE	DEV	6	-	-	-	-	0
SPARE	DEV	7	-	-	-	-	0
SPARE	DEV	8	-	-	-	-	0
SPARE	DEV	9	-	-	-	-	0
YS244A1IL	DI	0	0	-	340	244A	0
YS-P244A1	DI	1	1	-	340	244A	0
SPARE	DI	2	2	-	-	-	0
SPARE	DI	3	3	-	-	-	0
YS-P244A3	DI	4	4	-	340	244A	0
SPARE	DI	5	5	-	-	-	0
ZS-MOV-2F	DI	6	6	-	340	244A	0
ZS-MOV2DR	DI	7	7	-	340	244A	0
SPARE	DI	8	8	-	-	-	0
SPARE	DI	9	9	-	-	-	0
SPARE	DI	10	10	-	-	-	0
SPARE	DI	11	11	-	-	-	0
SPARE	DI	12	12	-	-	-	0
SPARE	DI	13	13	-	-	-	0
SPARE	DI	14	14	-	-	-	0
PSH-SN215	DI	15	15	-	-	-	0
PSH-SN216	DI	16	16	-	-	-	0
LDS-PP	DI	17	17	-	340	244A	0
SPARE	DI	18	-	-	-	-	0
PSH-FP	DI	19	-	-	-	-	0
II-P244A1	AI	0	20	-	340	244A	0
SPARE	AI	1	21	-	-	-	0
II-P244A3	AI	2	22	-	340	244A	0
DI-244-SP	AI	3	23	-	340	244A	0
WFI-244SP	AI	4	24	-	340	244A	0
SPARE	AI	5	25	-	-	-	0
LI-244TK	AI	6	26	-	340	244A	0
DI-244-TK	AI	7	27	-	340	244A	0
WFI-244TK	AI	8	28	-	340	244A	0
TI-244-TK	AI	9	29	31	340	244A	0
PI-244-TK	AI	10	30	-	340	244A	0
19 MORE	AI		THESE AIS ARE IN ADDITIONAL UNITES				

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
2 - H V C 2 4 4						**1-DEV; 5-AIN; 5-DIN**	
HVAC244	DEV	10	-	-	346	244AHVAC	0
PDSL-EF-2	DI	20	0	-	341	244AHVAC	0
PDSH-EF-1	DI	21	1	-	341	244AHVAC	0
RSH-A	DI	22	2	-	341	244AHVAC	0
RSH-EXH-1	DI	23	3	-	341	244AHVAC	0
QXS-EXH-1	DI	24	4	-	341	244AHVAC	0
RI-244ANN	AI	11	5	-	341	244AHVAC	0
FI-244EXH	AI	12	6	8,9	341	244AHVAC	0
RI-244EXH	AI	13	7	-	341	244AHVAC	0
II-350-1	AI	14	-	-	-	-	0
LI-350TK	AI	15	-	-	-	-	0
3 - W A S T E						**1-DEV; 0-AIN; 18-DIN**	
WSTXFR	DEV	11	-	-	349	WSTXFR1	0
LDS-AR151	DI	25	0	-	344	WSTXFR	0
LDS-ER151	DI	26	1	-	344	WSTXFR	0
PSHSNV229	DI	27	2	-	344	WSTXFR	0
LDS-ER152	DI	28	3	-	344	WSTXFR	0
SPARE	DI	29	4	-	-	-	0
SPARE	DI	30	5	-	-	-	0
SPARE	DI	31	6	-	-	-	0
SPARE	DI	32	7	-	-	-	0
LDS-ER153	DI	33	8	-	344	WSTXFR	0
PSHPSN232	DI	34	9	-	344	WSTXFR	0
PSHPSN234	DI	35	10	-	344	WSTXFR	0
SPARE	DI	36	11	-	-	-	0
SPARE	DI	37	12	-	-	-	0
SPARE	DI	38	13	-	-	-	0
SPARE	DI	39	14	-	-	-	0
LDS-AX155	DI	40	15	-	344	WSTXFR	0
LDS-DR713	DI	41	16	-	344	WSTXFR	0
LDS-DR717	DI	42	17	-	344	WSTXFR	0
4 - A 3 5 0						**3-DEV; 17-AIN; 5-DIN**	
350ALARM	DEV	12	-	-	343	350A	0
P-350-1	DEV	13	-	-	343	350A	0
SPARE	DEV	14	-	-	-	-	0
LSH-350-2	DI	44	1	-	343	350A	0
LDS-350-2	DI	45	2	-	343	350A	0
LDS-PW481	DI	46	3	-	343	350A	0
SPARE	DI	47	-	-	-	-	0
SPARE	DI	48	-	-	-	-	0
II-350-1	AI	14	4	-	343	350A	0
LI-350TK	AI	15	5	-	343	350A	0
DI-350-TK	AI	16	6	-	343	350A	0
WFI-350TK	AI	17	7	-	343	350A	0
FQI-350-2	AI	18	8	-	343	350A	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
FQI-350-1	AI	19	9	-	343	350A	0
FI-350-1	AI	20	10	-	343	350A	0
SPARE	AI	21	-	-	-	-	0
SPARE	AI	22	-	-	-	-	0
SPARE	AI	23	-	-	-	-	0
SPARE	AI	23	-	-	-	-	0
SPARE	AI	24	-	-	-	-	0
SPARE	AI	25	-	-	-	-	0
SPARE	AI	26	-	-	-	-	0
SPARE	AI	27	-	-	-	-	0
SPARE	AI	28	-	-	-	-	0
SPARE	AI	29	-	-	-	-	0
5 - F E E D					**10-DEV;**	**15-AIN;**	**10-DIN**
PAW102ALM	DEV	15	-	-	301	AWFEED	0
P-AW-102	DEV	16	-	-	301	AWFEED	0
HV-CA1-1	DEV	17	-	-	301	AWFEED	0
VCA1-INLK	DEV	18	-	-	301	AWFEED	0
SAPRE	DEV	19	-	-	-	-	0
SAPRE	DEV	20	-	-	-	-	0
SAPRE	DEV	21	-	-	-	-	0
SAPRE	DEV	22	-	-	-	-	0
SAPRE	DEV	23	-	-	-	-	0
SAPRE	DEV	24	-	-	-	-	0
YS-AW102	DI	50	0	-	301	AWFEED	0
YS-CA1-1	DI	51	1	-	301	AWFEED	0
LDS-SMPL1	DI	52	2	-	301	AWFEED	0
PSH-102-3	DI	53	3	-	301	AWFEED	0
YSAW102IL	DI	54	4	-	301	AWFEED	0
ZS-CA1-1C	DI	55	5	-	301	AWFEED	0
ZS-CA1-1N	DI	56	6	-	301	AWFEED	0
SPARE	DI	57	-	-	-	-	0
SPARE	DI	58	-	-	-	-	0
SPARE	DI	59	-	-	-	-	0
II-AW-102	AI	30	7	7	301	AWFEED	0
DI-AW-102	AI	31	8	-	301	AWFEED	0
FIC-CA1-1	AI	32	9	-	301	AWFEED	0
FQI-CA1-1	AI	33	10	-	301	AWFEED	0
KY-CA1-1	AI	34	11	-	301	AWFEED	0
CI-WVR-2	AI	35	12	-	301	AWFEED	0
CI-WVR-3	AI	36	13	-	301	AWFEED	0
CI-WVR-1	AI	37	14	-	301	AWFEED	0
PI-102-AW	AI	38	15	-	301	AWFEED	0
KY-102-3	AI	39	16	-	301	AWFEED	0
SPARE	AI	40	-	-	-	-	0
SPARE	AI	41	-	-	-	-	0
SPARE	AI	42	-	-	-	-	0
SPARE	AI	43	-	-	-	-	0
SPARE	AI	44	-	-	-	-	0
6 - C A 1					**10-DEV;**	**35-AIN;**	**10-DIN**
CA1-ALARM	DEV	25	-	-	010	CA1	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
SELECT-WF	DEV	26	-	-	010	CA1	0
SELECT-DI	DEV	27	-	-	010	CA1	0
HV-PDSPRY	DEV	28	-	-	010	CA1	0
SPARE	DEV	29	-	-	-	-	0
SPARE	DEV	30	-	-	-	-	0
SPARE	DEV	31	-	-	-	-	0
SPARE	DEV	32	-	-	-	-	0
SPARE	DEV	33	-	-	-	-	0
SPARE	DEV	34	-	-	-	-	0
PSH-CA111	DI	60	0	-	010	CA1	0
WFSH-CA11	DI	61	1	-	010	CA1	0
WFSH-CA12	DI	62	2	-	010	CA1	0
PDSH-CA1	DI	63	3	-	010	CA1	0
SPARE	DI	64	-	-	-	-	0
SPARE	DI	65	-	-	-	-	0
SPARE	DI	66	-	-	-	-	0
SPARE	DI	67	-	-	-	-	0
SPARE	DI	68	-	-	-	-	0
SPARE	DI	69	-	-	-	-	0
PI-CA1-11	AI	45	4	-	010	CA1	0
PIC-CA1-7	AI	46	5	-	010	CA1	0
TI-CA1-6S	AI	47	6	-	010	CA1	0
TI-CA1-6	AI	48	7	-	010	CA1	0
TDI-BPR-1	AI	49	8	-	010	CA1	0
WFI-CA1-1	AI	50	9	-	010	CA1	0
LI-CA1-1	AI	51	10	-	010	CA1	0
LI-CA1-1G	AI	52	11	-	010	CA1	0
LIC-CA1-1	AI	53	12	-	010	CA1	0
WFI-CA1-2	AI	54	13	-	010	CA1	0
LI-CA1-2	AI	55	14	-	010	CA1	0
LI-CA1-2G	AI	56	15	-	010	CA1	0
LIC-CA1-2	AI	57	16	-	010	CA1	0
DIC-CA1-1	AI	58	17	-	010	CA1	0
DI-CA1-1	AI	59	18	-	010	CA1	0
DI-CA1-2	AI	60	19	-	010	CA1	0
DDI-CA1-1	AI	61	20	35,36	010	CA1	0
WFI-CA1-3	AI	62	21	-	010	CA1	0
LI-CA1-3	AI	63	22	-	010	CA1	0
LI-CA1-3G	AI	64	23	-	010	CA1	0
PDI-FH1-1	AI	65	24	37	010	CA1	0
PDI-FH2-1	AI	66	25	38	010	CA1	0
PDI-FH3-1	AI	67	26	39	010	CA1	0
FIC-CA1-6	AI	68	27	-	010	CA1	0
FQI-CA1-6	AI	69	28	-	010	CA1	0
PDI-CA1-2	AI	70	29	-	010	CA1	0
HIC-CA114	AO	71	30	-	010	CA1	0
HIC-CA115	AO	72	31	-	010	CA1	0
PDI-CA1-1	AI	73	32	-	010	CA1	0
TI-CA1-10	AI	74	33	-	010	CA1	0
SPARE	AI	75	34	-	-	-	0
SPARE	AI	76	-	-	-	-	0
SPARE	AI	77	-	-	-	-	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
SPARE	AI	78	-	-	-	-	0
SPARE	AI	79	-	-	-	-	0
7 - P B 1					**15-DEV; 20-AIN; 15-DIN**		
PB1-ALARM	DEV	35	-	-	012	PB1	0
PB-1	DEV	36	-	-	012	PB1	0
PB1WFINLK	DEV	37	-	-	012	PB1	0
PB1-BYPAS	DEV	38	-	-	012	PB1	0
HV-CA1-7	DEV	39	-	-	012	PB1	0
HV-CA1-9	DEV	40	-	-	012	PB1	0
BOT-DUMP	DEV	41	-	-	012	PB1	0
HV-SUMP-1	DEV	42	-	-	012	PB1	0
JGV-SUMP	DEV	43	30	-	012	PB1	0
P-C-105A	DEV	44	-	-	012	PB1	0
P-C-105	DEV	45	-	-	012	PB1	0
DUMP-INLK	DEV	46	-	-	012	PB1	0
HV-CA1-10	DEV	47	-	-			0
SPARE	DEV	48	-	-	-	-	0
SPARE	DEV	49	-	-	-	-	0
YS-PC-105	DI	70	0	-	012	PB1	0
YS-PC105A	DI	71	1	-	012	PB1	0
ZS-CA1-7N	DI	72	2	-	012	PB1	0
YS-PB1-1	DI	73	3	-	012	PB1	0
ZS-CA1-7C	DI	74	4	-	012	PB1	0
LDS-SMPL2	DI	75	5	-	012	PB1	0
ZS-CA1-8N	DI	76	6	-	012	PB1	0
ZS-CA1-8C	DI	77	7	-	012	PB1	0
ZS-CA1-9C	DI	78	8	-	012	PB1	0
ZS-CA1-9N	DI	79	9	-	012	PB1	0
ZS-SUMP1C	DI	80	10	-	012	PB1	0
ZS-SUMP1N	DI	81	11	-	012	PB1	0
SPARE	DI	82	-	-	-	-	0
SPARE	DI	83	-	-	-	-	0
SPARE	DI	84	-	-	-	-	0
KY-PB1-1	AI	80	0	-	012	PB1	0
FI-CA1-7	AI	81	1	-	012	PB1	0
II-PB1-1	AI	82	2	-	012	PB1	0
VI-PB1-2A	AI	83	3	-	012	PB1	0
VI-PB1-1A	AI	84	4	-	012	PB1	0
VI-PB1-3A	AI	85	5	-	012	PB1	0
FI-CA1-1	AI	86	6	-	012	PB1	0
PI-CA1-9	AI	87	7	-	012	PB1	0
FQI-PB1-W	AI	88	8	-	012	PB1	0
FI-CA1-3	AI	89	9	-	012	PB1	0
TI-CA1-7	AI	90	10	-	012	PB1	0
WFI-SUMP1	AI	91	11	-	012	PB1	0
DI-SUMP-1	AI	92	12	-	012	PB1	0
LI-SUMP1	AI	93	13	-	012	PB1	0
PI-SUMP-1	AI	94	14	-	012	PB1	0
PDI-CA1-3	AI	95	15	-	012	PB1	0
ZI-CA1-10	AI	96	16	-	012	PB1	0
PI-CA1-20	AI	97	17	31	012	PB1	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
SPARE	AI	98	-	-	-	-	0
SPARE	AI	99	-	-	-	-	0
8 - P B 2					**15-DEV;**	**20-AIN;**	**20-DIN**
PB2-ALARM	DEV	50	-	-	015	PB2	0
PB-2	DEV	51	-	-	015	PB2	0
HV-CA1-2	DEV	52	-	-	015	PB2	0
HV-CA1-2S	DEV	53	-	-	015	PB2	0
HV-CA1-5	DEV	54	-	-	015	PB2	0
HV-CA1-6	DEV	55	-	-	015	PB2	0
JGV-STMFL	DEV	56	-	-	015	PB2	0
CONTROL	DEV	57	-	-	015	PB2	0
PB2SLFILK	DEV	58	-	-	015	PB2	0
PB2WFINLK	DEV	59	-	-	015	PB2	0
PB2GLOBAL	DEV	60	-	-	-	-	0
FQA-RW-1	DEV	61	24	-	015	PB2	0
SPARE	DEV	62	-	-	-	-	0
SPARE	DEV	63	-	-	-	-	0
SPARE	DEV	64	-	-	-	-	0
YS-PB2-1	DI	85	0	-	015	PB2	0
YS-PB2-IL	DI	86	1	-	015	PB2	0
TSH-PB2-1	DI	87	2	-	015	PB2	0
PSH-CA1-3	DI	88	3	-	015	PB2	0
PSH-PB2-1	DI	89	4	-	015	PB2	0
SXS-PB2-1	DI	90	5	-	015	PB2	0
YS-VFD-1	DI	91	6	-	015	PB2	0
SSL-PB2-1	DI	92	7	-	015	PB2	0
SPARE	DI	93	-	-	015	PB2	0
ZS-CA1-21	DI	94	-	-	015	PB2	0
ZS-CA1-22	DI	95	-	-	015	PB2	0
ZS-CA12A1	DI	96	-	-	015	PB2	0
ZS-CA12A2	DI	97	-	-	015	PB2	0
ZS-CA1-6N	DI	98	-	-	015	PB2	0
ZS-CA1-6C	DI	99	-	-	015	PB2	0
ZS-CA1-54	DI	100	-	-	015	PB2	0
ZS-CA1-55	DI	101	-	-	015	PB2	0
SPARE	DI	102	-	-	-	-	0
SPARE	DI	103	-	-	-	-	0
SPARE	DI	104	-	-	-	-	0
HI-WVR-1	AI	100	8	-	015	PB2	0
II-PB2-1	AI	101	9	-	015	PB2	0
SIC-PB2-1	AI	102	10	23	015	PB2	0
VI-PB2-1A	AI	103	11	-	015	PB2	0
PI-CA1-8	AI	104	12	-	015	PB2	0
FQI-PB2-W	AI	105	13	-	015	PB2	0
FI-CA1-2	AI	106	14	-	015	PB2	0
PI-CA1-10	AI	107	15	-	015	PB2	0
KY-CA1-2	AI	108	16	-	015	PB2	0
KY-CA1-2F	AI	109	17	-	015	PB2	0
FIC-CA1-4	AI	110	18	-	015	PB2	0
FQI-CA1-4	AI	111	19	-	015	PB2	0
PI-CA1-5	AI	112	20	-	015	PB2	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
FQI-RW-1	AI	113	21	-	015	PB2	0
FQI-RW-1B	AI	114	22	-	015	PB2	0
SPARE	AI	115	-	-	-	-	0
SPARE	AI	116	-	-	-	-	0
SPARE	AI	117	-	-	-	-	0
FI-RW-1/2	AI	118	-	-	-	-	0
YS-BFP1/2	AI	119	-	-	-	-	0
9 - E A 1					**15-DEV;**	**30-AIN;**	**5-DIN**
EA1-ALARM	DEV	65	-	-	013	EA1	0
FV-EA1-1	DEV	66	-	-	013	EA1	0
EA1-INLK1	DEV	67	-	-	013	EA1	0
EA1-INLK2	DEV	68	-	-	013	EA1	0
TV-DSH1/2	DEV	69	-	-	013	EA1	0
SELECT-TI	DEV	70	-	-	013	EA1	0
SPARE	DEV	71	-	-	-	-	0
SPARE	DEV	72	-	-	-	-	0
SPARE	DEV	73	-	-	-	-	0
SPARE	DEV	74	-	-	-	-	0
SPARE	DEV	75	-	-	-	-	0
SPARE	DEV	76	-	-	-	-	0
SPARE	DEV	77	-	-	-	-	0
SPARE	DEV	78	-	-	-	-	0
SPARE	DEV	79	-	-	-	-	0
PSL-EA1-1	DI	105	0	-	013	EA1	0
TSH-DSH-3	DI	106	1	-	013	EA1	0
ZS-EA1-1C	DI	107	2	-	013	EA1	0
SPARE	DI	108	-	-	-	-	0
SPARE	DI	109	-	-	-	-	0
TI-EA1-7	AI	120	3	-	013	EA1	0
TI-EA1-7S	AI	121	4	-	013	EA1	0
TI-EA1-1	AI	122	5	-	013	EA1	0
TI-EA1-1S	AI	123	6	-	013	EA1	0
TDI-EA1-1	AI	124	7	-	013	EA1	0
PI-EA1-12	AI	125	8	-	013	EA1	0
PI-EA1-2	AI	126	9	-	013	EA1	0
PDI-EA1-1	AI	127	10	-	013	EA1	0
PI-STM-1	AI	128	11	-	013	EA1	0
PI-EA1-13	AI	129	12	24,25	013	EA1	0
PI-EA1-14	AI	130	13	-	013	EA1	0
FIC-EA1-1	AI	131	14	26	013	EA1	0
ZI-EA1-1	AI	132	15	-	013	EA1	0
TI-DSH-2	AI	133	16	-	013	EA1	0
PI-EA1-1	AI	134	17	27,28	013	EA1	0
PI-EA1-11	AI	135	18	-	013	EA1	0
PDI-EA1-2	AI	136	19	-	013	EA1	0
TI-DSH-3	AI	137	20	-	013	EA1	0
TI-EA1-5	AI	138	21	29	013	EA1	0
CI-EA1-U2	AI	139	22	-	013	EA1	0
CI-EA1-U1	AI	140	23	-	013	EA1	0
SPARE	AI	141	-	-	-	-	0
SPARE	AI	142	-	-	-	-	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
SPARE	AI	143	-	-	-	-	0
SPARE	AI	144	-	-	-	-	0
SPARE	AI	145	-	-	-	-	0
SPARE	AI	146	-	-	-	-	0
SPARE	AI	147	-	-	-	-	0
SPARE	AI	148	-	-	-	-	0
SPARE	AI	149	-	-	-	-	0
10 - E C 1					**10-DEV;**	**30-AIN;**	**10-DIN**
EC1-ALARM	DEV	80	-	-	016	EC1	0
HV-EC1-1	DEV	81	-	-	016	EC1	0
HVEC2/3-1	DEV	82	-	-	016	EC1	0
SPARE	DEV	83	-	-	-	-	0
SPARE	DEV	84	-	-	-	-	0
SPARE	DEV	85	-	-	-	-	0
SPARE	DEV	86	-	-	-	-	0
SPARE	DEV	87	-	-	-	-	0
SPARE	DEV	88	-	-	-	-	0
SPARE	DEV	89	-	-	-	-	0
RSH-CA1-1	DI	110	0	-	016	EC1	0
ZS-EC1-1N	DI	111	-	-	016	EC1	0
ZS-EC1-1C	DI	112	-	-	016	EC1	0
ZSEC2/31N	DI	113	-	-	016	EC1	0
ZSEC2/31C	DI	114	-	-	016	EC1	0
SPARE	DI	115	-	-	-	-	0
SPARE	DI	116	-	-	-	-	0
SPARE	DI	117	-	-	-	-	0
SPARE	DI	118	-	-	-	-	0
SPARE	DI	119	-	-	-	-	0
TI-CA1-9	AI	150	1	-	016	EC1	0
TI-EC1-3	AI	151	2	-	016	EC1	0
TI-EC2-3	AI	152	3	-	016	EC1	0
PI-EC1-4	AI	153	4	-	016	EC1	0
PI-EC2-2	AI	154	5	-	016	EC1	0
CI-EC2-Q1	AI	155	6	-	016	EC1	0
CI-EC3-Q1	AI	156	7	-	016	EC1	0
ZI-CA1-7	AI	157	8	-	016	EC1	0
FI-EC2/3	AI	158	9	-	016	EC1	0
TI-EC1-4	AI	159	10	-	016	EC1	0
PI-EC1-5	AI	160	11	23	016	EC1	0
TI-EC2-1	AI	161	12	-	016	EC1	0
FIC-EC3-1	AI	162	13	24	016	EC1	0
TI-EC3-1	AI	163	14	-	016	EC1	0
TI-EC3-2	AI	164	15	-	016	EC1	0
TI-EC2-2	AI	165	16	-	016	EC1	0
PI-EC3-2	AI	166	17	-	016	EC1	0
TI-EC3-3	AI	167	18	-	016	EC1	0
RI-CA1-1	AI	168	19	-	016	EC1	0
FI-EC1-2	AI	169	20	-	016	EC1	0
FQI-EC1-2	AI	170	21	-	016	EC1	0
TIC-EC1-2	AI	171	22	25	016	EC1	0
FQI-EC2/3	AI	172	-	-	016	EC1	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
CI-EC1-U1	AI	173	-	-	016	EC1	0
SPARE	AI	174	-	-	-	-	0
SPARE	AI	175	-	-	-	-	0
SPARE	AI	176	-	-	-	-	0
SPARE	AI	177	-	-	-	-	0
SPARE	AI	178	-	-	-	-	0
SPARE	AI	179	-	-	-	-	0
11 - R W A T E R					**10-DEV;**	**10-AIN;**	**10-DIN**
RW-ALARM	DEV	90	-	-	026	RW1	0
HV-RW-1	DEV	91	14	-	011	RW	0
HV-RW-2	DEV	92	15	-	011	RW	0
SPARE	DEV	93	-	-	-	-	0
SPARE	DEV	94	-	-	-	-	0
SPARE	DEV	95	-	-	-	-	0
SPARE	DEV	96	-	-	-	-	0
SPARE	DEV	97	-	-	-	-	0
SPARE	DEV	98	-	-	-	-	0
SPARE	DEV	99	-	-	-	-	0
LDS-BFP-1	DI	120	0	-	011	RW	0
LSL-RWSMP	DI	121	1	-	011	RW	0
LDS-BFP-2	DI	122	2	-	011	RW	0
RSH-RW-1	DI	123	3	-	011	RW	0
RXS-RW-1	DI	124	4	-	011	RW	0
ZS-RW-1C	DI	125	-	-	011	RW	0
ZS-RW-1N	DI	126	-	-	011	RW	0
ZS-RW-2C	DI	127	-	-	011	RW	0
ZS-RW-2N	DI	128	-	-	011	RW	0
SPARE	DI	129	-	-	-	-	0
TSL242A81	DI	242	13	-	011	RW	1
PDI-RW-1	AI	180	5	10	011	RW	0
PI-RW-1	AI	181	6	-	011	RW	0
PDI-RW-2	AI	182	7	11	011	RW	0
RI-RW-1	AI	183	8	-	011	RW	0
PI-RW-2	AI	184	9	12	011	RW	0
SPARE	AI	185	-	-	-	-	0
SPARE	AI	186	-	-	-	-	0
SPARE	AI	187	-	-	-	-	0
SPARE	AI	188	-	-	-	-	0
SPARE	AI	189	-	-	-	-	0
12 - U R W					**10-DEV;**	**15-AIN;**	**10-DIN**
URW-ALARM	DEV	100	-	-	017	URW	0
RC2-SAMP	DEV	101	-	-	017	URW	0
RC2-PIG	DEV	102	17	-	017	URW	0
SPARE	DEV	103	-	-	-	-	0
SPARE	DEV	104	-	-	-	-	0
SPARE	DEV	105	-	-	-	-	0
SPARE	DEV	106	-	-	-	-	0
SPARE	DEV	107	-	-	-	-	0
SPARE	DEV	108	-	-	-	-	0
SPARE	DEV	109	-	-	-	-	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
FSL-RC2-1	DI	130	0	-	017	URW	0
RSH-RC2-1	DI	131	1	-	017	URW	0
RXS-RC2-1	DI	132	2	-	017	URW	0
YS-RC2-6	DI	133	3	-	017	URW	0
SPARE	DI	134	-	-	-	-	0
SPARE	DI	135	-	-	-	-	0
SPARE	DI	136	-	-	-	-	0
SPARE	DI	137	-	-	-	-	0
SPARE	DI	138	-	-	-	-	0
SPARE	DI	139	-	-	-	-	0
FIC-EC1-1	AI	190	4	15,16	017	URW	0
TI-EC1-1	AI	191	5	-	017	URW	0
ZI-EC1-1	AI	192	6	-	017	URW	0
FI-RC2-1	AI	193	7	-	017	URW	0
FQI-RC2-1	AI	194	8	-	017	URW	0
FQIC-RC2	AI	195	9	-	017	URW	0
RI-RC2-1	AI	196	10	-	017	URW	0
PIC-EC1-2	AI	197	11	-	017	URW	0
PI-EC1-9	AI	198	12	-	017	URW	0
ZI-EC1-2	AI	199	13	-	017	URW	0
KY-RC2-1	AI	200	14	-	017	URW	0
SPARE	AI	201	-	-	-	-	0
SPARE	AI	202	-	-	-	-	0
SPARE	AI	203	-	-	-	-	0
SPARE	AI	204	-	-	-	-	0
13 - V V E N T					**10-DEV;**	**20-AIN;**	**20-DIN**
VV-ALARM	DEV	110	-	-	020	VVENT	0
EX-C-1	DEV	111	-	-	020	VVENT	0
EXC1-INLK	DEV	112	-	-	020	VVENT	0
HC1-INLK1	DEV	113	-	-	-	-	0
SPARE	DEV	114	-	-	-	-	0
SPARE	DEV	115	-	-	-	-	0
SPARE	DEV	116	-	-	-	-	0
SPARE	DEV	117	-	-	-	-	0
SPARE	DEV	118	-	-	-	-	0
SPARE	DEV	119	-	-	-	-	0
PDSH-FC51	DI	140	0	-	020	VVENT	0
PDSL-FC51	DI	141	1	-	020	VVENT	0
ZS-FC5-1	DI	142	2	-	020	VVENT	0
PDSH-FC52	DI	143	3	-	020	VVENT	0
ZS-FC5-2	DI	144	4	-	020	VVENT	0
YS-EXC-1	DI	145	5	-	020	VVENT	0
YS-EXC3RL	DI	146	6	-	020	VVENT	0
TSHH-HC13	DI	147	7	-	020	VVENT	0
RXS-VVALP	DI	148	8	-	020	VVENT	0
RSH-VVALP	DI	149	9	-	020	VVENT	0
RXS-VVB/G	DI	150	10	-	020	VVENT	0
RSH-VVB/G	DI	151	11	-	020	VVENT	0
QXS-VV-1	DI	152	12	-	020	VVENT	0
SPARE	DI	153	13	-	-	-	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
PDSH-AS-1	DI	154	14	-	020	VVENT	0
PDSL-AS-2	DI	155	15	-	020	VVENT	0
AXS-NH3-1	DI	156	16	-	020	VVENT	0
SPARE	DI	157	-	-	-	-	0
SPARE	DI	158	-	-	-	-	0
SPARE	DI	159	-	-	-	-	0
PDI-FC5-2	AI	205	17	-	020	VVENT	0
PDI-FC5-1	AI	206	18	-	020	VVENT	0
PDI-DUC1	AI	207	19	-	020	VVENT	0
II-EXC-1	AI	208	20	33	020	VVENT	0
PDI-FC6-1	AI	209	21	-	020	VVENT	0
FQI-AS-5	AI	210	22	-	020	VVENT	0
TI-HC1-1	AI	211	23	-	020	VVENT	0
TI-HC1-2	AI	212	24	-	020	VVENT	0
TI-FC5-1	AI	213	25	-	020	VVENT	0
TDIC-HC11	AI	214	26	-	020	VVENT	0
FI-AS-5	AI	215	27	-	020	VVENT	0
PDI-FC512	AI	216	28	-	020	VVENT	0
RI-VVALP	AI	217	29	-	020	VVENT	0
RI-VVB/G	AI	218	30	-	020	VVENT	0
II-AS-1	AI	219	31	34	020	VVENT	0
AI-NH3-1	AI	220	32	-	020	VVENT	0
FQI-NH3-1	AI	221	-	-	-	-	0
SPARE	AI	222	-	-	-	-	0
SPARE	AI	223	-	-	-	-	0
SPARE	AI	224	-	-	-	-	0
14 - P C					**10-DEV;**	**15-AIN;**	**10-DIN**
PC-ALARM	DEV	120	-	-	018	PC	0
A-C100	DEV	121	-	-	018	PC	0
P-C100	DEV	122	-	-	018	PC	0
PC-INLK1	DEV	123	-	-	018	PC	0
P-C106	DEV	124	-	-	018	PC	0
SPARE	DEV	125	-	-	-	-	0
SPARE	DEV	126	-	-	-	-	0
SPARE	DEV	127	-	-	-	-	0
SPARE	DEV	128	-	-	-	-	0
SPARE	DEV	129	-	-	-	-	0
YS-A-C100	DI	160	0	-	018	PC	0
LSL-C1001	DI	161	1	-	018	PC	0
LSL-SP-1	DI	162	2	-	018	PC	0
YS-P-C100	DI	163	3	-	018	PC	0
YS-RC3-2	DI	164	4	-	018	PC	0
YS-P-C106	DI	165	5	-	018	PC	0
SPARE	DI	166	-	-	-	-	0
SPARE	DI	167	-	-	-	-	0
SPARE	DI	168	-	-	-	-	0
SPARE	DI	169	-	-	-	-	0
II-A-C100	AI	225	6	-	018	PC	0
WFIC-C100	AI	226	7	-	018	PC	0
LI-C100-G	AI	227	8	-	018	PC	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
LI-C100-1	AI	228	9	21	018	PC	0
LI-C100-2	AI	229	10	-	018	PC	0
TI-C100-1	AI	230	11	-	018	PC	0
II-P-C100	AI	231	12	-	018	PC	0
FIC-C1005	AI	232	13	-	018	PC	0
FQI-C100	AI	233	14	-	018	PC	0
PI-FC1-3	AI	234	15	-	018	PC	0
PDI-FC1-1	AI	235	16	-	018	PC	0
PI-FC1-4	AI	236	17	-	018	PC	0
II-P-C106	AI	237	18	-	018	PC	0
PDI-FC5/2	AI	238	19	-	018	PC	0
FQI-PB12W	AI	239	20	-	-	-	0
15 - I X					**10-DEV;**	**25-AIN;**	**20-DIN**
IX-ALARM	DEV	130	-	-	044	IX	0
HV-RC3-3	DEV	131	-	-	044	IX	0
RC3-SAMP	DEV	132	-	-	044	IX	0
RC3-PIG	DEV	133	33	-	044	IX	0
HV-2-34	DEV	134	-	-	044	IX	0
HV-2-37	DEV	135	-	-	044	IX	0
SPARE	DEV	136	-	-	-	-	0
SPARE	DEV	137	-	-	-	-	0
SPARE	DEV	138	-	-	-	-	0
SPARE	DEV	139	-	-	-	-	0
ZS-IDX-2	DI	170	0	-	044	IX	0
PSH-ILF-1	DI	171	1	-	044	IX	0
YS-RC3-6	DI	172	2	-	044	IX	0
RXS-RC3-1	DI	173	3	-	044	IX	0
RSH-RC3-1	DI	174	4	-	044	IX	0
FSL-RC3-1	DI	175	5	-	044	IX	0
ZS-RC3-4	DI	176	6	-	044	IX	0
ZS-RC3-5	DI	177	7	-	044	IX	0
ZS-IDX1NM	DI	178	-	-	044	IX	0
ZS-IDX-1B	DI	179	-	-	044	IX	0
ZS-IDX-3B	DI	180	-	-	044	IX	0
ZS-IDX3NM	DI	181	-	-	044	IX	0
ZS-RC3-3D	DI	182	-	-	044	IX	0
ZS-RC33NM	DI	183	-	-	044	IX	0
SPARE	DI	184	-	-	-	-	0
SPARE	DI	185	-	-	-	-	0
SPARE	DI	186	-	-	-	-	0
SPARE	DI	187	-	-	-	-	0
SPARE	DI	188	-	-	-	-	0
SPARE	DI	189	-	-	-	-	0
PI-IDX-13	AI	240	8	-	044	IX	0
PI-IDX-14	AI	241	9	-	044	IX	0
PI-IDX-15	AI	242	10	-	044	IX	0
PI-IDX-16	AI	243	11	-	044	IX	0
PDI-IDX-2	AI	244	12	-	044	IX	0
PDI-IDX-4	AI	245	13	-	044	IX	0
PDI-IDX-3	AI	246	14	-	044	IX	0
PI-IDX-12	AI	247	15	-	044	IX	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
PI-IDX-17	AI	248	16	-	044	IX	0
PDI-IDX-5	AI	249	17	-	044	IX	0
PDI-IDX-1	AI	250	18	-	044	IX	0
PI-IDX-18	AI	251	19	-	044	IX	0
PI-ILS-5	AI	252	20	-	044	IX	0
PI-ILS-6	AI	253	21	-	044	IX	0
FI-RC3-1	AI	254	22	-	044	IX	0
PDI-ILS-1	AI	255	23	-	044	IX	0
FQIC-RC3	AI	256	24	-	044	IX	0
FQI-RC3NM	AI	257	25	-	044	IX	0
FQI-RC3-D	AI	258	26	-	044	IX	0
KY-RC3-1	AI	259	27	-	044	IX	0
RI-RC3-1	AI	260	28	-	044	IX	0
SPARE	AI	261	-	-	-	-	0
SPARE	AI	262	-	-	-	-	0
SPARE	AI	263	-	-	-	-	0
SPARE	AI	264	-	-	-	-	0
16 - S C					**10-DEV;**	**15-AIN;**	**20-DIN**
SC-ALARM	DEV	140	-	-	014	SC	0
HV-RC1-3	DEV	141	-	-	014	SC	0
RC1-SAMP	DEV	142	-	-	014	SC	0
RC1-PIG	DEV	143	24	-	014	SC	0
HV-EA1-2	DEV	144	-	-	014	SC	0
SPARE	DEV	145	-	-	-	-	0
SPARE	DEV	146	-	-	-	-	0
SPARE	DEV	147	-	-	-	-	0
SPARE	DEV	148	-	-	-	-	0
SPARE	DEV	149	-	-	-	-	0
RSH-EA1-1	DI	190	0	-	014	SC	0
LSL-RC1-1	DI	191	1	-	014	SC	0
LSL-C1031	DI	192	2	-	014	SC	0
YS-P-RC1	DI	193	3	-	014	SC	0
YS-RC1-6	DI	194	4	-	014	SC	0
FSL-RC1-1	DI	195	5	-	014	SC	0
RSH-RC1-1	DI	196	6	-	014	SC	0
RXS-RC1-1	DI	197	7	-	014	SC	0
LSL-C1032	DI	198	8	-	014	SC	0
ZS-EA12NM	DI	199	9	-	014	SC	0
ZS-EA1-2D	DI	200	10	-	014	SC	0
ZS-RC13NM	DI	201	11	-	014	SC	0
ZS-RC1-3D	DI	202	12	-	014	SC	0
SPARE	DI	203	-	-	-	-	0
SPARE	DI	204	-	-	-	-	0
SPARE	DI	205	-	-	-	-	0
SPARE	DI	206	-	-	-	-	0
SPARE	DI	207	-	-	-	-	0
SPARE	DI	208	-	-	-	-	0
SPARE	DI	209	-	-	-	-	0
FI-EA1-3	AI	265	13	-	014	SC	0
FQI-EA1-D	AI	266	14	-	014	SC	0
FQI-EA1NM	AI	267	15	-	014	SC	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
RI-EA1-1	AI	268	16	-	014	SC	0
KY-RC1-1	AI	269	17	-	014	SC	0
RI-RC1-1	AI	270	18	-	014	SC	0
FI-RC1-1	AI	271	19	-	014	SC	0
FQI-RC1-D	AI	272	20	-	014	SC	0
FQI-RC1NM	AI	273	21	-	014	SC	0
FQIC-RC1	AI	274	22	-	014	SC	0
CI-EA1-SE	AI	275	23	-	014	SC	0
SPARE	AI	276	-	-	-	-	0
SPARE	AI	277	-	-	-	-	0
SPARE	AI	278	-	-	-	-	0
SPARE	AI	279	-	-	-	-	0
17 - B A S I N S					**10-DEV;**	**10-AIN;**	**20-DIN**
BASIN-ALM	DEV	150	-	-	022	SCBASIN	0
P-207A-S	DEV	151	10	-	022	SCBASIN	0
207-A-P3	DEV	152	-	-	022	SCBASIN	0
HV-SC-1A	DEV	153	-	-	022	SCBASIN	0
HV-SC-2A	DEV	154	-	-	022	SCBASIN	0
HV-SC-3A	DEV	155	-	-	022	SCBASIN	0
HV-SC-1B	DEV	156	-	-	022	SCBASIN	0
HV-SC-2B	DEV	157	-	-	022	SCBASIN	0
HV-SC-3B	DEV	158	-	-	022	SCBASIN	0
SPARE	DEV	159	-	-	-	-	0
YS-SCP3IL	DI	210	0	-	022	SCBASIN	0
LSH-P-1	DI	211	1	-	022	SCBASIN	0
YS-P1-1	DI	212	2	-	022	SCBASIN	0
LSHH-SC-1	DI	213	3	-	022	SCBASIN	0
LSH-SC-1	DI	214	4	-	022	SCBASIN	0
LSL-SC-1	DI	215	5	-	022	SCBASIN	0
LSH-SC-2	DI	216	6	-	022	SCBASIN	0
LSL-SC-2	DI	217	7	-	022	SCBASIN	0
LSH-SC-3	DI	218	8	-	022	SCBASIN	0
LSL-SC-3	DI	219	9	-	022	SCBASIN	0
YS-SC-P3	DI	220	10	-	022	SCBASIN	0
ZS-SC-1DC	DI	221	-	-	022	SCBASIN	0
ZS-SC-1FC	DI	222	-	-	022	SCBASIN	0
ZS-SC-2DC	DI	223	-	-	022	SCBASIN	0
ZS-SC-2FC	DI	224	-	-	022	SCBASIN	0
ZS-SC-3DC	DI	225	-	-	022	SCBASIN	0
ZS-SC-3FC	DI	226	-	-	022	SCBASIN	0
SPARE	DI	227	-	-	-	-	0
SPARE	DI	228	-	-	-	-	0
SPARE	DI	229	-	-	-	-	0
II-SUMPP1	AI	280	-	-	022	SCBASIN	0
II-SC-P3	AI	281	-	-	022	SCBASIN	0
SPARE	AI	282	-	-	-	-	0
SPARE	AI	283	-	-	-	-	0
SPARE	AI	284	-	-	-	-	0
SPARE	AI	285	-	-	-	-	0
SPARE	AI	286	-	-	-	-	0
SPARE	AI	287	-	-	-	-	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
SPARE	AI	288	-	-	-	-	0
SPARE	AI	289	-	-	-	-	0
18 - U T I L					**10-DEV;**	**20-AIN;**	**20-DIN**
UTILITIES	DEV	160	-	-	036	UTIL1	0
SPARE	DEV	161	-	-	-	-	0
SPARE	DEV	162	-	-	-	-	0
SPARE	DEV	163	-	-	-	-	0
SPARE	DEV	164	-	-	-	-	0
SPARE	DEV	165	-	-	-	-	0
SPARE	DEV	166	-	-	-	-	0
SPARE	DEV	167	-	-	-	-	0
SPARE	DEV	168	-	-	-	-	0
SPARE	DEV	169	-	-	-	-	0
PSLCPE1/2	DI	230	0	-	021	UTIL	0
PSL-IA-2	DI	231	1	-	021	UTIL	0
YS-CPE1-1	DI	232	2	-	021	UTIL	0
YS-CPE2-1	DI	233	3	-	021	UTIL	0
JXS-PWR-1	DI	234	4	-	021	UTIL	0
YS-DIEGEN	DI	235	5	-	021	UTIL	0
YS-GEN-1	DI	236	6	-	021	UTIL	0
ZS-PWR-1	DI	237	7	-	021	UTIL	0
JXS-PWR-3	DI	238	8	-	021	UTIL	0
YSL-UPS-1	DI	239	9	-	021	UTIL	0
ZS-UPS-1	DI	240	10	-	021	UTIL	0
SPARE	DI	241	-	-	-	-	0
SPARE	DI	242	-	-	-	-	0
SPARE	DI	243	-	-	-	-	0
SPARE	DI	244	-	-	-	-	0
SPARE	DI	245	-	-	-	-	0
SPARE	DI	246	-	-	-	-	0
SPARE	DI	247	-	-	-	-	0
SPARE	DI	248	-	-	-	-	0
SPARE	DI	249	-	-	-	-	0
PI-IA-1	AI	290	11	15,16	021	UTIL	0
PI-PA-1	AI	291	12	17	021	UTIL	0
TI-AMBS-1	AI	292	13	18-21	021	UTIL	0
TI-AMBS-2	AI	293	14	22-25	021	UTIL	0
SPARE	AI	294	-	-	-	-	0
SPARE	AI	295	-	-	-	-	0
SPARE	AI	296	-	-	-	-	0
SPARE	AI	297	-	-	-	-	0
SPARE	AI	298	-	-	-	-	0
SPARE	AI	299	-	-	-	-	0
RI-K1-1-1	AI	300	-	-	-	-	0
RI-K1-1-2	AI	301	-	-	-	-	0
FI-K1-1	AI	302	-	-	-	-	0
SPARE	AI	303	-	-	-	-	0
SPARE	AI	304	-	-	-	-	0
SPARE	AI	305	-	-	-	-	0
SPARE	AI	306	-	-	-	-	0
SPARE	AI	307	-	-	-	-	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
SPARE	AI	308	-	-	-	-	0
SPARE	AI	309	-	-	-	-	0
19 - R O O M S					**10-DEV;**	**10-AIN;**	**10-DIN**
ROOM-ALM	DEV	170	-	-	023	242A	0
AUDALARMO	DEV	171	-	-	-	-	0
SPARE	DEV	172	-	-	-	-	0
SPARE	DEV	173	-	-	-	-	0
SPARE	DEV	174	-	-	-	-	0
SPARE	DEV	175	-	-	-	-	0
SPARE	DEV	176	-	-	-	-	0
SPARE	DEV	177	-	-	-	-	0
SPARE	DEV	178	-	-	-	-	0
SPARE	DEV	179	-	-	-	-	0
SIMDIN1	DI	250	-	-	-	-	0
SPARE	DI	251	-	-	-	-	0
SPARE	DI	252	-	-	-	-	0
SPARE	DI	253	-	-	-	-	0
SPARE	DI	254	-	-	-	-	0
SPARE	DI	255	-	-	-	-	0
SPARE	DI	256	-	-	-	-	0
SPARE	DI	257	-	-	-	-	0
SPARE	DI	258	-	-	-	-	0
SPARE	DI	259	-	-	-	-	0
BUILDING	DEV	75	-	-	038	BLDNG1	1
BLDG-EXH	DEV	76	-	-	-	BLDNG	1
RSH-ARAMU	DI	250	0	-	023	242A	1
RSH-ASAMU	DI	251	1	-	023	242A	1
RSH-K1-12	DI	252	2	-	023	242A	1
RSH-K1-11	DI	253	3	-	023	242A	1
QXS-K1	DI	254	4	-	023	242A	1
PDSH-K161	DI	255	5	-	023	242A	1
PDSL-K161	DI	256	6	-	023	242A	1
PDSH-K162	DI	257	7	-	023	242A	1
PDSL-K162	DI	258	8	-	023	242A	1
PDSL-K163	DI	259	9	-	023	242A	1
PDSL-K164	DI	260	10	-	023	242A	1
YS-K1-1	DI	261	11	-	023	242A	1
RSH-ASSUR	DI	262	12	-	023	242A	1
RSH-ASCON	DI	263	13	-	023	242A	1
RSHARHVAC	DI	264	14	-	023	242A	1
RSH-ARC4	DI	265	15	-	023	242A	1
RSH-ARCB	DI	266	16	-	023	242A	1
RSHAREVAP	DI	267	17	-	023	242A	1
RSH-ARHES	DI	268	18	-	023	242A	1
RXS-ASCON	DI	269	19	-	023	242A	1
RXS-ASAMU	DI	270	20	-	023	242A	1
RXS-ASSUR	DI	271	21	-	023	242A	1
RXSAREVAP	DI	272	22	-	023	242A	1
RXS-ARAMU	DI	273	23	-	023	242A	1
RXSARHVAC	DI	274	24	-	023	242A	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
RXS-ARHES	DI	275	25	-	023	242A	1
RXS-ARC4	DI	276	26	-	023	242A	1
RXS-ARCB	DI	277	27	-	023	242A	1
RI-AR-AMU	AI	80	28	-	023	242A	1
RI-ASAMU	AI	81	29	-	023	242A	1
RI-ASSUR	AI	82	30	-	023	242A	1
RI-ASCON	AI	83	31	-	023	242A	1
RI-ARHVAC	AI	84	32	-	023	242A	1
RI-AR-C4	AI	85	33	-	023	242A	1
RI-AR-CB	AI	86	34	-	023	242A	1
TI-K1-11	AI	87	35	-	023	242A	1
TI-K1-4	AI	88	36	-	023	242A	1
TI-K1-12A	AI	89	37	-	023	242A	1
TI-K1-12B	AI	90	38	-	023	242A	1
TI-K1-2	AI	91	39	-	023	242A	1
RI-AREVAP	AI	92	40	-	023	242A	1
RI-ARHES	AI	93	41	-	023	242A	1
RI-K1-1-1	AI	300	42	-	023	242A	0
RI-K1-1-2	AI	301	43	-	023	242A	0
FI-K1-1	AI	302	44	-	023	242A	0
SPARE	AI	303	-	-	-	-	0
SPARE	AI	304	-	-	-	-	0
SPARE	AI	305	-	-	-	-	0
SPARE	AI	306	-	-	-	-	0
SPARE	AI	307	-	-	-	-	0
SPARE	AI	308	-	-	-	-	0
SPARE	AI	309	-	-	-	-	0
20 - A M U					**10-DEV;**	**20-AIN;**	**10-DIN**
AMU-ALARM	DEV	180	-	-	019	AMU	0
P-E-101	DEV	181	-	-	019	AMU	0
A-E-101	DEV	182	-	-	019	AMU	0
A-E-102	DEV	183	-	-	019	AMU	0
P-E-102	DEV	184	-	-	019	AMU	0
P-E-104	DEV	185	-	-	019	AMU	0
A-E-104	DEV	186	-	-	019	AMU	0
SPARE	DEV	187	-	-	-	-	0
SPARE	DEV	188	-	-	-	-	0
SPARE	DEV	189	-	-	-	-	0
YS-A-E101	DI	260	0	-	019	AMU	0
YS-P-E101	DI	261	1	-	019	AMU	0
YS-A-E102	DI	262	2	-	019	AMU	0
YS-P-E102	DI	263	3	-	019	AMU	0
YS-A-E104	DI	264	4	-	019	AMU	0
YS-P-E104	DI	265	5	-	019	AMU	0
SPARE	DI	266	-	-	-	-	0
SPARE	DI	267	-	-	-	-	0
SPARE	DI	268	-	-	-	-	0
SPARE	DI	269	-	-	-	-	0
TI-E101-2	AI	310	6	20	019	AMU	0
WFI-E101	AI	311	7	21	019	AMU	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
DI-E101-2	AI	312	8	22	019	AMU	0
LI-E101-1	AI	313	9	-	019	AMU	0
FI-E102-1	AI	314	10	-	019	AMU	0
WFI-E102	AI	315	11	23	019	AMU	0
FQI-E102	AI	316	12	24	019	AMU	0
TI-E104-2	AI	317	13	-	019	AMU	0
WFI-E104	AI	318	14	25	019	AMU	0
DI-E104-2	AI	319	15	26	019	AMU	0
LI-E104-1	AI	320	16	-	019	AMU	0
FQI-E104	AI	321	17	-	019	AMU	0
FI-E104-2	AI	322	18	-	019	AMU	0
FIC-E102	AI	323	19	-	019	AMU	0
SPARE	AI	324	-	-	-	-	0
SPARE	AI	325	-	-	-	-	0
SPARE	AI	326	-	-	-	-	0
SPARE	AI	327	-	-	-	-	0
SPARE	AI	328	-	-	-	-	0
SPARE	AI	329	-	-	-	-	0
21 - L E R F					**10-DEV;**	**20-AIN;**	**20-DIN**
LERF-ALM	DEV	190	-	-	024	LERF3	0
LERFILK	DEV	191	-	-	024	LERF3	0
SPARE	DEV	192	-	-	-	-	0
SPARE	DEV	193	-	-	-	-	0
SPARE	DEV	194	-	-	-	-	0
SPARE	DEV	195	-	-	-	-	0
SPARE	DEV	196	-	-	-	-	0
SPARE	DEV	197	-	-	-	-	0
SPARE	DEV	198	-	-	-	-	0
SPARE	DEV	199	-	-	-	-	0
YS-P-43	DI	270	0	-	024	LERF3	0
LDS-A1	DI	271	1	-	024	LERF3	0
YS-P-44	DI	272	2	-	024	LERF3	0
SPARE	DI	273	3	-	-	-	0
SPARE	DI	274	4	-	-	-	0
YS-P-42	DI	275	5	-	024	LERF3	0
LDS-BSN42	DI	276	6	-	024	LERF3	0
LDS-BSN43	DI	277	7	-	024	LERF3	0
LDS-BSN44	DI	278	8	-	024	LERF3	0
LXS-LCH42	DI	279	9	-	024	LERF3	0
LXS-BSN42	DI	280	10	-	024	LERF3	0
LXS-LCH43	DI	281	11	-	024	LERF3	0
LXS-BSN43	DI	282	12	-	024	LERF3	0
LXS-LCH44	DI	283	13	-	024	LERF3	0
LXS-BSN44	DI	284	14	-	024	LERF3	0
YS-PLC-1	DI	285	15	-	024	LERF3	0
SPARE	DI	286	-	-	-	-	0
SPARE	DI	287	-	-	-	-	0
SPARE	DI	288	-	-	-	-	0
SPARE	DI	289	-	-	-	-	0
LDI-A1	AI	330	20	-	024	LERF3	0
LI-LCH42	AI	331	21	-	024	LERF3	0

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
LI-BSN42	AI	332	22	-	024	LERF3	0
LI-LCH43	AI	333	23	-	024	LERF3	0
LI-BSN43	AI	334	24	-	024	LERF3	0
LI-LCH44	AI	335	25	-	024	LERF3	0
LI-BSN44	AI	336	26	-	024	LERF3	0
SPARE	AI	337	-	-	-	-	0
SPARE	AI	338	-	-	-	-	0
SPARE	AI	339	-	-	-	-	0
SPARE	AI	340	-	-	-	-	0
SPARE	AI	341	-	-	-	-	0
SPARE	AI	342	-	-	-	-	0
SPARE	AI	343	-	-	-	-	0
SPARE	AI	344	-	-	-	-	0
SPARE	AI	345	-	-	-	-	0
SPARE	AI	346	-	-	-	-	0
SPARE	AI	347	-	-	-	-	0
SPARE	AI	348	-	-	-	-	0
SPARE	AI	349	-	-	-	-	0
22 - E V A P					**80-DEV;**	**155-AIN;**	**110-DIN**
PAW102ALM	DEV	15	-	-	040	OVER1	0
YS-AW102	DI	50	-	-	040	OVER1	0
II-AW-102	AI	30	-	-	040	OVER1	0
23 - V A P O R					**30-DEV;**	**90-AIN;**	**60-DIN**
EC1-ALARM	DEV	80	-	-	041	OVER2	0
RSH-CA1-1	DI	110	-	-	041	OVER2	0
TI-CA1-9	AI	155	-	-	041	OVER2	0
24 - C O N D					**85-DEV;**	**135-AIN;**	**100-DIN**
PC-ALARM	DEV	120	-	-	042	OVER3	0
YS-A-C100	DI	160	-	-	042	OVER3	0
II-A-C100	AI	225	-	-	042	OVER3	0
25 - B L A N K 0					**0-DEV;**	**0-AIN;**	**0-DIN**
**** - - - M I S C E L L A N E O U S - - -**							
PB2GLOBAL	DEV	60	-	-	-	-	0
AUDALARM0	DEV	171	-	-	-	-	0
CASSOAL1A	DEV	200	-	-	090	CASS	0
CASSOAL2A	DEV	202	-	-	090	CASS	0
CASSOAL2B	DEV	203	-	-	090	CASS	0
GBIT0-0/1	DEV	204	-	-	090	CASS	0
HS-AB1ACK	DEV	208	-	-	-	-	0
0 - W H O L E 1					**90-DEV;**	**130-AIN;**	**280-DIN**
P-AN-101	DEV	0	-	-	-	-	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
YS-AN-101	DI	0	-	-	-	-	1
II-AN1011	AI	0	-	-	-	-	1
1 - A N F A R M					**15-DEV;**	**20-AIN;**	**60-DIN**
P-AN-101	DEV	0	-	-	270	ANFRM	1
P-AN-102	DEV	1	-	-	270	ANFRM	1
P-AN-103	DEV	2	-	-	270	ANFRM	1
P-AN-104	DEV	3	-	-	270	ANFRM	1
P-AN-105	DEV	4	-	-	270	ANFRM	1
P-AN-106	DEV	5	-	-	270	ANFRM	1
P-AN-107	DEV	6	-	-	270	ANFRM	1
HS-AN-SIL	DEV	7	-	-	-	-	1
ANFARM	DEV	8	0	-	270	ANFRM	1
AN-SERPIT	DEV	9	1	-	-	-	1
AN-VLVPIT	DEV	10	2	-	272	ANVLV	1
AN-HVAC	DEV	11	3	-	273	ANHVC	1
AN-271	DEV	12	4	-	274	AN271	1
HS-ARM-AN	DEV	13	5	-	274	AN271	1
SPARE	DEV	14	-	-	-	-	1
YS-AN-101	DI	0	1	-	270	ANFRM	1
RSH-AN101	DI	1	2	-	270	ANFRM	1
RSH-AN01C	DI	2	3	-	270	ANFRM	1
YS-AN-102	DI	3	4	-	270	ANFRM	1
RSH-AN102	DI	4	5	-	270	ANFRM	1
RSH-AN02C	DI	5	6	-	270	ANFRM	1
YS-AN-103	DI	6	7	-	270	ANFRM	1
RSH-AN103	DI	7	8	-	270	ANFRM	1
RSH-AN03C	DI	8	9	-	270	ANFRM	1
YS-AN-104	DI	9	10	-	270	ANFRM	1
RSH-AN104	DI	10	11	-	270	ANFRM	1
RSH-AN04C	DI	11	12	-	270	ANFRM	1
YS-AN-105	DI	12	13	-	270	ANFRM	1
RSH-AN105	DI	13	14	-	270	ANFRM	1
RSH-AN05C	DI	14	15	-	270	ANFRM	1
YS-AN-106	DI	15	16	-	270	ANFRM	1
RSH-AN106	DI	16	17	-	270	ANFRM	1
RSH-AN06C	DI	17	18	-	270	ANFRM	1
YS-AN-107	DI	18	19	-	270	ANFRM	1
RSH-AN107	DI	19	20	-	270	ANFRM	1
RSH-AN07C	DI	20	21	-	270	ANFRM	1
LDS-SP-AN	DI	21	22	-	272	ANVLV	1
RSH-SP-AN	DI	22	23	-	272	ANVLV	1
LDS-AN-PP	DI	23	24	-	272	ANVLV	1
LDS-ANSL1	DI	24	25	-	272	ANVLV	1
LDS-ANSN2	DI	25	26	-	272	ANVLV	1
LDS-COBAN	DI	26	27	-	272	ANVLV	1
PSH-ANSN1	DI	27	28	-	272	ANVLV	1
LDS-DR368	DI	28	29	-	272	ANVLV	1
RSH-AN-K1	DI	29	30	-	273	ANHVC	1
PSH-ANK11	DI	30	31	-	273	ANHVC	1
PSH-ANK12	DI	31	32	-	273	ANHVC	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
RXS-AN-K1	DI	32	33	-	273	ANHVC	1
RSH-AN-K2	DI	33	34	-	273	ANHVC	1
PSH-ANK21	DI	34	35	-	273	ANHVC	1
PSH-ANK22	DI	35	36	-	273	ANHVC	1
RXS-AN-K2	DI	36	37	-	273	ANHVC	1
JXS-AN271	DI	37	38	-	274	AN271	1
RSHAN2711	DI	38	39	-	274	AN271	1
RSHAN2712	DI	39	40	-	274	AN271	1
RSH-AN-12	DI	40	41	-	274	AN271	1
QS-AN-271	DI	41	42	-	274	AN271	1
TXS-AN-2	DI	42	43	-	274	AN271	1
YS-AN-ARM	DI	43	44	-	274	AN271	1
YS-AN-MSD	DI	44	45	-	274	AN271	1
SPARE	DI	45	-	-			1
SPARE	DI	46	-	-			1
SPARE	DI	47	-	-			1
SPARE	DI	48	-	-			1
SPARE	DI	49	-	-			1
SPARE	DI	50	-	-			1
SPARE	DI	51	-	-			1
SPARE	DI	52	-	-			1
SPARE	DI	53	-	-			1
SPARE	DI	54	-	-			1
SPARE	DI	55	-	-			1
SPARE	DI	56	-	-			1
SPARE	DI	57	-	-			1
SPARE	DI	58	-	-			1
SPARE	DI	59	-	-			1
II-AN1011	AI	0	-	-	270	ANFRM	1
II-AN1021	AI	1	-	-	270	ANFRM	1
II-AN1031	AI	2	-	-	270	ANFRM	1
II-AN1041	AI	3	-	-	270	ANFRM	1
II-AN1051	AI	4	-	-	270	ANFRM	1
II-AN1061	AI	5	-	-	270	ANFRM	1
II-AN1071	AI	6	-	-	270	ANFRM	1
FQI-AN-1	DI	7	-	-	272	ANVLV	1
KY-ARM-AN	AI	8	-	-	274	AN271	1
SIMAI-1	AI	9	-	-	-	-	1
SPARE	AI	10	-	-	-	-	1
SPARE	AI	11	-	-	-	-	1
SPARE	AI	12	-	-	-	-	1
SPARE	AI	13	-	-	-	-	1
SPARE	AI	14	-	-	-	-	1
SPARE	AI	15	-	-	-	-	1
SPARE	AI	16	-	-	-	-	1
SPARE	AI	17	-	-	-	-	1
SPARE	AI	18	-	-	-	-	1
SPARE	AI	19	-	-	-	-	1
2 - A P F A R M					**20-DEV;**	**20-AIN;**	**90-DIN**
P-AP-101	DEV	20	84	-	290	APFRM	1
P-AP-102	DEV	21	85	-	290	APFRM	1
P-AP-103	DEV	22	86	-	290	APFRM	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
P-AP-104	DEV	23	87	-	290	APFRM	1
P-AP-105	DEV	24	88	-	290	APFRM	1
P-AP-106	DEV	25	89	-	290	APFRM	1
P-AP-107	DEV	26	90	-	290	APFRM	1
P-AP-108	DEV	27	91	-	290	APFRM	1
SPARE	DEV	28	-	-	-	-	1
SPARE	DEV	29	-	-	-	-	1
EXH-AP-K1	DEV	30	-	-	-	-	1
EXH-AP-K2	DEV	31	-	-	-	-	1
HS-AP-SIL	DEV	32	-	-	-	-	1
APFARM	DEV	33	0	-	290	APFRM	1
AP-SERPIT	DEV	34	1	-	-	-	1
AP-VLVPIT	DEV	35	2	-	292	APVLV	1
AP-HVAC	DEV	36	3	-	294	APHVC	1
AP-271	DEV	37	4	-	295	AP271	1
SPARE	DEV	38	-	-	-	-	1
HS-ARM-AP	DEV	39	-	-	295	AP271	1
YS-AP-101	DI	60	1	-	290	APFRM	1
RSH-101AP	DI	61	2	-	290	APFRM	1
RXS-101AP	DI	62	3	-	290	APFRM	1
YS-AP-102	DI	63	4	-	291	AP102	1
RSH-102AP	DI	64	5	-	290	APFRM	1
RXS-102AP	DI	65	6	-	290	APFRM	1
YS-AP-103	DI	66	7	-	290	APFRM	1
RSH-103AP	DI	67	8	-	290	APFRM	1
RXS-103AP	DI	68	9	-	290	APFRM	1
RSH-AP03C	DI	69	10	-	290	APFRM	1
RXS-AP03C	DI	70	11	-	290	APFRM	1
LDS-AP03D	DI	71	12	-	290	APFRM	1
YS-AP-104	DI	72	13	-	290	APFRM	1
RSH-104AP	DI	73	14	-	290	APFRM	1
RXS-104AP	DI	74	15	-	290	APFRM	1
YS-AP-105	DI	75	16	-	290	APFRM	1
RSH-105AP	DI	76	17	-	290	APFRM	1
RXS-105AP	DI	77	18	-	290	APFRM	1
RSH-AP05C	DI	78	19	-	290	APFRM	1
RXS-AP05C	DI	79	20	-	290	APFRM	1
YS-AP-106	DI	80	21	-	290	APFRM	1
RSH-106AP	DI	81	22	-	290	APFRM	1
RXS-106AP	DI	82	23	-	290	APFRM	1
YS-AP-107	DI	83	24	-	290	APFRM	1
RSH-107AP	DI	84	25	-	290	APFRM	1
RXS-107AP	DI	85	26	-	290	APFRM	1
YS-AP-108	DI	86	27	-	290	APFRM	1
RSH-108AP	DI	87	28	-	290	APFRM	1
RXS-108AP	DI	88	29	-	290	APFRM	1
LDSAP02DC	DI	89	30	-	291	AP102	1
SPARE	DI	90	31	-	-	-	1
SPARE	DI	91	32	-	-	-	1
SPARE	DI	92	33	-	-	-	1
SPARE	DI	93	34	-	-	-	1
SPARE	DI	94	35	-	-	-	1
SPARE	DI	95	36	-	-	-	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
SPARE	DI	96	37	-	-	-	1
SPARE	DI	97	38	-	-	-	1
YS-AP-MSD	DI	98	39	-	295	AP271	1
YS-AP-ARM	DI	99	40	-	295	AP271	1
RSH-AP-2	DI	100	41	-	295	AP271	1
RXS-AP-2	DI	101	42	-	295	AP271	1
QS-AP-1	DI	102	43	-	295	AP271	1
TXS-AP-2	DI	103	44	-	295	AP271	1
LDS-AP-A	DI	104	45	-	295	AP271	1
LDS-AP-B	DI	105	46	-	295	AP271	1
LDS-AP-C	DI	106	47	-	295	AP271	1
JXS-AP-1	DI	107	48	-	295	AP271	1
FSLAP2711	DI	108	49	-	295	AP271	1
RSH-AP271	DI	109	50	-	295	AP271	1
RXS-AP271	DI	110	51	-	295	AP271	1
PSH-APFP1	DI	111	52	-	292	APVLV	1
ZS-AP-FP1	DI	112	53	-	292	APVLV	1
LDS-AP-FP	DI	113	54	-	292	APVLV	1
YS-AP-K1	DI	114	55	-	294	APHVC	1
FSL-APK13	DI	115	56	-	294	APHVC	1
RSH-APK11	DI	116	57	-	294	APHVC	1
RXS-APK11	DI	117	58	-	294	APHVC	1
FSL-APK12	DI	118	59	-	294	APHVC	1
FSL-APK11	DI	119	60	-	294	APHVC	1
LDS-AP-K1	DI	120	61	-	294	APHVC	1
YS-AP-K2	DI	121	62	-	294	APHVC	1
FSL-APK23	DI	122	63	-	294	APHVC	1
RSH-APK21	DI	123	64	-	294	APHVC	1
RXS-APK21	DI	124	65	-	294	APHVC	1
FSL-APK22	DI	125	66	-	294	APHVC	1
FSL-APK21	DI	126	67	-	294	APHVC	1
LDS-AP-SP	DI	127	68	-	292	APVLV	1
RSH-AP-SP	DI	128	69	-	292	APVLV	1
RXS-AP-SP	DI	129	70	-	292	APVLV	1
LDS-AP-SL	DI	130	71	-	292	APVLV	1
LDS-AP-SN	DI	131	72	-	292	APVLV	1
LDSAP621A	DI	132	73	-	291	AP102	1
LDSAP6502	DI	133	74	-	291	AP102	1
PSH-AP-2	DI	134	75	-	295	AP271	1
PSL-AP-2	DI	135	76	-	295	AP271	1
LDS-AP-VP	DI	136	77	-	292	APVLV	1
FSH-DR712	DI	137	78	-	292	APVLV	1
FXS-DR712	DI	138	79	-	292	APVLV	1
PSH-APFL1	DI	139	80	-	292	APVLV	1
ZS-AP-DR1	DI	140	81	-	292	APVLV	1
ZS-AP-FL1	DI	141	82	-	292	APVLV	1
SPARE	DI	142	83	-	-	-	1
SPARE	DI	143	-	-	-	-	1
SPARE	DI	144	-	-	-	-	1
SPARE	DI	145	-	-	-	-	1
SPARE	DI	146	-	-	-	-	1
SPARE	DI	147	-	-	-	-	1
SPARE	DI	148	-	-	-	-	1
SPARE	DI	149	-	-	-	-	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
II-AP1011	AI	20	-	-	290	APFRM	1
II-AP1021	AI	21	-	-	291	AP102	1
II-AP1031	AI	22	-	-	290	APFRM	1
II-AP1041	AI	23	-	-	290	APFRM	1
II-AP1051	AI	24	-	-	290	APFRM	1
II-AP1061	AI	25	-	-	290	APFRM	1
II-AP1071	AI	26	-	-	290	APFRM	1
II-AP1081	AI	27	-	-	290	APFRM	1
SPARE	AI	28	-	-	-	-	1
SPARE	AI	29	-	-	-	-	1
SPARE	AI	30	-	-	-	-	1
SPARE	AI	31	-	-	-	-	1
SPARE	AI	32	-	-	-	-	1
FQI-APSP1	AI	33	-	-	292	APVLV	1
KY-ARM-AP	AI	34	-	-	295	AP271	1
SPARE	AI	35	-	-	-	-	1
SPARE	AI	36	-	-	-	-	1
SPARE	AI	37	-	-	-	-	1
SPARE	AI	38	-	-	-	-	1
SPARE	AI	39	-	-	-	-	1
3 - A W F A R M					**20-DEV;**	**20-AIN;**	**60-DIN**
P-AW-101	DEV	40	-	-	300	AWFRM	1
P-AW-103	DEV	41	-	-	300	AWFRM	1
P-AW-104	DEV	42	-	-	300	AWFRM	1
P-AW-105	DEV	43	-	-	300	AWFRM	1
P-AW-106	DEV	44	-	-	300	AWFRM	1
HS-AW-SIL	DEV	45	-	-	-	-	1
AWFARM	DEV	46	1	-	300	AWFRM	1
AW-SERPIT	DEV	47	2	-	-	-	1
AW-VLVPIT	DEV	48	3	-	303	AWVLV	1
AW-HVAC	DEV	49	4	-	304	AWHVC	1
AW-271	DEV	50	5	-	302	AW271	1
AW-102	DEV	51	6	-	-	-	1
HS-ARM-AW	DEV	52	-	-	302	AW271	1
SPARE	DEV	53	-	-	-	-	1
SPARE	DEV	54	-	-	-	-	1
SPARE	DEV	55	-	-	-	-	1
SPARE	DEV	56	-	-	-	-	1
SPARE	DEV	57	-	-	-	-	1
SPARE	DEV	58	-	-	-	-	1
SPARE	DEV	59	-	-	-	-	1
YS-AW-101	DI	150	0	-	300	AWFRM	1
RSH-AW101	DI	151	1	-	300	AWFRM	1
RSH-AW01C	DI	152	2	-	300	AWFRM	1
RSH-AW102	DI	153	3	-	300	AWFRM	1
RSH-AW02C	DI	154	4	-	300	AWFRM	1
YS-AW-103	DI	155	5	-	300	AWFRM	1
RSH-AW103	DI	156	6	-	300	AWFRM	1
RSH-AW03C	DI	157	7	-	300	AWFRM	1
YS-AW-104	DI	158	8	-	300	AWFRM	1
RSH-AW104	DI	159	9	-	300	AWFRM	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
RSH-AW04C	DI	160	10	-	300	AWFRM	1
YS-AW-105	DI	161	11	-	300	AWFRM	1
RSH-AW105	DI	162	12	-	300	AWFRM	1
RSH-AW05C	DI	163	13	-	300	AWFRM	1
YS-AW-106	DI	164	14	-	300	AWFRM	1
RSH-AW106	DI	165	15	-	300	AWFRM	1
RSH-AW06C	DI	166	16	-			1
LDS-TL021	DI	167	17	-	303	AWVLV	1
LDSTL2223	DI	168	18	-	303	AWVLV	1
LDS-AW-DR	DI	169	19	-	303	AWVLV	1
LDS-AW-PP	DI	170	20	-	303	AWVLV	1
LDS-AW-SL	DI	171	21	-	303	AWVLV	1
LDS-AW-SN	DI	172	22	-	303	AWVLV	1
LDS-SN269	DI	173	23	-	303	AWVLV	1
LDS-SN270	DI	174	24	-	303	AWVLV	1
LDS-COBAW	DI	175	25	-	303	AWVLV	1
PSH-AWSN1	DI	176	26	-	303	AWVLV	1
PSH-AWSN2	DI	177	27	-	303	AWVLV	1
QS-AW-271	DI	178	28	-	302	AW271	1
RSH-SP-AW	DI	179	29	-	303	AWVLV	1
LDS-SP-AW	DI	180	30	-	303	AWVLV	1
RSH-AW-K1	DI	181	31	-	304	AWHVC	1
SPARE	DI	182	32	-	-	-	1
SPARE	DI	183	33	-	-	-	1
SPARE	DI	184	34	-	-	-	1
SPARE	DI	185	35	-	-	-	1
QXS-AWK15	DI	186	36	-	304	AWHVC	1
RSH-AW-K2	DI	187	37	-	304	AWHVC	1
QXSAWK1A2	DI	188	38	-	304	AWHVC	1
RSH-AW-12	DI	189	39	-	302	AW271	1
RSHAW2711	DI	190	40	-	302	AW271	1
RSHAW2712	DI	191	41	-	302	AW271	1
YS-AW-ARM	DI	192	42	-	302	AW271	1
JXS-AW271	DI	193	43	-	302	AW271	1
SPARE	DI	194	44	-	-	-	1
YS-AW-MSD	DI	195	45	-	302	AW271	1
TXS-AW-2	DI	196	46	-	302	AW271	1
SPARE	DI	197	-	-	-	-	1
SPARE	DI	198	-	-	-	-	1
SPARE	DI	199	-	-	-	-	1
SPARE	DI	200	-	-	-	-	1
SPARE	DI	201	-	-	-	-	1
SPARE	DI	202	-	-	-	-	1
SPARE	DI	203	-	-	-	-	1
SPARE	DI	204	-	-	-	-	1
SPARE	DI	205	-	-	-	-	1
SPARE	DI	206	-	-	-	-	1
SPARE	DI	207	-	-	-	-	1
SPARE	DI	208	-	-	-	-	1
SPARE	DI	209	-	-	-	-	1
SPARE	DI	210	-	-	-	-	1
II-AW1011	AI	40	-	-	300	AWFRM	1
II-AW1031	AI	41	-	-	300	AWFRM	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
II-AW1041	AI	42	-	-	300	AWFRM	1
II-AW1051	AI	43	-	-	300	AWFRM	1
II-AW1061	AI	44	-	-	300	AWFRM	1
FQI-AW-1	DI	45	-	-	303	AWVLV	1
KY-ARM-AW	AI	46	-	-	302	AW271	1
SPARE	AI	47	-	-	-	-	1
SPARE	AI	48	-	-	-	-	1
SPARE	AI	49	-	-	-	-	1
SPARE	AI	50	-	-	-	-	1
SPARE	AI	51	-	-	-	-	1
SPARE	AI	52	-	-	-	-	1
SPARE	AI	53	-	-	-	-	1
SPARE	AI	54	-	-	-	-	1
SPARE	AI	55	-	-	-	-	1
SPARE	AI	56	-	-	-	-	1
SPARE	AI	57	-	-	-	-	1
SPARE	AI	58	-	-	-	-	1
SPARE	AI	59	-	-	-	-	1
4 - X Y Z F R M					**15-DEV;**	**60-AIN;**	**60-DIN**
P-AY-101	DEV	60	-	31	322	AYFRM	1
P-AY-102	DEV	61	-	32	322	AYFRM	1
P-AZ-101	DEV	62	-	33	323	AZFRM	1
P-AZ-102	DEV	63	-	34	323	AZFRM	1
AFARM	DEV	64	0	-	-	-	1
AYFARM	DEV	65	1	-	-	-	1
AZFARM	DEV	66	2	-	-	-	1
AXYZ	DEV	67	3	-	-	-	1
XYZLEAK	DEV	68	-	-	-	-	1
HSAXYZSIL	DEV	69	-	-	-	-	1
HS-ARMAAX	DEV	70	-	-	-	-	1
SPARE	DEV	71	-	-	-	-	1
SPARE	DEV	72	-	-	-	-	1
SPARE	DEV	73	-	-	-	-	1
SPARE	DEV	74	-	-	-	-	1
PSH-SL100	DI	214	5	-	321	AFRM	1
PSH-SL101	DI	215	6	-	321	AFRM	1
PSH-SL113	DI	216	7	-	321	AFRM	1
PSH-SL114	DI	217	8	-	321	AFRM	1
PSH200213	DI	218	9	-	321	AFRM	1
PSH201214	DI	219	10	-	321	AFRM	1
LDS-SL500	DI	220	11	-	323	AZFRM	1
LDS-SL501	DI	221	12	-	323	AZFRM	1
LDS-SL502	DI	222	13	-	322	AYFRM	1
LDS-SL503	DI	223	14	-	322	AYFRM	1
LDS-SL504	DI	224	15	-	322	AYFRM	1
LDS-SL505	DI	225	16	-	322	AYFRM	1
LDS-SN600	DI	226	17	-	323	AZFRM	1
LDS-SN601	DI	227	18	-	323	AZFRM	1
LDS-DR700	DI	228	19	-	322	AYFRM	1
LXS-AXPOT	DI	229	20	-	320	AXYZFRM	1
LSH-AX-1	DI	230	21	-	320	AXYZFRM	1
LSL-AX-1	DI	231	22	-	320	AXYZFRM	1

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
LDSCOBAAX	DI	232	23	-	320	AXYZFRM	1
YS-AAXARM	DI	233	24	-	320	AXYZFRM	1
YS-AAXMSD	DI	234	25	-	320	AXYZFRM	1
RSHAAX3/4	DI	235	26	-			1
RSH-AXZY1	DI	236	27	-	320	AXYZFRM	1
LDSPPCOB1	DI	237	28	-	320	AXYZFRM	1
RXSAAX3/4	DI	238	29	-	320	AXYZFRM	1
SPARE	DI	239	30	-	-	-	1
QS-204AR1	DI	240	-	-	-	-	1
QS-204AR2	DI	241	-	-	-	-	1
TSL242A81	DI	242	-	-			1
LDS216A40	DI	243	-	-			1
YS-241A1A	DI	244	-	-			1
SPARE	DI	245	-	-			1
SPARE	DI	246	-	-			1
SPARE	DI	247	-	-			1
SPARE	DI	248	-	-			1
SPARE	DI	249	-	-			1
RSH-ARAMU	DI	250	-	-			1
RSH-ASAMU	DI	251	-	-			1
RSH-K1-12	DI	252	-	-			1
RSH-K1-11	DI	253	-	-			1
QXS-K1	DI	254	-	-			1
PDSH-K161	DI	255	-	-			1
PDSL-K161	DI	256	-	-			1
PDSH-K162	DI	257	-	-			1
PDSL-K162	DI	258	-	-			1
PDSL-K163	DI	259	-	-			1
PDSL-K164	DI	260	-	-			1
YS-K1-1	DI	261	-	-			1
RSH-ASSUR	DI	262	-	-			1
RSH-ASCON	DI	263	-	-			1
RSHARHVAC	DI	264	-	-			1
RSH-ARC4	DI	265	-	-			1
RSH-ARCB	DI	266	-	-			1
RSHAREVAP	DI	267	-	-			1
RSH-ARHES	DI	268	-	-			1
RXS-ASCON	DI	269	-	-			1
RXS-ASAMU	DI	270	-	-			1
RXS-ASSUR	DI	271	-	-			1
RXSAREVAP	DI	272	-	-			1
RXS-ARAMU	DI	273	-	-			1
RXSARHVAC	DI	274	-	-			1
PSH-SN215	DI	15	35	-	321	AFRM	0
PSH-SN216	DI	16	36	-	321	AFRM	0
II-AY-101	AI	60	-	-	322	AYFRM	
II-AY-102	AI	61	-	-	322	AYFRM	
II-AZ-101	AI	62	-	-	323	AZFRM	
II-AZ-102	AI	63	-	-	323	AZFRM	
KY-ARMAAX	AI	67	-	-	320	AXYZFM	
55 MORE AI'S		68 - 119		-			

5 - B L D N G (SEE PCMO UNIT #19) 5-DEV; 20-AIN;30-DIN

MCS EPN	SIG TYPE	IPN	LOOP INT	WHITE INT	GRAPH	ACAD	PCM
6 - B L A N K 1						**5-DEV; 0-AIN; 0-DIN**	
GBIT1-0/1	DEV	85	-	-	-	-	
CASS1AL1A	DEV	86	-	-	090	CASS	
CASS1AL2A	DEV	87	-	-	090	CASS	
WHITE	DEV	88	-	-	-	-	
SPARE	DEV	89	-	-	-	-	
**** - - - M I S C E L L A N E O U S - - -**							
SIMDEV1	DEV	14	-	-	-	-	
HS-AB2ACK	DEV	15	-	-	-	-	
CNDSR-RM	DEV	77	-	-	-	-	
QS-204AR1	DI	240	-	-	FP-81	-	1
QS-204AR2	DI	241	-	-	FP-81	-	1
YS-241A1A	DI	244	-	-	FP-81	-	1

APPENDIX B -SEQUENCE DATABASE (SDB)

PCM0ASDB

```
PCM name for which to create the SDB?> = pcm0a
Number of sequence units for PCM?> = 26


Unit 0
      Enter unit 0 sequence unit name?> = whole0
      Enter unit 0 console enable index?> = 0
      Read/Write unit 0 from other sequence units[Y/N]?> = y
      Enter unit 0 UPF name?> = total0
      Enter number of DEV for unit 0?> = 217
            Enter EPN of first DEV?> = 244alarm
      Enter number of AIN for unit 0?> = 379
            Enter EPN of first AIN?> = ii-p244al
      Enter number of DIN for unit 0?> = 348
            Enter EPN of first DIN?> = ys244alil
      Enter number of DOT for unit 0?> = 0
      Enter number of DGR for unit 0?> = 5
            Enter EPN of first DGR?> = dgr0


Unit 1
      Enter unit 1 sequence unit name?> = a244
      Enter unit 1 console enable index?> = 0
      Read/Write unit 1 from other sequence units[Y/N]?> = y
      Enter unit 1 UPF name?> = short0
      Enter number of DEV for unit 1?> = 15
            Enter EPN of first DEV?> = 244alarm
      Enter number of AIN for unit 1?> = 30
            Enter EPN of first AIN?> = ii-p244al
      Enter number of DIN for unit 1?> = 50
            Enter EPN of first DIN?> = ys244alil
      Enter number of DOT for unit 1?> = 0
      Enter number of DGR for unit 1?> = 0


Unit 2
      Enter unit 2 sequence unit name?> = hvc244
      Enter unit 2 console enable index?> = 0
      Read/Write unit 2 from other sequence units[Y/N]?> = y
      Enter unit 2 UPF name?> = short0
      Enter number of DEV for unit 2?> = 1
            Enter EPN of first DEV?> = hvac244
      Enter number of AIN for unit 2?> = 5
            Enter EPN of first AIN?> = ri-244ann
      Enter number of DIN for unit 2?> = 5
            Enter EPN of first DIN?> = pdsl-ef-2
      Enter number of DOT for unit 2?> = 0
      Enter number of DGR for unit 2?> = 0
```

```
Unit 3
      Enter unit 3 sequence unit name?> = waste
      Enter unit 3 console enable index?> = 0
      Read/Write unit 3 from other sequence units[Y/N]?> = y
      Enter unit 3 UPF name?> = short0
      Enter number of DEV for unit 3?> = 1
            Enter EPN of first DEV?> = wstxfr
      Enter number of AIN for unit 3?> = 0
      Enter number of DIN for unit 3?> = 18
            Enter EPN of first DIN?> = lds-ar151
      Enter number of DOT for unit 3?> = 0
      Enter number of DGR for unit 3?> = 0


Unit 4
      Enter unit 4 sequence unit name?> = a350
      Enter unit 4 console enable index?> = 0
      Read/Write unit 4 from other sequence units[Y/N]?> = y
      Enter unit 4 UPF name?> = short0
      Enter number of DEV for unit 4?> = 3
            Enter EPN of first DEV?> = 350alarm
      Enter number of AIN for unit 4?> = 17
            Enter EPN of first AIN?> = ii-350-1
      Enter number of DIN for unit 4?> = 5
            Enter EPN of first DIN?> = lsh-350-2
      Enter number of DOT for unit 4?> = 0
      Enter number of DGR for unit 4?> = 0


Unit 5
      Enter unit 5 sequence unit name?> = feed
      Enter unit 5 console enable index?> = 0
      Read/Write unit 5 from other sequence units[Y/N]?> = y
      Enter unit 5 UPF name?> = prcess
      Enter number of DEV for unit 5?> = 10
            Enter EPN of first DEV?> = paw102alm
      Enter number of AIN for unit 5?> = 15
            Enter EPN of first AIN?> = ii-aw-102
      Enter number of DIN for unit 5?> = 10
            Enter EPN of first DIN?> = ys-aw102
      Enter number of DOT for unit 5?> = 0
      Enter number of DGR for unit 5?> = 0
```

```
Unit 6
      Enter unit 6 sequence unit name?> = cal
      Enter unit 6 console enable index?> = 0
      Read/Write unit 6 from other sequence units[Y/N]?> = y
      Enter unit 6 UPF name?> = prcess
      Enter number of DEV for unit 6?> = 10
            Enter EPN of first DEV?> = cal-alarm
      Enter number of AIN for unit 6?> = 35
            Enter EPN of first AIN?> = pi-cal-11
      Enter number of DIN for unit 6?> = 10
            Enter EPN of first DIN?> = psh-call1
      Enter number of DOT for unit 6?> = 0
      Enter number of DGR for unit 6?> = 0


Unit 7
      Enter unit 7 sequence unit name?> = pb1
      Enter unit 7 console enable index?> = 0
      Read/Write unit 7 from other sequence units[Y/N]?> = y
      Enter unit 7 UPF name?> = prcess
      Enter number of DEV for unit 7?> = 15
            Enter EPN of first DEV?> = pb1-alarm
      Enter number of AIN for unit 7?> = 20
            Enter EPN of first AIN?> = ky-pb1-1
      Enter number of DIN for unit 7?> = 15
            Enter EPN of first DIN?> = ys-pc-105
      Enter number of DOT for unit 7?> = 0
      Enter number of DGR for unit 7?> = 0


Unit 8
      Enter unit 8 sequence unit name?> = pb2
      Enter unit 8 console enable index?> = 0
      Read/Write unit 8 from other sequence units[Y/N]?> = y
      Enter unit 8 UPF name?> = prcess
      Enter number of DEV for unit 8?> = 15
            Enter EPN of first DEV?> = pb2-alarm
      Enter number of AIN for unit 8?> = 20
            Enter EPN of first AIN?> = hi-wvr-1
      Enter number of DIN for unit 8?> = 20
            Enter EPN of first DIN?> = ys-pb2-1
      Enter number of DOT for unit 8?> = 0
      Enter number of DGR for unit 8?> = 0
```

```
Unit 9
      Enter unit 9 sequence unit name?> = eal
      Enter unit 9 console enable index?> = 0
      Read/Write unit 9 from other sequence units[Y/N]?> = y
      Enter unit 9 UPF name?> = prcess
      Enter number of DEV for unit 9?> = 15
            Enter EPN of first DEV?> = eal-alarm
      Enter number of AIN for unit 9?> = 30
            Enter EPN of first AIN?> = ti-eal-7
      Enter number of DIN for unit 9?> = 5
            Enter EPN of first DIN?> = psl-eal-1
      Enter number of DOT for unit 9?> = 0
      Enter number of DGR for unit 9?> = 0


Unit 10
      Enter unit 10 sequence unit name?> = ecl
      Enter unit 10 console enable index?> = 0
      Read/Write unit 10 from other sequence units[Y/N]?> = y
      Enter unit 10 UPF name?> = prcess
      Enter number of DEV for unit 10?> = 10
            Enter EPN of first DEV?> = ecl-alarm
      Enter number of AIN for unit 10?> = 30
            Enter EPN of first AIN?> = ti-cal-9
      Enter number of DIN for unit 10?> = 10
            Enter EPN of first DIN?> = rsh-cal-1
      Enter number of DOT for unit 10?> = 0
      Enter number of DGR for unit 10?> = 0


Unit 11
      Enter unit 11 sequence unit name?> = rwater
      Enter unit 11 console enable index?> = 0
      Read/Write unit 11 from other sequence units[Y/N]?> = y
      Enter unit 11 UPF name?> = prcess
      Enter number of DEV for unit 11?> = 10
            Enter EPN of first DEV?> = rw-alarm
      Enter number of AIN for unit 11?> = 10
            Enter EPN of first AIN?> = pdi-rw-1
      Enter number of DIN for unit 11?> = 10
            Enter EPN of first DIN?> = lds-bfp-1
      Enter number of DOT for unit 11?> = 0
      Enter number of DGR for unit 11?> = 0
```

```
Unit 12
      Enter unit 12 sequence unit name?> = urw
      Enter unit 12 console enable index?> = 0
      Read/Write unit 12 from other sequence units[Y/N]?> = y
      Enter unit 12 UPF name?> = prcess
      Enter number of DEV for unit 12?> = 10
            Enter EPN of first DEV?> = urw-alarm
      Enter number of AIN for unit 12?> = 15
            Enter EPN of first AIN?> = fic-ec1-1
      Enter number of DIN for unit 12?> = 10
            Enter EPN of first DIN?> = fsl-rc2-1
      Enter number of DOT for unit 12?> = 0
      Enter number of DGR for unit 12?> = 0


Unit 13
      Enter unit 13 sequence unit name?> = vvent
      Enter unit 13 console enable index?> = 0
      Read/Write unit 13 from other sequence units[Y/N]?> = y
      Enter unit 13 UPF name?> = prcess
      Enter number of DEV for unit 13?> = 10
            Enter EPN of first DEV?> = vv-alarm
      Enter number of AIN for unit 13?> = 20
            Enter EPN of first AIN?> = pdi-fc5-2
      Enter number of DIN for unit 13?> = 20
            Enter EPN of first DIN?> = pdsh-fc51
      Enter number of DOT for unit 13?> = 0
      Enter number of DGR for unit 13?> = 0


Unit 14
      Enter unit 14 sequence unit name?> = pc
      Enter unit 14 console enable index?> = 0
      Read/Write unit 14 from other sequence units[Y/N]?> = y
      Enter unit 14 UPF name?> = prcess
      Enter number of DEV for unit 14?> = 10
            Enter EPN of first DEV?> = pc-alarm
      Enter number of AIN for unit 14?> = 15
            Enter EPN of first AIN?> = ii-a-c100
      Enter number of DIN for unit 14?> = 10
            Enter EPN of first DIN?> = ys-a-c100
      Enter number of DOT for unit 14?> = 0
      Enter number of DGR for unit 14?> = 0
```

```
Unit 15
      Enter unit 15 sequence unit name?> = ix
      Enter unit 15 console enable index?> = 0
      Read/Write unit 15 from other sequence units[Y/N]?> = y
      Enter unit 15 UPF name?> = prcess
      Enter number of DEV for unit 15?> = 10
            Enter EPN of first DEV?> = ix-alarm
      Enter number of AIN for unit 15?> = 25
            Enter EPN of first AIN?> = pi-idx-13
      Enter number of DIN for unit 15?> = 20
            Enter EPN of first DIN?> = zs-idx-2
      Enter number of DOT for unit 15?> = 0
      Enter number of DGR for unit 15?> = 0


Unit 16
      Enter unit 16 sequence unit name?> = sc
      Enter unit 16 console enable index?> = 0
      Read/Write unit 16 from other sequence units[Y/N]?> = y
      Enter unit 16 UPF name?> = prcess
      Enter number of DEV for unit 16?> = 10
            Enter EPN of first DEV?> = sc-alarm
      Enter number of AIN for unit 16?> = 15
            Enter EPN of first AIN?> = fi-eal-3
      Enter number of DIN for unit 16?> = 20
            Enter EPN of first DIN?> = rsh-eal-1
      Enter number of DOT for unit 16?> = 0
      Enter number of DGR for unit 16?> = 0


Unit 17
      Enter unit 17 sequence unit name?> = basins
      Enter unit 17 console enable index?> = 0
      Read/Write unit 17 from other sequence units[Y/N]?> = y
      Enter unit 17 UPF name?> = prcess
      Enter number of DEV for unit 17?> = 10
            Enter EPN of first DEV?> = basin-alm
      Enter number of AIN for unit 17?> = 10
            Enter EPN of first AIN?> = ii-sumppl
      Enter number of DIN for unit 17?> = 20
            Enter EPN of first DIN?> = ys-scp3il
      Enter number of DOT for unit 17?> = 0
      Enter number of DGR for unit 17?> = 0
```

```
Unit 18
      Enter unit 18 sequence unit name?> = util
      Enter unit 18 console enable index?> = 0
      Read/Write unit 18 from other sequence units[Y/N]?> = y
      Enter unit 18 UPF name?> = prcess
      Enter number of DEV for unit 18?> = 10
            Enter EPN of first DEV?> = utilities
      Enter number of AIN for unit 18?> = 20
            Enter EPN of first AIN?> = pi-ia-1
      Enter number of DIN for unit 18?> = 20
            Enter EPN of first DIN?> = pslcpel/2
      Enter number of DOT for unit 18?> = 0
      Enter number of DGR for unit 18?> = 0


Unit 19
      Enter unit 19 sequence unit name?> = rooms
      Enter unit 19 console enable index?> = 0
      Read/Write unit 19 from other sequence units[Y/N]?> = y
      Enter unit 19 UPF name?> = prcess
      Enter number of DEV for unit 19?> = 10
            Enter EPN of first DEV?> = room-alm
      Enter number of AIN for unit 19?> = 10
            Enter EPN of first AIN?> = ri-kl-1-1
      Enter number of DIN for unit 19?> = 10
            Enter EPN of first DIN?> = simdinl
      Enter number of DOT for unit 19?> = 0
      Enter number of DGR for unit 19?> = 0


Unit 20
      Enter unit 20 sequence unit name?> = amu
      Enter unit 20 console enable index?> = 0
      Read/Write unit 20 from other sequence units[Y/N]?> = y
      Enter unit 20 UPF name?> = prcess
      Enter number of DEV for unit 20?> = 10
            Enter EPN of first DEV?> = amu-alarm
      Enter number of AIN for unit 20?> = 20
            Enter EPN of first AIN?> = ti-el01-2
      Enter number of DIN for unit 20?> = 10
            Enter EPN of first DIN?> = ys-a-el01
      Enter number of DOT for unit 20?> = 0
      Enter number of DGR for unit 20?> = 0
```

```
Unit 21
      Enter unit 21 sequence unit name?> = lerf
      Enter unit 21 console enable index?> = 0
      Read/Write unit 21 from other sequence units[Y/N]?> = y
      Enter unit 21 UPF name?> = prcess
      Enter number of DEV for unit 21?> = 10
            Enter EPN of first DEV?> = lerf-alm
      Enter number of AIN for unit 21?> = 20
            Enter EPN of first AIN?> = ldi-al
      Enter number of DIN for unit 21?> = 20
            Enter EPN of first DIN?> = ys-p-43
      Enter number of DOT for unit 21?> = 0
      Enter number of DGR for unit 21?> = 0


Unit 22
      Enter unit 22 sequence unit name?> = evap
      Enter unit 22 console enable index?> = 0
      Read/Write unit 22 from other sequence units[Y/N]?> = y
      Enter unit 22 UPF name?> = ovrvew
      Enter number of DEV for unit 22?> = 80
            Enter EPN of first DEV?> = paw102alm
      Enter number of AIN for unit 22?> = 155
            Enter EPN of first AIN?> = ii-aw-102
      Enter number of DIN for unit 22?> = 110
            Enter EPN of first DIN?> = ys-aw102
      Enter number of DOT for unit 22?> = 0
      Enter number of DGR for unit 22?> = 0


Unit 23
      Enter unit 23 sequence unit name?> = vapor
      Enter unit 23 console enable index?> = 0
      Read/Write unit 23 from other sequence units[Y/N]?> = y
      Enter unit 23 UPF name?> = ovrvew
      Enter number of DEV for unit 23?> = 30
            Enter EPN of first DEV?> = ecl-alarm
      Enter number of AIN for unit 23?> = 90
            Enter EPN of first AIN?> = ti-cal-9
      Enter number of DIN for unit 23?> = 60
            Enter EPN of first DIN?> = rsh-cal-1
      Enter number of DOT for unit 23?> = 0
      Enter number of DGR for unit 23?> = 0
```

```
Unit 24
      Enter unit 24 sequence unit name?> = cond
      Enter unit 24 console enable index?> = 0
      Read/Write unit 24 from other sequence units[Y/N]?> = y
      Enter unit 24 UPF name?> = ovrvew
      Enter number of DEV for unit 24?> = 85
            Enter EPN of first DEV?> = pc-alarm
      Enter number of AIN for unit 24?> = 135
            Enter EPN of first AIN?> = ii-a-c100
      Enter number of DIN for unit 24?> = 100
            Enter EPN of first DIN?> = ys-a-c100
      Enter number of DOT for unit 24?> = 0
      Enter number of DGR for unit 24?> = 0


Unit 25
      Enter unit 25 sequence unit name?> = blank0
      Enter unit 25 console enable index?> = 0
      Read/Write unit 25 from other sequence units[Y/N]?> = y
      Enter unit 25 UPF name?> = blankk
      Enter number of DEV for unit 25?> = 0
      Enter number of AIN for unit 25?> = 0
      Enter number of DIN for unit 25?> = 0
      Enter number of DOT for unit 25?> = 0
      Enter number of DGR for unit 25?> = 0


Build PCMOA.SDB? [Y/N]> = y
Build Completed -- Database requires 3295 pages of memory
Total Errors = 0
```

PCM1ASDB

```
PCM name for which to create the SDB?> = pcm1a
Number of sequence units for PCM?> = 7


Unit 0
      Enter unit 0 sequence unit name?> = whole1
      Enter unit 0 console enable index?> = 0
      Read/Write unit 0 from other sequence units[Y/N]?> = y
      Enter unit 0 UPF name?> = total1
      Enter number of DEV for unit 0?> = 90
            Enter EPN of first DEV?> = p-an-101
      Enter number of AIN for unit 0?> = 130
            Enter EPN of first AIN?> = ii-an1011
      Enter number of DIN for unit 0?> = 280
            Enter EPN of first DIN?> = ys-an-101
      Enter number of DOT for unit 0?> = 0
      Enter number of DGR for unit 0?> = 0


Unit 1
      Enter unit 1 sequence unit name?> = anfarm
      Enter unit 1 console enable index?> = 0
      Read/Write unit 1 from other sequence units[Y/N]?> = y
      Enter unit 1 UPF name?> = tnkfrm
      Enter number of DEV for unit 1?> = 15
            Enter EPN of first DEV?> = p-an-101
      Enter number of AIN for unit 1?> = 20
            Enter EPN of first AIN?> = ii-an1011
      Enter number of DIN for unit 1?> = 60
            Enter EPN of first DIN?> = ys-an-101
      Enter number of DOT for unit 1?> = 0
      Enter number of DGR for unit 1?> = 0


Unit 2
      Enter unit 2 sequence unit name?> = apfarm
      Enter unit 2 console enable index?> = 0
      Read/Write unit 2 from other sequence units[Y/N]?> = y
      Enter unit 2 UPF name?> = tnkfrm
      Enter number of DEV for unit 2?> = 20
            Enter EPN of first DEV?> = p-ap-101
      Enter number of AIN for unit 2?> = 20
            Enter EPN of first AIN?> = ii-ap1011
      Enter number of DIN for unit 2?> = 90
            Enter EPN of first DIN?> = ys-ap-101
      Enter number of DOT for unit 2?> = 0
      Enter number of DGR for unit 2?> = 0
```

```
Unit 3
      Enter unit 3 sequence unit name?> = awfarm
      Enter unit 3 console enable index?> = 0
      Read/Write unit 3 from other sequence units[Y/N]?> = y
      Enter unit 3 UPF name?> = tnkfrm
      Enter number of DEV for unit 3?> = 20
            Enter EPN of first DEV?> = p-aw-101
      Enter number of AIN for unit 3?> = 20
            Enter EPN of first AIN?> = ii-aw1011
      Enter number of DIN for unit 3?> = 60
            Enter EPN of first DIN?> = ys-aw-101
      Enter number of DOT for unit 3?> = 0
      Enter number of DGR for unit 3?> = 0


Unit 4
      Enter unit 4 sequence unit name?> = xyzfrm
      Enter unit 4 console enable index?> = 0
      Read/Write unit 4 from other sequence units[Y/N]?> = y
      Enter unit 4 UPF name?> = tnkfrm
      Enter number of DEV for unit 4?> = 15
            Enter EPN of first DEV?> = p-ay-101
      Enter number of AIN for unit 4?> = 60
            Enter EPN of first AIN?> = ii-ay-101
      Enter number of DIN for unit 4?> = 60
            Enter EPN of first DIN?> = psh-sl100
      Enter number of DOT for unit 4?> = 0
      Enter number of DGR for unit 4?> = 0


Unit 5
      Enter unit 5 sequence unit name?> = bldng
      Enter unit 5 console enable index?> = 0
      Read/Write unit 5 from other sequence units[Y/N]?> = y
      Enter unit 5 UPF name?> = tnkfrm
      Enter number of DEV for unit 5?> = 5
            Enter EPN of first DEV?> = building
      Enter number of AIN for unit 5?> = 20
            Enter EPN of first AIN?> = ri-ar-amu
      Enter number of DIN for unit 5?> = 30
            Enter EPN of first DIN?> = rsh-aramu
      Enter number of DOT for unit 5?> = 0
      Enter number of DGR for unit 5?> = 0
```

```
Unit 6
      Enter unit 6 sequence unit name?> = blankl
      Enter unit 6 console enable index?> = 0
      Read/Write unit 6 from other sequence units[Y/N]?> = y
      Enter unit 6 UPF name?> = blankk
      Enter number of DEV for unit 6?> = 5
            Enter EPN of first DEV?> = gbitl-0/1
      Enter number of AIN for unit 6?> = 0
      Enter number of DIN for unit 6?> = 0
      Enter number of DOT for unit 6?> = 0
      Enter number of DGR for unit 6?> = 0


Build PCM1A.SDB? [Y/N]> = y
Build Completed -- Database requires 1791 pages of memory
Total Errors = 0
```

APPENDIX C - RECIPE PROTOTYPE FILES (RPF)

ALLO

```
RMS Version 6.3-2                    05-Dec-94 09:31:35
RMS?> = rpf de all0
RPF?> = rpf de all0
Invalid Command
Open error file SV0:[300,1]U.UPF ,error = -1
RPF?> = cr all0,*
MRPF?>  = add 32 fg

Enter new 6 char. name of fg 0?> = flag0
Enter new 18 char. descriptor of fg 0?> = flag 0

Enter new 6 char. name of fg 1?> = flag1
Enter new 18 char. descriptor of fg 1?> = flag 1

Enter new 6 char. name of fg 2?> = flag2
Enter new 18 char. descriptor of fg 2?> = flag 2

Enter new 6 char. name of fg 3?> = flag3
Enter new 18 char. descriptor of fg 3?> = flag 3

Enter new 6 char. name of fg 4?> = flag4
Enter new 18 char. descriptor of fg 4?> = flag 4

Enter new 6 char. name of fg 5?> = flag5
Enter new 18 char. descriptor of fg 5?> = flag 5

Enter new 6 char. name of fg 6?> = flag6
Enter new 18 char. descriptor of fg 6?> = flag 6

Enter new 6 char. name of fg 7?> = flag7
Enter new 18 char. descriptor of fg 7?> = flag 7

Enter new 6 char. name of fg 8?> = flag8
Enter new 18 char. descriptor of fg 8?> = flag 8

Enter new 6 char. name of fg 9?> = flag9
Enter new 18 char. descriptor of fg 9?> = flag 9

Enter new 6 char. name of fg 10?> = flag10
Enter new 18 char. descriptor of fg 10?> = flag 10

Enter new 6 char. name of fg 11?> = flag11
Enter new 18 char. descriptor of fg 11?> = flag 11

Enter new 6 char. name of fg 12?> = flag12
Enter new 18 char. descriptor of fg 12?> = flag 12

Enter new 6 char. name of fg 13?> = flag13
Enter new 18 char. descriptor of fg 13?> = flag 13
```

```
Enter new 6 char. name of fg 14?> = flag14
Enter new 18 char. descriptor of fg 14?> = flag 14

Enter new 6 char. name of fg 15?> = flag15
Enter new 18 char. descriptor of fg 15?> = flag 15

Enter new 6 char. name of fg 16?> = flag16
Enter new 18 char. descriptor of fg 16?> = flag 16

Enter new 6 char. name of fg 17?> = flag17
Enter new 18 char. descriptor of fg 17?> = flag 17

Enter new 6 char. name of fg 18?> = flag18
Enter new 18 char. descriptor of fg 18?> = flag 18

Enter new 6 char. name of fg 19?> = flag19
Enter new 18 char. descriptor of fg 19?> = flag 19

Enter new 6 char. name of fg 20?> = flag20
Enter new 18 char. descriptor of fg 20?> = flag 20

Enter new 6 char. name of fg 21?> = flag21
Enter new 18 char. descriptor of fg 21?> = flag 21

Enter new 6 char. name of fg 22?> = flag22
Enter new 18 char. descriptor of fg 22?> = flag 22

Enter new 6 char. name of fg 23?> = flag23
Enter new 18 char. descriptor of fg 23?> = flag 23

Enter new 6 char. name of fg 24?> = flag24
Enter new 18 char. descriptor of fg 24?> = flag 24

Enter new 6 char. name of fg 25?> = flag25
Enter new 18 char. descriptor of fg 25?> = flag 25

Enter new 6 char. name of fg 26?> = flag26
Enter new 18 char. descriptor of fg 26?> = flag 26

Enter new 6 char. name of fg 27?> = flag27
Enter new 18 char. descriptor of fg 27?> = flag 27

Enter new 6 char. name of fg 28?> = flag28
Enter new 18 char. descriptor of fg 28?> = flag 28

Enter new 6 char. name of fg 29?> = flag29
Enter new 18 char. descriptor of fg 29?> = flag 29
```

```
Enter new 6 char. name of fg 30?> = flag30
Enter new 18 char. descriptor of fg 30?> = flag 30

Enter new 6 char. name of fg 31?> = flag31
Enter new 18 char. descriptor of fg 31?> = 31
MRPF?>  = add 40 fl

Enter new 6 char. name of fl 0?> = val0
Enter new 18 char. descriptor of fl 0?> = amps
Enter low limit for fl 0?> = 0
Enter high limit for fl 0?> = 13.6

Enter new 6 char. name of fl 1?> = val1
Enter new 18 char. descriptor of fl 1?> = pmp amps
Enter low limit for fl 1?> = 0
Enter high limit for fl 1?> = 13.6

Enter new 6 char. name of fl 2?> = val2
Enter new 18 char. descriptor of fl 2?> = pmp amps
Enter low limit for fl 2?> = 0
Enter high limit for fl 2?> = 13.6

Enter new 6 char. name of fl 3?> = val3
Enter new 18 char. descriptor of fl 3?> = agt amps
Enter low limit for fl 3?> = 0
Enter high limit for fl 3?> = 14.0

Enter new 6 char. name of fl 4?> = val4
Enter new 18 char. descriptor of fl 4?> = temp
Enter low limit for fl 4?> = 0
Enter high limit for fl 4?> = 200.0

Enter new 6 char. name of fl 5?> = val5
Enter new 18 char. descriptor of fl 5?> = flow
Enter low limit for fl 5?> = 375
Enter high limit for fl 5?> = 500

Enter new 6 char. name of fl 6?> = val6
Enter new 18 char. descriptor of fl 6?> = pmp amps
Enter low limit for fl 6?> = 0.0
Enter high limit for fl 6?> = 50.00

Enter new 6 char. name of fl 7?> = val7
Enter new 18 char. descriptor of fl 7?> = pmp amps
Enter low limit for fl 7?> = 0
Enter high limit for fl 7?> = 34.00
```

```
Enter new 6 char. name of fl 8?> = val8
Enter new 18 char. descriptor of fl 8?> = dlta spg
Enter low limit for fl 8?> = -0.1
Enter high limit for fl 8?> = 00.1

Enter new 6 char. name of fl 9?> = val9
Enter new 18 char. descriptor of fl 9?> = rw dp
Enter low limit for fl 9?> = 0
Enter high limit for fl 9?> = 30.00

Enter new 6 char. name of fl 10?> = val10
Enter new 18 char. descriptor of fl 10?> = rw dp
Enter low limit for fl 10?> = 0
Enter high limit for fl 10?> = 30.00

Enter new 6 char. name of fl 11?> = val11
Enter new 18 char. descriptor of fl 11?> = rw dp
Enter low limit for fl 11?> = 0
Enter high limit for fl 11?> = 30.00

Enter new 6 char. name of fl 12?> = val12
Enter new 18 char. descriptor of fl 12?> = slry spd
Enter low limit for fl 12?> = 0
Enter high limit for fl 12?> = 100.0

Enter new 6 char. name of fl 13?> = val13
Enter new 18 char. descriptor of fl 13?> = 90# stm
Enter low limit for fl 13?> = 0
Enter high limit for fl 13?> = 100.00

Enter new 6 char. name of fl 14?> = val14
Enter new 18 char. descriptor of fl 14?> = stm flw
Enter low limit for fl 14?> = 0.0
Enter high limit for fl 14?> = 30000.0

Enter new 6 char. name of fl 15?> = val15
Enter new 18 char. descriptor of fl 15?> = stm inlet
Enter low limit for fl 15?> = 15.00
Enter high limit for fl 15?> = 40.00

Enter new 6 char. name of fl 16?> = val16
Enter new 18 char. descriptor of fl 16?> = sc temp
Enter low limit for fl 16?> = 100.0
Enter high limit for fl 16?> = 200.0

Enter new 6 char. name of fl 17?> = val17
Enter new 18 char. descriptor of fl 17?> = rw inlet
Enter low limit for fl 17?> = 0.0
Enter high limit for fl 17?> = 100.00
```

```
Enter new 6 char. name of fl 18?> = val18
Enter new 18 char. descriptor of fl 18?> = urw flow
Enter low limit for fl 18?> = 0.0
Enter high limit for fl 18?> = 150.0

Enter new 6 char. name of fl 19?> = val19
Enter new 18 char. descriptor of fl 19?> = filter dp
Enter low limit for fl 19?> = 0.0
Enter high limit for fl 19?> = 30.0

Enter new 6 char. name of fl 20?> = val20
Enter new 18 char. descriptor of fl 20?> = filter dp
Enter low limit for fl 20?> = 0.0
Enter high limit for fl 20?> = 30.0

Enter new 6 char. name of fl 21?> = val21
Enter new 18 char. descriptor of fl 21?> = urw flow
Enter low limit for fl 21?> = 0.0
Enter high limit for fl 21?> = 4000.0

Enter new 6 char. name of fl 22?> = val22
Enter new 18 char. descriptor of fl 22?> = vv amps
Enter low limit for fl 22?> = 0
Enter high limit for fl 22?> = 4.8

Enter new 6 char. name of fl 23?> = val23
Enter new 18 char. descriptor of fl 23?> = vv flow
Enter low limit for fl 23?> = 0.0
Enter high limit for fl 23?> = 1000.0

Enter new 6 char. name of fl 24?> = val24
Enter new 18 char. descriptor of fl 24?> = pmp amps
Enter low limit for fl 24?> = 0.0
Enter high limit for fl 24?> = 15.20

Enter new 6 char. name of fl 25?> = val25
Enter new 18 char. descriptor of fl 25?> = pc amps
Enter low limit for fl 25?> = 0.0
Enter high limit for fl 25?> = 18.33

Enter new 6 char. name of fl 26?> = val26
Enter new 18 char. descriptor of fl 26?> = lo iface
Enter low limit for fl 26?> = 0.8
Enter high limit for fl 26?> = 1.00

Enter new 6 char. name of fl 27?> = val27
Enter new 18 char. descriptor of fl 27?> = pc amps
Enter low limit for fl 27?> = 0.0
Enter high limit for fl 27?> = 18.67
```

```
Enter new 6 char. name of fl 28?> = val28
Enter new 18 char. descriptor of fl 28?> = float value 28
Enter low limit for fl 28?> = -9999
Enter high limit for fl 28?> = 99999

Enter new 6 char. name of fl 29?> = val29
Enter new 18 char. descriptor of fl 29?> = float value 29
Enter low limit for fl 29?> = -9999
Enter high limit for fl 29?> = 99999

Enter new 6 char. name of fl 30?> = val30
Enter new 18 char. descriptor of fl 30?> = float value 30
Enter low limit for fl 30?> = -9999
Enter high limit for fl 30?> = 99999

Enter new 6 char. name of fl 31?> = val31
Enter new 18 char. descriptor of fl 31?> = float value 31
Enter low limit for fl 31?> = -9999
Enter high limit for fl 31?> = 99999

Enter new 6 char. name of fl 32?> = val32
Enter new 18 char. descriptor of fl 32?> = float value 32
Enter low limit for fl 32?> = -9999
Enter high limit for fl 32?> = 99999

Enter new 6 char. name of fl 33?> = val33
Enter new 18 char. descriptor of fl 33?> = float value 33
Enter low limit for fl 33?> = -9999
Enter high limit for fl 33?> = 99999

Enter new 6 char. name of fl 34?> = val34
Enter new 18 char. descriptor of fl 34?> = float value 34
Enter low limit for fl 34?> = -9999
Enter high limit for fl 34?> = 99999

Enter new 6 char. name of fl 35?> = val35
Enter new 18 char. descriptor of fl 35?> = float value 35
Enter low limit for fl 35?> = -9999
Enter high limit for fl 35?> = 99999

Enter new 6 char. name of fl 36?> = val36
Enter new 18 char. descriptor of fl 36?> = float value 36
Enter low limit for fl 36?> = -9999
Enter high limit for fl 36?> = 99999

Enter new 6 char. name of fl 37?> = val37
Enter new 18 char. descriptor of fl 37?> = float value 37
Enter low limit for fl 37?> = -9999
Enter high limit for fl 37?> = 99999
```

```
Enter new 6 char. name of fl 38?> = val38
Enter new 18 char. descriptor of fl 38?> = float value 38
Enter low limit for fl 38?> = -9999
Enter high limit for fl 38?> = 99999

Enter new 6 char. name of fl 39?> = val39
Enter new 18 char. descriptor of fl 39?> = float value 39
Enter low limit for fl 39?> = -9999
Enter high limit for fl 39?> = 99999
MRPF?>  = add 50 in

Enter new 6 char. name of in 0?> = in0
Enter new 18 char. descriptor of in 0?> = integer number 0
Enter low limit for in 0?> = 0
Enter high limit for in 0?> = 100

Enter new 6 char. name of in 1?> = in1
Enter new 18 char. descriptor of in 1?> = integer number 1
Enter low limit for in 1?> = 0
Enter high limit for in 1?> = 100

Enter new 6 char. name of in 2?> = in2
Enter new 18 char. descriptor of in 2?> = integer number 2
Enter low limit for in 2?> = 0
Enter high limit for in 2?> = 100

Enter new 6 char. name of in 3?> = in3
Enter new 18 char. descriptor of in 3?> = integer number 3
Enter low limit for in 3?> = 0
Enter high limit for in 3?> = 100

Enter new 6 char. name of in 4?> = in4
Enter new 18 char. descriptor of in 4?> = integer number 4
Enter low limit for in 4?> = 0
Enter high limit for in 4?> = 100

Enter new 6 char. name of in 5?> = in5
Enter new 18 char. descriptor of in 5?> = integer number 5
Enter low limit for in 5?> = 0
Enter high limit for in 5?> = 100

Enter new 6 char. name of in 6?> = in6
Enter new 18 char. descriptor of in 6?> = integer number 6
Enter low limit for in 6?> = 0
Enter high limit for in 6?> = 100

Enter new 6 char. name of in 7?> = in7
Enter new 18 char. descriptor of in 7?> = integer number 7
Enter low limit for in 7?> = 0
Enter high limit for in 7?> = 100
```

```
Enter new 6 char. name of in 8?> = in8
Enter new 18 char. descriptor of in 8?> = integer number 8
Enter low limit for in 8?> = 0
Enter high limit for in 8?> = 7

Enter new 6 char. name of in 9?> = in9
Enter new 18 char. descriptor of in 9?> = integer number 9
Enter low limit for in 9?> = 0
Enter high limit for in 9?> = 7

Enter new 6 char. name of in 10?> = in10
Enter new 18 char. descriptor of in 10?> = integer number 10
Enter low limit for in 10?> = 0
Enter high limit for in 10?> = 7

Enter new 6 char. name of in 11?> = in11
Enter new 18 char. descriptor of in 11?> = integer number 11
Enter low limit for in 11?> = 0
Enter high limit for in 11?> = 7

Enter new 6 char. name of in 12?> = in12
Enter new 18 char. descriptor of in 12?> = integer number 12
Enter low limit for in 12?> = 0
Enter high limit for in 12?> = 7

Enter new 6 char. name of in 13?> = in13
Enter new 18 char. descriptor of in 13?> = integer number 13
Enter low limit for in 13?> = 0
Enter high limit for in 13?> = 7

Enter new 6 char. name of in 14?> = in14
Enter new 18 char. descriptor of in 14?> = integer number 14
Enter low limit for in 14?> = 0
Enter high limit for in 14?> = 7

Enter new 6 char. name of in 15?> = in15
Enter new 18 char. descriptor of in 15?> = integer number 15
Enter low limit for in 15?> = 0
Enter high limit for in 15?> = 7

Enter new 6 char. name of in 16?> = in16
Enter new 18 char. descriptor of in 16?> = integer number 16
Enter low limit for in 16?> = 0
Enter high limit for in 16?> = 7

Enter new 6 char. name of in 17?> = in17
Enter new 18 char. descriptor of in 17?> = integer number 17
Enter low limit for in 17?> = 0
Enter high limit for in 17?> = 7
```

```
Enter new 6 char. name of in 18?> = in18
Enter new 18 char. descriptor of in 18?> = integer number 18
Enter low limit for in 18?> = 0
Enter high limit for in 18?> = 7

Enter new 6 char. name of in 19?> = in19
Enter new 18 char. descriptor of in 19?> = integer number 19
Enter low limit for in 19?> = 0
Enter high limit for in 19?> = 7

Enter new 6 char. name of in 20?> = in20
Enter new 18 char. descriptor of in 20?> = integer number 20
Enter low limit for in 20?> = 0
Enter high limit for in 20?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 21?> = in21
Enter new 18 char. descriptor of in 21?> = integer number 21
Enter low limit for in 21?> = 0
Enter high limit for in 21?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 22?> = in22
Enter new 18 char. descriptor of in 22?> = integer number 22
Enter low limit for in 22?> = 0
Enter high limit for in 22?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 23?> = in23
Enter new 18 char. descriptor of in 23?> = integer number 23
Enter low limit for in 23?> = 0
Enter high limit for in 23?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 24?> = in24
Enter new 18 char. descriptor of in 24?> = integer number 24
Enter low limit for in 24?> = 0
Enter high limit for in 24?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 25?> = in25
Enter new 18 char. descriptor of in 25?> = integer number 25
Enter low limit for in 25?> = 0
Enter high limit for in 25?> = 100000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of in 26?> = in26
Enter new 18 char. descriptor of in 26?> = integer number 26
Enter low limit for in 26?> = 0
Enter high limit for in 26?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 27?> = in27
Enter new 18 char. descriptor of in 27?> = integer number 27
Enter low limit for in 27?> = 0
Enter high limit for in 27?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 28?> = in28
Enter new 18 char. descriptor of in 28?> = integer number 28
Enter low limit for in 28?> = 0
Enter high limit for in 28?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 29?> = in29
Enter new 18 char. descriptor of in 29?> = integer number 29
Enter low limit for in 29?> = 0
Enter high limit for in 29?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 30?> = in30
Enter new 18 char. descriptor of in 30?> = integer number 30
Enter low limit for in 30?> = 0
Enter high limit for in 30?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 31?> = in31
Enter new 18 char. descriptor of in 31?> = integer number 31
Enter low limit for in 31?> = 0
Enter high limit for in 31?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 32?> = in32
Enter new 18 char. descriptor of in 32?> = integer number 32
Enter low limit for in 32?> = 0
Enter high limit for in 32?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 33?> = in33
Enter new 18 char. descriptor of in 33?> = integer number 33
Enter low limit for in 33?> = 0
Enter high limit for in 33?> = 100000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of in 34?> = in34
Enter new 18 char. descriptor of in 34?> = integer number 34
Enter low limit for in 34?> = 0
Enter high limit for in 34?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 35?> = in35
Enter new 18 char. descriptor of in 35?> = integer number 35
Enter low limit for in 35?> = 0
Enter high limit for in 35?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 36?> = in36
Enter new 18 char. descriptor of in 36?> = integer number 36
Enter low limit for in 36?> = 0
Enter high limit for in 36?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 37?> = in37
Enter new 18 char. descriptor of in 37?> = integer number 37
Enter low limit for in 37?> = 0
Enter high limit for in 37?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 38?> = in38
Enter new 18 char. descriptor of in 38?> = integer number 38
Enter low limit for in 38?> = 0
Enter high limit for in 38?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 39?> = in39
Enter new 18 char. descriptor of in 39?> = integer number 39
Enter low limit for in 39?> = 0
Enter high limit for in 39?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 40?> = imisc1
Enter new 18 char. descriptor of in 40?> = misc1 val1
Enter low limit for in 40?> = 0
Enter high limit for in 40?> = 128

Enter new 6 char. name of in 41?> = imisc2
Enter new 18 char. descriptor of in 41?> = misc2 val2
Enter low limit for in 41?> = 0
Enter high limit for in 41?> = 128

Enter new 6 char. name of in 42?> = adi
Enter new 18 char. descriptor of in 42?> = alm des index
Enter low limit for in 42?> = 0
Enter high limit for in 42?> = 80
```

```
Enter new 6 char. name of in 43?> = lmpvar
Enter new 18 char. descriptor of in 43?> = lamp var
Enter low limit for in 43?> = 0
Enter high limit for in 43?> = 4

Enter new 6 char. name of in 44?> = led0
Enter new 18 char. descriptor of in 44?> = led 0
Enter low limit for in 44?> = 0
Enter high limit for in 44?> = 63

Enter new 6 char. name of in 45?> = led1
Enter new 18 char. descriptor of in 45?> = led 1
Enter low limit for in 45?> = 0
Enter high limit for in 45?> = 63

Enter new 6 char. name of in 46?> = led2
Enter new 18 char. descriptor of in 46?> = led 2
Enter low limit for in 46?> = 0
Enter high limit for in 46?> = 63

Enter new 6 char. name of in 47?> = ispar0
Enter new 18 char. descriptor of in 47?> = spare int 0
Enter low limit for in 47?> = 0
Enter high limit for in 47?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 48?> = ispar1
Enter new 18 char. descriptor of in 48?> = spare int 1
Enter low limit for in 48?> = 0
Enter high limit for in 48?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 49?> = ispar2
Enter new 18 char. descriptor of in 49?> = spare int 2
Enter low limit for in 49?> = 0
Enter high limit for in 49?> = 37000
High limit is less than low - setting high to 32767
MRPF?>  = add 5 st

Enter new 6 char. name of st 0?> = stmr0
Enter new 18 char. descriptor of st 0?> = second timer 0
Enter low limit for st 0?> = 0
Enter high limit for st 0?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 1?> = stmr1
Enter new 18 char. descriptor of st 1?> = second timer 1
Enter low limit for st 1?> = 0
Enter high limit for st 1?> = 300
```

```
Enter new 6 char. name of st 2?> = stmr2
Enter new 18 char. descriptor of st 2?> = second timer 2
Enter low limit for st 2?> = 0
Enter high limit for st 2?> = 255

Enter new 6 char. name of st 3?> = stmr3
Enter new 18 char. descriptor of st 3?> = second timer 3
Enter low limit for st 3?> = 0
Enter high limit for st 3?> = 75

Enter new 6 char. name of st 4?> = stmr4
Enter new 18 char. descriptor of st 4?> = second timer 4
Enter low limit for st 4?> = 0
Enter high limit for st 4?> = 600
MRPF?>  = add 5 sg

Enter new 6 char. name of sg 0?> = note0
Enter new 18 char. descriptor of sg 0?> = total note 0
Enter maximum size for sg 0?> = 30

Enter new 6 char. name of sg 1?> = note1
Enter new 18 char. descriptor of sg 1?> = total note 1
Enter maximum size for sg 1?> = 30

Enter new 6 char. name of sg 2?> = note2
Enter new 18 char. descriptor of sg 2?> = total note 2
Enter maximum size for sg 2?> = 30

Enter new 6 char. name of sg 3?> = note3
Enter new 18 char. descriptor of sg 3?> = total note 3
Enter maximum size for sg 3?> = 30

Enter new 6 char. name of sg 4?> = note4
Enter new 18 char. descriptor of sg 4?> = total note 4
Enter maximum size for sg 4?> = 30
MRPF?>  =
RPF?>
 end of file encountered
RMS?>
 end of file encountered
```

242A

```
RMS Version 6.3-2                    05-Dec-94 09:32:03
RMS?> = rpf de 242a
RPF?> = rpf de 242a
Invalid Command
Open error file SVO:[300,1]U.UPF ,error = -1
Open error file SVO:[300,1]U.UPF ,error = -1
RPF?> = cr 242a,*
MRPF?>  = add 16 fg

Enter new 6 char. name of fg 0?> = flg0
Enter new 18 char. descriptor of fg 0?> = unit flag 0

Enter new 6 char. name of fg 1?> = flg1
Enter new 18 char. descriptor of fg 1?> = unit flag 1

Enter new 6 char. name of fg 2?> = flg2
Enter new 18 char. descriptor of fg 2?> = unit flag 2

Enter new 6 char. name of fg 3?> = flg3
Enter new 18 char. descriptor of fg 3?> = unit flag 3

Enter new 6 char. name of fg 4?> = flg4
Enter new 18 char. descriptor of fg 4?> = unit flag 4

Enter new 6 char. name of fg 5?> = flg5
Enter new 18 char. descriptor of fg 5?> = unit flag 5

Enter new 6 char. name of fg 6?> = flg6
Enter new 18 char. descriptor of fg 6?> = unit flag 6

Enter new 6 char. name of fg 7?> = flg7
Enter new 18 char. descriptor of fg 7?> = unit flag 7

Enter new 6 char. name of fg 8?> = flg8
Enter new 18 char. descriptor of fg 8?> = unit flag 8

Enter new 6 char. name of fg 9?> = flg9
Enter new 18 char. descriptor of fg 9?> = unit flag 9

Enter new 6 char. name of fg 10?> = flg10
Enter new 18 char. descriptor of fg 10?> = unit flag 10

Enter new 6 char. name of fg 11?> = flg11
Enter new 18 char. descriptor of fg 11?> = unit flag 11

Enter new 6 char. name of fg 12?> = flg12
Enter new 18 char. descriptor of fg 12?> = unit flag 12
```

```
Enter new 6 char. name of fg 13?> = flg13
Enter new 18 char. descriptor of fg 13?> = unit flag 13

Enter new 6 char. name of fg 14?> = flg14
Enter new 18 char. descriptor of fg 14?> = unit flag 14

Enter new 6 char. name of fg 15?> = flg15
Enter new 18 char. descriptor of fg 15?> = unit flag 15
MRPF?>  = add 20 fl

Enter new 6 char. name of fl 0?> = wf0
Enter new 18 char. descriptor of fl 0?> = wf float 0
Enter low limit for fl 0?> = 0
Enter high limit for fl 0?> = 100

Enter new 6 char. name of fl 1?> = wf1
Enter new 18 char. descriptor of fl 1?> = wf float 1
Enter low limit for fl 1?> = 0
Enter high limit for fl 1?> = 100

Enter new 6 char. name of fl 2?> = wf2
Enter new 18 char. descriptor of fl 2?> = wf float 2
Enter low limit for fl 2?> = 0
Enter high limit for fl 2?> = 100

Enter new 6 char. name of fl 3?> = wf3
Enter new 18 char. descriptor of fl 3?> = wf float 3
Enter low limit for fl 3?> = 0
Enter high limit for fl 3?> = 100

Enter new 6 char. name of fl 4?> = wf4
Enter new 18 char. descriptor of fl 4?> = wf float 4
Enter low limit for fl 4?> = 0
Enter high limit for fl 4?> = 100

Enter new 6 char. name of fl 5?> = psi0
Enter new 18 char. descriptor of fl 5?> = pressure 0
Enter low limit for fl 5?> = 0
Enter high limit for fl 5?> = 100

Enter new 6 char. name of fl 6?> = psi1
Enter new 18 char. descriptor of fl 6?> = pressure 1
Enter low limit for fl 6?> = 0
Enter high limit for fl 6?> = 100

Enter new 6 char. name of fl 7?> = psi2
Enter new 18 char. descriptor of fl 7?> = pressure 2
Enter low limit for fl 7?> = 0
Enter high limit for fl 7?> = 100
```

```
Enter new 6 char. name of fl 8?> = psi3
Enter new 18 char. descriptor of fl 8?> = pressure 3
Enter low limit for fl 8?> = 0
Enter high limit for fl 8?> = 100

Enter new 6 char. name of fl 9?> = psi4
Enter new 18 char. descriptor of fl 9?> = pressure 4
Enter low limit for fl 9?> = 0
Enter high limit for fl 9?> = 100

Enter new 6 char. name of fl 10?> = di0
Enter new 18 char. descriptor of fl 10?> = density 0
Enter low limit for fl 10?> = 0
Enter high limit for fl 10?> = 100

Enter new 6 char. name of fl 11?> = di1
Enter new 18 char. descriptor of fl 11?> = density 1
Enter low limit for fl 11?> = 0
Enter high limit for fl 11?> = 100

Enter new 6 char. name of fl 12?> = di2
Enter new 18 char. descriptor of fl 12?> = density 2
Enter low limit for fl 12?> = 0
Enter high limit for fl 12?> = 100

Enter new 6 char. name of fl 13?> = di3
Enter new 18 char. descriptor of fl 13?> = density 3
Enter low limit for fl 13?> = 0
Enter high limit for fl 13?> = 100

Enter new 6 char. name of fl 14?> = di4
Enter new 18 char. descriptor of fl 14?> = density 4
Enter low limit for fl 14?> = 0
Enter high limit for fl 14?> = 100

Enter new 6 char. name of fl 15?> = vl0
Enter new 18 char. descriptor of fl 15?> = float spare 0
Enter low limit for fl 15?> = 0
Enter high limit for fl 15?> = 100

Enter new 6 char. name of fl 16?> = vl1
Enter new 18 char. descriptor of fl 16?> = float spare 1
Enter low limit for fl 16?> = 0
Enter high limit for fl 16?> = 100

Enter new 6 char. name of fl 17?> = vl2
Enter new 18 char. descriptor of fl 17?> = float spare 2
Enter low limit for fl 17?> = 0
Enter high limit for fl 17?> = 100
```

```
Enter new 6 char. name of fl 18?> = vl3
Enter new 18 char. descriptor of fl 18?> = float spare 3
Enter low limit for fl 18?> = 0
Enter high limit for fl 18?> = 100

Enter new 6 char. name of fl 19?> = vl4
Enter new 18 char. descriptor of fl 19?> = float spare 4
Enter low limit for fl 19?> = 0
Enter high limit for fl 19?> = 100
MRPF?>  = add 20 in

Enter new 6 char. name of in 0?> = in0
Enter new 18 char. descriptor of in 0?> = integer number 0
Enter low limit for in 0?> = 0
Enter high limit for in 0?> = 1000

Enter new 6 char. name of in 1?> = in1
Enter new 18 char. descriptor of in 1?> = integer number 1
Enter low limit for in 1?> = 0
Enter high limit for in 1?> = 1000

Enter new 6 char. name of in 2?> = in2
Enter new 18 char. descriptor of in 2?> = integer number 2
Enter low limit for in 2?> = 0
Enter high limit for in 2?> = 1000

Enter new 6 char. name of in 3?> = in3
Enter new 18 char. descriptor of in 3?> = integer number 3
Enter low limit for in 3?> = 0
Enter high limit for in 3?> = 1000

Enter new 6 char. name of in 4?> = in4
Enter new 18 char. descriptor of in 4?> = integer number 4
Enter low limit for in 4?> = 0
Enter high limit for in 4?> = 1000

Enter new 6 char. name of in 5?> = in5
Enter new 18 char. descriptor of in 5?> = integer number 5
Enter low limit for in 5?> = 0
Enter high limit for in 5?> = 100

Enter new 6 char. name of in 6?> = in6
Enter new 18 char. descriptor of in 6?> = integer number 6
Enter low limit for in 6?> = 0
Enter high limit for in 6?> = 100

Enter new 6 char. name of in 7?> = in7
Enter new 18 char. descriptor of in 7?> = integer number 7
Enter low limit for in 7?> = 0
Enter high limit for in 7?> = 100
```

```
Enter new 6 char. name of in 8?> = in8
Enter new 18 char. descriptor of in 8?> = integer number 8
Enter low limit for in 8?> = 0
Enter high limit for in 8?> = 100

Enter new 6 char. name of in 9?> = in9
Enter new 18 char. descriptor of in 9?> = integer number 9
Enter low limit for in 9?> = 0
Enter high limit for in 9?> = 100

Enter new 6 char. name of in 10?> = in10
Enter new 18 char. descriptor of in 10?> = integer number 10
Enter low limit for in 10?> = 0
Enter high limit for in 10?> = 7

Enter new 6 char. name of in 11?> = in11
Enter new 18 char. descriptor of in 11?> = integer number 11
Enter low limit for in 11?> = 0
Enter high limit for in 11?> = 7

Enter new 6 char. name of in 12?> = in12
Enter new 18 char. descriptor of in 12?> = integer number 12
Enter low limit for in 12?> = 0
Enter high limit for in 12?> = 7

Enter new 6 char. name of in 13?> = in13
Enter new 18 char. descriptor of in 13?> = integer number 13
Enter low limit for in 13?> = 0
Enter high limit for in 13?> = 7

Enter new 6 char. name of in 14?> = in14
Enter new 18 char. descriptor of in 14?> = integer number 14
Enter low limit for in 14?> = 0
Enter high limit for in 14?> = 7

Enter new 6 char. name of in 15?> = in15
Enter new 18 char. descriptor of in 15?> = integer number 15
Enter low limit for in 15?> = 0
Enter high limit for in 15?> = 7

Enter new 6 char. name of in 16?> = in16
Enter new 18 char. descriptor of in 16?> = integer number 16
Enter low limit for in 16?> = 0
Enter high limit for in 16?> = 7

Enter new 6 char. name of in 17?> = in17
Enter new 18 char. descriptor of in 17?> = integer number 17
Enter low limit for in 17?> = 0
Enter high limit for in 17?> = 7
```

```
Enter new 6 char. name of in 18?> = in18
Enter new 18 char. descriptor of in 18?> = integer number 18
Enter low limit for in 18?> = 0
Enter high limit for in 18?> = 7

Enter new 6 char. name of in 19?> = in19
Enter new 18 char. descriptor of in 19?> = integer number 19
Enter low limit for in 19?> = 0
Enter high limit for in 19?> = 7
MRPF?>  = add 8 st

Enter new 6 char. name of st 0?> = minst
Enter new 18 char. descriptor of st 0?> = one minute timer
Enter low limit for st 0?> = 0
Enter high limit for st 0?> = 60

Enter new 6 char. name of st 1?> = fivest
Enter new 18 char. descriptor of st 1?> = five minute timer
Enter low limit for st 1?> = 0
Enter high limit for st 1?> = 300

Enter new 6 char. name of st 2?> = tenst
Enter new 18 char. descriptor of st 2?> = ten minute timer
Enter low limit for st 2?> = 0
Enter high limit for st 2?> = 600

Enter new 6 char. name of st 3?> = pigtmr
Enter new 18 char. descriptor of st 3?> = rc pig timer
Enter low limit for st 3?> = 0
Enter high limit for st 3?> = 255

Enter new 6 char. name of st 4?> = ostmr
Enter new 18 char. descriptor of st 4?> = one shot timer
Enter low limit for st 4?> = 0
Enter high limit for st 4?> = 75

Enter new 6 char. name of st 5?> = stime0
Enter new 18 char. descriptor of st 5?> = pgm error timer
Enter low limit for st 5?> = 0
Enter high limit for st 5?> = 10000

Enter new 6 char. name of st 6?> = stime1
Enter new 18 char. descriptor of st 6?> = pgm utility timer
Enter low limit for st 6?> = 0
Enter high limit for st 6?> = 10000

Enter new 6 char. name of st 7?> = sprtmr
Enter new 18 char. descriptor of st 7?> = spare sec timer
Enter low limit for st 7?> = 0
Enter high limit for st 7?> = 10000
```

```
MRPF?>  = add 5 sg

Enter new 6 char. name of sg 0?> = note0
Enter new 18 char. descriptor of sg 0?> = total note 0
Enter maximum size for sg 0?> = 30

Enter new 6 char. name of sg 1?> = note1
Enter new 18 char. descriptor of sg 1?> = total note 1
Enter maximum size for sg 1?> = 30

Enter new 6 char. name of sg 2?> = note2
Enter new 18 char. descriptor of sg 2?> = total note 2
Enter maximum size for sg 2?> = 30

Enter new 6 char. name of sg 3?> = note3
Enter new 18 char. descriptor of sg 3?> = total note 3
Enter maximum size for sg 3?> = 30

Enter new 6 char. name of sg 4?> = note4
Enter new 18 char. descriptor of sg 4?> = total note 4
Enter maximum size for sg 4?> = 30
MRPF?>  =
RPF?>
 end of file encountered
RMS?>
 end of file encountered
```

ALL1

```
RMS Version 6.3-2                    05-Dec-94 09:33:03
RMS?> = rpf de all
RPF?> = rpf de all
Invalid Command
Open error file SVO:[300,1]U.UPF ,error = -1
RPF?> = cr all,*
MRPF?>  = add 25 fl

Enter new 6 char. name of fl 0?> = val0
Enter new 18 char. descriptor of fl 0?> = value number 0
Enter low limit for fl 0?> = 0
Enter high limit for fl 0?> = 10000

Enter new 6 char. name of fl 1?> = val1
Enter new 18 char. descriptor of fl 1?> = value number 1
Enter low limit for fl 1?> = 0
Enter high limit for fl 1?> = 10000

Enter new 6 char. name of fl 2?> = val2
Enter new 18 char. descriptor of fl 2?> = value number 2
Enter low limit for fl 2?> = 0
Enter high limit for fl 2?> = 10000

Enter new 6 char. name of fl 3?> = val3
Enter new 18 char. descriptor of fl 3?> = value number 3
Enter low limit for fl 3?> = 0
Enter high limit for fl 3?> = 10000

Enter new 6 char. name of fl 4?> = val4
Enter new 18 char. descriptor of fl 4?> = value number 4
Enter low limit for fl 4?> = 0
Enter high limit for fl 4?> = 10000

Enter new 6 char. name of fl 5?> = val5
Enter new 18 char. descriptor of fl 5?> = value number 5
Enter low limit for fl 5?> = 0
Enter high limit for fl 5?> = 10000

Enter new 6 char. name of fl 6?> = val6
Enter new 18 char. descriptor of fl 6?> = value number 6
Enter low limit for fl 6?> = 0
Enter high limit for fl 6?> = 10000

Enter new 6 char. name of fl 7?> = val7
Enter new 18 char. descriptor of fl 7?> = value number 7
Enter low limit for fl 7?> = 0
Enter high limit for fl 7?> = 10000
```

```
Enter new 6 char. name of fl 8?> = val8
Enter new 18 char. descriptor of fl 8?> = value number 8
Enter low limit for fl 8?> = 0
Enter high limit for fl 8?> = 10000

Enter new 6 char. name of fl 9?> = val9
Enter new 18 char. descriptor of fl 9?> = value number 9
Enter low limit for fl 9?> = 0
Enter high limit for fl 9?> = 10000

Enter new 6 char. name of fl 10?> = val10
Enter new 18 char. descriptor of fl 10?> = value number 10
Enter low limit for fl 10?> = 0
Enter high limit for fl 10?> = 10000

Enter new 6 char. name of fl 11?> = val11
Enter new 18 char. descriptor of fl 11?> = value number 11
Enter low limit for fl 11?> = 0
Enter high limit for fl 11?> = 10000

Enter new 6 char. name of fl 12?> = val12
Enter new 18 char. descriptor of fl 12?> = value number 12
Enter low limit for fl 12?> = 0
Enter high limit for fl 12?> = 10000

Enter new 6 char. name of fl 13?> = val13
Enter new 18 char. descriptor of fl 13?> = value number 13
Enter low limit for fl 13?> = 0
Enter high limit for fl 13?> = 10000

Enter new 6 char. name of fl 14?> = val14
Enter new 18 char. descriptor of fl 14?> = value number 14
Enter low limit for fl 14?> = 0
Enter high limit for fl 14?> = 10000

Enter new 6 char. name of fl 15?> = val15
Enter new 18 char. descriptor of fl 15?> = value number 15
Enter low limit for fl 15?> = 0
Enter high limit for fl 15?> = 10000

Enter new 6 char. name of fl 16?> = val16
Enter new 18 char. descriptor of fl 16?> = value number 16
Enter low limit for fl 16?> = 0
Enter high limit for fl 16?> = 10000

Enter new 6 char. name of fl 17?> = val17
Enter new 18 char. descriptor of fl 17?> = value number 17
Enter low limit for fl 17?> = 0
Enter high limit for fl 17?> = 10000
```

```
Enter new 6 char. name of fl 18?> = val18
Enter new 18 char. descriptor of fl 18?> = value number 18
Enter low limit for fl 18?> = 0
Enter high limit for fl 18?> = 10000

Enter new 6 char. name of fl 19?> = val19
Enter new 18 char. descriptor of fl 19?> = value number 19
Enter low limit for fl 19?> = 0
Enter high limit for fl 19?> = 10000

Enter new 6 char. name of fl 20?> = val20
Enter new 18 char. descriptor of fl 20?> = value number 20
Enter low limit for fl 20?> = 0
Enter high limit for fl 20?> = 10000

Enter new 6 char. name of fl 21?> = val21
Enter new 18 char. descriptor of fl 21?> = value number 21
Enter low limit for fl 21?> = 0
Enter high limit for fl 21?> = 10000

Enter new 6 char. name of fl 22?> = val22
Enter new 18 char. descriptor of fl 22?> = value number 22
Enter low limit for fl 22?> = 0
Enter high limit for fl 22?> = 10000

Enter new 6 char. name of fl 23?> = val23
Enter new 18 char. descriptor of fl 23?> = value number 23
Enter low limit for fl 23?> = 0
Enter high limit for fl 23?> = 10000

Enter new 6 char. name of fl 24?> = val24
Enter new 18 char. descriptor of fl 24?> = value number 24
Enter low limit for fl 24?> = 0
Enter high limit for fl 24?> = 10000
MRPF?>  = add 50 in

Enter new 6 char. name of in 0?> = in0
Enter new 18 char. descriptor of in 0?> = integer number 0
Enter low limit for in 0?> = 0
Enter high limit for in 0?> = 7

Enter new 6 char. name of in 1?> = in1
Enter new 18 char. descriptor of in 1?> = integer number 1
Enter low limit for in 1?> = 0
Enter high limit for in 1?> = 7

Enter new 6 char. name of in 2?> = in2
Enter new 18 char. descriptor of in 2?> = integer number 2
Enter low limit for in 2?> = 0
Enter high limit for in 2?> = 7
```

```
Enter new 6 char. name of in 3?> = in3
Enter new 18 char. descriptor of in 3?> = integer number 3
Enter low limit for in 3?> = 0
Enter high limit for in 3?> = 7

Enter new 6 char. name of in 4?> = in4
Enter new 18 char. descriptor of in 4?> = integer number 4
Enter low limit for in 4?> = 0
Enter high limit for in 4?> = 7

Enter new 6 char. name of in 5?> = in5
Enter new 18 char. descriptor of in 5?> = integer number 5
Enter low limit for in 5?> = 0
Enter high limit for in 5?> = 7

Enter new 6 char. name of in 6?> = in6
Enter new 18 char. descriptor of in 6?> = integer number 6
Enter low limit for in 6?> = 0
Enter high limit for in 6?> = 7

Enter new 6 char. name of in 7?> = in7
Enter new 18 char. descriptor of in 7?> = integer number 7
Enter low limit for in 7?> = 0
Enter high limit for in 7?> = 7

Enter new 6 char. name of in 8?> = in8
Enter new 18 char. descriptor of in 8?> = integer number 8
Enter low limit for in 8?> = 0
Enter high limit for in 8?> = 7

Enter new 6 char. name of in 9?> = in9
Enter new 18 char. descriptor of in 9?> = integer number 9
Enter low limit for in 9?> = 0
Enter high limit for in 9?> = 7

Enter new 6 char. name of in 10?> = in10
Enter new 18 char. descriptor of in 10?> = integer number 10
Enter low limit for in 10?> = 0
Enter high limit for in 10?> = 7

Enter new 6 char. name of in 11?> = in11
Enter new 18 char. descriptor of in 11?> = integer number 11
Enter low limit for in 11?> = 0
Enter high limit for in 11?> = 7

Enter new 6 char. name of in 12?> = in12
Enter new 18 char. descriptor of in 12?> = integer number 12
Enter low limit for in 12?> = 0
Enter high limit for in 12?> = 7
```

```
Enter new 6 char. name of in 13?> = in13
Enter new 18 char. descriptor of in 13?> = integer number 13
Enter low limit for in 13?> = 0
Enter high limit for in 13?> = 7

Enter new 6 char. name of in 14?> = in14
Enter new 18 char. descriptor of in 14?> = integer number 14
Enter low limit for in 14?> = 0
Enter high limit for in 14?> = 7

Enter new 6 char. name of in 15?> = in15
Enter new 18 char. descriptor of in 15?> = integer number 15
Enter low limit for in 15?> = 0
Enter high limit for in 15?> = 7

Enter new 6 char. name of in 16?> = in16
Enter new 18 char. descriptor of in 16?> = integer number 16
Enter low limit for in 16?> = 0
Enter high limit for in 16?> = 7

Enter new 6 char. name of in 17?> = in17
Enter new 18 char. descriptor of in 17?> = integer number 17
Enter low limit for in 17?> = 0
Enter high limit for in 17?> = 7

Enter new 6 char. name of in 18?> = in18
Enter new 18 char. descriptor of in 18?> = integer number 18
Enter low limit for in 18?> = 0
Enter high limit for in 18?> = 7

Enter new 6 char. name of in 19?> = in19
Enter new 18 char. descriptor of in 19?> = integer number 19
Enter low limit for in 19?> = 0
Enter high limit for in 19?> = 7

Enter new 6 char. name of in 20?> = in20
Enter new 18 char. descriptor of in 20?> = integer number 20
Enter low limit for in 20?> = 0
Enter high limit for in 20?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 21?> = in21
Enter new 18 char. descriptor of in 21?> = integer number 21
Enter low limit for in 21?> = 0
Enter high limit for in 21?> = 100000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of in 22?> = in22
Enter new 18 char. descriptor of in 22?> = integer number 22
Enter low limit for in 22?> = 0
Enter high limit for in 22?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 23?> = in23
Enter new 18 char. descriptor of in 23?> = integer number 23
Enter low limit for in 23?> = 0
Enter high limit for in 23?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 24?> = in24
Enter new 18 char. descriptor of in 24?> = integer number 24
Enter low limit for in 24?> = 0
Enter high limit for in 24?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 25?> = in25
Enter new 18 char. descriptor of in 25?> = integer number 25
Enter low limit for in 25?> = 0
Enter high limit for in 25?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 26?> = in26
Enter new 18 char. descriptor of in 26?> = integer number 26
Enter low limit for in 26?> = 0
Enter high limit for in 26?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 27?> = in27
Enter new 18 char. descriptor of in 27?> = integer number 27
Enter low limit for in 27?> = 0
Enter high limit for in 27?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 28?> = in28
Enter new 18 char. descriptor of in 28?> = integer number 28
Enter low limit for in 28?> = 0
Enter high limit for in 28?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 29?> = in29
Enter new 18 char. descriptor of in 29?> = integer number 29
Enter low limit for in 29?> = 0
Enter high limit for in 29?> = 100000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of in 30?> = in30
Enter new 18 char. descriptor of in 30?> = integer number 30
Enter low limit for in 30?> = 0
Enter high limit for in 30?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 31?> = in31
Enter new 18 char. descriptor of in 31?> = integer number 31
Enter low limit for in 31?> = 0
Enter high limit for in 31?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 32?> = in32
Enter new 18 char. descriptor of in 32?> = integer number 32
Enter low limit for in 32?> = 0
Enter high limit for in 32?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 33?> = in33
Enter new 18 char. descriptor of in 33?> = integer number 33
Enter low limit for in 33?> = 0
Enter high limit for in 33?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 34?> = in34
Enter new 18 char. descriptor of in 34?> = integer number 34
Enter low limit for in 34?> = 0
Enter high limit for in 34?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 35?> = in35
Enter new 18 char. descriptor of in 35?> = integer number 35
Enter low limit for in 35?> = 0
Enter high limit for in 35?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 36?> = in36
Enter new 18 char. descriptor of in 36?> = integer number 36
Enter low limit for in 36?> = 0
Enter high limit for in 36?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 37?> = in37
Enter new 18 char. descriptor of in 37?> = integer number 37
Enter low limit for in 37?> = 0
Enter high limit for in 37?> = 100000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of in 38?> = in38
Enter new 18 char. descriptor of in 38?> = integer number 38
Enter low limit for in 38?> = 0
Enter high limit for in 38?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 39?> = in39
Enter new 18 char. descriptor of in 39?> = integer number 39
Enter low limit for in 39?> = 0
Enter high limit for in 39?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 40?> = imisc1
Enter new 18 char. descriptor of in 40?> = misc1 val1
Enter low limit for in 40?> = 0
Enter high limit for in 40?> = 128

Enter new 6 char. name of in 41?> = imisc2
Enter new 18 char. descriptor of in 41?> = misc2 val2
Enter low limit for in 41?> = 0
Enter high limit for in 41?> = 128

Enter new 6 char. name of in 42?> = adi
Enter new 18 char. descriptor of in 42?> = alm des index
Enter low limit for in 42?> = 0
Enter high limit for in 42?> = 80

Enter new 6 char. name of in 43?> = lmpvar
Enter new 18 char. descriptor of in 43?> = lamp var
Enter low limit for in 43?> = 0
Enter high limit for in 43?> = 4

Enter new 6 char. name of in 44?> = led0
Enter new 18 char. descriptor of in 44?> = led 0
Enter low limit for in 44?> = 0
Enter high limit for in 44?> = 63

Enter new 6 char. name of in 45?> = led1
Enter new 18 char. descriptor of in 45?> = led 1
Enter low limit for in 45?> = 0
Enter high limit for in 45?> = 63

Enter new 6 char. name of in 46?> = led2
Enter new 18 char. descriptor of in 46?> = led 2
Enter low limit for in 46?> = 0
Enter high limit for in 46?> = 63
```

```
Enter new 6 char. name of in 47?> = ispar0
Enter new 18 char. descriptor of in 47?> = spare int 0
Enter low limit for in 47?> = 0
Enter high limit for in 47?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 48?> = ispar1
Enter new 18 char. descriptor of in 48?> = spare int 1
Enter low limit for in 48?> = 0
Enter high limit for in 48?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 49?> = ispar2
Enter new 18 char. descriptor of in 49?> = spare int 2
Enter low limit for in 49?> = 0
Enter high limit for in 49?> = 37000
High limit is less than low - setting high to 32767
MRPF?>  = add 5 st

Enter new 6 char. name of st 0?> = stmr0
Enter new 18 char. descriptor of st 0?> = second timer 0
Enter low limit for st 0?> = 0
Enter high limit for st 0?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 1?> = stmr1
Enter new 18 char. descriptor of st 1?> = second timer 1
Enter low limit for st 1?> = 0
Enter high limit for st 1?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 2?> = stmr2
Enter new 18 char. descriptor of st 2?> = second timer 2
Enter low limit for st 2?> = 0
Enter high limit for st 2?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 3?> = stmr3
Enter new 18 char. descriptor of st 3?> = second timer 3
Enter low limit for st 3?> = 0
Enter high limit for st 3?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 4?> = stmr4
Enter new 18 char. descriptor of st 4?> = second timer 4
Enter low limit for st 4?> = 0
Enter high limit for st 4?> = 37000
High limit is less than low - setting high to 32767
MRPF?>  = add 5 mt
```

```
Enter new 6 char. name of mt 0?> = mtmr0
Enter new 18 char. descriptor of mt 0?> = minute timer 0
Enter low limit for mt 0?> = 0
Enter high limit for mt 0?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 1?> = mtmr1
Enter new 18 char. descriptor of mt 1?> = minute timer 1
Enter low limit for mt 1?> = 0
Enter high limit for mt 1?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 2?> = mtmr2
Enter new 18 char. descriptor of mt 2?> = minute timer 2
Enter low limit for mt 2?> = 0
Enter high limit for mt 2?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 3?> = mtmr3
Enter new 18 char. descriptor of mt 3?> = minute timer 3
Enter low limit for mt 3?> = 0
Enter high limit for mt 3?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 4?> = mtmr4
Enter new 18 char. descriptor of mt 4?> = minute timer 4
Enter low limit for mt 4?> = 0
Enter high limit for mt 4?> = 37000
High limit is less than low - setting high to 32767
MRPF?>
 end of file encountered
RPF?>
 end of file encountered
RMS?>
 end of file encountered
```

FARM

```
RMS Version 6.3-2                    05-Dec-94 09:32:21
RMS?> = rpf de farm
RPF?> = rpf de farm
RPF?> = cr farm,*
MRPF?>  = add 20 fl

Enter new 6 char. name of fl 0?> = val0
Enter new 18 char. descriptor of fl 0?> = value number 0
Enter low limit for fl 0?> = 0
Enter high limit for fl 0?> = 10000

Enter new 6 char. name of fl 1?> = val1
Enter new 18 char. descriptor of fl 1?> = value number 1
Enter low limit for fl 1?> = 0
Enter high limit for fl 1?> = 10000

Enter new 6 char. name of fl 2?> = val2
Enter new 18 char. descriptor of fl 2?> = value number 2
Enter low limit for fl 2?> = 0
Enter high limit for fl 2?> = 10000

Enter new 6 char. name of fl 3?> = val3
Enter new 18 char. descriptor of fl 3?> = value number 3
Enter low limit for fl 3?> = 0
Enter high limit for fl 3?> = 10000

Enter new 6 char. name of fl 4?> = val4
Enter new 18 char. descriptor of fl 4?> = value number 4
Enter low limit for fl 4?> = 0
Enter high limit for fl 4?> = 10000

Enter new 6 char. name of fl 5?> = val5
Enter new 18 char. descriptor of fl 5?> = value number 5
Enter low limit for fl 5?> = 0
Enter high limit for fl 5?> = 10000

Enter new 6 char. name of fl 6?> = val6
Enter new 18 char. descriptor of fl 6?> = value number 6
Enter low limit for fl 6?> = 0
Enter high limit for fl 6?> = 10000

Enter new 6 char. name of fl 7?> = val7
Enter new 18 char. descriptor of fl 7?> = value number 7
Enter low limit for fl 7?> = 0
Enter high limit for fl 7?> = 10000

Enter new 6 char. name of fl 8?> = val8
Enter new 18 char. descriptor of fl 8?> = value number 8
Enter low limit for fl 8?> = 0
Enter high limit for fl 8?> = 10000
```

```
Enter new 6 char. name of fl 9?> = val9
Enter new 18 char. descriptor of fl 9?> = value number 9
Enter low limit for fl 9?> = 0
Enter high limit for fl 9?> = 10000

Enter new 6 char. name of fl 10?> = val10
Enter new 18 char. descriptor of fl 10?> = value number 10
Enter low limit for fl 10?> = 0
Enter high limit for fl 10?> = 10000

Enter new 6 char. name of fl 11?> = val11
Enter new 18 char. descriptor of fl 11?> = value number 11
Enter low limit for fl 11?> = 0
Enter high limit for fl 11?> = 10000

Enter new 6 char. name of fl 12?> = val12
Enter new 18 char. descriptor of fl 12?> = value number 12
Enter low limit for fl 12?> = 0
Enter high limit for fl 12?> = 10000

Enter new 6 char. name of fl 13?> = val13
Enter new 18 char. descriptor of fl 13?> = value number 13
Enter low limit for fl 13?> = 0
Enter high limit for fl 13?> = 10000

Enter new 6 char. name of fl 14?> = val14
Enter new 18 char. descriptor of fl 14?> = value number 14
Enter low limit for fl 14?> = 0
Enter high limit for fl 14?> = 10000

Enter new 6 char. name of fl 15?> = val15
Enter new 18 char. descriptor of fl 15?> = value number 15
Enter low limit for fl 15?> = 0
Enter high limit for fl 15?> = 10000

Enter new 6 char. name of fl 16?> = val16
Enter new 18 char. descriptor of fl 16?> = value number 16
Enter low limit for fl 16?> = 0
Enter high limit for fl 16?> = 10000

Enter new 6 char. name of fl 17?> = val17
Enter new 18 char. descriptor of fl 17?> = value number 17
Enter low limit for fl 17?> = 0
Enter high limit for fl 17?> = 10000

Enter new 6 char. name of fl 18?> = val18
Enter new 18 char. descriptor of fl 18?> = value number 18
Enter low limit for fl 18?> = 0
Enter high limit for fl 18?> = 10000
```

```
Enter new 6 char. name of fl 19?> = val19
Enter new 18 char. descriptor of fl 19?> = value number 19
Enter low limit for fl 19?> = 0
Enter high limit for fl 19?> = 10000
MRPF?>  = add 35 in

Enter new 6 char. name of in 0?> = in0
Enter new 18 char. descriptor of in 0?> = integer number 0
Enter low limit for in 0?> = 0
Enter high limit for in 0?> = 7

Enter new 6 char. name of in 1?> = in1
Enter new 18 char. descriptor of in 1?> = integer number 1
Enter low limit for in 1?> = 0
Enter high limit for in 1?> = 7

Enter new 6 char. name of in 2?> = in2
Enter new 18 char. descriptor of in 2?> = integer number 2
Enter low limit for in 2?> = 0
Enter high limit for in 2?> = 7

Enter new 6 char. name of in 3?> = in3
Enter new 18 char. descriptor of in 3?> = integer number 3
Enter low limit for in 3?> = 0
Enter high limit for in 3?> = 7

Enter new 6 char. name of in 4?> = in4
Enter new 18 char. descriptor of in 4?> = integer number 4
Enter low limit for in 4?> = 0
Enter high limit for in 4?> = 7

Enter new 6 char. name of in 5?> = in5
Enter new 18 char. descriptor of in 5?> = integer number 5
Enter low limit for in 5?> = 0
Enter high limit for in 5?> = 7

Enter new 6 char. name of in 6?> = in6
Enter new 18 char. descriptor of in 6?> = integer number 6
Enter low limit for in 6?> = 0
Enter high limit for in 6?> = 7

Enter new 6 char. name of in 7?> = in7
Enter new 18 char. descriptor of in 7?> = integer number 7
Enter low limit for in 7?> = 0
Enter high limit for in 7?> = 7

Enter new 6 char. name of in 8?> = in8
Enter new 18 char. descriptor of in 8?> = integer number 8
Enter low limit for in 8?> = 0
Enter high limit for in 8?> = 7
```

```
Enter new 6 char. name of in 9?> = in9
Enter new 18 char. descriptor of in 9?> = integer number 9
Enter low limit for in 9?> = 0
Enter high limit for in 9?> = 7

Enter new 6 char. name of in 10?> = in10
Enter new 18 char. descriptor of in 10?> = integer number 10
Enter low limit for in 10?> = 0
Enter high limit for in 10?> = 7

Enter new 6 char. name of in 11?> = in11
Enter new 18 char. descriptor of in 11?> = integer number 11
Enter low limit for in 11?> = 0
Enter high limit for in 11?> = 7

Enter new 6 char. name of in 12?> = in12
Enter new 18 char. descriptor of in 12?> = integer number 12
Enter low limit for in 12?> = 0
Enter high limit for in 12?> = 7

Enter new 6 char. name of in 13?> = in13
Enter new 18 char. descriptor of in 13?> = integer number 13
Enter low limit for in 13?> = 0
Enter high limit for in 13?> = 7

Enter new 6 char. name of in 14?> = in14
Enter new 18 char. descriptor of in 14?> = integer number 14
Enter low limit for in 14?> = 0
Enter high limit for in 14?> = 7

Enter new 6 char. name of in 15?> = in15
Enter new 18 char. descriptor of in 15?> = integer number 15
Enter low limit for in 15?> = 0
Enter high limit for in 15?> = 7

Enter new 6 char. name of in 16?> = in16
Enter new 18 char. descriptor of in 16?> = integer number 16
Enter low limit for in 16?> = 0
Enter high limit for in 16?> = 7

Enter new 6 char. name of in 17?> = in17
Enter new 18 char. descriptor of in 17?> = integer number 17
Enter low limit for in 17?> = 0
Enter high limit for in 17?> = 7

Enter new 6 char. name of in 18?> = in18
Enter new 18 char. descriptor of in 18?> = integer number 18
Enter low limit for in 18?> = 0
Enter high limit for in 18?> = 7
```

```
Enter new 6 char. name of in 19?> = in19
Enter new 18 char. descriptor of in 19?> = integer number 19
Enter low limit for in 19?> = 0
Enter high limit for in 19?> = 7

Enter new 6 char. name of in 20?> = in20
Enter new 18 char. descriptor of in 20?> = integer number 20
Enter low limit for in 20?> = 0
Enter high limit for in 20?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 21?> = in21
Enter new 18 char. descriptor of in 21?> = integer number 21
Enter low limit for in 21?> = 0
Enter high limit for in 21?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 22?> = in22
Enter new 18 char. descriptor of in 22?> = integer number 22
Enter low limit for in 22?> = 0
Enter high limit for in 22?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 23?> = in23
Enter new 18 char. descriptor of in 23?> = integer number 23
Enter low limit for in 23?> = 0
Enter high limit for in 23?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 24?> = in24
Enter new 18 char. descriptor of in 24?> = integer number 24
Enter low limit for in 24?> = 0
Enter high limit for in 24?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 25?> = imisc1
Enter new 18 char. descriptor of in 25?> = misc1 val1
Enter low limit for in 25?> = 0
Enter high limit for in 25?> = 128

Enter new 6 char. name of in 26?> = imisc2
Enter new 18 char. descriptor of in 26?> = misc2 val2
Enter low limit for in 26?> = 0
Enter high limit for in 26?> = 128

Enter new 6 char. name of in 27?> = adi
Enter new 18 char. descriptor of in 27?> = alm des index
Enter low limit for in 27?> = 0
Enter high limit for in 27?> = 80
```

```
Enter new 6 char. name of in 28?> = lmpvar
Enter new 18 char. descriptor of in 28?> = lamp var
Enter low limit for in 28?> = 0
Enter high limit for in 28?> = 4

Enter new 6 char. name of in 29?> = led0
Enter new 18 char. descriptor of in 29?> = led 0
Enter low limit for in 29?> = 0
Enter high limit for in 29?> = 63

Enter new 6 char. name of in 30?> = led1
Enter new 18 char. descriptor of in 30?> = led 1
Enter low limit for in 30?> = 0
Enter high limit for in 30?> = 63

Enter new 6 char. name of in 31?> = led2
Enter new 18 char. descriptor of in 31?> = led 2
Enter low limit for in 31?> = 0
Enter high limit for in 31?> = 63

Enter new 6 char. name of in 32?> = ispar0
Enter new 18 char. descriptor of in 32?> = spare int 0
Enter low limit for in 32?> = 0
Enter high limit for in 32?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 33?> = ispar1
Enter new 18 char. descriptor of in 33?> = spare int 1
Enter low limit for in 33?> = 0
Enter high limit for in 33?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 34?> = ispar2
Enter new 18 char. descriptor of in 34?> = spare int 2
Enter low limit for in 34?> = 0
Enter high limit for in 34?> = 37000
High limit is less than low - setting high to 32767
MRPF?>  = add 5 st

Enter new 6 char. name of st 0?> = stmr0
Enter new 18 char. descriptor of st 0?> = second timer 0
Enter low limit for st 0?> = 0
Enter high limit for st 0?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 1?> = stmr1
Enter new 18 char. descriptor of st 1?> = second timer 1
Enter low limit for st 1?> = 0
Enter high limit for st 1?> = 37000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of st 2?> = stmr2
Enter new 18 char. descriptor of st 2?> = second timer 2
Enter low limit for st 2?> = 0
Enter high limit for st 2?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 3?> = stmr3
Enter new 18 char. descriptor of st 3?> = second timer 3
Enter low limit for st 3?> = 0
Enter high limit for st 3?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 4?> = stmr4
Enter new 18 char. descriptor of st 4?> = second timer 4
Enter low limit for st 4?> = 0
Enter high limit for st 4?> = 37000
High limit is less than low - setting high to 32767
MRPF?>  = add 5 mt

Enter new 6 char. name of mt 0?> = mtmr0
Enter new 18 char. descriptor of mt 0?> = minute timer 0
Enter low limit for mt 0?> = 0
Enter high limit for mt 0?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 1?> = mtmr1
Enter new 18 char. descriptor of mt 1?> = minute timer 1
Enter low limit for mt 1?> = 0
Enter high limit for mt 1?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 2?> = mtmr2
Enter new 18 char. descriptor of mt 2?> = minute timer 2
Enter low limit for mt 2?> = 0
Enter high limit for mt 2?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 3?> = mtmr3
Enter new 18 char. descriptor of mt 3?> = minute timer 3
Enter low limit for mt 3?> = 0
Enter high limit for mt 3?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 4?> = mtmr4
Enter new 18 char. descriptor of mt 4?> = minute timer 4
Enter low limit for mt 4?> = 0
Enter high limit for mt 4?> = 37000
High limit is less than low - setting high to 32767
MRPF?>  = add 5 sg
```

```
Enter new 6 char. name of sg 0?> = note0
Enter new 18 char. descriptor of sg 0?> = recipe string 0
Enter maximum size for sg 0?> = 20

Enter new 6 char. name of sg 1?> = note1
Enter new 18 char. descriptor of sg 1?> = recipe string 1
Enter maximum size for sg 1?> = 20

Enter new 6 char. name of sg 2?> = note2
Enter new 18 char. descriptor of sg 2?> = recipe string 2
Enter maximum size for sg 2?> = 20

Enter new 6 char. name of sg 3?> = note3
Enter new 18 char. descriptor of sg 3?> = recipe string 3
Enter maximum size for sg 3?> = 20

Enter new 6 char. name of sg 4?> = note4
Enter new 18 char. descriptor of sg 4?> = recipe string 4
Enter maximum size for sg 4?> = 20
MRPF?>
 end of file encountered
RPF?>
 end of file encountered
RMS?>
 end of file encountered
```

EMTY

```
RMS Version 6.3-2                    05-Dec-94 09:32:42
RMS?> = rpf de emty
RPF?> = rpf de emty
Invalid Command
Open error file SV0:[300,1]U.UPF ,error = -1
RPF?> = cr emty,*
MRPF?>  = add 25 fl

Enter new 6 char. name of fl 0?> = val0
Enter new 18 char. descriptor of fl 0?> = value number 0
Enter low limit for fl 0?> = 0
Enter high limit for fl 0?> = 10000

Enter new 6 char. name of fl 1?> = val1
Enter new 18 char. descriptor of fl 1?> = value number 1
Enter low limit for fl 1?> = 0
Enter high limit for fl 1?> = 10000

Enter new 6 char. name of fl 2?> = val2
Enter new 18 char. descriptor of fl 2?> = value number 2
Enter low limit for fl 2?> = 0
Enter high limit for fl 2?> = 10000

Enter new 6 char. name of fl 3?> = val3
Enter new 18 char. descriptor of fl 3?> = value number 3
Enter low limit for fl 3?> = 0
Enter high limit for fl 3?> = 10000

Enter new 6 char. name of fl 4?> = val4
Enter new 18 char. descriptor of fl 4?> = value number 4
Enter low limit for fl 4?> = 0
Enter high limit for fl 4?> = 10000

Enter new 6 char. name of fl 5?> = val5
Enter new 18 char. descriptor of fl 5?> = value number 5
Enter low limit for fl 5?> = 0
Enter high limit for fl 5?> = 10000

Enter new 6 char. name of fl 6?> = val6
Enter new 18 char. descriptor of fl 6?> = value number 6
Enter low limit for fl 6?> = 0
Enter high limit for fl 6?> = 10000

Enter new 6 char. name of fl 7?> = val7
Enter new 18 char. descriptor of fl 7?> = value number 7
Enter low limit for fl 7?> = 0
Enter high limit for fl 7?> = 10000
```

```
Enter new 6 char. name of fl 8?> = val8
Enter new 18 char. descriptor of fl 8?> = value number 8
Enter low limit for fl 8?> = 0
Enter high limit for fl 8?> = 10000

Enter new 6 char. name of fl 9?> = val9
Enter new 18 char. descriptor of fl 9?> = value number 9
Enter low limit for fl 9?> = 0
Enter high limit for fl 9?> = 10000

Enter new 6 char. name of fl 10?> = val10
Enter new 18 char. descriptor of fl 10?> = value number 10
Enter low limit for fl 10?> = 0
Enter high limit for fl 10?> = 10000

Enter new 6 char. name of fl 11?> = val11
Enter new 18 char. descriptor of fl 11?> = value number 11
Enter low limit for fl 11?> = 0
Enter high limit for fl 11?> = 10000

Enter new 6 char. name of fl 12?> = val12
Enter new 18 char. descriptor of fl 12?> = value number 12
Enter low limit for fl 12?> = 0
Enter high limit for fl 12?> = 10000

Enter new 6 char. name of fl 13?> = val13
Enter new 18 char. descriptor of fl 13?> = value number 13
Enter low limit for fl 13?> = 0
Enter high limit for fl 13?> = 10000

Enter new 6 char. name of fl 14?> = val14
Enter new 18 char. descriptor of fl 14?> = value number 14
Enter low limit for fl 14?> = 0
Enter high limit for fl 14?> = 10000

Enter new 6 char. name of fl 15?> = val15
Enter new 18 char. descriptor of fl 15?> = value number 15
Enter low limit for fl 15?> = 0
Enter high limit for fl 15?> = 10000

Enter new 6 char. name of fl 16?> = val16
Enter new 18 char. descriptor of fl 16?> = value number 16
Enter low limit for fl 16?> = 0
Enter high limit for fl 16?> = 10000

Enter new 6 char. name of fl 17?> = val17
Enter new 18 char. descriptor of fl 17?> = value number 17
Enter low limit for fl 17?> = 0
Enter high limit for fl 17?> = 10000
```

```
Enter new 6 char. name of fl 18?> = val18
Enter new 18 char. descriptor of fl 18?> = value number 18
Enter low limit for fl 18?> = 0
Enter high limit for fl 18?> = 10000

Enter new 6 char. name of fl 19?> = val19
Enter new 18 char. descriptor of fl 19?> = value number 19
Enter low limit for fl 19?> = 0
Enter high limit for fl 19?> = 10000

Enter new 6 char. name of fl 20?> = val20
Enter new 18 char. descriptor of fl 20?> = value number 20
Enter low limit for fl 20?> = 0
Enter high limit for fl 20?> = 10000

Enter new 6 char. name of fl 21?> = val21
Enter new 18 char. descriptor of fl 21?> = value number 21
Enter low limit for fl 21?> = 0
Enter high limit for fl 21?> = 10000

Enter new 6 char. name of fl 22?> = val22
Enter new 18 char. descriptor of fl 22?> = value number 22
Enter low limit for fl 22?> = 0
Enter high limit for fl 22?> = 10000

Enter new 6 char. name of fl 23?> = val23
Enter new 18 char. descriptor of fl 23?> = value number 23
Enter low limit for fl 23?> = 0
Enter high limit for fl 23?> = 10000

Enter new 6 char. name of fl 24?> = val24
Enter new 18 char. descriptor of fl 24?> = value number 24
Enter low limit for fl 24?> = 0
Enter high limit for fl 24?> = 10000
MRPF?>  = add 50 in

Enter new 6 char. name of in 0?> = in0
Enter new 18 char. descriptor of in 0?> = integer number 0
Enter low limit for in 0?> = 0
Enter high limit for in 0?> = 7

Enter new 6 char. name of in 1?> = in1
Enter new 18 char. descriptor of in 1?> = integer number 1
Enter low limit for in 1?> = 0
Enter high limit for in 1?> = 7

Enter new 6 char. name of in 2?> = in2
Enter new 18 char. descriptor of in 2?> = integer number 2
Enter low limit for in 2?> = 0
Enter high limit for in 2?> = 7
```

```
Enter new 6 char. name of in 3?> = in3
Enter new 18 char. descriptor of in 3?> = integer number 3
Enter low limit for in 3?> = 0
Enter high limit for in 3?> = 7

Enter new 6 char. name of in 4?> = in4
Enter new 18 char. descriptor of in 4?> = integer number 4
Enter low limit for in 4?> = 0
Enter high limit for in 4?> = 7

Enter new 6 char. name of in 5?> = in5
Enter new 18 char. descriptor of in 5?> = integer number 5
Enter low limit for in 5?> = 0
Enter high limit for in 5?> = 7

Enter new 6 char. name of in 6?> = in6
Enter new 18 char. descriptor of in 6?> = integer number 6
Enter low limit for in 6?> = 0
Enter high limit for in 6?> = 7

Enter new 6 char. name of in 7?> = in7
Enter new 18 char. descriptor of in 7?> = integer number 7
Enter low limit for in 7?> = 0
Enter high limit for in 7?> = 7

Enter new 6 char. name of in 8?> = in8
Enter new 18 char. descriptor of in 8?> = integer number 8
Enter low limit for in 8?> = 0
Enter high limit for in 8?> = 7

Enter new 6 char. name of in 9?> = in9
Enter new 18 char. descriptor of in 9?> = integer number 9
Enter low limit for in 9?> = 0
Enter high limit for in 9?> = 7

Enter new 6 char. name of in 10?> = in10
Enter new 18 char. descriptor of in 10?> = integer number 10
Enter low limit for in 10?> = 0
Enter high limit for in 10?> = 7

Enter new 6 char. name of in 11?> = in11
Enter new 18 char. descriptor of in 11?> = integer number 11
Enter low limit for in 11?> = 0
Enter high limit for in 11?> = 7

Enter new 6 char. name of in 12?> = in12
Enter new 18 char. descriptor of in 12?> = integer number 12
Enter low limit for in 12?> = 0
Enter high limit for in 12?> = 7
```

```
Enter new 6 char. name of in 13?> = in13
Enter new 18 char. descriptor of in 13?> = integer number 13
Enter low limit for in 13?> = 0
Enter high limit for in 13?> = 7

Enter new 6 char. name of in 14?> = in14
Enter new 18 char. descriptor of in 14?> = integer number 14
Enter low limit for in 14?> = 0
Enter high limit for in 14?> = 7

Enter new 6 char. name of in 15?> = in15
Enter new 18 char. descriptor of in 15?> = integer number 15
Enter low limit for in 15?> = 0
Enter high limit for in 15?> = 7

Enter new 6 char. name of in 16?> = in16
Enter new 18 char. descriptor of in 16?> = integer number 16
Enter low limit for in 16?> = 0
Enter high limit for in 16?> = 7

Enter new 6 char. name of in 17?> = in17
Enter new 18 char. descriptor of in 17?> = integer number 17
Enter low limit for in 17?> = 0
Enter high limit for in 17?> = 7

Enter new 6 char. name of in 18?> = in18
Enter new 18 char. descriptor of in 18?> = integer number 18
Enter low limit for in 18?> = 0
Enter high limit for in 18?> = 7

Enter new 6 char. name of in 19?> = in19
Enter new 18 char. descriptor of in 19?> = integer number 19
Enter low limit for in 19?> = 0
Enter high limit for in 19?> = 7

Enter new 6 char. name of in 20?> = in20
Enter new 18 char. descriptor of in 20?> = integer number 20
Enter low limit for in 20?> = 0
Enter high limit for in 20?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 21?> = in21
Enter new 18 char. descriptor of in 21?> = integer number 21
Enter low limit for in 21?> = 0
Enter high limit for in 21?> = 100000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of in 22?> = in22
Enter new 18 char. descriptor of in 22?> = integer number 22
Enter low limit for in 22?> = 0
Enter high limit for in 22?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 23?> = in23
Enter new 18 char. descriptor of in 23?> = integer number 23
Enter low limit for in 23?> = 0
Enter high limit for in 23?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 24?> = in24
Enter new 18 char. descriptor of in 24?> = integer number 24
Enter low limit for in 24?> = 0
Enter high limit for in 24?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 25?> = in25
Enter new 18 char. descriptor of in 25?> = integer number 25
Enter low limit for in 25?> = 0
Enter high limit for in 25?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 26?> = in26
Enter new 18 char. descriptor of in 26?> = integer number 26
Enter low limit for in 26?> = 0
Enter high limit for in 26?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 27?> = in27
Enter new 18 char. descriptor of in 27?> = integer number 27
Enter low limit for in 27?> = 0
Enter high limit for in 27?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 28?> = in28
Enter new 18 char. descriptor of in 28?> = integer number 28
Enter low limit for in 28?> = 0
Enter high limit for in 28?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 29?> = in29
Enter new 18 char. descriptor of in 29?> = integer number 29
Enter low limit for in 29?> = 0
Enter high limit for in 29?> = 100000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of in 30?> = in30
Enter new 18 char. descriptor of in 30?> = integer number 30
Enter low limit for in 30?> = 0
Enter high limit for in 30?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 31?> = in31
Enter new 18 char. descriptor of in 31?> = integer number 31
Enter low limit for in 31?> = 0
Enter high limit for in 31?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 32?> = in32
Enter new 18 char. descriptor of in 32?> = integer number 32
Enter low limit for in 32?> = 0
Enter high limit for in 32?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 33?> = in33
Enter new 18 char. descriptor of in 33?> = integer number 33
Enter low limit for in 33?> = 0
Enter high limit for in 33?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 34?> = in34
Enter new 18 char. descriptor of in 34?> = integer number 34
Enter low limit for in 34?> = 0
Enter high limit for in 34?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 35?> = in35
Enter new 18 char. descriptor of in 35?> = integer number 35
Enter low limit for in 35?> = 0
Enter high limit for in 35?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 36?> = in36
Enter new 18 char. descriptor of in 36?> = integer number 36
Enter low limit for in 36?> = 0
Enter high limit for in 36?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 37?> = in37
Enter new 18 char. descriptor of in 37?> = integer number 37
Enter low limit for in 37?> = 0
Enter high limit for in 37?> = 100000
High limit is less than low - setting high to 32767
```

```
Enter new 6 char. name of in 38?> = in38
Enter new 18 char. descriptor of in 38?> = integer number 38
Enter low limit for in 38?> = 0
Enter high limit for in 38?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 39?> = in39
Enter new 18 char. descriptor of in 39?> = integer number 39
Enter low limit for in 39?> = 0
Enter high limit for in 39?> = 100000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 40?> = imisc1
Enter new 18 char. descriptor of in 40?> = misc1 val1
Enter low limit for in 40?> = 0
Enter high limit for in 40?> = 128

Enter new 6 char. name of in 41?> = imisc2
Enter new 18 char. descriptor of in 41?> = misc2 val2
Enter low limit for in 41?> = 0
Enter high limit for in 41?> = 128

Enter new 6 char. name of in 42?> = adi
Enter new 18 char. descriptor of in 42?> = alm des index
Enter low limit for in 42?> = 0
Enter high limit for in 42?> = 80

Enter new 6 char. name of in 43?> = lmpvar
Enter new 18 char. descriptor of in 43?> = lamp var
Enter low limit for in 43?> = 0
Enter high limit for in 43?> = 4

Enter new 6 char. name of in 44?> = led0
Enter new 18 char. descriptor of in 44?> = led 0
Enter low limit for in 44?> = 0
Enter high limit for in 44?> = 63

Enter new 6 char. name of in 45?> = led1
Enter new 18 char. descriptor of in 45?> = led 1
Enter low limit for in 45?> = 0
Enter high limit for in 45?> = 63

Enter new 6 char. name of in 46?> = led2
Enter new 18 char. descriptor of in 46?> = led 2
Enter low limit for in 46?> = 0
Enter high limit for in 46?> = 63
```

```
Enter new 6 char. name of in 47?> = ispar0
Enter new 18 char. descriptor of in 47?> = spare int 0
Enter low limit for in 47?> = 0
Enter high limit for in 47?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 48?> = ispar1
Enter new 18 char. descriptor of in 48?> = spare int 1
Enter low limit for in 48?> = 0
Enter high limit for in 48?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of in 49?> = ispar2
Enter new 18 char. descriptor of in 49?> = spare int 2
Enter low limit for in 49?> = 0
Enter high limit for in 49?> = 37000
High limit is less than low - setting high to 32767
MRPF?>  = add 5 st

Enter new 6 char. name of st 0?> = stmr0
Enter new 18 char. descriptor of st 0?> = second timer 0
Enter low limit for st 0?> = 0
Enter high limit for st 0?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 1?> = stmr1
Enter new 18 char. descriptor of st 1?> = second timer 1
Enter low limit for st 1?> = 0
Enter high limit for st 1?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 2?> = stmr2
Enter new 18 char. descriptor of st 2?> = second timer 2
Enter low limit for st 2?> = 0
Enter high limit for st 2?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 3?> = stmr3
Enter new 18 char. descriptor of st 3?> = second timer 3
Enter low limit for st 3?> = 0
Enter high limit for st 3?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of st 4?> = stmr4
Enter new 18 char. descriptor of st 4?> = second timer 4
Enter low limit for st 4?> = 0
Enter high limit for st 4?> = 37000
High limit is less than low - setting high to 32767
MRPF?>  = add 5 mt
```

```
Enter new 6 char. name of mt 0?> = mtmr0
Enter new 18 char. descriptor of mt 0?> = minute timer 0
Enter low limit for mt 0?> = 0
Enter high limit for mt 0?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 1?> = mtmr1
Enter new 18 char. descriptor of mt 1?> = minute timer 1
Enter low limit for mt 1?> = 0
Enter high limit for mt 1?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 2?> = mtmr2
Enter new 18 char. descriptor of mt 2?> = minute timer 2
Enter low limit for mt 2?> = 0
Enter high limit for mt 2?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 3?> = mtmr3
Enter new 18 char. descriptor of mt 3?> = minute timer 3
Enter low limit for mt 3?> = 0
Enter high limit for mt 3?> = 37000
High limit is less than low - setting high to 32767

Enter new 6 char. name of mt 4?> = mtmr4
Enter new 18 char. descriptor of mt 4?> = minute timer 4
Enter low limit for mt 4?> = 0
Enter high limit for mt 4?> = 37000
High limit is less than low - setting high to 32767
MRPF?>
 end of file encountered
RPF?>
 end of file encountered
RMS?>
 end of file encountered
```

*** RMIS View/Print Document Cover Sheet ***

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Document #: SD-534-CSWL-001

Title/Desc:
SEQUENCE & BATCH LANGUAGE PROGRAMS & ALARM RELATED C PROGRAMS FOR THE 242A MCS [SEC 2 OF 6 PAGE 127 TO 252]

Pages: 127

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-534-CSWL-001

Section 2 **of** 6

Title: Sequence and Batch Language programs and Alarm Related "C" Programs for the 242-A MCS

Date: 4/15/96 **Revision:** 3

Originator: Berger, J.F.
Co:

Recipient:
Co:

References: ECN-627504

APPENDIX D - UNIT PROTOTYPE FILES (UPF)

TOTALO

```
UPF Version 6.3-2       05-Dec-94 09:33:27
UPF?>  = de total0
UPF?>  = cr total0,*
Enter 4 character name of RPF to associate?> = all0
MUPF?>  = add 432 fg
Enter new 6 char. name of fg 0 ?> = fai0
Enter new 6 char. name of fg 1 ?> = fai1
Enter new 6 char. name of fg 2 ?> = fai2
Enter new 6 char. name of fg 3 ?> = fai3
Enter new 6 char. name of fg 4 ?> = fai4
Enter new 6 char. name of fg 5 ?> = fai5
Enter new 6 char. name of fg 6 ?> = fai6
Enter new 6 char. name of fg 7 ?> = fai7
Enter new 6 char. name of fg 8 ?> = fai8
Enter new 6 char. name of fg 9 ?> = fai9
Enter new 6 char. name of fg 10 ?> = fai10
Enter new 6 char. name of fg 11 ?> = fai11
Enter new 6 char. name of fg 12 ?> = fai12
Enter new 6 char. name of fg 13 ?> = fai13
Enter new 6 char. name of fg 14 ?> = fai14
Enter new 6 char. name of fg 15 ?> = fai15
Enter new 6 char. name of fg 16 ?> = fai16
Enter new 6 char. name of fg 17 ?> = fai17
Enter new 6 char. name of fg 18 ?> = fai18
Enter new 6 char. name of fg 19 ?> = fai19
Enter new 6 char. name of fg 20 ?> = fai20
Enter new 6 char. name of fg 21 ?> = fai21
Enter new 6 char. name of fg 22 ?> = fai22
Enter new 6 char. name of fg 23 ?> = fai23
Enter new 6 char. name of fg 24 ?> = fai24
Enter new 6 char. name of fg 25 ?> = fai25
Enter new 6 char. name of fg 26 ?> = fai26
Enter new 6 char. name of fg 27 ?> = fai27
Enter new 6 char. name of fg 28 ?> = fai28
Enter new 6 char. name of fg 29 ?> = fai29
Enter new 6 char. name of fg 30 ?> = fai30
Enter new 6 char. name of fg 31 ?> = fai31
Enter new 6 char. name of fg 32 ?> = fai32
Enter new 6 char. name of fg 33 ?> = fai33
Enter new 6 char. name of fg 34 ?> = fai34
Enter new 6 char. name of fg 35 ?> = fai35
Enter new 6 char. name of fg 36 ?> = fai36
Enter new 6 char. name of fg 37 ?> = fai37
Enter new 6 char. name of fg 38 ?> = fai38
Enter new 6 char. name of fg 39 ?> = fai39
Enter new 6 char. name of fg 40 ?> = fai40
Enter new 6 char. name of fg 41 ?> = fai41
Enter new 6 char. name of fg 42 ?> = fai42
Enter new 6 char. name of fg 43 ?> = fai43
Enter new 6 char. name of fg 44 ?> = fai44
```

```
Enter new 6 char. name of fg 45 ?> = fai45
Enter new 6 char. name of fg 46 ?> = fai46
Enter new 6 char. name of fg 47 ?> = fai47
Enter new 6 char. name of fg 48 ?> = fai48
Enter new 6 char. name of fg 49 ?> = fai49
Enter new 6 char. name of fg 50 ?> = fai50
Enter new 6 char. name of fg 51 ?> = fai51
Enter new 6 char. name of fg 52 ?> = fai52
Enter new 6 char. name of fg 53 ?> = fai53
Enter new 6 char. name of fg 54 ?> = fai54
Enter new 6 char. name of fg 55 ?> = fai55
Enter new 6 char. name of fg 56 ?> = fai56
Enter new 6 char. name of fg 57 ?> = fai57
Enter new 6 char. name of fg 58 ?> = fai58
Enter new 6 char. name of fg 59 ?> = fai59
Enter new 6 char. name of fg 60 ?> = fai60
Enter new 6 char. name of fg 61 ?> = fai61
Enter new 6 char. name of fg 62 ?> = fai62
Enter new 6 char. name of fg 63 ?> = fai63
Enter new 6 char. name of fg 64 ?> = fai64
Enter new 6 char. name of fg 65 ?> = fai65
Enter new 6 char. name of fg 66 ?> = fai66
Enter new 6 char. name of fg 67 ?> = fai67
Enter new 6 char. name of fg 68 ?> = fai68
Enter new 6 char. name of fg 69 ?> = fai69
Enter new 6 char. name of fg 70 ?> = fai70
Enter new 6 char. name of fg 71 ?> = fai71
Enter new 6 char. name of fg 72 ?> = fai72
Enter new 6 char. name of fg 73 ?> = fai73
Enter new 6 char. name of fg 74 ?> = fai74
Enter new 6 char. name of fg 75 ?> = fai75
Enter new 6 char. name of fg 76 ?> = fai76
Enter new 6 char. name of fg 77 ?> = fai77
Enter new 6 char. name of fg 78 ?> = fai78
Enter new 6 char. name of fg 79 ?> = fai79
Enter new 6 char. name of fg 80 ?> = fai80
Enter new 6 char. name of fg 81 ?> = fai81
Enter new 6 char. name of fg 82 ?> = fai82
Enter new 6 char. name of fg 83 ?> = fai83
Enter new 6 char. name of fg 84 ?> = fai84
Enter new 6 char. name of fg 85 ?> = fai85
Enter new 6 char. name of fg 86 ?> = fai86
Enter new 6 char. name of fg 87 ?> = fai87
Enter new 6 char. name of fg 88 ?> = fai88
Enter new 6 char. name of fg 89 ?> = fai89
Enter new 6 char. name of fg 90 ?> = fai90
Enter new 6 char. name of fg 91 ?> = fai91
Enter new 6 char. name of fg 92 ?> = fai92
Enter new 6 char. name of fg 93 ?> = fai93
Enter new 6 char. name of fg 94 ?> = fai94
```

```
Enter new 6 char. name of fg 95 ?> = fai95
Enter new 6 char. name of fg 96 ?> = fai96
Enter new 6 char. name of fg 97 ?> = fai97
Enter new 6 char. name of fg 98 ?> = fai98
Enter new 6 char. name of fg 99 ?> = fai99
Enter new 6 char. name of fg 100 ?> = fai100
Enter new 6 char. name of fg 101 ?> = fai101
Enter new 6 char. name of fg 102 ?> = fai102
Enter new 6 char. name of fg 103 ?> = fai103
Enter new 6 char. name of fg 104 ?> = fai104
Enter new 6 char. name of fg 105 ?> = fai105
Enter new 6 char. name of fg 106 ?> = fai106
Enter new 6 char. name of fg 107 ?> = fai107
Enter new 6 char. name of fg 108 ?> = fai108
Enter new 6 char. name of fg 109 ?> = fai109
Enter new 6 char. name of fg 110 ?> = fai110
Enter new 6 char. name of fg 111 ?> = fai111
Enter new 6 char. name of fg 112 ?> = fai112
Enter new 6 char. name of fg 113 ?> = fai113
Enter new 6 char. name of fg 114 ?> = fai114
Enter new 6 char. name of fg 115 ?> = fai115
Enter new 6 char. name of fg 116 ?> = fai116
Enter new 6 char. name of fg 117 ?> = fai117
Enter new 6 char. name of fg 118 ?> = fai118
Enter new 6 char. name of fg 119 ?> = fai119
Enter new 6 char. name of fg 120 ?> = fai120
Enter new 6 char. name of fg 121 ?> = fai121
Enter new 6 char. name of fg 122 ?> = fai122
Enter new 6 char. name of fg 123 ?> = fai123
Enter new 6 char. name of fg 124 ?> = fai124
Enter new 6 char. name of fg 125 ?> = fai125
Enter new 6 char. name of fg 126 ?> = fai126
Enter new 6 char. name of fg 127 ?> = fai127
Enter new 6 char. name of fg 128 ?> = fdi0
Enter new 6 char. name of fg 129 ?> = fdi1
Enter new 6 char. name of fg 130 ?> = fdi2
Enter new 6 char. name of fg 131 ?> = fdi3
Enter new 6 char. name of fg 132 ?> = fdi4
Enter new 6 char. name of fg 133 ?> = fdi5
Enter new 6 char. name of fg 134 ?> = fdi6
Enter new 6 char. name of fg 135 ?> = fdi7
Enter new 6 char. name of fg 136 ?> = fdi8
Enter new 6 char. name of fg 137 ?> = fdi9
Enter new 6 char. name of fg 138 ?> = fdi10
Enter new 6 char. name of fg 139 ?> = fdi11
Enter new 6 char. name of fg 140 ?> = fdi12
Enter new 6 char. name of fg 141 ?> = fdi13
Enter new 6 char. name of fg 142 ?> = fdi14
Enter new 6 char. name of fg 143 ?> = fdi15
Enter new 6 char. name of fg 144 ?> = fdi16
```

```
Enter new 6 char. name of fg 145 ?> = fdi17
Enter new 6 char. name of fg 146 ?> = fdi18
Enter new 6 char. name of fg 147 ?> = fdi19
Enter new 6 char. name of fg 148 ?> = fdi20
Enter new 6 char. name of fg 149 ?> = fdi21
Enter new 6 char. name of fg 150 ?> = fdi22
Enter new 6 char. name of fg 151 ?> = fdi23
Enter new 6 char. name of fg 152 ?> = fdi24
Enter new 6 char. name of fg 153 ?> = fdi25
Enter new 6 char. name of fg 154 ?> = fdi26
Enter new 6 char. name of fg 155 ?> = fdi27
Enter new 6 char. name of fg 156 ?> = fdi28
Enter new 6 char. name of fg 157 ?> = fdi29
Enter new 6 char. name of fg 158 ?> = fdi30
Enter new 6 char. name of fg 159 ?> = fdi31
Enter new 6 char. name of fg 160 ?> = fdi32
Enter new 6 char. name of fg 161 ?> = fdi33
Enter new 6 char. name of fg 162 ?> = fdi34
Enter new 6 char. name of fg 163 ?> = fdi35
Enter new 6 char. name of fg 164 ?> = fdi36
Enter new 6 char. name of fg 165 ?> = fdi37
Enter new 6 char. name of fg 166 ?> = fdi38
Enter new 6 char. name of fg 167 ?> = fdi39
Enter new 6 char. name of fg 168 ?> = fdi40
Enter new 6 char. name of fg 169 ?> = fdi41
Enter new 6 char. name of fg 170 ?> = fdi42
Enter new 6 char. name of fg 171 ?> = fdi43
Enter new 6 char. name of fg 172 ?> = fdi44
Enter new 6 char. name of fg 173 ?> = fdi45
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Enter new 6 char. name of fg 188 ?> = fdi60
Enter new 6 char. name of fg 189 ?> = fdi61
Enter new 6 char. name of fg 190 ?> = fdi62
Enter new 6 char. name of fg 191 ?> = fdi63
Enter new 6 char. name of fg 192 ?> = fdi64
Enter new 6 char. name of fg 193 ?> = fdi65
Enter new 6 char. name of fg 194 ?> = fdi66
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Enter new 6 char. name of fg 195 ?> = fdi67
Enter new 6 char. name of fg 196 ?> = fdi68
Enter new 6 char. name of fg 197 ?> = fdi69
Enter new 6 char. name of fg 198 ?> = fdi70
Enter new 6 char. name of fg 199 ?> = fdi71
Enter new 6 char. name of fg 200 ?> = fdi72
Enter new 6 char. name of fg 201 ?> = fdi73
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Enter new 6 char. name of fg 204 ?> = fdi76
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Enter new 6 char. name of fg 209 ?> = fdi81
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Enter new 6 char. name of fg 212 ?> = fdi84
Enter new 6 char. name of fg 213 ?> = fdi85
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Enter new 6 char. name of fg 239 ?> = fdi111
Enter new 6 char. name of fg 240 ?> = fdi112
Enter new 6 char. name of fg 241 ?> = fdi113
Enter new 6 char. name of fg 242 ?> = fdi114
Enter new 6 char. name of fg 243 ?> = fdi115
Enter new 6 char. name of fg 244 ?> = fdi116
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Enter new 6 char. name of fg 245 ?> = fdi117
Enter new 6 char. name of fg 246 ?> = fdi118
Enter new 6 char. name of fg 247 ?> = fdi119
Enter new 6 char. name of fg 248 ?> = fdi120
Enter new 6 char. name of fg 249 ?> = fdi121
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Enter new 6 char. name of fg 251 ?> = fdi123
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Enter new 6 char. name of fg 254 ?> = fdi126
Enter new 6 char. name of fg 255 ?> = fdi127
Enter new 6 char. name of fg 256 ?> = fdv0
Enter new 6 char. name of fg 257 ?> = fdv1
Enter new 6 char. name of fg 258 ?> = fdv2
Enter new 6 char. name of fg 259 ?> = fdv3
Enter new 6 char. name of fg 260 ?> = fdv4
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Enter new 6 char. name of fg 294 ?> = fdv38
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Enter new 6 char. name of fg 344 ?> = fdv88
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Enter new 6 char. name of fg 346 ?> = fdv90
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Enter new 6 char. name of fg 381 ?> = fdv125
Enter new 6 char. name of fg 382 ?> = fdv126
Enter new 6 char. name of fg 383 ?> = fdv127
Enter new 6 char. name of fg 384 ?> = fx0
Enter new 6 char. name of fg 385 ?> = fx1
Enter new 6 char. name of fg 386 ?> = fx2
Enter new 6 char. name of fg 387 ?> = fx3
Enter new 6 char. name of fg 388 ?> = fx4
Enter new 6 char. name of fg 389 ?> = fx5
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Enter new 6 char. name of fg 391 ?> = fx7
Enter new 6 char. name of fg 392 ?> = fx8
Enter new 6 char. name of fg 393 ?> = fx9
Enter new 6 char. name of fg 394 ?> = fx10
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Enter new 6 char. name of fg 395 ?> = fx11
Enter new 6 char. name of fg 396 ?> = fx12
Enter new 6 char. name of fg 397 ?> = fx13
Enter new 6 char. name of fg 398 ?> = fx14
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Enter new 6 char. name of fg 420 ?> = fx36
Enter new 6 char. name of fg 421 ?> = fdisp
Enter new 6 char. name of fg 422 ?> = fhold
Enter new 6 char. name of fg 423 ?> = fning
Enter new 6 char. name of fg 424 ?> = fabort
Enter new 6 char. name of fg 425 ?> = fstart
Enter new 6 char. name of fg 426 ?> = fstop
Enter new 6 char. name of fg 427 ?> = ftrip0
Enter new 6 char. name of fg 428 ?> = ftrip1
Enter new 6 char. name of fg 429 ?> = ftrip2
Enter new 6 char. name of fg 430 ?> = ftrip3
Enter new 6 char. name of fg 431 ?> = ftrip4
MUPF?>  = add 89 in
Enter new 6 char. name of in 0 ?> = bitval
Enter new 6 char. name of in 1 ?> = iloop
Enter new 6 char. name of in 2 ?> = jloop
Enter new 6 char. name of in 3 ?> = kloop
Enter new 6 char. name of in 4 ?> = lloop
Enter new 6 char. name of in 5 ?> = mloop
Enter new 6 char. name of in 6 ?> = nloop
Enter new 6 char. name of in 7 ?> = oloop
Enter new 6 char. name of in 8 ?> = ploop
Enter new 6 char. name of in 9 ?> = index
Enter new 6 char. name of in 10 ?> = trip0
Enter new 6 char. name of in 11 ?> = trip1
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Enter new 6 char. name of in 12 ?> = trip2
Enter new 6 char. name of in 13 ?> = trip3
Enter new 6 char. name of in 14 ?> = trip4
Enter new 6 char. name of in 15 ?> = trip5
Enter new 6 char. name of in 16 ?> = trip6
Enter new 6 char. name of in 17 ?> = trip7
Enter new 6 char. name of in 18 ?> = nadi
Enter new 6 char. name of in 19 ?> = blkval
Enter new 6 char. name of in 20 ?> = sort
Enter new 6 char. name of in 21 ?> = bval
Enter new 6 char. name of in 22 ?> = hldstp
Enter new 6 char. name of in 23 ?> = errn
Enter new 6 char. name of in 24 ?> = errl
Enter new 6 char. name of in 25 ?> = int0
Enter new 6 char. name of in 26 ?> = int1
Enter new 6 char. name of in 27 ?> = int2
Enter new 6 char. name of in 28 ?> = int3
Enter new 6 char. name of in 29 ?> = int4
Enter new 6 char. name of in 30 ?> = int5
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Enter new 6 char. name of in 35 ?> = int10
Enter new 6 char. name of in 36 ?> = int11
Enter new 6 char. name of in 37 ?> = int12
Enter new 6 char. name of in 38 ?> = int13
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Enter new 6 char. name of in 40 ?> = int15
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Enter new 6 char. name of in 61 ?> = int36
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Enter new 6 char. name of in 62 ?> = int37
Enter new 6 char. name of in 63 ?> = int38
Enter new 6 char. name of in 64 ?> = int39
Enter new 6 char. name of in 65 ?> = int40
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Enter new 6 char. name of in 86 ?> = int61
Enter new 6 char. name of in 87 ?> = int62
Enter new 6 char. name of in 88 ?> = int63
MUPF?>  = add 16 pt
Enter new 6 char. name of pt 0 ?> = pepn
Enter new 6 char. name of pt 1 ?> = pdev
Enter new 6 char. name of pt 2 ?> = pai
Enter new 6 char. name of pt 3 ?> = pdin
Enter new 6 char. name of pt 4 ?> = ptrip
Enter new 6 char. name of pt 5 ?> = pdeadb
Enter new 6 char. name of pt 6 ?> = palarm
Enter new 6 char. name of pt 7 ?> = pack
Enter new 6 char. name of pt 8 ?> = pmessg
Enter new 6 char. name of pt 9 ?> = pdsabl
Enter new 6 char. name of pt 10 ?> = pback
Enter new 6 char. name of pt 11 ?> = preps
Enter new 6 char. name of pt 12 ?> = plast
Enter new 6 char. name of pt 13 ?> = pskid
Enter new 6 char. name of pt 14 ?> = pstat
Enter new 6 char. name of pt 15 ?> = pstrng
MUPF?>  = add 202 sg
Enter new 6 char. name of sg 0 ?> = epns0
Enter max string length for sg 0  ?> = 10
Enter new 6 char. name of sg 1 ?> = epns1
Enter max string length for sg 1  ?> = 10
Enter new 6 char. name of sg 2 ?> = epns2
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Enter max string length for sg 2  ?> = 10
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Enter new 6 char. name of sg 4 ?> = epns4
Enter max string length for sg 4  ?> = 10
Enter new 6 char. name of sg 5 ?> = epns5
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Enter new 6 char. name of sg 59 ?> = epns59
Enter max string length for sg 59  ?> = 10
Enter new 6 char. name of sg 60 ?> = epns60
Enter max string length for sg 60  ?> = 10
Enter new 6 char. name of sg 61 ?> = epns61
Enter max string length for sg 61  ?> = 10
Enter new 6 char. name of sg 62 ?> = epns62
Enter max string length for sg 62  ?> = 10
Enter new 6 char. name of sg 63 ?> = epns63
Enter max string length for sg 63  ?> = 10
Enter new 6 char. name of sg 64 ?> = epns64
Enter max string length for sg 64  ?> = 10
Enter new 6 char. name of sg 65 ?> = epns65
Enter max string length for sg 65  ?> = 10
Enter new 6 char. name of sg 66 ?> = epns66
Enter max string length for sg 66  ?> = 10
Enter new 6 char. name of sg 67 ?> = epns67
Enter max string length for sg 67  ?> = 10
Enter new 6 char. name of sg 68 ?> = epns68
Enter max string length for sg 68  ?> = 10
Enter new 6 char. name of sg 69 ?> = epns69
Enter max string length for sg 69  ?> = 10
Enter new 6 char. name of sg 70 ?> = epns70
Enter max string length for sg 70  ?> = 10
Enter new 6 char. name of sg 71 ?> = epns71
Enter max string length for sg 71  ?> = 10
Enter new 6 char. name of sg 72 ?> = epns72
Enter max string length for sg 72  ?> = 10
Enter new 6 char. name of sg 73 ?> = epns73
Enter max string length for sg 73  ?> = 10
Enter new 6 char. name of sg 74 ?> = epns74
Enter max string length for sg 74  ?> = 10
Enter new 6 char. name of sg 75 ?> = epns75
Enter max string length for sg 75  ?> = 10
Enter new 6 char. name of sg 76 ?> = epns76
Enter max string length for sg 76  ?> = 10
Enter new 6 char. name of sg 77 ?> = epns77
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Enter max string length for sg 77  ?> = 10
Enter new 6 char. name of sg 78 ?> = epns78
Enter max string length for sg 78  ?> = 10
Enter new 6 char. name of sg 79 ?> = epns79
Enter max string length for sg 79  ?> = 10
Enter new 6 char. name of sg 80 ?> = epns80
Enter max string length for sg 80  ?> = 10
Enter new 6 char. name of sg 81 ?> = epns81
Enter max string length for sg 81  ?> = 10
Enter new 6 char. name of sg 82 ?> = epns82
Enter max string length for sg 82  ?> = 10
Enter new 6 char. name of sg 83 ?> = epns83
Enter max string length for sg 83  ?> = 10
Enter new 6 char. name of sg 84 ?> = epns84
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Enter new 6 char. name of sg 85 ?> = epns85
Enter max string length for sg 85  ?> = 10
Enter new 6 char. name of sg 86 ?> = epns86
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Enter new 6 char. name of sg 87 ?> = epns87
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Enter new 6 char. name of sg 88 ?> = epns88
Enter max string length for sg 88  ?> = 10
Enter new 6 char. name of sg 89 ?> = epns89
Enter max string length for sg 89  ?> = 10
Enter new 6 char. name of sg 90 ?> = epns90
Enter max string length for sg 90  ?> = 10
Enter new 6 char. name of sg 91 ?> = epns91
Enter max string length for sg 91  ?> = 10
Enter new 6 char. name of sg 92 ?> = epns92
Enter max string length for sg 92  ?> = 10
Enter new 6 char. name of sg 93 ?> = epns93
Enter max string length for sg 93  ?> = 10
Enter new 6 char. name of sg 94 ?> = epns94
Enter max string length for sg 94  ?> = 10
Enter new 6 char. name of sg 95 ?> = epns95
Enter max string length for sg 95  ?> = 10
Enter new 6 char. name of sg 96 ?> = epns96
Enter max string length for sg 96  ?> = 10
Enter new 6 char. name of sg 97 ?> = epns97
Enter max string length for sg 97  ?> = 10
Enter new 6 char. name of sg 98 ?> = epns98
Enter max string length for sg 98  ?> = 10
Enter new 6 char. name of sg 99 ?> = epns99
Enter max string length for sg 99  ?> = 10
Enter new 6 char. name of sg 100 ?> = lsg0
Enter max string length for sg 100  ?> = 30
Enter new 6 char. name of sg 101 ?> = lsg1
Enter max string length for sg 101  ?> = 30
Enter new 6 char. name of sg 102 ?> = lsg2
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Enter max string length for sg 102  ?> = 30
Enter new 6 char. name of sg 103 ?> = lsg3
Enter max string length for sg 103  ?> = 30
Enter new 6 char. name of sg 104 ?> = lsg4
Enter max string length for sg 104  ?> = 30
Enter new 6 char. name of sg 105 ?> = lsg5
Enter max string length for sg 105  ?> = 30
Enter new 6 char. name of sg 106 ?> = lsg6
Enter max string length for sg 106  ?> = 30
Enter new 6 char. name of sg 107 ?> = lsg7
Enter max string length for sg 107  ?> = 30
Enter new 6 char. name of sg 108 ?> = lsg8
Enter max string length for sg 108  ?> = 30
Enter new 6 char. name of sg 109 ?> = lsg9
Enter max string length for sg 109  ?> = 30
Enter new 6 char. name of sg 110 ?> = lsg10
Enter max string length for sg 110  ?> = 30
Enter new 6 char. name of sg 111 ?> = lsg11
Enter max string length for sg 111  ?> = 30
Enter new 6 char. name of sg 112 ?> = lsg12
Enter max string length for sg 112  ?> = 30
Enter new 6 char. name of sg 113 ?> = lsg13
Enter max string length for sg 113  ?> = 30
Enter new 6 char. name of sg 114 ?> = lsg14
Enter max string length for sg 114  ?> = 30
Enter new 6 char. name of sg 115 ?> = lsg15
Enter max string length for sg 115  ?> = 30
Enter new 6 char. name of sg 116 ?> = lsg16
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Enter new 6 char. name of sg 117 ?> = lsg17
Enter max string length for sg 117  ?> = 30
Enter new 6 char. name of sg 118 ?> = lsg18
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Enter new 6 char. name of sg 119 ?> = lsg19
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Enter new 6 char. name of sg 124 ?> = lsg24
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Enter new 6 char. name of sg 125 ?> = lsg25
Enter max string length for sg 125  ?> = 30
Enter new 6 char. name of sg 126 ?> = lsg26
Enter max string length for sg 126  ?> = 30
Enter new 6 char. name of sg 127 ?> = lsg27
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Enter max string length for sg 127  ?> = 30
Enter new 6 char. name of sg 128 ?> = lsg28
Enter max string length for sg 128  ?> = 30
Enter new 6 char. name of sg 129 ?> = lsg29
Enter max string length for sg 129  ?> = 30
Enter new 6 char. name of sg 130 ?> = lsg30
Enter max string length for sg 130  ?> = 30
Enter new 6 char. name of sg 131 ?> = lsg31
Enter max string length for sg 131  ?> = 30
Enter new 6 char. name of sg 132 ?> = lsg32
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Enter new 6 char. name of sg 135 ?> = lsg35
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Enter new 6 char. name of sg 136 ?> = lsg36
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Enter new 6 char. name of sg 137 ?> = lsg37
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Enter new 6 char. name of sg 138 ?> = lsg38
Enter max string length for sg 138  ?> = 30
Enter new 6 char. name of sg 139 ?> = lsg39
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Enter new 6 char. name of sg 140 ?> = lsg40
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Enter new 6 char. name of sg 141 ?> = lsg41
Enter max string length for sg 141  ?> = 30
Enter new 6 char. name of sg 142 ?> = lsg42
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Enter new 6 char. name of sg 144 ?> = lsg44
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Enter new 6 char. name of sg 145 ?> = lsg45
Enter max string length for sg 145  ?> = 30
Enter new 6 char. name of sg 146 ?> = lsg46
Enter max string length for sg 146  ?> = 30
Enter new 6 char. name of sg 147 ?> = lsg47
Enter max string length for sg 147  ?> = 30
Enter new 6 char. name of sg 148 ?> = lsg48
Enter max string length for sg 148  ?> = 30
Enter new 6 char. name of sg 149 ?> = lsg49
Enter max string length for sg 149  ?> = 30
Enter new 6 char. name of sg 150 ?> = lsg50
Enter max string length for sg 150  ?> = 30
Enter new 6 char. name of sg 151 ?> = lsg51
Enter max string length for sg 151  ?> = 30
Enter new 6 char. name of sg 152 ?> = lsg52
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Enter max string length for sg 152  ?> = 30
Enter new 6 char. name of sg 153 ?> = lsg53
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Enter new 6 char. name of sg 158 ?> = lsg58
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Enter new 6 char. name of sg 167 ?> = lsg67
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Enter new 6 char. name of sg 168 ?> = lsg68
Enter max string length for sg 168  ?> = 30
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Enter new 6 char. name of sg 174 ?> = lsg74
Enter max string length for sg 174  ?> = 30
Enter new 6 char. name of sg 175 ?> = lsg75
Enter max string length for sg 175  ?> = 30
Enter new 6 char. name of sg 176 ?> = lsg76
Enter max string length for sg 176  ?> = 30
Enter new 6 char. name of sg 177 ?> = lsg77
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Enter max string length for sg 177  ?> = 30
Enter new 6 char. name of sg 178 ?> = lsg78
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Enter new 6 char. name of sg 198 ?> = lsg98
Enter max string length for sg 198  ?> = 30
Enter new 6 char. name of sg 199 ?> = lsg99
Enter max string length for sg 199  ?> = 30
Enter new 6 char. name of sg 200 ?> = time0
Enter max string length for sg 200  ?> = 10
Enter new 6 char. name of sg 201 ?> = date0
Enter max string length for sg 201  ?> = 10
MUPF?>  = add 5 st
```

```
Enter new 6 char. name of st 0 ?> = rcptmr
Enter new 6 char. name of st 1 ?> = vltmr0
Enter new 6 char. name of st 2 ?> = vltmr1
Enter new 6 char. name of st 3 ?> = vltmr2
Enter new 6 char. name of st 4 ?> = vltmr3
MUPF?>  = add 5 mt
Enter new 6 char. name of mt 0 ?> = dtmr0
Enter new 6 char. name of mt 1 ?> = dtmr1
Enter new 6 char. name of mt 2 ?> = dtmr2
Enter new 6 char. name of mt 3 ?> = dtmr3
Enter new 6 char. name of mt 4 ?> = dtmr4
MUPF?>  =
UPF?>
 end of file encountered
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SHORTO

```
UPF Version 6.3-2       05-Dec-94 09:35:38
UPF?>  = de short0
UPF?>  = cr short0,*
Enter 4 character name of RPF to associate?> = farm
MUPF?>  =  add 208 fg
Enter new 6 char. name of fg 0 ?> = falm0
Enter new 6 char. name of fg 1 ?> = falm1
Enter new 6 char. name of fg 2 ?> = falm2
Enter new 6 char. name of fg 3 ?> = falm3
Enter new 6 char. name of fg 4 ?> = falm4
Enter new 6 char. name of fg 5 ?> = falm5
Enter new 6 char. name of fg 6 ?> = falm6
Enter new 6 char. name of fg 7 ?> = falm7
Enter new 6 char. name of fg 8 ?> = falm8
Enter new 6 char. name of fg 9 ?> = falm9
Enter new 6 char. name of fg 10 ?> = falm10
Enter new 6 char. name of fg 11 ?> = falm11
Enter new 6 char. name of fg 12 ?> = falm12
Enter new 6 char. name of fg 13 ?> = falm13
Enter new 6 char. name of fg 14 ?> = falm14
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Enter new 6 char. name of fg 26 ?> = falm26
Enter new 6 char. name of fg 27 ?> = falm27
Enter new 6 char. name of fg 28 ?> = falm28
Enter new 6 char. name of fg 29 ?> = falm29
Enter new 6 char. name of fg 30 ?> = falm30
Enter new 6 char. name of fg 31 ?> = falm31
Enter new 6 char. name of fg 32 ?> = falm32
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Enter new 6 char. name of fg 34 ?> = falm34
Enter new 6 char. name of fg 35 ?> = falm35
Enter new 6 char. name of fg 36 ?> = falm36
Enter new 6 char. name of fg 37 ?> = falm37
Enter new 6 char. name of fg 38 ?> = falm38
Enter new 6 char. name of fg 39 ?> = falm39
Enter new 6 char. name of fg 40 ?> = fpas0
Enter new 6 char. name of fg 41 ?> = fpas1
Enter new 6 char. name of fg 42 ?> = fpas2
Enter new 6 char. name of fg 43 ?> = fpas3
Enter new 6 char. name of fg 44 ?> = fpas4
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Enter new 6 char. name of fg 45 ?> = fpas5
Enter new 6 char. name of fg 46 ?> = fpas6
Enter new 6 char. name of fg 47 ?> = fpas7
Enter new 6 char. name of fg 48 ?> = fpas8
Enter new 6 char. name of fg 49 ?> = fpas9
Enter new 6 char. name of fg 50 ?> = fpas10
Enter new 6 char. name of fg 51 ?> = fpas11
Enter new 6 char. name of fg 52 ?> = fpas12
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Enter new 6 char. name of fg 66 ?> = fpas26
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Enter new 6 char. name of fg 70 ?> = fpas30
Enter new 6 char. name of fg 71 ?> = fpas31
Enter new 6 char. name of fg 72 ?> = fpas32
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Enter new 6 char. name of fg 76 ?> = fpas36
Enter new 6 char. name of fg 77 ?> = fpas37
Enter new 6 char. name of fg 78 ?> = fpas38
Enter new 6 char. name of fg 79 ?> = fpas39
Enter new 6 char. name of fg 80 ?> = fdis0
Enter new 6 char. name of fg 81 ?> = fdis1
Enter new 6 char. name of fg 82 ?> = fdis2
Enter new 6 char. name of fg 83 ?> = fdis3
Enter new 6 char. name of fg 84 ?> = fdis4
Enter new 6 char. name of fg 85 ?> = fdis5
Enter new 6 char. name of fg 86 ?> = fdis6
Enter new 6 char. name of fg 87 ?> = fdis7
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Enter new 6 char. name of fg 91 ?> = fdis11
Enter new 6 char. name of fg 92 ?> = fdis12
Enter new 6 char. name of fg 93 ?> = fdis13
Enter new 6 char. name of fg 94 ?> = fdis14
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Enter new 6 char. name of fg 95 ?> = fdis15
Enter new 6 char. name of fg 96 ?> = fdis16
Enter new 6 char. name of fg 97 ?> = fdis17
Enter new 6 char. name of fg 98 ?> = fdis18
Enter new 6 char. name of fg 99 ?> = fdis19
Enter new 6 char. name of fg 100 ?> = fdis20
Enter new 6 char. name of fg 101 ?> = fdis21
Enter new 6 char. name of fg 102 ?> = fdis22
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Enter new 6 char. name of fg 105 ?> = fdis25
Enter new 6 char. name of fg 106 ?> = fdis26
Enter new 6 char. name of fg 107 ?> = fdis27
Enter new 6 char. name of fg 108 ?> = fdis28
Enter new 6 char. name of fg 109 ?> = fdis29
Enter new 6 char. name of fg 110 ?> = fdis30
Enter new 6 char. name of fg 111 ?> = fdis31
Enter new 6 char. name of fg 112 ?> = fdis32
Enter new 6 char. name of fg 113 ?> = fdis33
Enter new 6 char. name of fg 114 ?> = fdis34
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Enter new 6 char. name of fg 116 ?> = fdis36
Enter new 6 char. name of fg 117 ?> = fdis37
Enter new 6 char. name of fg 118 ?> = fdis38
Enter new 6 char. name of fg 119 ?> = fdis39
Enter new 6 char. name of fg 120 ?> = frv0
Enter new 6 char. name of fg 121 ?> = frv1
Enter new 6 char. name of fg 122 ?> = frv2
Enter new 6 char. name of fg 123 ?> = frv3
Enter new 6 char. name of fg 124 ?> = frv4
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Enter new 6 char. name of fg 127 ?> = frv7
Enter new 6 char. name of fg 128 ?> = frv8
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Enter new 6 char. name of fg 131 ?> = frv11
Enter new 6 char. name of fg 132 ?> = frv12
Enter new 6 char. name of fg 133 ?> = frv13
Enter new 6 char. name of fg 134 ?> = frv14
Enter new 6 char. name of fg 135 ?> = frv15
Enter new 6 char. name of fg 136 ?> = frv16
Enter new 6 char. name of fg 137 ?> = frv17
Enter new 6 char. name of fg 138 ?> = frv18
Enter new 6 char. name of fg 139 ?> = frv19
Enter new 6 char. name of fg 140 ?> = frv20
Enter new 6 char. name of fg 141 ?> = frv21
Enter new 6 char. name of fg 142 ?> = frv22
Enter new 6 char. name of fg 143 ?> = frv23
Enter new 6 char. name of fg 144 ?> = frv24
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Enter new 6 char. name of fg 145 ?> = frv25
Enter new 6 char. name of fg 146 ?> = frv26
Enter new 6 char. name of fg 147 ?> = frv27
Enter new 6 char. name of fg 148 ?> = frv28
Enter new 6 char. name of fg 149 ?> = frv29
Enter new 6 char. name of fg 150 ?> = frv30
Enter new 6 char. name of fg 151 ?> = frv31
Enter new 6 char. name of fg 152 ?> = frv32
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Enter new 6 char. name of fg 157 ?> = frv37
Enter new 6 char. name of fg 158 ?> = frv38
Enter new 6 char. name of fg 159 ?> = frv39
Enter new 6 char. name of fg 160 ?> = fleak0
Enter new 6 char. name of fg 161 ?> = fleak1
Enter new 6 char. name of fg 162 ?> = fleak2
Enter new 6 char. name of fg 163 ?> = fleak3
Enter new 6 char. name of fg 164 ?> = fleak4
Enter new 6 char. name of fg 165 ?> = fleak5
Enter new 6 char. name of fg 166 ?> = fleak6
Enter new 6 char. name of fg 167 ?> = fleak7
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Enter new 6 char. name of fg 170 ?> = fsn2
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Enter new 6 char. name of fg 179 ?> = fsl3
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Enter new 6 char. name of fg 181 ?> = fsl5
Enter new 6 char. name of fg 182 ?> = fsl6
Enter new 6 char. name of fg 183 ?> = fsl7
Enter new 6 char. name of fg 184 ?> = ffarm
Enter new 6 char. name of fg 185 ?> = fspit
Enter new 6 char. name of fg 186 ?> = fvlpit
Enter new 6 char. name of fg 187 ?> = fhvac
Enter new 6 char. name of fg 188 ?> = f271
Enter new 6 char. name of fg 189 ?> = fflush
Enter new 6 char. name of fg 190 ?> = fleak
Enter new 6 char. name of fg 191 ?> = fdisp
Enter new 6 char. name of fg 192 ?> = fhold
Enter new 6 char. name of fg 193 ?> = fning
Enter new 6 char. name of fg 194 ?> = fabort
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Enter new 6 char. name of in 36 ?> = int8
Enter new 6 char. name of in 37 ?> = int9
Enter new 6 char. name of in 38 ?> = int10
Enter new 6 char. name of in 39 ?> = int11
Enter new 6 char. name of in 40 ?> = int12
Enter new 6 char. name of in 41 ?> = int13
Enter new 6 char. name of in 42 ?> = int14
Enter new 6 char. name of in 43 ?> = int15
Enter new 6 char. name of in 44 ?> = int16
Enter new 6 char. name of in 45 ?> = int17
Enter new 6 char. name of in 46 ?> = int18
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Enter new 6 char. name of in 59 ?> = int31
Enter new 6 char. name of in 60 ?> = int32
Enter new 6 char. name of in 61 ?> = int33
Enter new 6 char. name of in 62 ?> = int34
Enter new 6 char. name of in 63 ?> = int35
Enter new 6 char. name of in 64 ?> = int36
Enter new 6 char. name of in 65 ?> = int37
Enter new 6 char. name of in 66 ?> = int38
Enter new 6 char. name of in 67 ?> = int39
Enter new 6 char. name of in 68 ?> = type0
Enter new 6 char. name of in 69 ?> = type1
Enter new 6 char. name of in 70 ?> = type2
Enter new 6 char. name of in 71 ?> = type3
Enter new 6 char. name of in 72 ?> = type4
Enter new 6 char. name of in 73 ?> = type5
Enter new 6 char. name of in 74 ?> = type6
Enter new 6 char. name of in 75 ?> = type7
Enter new 6 char. name of in 76 ?> = type8
Enter new 6 char. name of in 77 ?> = type9
Enter new 6 char. name of in 78 ?> = type10
Enter new 6 char. name of in 79 ?> = type11
Enter new 6 char. name of in 80 ?> = type12
Enter new 6 char. name of in 81 ?> = type13
Enter new 6 char. name of in 82 ?> = type14
Enter new 6 char. name of in 83 ?> = type15
Enter new 6 char. name of in 84 ?> = type16
Enter new 6 char. name of in 85 ?> = type17
```

```
Enter new 6 char. name of in 86 ?> = type18
Enter new 6 char. name of in 87 ?> = type19
Enter new 6 char. name of in 88 ?> = type20
Enter new 6 char. name of in 89 ?> = type21
Enter new 6 char. name of in 90 ?> = type22
Enter new 6 char. name of in 91 ?> = type23
Enter new 6 char. name of in 92 ?> = type24
Enter new 6 char. name of in 93 ?> = type25
Enter new 6 char. name of in 94 ?> = type26
Enter new 6 char. name of in 95 ?> = type27
Enter new 6 char. name of in 96 ?> = type28
Enter new 6 char. name of in 97 ?> = type29
Enter new 6 char. name of in 98 ?> = type30
Enter new 6 char. name of in 99 ?> = type31
Enter new 6 char. name of in 100 ?> = type32
Enter new 6 char. name of in 101 ?> = type33
Enter new 6 char. name of in 102 ?> = type34
Enter new 6 char. name of in 103 ?> = type35
Enter new 6 char. name of in 104 ?> = type36
Enter new 6 char. name of in 105 ?> = type37
Enter new 6 char. name of in 106 ?> = type38
Enter new 6 char. name of in 107 ?> = type39
Enter new 6 char. name of in 108 ?> = skid0
Enter new 6 char. name of in 109 ?> = skid1
Enter new 6 char. name of in 110 ?> = skid2
Enter new 6 char. name of in 111 ?> = skid3
Enter new 6 char. name of in 112 ?> = skid4
Enter new 6 char. name of in 113 ?> = skid5
Enter new 6 char. name of in 114 ?> = skid6
Enter new 6 char. name of in 115 ?> = skid7
Enter new 6 char. name of in 116 ?> = skid8
Enter new 6 char. name of in 117 ?> = skid9
Enter new 6 char. name of in 118 ?> = skid10
Enter new 6 char. name of in 119 ?> = skid11
Enter new 6 char. name of in 120 ?> = skid12
Enter new 6 char. name of in 121 ?> = skid13
Enter new 6 char. name of in 122 ?> = skid14
Enter new 6 char. name of in 123 ?> = skid15
Enter new 6 char. name of in 124 ?> = skid16
Enter new 6 char. name of in 125 ?> = skid17
Enter new 6 char. name of in 126 ?> = skid18
Enter new 6 char. name of in 127 ?> = skid19
Enter new 6 char. name of in 128 ?> = skid20
Enter new 6 char. name of in 129 ?> = skid21
Enter new 6 char. name of in 130 ?> = skid22
Enter new 6 char. name of in 131 ?> = skid23
Enter new 6 char. name of in 132 ?> = skid24
Enter new 6 char. name of in 133 ?> = skid25
Enter new 6 char. name of in 134 ?> = skid26
Enter new 6 char. name of in 135 ?> = skid27
```

```
Enter new 6 char. name of in 136 ?> = skid28
Enter new 6 char. name of in 137 ?> = skid29
Enter new 6 char. name of in 138 ?> = skid30
Enter new 6 char. name of in 139 ?> = skid31
Enter new 6 char. name of in 140 ?> = skid32
Enter new 6 char. name of in 141 ?> = skid33
Enter new 6 char. name of in 142 ?> = skid34
Enter new 6 char. name of in 143 ?> = skid35
Enter new 6 char. name of in 144 ?> = skid36
Enter new 6 char. name of in 145 ?> = skid37
Enter new 6 char. name of in 146 ?> = skid38
Enter new 6 char. name of in 147 ?> = skid39
Enter new 6 char. name of in 148 ?> = dev0
Enter new 6 char. name of in 149 ?> = dev1
Enter new 6 char. name of in 150 ?> = dev2
Enter new 6 char. name of in 151 ?> = dev3
Enter new 6 char. name of in 152 ?> = dev4
Enter new 6 char. name of in 153 ?> = dev5
Enter new 6 char. name of in 154 ?> = dev6
Enter new 6 char. name of in 155 ?> = dev7
Enter new 6 char. name of in 156 ?> = dev8
Enter new 6 char. name of in 157 ?> = dev9
Enter new 6 char. name of in 158 ?> = leak0
Enter new 6 char. name of in 159 ?> = leak1
Enter new 6 char. name of in 160 ?> = leak2
Enter new 6 char. name of in 161 ?> = leak3
Enter new 6 char. name of in 162 ?> = leak4
Enter new 6 char. name of in 163 ?> = leak5
Enter new 6 char. name of in 164 ?> = color0
Enter new 6 char. name of in 165 ?> = color1
Enter new 6 char. name of in 166 ?> = color2
Enter new 6 char. name of in 167 ?> = color3
Enter new 6 char. name of in 168 ?> = color4
Enter new 6 char. name of in 169 ?> = grafx0
Enter new 6 char. name of in 170 ?> = grafx1
Enter new 6 char. name of in 171 ?> = grafx2
Enter new 6 char. name of in 172 ?> = grafx3
Enter new 6 char. name of in 173 ?> = grafx4
MUPF?>  = add 30 fl
Enter new 6 char. name of fl 0 ?> = float0
Enter new 6 char. name of fl 1 ?> = float1
Enter new 6 char. name of fl 2 ?> = float2
Enter new 6 char. name of fl 3 ?> = float3
Enter new 6 char. name of fl 4 ?> = float4
Enter new 6 char. name of fl 5 ?> = float5
Enter new 6 char. name of fl 6 ?> = float6
Enter new 6 char. name of fl 7 ?> = float7
Enter new 6 char. name of fl 8 ?> = float8
Enter new 6 char. name of fl 9 ?> = float9
Enter new 6 char. name of fl 10 ?> = ai0
```

```
Enter new 6 char. name of fl 11 ?> = ai1
Enter new 6 char. name of fl 12 ?> = ai2
Enter new 6 char. name of fl 13 ?> = ai3
Enter new 6 char. name of fl 14 ?> = ai4
Enter new 6 char. name of fl 15 ?> = ai5
Enter new 6 char. name of fl 16 ?> = ai6
Enter new 6 char. name of fl 17 ?> = ai7
Enter new 6 char. name of fl 18 ?> = ai8
Enter new 6 char. name of fl 19 ?> = ai9
Enter new 6 char. name of fl 20 ?> = ai10
Enter new 6 char. name of fl 21 ?> = ai11
Enter new 6 char. name of fl 22 ?> = ai12
Enter new 6 char. name of fl 23 ?> = ai13
Enter new 6 char. name of fl 24 ?> = ai14
Enter new 6 char. name of fl 25 ?> = ai15
Enter new 6 char. name of fl 26 ?> = ai16
Enter new 6 char. name of fl 27 ?> = ai17
Enter new 6 char. name of fl 28 ?> = ai18
Enter new 6 char. name of fl 29 ?> = ai19
MUPF?>  = add 10 pt
Enter new 6 char. name of pt 0 ?> = pepn
Enter new 6 char. name of pt 1 ?> = pdin
Enter new 6 char. name of pt 2 ?> = pdev
Enter new 6 char. name of pt 3 ?> = pai
Enter new 6 char. name of pt 4 ?> = palarm
Enter new 6 char. name of pt 5 ?> = pskid
Enter new 6 char. name of pt 6 ?> = pstat
Enter new 6 char. name of pt 7 ?> = ptype
Enter new 6 char. name of pt 8 ?> = ppass
Enter new 6 char. name of pt 9 ?> = prev
MUPF?>  = add 35 sg
Enter new 6 char. name of sg 0 ?> = swhen0
Enter max string length for sg 0  ?> = 8
Enter new 6 char. name of sg 1
Enter new 6 char. name of sg 1 ?> = swhen1
Enter max string length for sg 1  ?> = 8
Enter new 6 char. name of sg 2 ?> = swhen2
Enter max string length for sg 2  ?> = 8
Enter new 6 char. name of sg 3 ?> = swhen3
Enter max string length for sg 3  ?> = 8
Enter new 6 char. name of sg 4 ?> = swhen4
Enter max string length for sg 4  ?> = 8
Enter new 6 char. name of sg 5 ?> = ssng0
Enter max string length for sg 5  ?> = 8
Enter new 6 char. name of sg 6 ?> = ssng1
Enter max string length for sg 6  ?> = 8
Enter new 6 char. name of sg 7 ?> = ssng2
Enter max string length for sg 7  ?> = 8
Enter new 6 char. name of sg 8 ?> = ssng3
Enter max string length for sg 8  ?> = 8
```

```
Enter new 6 char. name of sg 9 ?> = ssng4
Enter max string length for sg 9  ?> = 8
Enter new 6 char. name of sg 10 ?> = sdate0
Enter max string length for sg 10  ?> = 10
Enter new 6 char. name of sg 11 ?> = sdate1
Enter max string length for sg 11  ?> = 10
Enter new 6 char. name of sg 12 ?> = sdate2
Enter max string length for sg 12  ?> = 10
Enter new 6 char. name of sg 13 ?> = sdate3
Enter max string length for sg 13  ?> = 10
Enter new 6 char. name of sg 14 ?> = sdate4
Enter max string length for sg 14  ?> = 10
Enter new 6 char. name of sg 15 ?> = epns0
Enter max string length for sg 15  ?> = 10
Enter new 6 char. name of sg 16 ?> = epns1
Enter max string length for sg 16  ?> = 10
Enter new 6 char. name of sg 17 ?> = epns2
Enter max string length for sg 17  ?> = 10
Enter new 6 char. name of sg 18 ?> = epns3
Enter max string length for sg 18  ?> = 10
Enter new 6 char. name of sg 19 ?> = epns4
Enter max string length for sg 19  ?> = 10
Enter new 6 char. name of sg 20 ?> = salm0
Enter max string length for sg 20  ?> = 20
Enter new 6 char. name of sg 21 ?> = salm1
Enter max string length for sg 21  ?> = 20
Enter new 6 char. name of sg 22 ?> = salm2
Enter max string length for sg 22  ?> = 20
Enter new 6 char. name of sg 23 ?> = salm3
Enter max string length for sg 23  ?> = 20
Enter new 6 char. name of sg 24 ?> = salm4
Enter max string length for sg 24  ?> = 20
Enter new 6 char. name of sg 25 ?> = lsg0
Enter max string length for sg 25  ?> = 30
Enter new 6 char. name of sg 26 ?> = lsg1
Enter max string length for sg 26  ?> = 30
Enter new 6 char. name of sg 27 ?> = lsg2
Enter max string length for sg 27  ?> = 30
Enter new 6 char. name of sg 28 ?> = lsg3
Enter max string length for sg 28  ?> = 30
Enter new 6 char. name of sg 29 ?> = lsg4
Enter max string length for sg 29  ?> = 30
Enter new 6 char. name of sg 30 ?> = strng0
Enter max string length for sg 30  ?> = 30
Enter new 6 char. name of sg 31 ?> = strng1
Enter max string length for sg 31  ?> = 30
Enter new 6 char. name of sg 32 ?> = strng2
Enter max string length for sg 32  ?> = 30
Enter new 6 char. name of sg 33 ?> = strng3
Enter max string length for sg 33  ?> = 30
```

```
Enter new 6 char. name of sg 34 ?> = strng4
Enter max string length for sg 34  ?> = 30
MUPF?>  =
UPF?>
 end of file encountered
```

PRCESS

```
UPF Version 6.3-2       05-Dec-94 09:36:16
UPF?>  = de prcess
UPF?>  = cr prcess,*
Enter 4 character name of RPF to associate?> = 242a
MUPF?>  = add 368 fg
Enter new 6 char. name of fg 0 ?> = falm0
Enter new 6 char. name of fg 1 ?> = falm1
Enter new 6 char. name of fg 2 ?> = falm2
Enter new 6 char. name of fg 3 ?> = falm3
Enter new 6 char. name of fg 4 ?> = falm4
Enter new 6 char. name of fg 5 ?> = falm5
Enter new 6 char. name of fg 6 ?> = falm6
Enter new 6 char. name of fg 7 ?> = falm7
Enter new 6 char. name of fg 8 ?> = falm8
Enter new 6 char. name of fg 9 ?> = falm9
Enter new 6 char. name of fg 10 ?> = falm10
Enter new 6 char. name of fg 11 ?> = falm11
Enter new 6 char. name of fg 12 ?> = falm12
Enter new 6 char. name of fg 13 ?> = falm13
Enter new 6 char. name of fg 14 ?> = falm14
Enter new 6 char. name of fg 15 ?> = falm15
Enter new 6 char. name of fg 16 ?> = falm16
Enter new 6 char. name of fg 17 ?> = falm17
Enter new 6 char. name of fg 18 ?> = falm18
Enter new 6 char. name of fg 19 ?> = falm19
Enter new 6 char. name of fg 20 ?> = falm20
Enter new 6 char. name of fg 21 ?> = falm21
Enter new 6 char. name of fg 22 ?> = falm22
Enter new 6 char. name of fg 23 ?> = falm23
Enter new 6 char. name of fg 24 ?> = falm24
Enter new 6 char. name of fg 25 ?> = falm25
Enter new 6 char. name of fg 26 ?> = falm26
Enter new 6 char. name of fg 27 ?> = falm27
Enter new 6 char. name of fg 28 ?> = falm28
Enter new 6 char. name of fg 29 ?> = falm29
Enter new 6 char. name of fg 30 ?> = falm30
Enter new 6 char. name of fg 31 ?> = falm31
Enter new 6 char. name of fg 32 ?> = falm32
Enter new 6 char. name of fg 33 ?> = falm33
Enter new 6 char. name of fg 34 ?> = falm34
Enter new 6 char. name of fg 35 ?> = falm35
Enter new 6 char. name of fg 36 ?> = falm36
Enter new 6 char. name of fg 37 ?> = falm37
Enter new 6 char. name of fg 38 ?> = falm38
Enter new 6 char. name of fg 39 ?> = falm39
Enter new 6 char. name of fg 40 ?> = falm40
Enter new 6 char. name of fg 41 ?> = falm41
Enter new 6 char. name of fg 42 ?> = falm42
Enter new 6 char. name of fg 43 ?> = falm43
Enter new 6 char. name of fg 44 ?> = falm44
```

```
Enter new 6 char. name of fg 45 ?> = falm45
Enter new 6 char. name of fg 46 ?> = falm46
Enter new 6 char. name of fg 47 ?> = falm47
Enter new 6 char. name of fg 48 ?> = falm48
Enter new 6 char. name of fg 49 ?> = falm49
Enter new 6 char. name of fg 50 ?> = falm50
Enter new 6 char. name of fg 51 ?> = falm51
Enter new 6 char. name of fg 52 ?> = falm52
Enter new 6 char. name of fg 53 ?> = falm53
Enter new 6 char. name of fg 54 ?> = falm54
Enter new 6 char. name of fg 55 ?> = falm55
Enter new 6 char. name of fg 56 ?> = falm56
Enter new 6 char. name of fg 57 ?> = falm57
Enter new 6 char. name of fg 58 ?> = falm58
Enter new 6 char. name of fg 59 ?> = falm59
Enter new 6 char. name of fg 60 ?> = falm60
Enter new 6 char. name of fg 61 ?> = falm61
Enter new 6 char. name of fg 62 ?> = falm62
Enter new 6 char. name of fg 63 ?> = fpas0
Enter new 6 char. name of fg 64 ?> = fpas1
Enter new 6 char. name of fg 65 ?> = fpas2
Enter new 6 char. name of fg 66 ?> = fpas3
Enter new 6 char. name of fg 67 ?> = fpas4
Enter new 6 char. name of fg 68 ?> = fpas5
Enter new 6 char. name of fg 69 ?> = fpas6
Enter new 6 char. name of fg 70 ?> = fpas7
Enter new 6 char. name of fg 71 ?> = fpas8
Enter new 6 char. name of fg 72 ?> = fpas9
Enter new 6 char. name of fg 73 ?> = fpas10
Enter new 6 char. name of fg 74 ?> = fpas11
Enter new 6 char. name of fg 75 ?> = fpas12
Enter new 6 char. name of fg 76 ?> = fpas13
Enter new 6 char. name of fg 77 ?> = fpas14
Enter new 6 char. name of fg 78 ?> = fpas15
Enter new 6 char. name of fg 79 ?> = fpas16
Enter new 6 char. name of fg 80 ?> = fpas17
Enter new 6 char. name of fg 81 ?> = fpas18
Enter new 6 char. name of fg 82 ?> = fpas19
Enter new 6 char. name of fg 83 ?> = fpas20
Enter new 6 char. name of fg 84 ?> = fpas21
Enter new 6 char. name of fg 85 ?> = fpas22
Enter new 6 char. name of fg 86 ?> = fpas23
Enter new 6 char. name of fg 87 ?> = fpas24
Enter new 6 char. name of fg 88 ?> = fpas25
Enter new 6 char. name of fg 89 ?> = fpas26
Enter new 6 char. name of fg 90 ?> = fpas27
Enter new 6 char. name of fg 91 ?> = fpas28
Enter new 6 char. name of fg 92 ?> = fpas29
Enter new 6 char. name of fg 93 ?> = fpas30
Enter new 6 char. name of fg 94 ?> = fpas31
```

```
Enter new 6 char. name of fg 95 ?> = fpas32
Enter new 6 char. name of fg 96 ?> = fpas33
Enter new 6 char. name of fg 97 ?> = fpas34
Enter new 6 char. name of fg 98 ?> = fpas35
Enter new 6 char. name of fg 99 ?> = fpas36
Enter new 6 char. name of fg 100 ?> = fpas37
Enter new 6 char. name of fg 101 ?> = fpas38
Enter new 6 char. name of fg 102 ?> = fpas39
Enter new 6 char. name of fg 103 ?> = fpas40
Enter new 6 char. name of fg 104 ?> = fpas41
Enter new 6 char. name of fg 105 ?> = fpas42
Enter new 6 char. name of fg 106 ?> = fpas43
Enter new 6 char. name of fg 107 ?> = fpas44
Enter new 6 char. name of fg 108 ?> = fpas45
Enter new 6 char. name of fg 109 ?> = fpas46
Enter new 6 char. name of fg 110 ?> = fpas47
Enter new 6 char. name of fg 111 ?> = fpas48
Enter new 6 char. name of fg 112 ?> = fpas49
Enter new 6 char. name of fg 113 ?> = fpas50
Enter new 6 char. name of fg 114 ?> = fpas51
Enter new 6 char. name of fg 115 ?> = fpas52
Enter new 6 char. name of fg 116 ?> = fpas53
Enter new 6 char. name of fg 117 ?> = fpas54
Enter new 6 char. name of fg 118 ?> = fpas55
Enter new 6 char. name of fg 119 ?> = fpas56
Enter new 6 char. name of fg 120 ?> = fpas57
Enter new 6 char. name of fg 121 ?> = fpas58
Enter new 6 char. name of fg 122 ?> = fpas59
Enter new 6 char. name of fg 123 ?> = fpas60
Enter new 6 char. name of fg 124 ?> = fpas61
Enter new 6 char. name of fg 125 ?> = fpas62
Enter new 6 char. name of fg 126 ?> = fpas63
Enter new 6 char. name of fg 127 ?> = frv0
Enter new 6 char. name of fg 128 ?> = frv1
Enter new 6 char. name of fg 129 ?> = frv2
Enter new 6 char. name of fg 130 ?> = frv3
Enter new 6 char. name of fg 131 ?> = frv4
Enter new 6 char. name of fg 132 ?> = frv5
Enter new 6 char. name of fg 133 ?> = frv6
Enter new 6 char. name of fg 134 ?> = frv7
Enter new 6 char. name of fg 135 ?> = frv8
Enter new 6 char. name of fg 136 ?> = frv9
Enter new 6 char. name of fg 137 ?> = frv10
Enter new 6 char. name of fg 138 ?> = frv11
Enter new 6 char. name of fg 139 ?> = frv12
Enter new 6 char. name of fg 140 ?> = frv13
Enter new 6 char. name of fg 141 ?> = frv14
Enter new 6 char. name of fg 142 ?> = frv15
Enter new 6 char. name of fg 143 ?> = frv16
Enter new 6 char. name of fg 144 ?> = frv17
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```
Enter new 6 char. name of fg 145 ?> = frv18
Enter new 6 char. name of fg 146 ?> = frv19
Enter new 6 char. name of fg 147 ?> = frv20
Enter new 6 char. name of fg 148 ?> = frv21
Enter new 6 char. name of fg 149 ?> = frv22
Enter new 6 char. name of fg 150 ?> = frv23
Enter new 6 char. name of fg 151 ?> = frv24
Enter new 6 char. name of fg 152 ?> = frv25
Enter new 6 char. name of fg 153 ?> = frv26
Enter new 6 char. name of fg 154 ?> = frv27
Enter new 6 char. name of fg 155 ?> = frv28
Enter new 6 char. name of fg 156 ?> = frv29
Enter new 6 char. name of fg 157 ?> = frv30
Enter new 6 char. name of fg 158 ?> = frv31
Enter new 6 char. name of fg 159 ?> = frv32
Enter new 6 char. name of fg 160 ?> = frv33
Enter new 6 char. name of fg 161 ?> = frv34
Enter new 6 char. name of fg 162 ?> = frv35
Enter new 6 char. name of fg 163 ?> = frv36
Enter new 6 char. name of fg 164 ?> = frv37
Enter new 6 char. name of fg 165 ?> = frv38
Enter new 6 char. name of fg 166 ?> = frv39
Enter new 6 char. name of fg 167 ?> = frv40
Enter new 6 char. name of fg 168 ?> = frv41
Enter new 6 char. name of fg 169 ?> = frv42
Enter new 6 char. name of fg 170 ?> = frv43
Enter new 6 char. name of fg 171 ?> = frv44
Enter new 6 char. name of fg 172 ?> = frv45
Enter new 6 char. name of fg 173 ?> = frv46
Enter new 6 char. name of fg 174 ?> = frv47
Enter new 6 char. name of fg 175 ?> = frv48
Enter new 6 char. name of fg 176 ?> = frv49
Enter new 6 char. name of fg 177 ?> = frv50
Enter new 6 char. name of fg 178 ?> = frv51
Enter new 6 char. name of fg 179 ?> = frv52
Enter new 6 char. name of fg 180 ?> = frv53
Enter new 6 char. name of fg 181 ?> = frv54
Enter new 6 char. name of fg 182 ?> = frv55
Enter new 6 char. name of fg 183 ?> = frv56
Enter new 6 char. name of fg 184 ?> = frv57
Enter new 6 char. name of fg 185 ?> = frv58
Enter new 6 char. name of fg 186 ?> = frv59
Enter new 6 char. name of fg 187 ?> = frv60
Enter new 6 char. name of fg 188 ?> = frv61
Enter new 6 char. name of fg 189 ?> = frv62
Enter new 6 char. name of fg 190 ?> = frv63
Enter new 6 char. name of fg 191 ?> = aleak0
Enter new 6 char. name of fg 192 ?> = aleak1
Enter new 6 char. name of fg 193 ?> = aleak2
Enter new 6 char. name of fg 194 ?> = aleak3
```

```
Enter new 6 char. name of fg 195 ?> = bleak0
Enter new 6 char. name of fg 196 ?> = bleak1
Enter new 6 char. name of fg 197 ?> = bleak2
Enter new 6 char. name of fg 198 ?> = bleak3
Enter new 6 char. name of fg 199 ?> = cleak0
Enter new 6 char. name of fg 200 ?> = cleak1
Enter new 6 char. name of fg 201 ?> = cleak2
Enter new 6 char. name of fg 202 ?> = cleak3
Enter new 6 char. name of fg 203 ?> = dleak0
Enter new 6 char. name of fg 204 ?> = dleak1
Enter new 6 char. name of fg 205 ?> = dleak2
Enter new 6 char. name of fg 206 ?> = dleak3
Enter new 6 char. name of fg 207 ?> = at0
Enter new 6 char. name of fg 208 ?> = at1
Enter new 6 char. name of fg 209 ?> = at2
Enter new 6 char. name of fg 210 ?> = at3
Enter new 6 char. name of fg 211 ?> = at4
Enter new 6 char. name of fg 212 ?> = at5
Enter new 6 char. name of fg 213 ?> = at6
Enter new 6 char. name of fg 214 ?> = at7
Enter new 6 char. name of fg 215 ?> = at8
Enter new 6 char. name of fg 216 ?> = at9
Enter new 6 char. name of fg 217 ?> = at10
Enter new 6 char. name of fg 218 ?> = at11
Enter new 6 char. name of fg 219 ?> = at12
Enter new 6 char. name of fg 220 ?> = at13
Enter new 6 char. name of fg 221 ?> = at14
Enter new 6 char. name of fg 222 ?> = at15
Enter new 6 char. name of fg 223 ?> = at16
Enter new 6 char. name of fg 224 ?> = at17
Enter new 6 char. name of fg 225 ?> = at18
Enter new 6 char. name of fg 226 ?> = at19
Enter new 6 char. name of fg 227 ?> = at20
Enter new 6 char. name of fg 228 ?> = at21
Enter new 6 char. name of fg 229 ?> = at22
Enter new 6 char. name of fg 230 ?> = at23
Enter new 6 char. name of fg 231 ?> = at24
Enter new 6 char. name of fg 232 ?> = at25
Enter new 6 char. name of fg 233 ?> = at26
Enter new 6 char. name of fg 234 ?> = at27
Enter new 6 char. name of fg 235 ?> = at28
Enter new 6 char. name of fg 236 ?> = at29
Enter new 6 char. name of fg 237 ?> = at30
Enter new 6 char. name of fg 238 ?> = at31
Enter new 6 char. name of fg 239 ?> = bt0
Enter new 6 char. name of fg 240 ?> = bt1
Enter new 6 char. name of fg 241 ?> = bt2
Enter new 6 char. name of fg 242 ?> = bt3
Enter new 6 char. name of fg 243 ?> = bt4
Enter new 6 char. name of fg 244 ?> = bt5
```

```
Enter new 6 char. name of fg 245 ?> = bt6
Enter new 6 char. name of fg 246 ?> = bt7
Enter new 6 char. name of fg 247 ?> = bt8
Enter new 6 char. name of fg 248 ?> = bt9
Enter new 6 char. name of fg 249 ?> = bt10
Enter new 6 char. name of fg 250 ?> = bt11
Enter new 6 char. name of fg 251 ?> = bt12
Enter new 6 char. name of fg 252 ?> = bt13
Enter new 6 char. name of fg 253 ?> = bt14
Enter new 6 char. name of fg 254 ?> = bt15
Enter new 6 char. name of fg 255 ?> = bt16
Enter new 6 char. name of fg 256 ?> = bt17
Enter new 6 char. name of fg 257 ?> = bt18
Enter new 6 char. name of fg 258 ?> = bt19
Enter new 6 char. name of fg 259 ?> = bt20
Enter new 6 char. name of fg 260 ?> = bt21
Enter new 6 char. name of fg 261 ?> = bt22
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Enter new 6 char. name of fg 264 ?> = bt25
Enter new 6 char. name of fg 265 ?> = bt26
Enter new 6 char. name of fg 266 ?> = bt27
Enter new 6 char. name of fg 267 ?> = bt28
Enter new 6 char. name of fg 268 ?> = bt29
Enter new 6 char. name of fg 269 ?> = bt30
Enter new 6 char. name of fg 270 ?> = bt31
Enter new 6 char. name of fg 271 ?> = ct0
Enter new 6 char. name of fg 272 ?> = ct1
Enter new 6 char. name of fg 273 ?> = ct2
Enter new 6 char. name of fg 274 ?> = ct3
Enter new 6 char. name of fg 275 ?> = ct4
Enter new 6 char. name of fg 276 ?> = ct5
Enter new 6 char. name of fg 277 ?> = ct6
Enter new 6 char. name of fg 278 ?> = ct7
Enter new 6 char. name of fg 279 ?> = ct8
Enter new 6 char. name of fg 280 ?> = ct9
Enter new 6 char. name of fg 281 ?> = ct10
Enter new 6 char. name of fg 282 ?> = ct11
Enter new 6 char. name of fg 283 ?> = ct12
Enter new 6 char. name of fg 284 ?> = ct13
Enter new 6 char. name of fg 285 ?> = ct14
Enter new 6 char. name of fg 286 ?> = ct15
Enter new 6 char. name of fg 287 ?> = ct16
Enter new 6 char. name of fg 288 ?> = ct17
Enter new 6 char. name of fg 289 ?> = ct18
Enter new 6 char. name of fg 290 ?> = ct19
Enter new 6 char. name of fg 291 ?> = ct20
Enter new 6 char. name of fg 292 ?> = ct21
Enter new 6 char. name of fg 293 ?> = ct22
Enter new 6 char. name of fg 294 ?> = ct23
```

```
Enter new 6 char. name of fg 295 ?> = ct24
Enter new 6 char. name of fg 296 ?> = ct25
Enter new 6 char. name of fg 297 ?> = ct26
Enter new 6 char. name of fg 298 ?> = ct27
Enter new 6 char. name of fg 299 ?> = ct28
Enter new 6 char. name of fg 300 ?> = ct29
Enter new 6 char. name of fg 301 ?> = ct30
Enter new 6 char. name of fg 302 ?> = ct31
Enter new 6 char. name of fg 303 ?> = sa0
Enter new 6 char. name of fg 304 ?> = sa1
Enter new 6 char. name of fg 305 ?> = sa2
Enter new 6 char. name of fg 306 ?> = sa3
Enter new 6 char. name of fg 307 ?> = sa4
Enter new 6 char. name of fg 308 ?> = sa5
Enter new 6 char. name of fg 309 ?> = sa6
Enter new 6 char. name of fg 310 ?> = sa7
Enter new 6 char. name of fg 311 ?> = sb0
Enter new 6 char. name of fg 312 ?> = sb1
Enter new 6 char. name of fg 313 ?> = sb2
Enter new 6 char. name of fg 314 ?> = sb3
Enter new 6 char. name of fg 315 ?> = sb4
Enter new 6 char. name of fg 316 ?> = sb5
Enter new 6 char. name of fg 317 ?> = sb6
Enter new 6 char. name of fg 318 ?> = sb7
Enter new 6 char. name of fg 319 ?> = sc0
Enter new 6 char. name of fg 320 ?> = sc1
Enter new 6 char. name of fg 321 ?> = sc2
Enter new 6 char. name of fg 322 ?> = sc3
Enter new 6 char. name of fg 323 ?> = sc4
Enter new 6 char. name of fg 324 ?> = sc5
Enter new 6 char. name of fg 325 ?> = sc6
Enter new 6 char. name of fg 326 ?> = sc7
Enter new 6 char. name of fg 327 ?> = sd0
Enter new 6 char. name of fg 328 ?> = sd1
Enter new 6 char. name of fg 329 ?> = sd2
Enter new 6 char. name of fg 330 ?> = sd3
Enter new 6 char. name of fg 331 ?> = sd4
Enter new 6 char. name of fg 332 ?> = sd5
Enter new 6 char. name of fg 333 ?> = sd6
Enter new 6 char. name of fg 334 ?> = sd7
Enter new 6 char. name of fg 335 ?> = gt0
Enter new 6 char. name of fg 336 ?> = gt1
Enter new 6 char. name of fg 337 ?> = gt2
Enter new 6 char. name of fg 338 ?> = gt3
Enter new 6 char. name of fg 339 ?> = gt4
Enter new 6 char. name of fg 340 ?> = gt5
Enter new 6 char. name of fg 341 ?> = gt6
Enter new 6 char. name of fg 342 ?> = gt7
Enter new 6 char. name of fg 343 ?> = gt8
Enter new 6 char. name of fg 344 ?> = gt9
```

```
Enter new 6 char. name of fg 345 ?> = gtl0
Enter new 6 char. name of fg 346 ?> = gtl1
Enter new 6 char. name of fg 347 ?> = gtl2
Enter new 6 char. name of fg 348 ?> = gtl3
Enter new 6 char. name of fg 349 ?> = gtl4
Enter new 6 char. name of fg 350 ?> = gtl5
Enter new 6 char. name of fg 351 ?> = fhold
Enter new 6 char. name of fg 352 ?> = fning
Enter new 6 char. name of fg 353 ?> = fabort
Enter new 6 char. name of fg 354 ?> = fstart
Enter new 6 char. name of fg 355 ?> = fpass
Enter new 6 char. name of fg 356 ?> = ftrip0
Enter new 6 char. name of fg 357 ?> = ftrip1
Enter new 6 char. name of fg 358 ?> = ftrip2
Enter new 6 char. name of fg 359 ?> = ftrip3
Enter new 6 char. name of fg 360 ?> = ftrip4
Enter new 6 char. name of fg 361 ?> = fspar0
Enter new 6 char. name of fg 362 ?> = fspar1
Enter new 6 char. name of fg 363 ?> = fsn0
Enter new 6 char. name of fg 364 ?> = falmon
Enter new 6 char. name of fg 365 ?> = fack
Enter new 6 char. name of fg 366 ?> = fclear
Enter new 6 char. name of fg 367 ?> = ack
MUPF?>  = add 170 in
Enter new 6 char. name of in 0 ?> = unitt
Enter new 6 char. name of in 1 ?> = analog
Enter new 6 char. name of in 2 ?> = white
Enter new 6 char. name of in 3 ?> = bitval
Enter new 6 char. name of in 4 ?> = lmpvar
Enter new 6 char. name of in 5 ?> = skdkey
Enter new 6 char. name of in 6 ?> = iloop
Enter new 6 char. name of in 7 ?> = jloop
Enter new 6 char. name of in 8 ?> = index
Enter new 6 char. name of in 9 ?> = last
Enter new 6 char. name of in 10 ?> = curent
Enter new 6 char. name of in 11 ?> = nxt
Enter new 6 char. name of in 12 ?> = int
Enter new 6 char. name of in 13 ?> = remain
Enter new 6 char. name of in 14 ?> = trip
Enter new 6 char. name of in 15 ?> = nadi
Enter new 6 char. name of in 16 ?> = blkval
Enter new 6 char. name of in 17 ?> = sort
Enter new 6 char. name of in 18 ?> = bval
Enter new 6 char. name of in 19 ?> = hldstp
Enter new 6 char. name of in 20 ?> = errn
Enter new 6 char. name of in 21 ?> = errl
Enter new 6 char. name of in 22 ?> = adi
Enter new 6 char. name of in 23 ?> = star
Enter new 6 char. name of in 24 ?> = dev0
Enter new 6 char. name of in 25 ?> = dev1
```

```
Enter new 6 char. name of in 26 ?> = dev2
Enter new 6 char. name of in 27 ?> = dev3
Enter new 6 char. name of in 28 ?> = dev4
Enter new 6 char. name of in 29 ?> = dev5
Enter new 6 char. name of in 30 ?> = dev6
Enter new 6 char. name of in 31 ?> = dev7
Enter new 6 char. name of in 32 ?> = dev8
Enter new 6 char. name of in 33 ?> = dev9
Enter new 6 char. name of in 34 ?> = skid0
Enter new 6 char. name of in 35 ?> = skid1
Enter new 6 char. name of in 36 ?> = skid2
Enter new 6 char. name of in 37 ?> = skid3
Enter new 6 char. name of in 38 ?> = skid4
Enter new 6 char. name of in 39 ?> = skid5
Enter new 6 char. name of in 40 ?> = skid6
Enter new 6 char. name of in 41 ?> = skid7
Enter new 6 char. name of in 42 ?> = skid8
Enter new 6 char. name of in 43 ?> = skid9
Enter new 6 char. name of in 44 ?> = skid10
Enter new 6 char. name of in 45 ?> = skid11
Enter new 6 char. name of in 46 ?> = skid12
Enter new 6 char. name of in 47 ?> = skid13
Enter new 6 char. name of in 48 ?> = skid14
Enter new 6 char. name of in 49 ?> = skid15
Enter new 6 char. name of in 50 ?> = skid16
Enter new 6 char. name of in 51 ?> = skid17
Enter new 6 char. name of in 52 ?> = skid18
Enter new 6 char. name of in 53 ?> = skid19
Enter new 6 char. name of in 54 ?> = skid20
Enter new 6 char. name of in 55 ?> = skid21
Enter new 6 char. name of in 56 ?> = skid22
Enter new 6 char. name of in 57 ?> = skid23
Enter new 6 char. name of in 58 ?> = skid24
Enter new 6 char. name of in 59 ?> = skid25
Enter new 6 char. name of in 60 ?> = skid26
Enter new 6 char. name of in 61 ?> = skid27
Enter new 6 char. name of in 62 ?> = skid28
Enter new 6 char. name of in 63 ?> = skid29
Enter new 6 char. name of in 64 ?> = skid30
Enter new 6 char. name of in 65 ?> = skid31
Enter new 6 char. name of in 66 ?> = skid32
Enter new 6 char. name of in 67 ?> = skid33
Enter new 6 char. name of in 68 ?> = skid34
Enter new 6 char. name of in 69 ?> = skid35
Enter new 6 char. name of in 70 ?> = skid36
Enter new 6 char. name of in 71 ?> = skid37
Enter new 6 char. name of in 72 ?> = skid38
Enter new 6 char. name of in 73 ?> = skid39
Enter new 6 char. name of in 74 ?> = type0
Enter new 6 char. name of in 75 ?> = type1
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Enter new 6 char. name of in 76 ?> = type2
Enter new 6 char. name of in 77 ?> = type3
Enter new 6 char. name of in 78 ?> = type4
Enter new 6 char. name of in 79 ?> = type5
Enter new 6 char. name of in 80 ?> = type6
Enter new 6 char. name of in 81 ?> = type7
Enter new 6 char. name of in 82 ?> = type8
Enter new 6 char. name of in 83 ?> = type9
Enter new 6 char. name of in 84 ?> = type10
Enter new 6 char. name of in 85 ?> = type11
Enter new 6 char. name of in 86 ?> = type12
Enter new 6 char. name of in 87 ?> = type13
Enter new 6 char. name of in 88 ?> = type14
Enter new 6 char. name of in 89 ?> = type15
Enter new 6 char. name of in 90 ?> = type16
Enter new 6 char. name of in 91 ?> = type17
Enter new 6 char. name of in 92 ?> = type18
Enter new 6 char. name of in 93 ?> = type19
Enter new 6 char. name of in 94 ?> = type20
Enter new 6 char. name of in 95 ?> = type21
Enter new 6 char. name of in 96 ?> = type22
Enter new 6 char. name of in 97 ?> = type23
Enter new 6 char. name of in 98 ?> = type24
Enter new 6 char. name of in 99 ?> = type25
Enter new 6 char. name of in 100 ?> = type26
Enter new 6 char. name of in 101 ?> = type27
Enter new 6 char. name of in 102 ?> = type28
Enter new 6 char. name of in 103 ?> = type29
Enter new 6 char. name of in 104 ?> = type30
Enter new 6 char. name of in 105 ?> = type31
Enter new 6 char. name of in 106 ?> = type32
Enter new 6 char. name of in 107 ?> = type33
Enter new 6 char. name of in 108 ?> = type34
Enter new 6 char. name of in 109 ?> = type35
Enter new 6 char. name of in 110 ?> = type36
Enter new 6 char. name of in 111 ?> = type37
Enter new 6 char. name of in 112 ?> = type38
Enter new 6 char. name of in 113 ?> = type39
Enter new 6 char. name of in 114 ?> = int0
Enter new 6 char. name of in 115 ?> = int1
Enter new 6 char. name of in 116 ?> = int2
Enter new 6 char. name of in 117 ?> = int3
Enter new 6 char. name of in 118 ?> = int4
Enter new 6 char. name of in 119 ?> = int5
Enter new 6 char. name of in 120 ?> = int6
Enter new 6 char. name of in 121 ?> = int7
Enter new 6 char. name of in 122 ?> = int8
Enter new 6 char. name of in 123 ?> = int9
Enter new 6 char. name of in 124 ?> = int10
Enter new 6 char. name of in 125 ?> = int11
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Enter new 6 char. name of in 126 ?> = int12
Enter new 6 char. name of in 127 ?> = int13
Enter new 6 char. name of in 128 ?> = int14
Enter new 6 char. name of in 129 ?> = int15
Enter new 6 char. name of in 130 ?> = int16
Enter new 6 char. name of in 131 ?> = int17
Enter new 6 char. name of in 132 ?> = int18
Enter new 6 char. name of in 133 ?> = int19
Enter new 6 char. name of in 134 ?> = int20
Enter new 6 char. name of in 135 ?> = int21
Enter new 6 char. name of in 136 ?> = int22
Enter new 6 char. name of in 137 ?> = int23
Enter new 6 char. name of in 138 ?> = int24
Enter new 6 char. name of in 139 ?> = int25
Enter new 6 char. name of in 140 ?> = int26
Enter new 6 char. name of in 141 ?> = int27
Enter new 6 char. name of in 142 ?> = int28
Enter new 6 char. name of in 143 ?> = int29
Enter new 6 char. name of in 144 ?> = int30
Enter new 6 char. name of in 145 ?> = int31
Enter new 6 char. name of in 146 ?> = int32
Enter new 6 char. name of in 147 ?> = int33
Enter new 6 char. name of in 148 ?> = int34
Enter new 6 char. name of in 149 ?> = int35
Enter new 6 char. name of in 150 ?> = int36
Enter new 6 char. name of in 151 ?> = int37
Enter new 6 char. name of in 152 ?> = int38
Enter new 6 char. name of in 153 ?> = int39
Enter new 6 char. name of in 154 ?> = leak0
Enter new 6 char. name of in 155 ?> = leak1
Enter new 6 char. name of in 156 ?> = leak2
Enter new 6 char. name of in 157 ?> = leak3
Enter new 6 char. name of in 158 ?> = leak4
Enter new 6 char. name of in 159 ?> = leak5
Enter new 6 char. name of in 160 ?> = color0
Enter new 6 char. name of in 161 ?> = color1
Enter new 6 char. name of in 162 ?> = color2
Enter new 6 char. name of in 163 ?> = color3
Enter new 6 char. name of in 164 ?> = color4
Enter new 6 char. name of in 165 ?> = grafx0
Enter new 6 char. name of in 166 ?> = grafx1
Enter new 6 char. name of in 167 ?> = grafx2
Enter new 6 char. name of in 168 ?> = grafx3
Enter new 6 char. name of in 169 ?> = grafx4
MUPF?>  = add 36 fl
Enter new 6 char. name of fl 0 ?> = ai0
Enter new 6 char. name of fl 1 ?> = ai1
Enter new 6 char. name of fl 2 ?> = ai2
Enter new 6 char. name of fl 3 ?> = ai3
Enter new 6 char. name of fl 4 ?> = ai4
```

```
Enter new 6 char. name of fl 5 ?> = ai5
Enter new 6 char. name of fl 6 ?> = ai6
Enter new 6 char. name of fl 7 ?> = ai7
Enter new 6 char. name of fl 8 ?> = ai8
Enter new 6 char. name of fl 9 ?> = ai9
Enter new 6 char. name of fl 10 ?> = ai10
Enter new 6 char. name of fl 11 ?> = ai11
Enter new 6 char. name of fl 12 ?> = ai12
Enter new 6 char. name of fl 13 ?> = ai13
Enter new 6 char. name of fl 14 ?> = ai14
Enter new 6 char. name of fl 15 ?> = ai15
Enter new 6 char. name of fl 16 ?> = ai16
Enter new 6 char. name of fl 17 ?> = ai17
Enter new 6 char. name of fl 18 ?> = ai18
Enter new 6 char. name of fl 19 ?> = ai19
Enter new 6 char. name of fl 20 ?> = ai20
Enter new 6 char. name of fl 21 ?> = ai21
Enter new 6 char. name of fl 22 ?> = ai22
Enter new 6 char. name of fl 23 ?> = ai23
Enter new 6 char. name of fl 24 ?> = ai24
Enter new 6 char. name of fl 25 ?> = ai25
Enter new 6 char. name of fl 26 ?> = ai26
Enter new 6 char. name of fl 27 ?> = ai27
Enter new 6 char. name of fl 28 ?> = ai28
Enter new 6 char. name of fl 29 ?> = ai29
Enter new 6 char. name of fl 30 ?> = ai30
Enter new 6 char. name of fl 31 ?> = ai31
Enter new 6 char. name of fl 32 ?> = ai32
Enter new 6 char. name of fl 33 ?> = ai33
Enter new 6 char. name of fl 34 ?> = ai34
Enter new 6 char. name of fl 35 ?> = ai35
MUPF?>  = add 11 pt
Enter new 6 char. name of pt 0 ?> = pepn
Enter new 6 char. name of pt 1 ?> = pdin
Enter new 6 char. name of pt 2 ?> = pdev
Enter new 6 char. name of pt 3 ?> = pai
Enter new 6 char. name of pt 4 ?> = palarm
Enter new 6 char. name of pt 5 ?> = pskid
Enter new 6 char. name of pt 6 ?> = pstat
Enter new 6 char. name of pt 7 ?> = ptype
Enter new 6 char. name of pt 8 ?> = ppass
Enter new 6 char. name of pt 9 ?> = prev
Enter new 6 char. name of pt 10 ?> = pspar0
MUPF?>  = add  15 sg
Enter new 6 char. name of sg 0 ?> = epns0
Enter max string length for sg 0  ?> = 10
Enter new 6 char. name of sg 1 ?> = epns1
Enter max string length for sg 1  ?> = 10
Enter new 6 char. name of sg 2 ?> = epns2
Enter max string length for sg 2  ?> = 10
```

```
Enter new 6 char. name of sg 3 ?> = epns3
Enter max string length for sg 3  ?> = 10
Enter new 6 char. name of sg 4 ?> = epns4
Enter max string length for sg 4  ?> = 10
Enter new 6 char. name of sg 5 ?> = lsg0
Enter max string length for sg 5  ?> = 30
Enter new 6 char. name of sg 6 ?> = lsg1
Enter max string length for sg 6  ?> = 30
Enter new 6 char. name of sg 7 ?> = lsg2
Enter max string length for sg 7  ?> = 30
Enter new 6 char. name of sg 8 ?> = lsg3
Enter max string length for sg 8  ?> = 30
Enter new 6 char. name of sg 9 ?> = lsg4
Enter max string length for sg 9  ?> = 30
Enter new 6 char. name of sg 10 ?> = strng0
Enter max string length for sg 10  ?> = 30
Enter new 6 char. name of sg 11 ?> = strng1
Enter max string length for sg 11  ?> = 30
Enter new 6 char. name of sg 12 ?> = strng2
Enter max string length for sg 12  ?> = 30
Enter new 6 char. name of sg 13 ?> = strng3
Enter max string length for sg 13  ?> = 30
Enter new 6 char. name of sg 14 ?> = strng4
Enter max string length for sg 14  ?> = 30
MUPF?>
 end of file encountered
UPF?>
 end of file encountered
```

OVRVEW

```
UPF Version 6.3-2       05-Dec-94 09:37:11
UPF?>  = de ovrvew
UPF?>  = cr ovrvew,*
Enter 4 character name of RPF to associate?> = 242a
MUPF?>  = add 720 fg
Enter new 6 char. name of fg 0 ?> = fai0
Enter new 6 char. name of fg 1 ?> = fai1
Enter new 6 char. name of fg 2 ?> = fai2
Enter new 6 char. name of fg 3 ?> = fai3
Enter new 6 char. name of fg 4 ?> = fai4
Enter new 6 char. name of fg 5 ?> = fai5
Enter new 6 char. name of fg 6 ?> = fai6
Enter new 6 char. name of fg 7 ?> = fai7
Enter new 6 char. name of fg 8 ?> = fai8
Enter new 6 char. name of fg 9 ?> = fai9
Enter new 6 char. name of fg 10 ?> = fai10
Enter new 6 char. name of fg 11 ?> = fai11
Enter new 6 char. name of fg 12 ?> = fai12
Enter new 6 char. name of fg 13 ?> = fai13
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Enter new 6 char. name of fg 15 ?> = fai15
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Enter new 6 char. name of fg 22 ?> = fai22
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Enter new 6 char. name of fg 25 ?> = fai25
Enter new 6 char. name of fg 26 ?> = fai26
Enter new 6 char. name of fg 27 ?> = fai27
Enter new 6 char. name of fg 28 ?> = fai28
Enter new 6 char. name of fg 29 ?> = fai29
Enter new 6 char. name of fg 30 ?> = fai30
Enter new 6 char. name of fg 31 ?> = fai31
Enter new 6 char. name of fg 32 ?> = fai32
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Enter new 6 char. name of fg 41 ?> = fai41
Enter new 6 char. name of fg 42 ?> = fai42
Enter new 6 char. name of fg 43 ?> = fai43
Enter new 6 char. name of fg 44 ?> = fai44
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Enter new 6 char. name of fg 45 ?> = fai45
Enter new 6 char. name of fg 46 ?> = fai46
Enter new 6 char. name of fg 47 ?> = fai47
Enter new 6 char. name of fg 48 ?> = fai48
Enter new 6 char. name of fg 49 ?> = fai49
Enter new 6 char. name of fg 50 ?> = fai50
Enter new 6 char. name of fg 51 ?> = fai51
Enter new 6 char. name of fg 52 ?> = fai52
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Enter new 6 char. name of fg 56 ?> = fai56
Enter new 6 char. name of fg 57 ?> = fai57
Enter new 6 char. name of fg 58 ?> = fai58
Enter new 6 char. name of fg 59 ?> = fai59
Enter new 6 char. name of fg 60 ?> = fai60
Enter new 6 char. name of fg 61 ?> = fai61
Enter new 6 char. name of fg 62 ?> = fai62
Enter new 6 char. name of fg 63 ?> = fai63
Enter new 6 char. name of fg 64 ?> = fai64
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Enter new 6 char. name of fg 69 ?> = fai69
Enter new 6 char. name of fg 70 ?> = fai70
Enter new 6 char. name of fg 71 ?> = fai71
Enter new 6 char. name of fg 72 ?> = fai72
Enter new 6 char. name of fg 73 ?> = fai73
Enter new 6 char. name of fg 74 ?> = fai74
Enter new 6 char. name of fg 75 ?> = fai75
Enter new 6 char. name of fg 76 ?> = fai76
Enter new 6 char. name of fg 77 ?> = fai77
Enter new 6 char. name of fg 78 ?> = fai78
Enter new 6 char. name of fg 79 ?> = fai79
Enter new 6 char. name of fg 80 ?> = fai80
Enter new 6 char. name of fg 81 ?> = fai81
Enter new 6 char. name of fg 82 ?> = fai82
Enter new 6 char. name of fg 83 ?> = fai83
Enter new 6 char. name of fg 84 ?> = fai84
Enter new 6 char. name of fg 85 ?> = fai85
Enter new 6 char. name of fg 86 ?> = fai86
Enter new 6 char. name of fg 87 ?> = fai87
Enter new 6 char. name of fg 88 ?> = fai88
Enter new 6 char. name of fg 89 ?> = fai89
Enter new 6 char. name of fg 90 ?> = fai90
Enter new 6 char. name of fg 91 ?> = fai91
Enter new 6 char. name of fg 92 ?> = fai92
Enter new 6 char. name of fg 93 ?> = fai93
Enter new 6 char. name of fg 94 ?> = fai94
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Enter new 6 char. name of fg 95 ?> = fai95
Enter new 6 char. name of fg 96 ?> = fai96
Enter new 6 char. name of fg 97 ?> = fai97
Enter new 6 char. name of fg 98 ?> = fai98
Enter new 6 char. name of fg 99 ?> = fai99
Enter new 6 char. name of fg 100 ?> = fai100
Enter new 6 char. name of fg 101 ?> = fai101
Enter new 6 char. name of fg 102 ?> = fai102
Enter new 6 char. name of fg 103 ?> = fai103
Enter new 6 char. name of fg 104 ?> = fai104
Enter new 6 char. name of fg 105 ?> = fai105
Enter new 6 char. name of fg 106 ?> = fai106
Enter new 6 char. name of fg 107 ?> = fai107
Enter new 6 char. name of fg 108 ?> = fai108
Enter new 6 char. name of fg 109 ?> = fai109
Enter new 6 char. name of fg 110 ?> = fai110
Enter new 6 char. name of fg 111 ?> = fai111
Enter new 6 char. name of fg 112 ?> = fai112
Enter new 6 char. name of fg 113 ?> = fai113
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Enter new 6 char. name of fg 115 ?> = fai115
Enter new 6 char. name of fg 116 ?> = fai116
Enter new 6 char. name of fg 117 ?> = fai117
Enter new 6 char. name of fg 118 ?> = fai118
Enter new 6 char. name of fg 119 ?> = fai119
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Enter new 6 char. name of fg 122 ?> = fai122
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Enter new 6 char. name of fg 124 ?> = fai124
Enter new 6 char. name of fg 125 ?> = fai125
Enter new 6 char. name of fg 126 ?> = fai126
Enter new 6 char. name of fg 127 ?> = fai127
Enter new 6 char. name of fg 128 ?> = fai128
Enter new 6 char. name of fg 129 ?> = fai129
Enter new 6 char. name of fg 130 ?> = fai130
Enter new 6 char. name of fg 131 ?> = fai131
Enter new 6 char. name of fg 132 ?> = fai132
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Enter new 6 char. name of fg 136 ?> = fai136
Enter new 6 char. name of fg 137 ?> = fai137
Enter new 6 char. name of fg 138 ?> = fai138
Enter new 6 char. name of fg 139 ?> = fai139
Enter new 6 char. name of fg 140 ?> = fai140
Enter new 6 char. name of fg 141 ?> = fai141
Enter new 6 char. name of fg 142 ?> = fai142
Enter new 6 char. name of fg 143 ?> = fai143
Enter new 6 char. name of fg 144 ?> = fai144
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Enter new 6 char. name of fg 145 ?> = fai145
Enter new 6 char. name of fg 146 ?> = fai146
Enter new 6 char. name of fg 147 ?> = fai147
Enter new 6 char. name of fg 148 ?> = fai148
Enter new 6 char. name of fg 149 ?> = fai149
Enter new 6 char. name of fg 150 ?> = fai150
Enter new 6 char. name of fg 151 ?> = fai151
Enter new 6 char. name of fg 152 ?> = fai152
Enter new 6 char. name of fg 153 ?> = fai153
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Enter new 6 char. name of fg 641 ?> = fds113
Enter new 6 char. name of fg 642 ?> = fds114
Enter new 6 char. name of fg 643 ?> = fds115
Enter new 6 char. name of fg 644 ?> = fds116
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Enter new 6 char. name of fg 645 ?> = fds117
Enter new 6 char. name of fg 646 ?> = fds118
Enter new 6 char. name of fg 647 ?> = fds119
Enter new 6 char. name of fg 648 ?> = fds120
Enter new 6 char. name of fg 649 ?> = fds121
Enter new 6 char. name of fg 650 ?> = fds122
Enter new 6 char. name of fg 651 ?> = fds123
Enter new 6 char. name of fg 652 ?> = fds124
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Enter new 6 char. name of fg 661 ?> = fds133
Enter new 6 char. name of fg 662 ?> = fds134
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Enter new 6 char. name of fg 664 ?> = fds136
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Enter new 6 char. name of fg 675 ?> = fds147
Enter new 6 char. name of fg 676 ?> = fds148
Enter new 6 char. name of fg 677 ?> = fds149
Enter new 6 char. name of fg 678 ?> = fds150
Enter new 6 char. name of fg 679 ?> = fds151
Enter new 6 char. name of fg 680 ?> = fds152
Enter new 6 char. name of fg 681 ?> = fds153
Enter new 6 char. name of fg 682 ?> = fds154
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Enter new 6 char. name of fg 687 ?> = fds159
Enter new 6 char. name of fg 688 ?> = fds160
Enter new 6 char. name of fg 689 ?> = fds161
Enter new 6 char. name of fg 690 ?> = fds162
Enter new 6 char. name of fg 691 ?> = fds163
Enter new 6 char. name of fg 692 ?> = fds164
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Enter new 6 char. name of fg 694 ?> = fds166
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Enter new 6 char. name of fg 695 ?> = fds167
Enter new 6 char. name of fg 696 ?> = fds168
Enter new 6 char. name of fg 697 ?> = fds169
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Enter new 6 char. name of fg 699 ?> = fds171
Enter new 6 char. name of fg 700 ?> = fds172
Enter new 6 char. name of fg 701 ?> = fds173
Enter new 6 char. name of fg 702 ?> = fds174
Enter new 6 char. name of fg 703 ?> = fds175
Enter new 6 char. name of fg 704 ?> = fdisp
Enter new 6 char. name of fg 705 ?> = fhold
Enter new 6 char. name of fg 706 ?> = fning
Enter new 6 char. name of fg 707 ?> = fabort
Enter new 6 char. name of fg 708 ?> = fstart
Enter new 6 char. name of fg 709 ?> = ftrip0
Enter new 6 char. name of fg 710 ?> = ftrip1
Enter new 6 char. name of fg 711 ?> = ftrip2
Enter new 6 char. name of fg 712 ?> = fspar0
Enter new 6 char. name of fg 713 ?> = fspar1
Enter new 6 char. name of fg 714 ?> = fspar2
Enter new 6 char. name of fg 715 ?> = fspar3
Enter new 6 char. name of fg 716 ?> = fspar4
Enter new 6 char. name of fg 717 ?> = fspar5
Enter new 6 char. name of fg 718 ?> = fspar6
Enter new 6 char. name of fg 719 ?> = fspar7
MUPF?>  = add 367 in
Enter new 6 char. name of in 0 ?> = bitval
Enter new 6 char. name of in 1 ?> = iloop
Enter new 6 char. name of in 2 ?> = jloop
Enter new 6 char. name of in 3 ?> = kloop
Enter new 6 char. name of in 4 ?> = lloop
Enter new 6 char. name of in 5 ?> = index
Enter new 6 char. name of in 6 ?> = trip
Enter new 6 char. name of in 7 ?> = nadi
Enter new 6 char. name of in 8 ?> = blkval
Enter new 6 char. name of in 9 ?> = sort
Enter new 6 char. name of in 10 ?> = bval
Enter new 6 char. name of in 11 ?> = hldstp
Enter new 6 char. name of in 12 ?> = remain
Enter new 6 char. name of in 13 ?> = errn
Enter new 6 char. name of in 14 ?> = errl
Enter new 6 char. name of in 15 ?> = int0
Enter new 6 char. name of in 16 ?> = int1
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Enter new 6 char. name of in 361 ?> = typl70
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Enter new 6 char. name of in 366 ?> = typl75
MUPF?>  = add 50 fl
Enter new 6 char. name of fl 0 ?> = trip0
Enter new 6 char. name of fl 1 ?> = trip1
Enter new 6 char. name of fl 2 ?> = trip2
Enter new 6 char. name of fl 3 ?> = trip3
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Enter new 6 char. name of fl 6 ?> = trip6
Enter new 6 char. name of fl 7 ?> = trip7
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Enter new 6 char. name of fl 9 ?> = trip9
Enter new 6 char. name of fl 10 ?> = ai0
Enter new 6 char. name of fl 11 ?> = ai1
Enter new 6 char. name of fl 12 ?> = ai2
Enter new 6 char. name of fl 13 ?> = ai3
Enter new 6 char. name of fl 14 ?> = ai4
Enter new 6 char. name of fl 15 ?> = ai5
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Enter new 6 char. name of fl 48 ?> = ai38
Enter new 6 char. name of fl 49 ?> = ai39
MUPF?>  = add 12 pt
Enter new 6 char. name of pt 0 ?> = pepn
Enter new 6 char. name of pt 1 ?> = pdev
Enter new 6 char. name of pt 2 ?> = pdin
Enter new 6 char. name of pt 3 ?> = pai
Enter new 6 char. name of pt 4 ?> = ptrip
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Enter new 6 char. name of pt 5 ?> = pack
Enter new 6 char. name of pt 6 ?> = pdsabl
Enter new 6 char. name of pt 7 ?> = preps
Enter new 6 char. name of pt 8 ?> = pskid
Enter new 6 char. name of pt 9 ?> = pstat
Enter new 6 char. name of pt 10 ?> = ptype
Enter new 6 char. name of pt 11 ?> = prev
MUPF?>  = add 25 sg
Enter new 6 char. name of sg 0 ?> = date0
Enter max string length for sg 0  ?> = 10
Enter new 6 char. name of sg 1 ?> = date1
Enter max string length for sg 1  ?> = 10
Enter new 6 char. name of sg 2 ?> = date2
Enter max string length for sg 2  ?> = 10
Enter new 6 char. name of sg 3 ?> = date3
Enter max string length for sg 3  ?> = 10
Enter new 6 char. name of sg 4 ?> = date4
Enter max string length for sg 4  ?> = 10
Enter new 6 char. name of sg 5 ?> = time0
Enter max string length for sg 5  ?> = 8
Enter new 6 char. name of sg 6 ?> = time1
Enter max string length for sg 6  ?> = 8
Enter new 6 char. name of sg 7 ?> = time2
Enter max string length for sg 7  ?> = 8
Enter new 6 char. name of sg 8 ?> = time3
Enter max string length for sg 8  ?> = 8
Enter new 6 char. name of sg 9 ?> = time4
Enter max string length for sg 9  ?> = 8
Enter new 6 char. name of sg 10 ?> = epn0
Enter max string length for sg 10  ?> = 10
Enter new 6 char. name of sg 11 ?> = epn1
Enter max string length for sg 11  ?> = 10
Enter new 6 char. name of sg 12 ?> = epn2
Enter max string length for sg 12  ?> = 10
Enter new 6 char. name of sg 13 ?> = epn3
Enter max string length for sg 13  ?> = 10
Enter new 6 char. name of sg 14 ?> = epn4
Enter max string length for sg 14  ?> = 10
Enter new 6 char. name of sg 15 ?> = mssg0
Enter max string length for sg 15  ?> = 30
Enter new 6 char. name of sg 16 ?> = mssg1
Enter max string length for sg 16  ?> = 30
Enter new 6 char. name of sg 17 ?> = mssg2
Enter max string length for sg 17  ?> = 30
Enter new 6 char. name of sg 18 ?> = mssg3
Enter max string length for sg 18  ?> = 30
Enter new 6 char. name of sg 19 ?> = mssg4
Enter max string length for sg 19  ?> = 30
Enter new 6 char. name of sg 20 ?> = lsg0
Enter max string length for sg 20  ?> = 30
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Enter new 6 char. name of sg 21 ?> = lsg1
Enter max string length for sg 21  ?> = 30
Enter new 6 char. name of sg 22 ?> = lsg2
Enter max string length for sg 22  ?> = 30
Enter new 6 char. name of sg 23 ?> = lsg3
Enter max string length for sg 23  ?> = 30
Enter new 6 char. name of sg 24 ?> = lsg4
Enter max string length for sg 24  ?> = 30
MUPF?>
 end of file encountered
UPF?>
 end of file encountered
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TOTAL1

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UPF Version 6.3-2       05-Dec-94 09:39:28
UPF?>  = de totall
UPF?>  = cr totall,*
Enter 4 character name of RPF to associate?> = alll
MUPF?>  = add 784 fg
Enter new 6 char. name of fg 0 ?> = fds0
Enter new 6 char. name of fg 1 ?> = fds1
Enter new 6 char. name of fg 2 ?> = fds2
Enter new 6 char. name of fg 3 ?> = fds3
Enter new 6 char. name of fg 4 ?> = fds4
Enter new 6 char. name of fg 5 ?> = fds5
Enter new 6 char. name of fg 6 ?> = fds6
Enter new 6 char. name of fg 7 ?> = fds7
Enter new 6 char. name of fg 8 ?> = fds8
Enter new 6 char. name of fg 9 ?> = fds9
Enter new 6 char. name of fg 10 ?> = fds10
Enter new 6 char. name of fg 11 ?> = fds11
Enter new 6 char. name of fg 12 ?> = fds12
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Enter new 6 char. name of fg 41 ?> = fds41
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Enter new 6 char. name of fg 45 ?> = fds45
Enter new 6 char. name of fg 46 ?> = fds46
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Enter new 6 char. name of fg 190 ?> = fds190
Enter new 6 char. name of fg 191 ?> = fds191
Enter new 6 char. name of fg 192 ?> = fx0
Enter new 6 char. name of fg 193 ?> = fx1
Enter new 6 char. name of fg 194 ?> = fx2
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Enter new 6 char. name of fg 195 ?> = fx3
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Enter new 6 char. name of fg 442 ?> = fal58
Enter new 6 char. name of fg 443 ?> = fal59
Enter new 6 char. name of fg 444 ?> = fal60
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Enter new 6 char. name of fg 445 ?> = fal61
Enter new 6 char. name of fg 446 ?> = fal62
Enter new 6 char. name of fg 447 ?> = fal63
Enter new 6 char. name of fg 448 ?> = fal64
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Enter new 6 char. name of fg 451 ?> = fal67
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Enter new 6 char. name of fg 768 ?> = fdisp
Enter new 6 char. name of fg 769 ?> = fhold
Enter new 6 char. name of fg 770 ?> = fning
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Enter new 6 char. name of fg 774 ?> = ftrip1
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Enter new 6 char. name of fg 776 ?> = fspar0
Enter new 6 char. name of fg 777 ?> = fspar1
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Enter new 6 char. name of fg 782 ?> = fspar6
Enter new 6 char. name of fg 783 ?> = fspar7
MUPF?>  = add 306 in
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Enter new 6 char. name of in 2 ?> = line2
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Enter new 6 char. name of in 54 ?> = index
Enter new 6 char. name of in 55 ?> = trip
Enter new 6 char. name of in 56 ?> = nadi
Enter new 6 char. name of in 57 ?> = blkval
Enter new 6 char. name of in 58 ?> = sort
Enter new 6 char. name of in 59 ?> = bval
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Enter new 6 char. name of in 145 ?> = int31
Enter new 6 char. name of in 146 ?> = int32
Enter new 6 char. name of in 147 ?> = int33
Enter new 6 char. name of in 148 ?> = int34
Enter new 6 char. name of in 149 ?> = int35
Enter new 6 char. name of in 150 ?> = int36
Enter new 6 char. name of in 151 ?> = int37
Enter new 6 char. name of in 152 ?> = int38
Enter new 6 char. name of in 153 ?> = int39
Enter new 6 char. name of in 154 ?> = int40
Enter new 6 char. name of in 155 ?> = int41
Enter new 6 char. name of in 156 ?> = int42
Enter new 6 char. name of in 157 ?> = int43
Enter new 6 char. name of in 158 ?> = int44
Enter new 6 char. name of in 159 ?> = int45
```

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Enter new 6 char. name of in 160 ?> = int46
Enter new 6 char. name of in 161 ?> = int47
Enter new 6 char. name of in 162 ?> = int48
Enter new 6 char. name of in 163 ?> = int49
Enter new 6 char. name of in 164 ?> = int50
Enter new 6 char. name of in 165 ?> = int51
Enter new 6 char. name of in 166 ?> = int52
Enter new 6 char. name of in 167 ?> = int53
Enter new 6 char. name of in 168 ?> = int54
Enter new 6 char. name of in 169 ?> = int55
Enter new 6 char. name of in 170 ?> = int56
Enter new 6 char. name of in 171 ?> = int57
Enter new 6 char. name of in 172 ?> = int58
Enter new 6 char. name of in 173 ?> = int59
Enter new 6 char. name of in 174 ?> = int60
Enter new 6 char. name of in 175 ?> = int61
Enter new 6 char. name of in 176 ?> = int62
Enter new 6 char. name of in 177 ?> = int63
Enter new 6 char. name of in 178 ?> = int64
Enter new 6 char. name of in 179 ?> = int65
Enter new 6 char. name of in 180 ?> = int66
Enter new 6 char. name of in 181 ?> = int67
Enter new 6 char. name of in 182 ?> = int68
Enter new 6 char. name of in 183 ?> = int69
Enter new 6 char. name of in 184 ?> = int70
Enter new 6 char. name of in 185 ?> = int71
Enter new 6 char. name of in 186 ?> = int72
Enter new 6 char. name of in 187 ?> = int73
Enter new 6 char. name of in 188 ?> = int74
Enter new 6 char. name of in 189 ?> = int75
Enter new 6 char. name of in 190 ?> = int76
Enter new 6 char. name of in 191 ?> = int77
Enter new 6 char. name of in 192 ?> = int78
Enter new 6 char. name of in 193 ?> = int79
Enter new 6 char. name of in 194 ?> = int80
Enter new 6 char. name of in 195 ?> = int81
Enter new 6 char. name of in 196 ?> = int82
Enter new 6 char. name of in 197 ?> = int83
Enter new 6 char. name of in 198 ?> = int84
Enter new 6 char. name of in 199 ?> = int85
Enter new 6 char. name of in 200 ?> = int86
Enter new 6 char. name of in 201 ?> = int87
Enter new 6 char. name of in 202 ?> = int88
Enter new 6 char. name of in 203 ?> = int89
Enter new 6 char. name of in 204 ?> = int90
Enter new 6 char. name of in 205 ?> = int91
Enter new 6 char. name of in 206 ?> = int92
Enter new 6 char. name of in 207 ?> = int93
Enter new 6 char. name of in 208 ?> = int94
Enter new 6 char. name of in 209 ?> = int95
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Enter new 6 char. name of in 210 ?> = int96
Enter new 6 char. name of in 211 ?> = int97
Enter new 6 char. name of in 212 ?> = int98
Enter new 6 char. name of in 213 ?> = int99
Enter new 6 char. name of in 214 ?> = int100
Enter new 6 char. name of in 215 ?> = int101
Enter new 6 char. name of in 216 ?> = int102
Enter new 6 char. name of in 217 ?> = int103
Enter new 6 char. name of in 218 ?> = int104
Enter new 6 char. name of in 219 ?> = int105
Enter new 6 char. name of in 220 ?> = int106
Enter new 6 char. name of in 221 ?> = int107
Enter new 6 char. name of in 222 ?> = int108
Enter new 6 char. name of in 223 ?> = int109
Enter new 6 char. name of in 224 ?> = int110
Enter new 6 char. name of in 225 ?> = int111
Enter new 6 char. name of in 226 ?> = int112
Enter new 6 char. name of in 227 ?> = int113
Enter new 6 char. name of in 228 ?> = int114
Enter new 6 char. name of in 229 ?> = int115
Enter new 6 char. name of in 230 ?> = int116
Enter new 6 char. name of in 231 ?> = int117
Enter new 6 char. name of in 232 ?> = int118
Enter new 6 char. name of in 233 ?> = int119
Enter new 6 char. name of in 234 ?> = int120
Enter new 6 char. name of in 235 ?> = int121
Enter new 6 char. name of in 236 ?> = int122
Enter new 6 char. name of in 237 ?> = int123
Enter new 6 char. name of in 238 ?> = int124
Enter new 6 char. name of in 239 ?> = int125
Enter new 6 char. name of in 240 ?> = int126
Enter new 6 char. name of in 241 ?> = int127
Enter new 6 char. name of in 242 ?> = int128
Enter new 6 char. name of in 243 ?> = int129
Enter new 6 char. name of in 244 ?> = int130
Enter new 6 char. name of in 245 ?> = int131
Enter new 6 char. name of in 246 ?> = int132
Enter new 6 char. name of in 247 ?> = int133
Enter new 6 char. name of in 248 ?> = int134
Enter new 6 char. name of in 249 ?> = int135
Enter new 6 char. name of in 250 ?> = int136
Enter new 6 char. name of in 251 ?> = int137
Enter new 6 char. name of in 252 ?> = int138
Enter new 6 char. name of in 253 ?> = int139
Enter new 6 char. name of in 254 ?> = int140
Enter new 6 char. name of in 255 ?> = int141
Enter new 6 char. name of in 256 ?> = int142
Enter new 6 char. name of in 257 ?> = int143
Enter new 6 char. name of in 258 ?> = int144
Enter new 6 char. name of in 259 ?> = int145
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Enter new 6 char. name of in 260 ?> = int146
Enter new 6 char. name of in 261 ?> = int147
Enter new 6 char. name of in 262 ?> = int148
Enter new 6 char. name of in 263 ?> = int149
Enter new 6 char. name of in 264 ?> = int150
Enter new 6 char. name of in 265 ?> = int151
Enter new 6 char. name of in 266 ?> = int152
Enter new 6 char. name of in 267 ?> = int153
Enter new 6 char. name of in 268 ?> = int154
Enter new 6 char. name of in 269 ?> = int155
Enter new 6 char. name of in 270 ?> = int156
Enter new 6 char. name of in 271 ?> = int157
Enter new 6 char. name of in 272 ?> = int158
Enter new 6 char. name of in 273 ?> = int159
Enter new 6 char. name of in 274 ?> = int160
Enter new 6 char. name of in 275 ?> = int161
Enter new 6 char. name of in 276 ?> = int162
Enter new 6 char. name of in 277 ?> = int163
Enter new 6 char. name of in 278 ?> = int164
Enter new 6 char. name of in 279 ?> = int165
Enter new 6 char. name of in 280 ?> = int166
Enter new 6 char. name of in 281 ?> = int167
Enter new 6 char. name of in 282 ?> = int168
Enter new 6 char. name of in 283 ?> = int169
Enter new 6 char. name of in 284 ?> = int170
Enter new 6 char. name of in 285 ?> = int171
Enter new 6 char. name of in 286 ?> = int172
Enter new 6 char. name of in 287 ?> = int173
Enter new 6 char. name of in 288 ?> = int174
Enter new 6 char. name of in 289 ?> = int175
Enter new 6 char. name of in 290 ?> = int176
Enter new 6 char. name of in 291 ?> = int177
Enter new 6 char. name of in 292 ?> = int178
Enter new 6 char. name of in 293 ?> = int179
Enter new 6 char. name of in 294 ?> = int180
Enter new 6 char. name of in 295 ?> = int181
Enter new 6 char. name of in 296 ?> = int182
Enter new 6 char. name of in 297 ?> = int183
Enter new 6 char. name of in 298 ?> = int184
Enter new 6 char. name of in 299 ?> = int185
Enter new 6 char. name of in 300 ?> = int186
Enter new 6 char. name of in 301 ?> = int187
Enter new 6 char. name of in 302 ?> = int188
Enter new 6 char. name of in 303 ?> = int189
Enter new 6 char. name of in 304 ?> = int190
Enter new 6 char. name of in 305 ?> = int191
MUPF?>  = add 100 fl
Enter new 6 char. name of fl 0 ?> = trip0
Enter new 6 char. name of fl 1 ?> = trip1
Enter new 6 char. name of fl 2 ?> = trip2
```

```
Enter new 6 char. name of fl 3 ?> = trip3
Enter new 6 char. name of fl 4 ?> = trip4
Enter new 6 char. name of fl 5 ?> = trip5
Enter new 6 char. name of fl 6 ?> = trip6
Enter new 6 char. name of fl 7 ?> = trip7
Enter new 6 char. name of fl 8 ?> = trip8
Enter new 6 char. name of fl 9 ?> = trip9
Enter new 6 char. name of fl 10 ?> = ai0
Enter new 6 char. name of fl 11 ?> = ai1
Enter new 6 char. name of fl 12 ?> = ai2
Enter new 6 char. name of fl 13 ?> = ai3
Enter new 6 char. name of fl 14 ?> = ai4
Enter new 6 char. name of fl 15 ?> = ai5
Enter new 6 char. name of fl 16 ?> = ai6
Enter new 6 char. name of fl 17 ?> = ai7
Enter new 6 char. name of fl 18 ?> = ai8
Enter new 6 char. name of fl 19 ?> = ai9
Enter new 6 char. name of fl 20 ?> = ai10
Enter new 6 char. name of fl 21 ?> = ai11
Enter new 6 char. name of fl 22 ?> = ai12
Enter new 6 char. name of fl 23 ?> = ai13
Enter new 6 char. name of fl 24 ?> = ai14
Enter new 6 char. name of fl 25 ?> = ai15
Enter new 6 char. name of fl 26 ?> = ai16
Enter new 6 char. name of fl 27 ?> = ai17
Enter new 6 char. name of fl 28 ?> = ai18
Enter new 6 char. name of fl 29 ?> = ai19
Enter new 6 char. name of fl 30 ?> = ai20
Enter new 6 char. name of fl 31 ?> = ai21
Enter new 6 char. name of fl 32 ?> = ai22
Enter new 6 char. name of fl 33 ?> = ai23
Enter new 6 char. name of fl 34 ?> = ai24
Enter new 6 char. name of fl 35 ?> = ai25
Enter new 6 char. name of fl 36 ?> = ai26
Enter new 6 char. name of fl 37 ?> = ai27
Enter new 6 char. name of fl 38 ?> = ai28
Enter new 6 char. name of fl 39 ?> = ai29
Enter new 6 char. name of fl 40 ?> = ai30
Enter new 6 char. name of fl 41 ?> = ai31
Enter new 6 char. name of fl 42 ?> = ai32
Enter new 6 char. name of fl 43 ?> = ai33
Enter new 6 char. name of fl 44 ?> = ai34
Enter new 6 char. name of fl 45 ?> = ai35
Enter new 6 char. name of fl 46 ?> = ai36
Enter new 6 char. name of fl 47 ?> = ai37
Enter new 6 char. name of fl 48 ?> = ai38
Enter new 6 char. name of fl 49 ?> = ai39
Enter new 6 char. name of fl 50 ?> = ai40
Enter new 6 char. name of fl 51 ?> = ai41
Enter new 6 char. name of fl 52 ?> = ai42
```

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Enter new 6 char. name of fl 53 ?> = ai43
Enter new 6 char. name of fl 54 ?> = ai44
Enter new 6 char. name of fl 55 ?> = ai45
Enter new 6 char. name of fl 56 ?> = ai46
Enter new 6 char. name of fl 57 ?> = ai47
Enter new 6 char. name of fl 58 ?> = ai48
Enter new 6 char. name of fl 59 ?> = ai49
Enter new 6 char. name of fl 60 ?> = ai50
Enter new 6 char. name of fl 61 ?> = ai51
Enter new 6 char. name of fl 62 ?> = ai52
Enter new 6 char. name of fl 63 ?> = ai53
Enter new 6 char. name of fl 64 ?> = ai54
Enter new 6 char. name of fl 65 ?> = ai55
Enter new 6 char. name of fl 66 ?> = ai56
Enter new 6 char. name of fl 67 ?> = ai57
Enter new 6 char. name of fl 68 ?> = ai58
Enter new 6 char. name of fl 69 ?> = ai59
Enter new 6 char. name of fl 70 ?> = ai60
Enter new 6 char. name of fl 71 ?> = ai61
Enter new 6 char. name of fl 72 ?> = ai62
Enter new 6 char. name of fl 73 ?> = ai63
Enter new 6 char. name of fl 74 ?> = ai64
Enter new 6 char. name of fl 75 ?> = ai65
Enter new 6 char. name of fl 76 ?> = ai66
Enter new 6 char. name of fl 77 ?> = ai67
Enter new 6 char. name of fl 78 ?> = ai68
Enter new 6 char. name of fl 79 ?> = ai69
Enter new 6 char. name of fl 80 ?> = ai70
Enter new 6 char. name of fl 81 ?> = ai71
Enter new 6 char. name of fl 82 ?> = ai72
Enter new 6 char. name of fl 83 ?> = ai73
Enter new 6 char. name of fl 84 ?> = ai74
Enter new 6 char. name of fl 85 ?> = ai75
Enter new 6 char. name of fl 86 ?> = ai76
Enter new 6 char. name of fl 87 ?> = ai77
Enter new 6 char. name of fl 88 ?> = ai78
Enter new 6 char. name of fl 89 ?> = ai79
Enter new 6 char. name of fl 90 ?> = float0
Enter new 6 char. name of fl 91 ?> = float1
Enter new 6 char. name of fl 92 ?> = float2
Enter new 6 char. name of fl 93 ?> = float3
Enter new 6 char. name of fl 94 ?> = float4
Enter new 6 char. name of fl 95 ?> = float5
Enter new 6 char. name of fl 96 ?> = float6
Enter new 6 char. name of fl 97 ?> = float7
Enter new 6 char. name of fl 98 ?> = float8
Enter new 6 char. name of fl 99 ?> = float9
MUPF?>  = add 20 pt
Enter new 6 char. name of pt 0 ?> = pdate
Enter new 6 char. name of pt 1 ?> = ptime
```

```
Enter new 6 char. name of pt 2 ?> = pepn
Enter new 6 char. name of pt 3 ?> = pmessg
Enter new 6 char. name of pt 4 ?> = pgrafx
Enter new 6 char. name of pt 5 ?> = palarm
Enter new 6 char. name of pt 6 ?> = palm
Enter new 6 char. name of pt 7 ?> = pstat
Enter new 6 char. name of pt 8 ?> = pnext
Enter new 6 char. name of pt 9 ?> = plast
Enter new 6 char. name of pt 10 ?> = pline
Enter new 6 char. name of pt 11 ?> = ptrip
Enter new 6 char. name of pt 12 ?> = pack
Enter new 6 char. name of pt 13 ?> = pdsabl
Enter new 6 char. name of pt 14 ?> = pback
Enter new 6 char. name of pt 15 ?> = preps
Enter new 6 char. name of pt 16 ?> = ptype
Enter new 6 char. name of pt 17 ?> = prev
Enter new 6 char. name of pt 18 ?> = pspar0
Enter new 6 char. name of pt 19 ?> = pspar1
MUPF?>  = add 111 sg
Enter new 6 char. name of sg 0 ?> = date0
Enter max string length for sg 0  ?> = 10
Enter new 6 char. name of sg 1 ?> = date1
Enter max string length for sg 1  ?> = 10
Enter new 6 char. name of sg 2 ?> = date2
Enter max string length for sg 2  ?> = 10
Enter new 6 char. name of sg 3 ?> = date3
Enter max string length for sg 3  ?> = 10
Enter new 6 char. name of sg 4 ?> = date4
Enter max string length for sg 4  ?> = 10
Enter new 6 char. name of sg 5 ?> = time0
Enter max string length for sg 5  ?> = 8
Enter new 6 char. name of sg 6 ?> = time1
Enter max string length for sg 6  ?> = 8
Enter new 6 char. name of sg 7 ?> = time2
Enter max string length for sg 7  ?> = 8
Enter new 6 char. name of sg 8 ?> = time3
Enter max string length for sg 8  ?> = 8
Enter new 6 char. name of sg 9 ?> = time4
Enter max string length for sg 9  ?> = 8
Enter new 6 char. name of sg 10 ?> = epn0
Enter max string length for sg 10  ?> = 10
Enter new 6 char. name of sg 11 ?> = epn1
Enter max string length for sg 11  ?> = 10
Enter new 6 char. name of sg 12 ?> = epn2
Enter max string length for sg 12  ?> = 10
Enter new 6 char. name of sg 13 ?> = epn3
Enter max string length for sg 13  ?> = 10
Enter new 6 char. name of sg 14 ?> = epn4
Enter max string length for sg 14  ?> = 10
Enter new 6 char. name of sg 15 ?> = mssg0
```

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Enter max string length for sg 15  ?> = 30
Enter new 6 char. name of sg 16 ?> = mssg1
Enter max string length for sg 16  ?> = 30
Enter new 6 char. name of sg 17 ?> = mssg2
Enter max string length for sg 17  ?> = 30
Enter new 6 char. name of sg 18 ?> = mssg3
Enter max string length for sg 18  ?> = 30
Enter new 6 char. name of sg 19 ?> = mssg4
Enter max string length for sg 19  ?> = 30
Enter new 6 char. name of sg 20 ?> = mssg5
Enter max string length for sg 20  ?> = 30
Enter new 6 char. name of sg 21 ?> = mssg6
Enter max string length for sg 21  ?> = 30
Enter new 6 char. name of sg 22 ?> = mssg7
Enter max string length for sg 22  ?> = 30
Enter new 6 char. name of sg 23 ?> = mssg8
Enter max string length for sg 23  ?> = 30
Enter new 6 char. name of sg 24 ?> = mssg9
Enter max string length for sg 24  ?> = 30
Enter new 6 char. name of sg 25 ?> = mssg10
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Enter new 6 char. name of sg 26 ?> = mssg11
Enter max string length for sg 26  ?> = 30
Enter new 6 char. name of sg 27 ?> = mssg12
Enter max string length for sg 27  ?> = 30
Enter new 6 char. name of sg 28 ?> = mssg13
Enter max string length for sg 28  ?> = 30
Enter new 6 char. name of sg 29 ?> = mssg14
Enter max string length for sg 29  ?> = 30
Enter new 6 char. name of sg 30 ?> = mssg15
Enter max string length for sg 30  ?> = 30
Enter new 6 char. name of sg 31 ?> = mssg16
Enter max string length for sg 31  ?> = 30
Enter new 6 char. name of sg 32 ?> = mssg17
Enter max string length for sg 32  ?> = 30
Enter new 6 char. name of sg 33 ?> = mssg18
Enter max string length for sg 33  ?> = 30
Enter new 6 char. name of sg 34 ?> = mssg19
Enter max string length for sg 34  ?> = 30
Enter new 6 char. name of sg 35 ?> = mssg20
Enter max string length for sg 35  ?> = 30
Enter new 6 char. name of sg 36 ?> = mssg21
Enter max string length for sg 36  ?> = 30
Enter new 6 char. name of sg 37 ?> = mssg22
Enter max string length for sg 37  ?> = 30
Enter new 6 char. name of sg 38 ?> = mssg23
Enter max string length for sg 38  ?> = 30
Enter new 6 char. name of sg 39 ?> = mssg24
Enter max string length for sg 39  ?> = 30
Enter new 6 char. name of sg 40 ?> = mssg25
```

```
Enter max string length for sg 40  ?> = 30
Enter new 6 char. name of sg 41 ?> = mssg26
Enter max string length for sg 41  ?> = 30
Enter new 6 char. name of sg 42 ?> = mssg27
Enter max string length for sg 42  ?> = 30
Enter new 6 char. name of sg 43 ?> = mssg28
Enter max string length for sg 43  ?> = 30
Enter new 6 char. name of sg 44 ?> = mssg29
Enter max string length for sg 44  ?> = 30
Enter new 6 char. name of sg 45 ?> = mssg30
Enter max string length for sg 45  ?> = 30
Enter new 6 char. name of sg 46 ?> = mssg31
Enter max string length for sg 46  ?> = 30
Enter new 6 char. name of sg 47 ?> = mssg32
Enter max string length for sg 47  ?> = 30
Enter new 6 char. name of sg 48 ?> = mssg33
Enter max string length for sg 48  ?> = 30
Enter new 6 char. name of sg 49 ?> = mssg34
Enter max string length for sg 49  ?> = 30
Enter new 6 char. name of sg 50 ?> = mssg35
Enter max string length for sg 50  ?> = 30
Enter new 6 char. name of sg 51 ?> = mssg36
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Enter new 6 char. name of sg 52 ?> = mssg37
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Enter new 6 char. name of sg 53 ?> = mssg38
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Enter new 6 char. name of sg 54 ?> = mssg39
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Enter new 6 char. name of sg 55 ?> = mssg40
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Enter new 6 char. name of sg 56 ?> = mssg41
Enter max string length for sg 56  ?> = 30
Enter new 6 char. name of sg 57 ?> = mssg42
Enter max string length for sg 57  ?> = 30
Enter new 6 char. name of sg 58 ?> = mssg43
Enter max string length for sg 58  ?> = 30
Enter new 6 char. name of sg 59 ?> = mssg44
Enter max string length for sg 59  ?> = 30
Enter new 6 char. name of sg 60 ?> = mssg45
Enter max string length for sg 60  ?> = 30
Enter new 6 char. name of sg 61 ?> = mssg46
Enter max string length for sg 61  ?> = 30
Enter new 6 char. name of sg 62 ?> = mssg47
Enter max string length for sg 62  ?> = 30
Enter new 6 char. name of sg 63 ?> = lsg0
Enter max string length for sg 63  ?> = 30
Enter new 6 char. name of sg 64 ?> = lsg1
Enter max string length for sg 64  ?> = 30
Enter new 6 char. name of sg 65 ?> = lsg2
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Enter max string length for sg 65  ?> = 30
Enter new 6 char. name of sg 66 ?> = lsg3
Enter max string length for sg 66  ?> = 30
Enter new 6 char. name of sg 67 ?> = lsg4
Enter max string length for sg 67  ?> = 30
Enter new 6 char. name of sg 68 ?> = lsg5
Enter max string length for sg 68  ?> = 30
Enter new 6 char. name of sg 69 ?> = lsg6
Enter max string length for sg 69  ?> = 30
Enter new 6 char. name of sg 70 ?> = lsg7
Enter max string length for sg 70  ?> = 30
Enter new 6 char. name of sg 71 ?> = lsg8
Enter max string length for sg 71  ?> = 30
Enter new 6 char. name of sg 72 ?> = lsg9
Enter max string length for sg 72  ?> = 30
Enter new 6 char. name of sg 73 ?> = lsg10
Enter max string length for sg 73  ?> = 30
Enter new 6 char. name of sg 74 ?> = lsg11
Enter max string length for sg 74  ?> = 30
Enter new 6 char. name of sg 75 ?> = lsg12
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Enter max string length for sg 81  ?> = 30
Enter new 6 char. name of sg 82 ?> = lsg19
Enter max string length for sg 82  ?> = 30
Enter new 6 char. name of sg 83 ?> = lsg20
Enter max string length for sg 83  ?> = 30
Enter new 6 char. name of sg 84 ?> = lsg21
Enter max string length for sg 84  ?> = 30
Enter new 6 char. name of sg 85 ?> = lsg22
Enter max string length for sg 85  ?> = 30
Enter new 6 char. name of sg 86 ?> = lsg23
Enter max string length for sg 86  ?> = 30
Enter new 6 char. name of sg 87 ?> = lsg24
Enter max string length for sg 87  ?> = 30
Enter new 6 char. name of sg 88 ?> = lsg25
Enter max string length for sg 88  ?> = 30
Enter new 6 char. name of sg 89 ?> = lsg26
Enter max string length for sg 89  ?> = 30
Enter new 6 char. name of sg 90 ?> = lsg27
```

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Enter max string length for sg 90  ?> = 30
Enter new 6 char. name of sg 91 ?> = lsg28
Enter max string length for sg 91  ?> = 30
Enter new 6 char. name of sg 92 ?> = lsg29
Enter max string length for sg 92  ?> = 30
Enter new 6 char. name of sg 93 ?> = lsg30
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Enter new 6 char. name of sg 94 ?> = lsg31
Enter max string length for sg 94  ?> = 30
Enter new 6 char. name of sg 95 ?> = lsg32
Enter max string length for sg 95  ?> = 30
Enter new 6 char. name of sg 96 ?> = lsg33
Enter max string length for sg 96  ?> = 30
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Enter max string length for sg 97  ?> = 30
Enter new 6 char. name of sg 98 ?> = lsg35
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Enter new 6 char. name of sg 100 ?> = lsg37
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Enter new 6 char. name of sg 101 ?> = lsg38
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Enter new 6 char. name of sg 102 ?> = lsg39
Enter max string length for sg 102  ?> = 30
Enter new 6 char. name of sg 103 ?> = lsg40
Enter max string length for sg 103  ?> = 30
Enter new 6 char. name of sg 104 ?> = lsg41
Enter max string length for sg 104  ?> = 30
Enter new 6 char. name of sg 105 ?> = lsg42
Enter max string length for sg 105  ?> = 30
Enter new 6 char. name of sg 106 ?> = lsg43
Enter max string length for sg 106  ?> = 30
Enter new 6 char. name of sg 107 ?> = lsg44
Enter max string length for sg 107  ?> = 30
Enter new 6 char. name of sg 108 ?> = lsg45
Enter max string length for sg 108  ?> = 30
Enter new 6 char. name of sg 109 ?> = lsg46
Enter max string length for sg 109  ?> = 30
Enter new 6 char. name of sg 110 ?> = lsg47
Enter max string length for sg 110  ?> = 30
MUPF?>
 end of file encountered
UPF?>
 end of file encountered
```

TNKFRM

```
UPF Version 6.3-2       05-Dec-94 09:42:07
UPF?>  = de tnkfrm
UPF?>  = cr tnkfrm,*
Enter 4 character name of RPF to associate?> = farm
MUPF?>  = add 496 fg
Enter new 6 char. name of fg 0 ?> = falm0
Enter new 6 char. name of fg 1 ?> = falm1
Enter new 6 char. name of fg 2 ?> = falm2
Enter new 6 char. name of fg 3 ?> = falm3
Enter new 6 char. name of fg 4 ?> = falm4
Enter new 6 char. name of fg 5 ?> = falm5
Enter new 6 char. name of fg 6 ?> = falm6
Enter new 6 char. name of fg 7 ?> = falm7
Enter new 6 char. name of fg 8 ?> = falm8
Enter new 6 char. name of fg 9 ?> = falm9
Enter new 6 char. name of fg 10 ?> = falm10
Enter new 6 char. name of fg 11 ?> = falm11
Enter new 6 char. name of fg 12 ?> = falm12
Enter new 6 char. name of fg 13 ?> = falm13
Enter new 6 char. name of fg 14 ?> = falm14
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Enter new 6 char. name of fg 17 ?> = falm17
Enter new 6 char. name of fg 18 ?> = falm18
Enter new 6 char. name of fg 19 ?> = falm19
Enter new 6 char. name of fg 20 ?> = falm20
Enter new 6 char. name of fg 21 ?> = falm21
Enter new 6 char. name of fg 22 ?> = falm22
Enter new 6 char. name of fg 23 ?> = falm23
Enter new 6 char. name of fg 24 ?> = falm24
Enter new 6 char. name of fg 25 ?> = falm25
Enter new 6 char. name of fg 26 ?> = falm26
Enter new 6 char. name of fg 27 ?> = falm27
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Enter new 6 char. name of fg 491 ?> = ack
Enter new 6 char. name of fg 492 ?> = falmon
Enter new 6 char. name of fg 493 ?> = fack
Enter new 6 char. name of fg 494 ?> = fclear
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Enter new 6 char. name of fg 495 ?> = flgack
MUPF?>  = add 418 in
Enter new 6 char. name of in 0 ?> = bitval
Enter new 6 char. name of in 1 ?> = lmpval
Enter new 6 char. name of in 2 ?> = iloop
Enter new 6 char. name of in 3 ?> = jloop
Enter new 6 char. name of in 4 ?> = kloop
Enter new 6 char. name of in 5 ?> = lloop
Enter new 6 char. name of in 6 ?> = mloop
Enter new 6 char. name of in 7 ?> = index
Enter new 6 char. name of in 8 ?> = last
Enter new 6 char. name of in 9 ?> = curent
Enter new 6 char. name of in 10 ?> = nxt
Enter new 6 char. name of in 11 ?> = analog
Enter new 6 char. name of in 12 ?> = white
Enter new 6 char. name of in 13 ?> = stat
Enter new 6 char. name of in 14 ?> = remain
Enter new 6 char. name of in 15 ?> = trip
Enter new 6 char. name of in 16 ?> = star
Enter new 6 char. name of in 17 ?> = skdkey
Enter new 6 char. name of in 18 ?> = unitt
Enter new 6 char. name of in 19 ?> = adi
Enter new 6 char. name of in 20 ?> = nadi
Enter new 6 char. name of in 21 ?> = blkval
Enter new 6 char. name of in 22 ?> = sort
Enter new 6 char. name of in 23 ?> = bval
Enter new 6 char. name of in 24 ?> = hldstp
Enter new 6 char. name of in 25 ?> = errn
Enter new 6 char. name of in 26 ?> = errl
Enter new 6 char. name of in 27 ?> = int0
Enter new 6 char. name of in 28 ?> = int1
Enter new 6 char. name of in 29 ?> = int2
Enter new 6 char. name of in 30 ?> = int3
Enter new 6 char. name of in 31 ?> = int4
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Enter new 6 char. name of in 48 ?> = int21
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Enter new 6 char. name of in 98 ?> = int71
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Enter new 6 char. name of in 124 ?> = int97
Enter new 6 char. name of in 125 ?> = int98
Enter new 6 char. name of in 126 ?> = int99
Enter new 6 char. name of in 127 ?> = ialm0
Enter new 6 char. name of in 128 ?> = ialm1
Enter new 6 char. name of in 129 ?> = ialm2
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Enter new 6 char. name of in 136 ?> = ialm9
Enter new 6 char. name of in 137 ?> = ialm10
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Enter new 6 char. name of in 139 ?> = ialm12
Enter new 6 char. name of in 140 ?> = ialm13
Enter new 6 char. name of in 141 ?> = ialm14
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Enter new 6 char. name of in 226 ?> = ialm99
Enter new 6 char. name of in 227 ?> = skid0
Enter new 6 char. name of in 228 ?> = skid1
Enter new 6 char. name of in 229 ?> = skid2
Enter new 6 char. name of in 230 ?> = skid3
Enter new 6 char. name of in 231 ?> = skid4
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Enter new 6 char. name of in 326 ?> = skid99
Enter new 6 char. name of in 327 ?> = dev0
Enter new 6 char. name of in 328 ?> = dev1
Enter new 6 char. name of in 329 ?> = dev2
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Enter new 6 char. name of in 331 ?> = dev4
Enter new 6 char. name of in 332 ?> = dev5
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Enter new 6 char. name of in 346 ?> = dev19
Enter new 6 char. name of in 347 ?> = farm
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Enter new 6 char. name of in 348 ?> = serpit
Enter new 6 char. name of in 349 ?> = vlvpit
Enter new 6 char. name of in 350 ?> = hvac
Enter new 6 char. name of in 351 ?> = bld271
Enter new 6 char. name of in 352 ?> = flspit
Enter new 6 char. name of in 353 ?> = lekpit
Enter new 6 char. name of in 354 ?> = drapit
Enter new 6 char. name of in 355 ?> = wspit
Enter new 6 char. name of in 356 ?> = yspit
Enter new 6 char. name of in 357 ?> = rspit
Enter new 6 char. name of in 358 ?> = wvlvpt
Enter new 6 char. name of in 359 ?> = yvlvpt
Enter new 6 char. name of in 360 ?> = rvlvpt
Enter new 6 char. name of in 361 ?> = whvac
Enter new 6 char. name of in 362 ?> = yhvac
Enter new 6 char. name of in 363 ?> = rhvac
Enter new 6 char. name of in 364 ?> = wbld
Enter new 6 char. name of in 365 ?> = ybld
Enter new 6 char. name of in 366 ?> = rbld
Enter new 6 char. name of in 367 ?> = wpump
Enter new 6 char. name of in 368 ?> = ypump
Enter new 6 char. name of in 369 ?> = rpump
Enter new 6 char. name of in 370 ?> = leak0
Enter new 6 char. name of in 371 ?> = leak1
Enter new 6 char. name of in 372 ?> = leak2
Enter new 6 char. name of in 373 ?> = leak3
Enter new 6 char. name of in 374 ?> = leak4
Enter new 6 char. name of in 375 ?> = leak5
Enter new 6 char. name of in 376 ?> = hour
Enter new 6 char. name of in 377 ?> = min
Enter new 6 char. name of in 378 ?> = sec
Enter new 6 char. name of in 379 ?> = dom
Enter new 6 char. name of in 380 ?> = mon
Enter new 6 char. name of in 381 ?> = year
Enter new 6 char. name of in 382 ?> = alm0
Enter new 6 char. name of in 383 ?> = alm1
Enter new 6 char. name of in 384 ?> = alm2
Enter new 6 char. name of in 385 ?> = alm3
Enter new 6 char. name of in 386 ?> = alm4
Enter new 6 char. name of in 387 ?> = alm5
Enter new 6 char. name of in 388 ?> = alm6
Enter new 6 char. name of in 389 ?> = alm7
Enter new 6 char. name of in 390 ?> = alm8
Enter new 6 char. name of in 391 ?> = alm9
Enter new 6 char. name of in 392 ?> = ack0
Enter new 6 char. name of in 393 ?> = ack1
Enter new 6 char. name of in 394 ?> = ack2
Enter new 6 char. name of in 395 ?> = ack3
Enter new 6 char. name of in 396 ?> = ack4
Enter new 6 char. name of in 397 ?> = ack5
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Enter new 6 char. name of in 398 ?> = ack6
Enter new 6 char. name of in 399 ?> = ack7
Enter new 6 char. name of in 400 ?> = ack8
Enter new 6 char. name of in 401 ?> = ack9
Enter new 6 char. name of in 402 ?> = color0
Enter new 6 char. name of in 403 ?> = color1
Enter new 6 char. name of in 404 ?> = color2
Enter new 6 char. name of in 405 ?> = color3
Enter new 6 char. name of in 406 ?> = color4
Enter new 6 char. name of in 407 ?> = color5
Enter new 6 char. name of in 408 ?> = color6
Enter new 6 char. name of in 409 ?> = color7
Enter new 6 char. name of in 410 ?> = grafx0
Enter new 6 char. name of in 411 ?> = grafx1
Enter new 6 char. name of in 412 ?> = grafx2
Enter new 6 char. name of in 413 ?> = grafx3
Enter new 6 char. name of in 414 ?> = grafx4
Enter new 6 char. name of in 415 ?> = grafx5
Enter new 6 char. name of in 416 ?> = grafx6
Enter new 6 char. name of in 417 ?> = grafx7
MUPF?>  = add 20 fl
Enter new 6 char. name of fl 0 ?> = ai0
Enter new 6 char. name of fl 1 ?> = ai1
Enter new 6 char. name of fl 2 ?> = ai2
Enter new 6 char. name of fl 3 ?> = ai3
Enter new 6 char. name of fl 4 ?> = ai4
Enter new 6 char. name of fl 5 ?> = ai5
Enter new 6 char. name of fl 6 ?> = ai6
Enter new 6 char. name of fl 7 ?> = ai7
Enter new 6 char. name of fl 8 ?> = ai8
Enter new 6 char. name of fl 9 ?> = ai9
Enter new 6 char. name of fl 10 ?> = ai10
Enter new 6 char. name of fl 11 ?> = ai11
Enter new 6 char. name of fl 12 ?> = ai12
Enter new 6 char. name of fl 13 ?> = ai13
Enter new 6 char. name of fl 14 ?> = ai14
Enter new 6 char. name of fl 15 ?> = ai15
Enter new 6 char. name of fl 16 ?> = ai16
Enter new 6 char. name of fl 17 ?> = ai17
Enter new 6 char. name of fl 18 ?> = ai18
Enter new 6 char. name of fl 19 ?> = ai19
MUPF?>  = add 13 pt
Enter new 6 char. name of pt 0 ?> = pepn
Enter new 6 char. name of pt 1 ?> = pdin
Enter new 6 char. name of pt 2 ?> = pdev
Enter new 6 char. name of pt 3 ?> = pai
Enter new 6 char. name of pt 4 ?> = pskid
Enter new 6 char. name of pt 5 ?> = pstat
Enter new 6 char. name of pt 6 ?> = ptype
Enter new 6 char. name of pt 7 ?> = prev
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Enter new 6 char. name of pt 8 ?> = psn
Enter new 6 char. name of pt 9 ?> = pmsg0
Enter new 6 char. name of pt 10 ?> = pmsg1
Enter new 6 char. name of pt 11 ?> = ppass
Enter new 6 char. name of pt 12 ?> = pack
MUPF?>  = add 61 sg
Enter new 6 char. name of sg 0 ?> = swhen0
Enter max string length for sg 0  ?> = 8
Enter new 6 char. name of sg 1Enter new 6 char. name of sg 1 ?> = swhen1
Enter max string length for sg 1  ?> = 8
Enter new 6 char. name of sg 2 ?> = swhen2
Enter max string length for sg 2  ?> = 8
Enter new 6 char. name of sg 3 ?> = swhen3
Enter max string length for sg 3  ?> = 8
Enter new 6 char. name of sg 4 ?> = swhen4
Enter max string length for sg 4  ?> = 8
Enter new 6 char. name of sg 5 ?> = swhen5
Enter max string length for sg 5  ?> = 8
Enter new 6 char. name of sg 6 ?> = swhen6
Enter max string length for sg 6  ?> = 8
Enter new 6 char. name of sg 7 ?> = swhen7
Enter max string length for sg 7  ?> = 8
Enter new 6 char. name of sg 8 ?> = ssng0
Enter max string length for sg 8  ?> = 8
Enter new 6 char. name of sg 9 ?> = ssng1
Enter max string length for sg 9  ?> = 8
Enter new 6 char. name of sg 10 ?> = ssng2
Enter max string length for sg 10  ?> = 8
Enter new 6 char. name of sg 11 ?> = ssng3
Enter max string length for sg 11  ?> = 8
Enter new 6 char. name of sg 12 ?> = ssng4
Enter max string length for sg 12  ?> = 8
Enter new 6 char. name of sg 13 ?> = ssng5
Enter max string length for sg 13  ?> = 8
Enter new 6 char. name of sg 14 ?> = ssng6
Enter max string length for sg 14  ?> = 8
Enter new 6 char. name of sg 15 ?> = ssng7
Enter max string length for sg 15  ?> = 8
Enter new 6 char. name of sg 16 ?> = sdate0
Enter max string length for sg 16  ?> = 10
Enter new 6 char. name of sg 17 ?> = sdate1
Enter max string length for sg 17  ?> = 10
Enter new 6 char. name of sg 18 ?> = sdate2
Enter max string length for sg 18  ?> = 10
Enter new 6 char. name of sg 19 ?> = sdate3
Enter max string length for sg 19  ?> = 10
Enter new 6 char. name of sg 20 ?> = sdate4
Enter max string length for sg 20  ?> = 10
Enter new 6 char. name of sg 21 ?> = sdate5
Enter max string length for sg 21  ?> = 10
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Enter new 6 char. name of sg 22 ?> = sdate6
Enter max string length for sg 22  ?> = 10
Enter new 6 char. name of sg 23 ?> = sdate7
Enter max string length for sg 23  ?> = 10
Enter new 6 char. name of sg 24 ?> = epns0
Enter max string length for sg 24  ?> = 10
Enter new 6 char. name of sg 25 ?> = epns1
Enter max string length for sg 25  ?> = 10
Enter new 6 char. name of sg 26 ?> = epns2
Enter max string length for sg 26  ?> = 10
Enter new 6 char. name of sg 27 ?> = epns3
Enter max string length for sg 27  ?> = 10
Enter new 6 char. name of sg 28 ?> = epns4
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Enter new 6 char. name of sg 29 ?> = epns5
Enter max string length for sg 29  ?> = 10
Enter new 6 char. name of sg 30 ?> = epns6
Enter max string length for sg 30  ?> = 10
Enter new 6 char. name of sg 31 ?> = epns7
Enter max string length for sg 31  ?> = 10
Enter new 6 char. name of sg 32 ?> = salm0
Enter max string length for sg 32  ?> = 20
Enter new 6 char. name of sg 33 ?> = salm1
Enter max string length for sg 33  ?> = 20
Enter new 6 char. name of sg 34 ?> = salm2
Enter max string length for sg 34  ?> = 20
Enter new 6 char. name of sg 35 ?> = salm3
Enter max string length for sg 35  ?> = 20
Enter new 6 char. name of sg 36 ?> = salm4
Enter max string length for sg 36  ?> = 20
Enter new 6 char. name of sg 37 ?> = salm5
Enter max string length for sg 37  ?> = 20
Enter new 6 char. name of sg 38 ?> = salm6
Enter max string length for sg 38  ?> = 20
Enter new 6 char. name of sg 39 ?> = salm7
Enter max string length for sg 39  ?> = 20
Enter new 6 char. name of sg 40 ?> = msg0
Enter max string length for sg 40  ?> = 30
Enter new 6 char. name of sg 41 ?> = msg1
Enter max string length for sg 41  ?> = 30
Enter new 6 char. name of sg 42 ?> = msg2
Enter max string length for sg 42  ?> = 30
Enter new 6 char. name of sg 43 ?> = msg3
Enter max string length for sg 43  ?> = 30
Enter new 6 char. name of sg 44 ?> = msg4
Enter max string length for sg 44  ?> = 30
Enter new 6 char. name of sg 45 ?> = msg5
Enter max string length for sg 45  ?> = 30
Enter new 6 char. name of sg 46 ?> = msg6
Enter max string length for sg 46  ?> = 30
```

```
Enter new 6 char. name of sg 47 ?> = msg7
Enter max string length for sg 47  ?> = 30
Enter new 6 char. name of sg 48 ?> = lsg0
Enter max string length for sg 48  ?> = 30
Enter new 6 char. name of sg 49 ?> = lsg1
Enter max string length for sg 49  ?> = 30
Enter new 6 char. name of sg 50 ?> = lsg2
Enter max string length for sg 50  ?> = 30
Enter new 6 char. name of sg 51 ?> = lsg3
Enter max string length for sg 51  ?> = 30
Enter new 6 char. name of sg 52 ?> = lsg4
Enter max string length for sg 52  ?> = 30
Enter new 6 char. name of sg 53 ?> = lsg5
Enter max string length for sg 53  ?> = 30
Enter new 6 char. name of sg 54 ?> = lsg6
Enter max string length for sg 54  ?> = 30
Enter new 6 char. name of sg 55 ?> = lsg7
Enter max string length for sg 55  ?> = 30
Enter new 6 char. name of sg 56 ?> = strng0
Enter max string length for sg 56  ?> = 30
Enter new 6 char. name of sg 57 ?> = strng1
Enter max string length for sg 57  ?> = 30
Enter new 6 char. name of sg 58 ?> = strng2
Enter max string length for sg 58  ?> = 30
Enter new 6 char. name of sg 59 ?> = strng3
Enter max string length for sg 59  ?> = 30
Enter new 6 char. name of sg 60 ?> = strng4
Enter max string length for sg 60  ?> = 30
MUPF?>  =
UPF?>
 end of file encountered
```

*** RMIS View/Print Document Cover Sheet ***

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Accession #: D196079535

Document #: SD-534-CSWL-001

Title/Desc:
SEQUENCE & BATCH LANGUAGE PROGRAMS & ALARM RELATED C PROGRAMS FOR THE 242A MCS [SEC 3 OF 6 PAGE 253 TO 383]

Pages: 133

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-534-CSWL-001

Section 3 **of** 6

Title: Sequence and Batch Language programs and Alarm Related "C" Programs for the 242-A MCS

Date: 4/15/96 **Revision:** 3

Originator: Berger, J.T.
Co:

Recipient:
Co:

References: ECN-627504

BLANKK

```
UPF Version 6.3-2        05-Dec-94 09:39:00
UPF?>  = de blankk
UPF?>  = cr blankk,*
Enter 4 character name of RPF to associate?> = emty
MUPF?>  = add 192 fg
Enter new 6 char. name of fg 0 ?> = falm0
Enter new 6 char. name of fg 1 ?> = falm1
Enter new 6 char. name of fg 2 ?> = falm2
Enter new 6 char. name of fg 3 ?> = falm3
Enter new 6 char. name of fg 4 ?> = falm4
Enter new 6 char. name of fg 5 ?> = falm5
Enter new 6 char. name of fg 6 ?> = falm6
Enter new 6 char. name of fg 7 ?> = falm7
Enter new 6 char. name of fg 8 ?> = falm8
Enter new 6 char. name of fg 9 ?> = falm9
Enter new 6 char. name of fg 10 ?> = falm10
Enter new 6 char. name of fg 11 ?> = falm11
Enter new 6 char. name of fg 12 ?> = falm12
Enter new 6 char. name of fg 13 ?> = falm13
Enter new 6 char. name of fg 14 ?> = falm14
Enter new 6 char. name of fg 15 ?> = falm15
Enter new 6 char. name of fg 16 ?> = falm16
Enter new 6 char. name of fg 17 ?> = falm17
Enter new 6 char. name of fg 18 ?> = falm18
Enter new 6 char. name of fg 19 ?> = falm19
Enter new 6 char. name of fg 20 ?> = falm20
Enter new 6 char. name of fg 21 ?> = falm21
Enter new 6 char. name of fg 22 ?> = falm22
Enter new 6 char. name of fg 23 ?> = falm23
Enter new 6 char. name of fg 24 ?> = falm24
Enter new 6 char. name of fg 25 ?> = falm25
Enter new 6 char. name of fg 26 ?> = falm26
Enter new 6 char. name of fg 27 ?> = falm27
Enter new 6 char. name of fg 28 ?> = falm28
Enter new 6 char. name of fg 29 ?> = falm29
Enter new 6 char. name of fg 30 ?> = falm30
Enter new 6 char. name of fg 31 ?> = falm31
Enter new 6 char. name of fg 32 ?> = falm32
Enter new 6 char. name of fg 33 ?> = falm33
Enter new 6 char. name of fg 34 ?> = falm34
Enter new 6 char. name of fg 35 ?> = falm35
Enter new 6 char. name of fg 36 ?> = falm36
Enter new 6 char. name of fg 37 ?> = falm37
Enter new 6 char. name of fg 38 ?> = falm38
Enter new 6 char. name of fg 39 ?> = falm39
Enter new 6 char. name of fg 40 ?> = falm40
Enter new 6 char. name of fg 41 ?> = falm41
Enter new 6 char. name of fg 42 ?> = falm42
Enter new 6 char. name of fg 43 ?> = falm43
Enter new 6 char. name of fg 44 ?> = falm44
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Enter new 6 char. name of fg 45 ?> = falm45
Enter new 6 char. name of fg 46 ?> = falm46
Enter new 6 char. name of fg 47 ?> = falm47
Enter new 6 char. name of fg 48 ?> = falm48
Enter new 6 char. name of fg 49 ?> = falm49
Enter new 6 char. name of fg 50 ?> = falm50
Enter new 6 char. name of fg 51 ?> = falm51
Enter new 6 char. name of fg 52 ?> = falm52
Enter new 6 char. name of fg 53 ?> = falm53
Enter new 6 char. name of fg 54 ?> = falm54
Enter new 6 char. name of fg 55 ?> = falm55
Enter new 6 char. name of fg 56 ?> = falm56
Enter new 6 char. name of fg 57 ?> = falm57
Enter new 6 char. name of fg 58 ?> = falm58
Enter new 6 char. name of fg 59 ?> = falm59
Enter new 6 char. name of fg 60 ?> = falm60
Enter new 6 char. name of fg 61 ?> = falm61
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Enter new 6 char. name of fg 63 ?> = falm63
Enter new 6 char. name of fg 64 ?> = falm64
Enter new 6 char. name of fg 65 ?> = falm65
Enter new 6 char. name of fg 66 ?> = falm66
Enter new 6 char. name of fg 67 ?> = falm67
Enter new 6 char. name of fg 68 ?> = falm68
Enter new 6 char. name of fg 69 ?> = falm69
Enter new 6 char. name of fg 70 ?> = falm70
Enter new 6 char. name of fg 71 ?> = falm71
Enter new 6 char. name of fg 72 ?> = falm72
Enter new 6 char. name of fg 73 ?> = falm73
Enter new 6 char. name of fg 74 ?> = falm74
Enter new 6 char. name of fg 75 ?> = falm75
Enter new 6 char. name of fg 76 ?> = falm76
Enter new 6 char. name of fg 77 ?> = falm77
Enter new 6 char. name of fg 78 ?> = falm78
Enter new 6 char. name of fg 79 ?> = falm79
Enter new 6 char. name of fg 80 ?> = flg0
Enter new 6 char. name of fg 81 ?> = flg1
Enter new 6 char. name of fg 82 ?> = flg2
Enter new 6 char. name of fg 83 ?> = flg3
Enter new 6 char. name of fg 84 ?> = flg4
Enter new 6 char. name of fg 85 ?> = flg5
Enter new 6 char. name of fg 86 ?> = flg6
Enter new 6 char. name of fg 87 ?> = flg7
Enter new 6 char. name of fg 88 ?> = flg8
Enter new 6 char. name of fg 89 ?> = flg9
Enter new 6 char. name of fg 90 ?> = flg10
Enter new 6 char. name of fg 91 ?> = flg11
Enter new 6 char. name of fg 92 ?> = flg12
Enter new 6 char. name of fg 93 ?> = flg13
Enter new 6 char. name of fg 94 ?> = flg14
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```
Enter new 6 char. name of fg 95 ?> = flg15
Enter new 6 char. name of fg 96 ?> = flg16
Enter new 6 char. name of fg 97 ?> = flg17
Enter new 6 char. name of fg 98 ?> = flg18
Enter new 6 char. name of fg 99 ?> = flg19
Enter new 6 char. name of fg 100 ?> = flg20
Enter new 6 char. name of fg 101 ?> = flg21
Enter new 6 char. name of fg 102 ?> = flg22
Enter new 6 char. name of fg 103 ?> = flg23
Enter new 6 char. name of fg 104 ?> = flg24
Enter new 6 char. name of fg 105 ?> = flg25
Enter new 6 char. name of fg 106 ?> = flg26
Enter new 6 char. name of fg 107 ?> = flg27
Enter new 6 char. name of fg 108 ?> = flg28
Enter new 6 char. name of fg 109 ?> = flg29
Enter new 6 char. name of fg 110 ?> = flg30
Enter new 6 char. name of fg 111 ?> = flg31
Enter new 6 char. name of fg 112 ?> = flg32
Enter new 6 char. name of fg 113 ?> = flg33
Enter new 6 char. name of fg 114 ?> = flg34
Enter new 6 char. name of fg 115 ?> = flg35
Enter new 6 char. name of fg 116 ?> = flg36
Enter new 6 char. name of fg 117 ?> = flg37
Enter new 6 char. name of fg 118 ?> = flg38
Enter new 6 char. name of fg 119 ?> = flg39
Enter new 6 char. name of fg 120 ?> = flg40
Enter new 6 char. name of fg 121 ?> = flg41
Enter new 6 char. name of fg 122 ?> = flg42
Enter new 6 char. name of fg 123 ?> = flg43
Enter new 6 char. name of fg 124 ?> = flg44
Enter new 6 char. name of fg 125 ?> = flg45
Enter new 6 char. name of fg 126 ?> = flg46
Enter new 6 char. name of fg 127 ?> = flg47
Enter new 6 char. name of fg 128 ?> = flg48
Enter new 6 char. name of fg 129 ?> = flg49
Enter new 6 char. name of fg 130 ?> = flg50
Enter new 6 char. name of fg 131 ?> = flg51
Enter new 6 char. name of fg 132 ?> = flg52
Enter new 6 char. name of fg 133 ?> = flg53
Enter new 6 char. name of fg 134 ?> = flg54
Enter new 6 char. name of fg 135 ?> = flg55
Enter new 6 char. name of fg 136 ?> = flg56
Enter new 6 char. name of fg 137 ?> = flg57
Enter new 6 char. name of fg 138 ?> = flg58
Enter new 6 char. name of fg 139 ?> = flg59
Enter new 6 char. name of fg 140 ?> = flg60
Enter new 6 char. name of fg 141 ?> = flg61
Enter new 6 char. name of fg 142 ?> = flg62
Enter new 6 char. name of fg 143 ?> = flg63
Enter new 6 char. name of fg 144 ?> = flg64
```

```
Enter new 6 char. name of fg 145 ?> = flg65
Enter new 6 char. name of fg 146 ?> = flg66
Enter new 6 char. name of fg 147 ?> = flg67
Enter new 6 char. name of fg 148 ?> = flg68
Enter new 6 char. name of fg 149 ?> = flg69
Enter new 6 char. name of fg 150 ?> = flg70
Enter new 6 char. name of fg 151 ?> = flg71
Enter new 6 char. name of fg 152 ?> = flg72
Enter new 6 char. name of fg 153 ?> = flg73
Enter new 6 char. name of fg 154 ?> = flg74
Enter new 6 char. name of fg 155 ?> = flg75
Enter new 6 char. name of fg 156 ?> = flg76
Enter new 6 char. name of fg 157 ?> = flg77
Enter new 6 char. name of fg 158 ?> = flg78
Enter new 6 char. name of fg 159 ?> = flg79
Enter new 6 char. name of fg 160 ?> = fx0
Enter new 6 char. name of fg 161 ?> = fx1
Enter new 6 char. name of fg 162 ?> = fx2
Enter new 6 char. name of fg 163 ?> = fx3
Enter new 6 char. name of fg 164 ?> = fx4
Enter new 6 char. name of fg 165 ?> = fx5
Enter new 6 char. name of fg 166 ?> = fx6
Enter new 6 char. name of fg 167 ?> = fx7
Enter new 6 char. name of fg 168 ?> = fsl0
Enter new 6 char. name of fg 169 ?> = fsl1
Enter new 6 char. name of fg 170 ?> = fsl2
Enter new 6 char. name of fg 171 ?> = fsl3
Enter new 6 char. name of fg 172 ?> = fsl4
Enter new 6 char. name of fg 173 ?> = fsl5
Enter new 6 char. name of fg 174 ?> = fsl6
Enter new 6 char. name of fg 175 ?> = fsl7
Enter new 6 char. name of fg 176 ?> = fhold
Enter new 6 char. name of fg 177 ?> = fning
Enter new 6 char. name of fg 178 ?> = fabort
Enter new 6 char. name of fg 179 ?> = fstart
Enter new 6 char. name of fg 180 ?> = fpass
Enter new 6 char. name of fg 181 ?> = ftrip0
Enter new 6 char. name of fg 182 ?> = ftrip1
Enter new 6 char. name of fg 183 ?> = ftrip2
Enter new 6 char. name of fg 184 ?> = ftrip3
Enter new 6 char. name of fg 185 ?> = ftrip4
Enter new 6 char. name of fg 186 ?> = fspar0
Enter new 6 char. name of fg 187 ?> = fspar1
Enter new 6 char. name of fg 188 ?> = fspar2
Enter new 6 char. name of fg 189 ?> = fspar3
Enter new 6 char. name of fg 190 ?> = fspar4
Enter new 6 char. name of fg 191 ?> = fspar5
MUPF?>  = add 92 in
Enter new 6 char. name of in 0 ?> = bitval
Enter new 6 char. name of in 1 ?> = iloop
```

```
Enter new 6 char. name of in 2 ?> = index
Enter new 6 char. name of in 3 ?> = remain
Enter new 6 char. name of in 4 ?> = trip
Enter new 6 char. name of in 5 ?> = nadi
Enter new 6 char. name of in 6 ?> = blkval
Enter new 6 char. name of in 7 ?> = sort
Enter new 6 char. name of in 8 ?> = bval
Enter new 6 char. name of in 9 ?> = hldstp
Enter new 6 char. name of in 10 ?> = errn
Enter new 6 char. name of in 11 ?> = errl
Enter new 6 char. name of in 12 ?> = int0
Enter new 6 char. name of in 13 ?> = int1
Enter new 6 char. name of in 14 ?> = int2
Enter new 6 char. name of in 15 ?> = int3
Enter new 6 char. name of in 16 ?> = int4
Enter new 6 char. name of in 17 ?> = int5
Enter new 6 char. name of in 18 ?> = int6
Enter new 6 char. name of in 19 ?> = int7
Enter new 6 char. name of in 20 ?> = int8
Enter new 6 char. name of in 21 ?> = int9
Enter new 6 char. name of in 22 ?> = int10
Enter new 6 char. name of in 23 ?> = int11
Enter new 6 char. name of in 24 ?> = int12
Enter new 6 char. name of in 25 ?> = int13
Enter new 6 char. name of in 26 ?> = int14
Enter new 6 char. name of in 27 ?> = int15
Enter new 6 char. name of in 28 ?> = int16
Enter new 6 char. name of in 29 ?> = int17
Enter new 6 char. name of in 30 ?> = int18
Enter new 6 char. name of in 31 ?> = int19
Enter new 6 char. name of in 32 ?> = int20
Enter new 6 char. name of in 33 ?> = int21
Enter new 6 char. name of in 34 ?> = int22
Enter new 6 char. name of in 35 ?> = int23
Enter new 6 char. name of in 36 ?> = int24
Enter new 6 char. name of in 37 ?> = int25
Enter new 6 char. name of in 38 ?> = int26
Enter new 6 char. name of in 39 ?> = int27
Enter new 6 char. name of in 40 ?> = int28
Enter new 6 char. name of in 41 ?> = int29
Enter new 6 char. name of in 42 ?> = int30
Enter new 6 char. name of in 43 ?> = int31
Enter new 6 char. name of in 44 ?> = int32
Enter new 6 char. name of in 45 ?> = int33
Enter new 6 char. name of in 46 ?> = int34
Enter new 6 char. name of in 47 ?> = int35
Enter new 6 char. name of in 48 ?> = int36
Enter new 6 char. name of in 49 ?> = int37
Enter new 6 char. name of in 50 ?> = int38
Enter new 6 char. name of in 51 ?> = int39
```

```
Enter new 6 char. name of in 52 ?> = int40
Enter new 6 char. name of in 53 ?> = int41
Enter new 6 char. name of in 54 ?> = int42
Enter new 6 char. name of in 55 ?> = int43
Enter new 6 char. name of in 56 ?> = int44
Enter new 6 char. name of in 57 ?> = int45
Enter new 6 char. name of in 58 ?> = int46
Enter new 6 char. name of in 59 ?> = int47
Enter new 6 char. name of in 60 ?> = int48
Enter new 6 char. name of in 61 ?> = int49
Enter new 6 char. name of in 62 ?> = int50
Enter new 6 char. name of in 63 ?> = int51
Enter new 6 char. name of in 64 ?> = int52
Enter new 6 char. name of in 65 ?> = int53
Enter new 6 char. name of in 66 ?> = int54
Enter new 6 char. name of in 67 ?> = int55
Enter new 6 char. name of in 68 ?> = int56
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Enter new 6 char. name of in 70 ?> = int58
Enter new 6 char. name of in 71 ?> = int59
Enter new 6 char. name of in 72 ?> = int60
Enter new 6 char. name of in 73 ?> = int61
Enter new 6 char. name of in 74 ?> = int62
Enter new 6 char. name of in 75 ?> = int63
Enter new 6 char. name of in 76 ?> = int64
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Enter new 6 char. name of in 78 ?> = int66
Enter new 6 char. name of in 79 ?> = int67
Enter new 6 char. name of in 80 ?> = int68
Enter new 6 char. name of in 81 ?> = int69
Enter new 6 char. name of in 82 ?> = int70
Enter new 6 char. name of in 83 ?> = int71
Enter new 6 char. name of in 84 ?> = int72
Enter new 6 char. name of in 85 ?> = int73
Enter new 6 char. name of in 86 ?> = int74
Enter new 6 char. name of in 87 ?> = int75
Enter new 6 char. name of in 88 ?> = int76
Enter new 6 char. name of in 89 ?> = int77
Enter new 6 char. name of in 90 ?> = int78
Enter new 6 char. name of in 91 ?> = int79
MUPF?>  = add 30 fl
Enter new 6 char. name of fl 0 ?> = float0
Enter new 6 char. name of fl 1 ?> = float1
Enter new 6 char. name of fl 2 ?> = float2
Enter new 6 char. name of fl 3 ?> = float3
Enter new 6 char. name of fl 4 ?> = float4
Enter new 6 char. name of fl 5 ?> = float5
Enter new 6 char. name of fl 6 ?> = float6
Enter new 6 char. name of fl 7 ?> = float7
Enter new 6 char. name of fl 8 ?> = float8
```

```
Enter new 6 char. name of fl 9 ?> = float9
Enter new 6 char. name of fl 10 ?> = ai0
Enter new 6 char. name of fl 11 ?> = ai1
Enter new 6 char. name of fl 12 ?> = ai2
Enter new 6 char. name of fl 13 ?> = ai3
Enter new 6 char. name of fl 14 ?> = ai4
Enter new 6 char. name of fl 15 ?> = ai5
Enter new 6 char. name of fl 16 ?> = ai6
Enter new 6 char. name of fl 17 ?> = ai7
Enter new 6 char. name of fl 18 ?> = ai8
Enter new 6 char. name of fl 19 ?> = ai9
Enter new 6 char. name of fl 20 ?> = ai10
Enter new 6 char. name of fl 21 ?> = ai11
Enter new 6 char. name of fl 22 ?> = ai12
Enter new 6 char. name of fl 23 ?> = ai13
Enter new 6 char. name of fl 24 ?> = ai14
Enter new 6 char. name of fl 25 ?> = ai15
Enter new 6 char. name of fl 26 ?> = ai16
Enter new 6 char. name of fl 27 ?> = ai17
Enter new 6 char. name of fl 28 ?> = ai18
Enter new 6 char. name of fl 29 ?> = ai19
MUPF?>  = add 6 pt
Enter new 6 char. name of pt 0 ?> = pepn
Enter new 6 char. name of pt 1 ?> = pdin
Enter new 6 char. name of pt 2 ?> = pdev
Enter new 6 char. name of pt 3 ?> = pai
Enter new 6 char. name of pt 4 ?> = palarm
Enter new 6 char. name of pt 5 ?> = pspar0
MUPF?>  = add 38 sg
Enter new 6 char. name of sg 0 ?> = lsg0
Enter max string length for sg 0  ?> = 30
Enter new 6 char. name of sg 1 ?> = lsg1
Enter max string length for sg 1  ?> = 30
Enter new 6 char. name of sg 2 ?> = lsg2
Enter max string length for sg 2  ?> = 30
Enter new 6 char. name of sg 3 ?> = lsg3
Enter max string length for sg 3  ?> = 30
Enter new 6 char. name of sg 4 ?> = lsg4
Enter max string length for sg 4  ?> = 30
Enter new 6 char. name of sg 5 ?> = lsg5
Enter max string length for sg 5  ?> = 30
Enter new 6 char. name of sg 6 ?> = lsg6
Enter max string length for sg 6  ?> = 30
Enter new 6 char. name of sg 7 ?> = lsg7
Enter max string length for sg 7  ?> = 30
Enter new 6 char. name of sg 8 ?> = unit0
Enter max string length for sg 8  ?> = 30
Enter new 6 char. name of sg 9 ?> = unit1
Enter max string length for sg 9  ?> = 30
Enter new 6 char. name of sg 10 ?> = unit2
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```
Enter max string length for sg 10  ?> = 30
Enter new 6 char. name of sg 11 ?> = unit3
Enter max string length for sg 11  ?> = 30
Enter new 6 char. name of sg 12 ?> = unit4
Enter max string length for sg 12  ?> = 30
Enter new 6 char. name of sg 13 ?> = unit5
Enter max string length for sg 13  ?> = 30
Enter new 6 char. name of sg 14 ?> = unit6
Enter max string length for sg 14  ?> = 30
Enter new 6 char. name of sg 15 ?> = unit7
Enter max string length for sg 15  ?> = 30
Enter new 6 char. name of sg 16 ?> = unit8
Enter max string length for sg 16  ?> = 30
Enter new 6 char. name of sg 17 ?> = unit9
Enter max string length for sg 17  ?> = 30
Enter new 6 char. name of sg 18 ?> = unit10
Enter max string length for sg 18  ?> = 30
Enter new 6 char. name of sg 19 ?> = unit11
Enter max string length for sg 19  ?> = 30
Enter new 6 char. name of sg 20 ?> = unit12
Enter max string length for sg 20  ?> = 30
Enter new 6 char. name of sg 21 ?> = unit13
Enter max string length for sg 21  ?> = 30
Enter new 6 char. name of sg 22 ?> = unit14
Enter max string length for sg 22  ?> = 30
Enter new 6 char. name of sg 23 ?> = unit15
Enter max string length for sg 23  ?> = 30
Enter new 6 char. name of sg 24 ?> = unit16
Enter max string length for sg 24  ?> = 30
Enter new 6 char. name of sg 25 ?> = unit17
Enter max string length for sg 25  ?> = 30
Enter new 6 char. name of sg 26 ?> = unit18
Enter max string length for sg 26  ?> = 30
Enter new 6 char. name of sg 27 ?> = unit19
Enter max string length for sg 27  ?> = 30
Enter new 6 char. name of sg 28 ?> = unit20
Enter max string length for sg 28  ?> = 30
Enter new 6 char. name of sg 29 ?> = unit21
Enter max string length for sg 29  ?> = 30
Enter new 6 char. name of sg 30 ?> = unit22
Enter max string length for sg 30  ?> = 30
Enter new 6 char. name of sg 31 ?> = unit23
Enter max string length for sg 31  ?> = 30
Enter new 6 char. name of sg 32 ?> = unit24
Enter max string length for sg 32  ?> = 30
Enter new 6 char. name of sg 33 ?> = unit25
Enter max string length for sg 33  ?> = 30
Enter new 6 char. name of sg 34 ?> = unit26
Enter max string length for sg 34  ?> = 30
Enter new 6 char. name of sg 35 ?> = unit27
```

```
Enter max string length for sg 35  ?> = 30
Enter new 6 char. name of sg 36 ?> = unit28
Enter max string length for sg 36  ?> = 30
Enter new 6 char. name of sg 37 ?> = unit29
Enter max string length for sg 37  ?> = 30
MUPF?>
 end of file encountered
UPF?>
 end of file encountered
```

APPENDIX E - SEQUENCE AND BATCH LANGUAGE (SABL)

224BATCH

```
;       2 4 4 B A T C H . S E Q                                 VERSION 4
;
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 340,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]244BATCH
;
;       UNIT = 1, SKDKEY = 19
;
;       Assoc. UPF:     [300,1]_SHOTR0.___      SHORT0.LST
;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
;       SDB:            [300,1]PCMOASDB.___     PCMOASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ----------------------------------------
;       PSTAT     INTn          Current EPN alarm state and is integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;       09-JUN-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;
;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
;                       system. Rebase line document. Removed
;                       obsolite Select() statements.
;
;       10-MAY-95       Revised program to delete EPNs P-244-A2,  J. Berger
;                       II-P244A2, YS-P244A2, YS244A2IL. See
;                       ECN 622501 and EE-94-00929. (JFB01)
```

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                ;
                ;       20-OCT-95       Revised program to delete EPNs for 244A          J. Berger
                ;                       that were never used. See ECN 627411 and
                ;                       EE-94-00929. (JFB02)
                ;
                ;       08-JAN-96       Deleted RSH-SP & PSH-FP per MCS-96-001           J. Berger
                ;
                ;  END MOD LOG
                ;
                UNIT    A244
0000                    NOP
0001                    STAR = 20                       ; Start message
0002                    SKDKEY =19                      ; SKID key
0003                    ADI = 0                         ; Alarm Destination Index = 0
0004                    FSNO = 0                        ; No alarm yet
0005                    TIMEROFF STMR0                  ; Alarm timer off
0006                    TIMERCLR STMR0                  ; Alarm timer clear
0007                    STRNGO = " "                    ; Blank 30 Character string
0008                    ERRN = 0                        ; Set error number to zero
0009                    ERRL = 0                        ; Set error line to zero
0010                    ASSIGN PDEV = '244ALARM' ; Alarm device
0011                    LET FTRIP4 = 0                  ; FTRIP4 = 1 when audible horn is to be turned on
0012                    GETUNIT TRIP                    ; Which sequence unit is program running in
0013                    IF TRIP != 1 THEN               ; Abort if running in wrong seq. unit
                           BEGIN
0014                       FSTART = 1
0015                       ILOOP = STAR + 1
0016                       GOSUB ACKK
0017                       FSTART = 1
0018                       PRINT ADI," >>>>>  ATTEMPT TO RUN 244BATCH IN WRONG UNIT"
0019                       GOTO TERM
                           END
                ;
                ;       B E G I N   I N I T I A L I Z I N G
                ;
0020                    SSNGO = "INIT"
0021            INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
0022                    LET FSTART = 0                  ; Start Flag = 0
0023                    LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
0024                    LET LSG0 = " "                  ; Clear the string variables
0025                    LET LSG1 = " "
0026                    LET LSG2 = " "
0027                    LET LSG3 = " "
0028                    LET LSG4 = " "
0029                    PDEV:DEV_TMP0 = 1                                ; Set alarm device to non-alarm state
0030                    IF AND(PDEV:DEV_ALMCT,16) THEN                   ; If alarm device is inhibited, remove the inhibit
0031                      PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0032                    IF AND(PDEV:DEV_ALMCT,32) THEN                   ; If alarm device is acknowledged, clear it
0033                      PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
                ;
                ;       First, set all flags and integers:
                ;
                ; EPN           POINT   INT     TYPE    FRV     WHITE
                ; ---------     -----   ---     ----    ---     -----
                ; 244ALARM      DEV     -       -       -       -
```

```
                ; P-244-A1       DEV     -       -       -       -
                ; SPARE          DEV     -       -       -       -
                ; P-244-A3       DEV     -       -       -       -
                ; SPARE          DEV     -       -       -       -
                ; SPARE          DEV     -       -       -       -
                ; SPARE          DEV     -       -       -       -
                ; SPARE          DEV     -       -       -       -
                ; SPARE          DEV     -       -       -       -
                ; SPARE          DEV     -       -       -       -
                ;
                ; YS244A1IL      DIN     0       2       0       -
                ; YS-P244A1      DIN     1       0       -       -
                ; SPARE          DIN     2       -       -       -
                ; SPARE          DIN     3       -       -       -
                ; YS-P244A3      DIN     4       0       -       -
                ; SPARE          DIN     5       0       -       -
                ; ZS-MOV-2F      DIN     6       0       -       -
                ; ZS-MOV2DR      DIN     7       0       -       -
                ; SPARE          DIN     8       -       -       -
                ; SPARE          DIN     9       -       -       -
                ; SPARE          DIN     10      -       -       -
                ; SPARE          DIN     11      -       -       -
                ; SPARE          DIN     12      -       -       -
                ; SPARE          DIN     13      -       -       -
                ; SPARE          DIN     14      -       -       -
                ; PSH-SN215      DIN     15      2       0       -
                ; PSH-SN216      DIN     16      2       0       -
                ; LDS-PP DIN     17      2       0       -
                ; SPARE  DIN     18      -       -       -
                ; PSH-FP(SPARE)  DIN     19      -       -       -
                ;
                ; II-P244A1      AI      20      -       -       -
                ; SPARE          AI      21      -       -       -
                ; II-P244A3      AI      22      -       -       -
                ; DI-244-SP      AI      23      -       -       -
                ; WRI-244SP      AI      24      -       -       -
                ; SPARE          AI      25      -       -       -
                ; LI-244TK       AI      26      -       -       -
                ; DI-244-TK      AI      27      -       -       -
                ; WFI-2444TK     AI      28      -       -       -
                ; TI-244-TK      AI      29      -       -       31
                ; PI-244-TK      AI      30      -       -       -
                ; 19 MORE        AI
                ;
0034                    ASSIGN PDIN = 'YS244A1IL'
0035                    ASSIGN PSTAT = INT0
0036                    ASSIGN PTYPE = TYPE0
0037                    ASSIGN PREV = FRV0
0038                    ASSIGN PSKID = SKID0
0039                    ASSIGN PPASS = FPAS0
                ;
0040                    FOR ILOOP = 0 TO 31
0041                    LET PPASS = 0
0042                    LET PREV = 0
0043                    LET PTYPE = 0
```

```
166   0044   LET PSTAT = 0
167   0045   LET PSKID = 0
168   0046   IF ILOOP = 2 THEN                    ; JFB01
169           BEGIN                               ; JFB01
170   0047    STEP PDIN BY 1                      ; JFB01
171   0048    GOTO SKP                            ; JFB01
172           END                                 ; JFB01
173   0049   IF ILOOP = 3 THEN                    ; JFB01
174           BEGIN                               ; JFB01
175   0050    STEP PDIN BY 1                      ; JFB01
176   0051    GOTO SKP                            ; JFB01
177           END                                 ; JFB01
178   0052   IF ILOOP = 5 THEN                    ; JFB02
179           BEGIN                               ; JFB02
180   0053    STEP PDIN BY 1                      ; JFB02
181   0054    GOTO SKP                            ; JFB02
182           END                                 ; JFB02
183   0055   IF ILOOP = 8 THEN                    ; JFB02
184           BEGIN                               ; JFB02
185   0056    STEP PDIN BY 1                      ; JFB02
186   0057    GOTO SKP                            ; JFB02
187           END                                 ; JFB02
188   0058   IF ILOOP = 9 THEN                    ; JFB02
189           BEGIN                               ; JFB02
190   0059    STEP PDIN BY 1                      ; JFB02
191   0060    GOTO SKP                            ; JFB02
192           END                                 ; JFB02
193   0061   IF ILOOP = 10 THEN                   ; JFB02
194           BEGIN                               ; JFB02
195   0062    STEP PDIN BY 1                      ; JFB02
196   0063    GOTO SKP                            ; JFB02
197           END                                 ; JFB02
198   0064   IF ILOOP = 11 THEN                   ; JFB02
199           BEGIN                               ; JFB02
200   0065    STEP PDIN BY 1                      ; JFB02
201   0066    GOTO SKP                            ; JFB02
202           END                                 ; JFB02
203   0067   IF ILOOP = 12 THEN                   ; JFB02
204           BEGIN                               ; JFB02
205   0068    STEP PDIN BY 1                      ; JFB02
206   0069    GOTO SKP                            ; JFB02
207           END                                 ; JFB02
208   0070   IF ILOOP = 13 THEN                   ; JFB02
209           BEGIN                               ; JFB02
210   0071    STEP PDIN BY 1                      ; JFB02
211   0072    GOTO SKP                            ; JFB02
212           END                                 ; JFB02
213   0073   IF ILOOP = 14 THEN                   ; JFB02
214           BEGIN                               ; JFB02
215   0074    STEP PDIN BY 1                      ; JFB02
216   0075    GOTO SKP                            ; JFB02
217           END                                 ; JFB02
218   0076   IF ILOOP = 18 THEN                   ; JFB03
219           BEGIN                               ; JFB03
220   0077    STEP PDIN BY 1                      ; JFB03
```

```
0078            GOTO SKP                                    ; JFB03
                END                                         ; JFB03
0079           IF ILOOP = 19 THEN                           ; JFB03
                BEGIN                                       ; JFB03
0080            STEP PDIN BY 1                              ; JFB03
0081            GOTO SKP                                    ; JFB03
                END                                         ; JFB03
0082           IF ILOOP = 21 THEN                           ; JFB02
                BEGIN                                       ; JFB02
0083            GOTO SKP                                    ; JFB02
                END                                         ; JFB02
0084           IF ILOOP = 25 THEN                           ; JFB02
                BEGIN
0085            GOTO SKP                                    ; JFB02
                END                                         ; JFB02
0086           IF ILOOP < 20 THEN                           ; For DINs
                BEGIN
0087            IF (AND(PDIN:DIN_DFLG,3)) THEN              ; Check for alarms (must be red or yellow)
                  BEGIN
0088              LET PTYPE = 2                             ; Default to yellow for DINs
0090              IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1 ; Reverse acting
0092              IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4 ; Set to critical alarm
                  END
0093            STEP PDIN BY 1                              ; Point to next DIN
                END
0095           IF ILOOP > 30 THEN LET PTYPE = 1
0096     SKP:  STEP PSTAT BY 1
0097           STEP PTYPE BY 1
0098           STEP PREV BY 1
0099           STEP PPASS BY 1
0100           STEP PSKID BY 1
0101           NEXT ILOOP
         ;
0102           LET TYPE0 = 2            ; YS244A1IL
         ;     LET TYPE2 = 2            ; YS244A2IL      JFB01
0103           LET TYPE15 = 0           ; This EPN now alarms in Unit XYZFRM on Graphic 321
0104           LET TYPE16 = 0           ; This EPN now alarms in Unit XYZFRM on Graphic 321
0105           LET TYPE17 = 2           ; LDS-PP
         ;     LET TYPE18 = 4           ; RSH-SP
         ;     LET TYPE19 = 1           ; PSH-FP
0106           LET TYPE24 = 2           ; WFI-244SP HI
0107           LET TYPE26 = 6           ; LI-244TK LOLO, LO, HI, HIHI
0108           LET TYPE28 = 6           ; WFI-244TK LOLO, LO, HI, HIHI
         ;
0109           LET FRV15 = 0            ; This EPN now alarms in Unit XYZFRM on Graphic 321
0110           LET FRV16 = 0            ; This EPN now alarms in Unit XYZFRM on Graphic 321
0111           LET FRV17 = 0            ; LDS-PP
         ;     LET FRV18 = 0            ; RSH-SP
         ;     LET FRV19 = 1            ; PSH-FP
         ;
0112           LET AIO = 200.0 ; TI-244-TK TEMP HI
         ;
         ;     E N D   I N I T I A L I Z I N G
         ;
         ;     S E N D   P R O G R A M   S T A R T   M E S S A G E
```

```
276             ;
277     0113            PTYPE = 0
278     0114            ILOOP = STAR
279     0115            FSTART = 1
280     0116            GOSUB ACKK
281     0117            ON ERROR GOSUB ERRSUB
282             ;
283             ;       B E G I N   P R O G R A M   L O O P
284             ;
285     0118    AGAIN:  MARK STEP "WTUNTL",0,0
286             ;       WAITUNTIL SELECT() | FABORT       ; Wait until micro is selected or program aborted
287             ;       IF (FABORT) THEN GOTO TERM        ; Terminate program if FABORT flag is set
288     0119            MARK STEP "RNNING",0,0
289     0120            WAIT 1
290     0121            IF (FSN0) THEN                    ; If alarm flag set
291     0122               IF STMR0 > 60 THEN             ; If alarm flag active for 1 minute
292                           BEGIN                       ; Reset timer and turn off flag
293     0123                  TIMEROFF STMR0
294     0124                  TIMERCLR STMR0
295     0125                  LET FSN0 = 0
296     0126                  LET ERRN = 0
297     0127                  LET ERRL = 0
298                           END
299             ;
300             ;       If 244ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
301             ;
302     0128            IF (PDEV:DEV_TMP0 = 2 ) & AND(PDEV:DEV_ALMCT,32) THEN
303                        BEGIN
304     0129               PDEV:DEV_TMP0 = 1              ; Put device in acknowledge state
305     0130               LET FTRIP4 = 1                 ; Set for Unit alarm acknowledgement, system to graphic
306     0131               LET ACK = 1                    ; Set for Unit alarm acknowledgement, graphic to system
307             ;          CRIT
308     0132               LAMP ADI,SKDKEY,1
309                        END
310             ;
311             ;       BEGIN DINs:
312             ;
313     0133            ASSIGN PDIN = 'YS244A1IL'
314     0134            ASSIGN PTYPE = TYPE0
315     0135            ASSIGN PREV = FRV0
316     0136            ASSIGN PSTAT = INT0
317     0137            ASSIGN PPASS = FPAS0
318     0138            CURENT = 0                        ; Used to set LAMP status
319     0139            LAST = 0
320     0140            NXT = 0
321     0141            LMPVAR = 0
322     0142            BITVAL = 0
323             ;
324     0143    LOP:    FOR ILOOP = 0 TO 19
325             ;       IF !SELECT() THEN GOTO AGAIN
326     0145            IF ILOOP = 2 THEN GOTO LOP1                    ; JFB01
327     0147            IF ILOOP = 3 THEN GOTO LOP1                    ; JFB01
328     0149            IF ILOOP = 5 THEN GOTO LOP1                    ; JFB01
329     0151            IF ILOOP = 8 THEN GOTO LOP1                    ; JFB02
330     0153            IF ILOOP = 9 THEN GOTO LOP1                    ; JFB02
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331   0155          IF ILOOP = 10 THEN GOTO LOP1                    ; JFB02
332   0157          IF ILOOP = 11 THEN GOTO LOP1                    ; JFB02
333   0159          IF ILOOP = 12 THEN GOTO LOP1                    ; JFB02
334   0161          IF ILOOP = 13 THEN GOTO LOP1                    ; JFB02
335   0163          IF ILOOP = 14 THEN GOTO LOP1                    ; JFB02
336   0165          IF ILOOP = 18 THEN GOTO LOP1                    ; JFB03
337   0167          IF ILOOP = 19 THEN GOTO LOP1                    ; JFB03
338   0168          IF ( PTYPE > 0 ) THEN                                 ; If some type of alarm
339                    BEGIN                                        ; be1
340   0170             IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3  ; If EPN inhibited
341   0172             IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5          ; If EPN is bad input
342   0174             IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4           ; If EPN is disabled
343   0175             IF ( PSTAT < 3 ) THEN                        ; If not inhibited
344                         BEGIN                                   ; be2
345   0176                   IF PSTAT = 1 THEN
346                             BEGIN                                ; be3
347   0177                      IF PTYPE != 1 THEN
348   0179                         IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
349   0181                      IF (FTRIP4) THEN GOSUB ACK1
350                             END                                  ; en3
351   0184                   IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
352   0185                   IF (PSTAT) THEN
353                               BEGIN                              ; be4
354   0187                        IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
355   0188                        NXT = PSTAT
356   0190                        IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
357   0191                        LAST = OR(LAST,NXT)
358                               END                                ; en4
359                            END                                   ; en2
360   0193                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 0
361                       END                                       ; en1
362   0195    LOP1:   IF ILOOP < 19 THEN STEP PDIN BY 1
363   0196          STEP PTYPE BY 1                                 ; JFB01
364   0197          STEP PREV BY 1
365   0198          STEP PSTAT BY 1
366   0199          STEP PPASS BY 1
367   0200          NEXT ILOOP
368           ;
369           ;     END DINs
370           ;
371           ;     BEGIN ANALOG RED AND YELLOWS:
372           ;
373   0201          ANALOG = 0
374   0202          ASSIGN PAI = 'II-P244A1'
375   0203          ASSIGN PSKID = SKID20
376   0204          ASSIGN PTYPE = TYPE20
377   0205          ASSIGN PREV = FRV20
378   0206          FOR JLOOP = 20 TO 30
379   0208          IF JLOOP = 21 THEN GOTO LOP2          ; JFB01
380   0210          IF JLOOP = 25 THEN GOTO LOP2          ; JFB02
381           ;     IF !SELECT() THEN GOTO AGAIN
382   0211          IF (PTYPE) THEN                       ; If some alarm exists
383                    BEGIN                          ; be1
384   0212             BITVAL = PAI:AI_ALMCT
385   0213             IF !AND(BITVAL,16) THEN
```

```
                        BEGIN                          ; be2
0214                    IF AND(BITVAL,15) THEN                 ; If alarm exists and it is current
                          BEGIN                        ; be3
0216                      IF AND(BITVAL,32) THEN NXT = 2       ; If alarm is acknowledged
                          ELSE
                           BEGIN                       ; be4
0217                       IF PSKID !=BITVAL THEN
                              BEGIN                    ; be5
0219                          IF BITVAL < 3 THEN FALMON = 1
0220                          LET PSKID = BITVAL
0221                          LET PDEV:DEV_TMP0 = 2
0222                          NXT = 1
0223                          LAMP ADI,SKDKEY,2
        ;                     CRIT
                              END                      ; en5
0224                       ELSE NXT = 1
                            END                        ; en4
                           END                         ; en3
                        ELSE                                   ; Else there is no alarm
                           BEGIN
0225                       NXT = 0
0226                       LET PSKID = 0
                           END
                        END                            ; en2
                     ELSE                                      ; Else alarm is inhibited
                        BEGIN
0227                    NXT = 0
0228                    LET PSKID = 0
                        END
0229                 ANALOG = OR(ANALOG,NXT)
                     END                               ; en1
0230    LOP2:    STEP PSKID BY 1                               ; JFB01
0231             STEP PTYPE BY 1
0232             STEP PREV BY 1
0233             STEP PAI BY 1
0234             NEXT JLOOP
        ;
        ;        END ANALOG RED AND YELLOWS
        ;
        ;        BEGIN ANALOG WHITE ALARMS:
        ;
0235    WHT:     WHITE = 0
0236             SSNG0 = "RUN"
0237             ASSIGN PSTAT = INT31
0238             ASSIGN PTYPE = TYPE31
0239             ASSIGN PREV = FRV31
0240             ASSIGN PPASS = FPAS31
0241             ASSIGN PALARM = AIO
0242             ILOOP = 31
0243             ASSIGN PAI = 'TI-244-TK'
0244             GOSUB ANLG
        ;
        ;        END ANALOG WHITE ALARMS
        ;
0245             MARK STEP "BELOW",0,0
```

```
441   0246          LET FTRIP4 = 0
442   0248          IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
443   0249          CURENT = OR(LAST,WHITE)
444   0250          CURENT = OR(CURENT,ANALOG)
445   0252          IF AND(CURENT,1)THEN LMPVAR = 2
446   0254             ELSE IF AND(CURENT,2)THEN LMPVAR = 1
447   0255                  ELSE LMPVAR = 0
448   0256          LAMP ADI,SKDKEY,LMPVAR
449   0257          MARK STEP "BOTTOM",0,0
450         ;       NOCRIT
451         ;
452         ;       BEGIN DEVICES FOR GRAPHICS:
453         ;
454   0258          FLEAK0 = AND('P-244-A1':DEV_STAT,4)
455   0259          FLEAK1 = AND('P-244-A1':DEV_STAT,16)
456   0260          FLEAK2 = AND('P-244-A1':DEV_STAT,32)
457         ;       FLEAK3 = AND('P-244-A2':DEV_STAT,4)                JFB01
458         ;       FLEAK4 = AND('P-244-A2':DEV_STAT,16)               JFB01
459         ;       FLEAK5 = AND('P-244-A2':DEV_STAT,32)               JFB01
460         ;       FLEAK6 = AND('A-244-A':DEV_STAT,4)
461         ;       FLEAK7 = AND('A-244-A':DEV_STAT,16)
462         ;       FRV39 = AND('A-244-A':DEV_STAT,32)
463   0261          FRV36 = AND('P-244-A3':DEV_STAT,4)
464   0262          FRV37 = AND('P-244-A3':DEV_STAT,16)
465   0263          FRV38 = AND('P-244-A3':DEV_STAT,32)
466                 ;
467                 ;       FOR INTERLOCK GRAPHIC:
468                 ;
469   0264          FSN1 = AND('P-244-A1':DEV_TMP1,128)
470   0265          FSN2 = AND('P-244-A1':DEV_TMP1,256)
471   0266          FSN3 = AND('P-244-A1':DEV_TMP1,512)
472   0267          FSN4 = AND('P-244-A1':DEV_TMP1,1024)
473   0268          FSN5 = AND('P-244-A1':DEV_TMP1,2048)
474   0269          FSN6 = AND('P-244-A1':DEV_TMP1,4096)
475   0270          FSN7 = AND('P-244-A1':DEV_TMP1,8192)
476   0271          FSL1 = AND('P-244-A1':DEV_TMP1,32768)
477   0272          FSL2 = 'YS-P244A1':DIN_VAL
478         ;       FSL3 = 'YS-P244A2':DIN_VAL                         JFB01
479   0273          FSL4 = YS244A1IL:DIN_VAL
480         ;
481         ;       END DEVICES FOR GRAPHICS
482         ;
483   0274          GOTO AGAIN
484         ;
485         ;       E N D   P R O G R A M   L O O P
486         ;
487         ;       BEGIN ANALOG WHITE ALARM SUBROUTINE:
488         ;
489         ; ANLG: IF !SELECT() THEN GOTO AGAIN
490   0275  ANLG:   IF PTYPE = 1 THEN                                  ; If some alarm
491                   BEGIN                                      ; be0
492   0276            BITVAL = PAI:AI_ALMCT
493   0277            IF !(AND(BITVAL,16)) THEN                        ; If not inhibited
494                     BEGIN                                    ; be1
495   0278              IF (PREV) THEN                                 ; If rev acting, LOLO, or LO
```

```
                        BEGIN                          ; be2
0279                    IF (PSTAT = 0) THEN                    ; If not previously alarmed
                           BEGIN                       ; be3
0281                       IF PAI:AI_INVL <= PALARM THEN GOSUB ALM
                           END                         ; en3
                        ELSE
                           BEGIN                       ; be4
0282                       IF PSTAT = 1 THEN                  ; If previously alarmed
                              BEGIN                    ; be5
0284                          IF (FTRIP4) THEN GOSUB ACK1     ; If ACK flag set, then ack it
0287                          IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                              END                      ; en5
0289                       IF PAI:AI_INVL >= PALARM + PAI:AI_DEAD THEN GOSUB CLR
                           END                         ; en4
                        END                            ; en2
                     ELSE                                      ; If fail-safe, HIHI, or HI
                        BEGIN                          ; be2.1
0290                    IF PSTAT = 0  THEN
                           BEGIN
0292                       IF PAI:AI_INVL >= PALARM THEN GOSUB ALM
                           END
                        ELSE
                           BEGIN
0293                       IF PSTAT = 1 THEN
                              BEGIN
0295                          IF (FTRIP4) THEN GOSUB ACK1
0298                          IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                              END
0300                       IF PAI:AI_INVL <= PALARM - PAI:AI_DEAD THEN GOSUB CLR
                           END
                        END                            ; en2.1
0302                IF PSTAT = 3 THEN PSTAT = 0                ; If INHA, then there is no alarm
0304                IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0305                   ELSE NXT = PSTAT
                    END
                    ELSE
                      BEGIN
0306                  LET PSTAT = 3
0307                  NXT = 0
                      END
0308             WHITE = OR(WHITE,NXT)
                 END
0309             ELSE LET PSTAT = 0
0310             STEP PALARM BY 1
0311             STEP PSTAT BY 1
0312             STEP PTYPE BY 1
0313             STEP PREV BY 1
0314             STEP PPASS BY 1
0315             ILOOP = ILOOP + 1
0316             RETURN
        ;
        ;        END ANALOG WHITE ALARM SUBROUTINE
        ;
        ;        BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
        ;
```

```
0317    CLR:    LET PSTAT = 0                                          ; Int set to zero
                ;
                ; If not white then unack:
                ;
0320            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0321            LET FCLEAR = 1                                         ; Clear flag
0322            GOSUB ACKK                                             ; Print message
0323            RETURN
        ;
0324    ALM:    LET PSTAT = 1                                          ; Int set to one
                ;
                ; If not white then unack:
                ;
0327            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
                ;
                ; Turn audible alarm on if white or yellow:
                ;
0329            IF AND(PTYPE,3) THEN FALMON = 1
0330            LET PDEV:DEV_TMPO = 2
        ;       CRIT
0331            LAMP ADI,SKDKEY,2                                      ; Blink the LAMP
0332            GOSUB ACKK                                             ; Print message
0333            RETURN
        ;
0334    ACK1:   LET PSTAT = 2                                          ; Acknowledge alarm
0335            LET FACK = 1                                           ; Set ACK flag for C program
        ;
        ;       ALARM TYPER STRINGS:
        ;
0337    ACKK:   IF ILOOP = 0 THEN STRNGO = "244A-P1 HRDWR INTRLK  "
        ;       IF ILOOP = 2 THEN STRNGO = "244A-P2 HRDWR INTRLK  "                JFB01
0339            IF ILOOP = 17 THEN STRNGO = "244A PUMP PIT LEAK    "
        ;       IF ILOOP = 18 THEN STRNGO = "244A SER PIT RADN HI  "
        ;       IF ILOOP = 19 THEN STRNGO = "244A FLSH PIT PRES HI "
0341            IF ILOOP = 20 THEN STRNGO = "244BATCH PGM STARTING "
0343            IF ILOOP = 21 THEN STRNGO = "244BATCH WRONG UNIT   "
0345            IF ILOOP = 22 THEN STRNGO = "244BATCH TERMINATING  "
0347            IF ILOOP = 31 THEN STRNGO = "244A LIQUID TEMP HI   "
        ;
        ; If acknowledging alarm, then:
        ;
0348    AMSG:   IF (FACK) THEN
                   BEGIN
                   ;
                   ; If white, print it is acknowledged and reset the flag:
                   ;
0350               IF PTYPE = 1 THEN PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
0351               LET FACK = 0
0352               GOTO NXT
                   END
        ;
        ; If CLEAR flag is set, print it is clear and reset the flag:
        ;
0353            IF (FCLEAR) THEN
                   BEGIN
```

```
606   0354                PRINT ADI,"%p ALARM CLEAR",STRNG0
607   0355                LET FCLEAR = 0
608   0356                GOTO NXT
609                       END
610           ;         INO = TIMSTR(SSNG0)
611           ;         IF INO != 8 THEN SSNG0 = "TIMEFAIL"
612           ;         INO = APPEND(STRNG1,STRNG0,SSNG0)
613           ;         IF INO < 0 THEN STRNG1 = "APPEND FAILED!!"
614           ;
615           ; If white alarm, print:
616           ;
617   0358              IF PTYPE = 1 THEN PRINT ADI,"WHITE ALARM %p",STRNG0
618           ;
619           ; If STARTUP, then print startup message:
620           ;
621   0359    NXT:      IF FSTART = 1 THEN
622                       BEGIN
623   0360                LET FSTART = 0
624   0361                PRINT ADI,"%p",STRNG0
625                       END
626   0362              RETURN
627           ;
628           ; If ERROR - print message, start Btimer, and set flag:
629           ;
630   0363    ERRSUB:   IF ERRN != ERRNUM() THEN
631                       BEGIN
632   0364                TIMERON STMR0
633   0365                TIMERCLR STMR0
634   0366                LET FSN0 = 1
635   0367                LET ERRN = ERRNUM()
636   0368                LET ERRL = ERRLIN()
637   0369                PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
638                       END
639   0370              ERSCLR
640   0371              GOTO AGAIN
641           ;
642           ; If FABORT = 1, then abort program:
643           ;
644           ; TERM:  LET FABORT = 0
645   0372    TERM:     LET STRNG0 = "244BATCH TERMINATED    "
646   0373              LET ILOOP = STAR + 2
647   0374              LET FSTART = 1
648   0375              LET SSNG0 = "TERM"
649   0376              GOSUB ACKK
650                     END

      Total Errors Detected      0     Total Warnings      0
           Sequence Program Size = 6880 Bytes, 430 Pages
                 49 Forward Reference(s)
```

244HVAC

Sequence Instruction Compiler Listing 15:32:10 24-Feb-95 Page 1

```
;       2 4 4 H V A C . S E Q                                   VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 341,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]244HVAC
;
;       UNIT = 2, SKDKEY = 18
;
;       Assoc. UPF:     [300,1]_SHORT0.___      SHORT0.LST
;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
;       SDB:            [300,1]PCM0ASDB.___     PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ---------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;       09-JUN-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;
;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
;                       system. Rebase line document. Removed
;                       obsolite Select() statements.
;
;  END MOD LOG
;
UNIT    HVC244
;
```

```
0000            STAR = 8                          ; Start message
0001            SKDKEY = 18                       ; SKID Key
0002            ADI = 0                           ; Alarm destination index
0003            FSN0 = 0                          ; No alarm yet
0004            TIMEROFF STMR0                    ; Alarm timer off
0005            TIMERCLR STMR0                    ; Alarm timer clear
0006            STRNG0 = " "                      ; Blank 30 character string
0007            ERRN = 0                          ; Set error number to zero
0008            ERRL = 0                          ; Set error line to zero
0009            ASSIGN PDEV = 'HVAC244'           ; Alarm device
0010            FTRIP4 = 0                        ; FTRIPP4 = 1 when audible horn is to be turned on
0011            GETUNIT TRIP                      ; Which sequence unit is program running in
0012            IF TRIP != 2 THEN                 ; Abort if running in wrong seq. unit
                   BEGIN
0013               FSTART = 1
0014               ILOOP = STAR + 1
0015               GOSUB ACKK
0016               FSTART = 1
0017               PRINT ADI," >>>>>  ATTEMPT TO RUN 244BATCH IN WRONG UNIT"
0018               GOTO TERM
                   END
        ;       IF !SELECT() THEN GOTO AGAIN
        ;
        ;       B E G I N   I N I T I A L I Z I N G
        ;
0019            SSNG0 = "INIT"
0020    INIT:   FABORT = 0                        ; If FABORT = 1 then abort program
0021            FSTART = 0                        ; Program start flag = 0
0022            LAMP ADI,SKDKEY,0                 ; Turn off the annunciator key
0023            LSG0 = " "                        ; Clear the string variables
0024            LSG1 = " "
0025            LSG2 = " "
0026            LSG3 = " "
0027            LSG4 = " "
0028            PDEV:DEV_TMP0 = 1                                 ; Set alarm device to non-alarm state
0029            IF AND(PDEV:DEV_ALMCT,16) THEN                    ; If alarm device is inhibited, remove the inhibit
0030              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0031            IF AND(PDEV:DEV_ALMCT,32) THEN                    ; If alarm device is acknowledged, clear it
0032               PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
        ;
        ;       First, set all flags and integers:
        ;
        ; EPN           TYPE    INT     FRV     LIMIT           DESCRIPTOR
        ; ---------     ----    ---     ---     -----   ------------------------------
        ; PDSL-EF-2     2       0       1               244-A HEPA DP FAN FAIL EXH RADN
        ; PDSL-EF-1     2       1       0               244-A HEPA DELTA P HIGH
        ; RSH-A         4       2       0               244-A ANNULUS RADN HIGH
        ; RSH-EXH-1     4       3       0               244-A EXH STAK RADN HIGH
        ; QXS-EXH-1     2       4       0               244-A STACK MON SYS FAIL
        ;
        ; RI-244ANN     4       5       -               244-A LIFT STA ANNULUS RADN
        ; FI-244EXH     0       6       -               244-A EXHAUST STACK FLOW
        ; RI-244EXH     4       7       -               244-A LIFT STA EXH STACK RADN
        ;
        ; FI-244EXH     1       8       1       100 LO  244-A EXHAUST STACK FLOW
```

```
111          ; FI-244EXH      1       9       0       200 HI  244-A EXHAUST STACK FLOW
112          ;
113   0033          ASSIGN PDIN = 'PDSL-EF-2'                          ; Assign pointer to first DIN
114   0034          ASSIGN PSTAT = INTO
115   0035          ASSIGN PTYPE = TYPEO
116   0036          ASSIGN PREV = FRVO
117   0037          ASSIGN PPASS = FPASO
118   0038          ASSIGN PSKID = SKIDO
119   0039          ASSIGN PALARM = FDISO
120          ;
121   0040          FOR ILOOP = 0 TO 9
122   0041          PPASS = 0
123   0042          PREV = 0
124   0043          PTYPE = 2
125   0044          PSTAT = 0
126   0045          PSKID = 0
127   0046          IF ILOOP < 5 THEN
128                  BEGIN
129   0047           IF (AND(PDIN:DIN_DFLG,3)) THEN                    ; Check for alarms (must be red or yellow)
130                    BEGIN
131   0048             PTYPE = 2                                       ; Default to yellow
132   0050             IF AND(PDIN:DIN_DFLG,1) THEN PREV = 1           ; Reverse acting
133   0052             IF AND(PDIN:DIN_DFLG,4) THEN PTYPE = 4          ; Set to critical alarm
134                    END
135   0054           IF ILOOP < 4 THEN STEP PDIN BY 1                  ; Point to next DIN
136                  END
137   0056          IF ILOOP > 7 THEN PTYPE = 1
138   0057   SKP:  STEP PSTAT BY 1
139   0058          STEP PTYPE BY 1
140   0059          STEP PREV BY 1
141   0060          STEP PPASS BY 1
142   0061          STEP PSKID BY 1
143   0062          STEP PALARM BY 1
144   0063          NEXT ILOOP
145          ;
146   0064          FRVO = 1                  ; PDSL-EF-2
147   0065          FRV1 = 0                  ; PSDH-EF-1
148   0066          FRV2 = 0                  ; RSH-A
149   0067          FRV3 = 0                  ; RSH-EXH-1
150   0068          FRV4 = 0                  ; QXS-EXH-1
151   0069          FRV8 = 1                  ; FI-244EXH LO
152          ;
153   0070          TYPE5 = 4                 ; RI-244ANN
154   0071          TYPE6 = 0                 ; RI-244EXN
155   0072          TYPE7 = 4                 ; RI-244EXH
156          ;
157   0073          AIO = 100.0               ; FI-244EXH LO
158   0074          AI1 = 200.0               ; FI-244EXH HI
159   0075          ANALOG = 0
160          ;
161          ;       E N D   I N I T I A L I Z I N G
162          ;
163          ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
164          ;
165          ;
```

```
 166   0076            ILOOP = STAR
 167   0077            FSTART = 1
 168   0078            GOSUB ACKK
 169   0079            ON ERROR GOSUB ERRSUB
 170            ;
 171            ;       B E G I N   P R O G R A M   L O O P
 172            ;
 173   0080     AGAIN:  MARK STEP "AGAIN",0,0
 174   0081            SSNGO = "WAIT"
 175            ;       WAITUNTIL SELECT() ¦ FABORT       ; Wait until micro is selected or program aborted
 176            ;       IF (FABORT) THEN GOTO TERM        ; Terminate program if FABORT flag is set
 177   0082            WAIT 1
 178   0083            IF (FSNO) THEN                    ; If alarm flag set
 179   0084               IF STMRO > 60 THEN             ; If alarm flag active for 1 minute
 180                       BEGIN                          ; Reset timer and turn off flag
 181   0085                  TIMEROFF STMRO
 182   0086                  TIMERCLR STMRO
 183   0087                  FSNO = 0
 184   0088                  ERRN = 0
 185   0089                  ERRL = 0
 186                       END
 187            ;
 188            ;       If HVAC244 $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
 189            ;
 190   0090            IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
 191                      BEGIN
 192   0091               PDEV:DEV_TMPO = 1              ; Put device in ack state
 193   0092               FTRIP4 = 1                     ; Set for unit alarm ack, system to graphic
 194   0093               ACK = 1                        ; Set for unit alarm ack, graphic to system
 195   0094               CRIT
 196   0095               LAMP ADI,SKDKEY,1
 197                      END
 198            ;
 199            ;       BEGIN DINs:
 200            ;
 201   0096            ASSIGN PDIN = 'PDSL-EF-2'
 202   0097            ASSIGN PTYPE = TYPEO
 203   0098            ASSIGN PREV = FRVO
 204   0099            ASSIGN PSTAT = INTO
 205   0100            ASSIGN PPASS = FPASO
 206   0101            CURENT = 0                        ; Used to set LAMP status
 207   0102            LAST = 0
 208   0103            ANALOG = 0
 209   0104            NXT = 0
 210   0105            LMPVAR = 0
 211   0106            BITVAL = 0
 212            ;
 213   0107     LOP:    FOR ILOOP = 0 TO 4
 214   0108            IF ( PTYPE > 0 ) THEN                          ; If some type of alarm
 215                      BEGIN                                   ;be1
 216   0110               IF AND(PDIN:DIN_ALMCT,16) THEN PSTAT = 3     ; If EPN inhibited
 217   0112               IF AND(PDIN:DIN_ALMCT,4) THEN PSTAT = 5      ; If EPN is bad input
 218   0114               IF !AND(PDIN:DIN_FLG,8) THEN PSTAT = 4       ; If EPN is disabled
 219   0115               IF ( PSTAT < 3 ) THEN                   ; If not inhibited
 220                          BEGIN                               ;be2
```

```
0116                    IF PSTAT = 1 THEN
                           BEGIN                          ;be3
0118                       IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0120                       IF (FTRIP4) THEN GOSUB ACK1
                           END                            ;en3
0123                    IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0124                    IF(PSTAT) THEN
                              BEGIN                       ;be4
0126                          IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
0127                          NXT = PSTAT
0129                          IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0130                          LAST = OR(LAST,NXT)
                              END                         ;en4
                        END                               ;en2
0132                 ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN PSTAT = 0
                     END                                  ;en1
0134              IF ILOOP < 4 THEN STEP PDIN BY 1
0135              STEP PTYPE BY 1
0136              STEP PREV BY 1
0137              STEP PSTAT BY 1
0138              STEP PPASS BY 1
0139              NEXT ILOOP
          ;
          ;       END DINs:
          ;
          ;       BEGIN ANALOG RED AND YELLOWS:
          ;
0140              ASSIGN PSKID = SKID5
0141              ASSIGN PTYPE = TYPE5
0142              ASSIGN PREV = FRV5
0143              ASSIGN PAI = 'RI-244ANN'
0144              FOR JLOOP = 5 TO 7
0145              IF(PTYPE) THEN                          ; If some alarm exists
                     BEGIN                        ;be1
0146                 BITVAL = PAI:AI_ALMCT
0147                 IF !AND(BITVAL,16) THEN
                        BEGIN                     ;be2
0148                    IF AND(BITVAL,15) THEN            ; If alarm exists and alarm is current
                           BEGIN                  ;be3
0150                       IF AND(BITVAL,32) THEN NXT = 2  ; If alarm is ack
                           ELSE
                              BEGIN               ;be4
0151                          IF PSKID != BITVAL THEN
                                 BEGIN            ;be5
0152                             PSKID = BITVAL
0153                             PDEV:DEV_TMP0 = 2
0155                             IF BITVAL < 3 THEN FALMON = 1
0156                             NXT = 1
0157                             LAMP ADI,SKDKEY,2
0158                             CRIT
                                 END              ;en5
0159                          ELSE NXT = 1
                              END                 ;en4
                           END                    ;en3
                        ELSE                              ; Else there is no alarm
```

```
                          BEGIN
0160                      NXT = 0
0161                      PSKID = 0
                          END
                       END                          ;en2
                    ELSE                                  ; Else alarm is inhibited
                       BEGIN
0162                   NXT = 0
0163                   PSKID = 0
                       END
0164                ANALOG = OR(ANALOG,NXT)
                    END                             ;en1
0165             STEP PSKID BY 1
0166             STEP PTYPE BY 1
0167             STEP PREV BY 1
0169             IF JLOOP < 3 THEN STEP PAI BY 1
0170             NEXT JLOOP
          ;
          ;      END ANALOG RED AND YELLOWS
          ;
          ;      BEGIN ANALOG WHITE ALARMS:
          ;
0171      WHT:   WHITE = 0
0172             SSNGO = "RUN"
0173             ASSIGN PALARM = AIO
0174             ASSIGN PSTAT = INT8
0175             ASSIGN PTYPE = TYPE8
0176             ASSIGN PREV = FRV8
0177             ASSIGN PPASS = FPAS8
0178             ILOOP = 8
0179             ASSIGN PAI = 'FI-244EXH'
0180             GOSUB ANLG
0181             GOSUB ANLG
0182             CURENT = OR(CURENT,ANALOG)
0183             MARK STEP "BELOW",0,0
                 ;
                 ;  Use LEAKO with string packet 78 in graphic:
                 ;
0185             IF ((INT9)&INT9<3) THEN LEAKO = INT9 + 4
0187                ELSE IF((INT8) & (INT8 < 3)) THEN LEAKO = INT8 + 2
0189                     ELSE IF INT9 = 3 | INT8 = 3 THEN LEAKO = 9
0190                          ELSE LEAKO = 0
          ;
          ;      END ANALOG WHITE ALARMS
          ;
0191             FTRIP4 = 0
0193             IF CURENT > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
0194             CURENT = OR(LAST,WHITE)
0195             CURENT = OR(CURENT,ANALOG)
0197             IF AND(CURENT,1)THEN LMPVAR = 2
0199                ELSE IF AND(CURENT,2)THEN LMPVAR = 1
0200                          ELSE LMPVAR = 0
0201             LAMP ADI,SKDKEY,LMPVAR
0202             MARK STEP "BOTTOM",0,0
0203             NOCRIT
```

```
0204            GOTO AGAIN
        ;
        ;       E N D   P R O G R A M   L O O P
        ;
        ;       BEGIN ANALOG WHITE ALARM SUBROUTINE:
        ;
0205    ANLG:   IF PTYPE = 1 THEN                                   ; If some alarm
                   BEGIN                                    ;be0
0206               BITVAL = PAI:AI_ALMCT
0207               IF !(AND(BITVAL,16) & (PTYPE)) THEN              ; If not inhibited and alarm enabled
                     BEGIN                                  ;be1
0209                 IF PSTAT = 3 THEN PSTAT = 0
0210                 IF (PREV) THEN                                 ; If rev acting, LOLO, or LO
                        BEGIN                               ;be2
0211                    IF !(PSTAT) THEN                    ; If not previously alarmed
                           BEGIN                            ;be3
0213                       IF PAI:AI_INVL <= PALARM THEN GOSUB ALM
                           END                              ;en3
                        ELSE
                           BEGIN                            ;be4
0214                       IF PSTAT = 1 THEN                       ; If previously alarmed
                              BEGIN                         ;be5
0216                          IF (FTRIP4) THEN GOSUB ACK1           ; If ACK flag set, then ack it
0219                          IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                              END                           ;en5
0221                       IF PAI:AI_INVL >= PALARM + PAI:AI_DEAD THEN GOSUB CLR
                           END                              ;en4
                        END                                 ;en2
                     ELSE                                           ; If fail-safe, HIHI, or HI
                        BEGIN                               ;be2.1
0222                    IF PSTAT = 0  THEN
                           BEGIN
0224                       IF PAI:AI_INVL >= PALARM THEN GOSUB ALM
                           END
                        ELSE
                           BEGIN
0225                       IF PSTAT = 1 THEN
                              BEGIN
0227                          IF (FTRIP4) THEN GOSUB ACK1
0230                          IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                              END
0232                       IF PAI:AI_INVL <= PALARM - PAI:AI_DEAD THEN GOSUB CLR
                           END
                        END                                 ;en2.1
0234               IF PSTAT = 3 THEN PSTAT = 0                      ; If INHA then there is no alarm
0236               IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0237                  ELSE NXT = PSTAT
0238               NXT = PSTAT
                   END
                   ELSE
                     BEGIN
0239                 PSTAT = 3
0240                 NXT = 0
                     END
0241            WHITE = OR(WHITE,NXT)
```

```
386                     END
387     0242            ELSE PSTAT = 0
388     0243            STEP PALARM BY 1
389     0244            STEP PSTAT BY 1
390     0245            STEP PTYPE BY 1
391     0246            STEP PREV BY 1
392     0247            STEP PPASS BY 1
393     0248            ILOOP = ILOOP + 1
394     0249            RETURN
395             ;
396             ;       END ANALOG WHITE ALARM SUBROUTINE
397             ;
398             ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
399             ;
400     0250    CLR:    PSTAT = 0                                       ; Int set to zero
401     0253            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
402     0254            FCLEAR = 1                                      ; Clear flag
403     0256            IF ILOOP = 9 THEN INT8 = 0                      ; Reset the other white alarm
404     0257            GOSUB ACKK                                      ; Print message
405     0258            RETURN
406             ;
407     0259    ALM:    PSTAT = 1                                       ; Int set to one
408                     ;
409                     ; If not white then unack:
410                     ;
411     0262            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
412                     ;
413                     ; Turn audible alarm on if white or yellow:
414                     ;
415     0264            IF AND(PTYPE,3) THEN FALMON = 1
416     0265            PDEV:DEV_TMP0 = 2
417     0266            CRIT
418     0267            LAMP ADI,SKDKEY,2                               ; Blink the LAMP
419     0268            GOSUB ACKK                                      ; Print message
420     0269            RETURN
421             ;
422     0270    ACK1:   PSTAT = 2                                       ; Ack the alarm
423     0271            FACK = 1                                        ; Set ACK flag for C program
424             ;
425             ;       ALARM TYPER STRINGS:
426             ;
427     0273    ACKK:   IF ILOOP = 0 THEN STRNG0 = "DP FAN/FAIL EXH RADN  "
428     0275           IF ILOOP = 1 THEN STRNG0 = "244-A HEPA DLTA P HI  "
429     0277            IF ILOOP = 2 THEN STRNG0 = "244-A ANN EXH RAD HI  "
430     0279            IF ILOOP = 3 THEN STRNG0 = "244-A EXH STK RAD HI  "
431     0281            IF ILOOP = 4 THEN STRNG0 = "244-A STK MN SYS FAIL "
432     0283            IF ILOOP = 8 THEN STRNG0 = "244-A EXH STK FLO LO  "
433     0285            IF ILOOP = 9 THEN STRNG0 = "244-A EXH STK FLO HI  "
434     0287            IF ILOOP = 20 THEN STRNG0 = "START PGM 244HVAC.SEQ "
435     0289            IF ILOOP = 21 THEN STRNG0 = "WRONG UNIT 244HVAC.SEQ"
436     0291            IF ILOOP = 22 THEN STRNG0 = "244HVAC TERMINATED   "
437             ;
438             ; If acknowledging the alarm, then:
439             ;
440     0292    AMSG:   IF (FACK) THEN
```

```
                    BEGIN
                    ;
                    ; If white, print it is ack and reset the flag:
                    ;
0293                PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
0294                FACK = 0
0295                GOTO NXT
                    END
          ;
          ; If CLEAR flag is set, print it is clear and reset the flag:
          ;
0296              IF (FCLEAR) THEN
                    BEGIN
0297                PRINT ADI,"%p ALARM CLEAR",STRNGO
0298                FCLEAR = 0
0299                GOTO NXT
                    END
          ;         REMAIN= TIMSTR(SSNGO)
          ;         IF REMAIN != 8 THEN SSNGO = "TIMEFAIL"
          ;         REMAIN = APPEND(STRNG1,STRNGO,SSNGO)
          ;         IF REMAIN < 0 THEN STRNG1 = "APPEND FAILED!!"
          ;
          ; If white alarm, print:
          ;
0301              IF PTYPE = 1 THEN PRINT ADI,"WHITE ALARM %p",STRNG1
          ;
          ; If STARTUP, then print startup message:
          ;
0302      NXT:    IF FSTART = 1 THEN
                    BEGIN
0303                FSTART = 0
0304                PRINT ADI,"%p",STRNGO
                    END
0305              RETURN
          ;
          ; If ERROR - print message, start Btimer, and set flag:
          ;
0307      ERRSUB: IF(ERRNUM() = -187) THEN ERSRET
                  ELSE
                    BEGIN
0308                IF ERRN != ERRNUM() THEN
                          BEGIN
0309                      TIMERON STMRO
0310                      TIMERCLR STMRO
0311                      FSNO = 1
0312                      ERRN = ERRNUM()
0313                      ERRL = ERRLIN()
0314                      PRINT ADI,"ERROR # %i AT LINE %i",ERRN,ERRL
0315                      ERSCLR
                          END
                    END
0316              GOTO AGAIN
          ;
          ; If FABORT = 1, then abort the program:
          ;
```

```
496            ; TERM:  FABORT = 0
497    0317    TERM:    STRNGO = "244BATCH TERMINATED    "
498    0318             ILOOP = STAR + 2
499    0319             FSTART = 1
500    0320             SSNGO = "TERM"
501    0321             GOSUB ACKK
502                     END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 6048 Bytes, 378 Pages
22 Forward Reference(s)

WSTXFR

```
1          ;       W S T X F R . S E Q                          VERSION 4
2          ;
3          ;
4          ;       Function:       Sequence program for Lamp function,
5          ;                       message display on Graphic number 344,
6          ;                       and printer messages.
7          ;
8          ;       Written By      : R. N. Kersey
9          ;       Date            : 05-31-92
10         ;       Facility        : 242-A Evaporator Bldg.
11         ;       Machine         : VAX 4104-A
12         ;       Op. System      : VAX/VMS 5.5-2AH
13         ;       D/3 Version     : 6.3-3
14         ;       Compiler        : SIC
15         ;       Build command   : @[320,20]WSTXFR
16         ;
17         ;       UNIT = 3, SKDKEY = 16
18         ;
19         ;       Assoc. UPF:     [300,1]_SHORTO.___      SHORTO.LST
20         ;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
21         ;       SDB:            [300,1]PCM0ASDB.___     PCM0ASDB.CMD
22         ;
23         ;       POINTER   SDB VAR.      FUNCTION
24         ;       -------   ---------     ----------------------------------------
25         ;       PSTAT     INTn          Current EPN alarm state is an integer tied to
26         ;                               graphic flashing string of value:
27         ;       .         (n=0-100)             0 = previously not alarmed
28         ;       .                               1 = previously alarmed, not ack
29         ;       .                               2 = previously alarmed, is ack
30         ;       .                               3 = alarm is inhibited
31         ;       .                               4 = input is off scan
32         ;       .                               5 = input is bad
33         ;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
34         ;       PDIN      'EPN'         ---
35         ;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
36         ;                                  3 = yellow and yellow, 4 = red,
37         ;                                  6 = yellow and red
38         ;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
39         ;       PSKID     SKIDn         Used for analog alarms
40         ;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
41         ;       PALARM    FALMn         Analog alarm flag
42         ;       ---       FNING         Unused error flag
43         ;
44         ;  MODIFICATION LOG:
45         ;
46         ;       04-AUG-92       Set FRV9 and FRV10 to 0 for Fail Safe          M. Teats
47         ;                       per ECN 186678.
48         ;
49         ;       30-MAR-93       Modified for redundancy.               M. Teats
50         ;
51         ;       09-JUN-93       Added comments, CCN# 93JUN01-01.               M. Teats
52         ;
53         ;-mct1+ 13-JUL-93       Add LDS216A40 PCM1 DIN section, and CLR2,      M. Teats
54         ;                       ALM2, ACK2 subroutines per CCN 93JUL13-01.
55         ;                       Baselined for D/3 version 3.3.
```

```
                ;
                ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
                ;                       system. Rebase line document. Removed
                ;                       obsolite Select() statements.
                ;
                ;       25-JUL-95       Revised program to remove EPN LDS216A40         J. Berger
                ;                       from program. See ECN 623935 and package
                ;                       EE-95-00006.  (JFB01)
                ;
                ;       20-OCT-95       Revised program to remove EPNs that are         J. Berger
                ;                       no longer used. See ECN 627411 and package
                ;                       EE-94-00929. (JFB02)
                ;
                ;  END MOD LOG
                ;
                UNIT    WASTE                           ; Is in PCM0
                        COMMON WHOLE1                   ; Is in PCM1, -mct1+
                ;
                ;       LDS1 == 'LDS216A40'             ;-mct1+  (JFB01)
        0000            NOP
        0001            STAR = 20                       ; Start message
        0002            SKDKEY = 16                     ; SKID Key
        0003            ADI = 0                         ; Alarm Destination Index
        0004            FSN0 = 0                        ; No alarm yet
        0005            TIMEROFF STMR0                  ; Alarm timer off
        0006            TIMERCLR STMR0                  ; Alarm timer clear
        0007            STRNG0 = " "                    ; Blank 30 character string
        0008            ERRN = 0                        ; Set error number to zero
        0009            ERRL = 0                        ; Set error line to zero
        0010            ASSIGN PDEV = 'WSTXFR'          ; Alarm Device
        0011            FTRIP4 = 0                      ; FTRIP4 = 1 when audible horn is to be turned on
        0012            GETUNIT TRIP                    ; Which sequence unit is program running in
        0013            IF TRIP != 3 THEN               ; Abort if running in the wrong seq. unit
                           BEGIN
        0014               FSTART = 1
        0015               ILOOP = STAR + 1
        0016               FSTART = 1
        0017               GOSUB ACKK
        0018               PRINT ADI," >>>>>  ATTEMPT TO RUN WSTXFR IN WRONG UNIT"
        0019               GOTO TERM
                           END
                ;
                ;       B E G I N   I N I T I A L I Z I N G
                ;
        0020            SSNG0 = "INIT"
        0021    INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
        0022            LET FSTART = 0                  ; Start Flag = 0
        0023            LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
        0024            LET LSG0 = " "                  ; Clear the string variables
        0025            LET LSG1 = " "
        0026            LET LSG2 = " "
        0027            LET LSG3 = " "
        0028            LET LSG4 = " "
        0029            PDEV:DEV_TMP0 = 1                                ; Set alarm device to non-alarm state
        0030            IF AND(PDEV:DEV_ALMCT,16) THEN                   ; If alarm device is inhibited, remove the inhibit
```

```
 111    0031              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
 112    0032            IF AND(PDEV:DEV_ALMCT,32) THEN                  ; If alarm device is acknowledged, clear it
 113    0033               PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
 114            ;
 115            ;       First, set all flags and integers:
 116            ;
 117            ;       EPN             INT     TYPE    FRV
 118            ;       ---------       ---     ----    ---
 119            ;       LDS-AR151       0       2       0
 120            ;       LDS-ER151       1       2       0
 121            ;       PSHSNV229       2       2       0
 122            ;       LDS-ER152       3       2       0
 123            ;       SPARE           4       -       -
 124            ;       SPARE           5       -       -
 125            ;       SPARE           6       -       -
 126            ;       SPARE           7       -       -
 127            ;       LDS-ER153       8       2       0
 128            ;       PSHPSN232       9       2       0
 129            ;       PSHPSN234       10      2       0
 130            ;       SPARE           11      -       -
 131            ;       SPARE           12      -       -
 132            ;       SPARE           13      -       -
 133            ;       SPARE           14      -       -
 134            ;       LDS-AX155       15      2       0
 135            ;       LDS-DR713       16      2       0
 136            ;       LDS-DR717       17      2       0
 137            ;
 138    0034            ASSIGN PDIN = 'LDS-AR151'                       ; Assign pointer to first DIN
 139    0035            ASSIGN PSTAT = INT0
 140    0036            ASSIGN PTYPE = TYPE0
 141    0037            ASSIGN PREV = FRV0
 142    0038            ASSIGN PPASS = FPAS0
 143            ;
 144    0039            FOR ILOOP = 0 TO 17
 145    0040            LET PPASS = 0
 146    0041            LET PREV = 0
 147    0042            LET PTYPE = 0
 148    0043            LET PSTAT = 0
 149    0044            IF ILOOP = 4 THEN                               ; JFB02
 150                     BEGIN                                          ; JFB02
 151    0045             STEP PDIN BY 1                                 ; JFB02
 152    0046             GOTO SKP                                       ; JFB02
 153                     END                                            ; JFB02
 154    0047            IF ILOOP = 5 THEN                               ; JFB02
 155                     BEGIN                                          ; JFB02
 156    0048             STEP PDIN BY 1                                 ; JFB02
 157    0049             GOTO SKP                                       ; JFB02
 158                     END                                            ; JFB02
 159    0050            IF ILOOP = 6 THEN                               ; JFB02
 160                     BEGIN                                          ; JFB02
 161    0051             STEP PDIN BY 1                                 ; JFB02
 162    0052             GOTO SKP                                       ; JFB02
 163                     END                                            ; JFB02
 164    0053            IF ILOOP = 7 THEN                               ; JFB02
 165                     BEGIN                                          ; JFB02
```

```
0054                STEP PDIN BY 1                                  ; JFB02
0055                GOTO SKP                                        ; JFB02
                    END                                             ; JFB02
0056               IF ILOOP = 11 THEN                               ; JFB02
                    BEGIN                                           ; JFB02
0057                STEP PDIN BY 1                                  ; JFB02
0058                GOTO SKP                                        ; JFB02
                    END                                             ; JFB02
0059               IF ILOOP = 12 THEN                               ; JFB02
                    BEGIN                                           ; JFB02
0060                STEP PDIN BY 1                                  ; JFB02
0061                GOTO SKP                                        ; JFB02
                    END                                             ; JFB02
0062               IF ILOOP = 13 THEN                               ; JFB02
                    BEGIN                                           ; JFB02
0063                STEP PDIN BY 1                                  ; JFB02
0064                GOTO SKP                                        ; JFB02
                    END                                             ; JFB02
0065               IF ILOOP = 14 THEN                               ; JFB02
                    BEGIN                                           ; JFB02
0066                STEP PDIN BY 1                                  ; JFB02
0067                GOTO SKP                                        ; JFB02
                    END                                             ; JFB02
0068               IF (AND(PDIN:DIN_DFLG,3)) THEN                   ; Check for alarms (must be red or yellow)
                      BEGIN
0069                  LET PTYPE = 2                                 ; Default to yellow
0071                  IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1     ; Reverse acting
0073                  IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4    ; Set to critical alarm
                      END
0075               IF ILOOP < 17 THEN STEP PDIN BY 1                ; Point to next DIN
0076      SKP:     STEP PSTAT BY 1
0077               STEP PTYPE BY 1
0078               STEP PREV BY 1
0079               STEP PPASS BY 1
0080               NEXT ILOOP
          ;
          ;        LET TYPE4 = 0            ; ZSER15212
          ;        LET TYPE5 = 0            ; ZSER15211
          ;        LET TYPE6 = 0            ; PSER15212
          ;        LET TYPE7 = 0            ; PSER15211
          ;        LET TYPE11 = 0           ; ZSER15312
          ;        LET TYPE12 = 0           ; ZSER15311
          ;        LET TYPE13 = 0           ; PSER15312
          ;        LET TYPE14 = 0           ; PSER15311
          ;        LET TYPE18 = 2           ; LDS216A40, -mct1+  (JFB01)
          ;
0081               LET FRV0 = 0             ; LDS-AR151
0082               LET FRV1 = 0             ; LDS-ER151
0083               LET FRV2 = 0             ; PSHSNV229
0084               LET FRV3 = 0             ; LDS-ER152
0085               LET FRV8 = 0             ; LDS-ER153
0086               LET FRV9 = 0             ; PSHPSN232
0087               LET FRV10 = 0            ; PSHPSN234
0088               LET FRV15 = 0            ; LDS-AX155
0089               LET FRV16 = 0            ; LDS-DR713
```

```
0090            LET FRV17 = 0            ; LDS-DR717
        ;       LET FRV18 = 0            ; LDS216A40, -mct1+  (JFB01)
        ;
        ;       LET INT18 = 0            ; LDS216A40, -mct1+  (JFB01)
        ;       LET FPAS18 = 0           ; LDS216A40, -mct1+  (JFB01)
        ;
        ;       E N D   I N I T I A L I Z I N G
        ;
        ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
        ;
0091            ANALOG = 0
0092            ILOOP = STAR
0093            FSTART = 1
0094            GOSUB ACKK
0095            ON ERROR GOSUB ERRSUB
        ;
        ;       B E G I N   P R O G R A M   L O O P
        ;
0096    AGAIN:  MARK STEP "WTUNTL",0,0
        ;       WAITUNTIL SELECT() | FABORT      ; Wait until micro is selected or program aborted
        ;       IF (FABORT) THEN GOTO TERM       ; Terminate program if FABORT flag is set
0097            MARK STEP "RNNING",0,0
0098            WAIT 1
0099            IF (FSNO) THEN                   ; If alarm flag set
0100               IF STMRO > 60 THEN            ; If alarm flag active for 1 minute
                      BEGIN                      ; Reset timer and turn off flag
0101                  TIMEROFF STMRO
0102                  TIMERCLR STMRO
0103                  LET FSNO = 0
0104                  LET ERRN = 0
0105                  LET ERRL = 0
                      END
        ;
        ;       If WSTXFR $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
        ;
0106            IF (PDEV:DEV_TMPO = 2 ) & AND(PDEV:DEV_ALMCT,32) THEN
                   BEGIN
0107               PDEV:DEV_TMPO = 1             ; Put device in acknowledge state
0108               LET FTRIP4 = 1                ; Set for unit alarm acknowledgement, system to graphic
0109               LET ACK = 1                   ; Set for unit alarm acknowledgement, graphic to system
        ;          CRIT
0110               LAMP ADI,SKDKEY,1
                   END
        ;
        ;       BEGIN DINs:
        ;
0111            ASSIGN PDIN = 'LDS-AR151'
0112            ASSIGN PSTAT = INTO
0113            ASSIGN PTYPE = TYPEO
0114            ASSIGN PREV = FRVO
0115            ASSIGN PPASS = FPASO
0116            CURENT = 0                       ; Used to set LAMP status
0117            LAST = 0
0118            ANALOG = 0
0119            NXT = 0
```

```
0120            WHITE = 0
0121            LMPVAR = 0
0122            BITVAL = 0
          ;
0123      LOP:  FOR ILOOP = 0 TO 17
          ;     IF !SELECT() THEN GOTO AGAIN
0125            IF ILOOP = 4 THEN GOTO LOP1                    ; JFB02
0127            IF ILOOP = 5 THEN GOTO LOP1                    ; JFB02
0129            IF ILOOP = 6 THEN GOTO LOP1                    ; JFB02
0131            IF ILOOP = 7 THEN GOTO LOP1                    ; JFB02
0133            IF ILOOP = 11 THEN GOTO LOP1                   ; JFB02
0135            IF ILOOP = 12 THEN GOTO LOP1                   ; JFB02
0137            IF ILOOP = 13 THEN GOTO LOP1                   ; JFB02
0139            IF ILOOP = 14 THEN GOTO LOP1                   ; JFB02
0140            IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
                  BEGIN                                        ; be1
0142              IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3 ; If EPN inhibited
0144              IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5          ; If EPN is bad input
0146              IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4           ; If EPN is disabled
0147              IF ( PSTAT < 3 ) THEN                        ; If not inhibited
                       BEGIN                                   ; be2
0148                     IF PSTAT = 1 THEN
                           BEGIN                               ; be3
0149                       IF PTYPE != 1 THEN
0151                         IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0153                       IF (FTRIP4) THEN GOSUB ACK1
                           END                                 ; en3
0156                     IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0157                     IF (PSTAT) THEN
                             BEGIN                             ; be4
0159                         IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
0160                         NXT = PSTAT
0162                         IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0163                         LAST = OR(LAST,NXT)
                             END                               ; en4
                         END                                   ; en2
0165                 ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 0
                     END                                       ; en1
0167            IF ILOOP < 17 THEN STEP PDIN BY 1
0168      LOP1: STEP PSTAT BY 1
0169            STEP PTYPE BY 1
0170            STEP PREV BY 1
0171            STEP PPASS BY 1
0172            NEXT ILOOP
                ;
                ;       Begin PCM1 DIN (LDS216A40) -mct1+:   (JFB01)
                ;
          ;     ILOOP = 18
          ;     IF !SELECT() THEN GOTO AGAIN
          ;     IF ( TYPE18 > 0 ) THEN                                 ; If some type of alarm
          ;       BEGIN                                      ; be1
          ;       IF AND('LDS1':DIN_ALMCT,16) THEN LET INT18 = 3 ; If EPN inhibited
          ;         IF (ERRNUM() = -187) THEN GOTO WHT       ; Skip LDS216A40 if PCM1 micros down
          ;       IF AND('LDS1':DIN_ALMCT,4) THEN LET INT18 = 5  ; If EPN is bad input
          ;       IF !AND('LDS1':DIN_FLG,8) THEN LET INT18 = 4   ; If EPN is disabled
```

```
331          ;          IF ( INT18 < 3 ) THEN                          ; If not inhibited
332          ;              BEGIN                                      ; be2
333          ;               IF INT18 = 1 THEN
334          ;                  BEGIN                                  ; be3
335          ;                  IF TYPE18 != 1 THEN
336          ;                     IF AND('LDS1':DIN_ALMCT,32) THEN GOSUB ACK2
337          ;                  IF (FTRIP4) THEN GOSUB ACK2
338          ;                  END                                    ; en3
339          ;               IF INT18 = 0 THEN IF('LDS1':DIN_VAL = FRV18) THEN GOSUB ALM2
340          ;               IF (INT18) THEN
341          ;                    BEGIN                                ; be4
342          ;                    IF 'LDS1':DIN_VAL != FRV18 THEN GOSUB CLR2
343          ;                    NXT = INT18
344          ;                    IF (FPAS18) & (INT18 = 2) THEN NXT = 0
345          ;                    LAST = OR(LAST,NXT)
346          ;                    END                                  ; en4
347          ;               END                                       ; en2
348          ;           ELSE IF !AND('LDS1':DIN_ALMCT,16)&!AND('LDS1':DIN_ALMCT,4)&AND('LDS1':DIN_FLG,8) THEN LET INT18 = 0
349          ;           END                                           ; en1
350          ;
351          ;       END PCM1 DIN
352          ;
353          ;       END DINs
354          ;
355   0173   WHT:    WHITE = 0
356   0174           SSNGO = "RUN"
357   0175           MARK STEP "BELOW",0,0
358   0176           LET FTRIP4 = 0
359   0178           IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
360   0179           CURENT = OR(LAST,WHITE)
361   0180           CURENT = OR(CURENT,ANALOG)
362   0182           IF AND(CURENT,1) THEN LMPVAR = 2
363   0184              ELSE IF AND(CURENT,2) THEN LMPVAR = 1
364   0185                    ELSE LMPVAR = 0
365   0186           LAMP ADI,SKDKEY,LMPVAR
366   0187           MARK STEP "BOTTOM",0,0
367          ;       NOCRIT
368   0188           GOTO AGAIN
369          ;
370          ;       E N D   P R O G R A M   L O O P
371          ;
372          ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
373          ;
374   0189   CLR:    LET PSTAT = 0                                     ; INT set to zero
375                  ;
376                  ; If not white then unack:
377                  ;
378   0192           IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
379   0193           LET FCLEAR = 1                                    ; Clear Flag
380   0194           GOSUB ACKK
381   0195           RETURN
382          ;
383          ; CLR2: LET INT18 = 0          ; PCM1 DIN, -mct1+  (JF801)
384                  ;
385                  ; If not white, then unack:
```

```
                ;
        ;       IF TYPE18 != 1 THEN IF AND('LDS1':DIN_ALMCT,32)THEN 'LDS1':DIN_ALMCT = XOR('LDS1':DIN_ALMCT,32)
        ;       LET FCLEAR = 1
        ;       GOSUB ACKK
        ;       RETURN
        ;
0196    ALM:    LET PSTAT = 1                                           ; INT set to one
                ;
                ; If not white then unack:
                ;
0199            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
                ;
                ; Turn audible alarm on if white or yellow:
                ;
0201            IF AND(PTYPE,3) THEN FALMON = 1
0202            LET PDEV:DEV_TMPO = 2
        ;       CRIT
0203            LAMP ADI,SKDKEY,2                                       ; Blink the LAMP
0204            GOSUB ACKK                                              ; Print message
0205            RETURN
        ;
        ; ALM2: LET INT18 = 1                   ; PCM1 DIN, -mct1+  (JFB01)
                ;
                ; If not white, then unack:
                ;
        ;       IF TYPE18 != 1 THEN IF AND('LDS1':DIN_ALMCT,32)THEN 'LDS1':DIN_ALMCT = XOR('LDS1':DIN_ALMCT,32)
                ;
                ; Turn audible alarm on if white or yellow:
                ;
        ;       FALMON = 1
        ;       LET 'WSTXFR':DEV_TMPO = 2
        ;       CRIT
        ;       LAMP ADI,SKDKEY,2
        ;       GOSUB ACKK
        ;       RETURN
        ;
0206    ACK1:   LET PSTAT = 2                                           ; Acknowledge alarm
0207            LET FACK = 1                                            ; Set ACK flag for C program
        ;
        ; ACK2: IF ILOOP = 18 THEN                      ; PCM1 DIN, -mct1+  (JFB01)
        ;       BEGIN
        ;       LET INT18 = 2
        ;       LET FACK = 1
        ;       END
        ;
        ;       ALARM TYPER STRINGS:
        ;
0209    ACKK:   IF ILOOP = 0 THEN STRNGO = "151-AR DIVISION BOX LEAK"
0211            IF ILOOP = 1 THEN STRNGO = "1-1-ER DIVISION BOX LEAK"
0213            IF ILOOP = 2 THEN STRNGO = "151-ER LINE V229 LEAK"
0215            IF ILOOP = 3 THEN STRNGO = "152-ER DIVISION BOX LEAK"
0217            IF ILOOP = 8 THEN STRNGO = "153-ER DIVISION BOX LEAK"
0219            IF ILOOP = 9 THEN STRNGO = "153-ER LINE V232 LEAK"
0221            IF ILOOP = 10 THEN STRNGO = "153-ER LINE V234 LEAK"
0223            IF ILOOP = 15 THEN STRNGO = "155-AX DIVISION BOX LEAK"
```

```
441   0225            IF ILOOP = 16 THEN STRNG0 = " DRAIN DR-713 LINE LEAK"
442   0227            IF ILOOP = 17 THEN STRNG0 = " DRAIN DR-717 LINE LEAK"
443           ;       IF ILOOP = 18 THEN STRNG0 = "LDS216A40 LEAK DET " ;-mct1+  (JFB01)
444   0229            IF ILOOP = 20 THEN STRNG0 = "WSTXFR PGM STARTING "
445   0231            IF ILOOP = 21 THEN STRNG0 = "WSTXFR WRONG UNIT   "
446   0233            IF ILOOP = 22 THEN STRNG0 = "WSTXFR TERMINATING  "
447           ;
448           ; If acknowledging alarm, then:
449           ;
450   0234    AMSG:     IF (FACK) THEN
451                        BEGIN
452                        ;
453                        ; If white, print it is acknowledged and reset the flag
454                        ;
455   0236                 IF PTYPE = 1 THEN PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG0
456   0237                 LET FACK = 0
457   0238                 GOTO NXT
458                        END
459           ;
460           ; If CLEAR flag is set, print it is clear and reset the flag:
461           ;
462   0239            IF (FCLEAR) THEN
463                        BEGIN
464   0240                 PRINT ADI,"%p ALARM CLEAR",STRNG0
465   0241                 LET FCLEAR = 0
466   0242                 GOTO NXT
467                        END
468           ;       INO = TIMSTR(SSNG0)
469           ;       IF INO != 8 THEN SSNG0 = "TIMEFAIL"
470           ;       INO = APPEND(STRNG1,STRNG0,SSNG0)
471           ;       IF INO < 0 THEN STRNG1 = "APPEND FAILED!!"
472           ;
473           ; If white alarm, print:
474           ;
475   0244            IF PTYPE = 1 THEN PRINT ADI,"WHITE ALARM %p",STRNG0
476           ;
477           ; If STARTUP, then print startup message:
478           ;
479   0245    NXT:      IF FSTART = 1 THEN
480                        BEGIN
481   0246                 LET FSTART = 0
482   0247                 PRINT ADI,"%p",STRNG0
483                        END
484   0248            RETURN
485           ;
486           ; If ERROR - print message, start timer, and set flag:
487           ;
488   0249    ERRSUB:   IF ERRN != ERRNUM() THEN
489                        BEGIN
490   0250                 TIMERON STMR0
491   0251                 TIMERCLR STMR0
492   0252                 LET FSNO = 1
493   0253                 LET ERRN = ERRNUM()
494   0254                 LET ERRL = ERRLIN()
495   0255                 PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
```

```
                        END
0256                ERSCLR
0257                GOTO AGAIN
            ;
            ; If FABORT = 1, then abort program:
            ;
            ; TERM:  LET FABORT = 0
0258        TERM:   LET STRNGO = "WSTXFR TERMINATED    "
0259                LET ILOOP = STAR + 2
0260                LET FSTART = 1
0261                LET SSNGO = "TERM"
0262                GOSUB ACKK
                    END

Total Errors Detected      0     Total Warnings      0
     Sequence Program Size = 5008 Bytes, 313 Pages
          28 Forward Reference(s)
```

350BATCH

```
;       3 5 0 B A T C H . S E Q                                  VERSION 3
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 343,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASILINE
;       Compiler        : SIC
;       Build command   : @[320,20]350BATCH
;
;       UNIT = 4, SKDKEY = 17
;
;       Assoc. UPF:     [300,1]_SHORTO.___      SHORTO.LST
;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
;       SDB:            [300,1]PCMOASDB.___     PCMOASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ---------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;       09-JUN-93       Added comments and baselined for D/3            M. Teats
;                       version 3.3.  CCN# 93JUN01-01 and
;                       CCN# 93JUN01-02.
;
;       04-JAN-94       Changed variable FRV2=1 to FRV2=0 per         R. Persin
;                       ECN 603359 and CCN 94JAN04-01
;
;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
;                       system. Rebase line document. Removed
;                       obsolite Select() statements.
;
```

```
 56            ;  END MOD LOG
 57            ;
 58            UNIT     A350
 59            ;
 60    0000            STAR = 13                        ; Start message
 61    0001            SKDKEY = 17                      ; SKID Key
 62    0002            ADI = 0                          ; Alarm destination index
 63    0003            FSNO = 0                         ; No alarm yet
 64    0004            TIMEROFF STMR0                   ; Alarm timer off
 65    0005            TIMERCLR STMR0                   ; Alarm timer clear
 66    0006            STRNG0 = " "                     ; Blank 30 character string
 67    0007            ERRN = 0                         ; Set error number to zero
 68    0008            ERRL = 0                         ; Set error line to zero
 69    0009            ASSIGN PDEV = '350ALARM' ; Alarm device
 70    0010            FTRIP4 = 0                       ; FTRIP4 = 1 when audible horn is to be turned on
 71    0011            GETUNIT TRIP                     ; Which sequence unit is program running in
 72    0012            IF TRIP != 4 THEN                ; Abort if running in wrong seq. unit
 73                       BEGIN
 74    0013               FSTART = 1
 75    0014               ILOOP = STAR + 1
 76    0015               ASSIGN PTYPE = TYPE14
 77    0016               PTYPE = 0
 78    0017               GOSUB ACKK
 79    0018               GOTO TERM
 80                       END
 81            ;       IF !SELECT() THEN GOTO AGAIN
 82            ;
 83            ;       B E G I N   I N I T I A L I Z I N G
 84            ;
 85    0019            SSNG0 = "INIT"
 86    0020    INIT:   FABORT = 0                       ; If FABORT = 1 then abort program
 87    0021            FSTART = 0                       ; Start flag = 0
 88    0022            LAMP ADI,SKDKEY,0                ; Turn off the annunciator key
 89    0023            LSG0 = " "                       ; Clear the string variables
 90    0024            LSG1 = " "
 91    0025            LSG2 = " "
 92    0026            LSG3 = " "
 93    0027            LSG4 = " "
 94    0028            PDEV:DEV_TMP0 = 1                          ; Set alarm device to non-alarm state
 95    0029            IF AND(PDEV:DEV_ALMCT,16) THEN             ; If alarm device is inhibited, remove the inhibit
 96    0030              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
 97    0031            IF AND(PDEV:DEV_ALMCT,32) THEN             ; If alarm device is ack, clear it
 98    0032               PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
 99            ;
100            ;       First, set all flags and integers:
101            ;
102    0033            ASSIGN PDIN = 'LSH-350-2'                  ; Assign pointer to first DIN
103    0034            ASSIGN PSTAT = INT1
104    0035            ASSIGN PTYPE = TYPE1
105    0036            ASSIGN PREV = FRV1
106    0037            ASSIGN PSKID = SKID1
107    0038            ASSIGN PPASS = FPAS1
108    0039            ASSIGN PALARM = FDIS1
109            ;
110    0040            FOR ILOOP = 1 TO 10
```

```
 111   0041            PPASS = 0
 112   0042            PREV = 0
 113   0043            PTYPE = 0
 114   0044            PSTAT = 0
 115   0045            PSKID = 0
 116   0046            PALARM = 0
 117   0047            IF ILOOP < 4 THEN                          ; For DINs
 118                    BEGIN
 119   0048             IF (AND(PDIN:DIN_DFLG,3)) THEN            ; Check for alarms (must be red or yellow)
 120                      BEGIN
 121   0049               PTYPE = 2                               ; Default to yellow
 122   0051               IF AND(PDIN:DIN_DFLG,1) THEN PREV = 1   ; Reverse acting
 123   0053               IF AND(PDIN:DIN_DFLG,4) THEN PTYPE = 4  ; Set to critical alarm
 124                      END
 125   0055             IF ILOOP < 3 THEN STEP PDIN BY 1          ; Point to next DIN
 126                    END
 127   0056    SKP:    STEP PSTAT BY 1
 128   0057            STEP PTYPE BY 1
 129   0058            STEP PREV BY 1
 130   0059            STEP PPASS BY 1
 131   0060            STEP PSKID BY 1
 132   0061            STEP PALARM BY 1
 133   0062            NEXT ILOOP
 134           ;
 135   0063            FRV1 = 0                ; LSH-350-2
 136   0064            FRV2 = 0                ; LDS-350-2
 137   0065            FRV3 = 0                ; LDS-PW481
 138           ;
 139   0066            TYPE7 = 6               ; WFI-350TK
 140           ;
 141   0067            ANALOG = 0
 142           ;
 143           ;       E N D   I N I T I A L I Z I N G
 144           ;
 145           ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
 146           ;
 147   0068            PTYPE = 0
 148   0069            FCLEAR = 0
 149   0070            ILOOP = STAR
 150   0071            FSTART = 1
 151   0072            GOSUB ACKK
 152   0073            ON ERROR GOSUB ERRSUB
 153           ;
 154           ;       B E G I N   P R O G R A M   L O O P
 155           ;
 156   0074    AGAIN:  MARK STEP "AGAIN",0,0
 157   0075            SSNGO = "WAIT"
 158           ;       WAITUNTIL SELECT() | FABORT       ; Wait until micro is selected or program aborted
 159           ;       IF (FABORT) THEN GOTO TERM        ; Terminate program if FABORT flag is set
 160   0076            WAIT 1
 161   0077            IF (FSNO) THEN                    ; If alarm flag set
 162   0078               IF STMR0 > 60 THEN             ; If alarm flag active for 1 minute
 163                         BEGIN                       ; Reset timer and turn off flag
 164   0079                  TIMEROFF STMR0
 165   0080                  TIMERCLR STMR0
```

```
0081                 FSNO = 0
0082                 ERRN = 0
0083                 ERRL = 0
                     END
        ;
        ;       If 350ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
        ;
0084            IF (PDEV:DEV_TMPO = 2 ) & AND(PDEV:DEV_ALMCT,32) THEN
                   BEGIN
0085               PDEV:DEV_TMPO = 1              ; Put device in ack state
0086               FTRIP4 = 1                     ; Set for unit alarm ack, system to graphic
0087               ACK = 1                        ; Set for unit alarm ack, graphic to system
0088               CRIT
0089               LAMP ADI,SKDKEY,1
                   END
        ;
        ;       BEGIN DINs:
        ;
0090            ASSIGN PDIN = 'LSH-350-2'
0091            ASSIGN PTYPE = TYPE1
0092            ASSIGN PREV = FRV1
0093            ASSIGN PSTAT = INT1
0094            ASSIGN PPASS = FPAS1
0095            LET LAST = 0
0096            LET NXT = 0
0097            LMPVAR = 0
0098            BITVAL = 0
        ;
0099    LOP:    FOR ILOOP = 1 TO 3
0100            IF ( PTYPE > 0 ) THEN                          ; If some type of alarm
                   BEGIN                                 ;be1
0102               IF AND(PDIN:DIN_ALMCT,16) THEN PSTAT = 3       ; If EPN inhibited
0104               IF AND(PDIN:DIN_ALMCT,4) THEN PSTAT = 5        ; If EPN is bad input
0106               IF !AND(PDIN:DIN_FLG,8) THEN PSTAT = 4         ; If EPN is disabled
0107               IF ( PSTAT < 3 ) THEN                  ; If not inhibited
                       BEGIN                             ;be2
0108                    IF PSTAT = 1 THEN
                           BEGIN                         ;be3
0109                       IF PTYPE != 1 THEN
0111                          IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0113                       IF (FTRIP4) THEN GOSUB ACK1
                           END                           ;en3
0116                    IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0117                    IF (PSTAT) THEN
                              BEGIN                      ;be4
0119                          IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
0120                          NXT = PSTAT
0122                          IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0123                          LAST = OR(LAST,NXT)
                              END                        ;en4
                       END                               ;en2
0125                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN PSTAT = 0
                    END                                  ;en1
0126            STEP PDIN BY 1
0127            STEP PTYPE BY 1
```

```
0128            STEP PREV BY 1
0129            STEP PSTAT BY 1
0130            STEP PPASS BY 1
0131            NEXT ILOOP
          ;
          ;     END DINs:
          ;
          ;     BEGIN ANALOG RED AND YELLOWS:
          ;
0132            LET ANALOG = 0
0133            ASSIGN PAI = 'II-350-1'
0134            ASSIGN PSKID = SKID4
0135            ASSIGN PTYPE = TYPE4
0136            ASSIGN PREV = FRV4
0137            FOR JLOOP = 4 TO 10
0138            IF (PTYPE) THEN                          ; If some alarm exists
                   BEGIN                          ;be1
0139               BITVAL = PAI:AI_ALMCT
0140               IF !AND(BITVAL,16) THEN
                      BEGIN                       ;be2
0141                  IF AND(BITVAL,15) THEN           ; If alarm exists and it is current
                         BEGIN                    ;be3
0143                     IF AND(BITVAL,32) THEN NXT = 2  ; If alarm is ack
                         ELSE
                            BEGIN                 ;be4
0144                        IF PSKID !=BITVAL THEN
                               BEGIN              ;be5
0146                           IF BITVAL < 3 THEN FALMON = 1
0147                           PSKID = BITVAL
0148                           PDEV:DEV_TMP0 = 2
0149                           NXT = 1
0150                           LAMP ADI,SKDKEY,2
0151                           CRIT
                               END                ;en5
0152                        ELSE NXT = 1
                            END                   ;en4
                         END                      ;en3
                      ELSE                                ; Else there is no alarm
                         BEGIN
0153                     NXT = 0
0154                     PSKID = 0
                         END
                      END                         ;en2
                   ELSE                                   ; Else alarm is inhibited
                      BEGIN
0155                  NXT = 0
0156                  PSKID = 0
                      END
0157               ANALOG = OR(ANALOG,NXT)
                   END                            ;en1
0158            STEP PSKID BY 1
0159            STEP PTYPE BY 1
0160            STEP PREV BY 1
0161            STEP PAI BY 1
0162            NEXT JLOOP
```

```
276              ;
277              ;        END ANALOG RED AND YELLOWS
278              ;
279    0163      WHT:     WHITE = 0
280    0164               SSNGO = "RUN"
281    0165               MARK STEP "BELOW",0,0
282    0166               FTRIP4 = 0
283    0168               IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
284    0169               CURENT = OR(LAST,WHITE)
285    0170               CURENT = OR(CURENT,ANALOG)
286    0172               IF AND(CURENT,1)THEN LMPVAR = 2
287    0174                  ELSE IF AND(CURENT,2)THEN LMPVAR = 1
288    0175                           ELSE LMPVAR = 0
289    0176               LAMP ADI,SKDKEY,LMPVAR
290    0177               MARK STEP "BOTTOM",0,0
291    0178               NOCRIT
292    0179               GOTO AGAIN
293              ;
294              ;        E N D   P R O G R A M   L O O P
295              ;
296              ;        BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
297              ;
298    0180      CLR:     PSTAT = 0                                                  ; Int set to zero
299                       ;
300                       ; If not white, then unack:
301                       ;
302    0183               IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
303    0184               FCLEAR = 1                                                 ; Clear flag
304    0185               GOSUB ACKK
305    0186               RETURN
306              ;
307    0187      ALM:     PSTAT = 1                                                  ; Int set to one
308                       ;
309                       ; If not white, then unack:
310                       ;
311    0190               IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
312                       ;
313                       ; Turn audible alarm on if white or yellow:
314                       ;
315    0192               IF AND(PTYPE,3) THEN FALMON = 1
316    0193               PDEV:DEV_TMPO = 2
317    0194               NOCRIT
318    0195               CRIT
319    0196               LAMP ADI,SKDKEY,2                                          ; Blink LAMP
320    0197               GOSUB ACKK                                                 ; Print message
321    0198               RETURN
322              ;
323    0199      ACK1:    PSTAT = 2                                                  ; Ack the alarm
324    0200               FACK = 1                                                   ; Set ACK flag for C program
325              ;
326              ;        ALARM TYPER STRINGS:
327              ;
328    0202      ACKK:    IF ILOOP = 1 THEN STRNGO = "A-350 TANK LEVEL HIGH"
329    0204               IF ILOOP = 2 THEN STRNGO = "A-350 LIFT STATION LEAK"
330    0206               IF ILOOP = 3 THEN STRNGO = "PW-481 WASTE LINE LEAK"
```

```
0208            IF ILOOP = 13 THEN STRNGO = "350BATCH PGM STARTING "
0210            IF ILOOP = 14 THEN STRNGO = "350BATCH WRONG UNIT   "
0212            IF ILOOP = 15 THEN STRNGO = "350BATCH TERMINATING  "
          ;
          ; If acknowledging the alarm, then:
          ;
0213      AMSG:    IF PTYPE = 1 THEN
                      BEGIN
0214                  IF (FACK) THEN
                        BEGIN
                        ;
                        ; If white, print it is ack and reset the flag:
                        ;
0215                    PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
0216                    FACK = 0
                        END
0217                ELSE PRINT ADI,"WHITE ALARM %p",STRNGO
                      END
          ;
          ; If CLEAR flag is set, print it is clear and reset the flag:
          ;
0218            IF (FCLEAR) THEN
                      BEGIN
0219                  PRINT ADI,"%p ALARM CLEAR",STRNGO
0220                  FCLEAR = 0
                      END
          ;
          ;  If STARTUP, then print startup message:
          ;
0221            IF (FSTART) THEN
                      BEGIN
0222                  FSTART = 0
0223                  PRINT ADI,"%p",STRNGO
                      END
0224            RETURN
          ;
          ; If ERROR - print message, start timer, and set flag:
          ;
0226      ERRSUB:  IF(ERRNUM() = -187) THEN ERSRET
                   ELSE
                    BEGIN
0227                IF ERRN != ERRNUM() THEN
                      BEGIN
0228                  TIMERON STMRO
0229                  TIMERCLR STMRO
0230                  FSNO = 1
0231                  ERRN = ERRNUM()
0232                  ERRL = ERRLIN()
0233                  PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
0234                  ERSCLR
                      END
                   END
0235            GOTO AGAIN
          ;
          ; If FABORT = 1, then abort program:
```

```
386            ;
387            ; TERM:  FABORT = 0
388     0236   TERM:   STRNGO = "350BATCH TERMINATED    "
389     0237           ILOOP = STAR + 2
390     0238           FSTART = 1
391     0239           SSNGO = "TERM"
392     0240           GOSUB ACKK
393                    END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 4416 Bytes, 276 Pages
10 Forward Reference(s)

FEEDBATCH

```
;       F E E D B A T C H . S E Q                          VERSION 3
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 301,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]FEEDBATCH
;
;       NOTE:  lines commented out with ';OLD' are temporary changes to be
;               reimplemented when operational testing is done.  Related
;               changes are in PCBATCH.
;
;       UNIT = 5, SKDKEY = 31
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;        16-NOV-92      Added O/C display bar feature.                  M. Teats
;
;        23-NOV-92      Added 102AW pressure signals, analog red  M. Teats
;                       and yellow section.
;
;        30-DEC-92      Fixed white alarm print message.          M. Teats
;
```

```
            ;          13-MAY-93      Removed II-AW-102 hi white alarm per CCN#        M. Teats
            ;                         93MAY13-01.
            ;
            ;-mct1+  25-MAY-93        In ALM routine, changed FACK=1 to FALMON=1       M. Teats
            ;                         to prevent "alarm ack" message printout
            ;                         when alarm occurs.  CCN# 93MAY25-01.
            ;
            ;-mct2+  01-JUN-93        Add code to put FIC-CA1-1 in manual and set      M. Teats
            ;                         its output to zero when HV-CA1-1 closes.
            ;                         CCN# 93JUN01-01.
            ;
            ;          07-JUN-93      Added comments.  CCN# 93JUN01-01.                M. Teats
            ;
            ;          20-JUL-93      Commented and baselined for D/3 version 3.3.     M. Teats
            ;
            ;-mct3+   12-JAN-94       Delete LO white alarm on II-P-C100 per           M. Teats
            ;                         CCN# 94JAN12-01.
            ;
            ;         15-DEC-94       Revised header to indicate the new VMS           J. Berger
            ;                         system. Rebase line document. Removed
            ;                         obsolite Select() statements.
            ;
            ;         27-APR-95       Revised YS-AW102 to alarm on yellow alarm        J. Berger
            ;                         See WP EE-95-00006 and ECN 622499. (JFB01)
            ;
            ;
            ;  END OF MOD LOG
            ;
            UNIT      FEED
            ;
                      COMMON WHOLE0,WHOLE1,CA1          ; CA1 for synch PID
                      FLAGBITS == PSPAR0
                      HV_TMP0  == 'VCA1-INLK':DEV_TMP0
                      HV_TMP1  == 'HV-CA1-1':DEV_TMP1
                      PAW_TMP1 == 'P-AW-102':DEV_TMP1
                      PAW_STAT == 'P-AW-102':DEV_STAT
                      FSN0 == FSPAR0
                      FIC1SP == 'FIC-CA1-1':PID_SPVL:3 ; For synch PID
            ;
0000                  NOP
0001                  STAR = 24                         ; Start message
0002                  LET SKDKEY = 31           ; SKID Key
0003                  LET UNITT = 5                     ; SEQ Unit number
0004                  ASSIGN PDEV = 'PAW102ALM'         ; Alarm device
0005                  ASSIGN PTYPE = TYPE24
0006                  LET ADI = 0                       ; Alarm destination index
0007                  LET FSN0 = 0                      ; No alarm yet
0008                  TIMEROFF STIMEO           ; Alarm timer off
0009                  TIMERCLR STIMEO           ; Alarm timer clear
0010                  LET STRNG0 = " "                  ; Blank 30 character string
0011                  LET ERRN = 0                      ; Set error number to zero
0012                  LET ERRL = 0                      ; Set error line to zero
0013                  LET FTRIP4 = 0                    ; FTRIP4 = 1 when audible horn is to be turned on
0014                  GETUNIT TRIP                      ; Which sequence unit is program running in
0015                  IF TRIP != UNITT THEN             ; Abort if running in wrong seq. unit
```

```
                    BEGIN
0016                FSTART = 1
0017                ILOOP = STAR + 1
0018                PTYPE = 0
0019                GOSUB ACKK
0020                GOTO TERM
                    END
        ;       IF !SELECT() THEN GOTO AGAIN
        ;
        ;       B E G I N   I N I T I A L I Z I N G
        ;
        ;       ILOOP 0-6 are DINS, 7-16 are AINs
        ;
0021            LET STRNG0 = "INIT"
0022    INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
0023            LET FSTART = 0                  ; Program start flag = 0
0024            LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
0025            LET LSG0 = " "                  ; Clear the string variables
0026            LET LSG1 = " "
0027            LET LSG2 = " "
0028            LET LSG3 = " "
0029            LET LSG4 = " "
0030            PDEV:DEV_TMP0 = 1                                ; Set alarm device to non-alarm state
0031            IF AND(PDEV:DEV_ALMCT,16) THEN                   ; If alarm device is inhibited, remove the inhibit
0032              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0033            IF AND(PDEV:DEV_ALMCT,32) THEN                   ; If alarm device is ack, clear it
0034               PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
        ;
        ;       First, set all flags and integers:
        ;
0035            ASSIGN PDIN = 'YS-AW102'                 ; Assign pointer to first DIN
0036            ASSIGN PPASS = FPAS0
0037            ASSIGN PREV = FRV0
0038            ASSIGN PSTAT = INT0
0039            ASSIGN PTYPE = TYPE0
0040            ASSIGN PSKID = SKID0
        ;
0041            FOR ILOOP = 0 TO 16
0042            PPASS = 0
0043            PREV = 0
0045            IF PSTAT > 5 THEN PSTAT = 0                      ; Reset current status if undefined
0046            PSKID = 0                                        ; Default previous status to no alarms
0047            PTYPE = 2                                        ; Default to Yellow alarm
0048            IF ILOOP <= 6 THEN                               ; For DINs
                   BEGIN
0049                  IF AND(PDIN:DIN_DFLG,3) THEN               ; Check for alarms if defined (must be red or yellow)
                        BEGIN
0050                    PTYPE = 2                                ; Default to Yellow alarm
0052                    IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1        ; Reverse acting
0054                    IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4       ; Set to red critical alarm
                        END
                   END
0055            ELSE PTYPE = 1                                   ; Set to white alarm
0057            IF ILOOP < 6 THEN STEP PDIN BY 1         ; Point to next DIN
0058            STEP PPASS BY 1
```

```
166   0059          STEP PREV BY 1
167   0060          STEP PSTAT BY 1
168   0061          STEP PSKID BY 1
169   0062          STEP PTYPE BY 1
170   0063          NEXT ILOOP
171         ;
172   0064          LET FPASO = 1            ; YS-102AW, turn lamp off when alarm is ACK
173         ;
174   0065          LET TYPEO = 2            ; YS-AW102 added yellow alam (JFBO1)
175   0066          LET TYPE5 = 0            ; ZS-CA1-1C, no alarm
176   0067          LET TYPE6 = 0            ; ZS-CA1-1N, no alarm
177         ;
178   0068          LET FRVO = 0             ; YS-AW102 alarm on change from 1 to 0
179   0069          LET FRV1 = 1             ; YS-CA1-1 alarm on change from 0 to 1
180   0070          LET FRV2 = 0             ; LDS-SMPL1 alarm on change from 1 to 0
181   0071          LET FRV7 = 1             ; II-AW-102 is a white alarm
182         ;
183   0072          LET AIO = 12.0           ; II-AW-102 Lo alarm
184         ;
185   0073          FLG13 = 0                ; PID casc (1) flag, for synch FIC-CA1-1 > LIC
186   0074          FLG14 = 0                ; PID auto (1) flag, for synch FIC-CA1-1 > LIC
187   0075          FLG15 = 0                ; PID manual (1) flag, for synch FIC-CA1-1 > LIC
188   0076          AI20 = 0.0               ; For PID O/C display bar, FIC-CA1-1 manual (-mct2+)
189         ;
190         ;       E N D   I N I T I A L I Z I N G
191         ;
192         ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
193         ;
194   0077          ANALOG = 0
195   0078          ILOOP = STAR
196   0079          FPASS = 1
197   0080          FSTART = 1
198   0081          GOSUB ACKK
199   0082          FPASS = 0
200   0083          ON ERROR GOSUB ERRSUB
201   0084          ESTPGM "SHUTDOWN"
202         ;
203         ;       B E G I N   P R O G R A M   L O O P
204         ;
205   0085  AGAIN:  MARK STEP "WTUNTL",0,0
206         ;       IF !SELECT() THEN FTRIPO = 0     ; If micro not selected then clear flag
207         ;           ELSE FTRIPO = 1              ; Flag Determines if DOGOA.TSK should run in this micro
208         ;       WAITUNTIL SELECT() | FABORT      ; Wait Until micro is Selected or program aborted
209         ;       IF FABORT THEN GOTO TERM ; Terminate program if abort flag set
210                 ;
211                 ; If POWERFAIL flag set, terminate program and run emergency stop program.
212                 ;
213   0087          IF PWRFAIL() THEN ESTOP
214   0088          MARK STEP "RNNING",0,0
215   0089          WAIT 1
216   0090          IF (FSWO) THEN                   ; If alarm flag set
217   0091             IF STIMEO > 60 THEN           ; If alarm flag active for 1 minute
218                         BEGIN                    ; Reset timer and turn off flag
219   0092                  TIMEROFF STIMEO
220   0093                  TIMERCLR STIMEO
```

```
0094                LET FSNO = 0
0095                LET ERRN = 0
0096                LET ERRL = 0
                    END
        ;
        ;       If PAW102ALM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
        ;
0097            IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
                  BEGIN
0098              LET PDEV:DEV_TMPO = 1 ; Put PAW102ALM in ack state
0099              LET FTRIP4 = 1                ; Set for Unit alarm ack, system to graphic
0100              LET ACK = 1                   ; Set for Unit alarm ack, graphic to system
0101              CRIT
0102              LAMP ADI,SKDKEY,1             ; Turn lamp on
                  END
        ;
        ;       BEGIN DINs:
        ;
0103            ASSIGN PDIN = 'YS-AW102'
0104            ASSIGN PTYPE = TYPEO
0105            ASSIGN PREV = FRVO
0106            ASSIGN PSTAT = INTO
0107            ASSIGN PPASS = FPASO
0108            LET CURENT = 0                  ; Used to set LAMP status
0109            LET LAST = 0
0110            LET ANALOG = 0
0111            LET NXT = 0
0112            LMPVAR = 0
0113            BITVAL = 0
        ;
0114    LOP:    FOR ILOOP = 0 TO 6
0115            IF PTYPE THEN                                           ; If some type of alarm
                  BEGIN                                         ;be1
0117              IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3          ; If EPN inhibited
0119              IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5           ; If EPN is bad input
0121              IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4            ; If EPN is disabled
0122              IF PSTAT < 3 THEN                                     ; If not inhibited
                    BEGIN                                       ;be2
0123                IF PSTAT = 1 THEN
                      BEGIN                                     ;be3
0124                  IF PTYPE != 1 THEN
0126                  IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0128                  IF (FTRIP4) THEN GOSUB ACK1
                      END                                       ;en3
0131                IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0132                IF PSTAT THEN
                      BEGIN                                     ;be4
0134                  IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
0135                  NXT = PSTAT
0137                  IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0138                  LAST = OR(LAST,NXT)
                      END                                       ;en4
                    END                                         ;en2
0140              ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                END                                             ;en1
```

```
 276   0141          STEP PDIN BY 1
 277   0142          STEP PTYPE BY 1
 278   0143          STEP PREV BY 1
 279   0144          STEP PSTAT BY 1
 280   0145          STEP PPASS BY 1
 281          ;      IF !SELECT() THEN GOTO AGAIN
 282   0146          REMAIN = LAST
 283   0147          NEXT ILOOP
 284          ;
 285          ;      END DINs
 286          ;
 287          ;      BEGIN ANALOG RED AND YELLOWS:
 288          ;
 289   0148          ASSIGN PAI = 'II-AW-102'
 290   0149          ASSIGN PSKID = SKID7
 291   0150          ASSIGN PTYPE = TYPE7
 292   0151          FOR JLOOP = 7 TO 16
 293   0152          IF (PTYPE) THEN                          ; If some alarm exists
 294                    BEGIN                            ;be1
 295   0153             BITVAL = PAI:AI_ALMCT
 296   0154             IF !AND(BITVAL,16) THEN               ; If not inhibited
 297                        BEGIN                        ;be2
 298   0155                 IF AND(BITVAL,15) THEN            ; If alarm exists and is current
 299                            BEGIN                    ;be3
 300   0157                     IF AND(BITVAL,32) THEN NXT = 2  ; If alarm is ack
 301                            ELSE
 302                                BEGIN                ;be4
 303   0158                         IF PSKID !=BITVAL THEN
 304                                      BEGIN          ;be5
 305   0159                               LET PSKID = BITVAL
 306   0161                               IF BITVAL < 3 THEN FALMON = 1
 307   0162                               PDEV:DEV_TMPO = 2
 308   0163                               NXT = 1
 309                                      END            ;en5
 310   0164                         ELSE NXT = 1
 311                                END                  ;en4
 312                            END                      ;en3
 313                        ELSE                          ; Else there is no alarm
 314                            BEGIN
 315   0165                     NXT = 0
 316   0166                     LET PSKID = 0
 317                            END
 318                        END                          ;en2
 319                    ELSE                              ; Else alarm is inhibited
 320                        BEGIN
 321   0167                 NXT = 0
 322   0168                 LET PSKID = 0
 323                        END
 324   0169             ANALOG = OR(ANALOG,NXT)
 325                    END                              ;en1
 326   0170          STEP PSKID BY 1
 327   0171          STEP PTYPE BY 1
 328   0173          IF JLOOP < 16 THEN STEP PAI BY 1
 329   0174          NEXT JLOOP
 330          ;
```

```
331          ;        END ANALOG RED AND YELLOWS
332          ;
333          ;        BEGIN ANALOG WHITE ALARMS:
334          ;
335   0175           WHITE = 0
336   0176           ASSIGN PAI = 'II-AW-102'
337   0177           ASSIGN PALARM = AI0
338   0178           ASSIGN PSTAT = INT7
339   0179           ASSIGN PTYPE = TYPE7
340   0180           ILOOP = 7
341   0181           GOSUB ANLG
342                  ;
343                  ; II-AW-102 Lo, use with String packet 78:
344                  ;
345   0183           IF (INT7 & INT7 < 3) THEN LEAKO = INT7 + 2
346   0184              ELSE LEAKO = 0
347          ;
348          ;        END ANALOG WHITE ALARMS:
349          ;
350   0185           MARK STEP "BELOW",0,0
351   0186           FTRIP4 = 0
352   0188           IF REMAIN > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
353   0189           CURENT = OR(REMAIN,WHITE)
354   0190           CURENT = OR(CURENT,ANALOG)
355   0192           IF AND(CURENT,1) THEN LMPVAR = 2
356   0194             ELSE IF AND(CURENT,2) THEN LMPVAR = 1
357   0195               ELSE LMPVAR = 0
358   0196           LAMP ADI,SKDKEY,LMPVAR
359   0197           MARK STEP "BOTTOM",0,0
360   0198           NOCRIT
361          ;
362          ;        BEGIN HV-CA1-1 LOGIC (for graphic only):
363          ;
364   0199           ASSIGN FLAGBITS = AT0
365   0200           BVAL = 1
366   0201               FOR IN1 = 0 TO 12
367   0202               FLAGBITS = AND(BVAL,HV_TMP0)
368   0203               BVAL=BVAL<1
369   0204               STEP FLAGBITS BY 1
370   0205               NEXT IN1
371   0206           SA1  = 'YS-CA1-1':DIN_VAL
372   0207           AT25 = AND(HV_TMP1,512)
373   0208           AT26 = AND(HV_TMP1,1024)
374   0209           AT27 = AND(HV_TMP1,2048)
375   0210           AT30 = AND(HV_TMP1,16384)
376   0211           AT31 = AND(HV_TMP1,32768)
377   0212           SA2  = AND('RSH-VVB/G':DIN_VAL,'PDSH-FC51':DIN_VAL)
378   0213           AT14 = AND('WFSH-CA11':DIN_VAL,'WFSH-CA12':DIN_VAL)
379   0214           AT15 = AND('RSH-CA1-1':DIN_VAL,'PDSH-CA1':DIN_VAL)
380   0215           AT14 = AND(AT14,SA2)
381   0216           SA3  = AND(AT14,AT15)
382   0217           SA4  = OR('YS-CA1-1':DIN_VAL,SA3)
383   0218           AT14 = AND(HV_TMP1,32)
384   0219           AT15 = AND('HV-CA1-1':DEV_STAT,2)
385   0220           SA5  = AND('HV-CA1-1':DEV_CMD,2)
```

```
386   0221          SA6  = AND(SA5,SA4)
387   0222          SB0  = 'ZS-CA1-1C':DIN_VAL
388   0223          SB1  = 'ZS-CA1-1N':DIN_VAL
389   0224          AT20 = AT12
390   0225          AT21 = AND('VCA1-INLK':DEV_CMD,2)
391   0226          AT23 = AND('VCA1-INLK':DEV_TMP1,1)
392   0227          AT22 = XOR(AT21,AT23)
393   0228          AT28 = AT31
394           ;
395           ;     END HV-CA1-1 LOGIC
396           ;
397           ;     BEGIN P-AW-102 LOGIC (for graphic only):
398           ;
399   0229          ASSIGN FLAGBITS = BT23
400   0230          BVAL = 128
401   0231              FOR IN1 = 23 TO 29
402   0232              FLAGBITS = AND(BVAL,PAW_TMP1)
403   0233              BVAL=BVAL<1
404   0234              STEP FLAGBITS BY 1
405   0235              NEXT IN1
406   0236          BT31 = AND(PAW_TMP1,32768)
407   0237          BT0  = AND('HS-ARM-AW':DEV_TMP0,128)
408   0238          BT1  = OR('RSH-AW-12':DIN_VAL,BT0)
409   0239          AT15 = AND('LDS-AW-PP':DIN_VAL,!'YS-AW-MSD':DIN_VAL)
410   0240          BT2  = AND(AT15,BT1)
411   0241          AT14 = AND('RSH-SP-AW':DIN_VAL,'LDS-SN269':DIN_VAL)
412   0242          AT15 = AND('LDS-SN270':DIN_VAL,'PSH-AWSN2':DIN_VAL)
413   0243          AT14 = AND(AT14,AT15)
414   0244          BT3  = AND(BT2,AT14)
415   0245          AT14 = AND('WFSH-CA11':DIN_VAL,'WFSH-CA12':DIN_VAL)
416   0246          AT15 = AND('RSH-VVB/G':DIN_VAL,'RSH-CA1-1':DIN_VAL)
417   0247          AT16 = AND('PDSH-CA1':DIN_VAL,'RSH-CA1-1':DIN_VAL)
418   0248          AT17 = AND(BT3,'LSH-SC-1':DIN_VAL)
419   0249          AT18 = AND(AT14,AT15)
420   0250          AT19 = AND(AT16,AT17)
421   0251          BT4  = AND(AT18,AT19)
422   0252          BT5  = AND('P-AW-102':DEV_TMP0,2)
423   0253          BT6  = 'YS-AW102':DIN_VAL
424   0254          BT14 = AND(BT31,PAW_STAT)
425   0255          SB3 = AND(PAW_STAT,4)
426   0256          SB4 = AND(PAW_STAT,16)
427   0257          SB5 = AND('HV-CA1-1':DEV_STAT,4) ; RESET
428   0258          SB6 = AND('HV-CA1-1':DEV_STAT,16)        ; CHGSTATE
429   0259          SB7 = AND('HV-CA1-1':DEV_STAT,32)        ; INTERLOCK
430   0260          SC0 = AND(PAW_STAT,32)
431   0261          BT20 = AND(HV_TMP1,16)
432   0262          BT7  = AND(BT20,BT14)
433   0263          BT8  = AND(BT7,BT4)
434   0265          IF AND(PAW102ALM:DEV_FLG,64)THEN PUTMANL PAW102ALM
435   0267          IF AND('P-AW-102':DEV_FLG,64)THEN PUTMANL 'P-AW-102'
436   0269          IF AND('HV-CA1-1':DEV_FLG,64)THEN PUTMANL 'HV-CA1-1'
437   0271          IF AND('VCA1-INLK':DEV_FLG,64)THEN PUTMANL 'VCA1-INLK'
438           ;
439           ;     END P-AW-102 LOGIC
440           ;
```

```
441          ;       B E G I N   S Y N C H   P I D   C A S C A D E D   S E T P T
442          ;
443          ;       Fucntion:  Closes slave controller's PID (SPID) cascade,
444          ;                  sets cascade controller's PID (CPID) to auto,
445          ;                  sets the CPID output equal to the SPID setpoint
446          ;                  only on a manual to auto transition in the SPID.
447          ;                  Puts LIC's in manual if FIC was previously auto
448          ;                  and cascade open.
449          ;
450   0272          IF AND('FIC-CA1-1':CB_FLG:3,64) THEN              ; If in auto
451                    BEGIN                                                 ;be1
452   0273               IF (FLG14=0) & (FLG15=0) THEN                 ; If initializing
453                         BEGIN                                          ;be2
454   0275                  IF AND('FIC-CA1-1':PID_SPVS:3,64) THEN LET FLG13 = 1  ; If casc closed
455   0276                  LET FLG14 = 1
456   0277                  LET FLG15 = 0
457                         END                                            ;en2
458   0278               IF AND('FIC-CA1-1':PID_SPVS:3,64) & (FLG13=0) THEN    ; If clos casc + prev auto-open
459                         BEGIN                                          ;be3
460   0279                  IF !AND('LIC-CA1-1':CB_FLG:1,64) THEN  ; If LIC-CA1-1 in manual
461                            BEGIN                                       ;be3.1
462   0280                     PUTOUT 'LIC-CA1-1',FIC1SP
463   0281                     PUTAUTO 'LIC-CA1-1'
464                            END                                         ;en3.1
465   0282                  IF !AND('LIC-CA1-2':CB_FLG:1,64) THEN  ; If LIC-CA1-2 in manual
466                            BEGIN                                       ;be3.2
467   0283                     PUTOUT 'LIC-CA1-2',FIC1SP
468   0284                     PUTAUTO 'LIC-CA1-2'
469                            END                                         ;en3.2
470   0285                  LET FLG13 = 1
471                         END                                            ;en3
472   0286               IF !AND('FIC-CA1-1':PID_SPVS:3,64) & (FLG13=1) THEN ; If open casc + prev auto-clos
473                         BEGIN                                          ;be4
474   0288                  IF AND('LIC-CA1-1':CB_FLG:1,64) THEN PUTMANL 'LIC-CA1-1'
475   0290                  IF AND('LIC-CA1-2':CB_FLG:1,64) THEN PUTMANL 'LIC-CA1-2'
476   0291                  LET FLG13 = 0
477                         END                                            ;en4
478   0292               IF (FLG14=0) & (FLG15=1) THEN                 ; If FIC previously manual
479                         BEGIN                                          ;be5
480   0293                  CRIT
481   0294                  PUTOUT 'LIC-CA1-1',FIC1SP
482   0295                  PUTOUT 'LIC-CA1-2',FIC1SP
483   0296                  CLOSCASC 'FIC-CA1-1'
484   0298                  IF !AND('LIC-CA1-1':CB_FLG:1,64) THEN PUTAUTO 'LIC-CA1-1'
485   0300                  IF !AND('LIC-CA1-2':CB_FLG:1,64) THEN PUTAUTO 'LIC-CA1-2'
486   0301                  LET FLG13 = 1
487   0302                  LET FLG14 = 1
488   0303                  LET FLG15 = 0
489   0304                  NOCRIT
490                         END                                            ;en5
491                    END                                                 ;en1
492                ELSE                                              ; If FIC in manual
493                    BEGIN                                                 ;be7
494   0305               IF (FLG14=1) & (FLG15=0) THEN                 ; If FIC previously auto
495                         BEGIN                                          ;be8
```

```
496   0307                IF AND('LIC-CA1-1':CB_FLG:1,64) THEN PUTMANL 'LIC-CA1-1'
497   0309                IF AND('LIC-CA1-2':CB_FLG:1,64) THEN PUTMANL 'LIC-CA1-2'
498   0310                LET FLG13 = 0
499                       END                                                ;en8
500   0311             IF ((FLG14=1)&(FLG15=0)) | ((FLG14=0)&(FLG15=0)) THEN ; If FIC prev auto or init
501                       BEGIN                                              ;be9
502   0312                LET FLG14 = 0
503   0313                LET FLG15 = 1
504                       END                                                ;en9
505                    END                                                   ;en7
506          ;
507          ;        E N D   S Y N C H   P I D   C A S C A D E D   S E T P T
508          ;+mct2-
509          ;        B E G I N   F E E D   V A L V E   A C T I O N
510          ;
511          ;        function:       Upon loss of CF-OPEN, put the control loop in manual
512          ;                        and set the PID block output to zero.
513          ;
514   0315           IF AND('HV-CA1-1':DEV_STAT,2) THEN DLEAK2 = 1                  ; If Valve is open
515   0316           IF !AND('HV-CA1-1':DEV_STAT,2) & AND(DLEAK2,1) THEN            ; If not open and 1st pass
516                    BEGIN
517   0317             PUTMANL 'FIC-CA1-1'
518   0318             PRINT ADI," HV-CA1-1 IS NOT OPEN >>> FIC-CA1-1 PUT IN MANUAL"
519   0319             PUTOUT 'FIC-CA1-1',AI20
520   0320             PRINT ADI," HV-CA1-1 IS NOT OPEN >>> FIC-CA1-1 OUTPUT SET TO ZERO"
521   0321             DLEAK2 = 0
522                    END
523          ;
524          ;        E N D   F E E D   V A L V E   A C T I O N
525          ;-mct2+
526          ;        B E G I N   O / C   D I S P L A Y   B A R
527          ;
528          ;        Function:       Upon loss of permissive, put the control loop in manual
529          ;                        and set the PID block output to zero.
530          ;
531   0323           IF AND('PB1-BYPAS':DEV_TMP0,256) THEN DLEAK3 = 1          ; Permissive $T8 must be Hi (1)
532   0324           IF !AND('PB1-BYPAS':DEV_TMP0,256) & AND(DLEAK3,1) THEN            ; Permissive lost and 1st pass
533                    BEGIN
534   0325             PUTMANL 'FIC-CA1-1'
535   0326             PRINT ADI," PB1-BYPAS PERMISSIVE LOST >>> FIC-CA1-1 PUT IN MANUAL"
536   0327             PUTOUT 'FIC-CA1-1',AI20
537   0328             PRINT ADI," PB1-BYPAS PERMISSIVE LOST >>> FIC-CA1-1 OUTPUT SET TO ZERO"
538   0329             DLEAK3 = 0
539                    END
540          ;
541          ;             E N D   O / C   D I S P L A Y   B A R
542          ;
543   0330           GOTO AGAIN
544          ;
545          ;        E N D   P R O G R A M   L O O P
546          ;
547          ;        BEGIN ANALOG WHITE SUBROUTINE:
548          ;
549          ; ANLG: IF !SELECT() THEN GOTO AGAIN
550   0331   ANLG:   IF (PTYPE = 1) THEN                          ; If some alarm
```

```
                    BEGIN                                   ;be1
0332                BITVAL = PAI:AI_ALMCT
0333                IF !(AND(BITVAL,16)) THEN                       ; If not inhibited
                      BEGIN                                 ;be2
0335                  IF PSTAT = 3 THEN LET PSTAT = 0
0336                  IF (PREV) THEN                                ; If rev acting, LOLO, or LO
                        BEGIN                               ;be3
0337                    IF (PSTAT = 0) THEN                         ; If not previously alarmed
                          BEGIN                             ;be4
0339                      IF (PAI:AI_MEAS <= PALARM) THEN GOSUB ALM
                          END                               ;en4
                        ELSE
                          BEGIN                             ;be5
0340                      IF (PSTAT = 1) THEN                     ; If previously alarmed
                            BEGIN                           ;be6
0342                        IF (FTRIP4) THEN GOSUB ACK1             ; If ACK flag set, then ack it
0345                        IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                            END                             ;en6
0347                      IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                          END                               ;en5
                        END                                 ;en3
                      ELSE                                          ; If fail-safe, HIHI, or HI
                        BEGIN                               ;be10
                        IF (PSTAT = 0) THEN
                          BEGIN                             ;be11
0350                      IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
                          END                               ;en11
                        ELSE
                          BEGIN                             ;be12
0351                      IF (PSTAT = 1) THEN
                            BEGIN                           ;be13
0353                        IF (FTRIP4) THEN GOSUB ACK1
0356                        IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                            END                             ;en13
0358                      IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                          END                               ;en12
                        END                                 ;en10
0359                  NXT = PSTAT
0361                  IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
                      END                                   ;en2
                      ELSE
                        BEGIN
0362                    LET PSTAT = 3
0363                    NXT = 0
                        END
0364                  WHITE = OR(WHITE,NXT)
                    END                                     ;en1
0365              ELSE PSTAT = 0
0366              STEP PALARM BY 1
0367              STEP PSTAT BY 1
0368              STEP PTYPE BY 1
0369              STEP PREV BY 1
0370              STEP PPASS BY 1
0371              RETURN
          ;
```

```
606          ;        END ANALOG WHITE SUBROUTINE
607          ;
608          ;        BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
609          ;
610   0372   CLR:     LET PSTAT = 0                                          ; Int set to zero
611                   ;
612                   ; If not white then unack:
613                   ;
614   0375            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
615   0376            LET FCLEAR = 1                                         ; Clear flag
616   0377            GOSUB ACKK                                             ; Print message
617   0378            RETURN
618          ;
619   0379   ALM:     LET PSTAT = 1                                          ; Int set to one
620                   ;
621                   ; If not white then unack:
622                   ;
623   0382            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
624                   ;
625                   ; Turn audible alarm on if white or yellow:
626                   ;
627   0384            IF AND(PTYPE,3) THEN FALMON = 1                        ; -mct1+
628   0385            CRIT
629   0386            LET PDEV:DEV_TMPO = 2
630   0387            GOSUB ACKK                                             ; Print message
631   0388            RETURN
632          ;
633   0389   ACK1:    LET PSTAT = 2                                          ; Ack the alarm
634   0390            LET FACK = 1                                           ; Set ACK flag for C program
635          ;
636          ;        ALARM TYPER STRINGS:
637          ;
638   0392   ACKK:    IF ILOOP = 0 THEN STRNGO = "FEED PUMP YS-AW102 SHUTDOWN "
639   0394            IF ILOOP = 1 THEN STRNGO = "FEED VALVE INTERLOCK BYPASS ON"
640   0396            IF ILOOP = 2 THEN STRNGO = "FEED SAMPLER ENCLOSURE LEAK   "
641   0398           IF ILOOP = 3 THEN STRNGO = "TK-102-AW PRESSURE HI "
642   0400            IF ILOOP = 4 THEN STRNGO = "FEED PUMP INTERLOCK BYPASS ON "
643   0402            IF ILOOP = 7 THEN STRNGO = "FEED PUMP II-AW-102 AMPS LO "
644   0404            IF ILOOP = 24 THEN STRNGO = "START FEEDBATCH PGM "
645   0406            IF ILOOP = 25 THEN STRNGO = "FEEDBATCH WRONG UNIT"
646   0408            IF ILOOP = 26 THEN STRNGO = "TERMINATE FEEDBATCH "
647          ;
648          ; If acknowledging alarm, then:
649          ;
650   0409   AMSG:    IF PTYPE = 1 THEN
651                     BEGIN
652                     ;
653                     ; If white alarm, print:
654                     ;
655   0411              IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
656   0412              IF (FACK) THEN
657                       BEGIN
658                       ;
659                       ; If white, print it is ack and reset the flag:
660                       ;
```

```
661   0413                PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
662   0414                LET FACK = 0
663                       END
664                     END
665                  ;
666                  ; If CLEAR flag is set, print it is clear and reset the flag:
667                  ;
668   0415           IF (FCLEAR) THEN
669                     BEGIN
670   0416              PRINT ADI,"%p ALARM CLEAR",STRNGO
671   0417              LET FCLEAR = 0
672                     END
673                  ;
674                  ; If STARTUP, then print startup message:
675                  ;
676   0418           IF (FSTART) THEN
677                     BEGIN
678   0419              LET FSTART = 0
679   0420              PRINT ADI,"%p",STRNGO
680                     END
681   0421           RETURN
682            ;
683            ; If ERROR - print message, start timer, and set flag:
684            ;
685   0422     ERRSUB:  IF ERRN != ERRNUM() THEN
686                     BEGIN
687   0423              TIMERON STIMEO
688   0424              TIMERCLR STIMEO
689   0425              LET FSNO = 1
690   0426              LET ERRN = ERRNUM()
691   0427              LET ERRL = ERRLIN()
692   0428              PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
693                     END
694   0429              ERSCLR
695   0430           GOTO AGAIN
696            ;
697            ; If FABORT = 1, then abort program:
698            ;
699            ; TERM:  LET FABORT = 0
700   0431     TERM:    LET STRNGO = "FEEDBATCH TERMINATED    "
701   0432              LET ILOOP = STAR + 2
702   0433              LET FSTART = 1
703   0434              LET STRNGO = "TERM"
704   0435              GOSUB ACKK
705                     END

      Total Errors Detected      0     Total Warnings      0
          Sequence Program Size = 8736 Bytes, 546 Pages
                19 Forward Reference(s)
```

CA1BATCH

```
;       C A 1 B A T C H . S E Q                                 VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 010,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASILINE
;       Compiler        : SIC
;       Build command   : @[320,20]CA1BATCH
;
;       UNIT = 6, SKDKEY = 34
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
; MODIFICATION LOG:
;
;       16-SEP-92       Delete white alarms on DDI-CA1-1        M. Teats
;
;       30-DEC-92       Fixed white alarm print message.        M. Teats
;
;       07-MAR-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;
;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
;                       system. Rebase line document. Removed
;                       obsolite Select() statements.
;
```

```
 56            ;  END OF MOD LOG
 57            ;
 58            UNIT     CA1
 59            ;
 60                     COMMON PB2
 61            ;
 62     0000            NOP
 63     0001            STAR = 17                        ; Start message
 64     0002            LET SKDKEY = 34          ; SKID Key
 65     0003            LET UNITT = 6                    ; SEQ Unit number
 66     0004            ASSIGN PDEV = 'CA1-ALARM'        ; Alarm device
 67     0005            ASSIGN PTYPE = TYPE17
 68     0006            LET ADI = 0                      ; Alarm Destination Index
 69     0007            LET FSNO = 0                     ; No alarm yet
 70     0008            TIMEROFF STIMEO          ; Alarm timer off
 71     0009            TIMERCLR STIMEO          ; Alarm timer clear
 72     0010            STRNGO = " "                     ; Blank 30 character string
 73     0011            LET ERRN = 0                     ; Set error number to zero
 74     0012            LET ERRL = 0                     ; Set error line to zero
 75     0013            LET FTRIP4 = 0                   ; FTRIP4 = 1 when audible horn is to be turned on
 76     0014            GETUNIT TRIP                     ; Which sequence unit is program running in
 77     0015            IF TRIP != UNITT THEN            ; Abort if running in wrong seq. unit
 78                        BEGIN
 79     0016               FSTART = 1
 80     0017               ILOOP = STAR + 1
 81     0018               PTYPE = 0
 82     0019               GOSUB ACKK
 83     0020               GOTO TERM
 84                        END
 85            ;        IF !SELECT() THEN GOTO AGAIN
 86            ;
 87            ;        B E G I N   I N I T I A L I Z I N G
 88            ;
 89     0021            STRNGO = "INIT"
 90     0022    INIT:   LET FABORT = 0                   ; If FABORT = 1 then abort program
 91     0023            LET FSTART = 0                   ; Program start flag = 0
 92     0024            LAMP ADI,SKDKEY,0                ; Turn off annunciator key
 93     0025            LET LSG0 = " "                   ; Clear the string variables
 94     0026            LET LSG1 = " "
 95     0027            LET LSG2 = " "
 96     0028            LET LSG3 = " "
 97     0029            LET LSG4 = " "
 98     0030            LET PDEV:DEV_TMPO = 1                        ; Set alarm device to non-alarm state
 99     0031            IF AND(PDEV:DEV_ALMCT,16) THEN               ; If alarm device is inhibited, remove the inhibit
100     0032              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
101     0033            IF AND(PDEV:DEV_ALMCT,32) THEN               ; If alarm device is ack, clear it
102     0034               PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
103           ;
104           ;        First, set all flags and integers:
105           ;
106     0035            ASSIGN PDIN = 'PSH-CA111'                    ; Assign pointer to first DIN
107     0036            ASSIGN PSTAT = INTO
108     0037            ASSIGN PTYPE = TYPEO
109     0038            ASSIGN PREV = FRVO
110     0039            ASSIGN PSKID = SKIDO
```

```
111   0040          ASSIGN PPASS = FPAS0
112           ;
113   0041          FOR ILOOP = 0 TO 39
114   0042          LET PPASS = 0
115   0043          LET PREV = 0
116   0045          IF PSTAT > 5 THEN PSTAT = 0                    ; Reset current status if undefined
117   0046          LET PSKID = 0                                  ; Default previous status to no alarms
118   0047          LET PTYPE = 0                                  ; Default to no alarm
119   0048          IF ILOOP < 4 THEN                              ; For DINs
120                    BEGIN
121   0049             LET PTYPE = 0                               ; Default to no alarm
122   0050             IF AND(PDIN:DIN_DFLG,3) THEN                ; Check for alarms if defined (must be red or yellow)
123                      BEGIN
124   0051               LET PTYPE = 2                                     ; Default to yellow
125   0053               IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1         ; Reverse acting
126   0055               IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4   ; Set to red critical alarm
127                      END
128   0056             STEP PDIN BY 1                              ; Point to next DIN
129                    END
130   0058           IF ILOOP > 34 THEN PTYPE = 1                  ; Set to white alarm
131   0059           STEP PPASS BY 1
132   0060           STEP PREV BY 1
133   0061           STEP PSTAT BY 1
134   0062           STEP PSKID BY 1
135   0063           STEP PTYPE BY 1
136   0064          NEXT ILOOP
137           ;
138   0065          LET TYPE4 = 2
139   0066          LET TYPE6 = 4
140   0067          LET TYPE7 = 4
141   0068          LET TYPE10 = 6
142   0069          LET TYPE12 = 6
143   0070          LET TYPE14 = 6
144   0071          LET TYPE16 = 6
145   0072          LET TYPE22 = 4
146   0073          LET TYPE27 = 2
147   0074          LET TYPE29 = 6
148   0075          LET TYPE32 = 6
149           ;     BLET TYPE35 = 0          ; Delete White alarms on DDI-CA1-1
150           ;     BLET TYPE36 = 0          ; Delete White alarms on DDI-CA1-1
151   0076          LET TYPE37 = 1
152   0077          LET TYPE38 = 1
153   0078          LET TYPE39 = 1
154   0079          LET FRV0 = 0
155   0080          LET FRV1 = 0
156   0081          LET FRV2 = 0
157   0082          LET FRV3 = 0
158           ;     BLET FRV35 = 1           ; Delete White alarms on DDI-CA1-1
159           ;     BLET AI0 = -0.08         ; Delete White alarms on DDI-CA1-1
160           ;     BLET AI1 = 0.08          ; Delete White alarms on DDI-CA1-1
161   0083          LET AI2 = 15.0
162   0084          LET AI3 = 15.0
163   0085          LET AI4 = 5.0
164           ;
165           ;     E N D   I N I T I A L I Z I N G
```

```
166          ;
167          ;        S E N D   P R O G R A M   S T A R T   M E S S A G E
168          ;
169   0086           ANALOG = 0
170   0087           ILOOP = STAR
171   0088           FSTART = 1
172   0089           PTYPE = 0
173   0090           GOSUB ACKK
174   0091           ON ERROR GOSUB ERRSUB
175          ;
176          ;        B E G I N   P R O G R A M   L O O P
177          ;
178   0092   AGAIN:  MARK STEP "WTUNTL",0,0
179   0093           STRNGO = "WAIT"
180          ;        WAITUNTIL SELECT() | FABORT        ; Wait until micro is selected or program aborted
181          ;        IF (FABORT) THEN GOTO TERM         ; Terminate program if FABORT flag is set
182   0094           MARK STEP "RNNING",0,0
183   0095           WAIT 1
184   0096           IF (FSNO) THEN                     ; If alarm flag set
185   0097              IF STIMEO > 60 THEN             ; If alarm flag active for 1 minute
186                        BEGIN                        ; Reset timer and turn off flag
187   0098                 TIMEROFF STIMEO
188   0099                 TIMERCLR STIMEO
189   0100                 LET FSNO = 0
190   0101                 LET ERRN = 0
191   0102                 LET ERRL = 0
192                        END
193          ;
194          ;        If CA1-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
195          ;
196   0103           IF (PDEV:DEV_TMPO = 2 ) & AND(PDEV:DEV_ALMCT,32) THEN
197                     BEGIN
198   0104              LET PDEV:DEV_TMPO = 1 ; Put CA1-ALARM in ack state
199   0105              LET FTRIP4 = 1                  ; Set for unit alarm ack, system to graphic
200   0106              LET ACK = 1                     ; Set for unit alarm ack, graphic to system
201   0107              CRIT
202   0108              LAMP ADI,SKDKEY,1               ; Turn lamp on
203                     END
204          ;
205          ;        BEGIN DINs:
206          ;
207   0109           ASSIGN PDIN = 'PSH-CA111'
208   0110           ASSIGN PTYPE = TYPEO
209   0111           ASSIGN PREV = FRVO
210   0112           ASSIGN PSTAT = INTO
211   0113           ASSIGN PPASS = FPASO
212   0114           LET CURENT = 0                     ; Used to set LAMP status
213   0115           LET LAST = 0
214   0116           LET ANALOG = 0
215   0117           LET NXT = 0
216   0118           LMPVAR = 0
217   0119           BITVAL = 0
218          ;
219   0120   LOP:    FOR ILOOP = 0 TO 3
220          ;        IF !SELECT() THEN GOTO AGAIN
```

```
0121            IF (PTYPE > 0) THEN                                        ; If some type of alarm
                   BEGIN                                            ;be1
0123               IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3     ; If EPN inhibited
0125               IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5              ; If EPN is bad input
0127               IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4               ; If EPN is disabled
0128               IF (PSTAT < 3) THEN                                      ; If not inhibited
                       BEGIN                                        ;be2
0129                    IF (PSTAT = 1) THEN
                           BEGIN                                    ;be3
0130                       IF (PTYPE != 1) THEN
0132                          IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0134                       IF (FTRIP4) THEN GOSUB ACK1
                           END                                      ;en3
0137                    IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0138                    IF (PSTAT) THEN
                            BEGIN                                   ;be4
0140                        IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
0141                        NXT = PSTAT
0143                        IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0144                        LAST = OR(LAST,NXT)
                            END                                     ;en4
                        END                                         ;en2
0146                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                    END                                             ;en1
0147            STEP PDIN BY 1
0148            STEP PTYPE BY 1
0149            STEP PREV BY 1
0150            STEP PSTAT BY 1
0151            STEP PPASS BY 1
0152            NEXT ILOOP
        ;
        ;       END DINs
        ;
        ;       BEGIN ANALOG RED AND YELLOWS:
        ;
0153            LET STRNGO = "RUN"
0154            ASSIGN PAI = 'PI-CA1-11'
0155            ASSIGN PSKID = SKID4
0156            ASSIGN PTYPE = TYPE4
0157            FOR JLOOP = 4 TO 34
        ;       IF !SELECT() THEN GOTO AGAIN
0158            IF (PTYPE) THEN                                         ; If some alarm exists
                   BEGIN                                    ;be1
0159               BITVAL = PAI:AI_ALMCT
0160               IF !AND(BITVAL,16) THEN                              ; If not inhibited
                      BEGIN                                 ;be2
0161                  IF AND(BITVAL,15) THEN                            ; If alarm exists and is current
                         BEGIN                              ;be3
0163                     IF AND(BITVAL,32)THEN NXT = 2                  ; If alarm is ack
                         ELSE
                            BEGIN                           ;be4
0164                        IF PSKID !=BITVAL THEN
                                BEGIN                       ;be5
0166                            IF BITVAL < 3 THEN FALMON = 1
0167                            LET PSKID = BITVAL
```

```
 276   0168                          LET PDEV:DEV_TMPO = 2
 277   0169                          NXT = 1
 278                                 END                          ;en5
 279   0170                       ELSE NXT = 1
 280                              END                            ;en4
 281                           END                               ;en3
 282                        ELSE                                        ; Else there is no alarm
 283                           BEGIN
 284   0171                    NXT = 0
 285   0172                    LET PSKID = 0
 286                           END
 287                        END                                  ;en2
 288                     ELSE                                           ; Else alarm is inhibited
 289                        BEGIN
 290   0173                 NXT = 0
 291   0174                 LET PSKID = 0
 292                        END
 293   0175              ANALOG = OR(ANALOG,NXT)
 294                     END                                     ;en1
 295   0176           STEP PSKID BY 1
 296   0177           STEP PTYPE BY 1
 297   0178           STEP PAI BY 1
 298   0179           NEXT JLOOP
 299          ;
 300          ;       END ANALOG RED AND YELLOWS
 301          ;
 302          ;       BEGIN ANALOG WHITE ALARMS:
 303          ;
 304   0180   WHT:   WHITE = 0
 305   0181           ASSIGN PALARM = AI2
 306   0182           ASSIGN PREV = FRV37
 307   0183           ASSIGN PSTAT = INT37
 308   0184           ASSIGN PTYPE = TYPE37
 309   0185           ASSIGN PPASS = FPAS37
 310          ;       ILOOP = 35                        ; Delete White alarms on DDI-CA1-1
 311          ;       ASSIGN PAI = 'DDI-CA1-1'
 312          ;       GOSUB ANLG                              ; DDI-CA1-2 LOLO        35
 313          ;       ILOOP = 36
 314          ;       GOSUB ANLG                              ; DDI-CA1-2 HIHI        36
 315   0186           ILOOP = 37
 316   0187           ASSIGN PAI = 'PDI-FH1-1'
 317   0188           GOSUB ANLG                              ; PDI-FH1-1 HI          37
 318   0189           ILOOP = 38
 319   0190           ASSIGN PAI = 'PDI-FH2-1'
 320   0191           GOSUB ANLG                              ; PDI-FH2-1 HI          38
 321   0192           ILOOP = 39
 322   0193           ASSIGN PAI = 'PDI-FH3-1'
 323   0194           GOSUB ANLG                              ; PDI-FH3-1 HI          39
 324          ;
 325          ;       Deleted White alarms on DDI-CA1-1:
 326          ;
 327          ;       IF INT35 & INT35 < 3 THEN BLET LEAKO = INT35
 328          ;         ELSE IF INT36 & INT36 < 3 THEN BLET LEAKO = INT36 + 6
 329          ;           ELSE IF INT35 = 3 THEN BLET LEAKO = 9
 330          ;             ELSE BLET LEAKO = 0
```

```
331             ;
332             ;       END ANALOG WHITE ALARMS
333             ;
334     0195            LET FTRIP4 = 0
335     0196            MARK STEP "BELOW",0,0
336     0198            IF CURENT > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
337     0199            CURENT = OR(LAST,WHITE)
338     0200            CURENT = OR(CURENT,ANALOG)
339     0202            IF AND(CURENT,1)THEN LMPVAR = 2
340     0204               ELSE IF AND(CURENT,2)THEN LMPVAR = 1
341     0205                       ELSE LMPVAR = 0
342     0206            LAMP ADI,SKDKEY,LMPVAR
343     0207            MARK STEP "BOTTOM",0,0
344     0208            NOCRIT
345             ;
346             ;       BEGIN GRAPHIC SPECIALS:
347             ;
348     0209    WF1:    VL1 = 'LI-CA1-1G':AI_MEAS
349     0210            VL2 = 'LI-CA1-2G':AI_MEAS
350     0211            ASSIGN PSPARO = VL1
351     0213            IF AND('SELECT-WF':DEV_STAT,4)THEN STEP PSPARO BY 1
352     0214            IF PSPARO > 19860 THEN
353                        BEGIN
354     0216               IF PSPARO < 20472 THEN WF1 = ((PSPARO-19860)/612) * 7
355     0218                  ELSE IF PSPARO < 21780 THEN WF1=((PSPARO-20472)/1308)*13 + 7
356     0220                   ELSE IF PSPARO < 23088 THEN WF1=((PSPARO-21780)/2308)*10+ 20
357     0222                    ELSE IF PSPARO <= 30000 THEN WF1=((PSPARO-23088)/6912)*70 + 30
358                        END
359     0223            ELSE WF1 = 0
360             ;
361     0224    WF3:    VL3 = 'LI-CA1-3G':AI_MEAS
362     0225            IF VL3 > 760 THEN
363                        BEGIN
364     0227               IF VL3 < 8013 THEN WF3 = ((VL3-760)/7253) * 19
365     0229                  ELSE IF VL3 < 11377 THEN WF3 = ((VL3- 8013)/3364)*29 + 19
366     0231                   ELSE IF VL3 < 19815 THEN WF3 = ((VL3-11377)/8438)*18 + 48
367     0233                    ELSE IF VL3 < 20472 THEN WF3 = ((VL3-19860)/612)*2 + 66
368     0235                     ELSE IF VL3 < 21780 THEN WF3 = ((VL3-20472)/1308)*3 + 68
369     0237                      ELSE IF VL3 < 23088 THEN WF3 = ((VL3-21780)/1308)*3 + 71
370     0239                       ELSE IF VL3 <= 30560 THEN WF3 = ((VL3-23088)/7472)*26 + 74
371                        END
372             ;
373             ;       END GRAPHIC SPECIALS
374             ;
375             ;       Devices To Lock In Manual:
376             ;
377     0241            IF AND('CA1-ALARM':DEV_FLG,64)THEN PUTMANL 'CA1-ALARM'
378     0243            IF AND('SELECT-WF':DEV_FLG,64)THEN PUTMANL 'SELECT-WF'
379     0245            IF AND('SELECT-DI':DEV_FLG,64)THEN PUTMANL 'SELECT-DI'
380     0247            IF AND('HV-PDSPRY':DEV_FLG,64)THEN PUTMANL 'HV-PDSPRY'
381             ;
382     0248            GOTO AGAIN
383             ;
384             ;       E N D   P R O G R A M   L O O P
385             ;
```

```
386          ;        BEGIN ANALOG WHITE ALARM SUBROUTINE:
387          ;
388          ; ANLG:  IF !SELECT() THEN GOTO AGAIN
389   0249   ANLG:    IF (PTYPE = 1) THEN                          ; If some alarm
390                      BEGIN                                  ;be1
391   0250               BITVAL = PAI:AI_ALMCT
392   0251               IF !(AND(BITVAL,16)) THEN                ; If not inhibited
393                        BEGIN                                ;be2
394   0253                 IF PSTAT = 3 THEN LET PSTAT = 0
395   0254                 IF (PREV) THEN                         ; If rev acting, LOLO, or LO
396                          BEGIN                              ;be3
397   0255                   IF (PSTAT = 0) THEN                  ; If not previously alarmed
398                            BEGIN                            ;be4
399   0257                     IF (PAI:AI_MEAS <= PALARM) THEN GOSUB ALM
400                            END                              ;en4
401                          ELSE
402                            BEGIN                            ;be5
403   0258                     IF (PSTAT = 1) THEN                ; If previously alarmed
404                              BEGIN                          ;be6
405   0260                       IF (FTRIP4) THEN GOSUB ACK1      ; If ACK flag set, then ack it
406   0263                       IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
407                              END                            ;en6
408   0265                     IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
409                            END                              ;en5
410                          END                                ;en3
411                      ELSE                                   ; If fail-safe, HIHI, or HI
412                          BEGIN                              ;be10
413   0266                   IF (PSTAT = 0) THEN
414                            BEGIN                            ;be11
415   0268                     IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
416                            END                              ;en11
417                          ELSE
418                            BEGIN                            ;be12
419   0269                     IF (PSTAT = 1) THEN
420                              BEGIN                          ;be13
421   0271                       IF (FTRIP4) THEN GOSUB ACK1
422   0274                       IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
423                              END                            ;en13
424   0276                     IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
425                            END                              ;en12
426                          END                                ;en10
427   0277               NXT = PSTAT
428   0279               IF (PPASS) & (PSTAT = 2) THEN NXT = 0
429                      END                                    ;en2
430                      ELSE
431                        BEGIN
432   0280                 LET PSTAT = 3
433   0281                 NXT = 0
434                        END
435   0282           WHITE = OR(WHITE,NXT)
436                  END                                        ;en1
437   0283           ELSE PSTAT = 0
438   0284           STEP PALARM BY 1
439   0285           STEP PSTAT BY 1
440   0286           STEP PTYPE BY 1
```

```
0287            STEP PREV BY 1
0288            STEP PPASS BY 1
0289            RETURN
        ;
        ;       END ANALOG WHITE ALARM SUBROUTINE
        ;
        ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
        ;
0290    CLR:    LET PSTAT = 0                                           ; Int set to zero
                ;
                ; If not white, then unack:
                ;
0293            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0294            LET FCLEAR = 1                                          ; Clear flag
0295            GOSUB ACKK                                              ; Print message
0296            RETURN
        ;
0297    ALM:    LET PSTAT = 1                                           ; Int set to one
                ;
                ; If not white, then unack:
                ;
0300            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0301            LET PDEV:DEV_TMPO = 2
                ;
                ; Turn audible alarm on if white or yellow:
                ;
0303            IF AND(PTYPE,3) THEN FALMON = 1
0304            CRIT
0305            LAMP ADI,SKDKEY,2                                       ; Blink the LAMP
0306            GOSUB ACKK                                              ; Print message
0307            RETURN
        ;
0308    ACK1:   LET PSTAT = 2                                           ; Ack the alarm
0309            LET FACK = 1                                            ; Set ACK flag for C program
        ;
        ;       ALARM TYPER STRINGS:
        ;
0311    ACKK:   IF ILOOP = 0 THEN STRNGO = "CA1 VESSEL PRESSURE HI"
0313            IF ILOOP = 1 THEN STRNGO = "CA1-1 WEIGHT FACTOR HI"
0315            IF ILOOP = 2 THEN STRNGO = "CA1-2 WEIGHT FACTOR HI"
0317            IF ILOOP = 3 THEN STRNGO = "LOWER DE-ENTRNMNT PAD DP HI"
        ;       IF ILOOP = 35 THEN STRNGO = "(CA1-1)-(CA1-2) SPG DIFF LOLO"       ; Delete White on DDI-CA1-1
        ;       IF ILOOP = 36 THEN STRNGO = "(CA1-1)-(CA1-2) SPG DIFF HIHI"       ; Delete White on DDI-CA1-1
0319            IF ILOOP = 37 THEN STRNGO = "F-H-1 RW FILTER DELTA P HIGH"
0321            IF ILOOP = 38 THEN STRNGO = "F-H-2 RW FILTER DELTA P HIGH"
0323            IF ILOOP = 39 THEN STRNGO = "F-H-3 RW FILTER DELTA P HIGH"
0325            IF ILOOP = 17 THEN STRNGO = "START CA1BATCH PGM "
0327            IF ILOOP = 18 THEN STRNGO = "CA1BATCH WRONG UNIT"
0329            IF ILOOP = 19 THEN STRNGO = "TERMINATE CA1BATCH "
        ;
        ; If acking the alarm, then:
        ;
0330    AMSG:   IF PTYPE = 1 THEN
                   BEGIN
                   ;
```

```
                    ; If white alarm, print:
                    ;
0332                IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
0333                IF (FACK) THEN
                      BEGIN
                      ;
                      ; If white, print it is ack and reset the flag:
                      ;
0334                  PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
0335                  LET FACK = 0
                      END
                    END
                  ;
                  ; If Clear, print it is clear and reset the flag:
                  ;
0336              IF (FCLEAR) THEN
                    BEGIN
0337                PRINT ADI,"%p ALARM CLEAR",STRNGO
0338                LET FCLEAR = 0
                    END
                  ;
                  ; If Startup, then print startup message:
                  ;
0339              IF (FSTART) THEN
                    BEGIN
0340                LET FSTART = 0
0341                PRINT ADI,"%p",STRNGO
                    END
0342              RETURN
          ;
          ; If Error - print message, start timer, and set flag:
          ;
0343      ERRSUB:  IF ERRN != ERRNUM() THEN
                    BEGIN
0344                TIMERON STIMEO
0345                TIMERCLR STIMEO
0346                LET FSNO = 1
0347                LET ERRN = ERRNUM()
0348                LET ERRL = ERRLIN()
0349                PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
                    END
0350                ERSCLR
0351              GOTO AGAIN
          ;
          ; If FABORT = 1, then abort program:
          ;
          ; TERM:  LET FABORT = 0
0352      TERM:    LET STRNGO = "CA1BATCH TERMINATED    "
0353               LET ILOOP = STAR + 2
0354               LET FSTART = 1
0355               LET STRNGO = "TERM"
0356               GOSUB ACKK
                   END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 6960 Bytes, 435 Pages

21 Forward Reference(s)

PB1BATCH

```
;       P B 1 B A T C H . S E Q                                 VERSION 4
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 012,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]PB1BATCH
;
;       UNIT = 7, SKDKEY = 30
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ---------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;       30-DEC-92       Fixed white alarm print message.        M. Teats
;
;       07-JUN-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;       28-JUL-94       Added white alarm for PDI-CA1-3                 J. Berger
;                       per EE-94-00019.
;
;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
;                       system. Rebaselined docmument. Removed
;                       obsolite Select() statement.
;
```

```
 56          ;        26-MAR-95        Revised program to add the effected EPNs  J. Berger
 57          ;                         for the Condensate Recycle Loop per ECN
 58          ;                         620390 and WP EE-95-00036. (JFB01)
 59          ;
 60          ;        27-APR-95        Revised program to change YS-PB1-1 to a   J. Berger
 61          ;                         yellow alarm. See WP EE-95-00006 and
 62          ;                         ECN 622499.
 63          ;
 64          ;  END MOD LOG
 65          ;
 66          UNIT     PB1
 67          ;
 68                   COMMON PB2
 69    0000           NOP
 70    0001           STAR = 24                        ; Start message
 71    0002           LET SKDKEY = 30          ; SKID Key
 72    0003           LET UNITT = 7                    ; SEQ Unit number
 73    0004           ASSIGN PDEV = 'PB1-ALARM'        ; Alarm device
 74    0005           ASSIGN PTYPE = TYPE24
 75    0006           LET ADI = 0                      ; Alarm destination index
 76    0007           LET FSNO = 0                     ; No alarm yet
 77    0008           TIMEROFF STIME0          ; Alarm timer off
 78    0009           TIMERCLR STIME0          ; Alarm timer clear
 79    0010           STRNG0 = " "                     ; Blank 30 character string
 80    0011           LET ERRN = 0                     ; Set error number to zero
 81    0012           LET ERRL = 0                     ; Set error line to zero
 82    0013           LET FTRIP4 = 0                   ; FTRIP4 = 1 when audible horn is to be turned on
 83    0014           GETUNIT TRIP                     ; Which sequence unit is program running in
 84    0015           IF TRIP != UNITT THEN            ; Abort if running in wrong seq. unit
 85                      BEGIN
 86    0016              FSTART = 1
 87    0017              ILOOP = STAR + 1
 88    0018              PTYPE = 0
 89    0019              GOSUB ACKK
 90    0020              GOTO TERM
 91                      END
 92          ;        IF !SELECT() THEN GOTO AGAIN
 93          ;
 94          ;        B E G I N   I N I T I A L I Z I N G
 95          ;
 96    0021           LET STRNG0 = "INIT"
 97    0022     INIT: LET FABORT = 0                    ; If FABORT = 1 then abort program
 98    0023           LET FSTART = 0                   ; Program start flag = 0
 99    0024           LAMP ADI,SKDKEY,0                ; Turn off the annunciator key
100    0025           LET LSG0 = " "                   ; Clear the string variables
101    0026           LET LSG1 = " "
102    0027           LET LSG2 = " "
103    0028           LET LSG3 = " "
104    0029           LET LSG4 = " "
105    0030           LET PDEV:DEV_TMP0 = 1                          ; Set alarm device to non-alarm state
106    0031           IF AND(PDEV:DEV_ALMCT,16) THEN                 ; If the alarm device is inhibited, remove the inhibit
107    0032             PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
108    0033           IF AND(PDEV:DEV_ALMCT,32) THEN                 ; If the alarm device is ack, clear it
109    0034              PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
110         ;
```

```
111          ;        First, set all flags and integers:
112          ;
113    0035           ASSIGN PDIN = 'YS-PC-105'
114    0036           ASSIGN PPASS = FPAS0
115    0037           ASSIGN PREV = FRV0
116    0038           ASSIGN PSTAT = INT0
117    0039           ASSIGN PSKID = SKID0
118    0040           ASSIGN PTYPE = TYPE0
119          ;
120    0041           FOR ILOOP = 0 TO 29                        ; JFB01
121    0042           LET PPASS = 0
122    0043           LET PREV = 0
123    0045           IF PSTAT > 5 THEN LET PSTAT = 0            ; Reset current status if undefined
124    0046           LET PSKID = 0                                      ; Default previous status to no alarms
125    0047           LET PTYPE = 0                                      ; Default to no alarm
126    0048           IF ILOOP < 12 THEN                                 ; For DINs  JFB01
127                      BEGIN
128    0049              LET PTYPE = 0
129    0050              IF AND(PDIN:DIN_DFLG,3) THEN                    ; Check for alarms if defined (must be red or yellow)
130                        BEGIN
131    0051                LET PTYPE = 2                                 ; Default to yellow
132    0053                IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1     ; Reverse acting
133    0055                IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4    ; Set to red critical alarm
134                        END
135                      END
136    0056           ELSE LET PTYPE = 4                                 ; For AIs, default to red
137    0058           IF ILOOP < 11 THEN STEP PDIN BY 1                  ; Point to next DIN  JFB01
138    0059           STEP PPASS BY 1
139    0060           STEP PREV BY 1
140    0061           STEP PSTAT BY 1
141    0062           STEP PSKID BY 1
142    0063           STEP PTYPE BY 1
143    0064           NEXT ILOOP
144          ;
145    0065           LET FRV2 = 1
146    0066           LET FRV4 = 1
147    0067           LET FRV5 = 0
148    0068           LET FRV27 = 0
149          ;
150    0069           LET TYPE3 = 2                                      ; JFB02
151    0070           LET TYPE10 = 0
152    0071           LET TYPE11 = 0
153    0072           LET TYPE18 = 0
154    0073           LET TYPE22 = 0
155    0074           LET TYPE24 = 0
156    0075           LET TYPE30 = 2                                     ; JFB01
157    0076           LET TYPE27 = 1                                     ; JFB01
158    0077           LET TYPE29 = 6                                     ; JFB01
159    0078           LET INT30 = 0                                      ; JFB01
160    0079           LET AI15 = 15                                      ; JFB01
161          ;
162          ;        E N D   I N I T I A L I Z I N G
163          ;
164          ;        S E N D   P R O G R A M   S T A R T   M E S S A G E
165          ;
```

```
166   0080          ILOOP = STAR
167   0081          FSTART = 1
168   0082          PTYPE = 0
169   0083          CURENT = 0
170   0084          LAST = 0
171   0085          ANALOG = 0
172   0086          WHITE = 0
173   0087          GOSUB ACKK
174   0088          ON ERROR GOSUB ERRSUB
175         ;
176         ;       B E G I N   P R O G R A M   L O O P
177         ;
178   0089  AGAIN:  MARK STEP "WTUNTL",0,0
179         ;       WAITUNTIL SELECT() | FABORT      ; Wait until micro is selected or program aborted
180         ;       IF (FABORT) THEN GOTO TERM       ; Terminate program if abort flag is set
181   0090          MARK STEP "RNNING",0,0
182   0091          WAIT 1
183   0092          IF (FSNO) THEN                   ; If alarm flag set
184   0093             IF STIMEO > 60 THEN           ; If alarm flag active for 1 minute
185                         BEGIN                    ; Reset timer and turn off flag
186   0094                  TIMEROFF STIMEO
187   0095                  TIMERCLR STIMEO
188   0096                  LET FSNO = 0
189   0097                  LET ERRN = 0
190   0098                  LET ERRL = 0
191                         END
192         ;
193         ;       If PB1-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
194         ;
195   0099          IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
196                    BEGIN
197   0100             LET PDEV:DEV_TMPO = 1 ; Put PB1-ALARM in ack state
198   0101             LET FTRIP4 = 1                ; Set for Unit alarm ack, system to graphic
199   0102             LET ACK = 1                   ; Set for Unit alarm ack, graphic to system
200   0103             CRIT
201   0104             LAMP ADI,SKDKEY,1             ; Turn LAMP on
202                    END
203         ;
204         ;       BEGIN DINs:
205         ;
206   0105          ASSIGN PDIN = 'YS-PC-105'                ; Assign pointer to first DIN
207   0106          ASSIGN PTYPE = TYPEO
208   0107          ASSIGN PREV = FRVO
209   0108          ASSIGN PSTAT = INTO
210   0109          ASSIGN PPASS = FPASO
211   0110          LAST = 0
212   0111          NXT = 0
213   0112          LMPVAR = 0
214   0113          BITVAL = 0
215         ;
216   0114  LOP:    FOR ILOOP = 0 TO 11
217         ;       IF !SELECT() THEN GOTO AGAIN
218   0115          IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
219                    BEGIN                                          ;be1
220   0117             IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN inhibited
```

```
221  0119            IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5          ; If EPN is bad input
222  0121            IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4           ; If EPN is disabled
223  0122            IF ( PSTAT < 3 ) THEN                              ; If not inhibited
224                       BEGIN                                         ;be2
225  0123                 IF (PSTAT = 1) THEN
226                          BEGIN                                      ;be3
227  0124                    IF (PTYPE != 1) THEN
228  0126                       IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
229  0128                    IF (FTRIP4) THEN GOSUB ACK1
230                          END                                        ;en3
231  0131                 IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
232  0132                 IF (PSTAT) THEN
233                            BEGIN                                    ;be4
234  0134                      IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
235  0135                      NXT = PSTAT
236  0137                      IF (PPASS) & (PSTAT = 2) THEN NXT = 0
237  0138                      LAST = OR(LAST,NXT)
238                            END                                      ;en4
239                       END                                           ;en2
240  0140             ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
241                       END                                           ;en1
242  0142          IF ILOOP < 11 THEN STEP PDIN BY 1
243  0143          STEP PTYPE BY 1
244  0144          STEP PREV BY 1
245  0145          STEP PSTAT BY 1
246  0146          STEP PPASS BY 1
247  0147          NEXT ILOOP
248          ;
249          ;     END DINs:
250          ;
251          ;     BEGIN ANALOG RED AND YELLOWS:
252          ;
253  0148          ANALOG = 0
254  0149          ASSIGN PAI = 'KY-PB1-1'
255  0150          ASSIGN PSKID = SKID0
256  0151          FOR JLOOP = 0 TO 17
257          ;     IF !SELECT() THEN GOTO AGAIN
258  0152          IF (PTYPE) THEN                                      ; If some alarm exists
259                   BEGIN                                             ;be1
260  0153             BITVAL = PAI:AI_ALMCT
261  0154             IF !AND(BITVAL,16) THEN                           ; If not inhibited
262                      BEGIN                                         ;be2
263  0155                IF AND(BITVAL,15) THEN                         ; If alarm exists and is current
264                          BEGIN                                     ;be3
265  0157                    IF AND(BITVAL,32) THEN NXT = 2             ; If alarm is ack
266                          ELSE                                       ; If alarm is unack
267                             BEGIN                                  ;be4
268  0158                       IF PSKID !=BITVAL THEN
269                                 BEGIN                              ;be5
270  0160                           IF BITVAL < 3 THEN FALMON = 1
271  0161                           LET PSKID = BITVAL
272  0162                           LET PDEV:DEV_TMPO = 2
273  0163                           NXT = 1
274                                 END                                ;en5
275  0164                       ELSE NXT = 1
```

```
                                 END                                  ;en4
                              END                                     ;en3
                           ELSE                                                ; Else there is no alarm
                              BEGIN
0165                          NXT = 0
0166                          LET PSKID = 0
                              END
                           END                                        ;en2
                        ELSE                                                   ; Else alarm is inhibited
                           BEGIN
0167                       NXT = 0
0168                       LET PSKID = 0
                           END
0169                    ANALOG = OR(ANALOG,NXT)
                        END                                           ;en1
0170                 STEP PSKID BY 1
0171                 STEP PTYPE BY 1
0172                 STEP PAI BY 1
0173                 STEP PSTAT BY 1
0174                 NEXT JLOOP
          ;
          ;          END ANALOG RED AND YELLOWS
          ;
          ;          BEGIN DEVICE ALARMS:
          ;
0175      JGV:       ILOOP = 30                                              ; JGV-SUMP
0176                 ASSIGN PSTAT  = INT30
0177                 ASSIGN PTYPE = TYPE30
          ;          IF !SELECT() THEN GOTO AGAIN
0178                 IF (TYPE30) THEN                                        ; If some type of alarm
                        BEGIN                                         ;be1
0180                    IF AND('JGV-SUMP':DEV_ALMCT,16) THEN PSTAT = 3 ; If EPN inhibited
0181                    IF (PSTAT < 3) THEN                                  ; If not inhibited
                             BEGIN                                    ;be2
0182                         IF (PSTAT = 1) THEN
                                BEGIN                                 ;be3
0183                            IF (PTYPE != 1) THEN
0185                               IF AND('JGV-SUMP':DEV_ALMCT,32) THEN GOSUB ACK1
0187                            IF (FTRIP4) THEN GOSUB ACK1
                                END                                   ;en3
                             ;
                             ; If alarm (ON 8+ MIN) is active and is previously not alarmed:
                             ;
0189                         IF PSTAT = 0 THEN IF AND('JGV-SUMP':DEV_STAT,8) THEN
                                BEGIN                                 ;be4
0190                            LET PSTAT = 1
0193                            IF PTYPE != 1 THEN IF AND('JGV-SUMP':DEV_ALMCT,32)THEN 'JGV-SUMP':DEV_ALMCT = XOR('JGV-SUMP':DEV_ALMCT,32)
0194                            LET PDEV:DEV_TMP0 = 2
0196                            IF AND(PTYPE,3) THEN FALMON = 1
0197                            CRIT
0198                            LAMP ADI,SKDKEY,2
                                END                                   ;en4
0199                         IF (PSTAT) THEN                                 ; If previously alarmed
                                BEGIN                                 ;be5
0200                            IF !AND('JGV-SUMP':DEV_STAT,8) THEN           ; If not alarming now, then clear
```

```
                                    BEGIN                                ;be6
0201                                PSTAT = 0
0202                                GOSUB ACKK
                                    END                                  ;en6
0203                          NXT = PSTAT
0205                          IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0206                          LAST = OR(LAST,NXT)
                              END                                        ;en5
                           END                                           ;en2
0208                  ELSE IF !AND('JGV-SUMP':DEV_ALMCT,16) THEN PSTAT = 0
                      END                                                ;en1
          ;
          ;       END DEVICE ALARMS
          ;
          ;       BEGIN ANALOG WHITE ALARMS:
          ;
          ;
0209      WHT:    WHITE = 0
0210              ASSIGN PALARM = AI15
0211              ASSIGN PREV = FRV27
0212              ASSIGN PSTAT = INT27
0213              ASSIGN PTYPE = TYPE27
0214              ASSIGN PPASS = FPAS27
0215              ILOOP = 31
0216              ASSIGN PAI = 'PDI-CA1-3'
          ;       GOSUB ANLG                                  ; PDICA1-3      30
          ;
          ;       END ANALOG WHITE ALARMS
          ;
          ;       E N D   P R O G R A M   L O O P
          ;
          ;       BEGING ANALOG WHITE ALARMS SUBROUTINE:
          ;
          ; ANLG: IF !SELECT() THEN GOTO AGAIN
0217      ANLG:   IF (PTYPE = 1) THEN                         ; IF SOME ALARM
                     BEGIN                          ;BE1
0218                 BITVAL = PAI:AI_ALMCT
0219                 IF !(AND(BITVAL,16)) THEN                  ; IF NOT INHIBITED
                          BEGIN                     ;BE2
0221                      IF PSTAT = 3 THEN LET PSTAT = 0
0222                      IF (PREV) THEN                       ; IF REV ACTING, LOLO, OR LO
                             BEGIN                  ;BE3
0223                         IF (PSTAT = 0) THEN                ; IF NOT PREVIOUSLY ALARMED
                                  BEGIN             ;BE4
0225                         IF (PAI:AI_MEAS <= PALARM) THEN GOSUB ALM
                                  END
                             ELSE
                                  BEGIN             ;BE5
0226                              IF (PSTAT = 1) THEN        ; IF PREVIOUSLY ALARMED
                                     BEGIN          ;BE6
0228                                 IF (FTRIP4) THEN GOSUB ACK1   ;IF ACK FLAG SET, THEN ACK IT
0231                                 IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                                     END            ;EN5
0233                              IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                                  END               ;EN3
```

```
                                    END
                              ELSE                                  ; IF FAIL-SAFE, HIHI, OR HI
                                    BEGIN              ;BE10
0234                                IF (PSTAT = 0) THEN
                                       BEGIN           ;BE11
0236                                   IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
                                       END             ;EN11
                               ELSE
                                    BEGIN              ;BE12
0237                                IF (PSTAT = 1) THEN
                                       BEGIN           ;BE13
0239                                   IF (FTRIP4) THEN GOSUB ACK1
0242                                   IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                                       END             ;EN13
0244                                IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                                    END                ;EN12
                                       END             ;EN10
0245                                NXT = PSTAT
0247                                IF (PPASS) & (PSTAT = 2) THEN NXT = 0
                                    END                ;EN2
                                    ELSE
                                       BEGIN
0248                                   LET PSTAT = 3
0249                                   NXT = 0
                                       END
0250                        WHITE = OR(WHITE,NXT)
                            END                        ;EN1
0251                        ELSE PSTAT = 0
0252                        STEP PALARM BY 1
0253                        STEP PSTAT BY 1
0254                        STEP PTYPE BY 1
0255                        STEP PREV BY 1
0256                        STEP PPASS BY 1
          ;                 RETURN
          ;
          ;         END ANALOG WHITE ALARM SUBROUTINE
          ;
0257                FTRIP4 = 0
0259                IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
0260                CURENT = OR(LAST,ANALOG)
0261                CURENT = OR(CURENT,WHITE)
0263                IF AND(CURENT,1) THEN LMPVAR = 2
0265                   ELSE IF AND(CURENT,2) THEN LMPVAR = 1
0266                           ELSE LMPVAR = 0
0267                LAMP ADI,SKDKEY,LMPVAR
0268                MARK STEP "BOTTOM",0,0
0269                NOCRIT
          ;
          ;         BEGIN LOGIC FOR GRAPHICS:
          ;
          ;         SA0 = AND('PB-1':DEV_STAT,1)      ; CF-OFF
          ;         SA1 = AND('PB-1':DEV_STAT,2)      ; CF-ON
0270                SA2 = AND('PB-1':DEV_STAT,4)      ; SD-RESET
          ;         SA3 = AND('PB-1':DEV_STAT,8)      ; CF-JOGNG
0271                SA4 = AND('PB-1':DEV_STAT,16)     ; SHUTDOWN
```

```
441   0272          SA5 = AND('PB-1':DEV_STAT,32)     ; INTERLOCK
442           ;     SA6 = AND('PB-1':DEV_STAT,64)     ; STOPPING
443           ;     SA7 = AND('PB-1':DEV_STAT,128)    ; STARTING
444           ;
445   0274          IF AND('PB1-ALARM':DEV_FLG,64) THEN PUTMANL 'PB1-ALARM'
446   0276          IF AND('PB-1':DEV_FLG,64) THEN PUTMANL 'PB-1'
447   0278          IF AND('PB1WFINLK':DEV_FLG,64) THEN PUTMANL 'PB1WFINLK'
448   0280          IF AND('PB1-BYPAS':DEV_FLG,64) THEN PUTMANL 'PB1-BYPAS'
449   0282          IF AND('BOT-DUMP':DEV_FLG,64) THEN PUTMANL 'BOT-DUMP'
450   0284          IF AND('HV-SUMP-1':DEV_FLG,64) THEN PUTMANL 'HV-SUMP-1'
451   0286          IF AND('JGV-SUMP':DEV_FLG,64) THEN PUTMANL 'JGV-SUMP'
452           ;
453   0287          AT0 = AND('PB1WFINLK':DEV_TMP0,1)                 ; LI-CA1-3
454   0288          AT1 = AND('PB1WFINLK':DEV_TMP0,2)                 ; LI-CA1-1
455   0289          AT2 = AND('PB1WFINLK':DEV_TMP0,4)                 ; LI-CA1-2
456   0290          AT3 = AND('PB1WFINLK':DEV_TMP0,8)                 ; PB1WFINLK INTERLOCK
457   0291          AT4 = AND('PB1WFINLK':DEV_TMP0,16)                ; BYPAS OR NO INTERLOCK
458           ;     AT12= AND(AT0,AT4)                                ; LI-CA1-3 CONTROLS PB1WFINLK
459   0292          AT5 = AND('PB1-BYPAS':DEV_TMP0,32)                ; timer running
460   0293          AT6 = AND('PB1-BYPAS':DEV_TMP0,64)                ; time out
461   0294          AT8 = AND('PB1-BYPAS':DEV_TMP0,256)               ; PERMISSIVE ON
462   0295          AT23 = AND('PB-1':DEV_TMP1,128)
463   0296          AT24 = AND('PB-1':DEV_TMP1,256)
464   0297          AT25 = AND('PB-1':DEV_TMP1,512)
465   0298          AT27 = AND('HV-CA1-10':DEV_TMP1,2048)             ; JFB01  $T27
466   0299          AT28 = AND('HV-CA1-10':DEV_TMP1,4096)             ; JFB01  $T28
467   0300          AT29 = AND('HV-CA1-10':DEV_TMP1,8192)             ; JFB01  $T29
468   0301          AT31= AND('PB-1':DEV_TMP1,32768)          ; PB-1 INTERLOCKS
469           ;
470   0302          BT26 = AND('P-C-105':DEV_TMP1,1024)
471   0303          BT27 = AND('P-C-105':DEV_TMP1,2048)
472   0304          BT28 = AND('P-C-105':DEV_TMP1,4096)
473   0305          BT29 = AND('P-C-105':DEV_TMP1,8192)
474   0306          BT30 = AND('P-C-105':DEV_TMP1,16384)
475           ;
476   0307          CT0 = 'YS-PB1-1':DIN_VAL
477   0308          CT1 = AND('PB-1':DEV_TMP0,2)
478           ;
479   0309          GT8 = AND(PB2GLOBAL:DEV_TMP0,256)
480   0310          LEAK0 = GT8
481           ;
482   0311          SB4 = AND('P-C-105':DEV_STAT,16)
483   0312          SB5 = AND('P-C-105A':DEV_STAT,16)
484           ;
485           ;     LEAK0 CONTROLS THE COLOR OF LINE BETWEEN LI-CA1-1/2 AND LI-CA1-3:
486           ;             0 = GREEN, 1 = RED, 2 - 7 = BLACK.  IF AT4 THEN LINE = GREEN
487           ;             ELSE IF !AT12 THEN LINE = RED, ELSE LINE = BLACK.
488           ;
489   0314          IF AT12 THEN LEAK0 = 0            ; WFs are OK or BYPASS ON and WF-3 not LO (GREEN)
490   0316             ELSE IF !AT0 THEN LEAK0 = 2    ; WF-3 LO                                  (BLACK)
491   0317                ELSE LEAK0 = 1              ; INTERLOCK and WF-3 not LO                (RED)
492           ;
493           ;     END LOGIC FOR GRAPHICS
494           ;
495   0318          GOTO AGAIN
```

```
496          ;
497          ;        E N D   P R O G R A M   L O O P
498          ;
499          ;        BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
500          ;
501    0319  CLR:     LET PSTAT = 0                                          ; Int set to zero
502                   ;
503                   ; If not white, then unack:
504                   ;
505    0322           IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
506    0323           LET FCLEAR = 1                                         ; Clear flag
507    0324           GOSUB ACKK                                             ; Print message
508    0325           RETURN
509          ;
510    0326  ALM:     LET PSTAT = 1                                          ; Int set to one
511                   ;
512                   ; If not white, then unack:
513                   ;
514    0329           IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
515                   ;
516                   ; Turn audible alarm on if white or yellow:
517                   ;
518    0330           PDEV:DEV_TMPO = 2
519    0332           IF AND(PTYPE,3) THEN FALMON = 1
520    0333           CRIT
521    0334         * LAMP ADI,SKDKEY,2
522    0335           GOSUB ACKK                                             ; Print message
523    0336           RETURN
524          ;
525    0337  ACK1:    LET PSTAT = 2                                          ; Ack the alarm
526    0338           LET FACK = 1                                           ; Set ACK flag for C program
527          ;
528          ;        ALARM TYPER STRINGS:
529          ;
530    0340  ACKK:    IF ILOOP = 0 THEN STRNGO = "P-C-105 SEAL WATER PUMP ON"
531    0342           IF ILOOP = 1 THEN STRNGO = "P-C-105A SEAL WATER PUMP ON"
532    0344           IF ILOOP = 2 THEN STRNGO = "CA1-7 POT DUMP VALVE OPEN"
533    0346          IF ILOOP = 3 THEN STRNGO = "P-B-1 PUMP MOTOR CONFIRMED"
534    0348           IF ILOOP = 4 THEN STRNGO = "CA1-7 POT DUMP VALVE CLOSED"
535    0350           IF ILOOP = 5 THEN STRNGO = "SLURRY SAMPLER ENCLOSURE LEAK"
536    0352           IF ILOOP = 6 THEN STRNGO = "HV-CA1-8 RAW WATER VALVE OPEN"
537    0354           IF ILOOP = 7 THEN STRNGO = "HV-CA1-8 RAW WATER VALVE CLOS"
538    0356           IF ILOOP = 8 THEN STRNGO = "CA1-9 POT DUMP VALVE CLOSED"
539    0358           IF ILOOP = 9 THEN STRNGO = "CA1-9 POT DUMP VALVE OPEN"
540    0360           IF ILOOP = 30 THEN STRNGO = "JGV-SUMP ON 8 + MINUTES "
541    0362           IF ILOOP = 24 THEN STRNGO = "START PB1BATCH PGM "
542    0364           IF ILOOP = 25 THEN STRNGO = "PB1BATCH WRONG UNIT"
543    0366           IF ILOOP = 26 THEN STRNGO = "TERMINATE PB1BATCH "
544    0368           IF ILOOP = 31 THEN STRNGO = "F-CA1-L/R DELTA PRESS HI "
545          ;
546    0369  AMSG:    IF PTYPE = 1 THEN
547                     BEGIN
548                     ;
549                     ; If white alarm, print:
550                     ;
```

```
551   0371                IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
552   0372                IF (FACK) THEN
553                         BEGIN
554                         ;
555                         ; If white, print it is ack are reset the flag:
556                         ;
557   0373                  PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
558   0374                  LET FACK = 0
559                         END
560                       END
561           ;
562           ;  If CLEAR, print it is clear and reset the flag:
563           ;
564   0375            IF (FCLEAR) THEN
565                     BEGIN
566   0376              PRINT ADI,"%p ALARM CLEAR",STRNGO
567   0377              LET FCLEAR = 0
568                     END
569           ;
570           ;  If STARTUP, then print startup message:
571           ;
572   0378            IF (FSTART) THEN
573                     BEGIN
574   0379              LET FSTART = 0
575   0380              PRINT ADI,"%p",STRNGO
576                     END
577   0381            RETURN
578           ;
579           ;  If ERROR - print message, start timer, and set flag:
580           ;
581   0382    ERRSUB:  IF ERRN != ERRNUM() THEN
582                     BEGIN
583   0383              TIMERON STIMEO
584   0384              TIMERCLR STIMEO
585   0385              LET FSNO = 1
586   0386              LET ERRN = ERRNUM()
587   0387              LET ERRL = ERRLIN()
588   0388              PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
589                     END
590   0389              ERSCLR
591   0390            GOTO AGAIN
592           ;
593           ;  If FABORT = 1, then abort program:
594           ;
595           ; TERM:  LET FABORT = 0
596   0391    TERM:    LET STRNGO = "PB1BATCH TERMINATED    "
597   0392            LET ILOOP = STAR + 2
598   0393            LET FSTART = 1
599   0394            GOSUB ACKK
600                   END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 7760 Bytes, 485 Pages
21 Forward Reference(s)

PB2BATCH

```
;       P B 2 B A T C H . S E Q                                  VERSION 3
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 015,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]PB2BATCH
;
;       UNIT = 8, SKDKEY = 35
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCMOA.SDB        PCMOASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ---------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;       20-AUG-92       Set frv5=0.                                     M. Teats
;
;       08-SEP-92       Comment-out auto-initializing of DIC-CA1-1      M. Teats
;                       (search ";NU") and deleted CA1 Unit in
;                       COMMON for synch PID.
;
;       30-DEC-92       Fixed white alarm print message.        M. Teats
;
;       07-MAY-93       Added bldg raw water alarm, FQA-RW-1.           M. Teats
;
;       07-JUN-93       Added comments and baselined for        M. Teats
```

```
56          ;                       D/3 version 3.3.  CCN# 93JUN01-01.
57          ;
58          ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
59          ;                       system. Rebase line document. Remove
60          ;                       obsolite Select() statement.
61          ;
62          ;       31-JUL-95       Revised to delete FQA-RW-1 DIN and redefine     J. Berger
63          ;                       it as a DEV. Added code to program to properly
64          ;                       let DEVs alarm. See ECN 622808 and EE-95-00006.(JFB01)
65          ;
66          ;
67          ;   END OF MOD LOG
68          ;
69          ;               EPN             VAR     LOOP#     COLOR
70          ;               ---------       ----    -----     -----
71          ;       DEVs:   PB2-ALARM
72          ;               PB-2
73          ;               HV-CA1-2
74          ;               HV-CA1-2S
75          ;               HV-CA1-5
76          ;               HV-CA1-6
77          ;               JGV-STMFL
78          ;               CONTROL
79          ;               PB2SLFILK
80          ;               PB2WFINLK
81          ;               PB2GLOBAL
82          ;               FQA-RW-1        24      SKID24    Y                 JFB01
83          ;               SPARE
84          ;               SPARE
85          ;               SPARE
86          ;
87          ;       DINs:   YS-PB2-1        INT0    0         Y
88          ;               YS-PB2-1L       INT1    1         Y
89          ;               TSH-PB2-1       INT2    2         Y
90          ;               PSH-CA1-3       INT3    3         R
91          ;               PSH-PB2-1       INT4    4         R
92          ;               SXS-PB2-1       INT5    5         Y
93          ;               YS-VFD-1        INT6    6         Y
94          ;               SSL-PB2-1       INT7    7         Y
95          ;               SPARE           -       -         -
96          ;               ZS-CA1-21       -       -         -
97          ;               ZS-CA1-22       -       -         -
98          ;               ZS-CA12A1       -       -         -
99          ;               ZS-CA12A2       -       -         -
100         ;               ZS-CA1-6N       -       -         -
101         ;               ZS-CA1-6C       -       -         -
102         ;               ZS-CA1-54       -       -         -
103         ;               ZS-CA1-55       -       -         -
104         ;               SPARE
105         ;               SPARE
106         ;               SPARE
107         ;                                                       VAR     LOOP#     ALARM SETPT
108         ;                                                       ---     -----     -----------
109         ;       AINs:   HI-WVR-1        SKID8   8         -
110         ;               II-PB2-1        SKID9   9         Y
```

```
            ;                SIC-PB2-1       SKID10  10      Y       SKID23  23      95H
            ;                VI-PB2-1A       SKID11  11      Y
            ;                PI-CA1-8        SKID12  12      Y
            ;                FQI-PB2-W       SKID13  13      -
            ;                FI-CA1-2        SKID14  14      RY
            ;                PI-CA1-10       SKID15  15      -
            ;                KY-CA1-2        SKID16  16      -
            ;                KY-CA1-2F       SKID17  17      -
            ;                FIC-CA1-4       SKID18  18      Y
            ;                FQI-CA1-4       SKID19  19      -
            ;                PI-CA1-5        SKID20  20      -
            ;                FQI-RW-1        SKID21  21      -
            ;                FQI-RW-1B       SKID22  22      -
            ;                SPARE
            ;                SPARE
            ;                SPARE
            ;                FI-RW2-1/2      -       -       -
            ;                YS-BFP1/2       -       -       -
            ;
            ;
            UNIT     PB2
            ;
                     COMMON WHOLE0,WHOLE1
                     PB2_TMP0 == 'PB-2':DEV_TMP0
                     PB2_TMP1 == 'PB-2':DEV_TMP1
                     SLURRY == 'PB2SLFILK':DEV_TMP0
                     WFACTOR == 'PB2WFINLK':DEV_TMP0
                     GBITS   == 'PB2GLOBAL':DEV_TMP0
                     FLAGBITS == PSPAR0
                     HV_TMP0 == 'HV-CA1-2':DEV_TMP0
                     HV_CMD == 'HV-CA1-2':DEV_CMD
            ;
0000                 NOP
0001                 LET STAR = 25                    ; Start message
0002                 LET SKDKEY = 35                  ; SKID Key
0003                 LET UNITT = 8                    ; SEQ Unit number
0004                 ASSIGN PDEV = 'PB2-ALARM'        ; Alarm device
0005                 ASSIGN PTYPE = TYPE25
0006                 PTYPE = 0                        ; No start message yet
0007                 LET ADI = 0                      ; Alarm destination index
0008                 LET FSN0 = 0                     ; No alarm yet
0009                 TIMEROFF STIME0                  ; Alarm timer off
0010                 TIMERCLR STIME0                  ; Alarm timer clear
0011                 STRNG0 = " "                     ; Blank 30 character string
0012                 LET ERRN = 0                     ; Set error number to zero
0013                 LET ERRL = 0                     ; Set error line to zero
0014                 FTRIP4 = 0                       ; FTRIP = 1 when audible horn is to be turned on
0015                 GETUNIT TRIP                     ; Which sequence unit is program running in
0016                 IF TRIP != UNITT THEN            ; Abort if running in wrong seq. unit
                        BEGIN
0017                    FSTART = 1
0018                    ILOOP = STAR + 1
0019                    PTYPE = 0
0020                    GOSUB ACKK
0021                    GOTO TERM
```

```
                    END
          ;       IF !SELECT() THEN GOTO AGAIN
          ;
          ;       B E G I N   I N I T I A L I Z I N G
          ;
0022      INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
0023              LET FSTART = 0                  ; Program start flag = 0
0024              LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
0025              LET LSG0 = " "                  ; Clear the string variables
0026              LET LSG1 = " "
0027              LET LSG2 = " "
0028              LET LSG3 = " "
0029              LET LSG4 = " "
0030              PDEV:DEV_TMP0 = 1                                 ; Set alarm device to non-alarm state
0031              IF AND(PDEV:DEV_ALMCT,16) THEN                    ; If alarm device is inhibited, remove the inhibit
0032                PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0033              IF AND(PDEV:DEV_ALMCT,32) THEN                    ; If alarm device is ack, clear it
0034                 PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
          ;
          ;       First, set all flags and integers:
          ;
          ;       DIN = 0 - 7, AI = 8 - 22, WHITE = 23              JFB01
          ;
0035              ASSIGN PDIN = 'YS-PB2-1'                ; Assign pointer to first DIN
0036              ASSIGN PSTAT = INT0
0037              ASSIGN PTYPE = TYPE0
0038              ASSIGN PREV = FRV0
0039              ASSIGN PSKID = SKID0
0040              ASSIGN PPASS = FPAS0
          ;
0041              FOR ILOOP = 0 TO 22                               ;JFB01
0042              LET PPASS = 0
0043              LET PREV = 0
0045              IF PSTAT > 5 THEN PSTAT = 0                       ; Reset current status if undefined
0046              LET PSKID = 0                                     ; Default previous status to no alarms
0047              LET PTYPE = 0                                     ; Default to no alarms
0048              IF ILOOP < 8 THEN                                 ; For DINs
                    BEGIN
0049                LET PTYPE = 0                                   ; Default is no alarm
0050                IF AND(PDIN:DIN_DFLG,3) THEN                    ; Check for alarms if defined (must be red or yellow)
                      BEGIN
0051                  LET PTYPE = 2                                 ; Default to yellow alarm
0053                  IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1             ; Reverse acting
0055                  IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4    ; Set to red critical alarm
                      END
                    END
0057              IF ILOOP < 7 THEN STEP PDIN BY 1          ; Point to next DIN
0058              STEP PPASS BY 1
0059              STEP PREV BY 1
0060              STEP PSTAT BY 1
0061              STEP PSKID BY 1
0062              STEP PTYPE BY 1
0063              NEXT ILOOP
          ;
0064              LET TYPE9 = 2                                     ;JFB01
```

```
0065            LET TYPE11 = 2
0066            LET TYPE12 = 4
0067            LET TYPE14 = 2
0068            LET TYPE15 = 2
0069            LET TYPE18 = 2
0070            LET TYPE23 = 1
0071            LET TYPE24 = 2
          ;
0072            LET FRV0 = 0
0073            LET FRV1 = 0
0074            LET FRV2 = 0
0075            LET FRV3 = 0
0076            LET FRV4 = 0
0077            LET FRV5 = 0
0078            LET FRV24 = 1
0079            LET FPAS24 = 0
          ;
0080            LET AI0 = 95.0
          ;
0081            FLG14 = 0                ; PID auto (1) flag, for synch PID
0082            FLG15 = 0                ; PID manual (1) flag, for synch PID
0083            AI20 = 0.0               ; for PID O/C display bar
          ;
          ;     E N D   I N I T I A L I Z I N G
          ;
          ;     S E N D   P R O G R A M   S T A R T   M E S S A G E
          ;
0084            ANALOG = 0
0085            ILOOP = STAR
0086            FSTART = 1
0087            ASSIGN PTYPE = TYPE34
0088            GOSUB ACKK
0089            ON ERROR GOSUB ERRSUB
          ;
          ;     B E G I N   P R O G R A M   L O O P
          ;
0090      AGAIN:MARK STEP "WTUNTL",0,0
          ;     WAITUNTIL SELECT() | FABORT      ; Wait until micro is selected or program aborted
          ;     IF (FABORT) THEN GOTO TERM       ; Terminate program if abort flag set
0091            MARK STEP "RNNING",0,0
0092            WAIT 1
0093            IF (FSN0) THEN                   ; If alarm flag is set
0094               IF STIME0 > 60 THEN           ; If alarm flag active for 1 minute
                      BEGIN                      ; Reset timer and turn off flag
0095                  TIMEROFF STIME0
0096                  TIMERCLR STIME0
0097                  LET FSN0 = 0
0098                  LET ERRN = 0
0099                  LET ERRL = 0
                      END
          ;
          ;     If PB2-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
          ;
0100            IF (PDEV:DEV_TMP0 = 2) & AND(PDEV:DEV_ALMCT,32) THEN
                   BEGIN
```

```
0101                PDEV:DEV_TMP0 = 1              ; Put PB2-ALARM in ack state
0102                LET FTRIP4 = 1                 ; Set for unit alarm ack, system to graphic
0103                LET ACK = 1                    ; Set for unit alarm ack, graphic to system
0104                CRIT
0105                LAMP ADI,SKDKEY,1              ; Turn lamp on
                    END
        ;
        ;       BEGIN DINs:
        ;
0106            ASSIGN PDIN = 'YS-PB2-1'
0107            ASSIGN PTYPE = TYPE0
0108            ASSIGN PREV = FRV0
0109            ASSIGN PSTAT = INT0
0110            ASSIGN PPASS = FPAS0
0111            LET CURENT = 0                    ; Used to set lamp status
0112            LET LAST = 0
0113            LET ANALOG = 0
0114            LET NXT = 0
0115            LMPVAR = 0
0116            BITVAL = 0
        ;
0117    LOP:    FOR ILOOP = 0 TO 7
        ;       IF !SELECT() THEN GOTO AGAIN
0118            IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
                   BEGIN                                          ;be1
0120               IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN inhibited
0122               IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5            ; If EPN is bad input
0124               IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4             ; If EPN is disabled
0125               IF ( PSTAT < 3 ) THEN                          ; If not inhibited
                        BEGIN                                     ;be2
0126                     IF (PSTAT = 1) THEN
                            BEGIN                                 ;be3
0127                        IF (PTYPE != 1) THEN
0129                           IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0131                        IF (FTRIP4) THEN GOSUB ACK1
                            END                                   ;en3
0134                     IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0135                     IF (PSTAT) THEN
                              BEGIN                               ;be4
0137                          IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
0138                          NXT = PSTAT
0140                          IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0141                          LAST = OR(LAST,NXT)
                              END                                 ;en4
                        END                                       ;en2
0143                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                    END                                           ;en1
0144            STEP PDIN BY 1
0145            STEP PTYPE BY 1
0146            STEP PREV BY 1
0147            STEP PSTAT BY 1
0148            STEP PPASS BY 1
0149            NEXT ILOOP
        ;
        ;       END DINs
```

```
331            ;
332            ;        BEGIN ANALOG RED AND YELLOWS:
333            ;
334     0150           ASSIGN PAI = 'HI-WVR-1'
335     0151           ASSIGN PSKID = SKID8
336     0152           FOR JLOOP = 8 TO 22
337            ;       IF !SELECT() THEN GOTO AGAIN
338     0153           IF (PTYPE) THEN                                  ; If some alarm exists
339                       BEGIN                                   ;be1
340     0154              BITVAL = PAI:AI_ALMCT
341     0155              IF !AND(BITVAL,16) THEN                       ; If not inhibited
342                          BEGIN                                ;be2
343     0156                 IF AND(BITVAL,15) THEN                    ; If alarm exists and is current
344                             BEGIN                             ;be3
345     0158                    IF AND(BITVAL,32) THEN NXT = 2         ; If alarm is ack
346                             ELSE                                   ; If alarm is unack
347                                BEGIN                          ;be4
348     0159                       IF PSKID !=BITVAL THEN
349                                    BEGIN                      ;be5
350     0160                           PSKID = BITVAL
351     0162                           IF BITVAL < 3 THEN FALMON = 1
352     0163                           LET PDEV:DEV_TMPO = 2
353     0164                           NXT = 1
354                                    END                        ;en5
355     0165                       ELSE NXT = 1
356                                END                            ;en4
357                             END                               ;en3
358                          ELSE                                      ; Else there is no alarm
359                             BEGIN
360     0166                    NXT = 0
361     0167                    LET PSKID = 0
362                             END
363                          END                                   ;en2
364                       ELSE                                         ; Else alarm is inhibited
365                          BEGIN
366     0168                 NXT = 0
367     0169                 LET PSKID = 0
368                          END
369     0170              ANALOG = OR(ANALOG,NXT)
370                       END                                   ;en1
371     0171           STEP PREV BY 1
372     0172           STEP PSTAT BY 1
373     0173           STEP PSKID BY 1
374     0174           STEP PTYPE BY 1
375     0175           STEP PAI BY 1
376     0176           NEXT JLOOP
377            ;
378            ;        END ANALOG RED AND YELLOWS
379            ;
380            ;
381            ;        BEGIN DEVICE ALARM (FQA-RW-1 FLOW ALARM):                JFB01
382            ;
383     0177   RC1:     ASSIGN PTYPE = TYPE24
384     0178           ASSIGN PREV = FRV24
385     0179           ASSIGN PSTAT = INT24
```

```
386   0180            ASSIGN PPASS = FPAS24
387   0181            IF ( PTYPE > 0 ) THEN
388                      BEGIN
389   0183               IF AND('FQA-RW-1':DEV_ALMCT,16) THEN LET PSTAT = 3          ; EPN is inha
390           ;          IF AND('FQA-RW-1':DEV_ALMCT,4) THEN BLET PSTAT = 5          ; No IBAD on devices
391   0185               IF !AND('FQA-RW-1':DEV_FLG,8) THEN LET PSTAT = 4            ; EPN is dis
392   0186               IF ( PSTAT < 3 ) THEN
393                           BEGIN
394   0187                     IF PSTAT = 1 THEN
395                                BEGIN
396   0188                         IF PTYPE != 1 THEN
397   0190                            IF AND('FQA-RW-1':DEV_ALMCT,32) THEN GOSUB ACK1
398   0192                         IF (FTRIP4) THEN GOSUB ACK1
399                                END
400   0194                     IF PSTAT = 0 THEN IF AND('FQA-RW-1':DEV_STAT, 1) THEN
401                                BEGIN
402   0195                         CRIT
403   0196                         LET PSTAT = 1
404   0197                         'PB2-ALARM':DEV_TMPO = 2
405   0198                         FALMON = 1
406   0199                         LAMP ADI,SKDKEY,2
407   0200                         GOSUB ACKK
408   0201                         NOCRIT
409                                END
410   0202                     IF (PSTAT) THEN
411                                 BEGIN
412   0203                          IF !AND('FQA-RW-1':DEV_STAT, 1) THEN
413                                     BEGIN
414   0204                              LET PSTAT = 0
415   0205                              LET FCLEAR = 1
416   0206                              GOSUB ACKK
417                                     END
418   0207                          NXT = PSTAT
419   0209                          IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
420   0210                          LAST = OR(LAST,NXT)
421                                 END
422                           END
423   0212                ELSE IF !AND('FQA-RW-1':DEV_ALMCT,16)&AND('FQA-RW-1':DEV_FLG,8)THEN LET PSTAT = 0
424   0214                IF PSTAT = 5 THEN PSTAT = 0
425                       END
426           ;
427           ;        END DEVICE ALARM (FQA-RW-1 FLOW ALARM)
428           ;
429           ;        BEGIN ANALOG WHITE ALARMS:
430           ;
431   0215    WHT:     WHITE = 0
432   0216             ASSIGN PAI = 'SIC-PB2-1'
433   0217             ASSIGN PALARM = AIO
434   0218             ASSIGN PREV = FRV23
435   0219             ASSIGN PSTAT = INT23
436   0220             ASSIGN PTYPE = TYPE23
437   0221             ASSIGN PPASS = FPAS23
438   0222             ILOOP = 23
439   0223             GOSUB ANLG
440           ;
```

```
                ;       END ANALOG WHITE ALARMS:
                ;
        0224            MARK STEP "BELOW",0,0
        0226            IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
        0227            CURENT = OR(LAST,WHITE)
        0228            CURENT = OR(CURENT,ANALOG)
        0230            IF AND(CURENT,1)THEN LMPVAR = 2
        0232               ELSE IF AND(CURENT,2)THEN LMPVAR = 1
        0233                        ELSE LMPVAR = 0
        0234            LAMP ADI,SKDKEY,LMPVAR
        0235            MARK STEP "BOTTOM",0,0
        0236            NOCRIT
        0237            LET FTRIP4 = 0
                ;
                ;       BEGIN LOGIC FOR GRAPHICS:
                ;
        0238            at21 = and('PSH-CA1-3':DIN_VAL,'TSH-PB2-1':DIN_VAL)
        0239            at22 = and('ys-pb2-il':din_val,'psh-pb2-1':din_val)
        0240            at23 = and(pb2_tmp1,128)
        0241            at24 = and(pb2_tmp1,256)
        0242            at25 = and(pb2_tmp1,512)
        0243            at26 = and(at21,at22)
        0244            at27 = and(at23,at24)
        0245            at28 = and(at25,at26)
        0246            at29 = and(at27,at28)
                ;
        0247            AT31 = AND(PB2_TMP1,32768)
        0248            AT0  = AND(WFACTOR,1)
        0249            AT1  = AND(wfactor,2)
        0250            AT2  = AND(wfactor,4)
        0251            AT3  = AND(wfactor,8)
        0252            GT3  = AND(GBITS,8)
        0253            GT4  = AND(GBITS,16)
        0254            GT9  = AND(GBITS,512)
        0255            GT11 = AND(GBITS,2048)
        0256            BT0 = AND('LDS-SL502':DIN_VAL,'LDS-SL503':DIN_VAL)
        0257            BT1 = AND('LDS-SL504':DIN_VAL,'LDS-SL505':DIN_VAL)
        0258            BT2 = AND('LDS-DR700':DIN_VAL,'LDS-SL500':DIN_VAL)
        0259            BT3 = AND(BT2,'LDS-SL501':DIN_VAL)
        0260            BT4 = AND(BT0,BT1)
        0261            AT9 = AND(BT3,BT4)
        0262            BT5 = AND(!'YS-AN-MSD':DIN_VAL,'LDS-COBAN':DIN_VAL)
        0263            BT6 = AND('LDS-ANSL1':DIN_VAL,'LDS-DR368':DIN_VAL)
        0264            BT7 = AND('LDS-SP-AN':DIN_VAL,'LDS-AP-A':DIN_VAL)
        0265            BT8 = AND(!'YS-AP-MSD':DIN_VAL,'LDS-AP-VP':DIN_VAL)
        0266            BT9 = AND(BT5,BT6)
        0267            BT10= AND(BT7,BT8)
        0268            AT10= AND(BT9,BT10)
        0269            BT11= AND('PSH-CA1-3':DIN_VAL,'TSH-PB2-1':DIN_VAL)
        0270            BT12= AND('PSH-PB2-1':DIN_VAL,'PSH-SL113':DIN_VAL)
        0271            BT13= AND('PSH-SL114':DIN_VAL,'PSH-SL101':DIN_VAL)
        0272            BT14= AND(BT13,'PSH-SL100':DIN_VAL)
        0273            BT15= AND(BT14,BT12)
        0274            AT11= AND(BT14,BT11)
        0275            BT16= AND('LDS-AP-SL':DIN_VAL,!'YS-AW-MSD':DIN_VAL)
```

```
496  0276          BT17= AND('LDS-AW-SL':DIN_VAL,'RSH-SP-AW':DIN_VAL)
497  0277          BT18= AND('LDS-AW-DR':DIN_VAL,'LDSCOBAAX':DIN_VAL)
498  0278          BT19= OR('RSH-AXZY1':DIN_VAL,'YS-AAXARM':DIN_VAL)
499  0279          BT20= AND(BT19,'LDSPPCOBT':DIN_VAL)
500  0280          BT21= AND(BT16,BT17)
501  0281          BT22= AND(BT18,BT20)
502  0282          AT12= AND(BT21,BT22)
503  0283          BT23= AND(AT9,AT10)
504  0284          BT24= AND(AT11,AT12)
505  0285          AT13= AND(BT23,BT24)
506  0286          BT25= AND(PB2_TMP0,1)
507  0287          BT26= AND(BT25,AT31)
508  0288          SA1 = AND(AT20,BT26)
509  0289          SA3 = AND(SA1,AT13)
510  0290          SA2 = AND('PB-2':DEV_STAT,4)      ; PB-2 RESET
511  0291          SA4 = AND('PB-2':DEV_STAT,16)     ; PB-2 SHUTDOWN
512  0292          SB4 = AND(PB2_TMP0,2)             ; PB-2 TEMPORARY BIT $T1
513  0293          SB5 = 'YS-PB2-1':DIN_VAL
514  0294          SB6 = AND('PB-2':DEV_STAT,32)     ; PB-2 INTERLOCK
515  0295          CT0 = AND(1,HV_TMP0)              ; FIC-CA1-4 LOW FLOW  $T0  HV-CA1-2
516  0296          CT2 = AND(4,HV_CMD)               ; EVAPORATOR FLUSH,   $C2  HV-CA1-2
517  0297          CT3 = AND(8,HV_TMP0)              ; EVAP FLUSH TIMEOUT, $T3  HV-CA1-2
518  0298          CT4 = AND(4,HV_TMP0)              ; EVAP BTIMER ON       $T2  HV-CA1-2
519  0299          CT5 = AND(2048,HV_TMP0)           ; FARM BTIMER ON       $T11 HV-CA1-2
520  0300          CT6 = 'ZS-CA1-21':DIN_VAL         ; HV-CA1-2  POSN-1
521  0301          CT7 = 'ZS-CA1-22':DIN_VAL         ; HV-CA1-2  POSN-2
522  0302          CT8 = 'ZS-CA12A1':DIN_VAL         ; HV-CA1-2A POSN-1
523  0303          CT9 = 'ZS-CA12A2':DIN_VAL         ; HV-CA1-2A POSN-2
524  0304          CT10= XOR(CT5,CT12)
525  0305          CT11= AND(8,HV_CMD)               ; FARM FLUSH           $C3  HV-CA1-2
526  0306          CT12= AND(4096,HV_TMP0)           ; FARM FLUSH TIMEOUT  $T12 HV-CA1-2
527  0307          CT13= AND(CT4,CT3)
528  0309          IF AND('PB2-ALARM':DEV_FLG,64)THEN PUTMANL 'PB2-ALARM'
529  0311          IF AND('PB-2':DEV_FLG,64)THEN PUTMANL 'PB-2'
530  0313          IF AND('HV-CA1-5':DEV_FLG,64)THEN PUTMANL 'HV-CA1-5'
531  0315          IF AND('HV-CA1-6':DEV_FLG,64)THEN PUTMANL 'HV-CA1-6'
532  0317          IF AND('JGV-STMFL':DEV_FLG,64)THEN PUTMANL 'JGV-STMFL'
533  0319          IF AND('CONTROL':DEV_FLG,64) THEN PUTMANL 'CONTROL'
534  0321          IF AND('PB2SLFILK':DEV_FLG,64) THEN PUTMANL 'PB2SLFILK'
535  0323          IF AND('PB2WFINLK':DEV_FLG,64) THEN PUTMANL 'PB2WFINLK'
536            ;
537            ;    END LOGIC FOR GRAPHICS
538            ;
539            ;    B E G I N   S Y N C H   P I D   C A S C A D E D   S E T P T :
540            ;
541            ;    Function:  Closes slave controller's PID (SPID) cascade,
542            ;               sets cascade controller's PID (CPID) to auto.
543            ;               (NOTE:  the continuous database sets the CPID
544            ;               output equal to the SPID setpoint only on a
545            ;               manual to auto transition in the SPID.)
546            ;
547  0324          IF AND('SIC-PB2-1':CB_FLG:1,64) THEN          ; If SIC in auto
548                   BEGIN                                              ;be1
549  0325             IF (FLG14=0) & (FLG15=1) THEN              ; If SIC previously manual
550                      BEGIN                                           ;be2
```

```
 551   0326                    CLOSCASC 'SIC-PB2-1'
 552   0328                    IF !AND('FIC-CA1-4':CB_FLG:4,64) THEN PUTAUTO 'FIC-CA1-4'
 553   0329                    LET FLG14 = 1
 554   0330                    LET FLG15 = 0
 555                           END                                          ;en2
 556                      END                                               ;en1
 557                   ELSE                                          ; If SIC in manual
 558                      BEGIN                                             ;be3
 559   0331                 IF ((FLG14=1)&(FLG15=0)) | ((FLG14=0)&(FLG15=0)) THEN   ; If prev auto or init
 560                           BEGIN                                        ;be4
 561   0332                    LET FLG14 = 0
 562   0333                    LET FLG15 = 1
 563                           END                                          ;en4
 564                      END                                               ;en3
 565          ;
 566          ;        E N D   S Y N C H   P I D   C A S C A D E D   S E T P T
 567          ;
 568          ;        B E G I N   O / C   D I S P L A Y   B A R :
 569          ;
 570          ;        Function:  Upon loss of permissive, put the control loop in manual
 571          ;                   and set the PID block output to zero.
 572          ;
 573   0335            IF ('SIC-PB2-1':CB_LOUT:3 >= 2) THEN DLEAK3 = 1                  ; Permissive must be Hi (1)
 574   0336            IF ('SIC-PB2-1':CB_LOUT:3 = 0) & AND(DLEAK3,1) THEN              ; Permissive lost and 1st pass
 575                      BEGIN
 576   0337               PUTMANL 'SIC-PB2-1'
 577   0338               PRINT ADI," PERMISSIVE LOST >>> SIC-PB2-1 PUT IN MANUAL"
 578   0339               PUTOUT 'SIC-PB2-1',AI20
 579   0340               PRINT ADI," PERMISSIVE LOST >>> SIC-PB2-1 OUTPUT SET TO ZERO"
 580   0341               DLEAK3 = 0
 581                      END
 582          ;
 583          ;        E N D   O / C   D I S P L A Y   B A R
 584          ;
 585   0342            GOTO AGAIN
 586          ;
 587          ;        E N D   P R O G R A M   L O O P
 588          ;
 589          ;        BEGIN ANALOG WHITE SUBROUTINE:
 590          ;
 591          ; ANLG:  IF !SELECT() THEN GOTO AGAIN
 592   0343   ANLG:    IF (PTYPE = 1) THEN                          ; If some alarm
 593                      BEGIN                                 ;be1
 594   0344               BITVAL = PAI:AI_ALMCT
 595   0345               IF !(AND(BITVAL,16)) THEN                    ; If not inhibited
 596                        BEGIN                               ;be2
 597   0347                 IF PSTAT = 3 THEN LET PSTAT = 0
 598   0348                 IF (PREV) THEN                             ; If rev acting, LOLO, or LO
 599                           BEGIN                            ;be3
 600   0349                    IF (PSTAT = 0) THEN                     ; If not previously alarmed
 601                              BEGIN                         ;be4
 602   0351                       IF PAI:AI_MEAS <= PALARM THEN GOSUB ALM
 603                              END                           ;en4
 604                           ELSE
 605                              BEGIN                         ;be5
```

```
0352                        IF (PSTAT = 1) THEN                    ; If previously alarmed
                               BEGIN                        ;be6
0354                           IF (FTRIP4) THEN GOSUB ACK1          ; If ACK flag set, then ack it
0357                           IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                               END                          ;en6
0359                        IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                            END                             ;en5
                         END                                ;en3
                      ELSE                                          ; If fail-safe, HIHI, or HI
                         BEGIN                              ;be10
0360                     IF (PSTAT = 0) THEN
                            BEGIN                           ;be11
0362                        IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
                            END                             ;en11
                         ELSE
                            BEGIN                           ;be12
0363                        IF (PSTAT = 1) THEN
                               BEGIN                        ;be13
0365                           IF (FTRIP4) THEN GOSUB ACK1
0368                           IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                               END                          ;en13
0370                        IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                            END                             ;en12
                         END                                ;en10
0371                 NXT = PSTAT
0373                 IF (PPASS) & (PSTAT = 2) THEN NXT = 0
                     END                                    ;en2
                     ELSE
                       BEGIN
0374                   LET PSTAT = 3
0375                   NXT = 0
                       END
0376               WHITE = OR(WHITE,NXT)
                   END                                      ;en1
0377               ELSE PSTAT = 0
0378               STEP PALARM BY 1
0379               STEP PSTAT BY 1
0380               STEP PTYPE BY 1
0381               STEP PREV BY 1
0382               STEP PPASS BY 1
0383               ILOOP = ILOOP + 1
0384               RETURN
         ;
         ;         END ANALOG WHITE SUBROUTINE
         ;
         ;         BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
         ;
0385     CLR:      PSTAT = 0                                                  ; Int set to zero
                   ;
                   ; If not white, then unack:
                   ;
0388               IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0389               LET FCLEAR = 1                                             ; Clear flag
0390               GOSUB ACKK                                                 ; Print message
0391               RETURN
```

```
                ;
0392            ALM:     LET PSTAT = 1                                          ; Int set to one
                         ;
                         ; If not white, then unack:
                         ;
0395                     IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
                         ;
                         ; Turn audible alarm on if white or yellow:
                         ;
0396                     CRIT
0398                     IF AND(PTYPE,3) THEN FALMON = 1
0399                     LET PDEV:DEV_TMP0 = 2
0400                     LAMP ADI,SKDKEY,2
0401                     GOSUB ACKK                                             ; Print message
0402                     RETURN
                ;
0403            ACK1:    LET PSTAT = 2                                          ; Ack the alarm
0404                     LET FACK = 1                                           ; Set ACK flag for C program
0405                     LAMP ADI,SKDKEY,1                                      ; Lamp on
                ;
                ;        ALARM TYPER STRINGS:
                ;
0407            ACKK:    IF ILOOP = 1 THEN STRNG0 = "PUMP PB-2 HARDWARE INTERLOCK"
0409                    IF ILOOP = 2 THEN STRNG0 = "PUMP PB-2 TEMPERATURE HIGH  "
0411                     IF ILOOP = 3 THEN STRNG0 = "PUMP PB-2 DISCHARGE PRESS HI"
0413                     IF ILOOP = 4 THEN STRNG0 = "PUMP PB-2 RUPTURE DISK BROKN"
0415                     IF ILOOP = 5 THEN STRNG0 = "PUMP PB-2 ENCODER LOSS      "
0417                     IF ILOOP = 6 THEN STRNG0 = "PB-2 VARABLE FREQ DRIVE LOSS"
0419                     IF ILOOP = 7 THEN STRNG0 = "PUMP PB-2 ZERO SPEED        "
0421                     IF ILOOP = 24 THEN STRNG0 = "BUILDING FLUSH WATER ON     "
0423                     IF ILOOP = 23 THEN STRNG0 = "PUMP PB-2 CURRENT HIGH     "
0425                     IF ILOOP = 25 THEN STRNG0 = "START PB2BATCH PGM "
0427                     IF ILOOP = 26 THEN STRNG0 = "PB2BATCH WRONG UNIT"
0429                     IF ILOOP = 27 THEN STRNG0 = "TERMINATE PB2BATCH "
                ;
                ; If acknowledging alarm, then:
                ;
0430            AMSG:    IF PTYPE = 1 THEN
                            BEGIN
                            ;
                            ; If white alarm, print:
                            ;
0432                        IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNG0
0433                        IF (FACK) THEN
                              BEGIN
                              ;
                              ; If white, print it is ack and reset the flag:
                              ;
0434                          PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG0
0435                          LET FACK = 0
                              END
                            END
                ;
                ;  If CLEAR, print it is clear and reset flag:
                ;
```

```
716   0436            IF (FCLEAR) THEN
717                      BEGIN
718   0437               PRINT ADI,"%p ALARM CLEAR",STRNGO
719   0438               LET FCLEAR = 0
720                      END
721           ;
722           ;  If STARTUP, print startup message:
723           ;
724   0439            IF (FSTART) THEN
725                      BEGIN
726   0440               LET FSTART = 0
727   0441               PRINT ADI,"%p",STRNGO
728                      END
729   0442            RETURN
730           ;
731           ;  If ERROR - print message, start timer, and set flag:
732           ;
733   0443    ERRSUB:   IF ERRN != ERRNUM() THEN
734                      BEGIN
735
736   0444               TIMERCLR STIMEO
737   0445               LET FSNO = 1
738   0446               LET ERRN = ERRNUM()
739   0447               LET ERRL = ERRLIN()
740   0448               PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
741                      END
742   0449            ERSCLR
743   0450            GOTO AGAIN
744           ;
745           ;  If FABORT = 1, then abort program:
746           ;
747           ; TERM:  LET FABORT = 0
748   0451    TERM:   LET STRNGO = "PB2BATCH TERMINATED    "
749   0452            LET ILOOP = STAR + 2
750   0453            LET FSTART = 1
751   0454            GOSUB ACKK
752                   END

      Total Errors Detected      0     Total Warnings      0
          Sequence Program Size = 9136 Bytes, 571 Pages
                 23 Forward Reference(s)
```

EA1BATCH

```
;       E A 1 B A T C H . S E Q                                  VERSION 4
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 013,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-3 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]EA1BATCH
;
;       UNIT = 9, SKDKEY = 33
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ----------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;       30-DEC-92       Fixed white alarm print message.        M. Teats
;
;       07-MAY-93       Delete KY-EA1-1, move CI-EC1-U1 to              M. Teats
;                               Unit EC1.
;
;       07-JUN-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;
;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
;                       system. Rebase line document. Removed
;                       obsolite Select() statements.
```

```
56          ;
57          ;       21-APR-95       Revised white alarm rutine to set the          J. Berger
58          ;                       pointer for PPASS correctly. See WP
59          ;                       EE-95-00006 and ECN 622495. (JFB01)
60          ;
61          ;       04-OCT-95       Revised to remove PSL-EA1-1 form program  J. Berger
62          ;                       See ECN 623939 and EE-95-00006. JFB02
63          ;
64          ;       17-JAN-96       Added EPNs PIC-EA116 & ZI-EA1-16 to system        J. Berger
65          ;                       per ECNs 620355 & 627421 and per package
66          ;                       EE-94-00769.  JFB03.
67          ;
68          ; END MOD LOG
69          ;
70          ;
71          ;       EPN             TYPE            IPN     LOOP    WHITE
72          ;       EA1-ALARM       DEV             65      -       -
73          ;       FV-EA1-1        DEV             66      -       -
74          ;       EA1-INLK1       DEV             67      -       -
75          ;       EA1-INLK2       DEV             68      -       -
76          ;       TV-DSH1/2       DEV             69      -       -
77          ;       SELECT-TI       DEV             70      -       -
78          ;       SPARES          DEV             71-79   -       -
79          ;
80          ;       PSL-EA1-1       DI              105     0       -
81          ;       TSH-DSH-3       DI              106     1       -
82          ;       ZS-EA1-1C       DI              107     2       -
83          ;       SPARE           DI              108     -       -
84          ;       SPARE           DI              109     -       -
85          ;
86          ;       TI-EA1-7        AI              120     3       -
87          ;       TI-EA1-7S       AI              121     4       -
88          ;       TI-EA-1         AI              122     5       -
89          ;       TI-EA1-1S       AI              123     6       -
90          ;       TDI-EA1-1       AI              124     7       -
91          ;       PI-EA1-12       AI              125     8       -
92          ;       PI-EA1-2        AI              126     9       -
93          ;       PDI-EA1-1       AI              127     10      -
94          ;       PI-STM-1        AI              128     11      -
95          ;       PI-EA1-13       AI              129     12      24,25
96          ;       PI-EA1-14       AI              130     13      -
97          ;       FCI-EA1-1       AI              131     14      26
98          ;       ZI-EA1-1        AI              132     15      -
99          ;       TI-DSH-2        AI              133     16      -
100         ;       PI-EA1-1        AI              134     17      27,28
101         ;       PD-EA1-11       AI              135     18      -
102         ;       PDI-EA1-2       AI              136     19      -
103         ;       TI-DSH-3        AI              137     20      -
104         ;       TI-EA1-5        AI              138     21      29
105         ;       CI-EA1-U2       AI              139     22      -
106         ;       CI-EA1-U1       AI              140     23      -
107         ;       PIC-EA116       AI              141     -       -
108         ;       ZI-EA1-16       AI              142     -       -
109         ;       SPARES          AI
110         ;
```

```
111             ;
112             UNIT    EA1
113             ;
114                     COMMON WHOLE0
115                     FLAGBITS == PSPAR0
116                     FVEA1 == 'FV-EA1-1':DEV_TMP0
117                     INLK1 == 'EA1-INLK1':DEV_TMP0
118                     INLK2 == 'EA1-INLK2':DEV_TMP0
119                     G_bits == PB2GLOBAL:DEV_TMP0
120                     STAT_BITS == 'FV-EA1-1':DEV_STAT
121             ;
122     0000            NOP
123     0001            LET STAR = 34                   ; Start message
124     0002            LET SKDKEY = 33                 ; SKID Key
125     0003            LET UNITT = 9                   ; SEQ Unit number
126     0004            ASSIGN PDEV = 'EA1-ALARM'       ; Alarm device
127     0005            ASSIGN PTYPE = TYPE34
128     0006            LET ADI = 0                     ; Alarm destination index
129     0007            LET FSN0 = 0                    ; No alarms yet
130     0008            TIMEROFF STIME0                 ; Alarm timer off
131     0009            TIMERCLR STIME0                 ; Alarm timer clear
132     0010            LET STRNG0 = " "                ; Blank 30 character string
133     0011            LET ERRN = 0                    ; Set error number to zero
134     0012            LET ERRL = 0                    ; Set error line to zero
135     0013            GETUNIT TRIP                    ; Which sequence unit is program running in
136     0014            IF TRIP != UNITT THEN           ; Abort if running in wrong seq. unit
137                        BEGIN
138     0015               FSTART = 1
139     0016               ILOOP = STAR + 1
140     0017               PTYPE = 0
141     0018               GOSUB ACKK
142     0019               GOTO TERM
143                        END
144             ;       IF !SELECT() THEN GOTO AGAIN
145             ;
146             ;       B E G I N   I N I T I A L I Z I N G
147             ;
148     0020    INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
149     0021            LET FSTART = 0                  ; Program start flag = 0
150     0022            LAMP ADI,SKDKEY,0               ; Turn off annunciator key
151     0023            LET LSG0 = " "                  ; Clear the string variables
152     0024            LET LSG1 = " "
153     0025            LET LSG2 = " "
154     0026            LET LSG3 = " "
155     0027            LET LSG4 = " "
156     0028            PDEV:DEV_TMP0 = 1                       ; Set alarm device to non-alarm state
157     0029            IF AND(PDEV:DEV_ALMCT,16) THEN          ; If alarm device is inhibited, remove the inhibit
158     0030              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
159     0031            IF AND(PDEV:DEV_ALMCT,32) THEN          ; If alarm device is ack, clear it
160     0032               PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
161             ;
162             ;       First, set all flags and integers:
163             ;
164     0033            ASSIGN PDIN = 'TSH-DSH-3'               ; Assign pointer to first DIN
165     0034            ASSIGN PSTAT = INT1                     ; JFB02
```

```
166   0035          ASSIGN PTYPE = TYPE1
167   0036          ASSIGN PREV = FRV1
168   0037          ASSIGN PSKID = SKID1
169   0038          ASSIGN PPASS = FPAS1
170           ;
171   0039          FOR ILOOP = 1 TO 29                          ; JFB02
172   0040          LET PPASS = 0
173   0041          LET PREV = 0
174   0043          IF PSTAT > 5 THEN PSTAT = 0                  ; Reset current status if undefined
175   0044          LET PSKID = 0                                ; Default previous status to no alarms
176   0045          LET PTYPE = 0                                ; Default to no alarms
177   0046          IF ILOOP < 3 THEN                            ; For DINs
178                    BEGIN
179   0047             LET PTYPE = 0                             ; Default to no alarm
180   0048             IF AND(PDIN:DIN_DFLG,3) THEN              ; Check for alarms if defined (must be red or yellow)
181                       BEGIN
182   0049                LET PTYPE = 2                          ; Default to yellow alarm
183   0051                IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1          ; Reverse acting
184   0053                IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4   ; Set to red critical alarm
185                       END
186                    END
187   0054          ELSE LET PTYPE = 0                           ; Set to no alarm
188   0056          IF ILOOP < 2 THEN STEP PDIN BY 1          ; Point to next DIN
189   0058          IF ILOOP > 23 THEN LET PTYPE = 1          ; Set to white alarm
190   0059          STEP PPASS BY 1
191   0060          STEP PREV BY 1
192   0061          STEP PSTAT BY 1
193   0062          STEP PSKID BY 1
194   0063          STEP PTYPE BY 1
195   0064          NEXT ILOOP
196           ;
197   0065          LET TYPE0 = 1
198   0066          LET TYPE3 = 4
199   0067          LET TYPE4 = 4
200   0068          LET TYPE5 = 4
201   0069          LET TYPE6 = 4
202   0070          LET TYPE7 = 4
203   0071          LET TYPE11 = 2
204   0072          LET TYPE20 = 2
205           ;
206   0073          LET FRV0 = 0
207   0074          LET FRV1 = 0
208   0075          LET FRV2 = 1
209   0076          LET FRV24 = 1
210   0077          LET FRV25 = 1
211   0078          LET FRV26 = 1
212   0079          LET FRV27 = 1
213           ;
214   0080          LET AI0 = 75.0
215   0081          LET AI1 = 80.0
216   0082          LET AI2 = 3000.0
217   0083          LET AI3 = 17.7
218   0084          LET AI4 = 29.7
219   0085          LET AI5 = 190.0
220           ;
```

```
221   0086          LET AI19 = 0.0                    ; For FIC-EA1-1 output (O/C Display Bar)
222           ;
223           ;     E N D   I N I T I A L I Z I N G
224           ;
225           ;     S E N D   P R O G R A M   S T A R T   M E S S A G E
226           ;
227   0087          ANALOG = 0
228   0088          ILOOP = STAR
229   0089          FSTART = 1
230   0090          PTYPE = 0
231   0091          GOSUB ACKK
232   0092          ON ERROR GOSUB ERRSUB
233           ;
234           ;     B E G I N   P R O G R A M   L O O P
235           ;
236   0093    AGAIN:  MARK STEP "WTUNTL",0,0
237           ;     WAITUNTIL SELECT() | FABORT       ; Wait until micro is selected or program aborted
238           ;     IF (FABORT) THEN GOTO TERM        ; Terminate program if abort flag set
239   0094          MARK STEP "RNINNG",0,0
240   0095          WAIT 1
241   0096          IF (FSNO) THEN                    ; If alarm flag is set
242   0097             IF STIMEO > 60 THEN            ; If alarm flag active for 1 minute
243                         BEGIN                     ; Reset timer and turn off flag
244   0098                  TIMEROFF STIMEO
245   0099                  TIMERCLR STIMEO
246   0100                  LET FSNO = 0
247   0101                  LET ERRN = 0
248   0102                  LET ERRL = 0
249                         END
250           ;
251           ;     If EA1-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
252           ;
253   0103          IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
254                    BEGIN
255   0104             LET PDEV:DEV_TMPO = 1 ; Put EA1-ALARM in ack state
256   0105             LET FTRIP4 = 1                 ; Set for unit alarm ack, system to graphic
257   0106             LET ACK = 1                    ; Set for unit alarm ack, graphic to system
258   0107             LET FACK = 1
259           ;        CRIT
260   0108             LAMP ADI,SKDKEY,1              ; Turn lamp on
261                    END
262           ;
263           ;     BEGIN DINs:
264           ;
265   0109          ASSIGN PDIN = 'TSH-DSH-3'         ; JFB02
266   0110          ASSIGN PTYPE = TYPE1
267   0111          ASSIGN PREV = FRV1
268   0112          ASSIGN PSTAT = INT1
269   0113          ASSIGN PPASS = FPAS1
270   0114          LET CURENT = 0                    ; Used to set lamp status
271   0115          LET LAST = 0
272   0116          LET ANALOG = 0
273   0117          LET NXT = 0
274   0118          LMPVAR = 0
275   0119          BITVAL = 0
```

```
        ;
0120    LOP:    FOR ILOOP = 1 TO 2
        ;       IF !SELECT() THEN GOTO AGAIN
0121            IF ( PTYPE > 0 ) THEN                                   ; If some type of alarm
                   BEGIN                                        ;be1
0123               IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN inhibited
0125               IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5            ; If EPN is bad input
0127               IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4             ; If EPN is disabled
0128               IF ( PSTAT < 3 ) THEN                        ; If not inhibited
                        BEGIN                                   ;be2
0129                    IF (PSTAT = 1) THEN
                           BEGIN                                ;be3
0130                       IF (PTYPE != 1) THEN
0132                          IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0134                       IF (FTRIP4) THEN GOSUB ACK1
                           END                                  ;en3
0137                    IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0138                    IF (PSTAT) THEN
                              BEGIN                             ;be4
0140                          IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
0141                          NXT = PSTAT
0143                          IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0144                          LAST = OR(LAST,NXT)
                              END                               ;en4
                        END                                     ;en2
0146                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                    END                                         ;en1
0147            STEP PDIN BY 1
0148            STEP PTYPE BY 1
0149            STEP PREV BY 1
0150            STEP PSTAT BY 1
0151            STEP PPASS BY 1
0152            NEXT ILOOP
        ;
        ;       END DINs
        ;
        ;       BEGIN ANALOG RED AND YELLOWS:
        ;
0153            ASSIGN PAI = 'TI-EA1-7'
0154            ASSIGN PSKID = SKID3
0155            FOR JLOOP = 3 TO 23
        ;       IF !SELECT() THEN GOTO AGAIN
0156            IF (PTYPE) THEN                                 ; If some alarm exists
                   BEGIN                                ;be1
0157               BITVAL = PAI:AI_ALMCT
0158               IF !AND(BITVAL,16) THEN                      ; If not inhibited
                      BEGIN                             ;be2
0159                  IF AND(BITVAL,15) THEN                    ; If alarm exists and is current
                         BEGIN                          ;be3
0161                     IF AND(BITVAL,32) THEN NXT = 2         ; If alarm is ack
                         ELSE                                   ; If alarm is unack
                            BEGIN                       ;be4
0162                        IF (PSKID !=BITVAL) THEN
                               BEGIN                    ;be5
0163                           LET PSKID = BITVAL
```

```
331  0165                          IF BITVAL < 3 THEN FALMON = 1
332  0166                          PDEV:DEV_TMP0 = 2
333  0167                          NXT = 1
334                                END                          ;en5
335  0168                       ELSE NXT = 1
336                             END                            ;en4
337                          END                               ;en3
338                       ELSE                                          ; Else there is no alarm
339                          BEGIN
340  0169                    NXT = 0
341  0170                    LET PSKID = 0
342                          END
343                       END                                  ;en2
344                    ELSE                                             ; Else alarm is inhibited
345                       BEGIN
346  0171                 NXT = 0
347  0172                 LET PSKID = 0
348                       END
349  0173              ANALOG = OR(ANALOG,NXT)
350                    END                                     ;en1
351  0174           STEP PREV BY 1
352  0175           STEP PSTAT BY 1
353  0176           STEP PSKID BY 1
354  0177           STEP PTYPE BY 1
355  0178           STEP PAI BY 1
356  0179           NEXT JLOOP
357          ;
358          ;      END ANALOG RED AND YELLOWS
359          ;
360          ;      BEGIN ANALOG WHITE ALARMS:
361          ;
362  0180    WHT:   WHITE = 0
363  0181           ASSIGN PALARM = AIO
364  0182           ASSIGN PREV = FRV24
365  0183           ASSIGN PPASS = FPAS24                   ; JFB01
366  0184           ASSIGN PSTAT = INT24
367  0185           ASSIGN PTYPE = TYPE24
368          ;
369  0186           ASSIGN PAI = 'PI-EA1-13'
370  0187           ILOOP = 24
371  0188           GOSUB ANLG                              ; LOLO
372  0189           GOSUB ANLG                              ; LO
373  0190           ASSIGN PAI = 'FIC-EA1-1'
374  0191           GOSUB ANLG                              ; LO
375  0192           ASSIGN PAI = 'PI-EA1-1'
376  0193           GOSUB ANLG                              ; LO
377  0194           GOSUB ANLG                              ; HI
378  0195           ASSIGN PAI = 'TI-EA1-5'
379  0196           GOSUB ANLG                              ; HI
380          ;
381  0198           IF(INT24 = 3 | INT25 = 3)THEN LET LEAK0 = 9
382  0200             ELSE IF(INT24)THEN LET LEAK0 = INT24
383  0202               ELSE IF(INT25)THEN LET LEAK0 = INT25 + 2
384  0203                 ELSE LET LEAK0 = 0
385  0205           IF(INT27 = 3 | INT28 = 3)THEN LET LEAK1 = 9
```

```
386   0207            ELSE IF(INT27)THEN LET LEAK1 = INT27 + 2
387   0209              ELSE IF(INT28)THEN LET LEAK1 = INT28 + 4
388   0210                ELSE LET LEAK1 = 0
389   0211          FTRIP4 = 0
390           ;
391           ;       END ANALOG WHITE ALARMS
392           ;
393   0212          MARK STEP "BELOW",0,0
394   0214          IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
395   0215          CURENT = OR(LAST,WHITE)
396   0216          CURENT = OR(CURENT,ANALOG)
397   0218          IF AND(CURENT,1) THEN LMPVAR = 2
398   0220             ELSE IF AND(CURENT,2) THEN LMPVAR = 1
399   0221                     ELSE LMPVAR = 0
400   0222          LAMP ADI,SKDKEY,LMPVAR
401   0223          MARK STEP "BOTTOM",0,0
402           ;
403           ;       BEGIN LOGIC FOR GRAPHICS:
404           ;
405           ;       NOCRIT
406   0224          ASSIGN FLAGBITS = AT2
407   0225          BVAL = 4
408   0226              FOR IN1 = 2 TO 13                    ; $T2 TO $T13
409   0227              FLAGBITS = AND(FVEA1,BVAL)
410   0228              BVAL = BVAL  ( 1
411   0229              STEP FLAGBITS BY 1
412   0230              NEXT IN1
413   0231          ASSIGN FLAGBITS = SAO
414   0232          BVAL = 1
415   0233             FOR IN1 = 0 TO 4
416   0234             FLAGBITS = AND(INLK2,BVAL)            ; EA1-INLK2
417   0235             BVAL = BVAL ( 1
418   0236             STEP FLAGBITS BY 1
419   0237             NEXT IN1
420   0238          SA5 = AND(INLK1,1)
421   0239          SA6 = AND(INLK1,2)
422   0240          SA7 = AND(INLK1,4)
423   0241          GT7 = AND(G_bits,128)
424   0242          GT12 = AND(G_bits,4096)
425   0243          GT14 = AND(G_bits,16384)
426           ;       AT10 = AND(FVEA1,2048)
427   0244          AT18 = AND(STAT_BITS,4)                  ; STEAM PERMISSIVE
428   0245          AT19 = AND(STAT_BITS,32)          ; FV-EA1-1 INTERLOCK
429   0246          AT20 = AND('RSH-CA1-1':DIN_VAL,'PSH-CA111':DIN_VAL)
430   0247          AT21 = AND('RSH-RC1-1':DIN_VAL,'RSH-EA1-1':DIN_VAL)
431   0248          AT22 = AND('PDSH-FC51':DIN_VAL,'RSH-VVB/G':DIN_VAL)
432   0249          AT23 = AND('TSH-DSH-3':DIN_VAL,AT20)
433   0250          AT24 = AND(AT20,AT21)
434   0251          AT25 = AND(AT22,AT23)
435   0252          AT26 = AND(AT24,AT25)
436   0253          AT27 = AND(AT26,AT18)
437   0254          SB0 = AND('EA1-INLK1':DEV_STAT,32)
438   0255          SB1 = AND('EA1-INLK2':DEV_STAT,32)
439   0256          SB2 = AND('TV-DSH1/2':DEV_STAT,32)
440   0257          BT0 = AND(AT8,AT9)
```

```
441   0259          IF AND('EA1-ALARM':DEV_FLG,64) THEN PUTMANL 'EA1-ALARM'
442   0261          IF AND('FV-EA1-1':DEV_FLG,64) THEN PUTMANL 'FV-EA1-1'
443   0262          IF AND('PIC-EA116'DEV_FLG,64) THEN PUTMANL 'PIC-EA116'
444   0264          IF AND('EA1-INLK1':DEV_FLG,64) THEN PUTMANL 'EA1-INLK1'
445   0266          IF AND('EA1-INLK2':DEV_FLG,64) THEN PUTMANL 'EA1-INLK2'
446   0268          IF AND('TV-DSH1/2':DEV_FLG,64) THEN PUTMANL 'TV-DSH1/2'
447   0270          IF AND('SELECT-TI':DEV_FLG,64) THEN PUTMANL 'SELECT-TI'
448           ;
449           ;     END LOGIC FOR GRAPHICS
450           ;
451           ;     B E G I N   O / C   D I S P L A Y   B A R :
452           ;
453           ;     Function:  Upon loss of permissive, put the control loop in manual
454           ;                and set the PID block output to zero.
455           ;
456   0272          IF AND('FV-EA1-1':DEV_TMP1,4) THEN DLEAK3 = 1            ; Permissive ($T18) must be Hi (1)
457   0273          IF !AND('FV-EA1-1':DEV_TMP1,4) & AND(DLEAK3,1) THEN      ; Permissive ($T18) lost and 1st pass
458                    BEGIN
459   0274             PUTMANL 'FIC-EA1-1'
460   0275             PUTMANL 'PIC-EA116'                                   ; JFB03
461   0276             PRINT ADI," PERMISSIVE LOST >>> FIC-EA1-1 PUT IN MANUAL"
462   0277             PRINT ADI," PERMISSIVE LOST >>> PIC-EA116 PUT IN MANUAL"
463   0278             PUTOUT 'FIC-EA1-1',AI19
464   0279             PUTOUT 'PIC-EA116',AI19
465   0280             PRINT ADI," PERMISSIVE LOST >>> FIC-EA1-1 OUTPUT SET TO ZERO"
466   0281             PRINT ADI," PERMISSIVE LOST >>> PIC-EA116 OUTPUT SET TO ZERO"
467   0282             DLEAK3 = 0
468                    END
469           ;
470           ;          E N D   O / C   D I S P L A Y   B A R
471           ;
472           ;     NOCRIT
473   0283          GOTO AGAIN
474           ;
475           ;     E N D   P R O G R A M   L O O P
476           ;
477           ;     BEGIN ANALOG WHITE SUBROUTINE:
478           ;
479           ; ANLG:  IF !SELECT() THEN GOTO AGAIN                    ; JFB02
480   0284    ANLG:   IF (PTYPE = 1) THEN                              ; If some alarm
481                     BEGIN                                   ;be1
482   0285              BITVAL = PAI:AI_ALMCT
483   0286              IF !(AND(BITVAL,16)) THEN                      ; If not inhibited
484                       BEGIN                                 ;be2
485   0288                IF PSTAT = 3 THEN LET PSTAT = 0
486   0289                IF (PREV) THEN                               ; If rev acting, LOLO, or LO
487                         BEGIN                               ;be3
488   0290                  IF (PSTAT = 0) THEN                        ; If not previously alarmed
```

```
                                BEGIN                          ;be4
0292                            IF (PAI:AI_MEAS <= PALARM) THEN GOSUB ALM
                                END                            ;en4
                             ELSE
                                BEGIN                          ;be5
0293                            IF (PSTAT = 1) THEN                    ; If previously alarmed
                                   BEGIN                       ;be6
0295                               IF (FTRIP4) THEN GOSUB ACK1         ; If ACK flag set, then ack it
0298                               IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32)THEN GOSUB ACK1
                                   END                         ;en6
0300                            IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                                END                            ;en5
                             END                               ;en3
                          ELSE                                         ; If fail-safe, HIHI, or HI
                             BEGIN                             ;be10
0301                         IF (PSTAT = 0) THEN
                                BEGIN                          ;be11
0303                            IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
                                END                            ;en11
                             ELSE
                                BEGIN                          ;be12
0304                            IF (PSTAT = 1) THEN
                                   BEGIN                       ;be13
0306                               IF (FTRIP4) THEN GOSUB ACK1
0309                               IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                                   END                         ;en13
0311                            IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                                END                            ;en12
                             END                               ;en10
0312                   NXT = PSTAT
0314                   IF (PPASS) & (PSTAT = 2) THEN NXT = 0
                       END                                     ;en2
                       ELSE
                         BEGIN
0315                     LET PSTAT = 3
0316                     NXT = 0
                         END
0317                WHITE = OR(WHITE,NXT)
                    END                                        ;en1
0318                ELSE LET PSTAT = 0
0319                ILOOP = ILOOP + 1
0320                STEP PALARM BY 1
0321                STEP PSTAT BY 1
0322                STEP PTYPE BY 1
0323                STEP PREV BY 1
0324                STEP PPASS BY 1
0325                RETURN
         ;
         ;          END ANALOG WHITE SUBROUTINE
         ;
         ;          BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
         ;
0326     CLR:       LET PSTAT = 0                                                  ; Int set to zero
                    ;
                    ; If not white, then unack:
```

```
                ;
0329            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0331            IF ILOOP = 24 THEN INT25 = 0
0332            LET FCLEAR = 1                                          ; Clear flag
0333            GOSUB ACKK                                              ; Print message
0334            RETURN
        ;
0335    ALM:    LET PSTAT = 1                                           ; Int set to one
                ;
                ; If not white, then unack:
                ;
        ;       IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
                ;
                ; Turn audible alarm on if white or yellow:
                ;
        ;       CRIT
0337            IF AND(PTYPE,3) THEN FALMON = 1
0338            PDEV:DEV_TMP0 = 2
0339            GOSUB ACKK                                              ; Print message
0340            RETURN
        ;
0341    ACK1:   LET PSTAT = 2                                           ; Ack the alarm
0342            LET FACK = 1                                            ; Set ACK flag for C program
        ;
        ;       ALARM TYPER STRINGS:
        ;
        ;ACKK:  IF ILOOP = 0 THEN STRNG0 = "E-A-1 10 LB STEAM PRESSURE LO"
0344    ACKK:   IF ILOOP = 1 THEN STRNG0 = "DESUPER HEAT OUTLET TEMP HI  "
0346            IF ILOOP = 24 THEN STRNG0 = "PI-EA1-13 STM HDR PRESS LOLO"
0348            IF ILOOP = 25 THEN STRNG0 = "PI-EA1-13 STM HDR PRESS LO  "
0350            IF ILOOP = 26 THEN STRNG0 = "FIC-EA1-1 REBOIL STM FLO LOW"
0352            IF ILOOP = 27 THEN STRNG0 = "PI-EA1-1 REBOIL STM PRESS LO"
0354            IF ILOOP = 28 THEN STRNG0 = "PI-EA1-1 REBOIL STM PRESS HI"
0356            IF ILOOP = 29 THEN STRNG0 = "TI-EA1-5 STM CNDNSB TEMP HI "
0358            IF ILOOP = 34 THEN STRNG0 = "START EA1BATCH PGM "
0360            IF ILOOP = 35 THEN STRNG0 = "EA1BATCH WRONG UNIT"
0362            IF ILOOP = 36 THEN STRNG0 = "TERMINATE EA1BATCH "
        ;
        ;  If acknowledging the alarm, then:
        ;
0363    AMSG:   IF PTYPE = 1 THEN
                  BEGIN
                  ;
                  ; If white alarm, print:
                  ;
0365              IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNG0
0366              IF (FACK) THEN
                    BEGIN
                    ;
                    ; If white, print it is ack and reset the flag:
                    ;
                    PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG0
0367                LET FACK = 0
0368                END
                  END
```

```
                ;
                ;  If CLEAR, print it is clear and reset the flag:
                ;
0369                    IF (FCLEAR) THEN
                           BEGIN
0370                       PRINT ADI,"%p ALARM CLEAR",STRNGO
0371                       LET FCLEAR = 0
                           END
                ;
                ;  If STARTUP, print startup message:
                ;
0372                    IF (FSTART) THEN
                           BEGIN
0373                       LET FSTART = 0
0374                       PRINT ADI,"%p",STRNGO
                           END
0375                    RETURN
                ;
                ;  If ERROR - print message, start timer, and set flag:
                ;
0376            ERRSUB:  IF ERRN != ERRNUM() THEN
                           BEGIN
0377                       TIMERON STIMEO
0378                       TIMERCLR STIMEO
0379                       LET FSNO = 1
0380                       LET ERRN = ERRNUM()
0381                       LET ERRL = ERRLIN()
0382                       PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
                           END
0383                       ERSCLR
0384                    GOTO AGAIN
                ;
                ;  If FABORT = 1, then abort program:
                ;
                ; TERM:  LET FABORT = 0
0385            TERM:    LET STRNGO = "EA1BATCH TERMINATED    "
0386                    LET ILOOP = STAR + 2
0387                    LET FSTART = 1
0388                    GOSUB ACKK
                        END

     Total Errors Detected      7     Total Warnings      0
          Sequence Program Size = 7504 Bytes, 469 Pages
               24 Forward Reference(s)
```

EC1BATCH

```
;       E C 1 B A T C H . S E Q                                 VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 016,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]EC1BATCH
;
;       UNIT = 10, SKDKEY = 38
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;        09-DEC-92      Changed FIC-EC3-1 LO alarm from 140 to 50          M. Teats
;                       and added comments for FIC-EC3-1.
;
;        30-DEC-92      Fixed white alarm print message.          M. Teats
;
;        07-JUN-93      Added comments.  CCN# 93JUN01-01.                  M. Teats
;
;-mct1+  21-JUN-93       Changed TYPE25 = 0 to TYPE25 = 1.  Baselined       M. Teats
;                       for D/3 version 3.3.  CCN# 93JUN21-01.
;
;       15-DEC-94       Revised header to indicate the new VMS             J. Berger
```

```
                ;                       system. Rebaselined document. Removed
                ;                       obsolict Select() statement.
                ;
                ;  END MOD LOG
                ;
                UNIT     EC1
                ;
                         COMMON WHOLE0
                         HVEC1 == 'HV-EC1-1':DEV_TMP1
                         HVEC2 == 'HVEC2/3-1':DEV_TMP1
                         FLAGBITS == PSPAR0
                         G_bits == PB2GLOBAL:DEV_TMP0
                ;
0000                     NOP
0001                     STAR = 34                          ; Start message
0002                     LET SKDKEY = 38            ; SKID Key
0003                     LET UNITT = 10                     ; SEQ Unit number
0004                     ASSIGN PDEV = 'EC1-ALARM'          ; Alarm device
0005                     ASSIGN PTYPE = TYPE34
0006                     LET ADI = 0                        ; Alarm destination index
0007                     LET FSN0 = 0                       ; No alarm yet
0008                     TIMEROFF STIME0            ; Alarm timer off
0009                     TIMERCLR STIME0            ; Alarm timer clear
0010                     LET STRNG0 = " "                   ; Blank 30 character string
0011                     LET ERRN = 0                       ; Set error number to zero
0012                     LET ERRL = 0                       ; Set error line to zero
0013                     LET FTRIP4 = 0                     ; FTRIP4 = 1 when audible horn is to be turned on
0014                     GETUNIT TRIP                       ; Which sequence unit is program running in
0015                     IF TRIP != UNITT THEN              ; Abort if running in wrong seq. unit
                            BEGIN
0016                        FSTART = 1
0017                        ILOOP = STAR + 1
0018                        PTYPE = 0
0019                        GOSUB ACKK
0020                        GOTO TERM
                            END
                ;        IF !SELECT() THEN GOTO AGAIN
                ;
                ;        B E G I N   I N I T I A L I Z I N G
                ;
0021            INIT:    LET FABORT = 0                     ; If FABORT = 1 then abort program
0022                     LET FSTART = 0                     ; Program start flag = 0
0023                     LAMP ADI,SKDKEY,0                  ; Turn off the annunciator key
0024                     LET LSG0 = " "                     ; Clear the string variables
0025                     LET LSG1 = " "
0026                     LET LSG2 = " "
0027                     LET LSG3 = " "
0028                     LET LSG4 = " "
0029                     PDEV:DEV_TMP0 = 1                                  ; Set alarm device to non-alarm state
0030                     IF AND(PDEV:DEV_ALMCT,16) THEN                     ; If alarm device is inhibited, remove the inhibit
0031                       PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0032                     IF AND(PDEV:DEV_ALMCT,32) THEN                     ; If alarm device is ack, clear it
0033                        PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
                ;
                ;        First, set all flags and integers:
```

```
                ;
0034                ASSIGN PDIN = 'RSH-CA1-1'                          ; Assign pointer to first DIN
0035                ASSIGN PSTAT = INT0
0036                ASSIGN PTYPE = TYPE0
0037                ASSIGN PREV = FRV0
0038                ASSIGN PSKID = SKID0
0039                ASSIGN PPASS = FPAS0
                ;
0040                FOR ILOOP = 0 TO 25
0041                PPASS = 0
0042                PREV = 0
0044                IF PSTAT > 5 THEN PSTAT = 0                        ; Reset currnet status if undefined
0045                PSKID = 0                                          ; Default previous status to no alarms
0046                PTYPE = 0                                          ; Default to no alarms
0047                IF ILOOP = 0 THEN                                  ; For the only DIN
                       BEGIN
0048                   IF AND(PDIN:DIN_DFLG,3) THEN                    ; Check for alarms if defined (must be red or yellow)
                         BEGIN
0049                     LET PTYPE = 2                                 ; Default to yellow alarm
0051                     IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1     ; Reverse acting
0053                     IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4    ; Set to red critical alarm
                         END
                       END
0055                IF ILOOP > 22 THEN PTYPE = 1                       ; Set to white alarm
0056                STEP PPASS BY 1
0057                STEP PREV BY 1
0058                STEP PSTAT BY 1
0059                STEP PSKID BY 1
0060                STEP PTYPE BY 1
0061                NEXT ILOOP
                ;
0062                TYPE19 = 4
0063                TYPE23 = 1                 ; PI-EC1-5
0064                TYPE24 = 1                 ; FIC-EC3-1
0065                TYPE25 = 1                 ; TIC-EC1-2   +mct1-
                ;
0066                FRV0 = 0
0067                FRV1 = 0
0068                FRV24 = 1                  ; FIC-EC3-1 LO
                ;
0069                AI0 = 100.0                ; PI-EC1-5  HI
0070                AI1 = 50.0                 ; FIC-EC3-1 LO
0071                AI2 = 110.0                ; TIC-EC1-2 HI
                ;
                ;   E N D   I N I T I A L I Z I N G
                ;
                ;   S E N D   P R O G R A M   S T A R T   M E S S A G E
                ;
0072                ANALOG = 0
0073                ILOOP = STAR
0074                FSTART = 1
0075                PTYPE = 0
0076                GOSUB ACKK
0077                ON ERROR GOSUB ERRSUB
                ;
```

```
166          ;        B E G I N   P R O G R A M   L O O P
167          ;
168   0078   AGAIN:   MARK STEP "WTUNTL",0,0
169          ;        WAITUNTIL SELECT() | FABORT        ; Wait until micro is selected or program aborted
170          ;        IF (FABORT) THEN GOTO TERM         ; Terminate program if abort flag set
171   0079           MARK STEP "RNNING",0,0
172   0080           WAIT 1
173   0081           IF (FSNO) THEN                     ; If alarm flag is set
174   0082              IF STIMEO > 60 THEN             ; If alarm flag active for 1 minute
175                       BEGIN                        ; Reset timer and turn off flag
176   0083                TIMEROFF STIMEO
177   0084                TIMERCLR STIMEO
178   0085                LET FSNO = 0
179   0086                LET ERRN = 0
180   0087                LET ERRL = 0
181                       END
182          ;
183          ;        If EC1-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
184          ;
185   0088           IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
186                     BEGIN
187   0089              PDEV:DEV_TMPO = 1               ; Put EC1-ALARM in ack state
188   0090              LET FTRIP4 = 1                  ; Set for unit alarm ack, system to graphic
189   0091              LET ACK = 1                     ; Set for unit alarm ack, graphic to system
190   0092              CRIT
191   0093              LAMP ADI,SKDKEY,1               ; Turn lamp on
192                     END
193          ;
194          ;        BEGIN DINs:
195          ;
196   0094           ASSIGN PDIN = 'RSH-CA1-1'
197   0095           ASSIGN PTYPE = TYPEO
198   0096           ASSIGN PREV = FRVO
199   0097           ASSIGN PSTAT = INTO
200   0098           ASSIGN PPASS = FPASO
201   0099           LET CURENT = 0                     ; Used to set lamp status
202   0100           LET LAST = 0
203   0101           LET ANALOG = 0
204   0102           LET NXT = 0
205   0103           LMPVAR = 0
206   0104           BITVAL = 0
207          ;
208   0105   LOP:    IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
209                     BEGIN                                            ;be1
210   0107              IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3     ; If EPN inhibited
211   0109              IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5              ; If EPN is bad input
212   0111              IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4               ; If EPN is disabled
213   0112              IF ( PSTAT < 3 ) THEN                            ; If not inhibited
214                        BEGIN                                       ;be2
215   0113                 IF (PSTAT = 1) THEN
216                           BEGIN                                    ;be3
217   0114                    IF (PTYPE != 1) THEN
218   0116                       IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
219   0118                    IF (FTRIP4) THEN GOSUB ACK1
220                           END                                      ;en3
```

```
 221   0121                    IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
 222   0122                    IF (PSTAT) THEN
 223                                BEGIN                                   ;be4
 224   0124                         IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
 225   0125                         NXT = PSTAT
 226   0127                         IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
 227   0128                         LAST = OR(LAST,NXT)
 228                                END                                     ;en4
 229                             END                                        ;en2
 230   0130                 ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
 231                          END                                           ;en1
 232   0131            STEP PDIN BY 1
 233   0132            STEP PTYPE BY 1
 234   0133            STEP PREV BY 1
 235   0134            STEP PSTAT BY 1
 236   0135            STEP PPASS BY 1
 237           ;
 238           ;        END DINs
 239           ;
 240           ;        BEGIN ANALOG RED AND YELLOWS:
 241           ;
 242   0136            ASSIGN PAI = 'T1-CA1-9'
 243   0137            ASSIGN PSKID = SKID1
 244   0138            FOR JLOOP = 1 TO 22
 245           ;        IF !SELECT() THEN GOTO AGAIN
 246   0139            IF (PTYPE) THEN                                     ; If some alarm exists
 247                      BEGIN                                   ;be1
 248   0140               BITVAL = PAI:AI_ALMCT
 249   0141               IF !AND(BITVAL,16) THEN                          ; If not inhibited
 250                         BEGIN                                ;be2
 251   0142                  IF AND(BITVAL,15) THEN                        ; If alarm exists and is current
 252                            BEGIN                             ;be3
 253   0144                     IF AND(BITVAL,32) THEN NXT = 2             ; If alarm is ack
 254                            ELSE                                      ; If alarm is unack
 255                               BEGIN                          ;be4
 256   0145                        IF PSKID !=BITVAL THEN
 257                                   BEGIN                       ;be5
 258   0147                            IF BITVAL < 3 THEN FALMON = 1
 259   0148                            LET PSKID = BITVAL
 260   0149                            PDEV:DEV_TMPO = 2
 261   0150                            NXT = 1
 262                                   END                         ;en5
 263   0151                        ELSE NXT = 1
 264                               END                            ;en4
 265                            END                               ;en3
 266                         ELSE                                         ; Else there is no alarm
 267                            BEGIN
 268   0152                     NXT = 0
 269   0153                     LET PSKID = 0
 270                            END
 271                         END                                  ;en2
 272                      ELSE                                            ; Else alarm is inhibited
 273                         BEGIN
 274   0154                  NXT = 0
 275   0155                  LET PSKID = 0
```

```
                        END
0156                 ANALOG = OR(ANALOG,NXT)
                     END                                    ;en1
0157              STEP PREV BY 1
0158              STEP PSTAT BY 1
0159              STEP PSKID BY 1
0160              STEP PTYPE BY 1
0161              STEP PAI BY 1
0162              NEXT JLOOP
          ;
          ;       END ANALOG RED AND YELLOWS
          ;
          ;       BEGIN ANALOG WHITE ALARMS:
          ;
0163              WHITE = 0
0164              ASSIGN PALARM = AI0
0165              ASSIGN PREV = FRV23
0166              ASSIGN PSTAT = INT23
0167              ASSIGN PTYPE = TYPE23
          ;
0168              ASSIGN PAI = 'PI-EC1-5'
0169              ILOOP = 23
0170              GOSUB ANLG
0171              ASSIGN PAI = 'FIC-EC3-1'
0172              GOSUB ANLG
0173              ASSIGN PAI = 'TIC-EC1-2'
0174              GOSUB ANLG
          ;
          ;       END ANALOG WHITE ALARMS
          ;
0175              MARK STEP "BELOW",0,0
0176              FTRIP4 = 0
0178              IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
0179              CURENT = OR(LAST,WHITE)
0180              CURENT = OR(CURENT,ANALOG)
0182              IF AND(CURENT,1) THEN LMPVAR = 2
0184                 ELSE IF AND(CURENT,2)THEN LMPVAR = 1
0185                         ELSE LMPVAR = 0
0186              LAMP ADI,SKDKEY,LMPVAR
0187              MARK STEP "BOTTOM",0,0
0188              NOCRIT
          ;
          ;       BEGIN LOGIC FOR GRAPHICS:
          ;
0189              AT25 = AND(HVEC1,512)
0190              AT26 = AND(HVEC1,1024)
0191              AT27 = AND(HVEC1,2048)
0192              AT28 = AND(HVEC1,4096)
0193              AT29 = AND(HVEC1,8192)
0194              AT31 = AND(HVEC1,32768)
          ;
0195              SA0 = 'ZS-EC1-1N':DIN_VAL
0196              SA1 = 'ZS-EC1-1C':DIN_VAL
          ;
0197              SA4 = and('HV-EC1-1':DEV_STAT,4) ; RESET
```

```
0198            SA5 = AND('HV-EC1-1':DEV_STAT,16)        ; CHGSTATE
          ;
0199            BT27 = AND(HVEC2,2048)                   ; START TIMER
0200            BT28 = AND(HVEC2,4096)                   ; TIMER OVER
0201            BT29 = AND(HVEC2,8192)                   ; EX-C-1 OFF
0202            BT31 = AND(HVEC2,32768)                  ; INTERLOCK
          ;
0203            SA2 = 'ZSEC2/31N':DIN_VAL
0204            SA3 = 'ZSEC2/31C':DIN_VAL
          ;
0205            SB0 = AND('HVEC2/3-1':DEV_STAT,4)
0206            SB1 = AND('HVEC2/3-1':DEV_STAT,16)
0207            SB2 = AND('HVEC2/3-1':DEV_STAT,32)
          ;
0208            AT3 =  AND('RSH-VVB/G':DIN_VAL,'TSH-DSH-3':DIN_VAL)
0209            AT4 =  AND('WFSH-CA11':DIN_VAL,'WFSH-CA12':DIN_VAL)
0210            AT5 =  AND('RSH-CA1-1':DIN_VAL,'PDSH-CA1':DIN_VAL)
0211            AT6 =  AND(AT3,AT4)
0212            AT7 =  AND(AT5,AT6)
          ;
0213            IF !BT27 THEN
0214               IF !FLG0 THEN
                      BEGIN
0215                  TIMERCLR OSTMR
0216                  TIMERON OSTMR
0217                  FLG0 = 1
                      END
          ;
0218            IF FLG0 THEN
                   BEGIN
0219               IF OSTMR >= 255 THEN
                     BEGIN
0220                 TIMEROFF OSTMR
0221                 TIMERCLR OSTMR
                     END
                   END
0223            IF BT27 THEN FLG0 = 0
0225            IF AND('EC1-ALARM':DEV_FLG,64) THEN PUTMANL 'EC1-ALARM'
0227            IF AND('HV-EC1-1':DEV_FLG,64) THEN PUTMANL 'HV-EC1-1'
0229            IF AND('HVEC2/3-1':DEV_FLG,64) THEN PUTMANL 'HVEC2/3-1'
          ;
          ;     END LOGIC FOR GRAPHICS
          ;
0230            GOTO AGAIN
          ;
          ;     E N D   P R O G R A M   L O O P
          ;
          ;     BEGIN ANALOG WHITE SUBROUTINE:
          ;
          ; ANLG:  IF !SELECT() THEN GOTO AGAIN
0231      ANLG:  IF (PTYPE = 1) THEN                          ; If some alarm
                   BEGIN                                 ;be1
0232               BITVAL = PAI:AI_ALMCT
0233               IF !(AND(BITVAL,16)) THEN                  ; If not inhibited
                     BEGIN                               ;be2
```

```
386   0235                IF PSTAT = 3 THEN LET PSTAT = 0
387   0236                IF (PREV) THEN                                  ; If rev acting, LOLO, or LO
388                          BEGIN                                 ;be3
389   0237                   IF (PSTAT = 0) THEN                          ; If not previously alarmed
390                             BEGIN                              ;be4
391   0239                      IF (PAI:AI_MEAS <= PALARM) THEN GOSUB ALM
392                             END                                ;en4
393                          ELSE
394                             BEGIN                              ;be5
395   0240                      IF (PSTAT = 1) THEN                        ; If previously alarmed
396                                BEGIN                           ;be6
397   0242                         IF (FTRIP4) THEN GOSUB ACK1            ; If ACK flag set, then ack it
398   0245                         IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
399                                END                             ;en6
400   0247                      IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
401                             END                                ;en5
402                          END                                   ;en3
403                       ELSE                                            ; If fail-safe, HIHI, or HI
404                          BEGIN                                 ;be10
405   0248                   IF (PSTAT = 0) THEN
406                             BEGIN                              ;be11
407   0250                      IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
408                             END                                ;en11
409                          ELSE
410                             BEGIN                              ;be12
411   0251                      IF (PSTAT = 1) THEN
412                                BEGIN                           ;be13
413   0253                         IF (FTRIP4) THEN GOSUB ACK1
414   0256                         IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
415                                END                             ;en13
416   0258                      IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
417                             END                                ;en12
418                          END                                   ;en10
419   0259                NXT = PSTAT
420   0261                IF (PPASS) & (PSTAT = 2) THEN NXT = 0
421                       END                                       ;en2
422                       ELSE
423                         BEGIN
424   0262                  LET PSTAT = 3
425   0263                  NXT = 0
426                         END
427   0264             WHITE = OR(WHITE,NXT)
428                    END                                          ;en1
429   0265             ELSE LET PSTAT = 0
430   0266             ILOOP = ILOOP + 1
431   0267             STEP PALARM BY 1
432   0268             STEP PSTAT BY 1
433   0269             STEP PTYPE BY 1
434   0270             STEP PREV BY 1
435   0271             STEP PPASS BY 1
436   0272             RETURN
437          ;
438          ;        END ANALOG WHITE SUBROUTINE
439          ;
440          ;        BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
```

```
                ;
0273            CLR:    LET PSTAT = 0                                          ; Int set to zer0
                        ;
                        ; If not white, then unack:
                        ;
0276                    IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0277                    FCLEAR = 1                                             ; Clear flag
0278                    GOSUB ACKK                                             ; Print message
0279                    RETURN
                ;
0280            ALM:    LET PSTAT = 1                                          ; Int set to one
                        ;
                        ; If not white, then unack:
                        ;
0283                    IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
                        ;
                        ; Turn audible alarm on if white or yellow:
                        ;
0284                    CRIT
0286                    IF AND(PTYPE,3) THEN FALMON = 1
0287                    PDEV:DEV_TMP0 = 2
0288                    GOSUB ACKK                                             ; Print message
0289                    RETURN
                ;
0290            ACK1:   LET PSTAT = 2                                          ; Ack the alarm
0291                    FACK = 1                                               ; Set ACK flag for C program
                ;
                ;       ALARM TYPER STRINGS:
                ;
0293            ACKK:   IF ILOOP = 0 THEN STRNG0 = "E-C-1 PC RADIATION HI/FAIL"
0295                    IF ILOOP = 23 THEN STRNG0 = "E-C-1 RAW WATER INLET PRESS HI"
0297                    IF ILOOP = 24 THEN STRNG0 = "E-C-3 USED RAW WATER FLOW LOW"
0299                    IF ILOOP = 25 THEN STRNG0 = "E-C-1 OUTLET TEMPERATURE HIGH"
0301                    IF ILOOP = 34 THEN STRNG0 = "START EC1BATCH PGM "
0303                    IF ILOOP = 35 THEN STRNG0 = "EC1BATCH WRONG UNIT"
0305                    IF ILOOP = 36 THEN STRNG0 = "TERMINATE EC1BATCH "
                ;
                ;  If acknowledging alarm, then:
                ;
0306            AMSG:   IF PTYPE = 1 THEN
                           BEGIN
                           ;
                           ; If white alarm, print:
                           ;
0308                       IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNG0
0309                       IF (FACK) THEN
                             BEGIN
                             ;
                             ; If white, print it is ack and reset the flag:
                             ;
0310                         PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG0
0311                         FACK = 0
                             END
                           END
                ;
```

```
496             ;  If CLEAR, print it is clear and reset flag:
497             ;
498     0312            IF (FCLEAR) THEN
499                        BEGIN
500     0313               PRINT ADI,"%p ALARM CLEAR",STRNGO
501     0314               FCLEAR = 0
502                        END
503             ;
504             ;  If STARTUP, print startup message:
505             ;
506     0315            IF (FSTART) THEN
507                        BEGIN
508     0316               FSTART = 0
509     0317               PRINT ADI,"%p",STRNGO
510                        END
511     0318            RETURN
512             ;
513             ;  If ERROR - print message, start timer, and set flag:
514             ;
515     0320    ERRSUB:  IF(ERRNUM() = -187)THEN ERSRET
516                     ELSE
517                      BEGIN
518     0321              IF ERRN != ERRNUM() THEN
519                        BEGIN
520     0322               TIMERON STIMEO
521     0323               TIMERCLR STIMEO
522     0324               FSNO = 1
523     0325               ERRN = ERRNUM()
524     0326               ERRL = ERRLIN()
525     0327               PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
526     0328               ERSCLR
527                        END
528                     END
529     0329            GOTO AGAIN
530             ;
531             ;  If FABORT = 1, then abort program:
532             ;
533             ; TERM:  FABORT = 0
534     0330    TERM:    STRNGO = "EC1BATCH TERMINATED    "
535     0331             ILOOP = STAR + 2
536     0332             FSTART = 1
537     0333             GOSUB ACKK
538                      END

        Total Errors Detected      0     Total Warnings      0
             Sequence Program Size = 6288 Bytes, 393 Pages
                   21 Forward Reference(s)
```

*** RMIS View/Print Document Cover Sheet ***

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Accession #: D196079540

Document #: SD-534-CSWL-001

Title/Desc:
SEQUENCE & BATCH LANGUAGE PROGRAMS & ALARM RELATED C PROGRAMS FOR THE 242A MCS [SEC 4 OF 6 PAGE 384 TO 511]

Pages: 130

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-534-CSWL-001

Section 4 **of** 6

Title: Sequence and Batch Language programs and Alarm Related "C" Programs for the 242-A MCS

Date: 4/15/96 **Revision:** 3

Originator: Berger, J.F.
Co:

Recipient:
Co:

References: ECN-627504

RWBATCH

```
;       R W B A T C H . S E Q                                   VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 011,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]RWBATCH
;
;       UNIT = 11, SKDKEY = 43
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;       11-AUG-91       - Fixed order of variables so alarms will       M. Teats
;                         appear on graphic (PDI, TI, and TSL alarms
;                         were not working)
;                       - Added comments
;
;       30-DEC-92       Fixed white alarm print message.        M. Teats
;
;       07-JUN-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;
;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
```

```
 56            ;                        system. Rebaselined document. Removed
 57            ;                        obsolite Select() statement
 58            ;
 59            ;  END MOD LOG
 60            ;
 61            UNIT     RWATER
 62                     COMMON XYZFRM,PB2
 63            ;
 64                     TSL == 'TSL242A81'
 65                     AUTO1 == 'FQI-RW-1':CB_FLG:1              ; For FQI-RESET AUTO mode check
 66                     AUTO1B == 'FQI-RW-1B':CB_FLG:1            ; For FQI-RESET AUTO mode check
 67                     CALOUT1 == 'FQI-RW-1':CB_OTVL:1           ; For FQI-RESET calc block outvalue
 68                     CALOUT1B == 'FQI-RW-1B':CB_OTVL:1         ; For FQI-RESET calc block outvalue
 69            ;
 70     0000            NOP
 71     0001            LET STAR = 33                     ; Start message
 72     0002            LET SKDKEY = 43          ; SKID Key
 73     0003            LET UNITT = 11                    ; SEQ Unit number
 74     0004            ASSIGN PDEV = 'RW-ALARM' ; Alarm device
 75     0005            ASSIGN PTYPE = TYPE33
 76     0006            PTYPE = 0                         ; No start message yet
 77     0007            LET ADI = 0                       ; Alarm destination index
 78     0008            LET FSNO = 0                      ; No alarm yet
 79     0009            TIMEROFF STIME0          ; Alarm timer off
 80     0010            TIMERCLR STIME0          ; Alarm timer clear
 81     0011            STRNG0 = " "                      ; Blank 30 character string
 82     0012            LET ERRN = 0                      ; Set error number to zero
 83     0013            LET ERRL = 0                      ; Set error line to zero
 84     0014            FTRIP4 = 0                        ; FTRIP4 = 1 when audible horn is to be turned on
 85     0015            GETUNIT TRIP                      ; Which sequence unit is program running in
 86     0016            IF TRIP != UNITT THEN             ; Abort if running in wrong seq. unit
 87                       BEGIN
 88     0017              FSTART = 1
 89     0018              ILOOP = STAR + 1
 90     0019              GOSUB ACKK
 91     0020              FSTART = 1
 92     0021              PRINT ADI," >>>>>  ATTEMPT TO RUN RWBATCH IN WRONG UNIT"
 93     0022              GOTO TERM
 94                       END
 95            ;        IF (SELECT()=0) THEN GOTO AGAIN
 96            ;
 97            ;        B E G I N   I N I T I A L I Z I N G
 98            ;
 99     0023   INIT:    LET FABORT = 0                    ; If FABORT = 1 then abort program
100     0024            LET FSTART = 0                    ; Program start flag = 0
101     0025            LET SD0 = 0                       ; FQI-RESET manual mode flag = 0
102     0026            LET SD1 = 0                       ; FQI-RESET manual mode flag = 0
103     0027            LAMP ADI,SKDKEY,0                 ; Turn off the annunciator key
104     0028            LSG0 = " "                        ; Clear the string variables
105     0029            LSG1 = " "
106     0030            LSG2 = " "
107     0031            LSG3 = " "
108     0032            LSG4 = " "
109     0033            PDEV:DEV_TMP0 = 1                                  ; Set alarm device to non-alarm state
110     0034            IF AND(PDEV:DEV_ALMCT,16) THEN                     ; If alarm device is inhibited, remove the inhibit
```

```
111   0035          PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
112   0036        IF AND(PDEV:DEV_ALMCT,32) THEN                    ; If alarm device is ack, clear it
113   0037          PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
114         ;
115         ;     AIN, DIN, DEV -  ILOOP, TYPE, LIMITS:
116         ;
117         ;     Digitals:
118         ;     --------
119         ;     ILOOP   EPN             TYPE
120         ;       0     LDS-BFP-1       1
121         ;       1     LSL-RWSMP       1
122         ;       2     LDS-BFP-2       1
123         ;       3     RSH-RW-1        4
124         ;       4     RXS-RW-1        2
125         ;
126         ;     Analog Reds or Yellows:
127         ;     ----------------------
128         ;     ILOOP   EPN             TYPE    LIMIT
129         ;       5     PDI-RW-1        0       NA
130         ;       6     PI-RW-1         2       60 Low, 120 Hi
131         ;       7     PDI-RW-2        0       NA
132         ;       8     RI-RW-1         4       NA
133         ;       9     PI-RW-2         0       NA
134         ;
135         ;     Analog Whites:
136         ;     -------------
137         ;     ILOOP   EPN             TYPE    AI      LIMIT
138         ;       10    PDI-RW-1        1       AI0     13.0    Hi
139         ;       11    PDI-RW-2        1       AI1     13.0    Hi
140         ;       12    PI-RW-2         1       AI2     60.0    Low
141         ;
142         ;     PCM1 DIN:
143         ;     --------
144         ;     ILOOP   EPN             TYPE
145         ;       13    TSL242A81       2
146         ;
147         ;     PCM0 DEV:
148         ;     --------
149         ;     ILOOP   EPN             TYPE
150         ;       14    HV-RW-1         2
151         ;       15    HV-RW-2         2
152         ;
153         ;     Set all PCM0 flags and integers:
154         ;
155   0038        ASSIGN PDIN = 'LDS-BFP-1'                         ; Assign pointer to first DIN
156   0039        ASSIGN PTYPE = TYPE0
157   0040        ASSIGN PREV = FRV0
158   0041        ASSIGN PSTAT = INT0
159   0042        ASSIGN PSKID = SKID0
160   0043        ASSIGN PPASS = FPAS0
161         ;
162   0044        FOR ILOOP = 0 TO 4                                ; For PCM0 DINs
163   0045        LET PPASS = 0
164   0046        LET PREV = 0
165   0048        IF PSTAT > 5 THEN PSTAT = 0                       ; Reset current status if undefined
```

```
0049          LET PSKID = 0                                  ; Default previous status to no alarms
0050          LET PTYPE = 1                                  ; Default to white alarm
0051          IF AND(PDIN:DIN_DFLG,3) THEN                   ; Check for alarms (Must be red or yellow)
                BEGIN
0052            PTYPE = 2                                    ; Default to Yellow
0054            IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1    ; Reverse acting
0056            IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4   ; Critical red alarm
                END
0057          STEP PDIN BY 1
0058          STEP PTYPE BY 1
0059          STEP PREV BY 1
0060          STEP PSTAT BY 1
0061          STEP PSKID BY 1
0062          STEP PPASS BY 1
0063          NEXT ILOOP
        ;
0064          FOR ILOOP = 5 TO 15                            ; For everything else
0065          PTYPE = 0
0066          PREV = 0
0067          PSTAT = 0
0068          PSKID = 0
0069          PPASS = 0
0070          STEP PTYPE BY 1
0071          STEP PREV BY 1
0072          STEP PSTAT BY 1
0073          STEP PSKID BY 1
0074          STEP PPASS BY 1
0075          NEXT ILOOP
        ;
        ;     Set alarm type if not zero for above analogs:
        ;
0076          LET TYPE6 = 2
0077          LET TYPE8 = 4
0078          LET TYPE10 = 1
0079          LET TYPE11 = 1
0080          LET TYPE12 = 1
0081          LET TYPE13 = 2
0082          LET TYPE14 = 2
0083          LET TYPE15 = 2
        ;
0084          LET FRV12 = 1                                  ; PI-RW-2 low
        ;
        ;     Set White alarm limits:
        ;
0085          LET AI0 = 13.0                                 ; PDI-RW-1 hi
0086          LET AI1 = 13.0                                 ; PDI-RW-2 hi
0087          LET AI2 = 60.0                                 ; PI-RW-2 low
        ;
        ;     I N I T I A L I Z I N G   D O N E
        ;
        ;     S E N D   P R O G R A M   S T A R T   M E S S A G E
        ;
0088          ANALOG = 0
0089          ILOOP = STAR
0090          FSTART = 1
```

```
221  0091          GOSUB ACKK
222  0092          ON ERROR GOSUB ERRSUB
223          ;
224          ;     B E G I N   P R O G R A M   L O O P
225          ;
226  0093    AGAIN:  MARK STEP "WTUNTL",0,0
227          ;     WAITUNTIL SELECT() | FABORT       ; Wait until micro is selected or program aborted
228          ;     IF (FABORT) THEN GOTO TERM        ; Terminate program if abort flag set
229  0094          MARK STEP "RNNING",0,0
230  0095          WAIT 1
231          ;
232  0096          IF (FSNO) THEN                    ; If alarm flag is set
233  0097             IF STIMEO > 60 THEN            ; If alarm flag active for 1 minute
234                         BEGIN                   ; Reset timer and turn off flag
235  0098                   TIMEROFF STIMEO
236  0099                   TIMERCLR STIMEO
237  0100                   LET FSNO = 0
238  0101                   LET ERRN = 0
239  0102                   LET ERRL = 0
240                         END
241          ;
242          ;     If RW-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
243          ;
244  0103          IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
245                   BEGIN
246  0104             PDEV:DEV_TMPO = 1              ; Put RW-ALARM in ack state
247  0105             LET FTRIP4 = 1                 ; Set for unit alarm ack, system to graphic
248  0106             LET ACK = 1                    ; Set for unit alarm ack, graphic to system
249  0107             CRIT
250  0108             LAMP ADI,SKDKEY,1              ; Turn lamp on
251                   END
252          ;
253          ;     BEGIN DIGITALS (PCMO):
254          ;
255  0109          ASSIGN PDIN = 'LDS-BFP-1'
256  0110          ASSIGN PTYPE = TYPEO
257  0111          ASSIGN PREV = FRVO
258  0112          ASSIGN PSTAT = INTO
259  0113          ASSIGN PSKID = SKIDO
260  0114          ASSIGN PPASS = FPASO
261  0115          LET LAST = 0
262  0116          LET NXT = 0
263  0117          LMPVAR = 0
264  0118          BITVAL = 0
265          ;
266  0119    LOP:  FOR ILOOP = 0 TO 4
267          ;     IF !SELECT() THEN GOTO AGAIN
268  0120          IF (PTYPE > 0) THEN                                   ; If some type of alarm
269                   BEGIN                                        ;be1
270  0122             IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN Inhibited
271  0124             IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5          ; If EPN is Bad input
272  0126             IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4           ; If EPN is disabled
273  0127             IF (PSTAT < 3) THEN                                  ; If not inhibited
274                         BEGIN                                  ;be2
275  0128                   IF (PSTAT = 1) THEN
```

```
                                BEGIN                                   ;be3
0129                            IF (PTYPE != 1) THEN                            ; If not white
0131                               IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0133                            IF (FTRIP4) THEN GOSUB ACK1
                                END                                     ;en3
0136                         IF PSTAT = 0 THEN IF (PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0137                         IF (PSTAT) THEN
                                   BEGIN                                ;be4
0139                               IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
0140                               NXT = PSTAT
0142                               IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0143                               LAST = OR(LAST,NXT)
                                   END                                  ;en4
                             END                                        ;en2
0145                     ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                         END                                            ;en1
0146                 STEP PDIN BY 1
0147                 STEP PTYPE BY 1
0148                 STEP PREV BY 1
0149                 STEP PSTAT BY 1
0150                 STEP PSKID BY 1
0151                 STEP PPASS BY 1
0152                 NEXT ILOOP
          ;
          ;          END DIGITALS (PCM0)
          ;
          ;          BEGIN ANALOG RED AND YELLOWS:
          ;
0153                 STRNGO = "RUN"
0154                 LET ANALOG = 0
0155                 ASSIGN PAI = 'PDI-RW-1'
0156                 ASSIGN PSKID = SKID5
0157                 ASSIGN PTYPE = TYPE5
          ;
0158                 FOR ILOOP = 5 TO 9
          ;          IF !SELECT() THEN GOTO AGAIN
0159                 IF (PTYPE) THEN                                    ; If some alarm exists
                        BEGIN                                   ;be1
0160                    BITVAL = PAI:AI_ALMCT
0161                    IF !AND(BITVAL,16) THEN                         ; If not inhibited
                           BEGIN                                ;be2
0162                       IF AND(BITVAL,15) THEN                       ; If alarm exists and is current
                              BEGIN                             ;be3
0164                          IF AND(BITVAL,32) THEN NXT = 2            ; If alarm is ack
                              ELSE                                      ; If alarm is unack
                                 BEGIN                          ;be4
0165                             IF PSKID !=BITVAL THEN
                                     BEGIN                      ;be5
0167                                 IF BITVAL < 3 THEN FALMON = 1
0168                                 LET PSKID = BITVAL
0169                                 PDEV:DEV_TMPO = 2
0170                                 NXT = 1
                                     END                        ;en5
0171                             ELSE NXT = 1
                                 END                            ;en4
```

```
                          END                                  ;en3
                       ELSE                                          ; Else there is no alarm
                          BEGIN
0172                      NXT = 0
0173                      LET PSKID = 0
                          END
                       END                                     ;en2
                    ELSE                                             ; Else alarm is inhibited
                       BEGIN
0174                   NXT = 0
0175                   LET PSKID = 0
                       END
0176                ANALOG = OR(ANALOG,NXT)
                    END                                      ;en1
0177             STEP PSKID BY 1
0178             STEP PTYPE BY 1
0179             STEP PAI BY 1
0180             NEXT ILOOP
          ;
          ;      END ANALOG RED AND YELLOW
          ;
          ;      BEGIN ANALOG WHITE ALARMS:
          ;
0181             WHITE = 0
0182             ASSIGN PTYPE = TYPE10
0183             ASSIGN PSTAT = INT10
0184             ASSIGN PALARM = AI0
0185             ASSIGN PPASS = FPAS10
0186             ASSIGN PREV  = FRV10
0187             ILOOP = 10
          ;
0188             ASSIGN PAI = 'PDI-RW-1'
0189             GOSUB ANLG                                       ; Hi
0190             ASSIGN PAI = 'PDI-RW-2'
0191             GOSUB ANLG                                       ; Hi
0192             ASSIGN PAI = 'PI-RW-2'
0193             GOSUB ANLG                                       ; Low
          ;
          ;      END ANALOG WHITE ALARMS
          ;
          ;      BEGIN PCM1 DIN (TSL242A81):
          ;
0195             IF (ERRNUM() = -187) THEN GOTO SKP1                     ; Skip TSL242A81 if PCM1 micros down
0196             IF TYPE13 > 0 THEN                                      ; If some type of alarm
                   BEGIN                                          ;be1
0198                IF AND('TSL':DIN_ALMCT,16) THEN INT13 = 3            ; If EPN is Inhibited
0200                IF AND('TSL':DIN_ALMCT,4) THEN INT13 = 5             ; If EPN is Bad input
0202                IF !AND('TSL':DIN_FLG,8) THEN INT13 = 4              ; If EPN is disabled
0203                IF (INT13 < 3) THEN                                  ; If not inhibited
                        BEGIN                                     ;be2
0204                     IF (INT13 = 1) THEN
                            BEGIN                                 ;be3
0205                        IF (TYPE13 != 1) THEN
0207                           IF AND('TSL':DIN_ALMCT,32) THEN GOSUB ACK2
0209                        IF (FTRIP4) THEN GOSUB ACK2
```

```
                                END                                     ;en3
0210                         IF (INT13 = 0) THEN
0212                                 IF ('TSL':DIN_VAL = FRV13) THEN GOSUB ALM2
0213                         IF (INT13) THEN
                                BEGIN                                   ;be4
0215                            IF ('TSL':DIN_VAL != FRV13) THEN GOSUB CLR2
0216                            NXT = INT13
0218                            IF (FPAS13) & (INT13 = 2) THEN NXT = 0
0219                            LAST = OR(LAST,NXT)
                                END                                     ;en4
                             END                                        ;en2
0221                    ELSE IF !AND('TSL':DIN_ALMCT,16)&!AND('TSL':DIN_ALMCT,4)&AND('TSL':DIN_FLG,8)THEN INT13 = 0
                        END                                             ;en1
        ;
        ;           END PCM1 DIN
        ;
        ;           BEGIN HANDVALVE DEVICE ALARMS:
        ;
0222    HV:         DEV0 = 0
0223                ASSIGN PDIN = 'HV-RW-1'
0224                ASSIGN PTYPE = TYPE14
0225                ASSIGN PSTAT = INT14
        ;
0226                FOR ILOOP = 14 TO 15
0227                IF PTYPE > 0 THEN                                       ; If some type of alarm
                       BEGIN                                            ;be1
0229                   IF AND(PDIN:DEV_ALMCT,16) THEN LET PSTAT = 3     ; If EPN is Inhibited
0231                   IF AND(PDIN:DEV_ALMCT,4) THEN LET PSTAT = 5              ; If EPN is Bad input
0233                   IF !AND(PDIN:DEV_FLG,8) THEN LET PSTAT = 4               ; If EPN is disabled
0234                   IF (PSTAT < 3) THEN                                      ; If not inhibited
                            BEGIN                                       ;be2
0235                        IF (PSTAT = 1) THEN
                               BEGIN                                    ;be3
0236                           IF (PTYPE != 1) THEN
0238                              IF AND(PDIN:DEV_ALMCT,32) THEN GOSUB ACK1
0240                           IF (FTRIP4) THEN GOSUB ACK1
                               END                                      ;en3
0242                        IF AND(PDIN:DEV_CMD,4) THEN GOSUB ALM1
0243                        IF (PSTAT) THEN
                                BEGIN                                   ;be4
0245                            IF !AND(PDIN:DEV_CMD,4) THEN GOSUB CLR
0246                            NXT = PSTAT
0248                            IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0249                            LAST = OR(LAST,NXT)
                                END                                     ;en4
                            END                                         ;en2
0251                    ELSE IF !AND(PDIN:DEV_ALMCT,16)&!AND(PDIN:DEV_ALMCT,4)&AND(PDIN:DEV_FLG,8)THEN LET PSTAT = 0
                        END                                             ;en1
0252                STEP PDIN BY 1
0253                STEP PTYPE BY 1
0254                STEP PREV BY 1
0255                STEP PSTAT BY 1
0256                STEP PSKID BY 1
0257                STEP PPASS BY 1
0258                NEXT ILOOP
```

```
441            ;
442            ;        END HANDVALVE DEVICE ALARMS
443            ;
444     0259   SKP1:    MARK STEP "BELOW",0,0
445     0260            SORT = 0
446     0261            FTRIP4 = 0
447     0263            IF LAST > 3 THEN PRINT AD1," LAMP VARIABLE IS GREATER THAN 3!"
448     0264            CURENT = OR(WHITE,ANALOG)
449     0265            CURENT = OR(LAST,CURENT)
450     0266            CURENT = OR(DEV0,CURENT)
451     0268            IF AND(CURENT,1) THEN LMPVAR = 2
452     0270               ELSE IF AND(CURENT,2) THEN LMPVAR = 1
453     0271                       ELSE LMPVAR = 0
454     0272            LAMP AD1,SKDKEY,LMPVAR
455     0273            MARK STEP "BOTTOM",0,0
456     0274            NOCRIT
457            ;
458            ;        BEGIN FQI-RESET:
459            ;
460            ;        Function:        For totalizers that have a CALC block which performs the
461            ;                         integration, set the output of the CALC block to zero
462            ;                         after the FQI loop has been placed in AUTO from MANUAL.
463            ;                         Reset both FQI-RW-1 and -1B if either one is reset.
464            ;
465     0276            IF !AND(AUTO1,64) THEN SD0 = 1                    ; If manual, set manual flag
466     0277            IF AND(AUTO1,64) & AND(SD0,1) THEN                ; For manual-AUTO transition
467                        BEGIN
468     0278               SD0 = 0
469     0279               CALOUT1 = 0.0
470     0280               CALOUT1B = 0.0
471                        END
472            ;
473     0282            IF !AND(AUTO1B,64) THEN SD1 = 1                   ; If manual, set manual flag
474     0283            IF AND(AUTO1B,64) & AND(SD1,1) THEN               ; For manual-AUTO transition
475                        BEGIN
476     0284               SD1 = 0
477     0285               CALOUT1B = 0.0
478     0286               CALOUT1 = 0.0
479                        END
480            ;
481            ;        END FQI-RESET
482            ;
483     0288            IF AND('RW-ALARM':DEV_FLG,64) THEN PUTMANL 'RW-ALARM'
484     0289            GOTO AGAIN
485            ;
486            ;        E N D   P R O G R A M   L O O P
487            ;
488            ;        BEGIN ANALOG WHITE SUBROUTINE:
489            ;
490            ; ANLG:  IF !SELECT() THEN GOTO AGAIN
491     0290   ANLG:    IF (PTYPE = 1) THEN                               ; If some alarm
492                        BEGIN                                   ;be1
493     0291               BITVAL = PAI:AI_ALMCT
494     0292               IF !(AND(BITVAL,16)) THEN                      ; If not Inhibited
495                          BEGIN                                 ;be2
```

```
0294                  IF PSTAT = 3 THEN LET PSTAT = 0
0295                  IF (PREV) THEN                                  ; If rev acting, LOLO, or LO
                         BEGIN                                  ;be3
0296                     IF (PSTAT = 0) THEN                          ; If not previously alarmed
                            BEGIN                               ;be4
0298                        IF (PAI:AI_MEAS <= PALARM) THEN GOSUB ALM
                            END                                 ;en4
                         ELSE
                            BEGIN                               ;be5
0299                        IF (PSTAT = 1) THEN                       ; If previously alarmed
                               BEGIN                            ;be6
0301                           IF (FTRIP4) THEN GOSUB ACK1            ; If ACK flag set, then ack it
0304                           IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                               END                              ;en6
0306                        IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                            END                                 ;en5
                         END                                    ;en3
                      ELSE                                            ; If fail-safe, HIHI, or HI
                         BEGIN                                  ;be10
0307                     IF (PSTAT = 0) THEN
                            BEGIN                               ;be11
0309                        IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
                            END                                 ;en11
                         ELSE
                            BEGIN                               ;be12
0310                        IF (PSTAT = 1) THEN
                               BEGIN                            ;be13
0312                           IF (FTRIP4) THEN GOSUB ACK1
0315                           IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32)THEN GOSUB ACK1
                               END                              ;en13
0317                        IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                            END                                 ;en12
                         END                                    ;en10
0318                 NXT = PSTAT
0320                 IF (PPASS) & (PSTAT = 2) THEN NXT = 0
                     END                                        ;en2
                     ELSE
                       BEGIN
0321                   LET PSTAT = 3
0322                   NXT = 0
                       END
0323               WHITE = OR(WHITE,NXT)
                   END                                          ;en1
0324               ELSE LET PSTAT = 0
0325               STEP PALARM BY 1
0326               STEP PSTAT BY 1
0327               STEP PTYPE BY 1
0328               STEP PREV BY 1
0329               STEP PPASS BY 1
0330               ILOOP = ILOOP + 1
0331               RETURN
          ;
          ;        END ANALOG WHITE SUBROUTINE
          ;
          ;        BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
```

```
                ;
0332            CLR:     LET PSTAT = 0                                          ; PCM0 DIN, white AI, DEV
                         ;
                         ; If not white, then unack:
                         ;
0335                     IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0336                     LET FCLEAR = 1
0337                     GOSUB ACKK
0338                     RETURN
                ;
0339            CLR2:    LET INT13 = 0                                          ; PCM1 DIN
                         ;
                         ; If not white, then unack:
                         ;
0342                     IF TYPE13 != 1 THEN IF AND('TSL':DIN_ALMCT,32)THEN 'TSL':DIN_ALMCT = XOR('TSL':DIN_ALMCT,32)
0343                     LET FCLEAR = 1
0344                     GOSUB ACKK
0345                     RETURN
                ;
                ; If not white, then unack:
                ;
0348            ALM:     IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
                ;
0349            ALM1:    CRIT
0350                     LET PSTAT = 1
0352                     IF AND(PTYPE,3) THEN FALMON = 1
0353                     PDEV:DEV_TMP0 = 2
0354                     GOSUB ACKK
0355                     RETURN
                ;
0356            ALM2:    LET INT13 = 1                                          ; PCM1 DIN
                         ;
                         ; If not white, then unack:
                         ;
0359                     IF TYPE13 != 1 THEN IF AND('TSL':DIN_ALMCT,32)THEN 'TSL':DIN_ALMCT = XOR('TSL':DIN_ALMCT,32)
0360                     'RW-ALARM':DEV_TMP0 = 2
0361                     FALMON = 1
0362                     GOSUB ACKK
0363                     RETURN
                ;
0364            ACK1:    LET PSTAT = 2
0365                     LET FACK = 1
0366                     GOSUB ACKK
0367                     RETURN
                ;
0368            ACK2:    LET INT13 = 2                                          ; PCM1 DIN
0369                     LET FACK = 1
                ;
                ;        For multiple AI white alarms on one EPN (use with string packet 78):
                ;
0371            ACKK:        IF (INT12 & INT12 < 3) THEN LET LEAK0 = INT12 + 2          ; PI-RW-2 Lo
0373                           ELSE IF INT12 = 3 THEN LET LEAK0 = 9                     ; PI-RW-2 INHA
0374                             ELSE LET LEAK0 = 0                                     ; No alarm
                ;
                ;        End multiple AI white alarms on one EPN
```

```
606             ;
607             ;       ALARM TYPER STRINGS:
608             ;
609     0376    MSSG:    IF ILOOP = 0 THEN STRNGO = "RW BLDG BFP-1 LEAK    "       ; LDS-BFP-1
610     0378            IF ILOOP = 1 THEN STRNGO = "RW BLDG SUMP LEVEL LO "       ; LSL-RWSMP
611     0380             IF ILOOP = 2 THEN STRNGO = "RW BLDG BFP-2 LEAK    "       ; LDS-BFP-2
612     0382             IF ILOOP = 3 THEN STRNGO = "RW SUPPLY RAD HI      "       ; RSH-RW-1
613     0384             IF ILOOP = 4 THEN STRNGO = "RW SUPPLY RAD SYS FAIL"       ; RXS-RW-1
614     0386             IF ILOOP = 10 THEN STRNGO = "RW BLDG F-RW-1 DP HI  "      ; PDI-RW-1
615     0388             IF ILOOP = 11 THEN STRNGO = "RW BLDG F-RW-2 DP HI  "      ; PDI-RW-2
616     0390             IF ILOOP = 12 THEN STRNGO = "F-RW-1/2 IN PRESS LO  "      ; PI-RW-2
617     0392             IF ILOOP = 13 THEN STRNGO = "RW BLDG TEMP LO       "      ; TSL242A81
618     0394             IF ILOOP = 14 THEN STRNGO = "HV-RW-1 OPEN 30 + SEC."
619     0396             IF ILOOP = 15 THEN STRNGO = "HV-RW-2 OPEN 30 + SEC."
620     0398             IF ILOOP = 33 THEN STRNGO = "RWBATCH PGM STARTING "
621     0400             IF ILOOP = 34 THEN STRNGO = "RWBATCH WRONG UNIT   "
622     0402             IF ILOOP = 35 THEN STRNGO = "RWBATCH TERMINATING  "
623             ;
624     0403    AMSG:    IF PTYPE = 1 THEN
625                         BEGIN
626                         ;
627                         ; If white alarm, print:
628                         ;
629     0405                IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
630     0406                IF (FACK) THEN
631                            BEGIN
632                            ;
633                            ; If white, print it is ack and reset flag:
634                            ;
635     0407                   PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
636     0408                   LET FACK = 0
637                            END
638                         END
639             ;
640             ;  If CLEAR, print it is clear and reset flag:
641             ;
642     0409            IF (FCLEAR) THEN
643                        BEGIN
644     0410               PRINT ADI,"%p ALARM CLEAR",STRNGO
645     0411               LET FCLEAR = 0
646                        END
647             ;
648             ;  If STARTUP, print startup message:
649             ;
650     0412            IF (FSTART) THEN
651                        BEGIN
652     0413               LET FSTART = 0
653     0414               PRINT ADI,"%p",STRNGO
654                        END
655     0415            RETURN
656             ;
657             ;  If error - print message, start timer, and set flag:
658             ;
659     0416    ERRSUB:   IF ERRN != ERRNUM() THEN
660                        BEGIN
```

```
661   0417                TIMERON STIMEO
662   0418                TIMERCLR STIMEO
663   0419                LET FSNO = 1
664   0420                LET ERRN = ERRNUM()
665   0421                LET ERRL = ERRLIN()
666   0422                PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
667                       END
668   0423                ERSCLR
669   0424              GOTO AGAIN
670            ;
671            ;  If FABORT = 1, then abort program:
672            ;
673            ; TERM:  LET FABORT = 0
674   0425     TERM:    STRNGO = "RWBATCH TERMINATED    "
675   0426              LET ILOOP = STAR + 2
676   0427              LET FSTART = 1
677   0428              SSNGO = "TERM"
678   0429              GOSUB ACKK
679                     END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 8224 Bytes, 514 Pages
33 Forward Reference(s)

URWBATCH

```
;       U R W B A T C H . S E Q                                 VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 017,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]URWBATCH
;
;       UNIT = 12, SKDKEY = 42
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCMOA.SDB        PCMOASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;        02-JUN-92      Deleted O/C display bar feature.        M. Teats
;
;        08-JUL-92      Removed synchronized PID feature.               M. Teats
;
;        30-DEC-92      Fixed white alarm print message.        M. Teats
;
;        08-JUN-93      Added comments.  CCN# 93JUN01-01.               M. Teats
;
;-mct1+  29-JUN-93       Remove IBAD on RC2-PIG and baselined for M. Teats
;                        D/3 version 3.3.  CCN# 93JUN29-01.
;
```

```
56          ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
57          ;                       system. Rebaselined document. Removed
58          ;                       obsolite Select() statements.
59          ;
60          ;  END MOD LOG
61          ;
62          UNIT    URW
63          ;
64                  COMMON PB2
65                  DEVON == 'RC2-SAMP':DEV_STAT            ; For FQIC-RESET device on/off check
66                  CALOUT == 'FQIC-RC2':CB_OTVL:3          ; For FQIC-RESET calc block outvalue
67                  RC2_PIG == 'RC2-PIG':DEV_TMPO
68          ;
69    0000          NOP
70    0001          STAR = 24                       ; Start message
71    0002          LET SKDKEY = 42         ; SKID Key
72    0003          LET UNITT = 12                  ; SEQ Unit number
73    0004          ASSIGN PDEV = 'URW-ALARM'       ; Alarm device
74    0005          ASSIGN PTYPE = TYPE24
75    0006          ADI = 0                         ; Alarm destination index
76    0007          FSNO = 0                        ; No alarm yet
77    0008          TIMEROFF STIMEO         ; Alarm timer off
78    0009          TIMERCLR STIMEO         ; Alarm timer clear
79    0010          STRNGO = " "                    ; Blank 30 character string
80    0011          ERRN = 0                        ; Set error number to zero
81    0012          ERRL = 0                        ; Set error line to zero
82    0013          FTRIP4 = 0                      ; FTRIP4 = 1 when audible horn is to be turned on
83    0014          GETUNIT TRIP                    ; Which sequence unit is program running in
84    0015          IF TRIP != UNITT THEN           ; Abort if running in wrong seq. unit
85                     BEGIN
86    0016             FSTART = 1
87    0017             ILOOP = STAR + 1
88    0018             PTYPE = 0
89    0019             GOSUB ACKK
90    0020             GOTO TERM
91                     END
92          ;       IF !SELECT() THEN GOTO AGAIN
93          ;
94          ;       B E G I N   I N I T I A L I Z I N G
95          ;
96    0021          STRNGO = "INIT"
97    0022  INIT:   FABORT = 0                      ; If FABORT = 1, then abort program
98    0023          FSTART = 0                      ; Program start flag = 0
99    0024          SDO = 0                         ; For FQIC-RESET, RC2-SAMP device status flag
100   0025          LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
101   0026          LSG0 = " "                      ; Clear the string variables
102   0027          LSG1 = " "
103   0028          LSG2 = " "
104   0029          LSG3 = " "
105   0030          LSG4 = " "
106   0031          PDEV:DEV_TMPO = 1                                 ; Set alarm device to non-alarm state
107   0032          IF AND(PDEV:DEV_ALMCT,16) THEN                    ; If alarm device is inhibited, remove the inhibit
108   0033            PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
109   0034          IF AND(PDEV:DEV_ALMCT,32) THEN                    ; If alarm device is ack, clear it
110   0035             PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
```

```
111             ;
112             ;       First, set all flags and integers:
113             ;
114     0036            ASSIGN PDIN = 'FSL-RC2-1'                       ; Assign pointer to first DIN
115     0037            ASSIGN PSTAT = INT0
116     0038            ASSIGN PTYPE = TYPE0
117     0039            ASSIGN PREV = FRV0
118     0040            ASSIGN PSKID = SKID0
119     0041            ASSIGN PPASS = FPAS0
120             ;
121     0042            FOR ILOOP = 0 TO 15
122     0043            PPASS = 0
123     0044            PREV = 0
124     0046            IF PSTAT > 5 THEN PSTAT = 0                     ; Reset current status if undefined
125     0047            PSKID = 0                                       ; Default previous status to no alarms
126     0048            PTYPE = 0                                       ; Default to no alarms
127     0049            IF ILOOP < 4 THEN                               ; For DINs
128                        BEGIN
129     0050               IF AND(PDIN:DIN_DFLG,3) THEN                 ; Check for alarms if defined (must be red or yellow)
130                           BEGIN
131     0051                  PTYPE = 2                                 ; Default to yellow alarm
132     0053                  IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1 ; Reverse acting
133     0055                  IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4 ; Set to red critical alarm
134                           END
135                        END
136     0057            IF ILOOP > 3 THEN PTYPE = 0
137     0058            STEP PPASS BY 1
138     0059            STEP PREV BY 1
139     0060            STEP PSTAT BY 1
140     0061            STEP PSKID BY 1
141     0062            STEP PTYPE BY 1
142     0063            NEXT ILOOP
143             ;
144     0064            TYPE0 = 0
145     0065            TYPE1 = 4
146     0066            TYPE2 = 2
147     0067            TYPE3 = 2
148     0068            TYPE4 = 1
149     0069            TYPE10 = 4
150     0070            TYPE11 = 2
151     0071            TYPE12 = 2
152     0072            TYPE15 = 1
153     0073            TYPE16 = 0
154     0074            TYPE17 = 2
155             ;
156     0075            FRV0 = 0
157     0076            FRV1 = 0
158     0077            FRV2 = 0
159     0078            FRV3 = 1
160     0079            FRV15 = 1
161     0080            FRV16 = 0
162     0081            FRV17 = 1
163             ;
164     0082            AI0 = 1200.0
165             ;
```

```
166          ;        E N D   I N I T I A L I Z I N G
167          ;
168          ;        S E N D   P R O G R A M   S T A R T   M E S S A G E
169          ;
170    0083           ANALOG = 0
171    0084           ILOOP = STAR
172    0085           PTYPE = 0
173    0086           FSTART = 1
174    0087           GOSUB ACKK
175    0088           ON ERROR GOSUB ERRSUB
176          ;
177          ;        B E G I N   P R O G R A M   L O O P
178          ;
179    0089  AGAIN:   MARK STEP "WTUNTL",0,0
180          ;        WAITUNTIL SELECT() | FABORT       ; Wait until micro is selected or program aborted
181          ;        IF ( FABORT) THEN GOTO TERM       ; Terminate program if abort flag set
182    0090           MARK STEP "RNNING",0,0
183    0091           WAIT 1
184    0092           IF (FSNO) THEN                    ; If alarm flag is set
185    0093              IF STIMEO > 60 THEN            ; If alarm flag active for 1 minute
186                          BEGIN                      ; Reset timer and turn off flag
187    0094                  TIMEROFF STIMEO
188    0095                  TIMERCLR STIMEO
189    0096                  LET FSNO = 0
190    0097                  LET ERRN = 0
191    0098                  LET ERRL = 0
192                          END
193          ;
194          ;        If URW-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
195          ;
196    0099           IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
197                      BEGIN
198    0100              PDEV:DEV_TMPO = 1              ; Put URW-ALARM in ack state
199    0101              LET FTRIP4 = 1                 ; Set for unit alarm ack, system to graphic
200    0102              LET ACK = 1                    ; Set for unit alarm ack, graphic to system
201    0103              CRIT
202    0104              LAMP ADI,SKDKEY,1              ; Turn lamp on
203                      END
204          ;
205          ;        BEGIN DINs:
206          ;
207    0105           ASSIGN PDIN = 'FSL-RC2-1'
208    0106           ASSIGN PTYPE = TYPEO
209    0107           ASSIGN PREV = FRVO
210    0108           ASSIGN PSTAT = INTO
211    0109           ASSIGN PPASS = FPASO
212    0110           LET CURENT = 0                    ; Used to set lamp status
213    0111           LET LAST = 0
214    0112           LET ANALOG = 0
215    0113           LET NXT = 0
216    0114           LMPVAR = 0
217    0115           BITVAL = 0
218          ;
219    0116  LOP:     FOR ILOOP = 0 TO 3
220          ;        IF !SELECT() THEN GOTO AGAIN
```

```
0117            IF ( PTYPE > 0 ) THEN                                   ; If some type of alarm
                   BEGIN                                          ;be1
0119               IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN is inhibited
0121               IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5            ; If EPN is bad input
0123               IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4             ; If EPN is disabled
0124               IF ( PSTAT < 3 ) THEN                          ; If not inhibited
                        BEGIN                                     ;be2
0125                    IF (PSTAT = 1) THEN
                           BEGIN                                  ;be3
0126                       IF (PTYPE != 1) THEN
0128                          IF AND(PDIN:DIN_ALMCT,32)THEN GOSUB ACK1
0130                       IF (FTRIP4) THEN GOSUB ACK1
                           END                                    ;en3
0133                    IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0134                    IF (PSTAT) THEN
                              BEGIN                               ;be4
0136                          IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
0137                          NXT = PSTAT
0139                          IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0140                          LAST = OR(LAST,NXT)
                              END                                 ;en4
                        END                                       ;en2
0142                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                    END                                           ;en1
0143            STEP PDIN BY 1
0144            STEP PTYPE BY 1
0145            STEP PREV BY 1
0146            STEP PSTAT BY 1
0147            STEP PPASS BY 1
0148            NEXT ILOOP
        ;
        ;       END DINs
        ;
        ;       BEGIN ANALOG RED AND YELLOWS:
        ;
0149            ASSIGN PSKID = SKID4
0150            ASSIGN PAI = 'FIC-EC1-1'
0151            FOR JLOOP = 4 TO 14
        ;       IF !SELECT() THEN GOTO AGAIN
0152            IF (PTYPE) THEN                                   ; If some alarm exists
                   BEGIN                                  ;be1
0153               BITVAL = PAI:AI_ALMCT
0154               IF !AND(BITVAL,16) THEN                        ; If not inhibited
                      BEGIN                               ;be2
0155                  IF AND(BITVAL,15) THEN                      ; If alarm exists and is current
                         BEGIN                            ;be3
0157                     IF AND(BITVAL,32) THEN NXT = 2           ; If alarm is ack
                         ELSE                                     ; If alarm is unack
                            BEGIN                         ;be4
0158                        IF PSKID !=BITVAL THEN
                                BEGIN                     ;be5
0160                            IF BITVAL < 3 THEN FALMON = 1
0161                            LET PSKID = BITVAL
0162                            PDEV:DEV_TMP0 = 2
0163                            NXT = 1
```

```
                                    END                          ;en5
0164                              ELSE NXT = 1
                                    END                          ;en4
                                 END                             ;en3
                              ELSE                                        ; Else there is no alarm
                                 BEGIN
0165                             NXT = 0
0166                             LET PSKID = 0
                                 END
                              END                                ;en2
                           ELSE                                           ; Else alarm is inhibited
                              BEGIN
0167                          NXT = 0
0168                          LET PSKID = 0
                              END
0169                       ANALOG = OR(ANALOG,NXT)
                           END                                   ;en1
0170                    STEP PREV BY 1
0171                    STEP PSTAT BY 1
0172                    STEP PSKID BY 1
0173                    STEP PTYPE BY 1
0174                    STEP PAI BY 1
0175                    NEXT JLOOP
          ;
          ;             END ANALOG RED AND YELLOWS
          ;
          ;             BEGIN ANALOG WHITE ALARMS:
          ;
0176                    WHITE = 0
0177                    ASSIGN PALARM = AI0
0178                    ASSIGN PREV = FRV15
0179                    ASSIGN PSTAT = INT15
0180                    ASSIGN PTYPE = TYPE15
          ;
0181                    ASSIGN PAI = 'FIC-EC1-1'
0182                    ILOOP = 15
0183                    GOSUB ANLG
                        ;
                        ; Use LEAK0 with string packet 78 in URW graphic for FIC-EC1-1 LO:
                        ;
0185                    IF INT15 = 3 ¦ INT16 = 3 THEN LET LEAK0 = 9
0187                       ELSE IF (INT16) THEN LET LEAK0 = INT16 + 4
0189                          ELSE IF(INT15) THEN LET LEAK0 = INT15 + 2
0190                             ELSE LET LEAK0 = 0
          ;
          ;             END ANALOG WHITE ALARMS
          ;
          ;             BEGIN RC2-PIG ALARM:
          ;
0191      RC2:          ASSIGN PTYPE = TYPE17
0192                    ASSIGN PREV = FRV17
0193                    ASSIGN PSTAT = INT17
0194                    ASSIGN PPASS = FPAS17
          ;             IF !SELECT() THEN GOTO AGAIN
0195                    IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
```

```
                    BEGIN                                                   ;be1
0197                IF AND('RC2-PIG':DEV_ALMCT,16) THEN LET PSTAT = 3                ; If EPN is inhibited
        ;-mct1+     IF AND('RC2-PIG':DEV_ALMCT,4) THEN BLET PSTAT = 5                ; No IBAD on devices
0199                IF !AND('RC2-PIG':DEV_FLG,8) THEN LET PSTAT = 4                  ; If EPN is disabled
0200                IF ( PSTAT < 3 ) THEN                                   ; If not inhibited
                        BEGIN                                               ;be2
0201                     IF (PSTAT = 1) THEN
                           BEGIN                                            ;be3
0202                       IF (PTYPE != 1) THEN
0204                          IF AND('RC2-PIG':DEV_ALMCT,32) THEN GOSUB ACK1
0206                       IF (FTRIP4) THEN GOSUB ACK1
                           END                                              ;en3
0208                     IF PSTAT = 0 THEN IF ('RC2-PIG':DEV_ALMCT = 7) THEN
                           BEGIN                                            ;be4
0209                       CRIT
0210                       LET PSTAT = 1
0211                       'URW-ALARM':DEV_TMPO = 2
0212                       FALMON = 1
0213                       LAMP ADI,SKDKEY,2
0214                       GOSUB ACKK
0215                       NOCRIT
                           END                                              ;en4
0216                     IF (PSTAT) THEN
                              BEGIN                                         ;be5
0217                          IF !AND('RC2-PIG':DEV_ALMCT,7) THEN
                                 BEGIN                                      ;be6
0218                             LET PSTAT = 0
0219                             LET FCLEAR = 1
0220                             GOSUB ACKK
                                 END                                        ;en6
0221                          NXT = PSTAT
0223                          IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0224                          LAST = OR(LAST,NXT)
                              END                                           ;en5
                        END                                                 ;en2
0226                 ELSE IF !AND('RC2-PIG':DEV_ALMCT,16)&AND('RC2-PIG':DEV_FLG,8)THEN LET PSTAT = 0
0228                 IF PSTAT = 5 THEN PSTAT = 0
                    END                                                     ;en1
        ;
        ;       END RC2-PIG ALARM
        ;
0229            MARK STEP "BELOW",0,0
0230            FTRIP4 = 0
0232            IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
0233            CURENT = OR(LAST,WHITE)
0234            CURENT = OR(CURENT,ANALOG)
0236            IF AND(CURENT,1) THEN LMPVAR = 2
0238               ELSE IF AND(CURENT,2) THEN LMPVAR = 1
0239                       ELSE LMPVAR = 0
0240            LAMP ADI,SKDKEY,LMPVAR
0241            MARK STEP "BOTTOM",0,0
0242            NOCRIT
        ;
        ;       BEGIN LOGIC FOR GRAPHICS:
        ;
```

```
386   0243          AT0 = AND(RC2_PIG,1)
387   0244          AT1 = AND(RC2_PIG,2)
388   0245          AT2 = AND(RC2_PIG,4)
389   0246          AT3 = AND(RC2_PIG,8)
390   0247          AT4 = AND(RC2_PIG,16)
391   0248          AT5 = AND('RC2-SAMP':DEV_TMP0,32)
392   0249          AT6 = AND(RC2_PIG,64)
393   0250          AT7 = and('RC2-SAMP':DEV_TMP0,128)
394   0251          AT8 = and(rc2_pig,256)
395   0252          SA3 = AND('RC2-PIG':DEV_STAT,8)          ; DI/DRAIN
396   0253          SA4 = AND('RC2-PIG':DEV_STAT,16) ; DI/VN/DR
397   0254          SA5 = AND('RC2-PIG':DEV_STAT,32) ; INTERLOCK
398   0255          SA6 = AND('RC2-PIG':DEV_STAT,64) ; LOW FLOW
399   0256          GT0 = AND(PB2GLOBAL:DEV_TMP1,2)
400           ;
401           ;     END LOGIC FOR GRAPHICS
402           ;
403           ;     BEGIN FQIC-RESET:
404           ;
405           ;     Function:       For FQIC loops that have a CALC block which performs the
406           ;                     integration, set the output of the CALC block to zero
407           ;                     after the RC2-SAMP device is turned off.
408           ;
409   0258          IF AND(DEVON,2) THEN SD0 = 1                    ; If on (2), set device stat flag
410   0259          IF AND(DEVON,1) & AND(SD0,1) THEN               ; For on-off transition
411                    BEGIN
412   0260             SD0 = 0
413   0261             PRINT ADI,"... FQIC-RC2 LAST READING =  %f GAL",CALOUT
414   0262             CALOUT = 0.0
415                    END
416           ;
417           ;     END FQIC-RESET
418           ;
419           ;     DEVs To Lock In Manual:
420           ;
421   0264          IF AND('URW-ALARM':DEV_FLG,64) THEN PUTMANL 'URW-ALARM'
422   0266          IF AND('RC2-SAMP':DEV_FLG,64) THEN PUTMANL 'RC2-SAMP'
423   0268          IF AND('RC2-PIG':DEV_FLG,64) THEN PUTMANL 'RC2-PIG'
424           ;
425   0269          GOTO AGAIN
426           ;
427           ;     E N D   P R O G R A M   L O O P
428           ;
429           ;     BEGIN ANALOG WHITE SUBROUTINE:
430           ;
431           ; ANLG:  IF !SELECT() THEN GOTO AGAIN
432   0270    ANLG:   IF (PTYPE = 1) THEN                                  ; If some alarm
433                    BEGIN                                        ;be1
434   0271             BITVAL = PAI:AI_ALMCT
435   0272             IF !(AND(BITVAL,16)) THEN                           ; If not inhibited
436                      BEGIN                                      ;be2
437   0274               IF PSTAT = 3 THEN LET PSTAT = 0
438   0275               IF (PREV) THEN                                    ; If rev acting, LOLO, or LO
439                        BEGIN                                    ;be3
440   0276                 IF (PSTAT = 0) THEN                             ; If not previously alarmed
```

```
                                BEGIN                                   ;be4
0278                            IF (PAI:AI_MEAS <= PALARM) THEN GOSUB ALM
                                END                                     ;en4
                             ELSE
                                BEGIN                                   ;be5
0279                            IF (PSTAT = 1) THEN                             ; If previously alarmed
                                   BEGIN                                ;be6
0281                               IF (FTRIP4) THEN GOSUB ACK1                  ; If ACK flag set, then ack it
0284                               IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                                   END                                  ;en6
0286                            IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                                END                                     ;en5
                             END                                        ;en3
                          ELSE                                                  ; If fail-safe, HIHI, or HI
                             BEGIN                                      ;be10
0287                         IF (PSTAT = 0) THEN
                                BEGIN                                   ;be11
0289                            IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
                                END                                     ;en11
                             ELSE
                                BEGIN                                   ;be12
0290                            IF (PSTAT = 1) THEN
                                   BEGIN                                ;be13
0292                               IF (FTRIP4) THEN GOSUB ACK1
0295                               IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                                   END                                  ;en13
0297                            IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                                END                                     ;en12
                             END                                        ;en10
0298                   NXT = PSTAT
0300                   IF (PPASS) & (PSTAT = 2) THEN NXT = 0
                       END                                              ;en2
                       ELSE
                         BEGIN
0301                     LET PSTAT = 3
0302                     NXT = 0
                         END
0303                WHITE = OR(WHITE,NXT)
                    END                                                 ;en1
0304                ELSE LET PSTAT = 0
0305                STEP PALARM BY 1
0306                STEP PSTAT BY 1
0307                STEP PTYPE BY 1
0308                STEP PREV BY 1
0309                STEP PPASS BY 1
0310                ILOOP = ILOOP + 1
0311                RETURN
         ;
         ;          END ANALOG WHITE SUBROUTINE
         ;
         ;          BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
         ;
0312     CLR:       LET PSTAT = 0
0315                IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0316                LET FCLEAR = 1
```

```
496   0317            GOSUB ACKK
497   0318            RETURN
498           ;
499   0319    ALM:    LET PSTAT = 1
500   0322            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
501   0323            PDEV:DEV_TMPO = 2
502   0324            LAMP ADI,SKDKEY,2
503   0326            IF AND(PTYPE,3)THEN FALMON = 1
504   0327            CRIT
505   0328            GOSUB ACKK
506   0329            RETURN
507           ;
508   0330    ACK1:   LET PSTAT = 2
509   0331            LET FACK = 1
510           ;
511           ;       ALARM TYPER STRINGS:
512           ;
513   0333    ACKK:   IF ILOOP = 0 THEN STRNGO = "URW SAMPLER FLOW LOW"
514   0335            IF ILOOP = 1 THEN STRNGO = "URW SAMPLER RADIATION HI"
515   0337            IF ILOOP = 2 THEN STRNGO = "URW SYSTEM FAIL"
516   0339            IF ILOOP = 3 THEN STRNGO = "RC2 RADIATION BYPASS ON "
517   0341            IF ILOOP = 15 THEN STRNGO = "E-C-1 CONDENSER URW FLOW LO"
518   0343            IF ILOOP = 16 THEN STRNGO = "E-C-1 CONDENSER URW FLOW HI"
519   0345            IF ILOOP = 17 THEN STRNGO = "RC1-PIG LOW FLOW"
520   0347            IF ILOOP = 24 THEN STRNGO = "START URWBATCH PGM "
521   0349            IF ILOOP = 25 THEN STRNGO = "URWBATCH WRONG UNIT"
522   0351            IF ILOOP = 26 THEN STRNGO = "TERMINATE URWBATCH "
523           ;
524   0352    AMSG:   IF PTYPE = 1 THEN
525                      BEGIN
526   0354               IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
527   0355               IF (FACK) THEN
528                        BEGIN
529   0356                 PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
530   0357                 LET FACK = 0
531                        END
532                      END
533   0358            IF (FCLEAR) THEN
534                      BEGIN
535   0359               PRINT ADI,"%p ALARM CLEAR",STRNGO
536   0360               LET FCLEAR = 0
537                      END
538   0361            IF (FSTART) THEN
539                      BEGIN
540   0362               LET FSTART = 0
541   0363               PRINT ADI,"%p",STRNGO
542                      END
543   0364            RETURN
544           ;
545   0365    ERRSUB: IF ERRN != ERRNUM() THEN
546                      BEGIN
547   0366               TIMERON STIME0
548   0367               TIMERCLR STIME0
549   0368               LET FSN0 = 1
550   0369               LET ERRN = ERRNUM()
```

```
551   0370                LET ERRL = ERRLIN()
552   0371                PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
553                       END
554   0372              ERSCLR
555   0373              GOTO AGAIN
556             ;
557             ; TERM:  LET FABORT = 0
558   0374      TERM:   LET STRNGO = "URWBATCH TERMINATED    "
559   0375              LET ILOOP = STAR + 2
560   0376              LET FSTART = 1
561   0377              LET STRNGO = "TERM"
562   0378              GOSUB ACKK
563                     END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 7248 Bytes, 453 Pages
23 Forward Reference(s)

VENTBATCH

```
;       V E N T B A T C H . S E Q                                   VERSION 3
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 020,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]VENTBATCH
;
;       UNIT = 13, SKDKEY = 39
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ----------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
; MODIFICATION LOG:
;
;       29-DEC-92       Added ammonia monitor signals, O/C Display      M. Teats
;                       Bar code for TDIC-HC11, and comments.
;
;       31-DEC-92       Fixed white alarm print message.        M. Teats
;
;       27-JAN-93       Added HTR-PRMI, INTERLOK statuses for           M. Teats
;                       HC1-INLK1 (SB3, SB5)
;
;       08-JUN-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;
```

```
            ;       15-DEC-94       Revised header to indicate th enew VMS          J. Berger
            ;                       system. Rebaselined document. Remove
            ;                       obsolite Select() statements.
            ;
            ;       25-MAY-95       Changed FRV16 from 0 to 1 for AXS-NH3-1         M. Teats
            ;                       (search +mct1-).  Per EE-95-00006 and
            ;                       ECN 613434.
            ;
            ;  END MOD LOG
            ;
            UNIT    VVENT
            ;
                    COMMON PB2
                    FLAGBITS == PSPAR0
                    EXC_TMP1 == 'EXC1-INLK':DEV_TMP1
            ;
0000                NOP
0001                STAR = 35                       ; Start message
0002                LET SKDKEY = 39         ; SKID Key
0003                LET UNITT = 13                  ; SEQ Unit number
0004                ASSIGN PDEV = 'VV-ALARM' ; Alarm device
0005                ASSIGN PTYPE = TYPE35
0006                LET ADI = 0                     ; Alarm destination index
0007                LET FSN0 = 0                    ; No alarms yet
0008                TIMEROFF STIMEO         ; Alarm timer off
0009                TIMERCLR STIMEO         ; Alarm timer clear
0010                LET STRNG0 = " "                ; Blank 30 character string
0011                LET ERRN = 0                    ; Set error number to zero
0012                LET ERRL = 0                    ; Set error line to zero
0013                LET FTRIP4 = 0                  ; FTRIP4 = 1 when audible horn is to be turned on
0014                GETUNIT TRIP                    ; Which sequence unit is program running in
0015                IF TRIP != UNITT THEN           ; Abort if running in wrong seq. unit
                       BEGIN
0016                   FSTART = 1
0017                   ILOOP = STAR + 1
0018                   PTYPE = 0
0019                   GOSUB ACKK
0020                   GOTO TERM
                       END
            ;       IF !SELECT() THEN GOTO AGAIN
            ;
            ;       B E G I N   I N I T I A L I Z I N G :
            ;
0021                STRNG0 = "INIT"
0022        INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
0023                LET FSTART = 0                  ; Program start flag = 0
0024                LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
0025                LET LSG0 = " "                  ; Clear the string variables
0026                LET LSG1 = " "
0027                LET LSG2 = " "
0028                LET LSG3 = " "
0029                LET LSG4 = " "
0030                PDEV:DEV_TMP0 = 1                                ; Set alarm device to non-alarm state
0031                IF AND(PDEV:DEV_ALMCT,16) THEN                   ; If alarm device is inhibited, remove the inhibit
0032                  PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
```

```
111   0033          IF AND(PDEV:DEV_ALMCT,32) THEN                    ; If alarm device is ack, clear it
112   0034             PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
113         ;
114         ;       First, set all flags and integers:
115         ;
116         ;       ILOOP 0-16 are DINS, 17-32 are AINS red and yellow, 33-34 are AIN white
117         ;
118         ;       EPN             TYPE    INT     ILOOP
119         ;
120         ;       PDSH-FC51       4       INT0    0
121         ;       PDSL-FC51       2       INT1    1
122         ;       ZS-FC5-1        2       INT2    2
123         ;       PDSH-FC52       4       INT3    3
124         ;       ZS-FC5-2        2       INT4    4
125         ;       YS-EXC-1        0       INT5    5
126         ;       YS-EXC3RL       2       INT6    6
127         ;       TSHH-HC13       4       INT7    7
128         ;       RXS-VVALP       2       INT8    8
129         ;       RSH-VVALP       4       INT9    9
130         ;       RXS-VVB/G       2       INT10   10
131         ;       RSH-VVB/G       4       INT11   11
132         ;       QXS-VV-1        2       INT12   12
133         ;       (SPARE)         0       INT13   13      SKIP
134         ;       PDSH-AS-1       2       INT14   14
135         ;       PDSL-AS-2       2       INT15   15
136         ;       AXS-NH3-1       2       INT16   16
137         ;
138         ;       PDI-FC5-2       2       SKID17  17
139         ;       PDI-FC5-1       2       SKID18  18
140         ;       PDI-DUC1        2       SKID19  19
141         ;       II-EXC-1        0       SKID20  20
142         ;       PDI-FC6-1       2       SKID21  21
143         ;       FQI-AS-5        0       SKID22  22
144         ;       TI-HC1-1        0       SKID23  23
145         ;       TI-HC1-2        2       SKID24  24
146         ;       TI-FC5-1        2       SKID25  25
147         ;       TDIC-HC11       6       SKID26  26
148         ;       FI-AS-5         6       SKID27  27
149         ;       PDI-FC512       6       SKID28  28
150         ;       RI-VVALP        4       SKID29  29
151         ;       RI-VVB/G        4       SKID30  30
152         ;       II-AS-1         0       SKID31  31
153         ;       AI-NH3-1        2       SKID32  32
154         ;
155         ;       II-EXC-1        1       SKID33  33      LO      1.0
156         ;       II-AS-1         1       SKID34  34      LO      2.0
157         ;
158   0035          ASSIGN PDIN = 'PDSH-FC51'                         ; Assign pointer to first DIN
159   0036          ASSIGN PSTAT = INT0
160   0037          ASSIGN PTYPE = TYPE0
161   0038          ASSIGN PREV = FRV0
162   0039          ASSIGN PSKID = SKID0
163   0040          ASSIGN PPASS = FPAS0
164         ;
165   0041          FOR ILOOP = 0 TO 34
```

```
166   0042          LET PPASS = 0
167   0043          LET PREV = 0
168   0045          IF PSTAT > 5 THEN PSTAT = 0                    ; Reset current status if undefined
169   0046          LET PSKID = 0                                  ; Default previous status to no alarms
170   0047          LET PTYPE = 0                                  ; Default to no alarms
171   0049          IF ILOOP = 13 THEN GOTO SKP                    ; (Spare)
172   0050          IF ILOOP <= 16 THEN                            ; For DINs
173                    BEGIN
174   0051             LET PTYPE = 2                               ; Default to yellow alarm
175   0052             IF AND(PDIN:DIN_DFLG,3)THEN                 ; Check for alarms (must be a red or yellow)
176                       BEGIN
177   0053                LET PTYPE = 2                            ; Default to yellow alarm
178   0055                IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1  ; Reverse acting
179   0057                IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4  ; Set to red critical
180                       END
181                    END
182   0059          IF (ILOOP >= 17 & ILOOP <= 32) THEN PTYPE = 4  ; For AINs red and yellow
183   0061    SKP:  IF ILOOP < 16 THEN STEP PDIN BY 1              ; For DINs, point to next DIN
184   0063          IF ILOOP >= 33 THEN PTYPE = 1                  ; For AIN white
185   0064          STEP PPASS BY 1
186   0065          STEP PREV BY 1
187   0066          STEP PSTAT BY 1
188   0067          STEP PSKID BY 1
189   0068          STEP PTYPE BY 1
190   0069          NEXT ILOOP
191         ;
192   0070          TYPE5 = 0                  ; YS-EXC-1
193   0071          TYPE13 = 0                 ; (SPARE)
194   0072          TYPE20 = 0                 ; II-EXC-1
195   0073          TYPE22 = 0                 ; FQI-AS-5
196   0074          TYPE23 = 0                 ; TI-HC1-1
197   0075          TYPE31 = 0                 ; II-AS-1
198         ;
199   0076          FRV0 = 0                   ; PDSH-FC51
200   0077          FRV1 = 0                   ; PDSL-FC51
201   0078          FRV2 = 1                   ; ZS-FC5-1
202   0079          FRV3 = 0                   ; PDSH-FC52
203   0080          FRV4 = 1                   ; ZS-FC5-2
204   0081          FRV5 = 0                   ; YS-EXC-1
205   0082          FRV6 = 0                   ; YS-EXC3RL
206   0083          FRV7 = 0                   ; TSHH-HC13
207   0084          FRV8 = 0                   ; RXS-VVALP
208   0085          FRV9 =0                    ; RSH-VVALP
209   0086          FRV10 = 0                  ; RXS-VVB/G
210   0087          FRV11 = 0                  ; RSH-VVB/G
211   0088          FRV12 = 0                  ; QXS-VV-1
212   0089          FRV13 = 0                  ; (SPARE)
213   0090          FRV14 = 0                  ; PDSH-AS-1
214   0091          FRV15 = 0                  ; PDSL-AS-2
215   0092          FRV16 = 1                  ; AXS-NH3-1: changed from 0, 5-25-95, +mct1-
216   0093          FRV33 = 1                  ; II-EXC-1 LO
217   0094          FRV34 = 1                  ; II-AS-1 LO
218         ;
219   0095          AI0 = 1.0                  ; II-EXC-1 LO    ILOOP 33
220   0096          AI1 = 2.0                  ; II-AS-1 LO     ILOOP 34
```

```
                ;
0097                AI19 = 0.0                  ; For TDIC-HC11 PID output, O/C Display Bar
                ;
                ;       E N D   I N I T I A L I Z I N G
                ;
                ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
                ;
0098                ANALOG = 0
0099                ILOOP = STAR
0100                FSTART = 1
0101                GOSUB ACKK
0102                ON ERROR GOSUB ERRSUB
                ;
                ;       B E G I N   P R O G R A M   L O O P :
                ;
0103            AGAIN:  MARK STEP "WTUNTL",0,0
                ;       WAITUNTIL SELECT() | FABORT       ; Wait until micro is selected or program aborted
                ;       IF (FABORT) THEN GOTO TERM        ; Terminate program is FABORT flag set
0104                MARK STEP "RNNING",0,0
0105                WAIT 1
0106                IF (FSNO) THEN                    ; If alarm flag is set
0107                   IF STIMEO > 60 THEN            ; If alarm flag is active for 1 minute
                          BEGIN                       ; Reset timer and turn off flag
0108                      TIMEROFF STIMEO
0109                      TIMERCLR STIMEO
0110                      FSNO = 0
0111                      ERRN = 0
0112                      ERRL = 0
                          END
                ;
                ;       If VV-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
                ;
0113                IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
                       BEGIN
0114                   PDEV:DEV_TMPO = 1              ; Put VV-ALARM in ACKNWLDG state
0115                   FTRIP4 = 1                     ; Set for Unit alarm acknowledgement, system to graphic
0116                   ACK = 1                        ; Set for Unit alarm acknowledgement, graphic to system
0117                   CRIT
0118                   LAMP ADI,SKDKEY,1              ; Turn LAMP on
                       END
                ;
                ;       BEGIN DINs:
                ;
0119                ASSIGN PDIN = 'PDSH-FC51'
0120                ASSIGN PTYPE = TYPEO
0121                ASSIGN PREV = FRVO
0122                ASSIGN PSTAT = INTO
0123                ASSIGN PPASS = FPASO
0124                LET CURENT = 0                    ; Used to set lamp status
0125                LET LAST = 0
0126                LET ANALOG = 0
0127                LET NXT = 0
0128                LMPVAR = 0
0129                BITVAL = 0
                ;
```

```
0130    LOP:    FOR ILOOP = 0 TO 16
        ;       IF !SELECT() THEN GOTO AGAIN
0131            IF ( PTYPE > 0 ) THEN                                   ; If some type of alarm
                   BEGIN                                        ;be1
0133               IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN inhibited
0135               IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5            ; If EPN is bad input
0137               IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4             ; If EPN is disabled
0138               IF ( PSTAT < 3 ) THEN                        ; If not inhibited
                        BEGIN                                   ;be2
0139                    IF (PSTAT = 1) THEN
                           BEGIN                                ;be3
0140                       IF (PTYPE != 1) THEN
0142                          IF AND(PDIN:DIN_ALMCT,32)  THEN GOSUB ACK1
0144                       IF (FTRIP4) THEN GOSUB ACK1
                           END                                  ;en3
0147                    IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0148                    IF (PSTAT) THEN
                              BEGIN                             ;be4
0150                          IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
0151                          NXT = PSTAT
0153                          IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0154                          LAST = OR(LAST,NXT)
                              END                               ;en4
                        END                                     ;en2
0156                 ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                    END                                         ;en1
0157            STEP PDIN BY 1
0158            STEP PTYPE BY 1
0159            STEP PREV BY 1
0160            STEP PSTAT BY 1
0161            STEP PPASS BY 1
0162            NEXT ILOOP
        ;
        ;       END DINs
        ;
        ;       BEGIN ANALOG RED AND YELLOWS:
        ;
0163            ASSIGN PAI = 'PDI-FC5-2'
0164            ASSIGN PREV = FRV17
0165            ASSIGN PSTAT = INT17
0166            ASSIGN PSKID = SKID17
0167            ASSIGN PTYPE = TYPE17
0168            FOR JLOOP = 17 TO 32
        ;       IF !SELECT() THEN GOTO AGAIN
0169            IF (PTYPE) THEN                                 ; If some alarm exists
                   BEGIN                                ;be1
0170               BITVAL = PAI:AI_ALMCT
0171               IF !AND(BITVAL,16) THEN                      ; If not inhibited
                      BEGIN                             ;be2
0172                  IF AND(BITVAL,15) THEN                    ; If alarm exists and is current
                         BEGIN                          ;be3
0174                     IF AND(BITVAL,32) THEN NXT = 2         ; If alarm is ack
                         ELSE                                   ; If alarm is unack
                            BEGIN                       ;be4
0175                        IF PSKID !=BITVAL THEN
```

```
                                    BEGIN                        ;be5
0177                                IF BITVAL < 3 THEN FALMON = 1
0178                                LET PSKID = BITVAL
0179                                PDEV:DEV_TMP0 = 2
0180                                NXT = 1
                                    END                          ;en5
0181                            ELSE NXT = 1
                                END                              ;en4
                             END                                 ;en3
                          ELSE                                          ; Else there is no alarm
                             BEGIN
0182                         NXT = 0
0183                         LET PSKID = 0
                             END
                          END                                    ;en2
                       ELSE                                             ; Else alarm is inhibited
                          BEGIN
0184                      NXT = 0
0185                      LET PSKID = 0
                          END
0186                   ANALOG = OR(ANALOG,NXT)
                       END                                       ;en1
0187                STEP PAI BY 1
0188                STEP PREV BY 1
0189                STEP PSTAT BY 1
0190                STEP PSKID BY 1
0191                STEP PTYPE BY 1
0192                NEXT JLOOP
          ;
          ;         END ANALOG RED AND YELLOWS
          ;
          ;         BEGIN ANALOG WHITE ALARMS:
          ;
0193      WHT:      ASSIGN PALARM = AI0
0194                ASSIGN PSTAT = INT33
0195                ASSIGN PREV = FRV33
0196                ASSIGN PPASS = FPAS33
0197                ASSIGN PTYPE = TYPE33
0198                WHITE = 0
          ;
0199                ILOOP = 33
0200                ASSIGN PAI = 'II-EXC-1'
0201                GOSUB ANLG                ; 33
0202                ASSIGN PAI = 'II-AS-1'
0203                GOSUB ANLG                ; 34
                    ;
                    ;  For hi or lo DP alarm on F-AS-1, set alarm box to yellow:
                    ;
0205                IF (INT14 != 3 & INT14 >0) | (INT15 !=3 & INT15 > 0 ) THEN LET LEAK3 = 1
0206                   ELSE LET LEAK3 = 0
          ;
          ;         END ANALOG WHITE ALARMS
          ;
0207                MARK STEP "BELOW",0,0
0208                FTRIP4 = 0
```

```
386   0210          IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
387   0211          CURENT = OR(LAST,WHITE)
388   0212          CURENT = OR(CURENT,ANALOG)
389   0214          IF AND(CURENT,1) THEN LMPVAR = 2
390   0216             ELSE IF AND(CURENT,2) THEN LMPVAR = 1
391   0217                  ELSE LMPVAR = 0
392   0218          LAMP ADI,SKDKEY,LMPVAR
393   0219          MARK STEP "BOTTOM",0,0
394   0220          NOCRIT
395         ;
396         ;       BEGIN O/C DISPLAY BAR:
397         ;
398         ;       Fucntion:       Upon loss of permissive, put the control loop in manual
399         ;                       and set the PID block output to zero.
400         ;
401   0222          IF AND('EX-C-1':DEV_STAT,2) THEN DLEAK3 = 1                    ; Permissive must be Hi (1)
402   0223          IF !AND('EX-C-1':DEV_STAT,2) & AND(DLEAK3,1) THEN         ; Permissive lost and 1st pass
403                    BEGIN
404   0224             PUTMANL 'TDIC-HC11'
405   0225             PRINT ADI," PERMISSIVE LOST >>> TDIC-HC11 PUT IN MANUAL"
406   0226             PUTOUT 'TDIC-HC11',AI19
407   0227             PRINT ADI," PERMISSIVE LOST >>> TDIC-HC11 OUTPUT SET TO ZERO"
408   0228             DLEAK3 = 0
409                    END
410         ;
411         ;       END O/C DISPLAY BAR
412         ;
413         ;       BEGIN LOGIC FOR GRAPHICS:
414         ;
415   0229          ASSIGN FLAGBITS = AT23
416   0230          BVAL = 128
417   0231              FOR IN1 = 23 TO 28
418   0232              FLAGBITS = AND(BVAL,EXC_TMP1)
419   0233              BVAL=BVAL<1
420   0234              STEP FLAGBITS BY 1
421   0235              NEXT IN1
422         ;
423   0236          AT31 = AND('EX-C-1':DEV_TMP1,32768)
424   0237          AT0 = 'YS-EXC3RL':DIN_VAL
425   0238          AT1 = AND('EX-C-1':DEV_TMP0,1)
426   0239          AT2 = 'YS-EXC-1':DIN_VAL
427   0240          GT14 = AND(PB2GLOBAL:DEV_TMP0,16384)
428   0241          SA0 = AND('EX-C-1':DEV_STAT,16)
429   0242          SA1 = AND('EX-C-1':DEV_STAT,4)
430   0243          SB3 = AND('HC1-INLK1':DEV_STAT,8)         ; HTR-PRMI
431   0244          SB5 = AND('HC1-INLK1':DEV_STAT,32)        ; INTERLOK
432         ;
433         ;       END LOGIC FOR GRAPHICS
434         ;
435         ;       DEVICES TO LOCK IN MANUAL:
436         ;
437   0246          IF AND('VV-ALARM':DEV_FLG,64) THEN PUTMANL 'VV-ALARM'
438   0248          IF AND('EX-C-1':DEV_FLG,64) THEN PUTMANL 'EX-C-1'
439         ;
440   0249          GOTO AGAIN
```

```
441            ;
442            ;        E N D   P R O G R A M   L O O P
443            ;
444            ;        BEGIN ANALOG WHITE SUBROUTINE:
445            ;
446            ; ANLG:  IF !SELECT() THEN GOTO AGAIN
447     0250   ANLG:    IF (PTYPE = 1) THEN                                  ; If some alarm
448                       BEGIN                                        ;be1
449     0251              BITVAL = PAI:AI_ALMCT
450     0252              IF !(AND(BITVAL,16)) THEN                            ; If not inhibited
451                         BEGIN                                      ;be2
452     0254                IF PSTAT = 3 THEN LET PSTAT = 0
453     0255                IF (PREV) THEN                                     ; If rev acting, LOLO, or LO
454                            BEGIN                                   ;be3
455     0256                   IF (PSTAT = 0) THEN                             ; If not previously alarmed
456                               BEGIN                                ;be4
457     0258                      IF (PAI:AI_INVL <= PALARM) THEN GOSUB ALM
458                               END                                  ;en4
459                            ELSE
460                               BEGIN                                ;be5
461     0259                      IF (PSTAT = 1) THEN                             ; If previously alarmed
462                                  BEGIN                             ;be6
463     0261                         IF (FTRIP4) THEN GOSUB ACK1                 ; If ACK flag set, then ack it
464     0264                         IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
465                                  END                               ;en6
466     0266                      IF (PAI:AI_INVL >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
467                               END                                  ;en5
468                            END                                     ;en3
469                         ELSE                                               ; If fail-safe, HIHI, or HI
470                            BEGIN                                   ;be10
471     0267                   IF PSTAT = 0  THEN
472                               BEGIN                                ;be11
473     0269                      IF (PAI:AI_INVL >= PALARM) THEN GOSUB ALM
474                               END                                  ;en11
475                            ELSE
476                               BEGIN                                ;be12
477     0270                      IF (PSTAT = 1) THEN
478                                  BEGIN                             ;be13
479     0272                         IF (FTRIP4) THEN GOSUB ACK1
480     0275                         IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
481                                  END                               ;en13
482     0277                      IF (PAI:AI_INVL <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
483                               END                                  ;en12
484                            END                                     ;en10
485     0278              NXT = PSTAT
486     0280              IF (PPASS) & (PSTAT = 2) THEN NXT = 0
487                       END                                          ;en2
488                       ELSE
489                         BEGIN
490     0281                LET PSTAT = 3
491     0282                NXT = 0
492                         END
493     0283            WHITE = OR(WHITE,NXT)
494                     END                                            ;en1
495     0284            ELSE LET PSTAT = 0
```

```
496   0285          STEP PALARM BY 1
497   0286          STEP PSTAT BY 1
498   0287          STEP PTYPE BY 1
499   0288          STEP PREV BY 1
500   0289          STEP PPASS BY 1
501   0290          ILOOP = ILOOP + 1
502   0291          RETURN
503         ;
504         ;       END ANALOG WHITE SUBROUTINE
505         ;
506         ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
507         ;
508   0292  CLR:    LET PSTAT = 0
509   0295          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
510   0296          LET FCLEAR = 1
511   0297          GOSUB ACKK
512   0298          RETURN
513         ;
514   0299  ALM:    LET PSTAT = 1
515   0302          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
516   0304          IF AND(PTYPE,3)THEN FALMON = 1
517   0305          PDEV:DEV_TMPO = 2
518   0306          LAMP ADI,SKDKEY,2
519   0307          CRIT
520   0308          GOSUB ACKK
521   0309          RETURN
522         ;
523   0310  ACK1:   LET PSTAT = 2
524   0311          LET FACK = 1
525         ;
526         ;       ALARM TYPER STRINGS:
527         ;
528   0313  ACKK:   IF ILOOP = 0 THEN STRNGO = "VVENT 1ST HEPA DP HI "
529   0315          IF ILOOP = 1 THEN STRNGO = "VVENT 1ST HEPA DP LO "
530   0317          IF ILOOP = 2 THEN STRNGO = "VVENT 1ST DMPR CLOSED"
531   0319         IF ILOOP = 3 THEN STRNGO = "VVENT 2ND HEPA DP HI "
532   0321          IF ILOOP = 4 THEN STRNGO = "VVENT 2ND DMPR CLOSED"
533   0323          IF ILOOP = 5 THEN STRNGO = "VVENT EXHAUSTER ON   "
534   0325          IF ILOOP = 6 THEN STRNGO = "VVENT EXH FAN LOCAL  "
535   0327          IF ILOOP = 7 THEN STRNGO = "VVENT HEATER OVERTEMP"
536   0329          IF ILOOP = 8 THEN STRNGO = "VVENT EXH ALPHA  FAIL"
537   0331          IF ILOOP = 9 THEN STRNGO = "VVENT EXH ALPHA RD HI"
538   0333          IF ILOOP = 10 THEN STRNGO = "VVENT  BETA/GAM FAIL"
539   0335          IF ILOOP = 11 THEN STRNGO = "VVENT BETA/GAMMA HI "
540   0337          IF ILOOP = 12 THEN STRNGO = "VVENT RAD SYS FAIL  "
541         ;       IF ILOOP = 13 THEN STRNGO = "VVNT AIR SPL PMP OFF"                    ; (SPARE)
542   0339          IF ILOOP = 14 THEN STRNGO = "P-AS-1 DELTA P HI   "
543   0341          IF ILOOP = 15 THEN STRNGO = "P-AS-1 DELTA P LOW  "
544   0343          IF ILOOP = 16 THEN STRNGO = "AMMONIA MONITOR FAIL"
545   0345          IF ILOOP = 33 THEN STRNGO = "II-EXC-1 AMPS LO    "
546   0347          IF ILOOP = 34 THEN STRNGO = "II-AS-1 AMPS LO     "
547   0349          IF ILOOP = 35 THEN STRNGO = "START VENTBATCH PGM "
548   0351          IF ILOOP = 36 THEN STRNGO = "VENTBATCH WRONG UNIT"
549   0353          IF ILOOP = 37 THEN STRNGO = "TERMINATE VENTBATCH "
550         ;
```

```
0354   AMSG:    IF PTYPE = 1 THEN
                   BEGIN
0356               IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNG0
0357               IF (FACK) THEN
                     BEGIN
0358                 PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG0
0359                 LET FACK = 0
                     END
                   END
0360            IF (FCLEAR) THEN
                   BEGIN
0361               PRINT ADI,"%p ALARM CLEAR",STRNG0
0362               LET FCLEAR = 0
                   END
0363            IF (FSTART) THEN
                   BEGIN
0364               LET FSTART = 0
0365               PRINT ADI,"%p",STRNG0
                   END
0366            RETURN
        ;
        ;       BEGIN ERROR SUBROUTINE:
        ;
0367   ERRSUB:  IF ERRN = ABS(ERRNUM()) THEN
                BEGIN
0368            FSN0 = 1
        ;
        ; errors are handled differently depending on their severity:
        ;
        ; ERR
        ; NO.    ERROR DESCRIPTION                                  ACTION
        ; ---    ----------------------------------------------     --------------
        ;  19    PROGRAM ALREADY IN KICK SUBROUTINE                 (rekick)
        ;  32    UNDEFINED COMMUNICATIONS PACKET TYPE               (ignore)
        ;  41   PCM DB HEADER NOT LOADED                   (ignore)
        ;  69   IPN NOT DEFINED                                     (ignore)
        ;  162  NO SUCH PROGRAM IN THIS PCM                         (ignore)
        ;  165   SEQUENCE PROGRAM ALREADY RUNNING          (ignore)
        ;  170   SERIAL NUMBER MISMATCH                             (wait forever)
        ;  179  ILLEGAL SUBROUTINE STACK CLEAR                      (ignore)
        ;  187   BACKUP PCM IS DOWN                                 (ignore)
        ;  193   NO SUCH PROGRAM IN THIS PCM                        (ignore)
        ;  198   ILLEGAL SUBROUTINE STACK NESTING ERROR             (ignore)
        ;  199   ILLEGAL RDF NAME                                   (wait forever)
        ;  200   RDF NOT LOADED IN MEMORY                  (wait forever)
        ;  201  RECIPE LOAD NOT ENABLED                             (wait forever)
        ;  222  BOARDS DEAD                                         (ignore)
        ;  226   BOARD ERROR (ie: broken skid panel)                (ignore)
        ;  245   BOTH PCMS DOWN, SENT REDUNDANT HIGHWAY ACCESS      (ignore)
        ;
0369            ERRN = ABS(ERRNUM())                                ; get error number
0370            ERRL = ERRLIN()                                     ; get error line number
        ;
        ; if error is not serious, clear and return to program:
        ;
```

```
606   0371            IF (ERRN=187) ¦ (ERRN=32) ¦ (ERRN=69) ¦ (ERRN=222) THEN
607   0372                ERSRET
608   0373            IF (ERRN=41) ¦ (ERRN=165) ¦ (ERRN=162) ¦ (ERRN=179) THEN
609   0374                ERSRET
610   0375            IF (ERRN=226) ¦ (ERRN=198) ¦ (ERRN=245) THEN
611   0376                ERSRET
612   0377            IF (ERRN=193) ¦ (ERRN=19) THEN
613   0378                ERSRET
614           ;
615           ; else report the error, and take corrective action:
616           ;
617   0379            PRINT ADI,"ERROR NUMBER %i AT LINE %i ***",ERRN,ERRL
618                   END
619   0380            ERSCLR                                          ; Corrective action
620   0381            GOTO AGAIN                                      ; Goto done and cleanup
621           ;
622           ;       END ERROR SUBROUTINE
623           ;
624           ; TERM:  LET FABORT = 0
625   0382    TERM:   LET STRNGO = "VENTBATCH TERMINATED    "
626   0383            LET ILOOP = STAR + 2
627   0384            LET FSTART = 1
628   0385            LET STRNGO = "TERM"
629   0386            GOSUB ACKK
630                   END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 7728 Bytes, 483 Pages
21 Forward Reference(s)

PCBATCH

```
;       P C B A T C H . S E Q                                   VERSION 4
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 018,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]PCBATCH
;
;       UNIT = 14, SKDKEY = 37
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCMOA.SDB        PCMOASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ----------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                 3 = yellow and yellow, 4 = red,
;                                 6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;TA     note:  lines starting with ';OLD' are Original Lines to be
;TA             reimplemented when operational testing is done.  Lines
;TA             with ';TA' are Temporary Additions to be removed when
;TA             operational testing is done.  Related changes are in FEEDBATCH.
;TA             These changes are for level control of FIC-C1005 instead of
;TA             FIC-CA1-1.
;
;       28-AUG-92       Added NOCRIT below MARK STEP BOTTOM             M. Teats
;
;       12-SEP-92       Changed LI-C100-2 to LI-C100-1 and changed      M. Teats
;                       alarm level from 0.95 to 0.98
```

```
56          ;
57          ;       30-DEC-92       Fixed white alarm print message.        M. Teats
58          ;
59          ;       26-JAN-93       Added P-C100 and A-C100 device statuses,  M. Teats
60          ;                       (SB3,SB4,SB5,SC3,SC4,SC5)
61          ;
62          ;       01-APR-93       In INITIALIZATION fixed flags ASSIGNED to        M. Teats
63          ;                       pointers.  Changed FALM0 and SKID0 to
64          ;                       FALM5 and SKID5.
65          ;
66          ;       08-JUN-93       Added comments.  CCN# 93JUN01-01.                M. Teats
67          ;
68          ;-mct1+ 24-JUN-93       Changed "CONFIRM ON" to "SHUTDOWN" in alarm      M. Teats
69          ;                       typer string section, and baselined for D/3
70          ;                       version 3.3.  CCN# 93JUN24-01.
71          ;
72          ;-mct2+ 12-JAN-94       Deleted II-P-C100 white alarm per                M. Teats
73          ;                       CCN# 94JAN12-01.
74          ;
75          ;       15-DEC-94       Revised header to indicate the new VMS           J. Berger
76          ;                       system. Rebaselined document. Removed
77          ;                       obsolite Select() statement.
78          ;
79          ;       26-MAR-95       Revised program to add the effected EPNs  J. Berger
80          ;                       for the Condensate Recycle Loop per ECN
81          ;                       62039 and WP EE-95-00036. (JFB01)  Also
82          ;                       removed code for temp jumper added for
83          ;                       training runs.
84          ;
85          ;       27-APR-95       Revised program to change YS-P-C100 from  J. Berger
86          ;                       White to Yellow alarm.  See WP EE-95-00006
87          ;                       and ECN 622499. (JFB02)
88          ;
89          ;
90          ;  END OF MOD LOG
91          ;
92          UNIT    PC
93          ;
94                  COMMON PB2,EC1,IX,PB1                   ;TA; CA1 for synch FIC-C1005 > LIC
95                  DEVON == 'RC3-SAMP':DEV_STAT            ; For FQIC-RESET device on/off check
96                  CALOUT == 'FQIC-RC3':CB_OTVL:3          ; For FQIC-RESET calc block outvalue
97                  RC3_PIG == 'RC3-PIG':DEV_TMP0
98                  PC100 == 'P-C100':DEV_TMP1
99                  PC106 == 'P-C106':DEV_TMP1              ;JFB01
100                 PCINLK == 'PC-INLK1':DEV_TMP0
101                 C100_ACK == 'PC-ALARM':DEV_TMP0         ; ALARM ACK FOR SKID KEY 37
102                 IX_ACK == 'IX-ALARM':DEV_TMP0           ; ALARM ACK FOR SKID KEY 36
103         ;       FIC1SP == 'FIC-C1005':PID_SPVL:2 ;TA; For synch FIC-C1005 > LIC
104         ;
105   0000          NOP
106   0001          LET STAR = 24                   ; Start message
107   0002          LET UNITT = 14                  ; SEQ Unit number
108   0003          LET SKDKEY = 37                 ; SKID Key
109   0004          ASSIGN PDEV = 'PC-ALARM' ; Alarm device
110   0005          ASSIGN PTYPE = TYPE24
```

```
0006            LET ADI = 0                     ; Alarm destination index
0007            LET FSNO = 0                    ; No alarms yet
0008            TIMEROFF STIMEO                 ; Alarm timer off
0009            TIMERCLR STIMEO                 ; Alarm timer clear
0010            STRNGO = " "                    ; Blank 30 character string
0011            LET ERRN = 0                    ; Set error number to zero
0012            LET ERRL = 0                    ; SEt error line to zero
0013            LET FTRIP4 = 0                  ; FTRIP4 = 1 when audible horn is to be turned on
0014            GETUNIT TRIP                    ; Which sequence unit is program running in
0015            IF TRIP != UNITT THEN           ; Abort if running in wrong seq. unit
                   BEGIN
0016               FSTART = 1
0017               ILOOP = STAR + 1
0018               PTYPE = 0
0019               GOSUB ACKK
0020               GOTO TERM
                   END
        ;       IF !SELECT() THEN GOTO AGAIN
        ;
        ;       B E G I N   I N I T I A L I Z I N G :
        ;
        ;               EPN             VAR    LOOP#    COLOR
        ;               ---------       ----   -----    -----
        ;       DEVs:   PC ALARM
        ;               A-C100
        ;               P-C100
        ;               PC-INLK1
        ;               P-C106                                          ;JFB01
        ;
        ;       DINs:   YS-A-C100       INT0    0       W
        ;               LSL-C1001       INT1    1       Y
        ;               LSL-SP-1        INT2    2       Y
        ;               YS-P-C100       INT3    3       W
        ;               YS-RC3-2        INT4    4       Y
        ;               YS-P-C106       INT5    5       W                ;JFB01
        ;                                                       VAR    LOOP#    ALARM SETPT
        ;                                                       ---    -----    -----------
        ;       AINs:   II-A-C100       SKID6   6       -
        ;               WFIC-C100       SKID7   7       RY
        ;               LI-C100-G       SKID8   8       -
        ;               LI-C100-1       SKID9   9       W       INT21   21      .95
        ;               LI-C100-2       SKID10  10      -
        ;               TI-C100-1       SKID11  11      Y
        ;-mct2+         II-P-C100       SKID12  12      W       INT22   22      5.0   (not used)
        ;               FIC-C1005       SKID13  13      -
        ;               FQI-C100        SKID14  14      -
        ;               PI-FC1-3        SKID15  15      -
        ;               PDI-FC1-1       SKID16  16      RY
        ;               PI-FC1-4        SKID17  17      -
        ;               II-P-C106       SKID18  18      Y                ;JFB01
        ;               PDI-FC5/6       SKID19  19      RY               ;JFB01
        ;               FQI-PB12W       SKID20  20      -
        ;
0021            STRNGO = "INIT"
0022    INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
```

```
0023            LET FSTART = 0                  ; Program start flag = 0
0024            LET SD0 = 0                     ; For FQIC-RESET RC3-SAMP device status flag
0025            LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
0026            LET LSG0 = " "                  ; Clear the string variables
0027            LET LSG1 = " "
0028            LET LSG2 = " "
0029            LET LSG3 = " "
0030            LET LSG4 = " "
0031            C100_ACK = 1                    ; Set alarm device to non-alarm state
0032            IF AND('PC-ALARM':DEV_ALMCT,16) THEN                    ; If alarm device is inhibited, remove the inha
0033              'PC-ALARM':DEV_ALMCT=XOR('PC-ALARM':DEV_ALMCT,16)
0034            IF AND('PC-ALARM':DEV_ALMCT,32) THEN                    ; If alarm device is ack, clear it
0035               'PC-ALARM':DEV_ALMCT = XOR('PC-ALARM':DEV_ALMCT,32)
        ;
        ;       First, set all flags and integers:
        ;
0036            ASSIGN PDIN = 'YS-A-C100'                       ; Assign pointer to first DIN
0037            ASSIGN PPASS = FPAS0
0038            ASSIGN PREV = FRV0
0039            ASSIGN PTYPE = TYPE0
0040            ASSIGN PSTAT = INT0
        ;
0041            FOR ILOOP = 0 TO 5                              ; For DINs  JFB01
0042            LET PPASS = 0
0043            LET PREV = 0
0045            IF PSTAT > 5 THEN PSTAT = 0                     ; Reset current status if undefined
0046            LET PTYPE = 2                                   ; Default to yellow alarm
0047            IF AND(PDIN:DIN_DFLG,3) THEN                    ; Check for alarms (must be a red or yellow)
                  BEGIN
0048              LET PTYPE = 2                                 ; Default to Yellow alarm
0050              IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1     ; Reverse acting
0052              IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4    ; Set to red critical
                  END
0053            STEP PPASS BY 1
0054            STEP PREV BY 1
0055            STEP PTYPE BY 1
0056            STEP PSTAT BY 1
0057            NEXT ILOOP
        ;
0058            ASSIGN PALARM = FALM6                           ; For AIs  JFB01
0059            ASSIGN PSKID = SKID6                            ; JFB01
0060            FOR JLOOP = 6 TO 19                             ; JFB01
0061            PALARM = 0
0062            PSKID = 0
0063            STEP PALARM BY 1
0064            STEP PSKID BY 1
0065            NEXT JLOOP
        ;
0066            TYPE0 = 1
0067            TYPE3 = 2                               ;JFB02
0068            TYPE5 = 1                               ;JFB01
0069            TYPE7  = 6
0070            TYPE11 = 2
0071            TYPE15 = 2
0072            TYPE16 = 6
```

```
0073            TYPE21 = 1
        ;-mct2+ TYPE22 = 1              commented out
        ;
0074            FRV0 = 0
0075            FRV1 = 0
0076            FRV2 = 0
0077            FRV3 = 0
0078            FRV4 = 1
0079            FRV5 = 0
0080            FRV6 = 0                                ;JFB01
0081            FRV21 = 1
        ;-mct2+ FRV22 = 1               commented out
        ;
0082            FPAS0 = 1
0083            FPAS3 = 1
        ;
0084            AI0 = .98
        ;-mct2+ AI1 = 5.0               commented out
        ;
0085            FLG14 = 0               ; Flag for PID auto mode, for synch PID
0086            FLG15 = 0               ; Flag for PID manual mode, for synch PID
        ;       FLG13 = 0               ;TA; PID casc (1) flag, for synch FIC-C1005 > LIC
        ;       FLG14 = 0               ;TA; PID auto (1) flag, for synch FIC-C1005 > LIC
        ;       FLG15 = 0               ;TA; PID manual (1) flag, for synch FIC-C1005 > LIC
        ;
        ;       E N D   I N I T I A L I Z I N G
        ;
        ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
        ;
0087            ANALOG = 0
0088            ILOOP = STAR
0089            FSTART = 1
0090            FPASS = 1
0091            GOSUB ACKK
0092            ON ERROR GOSUB ERRSUB
        ;
        ;       B E G I N   P R O G R A M   L O O P :
        ;
0093    AGAIN:  MARK STEP "WTUNTL",0,0
        ;       IF SELECT() THEN FNING = 1
        ;          ELSE FNING = 0
        ;       WAITUNTIL SELECT() | FABORT      ; Wait until micro selected or program aborted
        ;       IF (FABORT) THEN GOTO TERM       ; Terminate program if abort flag set
        ;
0094            MARK STEP "RNNING",0,0
0095            WAIT 1
0096            IF (FSNO) THEN                   ; If alarm flag is set
0097               IF STIMEO > 60 THEN           ; If alarm flag active for 1 minute
                      BEGIN                      ; Reset timer and clear flag
0098                  TIMEROFF STIMEO
0099                  TIMERCLR STIMEO
0100                  LET FSNO = 0
0101                  LET ERRN = 0
0102                  LET ERRL = 0
                      END
```

```
                ;
                ;       If PC-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
                ;
0103                    IF (C100_ACK = 2) & AND('PC-ALARM':DEV_ALMCT,32) THEN
                           BEGIN
0104                       C100_ACK = 1                  ; Put PC-ALARM in ack state
0105                       FTRIP0 = 1
0106                       FTRIP4 = 1                    ; Set for unit alarm ack
0107                       ACK = 1                       ; Set for unit alarm ack
0108                       CRIT
0109                       LAMP ADI,SKDKEY,1             ; Turn lamp on
                           END
                ;
                ;       BEGIN DINs:
                ;
0110                    ASSIGN PDIN = 'YS-A-C100'
0111                    ASSIGN PTYPE = TYPE0
0112                    ASSIGN PREV = FRV0
0113                    ASSIGN PSTAT = INT0
0114                    ASSIGN PPASS = FPAS0
0115                    LET LAST = 0
0116                    LET NXT = 0
0117                    BITVAL = 0
                ;
0118            LOP:    FOR ILOOP = 0 TO 5                                          ;JFB01
                ;       IF !SELECT() THEN GOTO AGAIN
0119                    IF ( PTYPE > 0 ) THEN                                       ; If some type of alarm
                           BEGIN                                            ;be1
0121                       IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3     ; If EPN is inhibited
0123                       IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5              ; If EPN is bad input
0125                       IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4               ; If EPN is disabled
0126                       IF ( PSTAT < 3 ) THEN                            ; If not inhibited
                                BEGIN                                       ;be2
0127                            IF (PSTAT = 1) THEN
                                   BEGIN                                    ;be3
0128                               IF (PTYPE != 1) THEN
0130                                  IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0132                               IF (FTRIP4) THEN GOSUB ACK1
                                   END                                      ;en3
0135                            IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0136                            IF (PSTAT) THEN
                                      BEGIN                                 ;be4
0138                                  IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
0139                                  NXT = PSTAT
0141                                  IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0142                                  LAST = OR(LAST,NXT)
                                      END                                   ;en4
                                END                                         ;en2
0144                        ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                            END                                             ;en1
0145                    STEP PDIN BY 1
0146                    STEP PTYPE BY 1
0147                    STEP PREV BY 1
0148                    STEP PSTAT BY 1
0149                    STEP PPASS BY 1
```

```
0150            NEXT ILOOP
          ;
          ;     END DINs
          ;
          ;     BEGIN ANALOG RED AND YELLOWS:
          ;
0151      ALOG: LET ANALOG = 0
0152            ASSIGN PAI = 'II-A-C100'
0153            ASSIGN PSKID = SKID6
0154            ASSIGN PALARM = FALM6
0155            FOR JLOOP = 6 TO 19
          ;     IF !SELECT() THEN GOTO AGAIN
0156            IF !(PALARM) THEN
                  BEGIN                                   ;be1
0157              BITVAL = PAI:AI_ALMCT
0158              IF !AND(BITVAL,16) THEN                           ; If not inhibited
                    BEGIN                                 ;be2
0159                IF AND(BITVAL,15) THEN                          ; If alarm exists and is current
                      BEGIN                               ;be3
0161                  IF AND(BITVAL,32) THEN NXT = 2                ; If alarm is ack
                        ELSE                                        ; If alarm is unack
                        BEGIN                             ;be4
0162                    IF PSKID !=BITVAL THEN
                          BEGIN                           ;be5
0164                      IF BITVAL < 3 THEN FALMON = 1
0165                      LET PSKID = BITVAL
0166                      C100_ACK = 2
0167                      LAMP_ADI,SKDKEY,2
0168                      NXT = 1
                          END                             ;en5
0169                  ELSE NXT = 1
                      END                                 ;en4
                    END                                   ;en3
                  ELSE                                            ; Else there is no alarm
                     BEGIN
0170                 NXT = 0
0171                 LET PSKID = 0
                     END
                  END                                     ;en2
                  ELSE                                            ; Else alarm is inhibited
                    BEGIN
0172                NXT = 0
0173                LET PSKID = 0
                    END
0174              ANALOG = OR(ANALOG,NXT)
                  END                                     ;en1
0175            STEP PSKID BY 1
0176            STEP PAI BY 1
0177            STEP PALARM BY 1
0178            NEXT JLOOP
          ;
          ;     END ANALOG RED AND YELLOWS
          ;
          ;     BEGIN ANALOG WHITE ALARMS:
          ;
```

```
0179            WHITE = 0
0180    WHT:    ASSIGN PALARM = AI0
0181            ASSIGN PSTAT = INT17
0182            ASSIGN PTYPE = TYPE17
0183            ASSIGN PREV = FRV17
0184            ASSIGN PPASS = FPAS17
0185            ILOOP = 17
0186            ASSIGN PAI = 'LI-C100-1'
0187            GOSUB ANLG
        ;-mct2+ ASSIGN PAI = 'II-P-C100' commented out
        ;-mct2+ GOSUB ANLG                      commented out
        ;
        ;       END ANALOG WHITE ALARMS
        ;
0188            LET FTRIP4 = 0
0190            IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
0191            CURENT = OR(LAST,WHITE)
0192            CURENT = OR(CURENT,ANALOG)
0194            IF AND(CURENT,1) THEN LMPVAR = 2
0196               ELSE IF AND(CURENT,2) THEN LMPVAR = 1
0197                       ELSE LMPVAR = 0
0198            LAMP ADI,SKDKEY,LMPVAR
0199            MARK STEP "BOTTOM",0,0
0200            NOCRIT
        ;
        ;       BEGIN LOGIC FOR GRAPHICS:
        ;                                                   JFB01
0201            LET AI35 = (('FQI-PB1-W':AI_MEAS + 'FQI-PB2-W':AI_MEAS) - ('FQI-PB12W':AI_MEAS))

0202            SA0 = OR('RSH-RC3-1':DIN_VAL,'RSH-CA1-1':DIN_VAL)
0203            SA1 = 'YS-RC3-2':DIN_VAL
0204            SA2 = AND('RC3-PIG':DEV_STAT,4)          ; PIG FLSH
0205            SA3 = AND('RC3-PIG':DEV_STAT,8)          ; DI/DRAIN
0206            SA4 = AND('RC3-PIG':DEV_STAT,32) ; INTERLOCK
0207            SA5 = AND('RC3-SAMP':DEV_STAT,8) ; RC3-SAMP  SAMPLE
        ;
0208            SB0 = AND('HV-RC3-3':DEV_STAT,4) ; RESET
0209            SB1 = AND('HV-RC3-3':DEV_STAT,16)        ; CHGSTATE
0210            SB2 = AND('HV-RC3-3':DEV_STAT,32)        ; INTERLOCK
        ;
0211            SB0 = AND('P-C106':DEV_STAT,4)           ; RESET                JFB01
0212            SB1 = AND('P-C106':DEV_STAT,16)          ; SHUTDOWN             JFB01
0213            SB2 = AND('P-C106':DEV_STAT,32)          ; INTERLOCK            JFB01
0214            SB3 = AND('P-C100':DEV_STAT,4)           ; RESET
0215            SB4 = AND('P-C100':DEV_STAT,16)          ; SHUTDOWN
0216            SB5 = AND('P-C100':DEV_STAT,32)          ; INTERLOCK
        ;
0217            SC3 = AND('A-C100':DEV_STAT,4)           ; RESET
0218            SC4 = AND('A-C100':DEV_STAT,16)          ; SHUTDOWN
0219            SC5 = AND('A-C100':DEV_STAT,32)          ; INTERLOCK
        ;
0220            GT0 = AND(PB2GLOBAL:DEV_TMP1,2)
0221            AT0 = AND(RC3_PIG,1)                     ; TIMER ON
0222            AT1 = AND(RC3_PIG,2)                     ; TIME OUT
0223            AT2 = AND(RC3_PIG,4)
```

```
0224            AT3 = AND(RC3_PIG,8)
0225            AT4 = AND(RC3_PIG,16)
0226            AT5 = AND('RC3-SAMP':DEV_TMP0,32)
0227            AT6 = AND(RC3_PIG,64)
0228            AT7 = AND('P-C100':DEV_TMP0,2)
0229            AT8 = 'YS-P-C100':DIN_VAL
0230            AT9 = XOR(AT0,AT1)
0231            AT10= AND(RC3_PIG,1024)
0232            AT17= AND('HV-RC3-3':DEV_TMP1,2)
0233            AT20= AND('HV-RC3-3':DEV_CMD,2)
0234            AT22= AND('HV-RC3-3':DEV_TMP1,32)
0235            AT21= AND(AT20,AT22)
0236            AT11= AND('RSH-RC3-1':DIN_VAL,AT21)
0237            AT12= AND(PC106,512)                    ; JFB01 $T25
0238            AT23= AND(PC100,128)
0239            AT24= AND(PC100,256)
0240            AT25= AND(PC100,512)
0241            AT26= AND(PC100,1024)
0242            AT27= AND(PC100,2048)
0243            AT28= AND(PC100,4096)
0244            AT29= AND(PC100,8192)
0245            AT31= AND(PC100,32768)
        ;
0246            BT1 = AND(PCINLK,2)
0247            BT2 = AND(PCINLK,4)
0248            BT3 = AND(PCINLK,8)
0249            BT4 = AND(PCINLK,16)
0250            BT5 = AND(PCINLK,32)
        ;
0251            GT13 = AND(8192,PB2GLOBAL:DEV_TMP0)
0252            CT0 = AND('PC-INLK1':DEV_TMP0,1)
0253            CT1 = AND('PC-INLK1':DEV_TMP0,2)
0254            CT3 = AND('P-C106':DEV_TMP1,32)         ; JFB01 $T21
0255            CT4 = AND('P-C106':DEV_TMP1,64)         ; JFB01 $T22
0256            CT23 = AND('P-C100':DEV_TMP1,128)
0257            CT24 = AND('P-C100':DEV_TMP1,256)
0258            CT25 = AND('P-C100':DEV_TMP1,512)
0259            CT26 = AND('P-C100':DEV_TMP1,1024)
0260            CT27 = AND('P-C100':DEV_TMP1,2048)
0261            CT28 = AND('P-C100':DEV_TMP1,4096)
        ;
        ;       END LOGIC FOR GRAPHICS
        ;
        ;       B E G I N   F Q I C - R E S E T :
        ;
        ;       Function:       For FQIC loops that have a CALC block which performs the
        ;                       integration, set the output of the CALC block to zero
        ;                       after the RC3-SAMP device is turned off.
        ;
0263            IF AND(DEVON,2) THEN SDO = 1                    ; If on (2), set device stat flag
0264            IF AND(DEVON,1) & AND(SDO,1) THEN               ; For on-off transition
                   BEGIN
0265               SDO = 0
0266               PRINT ADI,"... FQIC-RC3 LAST READING =  %f GAL",CALOUT
0267               CALOUT = 0.0
```

```
                    END
          ;
          ;       E N D   F Q I C - R E S E T
          ;
          ;       B E G I N   S Y N C H   P I D   C A S C A D E D   S E T P T :
          ;
          ;       Function:  Closes slave controller's PID (SPID) cascade,
          ;                  sets cascade controller's PID (CPID) to auto.
          ;                  (NOTE:  the continuous database sets the CPID
          ;                  output equal to the SPID setpoint only on a
          ;                  manual to auto transition in the SPID.)
          ;
0268              IF AND('FIC-C1005':CB_FLG:2,64) THEN              ; If in auto
                    BEGIN                                                  ;be1
0269                  IF (FLG14=0) & (FLG15=1) THEN                 ; If previously manual
                        BEGIN                                              ;be2
0270                    CLOSCASC 'FIC-C1005'
0272                    IF !AND('WFIC-C100':CB_FLG:2,64) THEN PUTAUTO 'WFIC-C100'
0273                    LET FLG14 = 1
0274                    LET FLG15 = 0
                        END                                                ;en2
                    END                                                    ;en1
                  ELSE                                            ; If in manual
                    BEGIN                                                  ;be4
0275                  IF ((FLG14=1)&(FLG15=0)) | ((FLG14=0)&(FLG15=0)) THEN  ; If prev auto or init
                        BEGIN                                              ;be5
0276                    LET FLG14 = 0
0277                    LET FLG15 = 1
                        END                                                ;en5
                    END                                                    ;en4
          ;       IF AND('FIC-C1005':CB_FLG:2,64) THEN              ;TA; If in auto
          ;         BEGIN                                                  ;TA;be1
          ;           IF (FLG14=0) & (FLG15=0) THEN                 ;TA If initializing
          ;             BEGIN                                              ;TA;be2
          ;             IF AND('FIC-C1005':PID_SPVS:2,64) THEN LET FLG13 = 1  ;TA; If casc closed
          ;             LET FLG14 = 1                             ;TA
          ;             LET FLG15 = 0                             ;TA
          ;             END                                                ;TA;en2
          ;           IF AND('FIC-C1005':PID_SPVS:2,64) & (FLG13=0) THEN   ;TA; If clos casc + prev auto-open
          ;             BEGIN                                              ;TA;be3
          ;               IF !AND('LIC-CA1-1':CB_FLG:1,64) THEN  ;TA; If LIC-CA1-1 man
          ;                 BEGIN                                          ;TA;be3.1
          ;                 PUTOUT 'LIC-CA1-1',FIC1SP             ;TA
          ;                 PUTAUTO 'LIC-CA1-1'          ;TA
          ;                 END                                            ;TA;en3.1
          ;               IF !AND('LIC-CA1-2':CB_FLG:1,64) THEN  ;TA; If LIC-CA1-2 man
          ;                 BEGIN                                          ;TA;be3.2
          ;                 PUTOUT 'LIC-CA1-2',FIC1SP             ;TA
          ;                 PUTAUTO 'LIC-CA1-2'          ;TA
          ;                 END                                            ;TA;en3.2
          ;             LET FLG13 = 1
          ;             END                                                ;TA;en3
          ;           IF !AND('FIC-C1005':PID_SPVS:2,64) & (FLG13=1) THEN ;TA; If open casc + prev auto-clos
          ;             BEGIN                                              ;TA;be4
          ;             IF AND('LIC-CA1-1':CB_FLG:1,64) THEN PUTMANL 'LIC-CA1-1'  ;TA
```

```
551          ;                IF AND('LIC-CA1-2':CB_FLG:1,64) THEN PUTMANL 'LIC-CA1-2'  ;TA
552          ;                LET FLG13 = 0
553          ;                END                                                ;TA;en4
554          ;             IF (FLG14=0) & (FLG15=1) THEN                 ;TA; If previously manual
555          ;                BEGIN                                              ;TA;be5
556          ;                CRIT                                               ;TA
557          ;                PUTOUT 'LIC-CA1-1',FIC1SP                 ;TA
558          ;                PUTOUT 'LIC-CA1-2',FIC1SP                 ;TA
559          ;                CLOSCASC 'FIC-C1005'                      ;TA
560          ;                IF !AND('LIC-CA1-1':CB_FLG:1,64) THEN PUTAUTO 'LIC-CA1-1' ;TA
561          ;                IF !AND('LIC-CA1-2':CB_FLG:1,64) THEN PUTAUTO 'LIC-CA1-2' ;TA
562          ;                LET FLG13 = 1                             ;TA
563          ;                LET FLG14 = 1                             ;TA
564          ;                LET FLG15 = 0                             ;TA
565          ;                NOCRIT                                             ;TA
566          ;                END                                                ;TA;en5
567          ;             END                                                   ;TA;en1
568          ;          ELSE                                             ;TA; If in manual
569          ;             BEGIN                                              ;TA;be7
570          ;             IF (FLG14=1) & (FLG15=0) THEN                 ;TA; If previously auto
571          ;                BEGIN                                              ;TA;be8
572          ;                IF AND('LIC-CA1-1':CB_FLG:1,64) THEN PUTMANL 'LIC-CA1-1'  ;TA
573          ;                IF AND('LIC-CA1-2':CB_FLG:1,64) THEN PUTMANL 'LIC-CA1-2'  ;TA
574          ;                LET FLG13 = 0                             ;TA
575          ;                END                                                ;TA;en8
576          ;             IF ((FLG14=1)&(FLG15=0)) ¦ ((FLG14=0)&(FLG15=0)) THEN ;TA; If prev auto or init
577          ;                BEGIN                                              ;TA;be9
578          ;                LET FLG14 = 0                             ;TA
579          ;                LET FLG15 = 1                             ;TA
580          ;                END                                                ;TA;en9
581          ;             END                                                   ;TA;en7
582          ;
583          ;          E N D   S Y N C H   P I D   C A S C A D E D   S E T P T
584          ;
585     0278            GOTO AGAIN
586          ;
587          ;          E N D   P R O G R A M   L O O P
588          ;
589          ;          BEGIN ANALOG WHITE SUBROUTINE:
590          ;
591          ; ANLG:  IF !SELECT() THEN GOTO AGAIN
592     0279 ANLG:     IF (PTYPE = 1) THEN                          ; If some alarm
593                       BEGIN                                 ;be1
594     0280              BITVAL = PAI:AI_ALMCT
595     0281              IF !(AND(BITVAL,16)) THEN                    ; If not inhibited
596                         BEGIN                               ;be2
597     0283                IF PSTAT = 3 THEN LET PSTAT = 0
598     0284                IF (PREV) THEN                               ; If rev acting, LOLO, or LO
599                           BEGIN                             ;be3
600     0285                  IF (PSTAT = 0) THEN                        ; If previously not alarmed
601                             BEGIN                           ;be4
602     0287                    IF (PAI:AI_INVL <= PALARM) THEN GOSUB ALM
603                             END                             ;en4
604                           ELSE
605                             BEGIN                           ;be5
```

```
0288                        IF (PSTAT = 1) THEN                    ; If previously alarmed
                               BEGIN                       ;be6
0290                           IF (FTRIP4) THEN GOSUB ACK1         ; If ACK flag set, then ack it
0293                           IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                               END                         ;en6
0295                        IF (PAI:AI_INVL >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                            END                            ;en5
                         END                               ;en3
                      ELSE                                         ; If fail-safe, HIHI, or HI
                         BEGIN                             ;be10
0296                     IF (PSTAT = 0) THEN
                            BEGIN                          ;be11
0298                        IF (PAI:AI_INVL >= PALARM) THEN GOSUB ALM
                            END                            ;en11
                         ELSE
                            BEGIN                          ;be12
0299                        IF (PSTAT = 1) THEN
                               BEGIN                       ;be13
0301                           IF (FTRIP4) THEN GOSUB ACK1
0304                           IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                               END                         ;en13
0306                        IF (PAI:AI_INVL <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                            END                            ;en12
                         END                               ;en10
0307                 NXT = PSTAT
0309                 IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0310                 WHITE = OR(WHITE,NXT)
                     END                                   ;en2
0312                 IF AND(BITVAL,16) THEN LET PSTAT = 3
                  END                                      ;en1
0313              ELSE LET PSTAT = 0
0314              STEP PALARM BY 1
0315              STEP PSTAT BY 1
0316              STEP PTYPE BY 1
0317              STEP PREV BY 1
0318              STEP PPASS BY 1
0319              ILOOP = ILOOP + 1
0320              RETURN
          ;
          ;       END ANALOG WHITE SUBROUTINE
          ;
          ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
          ;
0321      CLR:    LET PSTAT = 0
0324              IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0325              LET FCLEAR = 1
0326              GOSUB ACKK
0327              RETURN
          ;
0328      ALM:    LET PSTAT = 1
0331              IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0332              C100_ACK = 2
0334              IF AND(PTYPE,3)THEN FALMON = 1
0335              LAMP ADI,SKDKEY,2
0336              CRIT
```

```
661   0337          GOSUB ACKK
662   0338          RETURN
663           ;
664   0339    ACK1:   LET PSTAT = 2
665   0340          LET FACK = 1
666           ;
667           ;       ALARM TYPER STRINGS:
668           ;
669   0342    ACKK:   IF ILOOP = 0 THEN STRNG0 = "TK-C100 AGITATOR SHUTDOWN"            ;-mct1+
670   0344          IF ILOOP = 1 THEN STRNG0 = "TK-C100 OVERFLOW TRAP LO"
671   0346          IF ILOOP = 2 THEN STRNG0 = "TK-C100 VVENT SEAL POT LVL LO"
672   0348          IF ILOOP = 3 THEN STRNG0 = "P-C100 PUMP SHUTDOWN"          ;-mct1+
673   0350          IF ILOOP = 4 THEN STRNG0 = "P-C100 RAD INTERLOCK BYPASS ON"
674   0352          IF ILOOP = 5 THEN STRNG0 = "P-C106 PUMP SHUTDOWN"          ;JFB01
675   0354          IF ILOOP = 21 THEN STRNG0 = "LI-C100-1 TK-C100 INTERFACE LO"       ;JFB01
676           ;-mct2+ IF ILOOP = 22 THEN STRNG0 = "II-P-C100: PUMP C100 AMPS HI"        commented out
677   0356          IF ILOOP = 24 THEN STRNG0 = "START PCBATCH PGM "
678   0358          IF ILOOP = 25 THEN STRNG0 = "PCBATCH WRONG UNIT"
679   0360          IF ILOOP = 26 THEN STRNG0 = "TERMINATE PCBATCH"
680           ;
681   0361    AMSG:   IF PTYPE = 1 THEN
682                     BEGIN
683   0363              IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNG0
684   0364              IF (FACK) THEN
685                       BEGIN
686   0365                PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG0
687   0366                LET FACK = 0
688                       END
689                     END
690   0367          IF (FCLEAR) THEN
691                     BEGIN
692   0368              PRINT ADI,"%p ALARM CLEAR",STRNG0
693   0369              LET FCLEAR = 0
694                     END
695   0370          IF (FSTART) THEN
696                     BEGIN
697   0371              LET FSTART = 0
698   0372              PRINT ADI,"%p",STRNG0
699                     END
700   0373          RETURN
701           ;
702   0374    ERRSUB: IF ERRN != ERRNUM() THEN
703                     BEGIN
704   0375              TIMERON STIMEO
705   0376              TIMERCLR STIMEO
706   0377              LET FSW0 = 1
707   0378              LET ERRN = ERRNUM()
708   0379              LET ERRL = ERRLIN()
709   0380              PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
710                     END
711   0381          ERSCLR
712   0382          GOTO AGAIN
713           ;
714           ; TERM: LET FABORT = 0
715   0383    TERM:   LET STRNG0 = "PCBATCH TERMINATED    "
```

```
716   0384          LET ILOOP = STAR + 2
717   0385          LET FSTART = 1
718   0386          LET STRNGO = "TERM"
719   0387          GOSUB ACKK
720                 END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 7760 Bytes, 485 Pages
19 Forward Reference(s)

IXBATCH

```
;       I X B A T C H . S E Q                                   VERSION 3
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 044,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]IXBATCH
;
;       UNIT = 15, SKDKEY = 36
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;        30-DEC-92      Fixed white alarm print message.          M. Teats
;
;        08-JUN-93      Added comments.  CCN# 93JUN01-01.                M. Teats
;
;        21-JUN-93      Removed 3 comment lines.  CCN# 93JUN21-02.       M. Teats
;
;-mct1+   29-JUN-93      Remove IBAD on RC3-PIG, set FRV33 to 1,          M. Teats
;                       and baselined for D/3 version 3.3.
;                       CCN# 93JUN29-01.
;
;       15-DEC-94       Revised header to indicate the new VMS           J. Berger
```

```
            ;                       system. Rebaselined dcument. Removed
            ;                       obsolite Select() statemens.
            ;
            ;       02-MAY-95       Added variables AT27, AT28, AT29 to use        J. Berger
            ;                       for interlock graphics. See WP EE-95-00006
            ;                       and ECN 622498.
            ;
            ;       01-APR-96       Changed the RC3-PIG DEV code to remove the     J. Berger
            ;                       the section where the continuious control
            ;                       database was getting changed. See MCS-96-013
            ;                       and ECN 627501.
            ;
            ;
            ;  END MOD LOG
            ;
            UNIT    IX
            ;
                    COMMON PB2,EC1
                    RC3_PIG == 'RC3-PIG':DEV_TMP0
                    IX_ACK == 'IX-ALARM':DEV_TMP0
                    RC3 == WHITE
            ;
0000                GTO = AND(PB2GLOBAL:DEV_TMP1,2)
0001                NOP
0002                LET STAR   = 24          ; Start message
0003                LET SKDKEY = 36          ; SKID Key
0004                LET UNITT  = 15          ; SEQ Unit number
0005                ASSIGN PDEV = 'IX-ALARM' ; Alarm device
0006                ASSIGN PTYPE = TYPE24
0007                LET ADI = 0                      ; Alarm destination index
0008                LET FSNO = 0                     ; No alarm yet
0009                TIMEROFF STIME0          ; Alarm timer off
0010                TIMERCLR STIME0          ; Alarm timer clear
0011                STRNG0 = " "                     ; Blank 30 character string
0012                LET ERRN = 0                     ; Set error number to zero
0013                LET ERRL = 0                     ; Set error line to zero
0014                LET FTRIP4 = 0                   ; FTRIP4 = 1 when audible horn is to be turned on
0015                GETUNIT TRIP                     ; Which sequence unit is program running in
0016                IF TRIP != UNITT THEN            ; Abort if running in wrong seq. unit
                       BEGIN
0017                   FSTART = 1
0018                   ILOOP = STAR + 1
0019                   PTYPE = 0
0020                   GOSUB ACKK
0021                   GOTO TERM
                       END
            ;       IF !SELECT() THEN GOTO AGAIN
            ;
            ;       B E G I N   I N I T I A L I Z I N G :
            ;
0022                STRNG0 = "INIT"
0023        INIT:   LET FABORT = 0                   ; If FABORT = 1 then abort program
0024                LET FSTART = 0                   ; Program start flag = 0
0025                LET SDO = 0                      ; For FQIC-RESET RC3-SAMP device status flag
0026                LAMP ADI,SKDKEY,0                ; Turn off the annunciator key
```

```
0027          LET LSG0 = " "                    ; Clear the string variables
0028          LET LSG1 = " "
0029          LET LSG2 = " "
0030          LET LSG3 = " "
0031          LET LSG4 = " "
0032          PDEV:DEV_TMP0 = 1                                  ; Set alarm device to non-alarm state
0033          IF AND('PDEV':DEV_ALMCT,16) THEN          ; If alarm device is inhibited, remove the inha
0034            'PDEV':DEV_ALMCT=XOR('PDEV':DEV_ALMCT,16)
0035          IF AND('PDEV':DEV_ALMCT,32) THEN          ; If alarm device is ack, clear it
0036             'PDEV':DEV_ALMCT = XOR('PDEV':DEV_ALMCT,32)
        ;
        ;     First, set all flags and integers:
        ;
        ;     DEVs:
        ;             IX-ALARM
        ;             HV-RC3-3
        ;             RC3-SAMP
        ;             RC3-PIG
        ;             HV-2-34
        ;             HV-2-37
        ;     DINs:
        ;             ZS-IDX-2        INT0    W
        ;             PSH-ILF-1       INT1    W
        ;             YS-RC3-6        INT2    Y
        ;             RXS-RC3-1       INT3    Y
        ;             RSH-RC3-1       INT4    R
        ;             FSL-RC3-1       INT5    -
        ;             ZS-RC3-4        INT6    W
        ;             ZS-RC3-5        INT7    W
        ;             ZS-IDX1NM               -
        ;             ZS-IDX-1B               -
        ;             ZS-IDX-3B               -
        ;             ZS-IDX3NM               -
        ;             ZS-RC3-3D               -
        ;             ZS-RC33NM               -
        ;     AIs:
        ;             PI-IDX-13       -       8
        ;             PI-IDX-14       -       9
        ;             PI-IDX-15       -       10
        ;             PI-IDX-16       -       11
        ;             PDI-IDX-2       RY      12
        ;             PDI-IDX-4       -       13
        ;             PDI-IDX-3       RY      14
        ;             PI-IDX-12       -       15
        ;             PI-IDX-17       -       16
        ;             PDI-IDX-5       RY      17
        ;             PDI-IDX-1       RY      18
        ;             PI-IDX-18       -       19
        ;             PI-ILS-5        -       20
        ;             PI-ILS-6        -       21
        ;             FI-RC3-1        -       22
        ;             PDI-ILS-1       RY      23
        ;             FQIC-RC3        -       24
        ;             FQI-RC3NM       -       25
        ;             FQI-RC3-D       -       26
```

```
        ;                KY-RC3-1        -       27
        ;                RI-RC3-1        R       28
        ;
0037            ASSIGN PDIN = 'ZS-IDX-2'
0038            ASSIGN PSTAT = INT0
0039            ASSIGN PTYPE = TYPE0
0040            ASSIGN PREV = FRV0
0041            ASSIGN PSKID = SKID0
0042            ASSIGN PPASS = FPAS0
        ;
0043            FOR ILOOP = 0 TO 7                                  ; For DINs
0044            PPASS = 0
0045            PREV  = 0
0046            PSTAT = 0
0047            PTYPE = 0
0048            IF AND(PDIN:DIN_DFLG,3) THEN                        ; Check for alarms (must be red or yellow)
                  BEGIN
0049              PTYPE = 2                                         ; Default to yellow alarm
0051              IF AND(PDIN:DIN_DFLG,1) THEN PREV = 1   ; Reverse acting
0053              IF AND(PDIN:DIN_DFLG,4) THEN PTYPE = 4  ; Set to red critical
                  END
0054            STEP PPASS BY 1
0055            STEP PREV BY 1
0056            STEP PSTAT BY 1
0057            STEP PTYPE BY 1
0058            STEP PSKID BY 1
0059            NEXT ILOOP
        ;
0060            ASSIGN PALARM = FALM8
0061            ASSIGN PSKID  = SKID8
0062            FOR JLOOP = 0 TO 32                                 ; For AIs
0063            PALARM = 0
0064            PSKID  = 0
0065            PTYPE  = 0
0066            STEP PALARM BY 1
0067            STEP PSKID BY 1
0068            STEP PTYPE BY 1
0069            NEXT JLOOP
        ;
0070            TYPE0 = 1
0071            TYPE1 = 1
0072            TYPE2 = 2
0073            TYPE3 = 2
0074            TYPE4 = 4
0075            TYPE6 = 1
0076            TYPE7 = 1
0077            TYPE12 = 6
0078            TYPE14 = 6
0079            TYPE17 = 6
0080            TYPE18 = 6
0081            TYPE23 = 6
0082            TYPE28 = 4
0083            TYPE33 = 2
        ;
0084            FRV0 = 1
```

```
221   0085          FRV2 = 1
222   0086          FRV6 = 0
223   0087          FRV7 = 0
224   0088          FRV33 = 1        ;-mct1+
225         ;
226         ;       E N D   I N I T I A L I Z I N G
227         ;
228         ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
229         ;
230   0089          ANALOG = 0
231   0090          ILOOP = STAR
232   0091          FSTART = 1
233   0092          FPASS = 1
234   0093          GOSUB ACKK
235   0094          ON ERROR GOSUB ERRSUB
236         ;
237         ;       B E G I N   P R O G R A M   L O O P :
238         ;
239   0095  AGAIN:  MARK STEP "WTUNTL",0,0
240         ;       IF SELECT() THEN FNING = 1
241         ;         ELSE FNING = 0
242         ;       WAITUNTIL SELECT() ¦ FABORT       ; Wait until micro is selected or program aborted
243         ;       IF (FABORT) THEN GOTO TERM        ; Terminate program if abort flag set
244   0096          MARK STEP "RNNING",0,0
245   0097          WAIT 1
246   0098          FTRIP4 = 0
247   0099          IF (FSNO) THEN                    ; If alarm flag is set
248   0100             IF STIMEO > 60 THEN            ; If alarm flag active for 1 minute
249                         BEGIN                     ; Reset timer and turn off flag
250   0101                  TIMEROFF STIMEO
251   0102                  TIMERCLR STIMEO
252   0103                  LET FSNO = 0
253   0104                  LET ERRN = 0
254   0105                  LET ERRL = 0
255                         END
256         ;
257         ;       If IX-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
258         ;
259   0106          IF AND('IX-ALARM':DEV_ALMCT,32) & IX_ACK = 2 THEN
260                    BEGIN
261   0107             IX_ACK = 1                     ; Put IX-ALARM in ack state
262   0108             FTRIP4 = 1                     ; Set for unit alarm ack
263   0109             ACK = 1                        ; Set for unit alarm ack
264         ;          CRIT
265   0110             LAMP ADI,SKDKEY,1              ; Turn lamp on
266                    END
267         ;
268   0111          LET LAST = 0
269   0112          LET NXT = 0
270   0113          BITVAL = 0
271         ;
272         ;       BEGIN DINs:
273         ;
274   0114  LOP:    ASSIGN PDIN = 'ZS-IDX-2'
275   0115          ASSIGN PTYPE = TYPEO
```

```
276   0116          ASSIGN PREV = FRVO
277   0117          ASSIGN PSTAT = INTO
278   0118          ASSIGN PPASS = FPASO
279   0119          FOR ILOOP = 0 TO 7
280         ;       IF !SELECT() THEN GOTO AGAIN
281   0120          IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
282                    BEGIN                                        ;be1
283   0122             IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3  ; If EPN is inhibited
284   0124             IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5          ; If EPN is bad input
285   0126             IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4           ; If EPN is disabled
286   0127             IF ( PSTAT < 3 ) THEN                        ; If not inhibited
287                         BEGIN                                   ;be2
288   0128                  IF (PSTAT = 1) THEN
289                            BEGIN                                ;be3
290   0129                     IF (PTYPE != 1) THEN
291   0131                        IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
292   0133                     IF (FTRIP4) THEN GOSUB ACK1
293                            END                                  ;en3
294   0136                  IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
295   0137                  IF (PSTAT) THEN
296                              BEGIN                              ;be4
297   0139                       IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
298   0140                       NXT = PSTAT
299   0142                       IF (PPASS) & (PSTAT = 2) THEN NXT = 0
300   0143                       LAST = OR(LAST,NXT)
301                              END                                ;en4
302                         END                                     ;en2
303   0145              ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
304                     END                                         ;en1
305   0146          STEP PDIN BY 1
306   0147          STEP PTYPE BY 1
307   0148          STEP PREV BY 1
308   0149          STEP PSTAT BY 1
309   0150          STEP PPASS BY 1
310   0151          NEXT ILOOP
311         ;
312         ;       END DINs
313         ;
314   0152          LET STRNGO = "RUN"
315         ;
316         ;       BEGIN ANALOG RED AND YELLOWS:
317         ;
318   0153  ALOG:   LET ANALOG = 0
319   0154          ASSIGN PAI = 'PI-IDX-13'
320   0155          ASSIGN PSKID = SKID8
321   0156          ASSIGN PALARM = FALM8
322   0157          FOR JLOOP = 8 TO 28
323         ;       IF !SELECT() THEN GOTO AGAIN
324   0158          IF !(PALARM) THEN
325                   BEGIN                                 ;be1
326   0159            BITVAL = PAI:AI_ALMCT
327   0160            IF !AND(BITVAL,16) THEN                       ; If not inhibited
328                     BEGIN                               ;be2
329   0161              IF AND(BITVAL,15) THEN                      ; If alarm exists and is current
330                       BEGIN                             ;be3
```

```
0163                IF AND(BITVAL,32) THEN NXT = 2              ; If alarm is ack
                      ELSE                                      ; If alarm is unack
                      BEGIN                                ;be4
0164                  IF (PSKID !=BITVAL) THEN
                        BEGIN                              ;be5
0166                    IF BITVAL < 3 THEN FALMON = 1
0167                    LET PSKID = BITVAL
0168                    IX_ACK = 2
0169                    LAMP ADI,SKDKEY,2
0170                    NXT = 1
                        END                                ;en5
0171                  ELSE NXT = 1
                      END                                  ;en4
                    END                                    ;en3
                  ELSE                                     ; Else there is no alarm
                    BEGIN
0172                NXT = 0
0173                LET PSKID = 0
                    END
                  END                                      ;en2
                  ELSE                                     ; Else alarm is inhibited
                    BEGIN
0174                NXT = 0
0175                LET PSKID = 0
                    END
0176              ANALOG = OR(ANALOG,NXT)
                  END                                      ;en1
0177            STEP PSKID BY 1
0178            STEP PAI BY 1
0179            STEP PALARM BY 1
0180            NEXT JLOOP
        ;
        ;       END ANALOG RED AND YELLOWS
        ;
        ;       BEGIN DEVICE ALARM:
        ;
0181    RC3:    RC3 = 0
0182            ASSIGN PTYPE = TYPE33
0183            ASSIGN PREV  = FRV33
0184            ASSIGN PSTAT = INT33
0185            ASSIGN PPASS = FPAS33
        ;       IF !SELECT() THEN GOTO AGAIN
0186            IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
                  BEGIN                                          ;be1
0188              IF AND('RC3-PIG':DEV_ALMCT,16) THEN LET PSTAT = 3  ; If EPN is inhibited
        ;-mct1+   IF AND('RC3-PIG':DEV_ALMCT,4) THEN BLET PSTAT = 5  ; No IBAD on devices
0190              IF !AND('RC3-PIG':DEV_FLG,8) THEN LET PSTAT = 4    ; If EPN is disabled
0191              IF ( PSTAT < 3 ) THEN                          ; If not inhibited
                      BEGIN                                      ;be2
0192                  IF PSTAT = 1 THEN
                        BEGIN                                    ;be3
0194                    IF AND('RC3-PIG':DEV_ALMCT,32) THEN GOSUB ACK1
0196                    IF (FTRIP4) THEN GOSUB ACK1
                        END                                      ;en3
0198                  IF !PSTAT THEN IF AND('RC3-PIG':DEV_STAT,64) THEN
```

```
                                BEGIN                                          ;be4
            ;                   CRIT
    0199                        LET PSTAT = 1
            ;                   IF AND('RC3-PIG':DEV_ALMCT,32)THEN 'RC3-PIG':DEV_ALMCT = XOR('RC3-PIG':DEV_ALMCT,32)
    0200                        IX_ACK = 2
    0201                        FALMON = 1
    0202                        LAMP ADI,SKDKEY,2
    0203                        GOSUB ACKK
            ;                   NOCRIT
                                END                                            ;en4
    0204                      IF PSTAT THEN
                                BEGIN                                          ;be5
    0205                        IF !AND('RC3-PIG':DEV_STAT,64) THEN
                                  BEGIN                                        ;be6
    0206                          LET PSTAT = 0
    0207                          LET FCLEAR = 1
    0208                          GOSUB ACKK
                                  END                                          ;en6
                                END                                            ;en5
    0209                      NXT = PSTAT
    0211                      IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
    0212                      RC3 = OR(RC3,NXT)
                              END                                              ;en2
    0214                  ELSE IF !AND('RC3-PIG':DEV_ALMCT,16)&AND('RC3-PIG':DEV_FLG,8)THEN LET PSTAT = 0
    0216                  IF PSTAT = 5 THEN PSTAT = 0
                          END                                                  ;en1
            ;
            ;         END DEVICE ALARM
            ;
            ;         BEGIN LOGIC FOR GRAPHICS:
            ;
    0217              AT0 = AND(RC3_PIG,1)     ; TIMER ON
    0218              AT1 = AND(RC3_PIG,2)     ; TIME OUT
    0219              AT2 = AND(RC3_PIG,4)
    0220              AT3 = AND(RC3_PIG,8)
    0221              AT4 = AND(RC3_PIG,16)
    0222              AT5 = AND('RC3-SAMP':DEV_TMP0,32)
    0223              AT6 = AND(RC3_PIG,64)
    0224              AT9 = XOR(AT0,AT1)
    0225              AT10= AND(RC3_PIG,1024)
    0226              AT11= AND('RSH-RC3-1':DIN_VAL,AT21)
    0227              AT17= AND('HV-RC3-3':DEV_TMP1,2)
    0228              AT20= AND('HV-RC3-3':DEV_CMD,2)
    0229              AT22= AND('HV-RC3-3':DEV_TMP1,32)
    0230              AT21= AND(AT20,AT22)
    0231              AT27= AND('HV-RC3-3':DEV_TMP1,2048)       ; JFB01 $T27
    0232              AT28= AND('HV-RC3-3':DEV_TMP1,4096)       ; JFB01 $T28
    0233              AT29= AND('HV-RC3-3':DEV_TMP1,8192)       ; JFB01 $T29
    0234              AT31= AND('HV-RC3-3':DEV_TMP1,32768)      ; JFB01 $T31

            ;
    0235              GT13 = AND(8192,PB2GLOBAL:DEV_TMP0)
            ;
    0236              SA0 = OR('RSH-RC3-1':DIN_VAL,'RSH-CA1-1':DIN_VAL)
    0237              SA1 = 'YS-RC3-6':DIN_VAL          ; JFB01
```

```
441   0238          SA2 = AND('RC3-PIG':DEV_STAT,4)          ; PIG FLSH
442   0239          SA3 = AND('RC3-PIG':DEV_STAT,8)          ; DI/DRAIN
443   0240          SA4 = AND('RC3-PIG':DEV_STAT,32) ; INTERLOCK
444   0241          SA5 = AND('RC3-SAMP':DEV_STAT,8) ; RC3-SAMP  SAMPLE
445   0242          SB0 = AND('HV-RC3-3':DEV_STAT,4) ; RESET
446   0243          SB1 = AND('HV-RC3-3':DEV_STAT,16)        ; CHGSTATE
447   0244          SB2 = AND('HV-RC3-3':DEV_STAT,32)        ; INTERLOCK
448   0245          LET FTRIP4 = 0
449           ;
450           ;     END LOGIC FOR GRAPHICS
451           ;
452   0247          IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
453   0248          CURENT = OR(LAST,RC3)
454   0249          CURENT = OR(CURENT,ANALOG)
455   0251          IF AND(CURENT,1) THEN LMPVAR = 2
456   0253             ELSE IF AND(CURENT,2) THEN LMPVAR = 1
457   0254                  ELSE LMPVAR = 0
458   0255          LAMP ADI,SKDKEY,LMPVAR
459           ;     NOCRIT
460   0256          GOTO AGAIN
461           ;
462           ;     E N D   P R O G R A M   L O O P
463           ;
464           ;     BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
465           ;
466   0257    CLR:  LET PSTAT = 0
467   0260          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
468   0261          LET FCLEAR = 1
469   0262          GOSUB ACKK
470   0263          RETURN
471           ;
472   0264    ALM:  LET PSTAT = 1
473   0267          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
474   0268          IX_ACK = 2
475   0270          IF AND(PTYPE,3) THEN FALMON = 1
476   0271          LAMP ADI,SKDKEY,2
477           ;     CRIT
478   0272          GOSUB ACKK
479   0273          RETURN
480           ;
481   0274    ACK1: LET PSTAT = 2
482   0275          LET FACK = 1
483           ;
484           ;     ALARM TYPER STRINGS:
485           ;
486   0277    ACKK: IF ILOOP = 0 THEN STRNG0 = "ZS-IDX-2   VALVE 1-29 CLOSED"
487   0279          IF ILOOP = 1 THEN STRNG0 = "PSH-ILF-1  FC3 INLET PRES HIGH"
488   0281          IF ILOOP = 2 THEN STRNG0 = "YS-RC3-6   RADIATION BYPASS ON"
489   0283         IF ILOOP = 3 THEN STRNG0 = "RXS-RC3-1  PC RAD SYSTEM FAIL "
490   0285          IF ILOOP = 4 THEN STRNG0 = "RSH-RC3-1  PC SAMPLER RAD HIGH"
491   0287          IF ILOOP = 5 THEN STRNG0 = "FSL-RC3-1  PC SAMPLER FLOW LOW"
492   0289          IF ILOOP = 6 THEN STRNG0 = "VALVE 1-16 TO TK-C100 OPEN"
493   0291          IF ILOOP = 7 THEN STRNG0 = "VALVE 1-17 TO TK-102AW OPEN"
494   0293          IF ILOOP = 33 THEN STRNG0 = "RC3-PIG LOW FLOW "
495   0295          IF ILOOP = 24 THEN STRNG0 = "START PCBATCH PGM "
```

```
496   0297            IF ILOOP = 25 THEN STRNGO = "PCBATCH WRONG UNIT"
497   0299            IF ILOOP = 26 THEN STRNGO = "TERMINATE PCBATCH"
498           ;
499   0300    AMSG:   IF PTYPE = 1 THEN
500                     BEGIN
501   0302              IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
502   0303              IF (FACK) THEN
503                       BEGIN
504   0304                PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
505   0305                LET FACK = 0
506                       END
507                     END
508   0306            IF (FCLEAR) THEN
509                       BEGIN
510   0307                PRINT ADI,"%p ALARM CLEAR",STRNGO
511   0308                LET FCLEAR = 0
512                       END
513   0309            IF (FSTART) THEN
514                     BEGIN
515   0310              LET FSTART = 0
516   0311              PRINT ADI,"%p",STRNGO
517                     END
518   0312            FACK = 0
519   0313            FCLEAR = 0
520   0314            RETURN
521           ;
522   0315    ERRSUB: IF ERRN != ERRNUM() THEN
523                     BEGIN
524   0316              TIMERON STIMEO
525   0317              TIMERCLR STIMEO
526   0318              LET FSNO = 1
527   0319              LET ERRN = ERRNUM()
528   0320              LET ERRL = ERRLIN()
529   0321              PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
530                     END
531   0322            ERSCLR
532   0323            GOTO AGAIN
533           ;
534           ; TERM: LET FABORT = 0
535   0324    TERM:   LET STRNGO = "IXBATCH TERMINATED    "
536   0325            LET ILOOP = STAR + 2
537   0326            LET FSTART = 1
538   0327            LET STRNGO = "TERM"
539   0328            GOSUB ACKK
540                   END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 6464 Bytes, 404 Pages
14 Forward Reference(s)

SCBATCH

```
;       S C B A T C H . S E Q                                   VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 014,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]SCBATCH
;
;       UNIT = 16, SKDKEY = 29
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;        30-DEC-92      Fixed white alarm print message.          M. Teats
;
;        18-FEB-93      Added BT13 SAMPLE status for RC1-SAMP.            M. Teats
;
;        08-JUN-93      Added comments.  CCN# 93JUN01-01.                 M. Teats
;
;        21-JUN-93      Removed 3 comment lines.  CCN# 93JUN21-02.        M. Teats
;
;-mct1+  29-JUN-93       Remove IBAD on RC3-PIG, and baselined for         M. Teats
;                       D/3 version 3.3.  CCN# 93JUN29-01.
;
```

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          ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
          ;                       system. Rebaselined document. Removed
          ;                       obsolite Select() statement.
          ;
          ;       31-JUN-95       Changed ZS-EA1-2D and ZS-RC1-3D to yellow       J. Berger
          ;                       alarms. See ECN 623929 and EE-95-00006. JFB01
          ;
          ;
          ;  END MOD LOG
          ;
          UNIT    SC
          ;
                  COMMON PB2,WHOLE0
                  DEVON == 'RC1-SAMP':DEV_STAT            ; For FQIC-RESET device on/off check
                  CALOUT == 'FQIC-RC1':CB_OTVL:3          ; For FQIC-RESET calc block outvalue
                  HVEA1 == 'HV-EA1-2':DEV_TMP1
                  PIG0  == 'RC1-PIG':DEV_TMP0
                  PIG1  == 'RC1-PIG':DEV_TMP1
          ;
0000              NOP
0001              LET STAR = 25                   ; Start message JFB01
0002              LET SKDKEY = 29         ; SKID Key
0003              LET UNITT = 16                  ; SEQ Unit number
0004              ASSIGN PDEV = 'SC-ALARM' ; Alarm device
0005              ASSIGN PTYPE = TYPE25           ; JFB01
0006              LET ADI = 0                     ; Alarm destination index
0007              LET FSN0 = 0                    ; No alarm yet
0008              TIMEROFF STIME0         ; Alarm timer off
0009              TIMERCLR STIME0         ; Alarm timer clear
0010              LET STRNG0 = " "                ; Blank 30 character string
0011              LET ERRN = 0                    ; Set error number to zero
0012              LET ERRL = 0                    ; Set error line to zero
0013              LET FTRIP4 = 0                  ; FTRIP4 = 1 when audible horn is to be turned on
0014              GETUNIT TRIP                    ; Which sequence unit is program running in
0015              IF TRIP != UNITT THEN           ; Abort if running in wrong seq. unit
                     BEGIN
0016                 FSTART = 1
0017                 ILOOP = STAR + 1
0018                 PTYPE = 0
0019                 GOSUB ACKK
0020                 GOTO TERM
                     END
          ;       IF !SELECT() THEN GOTO AGAIN
          ;
          ;       B E G I N   I N I T I A L I Z I N G :
          ;
          ;               EPN             VAR    LOOP#    COLOR
          ;               ---------       ----   -----    -----
          ;       DEVs:   SC-ALARM
          ;               HV-RC1-3
          ;               RC1-SAMP
          ;               RC1-PIG                  24      Y
          ;               HV-EA1-2
          ;
          ;       DINs:   RSH-EA1-1       INTO    0       R
```

```
                ;                LSL-RC1-1       INT1    1       Y
                ;                LSL-C1031       INT2    2       Y
                ;                YS-P-RC1        INT3    3       -
                ;                YS-RC1-6        INT4    4       Y
                ;                FSL-RC1-1       INT5    5       -
                ;                RSH-RC1-1       INT6    6       R
                ;                RXS-RC1-1       INT7    7       Y
                ;                LSL-C1032       INT8    8       Y
                ;                ZS-EA12NM       INT9    9       -
                ;                ZS-EA1-2D       INT10   10      Y
                ;                ZS-RC13NM       INT11   11      -
                ;                ZS-RC1-3D       INT12   12      Y
                ;                                                        VAR    LOOP#    ALARM SETPT
                ;                                                        ---    -----    -----------
                ;        AINs:   FI-EA1-3        SKID13  13      -
                ;                FQI-EA1-D       SKID14  14      -
                ;                FQI-EA1NM       SKID15  15      -
                ;                RI-EA1-1        SKID16  16      -
                ;                KY-RC1-1        SKID17  17      -
                ;                RI-RC1-1        SKID18  18      -
                ;                FI-RC1-1        SKID19  19      -
                ;                FQI-RC1-D       SKID20  20      -
                ;                FQI-RC1NM       SKID21  21      -
                ;                FQIC-RC1        SKID22  22      -
                ;                CI-EA1-SE       SKID23  23      -
                ;
                ;
0021                    LET STRNG0 = "INIT"
0022            INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
0023                    LET FSTART = 0                  ; Program start flag = 0
0024                    LET SD0 = 0                     ; For FQIC-RESET RC1-SAMP device status flag
0025                    LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
0026                    LET LSG0 = " "                  ; Clear the string variables
0027                    LET LSG1 = " "
0028                    LET LSG2 = " "
0029                    LET LSG3 = " "
0030                    LET LSG4 = " "
0031                    PDEV:DEV_TMP0 = 1                               ; Set alarm device to non-alarm state
0032                    IF AND(PDEV:DEV_ALMCT,16) THEN                  ; If alarm device is inha, remove the inha
0033                      PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0034                    IF AND(PDEV:DEV_ALMCT,32) THEN                  ; If alarm device is ack, clear it
0035                       PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
                ;
                ;       First, set all flags and integers:
                ;
0036                    ASSIGN PDIN = 'RSH-EA1-1'
0037                    ASSIGN PSTAT = INT0
0038                    ASSIGN PTYPE = TYPE0
0039                    ASSIGN PREV = FRV0
0040                    ASSIGN PSKID = SKID0
0041                    ASSIGN PPASS = FPAS0
                ;
0042                    FOR ILOOP = 0 TO 23                             ;JFB01
0043                    LET PPASS = 0
0044                    LET PREV = 0
```

```
166   0046          IF PSTAT > 5 THEN PSTAT = 0                    ; Reset current status if undefined
167   0047          LET PSKID = 0                                  ; Default previous status to no alarms
168   0048          LET PTYPE = 0                                  ; Default to no alarm
169   0049          IF ILOOP < 13 THEN                             ; For DINs      JFB01
170                    BEGIN
171   0050             LET PTYPE = 2                               ; Default to yellow alarm
172   0051             IF AND(PDIN:DIN_DFLG,3) THEN                ; Check for alarms if defined (must be red or yellow)
173                       BEGIN
174   0052                LET PTYPE = 2                            ; Default to yellow alarms
175   0054                IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1  ; Reverse acting
176   0056                IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4  ; Set to red critical
177                       END
178   0057             STEP PDIN BY 1                              ; Point to next DIN
179                    END
180   0058          ELSE PTYPE = 0
181   0059          STEP PPASS BY 1
182   0060          STEP PREV BY 1
183   0061          STEP PSTAT BY 1
184   0062          STEP PSKID BY 1
185   0063          STEP PTYPE BY 1
186   0064          NEXT ILOOP
187         ;
188   0065          TYPE3 = 0        ; YS-RC1-1       JFB01
189   0066          TYPE5 = 0        ; FSL-RC1-1 LOW FLOW ALARM REPLACED BY RC1-PIG ALARM
190         ;       TYPE12 = 4         JFB01
191         ;       TYPE14 = 4         JFB01
192   0067          TYPE24 = 2       ; RC1-PIG        JFB01
193         ;
194   0068          FRV0 = 0
195   0069          FRV1 = 0
196   0070          FRV2 = 0
197         ;       FRV3 = 0           JFB01
198   0071          FRV4 = 1
199   0072          FRV6 = 0
200   0073          FRV7 = 0
201   0074          FRV8 = 0
202   0075          FRV10 = 1        ; JFB01
203   0076          FRV12 = 1        ; JFB01
204   0077          FRV24 = 1        ; JFB01
205         ;
206   0078          FPAS24 = 0       ; JFB01
207         ;
208         ;       E N D   I N I T I A L I Z I N G
209         ;
210         ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
211         ;
212   0079          ANALOG = 0
213   0080          ILOOP = STAR
214   0081          FSTART = 1
215   0082          GOSUB ACKK
216   0083          ON ERROR GOSUB ERRSUB
217         ;
218         ;       B E G I N   P R O G R A M   L O O P :
219         ;
220   0084  AGAIN:  MARK STEP "WTUNTL",0,0
```

```
221          ; JH01   WAITUNTIL SELECT() | FABORT       ; Wait until micro is selected or program aborted
222          ;        IF (FABORT) THEN GOTO TERM        ; Terminate program if abort flag set
223    0085           MARK STEP "RNNING",0,0
224    0086           WAIT 1
225    0087           IF (FSNO) THEN                    ; If alarm flag is set
226    0088              IF STIMEO > 60 THEN            ; If alarm flag active for 1 minute
227                          BEGIN                      ; Reset timer and turn off flag
228    0089                  TIMEROFF STIMEO
229    0090                  TIMERCLR STIMEO
230    0091                  FSNO = 0
231    0092                  ERRN = 0
232    0093                  ERRL = 0
233                          END
234          ;
235          ;        If SC-ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
236          ;
237    0094           IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
238                      BEGIN
239    0095              PDEV:DEV_TMPO = 1              ; Put SC-ALARM in ack state
240    0096              FTRIP4 = 1                     ; Set for unit alarm ack
241    0097              ACK = 1                        ; Set for unit alarm ack
242    0098              CRIT
243    0099              LAMP ADI,SKDKEY,1              ; Turn lamp on
244                      END
245          ;
246          ;        BEGIN DINs:
247          ;
248    0100           ASSIGN PDIN = 'RSH-EA1-1'
249    0101           ASSIGN PTYPE = TYPEO
250    0102           ASSIGN PREV = FRVO
251    0103           ASSIGN PSTAT = INTO
252    0104           ASSIGN PPASS = FPASO
253    0105           LET CURENT = 0                    ; Used to set lamp status
254    0106           LET LAST = 0
255    0107           LET ANALOG = 0
256    0108           LET NXT = 0
257    0109           LMPVAR = 0
258    0110           BITVAL = 0
259          ;
260    0111  LOP:     FOR ILOOP = 0 TO 12               ; JFB01
261          ;        IF !SELECT() THEN GOTO AGAIN
262    0112           IF ( PTYPE > 0 ) THEN                                    ; If some type of alarm
263                      BEGIN                                            ;be1
264    0114              IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN is inhibited
265    0116              IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5            ; If EPN is bad input
266    0118              IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4             ; If EPN is disabled
267    0119              IF ( PSTAT < 3 ) THEN                            ; If not inhibited
268                          BEGIN                                        ;be2
269    0120                   IF (PSTAT = 1) THEN
270                              BEGIN                                    ;be3
271    0121                      IF (PTYPE != 1) THEN
272    0123                         IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
273    0125                      IF (FTRIP4) THEN GOSUB ACK1
274                              END                                      ;en3
275    0128                   IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
```

```
0129                    IF (PSTAT) THEN
                            BEGIN                                   ;be4
0131                        IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
0132                        NXT = PSTAT
0134                        IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0135                        LAST = OR(LAST,NXT)
                            END                                     ;en4
                        END                                         ;en2
0137                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                    END                                             ;en1
0138            STEP PDIN BY 1
0139            STEP PTYPE BY 1
0140            STEP PREV BY 1
0141            STEP PSTAT BY 1
0142            STEP PPASS BY 1
0143            NEXT ILOOP
        ;
        ;       END DINs
        ;
        ;       BEGIN ANALOG RED AND YELLOWS:
        ;
0144            ASSIGN PSKID = SKID13                               ; JFB01
0145            ASSIGN PAI = 'FI-EA1-3'
0146            FOR JLOOP = 13 TO 23                                ; JFB01
        ;       IF !SELECT() THEN GOTO AGAIN
0147            IF (PTYPE) THEN                                     ; If some alarm exists
                  BEGIN                                     ;be1
0148              BITVAL = PAI:AI_ALMCT
0149              IF !AND(BITVAL,16) THEN                           ; If not inhibited
                    BEGIN                                   ;be2
0150                IF AND(BITVAL,15) THEN                          ; If alarm exists and is current
                      BEGIN                                 ;be3
0152                  IF AND(BITVAL,32) THEN NXT = 2                ; If alarm is ack
                      ELSE                                          ; If alarm is unack
                        BEGIN                               ;be4
0153                    IF PSKID !=BITVAL THEN
                          BEGIN                             ;be5
0155                      IF BITVAL < 3 THEN FALMON = 1
0156                      LET PSKID = BITVAL
0157                      PDEV:DEV_TMPO = 2
0158                      NXT = 1
                          END                               ;en5
0159                    ELSE NXT = 1
                        END                                 ;en4
                      END                                   ;en3
                    ELSE                                            ; Else there is no alarm
                      BEGIN
0160                  NXT = 0
0161                  LET PSKID = 0
                      END
                    END                                     ;en2
                  ELSE                                              ; Else alarm is inhibited
                    BEGIN
0162                NXT = 0
0163                LET PSKID = 0
```

```
                        END
0164                  ANALOG = OR(ANALOG,NXT)
                      END                                   ;en1
0165                STEP PREV BY 1
0166                STEP PSTAT BY 1
0167                STEP PSKID BY 1
0168                STEP PTYPE BY 1
0169                STEP PAI BY 1
0170                NEXT JLOOP
            ;
            ;       END ANALOG RED AND YELLOWS
            ;
            ;       BEGIN DEVICE ALARM (RC1-PIG LOW FLOW ALARM):
            ;
0171        RC1:    ASSIGN PTYPE = TYPE24                                   ; JFB01
0172                ASSIGN PREV = FRV24                                     ; JFB01
0173                ASSIGN PSTAT = INT24                                    ; JFB01
0174                ASSIGN PPASS = FPAS24                                   ; JFB01
            ;       IF !SELECT() THEN GOTO AGAIN
0175                IF ( PTYPE > 0 ) THEN
                      BEGIN                                                 ;be1
0177                  IF AND('RC1-PIG':DEV_ALMCT,16) THEN LET PSTAT = 3             ; EPN is inha
            ;-mct1+   IF AND('RC1-PIG':DEV_ALMCT,4) THEN BLET PSTAT = 5             ; No IBAD on devices
0179                  IF !AND('RC1-PIG':DEV_FLG,8) THEN LET PSTAT = 4               ; EPN is dis
0180                  IF ( PSTAT < 3 ) THEN
                          BEGIN                                             ;be2
0181                      IF PSTAT = 1 THEN
                            BEGIN                                           ;be3
0182                        IF PTYPE != 1 THEN
0184                          IF AND('RC1-PIG':DEV_ALMCT,32) THEN GOSUB ACK1
0186                        IF (FTRIP4) THEN GOSUB ACK1
                            END                                             ;en3
0188                      IF PSTAT = 0 THEN IF 'RC1-PIG':DEV_ALMCT = 7 THEN
                            BEGIN                                           ;be4
0189                        CRIT
0190                        LET PSTAT = 1
0191                        'SC-ALARM':DEV_TMP0 = 2
0192                        FALMON = 1
0193                        LAMP ADI,SKDKEY,2
0194                        GOSUB ACKK
0195                        NOCRIT
                            END                                             ;en4
0196                      IF (PSTAT) THEN
                              BEGIN                                         ;be5
0197                          IF !AND('RC1-PIG':DEV_ALMCT,7) THEN
                                BEGIN                                       ;be6
0198                            LET PSTAT = 0
0199                            LET FCLEAR = 1
0200                            GOSUB ACKK
                                END                                         ;en6
0201                          NXT = PSTAT
0203                          IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0204                          LAST = OR(LAST,NXT)
                              END                                           ;en5
                          END                                               ;en2
```

```
386   0206            ELSE IF !AND('RC1-PIG':DEV_ALMCT,16)&AND('RC1-PIG':DEV_FLG,8)THEN LET PSTAT = 0
387   0208            IF PSTAT = 5 THEN PSTAT = 0
388                   END                                                    ;en1
389         ;
390         ;       END DEVICE ALARM (RC1-PIG LOW FLOW ALARM)
391         ;
392   0209          WHITE = 0
393   0210          LET FTRIP4 = 0
394   0212          IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
395   0213          CURENT = OR(LAST,WHITE)
396   0214          CURENT = OR(CURENT,ANALOG)
397   0216          IF AND(CURENT,1) THEN LMPVAR = 2
398   0218             ELSE IF AND(CURENT,2) THEN LMPVAR = 1
399   0219                   ELSE LMPVAR = 0
400   0220          LAMP ADI,SKDKEY,LMPVAR
401   0221          MARK STEP "BOTTOM",0,0
402   0222          NOCRIT
403         ;
404         ;       BEGIN LOGIC FOR GRAPHICS:
405         ;
406   0223          AT27 = AND(HVEA1,2048)                  ; $T27 = RSH-RC1-1 OFF
407   0224          AT28 = AND(HVEA1,4096)                  ; $T28 = RI-RC1-1  OFF
408   0225          AT29 = AND(HVEA1,8192)                  ; $T29 = RSH-EA1-1 OFF
409   0226          AT30 = AND(HVEA1,16384)                 ; $T30 = RI-EA1-1  OFF
410   0227          AT31 = AND(HVEA1,32769)                 ; $T31 = HV-EA1-2 INTERLOCK OFF
411   0228          SA0  = AND(HVEA1,2)                     ; $T17 = HV-EA1-2 INTERLOCK ON
412         ;       SA1  = 'ZS-EA1-2D':DIN_VAL              ; HV-EA1-2 DIVERTED = 1
413         ;       SA2  = 'ZS-EA12NM':DIN_VAL              ; HV-EA1-2 TO WEIR  = 1
414   0229          SA3  = AND('HV-RC1-3':DEV_TMP1,2)       ; $T17 = HV-RC1-3 INTERLOCK ON
415         ;       SA4  = 'ZS-RC1-3D':DIN_VAL              ; HV-RC1-3 DIVERTED = 1
416         ;       SA5  = 'ZS-RC13NM':DIN_VAL              ; HV-RC1-3 TO BASIN = 1
417   0230          AT0  = AND('HV-RC1-3':DEV_TMP1,32768)   ; $T31 = HV-RC1-3 INTERLOCK OFF
418         ;
419   0231          GT15 = AND('PB2GLOBAL':DEV_TMP0,32768)  ; RC1-SAMP TO RC1-PIG "SAMPLE"
420   0232          SA7  = 'YS-P-RC1':DIN_VAL               ; PUMP P-RC1 SC SAMPL PUMP  ON
421   0233          SB0  = AND(PIG1,4)                      ; $T20 = YS-RC1-6 BYPASS ON
422   0234          SB1  = AND(PIG0,1)                      ; $T0  = BTIMER KY-RC1-1 ON
423   0235          SB2  = AND(PIG0,2)                      ; $T1  = BTIMER KY-RC1-1 TIMEOUT
424   0236          AT2  = AND(PIG0,4)
425   0237          AT3  = AND(PIG0,8)
426   0238          AT4  = AND(PIG0,16)                     ; $T4  = RC1-PIG INTERLOCK OFF
427   0239          AT8  = AND(PIG0,256)                    ; $T8  = RC1-PIG DIVERT
428   0240          AT10 = AND(PIG0,1024)                   ; $T10 = RC1-PIG FLUSH
429   0241          AT15 = AND('RC1-SAMP':DEV_TMP0,32768)   ; $T15 = RC1-SAMP FAULT
430   0242          AT17 = AND(PIG1,2)
431   0243          AT20 = AND(PIG1,16)                     ; $T20 = RC1-PIG BYPASS ON
432   0244          AT21 = AND('RC1-SAMP':DEV_TMP1,32)      ; $T21 = PULSE SAMPLER RC1-SAMP
433   0245          AT23 = AND('RC1-SAMP':DEV_TMP1,128)     ; $T23 = SAMPLE RC1-SAMP
434   0246          BT5  = AND(PIG0,1)
435   0247          BT1  = AND(PIG0,2)                      ; $T1  = BTIMER KY-RC1-1 TIMEOUT
436   0248          BT0  = XOR(BT1,BT5)                     ; $BT0 = BTIMER KY-RC1-1 ON
437   0249          BT2 = AND('RC1-PIG':DEV_STAT,8)
438   0250          BT3 = AND('RC1-PIG':DEV_STAT,16)
439   0251          BT4 = AND('RC1-PIG':DEV_STAT,32)
440   0252          BT5 = AND('RC1-PIG':DEV_STAT,64)
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441   0253          BT6 = AND('RC1-PIG':DEV_STAT,128)
442   0254          BT7 = AND('HV-EA1-2':DEV_STAT,4)
443   0255          BT8 = AND('HV-EA1-2':DEV_STAT,16)
444   0256          BT9 = AND('HV-EA1-2':DEV_STAT,32)
445   0257          BT10 = AND('HV-RC1-3':DEV_STAT,4)
446   0258          BT11 = AND('HV-RC1-3':DEV_STAT,16)
447   0259          BT12 = AND('HV-RC1-3':DEV_STAT,32)
448   0260          BT13 = AND('RC1-SAMP':DEV_STAT,8)        ; SAMPLE
449   0261          BT14 = AND('RC1-SAMP':DEV_STAT,16)       ; SHUTDOWN
450   0262          BT19 = AND('RC1-SAMP':DEV_STAT,32)       ; INTERLOCK
451   0263          BT31 = AND('RC1-SAMP':DEV_TMP1,32768)    ; $T31 = RC1-SAMP INTERLOCK OFF
452   0265          IF AND('SC-ALARM':DEV_FLG,64)THEN PUTMANL 'SC-ALARM'
453   0267          IF AND('HV-RC1-3':DEV_FLG,64)THEN PUTMANL 'HV-RC1-3'
454   0269          IF AND('RC1-SAMP':DEV_FLG,64)THEN PUTMANL 'RC1-SAMP'
455   0271          IF AND('RC1-PIG':DEV_FLG,64)THEN PUTMANL 'RC1-PIG'
456   0273          IF AND('HV-EA1-2':DEV_FLG,64)THEN PUTMANL 'HV-EA1-2'
457         ;
458         ;       BEGIN LOGIC FOR GRAPHICS
459         ;
460         ;       B E G I N   F Q I C - R E S E T :
461         ;
462         ;       Function:       For FQIC loops that have a CALC block which performs the
463         ;                       integration, set the output of the CALC block to zero
464         ;                       after the RC1-SAMP device is turned off.
465         ;
466   0275          IF AND(DEVON,2) THEN SD0 = 1                    ; If on (2), set device stat flag
467   0276          IF AND(DEVON,1) & AND(SD0,1) THEN               ; For on-off transition
468                    BEGIN
469   0277             SD0 = 0
470   0278             PRINT AD1,"... FQIC-RC1 LAST READING =  %f GAL",CALOUT
471   0279             CALOUT = 0.0
472                    END
473         ;
474         ;       E N D   F Q I C - R E S E T
475         ;
476   0280          GOTO AGAIN
477         ;
478         ;       E N D   P R O G R A M   L O O P
479         ;
480         ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
481         ;
482   0281  CLR:    LET PSTAT = 0
483                 ;
484                 ; If not white, then unack:
485                 ;
486   0284          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
487   0285          LET FCLEAR = 1
488   0286          GOSUB ACKK
489   0287          RETURN
490         ;
491   0288  ALM:    LET PSTAT = 1
492                 ;
493                 ; If not white, then unack:
494                 ;
495   0291          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
```

```
                    ;
                    ; Turn audible alarm on if white or yellow:
                    ;
0292                PDEV:DEV_TMP0 = 2
0294                IF AND(PTYPE,3)THEN FALMON = 1
0295                LAMP ADI,SKDKEY,2
0296                CRIT
0297                GOSUB ACKK
0298                RETURN
            ;
0299        ACK1:   LET PSTAT = 2                                        ; Ack the alarm
0300                LET FACK = 1                                         ; Set ACK flag for C program
            ;
            ;       ALARM TYPER STRINGS:
            ;
0302        ACKK:   IF ILOOP = 0 THEN STRNG0 = "REBOILER SC RADIATION HI/FAIL"
0304                IF ILOOP = 1 THEN STRNG0 = "WEIR BOX LEVEL LOW"
0306                IF ILOOP = 2 THEN STRNG0 = "WEIR BOX OVERFLOW TRAP LVL LO"
0308               IF ILOOP = 3 THEN STRNG0 = "PUMP RC1 SC SAMPLE PUMP ON   "
0310                IF ILOOP = 4 THEN STRNG0 = "RC1 RADIATIN BYPASS SWITCH ON"
0312                IF ILOOP = 5 THEN STRNG0 = "SC SAMPLER FLOW LOW"
0314                IF ILOOP = 6 THEN STRNG0 = "SC SAMPLER RADIATION HIGH"
0316                IF ILOOP = 7 THEN STRNG0 = "SC RADIATION SYSTEM FAIL"
0318                IF ILOOP = 8 THEN STRNG0 = "WEIR BOX SC-LINE TRAP LEVEL LO"
0320                IF ILOOP = 10 THEN STRNG0 = "STEAM CNDSB DIVERTED TO 102AW"        ; JFB01
0322                IF ILOOP = 12 THEN STRNG0 = "STEAM CNDSB DIVERTED TO 102AW"        ; JFB01
0324                IF ILOOP = 24 THEN STRNG0 = "RC1-PIG LOW FLOW"                     ; JFB01
0326                IF ILOOP = 25 THEN STRNG0 = "START SCBATCH PGM "           ; JFB01
0328                IF ILOOP = 26 THEN STRNG0 = "SCBATCH WRONG UNIT"           ; JFB01
0330                IF ILOOP = 27 THEN STRNG0 = "TERMINATE SCBATCH "           ; JFB01
            ;
            ;  If acking alarm, then
            ;
0331        AMSG:   IF PTYPE = 1 THEN
                       BEGIN
                       ;
                       ;  If white alarm, print:
                       ;
0333                   IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNG0
0334                   IF (FACK) THEN
                         BEGIN
                         ;
                         ;  If white, print it is ack and reset the flag:
                         ;
0335                     PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG0
0336                     LET FACK = 0
                         END
                       END
            ;
            ;  If CLEAR, print it is clear and reset flag:
            ;
0337                IF (FCLEAR) THEN
                       BEGIN
0338                   PRINT ADI,"%p ALARM CLEAR",STRNG0
0339                   LET FCLEAR = 0
```

```
                    END
          ;
          ;  If STARTUP, print startup message:
          ;
0340              IF (FSTART) THEN
                    BEGIN
0341                LET FSTART = 0
0342                PRINT ADI,"%p",STRNGO
                    END
0343              RETURN
          ;
          ;  If ERROR - print message, start timer, and set flag:
          ;
0344      ERRSUB:   IF ERRN != ERRNUM() THEN
                    BEGIN
0345                TIMERON STIMEO
0346                TIMERCLR STIMEO
0347                LET FSNO = 1
0348                LET ERRN = ERRNUM()
0349                LET ERRL = ERRLIN()
0350                PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
                    END
0351              ERSCLR
0352              GOTO AGAIN
          ;
          ;  If FABORT = 1, then abort program:
          ;
          ; TERM:  LET FABORT = 0
0353      TERM:    LET STRNGO = "SCBATCH TERMINATED    "
0354               LET ILOOP = STAR + 2
0355               LET FSTART = 1
0356               LET STRNGO = "TERM"
0357               GOSUB ACKK
                   END

     Total Errors Detected      0     Total Warnings      0
          Sequence Program Size = 7216 Bytes, 451 Pages
               14 Forward Reference(s)
```

BASINBAT

```
;       B A S I N B A T . S E Q                                  VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 022,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]BASINBAT
;
;       UNIT = 17, SKDKEY = 28
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCMOA.SDB        PCMOASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;        30-DEC-92      Fixed white alarm print message.          M. Teats
;
;-mct1+  17-MAY-93      Added P-207A-S yellow device alarm and            M. Teats
;                       removed white analog pump amp alarms to make
;                       consistent with documentation.
;
;       09-JUN-93       Added comments and baselined for          M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;
;       15-DEC-94       Revised header to indicate the new VMS            J. Berger
;                       system. Rebaselined document. Removed
```

```
                ;                          obsolite Select() statements.
                ;
                ;  END OF MOD LOG
                ;
                UNIT     BASINS
                         COMMON A350
                ;
0000                     NOP
0001                     LET STAR = 14                    ; Start message
0002                     LET SKDKEY = 28            ; SKID Key
0003                     LET UNITT = 17                   ; SEQ Unit number
0004                     ASSIGN PDEV = 'BASIN-ALM'        ; Alarm device
0005                     ASSIGN PTYPE = TYPE14
0006                     LET ADI = 0                      ; Alarm destination index
0007                     LET FSNO = 0                     ; No alarm yet
0008                     TIMEROFF STIME0            ; Alarm timer off
0009                     TIMERCLR STIME0            ; Alarm timer clear
0010                     LET STRNGO = " "                 ; Blank 30 character string
0011                     LET ERRN = 0                     ; Set error number to zero
0012                     LET ERRL = 0                     ; Set error line to zero
0013                     LET FTRIP4 = 0                   ; FTRIP4 = 1 when audible horn is to be turned on
0014                     GETUNIT TRIP                     ; Which sequence unit is program running in
0015                     IF TRIP != UNITT THEN            ; Abort if running in wrong seq. unit
                            BEGIN
0016                        FSTART = 1
0017                        ILOOP = STAR + 1
0018                        PTYPE = 0
0019                        GOSUB ACKK
0020                        GOTO TERM
                            END
                ;        IF !SELECT() THEN GOTO AGAIN
                ;
                ;        B E G I N   I N I T I A L I Z I N G :
                ;
0021                     STRNGO = "INIT"
0022            INIT:    LET FABORT = 0                   ; If FABORT = 1 then abort program
0023                     LET FSTART = 0                   ; Program start flag = 0
0024                     LAMP ADI,SKDKEY,0                ; Turn off the annunciator key
0025                     LET LSG0 = " "                   ; Clear the string variables
0026                     LET LSG1 = " "
0027                     LET LSG2 = " "
0028                     LET LSG3 = " "
0029                     LET LSG4 = " "
0030                     PDEV:DEV_TMP0 = 1                                ; Set alarm device to non-alarm state
0031                     IF AND(PDEV:DEV_ALMCT,16) THEN                   ; If alarm device is inha, remove the inha
0032                       PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0033                     IF AND(PDEV:DEV_ALMCT,32) THEN                   ; If alarm device is ack, clear it
0034                        PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
                ;
                ;        First, set all flags and integers:
                ;
0035                     ASSIGN PDIN = 'YS-SCP3IL'
0036                     ASSIGN PSTAT = INT0
0037                     ASSIGN PTYPE = TYPE0
0038                     ASSIGN PREV = FRV0
```

```
111   0039          ASSIGN PPASS = FPAS0
112         ;
113   0040          FOR ILOOP = 0 TO 10
114   0041          LET PSTAT = 0
115   0042          LET PTYPE = 2
116   0043          LET PREV = 0
117   0044          LET PPASS = 0
118   0045          IF ILOOP < 10 THEN                          ; For digitals.  -mct1+
119                  BEGIN                                      ;-mct1+
120   0046           IF AND(PDIN:DIN_DFLG,3) THEN              ; Check for alarms (must be red or yellow)
121                    BEGIN
122   0047             PTYPE = 2                               ; Default to yellow alarm
123   0049             IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1          ; Reverse acting
124   0051             IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4         ; Set to red critical
125                    END
126   0052           STEP PDIN BY 1                     ;-mct1+
127                  END                                        ;-mct1+
128   0053          STEP PSTAT BY 1
129   0054          STEP PTYPE BY 1
130   0055          STEP PREV BY 1
131   0056          STEP PPASS BY 1
132   0057          NEXT ILOOP
133         ;
134   0058          FRV0 = 0
135   0059          FRV1 = 0
136   0060          FRV2 = 1
137   0061          FRV3 = 0
138   0062          FRV4 = 0
139   0063          FRV5 = 0
140   0064          FRV6 = 0
141   0065          FRV7 = 0
142   0066          FRV8 = 0
143   0067          FRV9 = 0
144         ;
145   0068          TYPE2 = 0
146   0069          TYPE5 = 1
147   0070          TYPE7 = 1
148   0071          TYPE9 = 1
149   0072          TYPE10 = 2                                 ;-mct1+
150         ;
151   0073          INT10 = 0                                  ;-mct1+
152         ;
153         ;       E N D   I N I T I A L I Z I N G
154         ;
155         ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
156         ;
157   0074          ILOOP = STAR
158   0075          FSTART = 1
159   0076          GOSUB ACKK
160   0077          ON ERROR GOSUB ERRSUB
161         ;
162         ;       B E G I N   P R O G R A M   L O O P :
163         ;
164   0078  AGAIN:  MARK STEP "WTUNTL",0,0
165         ;       WAITUNTIL SELECT() | FABORT      ; Wait until micro selected or program aborted
```

```
166          ;        IF (FABORT) THEN GOTO TERM        ; Terminate program if abort flag set
167    0079           MARK STEP "RNNING",0,0
168    0080           WAIT 1
169    0081           IF (FSNO) THEN                    ; If alarm flag is set
170    0082              IF STIMEO > 60 THEN            ; If alarm flag active for 1 minute
171                         BEGIN                       ; Reset timer and turn off flag
172    0083                 TIMEROFF STIMEO
173    0084                 TIMERCLR STIMEO
174    0085                 LET FSNO = 0
175    0086                 LET ERRN = 0
176    0087                 LET ERRL = 0
177                         END
178          ;
179          ;        If BASIN-ALM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
180          ;
181    0088           IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
182                      BEGIN
183    0089              PDEV:DEV_TMPO = 1              ; Put BASIN-ALM in ack state
184    0090              LET FTRIP4 = 1                 ; Set for unit alarm ack
185    0091              LET ACK = 1                    ; Set for unit alarm ack
186    0092              CRIT
187    0093              LAMP ADI,SKDKEY,1              ; Turn lamp on
188                      END
189          ;
190          ;        BEGIN DINs:
191          ;
192    0094           ASSIGN PDIN = 'YS-SCP3IL'
193    0095           ASSIGN PSTAT = INTO
194    0096           ASSIGN PTYPE = TYPEO
195    0097           ASSIGN PREV = FRVO
196    0098           ASSIGN PPASS = FPASO
197    0099           LET CURENT = 0                    ; Used to set lamp status
198    0100           LET LAST = 0
199    0101           LET ANALOG = 0
200    0102           LET NXT = 0
201    0103           LMPVAR = 0
202    0104           BITVAL = 0
203          ;
204    0105   LOP:    FOR ILOOP = 0 TO 9
205    0106           IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
206                      BEGIN                                          ;be1
207    0108              IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN is inhibited
208    0110              IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5            ; If EPN is bad input
209    0112              IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4             ; If EPN is disabled
210    0113              IF ( PSTAT < 3 ) THEN                          ; If not inhibited
211                          BEGIN                                      ;be2
212    0114                   IF PSTAT = 1 THEN
213                              BEGIN                                  ;be3
214    0115                      IF PTYPE != 1 THEN
215    0117                         IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
216    0119                      IF (FTRIP4) THEN GOSUB ACK1
217                              END                                    ;en3
218    0122                   IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
219    0123                   IF PSTAT THEN
220                              BEGIN                                  ;be4
```

```
0125                    IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
0126                    NXT = PSTAT
0128                    IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0129                    LAST = OR(LAST,NXT)
                        END                                     ;en4
                     END                                        ;en2
0131              ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
                  END                                           ;en1
0132           STEP PDIN BY 1
0133           STEP PSTAT BY 1
0134           STEP PTYPE BY 1
0135           STEP PREV BY 1
0136           STEP PPASS BY 1
0137           NEXT ILOOP
        ;
        ;      END DINs
        ;
        ;+mct1- BEGIN P-207A-S DEVICE ALARM:
        ;
0138    SMP:   ILOOP = 10                                                    ; P-207A-S
0139           ASSIGN PSTAT = INT10
0140           ASSIGN PTYPE = TYPE10
        ;      IF !SELECT() THEN GOTO AGAIN
0141           IF (TYPE10) THEN                                              ; If some type of alarm
                 BEGIN                                                 ;be1
0143             IF AND('P-207A-S':DEV_ALMCT,16) THEN PSTAT = 3        ; If inhibited
0144             IF ( PSTAT < 3 ) THEN                                 ; If not inhibited
                   BEGIN                                               ;be2
0145               IF PSTAT = 1 THEN                                         ; If previously not alarmed
                     BEGIN                                             ;be3
0146                 IF PTYPE != 1 THEN                                      ; If not white
0148                    IF AND('P-207A-S':DEV_ALMCT,32) THEN GOSUB ACK1      ; If acknowledged
0150                 IF (FTRIP4) THEN GOSUB ACK1                             ; If system acknowledged
                     END                                               ;en3
                   ;
                   ; If not alarmed but device status is alarming:
                   ;
0152               IF PSTAT = 0 THEN IF AND('P-207A-S':DEV_STAT,64) THEN
                     BEGIN                                             ;be4
0153                 LET PSTAT = 1                                           ; Update the alarm status
0156                 IF PTYPE != 1 THEN IF AND('P-207A-S':DEV_ALMCT,32)THEN 'P-207A-S':DEV_ALMCT = XOR('P-207A-S':DEV_ALMCT,32)
0157                 LET PDEV:DEV_TMP0 = 2                                   ; Set BASIN-ALM to alarm status
0159                 IF AND(PTYPE,3) THEN FALMON = 1                         ; Turn on audible horn
0160                 CRIT
0161                 LAMP ADI,SKDKEY,2                                       ; Blink the SKID key
0162                 GOSUB ACKK
                     END                                               ;en4
        ;
                   IF (PSTAT) THEN                                           ; If previously alarmed
                     BEGIN                                             ;be5
0164                 IF !AND('P-207A-S':DEV_STAT,64) THEN                    ; If device status is not alarming
                       BEGIN                                           ;be6
0165                   PSTAT = 0                                             ; Update the alarm status
0168                   IF PTYPE != 1 THEN IF AND('P-207A-S':DEV_ALMCT,32)THEN 'P-207A-S':DEV_ALMCT = XOR('P-207A-S':DEV_ALMCT,32)
0169                   LET FCLEAR = 1
```

```
0170                        GOSUB ACKK
                            END                                          ;en6
                        ;
                        ; Manage The Lamp:
                        ;
0171                    NXT = PSTAT
0173                    IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
0174                    LAST = OR(LAST,NXT)
                        END                                              ;en5
                     END                                                 ;en2
0176              ELSE IF !AND('P-207A-S':DEV_ALMCT,16) THEN PSTAT = 0
                  END                                                    ;en1
        ;
        ;-mct1+  END P-207A-S DEVICE ALARM
        ;
0177            MARK STEP "BELOW",0,0
0178            FTRIP4 = 0
0179            FTRIP3 = 0
0181            IF LAST > 3 THEN PRINT 0," LAMP VARIABLE IS GREATER THAN 3!"
0182            CURENT = OR(LAST,WHITE)
0184            IF AND(CURENT,1)THEN LMPVAR = 2
0186               ELSE IF AND(CURENT,2)THEN LMPVAR = 1
0187                       ELSE LMPVAR = 0
0188            LAMP ADI,SKDKEY,LMPVAR
0189            MARK STEP "BOTTOM",0,0
0190            NOCRIT
        ;
        ;       BEGIN LOGIC FOR DEVICES:
        ;
0191            SA0 = AND(16,'207-A-P3':DEV_STAT)                        ; SHUTDOWN
0192            SA1 = AND(32,'207-A-P3':DEV_STAT)                        ; INTERLOCK
0193            AT24 = OR('LDS-350-2':DIN_VAL,'LSH-350-2':DIN_VAL)       ;
0194            AT25 = AND('207-A-P3':DEV_TMP1,512)
0195            AT26 = AND('207-A-P3':DEV_TMP1,1024)
0196            AT27 = AND('207-A-P3':DEV_TMP1,2048)
0197            AT28 = AND('207-A-P3':DEV_TMP1,4096)
0198            AT30 = AND('207-A-P3':DEV_TMP1,16384)
0199            AT31 = AND('207-A-P3':DEV_TMP1,32768)                    ; INTERLOCK
        ;
0200            IF AT28 THEN
0201               IF !FLG0 THEN
                     BEGIN
0202                 TIMERON OSTMR
0203                 TIMERCLR OSTMR
0204                 FLG0 = 1
                     END
        ;
0205            IF FLG0 THEN
                  BEGIN
0206               IF OSTMR > 60 THEN
                    BEGIN
0207                TIMEROFF OSTMR
0208                TIMERCLR OSTMR
                    END
0210               IF AT28 = 0 THEN FLG0 = 0
```

```
                    END
          ;
          ;         BEGIN LOGIC FOR DEVICES:
          ;
          ;         DEVICES TO LOCK IN MANUAL:
          ;
0212                IF AND('BASIN-ALM':DEV_FLG,64) THEN PUTMANL 'BASIN-ALM'
0214                IF AND('P-207A-S':DEV_FLG,64) THEN PUTMANL 'P-207A-S'
0216                IF AND('207-A-P3':DEV_FLG,64) THEN PUTMANL '207-A-P3'
0218                IF AND('HV-SC-1A':DEV_FLG,64) THEN PUTMANL 'HV-SC-1A'
0220                IF AND('HV-SC-2A':DEV_FLG,64) THEN PUTMANL 'HV-SC-2A'
0222                IF AND('HV-SC-3A':DEV_FLG,64) THEN PUTMANL 'HV-SC-3A'
0224                IF AND('HV-SC-2B':DEV_FLG,64) THEN PUTMANL 'HV-SC-2B'
0226                IF AND('HV-SC-1B':DEV_FLG,64) THEN PUTMANL 'HV-SC-1B'
0228                IF AND('HV-SC-3B':DEV_FLG,64) THEN PUTMANL 'HV-SC-3B'
          ;
0229                GOTO AGAIN
          ;
          ;         E N D   P R O G R A M   L O O P
          ;
          ;         BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
          ;
0230      CLR:      LET PSTAT = 0
                    ;
                    ; If not white, then unack:
                    ;
0233                IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0234                LET FCLEAR = 1
0235                GOSUB ACKK
0236                RETURN
          ;
0237      ALM:      LET PSTAT = 1
                    ;
                    ; If not white, then unack:
                    ;
0240                IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
                    ;
                    ; Turn audible ;alarm on if white or yellow:
                    ;
0241                PDEV:DEV_TMP0 = 2
0242                LAMP ADI,SKDKEY,2
0244                IF !AND(PTYPE,4) THEN FALMON = 1
0245                CRIT
0246                LET FTRIP4 = 0
0247                GOSUB ACKK
0248                RETURN
          ;
0249      ACK1:     LET PSTAT = 2                                          ; Ack the alarm
0250                LET FACK = 1                                           ; Set ACK flag for C program
          ;
          ;         ALARM TYPER STRINGS:
          ;
0252      ACKK:     IF ILOOP =  0 THEN STRNG0 = "PUMP P3 INTERLOCK     "
0254                IF ILOOP =  1 THEN STRNG0 = "207-A SUMP LEVEL HIGH "
0256                IF ILOOP =  3 THEN STRNG0 = "SC BASINS LEVEL HIHI  "
```

```
0258            IF ILOOP =  4 THEN STRNGO = "SC BASIN-1 LEVEL HIGH "
0260            IF ILOOP =  5 THEN STRNGO = "SC BASIN-1 LEVEL LOW  "
0262            IF ILOOP =  6 THEN STRNGO = "SC BASIN-2 LEVEL HIGH "
0264            IF ILOOP =  7 THEN STRNGO = "SC BASIN-2 LEVEL LOW  "
0266            IF ILOOP =  8 THEN STRNGO = "SC BASIN-3 LEVEL HIGH "
0268            IF ILOOP =  9 THEN STRNGO = "SC BASIN-3 LEVEL LOW  "
0270            IF ILOOP = 10 THEN STRNGO = "207A SUMP PMP ALARM   "
0272            IF ILOOP = 14 THEN STRNGO = "BASINBAT.SEQ START    "
0274            IF ILOOP = 15 THEN STRNGO = "BASINBAT IN WRONG UNIT"
0276            IF ILOOP = 16 THEN STRNGO = "BASINBAT TERMINATING  "
        ;
0277    AMSG:   IF PTYPE = 1 THEN
                  BEGIN
                  ;
                  ; If white alarm, print:
                  ;
0279              IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
0280              IF (FACK) THEN
                    BEGIN
                    ;
                    ; If white, print it is ack and reset the flag:
                    ;
0281                PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
0282                LET FACK = 0
                    END
                  END
        ;
        ;  If CLEAR, print it is clear and reset flag:
        ;
0283            IF (FCLEAR) THEN
                  BEGIN
0284              PRINT ADI,"%p ALARM CLEAR",STRNGO
0285              LET FCLEAR = 0
                  END
        ;
        ;  If STARTUP, print startup message:
        ;
0286            IF (FSTART) THEN
                  BEGIN
0287              LET FSTART = 0
0288              PRINT ADI,"%p",STRNGO
                  END
0289            RETURN
        ;
        ;  If ERROR - print message, start timer, and set flag:
        ;
0290    ERRSUB:   IF ERRN != ERRNUM() THEN
                  BEGIN
0291              TIMERON STIME0
0292              TIMERCLR STIME0
0293              LET FSNO = 1
0294              LET ERRN = ERRNUM()
0295              LET ERRL = ERRLIN()
0296              PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
                  END
```

```
0297                ERSCLR
0298            GOTO AGAIN
        ;
        ;  If FABORT = 1 then abort program:
        ;
        ; TERM:  LET FABORT = 0
0299    TERM:    LET STRNGO = "BASINBAT TERMINATED    "
0300             LET ILOOP = STAR + 2
0301             LET FSTART = 1
0302             LET STRNGO = "TERM"
0303             GOSUB ACKK
                 END

Total Errors Detected      0     Total Warnings      0
     Sequence Program Size = 5936 Bytes, 371 Pages
          14 Forward Reference(s)
```

UTILBATCH

```
;       U T I L B A T C H . S E Q                                   VERSION 2
;
;       Function:       Sequence program for Lamp function (SKDKEY 46),
;                       message display on Graphic number 021, and
;                       printer messages.  Sequence Unit 18.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]UTILBATCH
;
;       UNIT = 18, SKDKEY = 46
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCMOA.SDB        PCMOASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
; MODIFICATION LOG:
;
;       11-AUG-92       - Changed PI-IA-1 white low alarm 15 to 18        M. Teats
;                       - Changed PI-PA-1 white low alarm 80 to
;                         yellow low alarm 95.  Added section 'JOP:'
;                       - Fixed FTRIP4 to prevent auto-acknowledge
;                       - Fixed print message error
;                       - Improved to cover Red alarms
;                       - Added comments
;
;       30-NOV-92       - Added 3 new UPS DINS per ECN 168693             M. Teats
;                       - Fixed SKDKEY reflashing when acknowledge
;
```

```
                ;       30-DEC-92       Fixed white alarm print message.        M. Teats
                ;
                ;       09-JUN-93       Added comments and baselined for        M. Teats
                ;                       D/3 version 3.3.  CCN# 93JUN01-01.
                ;
                ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
                ;                       system. Rebaselined document. Remove
                ;                       obsolite Select() statments.
                ;
                ;  END MOD LOG
                ;
                UNIT    UTIL
                ;
        0000            NOP
        0001            STAR = 26                       ; Start message
        0002            LET SKDKEY = 46         ; SKID Key
        0003            LET UNITT = 18                  ; SEQ Unit number
        0004            ASSIGN PDEV = 'UTILITIES'       ; Alarm device
        0005            ASSIGN PTYPE = TYPE26
        0006            LET ADI = 0                     ; Alarm destination index
        0007            LET FSNO = 0                    ; No alarm yet
        0008            TIMEROFF STIMEO         ; Alarm timer off
        0009            TIMERCLR STIMEO         ; Alarm timer clear
        0010            STRNGO = " "                    ; Blank 30 character string
        0011            LET ERRN = 0                    ; Set error number to zero
        0012            LET ERRL = 0                    ; Set error line to zero
                ;old    DLEAKO = 0                      ; Unused flag for inhibited alarms
        0013            FTRIP4 = 0                      ; FTRIP4 = 1 when audible horn is to be turned on
        0014            GETUNIT TRIP                    ; Which sequence unit is program running in
        0015            IF TRIP != UNITT THEN           ; Abort if running in wrong seq. unit
                           BEGIN
        0016               FSTART = 1
        0017               ILOOP = STAR + 1
        0018               PTYPE = 0
        0019               GOSUB ACKK
        0020               GOTO TERM
                           END
                ;       IF !SELECT() THEN GOTO AGAIN
                ;
                ;       B E G I N   I N I T I A L I Z I N G :
                ;
                ;       ILOOP 0-10 are DINs, 11-25 are AINs
                ;
        0021            STRNGO = "INIT"
        0022    INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
        0023            LET FSTART = 0                  ; Program start flag = 0
        0024            LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
        0025            LSGO = " "                      ; Clear the string variables
        0026            LSG1 = " "
        0027            LSG2 = " "
        0028            LSG3 = " "
        0029            LSG4 = " "
        0030            PDEV:DEV_TMPO = 1                               ; Set alarm device to non-alarm state
        0031            IF AND(PDEV:DEV_ALMCT,16) THEN                  ; If alarm device is inha, remove the inha
        0032              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
```

```
111   0033          IF AND(PDEV:DEV_ALMCT,32) THEN                  ; If alarm device is ack, clear it
112   0034             PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
113           ;
114           ;       First, set all flags and integers:
115           ;
116   0035          ASSIGN PDIN = 'PSLCPE1/2'
117   0036          ASSIGN PSTAT = INTO
118   0037          ASSIGN PTYPE = TYPEO
119   0038          ASSIGN PREV = FRVO
120   0039          ASSIGN PPASS = FPASO
121   0040          ASSIGN PALARM = FALMO
122   0041          ASSIGN PSKID = SKIDO
123           ;
124   0042          FOR ILOOP = 0 TO 25
125   0043          LET PSKID = 0
126   0044          LET PPASS = 0
127   0045          LET PREV = 0
128   0046          LET PTYPE = 2                                   ; Default to Yellow alarm
129   0048          IF PSTAT > 5 THEN PSTAT = 0                     ; Reset current status if undefined
130   0049          PALARM = 0                                      ; Default previous status to no alarms
131   0050          IF ILOOP <= 10 THEN                             ; For DINs
132                 BEGIN
133   0051          IF AND(PDIN:DIN_DFLG,3) THEN                    ; Check for alarms (must be red or yellow)
134                    BEGIN
135   0052             LET PTYPE = 2                                ; Default to Yellow alarm
136   0054             IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1    ; Reverse acting
137   0056             IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4   ; Set to red critical alarm
138                    END
139   0058          IF ILOOP < 10 THEN STEP PDIN BY 1               ; Point to next DIN
140                 END
141   0059          ELSE PTYPE = 1                                  ; For AINs, set to White alarm
142   0060    SKP:  STEP PSTAT BY 1
143   0061          STEP PTYPE BY 1
144   0062          STEP PREV BY 1
145   0063          STEP PPASS BY 1
146   0064          STEP PALARM BY 1
147   0065          STEP PSKID BY 1
148   0066          NEXT ILOOP
149           ;
150   0067          TYPE2 = 1                 ; YS-CPE1-1
151   0068          TYPE3 = 1                 ; YS-CPE2-1
152   0069          TYPE6 = 4                 ; YS-GEN-1
153   0070          TYPE7 = 4                 ; ZS-PWR-1
154   0071          TYPE8 = 4                 ; JXS-PWR-3
155   0072          TYPE12 = 2                ; PI-PA-1 LO
156           ;
157           ;       For White LOLO and LO Alarms:
158           ;
159   0073          FRV15 = 1                 ; PI-IA-1 LO
160   0074          FRV18 = 1                 ; TI-AMBS-1 LOLO
161   0075          FRV19 = 1                 ; TI-AMBS-1 LO
162   0076          FRV22 = 1                 ; TI-AMBS-2 LOLO
163   0077          FRV23 = 1                 ; TI-AMBS-2 LO
164           ;                                                                   ILOOP = INT #:
165   0078          AIO =  18.0               ; PI-IA-1 LO            LEAK4 = 2+          15
```

```
166   0079          AI1 =  25.0          ; PI-IA-1 HI          LEAK4 = 4+          16
167   0080          AI2 = 120.0          ; PI-PA-1 HI          LEAK1 = 4+          17
168   0081          AI3 =  48.0          ; TI-AMBS-1 LOLO      LEAK2 = +           18
169   0082          AI4 =  55.0          ; TI-AMBS-1 LO        LEAK2 = 2+          19
170   0083          AI5 =  80.0          ; TI-AMBS-1 HI        LEAK2 = 4+          20
171   0084          AI6 =  90.0          ; TI-AMBS-1 HIHI      LEAK2 = 6+          21
172   0085          AI7 =  48.0          ; TI-AMBS-2 LOLO      LEAK3 = +           22
173   0086          AI8 =  55.0          ; TI-AMBS-2 LO        LEAK3 = 2           23
174   0087          AI9 =  80.0          ; TI-AMBS-2 HI        LEAK3 = 4+          24
175   0088          AI10 = 90.0          ; TI-AMBS-2 HIHI      LEAK3 = 6+          25
176           ;
177           ;       E N D   I N I T I A L I Z I N G
178           ;
179           ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
180           ;
181   0089          ANALOG = 0
182   0090          ILOOP = STAR
183   0091          FSTART = 1
184   0092          GOSUB ACKK
185   0093          ON ERROR GOSUB ERRSUB
186           ;
187           ;       B E G I N   P R O G R A M   L O O P :
188           ;
189   0094    AGAIN:  MARK STEP "WTUNTL",0,0
190           ;       WAITUNTIL SELECT() | FABORT      ; Wait until micro is selected or program aborted
191           ;       IF (FABORT) THEN GOTO TERM       ; Terminate program if FABORT flag set
192   0095          MARK STEP "RNNING",0,0
193   0096          WAIT 1
194   0097          IF (FSNO) THEN                   ; If alarm flag is set
195   0098             IF STIMEO > 60 THEN           ; If alarm flag active for 1 minute
196                      BEGIN                        ; Reset timer and turn off flag
197   0099               TIMEROFF STIMEO
198   0100               TIMERCLR STIMEO
199   0101               FSNO = 0
200   0102               ERRN = 0
201   0103               ERRL = 0
202                      END
203           ;
204           ;       If UTILITIES $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
205           ;
206   0104          IF (PDEV:DEV_TMPO = 2) & AND(PDEV:DEV_ALMCT,32) THEN
207                    BEGIN
208   0105             PDEV:DEV_TMPO = 1              ; Put UTILITIES in ACKNWLDG state
209   0106             FTRIP4 = 1                     ; Set for Unit alarm ack
210   0107             ACK = 1                        ; Set for Unit alarm ack
211   0108             CRIT
212   0109             LAMP ADI,SKDKEY,1              ; Turn LAMP on
213                    END
214           ;
215           ;       BEGIN DINs:
216           ;
217   0110          ASSIGN PDIN = 'PSLCPE1/2'
218   0111          ASSIGN PTYPE = TYPEO
219   0112          ASSIGN PREV = FRVO
220   0113          ASSIGN PSTAT = INTO
```

```
221   0114          ASSIGN PPASS = FPASO
222   0115          ASSIGN PSKID = SKIDO
223   0116          LET CURENT = 0                    ; Used to set lamp status
224   0117          LET LAST = 0
225   0118          LET ANALOG = 0
226   0119          LET NXT = 0
227   0120          LMPVAR = 0
228   0121          BITVAL = 0
229         ;
230   0122  LOP:    FOR ILOOP = 0 TO 10
231         ;       IF !SELECT() THEN GOTO AGAIN
232   0123          IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
233                    BEGIN                                        ;be1
234   0125             IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN inhibited
235   0127             IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5          ; If EPN is bad input
236   0129             IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4           ; If EPN is disabled
237   0130             IF (PSTAT < 3) THEN                                  ; If Not Inhibited
238                         BEGIN                                   ;be2
239   0131                   IF (PSTAT = 1) THEN
240                             BEGIN                               ;be3
241   0132                      IF (PTYPE != 1) THEN
242   0134                         IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
243   0136                      IF (FTRIP4) THEN GOSUB ACK1
244                             END                                 ;en3
245   0139                   IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
246   0140                   IF (PSTAT) THEN
247                                BEGIN                            ;be4
248   0142                         IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
249   0143                         NXT = PSTAT
250   0145                         IF (PPASS) & (PSTAT = 2) THEN NXT = 0
251   0146                         LAST = OR(LAST,NXT)
252                                END                              ;en4
253                            END                                  ;en2
254   0148                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
255                        END                                      ;en1
256   0149          STEP PDIN BY 1
257   0150          STEP PTYPE BY 1
258   0151          STEP PREV BY 1
259   0152          STEP PSTAT BY 1
260   0153          STEP PPASS BY 1
261   0154          STEP PSKID BY 1
262   0155          NEXT ILOOP
263         ;
264         ;       END DINs
265         ;
266         ;       BEGIN ANALOG RED AND YELLOWS:
267         ;
268   0156          ASSIGN PAI = 'PI-IA-1'
269   0157          ASSIGN PSKID = SKID11
270   0158          ASSIGN PREV = FRV11
271   0159          ASSIGN PSTAT = INT11
272   0160          ASSIGN PTYPE = TYPE11
273         ;
274   0161  JOP:    FOR JLOOP = 11 TO 14
275         ;       IF !SELECT() THEN GOTO AGAIN
```

```
0162            IF (PTYPE) THEN                                  ; If some alarm
                   BEGIN                                  ;be1
0163               BITVAL = PAI:AI_ALMCT
0164               IF !AND(BITVAL,16) THEN                        ; If not inhibited
                      BEGIN                               ;be2
0165                  IF AND(BITVAL,15) THEN                      ; If alarm exists and is current
                         BEGIN                            ;be3
0167                     IF AND(BITVAL,32) THEN NXT = 2           ; If alarm is ack
                         ELSE                                     ; If alarm is unack
                            BEGIN                         ;be4
0168                        IF PSKID !=BITVAL THEN
                                BEGIN                     ;be5
0170                            IF BITVAL < 3 THEN FALMON = 1
0171                            LET PSKID = BITVAL
0172                            PDEV:DEV_TMPO = 2
0173                            NXT = 1
                                END                       ;en5
0174                        ELSE NXT = 1
                            END                           ;en4
                         END                              ;en3
                      ELSE                                        ; Else there is no alarm
                         BEGIN
0175                     NXT = 0
0176                     LET PSKID = 0
                         END
                      END                                 ;en2
                   ELSE                                           ; Else alarm is inhibited
                      BEGIN
0177                  NXT = 0
0178                  LET PSKID = 0
                      END
0179               ANALOG = OR(ANALOG,NXT)
                   END                                    ;en1
0180            STEP PSKID BY 1
0181            STEP PAI BY 1
0182            STEP PREV BY 1
0183            STEP PSTAT BY 1
0184            STEP PTYPE BY 1
0185            NEXT JLOOP
        ;
        ;       END ANALOG RED AND YELLOWS
        ;
        ;       BEGIN ANALOG WHITE ALARMS:
        ;
0186    WHT:    WHITE = 0
0187            ASSIGN PALARM = AIO
0188            ASSIGN PSTAT = INT15
0189            ASSIGN PREV = FRV15
0190            ASSIGN PPASS = FPAS15
0191            ASSIGN PTYPE = TYPE15
0192            ILOOP = 15
0193            ASSIGN PAI = 'PI-IA-1'
0194            GOSUB ANLG
0195            GOSUB ANLG
0196            ASSIGN PAI = 'PI-PA-1'
```

```
331   0197            GOSUB ANLG
332   0198            ASSIGN PAI = 'TI-AMBS-1'
333   0199            GOSUB ANLG
334   0200            GOSUB ANLG
335   0201            GOSUB ANLG
336   0202            GOSUB ANLG
337   0203            ASSIGN PAI = 'TI-AMBS-2'
338   0204            GOSUB ANLG
339   0205            GOSUB ANLG
340   0206            GOSUB ANLG
341   0207            GOSUB ANLG
342           ;
343           ;       END ANALOG WHITE ALARMS
344           ;
345   0208            MARK STEP "BELOW",0,0
346   0209            SORT = 0
347   0210            FTRIP4 = 0
348   0212            IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
349   0213            CURENT = OR(LAST,WHITE)
350   0214            CURENT = OR(CURENT,ANALOG)
351   0216            IF AND(CURENT,1) THEN LMPVAR = 2
352   0218               ELSE IF AND(CURENT,2) THEN LMPVAR = 1
353   0219                     ELSE LMPVAR = 0
354   0220            LAMP ADI,SKDKEY,LMPVAR
355   0221            MARK STEP "BOTTOM",0,0
356   0222            NOCRIT
357   0224            IF AND(UTILITIES:DEV_FLG,64) THEN PUTMANL UTILITIES
358   0225            GOTO AGAIN
359           ;
360           ;       E N D   P R O G R A M   L O O P
361           ;
362           ;       BEGIN ANALOG WHITE SUBROUTINE:
363           ;
364           ; ANLG: IF !SELECT() THEN GOTO AGAIN
365   0226    ANLG:   IF (PTYPE = 1) THEN                          ; If some alarm
366                   BEGIN                                  ;be1
367   0227            BITVAL = PAI:AI_ALMCT
368           ;old    IF AND(BITVAL,16) THEN                       ; If inhibited
369           ;old       BEGIN
370           ;old       BLET PSTAT = 3
371           ;old       DLEAKO = 1
372           ;old       GOSUB ACKK
373           ;old       END
374   0228            IF !(AND(BITVAL,16)) THEN                    ; If not inhibited
375                      BEGIN                               ;be2
376   0230               IF PSTAT = 3 THEN LET PSTAT = 0
377   0231               IF (PREV) THEN                            ; If rev acting, LOLO, or LO
378                         BEGIN                            ;be3
379   0232                  IF (PSTAT = 0) THEN                   ; If not previously alarmed
380                            BEGIN                         ;be4
381   0234                     IF (PAI:AI_INVL <= PALARM) THEN GOSUB ALM
382                            END                           ;en4
383                         ELSE
384                            BEGIN                         ;be5
385   0235                     IF (PSTAT = 1) THEN                 ; If previously alarmed
```

```
                                BEGIN                                   ;be6
0237                            IF (FTRIP4) THEN GOSUB ACK1                     ; If ACK flag set, then ack it
0240                            IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                                END                                     ;en6
0242                          IF (PAI:AI_INVL >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                              END                                       ;en5
                            END                                         ;en3
                        ELSE                                                    ; If fail-safe, HIHI, or HI
                            BEGIN                                       ;be10
0243                        IF (PSTAT = 0) THEN
                              BEGIN                                     ;be11
0245                          IF (PAI:AI_INVL >= PALARM) THEN GOSUB ALM
                              END                                       ;en11
                            ELSE
                              BEGIN                                     ;be12
0246                          IF (PSTAT = 1) THEN
                                BEGIN                                   ;be13
0248                            IF (FTRIP4) THEN GOSUB ACK1
0251                            IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                                END                                     ;en13
0253                          IF (PAI:AI_INVL <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                              END                                       ;en12
                            END                                         ;en10
0254                    NXT = PSTAT
0256                    IF (PPASS) & (PSTAT = 2) THEN NXT = 0
                        END                                             ;en2
                    ELSE
                        BEGIN
0257                    LET PSTAT = 3
0258                    NXT = 0
                        END
0259                WHITE = OR(WHITE,NXT)
                    END                                                 ;en1
0260                ELSE LET PSTAT = 0
0261                STEP PALARM BY 1
0262                STEP PSTAT BY 1
0263                STEP PREV BY 1
0264                STEP PPASS BY 1
0265                STEP PTYPE BY 1
0266                ILOOP = ILOOP + 1
0267                RETURN
            ;
            ;       END ALALOG WHITE SUBROUTINE
            ;
            ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
            ;
0268        CLR:    LET PSTAT = 0
                    ;
                    ;  If not white, then unack:
                    ;
0271                IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0272                LET FCLEAR = 1
                    ;
                    ;  To Set-Up For LOLO to LO or HIHI to HI Transition:
                    ;
```

```
441   0274          IF ILOOP = 18 THEN LET INT19 = 0          ; If TI-AMBS-1 LOLO, Reset LO
442   0276          IF ILOOP = 21 THEN LET INT20 = 0          ; If TI-AMBS-1 HIHI, Reset HI
443   0278          IF ILOOP = 22 THEN LET INT23 = 0          ; If TI-AMBS-2 LOLO, Reset LO
444   0280          IF ILOOP = 25 THEN LET INT24 = 0          ; If TI-AMBS-2 HIHI, Reset HI
445   0281          GOSUB ACKK
446   0282          RETURN
447         ;
448   0283  ALM:    LET PSTAT = 1
449                 ;
450                 ;  If not white, then unack:
451                 ;
452   0286          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
453                 ;
454                 ;  Turn audible alarm on if white or yellow:
455                 ;
456   0287          FALMON = 1
457   0289          IF AND(PTYPE,3) THEN FACK = 1
458   0290          CRIT
459   0291          PDEV:DEV_TMPO = 2
460   0292          GOSUB ACKK
461   0293          RETURN
462         ;
463   0294  ACK1:   LET PSTAT = 2                                      ; Ack the alarm
464   0295          FACK = 1                                           ; Set ACK flag for C program
465         ;
466         ;               Begin Multiple AI White Alarms on One EPN:
467         ;                         PI-IA-1:
468   0297  ACKK:   IF(INT15 & INT15 < 3)THEN LET LEAK4 = INT15 + 2   ; LO
469   0299           ELSE IF(INT16 & INT16 < 3)THEN LET LEAK4 = INT16 + 4          ; HI
470   0301            ELSE IF INT15 = 3 THEN LET LEAK4 = 9
471   0302             ELSE LET LEAK4 = 0
472                 ;
473                 ;                         PI-PA-1:
474   0304           IF(INT17 & INT17 < 3)THEN LET LEAK1 = INT17 + 4   ; HI
475   0306            ELSE IF INT17 = 3 THEN LET LEAK1 = 9
476   0307             ELSE LET LEAK1 = 0
477                 ;
478                 ;                         TI-AMBS-1:
479   0309          IF(INT18 & INT18 < 3)THEN LET LEAK2 = INT18                   ; LOLO
480   0311           ELSE IF(INT19 & INT19 < 3)THEN LET LEAK2 = INT19 + 2         ; LO
481   0313            ELSE IF(INT21 & INT21 < 3)THEN LET LEAK2 = INT21 + 6        ; HIHI
482   0315             ELSE IF(INT20 & INT20 < 3)THEN LET LEAK2 = INT20 + 4  ; HI
483   0317              ELSE IF INT18 = 3 THEN LET LEAK2 = 9
484   0318               ELSE LET LEAK2 = 0
485                 ;
486                 ;                         TI-AMBS-2:
487   0320          IF(INT22 & INT22 < 3) THEN LET LEAK3 = INT22                  ; LOLO
488   0322           ELSE IF (INT23 & INT23 < 3) THEN LET LEAK3 = INT23 + 2  ; LO
489   0324            ELSE IF(INT25 & INT25 < 3) THEN LET LEAK3 = INT25 + 6  ; HIHI
490   0326             ELSE IF( INT24 & INT24 < 3) THEN LET LEAK3 = INT24 + 4 ; HI
491   0328              ELSE IF INT22 = 3 THEN LET LEAK3 = 9
492   0329               ELSE LET LEAK3 = 0
493         ;
494         ;               End Multiple AI White Alarms
495         ;
```

```
496          ;old     IF DLEAKO = 1 THEN                                  ; If Inhibited
497          ;old             BEGIN
498          ;old             BLET DLEAKO = 0
499          ;old             RETURN                                      ; Skip message routine
500          ;old             END
501          ;
502          ;        ALARM TYPER STRINGS:
503          ;
504   0331           IF ILOOP = 0 THEN STRNGO = "PRCESS AIR PRSS LOW  "              ; PSLCPE1/2
505   0333           IF ILOOP = 1 THEN STRNGO = "INSTUMENT AIR PRES LO"              ; PSL-IA-2
506   0335           IF ILOOP = 2 THEN STRNGO = "AIR COMPRESSOR 1 OFF "              ; YS-CPE1-1
507   0337           IF ILOOP = 3 THEN STRNGO = "AIR COMPRESSOR 2 OFF "              ; YS-CPE2-1
508   0339           IF ILOOP = 4 THEN STRNGO = "24 VDC POWER FAIL    "              ; JXS-PWR-1
509   0341           IF ILOOP = 5 THEN STRNGO = "DIESEL GENRATR TROUBL"              ; YS-DIEGEN
510   0343           IF ILOOP = 6 THEN STRNGO = "EMRGNCY DIESELGEN FAIL"             ; YS-GEN-1
511   0345           IF ILOOP = 7 THEN STRNGO = "EMERG PWR XFR SWITCH ON"            ; ZS-PWR-1
512   0347           IF ILOOP = 8 THEN STRNGO = "UPS AC INPUT FAIL"                  ; JXS-PWR-3
513   0349           IF ILOOP = 9 THEN STRNGO = "UPS BATTERY LOW"                    ; YSL-UPS-1
514   0351           IF ILOOP = 10 THEN STRNGO = "UPS MBS BYPASS POSITION"           ; ZS-UPS-1
515   0353           IF ILOOP = 15 THEN STRNGO = "INSTRUMENT AIR HDR PRESS LOW"      ; PI-IA-1
516   0355           IF ILOOP = 16 THEN STRNGO = "INSTRUMENT AIR HDR PRESS HI" ; PI-IA-1
517   0357           IF ILOOP = 17 THEN STRNGO = "PROCESS AIR HDR PRESS HIGH " ; PI-PA-1
518   0359           IF ILOOP = 18 THEN STRNGO = "COLD JUNCTION SENSOR 1 LOLO" ; TI-AMBS-1
519   0361           IF ILOOP = 19 THEN STRNGO = "COLD JUNCTION SENSOR 1 LO  " ; TI-AMBS-1
520   0363           IF ILOOP = 20 THEN STRNGO = "COLD JUNCTION SENSOR 1 HI  " ; TI-AMBS-1
521   0365           IF ILOOP = 21 THEN STRNGO = "COLD JUNCTION SENSOR 1 HIHI" ; TI-AMBS-1
522   0367           IF ILOOP = 22 THEN STRNGO = "COLD JUNCTION SENSOR 2 LOLO" ; TI-AMBS-2
523   0369           IF ILOOP = 23 THEN STRNGO = "COLD JUNCTION SENSOR 2 LO  " ; TI-AMBS-2
524   0371           IF ILOOP = 24 THEN STRNGO = "COLD JUNCTION SENSOR 2 HI  " ; TI-AMBS-2
525   0373           IF ILOOP = 25 THEN STRNGO = "COLD JUNCTION SENSOR 2 HIHI" ; TI-AMBS-2
526   0375           IF ILOOP = 26 THEN STRNGO = "UTILBATCH.SEQ START        " ; STAR
527   0377           IF ILOOP = 27 THEN STRNGO = "UTILBATCH IN WRONG UNIT    "
528   0379           IF ILOOP = 28 THEN STRNGO = "UTILBATCH TERMINATING      "
529          ;
530   0380   AMSG:   IF PTYPE = 1 THEN
531                     BEGIN
532                     ;
533                     ;  If white alarm, print:
534                     ;
535   0382              IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
536   0383              IF(FACK) THEN
537                        BEGIN
538                        ;
539                        ;  If white, print it is ack and reset the flag:
540                        ;
541   0384                 PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
542   0385                 LET FACK = 0
543                        END
544                     END
545          ;
546          ;  If CLEAR, print it is clear and reset flag:
547          ;
548   0386           IF (FCLEAR) THEN
549                     BEGIN
550   0387              PRINT ADI,"%p ALARM CLEAR",STRNGO
```

```
551   0388              LET FCLEAR = 0
552                     END
553           ;
554           ;  If STARTUP, print startup message:
555           ;
556   0389            IF (FSTART) THEN
557                     BEGIN
558   0390              LET FSTART = 0
559   0391              PRINT ADI,"%p",STRNGO
560                     END
561   0392            RETURN
562           ;
563           ;  If ERROR - print message, start timer, and set flag:
564           ;
565   0393    ERRSUB:   IF ERRN != ERRNUM() THEN
566                     BEGIN
567   0394              TIMERON STIMEO
568   0395              TIMERCLR STIMEO
569   0396              LET FSNO = 1
570   0397              LET ERRN = ERRNUM()
571   0398              LET ERRL = ERRLIN()
572   0399              PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
573                     END
574   0400            ERSCLR
575   0401            GOTO AGAIN
576           ;
577           ;  If FABORT = 1, then abort program:
578           ;
579           ; TERM:  LET FABORT = 0
580   0402    TERM:   LET STRNGO = "UTILBATCH TERMINATED    "
581   0403            LET ILOOP = STAR + 2
582   0404            LET FSTART = 1
583   0405            LET STRNGO = "TERM"
584   0406            GOSUB ACKK
585                   END

      Total Errors Detected      0     Total Warnings      0
          Sequence Program Size = 8032 Bytes, 502 Pages
                29 Forward Reference(s)
```

AMUBATCH

```
 1          ;       A M U B A T C H . S E Q                                 VERSION 2
 2          ;
 3          ;       Function:       Sequence program for Lamp function,
 4          ;                       message display on Graphic number 019,
 5          ;                       and printer messages.
 6          ;
 7          ;       Written By      : R. N. Kersey
 8          ;       Date            : 05-31-92
 9          ;       Facility        : 242-A Evaporator Bldg.
10          ;       Machine         : VAX 4104-A
11          ;       Op. System      : VAX/VMS 5.5-2AH
12          ;       D/3 Version     : 6.3-2 BASELINE
13          ;       Compiler        : SIC
14          ;       Build command   : @[320,20]AMUBATCH
15          ;
16          ;       UNIT = 20, SKDKEY = 45
17          ;
18          ;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
19          ;       Assoc. RPF:     [300,1]_242A.___        242A.LST
20          ;       SDB:            [300,1]PCMOA.SDB        PCMOASDB.CMD
21          ;
22          ;       POINTER   SDB VAR.      FUNCTION
23          ;       -------   ---------     ------------------------------------------
24          ;       PSTAT     INTn          Current EPN alarm state is an integer tied to
25          ;                               graphic flashing string of value:
26          ;       .         (n=0-100)             0 = previously not alarmed
27          ;       .                               1 = previously alarmed, not ack
28          ;       .                               2 = previously alarmed, is ack
29          ;       .                               3 = alarm is inhibited
30          ;       .                               4 = input is off scan
31          ;       .                               5 = input is bad
32          ;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
33          ;       PDIN      'EPN'         ---
34          ;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
35          ;                                  3 = yellow and yellow, 4 = red,
36          ;                                  6 = yellow and red
37          ;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
38          ;       PSKID     SKIDn         Used for analog alarms
39          ;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
40          ;       PALARM    FALMn         Analog alarm flag
41          ;       ---       FNING         Unused error flag
42          ;
43          ; MODIFICATION LOG:
44          ;
45          ;       30-DEC-92       Fixed white alarm print message.        M. Teats
46          ;
47          ;       08-JUN-93       Added comments and baselined for        R. Persin
48          ;                       D/3 version 3.3.  CCN# 93JUN01-01.
49          ;
50          ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
51          ;                       system. Rebaselined document. Removed
52          ;                       obsolite Select() statment.
53          ;
54          ; END MOD LOG
55          ;
```

```
 56          UNIT    AMU
 57          ;
 58   0000           NOP
 59   0001           STAR = 33
 60   0002           ASSIGN PDEV = 'AMU-ALARM'                        ; Alarm device
 61          ;
 62   0003           LET FSN0 = 0                                     ; Error message repeater
 63   0004           TIMEROFF STIME0                            ; Alarm timer off
 64   0005           TIMERCLR STIME0                            ; Alarm timer clear
 65   0006           LET STRNG0 = " "                                 ; Blank 30 character string
 66   0007           LET ERRN = 0                                     ; Set erron number to zero
 67   0008           LET ERRL = 0                                     ; Set error linbe to zero
 68          ;
 69   0009           LET FTRIP4 = 0                                   ; FTRIP = 1 when audible horn is to be turned on
 70   0010           LET DLEAK3 = 0                                   ; Flag for inhibited alarms
 71          ;
 72          ;              S E Q U E N C E   U N I T   A N D   P C M   C H E C K
 73          ;
 74   0011           GETUNIT TRIP                                     ; Which sequence unit is program running in
 75   0012           IF TRIP != 20 THEN                               ; Abort if runni9ng in wring seq. unit
 76                     BEGIN
 77   0013              LET FSTART = 1
 78   0014              LET ILOOP = STAR + 1
 79   0015              GOSUB ACKK
 80   0016              LET FSTART = 1
 81   0017              PRINT ADI," >>>>>  ATTEMPT TO RUN AMUBATCH IN WRONG UNIT"
 82   0018              GOTO TERM
 83                     END
 84          ;        IF !SELECT() THEN GOTO AGAIN
 85          ;
 86          ;              E N D   S E Q U E N C E   U N I T   A N D   P C M   C H E C K
 87          ;
 88          ;              B E G I N   I N I T I A L I Z A T I O N :
 89          ;
 90   0019   INIT:    LET SKDKEY = 45                            ; SKID Key
 91   0020           LET ADI = 0                                      ; Alarm destination index
 92   0021           LET FABORT = 0                                   ; If FABORT = 1 then abort program
 93   0022           LET FSTART = 0                                   ; Program start flag = 0
 94   0023           LAMP ADI,SKDKEY,0                                ; Turn off the annunciator key
 95   0024           LET PDEV:DEV_TMP0 = 1                            ; Set alarm device to non-alarm state
 96   0025           IF AND(PDEV:DEV_ALMCT,16) THEN                   ; If alarm device is inhibited , remove the inhibit
 97   0026             LET PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
 98   0027           IF AND(PDEV:DEV_ALMCT,32) THEN                   ; If alarm device is ack, clear it
 99   0028              LET PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
100          ;
101          ;              First, set all flags and integers
102          ;
103   0029           ASSIGN PDIN = 'YS-A-ET01'                        ; Assign pointer to first DIN
104   0030           ASSIGN PPASS = FPAS0
105   0031           ASSIGN PREV = FRV0                               ; Reverse acting flag
106   0032           ASSIGN PSTAT = INT0
107   0033           ASSIGN PTYPE = TYPE0
108   0034           ASSIGN PSKID = SKID0                             ; stePer
109          ;
110   0035           FOR ILOOP = 0 TO 25
```

```
111   0036            LET PPASS = 0
112   0037            LET PREV = 0
113   0039            IF ILOOP < 6 THEN LET PREV = 1          ; For white DINs
114   0041            IF PSTAT > 5 THEN PSTAT = 0                     ; Reset current status if undefined
115   0042            LET PSKID = 0                           ; Default previous status to no alarm
116   0043            LET PTYPE = 0                           ; Default to no alarm
117   0044            IF ILOOP < 6 THEN
118                    BEGIN
119   0045             LET PTYPE = 2                                  ; Default to yellow alarm
120   0046             IF AND(PDIN:DIN_DFLG,3) THEN                   ; Check for alarms if defined (must be a red or yellow alarm)
121                       BEGIN
122   0047                LET PTYPE = 2                                     ; Default to yellow alarm
123   0049                IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1    ; Reverse acting
124   0051                IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4   ; Set to critical red alarm
125                       END
126                    END
127   0052            ELSE PTYPE = 6                                 ; Red and Yellow, future use
128   0054    SKP:     IF ILOOP < 6 THEN STEP PDIN BY 1              ; Point to next DIN
129   0055            STEP PPASS BY 1
130   0056            STEP PREV BY 1
131   0057            STEP PSTAT BY 1
132   0058            STEP PSKID BY 1
133   0059            STEP PTYPE BY 1
134   0060          NEXT ILOOP
135           ;
136           ;               Set alarm type if not red or yellow
137           ;
138   0061          LET TYPE0 = 1                                  ; YS-A-E101
139   0062          LET TYPE1 = 1                                  ; YS-P-E101
140   0063          LET TYPE2 = 1                                  ; YS-A-E102
141   0064          LET TYPE3 = 1                                  ; YS-P-E102
142   0065          LET TYPE4 = 1                                  ; YS-A-E104
143   0066          LET TYPE5 = 1                                  ; YS-P-E104
144   0067          LET TYPE6 = 1                                  ; TI-E101-2 Hi
145   0068          LET TYPE8 = 1                                  ; WFI-E101 Lo-Lo
146   0069          LET TYPE9 = 1                                  ; WFI-E101 Lo
147   0070          LET TYPE10 = 0                                 ; DI-E101-2
148   0071          LET TYPE12 = 0                                 ; FI-E102-1
149   0072          LET TYPE14 = 1                                 ; WFI-E102 Lo-Lo
150   0073          LET TYPE15 = 1                                 ; WFI-E102 Lo
151   0074          LET TYPE16 = 0                                 ; FQI-E102
152   0075          LET TYPE17 = 1                                 ; TI-E104-2 Hi
153   0076          LET TYPE19 = 1                                 ; WFI-E104 Lo-Lo
154   0077          LET TYPE20 = 1                                 ; WFI-E104 Lo
155   0078          LET TYPE21 = 0                                 ; DI-E104-2
156   0079          LET TYPE23 = 0                                 ; FQI-E104
157   0080          LET TYPE24 = 0                                 ; FI-E104-2
158   0081          LET TYPE25 = 0                                 ; FIC-E102
159           ;
160   0082          LET FRV8 = 1                                   ; WFI-E101 Lo-Lo
161   0083          LET FRV9 = 1                                   ; WFI-E101 Lo
162   0084          LET FRV14 = 1                                  ; WFI-E102 Lo-Lo
163   0085          LET FRV15 = 1                                  ; WFI-E102 Lo
164   0086          LET FRV19 = 1                                  ; WFI-E104 Lo-Lo
165   0087          LET FRV20 = 1                                  ; WFI-E104 Lo
```

```
                ;
                ;                Analog white alarm limits
                ;
0088                    LET AI0 = 150                                   ; TI-E101-2 Hi
0089                    LET AI2 = 15                                    ; WFI-E101 Lo-Lo
0090                    LET AI3 = 25                                    ; WFI-E101 Lo
0091                    LET AI8 = 5                                     ; WFI-E102 Lo-Lo
0092                    LET AI9 = 12                                    ; WFI-E102 Lo
0093                    LET AI11 = 170                                  ; TI-E104-2 Hi
0094                    LET AI13 = 5                                    ; WFI-E104 Lo-Lo
0095                    LET AI14 = 12                                   ; WFI-E104 Lo
                ;
                ;                E N D   I N I T I A L I Z I N G
                ;
                ;
                ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
                ;
                ;
0096                    LET ANALOG = 0
0097                    LET ILOOP = STAR
0098                    LET FSTART = 1
0099                    GOSUB ACKK
                ;
                ;
                ;       B E G I N   P R O G R A M   L O O P
                ;
                ;
0100            AGAIN:  MARK STEP "AGAIN",0,0
0101                    ON ERROR GOSUB ERRSUB
                ;       IF (FABORT) THEN GOTO TERM                      ; Terminate program if abort flag is set
                ;       WAITUNTIL SELECT()
0102                    WAIT 1
                ;
0103                    IF (FSNO) THEN                                  ; If alarm flag is set
0104                       IF STIME0 > 60 THEN                          ; If alarm flag active for 1 minute
                              BEGIN                                     ; Reset timer and turn off flag
0105                          TIMEROFF STIME0
0106                          TIMERCLR STIME0
0107                          LET FSNO = 0
0108                          LET ERRN = 0
0109                          LET ERRL = 0
                              END
                ;
                ;
                ;       If AMU ALARM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
                ;
                ;
0110                    IF (PDEV:DEV_TMP0 = 2) & AND(PDEV:DEV_ALMCT,32) THEN
                           BEGIN
0111                       PDEV:DEV_TMP0 = 1                    ; Put AMU - ALARM is ack state
0112                       LET FTRIP4 = 1                       ; Set for unit alarm ack, system to graphic
0113                       LET ACK = 1                          ; Set for unit alarm ack, graphic to system
0114                       CRIT
                           END
                ;
```

```
221          ;
222          ;              B E G I N   D I G I T A L S
223          ;
224          ;              Function:       Recognize digital red, yellow, white alarms
225          ;                              and associate with graphic string.  Turn
226          ;                              on alarm ACK device, turn on Lamp, and
227          ;                              flash message on graphic.
228          ;
229   0115          ASSIGN PDIN = 'YS-A-E101'
230   0116          ASSIGN PTYPE = TYPE0                    ; ALARM TYPE
231   0117          ASSIGN PREV = FRV0                      ; REVERSE ACTING FLAG
232   0118          ASSIGN PSTAT = INT0                     ; INTEGERS TIED TO GRAPHIC FLASHING STRINGS
233   0119          ASSIGN PPASS = FPAS0
234   0120          LET LAST = 0
235   0121          LET NXT = 0
236   0122          LMPVAR = 0
237   0123          BITVAL = 0
238          ;
239   0124   LOP:   FOR ILOOP = 0 TO 5
240          ;      IF !SELECT() THEN GOTO AGAIN
241   0125          IF PTYPE > 0 THEN                       ; If some type of alarm
242                   BEGIN                                         ; b1
243   0127            IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3
244   0129            IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5
245   0131            IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4
246   0132            IF PSTAT < 3 THEN                     ; If not inhibited
247                       BEGIN                                     ; b2
248   0133                IF PSTAT = 1 THEN
249                         BEGIN                                   ; b3
250   0134                  IF PTYPE != 1 THEN
251   0136                    IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
252   0138                  IF (FTRIP4) THEN GOSUB ACK1
253                         END                                     ; e3
254   0141                IF PSTAT = 0 THEN IF (PDIN:DIN_VAL = PREV) THEN GOSUB ALM
255   0142                IF (PSTAT) THEN
256                           BEGIN                                 ; b4
257   0144                    IF (PDIN:DIN_VAL != PREV) THEN GOSUB CLR
258   0145                    NXT = PSTAT
259   0147                    IF (PPASS) & (PSTAT = 2) THEN NXT = 0
260   0148                    LAST = OR(LAST,NXT)
261                           END                                   ; e4
262                       END                                       ; b2
263   0149            ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8) THEN
264   0150                LET PSTAT = 0
265                   END                                           ; e1
266   0151          STEP PDIN BY 1
267   0152          STEP PTYPE BY 1
268   0153          STEP PREV BY 1
269   0154          STEP PSTAT BY 1
270   0155          STEP PPASS BY 1
271          ;
272          ;                                   PSTAT NOW POINTING AT STAT6
273   0156          NEXT ILOOP
274          ;
275          ;              E N D   D I G I T A L S
```

```
276          ;
277          ;              B E G I N   A N A L O G S   R E D   A N D   Y E L L O W :
278          ;
279          ;              Function:        Recognize analog red and yellow alarms
280          ;                               and associate with graphic strings.  Turn
281          ;                               on alarm ACK device, turn on Lamp, and
282          ;                               flash message on graphic.
283          ;
284   0157          ANALOG = 0
285   0158          ASSIGN PSKID = SKID6
286   0159          ASSIGN PAI = 'TI-E101-2'
287   0160          FOR JLOOP = 6 TO 25
288          ;       IF !SELECT() THEN GOTO AGAIN                    ; If some alarm exists
289   0161          IF (PTYPE) THEN
290                    BEGIN                                                  ; b1
291   0162             BITVAL = PAI:AI_ALMCT
292   0163             IF !AND(BITVAL,T6) THEN                        ; If not inhibited
293                       BEGIN                                               ; b2
294   0164                IF AND(BITVAL,15) THEN                       ; If alarm exists and is current
295                          BEGIN                                            ; b3
296   0166                   IF AND(BITVAL,32) THEN NXT = 2            ; If alarm is ack
297                          ELSE                                      ; If alarm is unack
298                             BEGIN                                         ; b4
299   0167                      IF PSKID != BITVAL THEN
300                                BEGIN                                      ; b5
301   0168                         LET PSKID = BITVAL
302   0170                         IF BITVAL < 3 THEN FALMON = 1
303   0171                         PDEV:DEV_TMPO = 2
304   0172                         NXT = 1
305                                END                                        ; e5
306   0173                      ELSE NXT = 1
307                             END                                           ; e4
308                          END                                              ; e3
309                       ELSE                                         ; Else there is no alarm
310                          BEGIN                                            ; b6
311   0174                   NXT = 0
312   0175                   LET PSKID = 0
313                          END                                              ; e6
314                       END                                                 ; e2
315                    ELSE                                            ; Else alarm is inhibited
316                       BEGIN                                               ; b7
317   0176                NXT = 0
318   0177                LET PSKID = 0
319                       END                                                 ; e7
320   0178             ANALOG = OR(ANALOG,NXT)
321                    END                                                    ; e1
322   0179          STEP PREV BY 1
323   0180          STEP PSTAT BY 1
324   0181          STEP PSKID BY 1
325   0182          STEP PTYPE BY 1
326   0183          IF (JLOOP!=8)&(JLOOP!=9)&(JLOOP!=14)&(JLOOP!=15)&(JLOOP!=19)&(JLOOP!=20) THEN
327                    BEGIN
328   0184             STEP PAI BY 1                        ; Step PAI if JLOOP != 8, 9, 14, 15, 19, OR 20
329                    END
330   0185          NEXT JLOOP
```

```
331          ;
332          ;              E N D   A N A L O G S
333          ;
334          ;              B E G I N   A N A L O G   W H I T E   A L A R M S
335          ;
336          ;              Function:        Recognize AI White alarms, associate
337          ;                               with graphic string.  Turn on alarm
338          ;                               ACK device, turn on Lamp, and flash
339          ;                               message on graphic.
340          ;
341   0186           WHITE = 0
342   0187           ASSIGN PALARM = AI0
343   0188           ASSIGN PAI = 'TI-E101-2'
344   0189           ASSIGN PREV = FRV6
345   0190           ASSIGN PSTAT = INT6
346   0191           ASSIGN PTYPE = TYPE6
347   0192                   IN1 = 6
348   0193                   IN2 = 6
349   0194                   GOSUB ANLG
350   0195           ASSIGN PAI = 'WFI-E101'
351   0196                   IN1 = 7
352   0197                   IN2 = 9
353   0198                   GOSUB ANLG
354   0199           ASSIGN PAI = 'DI-E101-2'
355   0200                   IN1 = 10
356   0201                   IN2 = 12
357.  0202                   GOSUB ANLG
358   0203           ASSIGN PAI = 'WFI-E102'
359   0204                   IN1 = 13
360   0205                   IN2 = 15
361   0206                   GOSUB ANLG
362   0207           ASSIGN PAI = 'FQI-E102'
363   0208                   IN1 = 16
364   0209                   IN2 = 17
365   0210                   GOSUB ANLG
366   0211           ASSIGN PAI = 'WFI-E104'
367   0212                   IN1 = 18
368   0213                   IN2 = 20
369   0214                   GOSUB ANLG
370   0215           ASSIGN PAI = 'DI-E104-2'
371   0216                   IN1 = 21
372   0217                   IN2 = 25
373   0218                   GOSUB ANLG
374          ;
375          ;              E N D   A N A L O G   W H I T E   A L A R M S
376          ;
377   0220           IF (INT6 & INT6 < 3) THEN LET LEAK3 = INT6 + 4                  ; TI-E101-2 Hi
378   0222              ELSE IF INT6 = 3 THEN LET LEAK3 = 9                          ; TI-E101-2 INHA
379   0223                 ELSE LET LEAK3 = 0                                   ; No alarm
380
381   0225           IF (INT8 & INT8 < 3) THEN LET LEAK0 = INT8                      ; WFI-E101 Lo-Lo
382   0227              ELSE IF (INT9 & INT9 < 3) THEN LET LEAK0 = INT9 + 2          ; WFI-E101 Lo
383   0229                 ELSE IF INT8 = 3 THEN LET LEAK0 = 9                       ; WFI-E101 INHA
384   0230                    ELSE LET LEAK0 = 0                                     ; No alarm
385
```

```
386   0232          IF (INT14 & INT14 < 3) THEN LET LEAK1 = INT14                    ; WFI-E102 Lo-Lo
387   0234             ELSE IF (INT15 & INT15 < 3) THEN LET LEAK1 = INT15 + 2 ; WFI-E102 Lo
388   0236                ELSE IF INT14 = 3 THEN LET LEAK1 = 9                      ; WFI-E102 INHA
389   0237                   ELSE LET LEAK1 = 0                                     ; No alarm
390
391   0239          IF (INT17 & INT17 < 3) THEN LET LEAK4 = INT17 + 4          ; TI-E104-2 Hi
392   0241             ELSE IF INT17 = 3 THEN LET LEAK4 = 9                    ; TI-E104-2 INHA
393   0242                ELSE LET LEAK4 = 0                                   ; No alarm
394
395   0244          IF (INT19 & INT19 < 3) THEN LET LEAK2 = INT19                    ; WFI-E104 Lo-Lo
396   0246             ELSE IF (INT20 & INT20 < 3) THEN LET LEAK2 = INT20 + 2 ; WFI-E104 Lo
397   0248                ELSE IF INT19 = 3 THEN LET LEAK2 = 9                      ; WFI-E104 INHA
398   0249                   ELSE LET LEAK2 = 0                                     ; No alarm
399
400   0250          MARK STEP "BELOW",0,0
401   0251          SORT = 0
402   0253          IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
403   0254          CURENT = OR(LAST,WHITE)
404   0255          CURENT = OR(CURENT,ANALOG)
405   0257          IF AND(CURENT,1) THEN LMPVAR = 2
406   0259             ELSE IF AND(CURENT,2) THEN LMPVAR = 1
407   0260                   ELSE LMPVAR = 0
408   0261          LAMP ADI,SKDKEY,LMPVAR
409   0262          MARK STEP "BOTTOM",0,0
410   0263          NOCRIT
411   0265          IF AND('AMU-ALARM':DEV_FLG,64)THEN PUTMANL 'AMU-ALARM'
412   0267          IF AND('P-E-101':DEV_FLG,64)THEN PUTMANL 'P-E-101'
413   0269          IF AND('A-E-101':DEV_FLG,64)THEN PUTMANL 'A-E-101'
414   0271          IF AND('P-E-102':DEV_FLG,64)THEN PUTMANL 'P-E-102'
415   0273          IF AND('A-E-102':DEV_FLG,64)THEN PUTMANL 'A-E-102'
416   0275          IF AND('P-E-104':DEV_FLG,64)THEN PUTMANL 'P-E-104'
417   0277          IF AND('A-E-104':DEV_FLG,64)THEN PUTMANL 'A-E-104'
418   0278          GOTO AGAIN
419         ;
420         ;              B E G I N   A N A L O G   W H I T E   S U B R O U T I N E
421         ;
422         ;              ILOOP     EPN            ALARM LEVEL
423         ;              -----   --------         -----------
424         ;                6     TI-E101-2           Hi
425         ;                8     WFI-E101            Lo-Lo
426         ;                9     WFI-E101            Lo
427         ;               14     WFI-E102            Lo-Lo
428         ;               15     WFI-E102            Lo
429         ;               17     TI-E104-2           Hi
430         ;               19     WFI-E104            Lo-Lo
431         ;               20     WFI-E104            Lo
432         ;
433   0279  ANLG:   FOR ILOOP = IN1 TO IN2
434         ;       IF !SELECT() THEN GOTO AGAIN
435   0280          IF PTYPE = 1 THEN
436                    BEGIN                                                   ; b0
437   0281             BITVAL = PAI:AI_ALMCT
438         ;
439   0282             IF AND(BITVAL,16) THEN                          ; If inhibited
440                         BEGIN
```

```
0283                    LET PSTAT = 3
0284                    DLEAK3 = 1
0285                    GOSUB ACKK
                        END
        ;
0286                IF !(AND(BITVAL,16)) THEN              ; If not inhibited and alarm enabled
                      BEGIN                                                ; b1
0287                  IF (PREV) THEN                       ; If rev acting, Lo-Lo, or Lo
                        BEGIN                                              ; b2
0288                    IF (PSTAT = 0) THEN
                          BEGIN                                            ; b3
0290                      IF (PAI:AI_MEAS <= PALARM) THEN GOSUB ALM
                          END                                              ; e3
                        ELSE
                          BEGIN                                            ; b4
0291                      IF PSTAT = 1 THEN
                            BEGIN                                          ; b5
0293                        IF (FTRIP4) THEN GOSUB ACK1
0296                        IF PTYPE !=1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                            END                                            ; e5
0298                      IF (PAI:AI_MEAS >= PALARM + PAI:AI_DEAD) THEN GOSUB CLR
                          END                                              ; e4
                        END                                                ; e2
                      ELSE                                 ; If fail safe, Hi-Hi, or Hi
                        BEGIN                                              ; b2.1
0299                    IF PSTAT = 0  THEN
                          BEGIN                                            ; b6
0301                      IF (PAI:AI_MEAS >= PALARM) THEN GOSUB ALM
                          END                                              ; e6
                        ELSE
                          BEGIN                                            ; b7
0302                      IF PSTAT = 1 THEN
                            BEGIN                                          ; b8
0304                        IF (FTRIP4) THEN GOSUB ACK1
0307                        IF PTYPE != 1 THEN IF AND(PAI:AI_ALMCT,32) THEN GOSUB ACK1
                            END                                            ; e8
0309                      IF (PAI:AI_MEAS <= PALARM - PAI:AI_DEAD) THEN GOSUB CLR
                          END                                              ; e7
                        END                                                ; e2.1
0310                NXT = PSTAT
0312                IF (PPASS) & (PSTAT = 2) THEN NXT = 0
                    END                                                    ; e1
                    ELSE
                      BEGIN                                                ; b9
0313                  LET PSTAT = 3
0314                  NXT = 0
                      END                                                  ; e9
0315              WHITE = OR(WHITE,NXT)
                  END                                                      ; e0
0316              ELSE LET PSTAT = 0
0317              STEP PALARM BY 1
0318              IF (ILOOP!=7)&(ILOOP!=8)&(ILOOP!=13)&(ILOOP!=14)&(ILOOP!=18)&(ILOOP!=19) THEN
                    BEGIN
0319                STEP PAI BY 1                          ; Step PAI if ILOOP != 7, 8, 13, 14, 18, OR 19
                    END
```

```
496   0320          STEP PSTAT BY 1
497   0321          STEP PTYPE BY 1
498   0322          STEP PREV BY 1
499   0323          STEP PPASS BY 1
500   0324          NEXT ILOOP
501   0325          RETURN
502         ;
503         ;               E N D   A N A L O G   W H I T E   S U B R O U T I N E
504         ;
505         ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
506         ;
507         ;
508   0326  CLR:    LET PSTAT = 0
509   0328          IF ILOOP = 8 THEN LET INT9 = 0          ; Clear Hi alarm for Hi-Hi to Hi transition
510   0330          IF ILOOP = 14 THEN LET INT15 = 0        ; Clear Hi alarm for Hi-Hi to Hi transition
511   0332          IF ILOOP = 19 THEN LET INT20 = 0        ; Clear Hi alarm for Hi-Hi to Hi transition
512                 ;
513                 ; If not white, then unack:
514                 ;
515   0334          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32) THEN
516   0335                  PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
517   0336          LET FCLEAR = 1                          ; Clear flag
518   0337          GOSUB ACKK                              ; Print message
519   0338          RETURN
520         ;
521   0339  ALM:    LET PSTAT = 1                           ; Int set to one
522                 ;
523                 ; If not white, then unack:
524                 ;
525   0341          IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32) THEN
526   0342                  PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
527                 ;
528                 ; Turn audible alarm on if white or yellow
529                 ;
530   0343          PDEV:DEV_TMP0 = 2
531   0345          IF AND(PTYPE,3)THEN FALMON = 1
532   0346          LAMP AD1,SKDKEY,2
533   0347          CRIT
534   0348          GOSUB ACKK                              ; Print Message
535   0349          RETURN
536         ;
537   0350  ACK1:   LET PSTAT = 2                           ; Ack the alarm
538   0351          LET FACK = 1                            ; Set ack flag for C program
539         ;
540         ;               For multiple AI white alarms on one EPN (use with string packet 78):
541         ;
542         ;
543   0352  ACKK:   IF DLEAK3 = 1 THEN                                      ; If inhibited
544                         BEGIN
545   0353                  LET DLEAK3 = 0
546   0354                  RETURN                                  ; Skip message routine
547                         END
548         ;
549         ;               End multiple AI white alarms on one EPN
550         ;
```

```
551          ;                A L A R M   T Y P E R   S T R I N G S
552          ;
553          ;                For DIN white (there are no DIN R or Y), AI white,
554          ;                and program status.
555          ;
556   0356          IF ILOOP = 0 THEN STRNGO = "ELUANT AGITATOR ON       "    ; YS-A-E101
557   0358          IF ILOOP = 1 THEN STRNGO = "ELUANT PUMP ON           "    ; YS-P-E101
558   0360          IF ILOOP = 2 THEN STRNGO = "ANTIFOAM AGITATOR ON     "    ; YS-A-E102
559   0362          IF ILOOP = 3 THEN STRNGO = "ANTIFOAM PUMP ON         "    ; YS-P-E102
560   0364          IF ILOOP = 4 THEN STRNGO = "DECON AGITATOR ON        "    ; YS-A-E104
561   0366          IF ILOOP = 5 THEN STRNGO = "DECON PUMP ON            "    ; YS-P-E104
562   0368          IF ILOOP = 6 THEN STRNGO = "TK-E-101 LIQUID TEMP HI  "    ; TI-E101-2 Hi
563   0370          IF ILOOP = 8 THEN STRNGO = "TK-E-101 WT FACTOR LO-LO "    ; WFI-E101 Lo-Lo
564   0372          IF ILOOP = 9 THEN STRNGO = "TK-E-101 WT FACTOR LO    "    ; WFI-E101 Lo
565   0374          IF ILOOP = 14 THEN STRNGO = "TK-E-102 WT FACTOR LO-LO "   ; WFI-E102 Lo-Lo
566   0376          IF ILOOP = 15 THEN STRNGO = "TK-E-102 WT FACTOR LO    "   ; WFI-E102 Lo
567   0378          IF ILOOP = 17 THEN STRNGO = "TK-E-104 LIQUID TEMP HI  "   ; TI-E104-2 Hi
568   0380          IF ILOOP = 19 THEN STRNGO = "TK-E-104 WT FACTOR LO-LO "   ; WFI-E104 Lo-Lo
569   0382          IF ILOOP = 20 THEN STRNGO = "TK-E-104 WT FACTOR LO    "   ; WFI-E104 Lo
570   0384          IF ILOOP = 33 THEN STRNGO = "START AMUBATCH PGM "
571   0386          IF ILOOP = 34 THEN STRNGO = "AMUBATCH WRONG UNIT"
572   0388          IF ILOOP = 35 THEN STRNGO = "TERMINATE AMUBATCH "
573          ;
574          ; If acknowledging alarm, then:
575          ;
576   0389   AMSG:   IF PTYPE = 1 THEN
577                     BEGIN
578                  ;
579                  ;  If white alarm, print:
580                  ;
581   0391              IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
582   0392              IF (FACK) THEN
583                        BEGIN
584   0393                 PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
585   0394                 LET FACK = 0
586                        END
587                     END
588          ;
589          ; If CLEAR, print it is clear and reset flag:
590          ;
591   0395          IF (FCLEAR) THEN
592                     BEGIN
593   0396              PRINT ADI,"%p ALARM CLEAR",STRNGO
594   0397              LET FCLEAR = 0
595                     END
596          ;
597          ; If STARTUP, print startup message:
598          ;
599   0398          IF (FSTART) THEN
600                     BEGIN
601   0399              LET FSTART = 0
602   0400              PRINT ADI,"%p",STRNGO
603                     END
604   0401          RETURN
605          ;
```

```
606             ; if ERROR - print message, start timer, and set flag
607             ;
608     0402    ERRSUB:   IF ERRN != ERRNUM() THEN
609                         BEGIN
610     0403                TIMERON STIMEO
611     0404                TIMERCLR STIMEO
612     0405                LET FSNO = 1
613     0406                LET ERRN = ERRNUM()
614     0407                LET ERRL = ERRLIN()
615     0408                PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
616                         END
617     0409              ERSCLR
618     0410              GOTO AGAIN
619             ;
620             ; if FABORT = 1, then abort program
621             ;
622             ; TERM:  LET FABORT = 0
623     0411    TERM:     LET ILOOP = STAR + 2
624     0412              LET FSTART = 1
625     0413              GOSUB ACKK
626                       END
```

```
Total Errors Detected      0     Total Warnings      0
     Sequence Program Size = 8016 Bytes, 501 Pages
          26 Forward Reference(s)
```

LERFBATCH

```
;       L E R F B A T C H . S E Q                                   VERSION  4
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 024,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]LERFBATCH
;
;       UNIT = 21, SKDKEY = 40
;
;       Assoc. UPF:     [300,1]_PRCESS.___      PRCESS.LST
;       Assoc. RPF:     [300,1]_242A.___        242A.LST
;       SDB:            [300,1]PCM0A.SDB        PCM0ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ---------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       .         LEAKn         Special INT variable for multiple white alarms on an EPN
;       PDIN      'EPN'         ---
;       PTYPE     TYPEn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FRVn          Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Used for analog alarms
;       PPASS     FPASn         Turn lamp off when alarm is ACKnowledged
;       PALARM    FALMn         Analog alarm flag
;       ---       FNING         Unused error flag
;
;  MODIFICATION LOG:
;
;       05-NOV-92       Deleted LERF valve MOV-43-1 associated          M. Teats
;                       logic and DINs (search for WAS).
;
;       30-NOV-92       Added SA5, SA6, SA7 for line leaks;             M. Teats
;                       renumbered SA0 to SA7; revised leak logic.
;
;       16-DEC-92       Added analog alarm code, and comments.          M. Teats
;
;       30-DEC-92       Fixed white alarm print message.        M. Teats
;
;       29-JAN-93       Added YS-PLC-1.                                 M. Teats
```

```
 56            ;
 57            ;        01-MAR-93        Change LDS-BSN42, 43, 44 to fail-safe          M. Teats
 58            ;                         (alarms on voltage absent in MUX,
 59            ;                         change FRV_ from 1 to 0).
 60            ;
 61            ;        11-MAR-93        Modified SA_ (SA0...SA8) variable code for     M. Teats
 62            ;                         as-found.
 63            ;
 64            ;        08-JUN-93        Added comments and baselined for        R. Persin
 65            ;                         D/3 version 3.3.  CCN# 93JUN01-01.
 66            ;
 67            ;        11-JUL-94        Added LERF DINs LSH60A12, LSH60A13             R. Kersey
 68            ;                         YSETFCOM, and YS60A56
 69            ;
 70            ;        15-DEC-94        Revised header to indicate the new VMS         J. Berger
 71            ;                         system. Rebaselined document. Removed
 72            ;                         obsolite Select() document.
 73            ;
 74            ;        10-APR-95        Deleted LERF gate alarms ZS-105PS1 and         J. Berger
 75            ;                         ZS-105PS2 per ECN 620391 and WP EE-95-
 76            ;                         0006.  (JFB01)
 77            ;
 78            ;        03-APR-96        Deleted the ETF signals. ECN 627478            J. Berger
 79            ;                         MCS-96-010.
 80            ;
 81            ;  END MOD LOG
 82            ;
 83            UNIT     LERF
 84    0000             NOP
 85    0001             STAR = 26                        ; Start message
 86    0002             LET SKDKEY = 40          ; SKID Key
 87    0003             LET UNITT = 21                   ; SEQ Unit
 88    0004             ASSIGN PDEV = 'LERF-ALM' ; Alarm device
 89    0005             ASSIGN PTYPE = TYPE25
 90    0006             LET AD1 = 0                      ; Alarm destination index
 91    0007             LET FSN0 = 0                     ; No alarm yet
 92    0008             TIMEROFF STIME0          ; Alarm timer off
 93    0009             TIMERCLR STIME0          ; Alarm timer clear
 94    0010             STRNG0 = " "                     ; Blank 30 character string
 95    0011             LET ERRN = 0                     ; Set error number to zero
 96    0012             LET ERRL = 0                     ; Set error line to zero
 97    0013             LET FTRIP4 = 0                   ; FTRIP = 1 when audible horn is to be turned on
 98    0014             GETUNIT TRIP                     ; Which sequence unit is program running in
 99    0015             IF TRIP != UNITT THEN            ; Abort if running in wrong seq.  unit
100                       BEGIN
101    0016               FSTART = 1
102    0017               ILOOP = STAR + 1
103    0018               PTYPE = 0
104    0019               GOSUB ACKK
105    0020               GOTO TERM
106                       END
107           ;        IF !SELECT() THEN GOTO AGAIN
108           ;
109           ;        B E G I N   I N I T I A L I Z I N G
110           ;
```

```
111          ;        DEVICES:
112          ;                LERF-ALM
113          ;                LERFILK
114          ;        DIGITALS:                ILOOP#
115          ;                YS-P-43          0
116          ;                LDS-A1           1
117          ;                Y-P-44           2
118          ;                ZS-105PS1        3        DELETED JFB01
119          ;                ZS-105PS2        4        DELETED JFB01
120          ;                YS-P-42          5
121          ;                LDS-BSN42        6
122          ;                LDS-BSN43        7
123          ;                LDS-BSN44        8
124          ;                LXS-LCH42        9
125          ;                LXS-BSN42        10
126          ;                LXS-LCH43        11
127          ;                LXS-BSN43        12
128          ;                LXS-LCH44        13
129          ;                LXS-BSN44        14
130          ;                YS-PLC-1         15
131          ;                LSH60A12         16       DELETED
132          ;                LSH60A13         17       DELETED
133          ;                YSETFCOM         18       DELETED
134          ;                YS60A56          19       DELETED
135          ;        ANALOGS:
136          ;                LDI-A1           20
137          ;                LI-LCH42         21
138          ;                LI-BSN42         22
139          ;                LI-LCH43         23
140          ;                LI-BSN43         24
141          ;                LI-LCH44         25
142          ;                LI-BSN44         26
143          ;
144     0021         STRNG0 = "INIT"
145     0022 INIT:   LET FABORT = 0                    ; if FABORT = 1 then abort program
146     0023         LET FSTART = 0                    ; Program start flag = 0
147     0024         LAMP ADI,SKDKEY,0                 ; Turn off the annunciator key
148     0025         LET LSG0 = " "                    ; Clear the string variables
149     0026         LET LSG1 = " "
150     0027         LET LSG2 = " "
151     0028         LET LSG3 = " "
152     0029         LET LSG4 = " "
153     0030         LET PDEV:DEV_TMP0 = 1                          ; Set alarm device to non-alarm state
154     0031         IF AND(PDEV:DEV_ALMCT,16) THEN                 ; If alarm device is inhibited, remove the inhibit
155     0032           PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
156     0033         IF AND(PDEV:DEV_ALMCT,32) THEN                 ; If alarm device is ack, clear it
157     0034            PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
158          ;
159          ;        First, set all flags and integers:
160          ;
161     0035         ASSIGN PDIN = 'YS-P-43'           ; Assign pointer to first DIN
162     0036         ASSIGN PSTAT = INT0
163     0037         ASSIGN PTYPE = TYPE0
164     0038         ASSIGN PREV = FRV0
165     0039         ASSIGN PPASS = FPAS0
```

```
166   0040          ASSIGN PALARM = FALM0
167   0041          ASSIGN PSKID = SKID0
168         ;
169   0042          FOR ILOOP = 0 TO 26
170   0043          LET PSKID = 0
171   0044          LET PPASS = 0
172   0045          LET PREV = 0
173   0046          LET PTYPE = 0                                   ; Default to no alarm
174   0048          IF PSTAT > 5 THEN PSTAT = 0                     ; Reset current status if undefined
175   0049          PALARM = 0                                      ; Default previous status to no alarms
176   0050          IF ILOOP = 3 THEN
177                         BEGIN
178   0051                  STEP PDIN BY 1
179   0052                  GOTO SKP
180                         END
181   0053          IF ILOOP = 4 THEN
182                         BEGIN
183   0054                  STEP PDIN BY 1
184   0055                  GOTO SKP
185                         END
186   0057          IF ILOOP = 16 THEN GOTO SKP
187   0059          IF ILOOP = 17 THEN GOTO SKP
188   0061          IF ILOOP = 18 THEN GOTO SKP
189   0063          IF ILOOP = 19 THEN GOTO SKP
190
191   0064          IF ILOOP <= 15 THEN                             ; For DINs
192                    BEGIN
193   0065              IF AND(PDIN:DIN_DFLG,3)THEN                 ; Check for alarms (must be a red or yellow)
194                       BEGIN
195   0066                LET PTYPE = 2                             ; Default to yellow
196   0068                IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1   ; reverse acting
197   0070                IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4  ; Set to red critical alarm
198                       END
199   0072  SKP1:     IF ILOOP < 15 THEN STEP PDIN BY 1             ; Point to next DIN
200                   END
201   0073          ELSE PTYPE = 0                                  ; For AINs, set to no alarm
202   0074  SKP:    STEP PSTAT BY 1
203   0075          STEP PTYPE BY 1
204   0076          STEP PREV BY 1
205   0077          STEP PPASS BY 1
206   0078          STEP PALARM BY 1
207   0079          STEP PSKID BY 1
208   0080          NEXT ILOOP
209         ;
210   0081          TYPE0 = 1        ; YS-P-43
211   0082          TYPE1 = 2        ; LDS-A1
212   0083          TYPE2 = 1        ; YS-P-44
213         ;       TYPE3 = 1        ; ZS-105PS1      JFB01
214         ;       TYPE4 = 1        ; ZS-105PS2      JFB01
215   0084          TYPE5 = 1        ; YS-P-42
216   0085          TYPE6 = 2        ; LDS-BSN42
217   0086          TYPE7 = 2        ; LDS-BSN43
218   0087          TYPE8 = 2        ; LDS-BSN44
219   0088          TYPE9 = 4        ; LXS-LCH42
220   0089          TYPE10 = 4       ; LXS-BSN42
```

```
0090            TYPE11 = 4       ; LXS-LCH43
0091            TYPE12 = 4       ; LXS-BSN43
0092            TYPE13 = 4       ; LXS-LCH44
0093            TYPE14 = 4       ; LXS-BSN44
0094            TYPE15 = 4       ; YS-PLC-1
        ;       TYPE16 = 2       ; LSH60A12       DELETED
        ;       TYPE17 = 4       ; LAH60A13       DELETED
        ;       TYPE18 = 4       ; YSETFCOM       DELETED
        ;       TYPE19 = 2       ; YS60A56        DELETED
        ;
0095            TYPE20 = 2       ; LDI-A1
        ;
0096            FRV0 = 1         ; YS-P-43
0097            FRV2 = 1         ; YS-P-44
0098            FRV5 = 1         ; YS-P-42
        ;       FRV19 = 0        ; YS60A56        DELETED
        ;
0099            ANALOG = 0
        ;
        ;       E N D   I N I T I A L I Z I N G
        ;
        ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
        ;
0100            ILOOP = STAR
0101            FSTART = 1
0102            PTYPE = 0
0103            GOSUB ACKK
0104            ON ERROR GOSUB ERRSUB
        ;
        ;       B E G I N   P R O G R A M   L O O P
        ;
0105    AGAIN:  MARK STEP "WTUNTL",0,0
0106            STRNG0 = "WAIT"
        ;       WAITUNTIL SELECT() | FABORT       ; Wait until micro is selected or program aborted
        ;       IF (FABORT) THEN GOTO TERM        ; Terminate program if FABORT flag is set
0107            MARK STEP "RNNING",0,0
0108            WAIT 1
0109            FTRIP4 = 0
        ;
0110            IF (FSN0) THEN                    ; If alarm flag is set
0111               IF STIME0 > 60 THEN            ; If alarm flag active for 1 minute
                     BEGIN                        ; Reset timer and turn off flag
0112                 TIMEROFF STIME0
0113                 TIMERCLR STIME0
0114                 LET FSN0 = 0
0115                 LET ERRN = 0
0116                 LET ERRL = 0
                     END
        ;
        ;       If LERF-ALM $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
        ;
0117            IF (PDEV:DEV_TMP0 = 2) & AND(PDEV:DEV_ALMCT,32) THEN
                   BEGIN
0118               'LERF-ALM':DEV_TMP0 = 1        ; Put LERF-ALM in ACKNWLDG state
0119               LET FTRIP4 = 1                 ; Set for Unit alarm acknowledgement, system to graphic
```

```
0120                ACK = 1                          ; Set for Unit alarm acknowledgement, graphic to system
          ;         CRIT
0121                LAMP ADI,SKDKEY,1
                    END
          ;
          ;       BEGIN DINs:
          ;
0122              ASSIGN PDIN = 'YS-P-43'
0123              ASSIGN PTYPE = TYPE0
0124              ASSIGN PREV = FRV0
0125              ASSIGN PSTAT = INT0
0126              ASSIGN PPASS = FPAS0
0127              LET CURENT = 0                   ; Used to set lamp status
0128              LET LAST = 0
0129              LET ANALOG = 0
0130              LET NXT = 0
0131              LMPVAR = 0
0132              BITVAL = 0
          ;
0133      LOP:    FOR ILOOP = 0 TO 15
          ;       IF !SELECT() THEN GOTO AGAIN
0135              IF ILOOP = 3 THEN GOTO LOP1
0137              IF ILOOP = 4 THEN GOTO LOP1
0138              IF ( PTYPE > 0 ) THEN                                   ; If some type of alarm
                    BEGIN                                          ;be1
0140                IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3   ; If EPN Inhibited
0142                IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5            ; If EPN is bad input
0144                IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4             ; If EPN is disabled
0145                IF ( PSTAT < 3 ) THEN                          ; If not inhibited
                        BEGIN                                      ;be2
0146                    IF PSTAT = 1 THEN
                            BEGIN                                  ;be3
0147                        IF PTYPE != 1 THEN
0149                            IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0151                        IF (FTRIP4) THEN GOSUB ACK1
                            END                                    ;en3
                        IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
0155                    IF (PSTAT) THEN
                                BEGIN                              ;be4
0157                            IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
0158                            NXT = PSTAT
0160                            IF (PPASS) & (PSTAT = 2) THEN NXT = 0
0161                            LAST = OR(LAST,NXT)
                                END                                ;en4
                        END                                        ;en2
0163                  ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 0
                      END                                          ;en1
0165      LOP1:   IF ILOOP < 15 THEN STEP PDIN BY 1
0166              STEP PTYPE BY 1
0167              STEP PREV BY 1
0168              STEP PSTAT BY 1
0169              STEP PPASS BY 1
0170              NEXT ILOOP
          ;
          ;       END DINs:
```

```
331          ;
332          ;        BEGIN ANALOG RED AND YELLOWS:
333          ;
334   0171           ANALOG = 0
335   0172           LET STRNGO = "RUN"
336   0173           ASSIGN PAI = 'LDI-A1'
337   0174           ASSIGN PSKID = SKID20
338   0175           ASSIGN PTYPE = TYPE20
339          ;
340   0176           FOR JLOOP = 20 TO 26
341          ;        IF !SELECT() THEN GOTO AGAIN
342   0177           IF (PTYPE) THEN                                    ;If some alarm exists
343                     BEGIN                                           ;be1
344   0178              BITVAL = PAI:AI_ALMCT
345   0179              IF !AND(BITVAL,16)THEN
346                        BEGIN                                        ;be2
347   0180                 IF AND(BITVAL,15)THEN
348                           BEGIN                                     ;be3
349   0182                    IF AND(BITVAL,32)THEN NXT = 2
350                           ELSE
351                              BEGIN                                  ;be4
352   0183                       IF PSKID !=BITVAL THEN
353                                 BEGIN                               ;be5
354   0185                          IF BITVAL < 3 THEN FALMON = 1
355   0186                          LET PSKID = BITVAL
356   0187                          LET PDEV:DEV_TMPO = 2
357   0188                          NXT = 1
358                                 END                                 ;en5
359   0189                       ELSE NXT = 1
360                              END                                    ;en4
361                           END                                       ;en3
362                        ELSE
363                           BEGIN
364   0190                    NXT = 0
365   0191                    LET PSKID = 0
366                           END
367                        END                                          ;en2
368                     ELSE
369                        BEGIN
370   0192                 NXT = 0
371   0193                 LET PSKID = 0
372                        END
373   0194              ANALOG = OR(ANALOG,NXT)
374                     END                                             ;en1
375   0195           STEP PSKID BY 1
376   0196           STEP PAI BY 1
377   0197           STEP PTYPE BY 1
378   0198           NEXT JLOOP
379          ;
380          ;        END ANALOG RED AND YELLOWS
381          ;
382   0199           MARK STEP "BELOW",0,0
383   0200           LET FTRIP4 = 0
384   0202           IF LAST > 3 THEN PRINT ADI," LAMP VAR IS GREATER THAN 3"
385   0203           CURENT = OR(LAST,ANALOG)
```

```
386   0205          IF AND(CURENT,1) THEN LMPVAR = 2
387   0207             ELSE IF AND(CURENT,2) THEN LMPVAR = 1
388   0208                  ELSE LMPVAR = 0
389   0209          LAMP ADI,SKDKEY,LMPVAR                          ; LMPVAR 0=off, 1=on, 2=blink
390   0210          MARK STEP "BOTTOM",0,0
391           ;     NOCRIT
392   0212          IF AND('LERF-ALM':DEV_FLG,64) THEN PUTMANL 'LERF-ALM'
393           ;
394           ;     B E G I N   L E R F   L E A K
395           ;
396           ;     Each LDE represents 0.32 mA of the 4-20 mA signal, or 2% with the
397           ;     following exception.  During ATPs, the percent increment between
398           ;     leak detector zones was found to be 2.25 to 2.5%.  The following
399           ;     code corresponds to the following ATP findings:
400           ;
401           ;                                % Reading
402           ;           Sensor               on LDI-A1        mA reading
403           ;           ------               ---------        ----------
404           ;           LDE-01                 0.61             4.08
405           ;           LDE-02                 2.98             4.46
406           ;           LDE-03                 5.36             4.84
407           ;           LDE-04                 7.92             5.25
408           ;           LDE-05                10.23             5.62
409           ;           LDE-06                12.73             6.02
410           ;           LDE-07                15.61             6.48
411           ;           LDE-08                18.23             6.90
412           ;           LDE-09                20.23             7.29
413           ;           LDE-10                22.23             7.63
414           ;
415           ;
416           ;     Allow 1 % error for LDE trip.  The SA_ variables, where
417           ;     the underscore is a number from 0-7, are tied to graphic
418           ;     indications of the alarmed leak detector zone.
419           ;
420   0213          AI10 = 'LDI-A1':AI_INVL
421   0214          IF AI10 >= 25 THEN
422                    BEGIN
423   0215             SA0 = 1       ; LDE-01
424   0216             SA1 = 1       ; LDE-02
425   0217             SA2 = 1       ; LDE-03
426   0218             SA3 = 1       ; LDE-04
427   0219             SA4 = 1       ; LDE-05
428   0220             SA5 = 1       ; LDE-06
429   0221             SA6 = 1       ; LDE-07
430   0222             SA7 = 1       ; LDE-08
431   0223             SB0 = 1       ; LDE-09
432   0224             SB1 = 1       ; LDE-10
433                    END
434                 ELSE
435                    BEGIN
436   0226                IF (AI10 >= 0.0) & (AI10 < 1.8) THEN SA0 = 1      ; LDE-01
437   0227                   ELSE SA0 = 0
438   0229                IF (AI10 >= 1.8) & (AI10 < 4.2) THEN SA1 = 1      ; LDE-02
439   0230                   ELSE SA1 = 0
440   0232                IF (AI10 >= 4.2) & (AI10 < 6.6) THEN SA2 = 1      ; LDE-03
```

```
0233                    ELSE SA2 = 0
0235                 IF (AI10 >= 6.6) & (AI10 < 9.1) THEN SA3 = 1      ; LDE-04
0236                    ELSE SA3 = 0
0238                 IF (AI10 >= 9.1) & (AI10 < 11.5) THEN SA4 = 1     ; LDE-05
0239                    ELSE SA4 = 0
0241                 IF (AI10 >= 11.5) & (AI10 < 14.2) THEN SA5 = 1    ; LDE-06
0242                    ELSE SA5 = 0
0244                 IF (AI10 >= 14.2) & (AI10 < 16.9) THEN SA6 = 1    ; LDE-07
0245                    ELSE SA6 = 0
0247                 IF (AI10 >= 16.9) & (AI10 < 19.2) THEN SA7 = 1    ; LDE-08
0248                    ELSE SA7 = 0
0250                 IF (AI10 >= 19.2) & (AI10 < 21.2) THEN SB0 = 1    ; LDE-09
0251                    ELSE SB0 = 0
0253                 IF (AI10 >= 21.2) & (AI10 < 25.0) THEN SB1 = 1    ; LDE-10
0254                    ELSE SB1 = 0
                  END
        ;
        ;       E N D   L E R F   L E A K
        ;
0255            GOTO AGAIN
        ;
        ;       E N D   P R O G R A M   L O O P
        ;
        ;       BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
        ;
0256    CLR:    LET PSTAT = 0                                             ; Int set to zero
                ;
                ; If not white, then unack:
                ;
0259            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0260            LET FCLEAR = 1                                            ; Clear flag
0261            GOSUB ACKK                                                ; Print message
0262            RETURN
        ;
0263    ALM:    LET PSTAT = 1                                             ; Int set to one
                ;
                ; If not white, then unack:
                ;
0266            IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0267            LET PDEV:DEV_TMPO = 2
0269            IF AND(PTYPE,3) THEN FALMON = 1
        ;       CRIT
0270            LAMP ADI,SKDKEY,2
0271            GOSUB ACKK                                                ; Print message
0272            RETURN
        ;
0273    ACK1:   LET PSTAT = 2                                             ; Ack the alarm
0274            LET FACK = 1                                              ; Set ACK flag for C program
        ;
        ;       ALARM TYPER STRINGS:
        ;
0276    ACKK:   IF ILOOP = 0 THEN STRNGO = "LERF LECHATE PUMP #43 ON"
0278            IF ILOOP = 1 THEN STRNGO = "EVAPORATOR TO LERF LEAK"
0280            IF ILOOP = 2 THEN STRNGO = "LERF LECHATE PUMP #44 ON"
        ;       IF ILOOP = 3 THEN STRNGO = "LERF MAIN GATE (NORTH) OPEN"  ; JFB01
```

```
496          ;        IF ILOOP = 4 THEN STRNGO = "LERF REAR GATE (SOUTH) OPEN"  ; JFB01
497    0282           IF ILOOP = 5 THEN STRNGO = "LERF LECHATE PUMP #42 ON"
498    0284           IF ILOOP = 6 THEN STRNGO = "CATCH BASIN 42 LEAK DETECT "
499    0286           IF ILOOP = 7 THEN STRNGO = "CATCH BASIN 43 LEAK DETECT "
500    0288           IF ILOOP = 8 THEN STRNGO = "CATCH BASIN 44 LEAK DETECT "
501    0290           IF ILOOP = 9 THEN STRNGO = "BASIN 42 LEACHATE DIAGNOSTIC"
502    0292           IF ILOOP = 10 THEN STRNGO = "BASIN 42 LIQUID DIAGNOSTIC  "
503    0294           IF ILOOP = 11 THEN STRNGO = "BASIN 43 LEACHATE DIAGNOSTIC"
504    0296           IF ILOOP = 12 THEN STRNGO = "BASIN 43 LIQUID DIAGNOSTIC  "
505    0298           IF ILOOP = 13 THEN STRNGO = "BASIN 44 LEACHATE DIAGNOSTIC"
506    0300           IF ILOOP = 14 THEN STRNGO = "BASIN 44 LIQUID DIAGNOSTIC  "
507    0302           IF ILOOP = 15 THEN STRNGO = "LERF MODEM COMM STATUS "
508          ;        IF ILOOP = 16 THEN STRNGO = "ETF SURGE TANK HI"           DELETED
509          ;        IF ILOOP = 17 THEN STRNGO = "ETF SURGE TANK HIHI" DELETED
510          ;        IF ILOOP = 18 THEN STRNGO = "ETF COMMUNICATION FAIURE"    DELETED
511          ;        IF ILOOP = 19 THEN STRNGO = "ETF AOV CLOSED"              DELETED
512    0304           IF ILOOP = 27 THEN STRNGO = "LERFBATCH STARTING "
513    0306           IF ILOOP = 28 THEN STRNGO = "LERFBATCH TERMINATING "
514          ;
515          ; If acknowledging alarms, then:
516          ;
517    0307  AMSG:    IF PTYPE = 1 THEN
518                     BEGIN
519                  ;
520                  ; If white alarm, print:
521                  ;
522    0309            IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
523    0310            IF (FACK) THEN
524                      BEGIN
525                  ;
526                  ; If white alarm, print:
527                  ;
528    0311                PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
529    0312                LET FACK = 0
530                        END
531                     END
532          ;
533          ; If CLEAR, print it is ack and reset the flag:
534          ;
535    0313           IF (FCLEAR) THEN
536                     BEGIN
537    0314             PRINT ADI,"%p ALARM CLEAR",STRNGO
538    0315             LET FCLEAR = 0
539                     END
540          ;
541          ; If STARTUP, print startup message:
542          ;
543    0316           IF (FSTART) THEN
544                     BEGIN
545    0317             LET FSTART = 0
546    0318             PRINT ADI,"%p",STRNGO
547                     END
548    0319           RETURN
549          ;
550          ; If ERROR - print message, start timer, and set flag:
```

```
551            ;
552     0320   ERRSUB:  IF ERRN != ERRNUM() THEN
553                        BEGIN
554     0321               TIMERON STIMEO
555     0322               TIMERCLR STIMEO
556     0323               LET FSNO = 1
557     0324               LET ERRN = ERRNUM()
558     0325               LET ERRL = ERRLIN()
559     0326               PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
560                        END
561     0327               ERSCLR
562     0328            GOTO AGAIN
563            ;
564            ; If FABORT = 1, then abort program
565            ;
566            ; TERM:  LET FABORT = 0
567     0329   TERM:    LET STRNGO = "LERFBATCH TERMINATED    "
568     0330            LET ILOOP = STAR + 2
569     0331            LET FSTART = 1
570     0332            LET STRNGO = "TERM"
571     0333            GOSUB ACKK
572                     END

      Total Errors Detected      0     Total Warnings      0
           Sequence Program Size = 6624 Bytes, 414 Pages
                 18 Forward Reference(s)
```

CASSBATCH

```
 1          ;       C A S S B A T C H . S E Q                          VERSION 2
 2          ;
 3          ;       Written By      : R. N. Kersey
 4          ;       Date            : 05-31-92
 5          ;       Facility        : 242-A Evaporator Bldg.
 6          ;       Machine         : VAX 4104-A
 7          ;       Op. System      : VAX/VMS 5.5-2AH
 8          ;       D/3 Version     : 6.3-2 BASELINE
 9          ;       Compiler        : SIC
10          ;       Build command   : @[320,20]CASSBATCH
11          ;
12          ;       UNIT = 22, SKDKEY = 44
13          ;
14          ;       Assoc. UPF:     [300,1]_OVRVEW.___      OVRVEW.LST
15          ;       Assoc. RPF:     [300,1]_242A.___        242A.LST
16          ;       SDB:            [300,1]PCM0ASDB.CMD     PCM0ASDB.LST
17          ;
18          ; MODIFICATION LOG:
19          ;
20          ;       03-AUG-93       Added the following:                    M. Teats
21          ;                       - comments
22          ;                       - error handling
23          ;                       - unit checking
24          ;                       - start message
25          ;                       - micro select, abort
26          ;                       - redundant SABL
27          ;                       - ACKK, ERRSUB, TERM subroutines
28          ;                       and baselined for D/3 version 3.3.
29          ;
30          ;       15-DEC-94       Revised header to indicate the new VMS  J. Berger
31          ;                       system. Rebaselined document. Removed
32          ;                       obsolite Select() statements.
33          ;
34          ; END MOD LOG
35          ;
36          UNIT    EVAP
37                  COMMON WHOLE0,WHOLE1
38          ;
39  0000            NOP
40  0001            STA100 = 20                     ; Start message
41  0002            LET STA101 = 22         ; SEQ Unit number
42  0003            LET AD1 = 0                     ; Alarm Destination Index
43  0004            LET FSPAR0 = 0                  ; No Error yet
44  0005            TIMEROFF STIME0         ; Alarm timer off
45  0006            TIMERCLR STIME0         ; Alarm timer clear
46  0007            MSSG0 = " "                     ; Blank 30 character string
47  0008            LET ERRN = 0                    ; Set error number to zero
48  0009            LET ERRL = 0                    ; Set error line to zero
49  0010            GETUNIT TRIP                    ; Which sequence unit is program running in
50  0011            IF TRIP != STA101 THEN          ; Abort if running in wrong seq. unit
51                     BEGIN
52  0012               FSTART = 1
53  0013               ILOOP = STA100 + 1           ; ILoop = 21
54  0014               GOSUB ACKK
55  0015               GOTO TERM
```

```
                    END
            ;       IF !SELECT() THEN GOTO AGAIN
            ;
            ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
            ;
0016                ILOOP = STA100                  ; ILoop = 20
0017                FSTART = 1
0018                GOSUB ACKK
0019                ON ERROR GOSUB ERRSUB
            ;
            ;       B E G I N   P R O G R A M   L O O P
            ;
0020        AGAIN:  MARK STEP "WTUNTL",0,0
0021                MSSG0 = "WAIT"
            ;       WAITUNTIL SELECT() | FABORT     ; Wait until micro is selected or program aborted
            ;       IF (FABORT) THEN GOTO TERM      ; Terminate program if FABORT flag is set
0022                MARK STEP "RNNING",0,0
0023                WAIT 1
0024                IF (FSPAR0) THEN                ; If Error flag set
0025                   IF STIME0 > 60 THEN          ; If Error flag active for 1 minute
                          BEGIN                     ; Reset timer and turn off flag
0026                      TIMEROFF STIME0
0027                      TIMERCLR STIME0
0028                      LET FSPAR0 = 0
0029                      LET ERRN = 0
0030                      LET ERRL = 0
                          END
                    ;
0031                INDEX = CASS1AL1A:DEV_TMP0
0032                ASSIGN PDSABL = FAL0
0033                GOSUB FETCH
                    ;
0034                INDEX = CASS0AL1A:DEV_TMP0
0035                ASSIGN PDSABL = FAL20
0036                GOSUB FETCH
                    ;
0037                INDEX = CASS0AL2A:DEV_TMP0
0038                ASSIGN PDSABL = FAL40
0039                GOSUB FETCH
                    ;
0040                INDEX = CASS0AL2B:DEV_TMP0
0041                ASSIGN PDSABL = FAL60
0042                GOSUB FETCH
                    ;
0043                INDEX = CASS1AL2A:DEV_TMP0
0044                ASSIGN PDSABL = FAL80
0045                GOSUB FETCH
                    ;
0046                WAIT 2
0047                GOTO AGAIN
            ;
            ;       SUBROUTINES:
            ;
0048        FETCH:  BITVAL = 1
0049                FOR JLOOP = 0 TO 13
```

```
111   0050            PDSABL = AND(INDEX,BITVAL)
112   0051            BITVAL = BITVAL ( 1
113   0052            STEP PDSABL BY 1
114   0053            NEXT JLOOP
115   0054            RETURN
116             ;
117             ;       ALARM TYPER STRINGS:
118             ;
119   0056      ACKK:   IF ILOOP = 20 THEN MSSGO = "START CASSBATCH PGM "
120   0058              IF ILOOP = 21 THEN MSSGO = "CASSBATCH WRONG UNIT"
121   0060              IF ILOOP = 22 THEN MSSGO = "TERMINATE CASSBATCH "
122                     ;
123                     ; If Startup, then print startup message:
124                     ;
125   0061              IF (FSTART) THEN
126                        BEGIN
127   0062                 LET FSTART = 0
128   0063                 PRINT ADI,"%p",MSSGO
129                        END
130   0064              RETURN
131             ;
132             ; If Error - print message, start timer, and set Error flag:
133             ;
134   0065      ERRSUB:  IF ERRN != ERRNUM() THEN
135                        BEGIN
136   0066                 TIMERON STIMEO
137   0067                 TIMERCLR STIMEO
138   0068                 LET FSPARO = 1
139   0069                 LET ERRN = ERRNUM()
140   0070                 LET ERRL = ERRLIN()
141   0071                 PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
142                        END
143   0072              WAIT 5
144   0073              ERSCLR
145   0074              GOTO AGAIN
146             ;
147             ; If FABORT = 1, then abort program:
148             ;
149             ; TERM:  LET FABORT = 0
150   0075      TERM:   LET MSSGO = "CASSBATCH TERMINATED  "
151   0076              LET ILOOP = STA100 + 2                    ; ILoop = 22
152   0077              LET FSTART = 1
153   0078              LET MSSGO = "TERM"
154   0079              GOSUB ACKK
155                     END

      Total Errors Detected      0     Total Warnings      0
           Sequence Program Size = 1328 Bytes, 83 Pages
                 9 Forward Reference(s)
```

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Accession #: D196079545

Document #: SD-534-CSWL-001

Title/Desc:
SEQUENCE & BATCH LANGUAGE PROGRAMS & ALARM RELATED C PROGRAMS FOR THE 242A MCS [SEC 5 OF 6 PAGE 512 TO 636]

Pages: 127

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-534-CSWL-001

Section 5 **of** 6

Title: Sequence and Batch Language programs and Alarm Related "C" Programs for the 242-A MCS

Date: 4/15/96 **Revision:** 3

Originator: Berger, J.F.
Co:

Recipient:
Co:

References: ECN-627504

TAG

```
                ;       T A G . S E Q                                   VERSION 2
                ;
                ;
                ;       Function:       EPN ON/OFF for Graphics.
                ;
                ;       Written By      : R. N. Kersey
                ;       Date            : 05-31-92
                ;       Facility        : 242-A Evaporator Bldg.
                ;       Machine         : VAX 4104-A
                ;       Op. System      : BAX/VMS 5.5-2AH
                ;       D/3 Version     : 6.3-2 BASELINE
                ;       Compiler        : SIC
                ;       Build command   : @[320,20]TAG
                ;
                ;       UNIT = 0, SKDKEY = 62
                ;
                ;       Assoc. UPF:     [300,1]_TOTALO.___      TOTALO.LST
                ;       Assoc. RPF:     [300,1]_ALLO.___        ALLO.LST
                ;       SDB:            [300,1]PCMOASDB.CMD     PCMOASDB.LST
                ;
                ;  MODIFICATION LOG:
                ;
                ;       29-JUL-93       Added comments and baselined for        M. Teats
                ;                       D/3 version 3.3.
                ;
                ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
                ;                       system. Rebase line document.
                ;
                ;  END MOD LOG
                ;
                UNIT    WHOLEO
0001                    IF(FDISP)THEN FDISP = 0
0002                    ELSE FDISP = 1
                        END

        Total Errors Detected     0     Total Warnings     0
             Sequence Program Size = 80 Bytes, 5 Pages
                  0 Forward Reference(s)
```

TIMEINHA

```
Sequence Instruction Compiler Listing      15:36:55  24-Feb-95            Page   1

                ;       T I M E I N H A . S E Q                                 VERSION 2
                ;
                ;
                ;       Function:  Provide time for INHIBIT program.
                ;
                ;       Written By      : R. N. Kersey
                ;       Date            : 05-31-92
                ;       Facility        : 242-A Evaporator Bldg.
                ;       Machine         : VAX 4104-A
                ;       Op. System      : VAX/VMS 5.5-2AH
                ;       D/3 Version     : 6.3-2 BASELINE
                ;       Compiler        : SIC
                ;       Build command   : @[320,20]TIMEINHA
                ;
                ;       UNIT = 0, SKDKEY = 53
                ;
                ;       Assoc. UPF:     [300,1]_TOTAL0.___      TOTAL0.LST
                ;       Assoc. RPF:     [300,1]_ALL0.___        ALL0.LST
                ;       SDB:            [300,1]PCMOASDB.CMD     PCMOASDB.LST
                ;
                ;  MODIFICATION LOG:
                ;
                ;       29-JUL-93       Added comments and baselined for        M. Teats
                ;                       D/3 version 3.3.
                ;
                ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
                ;                       system. Rebase line document.
                ;
                ;  END MOD LOG
                ;
                UNIT    WHOLE0
        0000            FTRIP0 = 0
        0001            FTRIP1 = 0
        0002            FTRIP2 = 0
        0003            FTRIP3 = 0
        0004            FSTOP = 0
        0005            INT0 = TIMSTR(TIME0)
        0006            INT0 = DATSTR(DATE0)
                        END

        Total Errors Detected      0     Total Warnings      0
             Sequence Program Size = 144 Bytes, 9 Pages
                  0 Forward Reference(s)
```

PGMOA

```
 1          ;       P G M O A . S E Q                                       VERSION 2
 2          ;
 3          ;
 4          ;       Program to monitor sequence programs running in PCMO
 5          ;       PGMSTAT sets bits in an integer to give the status of a program.
 6          ;       It indicates if the program is running, is critical, trapped etc.
 7          ;       This program fetches this value then, by using a bit mask, it
 8          ;       checks specific statuses and converts these to a single integer value
 9          ;       used by the string editor.  SED translates the integer to strings
10          ;       in graphic 043, titled "PROGRAM STATUS".  SED = String Editor for graphics
11          ;
12          ;       Written By      : R. N. Kersey
13          ;       Date            : 05-31-92
14          ;       Facility        : 242-A Evaporator Bldg.
15          ;       Machine         : VAX 4104-A
16          ;       Op. System      : VAX/VMS 5.5-2AH
17          ;       D/3 Version     : 6.3 BASELINE
18          ;       Compiler        : SIC
19          ;       Build command   : @[320,20]PGMOA
20          ;
21          ;       Assoc. UPF:     [300,1]_BLANKK.___      BLANKK.LST
22          ;       Assoc. RPF:     [300,1]_EMTY.___        EMTY.LST
23          ;       SDB:            [300,1]PCMOASDB.CMD     PCMOASDB.LST
24          ;
25          ;  MODIFICATION LOG:
26          ;
27          ;       29-JUL-93       Added comments and baselined for        M. Teats
28          ;                       D/3 version 3.3.
29          ;
30          ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
31          ;                       system. Rebaselined document. Removed
32          ;                       obsolite Select() statements.
33          ;
34          ;  END MOD LOG
35          ;
36          UNIT    BLANKO
37                  COMMON ROOMS
38          ;
39                  PSTAT == PALARM
40                  PGRAPHIC == PSPARO
41  0000            FABORT = 0
42          ;
43  0001            ASSIGN PGRAPHIC = INTO
44  0002            FOR ILOOP = 0 TO 39
45  0003            PGRAPHIC = 0
46  0004            NEXT ILOOP
47          ;
48  0005            TIMERON STMR1
49  0006            ON ERROR GOSUB ERRSUB
50          ;
51  0007    AGAIN:  MARK STEP "WTUNTL",0,0
52  0008            LSG6 = "WAIT"
53  0009            WAIT 1
54          ;       IF FABORT THEN GOTO TERM
55  0010            LSG6 = "RUNNING"
```

```
0011            WAIT 1
0012            IF FSPAR5 THEN
                   BEGIN
0013               IF STMR0 > 60 THEN
                      BEGIN
0014                  FSPAR5 = 0
0015                  TIMERCLR STMR0
0016                  TIMEROFF STMR0
                      END
                   END
0017            TIMERCLR STMR1
        ;
        ;       SEQUENCE PROGRAM STATUS FOLLOW:
        ;
0018            INT20 = PGMSTAT("244BATCH","A244")
0019            INT21 = PGMSTAT("244HVAC","HVC244")
0020            INT22 = PGMSTAT("WSTXFR","WASTE")
0021            INT23 = PGMSTAT("350BATCH","A350")
0022            INT24 = PGMSTAT("FEEDBATCH","FEED")
0023            INT25 = PGMSTAT("CA1BATCH","CA1")
0024            INT26 = PGMSTAT("PB1BATCH","PB1")
0025            INT27 = PGMSTAT("PB2BATCH","PB2")
0026            INT28 = PGMSTAT("EA1BATCH","EA1")
0027            INT29 = PGMSTAT("EC1BATCH","EC1")
0028            INT30 = PGMSTAT("RWBATCH","RWATER")
0029            INT31 = PGMSTAT("URWBATCH","URW")
0030            INT32 = PGMSTAT("VENTBATCH","VVENT")
0031            INT33 = PGMSTAT("PCBATCH","PC")
0032            INT34 = PGMSTAT("IXBATCH","IX")
0033            INT35 = PGMSTAT("SCBATCH","SC")
0034            INT36 = PGMSTAT("BASINBAT","BASINS")
0035            INT37 = PGMSTAT("UTILBATCH","UTIL")
0036            INT38 = PGMSTAT("AMUBATCH","AMU")
0037            INT39 = PGMSTAT("LERFBATCH","LERF")
        ;
        ;                  PGRAPHIC                    PSTAT
        ;               --------------          -------------------
        ;               0 = ______
        ;               1 = RUNNING             1       000000000001
        ;               2 = TRAPPED             2       000000000010
        ;               3 = CRITICAL            4       000000000100
        ;               4 = WAIT                8       000000001000
        ;               5 = WAITUNTIL           4096    100000000000
        ;               6 = NOT RUNNING         0       000000000000
        ;               7 = NO STATUS
        ;
0038            ASSIGN PGRAPHIC = INT0
0039            ASSIGN PSTAT = INT20
0040            TRIP = 0                                        ; Initialize TRIP
0041            FTRIP1 = 0
        ;
0042            FOR ILOOP = 0 TO 19
0043            BVAL = 1                                        ; 1 = 1 = RUNNING
0044            REMAIN = 0
        ;
```

```
111   0045          FOR INDEX = 1 TO 4                          ; 2 = 2 = TRAPPED
112   0047          IF AND(BVAL,PSTAT)THEN REMAIN = INDEX       ; 4 = 3 = CRITICAL
113   0048          BVAL = BVAL ( 1                             ; 8 = 4 = WAIT
114   0049          NEXT INDEX
115           ;
116   0050          IF PSTAT = -1 THEN                          ; -1 = 6 = NOTRUNNING
117                    BEGIN
118   0051             FTRIP1 = 1
119   0052             PGRAPHIC = 6
120                    END
121                 ELSE
122                    BEGIN
123   0053             PGRAPHIC = REMAIN                        ; set SED value
124   0055             IF AND(PSTAT,4096)THEN PGRAPHIC = 5      ; 4096 = 5 = WAITUNTIL
125                    END
126   0056          TRIP = OR(TRIP,PSTAT)                       ; Accumulate for all pgms
127   0057          STEP PGRAPHIC BY 1
128   0058          STEP PSTAT BY 1
129   0059          NEXT ILOOP
130           ;
131           ;
132           ;              TRIP   = TRAPPED
133           ;              FTRIP1 = NOTRUNNING
134           ;              FTRIP2 = FLAG FROM DOGO
135           ;              FTRIP4 = FAULT
136           ;
137
138                 BEGIN
139   0061          IF AND(AUDALARMO:DEV_DFLG,1)THEN FTRIP4 = 1  ; IF AUDALARMO IN FAULT
140   0062            ELSE FTRIP4 = 0
141   0063          FTRIP0 = OR(FTRIP1,FTRIP4)                  ; IF FAULT OR NOTRUNNING
142   0064          FSPAR0 = AND(TRIP,2)                        ; IF ONE PGM TRAPPED
143   0065          FTRIP0 = OR(FTRIP0,FSPAR0)                  ; TOTAL ALL
144   0067          IF OR(FTRIP0,FTRIP2)THEN LAMP 0,48,3
145   0068             ELSE LAMP 0,48,0
146                 END
147   0069          GOTO AGAIN
148           ;
149           ;
150           ;
151           ;=================================================================
152           ;              SUBROUTINES
153           ;
154           ERRSUB:
155           ;
156           ; errors are handled differently depending on their severity
157           ;
158           ;  19    PROGRAM ALREADY IN KICK SUBROUTINE (rekick)
159           ;  32    UNDEFINED COMMUNICATIONS PACKET TYPE (ignore)
160           ;  41   PCM DB HEADER NOT LOADED  (ignore)
161           ;  69   IPN NOT DEFINED (ignore)
162           ;  162  NO SUCH PROGRAM IN THIS PCM (ignore)
163           ;  165   SEQUENCE PROGRAM ALREADY RUNNING (ignore)
164           ;  170   SERIAL NUMBER MISMATCH (wait forever)
165           ;  179  ILLEGAL SUBROUTINE STACK CLEAR (ignore)
```

```
            ;  187   BACKUP PCM IS DOWN (ignore)
            ;  193   NO SUCH PROGRAM IN THIS PCM (ignore)
            ;  198   ILLEGAL SUBROUTINE STACK NESTING ERROR (ignore)
            ;  199   ILLEGAL RDF NAME (wait forever)
            ;  200   RDF NOT LOADED IN MEMORY (wait forever)
            ;  201  RECIPE LOAD NOT ENABLED (wait forever)
            ;  222  BOARDS DEAD (ignore)
            ;  226   BOARD ERROR E.G. broken skid panel etc...  (ignore)
            ;  245   BOTH PCMS DOWN, SENT REDUNDANT HIGHWAY ACCESS (ignore)
            ;
     0070            ERRN = ABS(ERRNUM())      ; get error number
     0071            ERRL = ERRLIN()           ; get error line number
     0072            TIMERON STMR0
     0073            TIMERCLR STMR0
     0074             FSPAR5 = 1
            ;
            ; if error is not serious, clear and return to program
            ;
     0075            IF (ERRN=187) ¦ (ERRN=32) ¦ (ERRN=69) ¦ (ERRN=222) THEN
     0076                ERSRET

     0077            IF (ERRN=41) ¦ (ERRN=165) ¦ (ERRN=162) ¦ (ERRN=179) THEN
     0078                ERSRET

     0079            IF (ERRN=226) ¦ (ERRN=198) ¦ (ERRN=245) THEN
     0080                ERSRET

     0081            IF (ERRN=193) ¦ (ERRN=19) THEN
     0082                ERSRET

            ; else report the error, and wait for corrective action ....
     0083            PRINT 0,"ERROR NUMBER %i AT LINE %i ***",ERRN,ERRL

     0084            ERSCLR
     0085            GOTO AGAIN                        ; when corrective action taken,
                                                      ; goto done and cleanup
            ;
            ;=================================================================
            ;
            ;
     0086   TERM:    ASSIGN PGRAPHIC = INT1
     0087            FOR ILOOP = 1 TO 20
     0088            PGRAPHIC = 7
     0089            STEP PGRAPHIC BY 1
     0090            NEXT ILOOP
                     END

Total Errors Detected      0     Total Warnings      0
     Sequence Program Size = 2032 Bytes, 127 Pages
          1 Forward Reference(s)
```

WHITE1

```
;       W H I T E 1 . S E Q                                     VERSION 11
;
;       Function:       Drives WHITE ALARM SUMMARY PAGES,
;                       Graphic numbers 100 - 102.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]WHITE1
;
;       UNIT = 0, SKDKEY = 60
;
;       Assoc. UPF:     [300,1]_TOTAL1.___      TOTAL1.LST
;       Assoc. RPF:     [300,1]_ALL1.___        ALL1.LST
;       SDB:            [300,1]PCM1ASDB.___     PCM1ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ----------------------------------------
;       PTYPE     FDSn          Alarm inhibit status
;       PREV      FRVn          Alarm condition or setpoint
;       PSTAT     FXn           Current signal status
;       PALARM    FALn          Previous alarm condition
;
; MODIFICATION LOG:
;
;       12-SEP-92       Changed LI-C100-2 to LI-C100-1 and alarm  M. Teats
;                       level from 0.95 to 0.98
;
;       16-SEP-92       Deleted DDI-CA1-1 alarms (96+97)          M. Teats
;
;       02-DEC-92       - Corrected AMU strings                         M. Teats
;                       - Modified PI-RW-2 alarms
;                       - Added comments
;
;       09-DEC-92       Changed FIC-EC3-1 LO alarm from 140 to 50       M. Teats
;
;       29-DEC-92       Corrected white alarm level on II-AS-1          M. Teats
;
;       13-FEB-93       Added LERF gate white alarms:                   M. Teats
;                               ZS-105PS1       (171)
;                               ZS-105PS2       (172)
;
;       01-APR-93       Changed FRV128 (YS-A-C100) and FRV129           M. Teats
;                       (YS-P-C100) from 1 to 0 so the alarm occurs
;                       on shutdown.  Also changed strings for labels
;                       S128: and S129: from "...CONFIRM ON " to
;                       "...SHUTDOWN ".
;
;       04-APR-93       Reinstated white alarms on AW and AN pump       M. Teats
;                       pump shutdown (YS-) signals, and on AP pump
;                       MCC status (YS-) signals.
```

```
56          ;
57          ;-mct1+  13-MAY-93        Remove AW pump shutdown DEV white alarms,        M. Teats
58          ;                         which are based on the analog signals,
59          ;                         since they are not needed due to the 4/4/93
60          ;                         mods.  See CCN# 93MAY13-01.
61          ;
62          ;-mct2+  13-MAY-93        Remove AN pump shutdown DEV white alarms,        M. Teats
63          ;                         which are based on the analog signals,
64          ;                         since they are not needed due to the 4/4/93
65          ;                         mods.  See CCN# 93MAY13-01.
66          ;
67          ;-mct3+  14-MAY-93        Corrected typo on FDS36 and FX36 from            M. Teats
68          ;                         PSH-APFL1 to FXS-DR712.  Added FRV11, 17,
69          ;                         and 18 = 1 to get "MCC OFF" alarm for AP
70          ;                         pumps 103, 108, and 102M.  See CCN# 93MAY14-01.
71          ;
72          ;                 Summary To Date Of Deletions:
73          ;                    Deleted Points:  47-50, 80-83
74          ;                    Deleted alarms:  85-89, 93, 95, 96-97, 147, 118,
75          ;                         120, 122-125, 127, 134, 137, 141-142
76          ;                    Deleted DEV white alarms:  53-59 (AN pumps) -mct2-
77          ;                    Deleted DEV white alarms:  70-75 (AW pumps) -mct1-
78          ;
79          ;-mct4+ 19-MAY-93         Added YS-P-42, YS-P-43, YS-P-44 (173-175)        M. Teats
80          ;                         per CCN# 93MAY19-02.
81          ;
82          ;        10-JUN-93        Added comments and baselined for          M. Teats
83          ;                         D/3 version 3.3.  CCN# 93JUN01-01.
84          ;
85          ;-mct5+ 12-JAN-94         Deleted YS-AW102 per CCN# 94JAN12-01.            M. Teats
86          ;                         and deleted II-P-C100
87          ;
88          ;        01-AUG-94        Added White Alarm for PDI-CA1-3 per              J.F. Berger
89          ;                         EE-94-00019.
90          ;
91          ;        15-DEC-94        Revised header to indicate the new VMS            J. Berger
92          ;                         system. Rebaselined document. Removed
93          ;                         obsolite Select() statement.
94          ;
95          ;        30-MAR-95        Revised White1 to incorporate EPNs for            J. Berger
96          ;                         the PC Recycle System. YS-P-C106, HV-CA1-10.
97          ;                         Per ECN 620390 and WP EE-95-00036. (JFB01)
98          ;
99          ;        10-APR-95        Revised to remove LERF gate alarms, ZS-105PS1     J. Berger
100         ;                         and ZS-105PS2. See ECN 620391 and WP EE-95-
101         ;                         00006. (JFB02)
102         ;
103         ;        27-APR-95        Deleted YS-P-C100 from white alarm list           J. Berger
104         ;                         See WP EE-95-00006 and ECN 622499.
105         ;
106         ;        15-MAY-95        Deleted the GROUT signals from the Whtie          J. Berger
107         ;                         alarms. See EE-95-00126 and ECN 620366. jfb03
108         ;
109         ;        03-OCT-95        Deleted EPN PSL-EA1-1 per ECN 623939 &            J. Berger
110         ;                         EE-95-00006. JFB04
```

```
111             ;
112             ;       27-DEC-95       Deleted PSH-FP per ECN 627413 and                J. Berger
113             ;                       package MCS-96-001.  JFB05
114             ;
115             ;
116             ;  END MOD LOG
117             ;
118             UNIT    WHOLE1
119                     COMMON WHOLE0
120             ;
121                     NXTGRA == PDATE
122                     NXTMSG == PTIME
123                     NXTINT == PEPN
124                     NXTLSG == PALM
125                     PLRGSG == PTRIP
126                     STPPER == WHITE
127             ;
128     0000            ASSIGN PGRAFX = GRAFX0
129     0001            ASSIGN PMESSG = MSSG0
130     0002            ASSIGN PDSABL = LSG0
131     0003            ASSIGN PLINE = LINE0
132     0004            FOR ILOOP = 0 TO 46
133     0005             PGRAFX = 0
134     0006             PMESSG = "  "
135     0007             PDSABL = "  "
136     0008             PLINE =  0
137     0009            STEP PGRAFX BY 1
138     0010            STEP PMESSG BY 1
139     0011            STEP PDSABL BY 1
140     0012            STEP PLINE  BY 1
141     0013            NEXT ILOOP
142             ;
143     0014            ERRN = 0
144     0015            ERRL = 0
145             ;
146     0016            LSG47 = " "
147     0017            MSSG47 = " "
148     0018            INT47 = 0
149     0019            GRAF47 = 0
150             ;
151             ;       B E G I N   I N I T I A L I Z I N G :
152             ;
153     0020            ASSIGN PSTAT = FX1
154     0021            ASSIGN PALARM = FAL1
155     0022            ASSIGN PREV = FRV1
156     0023            ASSIGN PTYPE = FDS1
157     0024            ASSIGN PLINE = INT1
158     0025            FOR ILOOP = 1 TO 177            ;  JFB01
159     0026             PSTAT =  0
160     0027             PALARM = 0
161     0028             PREV =   0
162     0029             PTYPE =  1
163     0030             PLINE = 0
164     0031            STEP PSTAT BY 1
165     0032            STEP PALARM BY 1
```

```
166  0033          STEP PREV BY 1
167  0034          STEP PTYPE BY 1
168  0035          STEP PLINE BY 1
169  0036          NEXT ILOOP
170          ;
171  0037          NOP
172          ;
173          ;     FRV8  = 1
174  0038          FRV9  = 1        ; YS-AP-101
175  0039          FRV10 = 1        ; YS-AP-102
176  0040          FRV11 = 1        ; YS-AP-103 -mct3+
177  0041          FRV12 = 0
178  0042          FRV13 = 1        ; YS-AP-104
179  0043          FRV14 = 1        ; YS-AP-105
180  0044          FRV15 = 1        ; YS-AP-106
181  0045          FRV16 = 1        ; YS-AP-107
182  0046          FRV17 = 1        ; YS-AP-108 -mct3+
183          ;     FRV18 = 1        ; YS-AP102M -mct3+  jfb03
184  0047          FRV39 = 0
185                ;
186                ;  deleted YS-AY-101, -102, and YS-AZ-101, -102: 47-50
187                ;
188          ;-mct2-  FRV53 = 1
189          ;     FRV54 = 1
190          ;     FRV55 = 1
191          ;     FRV56 = 1
192          ;     FRV57 = 1
193          ;     FRV58 = 1
194          ;-mct2-  FRV59 = 1
195  0048          FRV60 = 1
196  0049          FRV61 = 1
197  0050          FRV62 = 1
198  0051          FRV63 = 1
199  0052          FRV64 = 1
200  0053          FRV65 = 1
201  0054          FRV66 = 1
202  0055          FRV67 = 1
203          ;     FRV68 = 1                jfb03
204          ;     FRV69 = 1                jfb03
205          ;-mct1-  FRV70 = 1
206          ;     FRV71 = 1
207          ;     FRV72 = 1
208          ;     FRV73 = 1
209          ;     FRV74 = 1
210          ;-mct1-  FRV75 = 1
211  0056          FRV76 = 1
212  0057          FRV77 = 1
213  0058          FRV78 = 1
214  0059          FRV79 = 1
215  0060          ASSIGN PREV = FRV85      ; jfb05
216  0061          FOR ILOOP = 85 TO 126
217  0062          PREV = 1
218  0063          STEP PREV BY 1
219  0064          NEXT ILOOP
220  0065          FRV100 = 1
```

```
                ;       FRV102 = 0                  ; jfb04
        0066            FRV103 = 1
        0067            FRV104 = 1
        0068            FRV112 = 0
        0069            FRV113 = 0
        0070            FRV114 = 0
        0071            FRV117 = 1
                ;       FRV119 = 1                  ; jfb03
        0072            FRV121 = 1
        0073            FRV128 = 0
                ;       FRV129 = 0                  ; JFB03
        0074            FRV130 = 1
        0075            FRV133 = 0
        0076            FRV135 = 1
                ;       FRV136 = 1                  ; commented out, -mct5+
        0077            FRV137 = 1
                ;       FRV140 = 1
        0078            ASSIGN PREV = FRV145
        0079            FOR ILOOP = 145 TO 155
        0080            PREV = 1
        0081            STEP PREV BY 1
        0082            NEXT ILOOP
        0083            FRV143 = 0                  ; YS-CPE1-1
        0084            FRV144 = 0                  ; YS-CPE2-1
        0085            FRV156 = 1                  ; YS-A-E101
        0086            FRV157 = 1                  ; YS-P-E101
        0087            FRV158 = 1                  ; YS-A-E102
        0088            FRV159 = 1                  ; YS-P-E102
        0089            FRV160 = 1                  ; YS-A-E104
        0090            FRV161 = 1                  ; YS-P-E104
        0091            FRV162 = 1
        0092            FRV163 = 1                  ; TI-E101-2
        0093            FRV164 = 1                  ; WFI-E101 LOLO
        0094            FRV165 = 1                  ; WFI-E101 LO
        0095            FRV166 = 1                  ; WFI-E102 LOLO
        0096            FRV167 = 1                  ; WFI-E102 LO
        0097            FRV168 = 1                  ; TI-E104-2 HI
        0098            FRV169 = 1                  ; WFI-E104 LOLO
        0099            FRV170 = 1                  ; WFI-E104 LO
        0100            FRV173 = 1                  ; YS-P-42  +mct4-
        0101            FRV174 = 1                  ; YS-P-43  +mct4-
        0102            FRV175 = 1                  ; YS-P-44  +mct4-
        0103            FRV176 = 0                  ; YS-P-C106  JFB01
        0104            FRV177 = 1                  ; HV-CA1-10  JFB01
        0105            FTRIP0 = 0
        0106            ON ERROR GOSUB ERRSUB
        0107            IN4 = 0
        0108            ASSIGN PGRAFX = FSPAR0
        0109            ASSIGN PMESSG = FSPAR1
        0110            ASSIGN PDSABL = FSPAR2
        0111            ASSIGN PLINE =  FSPAR3
                ;
                ;       E N D   I N I T I A L I Z I N G
                ;
                ;       B E G I N   P R O G R A M   L O O P :
```

```
                ;
0112            AGAIN:   WAIT 3                          ; Go get alarm status for all
                ;        WAITUNTIL SELECT()              ; Wait until micro selected
0113                     IF (FSPARO) THEN                ; If alarm flag is set
0114                        IF STMRO > 60 THEN           ; If alarm flag active for 1 minute
                               BEGIN                     ; Reset timer and turn off flag
0115                           TIMEROFF STMRO
0116                           TIMERCLR STMRO
0117                           FSPARO = 0
0118                           ERRN = 0
0119                           ERRL = 0
                               END
0120                     SORT = PGMSTAT("PGM1A","BLANK1")
0121                     REMAIN = 0
0122                     BITVAL = 1
0123                      FOR INDEX = 1 TO 4
0125                      IF AND(BITVAL,SORT) THEN REMAIN = INDEX
0126                      BITVAL = BITVAL ( 1
0127                      NEXT INDEX
0129                     IF SORT = -1 THEN INO = 6
                          ELSE
                           BEGIN
0130                       INO = REMAIN
0132                       IF AND(SORT,4096) THEN INO = 5
                           END
0133                     IF FTRIPO THEN
                           BEGIN
0134                       LAMP ADI,60,0
0135                       FTRIPO = 0
                           END
                        ;
                        ;  DETERMINE INHIBITED STATUS, (PTYPE = FDSn = 1 IF INHA):
                        ;
0136                     FDS1 = AND('YS-AN-101':DIN_ALMCT,16)      ; 1
0137                     FDS2 = AND('YS-AN-102':DIN_ALMCT,16)      ; 2
0138                     FDS3 = AND('YS-AN-103':DIN_ALMCT,16)      ; 3
0139                     FDS4 = AND('YS-AN-104':DIN_ALMCT,16)      ; 4
0140                     FDS5 = AND('YS-AN-105':DIN_ALMCT,16)      ; 5
0141                     FDS6 = AND('YS-AN-106':DIN_ALMCT,16)      ; 6
0142                     FDS7 = AND('YS-AN-107':DIN_ALMCT,16)      ; 7
0143                     FDS8 = AND('TXS-AN-2':DIN_ALMCT,16)       ; 8
0144                     FDS9 = AND('YS-AP-101':DIN_ALMCT,16)      ; 9
0145                     FDS10 = AND('YS-AP-102':DIN_ALMCT,16)     ; 10
0146                     FDS11 = AND('YS-AP-103':DIN_ALMCT,16)     ; 11
0147                     FDS12 = AND('LDS-AP03D':DIN_ALMCT,16)     ; 12
0148                     FDS13 = AND('YS-AP-104':DIN_ALMCT,16)     ; 13
0149                     FDS14 = AND('YS-AP-105':DIN_ALMCT,16)     ; 14
0150                     FDS15 = AND('YS-AP-106':DIN_ALMCT,16)     ; 15
0151                     FDS16 = AND('YS-AP-107':DIN_ALMCT,16)     ; 16
0152                     FDS17 = AND('YS-AP-108':DIN_ALMCT,16)     ; 17
                ;        FDS18 = AND('YS-AP102M':DIN_ALMCT,16)     ; 18  jfb03
                ;        FDS19 = AND('PSHAP102M':DIN_ALMCT,16)     ; 19  jfb03
                ;        FDS20 = AND('PSLAP102M':DIN_ALMCT,16)     ; 20  jfb03
                ;        FDS21 = AND('YS-AP102R':DIN_ALMCT,16)     ; 21  jfb03
                ;        FDS22 = AND('WSHAP102M':DIN_ALMCT,16)     ; 22  jfb03
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```
331          ;        FDS23 = AND('TSHAP102M':DIN_ALMCT,16)     ; 23  jfb03
332          ;        FDS24 = AND('VSHAP102M':DIN_ALMCT,16)     ; 24  jfb03
333   0153           FDS25 = AND('TXS-AP-2':DIN_ALMCT,16)      ; 25
334   0154           FDS26 = AND('FSLAP2711':DIN_ALMCT,16)     ; 26
335   0155           FDS27 = AND('PSH-APFP1':DIN_ALMCT,16)     ; 27
336   0156           FDS28 = AND('ZS-AP-FP1':DIN_ALMCT,16)     ; 28
337   0157           FDS29 = AND('FSL-APK13':DIN_ALMCT,16)     ; 29
338   0158           FDS30 = AND('FSL-APK12':DIN_ALMCT,16)     ; 30
339   0159           FDS31 = AND('FSL-APK11':DIN_ALMCT,16)     ; 31
340   0160           FDS32 = AND('FSL-APK23':DIN_ALMCT,16)     ; 32
341   0161           FDS33 = AND('FSL-APK22':DIN_ALMCT,16)     ; 33
342   0162           FDS34 = AND('FSL-APK21':DIN_ALMCT,16)     ; 34
343   0163           FDS35 = AND('FSH-DR712':DIN_ALMCT,16)     ; 35
344   0164           FDS36 = AND('FXS-DR712':DIN_ALMCT,16)    ; 36 -mct3+
345   0165           FDS37 = AND('PSH-APFL1':DIN_ALMCT,16)     ; 37
346   0166           FDS38 = AND('ZS-AP-DR1':DIN_ALMCT,16)     ; 38
347   0167           FDS39 = AND('ZS-AP-FL1':DIN_ALMCT,16)     ; 39
348   0168           FDS40 = AND('YS-AW-101':DIN_ALMCT,16)     ; 40
349   0169           FDS41 = AND('YS-AW102':DIN_ALMCT,16)      ; 41
350   0170           FDS42 = AND('YS-AW-103':DIN_ALMCT,16)     ; 42
351   0171           FDS43 = AND('YS-AW-104':DIN_ALMCT,16)     ; 43
352   0172           FDS44 = AND('YS-AW-105':DIN_ALMCT,16)     ; 44
353   0173           FDS45 = AND('YS-AW-106':DIN_ALMCT,16)     ; 45
354   0174           FDS46 = AND('TXS-AW-2':DIN_ALMCT,16)      ; 46
355                  ;
356                  ;  deleted YS-AY-101, -102, and YS-AZ-101, -102: 47-50
357                  ;
358   0175           FDS51  = AND('LSH-AX-1':DIN_ALMCT,16)     ; 51
359   0176           FDS52  = AND('LSL-AX-1':DIN_ALMCT,16)     ; 52
360          ;-mct2- FDS53  = AND('P-AN-101':DEV_ALMCT,16)     ; 53
361          ;       FDS54  = AND('P-AN-102':DEV_ALMCT,16)     ; 54
362          ;       FDS55  = AND('P-AN-103':DEV_ALMCT,16)     ; 55
363          ;       FDS56  = AND('P-AN-104':DEV_ALMCT,16)     ; 56
364          ;       FDS57  = AND('P-AN-105':DEV_ALMCT,16)     ; 57
365          ;       FDS58  = AND('P-AN-106':DEV_ALMCT,16)     ; 58
366          ;-mct2- FDS59  = AND('P-AN-107':DEV_ALMCT,16)     ; 59
367   0177           FDS60  = AND('P-AP-101':DEV_ALMCT,16)     ; 60
368   0178           FDS61  = AND('P-AP-102':DEV_ALMCT,16)     ; 61
369   0179           FDS62  = AND('P-AP-103':DEV_ALMCT,16)     ; 62
370   0180           FDS63  = AND('P-AP-104':DEV_ALMCT,16)     ; 63
371   0181           FDS64  = AND('P-AP-105':DEV_ALMCT,16)     ; 64
372   0182           FDS65  = AND('P-AP-106':DEV_ALMCT,16)     ; 65
373   0183           FDS66  = AND('P-AP-107':DEV_ALMCT,16)     ; 66
374   0184           FDS67  = AND('P-AP-108':DEV_ALMCT,16)     ; 67
375          ;       FDS68  = AND('P-AP-102M':DEV_ALMCT,16)    ; 68  jfb03
376          ;       FDS69  = AND('P-AP-102R':DEV_ALMCT,16)    ; 69  jfb03
377          ;-mct1- FDS70  = AND('P-AW-101':DEV_ALMCT,16)     ; 70
378          ;       FDS71  = AND('P-AW-102':DEV_ALMCT,16)     ; 71
379          ;       FDS72  = AND('P-AW-103':DEV_ALMCT,16)     ; 72
380          ;       FDS73  = AND('P-AW-104':DEV_ALMCT,16)     ; 73
381          ;       FDS74  = AND('P-AW-105':DEV_ALMCT,16)     ; 74
382          ;-mct1- FDS75  = AND('P-AW-106':DEV_ALMCT,16)     ; 75
383   0185           FDS76  = AND('P-AY-101':DEV_ALMCT,16)     ; 76
384   0186           FDS77  = AND('P-AY-102':DEV_ALMCT,16)     ; 77
385   0187           FDS78  = AND('P-AZ-101':DEV_ALMCT,16)     ; 78
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386  0188          FDS79  = AND('P-AZ-102':DEV_ALMCT,16)    ; 79    ;JFB05
387        ;       FDS84  = AND('PSH-FP':DIN_ALMCT,16)      ; 84
388  0189          FDS90  = AND('TI-244-TK':AI_ALMCT,16)    ; 90
389  0190          FDS91  = AND('FI-244EXH':AI_ALMCT,16)    ; 91
390  0191          FDS92  = AND('FI-244EXH':AI_ALMCT,16)    ; 92
391  0192          FDS94  = AND('II-AW-102':AI_ALMCT,16)    ; 94
392        ;       FDS96  = AND('DDI-CA1-1':AI_ALMCT,16)    ; 96
393        ;       FDS97  = AND('DDI-CA1-1':AI_ALMCT,16)    ; 97
394  0193          FDS98  = AND('PDI-FH1-1':AI_ALMCT,16)    ; 98
395  0194          FDS99  = AND('PDI-FH2-1':AI_ALMCT,16)    ; 99
396  0195          FDS100 = AND('PDI-FH3-1':AI_ALMCT,16)    ; 100
397  0196          FDS101 = AND('SIC-PB2-1':AI_ALMCT,16)    ; 101
398        ;       FDS102 = AND('PSL-EA1-1':DIN_ALMCT,16)   ; 102 JFB04
399  0197          FDS103 = AND('PI-EA1-13':AI_ALMCT,16)    ; 103
400  0198          FDS104 = AND('PI-EA1-13':AI_ALMCT,16)    ; 104
401  0199          FDS105 = AND('FIC-EA1-1':AI_ALMCT,16)    ; 105
402  0200          FDS106 = AND('PI-EA1-1':AI_ALMCT,16)     ; 106
403  0201          FDS107 = AND('PI-EA1-1':AI_ALMCT,16)     ; 107
404  0202          FDS108 = AND('TI-EA1-5':AI_ALMCT,16)     ; 108
405  0203          FDS109 = AND('PI-EC1-5':AI_ALMCT,16)     ; 109
406  0204          FDS110 = AND('FIC-EC3-1':AI_ALMCT,16)    ; 110
407  0205          FDS111 = AND('TIC-EC1-2':AI_ALMCT,16)    ; 111
408  0206          FDS112 = AND('LDS-BFP-1':DIN_ALMCT,16)   ; 112
409  0207          FDS113 = AND('LSL-RWSMP':DIN_ALMCT,16)   ; 113
410  0208          FDS114 = AND('LDS-BFP-2':DIN_ALMCT,16)   ; 114
411  0209          FDS115 = AND('PDI-RW-1':AI_ALMCT,16)     ; 115
412  0210          FDS116 = AND('PDI-RW-2':AI_ALMCT,16)     ; 116
413  0211          FDS117 = AND('PI-RW-2':AI_ALMCT,16)      ; 117
414        ;       FDS118 = AND('PI-RW-2':AI_ALMCT,16)      ; 118
415  0212          FDS119 = AND('FIC-EC1-1':AI_ALMCT,16)    ; 119
416        ;       FDS120 = AND('FIC-EC1-1':AI_ALMCT,16)    ; 120
417  0213          FDS121 = AND('II-EXC-1':AI_ALMCT,16)     ; 121
418  0214          FDS126 = AND('II-AS-1':AI_ALMCT,16)      ; 126
419  0215          FDS128 = AND('YS-A-C100':DIN_ALMCT,16)   ; 128
420        ;       FDS129 = AND('YS-P-C100':DIN_ALMCT,16)   ; 129, JFB03
421  0216          FDS130 = AND('ZS-IDX-2':DIN_ALMCT,16)    ; 130
422  0217          FDS131 = AND('PSH-ILF-1':DIN_ALMCT,16)   ; 131
423  0218          FDS132 = AND('ZS-RC3-4':DIN_ALMCT,16)    ; 132
424  0219          FDS133 = AND('ZS-RC3-5':DIN_ALMCT,16)    ; 133
425  0220          FDS135 = AND('LI-C100-1':AI_ALMCT,16)    ; 135
426        ;       FDS136 = AND('II-P-C100':AI_ALMCT,16)    ; 136, commented out, -mct5+
427  0221          FDS137 = AND('PDI-CA1-3':AI_ALMCT,16)    ; 137
428  0222          FDS138 = AND('LSL-SC-1':DIN_ALMCT,16)    ; 138
429  0223          FDS139 = AND('LSL-SC-2':DIN_ALMCT,16)    ; 139
430  0224          FDS140 = AND('LSL-SC-3':DIN_ALMCT,16)    ; 140
431  0225          FDS143 = AND('YS-CPE1-1':DIN_ALMCT,16)   ; 143
432  0226          FDS144 = AND('YS-CPE2-1':DIN_ALMCT,16)   ; 144
433  0227          FDS145 = AND('PI-IA-1':AI_ALMCT,16)      ; 145
434  0228          FDS146 = AND('PI-IA-1':AI_ALMCT,16)      ; 146
435        ;       FDS147 = AND('PI-PA-1':AI_ALMCT,16)      ; 147
436  0229          FDS148 = AND('PI-PA-1':AI_ALMCT,16)      ; 148
437  0230          FDS149 = AND('TI-AMBS-1':AI_ALMCT,16)    ; 149
438  0231          FDS150 = AND('TI-AMBS-1':AI_ALMCT,16)    ; 150
439  0232          FDS151 = AND('TI-AMBS-1':AI_ALMCT,16)    ; 151
440  0233          FDS152 = AND('TI-AMBS-1':AI_ALMCT,16)    ; 152
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0234          FDS153 = AND('TI-AMBS-2':AI_ALMCT,16)     ; 153
0235          FDS154 = AND('TI-AMBS-2':AI_ALMCT,16)     ; 154
0236          FDS155 = AND('TI-AMBS-2':AI_ALMCT,16)     ; 155
0237          FDS156 = AND('TI-AMBS-2':AI_ALMCT,16)     ; 156
0238          FDS157 = AND('YS-A-E101':DIN_ALMCT,16)    ; 157
0239          FDS158 = AND('YS-P-E101':DIN_ALMCT,16)    ; 158
0240          FDS159 = AND('YS-A-E102':DIN_ALMCT,16)    ; 159
0241          FDS160 = AND('YS-P-E102':DIN_ALMCT,16)    ; 160
0242          FDS161 = AND('YS-A-E104':DIN_ALMCT,16)    ; 161
0243          FDS162 = AND('YS-P-E104':DIN_ALMCT,16)    ; 162
0244          FDS163 = AND('TI-E101-2':AI_ALMCT,16)     ; 163
0245          FDS164 = AND('WFI-E101':AI_ALMCT,16)      ; 164
0246          FDS165 = AND('WFI-E101':AI_ALMCT,16)      ; 165
0247          FDS166 = AND('WFI-E102':AI_ALMCT,16)      ; 166
0248          FDS167 = AND('WFI-E102':AI_ALMCT,16)      ; 167
0249          FDS168 = AND('TI-E104-2':AI_ALMCT,16)     ; 168
0250          FDS169 = AND('WFI-E104':AI_ALMCT,16)      ; 169
0251          FDS170 = AND('WFI-E104':AI_ALMCT,16)      ; 170
        ;     FDS171 = AND('ZS-105PS1':DIN_ALMCT,16)    ; 171  JFB02
        ;     FDS172 = AND('ZS-105PS2':DIN_ALMCT,16)    ; 172  JFB02
0252          FDS173 = AND('YS-P-42':DIN_ALMCT,16)      ; 173  +mct4-
0253          FDS174 = AND('YS-P-43':DIN_ALMCT,16)      ; 174  +mct4-
0254          FDS175 = AND('YS-P-44':DIN_ALMCT,16)      ; 175  +mct4-
0255          FDS176 = AND('YS-P-C106':DIN_ALMCT,16)    ; 176  JFB01
0256          FDS177 = AND('HV-CA1-10':DEV_ALMCT,16)    ; 177  JFB01
              ;
              ;  DETERMINE SIGNAL STATUS, PSTAT (FXn):
              ;
0257          FX1 = 'YS-AN-101':DIN_VAL        ; 1
0258          FX2 = 'YS-AN-102':DIN_VAL        ; 2
0259          FX3 = 'YS-AN-103':DIN_VAL        ; 3
0260          FX4 = 'YS-AN-104':DIN_VAL        ; 4
0261          FX5 = 'YS-AN-105':DIN_VAL        ; 5
0262          FX6 = 'YS-AN-106':DIN_VAL        ; 6
0263          FX7 = 'YS-AN-107':DIN_VAL        ; 7
0264          FX8 = 'TXS-AN-2':DIN_VAL ; 8
0265          FX9 = 'YS-AP-101':DIN_VAL        ; 9
0266          FX10 = 'YS-AP-102':DIN_VAL       ; 10
0267          FX11 = 'YS-AP-103':DIN_VAL       ; 11
0268          FX12 = 'LDS-AP03D':DIN_VAL       ; 12
0269          FX13 = 'YS-AP-104':DIN_VAL       ; 13
0270          FX14 = 'YS-AP-105':DIN_VAL       ; 14
0271          FX15 = 'YS-AP-106':DIN_VAL       ; 15
0272          FX16 = 'YS-AP-107':DIN_VAL       ; 16
0273          FX17 = 'YS-AP-108':DIN_VAL       ; 17
        ;     FX18 = 'YS-AP102M':DIN_VAL       ; 18  jfb03
        ;     FX19 = 'PSHAP102M':DIN_VAL       ; 19  jfb03
        ;     FX20 = 'PSLAP102M':DIN_VAL       ; 20  jfb03
        ;     FX21 = 'YS-AP102R':DIN_VAL       ; 21  jfb03
        ;     FX22 = 'WSHAP102M':DIN_VAL       ; 22  jfb03
        ;     FX23 = 'TSHAP102M':DIN_VAL       ; 23  jfb03
        ;     FX24 = 'VSHAP102M':DIN_VAL       ; 24  jfb03
0274          FX25 = 'TXS-AP-2':DIN_VAL        ; 25
0275          FX26 = 'FSLAP2711':DIN_VAL       ; 26
0276          FX27 = 'PSH-APFP1':DIN_VAL       ; 27
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496   0277          FX28 = 'ZS-AP-FP1':DIN_VAL        ; 28
497   0278          FX29 = 'FSL-APK13':DIN_VAL        ; 29
498   0279          FX30 = 'FSL-APK12':DIN_VAL        ; 30
499   0280          FX31 = 'FSL-APK11':DIN_VAL        ; 31
500   0281          FX32 = 'FSL-APK23':DIN_VAL        ; 32
501   0282          FX33 = 'FSL-APK22':DIN_VAL        ; 33
502   0283          FX34 = 'FSL-APK21':DIN_VAL        ; 34
503   0284          FX35 = 'FSH-DR712':DIN_VAL        ; 35
504   0285          FX36 = 'FXS-DR712':DIN_VAL        ; 36 -mct3+
505   0286          FX37 = 'PSH-APFL1':DIN_VAL        ; 37
506   0287          FX38 = 'ZS-AP-DR1':DIN_VAL        ; 38
507   0288          FX39 = 'ZS-AP-FL1':DIN_VAL        ; 39
508   0289          FX40 = 'YS-AW-101':DIN_VAL        ; 40
509   0290          FX41 = 1                          ; 41 -mct5+
510   0291          FX42 = 'YS-AW-103':DIN_VAL        ; 42
511   0292          FX43 = 'YS-AW-104':DIN_VAL        ; 43
512   0293          FX44 = 'YS-AW-105':DIN_VAL        ; 44
513   0294          FX45 = 'YS-AW-106':DIN_VAL        ; 45
514   0295          FX46 = 'TXS-AW-2':DIN_VAL         ; 46
515                 ;
516                 ;  deleted YS-AY-101, -102, and YS-AZ-101, -102: 47-50
517                 ;
518   0296          FX51  = 'LSH-AX-1':DIN_VAL                ; 51
519   0297          FX52  = 'LSL-AX-1':DIN_VAL                ; 52
520         ;-mct2- FX53  = AND('P-AN-101':DEV_STAT,16)       ; 53
521         ;       FX54  = AND('P-AN-102':DEV_STAT,16)       ; 54
522         ;       FX55  = AND('P-AN-103':DEV_STAT,16)       ; 55
523         ;       FX56  = AND('P-AN-104':DEV_STAT,16)       ; 56
524         ;       FX57  = AND('P-AN-105':DEV_STAT,16)       ; 57
525         ;       FX58  = AND('P-AN-106':DEV_STAT,16)       ; 58
526         ;-mct2- FX59  = AND('P-AN-107':DEV_STAT,16)       ; 59
527   0298          FX60  = AND('P-AP-101':DEV_STAT,16)       ; 60
528   0299          FX61  = AND('P-AP-102':DEV_STAT,16)       ; 61
529   0300          FX62  = AND('P-AP-103':DEV_STAT,16)       ; 62
530   0301          FX63  = AND('P-AP-104':DEV_STAT,16)       ; 63
531   0302          FX64  = AND('P-AP-105':DEV_STAT,16)       ; 64
532   0303          FX65  = AND('P-AP-106':DEV_STAT,16)       ; 65
533   0304          FX66  = AND('P-AP-107':DEV_STAT,16)       ; 66
534   0305          FX67  = AND('P-AP-108':DEV_STAT,16)       ; 67
535         ;       FX68  = AND('P-AP-102M':DEV_STAT,16)      ; 68  jfb03
536         ;       FX69  = AND('P-AP-102R':DEV_STAT,16)      ; 69  jfb03
537         ;-mct1- FX70  = AND('P-AW-101':DEV_STAT,16)       ; 70
538         ;       FX71  = AND('P-AW-102':DEV_STAT,16)       ; 71
539         ;       FX72  = AND('P-AW-103':DEV_STAT,16)       ; 72
540         ;       FX73  = AND('P-AW-104':DEV_STAT,16)       ; 73
541         ;       FX74  = AND('P-AW-105':DEV_STAT,16)       ; 74
542         ;-mct1- FX75  = AND('P-AW-106':DEV_STAT,16)       ; 75
543   0306          FX76  = AND('P-AY-101':DEV_STAT,16)       ; 76
544   0307          FX77  = AND('P-AY-102':DEV_STAT,16)       ; 77
545   0308          FX78  = AND('P-AZ-101':DEV_STAT,16)       ; 78
546   0309          FX79  = AND('P-AZ-102':DEV_STAT,16)       ; 79
547         ;       FX84  = 'PSH-FP':DIN_VAL          ; 84    JFB05
548         ;
549   0310          IF FX90  = 0 THEN
550   0312          IF 'TI-244-TK':AI_MEAS >= 200.0 THEN FX90  =  1          ; 90
```

```
0313            ELSE FX90  = 0
0315            ELSE IF 'TI-244-TK':AI_MEAS <=  200.0 - 'TI-244-TK':AI_DEAD THEN FX90  =  0
          ;
0316            IF FX91  = 0 THEN
0318            IF 'FI-244EXH':AI_MEAS <= 100.0 THEN FX91  =  1           ; 91
0319            ELSE FX91  = 0
0321            ELSE IF 'FI-244EXH':AI_MEAS >=  100.0 +  'FI-244EXH':AI_DEAD THEN FX91  =  0
          ;
0322            IF FX92  = 0 THEN
0324            IF 'FI-244EXH':AI_MEAS >= 200.0 THEN FX92  =  1           ; 92
0325            ELSE FX92  = 0
0327            ELSE IF 'FI-244EXH':AI_MEAS <=  200.0 - 'FI-244EXH':AI_DEAD THEN FX92  =  0
          ;
0328            IF FX94  = 0 THEN
0330            IF 'II-AW-102':AI_MEAS <= 12.0 THEN FX94  =  1            ; 94
0331            ELSE FX94  = 0
0333            ELSE IF 'II-AW-102':AI_MEAS >=  12.0 + 'II-AW-102':AI_DEAD THEN FX94  =  0
          ;
          ;     IF FX95  = 0 THEN
          ;     IF 'II-AW-102':AI_MEAS >= 25.0 THEN FX95  =  1            ; 95
          ;     ELSE FX95  = 0
          ;     ELSE IF 'II-AW-102':AI_MEAS <=  25.0 - 'II-AW-102':AI_DEAD THEN FX95  =  0
          ;
          ;     IF FX96  = 0 THEN
          ;     IF 'DDI-CA1-1':AI_MEAS <= -0.05 THEN FX96  =  1           ; 96
          ;     ELSE FX96  = 0
          ;     ELSE IF 'DDI-CA1-1':AI_MEAS >=  -0.05 + 'DDI-CA1-1':AI_DEAD THEN FX96  =  0
          ;
          ;     IF FX97  = 0 THEN
          ;     IF 'DDI-CA1-1':AI_MEAS >= +0.05 THEN FX97  =  1           ; 97
          ;     ELSE FX97  = 0
          ;     ELSE IF 'DDI-CA1-1':AI_MEAS <=  +0.05 - 'DDI-CA1-1':AI_DEAD THEN FX97  =  0
          ;
0334            IF FX98  = 0 THEN
0336            IF 'PDI-FH1-1':AI_MEAS >= 15.0 THEN FX98  =  1            ; 98
0337            ELSE FX98  = 0
0339            ELSE IF 'PDI-FH1-1':AI_MEAS <=  15.0 - 'PDI-FH1-1':AI_DEAD THEN FX98  =  0
          ;
0340            IF FX99  = 0 THEN
0342            IF 'PDI-FH2-1':AI_MEAS >= 15.0 THEN FX99  =  1            ; 99
0343            ELSE FX99  = 0
0345            ELSE IF 'PDI-FH2-1':AI_MEAS <=  15.0 - 'PDI-FH2-1':AI_DEAD THEN FX99  =  0
          ;
0346            IF FX100  = 0 THEN
0348            IF 'PDI-FH3-1':AI_MEAS >= 5.0 THEN FX100  =  1            ; 100
0349            ELSE FX100  = 0
0351            ELSE IF 'PDI-FH3-1':AI_MEAS <=  5.0 - 'PDI-FH3-1':AI_DEAD THEN FX100  =  0
          ;
0352            IF FX101  = 0 THEN
0354            IF 'SIC-PB2-1':AI_MEAS >= 95.0 THEN FX101  =  1           ; 101
0355            ELSE FX101  = 0
0357            ELSE IF 'SIC-PB2-1':AI_MEAS <=  95.0 - 'SIC-PB2-1':AI_DEAD THEN FX101  =  0
          ;
          ;     FX102 = 'PSL-EA1-1':DIN_VAL       ; 102 JFB04
          ;
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0358        IF FX103  = 0 THEN
0360        IF 'PI-EA1-13':AI_MEAS <= 75.0 THEN FX103  =  1          ; 103
0361        ELSE FX103  = 0
0363        ELSE IF 'PI-EA1-13':AI_MEAS >=  75.0 + 'PI-EA1-13':AI_DEAD THEN FX103  =  0
        ;
0364        IF FX104  = 0 THEN
0366        IF 'PI-EA1-13':AI_MEAS <= 80.0 THEN FX104  =  1          ; 104
0367        ELSE FX104  = 0
0369        ELSE IF 'PI-EA1-13':AI_MEAS >=  80.0 + 'PI-EA1-13':AI_DEAD THEN FX104  =  0
        ;
0370        IF FX105  = 0 THEN
0372        IF 'FIC-EA1-1':AI_MEAS <= 3000.0 THEN FX105  =  1 ; 105
0373        ELSE FX105  = 0
0375        ELSE IF 'FIC-EA1-1':AI_MEAS >=  3000.0 + 'FIC-EA1-14':AI_DEAD THEN FX105  =  0
        ;
0376        IF FX106  = 0 THEN
0378        IF 'PI-EA1-1':AI_MEAS <= 17.7 THEN FX106  =  1           ; 106
0379        ELSE FX106  = 0
0381        ELSE IF 'PI-EA1-1':AI_MEAS >=  17.7 + 'PI-EA1-1':AI_DEAD THEN FX106  =  0
        ;
0382        IF FX107  = 0 THEN
0384        IF 'PI-EA1-1':AI_MEAS >= 29.7 THEN FX107  =  1           ; 107
0385        ELSE FX107  = 0
0387        ELSE IF 'PI-EA1-1':AI_MEAS <=  29.7 - 'PI-EA1-1':AI_DEAD THEN FX107  =  0
        ;
0388        IF FX108  = 0 THEN
0390        IF 'TI-EA1-5':AI_MEAS >= 190.0 THEN FX108  =  1          ; 108
0391        ELSE FX108  = 0
0393        ELSE IF 'TI-EA1-5':AI_MEAS <=  190.0 - 'TI-EA1-5':AI_DEAD THEN FX108  =  0
        ;
0394        IF FX109  = 0 THEN
0396        IF 'PI-EC1-5':AI_MEAS >= 100.0 THEN FX109  =  1          ; 109
0397        ELSE FX109  = 0
0399        ELSE IF 'PI-EC1-5':AI_MEAS <=  100.0 - 'PI-EC1-5':AI_DEAD THEN FX109  =  0
        ;
0400        IF FX110  = 0 THEN
0402        IF 'FIC-EC3-1':AI_MEAS <= 50.0 THEN FX110  =  1          ; 110
0403        ELSE FX110  = 0
0405        ELSE IF 'FIC-EC3-1':AI_MEAS >=  50.0 + 'FIC-EC3-1':AI_DEAD THEN FX110  =  0
        ;
0406        IF FX111  = 0 THEN
0408        IF 'TIC-EC1-2':AI_MEAS >= 110.0 THEN FX111  =  1         ; 111
0409        ELSE FX111  = 0
0411        ELSE IF 'TIC-EC1-2':AI_MEAS <=  110.0 - 'TIC-EC1-2':AI_DEAD THEN FX111  =  0
        ;
0412        FX112 = 'LDS-BFP-1':DIN_VAL      ; 112
0413        FX113 = 'LSL-RWSMP':DIN_VAL      ; 113
0414        FX114 = 'LDS-BFP-2':DIN_VAL      ; 114
        ;
0415        IF FX115  = 0 THEN
0417        IF 'PDI-RW-1':AI_MEAS >= 13.0 THEN FX115  =  1           ; 115
0418        ELSE FX115  = 0
0420        ELSE IF 'PDI-RW-1':AI_MEAS <=  13.0 - 'PDI-RW-1':AI_DEAD THEN FX115  =  0
        ;
0421        IF FX116  = 0 THEN
```

```
661   0423          IF 'PDI-RW-2':AI_MEAS >= 13.0 THEN FX116  =  1            ; 116
662   0424          ELSE FX116  = 0
663   0426          ELSE IF 'PDI-RW-2':AI_MEAS <=  13.0 - 'PDI-RW-2':AI_DEAD THEN FX116  =  0
664         ;
665   0427          IF FX117  = 0 THEN
666   0429          IF 'PI-RW-2':AI_MEAS <= 60.0 THEN FX117  =  1              ; 117
667   0430          ELSE FX117  = 0
668   0432          ELSE IF 'PI-RW-2':AI_MEAS >=  60.0 + 'PI-RW-2':AI_DEAD THEN FX117  =  0
669         ;
670         ;       IF FX118  = 0 THEN
671         ;       IF 'PI-RW-2':AI_MEAS >= 160.0 THEN FX118  =  1             ; 118
672         ;       ELSE FX118  = 0
673         ;       ELSE IF 'PI-RW-2':AI_MEAS <=  160.0 - 'PI-RW-2':AI_DEAD THEN FX118  =  0
674         ;
675   0433          IF FX119  = 0 THEN
676   0435          IF 'FIC-EC1-1':AI_MEAS <= 1200.0 THEN FX119  =  1 ; 119
677   0436          ELSE FX119  = 0
678   0438          ELSE IF 'FIC-EC1-1':AI_MEAS >=  1200.0 + 'FIC-EC1-1':AI_DEAD THEN FX119  =  0
679         ;
680         ;       IF FX120  = 0 THEN
681         ;       IF 'FIC-EC1-1':AI_MEAS >= 2800.0 THEN FX120  =  1 ; 120
682         ;       ELSE FX120  = 0
683         ;       ELSE IF 'FIC-EC1-1':AI_MEAS <=  2800.0 - 'FIC-EC1-1':AI_DEAD THEN FX120  =  0
684         ;
685   0439          IF FX121  = 0 THEN
686   0441          IF 'II-EXC-1':AI_MEAS <= 1.0 THEN FX121  =  1              ; 121
687   0442          ELSE FX121  = 0
688   0444          ELSE IF 'II-EXC-1':AI_MEAS >=  1.0 + 'II-EXC-1':AI_DEAD THEN FX121  =  0
689         ;
690   0445          IF FX126  = 0 THEN
691   0447          IF 'II-AS-1':AI_MEAS <= 2.0 THEN FX126  =  1               ; 126
692   0448          ELSE FX126  = 0
693   0450          ELSE IF 'II-AS-1':AI_MEAS >=  2.0 + 'II-AS-1':AI_DEAD THEN FX126  =  0
694         ;
695   0451          FX128 = 'YS-A-C100':DIN_VAL       ; 128
696         ;       FX129 = 'YS-P-C100':DIN_VAL       ; 129  JFB03
697   0452          FX130 = 'ZS-IDX-2':DIN_VAL        ; 130
698   0453          FX131 = 'PSH-ILF-1':DIN_VAL       ; 131
699   0454          FX132 = 'ZS-RC3-4':DIN_VAL        ; 132
700   0455          FX133 = 'ZS-RC3-5':DIN_VAL        ; 133
701         ;
702   0456          IF FX135  = 0 THEN
703   0458          IF 'LI-C100-1':AI_MEAS <= 0.98 THEN FX135  =  1            ; 135
704   0459          ELSE FX135  = 0
705   0461          ELSE IF 'LI-C100-1':AI_MEAS >=  0.98 + 'LI-C100-1':AI_DEAD THEN FX135  =  0
706         ;
707         ;       IF FX136  = 0 THEN                                         ;commented out, -mct5+
708         ;       IF 'II-P-C100':AI_MEAS <= 5.0 THEN FX136  =  1             ; 136
709         ;       ELSE FX136  = 0
710         ;       ELSE IF 'II-P-C100':AI_MEAS >=  5.0 + 'II-P-C100':AI_DEAD THEN FX136  =  0
711         ;
712   0462          IF FX137 = 0 THEN
713   0464          IF 'PDI-CA1-3':AI_MEAS >= 15.0 THEN FX137 = 1
714   0465          ELSE FX137 = 0
715   0467          ELSE IF 'PDI-CA1-3':AI_MEAS <= 15.0 - 'PDI-CA1-3':AI_DEAD THEN FX137 = 0
```

```
716             ;
717     0468            FX138 = 'LSL-SC-1':DIN_VAL        ; 138
718     0469            FX139 = 'LSL-SC-2':DIN_VAL        ; 139
719     0470            FX140 = 'LSL-SC-3':DIN_VAL        ; 140
720     0471            FX143 = 'YS-CPE1-1':DIN_VAL       ; 143
721     0472            FX144 = 'YS-CPE2-1':DIN_VAL       ; 144
722             ;
723     0473            IF FX145  = 0 THEN
724     0475            IF 'PI-IA-1':AI_MEAS <= 18.0 THEN FX145  =  1             ; 145
725     0476            ELSE FX145  = 0
726     0478            ELSE IF 'PI-IA-1':AI_MEAS >=  18.0 + 'PI-IA-1':AI_DEAD THEN FX145  =  0
727             ;
728     0479            IF FX146  = 0 THEN
729     0481            IF 'PI-IA-1':AI_MEAS >= 25.0 THEN FX146  =  1             ; 146
730     0482            ELSE FX146  = 0
731     0484            ELSE IF 'PI-IA-1':AI_MEAS <=  25.0 - 'PI-IA-1':AI_DEAD THEN FX146  =  0
732             ;
733             ;       IF FX147  = 0 THEN
734             ;       IF 'PI-PA-1':AI_MEAS <= 80.0 THEN FX147  =  1             ; 147
735             ;       ELSE FX147  = 0
736             ;       ELSE IF 'PI-PA-1':AI_MEAS >=  80.0 + 'PI-PA-1':AI_DEAD THEN FX147  =  0
737             ;
738     0485            IF FX148  = 0 THEN
739     0487            IF 'PI-PA-1':AI_MEAS >= 120.0 THEN FX148  =  1            ; 148
740     0488            ELSE FX148  = 0
741     0490            ELSE IF 'PI-PA-1':AI_MEAS <=  120.0 - 'PI-PA-1':AI_DEAD THEN FX148  =  0
742             ;
743     0491            IF FX149  = 0 THEN
744     0493            IF 'TI-AMBS-1':AI_MEAS <= 48.0 THEN FX149  =  1           ; 149
745     0494            ELSE FX149  = 0
746     0496            ELSE IF 'TI-AMBS-1':AI_MEAS >=  48.0 + 'TI-AMBS-1':AI_DEAD THEN FX149  =  0
747             ;
748     0497            IF FX150  = 0 THEN
749     0499            IF 'TI-AMBS-1':AI_MEAS <= 55.0 THEN FX150  =  1           ; 150
750     0500            ELSE FX150  = 0
751     0502            ELSE IF 'TI-AMBS-1':AI_MEAS >=  55.0 + 'TI-AMBS-1':AI_DEAD THEN FX150  =  0
752             ;
753     0503            IF FX151  = 0 THEN
754     0505            IF 'TI-AMBS-1':AI_MEAS >= 80.0 THEN FX151  =  1           ; 151
755     0506            ELSE FX151  = 0
756     0508            ELSE IF 'TI-AMBS-1':AI_MEAS <=  80.0 - 'TI-AMBS-1':AI_DEAD THEN FX151  =  0
757             ;
758     0509            IF FX152  = 0 THEN
759     0511            IF 'TI-AMBS-1':AI_MEAS >= 90.0 THEN FX152  =  1           ; 152
760     0512            ELSE FX152  = 0
761     0514            ELSE IF 'TI-AMBS-1':AI_MEAS <=  90.0 - 'TI-AMBS-1':AI_DEAD THEN FX152  =  0
762             ;
763     0515            IF FX153  = 0 THEN
764     0517            IF 'TI-AMBS-2':AI_MEAS <= 48.0 THEN FX153  =  1           ; 153
765     0518            ELSE FX153  = 0
766     0520            ELSE IF 'TI-AMBS-2':AI_MEAS >=  48.0 + 'TI-AMBS-2':AI_DEAD THEN FX153  =  0
767             ;
768     0521            IF FX154  = 0 THEN
769     0523            IF 'TI-AMBS-2':AI_MEAS <= 55.0 THEN FX154  =  1           ; 154
770     0524            ELSE FX154  = 0
```

```
0526            ELSE IF 'TI-AMBS-2':AI_MEAS >=  55.0 + 'TI-AMBS-2':AI_DEAD THEN FX154  =  0
          ;
0527            IF FX155  = 0 THEN
0529            IF 'TI-AMBS-2':AI_MEAS >= 80.0 THEN FX155  =  1           ; 155
0530            ELSE FX155  = 0
0532            ELSE IF 'TI-AMBS-2':AI_MEAS <=  80.0 - 'TI-AMBS-2':AI_DEAD THEN FX155  =  0
          ;
0533            IF FX156  = 0 THEN
0535            IF 'TI-AMBS-2':AI_MEAS >= 90.0 THEN FX156  =  1           ; 156
0536            ELSE FX156  = 0
0538            ELSE IF 'TI-AMBS-2':AI_MEAS <=  90.0 - 'TI-AMBS-2':AI_DEAD THEN FX156  =  0
          ;
0539            FX157 = 'YS-A-E101':DIN_VAL      ; 157
0540            FX158 = 'YS-P-E101':DIN_VAL      ; 158
0541            FX159 = 'YS-A-E102':DIN_VAL      ; 159
0542            FX160 = 'YS-P-E102':DIN_VAL      ; 160
0543            FX161 = 'YS-A-E104':DIN_VAL      ; 161
0544            FX162 = 'YS-P-E104':DIN_VAL      ; 162
          ;
0545            IF FX163  = 0 THEN
0547            IF 'TI-E101-2':AI_MEAS >= 150.0 THEN FX163  =  1          ; 163
0548            ELSE FX163  = 0
0550            ELSE IF 'TI-E101-2':AI_MEAS <=  150.0 - 'TI-E101-2':AI_DEAD THEN FX163  =  0
          ;
0551            IF FX164  = 0 THEN
0553            IF 'WFI-E101':AI_MEAS <= 15.0 THEN FX164  =  1                    ; 164
0554            ELSE FX164  = 0
0556            ELSE IF 'WFI-E101':AI_MEAS >=  15.0 + 'WFI-E101':AI_DEAD THEN FX164  =  0
          ;
0557            IF FX165  = 0 THEN
0559            IF 'WFI-E101':AI_MEAS <= 25.0 THEN FX165  =  1                    ; 165
0560            ELSE FX165  = 0
0562            ELSE IF 'WFI-E101':AI_MEAS >=  25.0 + 'WFI-E101':AI_DEAD THEN FX165  =  0
          ;
0563            IF FX166  = 0 THEN
0565            IF 'WFI-E102':AI_MEAS <= 5.0 THEN FX166  =  1                     ; 166
0566            ELSE FX166  = 0
0568            ELSE IF 'WFI-E102':AI_MEAS >=  5.0 + 'WFI-E102':AI_DEAD THEN FX166  =  0
          ;
0569            IF FX167  = 0 THEN
0571            IF 'WFI-E102':AI_MEAS <= 12.0 THEN FX167  =  1                    ; 167
0572            ELSE FX167  = 0
0574            ELSE IF 'WFI-E102':AI_MEAS >=  12.0 + 'WFI-E102':AI_DEAD THEN FX167  =  0
          ;
0575            IF FX168  = 0 THEN
0577            IF 'TI-E104-2':AI_MEAS >= 170.0 THEN FX168  =  1          ; 168
0578            ELSE FX168  = 0
0580            ELSE IF 'TI-E104-2':AI_MEAS <=  170.0 - 'TI-E104-2':AI_DEAD THEN FX168  =  0
          ;
0581            IF FX169  = 0 THEN
0583            IF 'WFI-E104':AI_MEAS <= 5 THEN FX169  =  1                       ; 169
0584            ELSE FX169  = 0
0586            ELSE IF 'WFI-E104':AI_MEAS >=  5 + 'WFI-E104':AI_DEAD THEN FX169  =  0
          ;
0587            IF FX170  = 0 THEN
```

```
826   0589          IF 'WFI-E104':AI_MEAS <= 12.0 THEN FX170  =  1                    ; 170
827   0590          ELSE FX170  = 0
828   0592          ELSE IF 'WFI-E104':AI_MEAS >=  12.0 + 'WFI-E104':AI_DEAD THEN FX170  =  0
829           ;
830           ;     FX171 = 'ZS-105PS1':DIN_VAL      ; 171  JFB02
831           ;     FX172 = 'ZS-105PS2':DIN_VAL      ; 172  JFB02
832   0593          FX173 = 'YS-P-42':DIN_VAL        ; 173  +mct4-
833   0594          FX174 = 'YS-P-43':DIN_VAL        ; 174  +mct4-
834   0595          FX175 = 'YS-P-44':DIN_VAL        ; 175  +mct4-
835   0596          FX176 = 'YS-P-C106':DIN_VAL      ; 176  JFB01
836   0597          FX177 = AND('HV-CA1-10':DEV_STAT,64)      ;177  JFB01
837                 ;
838                 ;  COMPARE ALARM SETPT (PREV) TO CURRENT SIGNAL STATUS (PSTAT)
839                 ;       TO DETERMINE IF ALARM OR CLEAR:
840                 ;
841   0598    LOP:  ASSIGN PSTAT = FX1
842   0599          ASSIGN PALARM = FAL1
843   0600          ASSIGN PREV = FRV1
844   0601          ASSIGN PTYPE = FDS1
845   0602          EPN3 = "LOP:"
846   0603          IN1 = TIMSTR(TIME3)
847           ;
848   0604          FOR ILOOP = 1 TO 177              ; +mct4-
849   0605          IF !(PTYPE)THEN                          ; IF AN ACTIVE ALARM (not inha)
850                    BEGIN
851   0606             IF!(PALARM)THEN                       ; IF NOT PREVIOUSLY ALARMED
852                      BEGIN
853   0608               IF PREV = PSTAT THEN GOSUB ALM      ; IF ALARM CONDITION MET
854                      END
855   0610             ELSE IF PREV!=PSTAT THEN GOSUB CLR    ; IF ALARM CLEARED
856                    END
857                 ELSE
858   0612          IF(PALARM)THEN GOSUB CLR
859   0613          STEP PSTAT BY 1
860   0614          STEP PALARM BY 1
861   0615          STEP PREV BY 1
862   0616          STEP PTYPE BY 1
863   0617          NEXT ILOOP
864           ;
865   0619          IF IN4 > 16 THEN FSPAR4 = 1       ; "*MORE" ON GRAPHIC 100
866   0620             ELSE FSPAR4 = 0
867   0622          IF IN4 > 32 THEN FSPAR5 = 1       ; "*MORE" ON GRAHIC 101
868   0623             ELSE FSPAR5 = 0
869   0624          WAIT 2
870   0625          GOTO AGAIN
871           ;
872           ;     E N D   P R O G R A M   L O O P
873           ;
874           ;     BEGIN CLEAR SUBROUTINE:
875           ;
876   0626    CLR:  EPN4 = "CLR"                      ; SET PALARM = 0, SET PLINE = 0
877                                                   ; MOVE LOWER LINES DOWN
878   0627          PALARM = 0
879   0628          PRINT 0,"            ---  CLEAR ALARM,  ILOOP = %i",ILOOP
880   0629          IN1 = TIMSTR(TIME4)
```

```
 881   0630          ASSIGN PLINE = INTO
 882   0631          STEP PLINE BY ILOOP
 883   0632          IF PLINE = 0 THEN
 884                    begin
 885   0633             PRINT 0,"          ~~~  W A R N I N G  PLINE = 0, ILOOP = %i",ILOOP
 886   0634             LAMP 0,60,1
 887   0635             goto term
 888                    end
 889   0636          IN4 = IN4 - 1
 890   0637          IN2 = ILOOP
 891   0638          FIRST = 46 - PLINE - 1
 892   0639          STPPER = 1
 893          ;
 894   0640          ASSIGN NXTGRA  = GRAFX0
 895   0641          ASSIGN PGRAFX   = GRAFX1
 896          ;
 897   0642          ASSIGN NXTLSG =  LSG0
 898   0643          ASSIGN PLRGSG =  LSG1
 899          ;
 900   0644          ASSIGN NXTMSG = MSSG0
 901   0645          ASSIGN PMESSG = MSSG1
 902          ;
 903   0646          STEP NXTGRA BY (PLINE - 1)
 904   0647          STEP PGRAFX BY (PLINE - 1)
 905   0648          STEP NXTMSG BY PLINE - 1
 906   0649          STEP PMESSG BY PLINE - 1
 907   0650          STEP NXTLSG BY PLINE - 1
 908   0651          STEP PLRGSG BY PLINE - 1
 909   0652          GOSUB SRT
 910          ;
 911   0653          LAST = PLINE
 912   0654          ASSIGN PLINE = INT1
 913          ;
 914   0655          FOR KLOOP = 1 TO 177            ; +mct4-
 915   0656          IF KLOOP = ILOOP THEN
 916                    BEGIN
 917   0657             PLINE = 0
 918          ;         PRINT 0,"          ~~~  PLINE NOW = 0, KLOOP = %i",KLOOP
 919                    END
 920   0658           ELSE IF PLINE > LAST THEN
 921                    BEGIN
 922   0659                PLINE = PLINE - 1
 923          ;            PRINT 0,"          ~~~  (PLINE - 1), KLOOP = %i, PLINE = %i",KLOOP,pline
 924   0661                if pline = 0 then goto term
 925                    END
 926   0662          STEP PLINE BY 1
 927   0663          NEXT KLOOP
 928   0664          RETURN
 929          ;
 930          ;       END CLEAR SUBROUTINE
 931          ;
 932          ;       BEGIN SORT SUB-SUBROUTINE (CALLED BY CLEAR):
 933          ;
 934   0665   SRT:   EPN3 = "SRT"
 935   0666          IN1 = TIMSTR(TIME3)
```

```
936   0667          FOR BVAL =  0 TO FIRST
937   0668          NXTGRA = PGRAFX
938   0669          NXTMSG = PMESSG
939   0670          NXTLSG = PLRGSG
940   0671          STEP NXTGRA BY STPPER
941   0672          STEP PGRAFX BY STPPER
942   0673          STEP NXTMSG BY STPPER
943   0674          STEP PMESSG BY STPPER
944   0675          STEP NXTLSG BY STPPER
945   0676          STEP PLRGSG BY STPPER
946   0677          NEXT BVAL
947   0678          RETURN
948           ;
949           ;       END SORT SUB-SUBROUTINE
950           ;
951           ;       BEGIN ALARM SUBROUTINE:
952           ;
953   0679    ALM:  EPN4 = "ALM:"
954   0680          IN4 = IN4 + 1
955   0681          IN1 = TIMSTR(TIME4)
956   0682          IN2 = ILOOP
957   0683          PALARM = 1
958           ;       print adi,"alarm routine , iloop = %i, palarm = %i",iloop,palarm
959   0684          LAMP 0,60,3
960   0685          FIRST = 45
961   0686          STPPER = -1
962   0687          ASSIGN NXTGRA = GRAF46
963   0688          ASSIGN PGRAFX = GRAF45
964   0689          ASSIGN NXTLSG =  LSG46
965   0690          ASSIGN PLRGSG =  LSG45
966   0691          ASSIGN NXTMSG = MSSG46
967   0692          ASSIGN PMESSG = MSSG45
968   0693          GOSUB SRT
969           ;
970           ;       GET STRINGS FOR ALARM SUBROUTINE:
971           ;
972   0694          ON ILOOP GOTO S1,S2,S3,S4,S5,S6,S7,S8,S9,S10
973   0695          ON ILOOP - 10 GOTO S11,S12,S13,S14,S15,S16,S17,S18,S19,S20
974   0696          ON ILOOP - 20 GOTO S21,S22,S23,S24,S25,S26,S27,S28,S29,S30
975   0697          ON ILOOP - 30 GOTO S31,S32,S33,S34,S35,S36,S37,S38,S39,S40
976   0698          ON ILOOP - 40 GOTO S41,S42,S43,S44,S45,S46,S47,S48,S49,S50
977   0699          ON ILOOP - 50 GOTO S51,S52,S53,S54,S55,S56,S57,S58,S59,S60
978   0700          ON ILOOP - 60 GOTO S61,S62,S63,S64,S65,S66,S67,S68,S69,S70
979   0701          ON ILOOP - 70 GOTO S71,S72,S73,S74,S75,S76,S77,S78,S79,S80
980   0702          ON ILOOP - 80 GOTO S81,S82,S83,S84,S85,S86,S87,S88,S89,S90
981   0703          ON ILOOP - 90 GOTO S91,S92,S93,S94,S95,S96,S97,S98,S99,S100
982   0704          ON ILOOP - 100 GOTO S101,S102,S103,S104,S105,S106,S107,S108,S109,S110
983   0705          ON ILOOP - 110 GOTO S111,S112,S113,S114,S115,S116,S117,S118,S119,S120
984   0706          ON ILOOP - 120 GOTO S121,S122,S123,S124,S125,S126,S127,S128,S129,S130
985   0707          ON ILOOP - 130 GOTO S131,S132,S133,S134,S135,S136,S137,S138,S139,S140
986   0708          ON ILOOP - 140 GOTO S141,S142,S143,S144,S145,S146,S147,S148,S149,S150
987   0709          ON ILOOP - 150 GOTO S151,S152,S153,S154,S155,S156,S157,S158,S159,S160
988   0710          ON ILOOP - 160 GOTO S161,S162,S163,S164,S165,S166,S167,S168,S169,S170
989   0711          ON ILOOP - 170 GOTO S171,S172,S173,S174,S175,S176,S177
990   0712          GOTO AMSG
```

```
                ;
        0713    S1:     MSSG0 = "AN-101 PUMP OFF                "
        0714            EPN0 = "YS-AN-101"
        0715            GRAFX0 = 270
        0716            GOTO AMSG
        0717    S2:     MSSG0 = "AN-102 PUMP OFF                "
        0718            EPN0 = "YS-AN-102"
        0719            GRAFX0 = 270
        0720            GOTO AMSG
        0721    S3:     MSSG0 = "AN-103 PUMP OFF          "
        0722            EPN0 = "YS-AN-103"
        0723            GRAFX0 = 270
        0724            GOTO AMSG
        0725    S4:     MSSG0 = "AN-104 PUMP OFF          "
        0726            EPN0 = "YS-AN-104"
        0727            GRAFX0 = 270
        0728            GOTO AMSG
        0729    S5:     MSSG0 = "AN-105 PUMP OFF          "
        0730            EPN0 = "YS-AN-105"
        0731            GRAFX0 = 270
        0732            GOTO AMSG
        0733    S6:     MSSG0 = "AN-106 PUMP OFF          "
        0734            EPN0 = "YS-AN-106"
        0735            GRAFX0 = 270
        0736            GOTO AMSG
        0737    S7:     MSSG0 = "AN-107 PUMP OFF          "
        0738            EPN0 = "YS-AN-107"
        0739            GRAFX0 = 270
        0740            GOTO AMSG
        0741    S8:     MSSG0 = "AN-FARM HEAT TRACE OVERTEMP"
        0742            EPN0 = "TXS-AN-2"
        0743            GRAFX0 = 274
        0744            GOTO AMSG
        0745    S9:     MSSG0 = "AP-101 PUMP MCC OFF        "
        0746            EPN0 = "YS-AP-101"
        0747            GRAFX0 = 290
        0748            GOTO AMSG
        0749    S10:    MSSG0 = "AP-102 PUMP MCC OFF        "
        0750            EPN0 = "YS-AP-102"
        0751            GRAFX0 = 290
        0752            GOTO AMSG
        0753    S11:    MSSG0 = "AP-103 PUMP MCC OFF        "
        0754            EPN0 = "YS-AP-103"
        0755            GRAFX0 = 290
        0756            GOTO AMSG
        0757    S12:    MSSG0 = "AP03D DRAIN PIT LEAK       "
        0758            EPN0 = "LDS-AP03D"
        0759            GRAFX0 = 290
        0760            GOTO AMSG
        0761    S13:    MSSG0 = "AP-104 PUMP MCC OFF        "
        0762            EPN0 = "YS-AP-104"
        0763            GRAFX0 = 290
        0764            GOTO AMSG
        0765    S14:    MSSG0 = "AP-105 PUMP MCC OFF        "
        0766            EPN0 = "YS-AP-105"
```

```
0767            GRAFXO = 290
0768            GOTO AMSG
0769    S15:    MSSGO = "AP-106 PUMP MCC OFF        "
0770            EPNO = "YS-AP-106"
0771            GRAFXO = 290
0772            GOTO AMSG
0773    S16:    MSSGO = "AP-107 PUMP MCC OFF        "
0774            EPNO = "YS-AP-107"
0775            GRAFXO = 290
0776            GOTO AMSG
0777    S17:    MSSGO = "AP-108 PUMP MCC OFF        "
0778            EPNO = "YS-AP-108"
0779            GRAFXO = 290
0780            GOTO AMSG
        S18:    ;       MSSGO = "MIXER PUMP AP-102-3 MCC OFF"  jfb03
        ;       EPNO = "YS-AP102M"
        ;       GRAFXO = 291
        ;       GOTO AMSG
        S19:    ;       MSSGO = "MIXER PUMP AP-102-3 PRESS HI"  jfb03
        ;       EPNO = "PSHAP102M"
        ;       GRAFXO = 291
        ;       GOTO AMSG
        S20:    ;       MSSGO = "MIXER PUMP AP-102-3 PRESS LOW"  jfb03
        ;       EPNO = "PSLAP102M"
        ;       GRAFXO = 291
        ;       GOTO AMSG
        S21:    ;       MSSGO = "AP-102-3 ROTATOR MOTR MCC OFF "  jfb03
        ;       EPNO = "YS-AP102R"
        ;       GRAFXO = 291
        ;       GOTO AMSG
        S22:    ;       MSSGO = "MIXER PUMP AP-102-3 STRAIN HI "  jfb03
        ;       EPNO = "WSHAP102M"
        ;       GRAFXO = 291
        ;       GOTO AMSG
        S23:    ;       MSSGO = "MIXER PUMP AP-102-3 TEMP HI   "  jfb03
        ;       EPNO = "TSHAP102M"
        ;       GRAFXO = 291
        ;       GOTO AMSG
        S24:    ;       MSSGO = "AP-102-3 VIBRATION HIGH       "  jfb03
        ;       EPNO = "VSHAP102M"
        ;       GRAFXO = 291
        ;       GOTO AMSG
0781    S25:    MSSGO = "AP-FARM HEAT TRACE OVER TEMP  "
0782            EPNO = "TXS-AP-2"
0783            GRAFXO = 295
0784            GOTO AMSG
0785    S26:    MSSGO = "271-AP BUILDING CAM FLOW LOW  "
0786            EPNO = "FSLAP2711"
0787            GRAFXO = 295
0788            GOTO AMSG
0789    S27:    MSSGO = "AP-FLSPIT FLUSH LINE PRESS HI "
0790            EPNO = "PSH-APFP1"
0791            GRAFXO = 292
0792            GOTO AMSG
0793    S28:    MSSGO = "AP-FARM VALVE PIT V-FP-1 OPEN "
```

```
0794            EPNO = "ZS-AP-FP1"
0795            GRAFXO = 292
0796            GOTO AMSG
0797    S29:    MSSGO = "AP-FARM K1 EXH MON SMPL FLO LO"
0798            EPNO = "FSL-APK13"
0799            GRAFXO = 294
0800            GOTO AMSG
0801    S30:    MSSGO = "AP-FARM K1 EXH REC SMPL FLO LO"
0802            EPNO = "FSL-APK12"
0803            GRAFXO = 294
0804            GOTO AMSG
0805    S31:    MSSGO = "AP-FARM K1 EXH STACK FLOW LOW "
0806            EPNO = "FSL-APK11"
0807            GRAFXO = 294
0808            GOTO AMSG
0809    S32:    MSSGO = "AP-FARM K2 EXH MON SMPL FLO LO"
0810            EPNO = "FSL-APK23"
0811            GRAFXO = 294
0812            GOTO AMSG
0813    S33:    MSSGO = "AP-FARM K2 EXH REC SMPL FLO LO"
0814            EPNO = "FSL-APK22"
0815            GRAFXO = 294
0816            GOTO AMSG
0817    S34:    MSSGO = "AP-FARM K2 EXH STACK FLOW LOW "
0818            EPNO = "FSL-APK21"
0819            GRAFXO = 294
0820            GOTO AMSG
0821    S35:    MSSGO = "AP-FARM VLVPIT DR-712 FLOW HI "
0822            EPNO = "FSH-DR712"
0823            GRAFXO = 293
0824            GOTO AMSG
0825    S36:    MSSGO = "AP-VLVPIT DR-712 FLO DET FAIL "
0826            EPNO = "FXS-DR712"
0827            GRAFXO = 293
0828            GOTO AMSG
0829    S37:    MSSGO = "AP-VLVPIT FLUSH LINE PRES HIGH"
0830            EPNO = "PSH-APFL1"
0831            GRAFXO = 293
0832            GOTO AMSG
0833    S38:    MSSGO = "AP-FARM VALVE PIT V-DR-1 OPEN "
0834            EPNO = "ZS-AP-DR1"
0835            GRAFXO = 293
0836            GOTO AMSG
0837    S39:    MSSGO = "AP-FARM VALVE PIT V-FL-1 OPEN "
0838            EPNO = "ZS-AP-FL1"
0839            GRAFXO = 293
0840            GOTO AMSG
0841    S40:    MSSGO = "AW-101 PUMP OFF              "
0842            EPNO = "YS-AW-101"
0843            GRAFXO = 300
0844            GOTO AMSG
        S41:    ;MSSGO = "AW-102 PUMP OFF              "        commented out, -mct5+
        ;       EPNO = "YS-AW102"
        ;       GRAFXO = 301
        ;       GOTO AMSG
```

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0845    S42:    MSSG0 = "AW-103 PUMP OFF                "
0846            EPN0 = "YS-AW-103"
0847            GRAFX0 = 300
0848            GOTO AMSG
0849    S43:    MSSG0 = "AW-104 PUMP OFF                "
0850            EPN0 = "YS-AW-104"
0851            GRAFX0 = 300
0852            GOTO AMSG
0853    S44:    MSSG0 = "AW-105 PUMP OFF                "
0854            EPN0 = "YS-AW-105"
0855            GRAFX0 = 300
0856            GOTO AMSG
0857    S45:    MSSG0 = "AW-106 PUMP OFF                "
0858            EPN0 = "YS-AW-106"
0859            GRAFX0 = 300
0860            GOTO AMSG
0861    S46:    MSSG0 = "AW-FARM HEAT TRACE OVERTEMP   "
0862            EPN0 = "TXS-AW-2"
0863            GRAFX0 = 302
0864            GOTO AMSG
        S47:    ;       MSSG0 = "AY-101 PUMP MCC OFF           "
        ;       EPN0 = "YS-AY-101"
        ;       GRAFX0 = 322
        ;       GOTO AMSG
        S48:    ;       MSSG0 = "AY-102 PUMP MCC OFF           "
        ;       EPN0 = "YS-AY-102"
        ;       GRAFX0 = 322
        ;       GOTO AMSG
        S49:    ;       MSSG0 = "AZ-101 PUMP MCC OFF           "
        ;       EPN0 = "YS-AZ-101"
        ;       GRAFX0 = 323
        ;       GOTO AMSG
        S50:    ;       MSSG0 = "AZ-102 PUMP MCC OFF           "
        ;       EPN0 = "YS-AZ-102"
        ;       GRAFX0 = 323
        ;       GOTO AMSG
0865    S51:    MSSG0 = "AX-A/B SEAL POT LEVEL HIGH    "
0866            EPN0 = "LSH-AX-1"
0867            GRAFX0 = 320
0868            GOTO AMSG
0869    S52:    MSSG0 = "AX-A/B SEAL POT LEVEL LOW     "
0870            EPN0 = "LSL-AX-1"
0871            GRAFX0 = 320
0872            GOTO AMSG
        ;-mct2-
        S53:    ;       MSSG0 = "PUMP AN-101 SHUTDOWN "
        ;       EPN0 = "P-AN-101"
        ;       GRAFX0 = 270
        ;       GOTO AMSG
        S54:    ;       MSSG0 = "PUMP AN-102 SHUTDOWN          "
        ;       EPN0 = "P-AN-102"
        ;       GRAFX0 = 270
        ;       GOTO AMSG
        S55:    ;       MSSG0 = "PUMP AN-103 SHUTDOWN          "
        ;       EPN0 = "P-AN-103"
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1211            ;       GRAFXO = 270
1212            ;       GOTO AMSG
1213            S56:    ;       MSSGO = "PUMP AN-104 SHUTDOWN          "
1214            ;       EPNO = "P-AN-104"
1215            ;       GRAFXO = 270
1216            ;       GOTO AMSG
1217            S57:    ;       MSSGO = "PUMP AN-105 SHUTDOWN          "
1218            ;       EPNO = "P-AN-105"
1219            ;       GRAFXO = 270
1220            ;       GOTO AMSG
1221            S58:    ;       MSSGO = "PUMP AN-106 SHUTDOWN          "
1222            ;       EPNO = "P-AN-106"
1223            ;       GRAFXO = 270
1224            ;       GOTO AMSG
1225            S59:    ;       MSSGO = "PUMP AN-107 SHUTDOWN          "
1226            ;       EPNO = "P-AN-107"
1227            ;       GRAFXO = 270
1228            ;       GOTO AMSG
1229            ;-mct2-
1230    0873    S60:    MSSGO = "PUMP AP-101 SHUTDOWN           "
1231    0874            EPNO = "P-AP-101"
1232    0875            GRAFXO = 290
1233    0876            GOTO AMSG
1234    0877    S61:    MSSGO = "PUMP AP-102 SHUTDOWN          "
1235    0878            EPNO = "P-AP-102"
1236    0879            GRAFXO = 291
1237    0880            GOTO AMSG
1238    0881    S62:    MSSGO = "PUMP AP-103 SHUTDOWN          "
1239    0882            EPNO = "P-AP-103"
1240    0883            GRAFXO = 290
1241    0884            GOTO AMSG
1242    0885    S63:    MSSGO = "PUMP AP-104 SHUTDOWN          "
1243    0886            EPNO = "P-AP-104"
1244    0887            GRAFXO = 290
1245    0888            GOTO AMSG
1246    0889    S64:    MSSGO = "PUMP AP-105 SHUTDOWN          "
1247    0890            EPNO = "P-AP-105"
1248    0891            GRAFXO = 290
1249    0892            GOTO AMSG
1250    0893    S65:    MSSGO = "PUMP AP-106 SHUTDOWN          "
1251    0894            EPNO = "P-AP-106"
1252    0895            GRAFXO = 290
1253    0896            GOTO AMSG
1254    0897    S66:    MSSGO = "PUMP AP-107 SHUTDOWN          "
1255    0898            EPNO = "P-AP-107"
1256    0899            GRAFXO = 290
1257    0900            GOTO AMSG
1258    0901    S67:    MSSGO = "PUMP AP-108 SHUTDOWN          "
1259    0902            EPNO = "P-AP-108"
1260    0903            GRAFXO = 290
1261    0904            GOTO AMSG
1262            S68:    ;       MSSGO = "MIXER PUMP AP-102M SHUTDOWN   " jfb03
1263            ;       EPNO = "P-AP-102M"
1264            ;       GRAFXO = 291
1265            ;       GOTO AMSG
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1266            S69:    ;       MSSG0 = "ROTOR AP-102R SHUTDOWN        "  jfb03
1267            ;       EPN0 = "P-AP-102R"
1268            ;       GRAFX0 = 291
1269            ;       GOTO AMSG
1270            ;-mct1-
1271            S70:    ;       MSSG0 = "PUMP AW-101 SHUTDOWN          "
1272            ;       EPN0 = "P-AW-101"
1273            ;       GRAFX0 = 300
1274            ;       GOTO AMSG
1275            S71:    ;       MSSG0 = "PUMP AW-102 SHUTDOWN          "
1276            ;       EPN0 = "P-AW-102"
1277            ;       GRAFX0 = 301
1278            ;       GOTO AMSG
1279            S72:    ;       MSSG0 = "PUMP AW-103 SHUTDOWN          "
1280            ;       EPN0 = "P-AW-103"
1281            ;       GRAFX0 = 300
1282            ;       GOTO AMSG
1283            S73:    ;       MSSG0 = "PUMP AW-104 SHUTDOWN          "
1284            ;       EPN0 = "P-AW-104"
1285            ;       GRAFX0 = 300
1286            ;       GOTO AMSG
1287            S74:    ;       MSSG0 = "PUMP AW-105 SHUTDOWN          "
1288            ;       EPN0 = "P-AW-105"
1289            ;       GRAFX0 = 300
1290            ;       GOTO AMSG
1291            S75:    ;       MSSG0 = "PUMP AW-106 SHUTDOWN          "
1292            ;       EPN0 = "P-AW-106"
1293            ;       GRAFX0 = 300
1294            ;       GOTO AMSG
1295            ;-mct1-
1296    0905    S76:    MSSG0 = "PUMP AY-101 SHUTDOWN          "
1297    0906            EPN0 = "P-AY-101"
1298    0907            GRAFX0 = 322
1299    0908            GOTO AMSG
1300    0909    S77:    MSSG0 = "PUMP AY-102 SHUTDOWN          "
1301    0910            EPN0 = "P-AY-102"
1302    0911            GRAFX0 = 322
1303    0912            GOTO AMSG
1304    0913    S78:    MSSG0 = "PUMP AZ-101 SHUTDOWN          "
1305    0914            EPN0 = "P-AZ-101"
1306    0915            GRAFX0 = 323
1307    0916            GOTO AMSG
1308    0917    S79:    MSSG0 = "PUMP AZ-102 SHUTDOWN          "
1309    0918            EPN0 = "P-AZ-102"
1310    0919            GRAFX0 = 323
1311    0920            GOTO AMSG
1312            S80:    ;       MSSG0 = "AW K1 STACK MON SMPL PUMP OFF "
1313            ;       EPN0 = "PSH-AWK11"
1314            ;       GRAFX0 = 304
1315            ;       GOTO AMSG
1316            S81:    ;       MSSG0 = "AW K1 RECORD SAMPLE PUMP OFF  "
1317            ;       EPN0 = "PSH-AWK12"
1318            ;       GRAFX0 = 304
1319            ;       GOTO AMSG
1320            S82:    ;       MSSG0 = "AW K2 STACK MON SMPL PUMP OFF "
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1321            ;       EPNO = "PSH-AWK21"
1322            ;       GRAFXO = 304
1323            ;       GOTO AMSG
1324            S83:    ;       MSSGO = "AW K2 RECORD SAMPLE PUMP OFF  "
1325            ;       EPNO = "PSH-AWK22"
1326            ;       GRAFXO = 304
1327            ;       GOTO AMSG
1328            S84:    ;       MSSGO = "244-A FLUSH PIT PRESS HIGH    "   JFB05
1329            ;       EPNO = "PSH-FP"
1330            ;       GRAFXO = 340
1331            ;       GOTO AMSG
1332            S85:    ;       MSSGO = "TK-244-A PUMP 1 CURRENT HIGH  "
1333            ;       EPNO = "II-P244A1"
1334            ;       GRAFXO = 340
1335            ;       GOTO AMSG
1336            S86:    ;       MSSGO = "TK-244-A PUMP 2 CURRENT HIGH  "
1337            ;       EPNO = "II-P244A2"
1338            ;       GRAFXO = 340
1339            ;       GOTO AMSG
1340            S87:    ;       MSSGO = "244-A SUMP PUMP CURRENT HIGH  "
1341            ;       EPNO = "II-P244A3"
1342            ;       GRAFXO = 340
1343            ;       GOTO AMSG
1344            S88:    ;       MSSGO = "244-A SUMP PUMP CURRENT HIHI  "
1345            ;       EPNO = "II-P244A3"
1346            ;       GRAFXO = 340
1347            ;       GOTO AMSG
1348            S89:    ;       MSSGO = "TK-244-A AGITATOR CURRENT HI  "
1349            ;       EPNO = "II-A-244A"
1350            ;       GRAFXO = 340
1351            ;       GOTO AMSG
1352    0921    S90:    MSSGO = "TK-244-A LIQUID TEMPERTURE HI "
1353    0922            EPNO = "TI-244-TK"
1354    0923            GRAFXO = 340
1355    0924            GOTO AMSG
1356    0925    S91:    MSSGO = "244A-EXHAUST STACK FLOW LOW   "
1357    0926            EPNO = "FI-244EXH"
1358    0927            GRAFXO = 341
1359    0928            GOTO AMSG
1360    0929    S92:    MSSGO = "244A-EXHAUST STACK FLOW HIGH  "
1361    0930            EPNO = "FI-244EXH"
1362    0931            GRAFXO = 341
1363    0932            GOTO AMSG
1364            S93:    ;       MSSGO = "TK-A-350 PUMP CURRENT HIGH    "
1365            ;       EPNO = "II-350-1"
1366            ;       GRAFXO = 343
1367            ;       GOTO AMSG
1368    0933    S94:    MSSGO = "AW-102 FEED PUMP CURRENT LOW "
1369    0934            EPNO = "II-AW-102"
1370    0935            GRAFXO = 301
1371    0936            GOTO AMSG
1372            S95:    ;       MSSGO = "AW-102 FEED PUMP CURRENT HIGH"
1373            ;       EPNO = "II-AW-102"
1374            ;       GRAFXO = 301
1375            ;       GOTO AMSG
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1376            S96:    ;       MSSG0 = "EVAP DENSITY DIFFERENCE LOLO  "
1377            ;       EPN0 = "DDI-CA1-1"
1378            ;       GRAFX0 = 10
1379            ;       GOTO AMSG
1380            S97:    ;       MSSG0 = "EVAP DENSITY DIFFERENCE HIHI  "
1381            ;       EPN0 = "DDI-CA1-1"
1382            ;       GRAFX0 = 10
1383            ;       GOTO AMSG
1384    0937    S98:    MSSG0 = "F-H-1 RAW WATER FILTER DP HIGH"
1385    0938            EPN0 = "PDI-FH1-1"
1386    0939            GRAFX0 = 10
1387    0940            GOTO AMSG
1388    0941    S99:    MSSG0 = "F-H-2 RAW WATER FILTER DP HIGH"
1389    0942            EPN0 = "PDI-FH2-1"
1390    0943            GRAFX0 = 10
1391    0944            GOTO AMSG
1392    0945    S100:   MSSG0 = "F-H-3 RAW WATER FILTER DP HIGH"
1393    0946            EPN0 = "PDI-FH3-1"
1394    0947            GRAFX0 = 10
1395    0948            GOTO AMSG
1396    0949    S101:   MSSG0 = "SLURRY PUMP SPEED CNTRLR HIGH "
1397    0950            EPN0 = "SIC-PB2-1"
1398    0951            GRAFX0 = 15
1399    0952            GOTO AMSG
1400            S102:   ;       MSSG0 = "REBOILER 10 LB STM PRESS LOW  "  JFB04
1401            ;       EPN0 = "PSL-EA1-1"
1402            ;       GRAFX0 = 13
1403            ;       GOTO AMSG
1404    0953    S103:   MSSG0 = "90 PSI STEAM HEADER PRESS LOLO"
1405    0954            EPN0 = "PI-EA1-13"
1406    0955            GRAFX0 = 13
1407    0956            GOTO AMSG
1408    0957    S104:   MSSG0 = "90 PSI STEAM HEADER PRESS LOW "
1409    0958            EPN0 = "PI-EA1-13"
1410    0959            GRAFX0 = 13
1411    0960            GOTO AMSG
1412    0961    S105:   MSSG0 = "REBOILER STEAM FLOW LOW       "
1413    0962            EPN0 = "FIC-EA1-1"
1414    0963            GRAFX0 = 13
1415    0964            GOTO AMSG
1416    0965    S106:   MSSG0 = "REBOILER STEAM INLET PRESS LOW"
1417    0966            EPN0 = "PI-EA1-1"
1418    0967            GRAFX0 = 13
1419    0968            GOTO AMSG
1420    0969    S107:   MSSG0 = "REBOILER STEAM INLET PRESS HI "
1421    0970            EPN0 = "PI-EA1-1"
1422    0971            GRAFX0 = 13
1423    0972            GOTO AMSG
1424    0973    S108:   MSSG0 = "REBOILER STM CONDNSATE TEMP HI"
1425    0974            EPN0 = "TI-EA1-5"
1426    0975            GRAFX0 = 13
1427    0976            GOTO AMSG
1428    0977    S109:   MSSG0 = "E-C-1 RAW WATER INLET PRESS HI"
1429    0978            EPN0 = "PI-EC1-5"
1430    0979            GRAFX0 = 16
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1431  0980          GOTO AMSG
1432  0981  S110:   MSSG0 = "E-C-3 CONDENSR URW FLOW LOW   "
1433  0982          EPN0 = "FIC-EC3-1"
1434  0983          GRAFX0 = 16
1435  0984          GOTO AMSG
1436  0985  S111:   MSSG0 = "E-C-1 PC OUTLET TEMP HIGH     "
1437  0986          EPN0 = "TIC-EC1-2"
1438  0987          GRAFX0 = 16
1439  0988          GOTO AMSG
1440  0989  S112:   MSSG0 = "WATER SERVICE BLD BFP-1 LEAK  "
1441  0990          EPN0 = "LDS-BFP-1"
1442  0991          GRAFX0 = 11
1443  0992          GOTO AMSG
1444  0993  S113:   MSSG0 = "WATER SERVCE BLD SUMP LEVEL LO"
1445  0994          EPN0 = "LSL-RWSMP"
1446  0995          GRAFX0 = 11
1447  0996          GOTO AMSG
1448  0997  S114:   mssg0 = "WTR SRVICE BUILDING BFP-2 LEAK"
1449  0998          EPN0 = "LDS-BFP-2"
1450  0999          GRAFX0 = 11
1451  1000          GOTO AMSG
1452  1001  S115:   MSSG0 = "F-RW-1 FILTER DELTA PRESS  HI "
1453  1002          EPN0 = "PDI-RW-1"
1454  1003          GRAFX0 = 11
1455  1004          GOTO AMSG
1456  1005  S116:   MSSG0 = "F-RW-2 FILTER DELTA PRESS HI  "
1457  1006          EPN0 = "PDI-RW-2"
1458  1007          GRAFX0 = 11
1459  1008          GOTO AMSG
1460  1009  S117:   MSSG0 = "F-RW-1/2 FLTR UPSTREAM PRES LO"
1461  1010          EPN0 = "PI-RW-2"
1462  1011          GRAFX0 = 11
1463        S118:   ;       MSSG0 = "F-RW-1/2 FLTR UPSTRM PRES HIHI"
1464        ;       EPN0 = "PI-RW-2"
1465        ;       GRAFX0 = 11
1466        ;       GOTO AMSG
1467  1012  S119:   MSSG0 = "E-C-1 CONDENSR URW FLOW LOW   "
1468  1013          EPN0 = "FIC-EC1-1"
1469  1014          GRAFX0 = 17
1470  1015          GOTO AMSG
1471        S120:   ;       MSSG0 = "E-C-1 CONDENSR URW FLOW HIGH  "
1472        ;       EPN0 = "FIC-EC1-1"
1473        ;       GRAFX0 = 17
1474        ;       GOTO AMSG
1475  1016  S121:   MSSG0 = "VESSEL VENT EXHSTR CURRENT LO"
1476  1017          EPN0 = "II-EXC-1"
1477  1018          GRAFX0 = 20
1478  1019          GOTO AMSG
1479        S122:   ;       MSSG0 = "VESSEL VENT EXHSTR CURRENT HI "
1480        ;       EPN0 = "II-EXC-1"
1481        ;       GRAFX0 = 20
1482        ;       GOTO AMSG
1483        S123:   ;       MSSG0 = "VESSEL VENT EXHAUSTER FLO LOLO"
1484        ;       EPN0 = "FI-AS-5"
1485        ;       GRAFX0 = 20
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1486            ;       GOTO AMSG
1487            S124:   ;       MSSG0 = "VESSEL VENT EXHAUSTER FLOW LOW"
1488            ;       EPN0 = "FI-AS-5"
1489            ;       GRAFX0 = 20
1490            ;       GOTO AMSG
1491            S125:   ;       MSSG0 = "VESSEL VENT EXHAUSTER FLOW HI "
1492            ;       EPN0 = "FI-AS-5"
1493            ;       GRAFX0 = 20
1494            ;       GOTO AMSG
1495    1020    S126:   MSSG0 = "AIR SAMPLE PUMP CURRENT LOW   "
1496    1021            EPN0 = "II-AS-1"
1497    1022            GRAFX0 = 20
1498    1023            GOTO AMSG
1499            S127:   ;       MSSG0 = "AIR SAMPLE PUMP CURRENT HIGH  "
1500            ;       EPN0 = "II-AS-1"
1501            ;       GRAFX0 = 20
1502            ;       GOTO AMSG
1503    1024    S128:   MSSG0 = "A-C100 AGITATOR SHUTDOWN      "
1504    1025            EPN0 = "YS-A-C100"
1505    1026            GRAFX0 = 18
1506    1027            GOTO AMSG
1507    1028    S129:   MSSG0 = "P-C100 PUMP SHUTDOWN          " ; JFB03
1508            ;       EPN0 = "YS-P-C100"
1509            ;       GRAFX0 = 18
1510            ;       GOTO AMSG
1511    1029    S130:   MSSG0 = "HANDVALVE 1-29 CLOSED         "
1512    1030            EPN0 = "ZS-IDX-2"
1513    1031            GRAFX0 = 18
1514    1032            GOTO AMSG
1515    1033    S131:   MSSG0 = "FC3 FILTER INLET PRESSURE HIGH"
1516    1034            EPN0 = "PSH-ILF-1"
1517    1035            GRAFX0 = 18
1518    1036            GOTO AMSG
1519    1037    S132:   MSSG0 = "HNDVLV 1-16 PC TO TK-C100 OPEN"
1520    1038            EPN0 = "ZS-RC3-4"
1521    1039            GRAFX0 = 18
1522    1040            GOTO AMSG
1523    1041    S133:   MSSG0 = "HNDVLV 1-17 PC TO TK-102AW OPN"
1524    1042            EPN0 = "ZS-RC3-5"
1525    1043            GRAFX0 = 18
1526    1044            GOTO AMSG
1527            S134:   ;       MSSG0 = "PROCESS CONDENSB AGIT AMPS HI "
1528            ;       EPN0 = "II-A-C100"
1529            ;       GRAFX0 = 18
1530            ;       GOTO AMSG
1531    1045    S135:   MSSG0 = "TK-C-100 UPPER INTERFACE LOW  "
1532    1046            EPN0 = "LI-C100-1"
1533    1047            GRAFX0 = 18
1534    1048            GOTO AMSG
1535            S136:   ;MSSG0 = "PROCESS CONDENSB PUMP AMPS LOW"        ;commented out, -mct5+
1536            ;       EPN0 = "II-P-C100"
1537            ;       GRAFX0 = 18
1538            ;       GOTO AMSG
1539    1049    S137:   MSSG0 = "F-CA1-L/R DELTA PRESS HI "
1540    1050            EPN0 = "PDI-CA1-3"
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1051            GRAFXO = 12
1052            GOTO AMSG
1053    S138:   MSSGO = "STM CONDSATE BASIN-1 LEVEL LOW"
1054            EPNO = "LSL-SC-1"
1055            GRAFXO = 22
1056            GOTO AMSG
1057    S139:   MSSGO = "STM CONDSATE BASIN-2 LEVEL LOW"
1058            EPNO = "LSL-SC-2"
1059            GRAFXO = 22
1060            GOTO AMSG
1061    S140:   MSSGO = "STM CONDSATE BASIN-3 LEVEL LOW"
1062            EPNO = "LSL-SC-3"
1063            GRAFXO = 22
1064            GOTO AMSG
        S141:   ;       MSSGO = "207-A SUMP PUMP P1 CURRENT HI "
        ;       EPNO = "II-SUMPP1"
        ;       GRAFXO = 22
        ;       GOTO AMSG
        S142:   ;       MSSGO = "STEAM CONDENS8 PUMP P3 AMPS HI"
        ;       EPNO = "II-SC-P3"
        ;       GRAFXO = 999
        ;       GOTO AMSG
1065    S143:   MSSGO = "PROCESS AIR CMPRESSR NO. 1 OFF"
1066            EPNO = "YS-CPE1-1"
1067            GRAFXO = 21
1068            GOTO AMSG
1069    S144:   MSSGO = "PROCESS AIR CMPRESSR NO. 2 OFF"
1070            EPNO = "YS-CPE2-1"
1071            GRAFXO = 21
1072            GOTO AMSG
1073    S145:   MSSGO = "INSTRUMENT AIR HEADER PRESS LO"
1074            EPNO = "PI-IA-1"
1075            GRAFXO = 21
1076            GOTO AMSG
1077    S146:   MSSGO = "INSTRUMENT AIR HEADER PRESS HI"
1078            EPNO = "PI-IA-1"
1079            GRAFXO = 21
1080            GOTO AMSG
        S147:   ;       MSSGO = "PROCESS AIR HEADER PRESSURE LO"
        ;       EPNO = "PI-PA-1"
        ;       GRAFXO = 21
        ;       GOTO AMSG
1081    S148:   MSSGO = "PROCESS AIR HEADER PRESSURE HI"
1082            EPNO = "PI-PA-1"
1083            GRAFXO = 21
1084            GOTO AMSG
1085    S149:   MSSGO = "COLD JNCTN AMBIENT SENSOR LOLO"
1086            EPNO = "TI-AMBS-1"
1087            GRAFXO = 21
1088            GOTO AMSG
1089    S150:   MSSGO = "COLD JNCTN AMBIENT SENSOR LOW "
1090            EPNO = "TI-AMBS-1"
1091            GRAFXO = 21
1092            GOTO AMSG
1093    S151:   MSSGO = "COLD JNCTN AMBIENT SENSOR HIGH"
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1596   1094          EPNO = "TI-AMBS-1"
1597   1095          GRAFXO = 21
1598   1096          GOTO AMSG
1599   1097   S152:  MSSGO = "COLD JNCTN AMBIENT SENSOR HIHI"
1600   1098          EPNO = "TI-AMBS-1"
1601   1099          GRAFXO = 21
1602   1100          GOTO AMSG
1603   1101   S153:  MSSGO = "COLD JNCTN AMBIENT SENSOR LOLO"
1604   1102          EPNO = "TI-AMBS-2"
1605   1103          GRAFXO = 21
1606   1104          GOTO AMSG
1607   1105   S154:  MSSGO = "COLD JNCTN AMBIENT SENSOR LOW "
1608   1106          EPNO = "TI-AMBS-2"
1609   1107          GRAFXO = 21
1610   1108          GOTO AMSG
1611   1109   S155:  MSSGO = "COLD JNCTN AMBIENT SENSOR HIGH"
1612   1110          EPNO = "TI-AMBS-2"
1613   1111          GRAFXO = 21
1614   1112          GOTO AMSG
1615   1113   S156:  MSSGO = "COLD JNCTN AMBIENT SENSOR HIHI"
1616   1114          EPNO = "TI-AMBS-2"
1617   1115          GRAFXO = 21
1618   1116          GOTO AMSG
1619   1117   S157:  MSSGO = "ELUANT AGITATOR MOTOR CF-ON   "
1620   1118          EPNO = "YS-A-E101"
1621   1119          GRAFXO = 19
1622   1120          GOTO AMSG
1623   1121   S158:  MSSGO = "ELUANT PUMP MOTOR CONFIRM ON  "
1624   1122          EPNO = "YS-P-E101"
1625   1123          GRAFXO = 19
1626   1124          GOTO AMSG
1627   1125   S159:  MSSGO = "ANTIFOAM AGITATOR MOTOR CF-ON "
1628   1126          EPNO = "YS-A-E102"
1629   1127          GRAFXO = 19
1630   1128          GOTO AMSG
1631   1129   S160:  MSSGO = "ANTIFOAM PUMP MOTOR CONFIRM ON"
1632   1130          EPNO = "YS-P-E102"
1633   1131          GRAFXO = 19
1634   1132          GOTO AMSG
1635   1133   S161:  MSSGO = "DECON AGITATOR MOTOR CF-ON    "
1636   1134          EPNO = "YS-A-104"
1637   1135          GRAFXO = 19
1638   1136          GOTO AMSG
1639   1137   S162:  MSSGO = "DECON PUMP MOTOR CONFIRM ON   "
1640   1138          EPNO = "YS-P-E104"
1641   1139          GRAFXO = 19
1642   1140          GOTO AMSG
1643   1141   S163:  MSSGO = "TK-E-101 LIQUID TEMPERATURE HI"
1644   1142          EPNO = "TI-E101-2"
1645   1143          GRAFXO = 19
1646   1144          GOTO AMSG
1647   1145   S164:  MSSGO = "TK-E-101 WEIGHT FACTOR LOLO   "
1648   1146          EPNO = "WFI-E101"
1649   1147          GRAFXO = 19
1650   1148          GOTO AMSG
```

```
1149    S165:   MSSG0 = "TK-E-101 WEIGHT FACTOR LO     "
1150            EPN0 = "WFI-E101"
1151            GRAFX0 = 19
1152            GOTO AMSG
1153    S166:   MSSG0 = "TK-E-102 WEIGHT FACTOR LOLO   "
1154            EPN0 = "WFI-E102"
1155            GRAFX0 = 19
1156            GOTO AMSG
1157    S167:   MSSG0 = "TK-E-102 WEIGHT FACTOR LO     "
1158            EPN0 = "WFI-E102"
1159            GRAFX0 = 19
1160            GOTO AMSG
1161    S168:   MSSG0 = "TK-E-104 LIQUID TEMP HIGH     "
1162            EPN0 = "TI-E104-2"
1163            GRAFX0 = 19
1164            GOTO AMSG
1165    S169:   MSSG0 = "TK-E-104 WEIGHT FACTOR LOLO   "
1166            EPN0 = "WFI-E104"
1167            GRAFX0 = 19
1168            GOTO AMSG
1169    S170:   MSSG0 = "TK-E-104 WEIGHT FACTOR LO     "
1170            EPN0 = "WFI-E104"
1171            GRAFX0 = 19
1172            GOTO AMSG
        S171:   ;       MSSG0 = "LERF NORTH GATE OPEN          "  ; JFB02
        ;       EPN0 = "ZS-105PS1"
        ;       GRAFX0 = 24
        ;       GOTO AMSG
        S172:   ;       MSSG0 = "LERF SOUTH GATE OPEN          "  ; JFB02
        ;       EPN0 = "ZS-105PS2"
        ;       GRAFX0 = 24
        ;       GOTO AMSG
1173    S173:   MSSG0 = "LERF LEACHATE PUMP 42 ON      "  ; +mct4-
1174            EPN0 = "YS-P-42"
1175            GRAFX0 = 24
1176            GOTO AMSG
1177    S174:   MSSG0 = "LERF LEACHATE PUMP 43 ON      "  ; +mct4-
1178            EPN0 = "YS-P-43"
1179            GRAFX0 = 24
1180            GOTO AMSG
1181    S175:   MSSG0 = "LERF LEACHATE PUMP 44 ON      "  ; +mct4-
1182            EPN0 = "YS-P-44"
1183            GRAFX0 = 24
1184            GOTO AMSG
1185    S176:   MSSG0 = "P-C106 PUMP SHUTDOWN          "  ; JFB01
1186            EPN0 = "YS-P-C106"
1187            GRAFX0 = 18
1188            GOTO AMSG
1189    S177:   MSSG0 = "HV-CA1-10 TRAVEL TO RAW WATER "  ; JFB01
1190            EPN0 = "HV-CA1-10"
1191            GRAFX0 = 12
1192            GOTO AMSG
        ;
        ;       END STRINGS COLLECTION FOR ALARM SUBROUTINE
        ;
```

```
1706            ;        BEGIN MESSAGE CREATION FOR ALARM SUBROUTINE:
1707            ;
1708    1193    AMSG:    IN1 = TIMSTR(TIMEO)
1709    1195             IF IN1 != 8 THEN TIMEO = "TIMEFAIL"
1710    1196             IN1 = DATSTR(DATEO)
1711    1198             IF IN1 != 9 THEN DATEO = "DATE FAIL"
1712    1199             IN1 = APPEND(LSGO,DATEO," ",TIMEO,"  ",EPNO)
1713    1200             LET PALARM = 1
1714            ;
1715    1201             ASSIGN PLINE = INT1
1716    1202             FOR JLOOP = 1 TO 177              ; +mct4-
1717    1203             IF PLINE THEN
1718                        BEGIN
1719    1204                PLINE = PLINE + 1
1720            ;           PRINT 0,"     ~~~ ALM: WHERE PLINE = PLINE + 1,  PLINE = %i, JLOOP = %i",pline,jloop
1721                        END
1722    1205             IF JLOOP = ILOOP THEN
1723                        BEGIN
1724    1206                IF(PLINE)THEN
1725                          BEGIN
1726            ;             PRINT 0,"  DURING ALM, PLINE LAERDY > 0, PLINE = %i",PLINE
1727    1207                  GOTO TERM
1728                          END
1729    1208                PLINE = 1
1730                        END
1731    1209             STEP PLINE BY 1
1732    1210             NEXT JLOOP
1733            ;
1734            ;        END MESSAGE CREATION FOR ALARM SUBROUTINE:
1735            ;
1736    1211             ASSIGN PLINE = INTO
1737    1212             STEP PLINE BY ILOOP
1738    1213             PLINE = 1
1739    1214             RETURN
1740            ;
1741            ;        END ALARM SUBROUTINE
1742            ;
1743            ;        BEGIN ERRORS SUBROUTINE:
1744            ;
1745    1215    ERRSUB:  IF ERRN != ERRNUM() THEN
1746                      BEGIN
1747    1216              TIMERON STMRO
1748    1217              TIMERCLR STMRO
1749    1218              FSPARO = 1
1750    1219              ERRN = ERRNUM()
1751    1220              ERRL = ERRLIN()
1752            ;         PRINT ADI,"ERROR # %i AT LINE %i",errn,errl
1753                      END
1754    1221             ERSCLR
1755    1222             WAIT 5
1756    1223             GOTO AGAIN
1757            ;
1758            ;        END ERRORS SUBROUTINE
1759            ;
1760            ;        TERMINATE SURBOUTINE:
```

```
1761            ;
1762    1224    TERM:   FABORT = 0
1763    1225            PRINT 0,"       --- WHITE1 TERMINATED"
1764                    END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 26128 Bytes, 1633 Pages
305 Forward Reference(s)

ANBATCH

```
;       A N B A T C H . S E Q                                   VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on graphics, and
;                       printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]ANBATCH
;
;       UNIT = 1, SKDKEY = 0, 1, 2, 3
;
;       Assoc. UPF:     [300,1]_TNKFRM.___      TNKFRM.LST
;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
;       SDB:            [300,1]PCM1ASDB.___     PCM1ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       PDIN      'EPN'         ---
;       PTYPE     IALMn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FXn           Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Tracks which graphic has an alarm
;       PPASS     FPASn         If set (1), turn lamp off when alarm is ACKnowledged
;       PSN       FSNn          Flag for the graphic to ACKnowledge
;       ---       FHOLD         Flag to update the lamps
;       ---       FNING         Flag for DOG1A.C micro select
;       ---       ACK           Flag for C program to ACK system wide
;
;  MODIFICATION LOG:
;
;       05-APR-93       Modified MCC OFF white alarm on all 7           M. Teats
;                       YS- signals to pump OFF white alarm because
;                       the YS DINs do not indicate MCC status - they
;                       indicate the pump status.
;
;-mct1+  13-MAY-93       Remove pump shutdown DEV white alarms, which   M. Teats
;                       are based on the analog signals, because they
;                       are not needed due to the 4/5/93 mods.  See
;                       CCN# 93MAY13-01.
;
```

```
56          ;       15-JUN-93       Added comments and baselined for        M. Teats
57          ;                       D/3 version 3.3.  CCN# 93JUN01-01.
58          ;
59          ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
60          ;                       system. Rebaselined document. Removed
61          ;                       obsolite Select() statements.
62          ;
63          ;  END MOD LOG
64          ;
65          UNIT    ANFARM
66          ;
67                  PUMP == FLSPIT
68                  AUTO == 'FQI-AN-1':CB_FLG:1             ; For FQI-RESET auto mode check
69                  CALOUT == 'FQI-AN-1':CB_OTVL:1          ; For FQI-RESET calc block outvalue
70          ;
71  0000            GETUNIT TRIP                            ; Which sequence unit is program running in
72  0001            IF TRIP != 1 THEN                       ; Abort if running in wrong seq. unit
73                     BEGIN
74  0002               FSTART = 1
75  0003               ILOOP = 54
76  0004               GOSUB CYCL
77  0005               FSTART = 1
78  0006               PRINT ADI," >>>>>  ATTEMPT TO RUN ANBATCH IN WRONG UNIT"
79  0007               GOTO TERM
80                     END
81          ;       IF !SELECT() THEN GOTO AGAIN
82          ;
83          ;       B E G I N   I N I T I A L I Z I N G :
84          ;
85  0008            NOP
86  0009    INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
87  0010            LET FSTART = 0                  ; Program start flag
88  0011            LET FLDALM = 0
89  0012            LET FSL7 = 0                    ; For FQI-RESET manual mode flag
90  0013            LAMP 0,3,0                      ; Turn off the lamps
91  0014            LAMP 0,2,0
92  0015            LAMP 0,1,0
93  0016            LAMP 0,0,0
94  0017            ASSIGN PDEV = ANFARM                            ; First of 5 alarm ack devices
95  0018            FOR ILOOP = 1 TO 5
96  0019             PDEV:DEV_TMPO = 1                              ; Set all 5 devices to ack state
97  0020            IF AND(PDEV:DEV_ALMCT,16) THEN                  ; If alarm device is inha, remove the inha
98  0021               PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
99  0022            IF AND(PDEV:DEV_ALMCT,32) THEN                  ; If alarm device is ack, clear it
100 0023                PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
101 0024            STEP PDEV BY 1
102 0025            NEXT ILOOP
103         ;
104         ;       First, set all flags and integers:
105         ;
106 0026            ASSIGN PDIN = 'YS-AN-101'                       ; Assign pointer to first DIN
107 0027            ASSIGN PSTAT = INTO
108 0028            ASSIGN PTYPE = IALMO
109 0029            ASSIGN PREV = FXO
110 0030            ASSIGN PSKID = SKIDO
```

```
0031            ASSIGN PPASS = FPAS0
        ;
0032            LET FARM = 0                                    ; Set up values for different graphics
0033            SERPIT = 1                                      ; SKID of each EPN indicates graphic
0034            VLVPIT = 2
0035            HVAC = 3
0036            BLD271 = 4
        ;
0037            LEAK0 = 3                                       ; FARM
0038            LEAK1 = 64                                      ; SERVICE PIT ( NOT USED )
0039            LEAK2 = 1                                       ; VALVE PIT
0040            LEAK3 = 2                                       ; HVAC
0041            LEAK4 = 0                                       ; 271
        ;
0042            FOR ILOOP = 0 TO 44                             ; For DINs
0043            LET PPASS = 0
0044            LET PREV = 0
0045            LET PTYPE = 2
        ;       BLET PSTAT = 0
0046            IF AND(PDIN:DIN_DFLG,3) THEN                    ; Check for alarms (must be red or yellow)
                   BEGIN
0047               LET PTYPE = 2                                ; Default to yellow alarm
0049               IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1            ; Reverse acting
0051               IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4           ; Set to red critical alarm
                   END
0053            IF ILOOP < 21 THEN LET PSKID = FARM                     ; These are set by IPN order
0055            IF (ILOOP > 20 & ILOOP < 29) THEN LET PSKID = VLVPIT
0057            IF (ILOOP > 28 & ILOOP < 37) THEN LET PSKID = HVAC
0059            IF ILOOP > 36 THEN LET PSKID = BLD271
0060            IF AND(PDIN:DIN_ALMCT,32) THEN
0061               PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0062    SKP:    STEP PSTAT BY 1
0063            STEP PDIN BY 1
0064            STEP PTYPE BY 1
0065            STEP PREV BY 1
0066            STEP PSKID BY 1
0067            STEP PPASS BY 1
0068            NEXT ILOOP
        ;
        ;-mct1- Abandoned code for white alarms tied to pump devices:
        ;
        ;       FOR ILOOP = 45 TO 51
        ;       BLET PSTAT = 0
        ;       BLET PTYPE = 1
        ;       BLET PREV = 0
        ;       BLET PSKID = 0
        ;       BLET PPASS = 1
        ;       STEP PSTAT BY 1
        ;       STEP PTYPE BY 1
        ;       STEP PREV BY 1
        ;       STEP PSKID BY 1
        ;       STEP PPASS BY 1
        ;       NEXT ILOOP
        ;-mct1-
                ;
```

```
                    ;  Set the white alarms:
                    ;
0069                LET IALM0 = 1
0070                LET IALM3 = 1
0071                LET IALM6 = 1
0072                LET IALM9 = 1
0073                LET IALM12 = 1
0074                LET IALM15 = 1
0075                LET IALM18 = 1
0076                LET IALM42 = 1
                    ;
                    ;  Pumps alarm on 0, No lamp when Ack:
                    ;
0077                FPAS0 = 1
0078                FPAS3 = 1
0079                FPAS6 = 1
0080                FPAS9 = 1
0081                FPAS12 = 1
0082                FPAS15 = 1
0083                FPAS18 = 1
          ;
          ;         E N D   I N I T I A L I Z I N G
          ;
          ;         S E N D   P R O G R A M   S T A R T   M E S S A G E
          ;
0084                ILOOP = 53
0085                FSTART = 1
0086                TIMERCLR STMR2
0087                TIMERON STMR2
0088                GOSUB CYCL
0089                ON ERROR GOSUB ERRSUB
          ;
          ;         B E G I N   P R O G R A M   L O O P :
          ;
0090      AGAIN:    MARK STEP "AGAIN",0,0
          ;         IF !SELECT() THEN FNING = 0
          ;            ELSE FNING = 1                        ; Flag 480 determines if selected micro for DOG1A.C
          ;         WAITUNTIL SELECT() | FABORT              ; Wait until micro selected or program aborted
          ;         IF (FABORT) THEN GOTO TERM
          ;         IF FNING = 0 THEN FHOLD = 1
0092                IF STMR2 > 30 THEN FHOLD = 1
0093                WAIT 1
          ;
0094                DEV0 = 0                                 ; Lamp 3
0095                DEV1 = 0
0096                DEV2 = 0                                 ; Lamp 1
0097                DEV3 = 0                                 ; Lamp 2
0098                DEV4 = 0                                 ; Lamp 0
          ;
          ;         LOOP CHECKS IF ANY OF 5 ALARM DEVICES HAS BEEN ACKNOWLEDGED.
          ;         IF ALARM DEVICE ACKNOWLEDGED AND DEV_TMP0 = 2 THEN ACKNOWLEDGE
          ;         EVERY SIGNAL ON THAT GRAPHIC
          ;
          ;                DEVICE          FLAG            OFFSET
          ;                ------          ------          ------
```

```
221          ;              ANFARM          FLEAK0          447
222          ;              AN-SERPIT       FLEAK1          448     (NOT USED)
223          ;              AN-VLVPIT       FLEAK2          449
224          ;              AN-HVAC         FLEAK3          450
225          ;              AN-271          FLEAK4          451
226          ;
227   0099            ASSIGN PDEV = ANFARM
228   0100            ASSIGN PSN = FSN0
229   0101            ASSIGN PACK = FLEAK0
230   0102            FOR ILOOP = 0 TO 4
231   0103            LET PSN = 0
232   0104            IF (PDEV:DEV_TMP0 = 2) & AND(PDEV:DEV_ALMCT,32) THEN
233                      BEGIN
234   0105               PDEV:DEV_TMP0 = 1                    ; Put device in ack state
235   0106               LET PSN = 1                          ; Set flag for the graphic to ack
236   0107               LET FLGACK = 1                       ; WATCH.C spawns ACKFLG.C, which resets flag
237   0108               LET ACK = 1                          ; Set flag for C program to ACK system wide
238   0109               LET PACK = 1
239   0110               ASSIGN PMSG0 = LEAK0
240   0111               STEP PMSG0 BY ILOOP
241   0113               IF ILOOP != 1 THEN LAMP 0,PMSG0,1    ; Flash Lamp
242                      END
243   0114            STEP PSN BY 1
244   0115            STEP PACK BY 1
245   0117            IF ILOOP < 6 THEN STEP PDEV BY 1 ; Only 5 devices
246   0118            WAIT 2
247   0119            NEXT ILOOP
248          ;
249          ;        FIELD ALARM SILENCE FEATURE REMOVED FROM ANFARM
250          ;        UNTIL 271-AN PANEL BOARD WIRING RESOLVED (1/24/92 RNK):
251          ;
252          ;        IF (ACK) THEN
253          ;          BEGIN
254          ;          BTIMERCLR STMR1
255          ;          BTIMERON STMR1
256          ;          BLET FLDALM = 1
257          ;          END
258          ;        IF (FLDALM) THEN IF STMR1 >= 30 THEN      ; If field alarm then ack in 30 sec
259          ;          BEGIN
260          ;          BTIMEROFF STMR1
261          ;          BTIMERCLR STMR1
262          ;          BLET FLDALM = 0
263          ;          OPEN 'HS-AN-SIL'                        ; Silence alarm from PCM
264          ;          END
265                   ;
266                   ;  If field alarm ack then set flag and start timer:
267                   ;
268   0121            IF (RESET) THEN IF LMPVAR < 2 THEN
269                     BEGIN
270   0122              LET FLDALM = 1
271   0123              TIMERON STMR1
272   0124              LET RESET = 0
273                     END
274   0126            IF LMPVAR = 2 THEN LET RESET = 1
275          ;
```

```
276          ;        BEGIN DINs:
277          ;
278   0127           ASSIGN PDIN = 'YS-AN-101'                ; First DIN in ANFARM
279   0128           ASSIGN PTYPE = iALMO
280   0129           ASSIGN PREV = FXO
281   0130           ASSIGN PSTAT = INTO
282   0131           ASSIGN PSKID = SKIDO
283   0132           ASSIGN PPASS = FPASO
284   0133           CURENT = 0                               ; Used to set lamp status
285   0134           NXT = 0                                  ; Temproary INT
286   0135           BITVAL = 0
287          ;
288   0136   LOP:    FOR ILOOP = 1 TO 45
289   0137           IF PTYPE THEN                                          ; If some alarm
290                     BEGIN                                        ;be1
291   0139              IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3  ; If EPN is inha
292   0141              IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5          ; If EPN is ibad
293   0143              IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4           ; If EPN is dis
294   0146              IF ! PSTAT THEN IF PREV = PDIN:DIN_VAL THEN GOSUB ALM  ; If not previously alarmed
295   0147              IF PSTAT THEN
296                        BEGIN                                     ;be2
297   0148                 IF PSTAT < 3 THEN                                 ; If not inha
298                           BEGIN                                  ;be3
299   0149                    IF PSTAT = 1 THEN
300                              BEGIN                               ;be4
301   0150                       IF AND(PDIN:DIN_ALMCT,32) THEN              ; If alarm is ack
302                                 BEGIN                            ;be5
303   0151                          LET PSTAT = 2
304   0152                          FHOLD = 1
305                                 END                              ;en5
306   0153                       IF ACK THEN                                 ; If a graphic has been ack
307                                 BEGIN                            ;be6  -   go find which graphic
308   0154                          CRIT
309   0155                          ASSIGN PSN = FSNO                ; Routine to find graphic
310   0156                          STEP PSN BY PSKID
311   0157                          IF PSN THEN                                 ; If this is the graphic
312                                    BEGIN                         ;be7  -   then ack it
313   0158                             LET PSTAT = 2
314   0160                             IF PTYPE = 1 THEN PDIN:DIN_ALMCT = OR(PDIN:DIN_ALMCT,32)
315   0161                             FPASS = 1
316   0162                             GOSUB ACKK                          ; Print signal was ack
317                                    END                           ;en7
318                                 END                              ;en6
319                              END                                 ;en4
320   0164                       IF PREV != PDIN:DIN_VAL THEN GOSUB CLR      ; If alarm has cleared
321   0165                       ASSIGN PMSGO = DEVO                         ; Find active alarms & graphic:
322   0166                       STEP PMSGO BY PSKID
323   0167                       IF PPASS THEN
324                                 BEGIN
325   0169                          IF PSTAT = 1 THEN PMSGO = OR(PMSGO,PSTAT)
326                                 END
327   0170                       ELSE PMSGO = OR(PMSGO,PSTAT)
328                           END                                    ;en3
329   0171                 ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN
330                           BEGIN
```

```
 331    0172                    LET PSTAT = 0
 332    0173                    FHOLD = 1
 333                            END
 334                        END                                        ;en2
 335                      END                                          ;en1
 336    0175            ELSE IF PSTAT THEN PSTAT = 0
 337    0176            STEP PDIN BY 1
 338    0177            STEP PTYPE BY 1
 339    0178            STEP PREV BY 1
 340    0179            STEP PSTAT BY 1
 341    0180            STEP PSKID BY 1
 342    0181            STEP PPASS BY 1
 343    0182            NEXT ILOOP
 344            ;
 345            ;       END DINs
 346            ;
 347    0183            DEV6 = 0
 348    0184            DEV7 = 0
 349    0185            DEV8 = 0
 350    0186            DEV9 = 0
 351    0187            DEV10 = 0
 352    0188            DEV11 = 0
 353            ;
 354            ;-mct1- Abandoned code for white alarms tied to pump devices:
 355            ;
 356            ;AUX:   ASSIGN PEPN = 'P-AN-101'
 357            ;
 358            ;       FOR ILOOP = 46 TO 52
 359            ;       IF PTYPE THEN
 360            ;          BEGIN
 361            ;          IF AND(PEPN:DEV_ALMCT,16)THEN BLET PSTAT = 3
 362            ;          IF AND(PEPN:DEV_ALMCT,4) THEN BLET PSTAT = 5
 363            ;          IF !AND(PEPN:DEV_FLG,8) THEN BLET PSTAT = 4
 364            ;          IF PSTAT < 3 THEN
 365            ;             BEGIN
 366            ;             IF (PSTAT = 1) & AND(PEPN:DEV_ALMCT,32)THEN
 367            ;                BEGIN
 368            ;                BLET PSTAT = 2
 369            ;                FHOLD = 1
 370            ;                END
 371            ;             IF ACK THEN
 372            ;                BEGIN
 373            ;                ASSIGN PSN = FSNO
 374            ;                STEP PSN BY PSKID
 375            ;                IF PSN & PSTAT = 1 THEN
 376            ;                   BEGIN
 377            ;                   BLET PSTAT = 2
 378            ;                   IF PTYPE = 1 THEN PEPN:DEV_ALMCT = OR(PEPN:DEV_ALMCT,32)
 379            ;                   FPASS = 1
 380            ;                   GOSUB ACKK
 381            ;                   END
 382            ;                END
 383            ;             IF !PSTAT THEN
 384            ;                BEGIN
 385            ;                IF AND(PEPN:DEV_STAT,16)THEN
```

```
386          ;                    BEGIN
387          ;                    BLET PSTAT = 1
388          ;                    IF AND(PEPN:DEV_ALMCT,32)THEN PEPN:DEV_ALMCT = XOR(PEPN:DEV_ALMCT,32)
389          ;                    ASSIGN PDEV = ANFARM
390          ;                    STEP PDEV BY PSKID
391          ;                    PDEV:DEV_TMPO = 2
392          ;                    GOSUB CYCL
393          ;                    END
394          ;                 END
395          ;              ELSE IF !AND(PEPN:DEV_STAT,16)THEN
396          ;                 BEGIN
397          ;                 BLET PSTAT = 0
398          ;                 IF AND(PEPN:DEV_ALMCT,32)THEN PEPN:DEV_ALMCT = XOR(PEPN:DEV_ALMCT,32)
399          ;                 FHOLD = 1
400          ;                 END
401          ;              IF PSTAT THEN
402          ;                 BEGIN
403          ;                 ASSIGN PMSGO = DEV6
404          ;                 STEP PMSGO BY PSKID
405          ;                 IF PPASS THEN
406          ;                    BEGIN
407          ;                    IF PSTAT = 1 THEN PMSGO = OR(PMSGO,PSTAT)
408          ;                    END
409          ;                 ELSE PMSGO = OR(PMSGO,PSTAT)
410          ;                 END
411          ;              END
412          ;           ELSE IF !AND(PEPN:DEV_ALMCT,16)&!AND(PEPN:DEV_ALMCT,4)&AND(PEPN:DEV_FLG,8)THEN PSTAT = 0
413          ;           END
414          ;        STEP PEPN BY 1
415          ;        STEP PTYPE BY 1
416          ;        STEP PREV BY 1
417          ;        STEP PSTAT BY 1
418          ;        STEP PSKID BY 1
419          ;        STEP PPASS BY 1
420          ;        NEXT ILOOP
421          ;-mct1-
422          ;
423   0189   S2ND:    ACK = 0
424   0190           SORT = 0
425          ;
426   0191           DEV12 = OR(DEV0,DEV6)
427   0192           DEV13 = OR(DEV1,DEV7)
428   0193           DEV14 = OR(DEV2,DEV8)
429   0194           DEV15 = OR(DEV3,DEV9)
430   0195           DEV16 = OR(DEV4,DEV10)
431   0196           DEV17 = OR(DEV5,DEV11)
432          ;
433   0197           ASSIGN PMSGO = DEV12
434   0198           ASSIGN PMSG1 = FARM
435   0199           FOR LLOOP = 1 TO 5
436   0200           IF PMSGO THEN
437                    BEGIN
438   0202             IF AND(PMSGO,1) THEN PMSG1 = 2
439   0203             ELSE PMSG1 = 1
440                    END
```

```
441   0204          ELSE PMSG1 = 0
442   0205          STEP PMSG0 BY 1
443   0206          STEP PMSG1 BY 1
444   0207          NEXT LLOOP
445           ;
446   0208          IF (FHOLD = 1) THEN
447                    BEGIN
448   0209             LAMP 0,3,FARM
449   0210             LAMP 0,2,HVAC
450   0211             LAMP 0,1,VLVPIT
451   0212             LAMP 0,0,BLD271
452   0213             FHOLD = 0
453   0214             TIMERCLR STMR2
454   0215             TIMERON STMR2
455                    END
456   0216          MARK STEP "BOTTOM",0,0
457   0217          NOCRIT
458           ;
459           ;     B E G I N   F Q I - R E S E T :
460           ;
461           ;     Function:       For totalizers that have a CALC block which performs the
462           ;                     integration, set the output of the CALC block to zero
463           ;                     after the FQI loop has been placed in AUTO from MANUAL.
464           ;
465   0219          IF !AND(AUTO,64) THEN FSL7 = 1                  ; If manual, set manual flag
466   0220          IF AND(AUTO,64) & AND(FSL7,1) THEN              ; For manual-auto transition
467                    BEGIN
468   0221             FSL7 = 0
469   0222             CALOUT = 0.0
470                    END
471           ;
472           ;     E N D   F Q I - R E S E T
473           ;
474   0223          GOTO AGAIN
475           ;
476           ;     E N D   P R O G R A M   L O O P
477           ;
478           ;     BEGIN CLEAR, ALARM, CYCLE, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
479           ;
480   0224  CLR:  LET PSTAT = 0
481   0226        IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
482   0227        FHOLD = 1
483   0228        RETURN
484           ;
485   0229  ALM:  LET PSTAT = 1          ; Print message, flash lamp, horn on, scroll message at bottom of graphic
486   0230        CRIT                                            ; Critical
487   0232        IF AND(PTYPE,3)THEN LET FALMON = 1              ; Audible alarm on
488   0233        IF AND(PDIN:DIN_ALMCT,32)THEN                   ; Clear the scan block
489   0234           PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
490   0235        ASSIGN PMSG0 = LEAK0
491   0236        STEP PMSG0 BY PSKID
492   0237        LAMP 0,PMSG0,2                                  ; Lamp flash
493   0238        ASSIGN PDEV = ANFARM                            ; Find DEV and turn it on
494   0239        STEP PDEV BY PSKID
495   0240        PDEV:DEV_TMP0 = 2
```

```
496              ;
497              ;        Scrolling alarm summary region in graphic (message, time, date, alarm type):
498              ;
499      0241    CYCL:    LET LSG4 = LSG3                          ; LSG = message
500      0242             LET LSG3 = LSG2
501      0243             LET LSG2 = LSG1
502      0244             LET LSG1 = LSG0
503      0245             LET COLOR4 = COLOR3                              ; COLOR = type of alarm
504      0246             LET COLOR3 = COLOR2
505      0247             LET COLOR2 = COLOR1
506      0248             LET COLOR1 = COLOR0
507      0249             LET EPNS4 = EPNS3                                ; EPN
508      0250             LET EPNS3 = EPNS2
509      0251             LET EPNS2 = EPNS1
510      0252             LET EPNS1 = STRNG1
511      0253             LET GRAFX4 = GRAFX3                              ; GRAFX = graphic number
512      0254             LET GRAFX3 = GRAFX2
513      0255             LET GRAFX2 = GRAFX1
514      0256             LET GRAFX1 = GRAFX0
515      0257             LET SDATE4 = SDATE3                              ; SDATE = time and date
516      0258             LET SDATE3 = SDATE2
517      0259             LET SDATE2 = SDATE1
518      0260             LET SDATE1 = SDATE0
519              ;
520              ;        ALARM TYPER STRINGS:
521              ;
522      0261    ACKK:    FHOLD = 1
523      0262             ON ILOOP GOTO S1,S2,S3,S4,S5,S6,S7,S8,S9,S10
524      0263             ON ILOOP - 10 GOTO S11,S12,S13,S14,S15,S16,S17,S18,S19,S20
525      0264             ON ILOOP - 20 GOTO S21,S22,S23,S24,S25,S26,S27,S28,S29,S30
526      0265             ON ILOOP - 30 GOTO S31,S32,S33,S34,S35,S36,S37,S38,S39,S40
527      0266             ON ILOOP - 40 GOTO S41,S42,S43,S44,S45,S46,S47,S48,S49,S50
528      0267             ON ILOOP - 50 GOTO S51,S52,S53,S54,S55
529      0268             GOTO AMSG
530      0269    S1:      LET STRNG0 = "PUMP AN-101 OFF       "
531      0270             LET STRNG1 ="YS-AN-101"
532      0271             GOTO AMSG
533      0272    S2:     LET STRNG0 = "AN-101 ANN RD HI/FAIL "
534      0273             LET STRNG1 ="RSH-AN101"
535      0274             GOTO AMSG
536      0275    S3:      LET STRNG0 = "AN-01C RAD HI/FAIL    "
537      0276             LET STRNG1 = "RSH-AN01C"
538      0277             GOTO AMSG
539      0278    S4:      LET STRNG0 = "PUMP AN-102 OFF       "
540      0279             LET STRNG1 = "YS-AN-102"
541      0280             GOTO AMSG
542      0281    S5:      LET STRNG0 = "AN-102 ANN RD HI/FAIL "
543      0282             LET STRNG1 = "RSH-AN102"
544      0283             GOTO AMSG
545      0284    S6:      LET STRNG0 = "AN-02C RADN HI/FAIL   "
546      0285             LET STRNG1 = "RSH-AN02C"
547      0286             GOTO AMSG
548      0287    S7:      LET STRNG0 = "PUMP AN-103 OFF       "
549      0288             LET STRNG1 = "YS-AN-103"
550      0289             GOTO AMSG
```

```
551   0290   S8:     LET STRNG0 = "AN-103 ANN RD HI/FAIL "
552   0291           LET STRNG1 = "RSH-AN103"
553   0292           GOTO AMSG
554   0293   S9:     LET STRNG0 = "AN-03C RADN HI/FAIL   "
555   0294           LET STRNG1 = "RSH-AN03C"
556   0295           GOTO AMSG
557   0296   S10:    LET STRNG0 = "PUMP AN-104 OFF       "
558   0297           LET STRNG1 = "YS-AN-104"
559   0298           GOTO AMSG
560   0299   S11:    LET STRNG0 = "AN-104 ANN RD HI/FAIL "
561   0300           LET STRNG1 = "RSH-AN104"
562   0301           GOTO AMSG
563   0302   S12:    LET STRNG0 = "AN-04C RADN HI/FAIL   "
564   0303           LET STRNG1 = "RSH-AN04C"
565   0304           GOTO AMSG
566   0305   S13:    LET STRNG0 = "PUMP AN-105 OFF       "
567   0306           LET STRNG1 = "YS-AN105"
568   0307           GOTO AMSG
569   0308   S14:    LET STRNG0 = "AN-105 ANN RD HI/FAIL "
570   0309           LET STRNG1 = "RSH-AN105"
571   0310           GOTO AMSG
572   0311   S15:    LET STRNG0 = "AN-05C RADN HI/FAIL   "
573   0312           LET STRNG1 = "RSH-AN05C"
574   0313           GOTO AMSG
575   0314   S16:    LET STRNG0 = "PUMP AN-106 OFF       "
576   0315           LET STRNG1 = "YS-AN-106"
577   0316           GOTO AMSG
578   0317   S17:    LET STRNG0 = "AN-106 ANN RD HI/FAIL "
579   0318           LET STRNG1 = "RSH-AN106"
580   0319           GOTO AMSG
581   0320   S18:    LET STRNG0 = "AN-06C RADN HI/FAIL   "
582   0321           LET STRNG1 = "RSH-AN06C"
583   0322           GOTO AMSG
584   0323   S19:    LET STRNG0 = "PUMP AN-107 OFF       "
585   0324           LET STRNG1 = "YS-AN-107"
586   0325           GOTO AMSG
587   0326   S20:    LET STRNG0 = "AN-107 ANN RD HI/FAIL "
588   0327           LET STRNG1 = "RSH-AN107"
589   0328           GOTO AMSG
590   0329   S21:    LET STRNG0 = "AN-07C RADN HI/FAIL   "
591   0330           LET STRNG1 = "RSH-AN07C"
592   0331           GOTO AMSG
593   0332   S22:    LET STRNG0 = "AN SERVICE PIT LEAK   "
594   0333           LET STRNG1 = "LDS-SP-AN"
595   0334           GOTO AMSG
596   0335   S23:    LET STRNG0 = "AN SERPIT RAD HI/FAIL "
597   0336           LET STRNG1 = "RSH-SP-AN"
598   0337           GOTO AMSG
599   0338   S24:    LET STRNG0 = "AN PROCESS PITS LEAK  "
600   0339           LET STRNG1 = "LDS-AN-PP"
601   0340           GOTO AMSG
602   0341   S25:    LET STRNG0 = "AN SL-160/SL-168 LEAK "
603   0342           LET STRNG1 = "LDS-ANSL1"
604   0343           GOTO AMSG
605   0344   S26:    LET STRNG0 = "AN SN-260/SN-268 LEAK "
```

```
606   0345          LET STRNG1 = "LDS-ANSN2"
607   0346          GOTO AMSG
608   0347   S27:   LET STRNG0 = "AN CLEANOUT BOX LEAK  "
609   0348          LET STRNG1 = "LDS-COBAN"
610   0349          GOTO AMSG
611   0350   S28:   LET STRNG0 = "AN FLUSHLINE PRESS HI "
612   0351          LET STRNG1 = "PSH-ANSN1"
613   0352          GOTO AMSG
614   0353   S29:   LET STRNG0 = "AN DR-368 ENCASE LEAK "
615   0354          LET STRNG1 = "LDS-DR368"
616   0355          GOTO AMSG
617   0356   S30:   LET STRNG0 = "AN TANK EXH RADN HI   "
618   0357          LET STRNG1 = "RSH-AN-K1"
619   0358          GOTO AMSG
620   0359   S31:   LET STRNG0 = "AN K1 STKMON SMPL PMP "
621   0360          LET STRNG1 = "PSH-ANK11"
622   0361          GOTO AMSG
623   0362   S32:   LET STRNG0 = "AN K1 REC SMPL PUMP   "
624   0363          LET STRNG1 = "PSH-ANK12"
625   0364          GOTO AMSG
626   0365   S33:   LET STRNG0 = "AN TNK EX RD MON FAIL "
627   0366          LET STRNG1 = "RXS-AN-K1"
628   0367          GOTO AMSG
629   0368   S34:   LET STRNG0 = "AN ANN EXH RADN HIGH  "
630   0369          LET STRNG1 = "RSH-AN-K2"
631   0370          GOTO AMSG
632   0371   S35:   LET STRNG0 = "AN K2 STK MN SMPL PMP "
633   0372          LET STRNG1 = "PSH-ANK21"
634   0373          GOTO AMSG
635   0374   S36:   LET STRNG0 = "AN K2 REC SMPL PUMP   "
636   0375          LET STRNG1 = "PSH-ANK22"
637   0376          GOTO AMSG
638   0377   S37:   LET STRNG0 = "AN ANN EX RD MON FAIL "
639   0378          LET STRNG1 = "RXS-AN-K2"
640   0379          GOTO AMSG
641   0380   S38:   LET STRNG0 = "AN-271 BLD POWER LOSS "
642   0381          LET STRNG1 = "JXS-AN271"
643   0382          GOTO AMSG
644   0383   S39:   LET STRNG0 = "AN-271  RADN HI/FAIL  "
645   0384          LET STRNG1 = "RSHAN2711"
646   0385          GOTO AMSG
647   0386   S40:   LET STRNG0 = "AN-271 RADN HI/FAIL   "
648   0387          LET STRNG1 = "RSHAN2712"
649   0388          GOTO AMSG
650   0389   S41:   LET STRNG0 = "AN-241 RADN HI/FAIL   "
651   0390          LET STRNG1 = "RSH-AN-12"
652   0391          GOTO AMSG
653   0392   S42:   LET STRNG0 = "AN FARM GENERAL ALARM "
654   0393          LET STRNG1 = "QS-AN-271"
655   0394          GOTO AMSG
656   0395   S43:   LET STRNG0 = "AN HEAT TRACE OVERTMP "
657   0396          LET STRNG1 = "TXS-AN-2"
658   0397          GOTO AMSG
659   0398   S44:   LET STRNG0 = "AN AREA RADN BYPASS   "
660   0399          LET STRNG1 = "YS-AN-ARM"
```

```
661   0400          GOTO AMSG
662   0401   S45:   LET STRNG0 = "AN MASTER SHUTDOWN    "
663   0402          LET STRNG1 = "YS-AN-MSD"
664   0403          GOTO AMSG
665          ;
666          ;-mct1- Abandoned code for white alarms tied to pump devices:
667          ;
668          S46:   ;       BLET STRNG0 = "PUMP AN-101 SHUTDOWN  "
669          ;      BLET STRNG1 = "P-AN-101"
670          ;      GOTO AMSG
671          S47:   ;       BLET STRNG0 = "PUMP AN-102 SHUTDOWN  "
672          ;      BLET STRNG1 = "P-AN-102"
673          ;      GOTO AMSG
674          S48:   ;       BLET STRNG0 = "PUMP AN-103 SHUTDOWN  "
675          ;      BLET STRNG1 = "P-AN-103"
676          ;      GOTO AMSG
677          S49:   ;       BLET STRNG0 = "PUMP AN-104 SHUTDOWN  "
678          ;      BLET STRNG1 = "P-AN-104"
679          ;      GOTO AMSG
680          S50:   ;       BLET STRNG0 = "PUMP AN-105 SHUTDOWN  "
681          ;      BLET STRNG1 = "P-AN-105"
682          ;      GOTO AMSG
683          S51:   ;       BLET STRNG0 = "PUMP AN-106 SHUTDOWN  "
684          ;      BLET STRNG1 = "P-AN-106"
685          ;      GOTO AMSG
686          S52:   ;       BLET STRNG0 = "PUMP AN-107 SHUTDOWN  "
687          ;      BLET STRNG1 = "P-AN-107"
688          ;      GOTO AMSG
689          ;-mct1-
690          ;
691   0404   S53:   LET STRNG0 = "ANBATCH PROGRAM START "
692   0405          GOTO AMSG
693   0406   S54:   LET STRNG0 = "ANBATCH IN WRONG UNIT "
694   0407          GOTO AMSG
695   0408   S55:   LET STRNG0 = "ANBATCH TERMINATING   "
696   0409          GOTO AMSG
697          ;
698   0410   AMSG:  IF (FPASS)THEN
699                   BEGIN
700   0411            PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG1
701   0412            LET FPASS = 0
702   0413            GOTO NXT
703                   END
704   0415          IF PTYPE = 4 THEN LET COLOR0 = 3
705   0416            ELSE LET COLOR0 = PTYPE
706   0417          LET EPNS0 = STRNG1
707   0418          IN0 = TIMSTR(SSNG0)
708   0420          IF IN0 != 8 THEN LET SSNG0 = "TIMEFAIL"
709   0421          IN0 = APPEND(LSG0,STRNG0,SSNG0)
710   0423          IF IN0 < 0 THEN LSG0 = "APPEND FAILED!!"
711   0424          IN0 = DATSTR(SDATE0)
712   0426          IF IN0 != 9 THEN SDATE0 = "DATE FAIL"
713   0428          IF PSKID = 1 THEN LET GRAFX0 = 272
714   0430          IF PSKID = 2 THEN LET GRAFX0 = 272
715   0432          IF PSKID = 3 THEN LET GRAFX0 = 273
```

```
716   0434            IF PSKID = 4 THEN LET GRAFXO = 274
717   0436            IF PSKID = 5 THEN LET GRAFXO = 270
718   0438            IF PSKID = 0 THEN LET GRAFXO = 270
719   0440            IF PTYPE = 1 THEN PRINT ADI,"WHITE ALARM %p %p GRAPHICS %i",EPNSO,STRNGO,GRAFXO
720   0441    NXT:    IF FSTART = 1 THEN
721                      BEGIN
722   0442               LET COLORO = 0
723   0443               LET GRAFXO = 0
724   0444               LET STRNG1 =" "
725   0445               LET FSTART = 0
726   0446               PRINT ADI,"%p",STRNGO
727                      END
728   0447            RETURN
729           ;
730   0448    ERRSUB: IF ERRN != ERRNUM() THEN
731                    BEGIN
732   0449             LET ERRN = ERRNUM()
733   0450             LET ERRL = ERRLIN()
734   0451             PRINT ADI,"ERROR # %i AT LINE %i, ILOOP = %i",errn,errl,ILOOP
735                    END
736   0452            ERSCLR
737   0453            GOTO AGAIN
738           ;
739           ; TERM: LET FABORT = 0
740   0454    TERM:   STRNGO = "ANBATCH TERMINATED    "
741   0455            LET ILOOP = 55
742   0456            LET FSTART = 1
743   0457            GOSUB CYCL
744                   END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 8864 Bytes, 554 Pages
112 Forward Reference(s)

APBATCH

```
;       A P B A T C H . S E Q                                   VERSION 3
;
;       Function:       Sequence program for Lamp function,
;                       message display on graphics, and
;                       printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASILINE
;       Compiler        : SIC
;       Build command   : @[320,20]APBATCH
;
;       UNIT = 2, SKDKEY = 4, 5, 6, 7
;
;       Assoc. UPF:     [300,1]_TNKFRM.___      TNKFRM.LST
;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
;       SDB:            [300,1]PCM1ASDB.___     PCM1ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       PDIN      'EPN'         ---
;       PTYPE     IALMn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FXn           Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Tracks which graphic has an alarm
;       PPASS     FPASn         If set (1), turn lamp off when alarm is ACKnowledged
;       PSN       FSNn          Flag for the graphic to ACKnowledge
;       ---       FHOLD         Flag to update the lamps
;       ---       FNING         Flag for DOG1A.C micro select
;       ---       ACK           Flag for C program to ACK system wide
;
; MODIFICATION LOG:
;
;       12-DEC-91       30 Second SKID update added.                    R. Kersey
;
;-mct1+ 14-MAY-93       Added FALMON for DEV pump shutdown.             M. Teats
;
;       11-JUN-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
;
;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
;                       system. Rebaselined document. Removed
;                       obsolite Select() statements.
```

```
                ;
                ;       15-MAY-95       Revised to delete the grout signals and          J. Berger
                ;                       skid key 22. See EE-95-00126 and ECN
                ;                       620366.  (JFB01)
                ;
                ;  END MOD LOG
                ;
                UNIT    APFARM
                ;
                        GROUT == FLSPIT
                        AUTO == 'FQI-APSP1':CB_FLG:1                ; For FQI-RESET auto mode check
                        CALOUT == 'FQI-APSP1':CB_OTVL:1             ; For FQI-RESET calc block outvalue
                ;
        0000            ON HOLD GOSUB HLD
                ;
        0001            GETUNIT TRIP                                ; Which sequence unit is program running in
        0002            IF TRIP != 2 THEN                           ; Abort program if running in wrong unit
                           BEGIN
        0003               FSTART = 1
        0004               ILOOP = 95
        0005               GOSUB CYCL
        0006               FSTART = 1
        0007               PRINT ADI," >>>>>  ATTEMPT TO RUN APBATCH IN WRONG UNIT"
        0008               GOTO TERM
                           END
                ;       IF !SELECT() THEN GOTO AGAIN
                ;
                ;       B E G I N   I N I T I A L I Z I N G :
                ;
        0009            NOP
        0010            ERRN = 0
        0011            ERRL = 0
                ;
        0012    INIT:   LET FABORT = 0                      ; If FABORT = 1 then abort program
        0013            LET FSTART = 0                      ; Program start flag
        0014            LET FLDALM = 0
        0015            LET FSL7 = 0                        ; For FQI-RESET manual mode flag
        0016            LAMP 0,7,0                          ; Turn off the lamps
        0017            LAMP 0,6,0
        0018            LAMP 0,5,0
        0019            LAMP 0,4,0
        0020            LAMP 0,63,0
                ;       LAMP 0,22,9                         ; JFB01
        0021            ASSIGN PDEV = APFARM                                ; First of 6 alarm ack devices
        0022            FOR ILOOP = 1 TO 5                          ; JFB01
        0023            PDEV:DEV_TMPO = 1                                   ; Set all devices to ack state
        0024            IF AND(PDEV:DEV_ALMCT,16) THEN                      ; If alarm device is inha, remove the inha
        0025              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
        0026            IF AND(PDEV:DEV_ALMCT,32) THEN                      ; If alarm device is ack, clear it
        0027               PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
        0028            STEP PDEV BY 1
        0029            NEXT ILOOP
                ;
        0030            FARM = 0                            ; LAMP 7        LEAK0
        0031            SERPIT = 1                          ; not used
```

```
0032            VLVPIT = 2                      ; LAMP 5        LEAK2
0033            HVAC = 3                        ; LAMP 6        LEAK3
0034            BLD271 = 4                      ; LAMP 4        LEAK4
        ;       GROUT = 5                       ; LAMP22        LEAK5   JFB01
        ;
0035            LEAK0 = 7                       ; FARM
0036            LEAK1 = 63                      ; not used
0037            LEAK2 = 5                       ; VALVE PIT
0038            LEAK3 = 6                       ; HVAC
0039            LEAK4 = 4                       ; AW-271
        ;       LEAK5 = 22                      ; AP-102 GROUT          JFB01
        ;
        ;       First, set all flags and integers:
        ;
0040            ASSIGN PDIN = 'YS-AP-101'                       ; Assign pointer to first DIN
0041            ASSIGN PSTAT = INT0
0042            ASSIGN PTYPE = IALM0
0043            ASSIGN PREV = FX0
0044            ASSIGN PSKID = SKID0
0045            ASSIGN PPASS = FPAS0
                ;
                ;  Note that iloop 0 is string 1 (S1:), and so on, in Alarm Typer String section
                ;
0046            FOR ILOOP = 0 TO 82                             ; For DINs
0047            LET PPASS = 0
0048            LET PREV = 0
0049            LET PTYPE = 2
0050            LET PSTAT = 0
0052            IF ILOOP = 30 THEN GOTO LOP2            ; JFB01
0054            IF ILOOP = 31 THEN GOTO LOP2            ; JFB01
0056            IF ILOOP = 32 THEN GOTO LOP2            ; JFB01
0058            IF ILOOP = 33 THEN GOTO LOP2            ; JFB01
0060            IF ILOOP = 34 THEN GOTO LOP2            ; JFB01
0062            IF ILOOP = 35 THEN GOTO LOP2            ; JFB01
0064            IF ILOOP = 36 THEN GOTO LOP2            ; JFB01
0066            IF ILOOP = 37 THEN GOTO LOP2            ; JFB01
0068            IF ILOOP = 82 THEN GOTO LOP2            ; JFB01
0069            IF AND(PDIN:DIN_DFLG,3) THEN                    ; Check for alarms (must be red or yellow)
                  BEGIN
0070              LET PTYPE = 2                                 ; Default to yellow alarm
0072              IF AND(PDIN:DIN_DFLG,1) THEN  LET PREV = 1            ; Reverse acting
0074              IF AND(PDIN:DIN_DFLG,4) THEN  LET PTYPE = 4           ; Set to red critical alarm
                  END
0076            IF ILOOP < 29 THEN  LET PSKID = FARM
        ;       IF ILOOP = 3 THEN  LET PSKID = GROUT                    ; JFB01
0078            IF (ILOOP > 28 & ILOOP < 38) THEN  LET PSKID = FARM     ; JFB01
0080            IF (ILOOP > 37 & ILOOP < 51) THEN  LET PSKID = BLD271
0082            IF (ILOOP > 50 & ILOOP < 54) THEN  LET PSKID = VLVPIT
0084            IF (ILOOP > 53 & ILOOP < 67) THEN  LET PSKID = HVAC
0086            IF (ILOOP > 66 & ILOOP < 70) THEN  LET PSKID = VLVPIT
0088            IF (ILOOP = 70 | ILOOP = 71) THEN  LET PSKID = VLVPIT
0090            IF (ILOOP = 72 | ILOOP = 73) THEN  LET PSKID = FARM     ; JFB01
0092            IF (ILOOP = 74 | ILOOP = 75) THEN  LET PSKID = BLD271
0094            IF (ILOOP > 75 ) THEN  LET PSKID = VLVPIT
0096            IF (ILOOP = 82 ) THEN  LET PSKID = FARM                 ; JFB01
```

```
166  0098          IF AND(PDIN:DIN_ALMCT,32) THEN  PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
167  0099   LOP2:  STEP PSTAT BY 1
168  0100          STEP PDIN BY 1
169  0101          STEP PTYPE BY 1
170  0102          STEP PREV BY 1
171  0103          STEP PSKID BY 1
172  0104          STEP PPASS BY 1
173  0105          NEXT ILOOP
174          ;
175          ;     White alarms tied to pump devices:
176          ;
177  0106          FOR ILOOP = 83 TO 92
178  0107          LET PSTAT = 0
179  0108          LET PTYPE = 1
180  0109          LET PREV = 1
181  0110          LET PPASS = 1
182  0111          LET PSKID = FARM                        ; JFB01
183          ;     IF ILOOP < 91 THEN LET PSKID = FARM       JFB01
184          ;       ELSE LET PSKID = GROUT          JFB01
185          ;     IF ILOOP = 84 THEN LET PSKID = GROUT      JFB01
186  0112          STEP PSTAT BY 1
187  0113          STEP PTYPE BY 1
188  0114          STEP PREV BY 1
189  0115          STEP PSKID BY 1
190  0116          STEP PPASS BY 1
191  0117          NEXT ILOOP
192                ;
193                ;  Set the white alarms:
194                ;
195  0118          IALM0 = 1
196  0119          IALM3 = 1
197  0120          IALM6 = 1
198  0121          IALM11 = 1
199  0122          IALM12 = 1
200  0123          IALM15 = 1
201  0124          IALM20 = 1
202  0125          IALM23 = 1
203  0126          IALM26 = 1
204          ;     IALM30 = 1                              JFB01
205          ;     IALM31 = 1                              JFB01
206          ;     IALM32 = 1                              JFB01
207          ;     IALM34 = 1                              JFB01
208          ;     IALM35 = 1                              JFB01
209          ;     IALM36 = 1                              JFB01
210          ;     IALM37 = 1                              JFB01
211  0127          IALM43 = 1
212  0128          IALM48 = 1
213  0129          IALM51 = 1
214  0130          IALM52 = 1
215  0131          IALM55 = 1
216  0132          IALM58 = 1
217  0133          IALM59 = 1
218  0134          IALM62 = 1
219  0135          IALM65 = 1
220  0136          IALM66 = 1
```

```
0137            IALM77 = 1
0138            IALM78 = 1
0139            IALM79 = 1
0140            IALM80 = 1
0141            IALM81 = 1
          ;
0142            FX38 = 1
0143            FX39 = 1
          ;     FX52 = 1
          ;     FX80 = 1
          ;     FX81 = 1
          ;
0144            FPAS1 = 0
0145            FPAS0 = 1
0146            FPAS3 = 1
0147            FPAS6 = 1
0148            FPAS12 = 1
0149            FPAS15 = 1
0150            FPAS20 = 1
0151            FPAS23 = 1
0152            FPAS26 = 1
          ;     FPAS30 = 1                          JFB01
          ;     FPAS34 = 1                          JFB01
          ;
0153            FX0 = 1
0154            FX3 = 1
0155            FX6 = 1
0156            FX12 = 1
0157            FX15 = 1
0158            FX20 = 1
0159            FX23 = 1
0160            FX26 = 1
          ;     FX30 = 1                            JFB01
          ;     FX34 = 1                            JFB01
          ;
          ;     E N D   I N I T I A L I Z I N G
          ;
          ;     S E N D   P R O G R A M   S T A R T   M E S S A G E
          ;
0161            ILOOP = 94
0162            FSTART = 1
0163            TIMERCLR STMR2
0164            TIMERON STMR2
0165            GOSUB CYCL
0166            ON ERROR GOSUB ERRSUB
          ;
          ;     B E G I N   P R O G R A M   L O O P :
          ;
0167      AGAIN:MARK STEP "AGAIN",0,0
          ;     IF !SELECT() THEN FNING = 0
          ;     ELSE FNING = 1                      ; Flag 480 determines if selected micro for DOG1A.C
          ;     WAITUNTIL SELECT() | FABORT         ; Wait until micro selected or program aborted
          ;     IF (FABORT) THEN GOTO TERM          ; Terminate program if abort flag set
          ;     IF FNING = 0 THEN FHOLD = 1
0169            IF STMR2 > 30 THEN FHOLD = 1
```

```
0170          WAIT 1
        ;
0171          DEV0 = 0
0172          DEV1 = 0
0173          DEV2 = 0
0174          DEV3 = 0
0175          DEV4 = 0
        ;     DEV5 = 0                                JFB01
        ;
        ;     If alarm device is alarmed and its ALMCT indicates alarms are ack'd:
        ;
        ;             DEVICE          FLAG    OFFSET
        ;             ---------       ------  ------
        ;             APFARM          FLEAK0  447
        ;             AP-SERPIT       FLEAK1  448
        ;             AP-VLVPIT       FLEAK2  449
        ;             AP-HVAC         FLEAK3  450
        ;             AP-271          FLEAK4  451
        ;             GROUT           FLEAK5  452             NO LONGER USED JFB01
        ;
0176          ASSIGN PDEV = APFARM
0177          ASSIGN PSN = FSN0
0178          ASSIGN PACK = FLEAK0
0179          FOR ILOOP = 0 TO 4                      ; JFB01
0180          LET PSN = 0
0181          IF (PDEV:DEV_TMP0 = 2) & AND(PDEV:DEV_ALMCT,32) THEN
                 BEGIN
0182             PDEV:DEV_TMP0 = 1                    ; Put device in ack state
0183             LET PSN = 1                          ; Set flag for the graphic to ack
0184             LET FLGACK = 1                       ; WATCH.C spawns ACKFLG.C which resets flag
0185             LET ACK = 1                          ; Set flag for C program to ACK system wide
0186             LET PACK = 1
0187             FHOLD = 1
0188             ASSIGN PMSG0 = LEAK0
0189             STEP PMSG0 BY ILOOP
0191             IF ILOOP != 1 THEN LAMP 0,PMSG0,1    ; Flash lamp
                 END
0192          STEP PDEV BY 1
0193          STEP PSN BY 1
0194          STEP PACK BY 1
0195          NEXT ILOOP
        ;
0196          LEAK0 = 7
0197          LEAK1 = 63
0198          LEAK2 = 5
0199          LEAK3 = 6
0200          LEAK4 = 4
        ;     LEAK5 = 22                              JFB01
        ;
        ;     Field Alarm Silence feature:
        ;
0201          IF ACK THEN
                 BEGIN
0202             TIMERCLR STMR1
0203             TIMERON STMR1
```

```
0204                FLDALM = 1
                    END
0206              IF FLDALM THEN IF STMR1 >= 30 THEN        ; If field alarm then ack in 30 sec
                    BEGIN
0207                TIMEROFF STMR1
0208                TIMERCLR STMR1
0209                FLDALM = 0
0210                OPEN 'HS-AP-SIL'                        ; Silence alarm from PCM
                    END
                  ;
                  ;  If field alarm ack then set flag and start timer:
                  ;
0212              IF RESET THEN IF LMPVAR < 2 THEN
                    BEGIN
0213                FLDALM = 1
0214                TIMERON STMR1
0215                RESET = 0
                    END
0217              IF LMPVAR = 2 THEN RESET = 1
            ;
            ;     BEGIN DINs:
            ;
0218              ASSIGN PDIN = 'YS-AP-101'                 ; First DIN in APFARM
0219              ASSIGN PTYPE = IALM0
0220              ASSIGN PREV = FX0
0221              ASSIGN PSTAT = INT0
0222              ASSIGN PSKID = SKID0
0223              ASSIGN PPASS = FPAS0
0224              CURENT = 0                                ; Used to set lamp status
0225              NXT = 0                                   ; Temporary INT
0226              BITVAL = 0
            ;
            LOP:  FOR ILOOP = 1 TO 83
0229              IF ILOOP = 31 THEN GOTO LOP1              ; JFB01
0231              IF ILOOP = 32 THEN GOTO LOP1              ; JFB01
0233              IF ILOOP = 33 THEN GOTO LOP1              ; JFB01
0235              IF ILOOP = 34 THEN GOTO LOP1              ; JFB01
0237              IF ILOOP = 35 THEN GOTO LOP1              ; JFB01
0239              IF ILOOP = 36 THEN GOTO LOP1              ; JFB01
0241              IF ILOOP = 37 THEN GOTO LOP1              ; JFB01
0243              IF ILOOP = 38 THEN GOTO LOP1              ; JFB01
0245              IF ILOOP = 83 THEN GOTO LOP1              ; JFB01
0246              IF PTYPE  THEN                                          ; If some alarm
                    BEGIN                                           ;be1
0248                IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3    ; If EPN is inha
0250                IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5             ; If EPN is ibad
0252                IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4              ; If EPN is dis
0255                IF ! PSTAT THEN IF PREV = PDIN:DIN_VAL THEN GOSUB ALM   ; If not prev alarmed
0256                IF PSTAT THEN
                      BEGIN                                         ;be2
0257                  IF PSTAT < 3 THEN                                     ; If not inha
                        BEGIN                                       ;be3
0258                    IF PSTAT = 1 THEN
                          BEGIN                                     ;be4
0259                      IF AND(PDIN:DIN_ALMCT,32) THEN                    ; If alarm is ack
```

```
                                BEGIN                                   ;be5
0260                            LET PSTAT = 2
0261                            FHOLD = 1
                                END                                     ;en5
0262                         IF ACK THEN                                        ; If graphic has been ack
                                BEGIN                                   ;be6  -   go find which graphic
0263                            CRIT
0264                            ASSIGN PSN = FSNO                       ; Routine to find graphic
0265                            STEP PSN BY PSKID
0266                            IF PSN THEN                                    ; If this is the graphic
                                   BEGIN                                ;be7
0267                               LET PSTAT = 2
0269                               IF PTYPE = 1 THEN PDIN:DIN_ALMCT = OR(PDIN:DIN_ALMCT,32)
0270                               FPASS = 1
0271                               GOSUB ACKK                                  ; Print signal was ack
                                   END                                  ;en7
                                END                                     ;en6
                             END                                        ;en4
0273                         IF PREV != PDIN:DIN_VAL THEN GOSUB CLR             ; If alarm has cleared
0274                         ASSIGN PMSGO = DEVO                                ; Find active alarms & graphic:
0275                         STEP PMSGO BY PSKID
0276                         IF PPASS THEN
                                BEGIN
0278                            IF PSTAT = 1 THEN PMSGO = OR(PMSGO,PSTAT)
                                END
0279                         ELSE PMSGO = OR(PMSGO,PSTAT)
                          END                                           ;en3
0280                     ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN
                            BEGIN
0281                        PSTAT = 0
0282                        FHOLD = 1
                            END
                         END                                            ;en2
                    END                                                 ;en1
0284                ELSE IF PSTAT THEN PSTAT = 0
0285      LOP1:     STEP PDIN BY 1                                      ; JFB01
0286                STEP PTYPE BY 1
0287                STEP PREV BY 1
0288                STEP PSTAT BY 1
0289                STEP PSKID BY 1
0290                STEP PPASS BY 1
0291                NEXT ILOOP
          ;
          ;         END DINs
          ;
0292                DEV6 = 0
0293                DEV7 = 0
0294                DEV8 = 0
0295                DEV9 = 0
0296                DEV10 = 0
0297                DEV11 = 0
          ;
          ;         BEGIN WHITE ALARMS FOR PUMP DEVICES:
          ;
0298      AUX:      ASSIGN PEPN = 'P-AP-101'
```

```
441   0299          FOR ILOOP = 84 TO 91                                  ; JFB01
442   0300          IF PTYPE THEN
443                    BEGIN
444   0302             IF AND(PEPN:DEV_ALMCT,16) THEN LET PSTAT = 3   ; If inha
445   0304             IF AND(PEPN:DEV_ALMCT,4) THEN LET PSTAT = 5          ; If ibad
446   0306             IF !AND(PEPN:DEV_FLG,8) THEN LET PSTAT = 4           ; If dis
447   0307             IF PSTAT < 3 THEN                                    ; If not inha
448                       BEGIN
449   0308                IF (PSTAT = 1) & AND(PEPN:DEV_ALMCT,32) THEN      ; If prev unack alarm, and is now ack
450                          BEGIN
451   0309                   LET PSTAT = 2
452   0310                   FHOLD = 1
453                          END
454   0311                IF ACK THEN
455                          BEGIN
456   0312                   ASSIGN PSN = FSNO
457   0313                   STEP PSN BY PSKID
458   0314                   IF PSN & PSTAT = 1 THEN
459                             BEGIN
460   0315                      LET PSTAT = 2
461   0317                      IF PTYPE = 1 THEN PEPN:DEV_ALMCT = OR(PEPN:DEV_ALMCT,32)
462   0318                      FPASS = 1
463   0319                      GOSUB ACKK
464                             END
465                          END
466   0320                IF !PSTAT THEN                                    ; If prev not alarmed
467                          BEGIN
468   0321                   IF AND(PEPN:DEV_STAT,16) THEN                 ; If Shutdown
469                             BEGIN
470   0322                      LET PSTAT = 1
471   0323                      FALMON = 1                                 ; -mct1+
472   0325                      IF AND(PEPN:DEV_ALMCT,32)THEN PEPN:DEV_ALMCT = XOR(PEPN:DEV_ALMCT,32)
473   0326                      ASSIGN PDEV = APFARM
474   0327                      STEP PDEV BY PSKID
475   0328                      PDEV:DEV_TMPO = 2
476   0329                      GOSUB CYCL
477                             END
478                          END
479   0330                ELSE IF !AND(PEPN:DEV_STAT,16) THEN
480                          BEGIN
481   0331                   LET PSTAT = 0
482   0333                   IF AND(PEPN:DEV_ALMCT,32)THEN PEPN:DEV_ALMCT = XOR(PEPN:DEV_ALMCT,32)
483   0334                   FHOLD = 1
484                          END
485   0335                IF PSTAT THEN
486                          BEGIN
487   0336                   ASSIGN PMSGO = DEV6
488   0337                   STEP PMSGO BY PSKID
489   0338                   IF PPASS THEN
490                             BEGIN
491   0340                      IF PSTAT = 1 THEN PMSGO = OR(PMSGO,PSTAT)
492                             END
493   0341                   ELSE PMSGO = OR(PMSGO,PSTAT)
494                          END
495                       END
```

```
496   0342                ELSE IF !AND(PEPN:DEV_ALMCT,16)&!AND(PEPN:DEV_ALMCT,4)&AND(PEPN:DEV_FLG,8)THEN
497                          BEGIN
498   0343                   PSTAT = 0
499   0344                   FHOLD = 1
500                          END
501                        END
502   0345              STEP PEPN BY 1
503   0346              STEP PTYPE BY 1
504   0347              STEP PREV BY 1
505   0348              STEP PSTAT BY 1
506   0349              STEP PSKID BY 1
507   0350              STEP PPASS BY 1
508   0351              NEXT ILOOP
509            ;
510            ;         END WHITE ALARMS FOR PUMP DEVICES
511            ;
512   0352     S2ND:    ACK = 0
513   0353              SORT = 0
514            ;
515   0354              DEV12 = OR(DEV0,DEV6)
516   0355              DEV13 = OR(DEV1,DEV7)
517   0356              DEV14 = OR(DEV2,DEV8)
518   0357              DEV15 = OR(DEV3,DEV9)
519   0358              DEV16 = OR(DEV4,DEV10)
520   0359              DEV17 = OR(DEV5,DEV11)
521            ;
522   0360              ASSIGN PMSG0 = DEV12
523   0361              ASSIGN PMSG1 = FARM
524   0362              FOR LLOOP = 1 TO 6
525   0363              IF PMSG0 THEN
526                       BEGIN
527   0365                IF AND(PMSG0,1) THEN PMSG1 = 2
528   0366                ELSE PMSG1 = 1
529                       END
530   0367              ELSE PMSG1 = 0
531   0368              STEP PMSG0 BY 1
532   0369              STEP PMSG1 BY 1
533   0370              NEXT LLOOP
534            ;
535   0371              MARK STEP "BOTTOM",0,0
536   0372              NOCRIT
537            ;
538            ;         B E G I N   F Q I - R E S E T :
539            ;
540            ;         Function:        For totalizers that have a CALC block which performs the
541            ;                          integration, set the output of the CALC block to zero
542            ;                          after the FQI loop has been placed in AUTO from MANUAL.
543            ;
544   0374              IF !AND(AUTO,64) THEN FSL7 = 1                    ; If manual, set manual flag
545   0375              IF AND(AUTO,64) & AND(FSL7,1) THEN                ; For manual-auto transition
546                       BEGIN
547   0376                FSL7 = 0
548   0377                CALOUT = 0.0
549                       END
550            ;
```

```
          ;       E N D   F Q I - R E S E T
          ;
0378              IF FHOLD THEN
                     BEGIN
0379                 LAMP 0,7,FARM
0380                 LAMP 0,6,HVAC
0381                 LAMP 0,5,VLVPIT
0382                 LAMP 0,4,BLD271
          ;          LAMP 0,22,GROUT                                JFB01
0383                 FHOLD = 0
0384                 TIMERCLR STMR2
0385                 TIMERON STMR2
                     END
          ;
0386              GOTO AGAIN
          ;
          ;       E N D   P R O G R A M   L O O P
          ;
          ;       BEGIN CLEAR, ALARM, CYCLE, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
          ;
0387      CLR:    LET PSTAT = 0
0389              IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0390              FHOLD = 1
0391              RETURN
          ;
0392      ALM:    LET PSTAT = 1            ; Print message, flash lamp, horn on, scroll message at bottom of graphic
0393              CRIT                                                ; Critical
0395              IF AND(PTYPE,3) THEN FALMON = 1                     ; Audible alarm on
0396              IF AND(PDIN:DIN_ALMCT,32) THEN                      ; Clear the scan block
0397                 PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0398              ASSIGN PMSG0 = LEAK0
0399              STEP PMSG0 BY PSKID
0400              LAMP 0,PMSG0,2                                      ; Lamp flash
0401              ASSIGN PDEV = APFARM                                ; Find dev and turn it on
0402              STEP PDEV BY PSKID
0403              PDEV:DEV_TMP0 = 2
          ;
          ;       Scrolling alarm summary region in graphic (Message, time, date, alarm type):
          ;
0404      CYCL:   LET LSG4 = LSG3                          ; LSG = message
0405              LET LSG3 = LSG2
0406              LET LSG2 = LSG1
0407              LET LSG1 = LSG0
0408              LET COLOR4 = COLOR3                                 ; COLOR = type of alarm
0409              LET COLOR3 = COLOR2
0410              LET COLOR2 = COLOR1
0411              LET COLOR1 = COLOR0
0412              LET EPNS4 = EPNS3                                   ; EPN
0413              LET EPNS3 = EPNS2
0414              LET EPNS2 = EPNS1
0415              LET EPNS1 = STRNG1
0416              LET GRAFX4 = GRAFX3                                 ; GRAFX = graphic number
0417              LET GRAFX3 = GRAFX2
0418              LET GRAFX2 = GRAFX1
0419              LET GRAFX1 = GRAFX0
```

```
0420            LET SDATE4 = SDATE3                          ; SDATE = time and date
0421            LET SDATE3 = SDATE2
0422            LET SDATE2 = SDATE1
0423            LET SDATE1 = SDATE0
          ;
          ;     ALARM TYPER STRINGS:
          ;
0424      ACKK: FHOLD = 1
0425            ON ILOOP GOTO S1,S2,S3,S4,S5,S6,S7,S8,S9,S10
0426            ON ILOOP - 10 GOTO S11,S12,S13,S14,S15,S16,S17,S18,S19,S20
0427            ON ILOOP - 20 GOTO S21,S22,S23,S24,S25,S26,S27,S28,S29,S30
0428            ON ILOOP - 30 GOTO S31,S32,S33,S34,S35,S36,S37,S38,S39,S40
0429            ON ILOOP - 40 GOTO S41,S42,S43,S44,S45,S46,S47,S48,S49,S50
0430            ON ILOOP - 50 GOTO S51,S52,S53,S54,S55,S56,S57,S58,S59,S60
0431            ON ILOOP - 60 GOTO S61,S62,S63,S64,S65,S66,S67,S68,S69,S70
0432            ON ILOOP - 70 GOTO S71,S72,S73,S74,S75,S76,S77,S78,S79,S80
0433            ON ILOOP - 80 GOTO S81,S82,S83,S84,S85,S86,S87,S88,S89,S90
0434            ON ILOOP - 90 GOTO S91,S92,S93,S94,S95,S96
0435            GOTO AMSG
0436      S1:   STRNG0 = "AP-101 PUMP MCC OFF   "
0437            STRNG1 ="YS-AP-101"
0438            GOTO AMSG
0439      S2:   STRNG0 = "AP-101 ANN EX RAD HI  "
0440            STRNG1 ="RSH-101AP"
0441            GOTO AMSG
0442      S3:   STRNG0 = "AP-101 ANN MON FAIL   "
0443            STRNG1 ="RXS-101AP"
0444            GOTO AMSG
0445      S4:   STRNG0 = "AP-102 PUMP MCC OFF   "
0446            STRNG1 ="YS-AP-102"
0447            GOTO AMSG
0448      S5:   STRNG0 = "AP-102 ANN EX RAD HI  "
0449            STRNG1 ="RSH-102AP"
0450            GOTO AMSG
0451      S6:   STRNG0 = "AP-102 RAD MON FAIL   "
0452            STRNG1 ="RXS-102AP"
0453            GOTO AMSG
0454      S7:   STRNG0 = "AP-103 PUMP MCC OFF   "
0455            STRNG1 ="YS-AP103"
0456            GOTO AMSG
0457      S8:   STRNG0 = "AP-103 ANN EX RAD HI  "
0458            STRNG1 ="RSH-103AP"
0459            GOTO AMSG
0460      S9:   STRNG0 = "AP-103 RAD MON FAIL   "
0461            STRNG1 ="RXS-103AP"
0462            GOTO AMSG
0463      S10:  STRNG0 = "AP-03C RAD MON FAIL   "
0464            STRNG1 ="RSH-AP03C"
0465            GOTO AMSG
0466      S11:  STRNG0 = "AP-03C LK PIT RAD HI  "
0467            STRNG1 ="RXS-AP03C"
0468            GOTO AMSG
0469      S12:  STRNG0 = "AP-03D DRAN PIT LEAK  "
0470            STRNG1 ="LDS-AP03D"
0471            GOTO AMSG
```

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661   0472   S13:    STRNG0 = "AP-104 PUMP MCC OFF   "
662   0473           STRNG1 ="YS-AP-104"
663   0474           GOTO AMSG
664   0475   S14:    STRNG0 = "AP-104 ANN EX RAD HI  "
665   0476           STRNG1 ="RSH-104AP"
666   0477           GOTO AMSG
667   0478   S15:    STRNG0 = "AP-104 RAD MON FAIL   "
668   0479           STRNG1 ="RXS-104AP"
669   0480           GOTO AMSG
670   0481   S16:    STRNG0 = "PUMP AP-105 MCC OFF   "
671   0482           STRNG1 ="YS-AP-105"
672   0483           GOTO AMSG
673   0484   S17:    STRNG0 = "AP-105 ANN EX RAD HI  "
674   0485           STRNG1 ="RSH-105AP"
675   0486           GOTO AMSG
676   0487   S18:    STRNG0 = "AP-105 RAD MON FAIL   "
677   0488           STRNG1 ="RXS-105AP"
678   0489           GOTO AMSG
679   0490   S19:    STRNG0 = "AP-05C LK-PIT RAD HI  "
680   0491           STRNG1 ="RSH-AP05C"
681   0492           GOTO AMSG
682   0493   S20:    STRNG0 = "AP-05C RAD MON FAIL   "
683   0494           STRNG1 ="RXS-AP05C"
684   0495           GOTO AMSG
685   0496   S21:    STRNG0 = "PUMP AP-106 MCC OFF   "
686   0497           STRNG1 ="YS-AP-106"
687   0498           GOTO AMSG
688   0499   S22:    STRNG0 = "AP-106 ANN EX RAD HI  "
689   0500           STRNG1 ="RSH-106AP"
690   0501           GOTO AMSG
691   0502   S23:    STRNG0 = "106 EXH RAD MON FAIL  "
692   0503           STRNG1 ="RXS-106AP"
693   0504           GOTO AMSG
694   0505   S24:    STRNG0 = "PUMP AP-107 MCC OFF   "
695   0506           STRNG1 ="YS-AP-107"
696   0507           GOTO AMSG
697   0508   S25:    STRNG0 = "AP-107 ANN EX RAD HI  "
698   0509           STRNG1 ="RSH-107AP"
699   0510           GOTO AMSG
700   0511   S26:    STRNG0 = "107 EXH RAD MON FAIL  "
701   0512           STRNG1 ="RXS-107AP"
702   0513           GOTO AMSG
703   0514   S27:    STRNG0 = "PUMP AP-108 MCC OFF   "
704   0515           STRNG1 ="YS-AP-108"
705   0516           GOTO AMSG
706   0517   S28:    STRNG0 = "AP-108 ANN EX RAD HI  "
707   0518           STRNG1 ="RSH-108AP"
708   0519           GOTO AMSG
709   0520   S29:    STRNG0 = "108 EXH RAD MON FAIL  "
710   0521           STRNG1 ="RXS-108AP"
711   0522           GOTO AMSG
712   0523   S30:    STRNG0 = "AP-02D PUMP PIT LEAK  "
713   0524           STRNG1 ="LDSAP02DC"
714   0525           GOTO AMSG
715          S31:    ;       STRNG0 = "AP-102-3 MCC OFF      "                JFB01
```

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716          ;        STRNG1 ="YS-AP102M"                                JFB01
717          ;        GOTO AMSG                                          JFB01
718          S32:     ;        STRNG0 = "AP-102-3 DIS PRES HI  "         JFB01
719          ;        STRNG1 ="PSHAP102M"                                JFB01
720          ;        GOTO AMSG                                          JFB01
721          S33:     ;        STRNG0 = "AP-102-3 DIS PRES LO  "         JFB01
722          ;        STRNG1 ="PSLAP102M"                                JFB01
723          ;        GOTO AMSG                                          JFB01
724          S34:     ;        STRNG0 = "AP-102-3 LEAK         "         JFB01
725          ;        STRNG1 ="LDSAP102M"                                JFB01
726          ;        GOTO AMSG                                          JFB01
727          S35:     ;        STRNG0 = "AP-102-3 ROTATOR OFF  "         JFB01
728          ;        STRNG1 ="YS-AP102R"                                JFB01
729          ;        GOTO AMSG                                          JFB01
730          S36:     ;        STRNG0 = "AP-102-3 STRAIN HIGH  "         JFB01
731          ;        STRNG1 ="WSHAP102M"                                JFB01
732          ;        GOTO AMSG                                          JFB01
733          S37:     ;        STRNG0 = "AP-102-3 TEMP HIGH    "         JFB01
734          ;        STRNG1 ="TSHAP102M"                                JFB01
735          ;        GOTO AMSG                                          JFB01
736          S38:     ;        STRNG0 = "AP-102-3 VIBRATIN HI  "         JFB01
737          ;        STRNG1 ="VSHAP102M"                                JFB01
738          ;        GOTO AMSG                                          JFB01
739     0526 S39:     STRNG0 = "AP-MASTER SHUTDOWN    "
740     0527          STRNG1 ="YS-AP-MSD"
741     0528          GOTO AMSG
742     0529 S40:     STRNG0 = "AP-AREA RAD BYPASS    "
743     0530          STRNG1 ="YS-AP-ARM"
744     0531          GOTO AMSG
745     0532 S41:     STRNG0 = "AP-FARM RADIATION HI  "
746     0533          STRNG1 ="RSH-AP-2"
747     0534          GOTO AMSG
748     0535 S42:     STRNG0 = "AP-FARM RAD MON FAIL  "
749     0536          STRNG1 ="RXS-AP-2"
750     0537          GOTO AMSG
751     0538 S43:     STRNG0 = "AP GENERAL ALARM      "
752     0539          STRNG1 ="QS-AP-1"
753     0540          GOTO AMSG
754     0541 S44:     STRNG0 = "AP HEAT TRACE OVRTMP  "
755     0542          STRNG1 ="TXS-AP-2"
756     0543          GOTO AMSG
757     0544 S45:     STRNG0 = "CENTRAL PMP PIT LEAK  "
758     0545          STRNG1 ="LDS-AP-A"
759     0546          GOTO AMSG
760     0547 S46:     STRNG0 = "ANNULUS PMP PIT LEAK  "
761     0548          STRNG1 ="LDS-AP-B"
762     0549          GOTO AMSG
763     0550 S47:     STRNG0 = "LEAK-DET PMPIT LEAK  "
764     0551          STRNG1 ="LDS-AP-C"
765     0552          GOTO AMSG
766     0553 S48:     STRNG0 = "271 ANNUNC POWER OFF  "
767     0554          STRNG1 ="JXS-AP-1"
768     0555          GOTO AMSG
769     0556 S49:     STRNG0 = "271 BLDG CAM FLOW LO  "
770     0557          STRNG1 ="FSLAP2711"
```

```
0558            GOTO AMSG
0559    S50:    STRNG0 = "271 BLDG RADN HIGH    "
0560            STRNG1 ="RSH-AP271"
0561            GOTO AMSG
0562    S51:    STRNG0 = "271 BLD RAD MON FAIL  "
0563            STRNG1 ="RXS-AP271"
0564            GOTO AMSG
0565    S52:    STRNG0 = "FLSH PIT FL LINE PRS  "
0566            STRNG1 ="PSH-APFP1"
0567            GOTO AMSG
0568    S53:    STRNG0 = "FLSH PIT V-FP-1 OPEN  "
0569            STRNG1 ="ZS-AP-FP1"
0570            GOTO AMSG
0571    S54:    STRNG0 = "AP-FLUSH PIT LEAK     "
0572            STRNG1 ="LDS-AP-FP"
0573            GOTO AMSG
0574    S55:    STRNG0 = "K1 EXHAUST FAN OFF    "
0575            STRNG1 ="YS-AP-K1"
0576            GOTO AMSG
0577    S56:    STRNG0 = "K1 EXH SMPLE FLOW LO  "
0578            STRNG1 ="FSL-APK13"
0579            GOTO AMSG
0580    S57:    STRNG0 = "K1 EXHAUST RAD HIGH   "
0581            STRNG1 ="RSH-APK11"
0582            GOTO AMSG
0583    S58:    STRNG0 = "K1 EXH RAD MON FAIL   "
0584            STRNG1 ="RXS-APK11"
0585            GOTO AMSG
0586    S59:    STRNG0 = "K1 EX REC SMPL LOFLO  "
0587            STRNG1 ="FSL-APK12"
0588            GOTO AMSG
0589    S60:    STRNG0 = "K1 EXH STACK FLOW LO  "
0590            STRNG1 ="FSL-APK11"
0591            GOTO AMSG
0592    S61:    STRNG0 = "AP SEAL-POT PIT LEAK  "
0593            STRNG1 ="LDS-AP-K1"
0594            GOTO AMSG
0595    S62:    STRNG0 = "K2 EXH FAN SHUTDOWN   "
0596            STRNG1 ="YS-AP-K2"
0597            GOTO AMSG
0598    S63:    STRNG0 = "K2 EXH MON SMPL FLOLO "
0599            STRNG1 ="FSL-APK23"
0600            GOTO AMSG
0601    S64:    STRNG0 = "K2 EXH RADIATION HI   "
0602            STRNG1 ="RSH-APK21"
0603            GOTO AMSG
0604    S65:    STRNG0 = "K2 EXH RADN MON FAIL  "
0605            STRNG1 ="RXS-APK21"
0606            GOTO AMSG
0607    S66:    STRNG0 = "K2 EXH REC SMPL FLOLO "
0608            STRNG1 ="FSL-APK22"
0609            GOTO AMSG
0610    S67:    STRNG0 = "K2 EXH STACK FLOW LO  "
0611            STRNG1 ="FSL-APK21"
0612            GOTO AMSG
```

```
826   0613   S68:    STRNG0 = "AP SERVICE PIT LEAK   "
827   0614           STRNG1 ="LDS-AP-SP"
828   0615           GOTO AMSG
829   0616   S69:    STRNG0 = "AP SER PIT RAD HI     "
830   0617           STRNG1 ="RSH-AP-SP"
831   0618           GOTO AMSG
832   0619   S70:    STRNG0 = "AP SER PIT RAD FAIL   "
833   0620           STRNG1 ="RXS-AP-SP"
834   0621           GOTO AMSG
835   0622   S71:    STRNG0 = "AP SL-509/510 LEAK    "
836   0623           STRNG1 ="LDS-AP-SL"
837   0624           GOTO AMSG
838   0625   S72:    STRNG0 = "AP SN-609/610 LEAK    "
839   0626           STRNG1 ="LDS-AP-SN"
840   0627           GOTO AMSG
841   0628   S73:    STRNG0 = "AP SN-621 LINE LEAK   "
842   0629           STRNG1 ="LDSAP621A"
843   0630           GOTO AMSG
844   0631   S74:    STRNG0 = "AP SN-650 LINE LEAK   "
845   0632           STRNG1 ="LDSAP6502"
846   0633           GOTO AMSG
847   0634   S75:    STRNG0 = "AP TANKS EXCESS VACU  "
848   0635           STRNG1 ="PSH-AP-2"
849   0636           GOTO AMSG
850   0637   S76:    STRNG0 = "AP TANKS VACUUM LOSS  "
851   0638           STRNG1 ="PSL-AP-2"
852   0639           GOTO AMSG
853   0640   S77:    STRNG0 = "AP VALVE PIT LEAK     "
854   0641           STRNG1 ="LDS-AP-VP"
855   0642           GOTO AMSG
856   0643   S78:    STRNG0 = "DR-712 FLOW DETECTED  "
857   0644           STRNG1 ="FSH-DR712"
858   0645           GOTO AMSG
859   0646   S79:    STRNG0 = "DR-712 FLOW DET FAIL  "
860   0647           STRNG1 ="FXS-DR712"
861   0648           GOTO AMSG
862   0649   S80:    STRNG0 = "FLUSH LINE PRESS HIGH "
863   0650           STRNG1 ="PSH-APFL1"
864   0651           GOTO AMSG
865   0652   S81:    STRNG0 = "AP VPIT V-DR-1 OPEN   "
866   0653           STRNG1 ="ZS-AP-DR1"
867   0654           GOTO AMSG
868   0655   S82:    STRNG0 = "AP VPIT V-FL-1 OPEN   "
869   0656           STRNG1 ="ZS-AP-FL1"
870   0657           GOTO AMSG
871          S83:    ;       STRNG0 = "ROTOR 102-3 BYPASS ON "        ; JFB01
872          ;       STRNG1 ="YS-1023BY"
873          ;       GOTO AMSG
874   0658   S84:    STRNG0 = "PUMP AP-101 SHUTDOWN  "
875   0659           STRNG1 = "P-AP-101"
876   0660           GOTO AMSG
877   0661   S85:    STRNG0 = "PUMP AP-102 SHUTDOWN  "
878   0662           STRNG1 = "P-AP-102"
879   0663           GOTO AMSG
880   0664   S86:    STRNG0 = "PUMP AP-103 SHUTDOWN  "
```

```
0665            STRNG1 = "P-AP-103"
0666            GOTO AMSG
0667    S87:    STRNG0 = "PUMP AP-104 SHUTDOWN  "
0668            STRNG1 = "P-AP-104"
0669            GOTO AMSG
0670    S88:    STRNG0 = "PUMP AP-105 SHUTDOWN  "
0671            STRNG1 = "P-AP-105"
0672            GOTO AMSG
0673    S89:    STRNG0 = "PUMP AP-106 SHUTDOWN  "
0674            STRNG1 = "P-AP-106"
0675            GOTO AMSG
0676    S90:    STRNG0 = "PUMP AP-107 SHUTDOWN  "
0677            STRNG1 = "P-AP-107"
0678            GOTO AMSG
0679    S91:    STRNG0 = "PUMP AP-108 SHUTDOWN  "
0680            STRNG1 = "P-AP-108"
0681            GOTO AMSG
        S92:    ;       STRNG0 = "PUMP AP-102M SHUTDOWN "       JFB01
        ;       STRNG1 = "P-AP-102M"                            JFB01
        ;       GOTO AMSG                                       JFB01
        S93:    ;       STRNG0 = "ROTR AP-102R SHUTDOWN "       JFB01
        ;       STRNG1 = "P-AP-102R"                            JFB01
        ;       GOTO AMSG                                       JFB01
0682    S94:    STRNG0 = "APBATCH PROGRAM START "
0683            GOTO AMSG
0684    S95:    STRNG0 = "APBATCH IN WRONG UNIT "
0685            GOTO AMSG
0686    S96:    STRNG0 = "APBATCH TERMINATING   "
0687            GOTO AMSG
        ;
0688    AMSG:   IF (FPASS)THEN
                   BEGIN
0689               PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG1
0690               FPASS = 0
0691               GOTO NXT
                   END
0693            IF PTYPE = 4 THEN COLOR0 = 3
0694               ELSE COLOR0 = PTYPE
0695            EPNS0 = STRNG1
0696            IN0 = TIMSTR(SSNG0)
0698            IF IN0 != 8 THEN SSNG0 = "TIMEFAIL"
0699            IN0 = APPEND(LSG0,STRNG0,SSNG0)
0701            IF IN0 < 0 THEN LSG0 = "APPEND FAILED!!"
0702            IN0 = DATSTR(SDATE0)
0704            IF IN0 != 9 THEN SDATE0 = "DATE FAIL"
0705            GRAFX0 = 291 + PSKID
0707            IF PSKID = 5 THEN GRAFX0 = 291
0709            IF PSKID = 0 THEN GRAFX0 = 290
0711            IF PTYPE = 1 THEN PRINT ADI,"WHITE ALARM %p %p GRAPHICS %i",EPNS0,STRNG0,GRAFX0
0712    NXT:    IF FSTART = 1 THEN
                   BEGIN
0713               COLOR0 = 0
0714               GRAFX0 = 0
0715               STRNG1 =" "
0716               FSTART = 0
```

```
936   0717                PRINT ADI,"%p",STRNGO
937                       END
938   0718            RETURN
939           ;
940   0720    ERRSUB: IF(ERRNUM() = -187)THEN ERSRET
941                   ELSE
942                    BEGIN
943   0721             ERRN = ERRNUM()
944   0722             ERRL = ERRLIN()
945   0723             PRINT ADI,"ERROR # %i AT LINE %i, ILOOP = %i",errn,errl,ILOOP
946   0724             ERSCLR
947                    END
948   0725            GOTO AGAIN
949           ;
950   0726    HLD:    HRSCLR
951   0727            WAITUNTIL HLDSTP != 0
952   0728            ON HLDSTP GOTO INIT,AGAIN,TERM
953           ;
954           ; TERM: FABORT = 0
955   0729    TERM:   STRNGO = "APBATCH TERMINATED    "
956   0730            ILOOP = 96
957   0731            FSTART = 1
958   0732            TIMEROFF STMR1
959   0733            TIMERCLR STMR1
960   0734            FLDALM = 0
961   0735            OPEN 'HS-AP-SIL'
962   0736            GOSUB CYCL
963                   END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 14224 Bytes, 889 Pages
212 Forward Reference(s)

AWBATCH

```
;       A W B A T C H . S E Q                                   VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on graphics, and
;                       printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]AWBATCH
;
;       UNIT = 3, SKDKEY = 8, 9, 10, 11
;
;       Assoc. UPF:     [300,1]_TNKFRM.___      TNKFRM.LST
;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
;       SDB:            [300,1]PCM1ASDB.___     PCM1ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       PDIN      'EPN'         ---
;       PTYPE     IALMn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FXn           Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Tracks which graphic has an alarm
;       PPASS     FPASn         If set (1), turn lamp off when alarm is ACKnowledged
;       PSN       FSNn          Flag for the graphic to ACKnowledge
;       ---       FHOLD         Flag to update the lamps
;       ---       FNING         Flag for DOG1A.C micro select
;       ---       ACK           Flag for C program to ACK system wide
;
;  MODIFICATION LOG:
;
;       12-DEC-91       Include MCC shutdown, pump shutdown, and  R. Kersey
;                       30 second SKID update.
;
;       05-APR-93       Modified MCC OFF white alarm on all 5           M. Teats
;                       YS- signals to pump OFF white alarm because
;                       the YS DINs do not indicate MCC status - they
;                       indicate the pump status.
;
;-mct1+  13-MAY-93       Remove pump shutdown DEV white alarms, which    M. Teats
;                       are based on the analog signals, because they
```

```
56          ;                       are not needed due to the 4/5/93 mods.  See
57          ;                       CCN# 93MAY13-01.
58          ;
59          ;       10-JUN-93       Added comments and baselined for        M. Teats
60          ;                       D/3 version 3.3.  CCN# 93JUN01-01
61          ;
62          ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
63          ;                       system. Rebaselined document. Removed
64          ;                       obsolite Select() statement.
65          ;
66          ;  END MOD LOG
67          ;
68          UNIT    AWFARM
69          ;
70                  PUMP == FLSPIT
71                  AUTO == 'FQI-AW-1':CB_FLG:1             ; For FQI-RESET auto mode check
72                  CALOUT == 'FQI-AW-1':CB_OTVL:1          ; For FQI-RESET calc block outvalue
73          ;
74  0000            GETUNIT TRIP                            ; Which sequence unit is program running
75  0001            IF TRIP != 3 THEN                       ; Abort if running in wrong seq. unit
76                     BEGIN
77  0002               FSTART = 1
78  0003               ILOOP = 54
79  0004               GOSUB CYCL
80  0005               FSTART = 1
81  0006               PRINT ADI," >>>>>  ATTEMPT TO RUN AWBATCH IN WRONG UNIT"
82  0007               GOTO TERM
83                     END
84          ;       IF !SELECT() THEN GOTO AGAIN
85          ;
86          ;       B E G I N   I N I T I A L I Z I N G :
87          ;
88  0008            NOP
89  0009    INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
90  0010            LET FSTART = 0                  ; Program start flag = 0
91  0011            LET ERRN = 0                    ; Set error number to zero
92  0012            LET ERRL = 0                    ; Set error line to zero
93  0013            LET FLDALM = 0
94  0014            LET FSL7 = 0                    ; For FQI-RESET manual mode flag
95  0015            LAMP 0,11,0                     ; Turn off the lamps
96  0016            LAMP 0,10,0
97  0017            LAMP 0,9,0
98  0018            LAMP 0,8,0
99  0019            ASSIGN PDEV = AWFARM                            ; First of 6 alarm ack devices
100 0020            FOR ILOOP = 1 TO 6
101 0021            PDEV:DEV_TMPO = 1                               ; Set all devices to ack state
102 0022            IF AND(PDEV:DEV_ALMCT,16) THEN                  ; If alarm device is inha, remove the inha
103 0023              PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
104 0024            IF AND(PDEV:DEV_ALMCT,32) THEN                  ; If alarm device is ack, clear it
105 0025               PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
106 0026            STEP PDEV BY 1
107 0027            NEXT ILOOP
108         ;
109         ;       First, set all flags and integers:
110         ;
```

```
111   0028          ASSIGN PDIN = 'YS-AW-101'                    ; Assign pointer to first DIN
112   0029          ASSIGN PSTAT = INTO
113   0030          ASSIGN PTYPE = IALMO
114   0031          ASSIGN PREV = FXO
115   0032          ASSIGN PSKID = SKIDO
116   0033          ASSIGN PPASS = FPASO
117         ;
118   0034          LET FARM = 0                                 ; Set up values for different graphics
119   0035          SERPIT = 1                                   ; SKID of each EPN indicates graphic
120   0036          VLVPIT = 2
121   0037          HVAC = 3
122   0038          BLD271 = 4
123   0039          PUMP = 5
124         ;
125   0040          LEAKO = 11                                   ; FARM
126   0041          LEAK1 = 63                                   ; not used
127   0042          LEAK2 = 9                                    ; VALVE PIT
128   0043          LEAK3 = 10                                   ; HVAC
129   0044          LEAK4 = 8                                    ; AW-271
130         ;
131   0045          FOR ILOOP = 0 TO 46                          ; For DINs
132   0046          LET PPASS = 0
133   0047          LET PREV = 0
134   0049          IF ILOOP > 31 & ILOOP < 36 THEN GOTO SKP
135   0051          IF ILOOP = 44 THEN GOTO SKP
136   0052          LET PTYPE = 2
137         ;       BLET PSTAT = 0
138   0053          IF AND(PDIN:DIN_DFLG,3) THEN                 ; Check for alarms (must be red or yellow)
139                    BEGIN
140   0054             LET PTYPE = 2
141   0056             IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1          ; Reverse acting
142   0058             IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4         ; Set to red critical alarm
143                    END
144   0060          IF ILOOP < 17 THEN LET PSKID = FARM                ; These are set by IPN order
145   0062          IF (ILOOP > 16 & ILOOP < 31) THEN LET PSKID = VLVPIT
146   0064          IF ILOOP = 28 THEN LET PSKID = BLD271
147   0066          IF (ILOOP > 30 & ILOOP < 39) THEN LET PSKID = HVAC
148   0068          IF ILOOP > 38 THEN LET PSKID = BLD271
149   0070          IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
150   0071    SKP:  STEP PSTAT BY 1
151   0072          STEP PDIN BY 1
152   0073          STEP PTYPE BY 1
153   0074          STEP PREV BY 1
154   0075          STEP PSKID BY 1
155   0076          STEP PPASS BY 1
156   0077          NEXT ILOOP
157         ;
158         ;-mct1- abandoned code for white alarms tied to pump devices:
159         ;
160         ;       FOR ILOOP = 47 TO 51
161         ;       PSTAT = 0
162         ;       PTYPE = 1
163         ;       PREV = 0
164         ;       PSKID = 0
165         ;       PPASS = 1
```

```
            ;       STEP PSTAT BY 1
            ;       STEP PTYPE BY 1
            ;       STEP PREV BY 1
            ;       STEP PSKID BY 1
            ;       STEP PPASS BY 1
            ;       NEXT ILOOP
            ;-mct1-
                    ;
                    ;  Set the white alarms:
                    ;
0078                LET IALM0 = 1
0079                LET IALM5 = 1
0080                LET IALM8 = 1
0081                LET IALM11= 1
0082                LET IALM14 = 1
0083                LET IALM32 = 0
0084                LET IALM33 = 0
0085                LET IALM34 = 0
0086                LET IALM35 = 0
0087                LET IALM44 = 0
0088                LET IALM46 = 1
            ;
0089                FX0 = 0
0090                FX5 = 0
0091                FX8 = 0
0092                FX11 = 0
0093                FX14 = 0
0094                FX28 = 1
            ;
0095                FPAS0 = 1
0096                FPAS5 = 1
0097                FPAS8 = 1
0098                FPAS11 = 1
0099                FPAS14 = 1
            ;
            ;       E N D   I N I T I A L I Z I N G
            ;
            ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
            ;
0100                ILOOP = 53
0101                FSTART = 1
0102                TIMERCLR STMR2
0103                TIMERON STMR2
0104                GOSUB CYCL
0105                ON ERROR GOSUB ERRSUB
            ;
            ;       B E G I N   P R O G R A M   L O O P :
            ;
0106        AGAIN:  MARK STEP "AGAIN",0,0
            ;       IF !SELECT() THEN FNING = 0
            ;          ELSE FNING = 1                    ; Flag 480 determines if selected micro for DOG1A.C
            ; JH01  WAITUNTIL SELECT() ¦ FABORT          ; Wait until micro selected or program aborted
            ;       IF FABORT THEN GOTO TERM
0108                IF STMR2 > 30 THEN FHOLD = 1
            ;       IF FNING = 0 THEN FHOLD = 1
```

```
0109            WAIT 1
        ;
0110            DEV0 = 0                                  ; Lamp 11
0111            DEV1 = 0                                  ; not used
0112            DEV2 = 0                                  ; Lamp 9
0113            DEV3 = 0                                  ; Lamp 10
0114            DEV4 = 0                                  ; Lamp 8
0115            DEV5 = 0                                  ; not used
        ;
0116            ASSIGN PDEV = AWFARM
0117            ASSIGN PSN = FSN0
0118            ASSIGN PACK = FLEAK0
0119            FOR ILOOP = 0 TO 5                        ; For the 6 alarm devices (2 unused)
0120            PSN = 0
                ;
                ;  If alarm device is alarmed and its ALMCT indicates alarms are ack'd:
                ;
0121            IF (PDEV:DEV_TMP0 = 2) & AND(PDEV:DEV_ALMCT,32) THEN
                   BEGIN
0122               PDEV:DEV_TMP0 = 1                      ; Put device in ack state
0123               LET PSN = 1                            ; Set flag for graphic to ack
0124               LET FLGACK = 1                         ; WATCH.C spawns ACKFLG.C, which resets flag
0125               LET ACK = 1                            ; Set flag for C program to ACK system wide
0126               LET PACK = 1
0127               ASSIGN PMSG0 = LEAK0
0128               STEP PMSG0 BY ILOOP
0130               IF ILOOP !=1 THEN LAMP 0,PMSG0,1       ; Flash lamp
                   END
0131            STEP PDEV BY 1
0132            STEP PSN BY 1
0133            STEP PACK BY 1
0134            NEXT ILOOP
        ;
        ;       Field Alarm Silence feature:
        ;
0135            IF(ACK)THEN
                  BEGIN
0136              TIMERCLR STMR1
0137              TIMERON STMR1
0138              FLDALM = 1
                  END
0140            IF(FLDALM)THEN IF STMR1 >= 30 THEN        ; If field alarm then ack in 30 sec
                  BEGIN
0141              TIMEROFF STMR1
0142              TIMERCLR STMR1
0143              FLDALM = 0
0144              OPEN 'HS-AW-SIL'                        ; Silence alarm from PCM
                  END
                ;
                ;  If field alarm ack then set flag and start timer:
                ;
0146            IF(RESET)THEN IF LMPVAR < 2 THEN
                  BEGIN
0147              FLDALM = 1
0148              TIMERON STMR1
```

```
276   0149            RESET = 0
277                   END
278   0151          IF LMPVAR = 2 THEN RESET = 1
279           ;
280           ;       BEGIN DINs:
281           ;
282   0152          ASSIGN PDIN = 'YS-AW-101'                ; First DIN in AWFARM
283   0153          ASSIGN PTYPE = IALMO
284   0154          ASSIGN PREV = FXO
285   0155          ASSIGN PSTAT = INTO
286   0156          ASSIGN PSKID = SKIDO
287   0157          ASSIGN PPASS = FPASO
288   0158          CURENT = 0                               ; Used to set lamp status
289   0159          NXT = 0                                  ; Temporary INT
290   0160          BITVAL = 0
291           ;
292   0161    LOP:  FOR ILOOP = 1 TO 47
293   0162          IF PTYPE THEN                                        ; If some alarm
294                    BEGIN                                       ;be1
295   0164             IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3  ; If EPN is inha
296   0166             IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5          ; If EPN is ibad
297   0168             IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4           ; If EPN is dis
298   0171             IF ! PSTAT THEN IF PREV = PDIN:DIN_VAL THEN GOSUB ALM  ; If not prev alarmed
299   0172             IF PSTAT THEN
300                       BEGIN                                    ;be2
301   0173                IF PSTAT < 3 THEN                                  ; If not inha
302                          BEGIN                                 ;be3
303   0174                 IF PSTAT = 1 THEN
304                            BEGIN                               ;be4
305   0175                     IF AND(PDIN:DIN_ALMCT,32) THEN               ; If alarm is ack
306                                BEGIN                           ;be5
307   0176                         LET PSTAT = 2
308   0177                         FHOLD = 1
309                                END                             ;en5
310   0178                     IF ACK THEN                                  ; If a graphic has been ack
311                                BEGIN                           ;be6  -   go find which graphic
312   0179                         CRIT
313   0180                         ASSIGN PSN = FSNO               ; Routine to find graphic
314   0181                         STEP PSN BY PSKID
315   0182                         IF PSN THEN                                  ; If this is the graphic
316                                    BEGIN                       ;be7  -   then ack it
317   0183                             LET PSTAT = 2
318   0185                             IF PTYPE = 1 THEN PDIN:DIN_ALMCT = OR(PDIN:DIN_ALMCT,32)
319   0186                             FPASS = 1
320   0187                             GOSUB ACKK                           ; Print signal was ack
321                                    END                         ;en7
322                                END                             ;en6
323                            END                                 ;en4
324   0189                     IF PREV != PDIN:DIN_VAL THEN GOSUB CLR       ; If alarm has cleared
325   0190                     ASSIGN PMSGO = DEVO                          ; Find active alarms & graphic
326   0191                     STEP PMSGO BY PSKID
327   0192                     IF PPASS THEN
328                                BEGIN
329   0194                         IF PSTAT = 1 THEN PMSGO = OR(PMSGO,PSTAT)
330                                END
```

```
331   0195                    ELSE PMSGO = OR(PMSGO,PSTAT)
332                         END                                   ;en3
333   0196                ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN
334                         BEGIN
335   0197                  LET PSTAT = 0
336   0198                  FHOLD = 1
337                         END
338                       END                                     ;en2
339                   END                                         ;en1
340   0200          ELSE IF PSTAT THEN PSTAT = 0
341   0201          STEP PDIN BY 1
342   0202          STEP PTYPE BY 1
343   0203          STEP PREV BY 1
344   0204          STEP PSTAT BY 1
345   0205          STEP PSKID BY 1
346   0206          STEP PPASS BY 1
347   0207          NEXT ILOOP
348         ;
349         ;       END DINs
350         ;
351   0208          DEV6 = 0
352   0209          DEV7 = 0
353   0210          DEV8 = 0
354   0211          DEV9 = 0
355   0212          DEV10 = 0
356   0213          DEV11 = 0
357         ;
358         ;-mct1-  abandoned code for white alarms tied to pump devices:
359         ;
360         ;AUX:    ASSIGN PEPN = 'P-AW-101'
361         ;
362         ;       FOR ILOOP = 48 TO 52
363         ;       IF PTYPE THEN
364         ;          BEGIN
365         ;          IF AND(PEPN:DEV_ALMCT,16)THEN BLET PSTAT = 3
366         ;          IF AND(PEPN:DEV_ALMCT,4) THEN BLET PSTAT = 5
367         ;          IF !AND(PEPN:DEV_FLG,8) THEN BLET PSTAT = 4
368         ;          IF PSTAT < 3 THEN
369         ;             BEGIN
370         ;             IF (PSTAT = 1) & AND(PEPN:DEV_ALMCT,32)THEN
371         ;                BEGIN
372         ;                BLET PSTAT = 2
373         ;                FHOLD = 1
374         ;                END
375         ;             IF ACK THEN
376         ;                BEGIN
377         ;                ASSIGN PSN = FSNO
378         ;                STEP PSN BY PSKID
379         ;                IF PSN & PSTAT = 1 THEN
380         ;                   BEGIN
381         ;                   BLET PSTAT = 2
382         ;                   IF PTYPE = 1 THEN PEPN:DEV_ALMCT = OR(PEPN:DEV_ALMCT,32)
383         ;                   FPASS = 1
384         ;                   GOSUB ACKK
385         ;                   END
```

```
386          ;                 END
387          ;              IF !PSTAT THEN
388          ;                 BEGIN
389          ;                 IF AND(PEPN:DEV_STAT,16)THEN
390          ;                    BEGIN
391          ;                    BLET PSTAT = 1
392          ;                    IF AND(PEPN:DEV_ALMCT,32)THEN PEPN:DEV_ALMCT = XOR(PEPN:DEV_ALMCT,32)
393          ;                    ASSIGN PDEV = AWFARM
394          ;                    STEP PDEV BY PSKID
395          ;                    PDEV:DEV_TMPO = 2
396          ;                    GOSUB CYCL
397          ;                    END
398          ;                 END
399          ;              ELSE IF !AND(PEPN:DEV_STAT,16)THEN
400          ;                 BEGIN
401          ;                 BLET PSTAT = 0
402          ;                 FHOLD = 1
403          ;                 IF AND(PEPN:DEV_ALMCT,32)THEN PEPN:DEV_ALMCT = XOR(PEPN:DEV_ALMCT,32)
404          ;                 END
405          ;              IF PSTAT THEN
406          ;                 BEGIN
407          ;                 ASSIGN PMSGO = DEV6
408          ;                 STEP PMSGO BY PSKID
409          ;                 IF PPASS THEN
410          ;                    BEGIN
411          ;                    IF PSTAT = 1 THEN PMSGO = OR(PMSGO,PSTAT)
412          ;                    END
413          ;                 ELSE PMSGO = OR(PMSGO,PSTAT)
414          ;                 END
415          ;              END
416          ;           ELSE IF !AND(PEPN:DEV_ALMCT,16)&!AND(PEPN:DEV_ALMCT,4)&AND(PEPN:DEV_FLG,8)THEN
417          ;              BEGIN
418          ;              BLET PSTAT = 0
419          ;              FHOLD = 1
420          ;              END
421          ;           END
422          ;        STEP PEPN BY 1
423          ;        STEP PTYPE BY 1
424          ;        STEP PREV BY 1
425          ;        STEP PSTAT BY 1
426          ;        STEP PSKID BY 1
427          ;        STEP PPASS BY 1
428          ;        NEXT ILOOP
429          ;-mct1-
430          ;
431   0214   S2ND:    ACK = 0
432   0215           SORT = 0
433          ;
434   0216           DEV12 = OR(DEV0,DEV6)
435   0217           DEV13 = OR(DEV1,DEV7)
436   0218           DEV14 = OR(DEV2,DEV8)
437   0219           DEV15 = OR(DEV3,DEV9)
438   0220           DEV16 = OR(DEV4,DEV10)
439   0221           DEV17 = OR(DEV5,DEV11)
440          ;
```

```
441   0222          ASSIGN PMSG0 = DEV12
442   0223          ASSIGN PMSG1 = FARM
443   0224          FOR LLOOP = 1 TO 5
444   0225          IF PMSG0 THEN
445                   BEGIN
446   0227            IF AND(PMSG0,1) THEN PMSG1 = 2
447   0228            ELSE PMSG1 = 1
448                   END
449   0229          ELSE PMSG1 = 0
450   0230          STEP PMSG0 BY 1
451   0231          STEP PMSG1 BY 1
452   0232          NEXT LLOOP
453         ;
454   0233          IF FHOLD THEN
455                    BEGIN
456   0234             LAMP 0,11,FARM
457   0235             LAMP 0,10,HVAC
458   0236             LAMP 0,9,VLVPIT
459   0237             LAMP 0,8,BLD271
460   0238             FHOLD = 0
461   0239             TIMERCLR STMR2
462   0240             TIMERON STMR2
463                    END
464   0241          MARK STEP "BOTTOM",0,0
465   0242          NOCRIT
466         ;
467         ;       B E G I N   F Q I - R E S E T :
468         ;
469         ;       Function:       For totalizers that have a CALC block which performs the
470         ;                       integration, set the output of the CALC block to zero
471         ;                       after the FQI loop has been placed in AUTO from MANUAL.
472         ;
473   0244          IF !AND(AUTO,64) THEN FSL7 = 1                  ; If manual, set manual flag
474   0245          IF AND(AUTO,64) & AND(FSL7,1) THEN              ; For manual-auto transition
475                    BEGIN
476   0246             FSL7 = 0
477   0247             CALOUT = 0.0
478                    END
479         ;
480         ;       E N D   F Q I - R E S E T
481         ;
482   0248          GOTO AGAIN
483         ;
484         ;       E N D   P R O G R A M   L O O P
485         ;
486         ;       BEGIN CLEAR, ALARM, CYCLE, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
487         ;
488   0249  CLR:    LET PSTAT = 0
489   0251          IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
490   0252          FHOLD = 1
491   0253          RETURN
492         ;
493   0254  ALM:    LET PSTAT = 1           ; Print message, flash lamp, horn on, scroll message at bottom of graphic
494   0255          CRIT                                            ; Critical
495   0257          IF AND(PTYPE,3)THEN FALMON = 1                  ; Audible alarm on
```

```
0258            IF AND(PDIN:DIN_ALMCT,32)THEN                    ; Clear the scan block
0259               PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0260            ASSIGN PMSG0 = LEAK0
0261            STEP PMSG0 BY PSKID
0262            LAMP 0,PMSG0,2                                   ; Lamp flash
0263            ASSIGN PDEV = AWFARM                             ; Find DEV and turn it on
0264            STEP PDEV BY PSKID
0265            PDEV:DEV_TMP0 = 2
        ;
        ;       Scrolling alarm summary region in graphic (message, time, date, alarm type):
        ;
0266    CYCL:   LSG4 = LSG3                                      ; LSG = message
0267            LSG3 = LSG2
0268            LSG2 = LSG1
0269            LSG1 = LSG0
0270            COLOR4 = COLOR3                                  ; COLOR = type of alarm
0271            COLOR3 = COLOR2
0272            COLOR2 = COLOR1
0273            COLOR1 = COLOR0
0274            EPNS4 = EPNS3                                    ; EPN
0275            EPNS3 = EPNS2
0276            EPNS2 = EPNS1
0277            EPNS1 = STRNG1
0278            GRAFX4 = GRAFX3                                  ; GRAFX = graphic number
0279            GRAFX3 = GRAFX2
0280            GRAFX2 = GRAFX1
0281            GRAFX1 = GRAFX0
0282            SDATE4 = SDATE3                                  ; SDATE = time and date
0283            SDATE3 = SDATE2
0284            SDATE2 = SDATE1
0285            SDATE1 = SDATE0
        ;
        ;       ALARM TYPER STRINGS:
        ;
0286    ACKK:   FHOLD = 1
0287            ON ILOOP GOTO S1,S2,S3,S4,S5,S6,S7,S8,S9,S10
0288            ON ILOOP - 10 GOTO S11,S12,S13,S14,S15,S16,S17,S18,S19,S20
0289            ON ILOOP - 20 GOTO S21,S22,S23,S24,S25,S26,S27,S28,S29,S30
0290            ON ILOOP - 30 GOTO S31,S32,S33,S34,S35,S36,S37,S38,S39,S40
0291            ON ILOOP - 40 GOTO S41,S42,S43,S44,S45,S46,S47,S48,S49,S50
0292            ON ILOOP - 50 GOTO S51,S52,S53,S54,S55
0293            GOTO AMSG
0294    S1:     STRNG0 = "PUMP AW-101 OFF       "
0295            STRNG1 ="YS-AW-101"
0296            GOTO AMSG
0297    S2:     STRNG0 = "AW-101 ANN RD HI/FAIL "
0298            STRNG1 ="RSH-AW101"
0299            GOTO AMSG
0300    S3:     STRNG0 = "AW-01C RAD HI/FAIL    "
0301            STRNG1 = "RSH-AW01C"
0302            GOTO AMSG
0303    S4:     STRNG0 = "AW-102 ANN RD HI/FAIL "
0304            STRNG1 = "RSH-AW102"
0305            GOTO AMSG
0306    S5:     STRNG0 = "AW-02C RAD HI/FAIL    "
```

```
0307            STRNG1 = "RSH-AW02C"
0308            GOTO AMSG
0309    S6:     STRNG0 = "PUMP AW-103 OFF       "
0310            STRNG1 = "YS-AW-103"
0311            GOTO AMSG
0312    S7:     STRNG0 = "AW-103 ANN RD HI/FAIL "
0313            STRNG1 = "RSH-AW103"
0314            GOTO AMSG
0315    S8:     STRNG0 = "AW-03C RADN HIGH/FAIL "
0316            STRNG1 = "RSH-AW03C"
0317            GOTO AMSG
0318    S9:     STRNG0 = "PUMP AW-104 OFF       "
0319            STRNG1 = "YS-AW-104"
0320            GOTO AMSG
0321    S10:    STRNG0 = "AW-104 ANN RD HI/FAIL "
0322            STRNG1 = "RSH-AW104"
0323            GOTO AMSG
0324    S11:    STRNG0 = "AW-04C RADN HIGH/FAIL "
0325            STRNG1 = "RSH-AW04C"
0326            GOTO AMSG
0327    S12:    STRNG0 = "PUMP AW-105 OFF       "
0328            STRNG1 = "YS-AW-105"
0329            GOTO AMSG
0330    S13:    STRNG0 = "AW-105 ANN RD HI/FAIL "
0331            STRNG1 = "RSH-AW105"
0332            GOTO AMSG
0333    S14:    STRNG0 = "AW-05C RADN HIGH/FAIL "
0334            STRNG1 = "RSH-AW05C"
0335            GOTO AMSG
0336    S15:    STRNG0 = "PUMP AW-106 OFF       "
0337            STRNG1 = "YS-AW-106"
0338            GOTO AMSG
0339    S16:    STRNG0 = "AW-106 ANN RD HI/FAIL "
0340            STRNG1 = "RSH-AW106"
0341            GOTO AMSG
0342    S17:    STRNG0 = "AW-06C RADN HIGH/FAIL "
0343            STRNG1 = "RSH-AW06C"
0344            GOTO AMSG
0345    S18:    STRNG0 = "AW TL-21 LINE LEAK    "
0346            STRNG1 = "LDS-TL021"
0347            GOTO AMSG
0348    S19:    STRNG0 = "AW CIRCUIT TROBL/LEAK "
0349            STRNG1 = "LDSTL2223"
0350            GOTO AMSG
0351    S20:    STRNG0 = "AW DRAIN ENCASE LEAK  "
0352            STRNG1 = "LDS-AW-DR"
0353            GOTO AMSG
0354    S21:    STRNG0 = "AW PROCESS PITS LEAK  "
0355            STRNG1 = "LDS-AW-PP"
0356            GOTO AMSG
0357    S22:    STRNG0 = "AW SLURRY ENCASE LEAK "
0358            STRNG1 = "LDS-AW-SL"
0359            GOTO AMSG
0360    S23:    STRNG0 = "AW SUPRNB ENCASE LEAK "
0361            STRNG1 = "LDS-AW-SN"
```

```
606   0362          GOTO AMSG
607   0363   S24:   STRNG0 = "AW SN-269 LINE LEAK   "
608   0364          STRNG1 = "LDS-SN269"
609   0365          GOTO AMSG
610   0366   S25:   STRNG0 = "AW SN-270 LINE LEAK   "
611   0367          STRNG1 = "LDS-SN270"
612   0368          GOTO AMSG
613   0369   S26:   STRNG0 = "AW CLEAKOUT BOX LEAK  "
614   0370          STRNG1 = "LDS-COBAW"
615   0371          GOTO AMSG
616   0372   S27:   STRNG0 = "AW SN FLSH LN PRES HI "
617   0373          STRNG1 = "PSH-AWSN1"
618   0374          GOTO AMSG
619   0375   S28:   STRNG0 = "AW FEEDLNE PRESSUR HI "
620   0376          STRNG1 = "PSH-AWSN2"
621   0377          GOTO AMSG
622   0378   S29:   STRNG0 = "AW FARM GENERAL ALARM "
623   0379          STRNG1 = "QS-AW-271"
624   0380          GOTO AMSG
625   0381   S30:   STRNG0 = "AW SERPIT RAD HI/FAIL "
626   0382          STRNG1 = "RSH-SP-AW"
627   0383          GOTO AMSG
628   0384   S31:   STRNG0 = "AW SERVICE PIT LEAK   "
629   0385          STRNG1 = "LDS-SP-AW"
630   0386          GOTO AMSG
631   0387   S32:   STRNG0 = "AW-FRM TNK EXH RAD HI "
632   0388          STRNG1 = "RSH-AW-K1"
633   0389          GOTO AMSG
634   0390   S33:   STRNG0 = "K1 SK MN SMPL PMP OFF "
635   0391          STRNG1 = "PSH-AWK11"
636   0392          GOTO AMSG
637   0393   S34:   STRNG0 = "K1 REC SMPL PUMP OFF  "
638   0394          STRNG1 = "PSH-AWK12"
639   0395          GOTO AMSG
640   0396   S35:   STRNG0 = "K2 STK MN SPL PMP OFF "
641   0397          STRNG1 = "PSH-AWK21"
642   0398          GOTO AMSG
643   0399   S36:   STRNG0 = "K2 REC SMPL PUMP OFF  "
644   0400          STRNG1 = "PSH-AWK22"
645   0401          GOTO AMSG
646   0402   S37:   STRNG0 = "AW TANK EXH FANS OFF  "
647   0403          STRNG1 = "QXS-AWK15"
648   0404          GOTO AMSG
649   0405   S38:   STRNG0 = "ANN EX RD/FAN HI/FAIL "
650   0406          STRNG1 = "RSH-AW-K2"
651   0407          GOTO AMSG
652   0408   S39:   STRNG0 = "AW TNK EX RADMON FAIL "
653   0409          STRNG1 = "QXSAWK1A2"
654   0410          GOTO AMSG
655   0411   S40:   STRNG0 = "241-AW RADN HI/FAIL   "
656   0412          STRNG1 = "RSH-AW-12"
657   0413          GOTO AMSG
658   0414   S41:   STRNG0 = "271-AW RADN HI/FAIL   "
659   0415          STRNG1 = "RSHAW2711"
660   0416          GOTO AMSG
```

```
0417    S42:    STRNG0 = "271-AW RADN HI/FAIL   "
0418            STRNG1 = "RSHAW2712"
0419            GOTO AMSG
0420    S43:    STRNG0 = "AW AREA RADN BYPASS   "
0421            STRNG1 = "YS-AW-ARM"
0422            GOTO AMSG
0423    S44:    STRNG0 = "271-AW BLD POWER LOSS "
0424            STRNG1 = "JXS-AW271"
0425            GOTO AMSG
0426    S45:    STRNG0 = "EPN DELETED           "
0427            STRNG1 = "NO EPN"
0428            GOTO AMSG
0429    S46:    STRNG0 = "AW-FARM MASTER SHTDWN "
0430            STRNG1 = "YS-AW-MSD"
0431            GOTO AMSG
0432    S47:    STRNG0 = "AW HEAT TRACE OVRTMP  "
0433            STRNG1 = "TXS-AW-2"
0434            GOTO AMSG
        ;
        ;-mct1- abandoned code for white alarms tied to pump devices:
        ;
        S48:    ;       STRNG0 = "PUMP AW-101 SHUTDOWN  "
        ;       STRNG1 = "P-AW-101"
        ;       GOTO AMSG
        S49:    ;       STRNG0 = "PUMP AW-103 SHUTDOWN  "
        ;       STRNG1 = "P-AW-103"
        ;       GOTO AMSG
        S50:    ;       STRNG0 = "PUMP AW-104 SHUTDOWN  "
        ;       STRNG1 = "P-AW-104"
        ;       GOTO AMSG
        S51:    ;       STRNG0 = "PUMP AW-105 SHUTDOWN  "
        ;       STRNG1 = "P-AW-105"
        ;       GOTO AMSG
        S52:    ;       STRNG0 = "PUMP AW-106 SHUTDOWN  "
        ;       STRNG1 = "P-AW-106"
        ;       GOTO AMSG
        ;-mct1-
        ;
0435    S53:    STRNG0 = "AWBATCH PROGRAM START "
0436            GOTO AMSG
0437    S54:    STRNG0 = "AWBATCH IN WRONG UNIT "
0438            GOTO AMSG
0439    S55:    STRNG0 = "AWBATCH TERMINATING   "
0440            GOTO AMSG
        ;
0441    AMSG:   IF (FPASS)THEN
                   BEGIN
0442               PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNG1
0443               FPASS = 0
0444               GOTO NXT
                   END
0446            IF PTYPE = 4 THEN COLOR0 = 3
0447               ELSE COLOR0 = PTYPE
0448            EPNS0 = STRNG1
0449            IN0 = TIMSTR(SSNG0)
```

```
716   0451            IF INO != 8 THEN SSNGO = "TIMEFAIL"
717   0452            INO = APPEND(LSGO,STRNGO,SSNGO)
718   0454            IF INO < 0 THEN LSGO = "APPEND FAILED!!"
719   0455            INO = DATSTR(SDATEO)
720   0457            IF INO != 9 THEN SDATEO = "DATE FAIL"
721   0459            IF PSKID = 1 THEN GRAFXO = 303   ; SERVICE PIT
722   0461            IF PSKID = 2 THEN GRAFXO = 303   ; VALVE PIT
723   0463            IF PSKID = 3 THEN GRAFXO = 303   ; HVAC
724   0465            IF PSKID = 4 THEN GRAFXO = 302   ; BLD-271
725   0467            IF PSKID = 5 THEN GRAFXO = 301   ; PUMP
726   0469            IF PSKID = 0 THEN GRAFXO = 300   ; FARM
727   0471            IF PTYPE = 1 THEN PRINT ADI,"WHITE ALARM %p %p GRAPHICS %i",EPNSO,STRNGO,GRAFXO
728   0472    NXT:    IF FSTART = 1 THEN
729                      BEGIN
730   0473               COLORO = 0
731   0474               GRAFXO = 0
732   0475               STRNG1 =" "
733   0476               FSTART = 0
734   0477               PRINT ADI,"%p",STRNGO
735                      END
736   0478            RETURN
737           ;
738   0480    ERRSUB: IF(ERRNUM() = -187)THEN ERSRET
739                   ELSE
740                    BEGIN
741   0481             ERRN = ERRNUM()
742   0482             ERRL = ERRLIN()
743   0483             PRINT ADI,"ERROR # %i AT LINE %i, ILOOP = %i",errn,errl,ILOOP
744   0484             ERSCLR
745                    END
746   0485            GOTO AGAIN
747           ;
748           ; TERM: FABORT = 0
749   0486    TERM:   STRNGO = "AWACK TERMINATED    "
750   0487            ILOOP = 55
751   0488            FSTART = 1
752   0489            TIMEROFF STMR1
753   0490            TIMERCLR STMR1
754   0491            FLDALM = 0
755   0492            OPEN 'HS-AW-SIL'
756   0493            GOSUB CYCL
757                   END
```

Total Errors Detected 0 Total Warnings 0
Sequence Program Size = 9408 Bytes, 588 Pages
116 Forward Reference(s)

XYZBATCH

```
;       X Y Z B A T C H . S E Q                                 VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on graphics, and
;                       printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]XYZBATCH
;
;       UNIT = 4, SKDKEY = 12, 13, 14, 15
;
;       Assoc. UPF:     [300,1]_TNKFRM.___      TNKFRM.LST
;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
;       SDB:            [300,1]PCM1ASDB.___     PCM1ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ------------------------------------------
;       PSTAT     1NTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       PDIN      'EPN'         ---
;       PTYPE     IALMn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                  3 = yellow and yellow, 4 = red,
;                                  6 = yellow and red
;       PREV      FXn           Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Tracks which graphic has an alarm
;       PPASS     FPASn         If set (1), turn lamp off when alarm is ACKnowledged
;       PSN       FSNn          Flag for the graphic to ACKnowledge
;       ---       FHOLD         Flag to update the lamps
;       ---       FNING         Flag for DOG1A.C micro select
;       ---       ACK           Flag for C program to ACK system wide
;
;  MODIFICATION LOG:
;
;        11-JUN-93      Added comments.  CCN# 93JUN01-01.                M. Teats
;
;-mct1+  25-JUN-93       Set QSCONSOLE to no alarms, since the            M. Teats
;                       Gamewell is not connected to the MCS.
;                       CCN# 93JUN25-01.
;
;-mct2+  19-JUL-93       Delete QSCONSOLE per ECN 190990, since the       M. Teats
;                       Gamewell is not connected to the MCS.  CCN
;                       93JUL15-01.  Baselined for D/3 version 3.3.
;
```

```
                ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
                ;                       system. Rebaselined document. Removed
                ;                       obsolite Select() statement.
                ;
                ;  END MOD LOG
                ;
                UNIT    XYZFRM
                        COMMON A244                     ; Include PSH-SN215, PSH-SN216
                        PUMP == FLSPIT
0000                    GETUNIT TRIP                    ; Which sequence unit is program running in
0001                    IF TRIP != 4 THEN               ; Abort if running in wrong seq. unit
                           BEGIN
0002                       FSTART = 1
0003                       ILOOP = 38
0004                       GOSUB CYCL
0005                       FSTART = 1
0006                       PRINT ADI," >>>>>  ATTEMPT TO RUN XYZBAT IN WRONG UNIT"
0007                       GOTO TERM
                           END
                ;       IF !SELECT() THEN GOTO AGAIN
                ;
                ;       B E G I N   I N I T I A L I Z I N G :
                ;
0008                    NOP
0009            INIT:   LET FABORT = 0                  ; Abort program if FABORT = 1
0010                    LET FSTART = 0                  ; Program start flag
0011                    LET FLDALM = 0
0012                    LET FSL6 = 0                    ; QS-204AR1 flag (mct)
0013                    LET FSL7 = 0                    ; QS-204AR2 flag (mct)
0014                    LET ERRN = 0                    ; Set error number to zero
0015                    LET ERRL = 0                    ; Set error line to zero
0016                    LAMP 0,15,0                     ; Turn off the lamps
0017                    LAMP 0,14,0
0018                    LAMP 0,13,0
0019                    LAMP 0,12,0
0020                    ASSIGN PDEV = AFARM                             ; First of 5 alarm ack devices
0021                    FOR ILOOP = 1 TO 5
0022                    PDEV:DEV_TMP0 = 1                               ; Set all 5 devices to ack state
0023                    IF AND(PDEV:DEV_ALMCT,16) THEN                  ; If alarm device is inha, remove the inha
0024                      PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0025                    IF AND(PDEV:DEV_ALMCT,32) THEN                  ; If alarm device is ack, clear it
0026                       PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
0027                    STEP PDEV BY 1
0028                    NEXT ILOOP
                ;
                ;       First, set all flags and integers:
                ;
0029                    ASSIGN PDIN = 'PSH-SL100'                       ; Assign pointer to first DIN
0030                    ASSIGN PSTAT = INT4
0031                    ASSIGN PTYPE = IALM4
0032                    ASSIGN PREV = FX4
0033                    ASSIGN PSKID = SKID4
0034                    ASSIGN PPASS = FPAS4
                ;
0035                    FARM = 0                                        ; Set up values for different graphics
```

```
111   0036          SERPIT = 1                                  ; SKID of each EPN indicates graphic
112   0037          VLVPIT = 2
113   0038          HVAC = 3
114   0039          BLD271 = 4
115         ;       PUMP = 5
116         ;
117   0040          LEAK0 = 15                                  ; AXYZ FARM lamp
118   0041          LEAK1 = 14                                  ; A FARM lamp
119   0042          LEAK2 = 13                                  ; AY FARM lamp
120   0043          LEAK3 = 12                                  ; AZ FARM lamp
121         ;
122   0044          FOR ILOOP = 4 TO 29                         ; For DINs
123   0045          LET PPASS = 0
124   0046          LET PREV = 0
125   0047          LET PTYPE = 2
126         ;       BLET PSTAT = 0
127   0048          IF ILOOP = 29 THEN                          ; -mct2+
128                    BEGIN
129   0049             LET IALM29 = 0                           ; -mct1+
130   0050             GOTO SKP
131                    END
132   0051          IF AND(PDIN:DIN_DFLG,3) THEN                ; Check for alarms (must be red or yellow)
133                    BEGIN
134   0052             LET PTYPE = 2                            ; Default to yellow alarm
135   0054             IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1          ; Reverse acting
136   0056             IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4         ; Set to red critical
137                    END
138   0058          IF ILOOP = 0 | ILOOP = 1 THEN LET PSKID = VLVPIT
139   0060          IF ILOOP = 2 | ILOOP = 3 THEN LET PSKID = HVAC
140   0062          IF ILOOP > 3 & ILOOP < 10 THEN LET PSKID = SERPIT
141   0064          IF ILOOP = 10 |ILOOP = 11 THEN LET PSKID = HVAC
142   0066          IF ILOOP > 11 & ILOOP < 16 THEN LET PSKID = VLVPIT
143   0068          IF ILOOP = 16 | ILOOP = 17 THEN LET PSKID = HVAC
144   0070          IF ILOOP = 18 THEN LET PSKID = VLVPIT
145   0072          IF ILOOP > 18 THEN LET PSKID = FARM
146   0074          IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
147   0075    SKP:  STEP PSTAT BY 1
148   0076          STEP PDIN BY 1
149   0077          STEP PTYPE BY 1
150   0078          STEP PREV BY 1
151   0079          STEP PSKID BY 1
152   0080          STEP PPASS BY 1
153   0081          NEXT ILOOP
154         ;
155         ;       For White alarms on pump devices:
156         ;
157   0082          FOR ILOOP = 30 TO 33
158         ;       BLET PSTAT = 0
159   0083          LET PTYPE = 1
160   0084          LET PREV = 1
161   0086          IF ILOOP = 30 | ILOOP = 31 THEN LET PSKID = VLVPIT
162   0088          IF ILOOP = 32 | ILOOP = 33 THEN LET PSKID = HVAC
163   0089          LET PPASS = 1
164   0090          STEP PSTAT BY 1
165   0091          STEP PTYPE BY 1
```

```
166   0092          STEP PREV BY 1
167   0093          STEP PSKID BY 1
168   0094          STEP PPASS BY 1
169   0095          NEXT ILOOP
170         ;
171   0096          FX0 = 0
172   0097          FX1 = 0
173   0098          FX2 = 0
174   0099          FX3 = 0
175                 ;
176                 ;  Set the white alarms:
177                 ;
178   0100          IALM0 = 0
179   0101          IALM1 = 0
180   0102          IALM2 = 0
181   0103          IALM3 = 0
182   0104          IALM20 = 1
183   0105          IALM21 = 1
184   0106          IALM30 = 1
185   0107          IALM31 = 1
186   0108          IALM32 = 1
187   0109          IALM33 = 1
188         ;
189   0110          FPAS0 = 1
190   0111          FPAS1 = 1
191   0112          FPAS2 = 1
192   0113          FPAS3 = 1
193         ;
194         ;       For PSH-SN215 (#34) and PSH-SN216 (#35) signals in PCMOA:
195         ;
196   0114          FX34 = 0
197   0115          FX35 = 0
198         ;       INT34 = 0
199         ;       INT35 = 0
200   0116          IALM34 = 2
201   0117          IALM35 = 2
202   0118          SKID34 = SERPIT
203   0119          SKID35 = SERPIT
204   0120          FPAS34 = 0
205   0121          FPAS35 = 0
206         ;
207         ;       E N D   I N I T I A L I Z I N G
208         ;
209         ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
210         ;
211   0122          ILOOP = 37
212   0123          FSTART = 1
213   0124          GOSUB CYCL
214   0125          TIMERON STMR2
215   0126          TIMERCLR STMR2
216   0127          ON ERROR GOSUB ERRSUB
217         ;
218         ;       B E G I N   P R O G R A M   L O O P :
219         ;
220         ;       PLEASE NOTE:    ALARM ACKNOWLEDGE DEVICES USED IN
```

```
221          ;                        GRAPHICS 320 THROUGH 343 START WITH 'AFARM' AND GO
222          ;                        TO DEVICE 'AXYZ'.  GRAPHICS GO FROM XYZFRM TO AZFARM.
223          ;                        THIS IS TRANSPARENT TO THE OPERATOR.
224          ;
225   0128   AGAIN:   MARK STEP "AGAIN",0,0
226          ;        IF !SELECT()THEN FNING = 0
227          ;           ELSE FNING = 1                        ; Flag 480 determines if selected micro for DOG1A.C
228          ;        WAITUNTIL SELECT() | FABORT              ; Wait until micro selected or program aborted
229          ;        IF (FABORT) THEN GOTO TERM               ; Terminate program if abort flag is set
230          ;        IF FNING = 0 THEN FHOLD = 1
231   0130           IF STMR2 > 30 THEN FHOLD = 1
232   0131           WAIT 1
233          ;
234   0132           DEV0 = 0
235   0133           DEV1 = 0
236   0134           DEV2 = 0
237   0135           DEV3 = 0
238   0136           DEV4 = 0
239   0137           DEV5 = 0
240                  ;
241                  ;  If alarm device is alarmed and its ALMCT indicates alarms are ack'd:
242                  ;
243   0138           ASSIGN PDEV = AFARM                      ; DEV ACCIDENTALLY OFFSET BY 1 (RNK)
244   0139           ASSIGN PSN = FSN0
245   0140           ASSIGN PACK = FLEAK0
246   0141           FOR ILOOP = 0 TO 3
247   0142           PSN = 0
248   0143           IF (PDEV:DEV_TMP0 = 2) & AND(PDEV:DEV_ALMCT,32) THEN
249                     BEGIN
250   0144              PDEV:DEV_TMP0 = 1                     ; Put device in ack state
251   0145              LET PSN = 1                           ; Set flag for graphic to ack
252   0146              LET FLGACK = 1                        ; WATCH.C spawns ACKFLG.C, which resets flag
253   0147              LET ACK = 1                           ; Set flag for C program to ACK system wide
254   0148              LET PACK = 1                  ; ACKFLG.C to acknowledge this graphic
255   0149              ASSIGN PMSG0 = LEAK0                  ; Make the appropriate lamp steady:
256   0150              STEP PMSG0 BY ILOOP
257   0152              IF ILOOP !=1 THEN LAMP 0,PMSG0,1      ; Flash lamp
258                     END
259   0153           ELSE PSN = 0
260   0154           STEP PSN BY 1
261   0155           STEP PDEV BY 1
262   0156           STEP PACK BY 1
263   0157           NEXT ILOOP
264          ;
265          ;        Field Alarm Silence feature:
266          ;
267   0158           IF(ACK)THEN
268                    BEGIN
269   0159             TIMErCLR STMR1
270   0160             TIMErON STMR1
271   0161             FLDALM = 1
272                    END
273   0163           IF(FLDALM)THEN IF STMR1 >= 30 THEN       ; If field alarm then ack in 30 sec
274                    BEGIN
275   0164             TIMErOFF STMR1
```

```
276   0165          TIMErCLR STMR1
277   0166          FLDALM = 0
278   0167          OPEN 'HSAXYZSIL'                    ; Silence alarm from PCM
279                 END
280               ;
281               ;  If field alarm ack then set flag and start timer:
282               ;
283   0169        IF(RESET)THEN IF LMPVAR < 2 THEN
284                 BEGIN
285   0170          FLDALM = 1
286   0171          TIMErON STMR1
287   0172          TIMErCLR STMR1
288   0173          RESET = 0
289                 END
290   0175        IF LMPVAR = 2 THEN RESET = 1
291         ;
292         ;     BEGIN DINs:
293         ;
294   0176        ASSIGN PDIN = 'PSH-SL100'           ; Assign pointer to first DIN
295   0177        ASSIGN PTYPE = IALM4
296   0178        ASSIGN PREV = FX4
297   0179        ASSIGN PSTAT = INT4
298   0180        ASSIGN PSKID = SKID4
299   0181        ASSIGN PPASS = FPAS4
300   0182        CURENT = 0                          ; Used to set lamp status
301   0183        NXT = 0                             ; Temporary INT
302   0184        BITVAL = 0
303         ;
304   0185  LOP:  FOR ILOOP = 5 TO 30
305   0187        IF ILOOP = 30 THEN GOTO SKP1                        ; -mct2+
306   0188        IF PTYPE THEN                                       ; If some alarm
307                 BEGIN                                     ;be1
308   0190          IF AND(PDIN:DIN_ALMCT,16) THEN LET PSTAT = 3      ; If EPN is inha
309   0192          IF AND(PDIN:DIN_ALMCT,4) THEN LET PSTAT = 5       ; If EPN is ibad
310   0194          IF !AND(PDIN:DIN_FLG,8) THEN LET PSTAT = 4        ; If EPN is dis
311   0197          IF ! PSTAT THEN IF PREV = PDIN:DIN_VAL THEN GOSUB ALM  ; If not prev alarmed
312   0198          IF PSTAT THEN
313                   BEGIN                                   ;be2
314   0199            IF PSTAT < 3 THEN                               ; If not inha
315                     BEGIN                                 ;be3
316   0200              IF PSTAT = 1 THEN
317                       BEGIN                               ;be4
318   0201                IF AND(PDIN:DIN_ALMCT,32) THEN              ; If alarm is ack
319                         BEGIN                             ;be5
320   0202                  LET PSTAT = 2
321   0203                  FHOLD = 1
322                         END                               ;en5
323   0204                IF ACK THEN                                 ; If a graphic has been ack
324                         BEGIN                             ;be6  -  go find which graphic
325   0205                  CRIT
326   0206                  ASSIGN PSN = FSNO                         ; Routine to find graphic
327   0207                  STEP PSN BY PSKID
328   0208                  IF PSN THEN                               ; If this is the graphic
329                           BEGIN                           ;be7  -  then ack it
330   0209                    LET PSTAT = 2
```

```
331   0211                          IF PTYPE = 1 THEN PDIN:DIN_ALMCT = OR(PDIN:DIN_ALMCT,32)
332   0212                          FPASS = 1
333   0213                          GOSUB ACKK
334                                 END                                ;en7
335                               END                                  ;en6
336                             END                                    ;en4
337   0215                      IF PREV != PDIN:DIN_VAL THEN GOSUB CLR        ; If alarm has cleared
338   0216                      ASSIGN PMSGO = DEVO                           ; Find active alarms & graphic:
339   0217                      STEP PMSGO BY PSKID
340   0218                      IF PPASS THEN
341                                BEGIN
342   0219                         FHOLD = 1
343   0221                         IF PSTAT = 1 THEN PMSGO = OR(PMSGO,PSTAT)
344                                END
345   0222                      ELSE PMSGO = OR(PMSGO,PSTAT)
346                           END                                      ;en3
347   0224                  ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN PSTAT = 0
348                         END                                        ;en2
349                     END                                            ;en1
350   0226            ELSE IF PSTAT THEN PSTAT = 0
351   0227    SKP1:   STEP PDIN BY 1
352   0228            STEP PTYPE BY 1
353   0229            STEP PREV BY 1
354   0230            STEP PSTAT BY 1
355   0231            STEP PSKID BY 1
356   0232            STEP PPASS BY 1
357   0233            NEXT ILOOP
358           ;
359           ;       END DINs
360           ;
361   0234            DEV6 = 0
362   0235            DEV7 = 0
363   0236            DEV8 = 0
364   0237            DEV9 = 0
365   0238            DEV10 = 0
366   0239            DEV11 = 0
367           ;
368           ;       BEGIN WHITE ALARMS FOR PUMP DEVICES:
369           ;
370   0240    AUX:    ASSIGN PEPN = 'P-AY-101'
371   0241            FOR ILOOP = 31 TO 34
372   0242            IF PTYPE THEN
373                      BEGIN
374   0244               IF AND(PEPN:DEV_ALMCT,16) THEN LET PSTAT = 3   ; If EPN is inha
375   0246               IF AND(PEPN:DEV_ALMCT,4) THEN LET PSTAT = 5            ; If EPN is ibad
376   0248               IF !AND(PEPN:DEV_FLG,8) THEN LET PSTAT = 4             ; If EPN is dis
377   0249               IF PSTAT < 3 THEN                                      ; If not inha
378                         BEGIN
379   0250                  IF (PSTAT = 1) & AND(PEPN:DEV_ALMCT,32) THEN        ; If prev unack alrarm, and is now ack
380                            BEGIN
381   0251                     LET PSTAT = 2
382   0252                     FHOLD = 1
383                            END
384   0253                  IF ACK THEN
385                            BEGIN
```

```
386   0254                    ASSIGN PSN = FSNO
387   0255                    STEP PSN BY PSKID
388   0256                    IF PSN & PSTAT = 1 THEN
389                              BEGIN
390   0257                       LET PSTAT = 2
391   0259                       IF PTYPE = 1 THEN PEPN:DEV_ALMCT = OR(PEPN:DEV_ALMCT,32)
392   0260                       FPASS = 1
393   0261                       GOSUB ACKK
394                              END
395                           END
396   0262                 IF !PSTAT THEN                                  ; If prev not alarmed
397                           BEGIN
398   0263                    IF AND(PEPN:DEV_STAT,16)THEN                 ; If shutdown
399                              BEGIN
400   0264                       LET PSTAT = 1
401   0266                       IF AND(PEPN:DEV_ALMCT,32)THEN PEPN:DEV_ALMCT = XOR(PEPN:DEV_ALMCT,32)
402   0267                       ASSIGN PDEV = AFARM
403   0268                       STEP PDEV BY PSKID
404   0269                       PDEV:DEV_TMPO = 2
405   0270                       GOSUB CYCL
406                              END
407                           END
408   0271                 ELSE IF !AND(PEPN:DEV_STAT,16)THEN
409                           BEGIN
410   0272                    LET PSTAT = 0
411   0273                    FHOLD = 1
412   0275                    IF AND(PEPN:DEV_ALMCT,32)THEN PEPN:DEV_ALMCT = XOR(PEPN:DEV_ALMCT,32)
413                           END
414   0276                 IF PSTAT THEN
415                           BEGIN
416   0277                    ASSIGN PMSGO = DEV6
417   0278                    STEP PMSGO BY PSKID
418   0279                    IF PPASS THEN
419                              BEGIN
420   0281                       IF PSTAT = 1 THEN PMSGO = OR(PMSGO,PSTAT)
421                              END
422   0282                    ELSE PMSGO = OR(PMSGO,PSTAT)
423                           END
424                        END
425   0284              ELSE IF !AND(PEPN:DEV_ALMCT,16)&!AND(PEPN:DEV_ALMCT,4)&AND(PEPN:DEV_FLG,8)THEN PSTAT = 0
426                        END
427   0285           STEP PEPN BY 1
428   0286           STEP PTYPE BY 1
429   0287           STEP PREV BY 1
430   0288           STEP PSTAT BY 1
431   0289           STEP PSKID BY 1
432   0290           STEP PPASS BY 1
433   0291           NEXT ILOOP
434          ;
435          ;       END WHITE ALARMS FOR PUMP DEVICES
436          ;
437          ;       BEGIN PCMOA ALARMS:
438          ;
439   0292   PCMOA:  ILOOP = 35
440   0293           IF IALM34 THEN
```

```
                    BEGIN                                                   ;be1
0295                IF AND('PSH-SN215':DIN_ALMCT,16) THEN LET INT34 = 3            ; If EPN is inha
0297                IF AND('PSH-SN215':DIN_ALMCT,4) THEN LET INT34 = 5             ; If EPN is ibad
0299                IF !AND('PSH-SN215':DIN_FLG,8) THEN LET INT34 = 4              ; If EPN is dis
0302                IF ! INT34 THEN IF FX34 = 'PSH-SN215':DIN_VAL THEN GOSUB ALM
0303                IF INT34 THEN
                       BEGIN                                                ;be2
0304                   IF INT34 < 3 THEN                                           ; If not inha
                          BEGIN                                             ;be3
0305                      IF INT34 = 1 THEN
                             BEGIN                                          ;be4
0306                            IF FSN1 THEN
                                   BEGIN                                    ;be5
0307                               LET INT34 = 2
0309                               IF IALM34 = 1 THEN 'PSH-SN215':DIN_ALMCT = OR('PSH-SN215':DIN_ALMCT,32)
0310                               FPASS = 1
0311                               GOSUB ACKK
                                   END                                      ;en5
                             END                                            ;en4
0313                         IF FX34 != 'PSH-SN215':DIN_VAL THEN GOSUB CLR
0314                         IF FPAS34 THEN
                                BEGIN
0316                            IF INT34 = 1 THEN DEV1 = OR(DEV1,INT34)
                                END
0317                         ELSE DEV1 = OR(DEV1,INT34)
                          END                                               ;en3
0319                   ELSE IF !AND('PSH-SN215':DIN_ALMCT,16)&!AND('PSH-SN215':DIN_ALMCT,4)&AND('PSH-SN215':DIN_FLG,8)THEN INT34 = 0
                       END                                                  ;en2
                    END                                                     ;en1
0321             ELSE IF INT34 THEN INT34 = 0
0322             STEP PTYPE BY 1
0323             STEP PREV BY 1
0324             STEP PSTAT BY 1
0325             STEP PSKID BY 1
0326             STEP PPASS BY 1
        ;
0327             ILOOP = 36
0328             IF IALM35 THEN
                    BEGIN                                                   ;be1
0330                IF AND('PSH-SN216':DIN_ALMCT,16) THEN LET INT35 = 3            ; If EPN is inha
0332                IF AND('PSH-SN216':DIN_ALMCT,4) THEN LET INT35 = 5             ; If EPN is ibad
0334                IF !AND('PSH-SN216':DIN_FLG,8) THEN LET INT35 = 4              ; If EPN is dis
0337                IF ! INT35 THEN IF FX35 = 'PSH-SN216':DIN_VAL THEN GOSUB ALM
0338                IF INT35 THEN
                       BEGIN                                                ;be2
0339                   IF INT35 < 3 THEN                                           ; If not inha
                          BEGIN                                             ;be3
0340                      IF INT35 = 1 THEN
                             BEGIN                                          ;be4
0341                            IF FSN1 THEN
                                   BEGIN                                    ;be5
0342                               LET INT35 = 2
0344                               IF IALM35 = 1 THEN 'PSH-SN216':DIN_ALMCT = OR('PSH-SN216':DIN_ALMCT,32)
0345                               FPASS = 1
0346                               GOSUB ACKK
```

```
                                    END                                    ;en5
                              END                                          ;en4
0348                          IF FX35 != 'PSH-SN216':DIN_VAL THEN GOSUB CLR
0349                          IF FPAS35 THEN
                                BEGIN
0351                            IF INT35 = 1 THEN DEV1 = OR(DEV1,INT35)
                                END
0352                          ELSE DEV1 = OR(DEV1,INT35)
                            END                                            ;en3
0354                      ELSE IF !AND('PSH-SN216':DIN_ALMCT,16)&!AND('PSH-SN216':DIN_ALMCT,4)&AND('PSH-SN216':DIN_FLG,8)THEN INT35 = 0
                          END                                              ;en2
                        END                                                ;en1
0356                  ELSE IF INT35 THEN INT35 = 0
            ;
            ;         END PCM0A ALARMS
            ;
0357        S2ND:     ACK = 0
0358                  SORT = 0
            ;
0359                  DEV12 = OR(DEV0,DEV6)
0360                  DEV13 = OR(DEV1,DEV7)
0361                  DEV14 = OR(DEV2,DEV8)
0362                  DEV15 = OR(DEV3,DEV9)
0363                  DEV16 = OR(DEV4,DEV10)
0364                  DEV17 = OR(DEV5,DEV11)
            ;
0365                  ASSIGN PMSG0 = DEV12
0366                  ASSIGN PMSG1 = FARM
0367                  FOR LLOOP = 1 TO 6
0368                  IF PMSG0 THEN
                        BEGIN
0370                    IF AND(PMSG0,1) THEN PMSG1 = 2
0371                    ELSE PMSG1 = 1
                        END
0372                  ELSE PMSG1 = 0
0373                  STEP PMSG0 BY 1
0374                  STEP PMSG1 BY 1
0375                  NEXT LLOOP
            ;
0376                  IF FHOLD THEN
                         BEGIN
0377                     FHOLD = 0
0378                     TIMERCLR STMR2
0379                     TIMERON STMR2
0380                     LAMP 0,15,FARM
0381                     LAMP 0,14,SERPIT
0382                     LAMP 0,13,VLVPIT
0383                     LAMP 0,12,HVAC
                         END
0384                  MARK STEP "BOTTOM",0,0
0385                  NOCRIT
            ;
            ;         BEGIN 204-AR Alarms:  Relate to LED 31 (mct)
            ;
                      ;  If QS-204AR1 alarm and unack:
```

```
                ;
0386            IF AND('QS-204AR1':DIN_ALMCT,2) & !AND('QS-204AR1':DIN_ALMCT,32) THEN
                        BEGIN
0387                    FSL6 = 1                                        ; Alarm not ack
0388                    LAMP 0,23,2                                     ; Blink lamp
                        END
0389            IF AND('QS-204AR1':DIN_ALMCT,32) &  FSL6=1 THEN         ; If ACK & 1st pass
                        BEGIN
0390                    FSL6 = 0                                        ; Alarm is ack
0392                    IF FSL7=0 THEN LAMP 0,23,1                      ; Lamp steady on
                        END
0394            IF !AND('QS-204AR1':DIN_ALMCT,2) & FSL6=1 & AND('QS-204AR2':DIN_ALMCT,2) THEN LAMP 0,23,1
0396            IF !AND('QS-204AR1':DIN_ALMCT,2) THEN FSL6 = 0          ; If no alarm
                ;
                ;  If QS-204AR2 alarm and unack:
                ;
0397            IF AND('QS-204AR2':DIN_ALMCT,2) & !AND('QS-204AR2':DIN_ALMCT,32) THEN
                        BEGIN
0398                    FSL7 = 1                                        ; Alarm not ack
0399                    LAMP 0,23,2                                     ; Blink lamp
                        END
0400            IF AND('QS-204AR2':DIN_ALMCT,32) & FSL7=1 THEN          ; IF ACK
                        BEGIN
0401                    FSL7 = 0                                        ; Alarm is ack
0403                    IF FSL6=0 THEN LAMP 0,23,1                      ; Lamp steady on
                        END
0405            IF !AND('QS-204AR2':DIN_ALMCT,2) & FSL7=1 & AND('QS-204AR1':DIN_ALMCT,2) THEN LAMP 0,23,1
0407            IF !AND('QS-204AR2':DIN_ALMCT,2) THEN FSL7 = 0          ; If no alarm
                ;
                ;  If No Alarms:
                ;
0409            IF !AND('QS-204AR1':DIN_ALMCT,2) & !AND('QS-204AR2':DIN_ALMCT,2) THEN LAMP 0,23,0
        ;
        ;       END 204-AR Alarms (mct)
        ;
0410            NOCRIT
0411            GOTO AGAIN
        ;
        ;       E N D   P R O G R A M   L O O P
        ;
        ;       BEGIN CLEAR, ALARM, CYCLE, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
        ;
0412    CLR:    LET PSTAT = 0
0414            IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0415            FHOLD = 1
0416            RETURN
        ;
0417    ALM:    LET PSTAT = 1
0419            IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0420            ASSIGN PDEV = AFARM
0421            STEP PDEV BY PSKID
0422            PDEV:DEV_TMPO = 2
0423            CRIT
0424            ASSIGN PMSGO = LEAKO
0425            STEP PMSGO BY PSKID
```

```
606   0426          LAMP 0,PMSG0,2
607   0428          IF AND(PTYPE,3)THEN FALMON = 1
608           ;
609   0429    CYCL: FHOLD = 1
610   0430          LSG4 = LSG3
611   0431          LSG3 = LSG2
612   0432          LSG2 = LSG1
613   0433          LSG1 = LSG0
614   0434          COLOR4 = COLOR3
615   0435          COLOR3 = COLOR2
616   0436          COLOR2 = COLOR1
617   0437          COLOR1 = COLOR0
618   0438          EPNS4 = EPNS3
619   0439          EPNS3 = EPNS2
620   0440          EPNS2 = EPNS1
621   0441          EPNS1 = STRNG1
622   0442          GRAFX4 = GRAFX3
623   0443          GRAFX3 = GRAFX2
624   0444          GRAFX2 = GRAFX1
625   0445          GRAFX1 = GRAFX0
626   0446          SDATE4 = SDATE3
627   0447          SDATE3 = SDATE2
628   0448          SDATE2 = SDATE1
629   0449          SDATE1 = SDATE0
630           ;
631           ;       ALARM TYPER STRINGS:
632           ;
633   0450    ACKK: ON ILOOP GOTO S1,S2,S3,S4,S5,S6,S7,S8,S9,S10
634   0451          ON ILOOP - 10 GOTO S11,S12,S13,S14,S15,S16,S17,S18,S19,S20
635   0452          ON ILOOP - 20 GOTO S21,S22,S23,S24,S25,S26,S27,S28,S29,S30
636   0453          ON ILOOP - 30 GOTO S31,S32,S33,S34,S35,S36,S37,S38,S39
637   0454          GOTO AMSG
638   0455    S1:   STRNG0 = "PUMP AY-101 MCC OFF   "
639   0456          STRNG1 ="YS-AY-101"
640   0457          GOTO AMSG
641   0458    S2:   STRNG0 = "PUMP AY-102 MCC OFF   "
642   0459          STRNG1 = "YS-AY-102"
643   0460          GOTO AMSG
644   0461    S3:   STRNG0 = "PUMP AZ-101 MCC OFF   "
645   0462          STRNG1 = "YS-AZ-101"
646   0463          GOTO AMSG
647   0464    S4:   STRNG0 = "PUMP AZ-102 MCC OFF   "
648   0465          STRNG1 = "YS-AZ-102"
649   0466          GOTO AMSG
650   0467    S5:   STRNG0 = "AX-B SL-100 LINE LEAK "
651   0468          STRNG1 = "PSH-SL100"
652   0469          GOTO AMSG
653   0470    S6:   STRNG0 = "AX-A SL-101 LINE LEAK "
654   0471          STRNG1 = "PSH-SL101"
655   0472          GOTO AMSG
656   0473    S7:   STRNG0 = "A-B SL-113 LINE LEAK  "
657   0474          STRNG1 = "PSH-SL113"
658   0475          GOTO AMSG
659   0476    S8:   STRNG0 = "A-A SL-114 LINE LEAK  "
660   0477          STRNG1 = "PSH-SL114"
```

```
661  0478          GOTO AMSG
662  0479   S9:    STRNG0 = "AX-B SN-200/213 LEAK  "
663  0480          STRNG1 = "PSH200213"
664  0481          GOTO AMSG
665  0482   S10:   STRNG0 = "AX-A SN-201/214 LEAK  "
666  0483          STRNG1 = "PSH201214"
667  0484          GOTO AMSG
668  0485   S11:   STRNG0 = "AZ SL-500 LINE LEAK   "
669  0486          STRNG1 = "LDS-SL500"
670  0487          GOTO AMSG
671  0488   S12:   STRNG0 = "AZ SL-501 LINE LEAK   "
672  0489          STRNG1 = "LDS-SL501"
673  0490          GOTO AMSG
674  0491   S13:   STRNG0 = "AY SL-502 LINE LEAK   "
675  0492          STRNG1 = "LDS-SL502"
676  0493          GOTO AMSG
677  0494   S14:   STRNG0 = "AY SL-503 LINE LEAK   "
678  0495          STRNG1 = "LDS-SL503"
679  0496          GOTO AMSG
680  0497   S15:   STRNG0 = "AY SL-504 LINE LEAK   "
681  0498          STRNG1 = "LDS-SL504"
682  0499          GOTO AMSG
683  0500   S16:   STRNG0 = "AY SL-505 LINE LEAK   "
684  0501          STRNG1 = "LDS-SL505"
685  0502          GOTO AMSG
686  0503   S17:   STRNG0 = "AZ SN-600 LINE LEAK   "
687  0504          STRNG1 = "LDS-SN600"
688  0505          GOTO AMSG
689  0506   S18:   STRNG0 = "AZ SN-601 LINE LEAK   "
690  0507          STRNG1 = "LDS-SN601"
691  0508          GOTO AMSG
692  0509   S19:   STRNG0 = "AY DR-700 LINE LEAK   "
693  0510          STRNG1 = "LDS-DR700"
694  0511          GOTO AMSG
695  0512   S20:   STRNG0 = "AX-A/B SELPOT HI FAIL "
696  0513          STRNG1 = "LXS-AXPOT"
697  0514          GOTO AMSG
698  0515   S21:   STRNG0 = "AX-A/B SEAL POT HIGH  "
699  0516          STRNG1 = "LSH-AX-1"
700  0517          GOTO AMSG
701  0518   S22:   STRNG0 = "AX-A/B SEAL POT LOW   "
702  0519          STRNG1 = "LSL-AX-1"
703  0520          GOTO AMSG
704  0521   S23:   STRNG0 = "A/AX COB LEAK         "
705  0522          STRNG1 = "LDSCOBAAX"
706  0523          GOTO AMSG
707  0524   S24:   STRNG0 = "A/AX AREA RADN BYPASS "
708  0525          STRNG1 = "YS-AAXARM"
709  0526          GOTO AMSG
710  0527   S25:   STRNG0 = "A/AX MASTER SHUTDOWN  "
711  0528          STRNG1 = "YS-AAXMSD"
712  0529          GOTO AMSG
713  0530   S26:   STRNG0 = "A/AX FARM RADN HIGH   "
714  0531          STRNG1 = "RSHAAX3/4"
715  0532          GOTO AMSG
```

```
 716   0533   S27:    STRNG0 = "A/AX/AY/AZ RD HI/FAIL "
 717   0534            STRNG1 = "RSH-AXZY1"
 718   0535            GOTO AMSG
 719   0536   S28:    STRNG0 = "A/AX/AZ PPT AZ COB LK "
 720   0537            STRNG1 = "LDSPPCOB1"
 721   0538            GOTO AMSG
 722   0539   S29:    STRNG0 = "A3/AX3/AX4 RAD MON FA "
 723   0540            STRNG1 = "RXSAAX3/4"
 724   0541            GOTO AMSG
 725          S30:    ;        STRNG0 = "LEAK-DET CNSL GEN ALM "        -mct2+
 726          ;       STRNG1 = "QSCONSOLE"
 727          ;       GOTO AMSG
 728   0542   S31:    STRNG0 = "PUMP AY-101 SHUTDOWN  "
 729   0543            STRNG1 = "P-AY-101"
 730   0544            GOTO AMSG
 731   0545   S32:    STRNG0 = "PUMP AY-102 SHUTDOWN  "
 732   0546            STRNG1 = "P-AY-102"
 733   0547            GOTO AMSG
 734   0548   S33:    STRNG0 = "PUMP AZ-101 SHUTDOWN  "
 735   0549            STRNG1 = "P-AZ-101"
 736   0550            GOTO AMSG
 737   0551   S34:    STRNG0 = "PUMP AZ-102 SHUTDOWN  "
 738   0552            STRNG1 = "P-AZ-102"
 739   0553            GOTO AMSG
 740   0554   S35:    STRNG0 = "A SN-215 LINE LEAK    "
 741   0555            STRNG1 = "PSH-SN215"
 742   0556            GOTO AMSG
 743   0557   S36:    STRNG0 = "A SN-216 LINE LEAK    "
 744   0558            STRNG1 = "PSH-SN216"
 745   0559            GOTO AMSG
 746   0560   S37:    STRNG0 = "XYZBAT PROGRAM START  "
 747   0561            GOTO AMSG
 748   0562   S38:    STRNG0 = "XYZBAT IN WRONG UNIT  "
 749   0563            GOTO AMSG
 750   0564   S39:    STRNG0 = "XYZBAT TERMINATING    "
 751          ;
 752   0565   AMSG:   IF (FPASS)THEN
 753                     BEGIN
 754   0566              PRINT AD1,"%p ALARM ACKNOWLEDGE",STRNG1
 755   0567              FPASS = 0
 756   0568              GOTO NXT
 757                     END
 758   0570            IF PTYPE = 4 THEN COLORO = 3
 759   0571               ELSE COLORO = PTYPE
 760   0572            EPNSO = STRNG1
 761   0573            INO = TIMSTR(SSNGO)
 762   0575            IF INO != 8 THEN SSNGO = "TIMEFAIL"
 763   0576            INO = APPEND(LSGO,STRNGO,SSNGO)
 764   0578            IF INO < 0 THEN LSGO = "APPEND FAILED!!"
 765   0579            INO = DATSTR(SDATEO)
 766   0581            IF INO != 9 THEN SDATEO = "DATE FAIL"
 767   0583            IF PSKID = 1 THEN GRAFXO = 272
 768   0585            IF PSKID = 2 THEN GRAFXO = 272
 769   0587            IF PSKID = 3 THEN GRAFXO = 273
 770   0589            IF PSKID = 4 THEN GRAFXO = 274
```

```
771   0591            IF PSKID = 5 THEN GRAFXO = 270
772   0593            IF PSKID = 0 THEN GRAFXO = 270
773   0595            IF PTYPE = 1 THEN PRINT ADI,"WHITE ALARM %p %p GRAPHICS %i",EPNSO,STRNGO,GRAFXO
774   0596    NXT:    IF FSTART = 1 THEN
775                      BEGIN
776   0597               COLORO = 0
777   0598               GRAFXO = 0
778   0599               STRNG1 =" "
779   0600               FSTART = 0
780   0601               PRINT ADI,"%p",STRNGO
781                      END
782   0602            RETURN
783           ;
784   0603    ERRSUB:IF ERRN != ERRNUM() THEN
785                   BEGIN
786   0604             LET ERRN = ERRNUM()
787   0605             LET ERRL = ERRLIN()
788   0606             PRINT ADI,"ERROR # %i AT LINE %i, ILOOP = %i",errn,errl,ILOOP
789                    END
790   0607            ERSCLR
791   0608            GOTO AGAIN
792           ;
793           ; TERM:  LET FABORT = 0
794   0609    TERM:   LET STRNGO = "XYZBAT TERMINATED    "
795   0610            LET ILOOP = 39
796   0611            LET FSTART = 1
797   0612            TIMErOFF STMR1
798   0613            TIMErCLR STMR1
799   0614            LET FLDALM = 0
800   0615            OPEN 'HSAXYZSIL'
801   0616            GOSUB CYCL
802                   END

      Total Errors Detected      0     Total Warnings      0
          Sequence Program Size = 12032 Bytes, 752 Pages
                 95 Forward Reference(s)
```

242BATCH

```
;       2 4 2 B A T C H . S E Q                                         VERSION 2
;
;       Function:       Sequence program for Lamp function,
;                       message display on Graphic number 023,
;                       and printer messages.
;
;       Written By      : R. N. Kersey
;       Date            : 05-31-92
;       Facility        : 242-A Evaporator Bldg.
;       Machine         : VAX 4104-A
;       Op. System      : VAX/VMS 5.5-2AH
;       D/3 Version     : 6.3-2 BASELINE
;       Compiler        : SIC
;       Build command   : @[320,20]242BATCH
;
;       UNIT = 5, SKDKEY = 47
;
;       Three AIs (RI-K1-1-1, RI-K1-1-2, and FI-K1-1) are found in unit ROOMS in PCMOA.
;
;       Assoc. UPF:     [300,1]_TNKFRM.___      TNKFRM.LST
;       Assoc. RPF:     [300,1]_FARM.___        FARM.LST
;       SDB:            [300,1]PCM1ASDB.___     PCM1ASDB.CMD
;
;       POINTER   SDB VAR.      FUNCTION
;       -------   ---------     ----------------------------------------
;       PSTAT     INTn          Current EPN alarm state is an integer tied to
;                               graphic flashing string of value:
;       .         (n=0-100)             0 = previously not alarmed
;       .                               1 = previously alarmed, not ack
;       .                               2 = previously alarmed, is ack
;       .                               3 = alarm is inhibited
;       .                               4 = input is off scan
;       .                               5 = input is bad
;       PDIN      'EPN'         ---
;       PTYPE     IALMn         alarm type 0 = none, 1 = white, 2 = yellow,
;                                 3 = yellow and yellow, 4 = red,
;                                 6 = yellow and red
;       PREV      FXn           Reverse acting (not fail safe) flag (1=set)
;       PSKID     SKIDn         Tracks which graphic has an alarm
;       PPASS     FPASn         If set (1), turn lamp off when alarm is ACKnowledged
;       PSN       FSNn          Flag for the graphic to ACKnowledge
;       ---       FHOLD         Flag to update the lamps
;       ---       FNING         Flag for DOG1A.C micro select
;       ---       ACK           Flag for C program to ACK system wide
;
; MODIFICATION LOG:
;
;       10-DEC-92       Modified STRNGO length.                         M. Teats
;
;       15-DEC-92       Modified for Rad Systems Upgrade.               M. Teats
;
;       30-DEC-92       Fixed white alarm print message.        M. Teats
;
;       15-JUN-93       Added comments and baselined for        M. Teats
;                       D/3 version 3.3.  CCN# 93JUN01-01.
```

```
                ;
                ;       15-DEC-94       Revised header to indicate the new VMS          J. Berger
                ;                       system. Rebaselined document. Removed
                ;                       obsolite Select() statement.
                ;
                ;  END MOD LOG
                ;
                UNIT    BLDNG
                        COMMON ROOMS
                ;
0000                    NOP
0001                    LET STAR =  45                  ; Start message
0002                    LET SKDKEY = 47         ; SKID Key
0003                    LET UNITT = 5                   ; SEQ Unit number
0004                    ASSIGN PDEV = 'BUILDING' ; Alarm device
0005                    ASSIGN PTYPE = IALMO
0006                    LET ADI = 0                     ; Alarm destination index
0007                    LET FSNO = 0                    ; No alarm yet
0008                    TIMEROFF STMRO                  ; Alarm timer off
0009                    TIMERCLR STMRO                  ; Alarm timer clear
0010                    LET STRNGO = " "                ; Blank 30 character string
0011                    LET ERRN = 0                    ; Set error number to zero
0012                    LET ERRL = 0                    ; Set error line to zero
0013                    LET ACK = 0
0014                    GETUNIT TRIP                    ; Which sequence unit is program running in
0015                    IF TRIP != UNITT THEN           ; Abort if running in wrong seq. unit
                          BEGIN
0016                      FSTART = 1
0017                      ILOOP = STAR + 1
0018                      PTYPE = 0
0019                      GOSUB ACKK
0020                      GOTO TERM
                          END
                ;       IF !SELECT() THEN GOTO AGAIN
                ;
                ;       B E G I N   I N I T I A L I Z I N G :
                ;
                ;       0-27 are PCM1 DIN, 28-41 are PCM1 AIN, 42-44 are PCM0 AIN
                ;
0021                    LET SSNGO = "INIT"
0022            INIT:   LET FABORT = 0                  ; If FABORT = 1 then abort program
0023                    LET FSTART = 0                  ; Program start flag = 0
0024                    LAMP ADI,SKDKEY,0               ; Turn off the annunciator key
0025                    LET LSG0 = " "                  ; Clear the string variables
0026                    LET LSG1 = " "
0027                    LET LSG2 = " "
0028                    LET LSG3 = " "
0029                    LET LSG4 = " "
0030                    LET PDEV:DEV_TMPO = 1                                   ; Set alarm device to non-alarm state
0031                    IF AND(PDEV:DEV_ALMCT,16) THEN                          ; If alarm device is inha, remove the inha
0032                       LET PDEV:DEV_ALMCT=XOR(PDEV:DEV_ALMCT,16)
0033                    IF AND(PDEV:DEV_ALMCT,32) THEN                          ; If alarm device is ack, clear it
0034                       LET PDEV:DEV_ALMCT = XOR(PDEV:DEV_ALMCT,32)
                ;
                ;       INITIALIZE PCM1 DINs AND AINs:
```

```
111          ;
112    0035          ASSIGN PDIN = 'RSH-ARAMU'
113    0036          ASSIGN PSTAT = INTO
114    0037          ASSIGN PTYPE = IALMO
115    0038          ASSIGN PREV = FXO
116    0039          ASSIGN PSKID = SKIDO
117    0040          ASSIGN PPASS = FPASO
118          ;
119    0041          FOR ILOOP = 0 TO 41                          ; 0-27 are PCM1 DINs, 28-41 are PCM1 AINs
120    0042          LET PPASS = 0
121    0043          LET PREV = 0
122    0045          IF PSTAT > 5 THEN PSTAT = 0                  ; Reset current status if undefined
123    0046          LET PSKID = 0
124    0047          LET PTYPE = 2                                ; Default to yellow alarm
125    0048          IF ILOOP <= 27 THEN                          ; For PCM1 DINs
126                    BEGIN
127    0049            IF (AND(PDIN:DIN_DFLG,3)) THEN         ; Check for alarms (Must be red or yellow)
128                      BEGIN
129    0050              LET PTYPE = 2                          ; Default to yellow alarm
130    0052              IF AND(PDIN:DIN_DFLG,1) THEN LET PREV = 1          ; Reverse acting
131    0054              IF AND(PDIN:DIN_DFLG,4) THEN LET PTYPE = 4         ; Set to red critical
132                      END
133    0056            IF ILOOP < 27 THEN STEP PDIN BY 1        ; Point to next DIN
134                    END
135    0057          ELSE LET PTYPE = 4                           ; For PCM1 AINs
136    0058          STEP PTYPE BY 1
137    0059          STEP PREV BY 1
138    0060          STEP PSTAT BY 1
139    0061          STEP PSKID BY 1
140    0062          STEP PPASS BY 1
141    0063          NEXT ILOOP
142          ;
143          ;       DONE WITH PCM1 DINs AND AINs:
144          ;
145          ;       INITIALIZE PCMO AINs:
146          ;
147    0064          LET IALM42 = 4          ; RI-K1-1-1
148    0065          LET SKID42 = 0
149    0066          LET IALM43 = 4          ; RI-K1-1-2
150    0067          LET SKID43 = 0
151    0068          LET IALM44 = 0          ; FI-K1-1
152    0069          LET SKID44 = 0
153          ;
154          ;       E N D   I N I T I A L I Z I N G
155          ;
156          ;       S E N D   P R O G R A M   S T A R T   M E S S A G E
157          ;
158    0070          LET PTYPE = 0
159    0071          LET ILOOP = STAR
160    0072          LET FSTART = 1
161    0073          GOSUB ACKK
162    0074          ON ERROR GOSUB ERRSUB
163          ;
164          ;       B E G I N   P R O G R A M   L O O P :
165          ;
```

```
0075    AGAIN:   MARK STEP "AGAIN",0,0
         ;       IF (FABORT) THEN GOTO TERM        ; Terminate program if abort flag set
0076             SSNGO = "WAIT"
         ; JH01  WAITUNTIL SELECT()                 ; Wait until micro is selected
0077             WAIT 1
0078             IF (FSNO) THEN                     ; If alarm flag set
0079               IF STMRO > 60 THEN               ; If alarm flag set for 1 minute
                     BEGIN                          ; Reset timer and turn off flag
0080                 TIMEROFF STMRO
0081                 TIMERCLR STMRO
0082                 FSNO = 0
0083                 ERRN = 0
0084                 ERRL = 0
                     END
         ;
         ;       If BUILDING $T1 is alarmed and it's ALMCT indicates alarms are acknowledged:
         ;
0085             IF AND(PDEV:DEV_TMPO,2) & AND(PDEV:DEV_ALMCT,32) THEN
                   BEGIN
0086               LET PDEV:DEV_TMPO = 1  ; Put BUILDING in ACK state
0087               LET FTRIPO = 1                   ; Set for Unit alarm acknowledgement, system to grahpic
0088               LET ACK = 1                      ; Set for PCM0 Unit alarm acknowledgement, grahpic to system
0089               LET FLGACK = 1                   ; Set for PCM1 Unit alarm acknowledgement, grahpic to system
0090               CRIT
0091               LAMP ADI,SKDKEY,1                ; Turn lamp on
                   END
         ;
         ;       BEGIN PCM1 DINS:
         ;
0092             ASSIGN PDIN = 'RSH-ARAMU'
0093             ASSIGN PTYPE = IALMO
0094             ASSIGN PREV = FXO
0095             ASSIGN PSTAT = INTO
0096             ASSIGN PPASS = FPASO
0097             LET CURENT = 0                     ; Used to set lamp status
0098             LET LAST = 0
0099             LET NXT = 0
0100             LET LMPVAR = 0
0101             LET BITVAL = 0
         ;
0102    LOP:     FOR ILOOP = 0 TO 27
         ;       IF !SELECT() THEN GOTO AGAIN
0103             IF ( PTYPE > 0 ) THEN                                  ; If some type of alarm
                    BEGIN                                          ;be1
0105                IF AND(PDIN:DIN_ALMCT,16) THEN  LET PSTAT = 3  ; If EPN is inhibited
0107                IF AND(PDIN:DIN_ALMCT,4) THEN  LET PSTAT = 5   ; If EPN is bad input
0109                IF !AND(PDIN:DIN_FLG,8) THEN  LET PSTAT = 4            ; If EPN is not disabled
0110                IF ( PSTAT < 3 ) THEN                          ; If not inhibited
                       BEGIN                                       ;be2
0111                   IF PSTAT = 1 THEN
                          BEGIN                                    ;be3
0112                      IF PTYPE != 1 THEN
0114                         IF AND(PDIN:DIN_ALMCT,32) THEN GOSUB ACK1
0116                      IF (FTRIP4) THEN GOSUB ACK1
                          END                                      ;en3
```

```
221   0119                IF PSTAT = 0 THEN IF(PDIN:DIN_VAL = PREV) THEN GOSUB ALM
222   0120                IF (PSTAT) THEN
223                          BEGIN                                          ;be4
224   0122                   IF PDIN:DIN_VAL != PREV THEN GOSUB CLR
225   0123                   NXT = PSTAT
226   0125                   IF (PPASS) & (PSTAT = 2 ) THEN NXT = 0
227   0126                   LAST = OR(LAST,NXT)
228                          END                                            ;en4
229                       END                                               ;en2
230   0128              ELSE IF !AND(PDIN:DIN_ALMCT,16)&!AND(PDIN:DIN_ALMCT,4)&AND(PDIN:DIN_FLG,8)THEN LET PSTAT = 0
231                 END                                                     ;en1
232   0130          IF ILOOP < 27 THEN STEP PDIN BY 1
233   0131          STEP PTYPE BY 1
234   0132          STEP PREV BY 1
235   0133          STEP PSTAT BY 1
236   0134          STEP PPASS BY 1
237   0135          NEXT ILOOP
238         ;
239   0137          IF (INT5 + INT6) > 0 THEN LET FTRIP1 = 1  ; For K1-6-1 combined dp
240   0138            ELSE LET FTRIP1 = 0
241   0140          IF (INT7 + INT8) > 0 THEN LET FTRIP2 = 1  ; For K1-6-2 combined dp
242   0141            ELSE LET FTRIP2 = 0
243         ;
244         ;       END PCM1 DINS
245         ;
246         ;       BEGIN PCM1 ANALOGS:
247         ;
248   0142          ANALOG = 0
249   0143          SSNGO = "RUN"
250   0144          ASSIGN PSKID = SKID28
251   0145          ASSIGN PTYPE = IALM28
252   0146          ASSIGN PAI = 'RI-AR-AMU'
253   0147          FOR ILOOP = 28 TO 41
254         ;       IF !SELECT() THEN GOTO AGAIN
255   0148              IF(PTYPE) THEN
256                          BEGIN                                          ;be1
257   0149                   BITVAL = PAI:AI_ALMCT
258   0150                   IF !AND(BITVAL,16) THEN
259                             BEGIN                                       ;be2
260   0151                      IF AND(BITVAL,15) THEN
261                                BEGIN                                    ;be3
262   0153                         IF AND(BITVAL,32) THEN NXT = 2
263                                ELSE
264                                   BEGIN                                 ;be4
265   0154                            IF PSKID != BITVAL THEN
266                                      BEGIN                              ;be5
267   0155                               LET PSKID = BITVAL
268   0157                               IF BITVAL < 3 THEN FALMON = 1
269   0158                               PDEV:DEV_TMPO = 2
270   0159                               NXT = 1
271                                      END                                ;en5
272   0160                            ELSE NXT = 1
273                                   END                                   ;en4
274                                END                                      ;en3
275                             ELSE
```

```
                                BEGIN
0161                            NXT = 0
0162                            LET PSKID = 0
                                END
                              END                                   ;en2
                            ELSE
                              BEGIN
0163                          NXT = 0
0164                          LET PSKID = 0
                              END
0165                          ANALOG = OR(ANALOG,NXT)
                            END                                     ;en1
0166                STEP PSKID BY 1
0167                STEP PTYPE BY 1
0169                IF ILOOP < 41 THEN STEP PAI BY 1
0170                NEXT ILOOP
            ;
            ;       END PCM1 ANALOGS
            ;
            ;       BEGIN PCM0 ANALOGS:
            ;
0171                ILOOP = 42
0172                ASSIGN PAI = 'RI-K1-1-1'          ; 42
0173                GOSUB ANLG1
0174                ASSIGN PAI = 'RI-K1-1-2'          ; 43
0175                GOSUB ANLG1
0176                ASSIGN PAI = 'FI-K1-1'                    ; 44
0177                GOSUB ANLG1
            ;
            ;       END PCM0 ANALOGS
            ;
0178                NOCRIT
0180                IF LAST > 3 THEN PRINT ADI," LAMP VARIABLE IS GREATER THAN 3!"
0181                CURENT = OR(LAST,ANALOG)
0183                IF AND(CURENT,1) THEN LMPVAR = 2
0185                  ELSE IF AND(CURENT,2) THEN LMPVAR = 1
0186                          ELSE LMPVAR = 0
0187                LAMP ADI,SKDKEY,LMPVAR
0188                MARK STEP "BOTTOM",0,0
0190                IF AND(BUILDING:DEV_FLG,64) THEN PUTMANL BUILDING
0191                LET ACK = 0
0192                GOTO AGAIN
            ;
            ;       E N D   P R O G R A M   L O O P
            ;
            ;       BEGIN PCM0 ANALOG SUBROUTINE:
            ;
0193        ANLG1:  BITVAL = PAI:AI_ALMCT
            ;       IF !SELECT() THEN GOTO AGAIN
0194                IF !AND(BITVAL,16) THEN
                      BEGIN                                         ;be2
0195                  IF AND(BITVAL,15) THEN
                        BEGIN                                       ;be3
0197                    IF AND(BITVAL,32) THEN NXT = 2
                        ELSE
```

```
                                BEGIN                                   ;be4
0198                            IF PSKID != BITVAL THEN
                                   BEGIN                                ;be5
0199                               LET PSKID = BITVAL
0200                               LET PDEV:DEV_TMPO = 2
0201                               NXT = 1
                                   END                                  ;en5
0202                            ELSE NXT = 1
                                END                                     ;en4
                             END                                        ;en3
                          ELSE
                             BEGIN
0203                         NXT = 0
0204                         LET PSKID = 0
                             END
                          END                                           ;en2
                       ELSE
                          BEGIN
0205                      NXT = 0
0206                      LET PSKID = 0
                          END
0207                    ANALOG = OR(ANALOG,NXT)
0208                   STEP PSKID BY 1
0209                   STEP PTYPE BY 1
0210                   ILOOP = ILOOP + 1
0211                   RETURN
            ;
            ;          END PCMO ANALOG SUBROUTINE
            ;
            ;          BEGIN CLEAR, ALARM, ACKNOWLEDGE, MESSAGE, ERROR, AND TERMINATE SUBROUTINES:
            ;
0212        CLR:       LET PSTAT = 0
0215                   IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0216                   LET FCLEAR = 1
0217                   GOSUB ACKK
0218                   RETURN
            ;
0219        ALM:       LET PSTAT = 1
0222                   IF PTYPE != 1 THEN IF AND(PDIN:DIN_ALMCT,32)THEN PDIN:DIN_ALMCT = XOR(PDIN:DIN_ALMCT,32)
0224                   IF AND(PTYPE,3)THEN FALMON = 1
0225                   LET PDEV:DEV_TMPO = 2
0226                   LAMP ADI,SKDKEY,2
0227                   CRIT
0228                   GOSUB ACKK
0229                   RETURN
            ;
0230        ACK1:      LET PSTAT = 2
0231                   LET FACK = 1
0232                   LAMP ADI,SKDKEY,1
            ;
            ;          ALARM TYPER STRINGS:
            ;
0234        ACKK:      IF ILOOP = 0  THEN  STRNGO = "AMU AREA RAD HI      "
0236                   IF ILOOP = 1  THEN  STRNGO = "AMU AIRSMP CAM RAD HI"
0238                  IF ILOOP = 2  THEN  STRNGO = "242A K1 ALPHA RAD HI "
```

```
386   0240          IF ILOOP = 3  THEN  STRNGO = "242A K1 B/GAMA RAD HI"
387   0242          IF ILOOP = 4  THEN  STRNGO = "242A K1 RAD MON TROUB"
388   0244          IF ILOOP = 5  THEN  STRNGO = "242A K1-6-1 FLT DP HI"
389   0246          IF ILOOP = 6  THEN  STRNGO = "242A K1-6-1 FLT DP LO"
390   0248          IF ILOOP = 7  THEN  STRNGO = "242A K1-6-2 FLT DP HI"
391   0250          IF ILOOP = 8  THEN  STRNGO = "242A K1-6-2 FLT DP LO"
392   0252          IF ILOOP = 9  THEN  STRNGO = "242A K1-6-3 FLT DP LO"
393   0254          IF ILOOP = 10 THEN  STRNGO = "242A K1-6-4 FLT DP LO"
394   0256          IF ILOOP = 11 THEN  STRNGO = "242A TURBINE FAN ON  "
395   0258          IF ILOOP = 12 THEN  STRNGO = "HPT AIRSMP CAM RAD HI"
396   0260          IF ILOOP = 13 THEN  STRNGO = "CND AIRSMP CAM RAD HI"
397   0262          IF ILOOP = 14 THEN  STRNGO = "HVAC AREA RAD HI     "
398   0264          IF ILOOP = 15 THEN  STRNGO = "CND LVL4 AREA RAD HI "
399   0266          IF ILOOP = 16 THEN  STRNGO = "CND BSMT AREA RAD HI "
400   0268          IF ILOOP = 17 THEN  STRNGO = "EVAP RM AREA RAD HI  "
401   0270          IF ILOOP = 18 THEN  STRNGO = "LOADOUT AREA RAD HI  "
402   0272          IF ILOOP = 19 THEN  STRNGO = "CND AIR SAMP CAM FAIL"
403   0274          IF ILOOP = 20 THEN  STRNGO = "AMU AIR SAMP CAM FAIL"
404   0276          IF ILOOP = 21 THEN  STRNGO = "HPT AIR SAMP CAM FAIL"
405   0278          IF ILOOP = 22 THEN  STRNGO = "EVAP RM AREA RAD FAIL"
406   0280          IF ILOOP = 23 THEN  STRNGO = "AMU AREA RAD FAIL    "
407   0282          IF ILOOP = 24 THEN  STRNGO = "HVAC AREA RAD FAIL   "
408   0284          IF ILOOP = 25 THEN  STRNGO = "LOADOUT AREA RAD FAIL"
409   0286          IF ILOOP = 26 THEN  STRNGO = "CND LV4 AREA RAD FAIL"
410   0288          IF ILOOP = 27 THEN  STRNGO = "CND BAS AREA RAD FAIL"
411   0290          IF ILOOP = 45 THEN  STRNGO = "242BATCH PGM START   "
412   0292          IF ILOOP = 46 THEN  STRNGO = "244BATCH WRONG UNIT  "
413   0294          IF ILOOP = 47 THEN  STRNGO = "244BATCH TERMINATING "
414           ;
415   0295    AMSG:   IF PTYPE = 1 THEN
416                     BEGIN
417   0297              IF (FACK = 0) & (FCLEAR = 0) & (FSTART = 0) THEN PRINT ADI,"WHITE ALARM %p",STRNGO
418   0298              IF (FACK) THEN
419                       BEGIN
420   0299                PRINT ADI,"%p ALARM ACKNOWLEDGE",STRNGO
421   0300                LET FACK = 0
422   0301                GOTO NEX
423                       END
424                     END
425   0302            IF (FCLEAR) THEN
426                     BEGIN
427   0303              PRINT ADI,"%p ALARM CLEAR",STRNGO
428   0304              LET FCLEAR = 0
429   0305              GOTO NEX
430                     END
431   0306            IF (FSTART) THEN
432                     BEGIN
433   0307              LET FSTART = 0
434   0308              PRINT ADI,"%p",STRNGO
435   0309              GOTO NEX
436                     END
437   0310            COLORO = PTYPE
438   0311            INO = TINSTR(SSNGO)
439   0313            IF INO != 8 THEN SSNGO = "TIMEFAIL"
440   0314            INO = APPEND(LSGO,STRNGO,SSNGO)
```

```
441   0316            IF INO < 0 THEN LSGO = "APPEND FAILED!!"
442   0317            INO = DATSTR(SDATEO)
443   0319            IF INO != 9 THEN SDATEO = "DATE FAIL"
444   0320    NEX:    RETURN
445           ;
446   0321    ERRSUB:   IF ERRN != ERRNUM() THEN
447                     BEGIN
448   0322              ERRN = ERRNUM()
449   0323              ERRL = ERRLIN()
450   0324              PRINT ADI,"ERROR # %i AT LINE %i, iloop = %i",errn,errl,iloop
451   0325              FSNO = 1
452   0326              TIMERON STMRO
453                     END
454   0327            ERSCLR
455   0329            IF ERRN = -187 THEN WAIT 5
456   0330            GOTO AGAIN
457           ;
458           ; TERM:  LET FABORT = 0
459   0331    TERM:   LET STRNGO = "242BATCH TERMINATED    "
460   0332            LET ILOOP = STAR + 2
461   0333            LET FSTART = 1
462   0334            LET SSNGO = "TERM"
463   0335            GOSUB ACKK
464                   END

      Total Errors Detected      0     Total Warnings      0
          Sequence Program Size = 6784 Bytes, 424 Pages
                16 Forward Reference(s)
```

PGM1A

```
                ;       P G M 1 A . S E Q                                       VERSION 2
                ;
                ;
                ;       Program to monitor sequence programs running in PCM1
                ;       PGMSTAT sets bits in an integer to give the status of a program.
                ;       It indicates if the program is running, is critical, trapped etc.
                ;       This program fetches this value then, by using a bit mask, it
                ;       checks specific statuses and converts these to a single integer value
                ;       used by the string editor.  SED translates the integer to strings
                ;       in graphic 043, titled "PROGRAM STATUS".
                ;
                ;       Written By      : R. N. Kersey
                ;       Date            : 05-31-92
                ;       Facility        : 242-A Evaporator Bldg.
                ;       Machine         : VAX 4104-A
                ;       Op. System      : VAX/VMS 5.5-2AH
                ;       D/3 Version     : 6.3-2 BASELINE
                ;       Compiler        : SIC
                ;       Build command   : @[320,20]PGM1A
                ;
                ;       Assoc. UPF:     [300,1]_BLANKK.___      BLANKK.LST
                ;       Assoc. RPF:     [300,1]_EMTY.___        EMTY.LST
                ;       SDB:            [300,1]PCM1ASDB.CMD     PCM1ASDB.LST
                ;
                ;  MODIFICATION LOG:
                ;
                ;       29-JUL-93       Added comments and baselined for        M. Teats
                ;                       D/3 version 3.3.
                ;
                ;       15-DEC-94       Revised header to indicate th enew VMS          J. Berger
                ;                       system. Rebase line document.
                ;
                ;  END MOD LOG
                ;
                UNIT    BLANK1
                ;
                        PSTAT == PALARM
                        PLIST == PSPAR0
0000                    TIMERCLR STMR1
0001                    TIMERON STMR1
0002                    FABORT = 0
0003                    ASSIGN PLIST = INT0
0004                    FOR ILOOP = 0 TO 11
0005                    PLIST = 0
0006                    NEXT ILOOP
                ;
0007            AGAIN:  LSG6 = "WAIT"
0008                    ON ERROR GOSUB ERRSUB
0009                    IF (FSPAR0) THEN
0010                       IF STMR0 > 60 THEN
                              BEGIN
0011                          TIMEROFF STMR0
0012                          TIMERCLR STMR0
0013                          FSPAR5 = 0
0014                          ERRN = 0
```

```
 56   0015                ERRL = 0
 57                       END
 58   0016          WAIT 1
 59          ;      IF FABORT THEN GOTO TERM
 60   0017          LSG6 = "RUNNING"
 61   0018          WAIT 1
 62   0019          TIMERCLR STMR1
 63   0020          INT6 = PGMSTAT("WHITE1","WHOLE1")
 64   0021          INT7 = PGMSTAT("ANBATCH","ANFARM")
 65   0022          INT8 = PGMSTAT("APBATCH","APFARM")
 66   0023          INT9 = PGMSTAT("AWBATCH","AWFARM")
 67   0024          INT10 = PGMSTAT("XYZBATCH","XYZFRM")
 68   0025          INT11 = PGMSTAT("242BATCH","BLDNG")
 69   0026          ASSIGN PLIST = INT0
 70   0027          ASSIGN PSTAT = INT6
 71   0028          FTRIP1 = 0
 72   0029          TRIP = 0
 73   0030          FOR ILOOP = 0 TO 5
 74   0031          BVAL = 1
 75   0032          REMAIN = 0
 76   0033           FOR INDEX = 1 TO 4
 77   0035           IF AND(BVAL,PSTAT)THEN REMAIN = INDEX
 78   0036           BVAL = BVAL{1
 79   0037           NEXT INDEX
 80   0038          IF PSTAT = -1 THEN
 81                    BEGIN
 82   0039             PLIST = 6
 83   0040             FTRIP1 = 1
 84                    END
 85                    ELSE
 86                    BEGIN
 87   0041             PLIST = REMAIN
 88   0043             IF AND(4096,PSTAT)THEN PLIST = 5
 89                    END
 90   0044          TRIP = OR(TRIP,PSTAT)
 91   0045          STEP PLIST BY 1
 92   0046          STEP PSTAT BY 1
 93   0047          NEXT ILOOP
 94   0049          IF AND(TRIP,2) ¦ FTRIP1 THEN FTRIP0 = 1
 95   0050          ELSE FTRIP0 = 0
 96   0051          GOTO AGAIN
 97          ;
 98          ;=================================================================
 99          ;                  SUBROUTINES
100          ;
101   0052   ERRSUB:  TIMERON STMR1
102   0053          TIMERCLR STMR1
103   0054          FSPAR5 = 1
104          ;
105          ; errors are handled differently depending on their severity
106          ;
107          ;  19    PROGRAM ALREADY IN KICK SUBROUTINE (rekick)
108          ;  32    UNDEFINED COMMUNICATIONS PACKET TYPE (ignore)
109          ;  41   PCM DB HEADER NOT LOADED  (ignore)
110          ;  69   IPN NOT DEFINED (ignore)
```

```
111            ;  162  NO SUCH PROGRAM IN THIS PCM (ignore)
112            ;  165   SEQUENCE PROGRAM ALREADY RUNNING (ignore)
113            ;  170   SERIAL NUMBER MISMATCH (wait forever)
114            ;  179  ILLEGAL SUBROUTINE STACK CLEAR (ignore)
115            ;  187   BACKUP PCM IS DOWN (ignore)
116            ;  193   NO SUCH PROGRAM IN THIS PCM (ignore)
117            ;  198   ILLEGAL SUBROUTINE STACK NESTING ERROR (ignore)
118            ;  199   ILLEGAL RDF NAME (wait forever)
119            ;  200   RDF NOT LOADED IN MEMORY (wait forever)
120            ;  201  RECIPE LOAD NOT ENABLED (wait forever)
121            ;  222  BOARDS DEAD (ignore)
122            ;  226   BOARD ERROR E.G. broken skid panel etc...  (ignore)
123            ;  245   BOTH PCMS DOWN, SENT REDUNDANT HIGHWAY ACCESS (ignore)
124            ;
125     0055            ERRN = ABS(ERRNUM())      ; get error number
126     0056            ERRL = ERRLIN()           ; get error line number
127            ;
128            ; if error is not serious, clear and return to program
129            ;
130     0057            IF (ERRN=187) ¦ (ERRN=32) ¦ (ERRN=69) ¦ (ERRN=222) THEN
131     0058                ERSRET
132
133     0059            IF (ERRN=41) ¦ (ERRN=165) ¦ (ERRN=162) ¦ (ERRN=179) THEN
134     0060                ERSRET
135
136     0061            IF (ERRN=226) ¦ (ERRN=198) ¦ (ERRN=245) THEN
137     0062                ERSRET
138
139     0063            IF (ERRN=193) ¦ (ERRN=19) THEN
140     0064                ERSRET
141            ;
142            ; else report the error, and wait for corrective action ....
143     0065            PRINT 0,"NUMBER %i AT LINE %i ***",ERRN,ERRL
144            ;
145     0066            WAITUNTIL(0)                      ; wait for engineer corrective
146                                                       ; action
147     0067            GOTO AGAIN                        ; when corrective action taken,
148                                                       ; goto done and cleanup
149            ;
150            ;=================================================================
151            ;
152            ;
153     0068   TERM:    ASSIGN PLIST = INTO
154     0069            FOR ILOOP = 0 TO 5
155     0070            PLIST = 6
156     0071            STEP PLIST BY 1
157     0072            NEXT ILOOP
158     0073            TIMEROFF STMR0
159     0074            TIMERCLR STMR0
160     0075            TIMEROFF STMR1
161     0076            TIMERCLR STMR1
162                     END

      Total Errors Detected      0     Total Warnings      0
           Sequence Program Size = 1456 Bytes, 91 Pages
                 1 Forward Reference(s)
```

APPENDIX F - "C" PROGRAMS FOR ALARMS

DOGOA

```
/*      D O G O A . C                                          VERSION 2

        DOGOA (DOGOA.LTK) runs in micro PCMOA.

        DOGOA scans the FALMON and ACK flags on all sequence units in PCMOA.
        When FALMON is set by any sequence program, DOGOA turns on audiable
        alarm device AUDALARMO and resets the FALMON flag to zero.  FALMON
        is set by the sequence programs if alarms found by sequence programs
        are yellow or white.

        When the flag ACK is set by any sequence program, DOGOA sets FSLO
        (Flag 168) in unit BLANKO, which is scanned every 2 seconds by
        WATCH.C (installed as task DOG running in the CDCM).  WATCH.C resets
        the FSLO flag to zero and spawns task ACKFLG (in the CDCM).  Task
        ACKFLG acknowledges all alarms in that unit and resets the ACK flag
        to zero in the sequence program.
*/
/*  Written by : R. N. Kersey              */
/*  Date       : 12-May-92                 */
/*  Modified by: John Hayden T.I.          6.3-2 Upgrade    */
/*  Facility   : 242-A Evaporator Bldg.              */
/*  Machine    : VAX 4105-A                                 */
/*  Compiler   : DEC VAX C V3.3                     JH01     */
/*  VMS DCL .cmd use : SET DEF MICRO:[200,10]       JH01     */
/*  C .cmd use : BLD DOGOA DOGOA.C -L -MOV          JH01     */
/*  Op. System : VAX/VMS 5.5-2AH           JH01     */
/*  D/3 Version: 6.3-2                              JH01     */
/*                                                           */
/*  MODIFICATION LOG:                                                    */
/*                                                                       */
/*      16-Jul-92       Added description, format changes.       M. Teats */
/*                                                                       */
/*      04-Sep-92       Added/increased sleep to prevent M. Teats */
/*                      FALMON getting stuck on (mt1).                   */
/*                                                                       */
/*      19-JAN-93       Added 30 tic sleep before put_vseq.      R. Kersey*/
/*                                                                       */
/*      02-AUG-93       Baseline for D/3 version 3.3             M. Teats */
/*                                                                       */
/*      02-JUL-94       Baseline for D/3 version 6.3             J. Hayden */
/*                                                                       */
/*      01-SEP-94       Sleeps now seconds instead of ticks      J. Hayden */
/*                                                                       */
/*      02-SEP-94       %i now %d, #includes different           J. Hayden */
/*                                                                       */
/*      20-SEP-94       Paramaters for put_vseq calls changed   J. Hayden */
/*                                                                       */
/*      22-Sep-94       Inclused RSI fuction to put in infinite          */
/*                      loop                                     J. Hayden */
/*  END OF MOD LOG                                                       */
/*                                                                       */

#include <d3sys.h>
#include <dba.h>
#include <micstd.h>
#include <seqdba.h>
#include <conf.h>
#include <almmsg.h>
#include <err.h>
#include <comm.h>
#include <comcodes.h>
#include <mic.h>
#include <comstat.h>
#include <pcmii.h>


main()
{
char    net, unit, type, field, cmd, pcm ;
int     access, k, vprt, alm_on, flg_on, value, select,
```

```
        ipn, extra, zero, err, crid, ack, ackflg, index ;

access = UNITREL ; net = 0 ; zero = 0 ; cmd = 1 ;
vprt = 0 ; alm_on = 0 ; flg_on = 0 ; value = 0 ; select = 0 ;
ipn = 0 ; extra = 0 ; err = 0 ; ack = 0 ; ackflg = 0 ; index = 0 ;
checkerr(1, mopen()) ;

FOREVER
   {                                                                    /* Infinite Loop
        */
      RSI(100) ;
      ackflg  = 0 ;  alm_on = 0 ;
      for ( k = 1; k < 22; k++ )                  /* 21 Units, skip 19 (ROOMS). 14 handled outside Loop
*/
         {
         index = 364 ;                                                  /* FALMON offset 204 for UPF
SHORTO  */
         if ( k < 5 ) index = 204 ;                                     /* FALMON offset 364 for UPF
TNKFRM  */
         if ( k != 19 )
            {
            checkerr ( 3, get_vseq ( net, 2, FG, access, k, index, &vprt )) ;              /* Get FALMON
Flag    */
            if ( vprt == 1 )
               {
               alm_on = 1 ;
               sleep (1) ;                                                                 /*
added           */
               checkerr ( 4, put_vseq ( net, 2, FG, access, k, index, &zero ));            /* Reset FALMON
Flag    */
               sleep(1);                                                                   /* added
(mt1)            */
               }
            checkerr ( 4, get_vseq ( net, 2, FG, access, k, index+3, &ack )) ;             /* Get ACK Flag
        */
            if ( ack == 1 ) ackflg = 1 ;
            sleep(1);
            }
         }                                                              /* End FOR Loop
        */

      /* If ACKFLG = 1 then set Flag 168 in sequence unit BLANKO in PCMOA
*/
      /* If ALM_ON = 1 then turn on device AUDALARMO in PCMOA
        */

      if ( ackflg == 1 )   checkerr ( 8, put_vseq ( net, 2, FG, access, 25, 168, &ackflg )) ;
      if ( alm_on == 1)    checkerr ( 9, devcmd ( 0, 2, DEV, 171, &cmd )) ;
      /* TAKE A REST
        */
      sleep (3) ;                                                       /* changed from 10 to 100 (mt1)
        */
   }                                          /* End FOREVER                                  */
}                                             /* End MAIN                                     */

checkerr(x,ierr)
int ierr,x ;
{
int r2,r3 ;
if (ierr < 0 )
  {
   r2 = lnkrg("CONFIG");
   r3 = lnkrg("ALMQUE");
   sndmsg ( 0, 0, r3, r2, 3, MSG_TEXT, CRIT," DOGOB.LTK err %d at %d, DOGOB IS TERMINATING!!!!!!\n",ierr,x)
;
   sndmsg ( 0, 0, r3, r2, 3, MSG_TEXT, CRIT," DOGOB.LTK err %d at %d, DOGOB IS TERMINATING!!!!!!\n",ierr,x)
;
   exit();
   }
}
```

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Accession #: D196079553

Document #: SD-534-CSWL-001

Title/Desc:
SEQUENCE & BATCH LANGUAGE PROGRAMS & ALARM RELATED C PROGRAMS FOR THE 242A MCS [SEC 6 OF 6 PAGE 637 TO 731]

Pages: 97

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-534-CSWL-001

Section 6 **of** 6

Title: Sequence and Batch Language programs and Alarm Related "C" Programs for the 242-A MCS

Date: 4/15/96 **Revision:** 3

Originator: Berger, J.F.
Co:

Recipient:
Co:

References: ECN-627504

DOGOB

```
/*      D O G O B . C                                           VERSION 2

        DOGOB (DOGOB.LTK) runs in micro PCM0A.

        DOGOB scans the FALMON and ACK flags on all sequence units in PCM0A.
        When FALMON is set by any sequence program, DOGOB turns on audiable
        alarm device AUDALARM0 and resets the FALMON flag to zero.  FALMON
        is set by the sequence programs if alarms found by sequence programs
        are yellow or white.

        When the flag ACK is set by any sequence program, DOGOB sets FSL0
        (Flag 168) in unit BLANK0, which is scanned every 2 seconds by
        WATCH.C (installed as task DOG running in the CDCM).  WATCH.C resets
        the FSL0 flag to zero and spawns task ACKFLG (in the CDCM).  Task
        ACKFLG acknowledges all alarms in that unit and resets the ACK flag
        to zero in the sequence program.
/*                                      */
/*  Written by : R. N. Kersey           */
/*  Date       : 12-May-92              */
/*  Facility   : 242-A Evaporator Bldg. */
/*  Modified by: John Hayden T.I.       6.3-2 Upgrade    */
/*  Facility   : 242-A Evaporator Bldg.          */
/*  Machine    : VAX 4105-A                      */
/*  Compiler   : DEC VAX C V3.3                  JH01    */
/*  VMS DCL .cmd use : SET DEF MICRO:[200,10]    JH01    */
/*  C .cmd use : BLD DOGOB DOGOB.C -L -MOV       JH01    */
/*  Op. System : VAX/VMS 5.5-2AH         JH01    */
/*  D/3 Version: 6.3-2                           JH01    */
/*                                               */
/*  MODIFICATION LOG:                                                    */
/*                                                                       */
/*      16-Jul-92       Added description, format changes.       M. Teats */
/*                                                                       */
/*      04-Sep-92       Added/increased sleep to prevent M. Teats */
/*                      FALMON getting stuck on (mt1).                   */
/*                                                                       */
/*      19-JAN-93       Added 30 tic sleep before put_vseq.      R. Kersey*/
/*                                                                       */
/*      02-AUG-93       Baseline for D/3 version 3.3             M. Teats */
/*                                                                       */
/*      02-JUL-94       Baseline for D/3 version 6.3             J Hayden  */
/*                                                                       */
/*      01-SEP-94       Sleeps now seconds instead of ticks      J. Hayden */
/*                                                                       */
/*      02-SEP-94       %i now %d, #includes different           J. Hayden */
/*                                                                       */
/*      20-SEP-94       Paramaters for put_vseq calls changed   J. Hayden */
/*                                                                       */
/*      22-Sep-94       Inclused RSI fuction to put in infinite          */
/*                      loop                                     J. Hayden */
/*  END OF MOD LOG                                                       */

#include <d3sys.h>
#include <dba.h>
#include <micstd.h>
#include <seqdba.h>
#include <conf.h>
#include <almmsg.h>
#include <err.h>
#include <comm.h>
#include <comcodes.h>
#include <mic.h>
#include <comstat.h>
#include <pcmii.h>


main()
{
char    net, unit, type, field, cmd ;
int     access, k, vprt, alm_on, flg_on, value, select,
```

```
        ipn, extra, zero, err, crid, ack, ackflg, index ;

access = UNITREL ; net = 0 ; zero = 0 ; cmd = 1 ;
vprt = 0 ; alm_on = 0 ; flg_on = 0 ; value = 0 ; select = 0 ;
ipn = 0 ; extra = 0 ; err = 0 ; ack = 0 ; ackflg = 0 ; index = 0 ;
checkerr(1, mopen()) ;

FOREVER
   {                                                                    /* Infinite Loop
        */
      RSI(100) ;
      ackflg  = 0 ;  alm_on = 0 ;
      for ( k = 1; k < 22; k++ )                  /* 21 Units, skip 19 (ROOMS). 14 handled outside Loop
*/
         {
         index = 364 ;                                                  /* FALMON offset 204 for UPF
SHORTO   */
         if ( k < 5 ) index = 204 ;                                     /* FALMON offset 364 for UPF
TNKFRM   */
         if ( k != 19 )
            {
            checkerr ( 3, get_vseq ( net, 3, FG, access, k, index, &vprt )) ;          /* Get FALMON
Flag     */
            if ( vprt == 1 )
               {
               alm_on = 1 ;
               checkerr ( 4, put_vseq ( net, 3, FG, access, k, index, &zero ));        /* Reset FALMON
Flag     */
               sleep(1);                                                                /* added
(mt1)           */
               }
            checkerr ( 4, get_vseq ( net, 3, FG, access, k, index+3, &ack )) ;         /* Get ACK Flag
        */
            if ( ack == 1 ) ackflg = 1 ;
            sleep(1);
            }
         }                                                              /* End FOR Loop
        */

      /* If ACKFLG = 1 then set Flag 168 in sequence unit BLANK0 in PCM0A
*/
      /* If ALM_ON = 1 then turn on device AUDALARM0 in PCM0A
        */

      if ( ackflg == 1 )   checkerr ( 8, put_vseq ( net, 3, FG, access, 25, 168, &ackflg )) ;
      if ( alm_on == 1)    checkerr ( 9, devcmd ( 0, 3, DEV, 171, &cmd )) ;

      /* TAKE A REST
        */

      sleep (3) ;                                                       /* changed from 10 to 100 (mt1)
        */
   }                                          /* End FOREVER                          */
}                                             /* End MAIN                             */

checkerr(x,ierr)
int ierr,x ;
{
int r2,r3 ;
if (ierr < 0 )
  {
   r2 = lnkrg("CONFIG");
   r3 = lnkrg("ALMQUE");
   sndmsg ( 0, 0, r3, r2, 3, MSG_TEXT, CRIT," DOGOB.LTK err %d at %d, DOGOB IS TERMINATING!!!!!!\n",ierr,x)
;
   sndmsg ( 0, 0, r3, r2, 3, MSG_TEXT, CRIT," DOGOB.LTK err %d at %d, DOGOB IS TERMINATING!!!!!!\n",ierr,x)
;
   exit();
   }
}
```

DOG1A

```
/*      D O G 1 A . C                                           VERSION 2

        DOG1A (DOG1A.LTK) runs in micro PCM1A.

        DOG1A scans the FALMON and FLGACK flags on all sequence units in PCM1A.
        When FALMON is set by any sequence program, DOG1A turns on audiable
        alarm device AUDALARMO and resets the FALMON flag to zero.  FALMON
        is set by the sequence programs if alarms found by sequence programs
        are yellow or white.

        When the flag FLGACK is set by any sequence program, DOG1A sets FSLO
        (Flag 168) in unit BLANK1, which is scanned every 2 seconds by
        WATCH.C (installed as task DOG running in the CDCM).  WATCH.C resets
        the FSLO flag to zero and spawns task ACKFLG (in the CDCM).  Task
        ACKFLG acknowledges all alarms in that unit and resets the FLGACK flag
        to zero in the sequence program.
 */
/*  Written by : R. N. Kersey            */
/*  Date       : 27-May-92               */
/*  Modified by: John Hayden T.I.        6.3-2 Upgrade    */
/*  Facility   : 242-A Evaporator Bldg.          */
/*  Machine    : VAX 4104-A                                 */
/*  Compiler   : DEC VAX C V3.3                     JH01     */
/*  VMS DCL .cmd use : SET DEF MICRO:[200,10]       JH01     */
/*  C .cmd use : BLD DOG1A DOG1A.C -L -MOV          JH01     */
/*  Op. System : VAX/VMS 5.5-2AH         JH01     */
/*  D/3 Version: 6.3-2                              JH01     */
/*                                                           */
/*                                       */
/*  MODIFICATION LOG:                                                    */
/*                                                                       */
/*      13-Jul-92       Removed LNKRG('CONFIG') after mopen.     M. Teats */
/*                      Reformatted brackets.                            */
/*                                                                       */
/*      16-Jul-92       Added description, format changes.       M. Teats */
/*                                                                       */
/*      21-Jul-92       Implemented micro select feature.        M. Teats */
/*                      Changed 'err = ' to 'checkerr'.                  */
/*                      Added CHECKERR subroutine.                       */
/*                      Deleted CONTINUE if err < 0.                     */
/*                      Changed 'cmd' from int to char to allow          */
/*                         DEVCMD to turn on horn.                       */
/*                      Initialize 'cmd = 1' at program start and        */
/*                         removed 'cmd = 1' from IF #8 when             */
/*                         AUDALARMO turned on.                          */
/*                      Rewrote last half of code.                       */
/*                                                                       */
/*      12-FEB-93       - Added sleep as noted before and        M. Teats */
/*                        after put_vseq                                 */
/*                      - Removed phasing (& put_vseq) on                */
/*                        FHOLD (done by sequence programs)              */
/*                      These are to prevent program lock-up.            */
/*                                                                       */
/*      02-AUG-93       Baseline for D/3 version 3.3                     */
/*                                                                       */
/*      03-JUL-93       Baseline for D/3 version 6.3-2           J. Hayden */
/*                                                                       */
/*      01-SEP-94       Sleeps now seconds instead of ticks      J. Hayden */
/*                                                                       */
/*      02-SEP-94       %i now %d, #includes different           J. Hayden */
/*                                                                       */
/*      20-SEP-94       Parameters for put_vseq calls changed   J. Hayden */
/*                                                                       */
/*      22-Sep-94       Inclused RSI fuction to put in infinite          */
/*                      loop                                     J. Hayden */
/*  END OF MOD LOG                                                       */
/*                                                                       */

#include <d3sys.h>
#include <dba.h>
```

```
#include <micstd.h>
#include <seqdba.h>
#include <conf.h>
#include <almmsg.h>
#include <err.h>
#include <comm.h>
#include <comcodes.h>
#include <mic.h>
#include <comstat.h>
#include <pcmii.h>

main()
{                                                                    /* be1 */
char    net, unit, type, field, cmd ;
int     access, k, vprt, alm_on, one, select,
        flg_on, value, ipn, extra, phase,
        zero, err, crid, total ;

access = UNITREL ; net = 0 ; zero = 0 ; phase = 0 ; one = 1 ; cmd = 1;
vprt = 0 ; alm_on = 0 ; select = 0 ; flg_on = 0 ; value = 0 ; ipn = 0 ;
extra = 0 ; err = 0 ; total = 0 ;
checkerr (1, mopen());

FOREVER
   {                                                                 /* be2 */
     RSI(100) ;
     alm_on = 0 ;
     total  = 0 ;

/*       A L A R M:                                  */
/*       Get FALMON Flag 492, then reset it to zero:      */
     for ( k = 1 ; k < 6 ; k++ )                                     /* For 6 Sequence Units  */
        {                                                            /* be4 */
        checkerr ( 3, get_vseq ( 0, 4, FG, access, k, 492, &vprt )) ;
        if (vprt==1)
           {                                                         /* be5 */
           alm_on = 1 ;
           checkerr ( 4, put_vseq ( 0, 4, FG, access, k, 492, &zero )) ;
           sleep (1) ;
/*         sndmsg(0,0,-1,crid,1,MSG_TEXT,NONCRIT,"D O G 1 A . C - FALMON FLAG SET ON UNIT %d\n",k) ;
*/
           }                                                         /* en5 */

/*       A C K N O W L E D G E:                      */
/*       Get FLGACK Flag 495, then reset it to zero:      */
        checkerr ( 5, get_vseq ( 0, 4, FG, access, k, 495, &vprt )) ;
        if (vprt == 1 )
           {                                                         /* be6 */
           total = 1 ;
           if ( k != 5 )
              {                                                      /* be7 */
              checkerr ( 6, put_vseq ( 0, 4, FG, access, k, 495, &zero )) ;
              sleep (1) ;                                            /* added                 */
              }                                                      /* en7 */
           }                                                         /* en6 */
        }                                                            /* en4, End FOR Loop     */

/*    If FALMON = 1, then turn on device AUDALARMO in PCM0A:      */
     if (alm_on == 1 )
        {                                                            /* be8 */
        checkerr ( 7, devcmd ( 0, 2, DEV, 171, &cmd )) ;
        }                                                            /* en8 */

/*    If FLGACK = 1, then set Flag 168 (FSLO) in unit BLANK1 in PCM1A:     */
     if (total == 1 )   checkerr ( 8, put_vseq ( 0, 4, FG, access, 6, 168, &total )) ;

/*    Phase the FHOLD flag 479 to turn off Lamp:                                    */
/*      if (phase == 1)  put_vseq ( 0, 4, FG, access, 1, 479, &one ) ;          deleted          */
/*      if (phase == 7)  put_vseq ( 0, 4, FG, access, 2, 479, &one ) ;          deleted          */
/*      if (phase == 14) put_vseq ( 0, 4, FG, access, 3, 479, &one ) ;          deleted          */
```

```
/*      if (phase == 21) put_vseq ( 0, 4, FG, access, 4, 479, &one ) ;          deleted        */
/*      phase++ ; if (phase >= 22) phase = 1 ;                                  deleted        */

     sleep (3) ;
   }                                                                    /* en2, End FOREVER     */
}                                                                       /* en1, End main        */

/* CHECKERR SUBROUTINE:          */
checkerr(x,ierr)
int ierr,x ;
{
int r2,r3 ;
if (ierr < 0 )
  {
   r2 = lnkrg("CONFIG");
   r3 = lnkrg("ALMQUE");
   sndmsg ( 0, 0, r3, r2, 3, MSG_TEXT, CRIT," DOG1A.LTK err %d at %d\n",ierr,x) ;
   exit();
   }
}
```

DOG1B

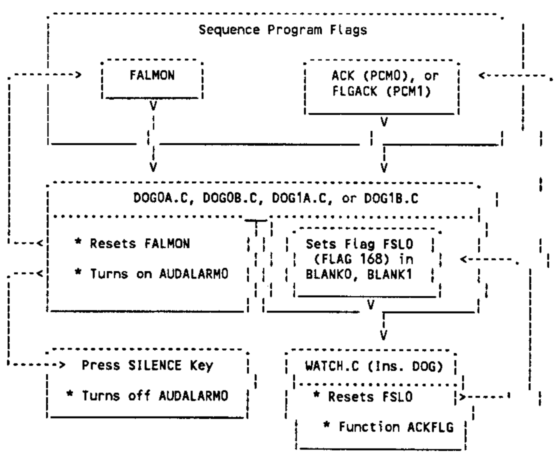
```
/*      D O G 1 B . C                                                   VERSION 2

        DOG1b (DOG1b.LTK) runs in micro PCM1b.

        DOG1b scans the FALMON and FLGACK flags on all sequence units in PCM1b.
        When FALMON is set by any sequence program, DOG1b turns on audiable
        alarm device AUDALARMO and resets the FALMON flag to zero.  FALMON
        is set by the sequence programs if alarms found by sequence programs
        are yellow or white.

        When the flag FLGACK is set by any sequence program, DOG1b sets FSLO
        (Flag 168) in unit BLANK1, which is scanned every 2 seconds by
        WATCH.C (installed as task DOG running in the CDCM).  WATCH.C resets
        the FSLO flag to zero and spawns task ACKFLG (in the CDCM).  Task
        ACKFLG acknowledges all alarms in that unit and resets the FLGACK flag
        to zero in the sequence program.
 */
/*  Written by : R. N. Kersey              */
/*  Date       : 27-May-92                 */
/*  Modified by: John Hayden T.I.          6.3-2 Upgrade    */
/*  Facility   : 242-A Evaporator Bldg.            */
/*  Machine    : VAX 4104-A                                 */
/*  Compiler   : DEC VAX C V3.3                     JH01    */
/*  VMS COMMAND use : SET DEF MICRO:[200,10]        JH01    */
/*  C .cmd use : BLD DOG1B DOG1B.C -L -MOV          JH01    */
/*  Op. System : VAX/VMS 5.5-2AH           JH01     */
/*  D/3 Version: 6.3-2                              JH01    */
/*                                                          */
/*                                         */
/*  MODIFICATION LOG:                                                   */
/*                                                                      */
/*      13-Jul-92       Removed LNKRG('CONFIG') after mopen.     M. Teats */
/*                      Reformatted brackets.                           */
/*                                                                      */
/*      16-Jul-92       Added description, format changes.       M. Teats */
/*                                                                      */
/*      21-Jul-92       Implemented micro select feature.        M. Teats */
/*                      Changed 'err = ' to 'checkerr'.                 */
/*                      Added CHECKERR subroutine.                      */
/*                      Deleted CONTINUE if err < 0.                    */
/*                      Changed 'cmd' from int to char to allow         */
/*                         DEVCMD to turn on horn.                      */
/*                      Initialize 'cmd = 1' at program start and       */
/*                         removed 'cmd = 1' from IF #8 when            */
/*                         AUDALARMO turned on.                         */
/*                      Rewrote last half of code.                      */
/*                                                                      */
/*      12-FEB-93       - Added sleep as noted before and        M. Teats */
/*                        after put_vseq                                */
/*                      - Removed phasing (& put_vseq) on               */
/*                        FHOLD (done by sequence programs)             */
/*                      These are to prevent program lock-up.           */
/*                                                                      */
/*      02-AUG-93       Baseline for D/3 version 3.3                    */
/*                                                                      */
/*      02-JUL-94       Baseline for D/3 version 6.3-2           J Hayden */
/*                                                                      */
/*      01-SEP-94       Sleeps now seconds instead of ticks      J. Hayden */
/*                                                                      */
/*      02-SEP-94       %i now %d, #includes different           J. Hayden */
/*                                                                      */
/*      20-SEP-94       Paramaters for put_vseq calls changed   J. Hayden */
/*                                                                      */
/*      22-Sep-94       Inclused RSI fuction to put in infinite         */
/*                      loop                                     J. Hayden */
/*                                                                      */
/*  END OF MOD LOG                                                      */
/*                                                                      */
#include <d3sys.h>
#include <dba.h>
```

```
#include <micstd.h>
#include <seqdba.h>
#include <conf.h>
#include <almmsg.h>
#include <err.h>
#include <comm.h>
#include <comcodes.h>
#include <mic.h>
#include <comstat.h>
#include <pcmii.h>

main()
{                                                                    /* be1 */
char    net, unit, type, field, cmd ;
int     access, k, vprt, alm_on, one, select,
        flg_on, value, ipn, extra, phase,
        zero, err, crid, total ;

access = UNITREL ; net = 0 ; zero = 0 ; phase = 0 ; one = 1 ; cmd = 1;
vprt = 0 ; alm_on = 0 ; select = 0 ; flg_on = 0 ; value = 0 ; ipn = 0 ;
extra = 0 ; phase = 0 ; err = 0 ; total = 0;
checkerr (1, mopen());

FOREVER
  {                                                                  /* be2 */
     RSI(100) ;
     alm_on = 0 ;
     total  = 0 ;

/*       A L A R M:                                  */
/*       Get FALMON Flag 492, then reset it to zero:      */
     for ( k = 1 ; k < 6 ; k++ )                                     /* For 6 Sequence Units  */
        {                                                            /* be4 */
        checkerr ( 3, get_vseq ( 0, 5, FG, access, k, 492, &vprt )) ;
        if (vprt==1)
           {                                                         /* be5 */
           alm_on = 1 ;
           checkerr ( 4, put_vseq ( 0, 5, FG, access, k, 492, &zero )) ;
           sleep (1) ;
/*         sndmsg(0,0,-1,crid,1,MSG_TEXT,NONCRIT,"D O G 1 A . C - FALMON FLAG SET ON UNIT %d\n",k) ;
*/
           }                                                         /* en5 */

/*       A C K N O W L E D G E:                      */
/*       Get FLGACK Flag 495, then reset it to zero:      */
        checkerr ( 5, get_vseq ( 0, 5, FG, access, k, 495, &vprt )) ;
        if (vprt == 1 )
           {                                                         /* be6 */
           total = 1 ;
           if ( k != 5 )
              {                                                      /* be7 */
              checkerr ( 6, put_vseq ( 0, 5, FG, access, k, 495, &zero )) ;
              sleep (1) ;                                            /* added                 */
              }                                                      /* en7 */
           }                                                         /* en6 */
        }                                                            /* en4, End FOR Loop     */

/*    If FALMON = 1, then turn on device AUDALARMO in PCMOA:      */
     if (alm_on == 1 )
        {                                                            /* be8 */
        checkerr ( 7, devcmd ( 0, 2, DEV, 171, &cmd )) ;
        }                                                            /* en8 */

/*    If FLGACK = 1, then set Flag 168 (FSLO) in unit BLANK1 in PCM1b:     */
     if (total == 1 )   checkerr ( 8, put_vseq ( 0, 5, FG, access, 6, 168, &total )) ;

/*    Phase the FHOLD flag 479 to turn off Lamp:                                    */
/*      if (phase == 1)  put_vseq ( 0, 4, FG, access, 1, 479, &one ) ;          deleted          */
/*      if (phase == 7)  put_vseq ( 0, 4, FG, access, 2, 479, &one ) ;          deleted          */
/*      if (phase == 14) put_vseq ( 0, 4, FG, access, 3, 479, &one ) ;          deleted          */
```

```
/*      if (phase == 21) put_vseq ( 0, 4, FG, access, 4, 479, &one ) ;          deleted        */
/*      phase++ ; if (phase >= 22) phase = 1 ;                                  deleted        */

     sleep (3) ;
   }                                                                    /* en2, End FOREVER     */
}                                                                       /* en1, End main        */

/* CHECKERR SUBROUTINE:          */
checkerr(x,ierr)
int ierr,x ;
{
int r2,r3 ;
if (ierr < 0 )
  {
   r2 = lnkrg("CONFIG");
   r3 = lnkrg("ALMQUE");
   sndmsg ( 0, 0, r3, r2, 3, MSG_TEXT, CRIT," DOG1b.LTK err %d at %d\n",ierr,x) ;
   exit();
   }
}
```

WATCH

```
/*      W A T C H . C           VERSION 2                               */
/*      Written by : R. N. Kersey                                       */
/*      Date       : 12-May-92                                          */
/*      Facilty    : 242-A Evaporator Bldg.                             */
/*      Machine           : VAX 4104-A                                  */
/*      Op. System        : VAX/VMS 5.5-2AH                             */
/*      D/3 Version       : 6.3-1 BASELINE                              */
/*      Compiler   : VAX C                                              */
/*      C .cmd use : BLD -L -ALL -MOV -LIS WATCH.SCR                    */

/*      Program to acknowledge, from a graphic, all alarms in that graphic (and
 *      the corresponding sequence unit - since there is one sequence unit per
 *      graphic).  Resets flag FSL0 to zero in Sequence Units BLANK0 and
 *      BLANK1, and runs function ACKFLG().
 *
 *      How WATCH.C works:  WATCH.C is installed as task DOG in the CDCM.
 *      It works in conjunction with DOG0A and DOG1A running in the micros.
 *      These three programs communicate via sequence variable flags in the
 *      various sequence units to turn on device AUDALARM0 for yellow and
 *      white alarms and acknowledge (from a single graphic) all analog and
 *      digital alarms in that graphic.
 *
 *      Each sequence program sets flag FALMON to 1 when a new yellow or white
 *      alarm occurs.  DOG0A and DOG1A scan the sequence units for FALMON flags
 *      that are set to 1.  When the flag is found, DOG0A or DOG1A resets
 *      FALMON to zero.  Any FALMON flag set to 1 causes AUDALARM0 to be
 *      commanded on, which turns on the yellow/white audiable alarm horn.
 *
 *      Also, DOG0A looks at flag ACK (in PCM0 sequence units) and DOG1A looks
 *      at flag FLGACK (in PCM1 sequence units).  If ACK is set to 1, DOG0A
 *      sets flag FSL0 in unit BLANK0.  If FLGACK is set to 1, DOG1A sets flag
 *      FSL0 in unit BLANK1.  WATCH scans the FSL0 flags in these two units.
 *      If FSL0 is set to 1, WATCH resets them to zero and runs function
 *      ACKFLG() contained within the WHTCH.C program. This function looks
 *      at all the sequence units, finds the ACK and FLGACK flags, resets
 *      them to zero, and acknowledges all EPNs only in the unit corresponding
 *      to the currently displayed graphic.
 *
 *      NOTE: The redundant program for DOG0A in PCM0B is DOG0B.C, and
 *                                     for DOG1A in PCM1B is DOG1B.C
 *
```



```
 *                                                  V                    |
 *                                                  |                    |
 *                                  ---------------------------------    |
 *                                  |  FUNCTION ACKFLG()            |    |
 *                                  |-------------------------------|    |
 *                                  |  * Resets sequence            |\   |
 *                                  |    program ACK or             | >--'
 *                                  |    FLGACK Flags               |/
 *                                  |                               |
 *                                  |  * Acknowledges all           |
 *                                  |    alarms in a single         |
 *                                  |    sequence unit              |
 *                                  |_______________________________|
 */

/*  MODIFICATION LOG:                                                    */
/*                                                                       */
/*      17-JUL-92       Added description, flow chart,          M. Teats  */
/*                      reformatted.                                     */
/*                                                                       */
/*      20-JUL-92       Commented-out code (abandoned) to       M. Teats  */
/*                      spawn ALMON (which is unused).                   */
/*                      AUDALARM0 is now turned on by                    */
/*                      DOG0A and DOG1A.  See also ALMON.C.              */
/*                                                                       */
/*      15-DEC-92       Changed for AUDALARM0 now being  M. Teats  */
/*                      turned off by SILENCE Key.                       */
/*                                                                       */
/*      14-JUL-93       Commented.                              M. Teats  */
/*                                                                       */
/*      03-AUG-93       Baseline for D/3 Version 3.3            M. Teats  */
/*                                                                       */
/*      03-JAN-95       Combined the program ACKFLG.C as  J. Berger */
/*                      a funcion within WATCH.C. Also                   */
/*                      rebaselined the documentation after              */
/*                      the up grade.  Added PDI-CA1-3 to                */
/*                      ACKFLG() funcion matrix.                  */
/*                                                                       */
/*      26-MAR-95       Added PC Recycle EPNs to Group Ack               */
/*                      per EE-95-00036.                                 */
/*                                                                       */
/*  END OF MOD LOG                                                       */
/*                                                                       */

#include <emcstd.h>
#include <d3sys.h>
#include <dba.h>
#include <seqdba.h>
#include <almmsg.h>
#include <recipe.h>


main()
{
void ackflg(void) ;

char  net, unit, type, field ;
int   access, k, vprt, alm_on, flg_on, value, ipn, extra, zero, err ;
int   pcm0, pcm1, crid, rid ;
access = UNITREL ; net = 0 ; zero = 0 ; pcm0 = 0 ; pcm1 = 0 ; vprt = 0 ;
err = mopen() ;

FOREVER
   {
   alm_on = 0 ;
   err = get_vseq ( net, 2, FG, access, 25, 168, &pcm0) ;
           if (err < 0 ) continue ;

   err = get_vseq ( net, 4, FG, access, 6, 168, &pcm1) ;
```

```
            if (err < 0 ) continue ;

   if ( pcm0==1 || pcm1==1 ) ackflg();

   if (pcm0 == 1 ) err = put_vseq ( net, 2, FG, access, 25, 168, &zero ) ;

        /* Reset flags */
   if (pcm1 == 1 ) err = put_vseq ( net, 4, FG, access, 6, 168, &zero ) ;

   err = get_vseq ( net, 4, FG, access, 6, 181, &vprt ) ;
   err = put_vseq ( net, 2, FG, access, 25, 183, &vprt ) ;
                        /* Flag FTRIP2, Unit(25) Blank0  */
/*
                                                  */
/*      ABANDONED CODE (may be used for testing) TO TURN ON AUDALARM0:
        */
/*
        */
/* err = get_vseq ( net, 2, FG, 25, access, 184, &extra ) ;              Flag FTRIP3, Unit (25) Blank0
        */
/* if ( extra == 1)
        */
/*    {                                                                  Test for AUDALARM0 using FTRIP3
in SSD  */
/*     err = put_vseq ( net, 2, FG, 25, access, 184, &zero ) ;           Reset FTRIP3
        */
/*    }
        */
/*
        */
/*      END ABANDONED CODE
        */
/*
        */

   sleep (2) ;

   }                                                    /* End FOREVER */

}                                                       /* End Main */
void ackflg(void)
{
        struct s1
        {
            char pcm;
            int  sunit,
                 index,
                 bloks,
                 offset;
        };

        static struct s1  seqrec [] =
                 {

/*  k            struct s1 seqrec []        seq unit name          */
/* --            -------------------        -------------          */
/*  0  */         2,  1, 207, 2,  0,   /* A244                     */
/*  1  */         2,  2, 207, 1,  2,   /* HVC244          */
/*  2  */         2,  3, 207, 2,  3,   /* WASTE           +mct3-   */
/*  3  */         2,  4, 207, 1,  5,   /* A350                     */
/*  4  */         2,  5, 367, 1,  6,   /* FEED                     */
/*  5  */         2,  6, 367, 1,  7,   /* CA1                      */
/*  6  */         2,  7, 367, 1,  8,   /* PB1                      */
/*  7  */         2,  8, 367, 1,  9,   /* PB2                      */
/*  8  */         2,  9, 367, 1, 10,   /* EA1                      */
/*  9  */         2, 10, 367, 1, 11,   /* EC1                      */
/* 10  */         2, 11, 367, 2, 12,   /* RWATER          */
/* 11  */         2, 12, 367, 1, 14,   /* URW                      */
/* 12  */         2, 13, 367, 2, 15,   /* VVENT                    */
```

```
/* 13  */          2, 14, 367, 1, 17,   /* PC                        */
/* 14  */          2, 15, 367, 1, 18,   /* IX                        */
/* 15  */          2, 16, 367, 1, 19,   /* SC                        */
/* 16  */          2, 17, 367, 1, 20,   /* BASINS          */
/* 17  */          2, 18, 367, 1, 21,   /* UTIL                      */
/* 18  */          2, 20, 367, 1, 22,   /* AMU                       */
/* 19  */          2, 21, 367, 1, 23,   /* LERF                      */
/* 20  */          4,  1, 447, 1, 24,   /* ANFARM          */
/* 21  */          4,  1, 450, 1, 25,   /* ANFARM - ANHVC  */
/* 22  */          4,  1, 449, 1, 26,   /* ANFARM - ANVLV  */
/* 23  */          4,  1, 451, 1, 27,   /* ANFARM - AN271  */
/* 24  */          4,  2, 447, 2, 28,   /* APFARM          */
/* 25  */          4,  2, 450, 1, 30,   /* APFARM - APHVC  */
/* 26  */          4,  2, 449, 3, 31,   /* APFARM - APVLV  */
/* 27  */          4,  2, 451, 2, 34,   /* APFARM - AP271  */
/* 28  */          4,  2, 452, 4, 36,   /* APFARM - AP102  */
/* 29  */          4,  3, 447, 1, 40,   /* AWFARM          */
/* 30  */          4,  3, 450, 2, 41,   /* AWFARM - AWHVC  */
/* 31  */          4,  3, 449, 2, 43,   /* AWFARM - AWVLV  */
/* 32  */          4,  3, 451, 3, 45,   /* AWFARM - AW271  */
/* 33  */          4,  4, 447, 1, 48,   /* XYZFRM          */
/* 34  */          4,  4, 448, 2, 49,   /* XYZFRM - AFRM           */
/* 35  */          4,  4, 449, 2, 51,   /* XYZFRM - AYFRM  */
/* 36  */          4,  4, 450, 2, 53,   /* XYZFRM - AY, AZFRM      */
/* 37  */          4,  5, 495, 2, 55    /* BLDNG          -mct3+   */
                 };

        struct s2
        {
            char pcm;
            int  fstDIN,
                 totDIN,
                 fstAI,
                 totAI,
                 fstDEV,                                   /* -mct2+ */
                 totDEV;                                   /* -mct2+ */
        };

        static struct s2  datblk [] =
                 {
/*   Added fstDEV and totDEV columns to struct s2 -          *//* -mct2+ */
/*                                                           */
/*  0 */          2,   0,  15,   0, 11,   0, 0,   /* A244   */
/*  1 */          2,  17,   3,   0,  0,   0, 0,   /* A244   */
/*  2 */          2,  20,   5,  11,  3,   0, 0,  /* HVC244 */
/*  3 */          2,  25,  18,   0,  0,   0, 0,  /* WASTE  */
/*  4 */          4, 243,   1,   0,  0,   0, 0,  /* WASTE  *//* -mct3+ */
/*  5 */          2,  44,   3,  14,  7,   0, 0,   /* A350   */
/*  6 */          2,  50,   7,  30, 10,   0, 0,  /* FEED   */
/*  7 */          2,  60,   4,  45, 30,   0, 0,  /* CA1    */
/*  8 */          2,  70,  13,  80, 18,   0, 0,  /* PB1    *//* -jfb3+ */
/*  9 */          2,  85,  17, 100, 15,  61, 1,  /* PB2    *//* -mct1+ */
/* 10 */          2, 105,   3, 120, 21,   0, 0,   /* EA1    *//* -mct1+ */
/* 11 */          2, 110,   5, 150, 24,   0, 0,  /* EC1    *//* -mct1+ */
/* 12 */          2, 120,   9, 180,  5,   0, 0,  /* RWATER */
/* 13 */          4, 242,   1,   0,  0,   0, 0,  /* RWATER */
/* 14 */          2, 130,   4, 190, 11, 102, 1,  /* URW    *//* -mct2+ */
/* 15 */          2, 140,  13, 205, 16,   0, 0,  /* VVENT  */
/* 16 */          2, 154,   3,   0,  0,   0, 0,  /* VVENT  */
/* 17 */          2, 160,   6, 225, 15,   0, 0,  /* PC     */
/* 18 */          2, 170,  14, 240, 21, 133, 1,   /* IX     *//* -mct2+ */
/* 19 */          2, 190,  13, 265, 11, 143, 1,   /* SC     *//* -mct2+ */
/* 20 */          2, 210,  17, 280,  2, 151, 1,   /* BASINS *//* -mct2+ */
/* 21 */          2, 230,  11, 290,  4,   0, 0,  /* UTIL   */
/* 22 */          2, 260,   6, 310, 14,   0, 0,  /* AMU    */
/* 23 */          2, 270,  16, 330,  7,   0, 0,   /* LERF   */
/* 24 */          4,   0,  21,   0,  0,   0, 0,  /* ANFARM          */
/* 25 */          4,  21,   8,   0,  0,   0, 0,  /* ANFARM - ANHVC */
/* 26 */          4,  29,   8,   0,  0,   0, 0,  /* ANFARM - ANVLV */
/* 27 */          4,  37,   8,   0,  0,   0, 0,  /* ANFARM - AN271 */
```

```
/* 28 */          4,  60,   3,   0,  0,   0, 0,  /* APFARM           */
/* 29 */          4,  64,  25,   0,  0,   0, 0,  /* APFARM           */
/* 30 */          4, 114,  13,   0,  0,   0, 0,  /* APFARM - APHVC */
/* 31 */          4, 111,   3,   0,  0,   0, 0,  /* APFARM - APVLV */
/* 32 */          4, 127,   5,   0,  0,   0, 0,  /* APFARM - APVLV */
/* 33 */          4, 136,   6,   0,  0,   0, 0,  /* APFARM - APVLV */
/* 34 */          4,  98,  13,   0,  0,   0, 0,  /* APFARM - AP271 */
/* 35 */          4, 134,   2,   0,  0,   0, 0,  /* APFARM - AP271 */
/* 36 */          4,  63,   1,   0,  0,   0, 0,  /* APFARM - AP102 */
/* 37 */          4,  89,   9,   0,  0,   0, 0,  /* APFARM - AP102 */
/* 38 */          4, 132,   2,   0,  0,   0, 0,  /* APFARM - AP102 */
/* 39 */          4, 142,   1,   0,  0,   0, 0,  /* APFARM - AP102 */
/* 40 */          4, 150,  17,   0,  0,   0, 0,  /* AWFARM           */
/* 41 */          4, 181,   1,   0,  0,   0, 0,  /* AWFARM - AWHVC */
/* 42 */          4, 186,   3,   0,  0,   0, 0,  /* AWFARM - AWHVC */
/* 43 */          4, 167,  11,   0,  0,   0, 0,  /* AWFARM - AWVLV */
/* 44 */          4, 179,   2,   0,  0,   0, 0,  /* AWFARM - AWVLV */
/* 45 */          4, 178,   1,   0,  0,   0, 0,   /* AWFARM - AW271 */
/* 46 */          4, 189,   5,   0,  0,   0, 0,   /* AWFARM - AW271 */
/* 47 */          4, 195,   2,   0,  0,   0, 0,  /* AWFARM - AW271 */
/* 48 */          4, 229,  10,   0,  0,   0, 0,  /* XYZFRM           *///* -mct4+ */
/* 49 */          4, 214,   6,   0,  0,   0, 0,  /* XYZFRM - AFRM  */
/* 50 */          2,  15,   2,   0,  0,   0, 0,  /* A244   - AFRM  */
/* 51 */          4, 222,   4,   0,  0,   0, 0,  /* XYZFRM - AYFRM */
/* 52 */          4, 228,   1,   0,  0,   0, 0,  /* XYZFRM - AYFRM */
/* 53 */          4, 220,   2,   0,  0,   0, 0,  /* XYZFRM - AY,AZ */
/* 54 */          4, 226,   2,   0,  0,   0, 0,  /* XYZFRM - AY,AZ */
/* 55 */          4, 250,  28,  80, 12,   0, 0,  /* BLDNG            */
/* 56 */          2,   0,   0, 300,  3,   0, 0   /* BLDNG            */
                 };

{
        char net, unit;
        int  access, almreg, conreg, dbreg, j, k, vprt, extra, value ;

        access = UNITREL;
        net = 0; almreg = 0; conreg = 0; dbreg = 0; j = 0;
        k = 0; vprt = 0; extra = 0; value = 0;
   /* opens network for communication */
        checkerr (1, mopen() );
        for (k = 0; k < 38; k++)
        {

       /* get value from Sequence Database to check if flag is set */
            checkipn ( k, 2, seqrec[k].pcm, get_vseq(net,seqrec[k].pcm,FG,access,
                                  seqrec[k].sunit, seqrec[k].index,&vprt) );
            if(vprt==1)
            {
                        vprt = 0;
                checkerr (3, put_vseq(net,seqrec[k].pcm,FG,access,
                                  seqrec[k].sunit,seqrec[k].index,&vprt) );
                checkerr (4, dbreg =  lnkrg ("DBASE" ) );
                checkerr (5, almreg = lnkrg ("ALMQUE") );
                checkerr (6, conreg = lnkrg ("CONFIG") );

                for ( j = seqrec[k].offset;
                     j < seqrec[k].offset + seqrec[k].bloks;
                     j++ )
                {
                    if (datblk[j].totDIN > 0 )
                        acknow (net, datblk[j].pcm, datblk[j].fstDIN,
                                datblk[j].totDIN, DIN, DIN_ALMCT,
                                almreg, conreg, dbreg);
                    if (datblk[j].totAI > 0 )
                        acknow (net, datblk[j].pcm, datblk[j].fstAI,
                                datblk[j].totAI, AI, AI_ALMCT,
                                almreg, conreg, dbreg);

                    if (datblk[j].totDEV > 0 )
                        acknow (net, datblk[j].pcm, datblk[j].fstDEV,
```

```
                                datblk[j].totDEV, DEV, DEV_ALMCT,
                                almreg, conreg, dbreg);

                } /* end for */

                checkerr ( 11, conreg = unlrg ( conreg ) );
                checkerr ( 12, almreg = unlrg ( almreg ) );
                checkerr ( 13, dbreg =  unlrg ( dbreg ) );

            } /* end if */

        } /* end for loop */
                checkerr (14, get_vseq(net,4,FG,access, 6, 181, &vprt) );
                checkerr (15, put_vseq(net,2,FG,access,25, 183, &vprt) ); /* +mct2- */
                checkerr (16, get_vseq(net,2,FG,access,25, 184, &extra) );        /* +mct2- */
                if ( extra == 1)
                   {
                value = 1 ;
                extra = 0 ;
                checkerr ( 4, devcmd( net, 2, DEV, 171, &value));          /* AUDALARMO, +mct2- */
                checkerr (17, put_vseq(net,2,FG,access,25, 184, &extra) );        /* +mct2- */
                   }
} /* end main */
}
/******************/
/* function acknow */
/******************/
acknow (net, pcm, first, last, type, field, almreg, conreg, dbreg)

        char field, net, pcm, type;
        int  almreg, conreg, dbreg, first, last;
{
        char buff[MAX_DB_RECSIZ],
             dbuff[MAX_DB_RECSIZ],
             epn[EPNSIZ + 1];
        int  adi, devunt, ipn, tot_val, temp_val, err;

        devunt = 4;


   /* loop for ipns */
        for (ipn = first; ipn < first + last; ipn++)
        {

      /* transfers every field in one PCMDB into buffer */
            err = grb(net,pcm,type,ipn,buff);
           if ( err < 0 ) continue ;

      /* transfers one field from buffer into user location */
            checkerr (8, gfb(type,field,&tot_val,buff));

            temp_val = (tot_val & 15);
            if (temp_val > 0)
                {
                if ( ! ( tot_val & 32 ) )
                    {

                /* transfers an acknowledgement */
                     checkipn (9,ipn, pcm, dback(net,pcm,type,ipn));

                /* identifies epn */
                     checkerr (10, idepn(dbreg,epn,net,pcm,type,ipn));
                     sndmsg (net,devunt,almreg,conreg,adi,MSG_TEXT,
                            NONCRIT,"\t\t%s   ALARM ACKNOWLEDGED",epn);

                    } /* end if */

               } /* end if */

        } /* end for loop */
```

```
} /* end function acknow */

/*********************/
/* function checkerr */
/*********************/
checkerr(x,ierr)
        int ierr[],x ;
        {
        int r2,r3 ;
        if (ierr < 0 )
          {
           printf("\n checkerr problem on ACKFLG.C at %d, error = %d\n",x,ierr);
/*         perror(ierr); */
           r2 = lnkrg("CONFIG");
           r3 = lnkrg("ALMQUE");
/*         sndmsg(0,0,r3,r2,3,MSG_TEXT,NOCRIT,
"\n ALARM ACKNOWLEDGE PROGRAM --- ERROR ROUTINE FAILURE AT %d, ERROR %d\n",
                x,ierr); */
           exit();
           }
        }

checkipn(x,y,p,ierr)                        /* number, ipn, error */
        int x, y, p, ierr ;
        {
        int r2,r3 ;
        if (ierr < 0 )
          {
           printf("\n checkipn problem on ackflg.c at %d, error = %d, ipn = %d, pcm %d\n",x,ierr,y,p);
/*         perror(ierr); */
           r2 = lnkrg("CONFIG");
           r3 = lnkrg("ALMQUE");
/*         sndmsg(0,0,r3,r2,3,MSG_TEXT,NOCRIT,
"\n ALARM ACKNOWLEDGE PROGRAM --- ERROR ROUTINE FAILURE AT %d, ERROR %d\n",
                x,ierr); */
           exit();
           }
        }
```

INHA

```
/*              I N H A . C                                VERSION 3
 *
 *      Alarm Inhibit program for graphics 80, 81, 82, 83 and 84.  Scans
 *      EPNs and lists all inhibited EPNs and descriptors.  Batch variables
 *      FTRIP0, FTRIP1, FTRIP2, FTRIP3 display *MORE on GRA080, 81, 82, 83 when
 *      more than 20 found on the page.  FSTOP displays TOO MANY INHIBITED
 *      ALARMS!.... when more than 96 inhibited alarms are found.  FSTOP also
 *      terminates program.  INHA.C is to be run with sequence program
 *      TIMEINHA.SEQ in unit WHOLE0 which fetches the correct time and date.
 *      INHA.C is installed as task INHALM and runs from skid key 53.
 */

/*  Written by : R. N. Kersey              */
/*  Date       : 11-SEP-91                 */
/*  Facility   : 242-A Evaporator Bldg. */
/*  Machine    : VAX 4000-105              */
/*  D/3 Version: 6.3                       */
/*  Compiler   : VAX C                     */
/*  Op. System : VMS 5                     */

/*  MODIFICATION LOG:                                                          */
/*                                                                             */
/*      20-JUL-92       Added description, header.              M. Teats  */
/*                                                                             */
/*      22-JUL-93       Baselined for D/3 Version 3.3.          M. Teats  */
/*                                                                             */
/*      26-MAR-95       Changed struct S1 so that all           J. Berger */
/*                      EPNs will get displayed. Per                          */
/*                      EE-95-00036.                                          */
/*                                                                             */
/*  END OF MOD LOG                                                             */

#include <emcstd.h>
#include <d3sys.h>
#include <dba.h>
#include <seqdba.h>
#include <almmsg.h>

        struct s1{
                int   pcm    ;
                char  type   ;
                char  field  ;
                int  tot_ipn ;
                 } ;

        /* number of analog, digital and device EPNS */
        /*      Tank farm signals are first          */

        static struct s1 point[] =
                {
                4,      AI,     AI_ALMCT,       135,
                4,      DIN,    DIN_ALMCT,      300,
                4,      DEV,    DEV_ALMCT,      100,
                4,      DGR,    DGR_ALMCT,        3,
                4,      DOT,    DOT_ALMCT,        3,
                2,      AI,     AI_ALMCT,       380,
                2,      DIN,    DIN_ALMCT,      348,
                2,      DEV,    DEV_ALMCT,      217,
                2,      DGR,    DGR_ALMCT,        7,
                2,      DOT,    DOT_ALMCT,        4
                        } ;

        static char fil[]="09        " ;
main()

{

   char variabl[EPNSIZ+3], epn[EPNSIZ+1];
   char buff [ MAX_DB_RECSIZ ], net;
   int descripI[(NUMDESC*DESCSIZ)+1] ; int seq_pcm = 2  ;
```

```
   int descrip1[8], descrip2[8], descrip3[8], descrip4[8];
   int string[NUMDESC*DESCSIZ+1],  bottom[NUMDESC*DESCSIZ+3] ;
   int u_rel = UNITREL ; int sequnit = 0          ;
   int access, conreg, dbreg, i, j, index, jndex;
   int fstart, fstop, ftrip0, ftrip1, ftrip2, ftrip3, count ;
   int ipn, err, tot_val, sunit ;
   unsigned long epoch ;
   int tt ;

   net = 0 ;
   access = UNITREL    ; sunit = 0 ;

   checkerr (1, mopen() );
   checkerr (2, dbreg =  inkrg ("DBASE" ) );
   checkerr (3, conreg = inkrg ("CONFIG") );

                /*      clear screen    */

for ( j = 0; j < 100 ; j++ )
        {
        index =  j ;
        checkerr ( 4,  put_vseq ( net, 2, SG, access, sunit, index, fil ) ) ;
        index = 100 + j ;
        checkerr ( 5,  put_vseq ( net, 2, SG, access, sunit, index, fil ) ) ;
        }

        /"              initialize batch variables              */

  fstart = 1 ;fstop = 0 ; ftrip0 = 0 ; ftrip1 = 0 , ftrip2 = 0, ftrip3 = 0;
  put_vseq ( net, 2, FG, access, sunit, 425, &fstart)  ;          /* sets  fstart */
  put_vseq ( net, 2, FG, access, sunit, 426, &fstop )  ;          /* clear fstop  */
  put_vseq ( net, 2, FG, access, sunit, 427, &ftrip0)  ;          /* clear ftrip0 */
  put_vseq ( net, 2, FG, access, sunit, 428, &ftrip1)  ;          /* clear ftrip1 */
  put_vseq ( net, 2, FG, access, sunit, 429, &ftrip1)  ;          /* clear ftrip2 */
  put_vseq ( net, 2, FG, access, sunit, 430, &ftrip1)  ;          /* clear ftrip3 */
  fstart = 0 ;fstop = 1 ; ftrip0 = 1 ; ftrip1 = 1 ; ftrip2 = 1; ftrip3 = 1;

  sleep(1) ;            /* give sequence program chance to run */

  index = 0 ;
  jndex = 100;
  count = 0 ;


for (i = 0; i < 10 ; i++)
{

   for (ipn = 0 ; ipn < point[i].tot_ipn ; ipn++ )
    {

        err = grb ( net, point[i].pcm, point[i].type, ipn, buff ) ;
        if ( err < 0 ) continue ;
        checkerr (6, gfb ( point[i].type, point[i].field, &tot_val, buff ) ) ;
        if ( tot_val & 16)                                                    /* if alm
inhibited...*/
         {

          err =  idepn ( dbreg, epn, net, point[i].pcm, point[i].type, ipn ) ;        /* get EPN and
descriptor */
          if (err < 0) continue ;
          cpystr(variabl,"09", epn);
          checkerr ( 8,  put_vseq ( net, seq_pcm, SG, u_rel, sequnit, index++, variabl)) ;
          sleep(1) ;
/*
descrip[ squeeze ( descrip, desc ( dbreg, descrip, net, point[i].pcm, point[i].type, ipn), NULL)] = 0 ;
*/

descrip1[squeeze(descrip1,dstring(dbreg, descrip1, net, point[i].pcm, point[i].type, ipn, 0), NULL)];
descrip2[squeeze(descrip2,dstring(dbreg, descrip2, net, point[i].pcm, point[i].type, ipn, 1), NULL)];
descrip3[squeeze(descrip3,dstring(dbreg, descrip3, net, point[i].pcm, point[i].type, ipn, 2), NULL)];
```

```
descrip4[squeeze(descrip4,dstring(dbreg, descrip4, net, point[i].pcm, point[i].type, ipn, 3), NULL)];

          cpystr ( bottom,"09", descrip1, " ", descrip2, " ", descrip3, " ", descrip4, NULL) ;


          checkerr ( 10,  put_vseq ( net, seq_pcm, SG, u_rel, sequnit,jndex++, bottom));
          if (  count > 20 ) put_vseq ( net, 2, FG, access, sunit, 427, &ftrip0 )  ;        /* more on page
0 */
          if (  count > 40 ) put_vseq ( net, 2, FG, access, sunit, 428, &ftrip1 )  ;    /* more on page 1 */

          if (  count > 60 ) put_vseq ( net, 2, FG, access, sunit, 429, &ftrip2 )  ;    /* more on page 2 */
          if (  count > 80 ) put_vseq ( net, 2, FG, access, sunit, 430, &ftrip3 )  ;    /* more on poge 3 */
          if (++count > 99 )
             {                                                                  /* exceeds number of strings
*/

                put_vseq ( net, 2, FG, access, sunit, 425, &fstart )  ; /* clears  'running' message
*/
                put_vseq ( net, 2, FG, access, sunit, 426, &fstop )   ; /* lights 'too many inhibited
alarms' */
                exit();
             }          /* count   */
          }             /* tot_val */
    }                   /* ipn     */
}                       /* i       */

        put_vseq ( net, 2, FG, access, sunit, 425, &fstart )  ; /* clears  'running' message if normal term.
*/

}                       /* main  */


checkerr(x,ierr)
        int ierr,x ;
        {
        int r2,r3 ;
        if (ierr < 0 )
          {
           printf("\n checkerr problem on test.c at %d, error = %d\n",x,ierr);
           r2 = lnkrg("CONFIG");
           r3 = lnkrg("ALMQUE");
           sndmsg(0,0,r3,r2,3,MSG_TEXT,CRIT,
"\n ALARM INHIBIT TEST PROGRAM --- ERROR ROUTINE FAILURE AT %d, ERROR %d\n",
                  x,ierr);
           exit();
           }
        }

checkipn(x,y,ierr)
        int ierr,x,y ;
        {
        int r2,r3 ;
        if (ierr < 0 )
          {
           printf("\n checkerr problem on ackflg.c at %d, error = %d, ipn = %d\n",x,ierr,y);
           r2 = lnkrg("CONFIG");
           r3 = lnkrg("ALMQUE");
           sndmsg(0,0,r3,r2,3,MSG_TEXT,CRIT,
"\n ALARM ACKNOWLEDGE PROGRAM --- ERROR ROUTINE FAILURE AT %d, ERROR %d\n",
                  x,ierr);
           exit();
           }
        }
```

UKF14

```
/* +
 *    U K F 1 4 . C
 *
 *    .IDENT    /33MF00/
 *+
 *    Disk = SD0:    UIC = [261,10]
 *
 *    Copyright (C) 1992 - Texas Instruments
 *    ALL RIGHTS RESERVED
 *
 *    This program is a confidential trade secret
 *    of Texas Instruments which may be used only
 *    with the system with which  it was supplied
 *    and which may  not be disclosed, published,
 *    disseminated, sold or in  any  way divulged
 *    without advance express written  permission
 *    of Texas Instruments.
 *
 *
 *       Program transcribed by :    Mike Fowler
 *       Facility   : 242-A Evaporator Bldg.
 *       Machine    : VAX 4104-A
 *       Compiler   : DEC VAX C V3.3
 *       C .cmd use : SET DEF D3SOURCE::[261,10]
 *       C .cmd use : BLD UKF14 UKF14.C -L -MOV
 *       Op. System : VAX/VMS 5.5-2AH
 *       D/3 Version: 6.3
 *
 *       Reactivate Alarm Summary Pages by clearing the alarm
 *    condition of all I/O points in each PCM.  This causes
 *    the PCM's to regenerate alarms for I/O points that are
 *    still active.
 *       This Program can be initiated from a console via
 *    general function 14.
 *
 *+
 *       PROGRAM MODIFICATION LOG
 *-
 *33MF00    31-JAN-92    DEFINE PROGRAM FOR D/3 VERSION 3.3
 *
 *       01-SEP-94        Sleeps now seconds instead of ticks       J. Hayden
 *
 *       02-SEP-94        %i now %d, #includes different            J. Hayden
 *
 *       10-SEP-94        Some functions changed now wanting address of
 *                        Variable instead of variable and vice-versa
 *                                                                  J. Hayden
 *       11-SEP-94        Pgragma compiler directives to
 *                        initialize dlist variables                J. Hayden
 *
 *       26-SEP-95        Changed program so multiple general       J. Berger
 *                        functions do not have to be run.
 *                        See ECN 623938 & EE-95-00006.
 *
 *  #includes changed
 *  paramaters to functions changed, glf,plf
 *  pragama for dlist declarations, initialize
 *  sleep now seconds instead of ticks
 *  %p not %s, putfmt-> printf,%i->%d
 *  mopen() now net_saps
 *
 *  END OF MOD LOG
 *
*/
#include <emcstd.h>
#include <file.h>
#include <d3sys.h>
#include <grinnell.h>
#include <conkey.h>
#include <keyequ.h>
```

```
#include <err.h>
#include <video.h>
#include <almmsg.h>
#include <conf.h>
#include <unitdb.h>
#include <dbaai.h>
#include <dbadin.h>
#include <dbadot.h>
#include <dbadgr.h>
#include <devdba.h>
#include <digdef.h>
#include <func.h>

#define UDF14           14
#define NDBTYPES        5
#define IPNSMAX         4681            /* unusual max count for e/ipns */
#define DONE            1


#pragma nostandard

PUBLIC  int      dlrd   = 0;            /* DLIST descriptor */
PUBLIC  struct dlist    dlist   =0;     /* DLIST structure */
PUBLIC  struct gcb      gcb     =0;     /* Struct for Grinnel Control Block */
PUBLIC  short  con = 0;
#pragma standard


/*
 *  Define struct for Node Status'
 */
struct unitstat ustat      = 0;         /* for Micro Status determination */

/*
 *  Define field for micro data
 */
unsigned short fldbuf[4]  =0;

/*
 *  Define the field list
 */
static char fldlst[]  =    {
    AI_ALMCT, AI_CURAL,
    DIN_ALMCT,
    DOT_ALMCT,
    DGR_ALMCT,
    DEV_ALMCT, DEV_FLG, DEV_STAT, DEV_DFLG,
};

/*
 *  Database types
 *
 */                      /*  0,   1,   2,   3,   5  */
static char dbtype[] =    { AI, DIN, DOT, DGR, DEV, };
static int  nflds[]  =    {  2,   1,   1,   1,   4, };

static char net  = 0;
static char type = 0;

static char dbase[]  =    "DBASE";
static char config[] =    "CONFIG";


/*
 *  M A I N (  UKF14  )
 *
 */
main( )
{
    int  dbrd;                  /* DBASE region id */
```

```
    int  rdc;                   /* Config region descriptor */
    int  ipn;                   /* current ipn */
    char fldx;                  /* fldlst index */
    char uname[ UNAMSIZ+1 ];    /* unit name buffer */
    char epn[ EPNSIZ+1 ];       /* epn buffer */
    char status[36];            /* mf - temp string for status */
    char pcm_node[64];          /* table of PCM's completed or failed */
    int  unit;                  /* PCM unit number */
    char backup;                /* PCM backup unit number */
    char buffer[80];
    char anydone;               /* Any Nodes regenerated ? */
    int  err;                   /* error codes    */
    int  i, exit_code;                  /* misc variables */
    long alarms = 0;            /* total alarms regenerated */


        con = gtnum();
        if( con < 0 || con > 3 )
                {
                con = 0;
                printf("\n-- UKF14 - REGENERATING ALL ALARMS ( Invoked - Interactive Mode )\n" );
                }
        else                            /*  Else - Invoked by Gen Func 44 at console      */
                {
                printf("\n-- UKF14 - REGENERATING ALL ALARMS Console %d \n", con );
                wrt_con1( con );        /* Send message that 44 will be done on both */
                }                       /*  End else from CONSOLE                        */


        sprintf(buffer, "@d3source:[261010]reset.com");
        exit_code = d3spawn(buffer, 0, 0);
                if(exit_code == ER_GEN)
                        printf("Error spawing RESET.COM\n");
        sleep(3);
        sprintf(buffer, "@d3source:[261010]dcmreset.com");
        exit_code = d3spawn(buffer, 0, 0);
                if(exit_code == ER_GEN)
                        printf("Error spawing DCMRESET.COM\n");


/*      system("@d3source:[261010]reset.com");
        system("@d3source:[261010]dcmreset.com");
*/
        sleep(120);             /* Wait for 44 to get done */


        con = gtnum();
        if( con < 0 || con > 3 )
                {
                con = 0;
                printf("\n-- UKF14 - REGENERATING ALL ALARMS ( Invoked - Interactive Mode )\n" );
                }
        else                            /*  Else - Invoked by Gen Func 44 at console      */
                {
                printf("\n-- UKF14 - REGENERATING ALL ALARMS Console %d \n", con );
                wrt_con2( con );        /* Send message that 44 will be done on both */
                }                       /*  End else from CONSOLE                        */


/*
*   Open the communication lines.
*/
    if( net_saps(FALSE,TRUE) < 0 ) {
        printf("UKF14 - cant open communication, mopen()\n");
        exit();
    }

/*
*   Link to the regions (config, dbase, )
```

```
*/
    if( (rdc = lnkrg("config")) < 0 ) {    /* to CONFIG table */

        printf("UKF14 - Can't link to CONFIG, task exitting \n");
        exit();
    }

    if( (dbrd = lnkrg(dbase)) < 0 ) {     /* link to database */

        printf("UKF14 - can't link to DBASE, task exitting \n");
        unlrg( rdc );
        exit();
    }


/*
*   Initialization
*/
    anydone = 0;
    unit = -1;
    for( i=0; i<sizeof(pcm_node); i++ )
        pcm_node[i] = 0;

/*
*   MAIN LOOP - While each pcm on network 0.
*/
    while( ++unit < NUMPCM ) {
        /*
         *  Get unitname for next pcm.
         */
        for( type=0; type != UPCM; unit++ ) {

            if(unit >= NUMPCM)   goto quit;                /* Maxed out */
            fill( uname,sizeof(uname),'\0' );

            err = idpcm( rdc,uname,net,unit );
            if( err < 0 ) {

                if( err == ER_SND || err == ER_UNF || err == ER_UNL )
                    continue;

                printf("UKF14 - Can't get unit name for unit #%d, err=%d\n",unit,err) ;
                goto quit;
            }

            if( err = pcmid( rdc,uname,&net,&unit,&type,&backup) < 0 ) {

                printf("UKF14 - Can't get unit type for unit# %d, err=%d\n",unit,err);
                goto quit;
            }

            if( type == UPCM ) {

                /*  Has the Primary unit been done already ?  */

                if( (unit>backup) && (backup!=-1) && (pcm_node[backup] == DONE) ) {
/* mf */            printf( "UKF14 - %s is a backup (BYPASSED) \n", uname );
                    type = 0;
                    continue;
                }
                err = gsstat( rdc, net, unit, &ustat );

                if( ustat.us_pro != STOK )
                    type = 0;

                /*
                *   Processor status
                */
                switch( ustat.us_pro ) {
```

```
        case( STOFF ):   cpystr( status, "offline", 0 );
                         break;
        case( STLOD ):   cpystr( status, "load request", 0 );
                         break;
        case( STIDL ):   cpystr( status, "idle", 0 );
                         break;
        case( STOK ):    cpystr( status, "running", 0 );
                         break;
        default:         cpystr( status, "UNKNOWN", 0 );
                         break;
        }

        if( ustat.us_pro != STOK )
             printf( "UKF14 - %s is %s  (BYPASSED) \n", uname, status );
        else printf( "UKF14 - %s is %s \n", uname, status );

  } /* end if */
} /* end for( unit++ ) loop */

unit--;
anydone = 1;
if( backup == -1 ) backup = unit;
pcm_node[ unit ] = pcm_node[ backup ] = DONE;     /* Now do it ! */

/*
*   For each database type
*/
fldx = 0;
for( i=0; i< NDBTYPES; i++ ) {
printf(" ndbtype is %d\n",i);

    /*
    *   For every ipn in a given pcm (unit).
    */
    for( ipn=0; ipn <= IPNSMAX; ipn++) {
printf(" ipn is %d\n",ipn);

        /*
        *   Get the field data to determine the
        *   uninhibited points that are in alarm.
        */
        err = glf( net, unit, dbtype[i], 1, &ipn,
                   nflds[i], &fldlst[fldx], fldbuf);

        if( err < 0 ) {
            if( err == ER_IPN || err == E_PWPF )
                break;
            else continue;                        /* next ipn */
        }

        /*
        *  Uninhibited and Alarm conditions ?
        */
        if( !(fldbuf[0] & BIT_ALLIN) && (fldbuf[0] & BIT_DISAL) ) {

            /*
            *   Clear current Alarm status condition
            *   and for DIN's and DOT's save old
            *   CFN or COS using MSB
            */
            if( (dbtype[i] == DIN &&
                (fldbuf[0] & (DB_COS | DB_CFN0 | DB_CFN1) )) ||
                (dbtype[i] == DOT && (fldbuf[0] &  DB_COS) ))
                    fldbuf[0] |= BIT_NOALM;

            fldbuf[0] &= ~BIT_DISAL;

            /*
             *  Set doit bit for devices;
             *  Clear current Alarm for analog inputs;
```

```
                 *  other database types this is moot.
                 */

                if( dbtype[i] == DEV ) {
                    fldbuf[1] |= DV_DOIT;
                    fldbuf[2] = 0;
                    fldbuf[3] = 0;
                }
                else fldbuf[1] = 0;

                alarms += 1;
            } /* end if( alarms ) */

            else {  /*  Else there is no alarm, or its inhibited */

            printf("UKF14 - NOT ALARMED - unit=%d db=%d ipn=%d BUF=%d fldx=%d fld=%d\n",
                            unit,dbtype[i],ipn,&fldbuf[0],fldx,fldlst[fldx]);

                continue;                       /* next ipn - for loop */
            }

            /*
            *  Write fields(s) to  P C M  - regenerate ALARMS
            */
            err = plf( net, unit, dbtype[i], 1, &ipn,
                        nflds[i], &fldlst[fldx], fldbuf);
            if( err < 0 )
                printf("UKF14 - PLF ERROR=%d (unit=%d dbtype=%d ipn=%d nflds=%d fldx=%d fld=%d)\n",
                    err, unit, dbtype[i], ipn, nflds[i], fldx, fldlst[fldx]);


        } /* end for( each ipn ) */
    printf(" done with ipns\n");

        fldx += nflds[i];
        sleep(5);           /* allow some alarm processing time */

    } /* end for( each DBTYPE ) */
    printf(" done with type\n");
            sleep(5);
} /* end while( units 0->63 ) */
    printf(" done with units\n");

/*
*   Clean up shop and getout
*/
quit:

    con = gtnum();
    if( con < 0 || con > 3 )
            {
            con = 0;
            printf("\n-- UKF14 - REGENERATING ALL ALARMS ( Invoked - Interactive Mode )\n" );
            }
    else                            /*  Else - Invoked by Gen Func 44 at console      */
            {
            printf("\n-- UKF14 - REGENERATING ALL ALARMS Console %d \n", con );
            wrt_con3( con );        /* Send message that 44 will be done on both */
            }                       /*  End else from CONSOLE                        */


unlrg( rdc );
unlrg( dbrd );
if( anydone ) {
    printf( "UKF14 - Total Alarms Regenerated (%l) \n", alarms );
    printf( "UKF14 - ALARM REGENERATION COMPLETED \n" );
}
else
    printf( "UKF14 - ALARM REGENERATION WARNING - ALL PCM NODES OFFLINE \n" );
return(1);
```

```
} /* end main( UKF14 ) */


/*
*  W R T _ C O N 1(   )
*
*  Draw the General Function 14 - Display
*/
wrt_con1(con)
int con;
{
    int    kbfd;                          /* Key board fd */
    int    kboutfd;                       /* keyboard output fd */
    int    err;                           /* error code */
    static char dlname[] = "DLISTxx";

        dlname[ 5 + itob( &dlname[5], con, 10 ) ] = 0;
        if((dlrd = lnkrg(dlname)) < 0) {
            printf("UKF14 - DLIST LINK FAILURE %d\n",dlrd);
            unlrg(dlrd);
            exit();
        }
        if((err = ginit(&gcb, con)) < 0 ) {
            printf("UKF14 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
        }
        dlist.act = DMUSER + UDF14;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
*       C L E A R  the  O C M
*/
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /* O C M   G R A P H I C S  */

        gsetup(&gcb,RED);
        cursor(&gcb,10,425);     /*      S C R E E N   F O R M A T    */
        horiz( &gcb,440,3);      /*  ._________________________.  */
        cursor(&gcb,447,425);    /*  |  General Function  14   |  */
        vert(  &gcb,-105,3);     /*  |-------------------------|  */
        cursor(&gcb,449,320);    /*  |  Clearing alarm pages   |  */
        horiz( &gcb,-439,3);     /*  |                         |  */
        cursor(&gcb,10,320);     /*  |  On both machines       |  */
        vert(  &gcb,105,3);      /*  |_________________________|  */
        cursor(&gcb,10,390);
        horiz( &gcb,440,3);

        /* O C M   T E X T  */

        gsetup(&gcb, WHITE );
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 14" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "CLEARING ALARM PAGES" );
        gflush(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "ON BOTH MACHINES" );
        gflush(&gcb);
        gsetup(&gcb, WHITE );
        cursor(&gcb,HCHAR*12,VCHAR*31);
        g_puts( &gcb, "" );
        gflush(&gcb);
/*
```

```
*       Release the console and dlist region
*/
        dlist.ukf = -1;
        dlist.act = 0;
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);

} /* end wrt_con1() */

/*
*  W R T _ C O N 2(   )
*
*  Draw the General Function 14 - Display
*/
wrt_con2(con)
int con;
{
    int    kbfd;                        /* Key board fd */
    int    kboutfd;                     /* keyboard output fd */
    int    err;                         /* error code */
    static char dlname[] = "DLISTxx";


        dlname[ 5 + itob( &dlname[5], con, 10 ) ] = 0;
        if((dlrd = lnkrg(dlname)) < 0) {
            printf("UKF14 - DLIST LINK FAILURE %d\n",dlrd);
            unlrg(dlrd);
            exit();
        }
        if((err = ginit(&gcb, con)) < 0 ) {
            printf("UKF14 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
        }
        dlist.act = DMUSER + UDF14;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
*       C L E A R  the  O C M
*/
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /*  O C M    G R A P H I C S  */

        gsetup(&gcb,RED);
        cursor(&gcb,10,425);     /*      S C R E E N   F O R M A T    */
        horiz( &gcb,440,3);      /*  .___________________________. */
        cursor(&gcb,447,425);    /*  |   General Function  14    | */
        vert(  &gcb,-105,3);     /*  |---------------------------| */
        cursor(&gcb,449,320);    /*  |   Regenerating Alarm pages | */
        horiz( &gcb,-439,3);     /*  |                           | */
        cursor(&gcb,10,320);     /*  |   Alarms printing at typer. | */
        vert(  &gcb,105,3);      /*  |___________________________| */
        cursor(&gcb,10,390);
        horiz( &gcb,440,3);

        /*  O C M    T E X T  */

        gsetup(&gcb, WHITE );
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 14" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "REGENERATING ALARM PAGES" );
```

```
        gflush(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "ALARMS PRINTING AT TYPER." );
        gflush(&gcb);
        gsetup(&gcb, WHITE );
        cursor(&gcb,HCHAR*12,VCHAR*31);
        g_puts( &gcb, "" );
        gflush(&gcb);
/*
*       Release the console and dlist region
*/
        dlist.ukf = -1;
        dlist.act = 0;
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);

) /* end wrt_con2() */

/*
*  W R T _ C O N 3(   )
*
*  Draw the General Function 14 - Display
*/
wrt_con3(con)
int con;
{
    int    kbfd;                        /* Key board fd */
    int    kboutfd;                     /* keyboard output fd */
    int    err;                         /* error code */
    static char dlname[] = "DLISTxx";

        dlname[ 5 + itob( &dlname[5], con, 10 ) ] = 0;
        if((dlrd = lnkrg(dlname)) < 0) {
            printf("UKF14 - DLIST LINK FAILURE %d\n",dlrd);
            unlrg(dlrd);
            exit();
        }
        if((err = ginit(&gcb, con)) < 0 ) {
            printf("UKF14 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
        }
        dlist.act = DMUSER + UDF14;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
*       C L E A R  the  O C M
*/
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /* O C M   G R A P H I C S */

        gsetup(&gcb,YELLOW);
        cursor(&gcb,10,425);     /*     S C R E E N   F O R M A T    */
        horiz( &gcb,440,3);      /*  ._________________________.     */
        cursor(&gcb,447,425);    /*  |  General Function  14   |  */
        vert(  &gcb,-105,3);     /*  |-------------------------|  */
        cursor(&gcb,449,320);    /*  |  All Alarms processed   |  */
        horiz( &gcb,-439,3);     /*  |                         |  */
        cursor(&gcb,10,320);     /*  |  General Function Complete  |  */
        vert(  &gcb,105,3);      /*  |_________________________|  */
        cursor(&gcb,10,390);
        horiz( &gcb,440,3);

        /* O C M   T E X T */

        gsetup(&gcb, WHITE );
```

```
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 14" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "ALL ALARMS PROCESSED" );
        gflush(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "GENERAL FUNCTION COMPLETE." );
        gflush(&gcb);
        gsetup(&gcb, WHITE );
        cursor(&gcb,HCHAR*12,VCHAR*31);
        g_puts( &gcb, "" );
        gflush(&gcb);
/*
*       Release the console and dlist region
*/
        dlist.ukf = -1;
        dlist.act = 0;
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);

} /* end wrt_con3() */
```

UKF34

```
/*              U K F 3 4 . C                                   VERSION 5
 *
 *
 *
 *  General Function 34 - To remove inhibited alarms for Plant startup.
 *                        Reversal of UKF43.  UKF34 is only loaded to the
 *                        CDCM, as are UKF43 (alarm inhibiting) and UKF14
 *                        (alarm regereration).
 *
 *
 *      Written by : M. C. Teats
 *      Date       : 03-08-93
 *      Facility   : 242-A Evaporator Bldg.
 *      Machine    : VAX 4104-A
 *      Compiler   : DEC VAX C V3.3
 *      C .cmd use : SET DEF D3SOURCE::[261,10]
 *      C .cmd use : BLD UKF34 UKF34.C -L -MOV
 *      Op. System : VAX/VMS 5.5-2AH
 *      D/3 Version: 6.3
 *
 *  MODIFICATION LOG:
 *
 *      08-MAR-93       Define program for D/3 version 3.3              M. Teats
 *
 *      07-MAY-93       Modify ipns per CCN# 93MAR25-01 (search         M. Teats
 *                      MCT1).
 *
 *      05-JAN-95       Rebase lined the program for upgrade to          J. Berger
 *                      version 6.3 of the D/3 software. Added
 *                      additional EPNs to the inhibit list.
 *                      This will be documented on the rebaselined
 *                      documentation for the 6.3 upgrade.
 *
 *      27-APR-95       Added EPNs P1-CA1-20, YS-PB1-1, YS-P-C100        J. Berger
 *                      and YS-AW102 to program. See WP EE-95-00006
 *                      and ECN 622499. (JFB2)
 *
 *      26-SEP-95       Revised the screens that are displayed to        J. Berger
 *                      the OCMs. See ECN 623938 & EE-95-00006.
 *
 *  END OF MOD LOG
 */

#include <emcstd.h>
#include <d3sys.h>
#include <unitdb.h>
#include <grinnell.h>
#include <dbatypes.h>
#include <dbaai.h>
#include <dbadin.h>
#include <dbadev.h>                     /*  jfb1  */
#include <digdef.h>
#include <conkey.h>
#include <conf.h>
#include <err.h>
#include <keyequ.h>
#include <func.h>
#include <seqdba.h>
#include <almmsg.h>

#define UDF34           34
#define DONE            1

#pragma nostandard
PUBLIC    int     dlrd    =0;             /* DLIST descriptor                    */
PUBLIC    struct dlist    dlist   =0;     /* DLIST structure                     */
PUBLIC    struct gcb      gcb     =0;     /* Struct for Grinnel Control Block    */
PUBLIC    short  con      = 0;            /* console numbwer */
#pragma standard
```

```
/*
 *      DEFINE STRUCTURE FOR NODE STATUS:
 */
        struct unitstat ustat    =0;      /* For Micro Status determination        */
/*
 *      DEFINE STRUCTURES FOR EPN's TO REMOVE INHIBIT FOR:
 */
        struct s1
        {
            char pcm,                     /*  PCM unit number      */
                 dbt;                     /*  DBASE type           */
            int  sbi;                     /*  Scan block ipn       */
        };

        static struct s1 inha [] =
                {
/* k          pcm  dbt  sbi                  epn          */
/* --         ---  ---  ---                  ---------    */
/* 0  */        2,  AI,  45,             /*  pi-ca1-11    */
/* 1  */        2,  AI,  46,             /*  pic-ca1-7    */
/* 2  */        2,  AI,  53,             /*  lic-ca1-1    */
/* 3  */        2,  AI,  57,             /*  lic-ca1-2    */
/* 4  */        2,  AI,  63,             /*  li-ca1-3     */
/* 5  */        2,  AI,  68,             /*  fic-ca1-6    */
/* 6  */        2,  AI,  81,             /*  FI-CA1-7     */  /* JFB1 */
/* 7  */        2,  AI,  83,             /*  vi-pb1-2a    */
/* 8  */        2,  AI,  84,             /*  vi-pb1-1a    */
/* 9  */        2,  AI,  85,             /*  vi-pb1-3a    */
/* 10 */        2,  AI,  86,             /*  fi-ca1-1     */
/* 11 */        2,  AI,  87,             /*  pi-ca1-9     */
/* 12 */        2,  AI,  89,             /*  fi-ca1-3     */
/* 13 */        2,  AI,  97,             /*  pi-ca1-20    */  /* JFB2 */
/* 14 */        2,  AI, 102,             /*  sic-pb2-1    */  /* JFB1 */
/* 15 */        2,  AI, 103,             /*  vi-pb2-1a    */
/* 16 */        2,  AI, 106,             /*  fi-ca1-2     */
/* 17 */        2,  AI, 107,             /*  pi-ca1-10    */
/* 18 */        2,  AI, 110,             /*  fic-ca1-4    */
/* 19 */        2,  AI, 130,             /*  pi-ea1-14    */  /* JFB1 */
/* 20 */        2,  AI, 131,             /*  fic-ea1-1    */
/* 21 */        2,  AI, 153,             /*  pi-ec1-4     */  /* MCT1 */
/* 22 */        2,  AI, 154,             /*  pi-ec2-2     */  /* MCT1 */
/* 23 */        2,  AI, 162,             /*  fic-ec3-1    */  /* MCT1 */
/* 24 */        2,  AI, 197,             /*  pic-ec1-2    */
/* 25 */        2,  AI, 198,             /*  pi-ec1-9     */  /* JFB1 */
/* 26 */        2, DIN,  50,             /*  ys-aw102     */  /* JFB2 */
/* 27 */        2, DIN,  60,             /*  psh-ca111    */
/* 28 */        2, DIN,  73,             /*  ys-pb1-1     */  /* JFB2 */
/* 29 */        2, DIN,  87,             /*  TSH-PB2-1    */  /* JFB1 */
/* 30 */        2, DIN,  90,             /*  SXS-PB2-1    */  /* JFB1 */
/* 31 */        2, DIN,  91,             /*  YS-VFD-1     */  /* JFB1 */
/* 32 */        2, DIN,  92,             /*  SSL-PB2-1    */  /* JFB1 */
/* 33 */        2, DIN, 107,             /*  ZS-EA1-1C    */  /* JFB1 */
/* 34 */        2, DIN, 163,             /*  ys-p-c100    */  /* JFB2 */
/* 35 */        2, DEV, 102,             /*  RC2-PIG      */  /* JFB1 */
/* 36 */        2, DEV, 133,             /*  RC3-PIG      */  /* JFB1 */
/* 37 */        2, DEV, 143,             /*  RC1-PIG      */  /* JFB1 */
                };
    static char type = 0;                 /*  For PCM processor type, status                */

/*************************
 *                       *
 *  M A I N  ( UKF34 )   *
 *                       *
 *************************/

main( )
{
    char net,                             /*  Network number                        */
         uname[ UNAMSIZ+1 ],              /*  Unit name buffer                      */
         epn[ EPNSIZ+1 ],                 /*  EPN buffer                            */
```

```
        status[36],                     /*  Temp string for status              */
        pcm_node[64],                   /*  Table of PCM's completed or failed  */
        backup,                         /*  PCM backup unit number              */
        anydone,                        /*  Any Nodes done ?                    */
        buff[ MAX_DB_RECSIZ ],          /*  Largest db block                    */
        field;                          /*  Alarm count field                   */
    int  dbreg,                         /*  DBASE region id                     */
        creg,                           /*  Config region id                    */
        areg,                           /*  Alarm que region id                 */
        unit,                           /*  PCM unit number                     */
        npcm,                           /*  Maximum PCM unit number = 3         */
        value,                          /*  Alarm count field's bit value       */
        k,                              /*  De-Inhibit for-loop counter         */
        err,                            /*  Error code for dbase access calls   */
        i;                              /*  Miscellaneous variables             */
    net  = 0;
    npcm = 3;

        con = gtnum();
        if( con < 0 || con > 3 )
                {
                con = 0;
                printf("\n-- UKF34 - ALARM INHIBIT REMOVAL ( Invoked - Interactive Mode )\n" );
                }
        else                            /*  Else - Invoked by Gen Func 34 at console      */
                {
                printf("\n-- UKF34 - ALARM INHIBIT REMOVAL Invoked from Console %d \n", con );
                wrt_con1( con );
                }                       /*  End else from CONSOLE                         */

/*
 *      FIRST, LINK TO THE CONFIG TABLE, DATABASE, AND ALARM QUE REGIONS:
 */
if( (creg = lnkrg("config")) < 0 )                              /*  Link to config      */
        {
        printf("\n -- UKF34 -- CAN'T LINK TO CONFIG - TASK EXITING --\n");
        exit();
        }
if( (dbreg = lnkrg("DBASE")) < 0 )                              /*  Link to database    */
        {
        printf("\n -- UKF34 -- CAN'T LINK TO DBASE - TASK EXITING --\n");
        unlrg( creg );
        exit();
        }
if( (areg = lnkrg("ALMQUE")) < 0 )                              /*  Link to alarm que   */
        {
        printf("\n -- UKF34 -- CAN'T LINK TO ALMQUE - TASK EXITING --\n");
        unlrg( creg );
        unlrg( dbreg );
        exit();
        }
/*
 *      OPEN A COMMUNICATION CHANNEL TO THE PCM:
 */
if ( net_saps(FALSE,TRUE) < 0 )
        {
        printf("\n -- UKF34 -- CAN'T OPEN COMMUNICATIONS, MOPEN() - TASK EXITING\n");
        unlrg( creg );
        unlrg( dbreg );
        unlrg( areg );
        exit();
        }
/*
 *      INITIALIZATION:
 */
    anydone = 0;
    unit = -1;
    for( i=0; i<sizeof(pcm_node); i++ )
        pcm_node[i] = 0;
/*
```

```
*       MAIN LOOP -
*
*       WHILE PCMOA OR PCMOB (unit 2 or 3) ON NETWORK 0:
*/
  while( ++unit <= npcm )
  {
  /*
   *  GET UNIT NAME FOR NEXT PCM:
   */
      for( type=0; type != UPCM; unit++ )
          {
          if( unit > npcm ) goto quit;
          fill( uname,sizeof(uname),'\0' );

          err = idpcm( creg, uname, net, unit );
          if( err < 0 )
              {
              if( err == ER_SND || err == ER_UNF || err == ER_UNL )
                  continue;
              printf("UKF34 - CAN'T GET UNIT NAME FOR UNIT #%d, err=%d\n",unit,err) ;
              goto quit;
              }
          if( err = pcmid( creg, uname, &net, &unit, &type, &backup) < 0 )
              {
              printf("UKF34 - CAN'T GET UNIT TYPE FOR UNIT #%d, err=%d\n",unit,err);
              goto quit;
              }
          if( type == UPCM )
              {
              /*
               *   HAS THE PRIMARY UNIT ALREADY BEEN DONE ?
               */
              if( (unit>backup) && (backup!=-1) && (pcm_node[backup] == DONE) )
                  {
                  printf( "UKF34 - %s IS BACKUP UNIT (BYPASSED) \n", uname );
                  type = 0;
                  continue;
                  }
              err = gsstat( creg, net, unit, &ustat );

              if( ustat.us_pro != STOK )
                  type = 0;
              /*
               *      PROCESSOR STATUS:
               */
              switch( ustat.us_pro )
                      {
                      case( STOFF ):   cpystr( status, "offline", 0 );
                              break;
                      case( STLOD ):   cpystr( status, "load request", 0 );
                              break;
                      case( STIDL ):   cpystr( status, "idle", 0 );
                              break;
                      case( STOK ):    cpystr( status, "running", 0 );
                              break;
                      default:         cpystr( status, "UNKNOWN", 0 );
                              break;
                      }
              if( ustat.us_pro != STOK )
                   printf( "UKF34 - %s IS %s  (BYPASSED) \n", uname, status );
              else printf( "UKF34 - %s IS %s \n", uname, status );
              /*
               *      END PROCESSOR STATUS
               */
              }                           /*  End If  ( type UPCM )        */
      }                                   /*  End For ( unit++ ) loop      */
      unit--;
      anydone = 1;
      if( backup == -1 ) backup = unit;
      pcm_node[ unit ] = pcm_node[ backup ] = DONE;
```

```
/*
 *      EPN INHIBIT REMOVAL LOOP -
 *
 *      NOW WE ARE READY TO REMOVE INHIBITED ALARMS:
 *              err = idepn (rid, &epn, net, unit, dbtype, ipn)
 *              err = grb (net, unit, dbtype , ipn, &buff)
 *              err = gfb (dbtype, field, &value, &buff)
 *              err = pfb (dbtype, field, &value, &buff)
 *              err = prb (net, unit, dbtype , ipn, &buff)
 */
        for (k = 0; k < 38; k++)          /* JFB1,2 */
        {
        field = AI_ALMCT;
        if (k > 25)                               /* JFB1,2 */
                {
                field = DIN_ALMCT;
                }
        if (k > 34)                               /* JFB1,2 */
                {                                 /* JFB1 */
                field = DEV_ALMCT;                /* JFB1 */
                }                                 /* JFB1 */
        err = idepn(dbreg, epn, net, inha[k].pcm, inha[k].dbt, inha[k].sbi);
                if(err < 0)
                {
                printf("\n --UKF34 IDEPN--ERROR = %d\n",err);
/*              perror(&err);    */
                unlrg( creg );
                unlrg( dbreg );
                unlrg( areg );
                exit();
                }
        err = grb(net, inha[k].pcm, inha[k].dbt, inha[k].sbi, buff);
                if(err < 0)
                {
                printf("\n --UKF34 %s GRB--ERROR = %d\n", epn, err);
/*              perror(&err);    */
                unlrg( creg );
                unlrg( dbreg );
                unlrg( areg );
                exit();
                }
        err = gfb(inha[k].dbt, field, &value, buff);
                if(err < 0)
                {
                printf("\n -- UKF34 %s GFB--ERROR = %d\n", epn, err);
/*              perror(&err);    */
                unlrg( creg );
                unlrg( dbreg );
                unlrg( areg );
                exit();
                }
        /*
         *      CHECK IF INHIBITED.  IF TRUE, REMOVE IT AND SEND MESSAGE!
         */
        if ( value = 16 )                                       /*  If inhibited        */
                {
                value = 32;                                     /*  Remove inhibit      */
                err = pfb(inha[k].dbt, field, &value, buff);
                        if(err < 0)
                        {
                        printf("\n -- UKF34 %s PFB--ERROR = %d\n", epn, err);
/*                      perror(&err);    */
                        unlrg( creg );
                        unlrg( dbreg );
                        unlrg( areg );
                        exit();
                        }
                sndmsg (0,0,areg,creg,3,MSG_TEXT,NONCRIT,"--- UKF34 - INHIBIT REMOVED FOR  %s",epn);
                sleep (2);
                }                                 /*  End If              */
```

```
        /*
         *      GET OUT AND GO TO NEXT EPN:
         */
        err = prb(net, inha[k].pcm, inha[k].dbt, inha[k].sbi, buff);
                if(err < 0)
                {
                printf("\n --UKF34 %s PRB--ERROR = %d\n", epn, err);
/*              perror(&err);   */
                unlrg( creg );
                unlrg( dbreg );
                unlrg( areg );
                exit();
                }
        sleep (1);                              /* Take a rest                  */
        }                                       /* End removal for loop, k++    */
    }                                           /* END while <= npcm            */
/*
 *      UNLINK REGIONS AND GET OUT:
 */
quit:
        unlrg( creg );
        unlrg( dbreg );
        unlrg( areg );

        con = gtnum();
        if( con < 0 || con > 3 )
                {
                con = 0;
                printf("\n-- UKF34 - ALARM INHIBIT REMOVAL ( Invoked - Interactive Mode )\n" );
                }
        else                            /* Else - Invoked by Gen Func 34 at console      */
                {
                printf("\n-- UKF34 - ALARM INHIBIT REMOVAL Invoked from Console %d \n", con );
                wrt_con2( con );
                }                       /* End else from CONSOLE                         */


        if( anydone )
                {
                printf( "UKF34 - INHIBIT REMOVAL FOR 242-A STARTUP COMPLETED \n" );
                }
        else
                printf( "UKF34 - INHIBIT REMOVAL WARNING - ALL PCM NODES OFFLINE \n" );
        return(1);

}                                               /* End main  */

/************************
 *                      *
 *   E N D   M A I N    *
 *                      *
 ************************/


/*      W R T _ C O N 1 (   )
 *
 *      Draw the General Function 34 - Display
 */
int wrt_con1( con )
int con;
{
    int     kbfd;                       /* Key board fd         */
    int     kboutfd;                    /* Keyboard output fd   */
    int     err;                        /* Error code           */
    static char dlname[] = "DLISTxx";

        dlname[5 + itob ( &dlname[5], con ,10 ) ] = 0;
        if((dlrd = lnkrg(dlname)) < 0)
            {
            printf("UKF34 - DLIST LINK FAILURE %d\n",dlrd);
```

```
            unlrg(dlrd);
            exit();
            }
        if((err = ginit(&gcb, con)) < 0 )
            {
            printf("UKF34 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
            }
        dlist.act = DMUSER + UDF34;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
 *      C L E A R  the  O C M :
 */
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /* O C M   G R A P H I C S :  */

        gsetup(&gcb,RED);
        cursor(&gcb,10,425);      /*      S C R E E N   F O R M A T    */
        horiz( &gcb,440,3);       /*  ._______________________________. */
        cursor(&gcb,447,425);     /*  |  General Function  34         | */
        vert(  &gcb,-105,3);      /*  |-------------------------------| */
        cursor(&gcb,449,320);     /*  |  Alarm Inhibit Removal        | */
        horiz( &gcb,-439,3);      /*  |                               | */
        cursor(&gcb,10,320);      /*  |  EPN's printing at typer.     | */
        vert(  &gcb,105,3);       /*  |_______________________________| */
        cursor(&gcb,10,390);
        horiz( &gcb,440,3);

        /* O C M   T E X T :  */

        gsetup(&gcb, WHITE );
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 34" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "REMOVING INHA ALARMS FOR STARTUP   " );
        gflush(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "EPN'S WILL BE PRINTED AT TYPER " );
        gflush(&gcb);
/*
 *      RELEASE THE CONSOLE AND DLIST REGION:
 */
        dlist.ukf = -1;
        dlist.act = 0;
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);
}                                       /*  End wrt_con1() */


/*      W R T _ C O N 2 (   )
 *
 *      Draw the General Function 34 - Display
 */
int wrt_con2( con )
int con;
{
    int    kbfd;                        /*  Key board fd        */
    int    kboutfd;                     /*  Keyboard output fd  */
    int    err;                         /*  Error code          */
    static char dlname[] = "DLISTxx";
```

```
        dlname[5 + itob ( &dlname[5], con ,10 ) ] = 0;
        if((dlrd = lnkrg(dlname)) < 0)
            {
            printf("UKF34 - DLIST LINK FAILURE %d\n",dlrd);
            unlrg(dlrd);
            exit();
            }
        if((err = ginit(&gcb, con)) < 0 )
            {
            printf("UKF34 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
            }
        dlist.act = DMUSER + UDF34;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
 *      C L E A R  the  O C M :
 */
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /* O C M   G R A P H I C S :  */

        gsetup(&gcb,YELLOW);
        cursor(&gcb,10,425);     /*     S C R E E N   F O R M A T    */
        horiz( &gcb,440,3);      /*  ._______________________________. */
        cursor(&gcb,447,425);    /*  |  General Function  34         | */
        vert(  &gcb,-105,3);     /*  |-------------------------------| */
        cursor(&gcb,449,320);    /*  |                               | */
        horiz( &gcb,-439,3);     /*  |                               | */
        cursor(&gcb,10,320);     /*  |                               | */
        vert(  &gcb,105,3);      /*  |_______________________________| */
        cursor(&gcb,10,390);
        horiz( &gcb,440,3);

        /* O C M   T E X T :  */

        gsetup(&gcb, WHITE );
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 34" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "GENERAL FUNCTION IS COMPLETE" );
        gflush(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "THE SCREEN CAN BE CLEARED " );
        gflush(&gcb);
/*
 *      RELEASE THE CONSOLE AND DLIST REGION:
 */
        dlist.ukf = -1;
        dlist.act = 0;
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);
}                                   /*  End wrt_con2() */
```

```
/*              U K F 4 3 . C                                   VERSION 5
 *
 *
 *
 *  General Function 43 - For standard alarm inhibiting during Plant
 *                        shutdown.  UKF43 is loaded only to the CDCM,
 *                        as are UKF34 (de-inhibiting), and UKF14 (alarm
 *                        regeneration).  Due to the way the ALMGMG task
 *                        works, the following user key functions must
 *                        be run after GF 43 in the order presented:
 *                        GF 14 (to regenerate alarms).
 *
 *
 *      Written by : M. C. Teats
 *      Date       : 03-08-93
 *      Facility   : 242-A Evaporator Bldg.
 *      Run on Unit: CDCM only
 *      Machine    : VAX 4104-A
 *      Compiler   : DEC VAX C V3.3
 *      C .cmd use : SET DEF D3SOURCE::[261,10]
 *      C .cmd use : BLD UKF14 UKF14.C -L -MOV
 *      Op. System : VAX/VMS 5.5-2AH
 *      D/3 Version: 6.3         BASELINE
 *
 *  MODIFICATION LOG:
 *
 *      08-MAR-93       Define program for D/3 version 3.3              M. Teats
 *
 *      07-MAY-93       Modify ipns per CCN# 93MAR25-01 (search         M. Teats
 *                      MCT1).
 *
 *      05-JAN-95       Rebaselined the program for version              J. Berger
 *                      6.3 upgrade of the D/3 software. Added
 *                      aditional EPN to the list of EPNs to be
 *                      inhibited. See rebaseline documents for
 *                      the 6.3 upgrade.
 *
 *      27-APR-95       Added PI-CA1-20, YS-PB1-1, YS-P-C100            J. Berger
 *                      and YS-AW102. See WP EE-95-00006 and
 *                      ECN 622499. (JFB2)
 *
 *      26-SEP-95       Changed program so multiple general       J. Berger
 *                      functions do not have to be run.
 *                      See ECN 623938 & EE-95-00006.
 *
 *
 *  END OF MOD LOG
 */

#include <emcstd.h>
#include <d3sys.h>
#include <unitdb.h>
#include <grinnell.h>
#include <dbatypes.h>
#include <dbaai.h>
#include <dbadin.h>
#include <dbadev.h>                     /*  jfb1  */
#include <digdef.h>
#include <conkey.h>
#include <conf.h>
#include <err.h>
#include <keyequ.h>
#include <func.h>
#include <seqdba.h>
#include <almmsg.h>
#include <processes.h>

#define UDF43           43
#define DONE            1
```

```
#pragma nostandard
PUBLIC    int     dlrd    = 0;                    /* DLIST descriptor                    */
PUBLIC    struct dlist    dlist   = 0;    /* DLIST structure                          */
PUBLIC    struct gcb      gcb     = 0;    /* Struct for Grinnel Control Block         */
PUBLIC   short con=0;
#pragma standard

/*
 *      DEFINE STRUCTURE FOR NODE STATUS:
 */
        struct unitstat ustat    =0;     /* For Micro Status determination           */
/*
 *      DEFINE STRUCTURES FOR EPN's TO INHIBIT:
 */
        struct s1
        {
            char pcm,                    /*  PCM unit number      */
                 dbt;                    /*  DBASE type           */
            int  sbi;                    /*  Scan block ipn       */
        };

        static struct s1 inha [] =
                {
/* k          pcm  dbt  sbi                  epn          */
/* --         ---  ---  ---                  ---------    */
/* 0  */        2,  AI,  45,             /*  pi-ca1-11    */
/* 1  */        2,  AI,  46,             /*  pic-ca1-7    */
/* 2  */        2,  AI,  53,             /*  lic-ca1-1    */
/* 3  */        2,  AI,  57,             /*  lic-ca1-2    */
/* 4  */        2,  AI,  63,             /*  li-ca1-3     */
/* 5  */        2,  AI,  68,             /*  fic-ca1-6    */
/* 6  */        2,  AI,  81,             /*  fi-ca1-7    */   /* jfb1 */
/* 7  */        2,  AI,  83,             /*  vi-pb1-2a    */
/* 8  */        2,  AI,  84,             /*  vi-pb1-1a    */
/* 9  */        2,  AI,  85,             /*  vi-pb1-3a    */
/* 10 */        2,  AI,  86,             /*  fi-ca1-1     */
/* 11 */        2,  AI,  87,             /*  pi-ca1-9     */
/* 12 */        2,  AI,  89,             /*  fi-ca1-3     */
/* 13 */        2,  AI,  97,             /*  pi-ca1-20   */  /* JFB2 */
/* 14 */        2,  AI, 102,             /*  sic-pb2-1   */  /* JFB1 */
/* 15 */        2,  AI, 103,             /*  vi-pb2-1a    */
/* 16 */        2,  AI, 106,             /*  fi-ca1-2     */
/* 17 */        2,  AI, 107,             /*  pi-ca1-10    */
/* 18 */        2,  AI, 110,             /*  fic-ca1-4    */
/* 19 */        2,  AI, 130,             /*  pi-ea1-14   */  /* JFB1 */
/* 20 */        2,  AI, 131,             /*  fic-ea1-1    */
/* 21 */        2,  AI, 153,             /*  pi-ec1-4     */  /* MCT1 */
/* 22 */        2,  AI, 154,             /*  pi-ec2-2     */  /* MCT1 */
/* 23 */        2,  AI, 162,             /*  fic-ec3-1    */  /* MCT1 */
/* 24 */        2,  AI, 197,             /*  pic-ec1-2    */
/* 25 */        2,  AI, 198,             /*  pi-ec1-9     */  /* JFB1 */
/* 26 */        2, DIN,  50,             /*  ys-aw102     */  /* JFB2 */
/* 27 */        2, DIN,  60,             /*  psh-ca111    */
/* 28 */        2, DIN,  73,             /*  ys-pb1-1     */  /* JFB2 */
/* 29 */        2, DIN,  87,             /*  TSH-PB2-1    */  /* JFB1 */
/* 30 */        2, DIN,  90,             /*  SXS-PB2-1    */  /* JFB1 */
/* 31 */        2, DIN,  91,             /*  YS-VFD-1     */  /* JFB1 */
/* 32 */        2, DIN,  92,             /*  SSL-PB2-1    */  /* JFB1 */
/* 33 */        2, DIN, 107,             /*  ZS-EA1-1C    */  /* JFB1 */
/* 34 */        2, DIN, 163,             /*  YS-P-C100    */  /* JFB2 */
/* 35 */        2, DEV, 102,             /*  RC2-PIG      */  /* JFB1 */
/* 36 */        2, DEV, 133,             /*  RC3-PIG      */  /* JFB1 */
/* 37 */        2, DEV, 143,             /*  RC1-PIG      */  /* JFB1 */
                };
    static char type = 0;                /*  For PCM processor type, status          */

/*************************
 *                       *
 *  M A I N  ( UKF43 )   *
 *                       *
```

```
 *************************/

main( )
{
    char net,                          /*  Network number                      */
         uname[ UNAMSIZ+1 ],           /*  Unit name buffer                    */
         epn[ EPNSIZ+1 ],              /*  EPN buffer                          */
         status[36],                   /*  Temp string for status              */
         pcm_node[64],                 /*  Table of PCM's completed or failed  */
         backup,                       /*  PCM backup unit number              */
         anydone,                      /*  Any Nodes done ?                    */
         buff[ MAX_DB_RECSIZ ],        /*  Largest db block                    */
         field;                        /*  Alarm count field                   */
    int  dbreg,                        /*  DBASE region id                     */
         creg,                         /*  Config region id                    */
         areg,                         /*  Alarm que region id                 */
         unit,                         /*  PCM unit number                     */
         npcm,                         /*  Maximum PCM unit number = 3         */
         value,                        /*  Alarm count field's bit value       */
         k,                            /*  For loop counter                    */
         err,                          /*  Error code for dbase access calls   */
         con,                          /*  Console number                      */
         i;                            /*  Miscellaneous variables             */
    int  exit_code;
    char buffer[80];
    net  = 0;
    npcm = 3;

        con = gtnum();
        if( con < 0 || con > 3 )
                {
                con = 0;
                printf("\n-- UKF43 - ALARM INHIBIT ( Invoked - Interactive Mode )\n" );
                }
        else                           /*  Else - Invoked by Gen Func 43 at console      */
                {
                printf("\n-- UKF43 - ALARM INHIBIT Invoked from Console %d \n", con );
                wrt_con1( con );
                }                      /*  End else from CONSOLE                         */
/*
 *      SECOND, OPEN A COMMUNICATION CHANNEL TO THE PCM:
 */
if ( net_saps(FALSE,TRUE) < 0 )
        {
        printf("\n -- UKF43 -- CAN'T OPEN COMMUNICATIONS, net_saps- TASK EXITING\n");
        unlrg( creg );
        unlrg( dbreg );
        unlrg( areg );
        exit();
        }
/*
 *      FIRST, LINK TO THE CONFIG TABLE, DATABASE, AND ALARM QUE REGIONS:
 */
if( (creg = lnkrg("CONFIG")) < 0 )                          /*  Link to config       */
        {
        printf("\n -- UKF43 -- CAN'T LINK TO CONFIG - TASK EXITING --\n");
        exit();
        }
if( (dbreg = lnkrg("DBASE")) < 0 )                          /*  Link to database     */
        {
        printf("\n -- UKF43 -- CAN'T LINK TO DBASE - TASK EXITING --\n");
        unlrg( creg );
        exit();
        }
if( (areg = lnkrg("ALMQUE")) < 0 )                          /*  Link to alarm que    */
        {
        printf("\n -- UKF43 -- CAN'T LINK TO ALMQUE - TASK EXITING --\n");
        unlrg( creg );
        unlrg( dbreg );
        exit();
```

```
        }
/*
 *      INITIALIZATION:
 */
    anydone = 0;
    unit = -1;
    for( i=0; i<sizeof(pcm_node); i++ )
        pcm_node[i] = 0;
/*
 *      MAIN LOOP -
 *
 *      WHILE PCM0A OR PCM0B (unit 2 or 3) ON NETWORK 0:
 */
    while( ++unit <= npcm )
    {
    /*
     *  GET UNIT NAME FOR NEXT PCM:
     */
        for( type=0; type != UPCM; unit++ )
            {
            if( unit > npcm ) goto quit;
            fill( uname,sizeof(uname),'\0' );

            err = idpcm( creg, uname, net, unit );
            if( err < 0 )
                {
                if( err == ER_SND || err == ER_UNF || err == ER_UNL )
                    continue;
                printf("UKF43 - CAN'T GET UNIT NAME FOR UNIT %d, err=%d\n",unit,err) ;
                goto quit;
                }
            if( err = pcmid( creg, uname, &net, &unit, &type, &backup) < 0 )
                {
                printf("UKF43 - CAN'T GET UNIT TYPE FOR UNIT %d, err=%d\n",unit,err);
                goto quit;
                }
            if( type == UPCM )
                {
                /*
                 *   HAS THE PRIMARY UNIT ALREADY BEEN DONE ?
                 */
                if( (unit>backup) && (backup!=-1) && (pcm_node[backup] == DONE) )
                    {
                    printf( "UKF43 - %s IS BACKUP UNIT (BYPASSED) \n", uname );
                    type = 0;
                    continue;
                    }
                err = gsstat( creg, net, unit, &ustat );

                if( ustat.us_pro != STOK )
                    type = 0;
                /*
                 *       PROCESSOR STATUS:
                 */
                switch( ustat.us_pro )
                        {
                        case( STOFF ):  cpystr( status, "offline", 0 );
                                break;
                        case( STLOD ):  cpystr( status, "load request", 0 );
                                break;
                        case( STIDL ):  cpystr( status, "idle", 0 );
                                break;
                        case( STOK ):   cpystr( status, "running", 0 );
                                break;
                        default:        cpystr( status, "UNKNOWN", 0 );
                                break;
                        }
                if( ustat.us_pro != STOK )
                     printf( "UKF43 - %s IS %s  (BYPASSED) \n", uname, status );
                else printf( "UKF43 - %s IS %s \n", uname, status );
```

```
                /*
                 *      END PROCESSOR STATUS
                 */
                }                               /*  End If  ( type UPCM )       */
        }                                       /*  End For ( unit++ ) loop     */
        unit--;
        anydone = 1;
        if( backup == -1 ) backup = unit;
        pcm_node[ unit ] = pcm_node[ backup ] = DONE;
/*
 *      EPN INHIBIT LOOP -
 *
 *      NOW WE ARE READY TO INHIBIT ALARMS:
 *              err = idepn (rid, &epn, net, unit, dbtype, ipn)
 *              err = grb (net, unit, dbtype , ipn, &buff)
 *              err = gfb (dbtype, field, &value, &buff)
 *              err = pfb (dbtype, field, &value, &buff)
 *              err = prb (net, unit, dbtype , ipn, &buff)
 */
        for (k = 0; k < 38; k++)        /* JFB1 */
        {
        field = AI_ALMCT;
        if (k > 25)                             /* JFB1 */
                {
                field = DIN_ALMCT;
                }
        if (k > 34)                             /* JFB1 */
                {                               /* JFB1 */
                field = DEV_ALMCT;              /* JFB1 */
                }                               /* JFB1 */
        err = idepn(dbreg, epn, net, inha[k].pcm, inha[k].dbt, inha[k].sbi);
                if(err < 0)
                {
                printf("\n --UKF43 IDEPN--ERROR = %d\n",err);

                unlrg( creg );
                unlrg( dbreg );
                unlrg( areg );
                exit();
                }
        err = grb(net, inha[k].pcm, inha[k].dbt, inha[k].sbi, buff);
                if(err < 0)
                {
                printf("\n --UKF43 %s GRB--ERROR = %d\n", epn, err);

                unlrg( creg );
                unlrg( dbreg );
                unlrg( areg );
                exit();
                }
        err = gfb(inha[k].dbt, field, &value, buff);
                if(err < 0)
                {
                printf("\n -- UKF43 %s GFB--ERROR = %d\n", epn, err);

                unlrg( creg );
                unlrg( dbreg );
                unlrg( areg );
                exit();
                }
        /*
         *      CHECK IF INHIBITED.  IF NOT, DO IT AND SEND MESSAGE!
         */
        if ( value != 16 )                                      /*  If not inhibited    */
                {
                value = 16;                                     /*  Set to inhibit      */
                err = pfb(inha[k].dbt, field, &value, buff);
                        if(err < 0)
                        {
                        printf("\n -- UKF43 %s PFB--ERROR = %d\n", epn, err);
```

```
                        unlrg( creg );
                        unlrg( dbreg );
                        unlrg( areg );
                        exit();
                        }
                sndmsg (0,0,areg,creg,3,MSG_TEXT,NONCRIT,"--- UKF43 INHIBITED EPN %s ",epn);
                sleep (.2);
                }                                       /*  End if              */
        /*
         *      GET OUT AND GO TO NEXT EPN:
         */
        err = prb(net, inha[k].pcm, inha[k].dbt, inha[k].sbi, buff);
                if(err < 0)
                {
                printf("\n --UKF43 %s PRB--ERROR = %d\n", epn, err);

                unlrg( creg );
                unlrg( dbreg );
                unlrg( areg );
                exit();
                }
        sleep (1);                                      /*  Take a rest                 */
        }                                               /*  End inhibit for-loop, k++   */
    }                                                   /*  END while <= npcm           */
/*
 *      UNLINK REGIONS AND GET OUT:
 */
quit:
        unlrg( creg );
        unlrg( dbreg );
        unlrg( areg );
        if( anydone )
                {
                sleep ( 5 );

        con = gtnum();
        if( con < 0 || con > 3 )
                {
                con = 0;
                printf("\n-- UKF43 - ALARM INHIBIT ( Invoked - Interactive Mode )\n" );
                }
        else                                    /*  Else - Invoked by Gen Func 43 at console      */
                {
                printf("\n-- UKF43 - ALARM INHIBIT Invoked from Console %d \n", con );
                wrt_con2( con );
                }                               /*  End else from CONSOLE                         */

/*      system("run d3source:[004055]ukf14.exe");          */

                printf( "UKF43 - ALARM INHIBIT COMPLETED \n" );
                }
        else
                printf( "UKF43 - ALARM INHIBIT WARNING - ALL PCM NODES OFFLINE \n" );
        return(1);

}                                                       /*  End main  */

/************************
 *                      *
 *   E N D   M A I N    *
 *                      *
 ************************/

/*
 *      W R T _ C O N S 1 (   )
 *
 *      Draw the General Function 43 - Display
 */
int wrt_con1( con )
```

```
int con;
{
    int    kbfd;                          /*  Key board fd          */
    int    kboutfd;                       /*  Keyboard output fd    */
    int    err;                           /*  Error code            */
    static char dlname[] = "DLISTxx";

        dlname[5 + itob ( &dlname[5], con ,10 ) ] = 0;
        if((dlrd = lnkrg(dlname)) < 0)
            {
            printf("UKF43 - DLIST LINK FAILURE %d\n",dlrd);
            unlrg(dlrd);
            exit();
            }
        if((err = ginit(&gcb, con)) < 0 )
            {
            printf("UKF43 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
            }
        dlist.act = DMUSER + UDF43;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
 *      C L E A R  the  O C M :
 */
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /*  O C M    G R A P H I C S :  */

        gsetup(&gcb,RED);          /*      S C R E E N   F O R M A T    */
        cursor(&gcb,10,425);       /*  _____________________________ */
        horiz( &gcb,440,3);        /*  |  General Function  43       | */
        cursor(&gcb,447,425);      /*  |-----------------------------| */
        vert(  &gcb,-165,3);       /*  |  Inhibiting Alarms.         | */
        cursor(&gcb,449,260);      /*  |                             | */
        horiz( &gcb,-439,3);       /*  |  EPN's printing at typer.   | */
        cursor(&gcb,10,260);       /*  |                             | */
        vert(  &gcb,165,3);        /*  |                             | */
        cursor(&gcb,10,390);       /*  |                             | */
        horiz( &gcb,440,3);        /*  |                             | */
                                   /*  |                             | */
                                   /*  |                             | */
                                   /*  |_____________________________| */

        gsetup(&gcb, WHITE );
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 43" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "INHIBITING ALARMS FOR 242A SHUTDOWN" );
        gflush(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "EPN'S WILL BE PRINTED AT TYPER." );
        gflush(&gcb);
/*
 *      RELEASE THE CONSOLE AND DLIST REGION:
 */
        dlist.ukf = -1;
        dlist.act = 0;
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);
}                                  /*  End wrt_con1() */
```

```
/*
 *      W R T _ C O N S 2 (   )
 *
 *      Draw the General Function 43 - Display
 */
int wrt_con2( con )
int con;
{
    int    kbfd;                          /*  Key board fd          */
    int    kboutfd;                       /*  Keyboard output fd    */
    int    err;                           /*  Error code            */
    static char dlname[] = "DLISTxx";

        dlname[5 + itob ( &dlname[5], con ,10 ) ] = 0;
        if((dlrd = lnkrg(dlname)) < 0)
            {
            printf("UKF43 - DLIST LINK FAILURE %d\n",dlrd);
            unlrg(dlrd);
            exit();
            }
        if((err = ginit(&gcb, con)) < 0 )
            {
            printf("UKF43 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
            }
        dlist.act = DMUSER + UDF43;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
 *      C L E A R  the  O C M :
 */
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /*  O C M   G R A P H I C S :  */

        gsetup(&gcb,YELLOW);      /*      S C R E E N   F O R M A T    */
        cursor(&gcb,10,425);      /*  .______________________________. */
        horiz( &gcb,440,3);       /*  |   General Function  43       | */
        cursor(&gcb,447,425);     /*  |------------------------------| */
        vert(  &gcb,-165,3);      /*  |                              | */
        cursor(&gcb,449,260);     /*  |                              | */
        horiz( &gcb,-439,3);      /*  |                              | */
        cursor(&gcb,10,260);      /*  |                              | */
        vert(  &gcb,165,3);       /*  |                              | */
        cursor(&gcb,10,390);      /*  |                              | */
        horiz( &gcb,440,3);       /*  |                              | */
                                  /*  |                              | */
                                  /*  |                              | */
                                  /*  |______________________________| */

        gsetup(&gcb, WHITE );
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 43" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "GENERAL FUNCTION 43 IS COMPLETE." );
        gflush(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "RUN GENERAL FUNCTION 14." );
        gflush(&gcb);
/*
 *      RELEASE THE CONSOLE AND DLIST REGION:
 */
        dlist.ukf = -1;
        dlist.act = 0;
```

```
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);
}                                       /*  End wrt_con2) */
```

UKF44

```
/*              U K F 4 4 . C                                   VERSION 2
 *
 *
 *
 *
 *  General Function 44 - General Function 44 is to be used only on
 *                        DCM0 following GF 43 (alarm inhibiting).  GF 44
 *                        clears the alarm summary pages on DCM0.  The
 *                        alarm summary pages on the CDCM are cleared by
 *                        GF43, which spawns the mcr command file to reset
 *                        the summary pages.
 *
 *                        After GF 44 is run on DCM0, GF 14 is then run on
 *                        the CDCM to regenerate alarms.
 *
 *
 *      Written by : M. C. Teats
 *      Date       : 03-08-93
 *      Facility   : 242-A Evaporator Bldg. */
/*  Modified by: John Hayden T.I.         6.3-2 Upgrade    */
/*  Facility   : 242-A Evaporator Bldg.          */
/*  Machine    : VAX 4104-A                      */
/*  Compiler   : DEC VAX C V3.3                  JH01    */
/*  C .cmd use : SET DEF D3SOURCE::[261,10]      JH01    */
/*  C .cmd use : BLD UKF14 UKF14.C -L -MOV       JH01    */
/*  Op. System : VAX/VMS 5.5-2AH          JH01   */
/*  D/3 Version: 6.3-2   BASELINE                JH01    */
/*  #INCLUDES CHANGED                            JH01    */
/*  PARAMATERS TO FUNCTIONS CHANGED              JH01    */
/*  PRAGAMA FOR DLIST DECLARATIONS, INITIALIZE   JH01    */
/*  SLEEP NOW SECONDS INSTEAD OF TICKS           JH01    */
/*  %P NOT %S, PUTFMT-> PRINTF,%I->%D            JH01    */
/*      Run on Unit: DCM0 only
 *
 *      Build command file : @[261,10]UKF44
 *
 *
 *  MODIFICATION LOG:
 *
 *      08-MAR-93       Define program for D/3 version 3.3              M. Teats
 *
 *      05-JAN-95       Rebaselined software for upgrade of             J. Berger
 *                      D/3 software to version 6.3.
 *
 *  END OF MOD LOG
 */

#include <emcstd.h>
#include <d3sys.h>
#include <unitdb.h>
#include <dbatypes.h>
#include <grinnell.h>
#include <dbaai.h>
#include <dbadin.h>
#include <digdef.h>
#include <conkey.h>
#include <conf.h>
#include <err.h>
#include <keyequ.h>
#include <func.h>
#include <almmsg.h>

#define UDF44           44
#define DONE            1
#pragma nostandard
PUBLIC    int     dlrd    =0;             /* DLIST descriptor                    */
PUBLIC    struct dlist    dlist    =0;    /* DLIST structure                     */
PUBLIC    struct gcb      gcb      =0;    /* Struct for Grinnel Control Block    */
PUBLIC    short  con = 0;
#pragma standard
```

```
/************************
 *                      *
 *  M A I N  ( UKF44 )  *
 *                      *
 ************************/

main( )
{
    int  err,                           /*  Error code                          */

        con = gtnum();
        if( con < 0 || con > 3 )
                {
                con = 0;
                printf("\n-- UKF44 - ALARM SUMMARY PAGE CLEARING ( Invoked - Interactive Mode )\n" );
                }
        else                            /*  Else - Invoked by Gen Func 44 at console      */
                {
                printf("\n-- UKF44 - ALARM SUMMARY PAGE CLEARING Invoked from Console %d \n", con );
                wrt_console( con );
                }                       /*  End else from CONSOLE                         */
/*
 *      SPAWN RESET.CMD TO CLEAR ALARM SUMMARY PAGES ON THIS DCM
 */


/*
                        sprintf(buffer, "@d3com:pcmlod %s all", node_name);
                        exit_code = d3spawn(buffer, 1, 0);
                        if (exit_code == ER_GEN)
                            printf("Error spawning PCMLOD\n");
                        sleep(3);
                        printf("%-80s", " ");

*/

        err = d3spawn("SUBMIT D3SOURCE:[261,10]RESET.COM",1,0);

        if(err == ER_GEN)
                printf("error spawning\n");

        sleep (180);

        con = gtnum();
        if( con < 0 || con > 3 )
                {
                con = 0;
                printf("\n-- UKF44 - ALARM SUMMARY PAGE CLEARING ( Invoked - Interactive Mode )\n" );
                }
        else                            /*  Else - Invoked by Gen Func 44 at console      */
                {
                printf("\n-- UKF44 - ALARM SUMMARY PAGE CLEARING Invoked from Console %d \n", con );
                wrt_cons( con );
                }                       /*  End else from CONSOLE                         */

}

/************************
 *                      *
 *    E N D   M A I N   *
 *                      *
 ************************/


/*      W R T _ C O N S O L E (  )
 *
 *      Draw the General Function 44 - Display
 */
int wrt_console( con )
int con;
```

```
{
    int    kbfd;                          /*  Key board fd          */
    int    kboutfd;                       /*  Keyboard output fd    */
    int    err;                           /*  Error code            */
    static char dlname[] = "DLISTxx";

        dlname[5 + itob( &dlname[5], con ,10)] = 0;
        if((dlrd = lnkrg(dlname)) < 0)
            {
            printf("UKF44 - DLIST LINK FAILURE %d\n",dlrd);
            unlrg(dlrd);
            exit();
            }
        if((err = ginit(&gcb, con)) < 0 )
            {
            printf("UKF44 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
            }
        dlist.act = DMUSER + UDF44;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
 *      C L E A R  the  O C M :
 */
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /*  O C M    G R A P H I C S :  */

        gsetup(&gcb,RED);          /*      S C R E E N   F O R M A T    */
        cursor(&gcb,10,425);       /*  _____________________________ */
        horiz( &gcb,440,3);        /*  |  General Function  44     | */
        cursor(&gcb,447,425);      /*  |---------------------------| */
        vert(  &gcb,-125,3);       /*  |  Clearing Alarm Pages.    | */
        cursor(&gcb,449,300);      /*  |                           | */
        horiz( &gcb,-439,3);       /*  |  Wait for COMPLETE        | */
        cursor(&gcb,10,300);       /*  |                           | */
        vert(  &gcb,125,3);        /*  |  Then run GF 14 on CDCM.  | */
        cursor(&gcb,10,390);       /*  |___________________________| */
        horiz( &gcb,440,3);

        gsetup(&gcb, WHITE );
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 44" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "CLEARING ALARM PAGES FOR THIS UNIT." );
        gflush(&gcb);
        g_puts( &gcb, " " );
        gflush(&gcb);
        gsetup( &gcb, RED );
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "WAIT FOR COMPLETE          " );
        gflush(&gcb);
        gsetup( &gcb, GREEN );
        cursor(&gcb,HCHAR*3,VCHAR*32);
        g_puts( &gcb, "THEN RUN GENL FCTN 14 AT CDCM CONSOLE." );
        gflush(&gcb);
        gsetup(&gcb, WHITE );
        cursor(&gcb,HCHAR*72,VCHAR*29);
        g_puts( &gcb, "  " );
        gflush(&gcb);
/*
 *      RELEASE THE CONSOLE AND DLIST REGION:
 */
        dlist.ukf = -1;
```

```
        dlist.act = 0;
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);
        exit();
}                                       /*  End wrt_console() */


/*      W R T _ C O N S (   )
 *
 *      Draw the General Function 44 - Display
 */
int wrt_cons( con )
int con;
{
    int     kbfd;                       /*  Key board fd        */
    int     kboutfd;                    /*  Keyboard output fd  */
    int     err;                        /*  Error code          */
    static char dlname[] = "DLISTxx";

        dlname[5 + itob( &dlname[5], con ,10)] = 0;
        if((dlrd = lnkrg(dlname)) < 0)
            {
            printf("UKF44 - DLIST LINK FAILURE %d\n",dlrd);
            unlrg(dlrd);
            exit();
            }
        if((err = ginit(&gcb, con)) < 0 )
            {
            printf("UKF44 - CANT ACCESS GRINNELL, ERR %d\n",err );
            unlrg(dlrd);
            exit();
            }
        dlist.act = DMUSER + UDF44;
        putrg(dlrd, &dlist.act, OFFSET(dlist,act), sizeof(dlist.act) );
/*
 *      C L E A R  the  O C M :
 */
        gsetup(&gcb,BLACK);
        erase(&gcb);
        gflush(&gcb);

        /*  O C M   G R A P H I C S :  */

        gsetup(&gcb,RED);           /*      S C R E E N   F O R M A T   */
        cursor(&gcb,10,425);        /*  .__________________________. */
        horiz( &gcb,440,3);         /*  |  General Function  44    | */
        cursor(&gcb,447,425);       /*  |--------------------------| */
        vert(  &gcb,-125,3);        /*  |  COMPLETE  COMPLETE      | */
        cursor(&gcb,449,300);       /*  |                          | */
        horiz( &gcb,-439,3);        /*  |  COMPLETE  COMPLETE      | */
        cursor(&gcb,10,300);        /*  |                          | */
        vert(  &gcb,125,3);         /*  |  Now  run GF 14 on CDCM. | */
        cursor(&gcb,10,390);        /*  |__________________________| */
        horiz( &gcb,440,3);

        gsetup(&gcb, WHITE );
        dublchar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*40);
        g_puts( &gcb, "GENERAL FUNCTION 44" );
        gflush(&gcb);
        gsetup( &gcb, YELLOW );
        widechar(&gcb);
        cursor(&gcb,HCHAR*3,VCHAR*36);
        g_puts( &gcb, "COMPLETE  COMPLETE " );
        gflush(&gcb);
        g_puts( &gcb, " " );
        gflush(&gcb);
        gsetup( &gcb, RED );
```

```
        cursor(&gcb,HCHAR*3,VCHAR*34);
        g_puts( &gcb, "COMPLETE  COMPLETE " );
        gflush(&gcb);
        gsetup( &gcb, GREEN );
        cursor(&gcb,HCHAR*3,VCHAR*32);
        g_puts( &gcb, "NOW RUN GENL FCTN 14 AT CDCM CONSOLE." );
        gflush(&gcb);
        gsetup(&gcb, WHITE );
        cursor(&gcb,HCHAR*72,VCHAR*29);
        g_puts( &gcb, "  " );
        gflush(&gcb);
/*
 *      RELEASE THE CONSOLE AND DLIST REGION:
 */
        dlist.ukf = -1;
        dlist.act = 0;
        putrg(dlrd,&dlist.ukf,OFFSET(dlist,ukf),sizeof(dlist.ukf));
        putrg(dlrd,&dlist.act,OFFSET(dlist,act),sizeof(dlist.act));
        unlrg( dlrd );
        return(1);
        exit();
}                                       /*  End wrt_cons() */
```

APPENDIX G - STRING PACKET LISTING

Listing of string.out Created using SED from CDCM D3DATA:[100010]STRING.BIN

```
247
        [0]
<0>
<1> ¦ALARM (UP)
<2>      ALARM
<3> ¦ALARM (UP)
<4>      ALARM
<5> ¦ALARM (UP)
<6>      ALARM

        [1]
<0>
<1> ¦LOW FLOW
<2>  LOW FLOW
<3>  LOW FLOW
<4>  LOW FLOW
<5>  LOW FLOW
<6>  LOW FLOW

        [2]
<0>
<1> ¦50 LB INSTRUMENT AIR LOW
<2>  50 LB INSTRUMENT AIR LOW
<3>  50 LB INSTRUMENT AIR LOW
<4>  50 LB INSTRUMENT AIR LOW
<5>  50 LB INSTRUMENT AIR LOW
<6>         ALARM

        [3]
<0>
<1> ¦ERROR
<2>  ERROR
<3>  ERROR
<4>  ERROR
<5>  ERROR
<6>  ALARM

        [4]
<0>
<1> ¦LOW
<2>  LOW
<3>  LOW
<4>  LOW
<5>  LOW
<6>  LOW

        [5]
<0>
<1> ¦ANNULUS EXH RAD HI/FAIL
<2>  ANNULUS EXH RAD HI/FAIL
<3>  ANN EXH RAD HI/FAIL INHA
<4> ¦ANN EXH RAD HI/FAIL OSCN
<5>  ANN EXH RAD HI/FAIL IBAD

        [6]
<0>
<1> ¦LEAK PIT RAD HI/FAIL
<2>  LEAK PIT RAD HI/FAIL
<3>  L-PIT RAD HI/FL INHA
<4> ¦L-PIT RAD HI/FL OSCN
<5>  L-PIT RAD HI/FL IBAD

        [7]
<0>
<1> ¦ALARM
<2>  ALARM
<3> ¦ALARM
<4>  ALARM
<5> ¦ALARM
<6> ALARM

        [8]
<0>
<1> ¦SERVICE PIT RAD HI/FAIL
<2>  SERVICE PIT RAD HI/FAIL
<3>  SERPIT RAD DET INHA
<4> ¦SER PIT RAD DET OSCN
<5>  SER PIT RAD DET IBAD

        [9]
<0>
<1> ¦SERVICE PIT LEAK
<2>  SERVICE PIT LEAK
<3>  SERPIT LEAK INHA
<4> ¦SERPIT LEAK OSCN
<5>  SERPIT LEAK IBAD

        [10]
<0>
<1> ¦PROCESS PITS LEAK
<2>  PROCESS PITS LEAK
<3>  PRO PIT LEAK INHA
<4> ¦PRO PIT LEAK OSCN
<5>  PRO PIT LEAK IBAD

        [11]
<0>
<1> ¦SL-160 SL-168 LEAK
<2>  SL-160 SL-168 LEAK
<3>  SL-160 SL-168 INHA
<4> ¦SL160/168 OFF SCAN
<5> SL160/168 BAD INPUT

        [12]
<0>
<1> ¦SN-260 SN-268 LEAK
<2>  SN-260 SN-268 LEAK
<3>  SN260/268 INHA
<4> ¦SN-260/268 OSCN
<5> SN260/268 BAD INPUT

        [13]
<0>
<1> ¦CLEANOUT BOX LEAK
<2>  CLEANOUT BOX LEAK
<3>  COB LEAK INHA
<4> ¦COM LEAK DIS
<5>  COB LEAK IBAD
```

[14]
<0>
<1> ¦SN FLUSH LINE PRESSURE HI
<2> SN FLUSH LINE PRESSURE HI
<3> SN FLUSH LINE PRES INHA
<4> ¦SN FLUSH LINE PRESS DIS
<5> SN FLUSH LINE PRESSURE IBAD

[15]
<0>
<1> ¦AN DR-368 ENCASE LEAK
<2> AN DR-368 ENCASE LEAK
<3> AN368 ENCASE INHA
<4> ¦AN368 ENCASE DIS
<5> AN368 ENCASE BAD INPUT

[16]
<0> 271 BUILDING POWER NORM
<1> ¦271 BUILDING POWER LOSS
<2> 271 BUILDING POWER LOSS
<3> BLD POWER LOSS ALM INHA
<4> ¦BLD POWER LOSS DIS
<5> BLD POW LOSS BAD INPUT

[17]
<0> 271 BUILDING RADIATION NORMAL
<1> ¦271 BUILDING RADIATION HI/FAIL
<2> 271 BUILDING RADIATION HI/FAIL
<3> 271 BUILDING RADIATION INHA
<4> ¦271 BUILDING RADIATION DIS
<5> BLD RAD ALARM BAD INPUT

[18]
<0> 241 AREA RADIATION NORMAL
<1> ¦241 AREA RADIATION HI/FAIL
<2> 241 RADIATION HI/FAIL
<3> 241 RAD HI/FAIL INHA
<4> ¦241 RAD HI/FAIL DIS
<5> 241 RAD HI/FAIL BAD INPUT

[19]
<0> GENERAL ALARM OFF
<1> ¦GENERAL ALARM ON
<2> GENERAL ALARM ON
<3> GENERAL ALM INHA
<4> ¦GENERAL ALM DIS
<5> GENERAL ALM IBAD

[20]
<0> RADIATION BYPASS OFF
<1> ¦AREA RADIATION BYPASS
<2> AREA RADIATION BYPASS
<3> AREA RAD BYPASS INHA
<4> ¦AREA RAD BYPASS DIS
<5> AREA RAD BYPASS IBAD

[21]
<0> MASTER SHUTDOWN OFF
<1> ¦FARM MASTER SHUTDOWN
<2> FARM MASTER SHUTDOWN
<3> MSTR SHUTDOWN INHA
<4> ¦MSTR SHUTDOWN DIS
<5> MSTR SHUTDN BAD INPUT

[22]
<0>
<1> ¦TANK EXH RAD HI
<2> TANK EXH RAD HI
<3> TANK EXHRD INHA
<4> ¦TANK EXHRD DIS
<5> TANK EXHRD IBAD

[23]
<0> STACK MONITOR SAMPLE PUMP ON
<1> ¦STACK MONITOR SAMPLE PUMP OFF
<2> STACK MONITOR SAMPLE PUMP OFF
<3> STACK MONITOR SAMPLE PMP INHA
<4> ¦STACK MONITOR SAMPLE PMP DIS
<5> STACK MONITOR SAMPLE PMP IBAD

[24]
<0> RECORD SAMPLE PUMP ON
<1> ¦RECORD SAMPLE PUMP OFF
<2> RECORD SAMPLE PUMP OFF
<3> RECORD SAMPLE PMP INHA
<4> ¦RECORD SAMPLE PMP DIS
<5> RECORD SAMPLE PMP IBAD

[25]
<0>
<1> ¦TANK EXH RAD MON FAIL
<2> TANK EXH RAD MON FAIL
<3> TANK EXH RAD MON INHA
<4> ¦TANK EXH RAD MON DIS
<5> TANK EXH RAD MON IBAD

[26]
<0> TANK EXH FANS ON
<1> ¦TANK EXH FANS OFF
<2> TANK EXH FANS OFF
<3> TANK EXH FAN INHA
<4> ¦TANK EXH FAN DIS
<5> TANK EXH FAN IBAD

[27]
<0> ANN EXH RAD HI/FAIL FAN NORM
<1> ¦ANN EXH RAD HI/FAIL FAN FAIL
<2> ANN EXH RAD HI/FAIL FAN FAIL
<3> ANN EXH RAD/FAN HI/FAIL INHA
<4> ¦ANN EXH RAD/FAN HI/FAIL DIS
<5> ANN EXH RAD/FAN HI/FAIL IBAD

[28]
<0> ANNULUS EXHAUST RADIATION MONITOR NORMAL
<1> ¦ANNULUS EXHAUST RADIATION MONITOR FAILURE
<2> ANNULUS EXHAUST RADIATION MONITOR FAILURE
<3> ANN EXHAUST RAD MONITOR FAILURE INHA
<4> ¦ANN EXHAUST RAD MONITOR FAILURE DIS
<5> ANN EXHAUST RAD MONITOR FAILURE BAD INPUT

[29]
<0> ANNULUS EXH RADIATION OK
<1> ¦ANNULUS EXH RADIATION HI
<2> ANNULUS EXH RADIATION HI
<3> ¦ANN EXH RAD MON FAILURE
<4> ANN EXH RAD MON FAILURE
<5> ANN EXH RAD MON INHIBIT
<6> ANN EXH RAD MON OFF SCAN
<7> ANN EXH RAD MON BAD INPT

[30]
<0>
<1> ¦LEAK PIT RADIATION HI
<2> LEAK PIT RADIATION HI
<3> LEAK PIT RAD MON INHA
<4> LEAK PIT RAD OFF SCAN
<5> LEAK PIT RAD BAD INPT
<6>
<7>

[31]
<0> DRAIN PIT LEAK
<1> ¦DRAIN PIT LEAK
<2> DRAIN PIT LEAK
<3> DRN PIT LK INHA
<4> ¦DRN PIT LK DIS
<5> D PIT LK BD IPT

[32]
<0> SERVICE PIT MONITOR NORMAL
<1> ¦SERVICE PIT MONITOR FAILURE
<2> SERVICE PIT MONITOR FAILURE
<3> SERVICE PIT MONITOR INHA
<4> ¦SERPIT MON FAILURE DIS
<5> SER PIT MON FAIL BAD INPUT

[33]
<0> RADIATION MONITOR NORMAL
<1> ¦RADIATION MONITOR FAILURE
<2> RADIATION MONITOR FAILURE
<3> RAD MON FAIL ALM INHIBIT
<4> RAD MON FAIL OFF SCAN
<5> RAD MON FAIL BAD INPUT

[34]
<0>
<1> ¦RADIATION HIGH
<2> RADIATION HIGH
<3> RADIATION HIGH
<4> RADIATION HIGH
<5> RADIATION HIGH

[35]
<0> SL-509/SL-510

[36]
<0>
<1> ¦SL-509/SL-510 LEAK DETECTED
<2> SL-509/SL-510 LEAK DETECTED
<3> SL-509/SL-510 LEAK DET INHA
<4> SL-509/SL-510 LEAK DET OSCN
<5> SL-509/SL-510 LEAK DET IBAD

[37]
<0>
<1> ¦SN-609/SN-610 LEAK DETECTED
<2> SN-609/SN-610 LEAK DETECTED
<3> SN-609/SN-610 LEAK DET INHA
<4> SN-609/SN-610 LEAK DET OSCN
<5> SN-609/SN-610 LEAK DET IBAD

[38]
<0>
<1> ¦SN-621 LEAK DETECTED
<2> SN-621 LEAK DETECTED
<3> SN-612 LEAK DET INHA
<4> SN-621 LEAK DET OSCN
<5> SN-621 LEAK DET IBAD

[39]
<0>
<1> ¦SN-650 ENCASEMENT LEAK DETECTED
<2> SN-650 ENCASEMENT LEAK DETECTED
<3> SN-650 ENCASEMENT LEAK DET INHA
<4> SN-650 ENCASEMENT LEAK DET OSCN
<5> SN-650 ENCASEMENT LEAK DET IBAD

[40]
<0> NORMAL
<1> ¦FLOW
<2> FLOW
<3> INHA
<4> OSCN
<5> IBAD

[41]
<0>
<1> ¦FLOW DETECTED
<2> FLOW DETECTED
<3> FLOW DET INHA
<4> FLOW DET OSCN
<5> FLOW DET IBAD

[42]
<0> CLOSED
<1> ¦OPEN
<2> OPEN
<3> INHA
<4> OSCN
<5> IBAD

[43]
<0>
<1> ¦HIGH PRESSURE
<2> HIGH PRESSURE
<3> PSH-APFL1 INHA
<4> PSH-APFL1 OSCN
<5> PSH-APFL1 IBAD

[44]
<0>
<1> ¦SHUTDOWN
<2> SHUTDOWN
<3>
<4>

[45]
<0>
<1> ¦LEAK DETECTED
<2> LEAK DETECTED
<3> LEAK DET INHA
<4> ¦LEAK DET DIS
<5> LEAK DET IBAD

[46]
<0> ANN EXHAUST FANS ON
<1> ¦ANN EXHAUST FANS OFF
<2> ANN EXHAUST FANS OFF
<3> ANN EXH FANS INHIBIT
<4> ANN EXH FANS OFF SCAN
<5> ANN EXH FANS BAD INPUT

[47]
<0> MONITOR SAMPLE FLO NORM
<1> ¦MONITOR SAMPLE LOW FLOW
<2> MONITOR SAMPLE LOW FLOW
<3> MON SMPL LOW FLOW INHA
<4> MON SMPL LOW FLOW OSCN
<5> MON SMPL LOW FLOW IBAD

[48]
<0> EXHAUST RADIATION NORM
<1> ¦EXHAUST RADIATION HIGH
<2> EXHAUST RADIATION HIGH
<3> EXH RAD ALARM INHIBITED
<4> EXH RAD ALARM OFF SCAN
<5> EXH RAD ALARM BAD INPUT

[49]
<0> RADIATION MONITOR NORMAL
<1> ¦RADIATION MONITOR FAILED
<2> RADIATION MONITOR FAILED
<3> RAD MON FAIL ALM INHIBIT
<4> RAD MON FAIL ALARM OSCN
<5> RAD MON FAIL ALARM IBAD

[50]
<0> RECORD SAMPLE FLO NORM
<1> ¦RECORD SAMPLE LOW NORM
<2> RECORD SAMPLE LOW FLOW
<3> REC SAMPLE ALM INHIBIT
<4> REC SAMPLE ALARM OSCN
<5> REC SAMPLE ALARM IBAD

[51]
<0> STACK FLO NORM
<1> ¦STACK FLOW LOW
<2> STACK FLOW LOW
<3> STACK FLOW LOW
<4> STACK FLOW LOW
<5> STACK FLOW LOW

[52]
<0> SEAL-POT PIT NORMAL
<1> ¦SEAL POT PIT LEAK
<2> SEAL POT PIT LEAK
<3> SEAL POT PIT LEAK ALARM INHA
<4> SEAL POT PIT LEAK ALARM OSCN
<5> SEAL POT PIT LEAK ALARM IBAD

[53]
<0>
<1> ¦FLOW DETECT FAILED
<2> FLOW DETECT FAILED
<3> FLOW DET FAIL INHA
<4> FLOW DET FAIL OSCN
<5> FLOW DET FAIL IBAD
<6>

[54]
<0>
<1> ¦FAILURE
<2> FAILURE
<3> INHIBIT
<4> OFF SCN
<5> BAD INP

[55]
<0> ENCASEMENT
<1> ¦ENCASEMENT
<2> ENCASEMENT
<3> ENCASEMENT
<4> ENCASEMENT
<5> ENCASEMENT

[56]
<0>
<1> ¦LEAK
<2> LEAK
<3> INHA
<4> OSCN
<5> IBAD

[57]
<0>
<1> ¦VALVE PIT LEAK
<2> VALVE PIT LEAK
<3> VALVE PIT INHA
<4> VALVE PIT OSCN
<5> VALVE PIT IBAD

[58]

```
<0> OFF>
<1> ON > ¦HI
<2>  ¦LO
<3>  ¦HIHI
<4>  ¦LOLO
<5>  ¦ROC
<6>  ¦LOOP
<7>  ¦DEV
<8>  ¦OBAD
<9>  ¦RANGE
<10>  ¦OVER
<11>  ¦OC
<12>  ¦IBAD
<13>  ¦UNDR
<14>  ¦TMR
<15>  ¦CNTR
<16>  HI
<17>  LO
<18>  HIHI
<19>  LOLO
<20>  ROC
<21>  LOOP
<22>  DEV
<23>  OBAD
<24>  RANG
<25>  OVER
```

[59]

```
<0>  HIGH TEMPERATURE
<1> ¦HIGH TEMPERATURE
<2>  HIGH TEMPERATURE
<3>  HI TEMP DET INHA
<4>  HI TEMP DET OSCN
<5>  HI TEMP DET IBAD
```

[60]

```
<0>
<1> ¦MOTOR HOUSING LEAK
<2>  MOTOR HOUSING LEAK
<3>  MOTOR LEAK INHA
<4>  MOTOR LEAK OSCN
<5>  MOTOR LEAK IBAD
```

[61]

```
<0>
<1> ¦HIGH VIBRATION
<2>  HIGH VIBRATION
<3> HI VIB DET INHA
<4> HI VIB DET OSCN
<5> HI VIB DET IBAD
```

[62]

```
<0>
<1> ¦EXCESSIVE SHAFT STRAIN
<2>  EXCESSIVE SHAFT STRAIN
<3>  EXCESS SHAFT STRN INHA
<4>  EXCESS SHAFT STRN OSCN
<5>  EXCESS SHAFT STRN IBAD
```

[63]

```
<0>
<1> ¦DISCHARGE PRESS LOW
<2>  DISCHARGE PRESS LOW
<3>  DIS PRES LOW INHA
<4> DIS PRES LOW OSCN
<5> DIS PRES LOW IBAD
```

[64]

```
<0>
<1> ¦DISCHARGE PRESS HIGH
<2>  DISCHARGE PRESS HIGH
<3>  DIS PRESS HIGH INHA
<4>  DIS PRESS HIGH OSCN
<5>  DIS PRESS HIGH IBAD
```

[65]

```
<0>
<1> ¦HIGH TEMPERATURE
<2>  HIGH TEMPERATURE
<3>  HI TEMP ALM INHA
<4>  HI TEMP ALM OSCN
<5>  HI TEMP ALM IBAD
```

[66]

```
<0>
<1> ¦RADN HIGH/FAIL
<2>  RADN HIGH/FAIL
<3>  RAD HI/FA INHA
<4>  RAD HI/FA OSCN
<5>  RAD HI/FA IBAD
```

[67]

```
<0>
<1> ¦ANNULUS EXHAUST
<2>  ANNULUS EXHAUST
<3>  ANNULUS EXHAUST
<4>  ANNULUS EXHAUST
<5>  ANNULUS EXHAUST
```

[68]

```
<0>
<1> ¦LEAK PIT
<2>  LEAK PIT
<3>  LEAK PIT
<4>  LEAK PIT
<5>  LEAK PIT
<6>
```

[69]

```
<0>
<1> ¦ALARM (UP)
<2>  ALARM
<3> ¦ALARM (UP)
<4>  ALARM
<5> ¦ALARM (UP)
<6>  ALARM
<7>
<8>
<9>
<10>
<11>
```

[70]

```
<0>
<1> ¦ALARM (DN)
<2>  ALARM
<3> ¦ALARM (DN)
<4>  ALARM
<5> ¦ALARM (DN)
<6>  ALARM
<7>
<8>
<9>
<10>
<11>
```

[71]

```
<0>
<1> ¦INTERLOCK
<2>  INTERLOCK
<3>  INTERLOCK
<4>  INTERLOCK
<5>
<6>
<7>
```

[72]

```
<0>  LEAK DETECTION ALARM
<1> ¦LEAK DETECTION ALARM
<2>  LEAK DETECTION ALARM
<3> LEAK DETECT INHIBITED
<4> LEAK DETECT OFF SCAN
<5> LEAK DETECT BAD INPUT
<6>
<7>
```

[73]

```
<0>  SEAL POT HI ALM NORM
<1> ¦SEAL POT HI ALM FAIL
<2>  SEAL POT HI ALM FAIL
<3>  SEAL POT HI ALM INHA
<4>  SEAL POT HI ALM OSCN
<5>  SEAL POT HI ALM IBAD
<6>
<7>
```

[74]

```
<0>  SEAL POT ALARM  NORM
<1> ¦SEAL POT  HIGH ALARM
<2>  SEAL POT  HIGH ALARM
<3>  SEAL POT HI ALM INHA
<4>  SEAL POT HI ALM OSCN
<5>  SEAL POT HI ALM IBAD
<6>
<7>
```

[75]

```
<0>  SEAL POT LOW ALM  NORM
<1> ¦SEAL POT LOW LEVEL ALM
<2>  SEAL POT LOW LEVEL ALM
<3>  SEAL POT LOW ALM INHA
<4>  SEAL POT LOW ALM  OSCN
<5>  SEAL POT LOW ALM  IBAD
<6>
<7>
```

[76]

```
<0>      NORMAL
<1> ¦GENERAL ALARM
<2>  GENERAL ALARM
<3> GEN ALARM INHA
<4> GEN ALARM OSCN
<5> GEN ALARM IBAD
<6>
<7>
```

[77]

```
<0>  RADIATION NORM
<1> ¦RADIATION HIGH
<2>  RADIATION HIGH
<3> RAD DETECT INHA
<4> RAD DETECT OSCN
<5> RAD DETECT IBAD
<6>
<7>
```

[78]

```
<0>
<1> ¦LOLO
<2>  LOLO
<3> ¦LO
<4>  LO
<5> ¦HI
<6>  HI
<7> ¦HIHI
<8>  HIHI
<9>  INHA
<10> OVER
<11> OC
<12> IBAD
<13> UNDR
<14> TMR
<15> CNTR
<16> ¦HI
<17> ¦LO
<18> ¦HIHI
<19> ¦LOLO
<20> ¦ROC
<21> ¦LOOP
<22> ¦DEV
<23> ¦OBAD
<24> ¦RANG
<25> ¦OVER
<26> ¦OC
<27> ¦IBAD
<28> ¦UNDR
<29> ¦TMR
<30> ¦CNTR
<31>
<32>
```

[79]

```
<0>  LIFT STATION LEAK
<1> ¦LIFT STATION LEAK
<2>  LIFT STATION LEAK
<3>  LEAK DET INHIBIT
<4>  LEAK DET OFFSCAN
<5>  LEAK DET BADINPUT
<6>
<7>
```

[80]
<0> DIVERSION BOX LEAK
<1> ¦DIVERSION BOX LEAK
<2> DIVERSION BOX LEAK
<3> DIV BOX LEAK INHA
<4> DIV BOX LEAK OSCN
<5> DIV BOX LEAK IBAD
<6>
<7>

[81]
<0> VALVE LEAK
<1> ¦VALVE LEAK
<2> VALVE LEAK
<3> VLVLK INHA
<4> VLVLK OSCN
<5> VLVLK IBAD
<6>
<7>

[82]
<0>
<1> ¦HI PRESSURE
<2> HI PRESSURE
<3> HI PRES INHA
<4> HI PRES OSCN
<5> HI PRES IBAD
<6>
<7>

[83]
<0> HEAT TRACE TEMPERATURE NORM
<1> ¦HEAT TRACE OVERTEMPERATURE
<2> HEAT TRACE OVERTEMPERATURE
<3> HEAT TRACE TEMP MON INHIBIT
<4> HEAT TRACE TEMP MON OFFSCAN
<5> HEAT TRACE TEMP MON IBAD
<6>
<7>

[84]
<0> 241 AREA RADIATION NORM
<1> ¦241 AREA RADIATION HIGH
<2> 241 AREA RADIATION HIGH
<3> 241 AREA RAD MONIT INHA
<4> 241 AREA RAD MONIT OSCN
<5> 241 AREA RAD MONIT IBAD
<6>
<7>

[85]
<0> 271 BUILDING RADIATION NORM
<1> ¦271 BUILDING RADIATION HIGH
<2> 271 BUILDING RADIATION HIGH
<3> 271 BLDG RADIATION INHIBIT
<4> 271 BLDG RADIATION OFF SCAN
<5> 271 BLDG RADIATION BAD INPT
<6>
<7>

[86]
<0> CENTRAL PUMP PIT NORM
<1> ¦CENTRAL PUMP PIT LEAK
<2> CENTRAL PUMP PIT LEAK
<3> CENTRAL PUMP PIT INHA
<4> CENTRAL PUMP PIT OSCN
<5> CENTRAL PUMP PIT IBAD
<6>
<7>

[87]
<0>
<1> ¦PUMP PIT LEAK
<2> PUMP PIT LEAK
<3> LEAK DET INHA
<4> LEAK DET OSCN
<5> LEAK DET IBAD
<6>
<7>

[88]
<0> 271 CAM FLOW NORM
<1> ¦271 CAM FLOW LOW
<2> 271 CAM FLOW LOW
<3> 271 CAM FLOW INHA
<4> 271 CAM FLOW OSCN
<5> 271 CAM FLOW IBAD
<6>
<7>

[89]
<0> ANNULUS PUMP PIT NORM
<1> ¦ANNULUS PUMP PIT LEAK
<2> ANNULUS PUMP PIT LEAK
<3> ANNULUS PUMP PIT INHA
<4> ANNULUS PUMP PIT OSCN
<5> ANNULUS PUMP PIT IBAD
<6>
<7>

[90]
<0> ANNUNCIATOR POWER NORM
<1> ¦ANNUNCIATOR POWER LOSS
<2> ANNUNCIATOR POWER LOSS
<3> ANNUNCIATOR POWER INHA
<4> ANNUNCIATOR POWER OSCN
<5> ANNUNCIATOR POWER IBAD
<6>
<7>

[91]
<0> BUILDING RADIATION MONITOR NORM
<1> ¦BUILDING RADIATION MONITOR FAIL
<2> BUILDING RADIATION MONITOR FAIL
<3> BUILDING RADIATION MONITOR INHA
<4> BUILDING RADIATION MONITOR OSCN
<5> BUILDING RADIATION MONITOR IBAD
<6>
<7>

```
        [92]
<0>  241 AREA RADIATION MONITOR NORM
<1> ¦241 AREA RADIATION MONITOR FAIL
<2>  241 AREA RADIATION MONITOR FAIL
<3>  241 AREA RADIATION MONITOR INHA
<4>  241 AREA RADIATION MONITOR OSCN
<5>  241 AREA RADIATION MONITOR IBAD
<6>
<7>

        [93]
<0>
<1> ¦WF HIGH
<2>  WF HIGH
<3>  WF HIGH
<4>  WF HIGH
<5>  WF HIGH
<6>
<7>

        [94]
<0>
<1> ¦DE-ENTRAINMENT
<2>  DE-ENTRAINMENT
<3> ¦  LOWER PAD
<4>    LOWER PAD
<5> ¦HIGH DELTA P
<6>  HIGH DELTA P
<7> ¦HIGH DELTA P
<8>

        [95]
<0> M
<1> A
<2>
<3>
<4>
<5>
<6>
<7>
<8>

        [96]
<0>
<1> ¦REBOILER 10 LB STEAM PRESSURE LOW
<2>  REBOILER 10 LB STEAM PRESSURE LOW
<3>
<4>
<5>
<6>
<7>

        [97]
<0> O
<1> C
<2>
<3>
<4>
<5>
<6>
<7>

        [98]
<0>  DESUPERHEATER OUTLET TEMPERATURE HIGH
<1> ¦DESUPERHEATER OUTLET TEMPERATURE HIGH
<2>  DESUPERHEATER OUTLET TEMPERATURE HIGH
<3>
<4>
<5>
<6>
<7>

        [99]
<0>  OPEN
<1> ¦CLOSED
<2>  CLOSED
<3>  INHA
<4>  OSCN
<5>  IBAD
<6>
<7>

        [100]
<0>
<1> ¦SHUTDOWN
<2>
<3>
<4>
<5>
<6>
<7>

        [101]
<0>
<1> ¦FAILED
<2>  FAILED
<3>  INHA
<4>  OSCN
<5>  IBAD
<6>
<7>

        [102]
<0>
<1> ¦RADN HI
<2>  RADN HI
<3>  INHA
<4>  OSCN
<5>  IBAD
<6>
<7>

        [103]
<0>
<1> ¦ANN EXH RAD HIGH
<2>  ANN EXH RAD HIGH
<3>  ANN EXH RAD INHA
<4>  ANN EXH RAD OSCN
<5>  ANN EXH RAD IBAD
<6>
<7>
```

[104]

```
<0>
<1> ¦ANN EXH RAD FAIL
<2>  ANN EXH RAD FAIL
<3>  ANN EXH RAD INHA
<4>  ANN EXH RAD OSCN
<5>  ANN EXH RAD IBAD
<6>
<7>
```

[105]

```
<0>
<1> ¦LEAK PIT RAD MON FAIL
<2>  LEAK PIT RAD MON FAIL
<3>  LEAK PIT RAD MON INHA
<4>  LEAK PIT RAD MON OSCN
<5>  LEAK PIT RAD MON IBAD
<6>
<7>
```

[106]

```
<0>  LEAK DETECT PUMP PIT LEAK
<1> ¦LEAK DETECT PUMP PIT LEAK
<2>  LEAK DETECT PUMP PIT LEAK
<3> LEAK DET PMP PIT LEAK INHA
<4> LEAK DET PMP PIT LEAK OSCN
<5> LEAK DET PMP PIT LEAK IBAD
<6>
<7>
```

[107]

```
<0> BYPASS OFF
<1> ¦BYPASS ON
<2>  BYPASS ON
<3>  BYPASS ON
<4>  BYPASS ON
<5>  BYPASS
<6>
<7>
```

[108]

```
<0>
<1> ¦ALARM
<2>  ACKWD
<3>
<4>
<5>
<6>
<7>
```

[109]

```
<0>
<1> ¦ALARM (PG)
<2>  ALARM
<3>
<4>
<5>
<6>
<7>
```

[110]

```
<0>
<1> ¦ALARM (LT)
<2>  ALARM
<3>
<4>
<5>
<6>
<7>
```

[111]

```
<0>
<1> ¦ALARM (RT)
<2>  ALARM
<3>
<4>
<5>
<6>
<7>
```

[112]

```
<0>  EXCESS VACUUM ALM NORM
<1> ¦TANKS EXCESS VACUUM ALM
<2>  TANKS EXCESS VACUUM ALM
<3>  TANKS EXCS VAC ALM INHA
<4>  TANKS EXCS VAC ALM OSCN
<5>  TANKS EXCS VAC ALM IBAD
<6>
<7>
```

[113]

```
<0>  VACUUM LOSS ALM NORMAL
<1> ¦TANKS VACUUM LOSS ALARM
<2>  TANKS VACUUM LOSS ALARM
<3>  TANKS VAC LOSS ALM INHA
<4> TANKS VACU LOSS ALM OSCN
<5> TANKS VACU LOSS ALM IBAD
<6>
<7>
```

[114]

```
<0>
<1> ¦TL-021 LINE LEAK
<2>  TL-021 LINE LEAK
<3>  TL-021 LEAK INHA
<4>  TL-021 LEAK OSCN
<5>  TL-021 LEAK IBAD
<6>
<7>
```

[115]

```
<0>
<1> ¦AW CIRCUIT TROUBLE/LEAK
<2>  AW CIRCUIT TROUBLE/LEAK
<3>  AW CIRCUIT TROUBL INHA
<4>  AW CIRCUIT TROUBL OSCN
<5>  AW CIRCUIT TROUBL IBAD
<6>
<7>
```

[116]
<0>
<1> DRAIN ENCASEMENT LEAK
<2> DRAIN ENCASEMENT LEAK
<3> DRAIN ENCASE LK INHA
<4> DRAIN ENCASE LK OSCN
<5> DRAIN ENCASE LK IBAD
<6>
<7>

[117]
<0>
<1> SLURRY ENCASEMENT LEAK
<2> SLURRY ENCASEMENT LEAK
<3> SLURRY ENCASE LK INHA
<4> SLURRY ENCASE LK OSCN
<5> SLURRY ENCASE LK IBAD
<6>
<7>

[118]
<0>
<1> SUPERNATE ENCASEMENT LEAK
<2> SUPERNATE ENCASEMENT LEAK
<3> SUPERNATE ENCASE LK INHA
<4> SUPERNATE ENCASE LK OSCN
<5> SUPERNATE ENCASE LK IBAD
<6>
<7>

[119]
<0>
<1> SN-269 LINE LEAK
<2> SN-269 LINE LEAK
<3> SN-269 LINE INHA
<4> SN-269 LINE OSCN
<5> SN-269 LINE IBAD
<6>
<7>

[120]
<0>
<1> SN-270 LINE LEAK
<2> SN-270 LINE LEAK
<3> SN-270 LINE INHA
<4> SN-270 LINE OSCN
<5> SN-270 LINE IBAD
<6>
<7>

[121]
<0>
<1> SN-FLUSH LINE PRESSURE HI
<2> SN-FLUSH LINE PRESSURE HI
<3> SN-FLUSH LINE PRESS INHA
<4> SN-FLUSH LINE PRESS OSCN
<5> SN-FLUSH LINE PRESS IBAD
<6>
<7>

[122]
<0>
<1> FEEDLINE PRESSURE HI
<2> FEEDLINE PRESSURE HI
<3> FEEDLINE PRESS INHA
<4> FEEDLINE PRESS OSCN
<5> FEEDLINE PRESS IBAD
<6>
<7>

[123]
<0> CLEANOUT BOX NORM
<1> CLEANOUT BOX LEAK
<2> CLEAKOUT BOX LEAK
<3> CLEANOUT BOX INHA
<4> CLEANOUT BOX OSCN
<5> CLEANOUT BOX IBAD
<6>
<7>

[124]
<0> RADIATION NORMAL
<1> RADIATION HI/FAIL
<2> RADIATION HI/FAIL
<3> RAD HI/FAIL INHA
<4> RAD HI/FAIL OSCN
<5> RAD HI/FAIL IBAD
<6>
<7>

[125]
<0> CLEANOUT BOX NORM
<1> CLEANOUT BOX LEAK
<2> CLEANOUT BOX LEAK
<3> CLEANOUT BOX INHA
<4> CLEANOUT BOX OSCN
<5> CLEANOUT BOX IBAD
<6>
<7>

[126]
<0>
<1> MCC OFF
<2> MCC OFF
<3> MCC INHA
<4> MCC OSCN
<5> MCC IBAD
<6>
<7>

[127]
<0> ANN EXH RAD HI/FAIL NORM
<1> ANN EXH RAD HI/FAIL FAIL
<2> ANN EXH RAD HI/FAIL FAIL
<3> ANN EXH RAD HI/FAIL INHA
<4> ANN EXH RAD HI/FAIL OSCN
<5> ANN EXH RAD HI/FAIL IBAD
<6>
<7>

[128]

```
<0>
<1> ¦TANK EXH FANS OFF
<2>  TANK EXH FANS OFF
<3>  TANK EXH FAN INHA
<4>  TANK EXH FAN OSCN
<5>  TANK EXH FAN IBAD
<6>
<7>
```

[129]

```
<0>
<1> ¦AX-B SL-100 LINE LEAK
<2>  AX-B SL-100 LINE LEAK
<3>  AX-B SL-100 LINE INHA
<4>  AX-B SL-100 LINE OSCN
<5>  AX-B SL-100 LINE IBAD
<6>
<7>
```

[130]

```
<0>
<1> ¦AX-B SN-200 SN-213 LINE LEAK
<2>  AX-B SN-200 SN-213 LINE LEAK
<3>  AX-B SN-200 SN-213 LEAK INHA
<4>  AX-B SN-200 SN-213 LEAK OSCN
<5>  AX-B SN-200 SN-213 LEAK IBAD
<6>
<7>
```

[131]

```
<0>
<1> ¦AX-A SN-201 SN-214 LINE LEAK
<2>  AX-A SN-201 SN-214 LINE LEAK
<3>  AX-A SN-201 SN-214 LEAK INHA
<4>  AX-A SN-201 SN-214 LEAK OSCN
<5>  AX-A SN-201 SN-214 LEAK IBAD
<6>
<7>
```

[132]

```
<0>
<1> ¦AX-A SL-101 LEAK
<2>  AX-A SL-101 LEAK
<3>  AX-A SL-101 INHA
<4>  AX-A SL-101 OSCN
<5>  AX-A SL-101 IBAD
<6>
<7>
```

[133]

```
<0>
<1> ¦A-B SL-113 LEAK
<2>  A-B SL-113 LEAK
<3>  A-B SL-113 INHA
<4> ¦A-B SL-113 OSCN
<5>  A-B SL-113 IBAD
<6>
<7>
```

[134]

```
<0>
<1> ¦A-A SL-114 LEAK
<2>  A-A SL-114 LEAK
<3>  A-A SL-114 INHA
<4> ¦A-A SL-114 OSCN
<5>  A-A SL-114 IBAD
<6>
<7>
```

[135]

```
<0>
<1> ¦HEPA DP FAN FAIL EXHAUST RADIATION
<2> HEPA DP FAN FAIL EXHAUST RADIATION
<3>  HEPA DP FAN FAIL EXHAUST RAD  INHA
<4> HEPA DP FAN FAIL EXHAUST RAD  OSCN
<5> HEPA DP FAN FAIL EXHAUST RAD  IBAD
<6>
<7>
```

[136]

```
<0>
<1> ¦HEPA DELTA PRESS HIGH
<2>  HEPA DELTA PRESS HIGH
<3>  HEPA DELTA PRESS INHA
<4>  HEPA DELTA PRESS OSCN
<5>  HEPA DELTA PRESS IBAD
<6>
<7>
```

[137]

```
<0>
<1> ¦STACK MONITOR SYSTEM FAILURE
<2>  STACK MONITOR SYSTEM FAILURE
<3>  STACK MONITOR SYS FAIL  INHA
<4>  STACK MONITOR SYS FAIL  OSCN
<5>  STACK MONITOR SYS FAIL  IBAD
<6>
<7>
```

[138]

```
<0>
<1> ¦EXHAUST STACK RADIATION HIGH
<2>  EXHAUST STACK RADIATION HIGH
<3>  EXHAUST STACK RADIATION INHA
<4>  EXHAUST STACK RADIATION OSCN
<5>  EXHAUST STACK RADTATION IBAD
<6>
<7>
```

[139]

```
<0>
<1> ¦SERVICE PIT
<2>  SERVICE PIT
<3>  SERVICE PIT
<4>  SERVICE PIT
<5>  SERVICE PIT
<6>
<7>
```

[140]

```
<0>
<1> ¦FLUSH PIT
<2>  FLUSH PIT
<3>  FLUSH PIT
<4>  FLUSH PIT
<5>  FLUSH PIT
<6>
<7>
```

[141]

```
<0>
<1> ¦LOLO
<2>  LOLO
<3>  INHA
<4>  OSCN
<5>  IBAD
<6>
<7>
```

[142]

```
<0>
<1> ¦LO
<2>  LO
<3> INHA
<4> OSCN
<5> IBAD
<6>
<7>
```

[143]

```
<0>
<1> ¦HI
<2>  HI
<3> INHA
<4> OSCN
<5> IBAD
<6>
<7>
```

[144]

```
<0>
<1> ¦HIHI
<2>  HIHI
<3>  INHA
<4>  OSCN
<5>  IBAD
<6>
<7>
```

[145]

```
<0>
<1> ¦STACK FLOW HIGH
<2>  STACK FLOW HIGH
<3>  STACK FLOW INHA
<4>  STACK FLOW OSCN
<5>  STACK FLOW IBAD
<6>
<7>
```

[146]

```
<0>
<1> ¦PW-481 WASTE LINE LEAK
<2>  PW-481 WASTE LINE LEAK
<3>  PW-481 WASTE LINE INHA
<4>  PW-481 WASTE LINE OSCN
<5>  PW-481 WASTE LINE IBAD
<6>
<7>
```

[147]

```
<0>
<1> ¦LINE LEAK
<2>  LINE LEAK
<3>  LEAK INHA
<4>  LEAK OSCN
<5>  LEAK IBAD
<6>
<7>
```

[148]

```
<0>
<1> ¦BASIN LEVEL LOW
<2>  BASIN LEVEL LOW
<3>  BASIN LEVL INHA
<4>  BASIN LEVL OSCN
<5>  BASIN LEVL IBAD
<6>
<7>
```

[149]

```
<0>
<1> ¦BASIN LEVEL HIGH
<2>  BASIN LEVEL HIGH
<3>  BASIN LEVEL INHA
<4>  BASIN LEVEL OSCN
<5>  BASIN LEVEL IBAD
<6>  BASIN LEVEL IBAD
<7> -
```

[150]

```
<0>
<1> ¦PRESS LOW
<2>  PRESS LOW
<3>  PRSS INHA
<4>  PRSS OSCN
<5>  PRSS IBAD
<6>
<7>
```

[151]

```
<0>
<1>  24 VDC POWER SUPPLY NORM
<2> ¦24 VDC POWER SUPPLY FAIL
<3>  24 VDC POWER SUPPLY FAIL
<4>  24 VDC POWER SUPPLY INHA
<5>  24 VDC POWER SUPPLY  DIS
<6>  24 VDC POWER SUPPLY IBAD
<7>
<8>
```

[152]
<0> DIESEL GENERATOR NORMAL
<1> ¦DIESEL GENERATOR TROUBLE
<2> DIESEL GENERATOR TROUBLE
<3> DIESEL GENERATOR INHA
<4> DIESEL GENERATOR DIS
<5> DIESEL GENERATOR IBAD
<6>
<7>

[153]
<0> DIESEL GENERATOR OFF
<1> ¦DIESEL GENERATOR RUNNING
<2> DIESEL GENERATOR RUNNING
<3> DIESEL GEN OFF/ON INHA
<4> DIESEL GEN OFF/ON DIS
<5> DIESEL GEN OFF/ON IBAD
<6>
<7>

[154]
<0> UPS SUMMARY NORML
<1> ¦UPS SUMMARY ALARM
<2> UPS SUMMARY ALARM
<3> UPS SUMMARY INHA
<4> UPS SUMMARY DIS
<5> UPS SUMMARY IBAD
<6> UPS SUMMARY ALARM
<7>

[155]
<0>
<1> ¦CF-ON
<2> CF-ON
<3>
<4>
<5>
<6>
<7>

[156]
<0> RAD MON NORM
<1> ¦RAD MON FAIL
<2> RAD MON FAIL
<3> RAD MON INHA
<4> RAD MON OSCN
<5> RAD MON IBAD

[157]
<0>
<1> ¦RAD HI/FAIL
<2> RAD HI/FAIL
<3> RAD INHA
<4> RAD OSCN
<5> RAD IBAD

[158]
<0>
<1> ¦ALPHA RADN HI
<2> ALPHA RADN HI
<3> ALPHA RAD INHA
<4> ALPHA RAD OSCN
<5> ALPHA RAD IBAD

[159]
<0>
<1> ¦BETA/GAMMA HI
<2> BETA/GAMMA HI
<3> BETA/GAM INHA
<4> BETA/GAM OSCN
<5> BETA/GAM IBAD
<6>

[160]
<0>
<1> ¦SYSTEM TROUBLE
<2> SYSTEM TROUBLE
<3> SYS TROUB INHA
<4> SYSTEM OSCN
<5> SYSTEM IBAD
<6>

[161]
<0> ¦RADIATION HI
<1> RADIATION HI
<2> RAD HI INHA
<3> RAD HI OSCN
<4> RAD HI IBAD

[162]
<0>
<1> ¦RAD HI/FAIL
<2> RAD HI/FAIL
<3> RAD H/F INHA
<4> RAD H/F OSCN
<5> RAD H/F IBAD

[163]
<0>
<1> ¦DP LOW
<2> DP LOW
<3>
<4>
<5>

[164]
<0>
<1> ¦DP HI
<2> DP HI
<3>
<4>
<5>

[165]
<0> REMOTE
<1> ¦LOCAL
<2> LOCAL
<3>
<4>
<5>

[166]
<0> PUMP ON
<1> ¦PUMP OFF
<2> PUMP OFF
<3>
<4>
<5>

[167]
<0>
<1> ¦OVERFLOW TRAP LEVEL LO
<2> OVERFLOW TRAP LEVEL LO
<3> OVERFLOW TRAP LEVEL LO
<4> OVERFLOW TRAP LEVEL LO
<5> OVERFLOW TRAP LEVEL LO

[168]
<0>
<1> ¦LOW
<2> LOW

[169]
<0>
<1> ¦LEVEL
<2> LEVEL

[170]
<0>
<1> ¦WATER SERVICE BLDG TEMP LO
<2> WATER SERVICE BLDG TEMP LO
<3> WATER SERVICE BLDG TEMP INHA
<4> WATER SERVICE BLDG TEMP OSCN
<5> WATER SERVICE BLDG TEMP IBAD
<6>
<7>

[171]
<0>
<1> ¦EVAP VESSEL PRESSURE HIGH
<2> EVAP VESSEL PRESSURE HIGH
<3> EVAP VESSEL PRESSURE INHA
<4> EVAP VESSEL PRESSURE OSCN
<5> EVAP VESSEL PRESSURE IBAD
<6>
<7>

[172]
<0>
<1> ¦LEAK
<2> LEAK
<3> LEAK
<4> LEAK
<5> LEAK

[173]
<0>
<1> ¦ON
<2>
<3>
<4>
<5>

[174]
<0>
<1> ¦OVERFLOW TRAP LEVEL LO
<2> OVERFLOW TRAP LEVEL LO
<3> OVERFLOW TRAP LVL INHA
<4> OVERFLOW TRAP LVL OSCN
<5> OVERFLOW TRAP LVL IBAD

[175]
<0>
<1> ¦LINE TRAP LEVEL LO
<2> LINE TRAP LEVEL LO
<3> LINE TRAP LVL INHA
<4> LINE TRAP LVL OSCN
<5> LINE TRAP LVL IBAD

[176]
<0>
<1> ¦TEMPERATURE HI
<2> TEMPERATURE HI
<3> TEMP HI INHA
<4> TEMP HI OSCN
<5> TEMP HI IBAD

[177]
<0>
<1> ¦BROKEN
<2> BROKEN
<3> INHA
<4> OSCN
<5> IBAD

[178]
<0>
<1> ¦DESUP OUTLET TEMP HIGH
<2> DESUP OUTLET TEMP HIGH
<3> DESUP OUTLET TEMP INHA
<4> DESUP OUTLET TEMP OSCN
<5> DESUP OUTLET TEMP IBAD

[179]
<0>
<1> ¦A SN-215 LEAK
<2> A SN-215 LEAK
<3> A SN-215 INHA
<4> ¦A SN-215 OSCN
<5> A SN-215 IBAD

[180]
<0>
<1> ¦A SN-216 LEAK
<2> A SN-216 LEAK
<3> A SN-216 INHA
<4> ¦A SN-216 OSCN
<5> A SN-216 IBAD

[181]
<0>
<1> ¦VALVE FAILED TO CLOSE
<2> VALVE FAILED TO CLOSE
<3>
<4>
<5>

[182]
<0>
<1> RUNNING
<2> ¦TRAPPED
<3> CRITICAL
<4> WAIT
<5> WAITUNTIL
<6> ¦NOT RUNNING
<7> ¦NO STATUS
<8>
<9>
<10>

[183]
<0>
<1> LOCAL

[184]
<0>
<1> ¦TURBIN FAN ON
<2> TURBIN FAN ON
<3> TURBN FN INHA
<4> TURBN FN OSCN
<5> TURBN FN IBAD

[185]
<0>
<1> ¦ERROR

[186]
<0> PERMISSIVE OFF
<1> PERMISSIVE ON

[187]
<0> PUMP OFF
<1> PUMP ON

[188]
<0> INTERLOCK
<1> NORMAL

[189]
<0> BYPASS OFF
<1> BYPASS ON

[190]
<0> NOT OPEN
<1> OPEN

[191]
<0> NOT CLOSED
<1> CLOSED

[192]
<0> LOCAL
<1> REMOTE

[193]
<0> OFF
<1> ON

[194]
<0> PRMSSV OFF
<1> PERMISSIVE

[195]
<0> STOP/RESET
<1> START

[196]
<0>
<1> ¦TIMEOUT
<2>

[197]
<0> TIMER OFF
<1> TIMER ON

[198]
<0> POSN-1
<1> NOT POS1

[199]
<0> POSN-2
<1> NOT POS2

[200]
<0> NOT DVRT
<1> DIVERTED

[201]
<0> NOT NORM
<1> TO WEIR

[202]
<0> NOT NORM
<1> TO BASIN

[203]
<0> DIVERTED
<1> NORMAL

[204]
<0>
<1> ¦SAMPLER LOW FLOW
<2> SAMPLER LOW FLOW
<3> SAMPLER LOW FLOW
<4> SAMPLER LOW FLOW
<5> SAMPLER LOW FLOW

[205]
<0>
<1> ¦RAD SYSTEM FAIL
<2> RAD SYSTEM FAIL
<3> RAD SYSTEM FAIL
<4> RAD SYSTEM FAIL
<5> RAD SYSTEM FAIL

[206]
<0>
<1> ¦PUMP ENCODER LOSS
<2> PUMP ENCODER LOSS
<3> PUMP ENCODER INHA
<4> PUMP ENCODER OSCN
<5> PUMP ENCODER IBAD

[207]
<0>
<1> ¦VAR FREQ DRIVE FAULT
<2> VAR FREQ DRIVE FAULT
<3> VAR FREQ DRIVE INHA
<4> VAR FREQ DRIVE OSCN
<5> VAR FREQ DRIVE IBAD

[208]
<0>
<1> ¦PUMP ZERO SPEED
<2> PUMP ZERO SPEED
<3> PUMP SPEED INHA
<4> PUMP SPEED OSCN
<5> PUMP SPEED IBAD

[209]
<0> EMERGENCY POWER TRANSFR SWITCH OFF
<1> ¦EMERGENCY POWER TRANSFER SWITCH ON
<2> EMERGENCY POWER TRANSFER SWITCH ON
<3> EMERGENCY POWER XFR SWITCH INHA
<4> EMERGENCY POWER XFR SWITCH DIS
<5> EMERGENCY POWER XFR SWITCH IBAD

[210]
<0>
<1> ¦LOW
<2> LOW
<3> INHA
<4> OSCN
<5> IBAD

[211]
<0>
<1> ¦LEVEL
<2> LEVEL
<3>
<4>
<5>

[212]
<0> SD-RESET

[213]
<0> SHUTDOWN

[214]
<0> INTERLOK

[215]
<0>
<1> ¦FAULT
<2> FAULT

[216]
<0> CF-OFF
<1> CF-ON
<2> SD-RESET
<3>
<4> SHUTDOWN
<5> INTERLOCK
<6> STOPPING
<7> STARTING

[217]
<0>
<1>
<2>
<3> INHA
<4> ¦DIS
<5> IBAD

[218]
<0>
<1> ¦LO LEVEL
<2> LO LEVEL
<3> LO INHA
<4> ¦LO DIS
<5> LO IBAD

[219]
<0>
<1> ¦SHUTDOWN
<2> SHUTDOWN
<3> SHUTDOWN
<4> SHUTDOWN
<5> SHUTDOWN

[220]
<0>
<1> ¦INLET PRESS HI
<2> INLET PRESS HI
<3> INLET PRESS HI
<4> INLET PRESS HI
<5> INLET PRESS HI

[221]
<0> TIMER OFF
<1> ¦TIMER ON

[222]
<0> MANUAL
<1> AUTO

[223]
<0> NOT SELECTED
<1> SELECTED
<2> ¦OFFLINE
<3>
<4>
<5>

[224]
<0> VESSEL VENT RADIATION SYSTEM NORMAL
<1> ¦VESSEL VENT RADIATION SYSTEM FAILURE
<2> VESSEL VENT RADIATION SYSTEM FAILURE
<3> VESSEL VENT RADIATION SYSTEM INHIBIT
<4> VESSEL VENT RADIATION SYSTEM OFF SCN
<5> VESSEL VENT RADIATION SYSTEM BAD INP

[225]
<0> CLOSED
<1> OPEN

[226]
<0>
<1> ¦242-A TO L.E.R.F. LEAK
<2> 242-A TO L.E.R.F. LEAK
<3> 242-A TO L.E.R.F. LEAK
<4> 242-A TO L.E.R.F. LEAK
<5> 242-A TO L.E.R.F. LEAK

[227]
<0> OFF
<1> ¦ON
<2> ON
<3>
<4>
<5>

[228]
<0>
<1> *
<2> *
<3>
<4>
<5>

[229]
<0> OFF
<1> ON
<2> ON
<3> INHA
<4> DIS
<5> IBAD

[230]
<0>
<1> ¦CF-OFF
<2> CF-OFF

[231]
<0> UPS AC INPUT NORM
<1> ¦UPS AC INPUT FAIL
<2> UPS AC INPUT FAIL
<3> UPS AC INPUT INHA
<4> UPS AC INPUT DIS
<5> UPS AC INPUT IBAD
<6>

[232]
<0> UPS BATTERY NORM
<1> ¦UPS BATTERY LOW
<2> UPS BATTERY LOW
<3> UPS BATTERY INHA
<4> UPS BATTERY DIS
<5> UPS BATTERY IBAD
<6>

[233]
<0> UPS BYP SWITCH NORMAL
<1> ¦UPS BYP SWITCH BYPASS
<2> UPS BYP SWITCH BYPASS
<3> UPS BYP SWITCH INHA
<4> UPS BYP SWITCH DIS
<5> UPS BYP SWITCH IBAD
<6>

[234]
<0> ON
<1> OFF
<2> OFF
<3> INHA
<4> DIS
<5> IBAD

[235]
<0>
<1> ¦AREA RAD MON FAIL
<2> AREA RAD MON FAIL
<3> AREA RAD MON INHA
<4> AREA RAD MON DIS
<5> AREA RAD MON IBAD

[236]
<0>
<1> ¦AIR SAMP MON FAIL
<2> AIR SAMP MON FAIL
<3> AIR SAMP MON INHA
<4> AIR SAMP MON DIS
<5> AIR SAMP MON IBAD

[237]
<0>
<1> ¦AS RADIATION HI
<2> AS RADIATION HI
<3> AS RADN HI INHA
<4> AS RADN HI DIS
<5> AS RADN HI IBAD

[238]

```
<0>
<1> ¦AREA RADIATION HI
<2>  AREA RADIATION HI
<3>  AREA RADN HI INHA
<4>  AREA RADN HI  DIS
<5>  AREA RADN HI IBAD
```

[239]

```
<0>  PRESSURE NORM
<1> ¦PRESSURE HIGH
<2>  PRESSURE HIGH
<3>  PRESS HI INHA
<4>  PRESS HI  DIS
<5>  PRESS HI IBAD
```

[240]

```
<0>
<1> ¦LERF MODEM COMM FAIL
<2>  LERF MODEM COMM FAIL
<3>  LERF MODEM FAIL INHA
<4>  LERF MODEM FAIL  DIS
<5>  LERF MODEM FAIL IBAD
```

[241]

```
<0>  ON
<1> ¦OFF
<2>  OFF
<3>
<4>
<5>
```

[242]

```
<0>
<1> ¦RW ON
<2>  RW ON
<3>   INHA
<4>    DIS
<5>   IBAD
```

[243]

```
<0>
<1> ¦SHUTDOWN
<2>
<3>  SHUTDOWN
<4>  SHUTDOWN
<5>  SHUTDOWN
```

[244]

```
<0>
<1> ¦ANNULUS EXH RADIATION HI
<2>  ANNULUS EXH RADIATION HI
<3>  ANNULUS EXH RADN INHA
<4>  ANNULUS EXH RADN  DIS
<5>  ANNULUS EXH RADN IBAD
```

[245]

```
<0>
<1> ¦LEAK DETECT PUMP PIT LEAK
<2>  LEAK DETECT PUMP PIT LEAK
<3>  LEAK DETECT PUMP PIT INHA
<4>  LEAK DETECT PUMP PIT  DIS
<5>  LEAK DETECT PUMP PIT IBAD
```

[246]

```
<0>
<1> ¦WATER SERVICE BLDG TEMP LO
<2>  WATER SERVICE BLDG TEMP LO
<3>  WATER SERVICE BLDG TEMP INHA
<4>  WATER SERVICE BLDG TEMP OSCN
<5>  WATER SERVICE BLDG TEMP IBAD
<6>
<7>
```

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APPENDIX H - REBUILD PROCEDURE

INTRODUCTION

The 242-A control room is run by a Distributive Controls System (DCS) designed by Texas Instruments (TI) now known as GSE Process Solutions Inc. (GSE). The system runs on two redundant VAX 4000-105A computers located in the control room. The operating system on the computers is VMS version 5.5-2AH. The TI software is called D3 and is version 6.3-2. The two computers are know as CDCM and DCMO. The disk on both machines is DKA300: and is organized as follows. The D3 source code is located in a directory called D3SOURCE: and the site specific files are located in the directory called D3DATA:. To properly rebuild the system a few VMS commands are good to know. First to change you place iOn the directory structure the command SET DEFAULT is used or SET DEF for short. To change to the directory D3DATA: you would type SET DEF D3DATA:[000000]. Since D3DATA is a logical pointing to the a specific place on the directory structure it will appear that now the drive is D3DATA:. If you want to see where you are located in the directory structure you would type SHOW DEF. You will see D3DATA:[000000]. The six zero imply that you are at the top of that directory. Within the D3DATA directory you will see many other directory by typing DIRECTORY or DIR for short. The directories will be 6 digit numbers. The information for building the Continuous Control Database is located in directory [100001] or [100,1]. To change to that directory you would type SET DEF [100001]. A SHOW DEF command you display D3DATA:[100001] for your location on the disk. Another useful way to use the DIR command is to search for a file on the disk when you have forgotten where it is located. If you go to the top of the directory structure by typing SET DEF DKA300:[000000] you can then look for a file anywhere on the disk by typing DIR [*...]file-name. If you would like to search all .COM files to see which file contains a phrase you are looking for you can use the SEARCH or SEA command. From the top of the directory structure you could type SEA [*...]*.COM PCMOA. This would search in every .COM file on the disk and report back every file that contains the word PCMOA. Other commands that may be useful are COPY, MOVE, RENAME, and DELETE. All these file work as they do for IBM DOS.

Command files are used to rebuild the system. They are files that end in .COM and can be found through out the directory structure. These file are described through out this document. For the most part the command files for rebuilding the system are in D3DATA:[001001].

SYSTEM REBUILD PROCEDURE

1. REBUILD ALL OR PORTIONS OF CONTINUOUS DATABASE:

   a. REBUILD A PORTION - for example redefine an EPN:

      1. Write command file to report out existing EPN you wish to redefine. The command file content should be as follows:

         ```
         KILL        (prevents new version of UDB)
         NOCHECK     (avoids rebuild of SDB, SEQ, CGR)
         REP <EPN>   (do this for each EPN)
         EXIT        (exits MDL utility)
         ```

      2. Run the command file with MODEL to report out the EPNs to be modified. The command format to run MODEL should be as follows:

         MDL PCM__ -I <infile name.CMD> -O <outfile name.OUT>

         where PCM__ is the name of the PCM database.

      3. Modify the output (.OUT) file. I suggest that the modified file be named with ".INP" as the file name extension. This will differentiate the old from the new and will result in concise records of both configurations. After modifying, make sure of the following:

         a. The .INP file uses the MODEL commands KILL, NOCHECK, and EXIT.

         b. All REPs replaced with DELs.

         c. Analogs are redefined before MDVs and DEVs, in case the analogs "forward reference" the DEVs.

         d. DEVs are deleted first followed by MDVs, and that the MDVs are redefined before the DEVs.

         e. Some MDVs are associated with more then one DEV. So make sure all DEVs associated with a common MDV are redefined.

4. Run local MODEL with KILL on for error checking and debugging. With KILL on, a new database is not created. If MDL is run without KILL on and errors are generated, then the new database will be corrupted. I suggest writing the output file of this session to a file name having the .ERR extension, denoting error output file. For example:

   MDL PCM__ -I <infile name.INP> -O <outfile name.ERR>

   Pay attention to the CRT as MODEL runs as not all errors get written to the error output file, although most do. View the error file for errors. If no errors are indicated at the 'end of file', then proceed as long as the CRT did not display any errors.

5. EDT the .INP file to remove the KILL command.

6. Run Remote MODEL (CAUTION !!!) with KILL off again using the .ERR output file specification:

   MDL -R PCM__ -I <infile name.INP> -O <outfile name.ERR>

7. View the error file. If all looks well and this is a permanent change, modify the source input file for the modified database. The source input file for PCM0A PCM0B are in D3DATA:[100001]. They have .INP file extensions. All pertinent PCM0A text files are also in D3DATA:[100001] Otherwise just copy an EPN to create a new one.

8. With NOCHECK on, the sequence database, sequence programs, graphics, other displays, and c-code do not need to be rebuilt. But the display database may need to be reloaded to the DCMs (use D3DATA:[001001]DBL.COM, or a select part of it).

b. REBUILD ALL - that is, rebuild the system.

1. Use the latest PCM__.INP input files in D3DATA:[100001]. These use the CREATE model command. Do not use remote model. Do not error check with KILL on - MODEL ignores KILL when CREATE is used. If at first you don't succeed, edit the input file and try again. Run local model, which only creates a new disk version:

   MDL PCM__ -I <infile name.INP> -O <outfile name.ERR>

You can go to D3DATA:[001001] and use command files if creating a new database. The command @BLDALLPCMS will build both PCM0A and PCM1A databases using PCM0A.INP and PCM1A.INP files. It will also create the .ERR files and locate them in D3DATA:[100001]. Command file @BLDPCM0A and @BLDPCM1A will build just the respective databases. These command files remove all display databases from the CDCM only. Then runs MDL with PCM0A and PCM1A as input and creates the .ERR files.

2. After model is done, load the display database to the Host only! This is necessary to rebuild SABL, graphics, and other displays on the Host. Do not load to DCM0 yet to minimize impact to the control room. Use the following DBL commands. From now on CDCM OCM displays may be out to lunch, but the DCM0 will be unaffected. Or use command file @LOADDISDBCDCM located in D3DATA:[001001].

```
DBL -H -RD PCM0A
DBL -H -D PCM0A
DBL -H -RD PCM1A
DBL -H -D PCM1A
```

3. Rebuild sequence database:

   a. In D3DATA:[300001], if just rebuilding PCM0A OR PCM1A copy (NOT rename) SDBMASTER.XRF and SDBSHORT.XRF to the same file name but with .OLD extension. When SDB utility runs it overwrites the .XRF files (the old XRF files will be lost).

   b. Rebuild the Sequence databases in D3DATA:[001001]:

```
For PCM0A:  SDB P0ASDB (runs P0ASDB.COM)
For PCM1A:  SDB P1ASDB (runs P1ASDB.COM)
```

   [Note - to build all sdb files use D3DATA:[001001]BLDRMS. To build just the sdb you may use D3DATA:[001001]BLDSDB. For all PCM0, you may use D3DATA:[001001]P0ASDB. For all PCM1, you may use D3DATA:[001001]P1ASDB. There also is a D3DATA:[001001]BLDSYS file. Look at these and use what meets your needs at the time.]

   These command files will copy the SDBMANSTER.XRF and SDBSHORT.XRF to *.OLD. These command files use input files located in D3DATA:[300001] called 242A.CMD, ALL0.CMD, ALL1.CMD, BANKK.CMD, EMTY.CMD, FARM.CMD, OVRVEW.CMD, PCM0A.CMD, PCM1A.CMD, PROESS.CMD, SHORT0.CMD, TNKFRM.CMD, TOTAL0.CMD, and TATLA1.CMD as necessary.

4. Rebuild sequence programs in D3DATA:[001001]:

   a. For PCM0A: @SICPCM0APROGS
   b. For PCM1A: @SICPCM1APROGS
   c. For BOTH: @SICALLPROGS

5. Rebuild graphics in D3DATA:[001001]:

   a. For PCM0A: @COMPILE_PCM0A
   b. For PCM1A: @COMPILE_PCM1A
   c. For BOTH: @COMPILE_GRAPHICS

6. Rebuild Group Displays (POV, EPN, TRN, HIS) in D3DATA:[001001]:

   a. To build: @BLD_GROUPS

   This command file first stops the current trends and stops the historical trends.

7. Now you are ready to load the PCMs. Crash the PCMs by pressing the RESET switch on the PCMs. Reset and load only one redundant PCM pair at a time (PCM0 OR PCM1).

   D3DATA:[001001]LOADPCM0A, or
   D3DATA:[001001]LOADPCM1A

   Answer the prompts and then everything is automatically loaded to the PCMs, including sequence programs, and runs them. Don't try to do anything else. Just watch the screen to make sure everything loads and runs properly. Repeat for the other redundant pcm pair, if necessary. The two command files above start command procedure PCMLOD.COM located in D3SOURCE:[001003]. This command procedure runs four different command procedures located in D3SOURCE:[001001] which load and run all the sequence programs. These command procedures are SEQLD0A.COM, SEQLD0B.COM, SEQLD1A.COM, and SEQLD1B.COM.

8. At this point, the PCMs are loaded and the Host has the new display database loaded to it. Load the files to the DCMO by using command file D3DATA:[001001]LOADDCM. But nothing else is loaded to the Host. So finish loading the Host by re-booting it as follows:

   a. Enter D3DOWN and answer the prompts.
   b. Enter SHUTDOWN to stop the system.
   c. Press the halt button on the back of the CDCM. Turn the power witch off on the Q buss for the CDCM then turn the power off on the CDCM.
   d. Turn the power switch on the Q buss first then the power switch on the back of the CDCM.
   e. When the power comes on the CDCM will reboot. When the prompt >>> comes on the CDCM alarm typer enter a "b" and hit enter.
   f. When the system is up you can log back on a CDCM terminal.
   g. After logging on type D3UP to start the D3 software.

9. Now the CDCM displays, for the most part, should be functional. There may be a few straggler displays that need to be re-compiled, but don't worry about these at the moment. Also, the DCMO displays are now out to lunch. Notice how the operator for the most part has had at least one console with completely functional displays.

10. Reboot the DCMO as follows:

   a. Enter D3DOWN and answer the prompts.
   b. Enter SHUTDOWN to stop the system.
   c. Press the halt button on the back of the DCMO. Turn the power switch off on the Q buss for the DCMO then turn the power off on the DCMO.
   d. Turn the power switch on the Q buss first then the power switch on the back of the DCMO.
   e. When the power comes on the CDCM will reboot. When the prompt >>> comes on the DCMO alarm typer enter a "b" and hit enter.
   f. When the system is up you can log back on a DCMO terminal.
   g. After logging on type D3UP to start the D3 software.

   Now DCMO is back to normal. All that is left is some miscellaneous rebuilds and cleanup.

11. Rebuild C-code, even if IPNs have not changed. The source code for the C-code is located in D3SOURCE:[261010] or [MICRO.200010]. The *.SCR files will place the executable files in the appropriate directories such as D3SOURCE:[003055], [004055], and [005055], The LTK files loaded to the micros are in D3SOURCE:[001055]. To build an individual C-program, set default to D3SOURCE:[261010] or [MICRO.200010] and type the following:

    BLD FILE.SCR -L -ALL -MOV -LIS

    D3SOURCE:[261010]:
    WATCH, FQIRESET, INHA, BALANCE, TFBALANCE, HISTDAT, UKF14, UKF34, UKF43, UKF44, etc)

    [MICRO.200010]:
    DOG0A, DOG0B, DOG1A, and DOG1B.

    To build all the C-code type the use the following command file located in D3DATA:[001001]:BLDALLC

12. If IPNs for DEVs or MDVs have changed, then make sure the key task (D3SOURCE:[160010]KEY.C, KEY.TSK) are correct for:

    AUDALARM0 (pcm0a dev ipn 171)
    HS-AB1ACK (pcm0a dev ipn 208)
    HS-AB2ACK (pcm1a dev ipn 15)

13. Reload C-code to PCMs (MICRO:[377001]DOG0, DOG1) if necessary. Use command file located in D3DATA:[001001]DOGSWAP.

14. Reinstall (reboot if you like) C-code to DCMs if necessary.

15. Rebuild the Report Writer reports on each DCM: (NOTE: report writer is no longer used)

CDCM		DCM0
ROUTINEG1	ROUTINED1	ROUTINES1
ROUTINEG2	ROUTINED2	ROUTINES2
ROUTINEG3	ROUTINED3	ROUTINES3
ROUTINEG4	ROUTINED4	ROUTINES4
TOTALIZRS		

    This is done by recompiling these using RGE in [244,2].

16. Purge the old files away as required:

```
D3DATA:[100001]*.UDB, *.REF
D3DATA:[300001]PCM*SDB.LST
D3DATA:[300001]*.SEQ, *.LST, *.LTQ
D3DATA:[100010]GRA*.BIN, *.POV, *.EPN, *.TRN, *.HIS, *.COL
D3DATA:[100010]GRA*.CGR
D3SOURCE:[261010]name.C
[MICRO.200010]*.C
```

To purge all these directories above use command procedure in D3DATA:[001001]PGALL.

17. The String Editor can now only handle an input file of 50 string packets. Since there are about 274 string packets on this system, the input file had to be split into five separate files located in D3DATA:[100010]. They are STRING1.TXT, STRING2.TXT, STRING3.TXT, STRING4.TXT, and STRING5.TXT. Command procedure STRING_BUILD.COM is located in D3DATA:[100010] and will build one string file called STRING.BIN. After making any changes to the string any graphics that use the string changed will have to be recompiled and copied to the DCMO.

18. If all input files have been proporly changed, the way to build all inputs and reload everything is as follows:

SET DEF D3DATA:[001001]	
@BLDALLPCMS	3:30
@LOADDISDBCDCM	:10
@BLDRMS	6:15
@SICALLPROGS	7:30
@COMPILE GRAPHICS	8:18
@BLD GROUPS	2:30
CRASH BOTH PCMS AND TURN THEM BACK ON.	0:20
(Wait until the pcms are in load request)	1:30
@LOADPCM0A	2:30
@LOADPCM1A	2:30
@DCMLOAD	3:30
DO A D3DOWN AND D3UP ON BOTH COMPUTERS	5:00
	39:273

APPENDIX I - SKID KEY CONFIGURATION

Listing of D3DATA:[100010]CDCMSKO.CMD on the CDCM
(Other SKID command files are identical)

KEY: 0
LABEL: AN:271
VERIFICATION: N
ECHO: AN-271
DISPLAY TYPE: GR
DISPLAY NUMBER: 274
LED MODE: NONE
FUNCTION:
KEY: 1
LABEL: AN:VALVE:PIT
VERIFICATION: N
ECHO: AN VALVE PIT
DISPLAY TYPE: GR
DISPLAY NUMBER: 272
LED MODE: NONE
FUNCTION:
KEY: 2
LABEL: AN:HVAC
VERIFICATION: N
ECHO: AN HVAC
DISPLAY TYPE: GR
DISPLAY NUMBER: 273
LED MODE: NONE
FUNCTION:
KEY: 3
LABEL: AN:FARM
VERIFICATION: N
ECHO: AN FARM
DISPLAY TYPE: GR
DISPLAY NUMBER: 270
LED MODE: NONE
FUNCTION:
KEY: 4
LABEL: AP:271
VERIFICATION: N
ECHO: AP-271
DISPLAY TYPE: GR
DISPLAY NUMBER: 295
LED MODE: NONE
FUNCTION:
KEY: 5
LABEL: AP:VALVE:PIT
VERIFICATION: N
ECHO: AP VALVE PIT
DISPLAY TYPE: GR
DISPLAY NUMBER: 292
LED MODE: NONE
FUNCTION:
KEY: 6
LABEL: AP:HVAC
VERIFICATION: N
ECHO: AP HVAC
DISPLAY TYPE: GR
DISPLAY NUMBER: 294
LED MODE: NONE
FUNCTION:
KEY: 7
LABEL: AP:FARM
VERIFICATION: N
ECHO: AP FARM
DISPLAY TYPE: GR
DISPLAY NUMBER: 290
LED MODE: NONE
FUNCTION:
KEY: 8
LABEL: AW:271
VERIFICATION: N
ECHO: AW-271
DISPLAY TYPE: GR
DISPLAY NUMBER: 302
LED MODE: NONE
FUNCTION:
KEY: 9
LABEL: AW:VALVE:PIT
VERIFICATION: N
ECHO: AW VALVE PIT
DISPLAY TYPE: GR
DISPLAY NUMBER: 303
LED MODE: NONE
FUNCTION:
KEY: 10
LABEL: AW:HVAC
VERIFICATION: N
ECHO: AW HVAC
DISPLAY TYPE: GR
DISPLAY NUMBER: 304
LED MODE: NONE
FUNCTION:
KEY: 11
LABEL: AW:FARM
VERIFICATION: N
ECHO: AW FARM
DISPLAY TYPE: GR
DISPLAY NUMBER: 300
LED MODE: NONE
FUNCTION:
KEY: 12
LABEL: AZ:FARM
VERIFICATION: N
ECHO: AZ FARM

DISPLAY TYPE: GR
DISPLAY NUMBER: 323
LED MODE: NONE
FUNCTION:
KEY: 13
LABEL: AY:FARM
VERIFICATION: N
ECHO: AY FARM
DISPLAY TYPE: GR
DISPLAY NUMBER: 322
LED MODE: NONE
FUNCTION:
KEY: 14
LABEL: A:FARM
VERIFICATION: N
ECHO: A FARM
DISPLAY TYPE: GR
DISPLAY NUMBER: 321
LED MODE: NONE
FUNCTION:
KEY: 15
LABEL: A AX:AY AZ:FARMS
VERIFICATION: N
ECHO: A AX AY AZ FARMS
DISPLAY TYPE: GR
DISPLAY NUMBER: 320
LED MODE: NONE
FUNCTION:
KEY: 16
LABEL: WASTE:XFR
VERIFICATION: N
ECHO: WASTE TRANSFER
DISPLAY TYPE: GR
DISPLAY NUMBER: 344
LED MODE: NONE
FUNCTION:
KEY: 17
LABEL: A-350
VERIFICATION: N
ECHO: A-350
DISPLAY TYPE: GR
DISPLAY NUMBER: 343
LED MODE: NONE
FUNCTION:
KEY: 18
LABEL: 244-A:HVAC
VERIFICATION: N
ECHO: 244-A HVAC
DISPLAY TYPE: GR
DISPLAY NUMBER: 341
LED MODE: NONE
FUNCTION:
KEY: 19
LABEL: 244-A
VERIFICATION: N
ECHO: 244-A
DISPLAY TYPE: GR
DISPLAY NUMBER: 340
LED MODE: NONE
FUNCTION:
KEY: 20
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 21
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 22
LABEL: AP-102:GROUT
VERIFICATION: N
ECHO: AP-102 GROUT TANK
DISPLAY TYPE: GR
DISPLAY NUMBER: 291
LED MODE: NONE
FUNCTION:
KEY: 23
LABEL: 204AR:& MISC
VERIFICATION: N
ECHO: 204-AR ALARMS
DISPLAY TYPE: FP
DISPLAY NUMBER: 81
LED MODE: NONE
FUNCTION:
KEY: 24
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 25
LABEL:
VERIFICATION: N

ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 26
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 27
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 28
LABEL: SC:BASIN
VERIFICATION: N
ECHO: STEAM CONDENSATE BASINS
DISPLAY TYPE: GR
DISPLAY NUMBER: 22
LED MODE: NONE
FUNCTION:
KEY: 29
LABEL: STEAM:CNDS8
VERIFICATION: N
ECHO: STEAM CONDENSATE
DISPLAY TYPE: GR
DISPLAY NUMBER: 14
LED MODE: NONE
FUNCTION:
KEY: 30
LABEL: PB-1
VERIFICATION: N
ECHO: PB-1 PUMP
DISPLAY TYPE: GR
DISPLAY NUMBER: 12
LED MODE: NONE
FUNCTION:
KEY: 31
LABEL: PUMP:AW-102
VERIFICATION: N
ECHO: AW-102 FEED PUMP
DISPLAY TYPE: GR
DISPLAY NUMBER: 301
LED MODE: NONE
FUNCTION:
KEY: 32
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 33
LABEL: E-A-1
VERIFICATION: N
ECHO: E-A-1 REBOILER
DISPLAY TYPE: GR
DISPLAY NUMBER: 13
LED MODE: NONE
FUNCTION:
KEY: 34
LABEL: C-A-1
VERIFICATION: N
ECHO: C-A-1 EVAPORATOR
DISPLAY TYPE: GR
DISPLAY NUMBER: 10
LED MODE: NONE
FUNCTION:
KEY: 35
LABEL: PB-2
VERIFICATION: N
ECHO: PB-2 PUMP
DISPLAY TYPE: GR
DISPLAY NUMBER: 15
LED MODE: NONE
FUNCTION:
KEY: 36
LABEL: IX-D-1
VERIFICATION: N
ECHO: IX-D-1 / RC3
DISPLAY TYPE: GR
DISPLAY NUMBER: 44
LED MODE: NONE
FUNCTION:
KEY: 37
LABEL: TK:C-100
VERIFICATION: N
ECHO: TK-C-100
DISPLAY TYPE: GR
DISPLAY NUMBER: 18
LED MODE: NONE
FUNCTION:
KEY: 38
LABEL: E-C-1:COND
VERIFICATION: N

ECHO: E-C-1 VACUUM CONDENSER
DISPLAY TYPE: GR
DISPLAY NUMBER: 16
LED MODE: NONE
FUNCTION:
KEY: 39
LABEL: VESSL:VENT
VERIFICATION: N
ECHO: VESSEL VENT
DISPLAY TYPE: GR
DISPLAY NUMBER: 20
LED MODE: NONE
FUNCTION:
KEY: 40
LABEL: LERF
VERIFICATION: N
ECHO: L.E.R.F.
DISPLAY TYPE: GR
DISPLAY NUMBER: 24
LED MODE: NONE
FUNCTION:
KEY: 41
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 42
LABEL: USED:RAW:WATER
VERIFICATION: N
ECHO: USED RAW WATER
DISPLAY TYPE: GR
DISPLAY NUMBER: 17
LED MODE: NONE
FUNCTION:
KEY: 43
LABEL: RAW:WATER
VERIFICATION: N
ECHO: RAW WATER SUPPLY
DISPLAY TYPE: GR
DISPLAY NUMBER: 11
LED MODE: NONE
FUNCTION:
KEY: 44
LABEL: CASS
VERIFICATION: N
ECHO: CASS ALARMS
DISPLAY TYPE: GR
DISPLAY NUMBER: 90
LED MODE: NONE
FUNCTION:
KEY: 45
LABEL: AMU
VERIFICATION: N
ECHO: AQUEOUS MAKE UP
DISPLAY TYPE: GR
DISPLAY NUMBER: 19
LED MODE: NONE
FUNCTION:
KEY: 46
LABEL: UTILS
VERIFICATION: N
ECHO: UTILITIES
DISPLAY TYPE: GR
DISPLAY NUMBER: 21
LED MODE: NONE
FUNCTION:
KEY: 47
LABEL: 242A:RADS
VERIFICATION: N
ECHO: 242-A RADIATION / VENT
DISPLAY TYPE: GR
DISPLAY NUMBER: 23
LED MODE: NONE
FUNCTION:
KEY: 48
LABEL: PROGRM:STATUS
VERIFICATION: N
ECHO: SEQUENCE PROGRAM STATUS
DISPLAY TYPE: GR
DISPLAY NUMBER: 43
LED MODE: NONE
FUNCTION:
KEY: 49
LABEL: CNDS8:OVER-:VIEW
VERIFICATION: N
ECHO: CONDENSATE OVERVIEW
DISPLAY TYPE: GR
DISPLAY NUMBER: 42
LED MODE: NONE
FUNCTION:
KEY: 50
LABEL: VACUM:OVER-:VIEW
VERIFICATION: N
ECHO: VACUUM CONDENSR OVERVIEW
DISPLAY TYPE: GR
DISPLAY NUMBER: 41
LED MODE: NONE
FUNCTION:

KEY: 51
LABEL: EVAP:OVER-:VIEW
VERIFICATION: N
ECHO: EVAPORATOR OVERVIEW
DISPLAY TYPE: GR
DISPLAY NUMBER: 40
LED MODE: NONE
FUNCTION:
KEY: 52
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 53
LABEL: INHA
VERIFICATION: N
ECHO: INHIBITED ALARMS
DISPLAY TYPE: GR
DISPLAY NUMBER: 80
LED MODE: NONE
FUNCTION: ES
UNIT NAME: WHOLE0
PROGRAM NAME: TIMEINHA
FUNCTION: EL
NAME: INHALM
FUNCTION:
KEY: 54
LABEL: HISTL:TREND:MENU
VERIFICATION: N
ECHO: HISTORICAL TREND MENU
DISPLAY TYPE: GR
DISPLAY NUMBER: 9
LED MODE: NONE
FUNCTION:
KEY: 55
LABEL: CURR:TREND:MENU
VERIFICATION: N
ECHO: CURRENT TREND MENU
DISPLAY TYPE: GR
DISPLAY NUMBER: 8
LED MODE: NONE
FUNCTION:
KEY: 56
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 57
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 58
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: 59
LABEL: ROUNDS:MENU
VERIFICATION: N
ECHO: ROUNDS MENU
DISPLAY TYPE: GR
DISPLAY NUMBER: 501
LED MODE: NONE
FUNCTION:
KEY: 60
LABEL: WHITE:ALARM
VERIFICATION: N
ECHO: WHITE ALARMS
DISPLAY TYPE: GR
DISPLAY NUMBER: 100
LED MODE: NONE
FUNCTION: MS
UNIT NAME: WHOLE1
TYPE: S
VARIABLE NAME: FTRIP0
STATUS: ON
FUNCTION:
KEY: 61
LABEL: NOTE:BOOK
VERIFICATION: N
ECHO: NOTE BOOK
DISPLAY TYPE: GF
DISPLAY NUMBER: 4
LED MODE: NONE
FUNCTION:
KEY: 62
LABEL: EPN:ON/OFF
VERIFICATION: N
ECHO: EPN ON/OFF
DISPLAY TYPE: NONE
LED MODE: NONE

FUNCTION: ES
UNIT NAME: WHOLEO
PROGRAM NAME: TAG
FUNCTION:
KEY: 63
LABEL:
VERIFICATION: N
ECHO:
DISPLAY TYPE: NONE
LED MODE: NONE
FUNCTION:
KEY: