This document was too large to scan as a single document; therefore, it has been divided into smaller sections.

Section 1 of 2

Document Information			
Document #	SD-WM-SDD-045	**Revision**	4
Title	SYS DESIGN DESCRIPTION FOR THE SY101 HYDROGEN MITIGATION TEST PROJECT DATA ACQUISITION & CONTROL SYS (DACS-1)		
Date	04/01/1999		
Originator	ERMI AM	**Originator Co.**	COGEMA
Recipient		**Recipient Co.**	
References			
Keywords			
Projects			
Other Information			

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 651843

Proj. ECN S

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental ○ Direct Revision ◉ Change ECN ○ Temporary ○ Standby ○ Supersedure ○ Cancel/Void ○	AM Ermi, COGEMA Engineering Corp., L6-37, 376-5099	◉ Yes ○ No TF-98-1059	March 22, 1999
	6. Project Title/No./Work Order No. Tank 241SY101 Hydrogen Mitigation Test Project / 102525	7. Bldg./Sys./Fac. No. Tank 241SY101	8. Approval Designator SQ
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-SD-WM-SDD-045, Rev. 3	10. Related ECN No(s). N/A	11. Related PO No. N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Completed	12d. Restored to Original Condition (Temp. or Standby ECNs only)
○ Yes (fill out Blk. 12b) ◉ No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change — 13b. Design Baseline Document? ○ Yes ◉ No

The previous Rev. 3 document is being replaced by this Rev. 4 document. The DACS computer hardware was upgraded to Pentium II 400 MHz CPUs running Windows NT 4.0, and the DACS HMI software was upgraded from the former Iconics GENESIS TEST-3.05 and MOTOR-3.02 strategies to the new Intellution FIX32 DACS-4.01.

14a. Justification (mark one)	14b. Justification Details
Criteria Change ○ Design Improvement ◉ Environmental ○ Facility Deactivation ○ As-Found ○ Facilitate Const. ○ Const. Error/Omission ○ Design Error/Omission ○	The DACS hardware and software was upgraded to provide a state-of-the-art, more user-friendly and Year-2000 compliant system. This design will not result in exposure change greater than 1 person-Rem (whole body) or greather than 10 person-Rem (extremities) for the installation, maintenance, and operation of the life of the modification per HNF-PRO-233. Approval designator determined per HNF-PRO-233 and informal review completed per HNF-PRO-~~445~~ 1819.

15. Distribution (include name, MSIN, and no. of copies)

See Distribution Sheet

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DATE:

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ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 651843

16. Design Verification Required	17. Cost Impact		18. Schedule Impact (days)
	ENGINEERING	CONSTRUCTION	
○ Yes	Additional ○ $ N/A	Additional ○ $ N/A	Improvement ○ N/A
◉ No	Savings ○ $ N/A	Savings ○ $ N/A	Delay ○ N/A

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

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	☐	Config. Mngt. Plan	☒
Environmental Permit	☐	Inventory Adjustment Request	☐		☐

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
HNF-SD-WM-CSCM-023 / Rev. 1	1-GEN1-404	
ARP-T-001,003-007,010-012, 014-017,019-026,029	6-TF-244,367,379-382,390,391, 396,397,400,401,406,408, 413,423,424,434,437	
T0-440-001 to 003,005,006		

21. Approvals

	Signature	Date		Signature	Date
Design Authority RE Larsen	RE Larsen	3/29/99	Design Agent AM Ermi	AM Ermi	3-22-99
Cog. Eng. GJ Gauck	GJ Gauck	3-26-99	PE		
Cog. Mgr. RE Larsen	RE Larsen	3/29/99	QA		
QA RR True	RR True	3-26-99	Safety		
Safety LS Krogsrud	LS Krogsrud	3/26/99	Design		
Environ.			Environ.		
Other			Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	A.M. Ermi / COGEMA Engineering	Date March 22, 1999
Project Title/Work Order		EDT No.
System Design Description for the SY-101 Hydrogen Mitigation Test Project Data Acquisition and Control System (DACS-1)		ECN No. 651843

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
A. M. Ermi (3)	L6-37	X			
M. H. Brown	T4-07				X
G. J. Gauck	T4-07	X			
L. S. Krogsrud	T4-07				X
D. W. Lamastus	R2-84	X			
D. C. Larsen	T4-08				X
R. E. Larson	T4-07				X
D. D. Tate	L6-37				X
R. R. True	T4-07				X
R. W. Truitt	L6-37	X			
R. P. Tucker	T4-07				X
DACS Project File (AM Ermi)	L6-37	X			
DOE/RL Reading Room	H2-53	X			
Central Files	B1-07	X			

S

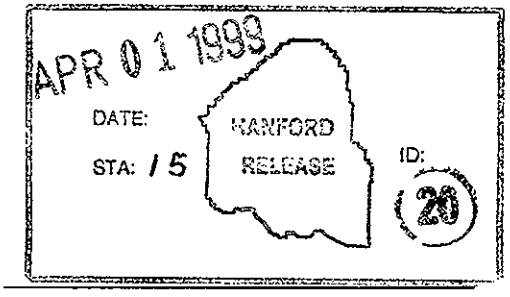
System Design Description for the SY-101 Hydrogen Mitigation Test Project Data Acquisition and Control System (DACS-1)

A. M. Ermi
COGEMA Engineering Corporation, P.O. Box 840
Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 651843 UC: 2030
Org Code: S4100 Charge Code: 102525 BC20 HN920521
B&R Code: EW3120072 Total Pages: 440

Key Words: DACS, DATA ACQUISITION AND CONTROL SYSTEM, HARDWARE, SOFTWARE, 241SY101, MIXER PUMP, UPGRADE, Y2K

Abstract: This document describes the hardware and software of the computer subsystems for the Data Acquisition and Control System (DACS) used in mitigation tests conducted on waste tank 241-SY-101 at the Hanford Nuclear Reservation. The original system was designed and implemented by LANL, supplied to WHC, and turned over to LMHC for operation. In early 1999, the hardware and software were upgraded to provide a state-of-the-art, Year-2000 compliant system.



Janis Randal 4-1-99
Release Approval Date

Release Stamp

Approved For Public Release

RECORD OF REVISION

(1) Document Number: HNF-SD-WM-SDD-045

(2) Title

System Design Description for the SY-101 Hydrogen Mitigation Test Project DACS

Change Control Record

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) EDT 600136, August 24, 1994	---	---
1	Complete Revision per ECN 198628, January 4, 1995	GJ Gauck	SH Rifaey (orig. signed 7/13/95)
2	Complete revision with the installation of revised software TEST-3.04 and PLC-3.05 per	GJ Gauck	GL Dunford (orig signed 3/28/97)
	ECN 637503, November 15, 1996. "WHC" document prefix changed to "HNF"		
3	Complete rev. with the installation of revised software TEST-3.05, MOTOR-3.02 and PLC-3.06	GJ Gauck	RP Tucker (orig. signed 11/25/97)
	per ECN 643391, October 31, 1997. Incorporates information formerly in supporting documents		
	HNF-SD-WM-CSDD-008 and HNF-SD-WM-EL-001.		
4 RS	Complete revision with the installation of new, upgraded software DACS-4.01 and new computer	GJ Gauck GJ Gauck	RE Larson RE Larson 3/29/99
	hardware per ECN 651843, March 22, 1999.		

HNF-SD-WM-SDD-045
Revision 4

System Design Description for the SY-101 Hydrogen Mitigation Test Project Data Acquisition and Control System (DACS-1)

March 1999

Prepared by:

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Prepared for:

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SYSTEM DESIGN DESCRIPTION FOR SY-101 HYDROGEN MITIGATION TEST PROJECT DATA ACQUISITION AND CONTROL SYSTEM (DACS-1)

1.0 INTRODUCTION

This document describes the hardware and software of the computer subsystems for the Data Acquisition and Control System (DACS) used in mitigation tests conducted on waste tank 241-SY-101 at the Hanford Nuclear Reservation. The original system was designed and implemented by Los Alamos National Laboratory (LANL), supplied to the Westinghouse Hanford Company (WHC), and turned over to Lockheed Martin Hanford Corporation (LMHC) for operation. In early 1999, the hardware and software were upgraded to provide a state-of-the-art, Year-2000 compliant system. This document reflects the DACS-1 information for the software currently in use in the DACS trailer: Intellution FIX32 Human-Machine Interface (HMI) "DACS v4.01" and Modicon Ladder Logic software "PLC v3.06".

1.1 BACKGROUND

Prior to the mixer pump installation in 1993, tank 241-SY-101 experienced recurrent periodic gas releases of hydrogen, nitrous oxide, ammonia, and methane. The hydrogen gas represents a danger, as some of the releases are in amounts above the lower flammability limit (LFL). These large gas releases had to be mitigated. Several instruments were added to the tank to monitor the gas compositions, the tank level, the tank temperature, and other parameters. A mixer pump was developed to stir the tank waste to cause the gases to be released at a slow rate. It is the function of the DACS to monitor those instruments and to control the mixer pump in a safe manner.

During FY93 and FY94 the mixer pump was installed with associated testing operations support equipment and a mitigation test project plan was implemented. These activities successfully demonstrated the mixer pump's ability to mitigate the tank 241-SY-101 hydrogen gas hazard.

The mitigation testing uses a pump immersed in the waste tank, directed at certain angles and operated at different speeds and time durations. The positioning of the pump and operation of the pump is controlled by the DACS, with the test operators commanding the system. There are many instruments used to monitor process variables within the tank at all times. The DACS collects data from these instruments, displays real-time data for operators and archives the data for later analysis; it also interfaces with control elements and safeguards the operation of the test equipment.

The DACS is composed of several components working in parallel to perform the tasks needed for test operation and monitoring.

There is a variable frequency drive that controls a motor that moves the position of the pump to different angles. A second variable frequency drive controls a motor which drives the pump that circulates the waste.

A PLC (Programmable Logic Controller) interfaces with instrumentation in the waste tank and controls elements for safe operation. This PLC has embedded logic to assure safe operation of the pump and to process data for interfacing to a networked computer system.

A networked computer system, using multitasking HMI software called Intellution FIX32, brings together all data gathered from operator input, the PLC, and the variable frequency drives. The Windows NT based FIX32 software replaced the original DOS based Iconics GENESIS software during an upgrade in early 1999. The FIX32 software is used to

collect data from the PLC and from the variable frequency drives controlling the motors. FIX32 displays this data in real time and in a graphic format to the operators. The system also stores data to files that can be analyzed at any time. These files are archived for later analysis.

The FIX32 system also is used to control the variable frequency drives' operation from operator requests. There is embedded logic in the system to warn operators of critical conditions and ensure safe operation of the pump motors.

The FIX32 system supports peer-to-peer network communications to enable data to be shared between stations. The FIX32 network, with the use of Windows NT Remote Access Service (RAS), supports host communications to multiple supervisory stations. This allows remote computers specifically configured with FIX32 software to access common data. Security features have been implemented to ensure proper authorization for remote access.

1.2 FUNCTION AND DESIGN REQUIREMENTS

1.2.1 Basis for Requirements

The requirements for the DACS were based on the following two WHC documents: "Test Plan for Run-In of 101-SY Mitigation Mixer Pump" (WHC-SD-WM-TP-139) [ref. 1], and "Test Plan for Tank 101-SY Mitigation-by-Mixing Test" (WHC-SD-WM-TP-140) [ref. 2]. These documents provided the basis for conducting the run-in tests and experiments required to conduct the 241-SY-101 mitigation tests.

Other documents, "Function and Design Requirements for Test Mixer Pump" (WHC-SD-WM-FDC-022, hereafter called FDC-022) [ref. 3], and "Functional Design Criteria for Tank 241-SY-101 Hydrogen Mitigation Test Project Data Acquisition and Control System (DACS-1)" (WHC-SD-WM-FDC-031, hereafter called FDC-031) [ref. 4], contain more information on DACS function and design requirements. This section comprises excerpts from these documents.

In July 1992, FDC-022 was finalized and released as Revision 1. In addition to presenting the functional design criteria (FDC) for design and analysis of candidate hydrogen mitigation concepts, FDC-022 provided extensive criteria for design of the DACS, which supports mitigation testing operations. While some general DACS criteria and/or descriptions appear throughout FDC-022, Sections 2.3, 3.6, 3.7, 3.8, 3.9, 3.10, and 3.13 are, for the most part, specific to the DACS. FDC-022 Table 3-1 (in Section 3.6) provides a detailed listing of all mitigation testing instrumentation.

1.2.2 Functional Requirements

The DACS is required to monitor and control all of the tank 241-SY-101 hydrogen mitigation testing systems. This edict is from the Safety Assessment (SA) [ref. 5]. Associated ancillary systems and equipment must also be monitored and controlled, including heating ventilation and air conditioning (HVAC), uninterruptable power supply (UPS), and other support systems required to achieve safe and reliable operation of the testing systems in the tank. Monitoring and control functions include data display, alarm annunciation, and data storage. The DACS is also required to have methods for monitored data to be transferred to outside data management and analysis organizations.

Data monitored by the DACS include physical and chemical properties of the waste and the gases in the dome space and ventilation system. The DACS tank data do not include tank

integrity data such as the leak detection system or concrete and annular space temperatures, with the exception of the tank bottom and side thermocouples.

The DACS control functions include pump manual control, pump automatic control, operation monitoring, test system operating condition indication, and selected screens to advise operating personnel of the current operating status of the systems. Manual emergency shutdown capabilities are required, in order to provide safety backup for equipment and personnel.

For specific DACS functional requirements, see FDC-031.

1.2.3 Design Requirements

No specific design requirements for hydrogen mitigation methods were applied to the DACS. The trailer, HVAC system, and UPS were all originally designed to fulfill missions at the Nevada Test Site (NTS) and were adapted for use on the mitigation project. The internal layout and selection of equipment were all done by consensus of project engineers.

1.3 DOCUMENT OVERVIEW

This document provides detailed descriptions of the tank 241-SY-101 DACS hardware and computer systems. The hardware layout is described in Section 2.0, while areas pertaining to its limitations, operation and maintenance are covered in Sections 3.0, 4.0 and 5.0. The associated instrumentation is described in Section 6.0, while details pertaining to how the tasks are accomplished through the software are covered in Section 7.0.

1.4 ACRONYMS

The following acronyms are used in this document:

AFD	Adjustable Frequency Drive (see also VSD)
AOP	Alarm Operational Procedure
ARP	Alarm Response Procedure
ASCII	American Standard Code for Information Interchange
BASIC	Beginner's All-Purpose Symbolic Instruction Code
BCD	Binary Coded Decimal
BNC	Bayonet connector type N, size C
DACS	Data Acquisition and Control System
DACSNet	DACS network
FTIR	Fourier Transform InfraRed
GMS	Gas Monitoring System
HLAN	Hanford Local Area Network (actually a WAN)
HMI	Human-Machine Interface
HP	Hewlett Packard
hp	horsepower
HVAC	Heating, Ventilating, Air Conditioning
LANL	Los Alamos National Laboratory
LMHC	Lockheed Martin Hanford Corporation
LAN	Local Area Network
MIT	Multifunction Instrumentation Tree
NIC	Network Interface Card

NTS	Nevada Test Site
PBX	Private Bell Switch (X)
PC	Personal Computer
PLC	Programmable Logic Controller
RAS	Remote Access Service
RSS	Remote Supervisory Station
RZ	return to zero
RTD	Resistance Thermal Device
SA	Safety Assessment
SCADA	Supervisory Control and Data Acquisition
SDD	System Design Description
SHMS	Standard Hydrogen Monitoring System
SSP	Strain Signal Processor
UPS	Uninterruptable Power Supply
VDTT	Velocity, Density, Temperature Tree
VSD	Variable Speed Drive (see also AFD) Note: VSD and AFD are synonymous
WAN	Wide Area Network
WHC	Westinghouse Hanford Company

2.0 HARDWARE DESIGN DESCRIPTION

2.1 INTRODUCTION

LANL provided the original DACS to monitor and control the 241-SY-101 tank mixer pump mitigation tests at Hanford. The DACS controls the mixer pump, records, displays, and archives the required data from the instrumentation tagnames discussed in Section 7.5. The data are made available for off-line analysis. The majority of the data are recorded at a low frequency (approximately one sample per second or longer) for long periods of time (hours to months). The DACS displays the data in simple, clear screens on computer monitors. The DACS controls the mitigation equipment through the use of commercial process control software and I/O modules. Automatic alarms alert operators of potentially unsafe conditions, and abort sequences shut down the tests when unsafe conditions occur.

2.1.1 Overall Block Diagram

Figure 1 shows a block diagram of the DACS. It is divided into six major subsystems:

1. Uninterruptable Power Supply (UPS)
2. Heating, Ventilation, and Air Conditioning (HVAC)
3. Instrumentation trailer
4. Programmable Logic Controller (PLC) system for instrumentation
5. Intellution FIX32 HMI control system
6. Auxiliary systems and components

Each major subsystem is further divided into its own subsystems and will be described on that basis.

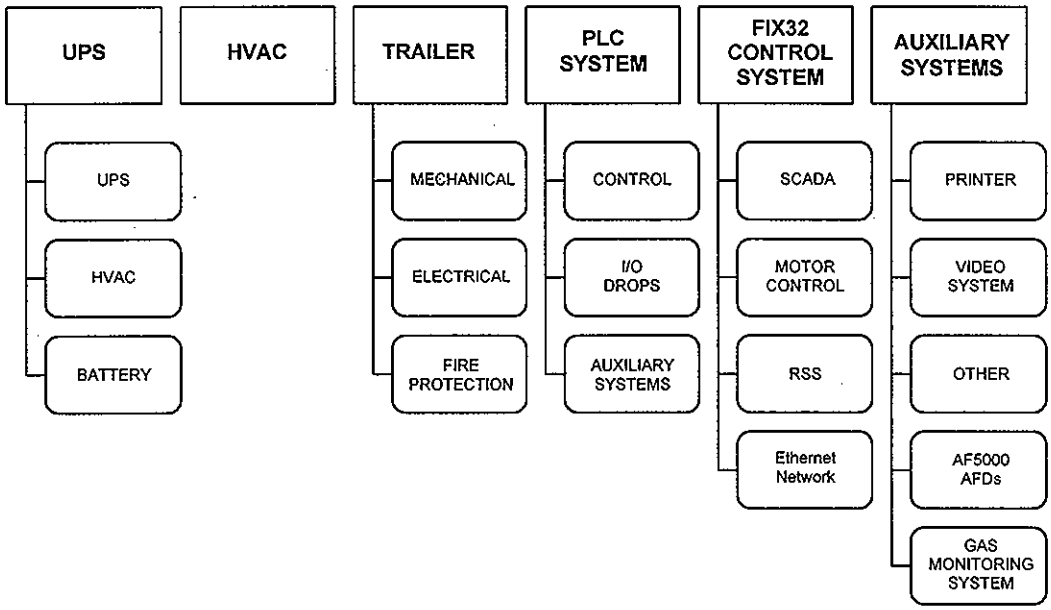


Figure 1. *DACS Block Diagram*

2.1.2 Site Support

Site support is limited to electrical power, telephones, including the local-area network (LAN), and trailer emplacement. There is no plumbing in the DACS trailer or DACS equipment in the tank farm. The HVAC is self-contained (see Section 2.3).

2.2 UNINTERRUPTABLE POWER SUPPLY

2.2.1 General

The UPS is housed separately from the trailer and is located immediately to the west of the HVAC skid, outside the trailer. The UPS is housed in a metal "shack" mounted on a skid. Inside the shack are the following:

1. UPS unit
2. HVAC system for the shack (attached to the wall of the shack)
3. Batteries
4. Utilities (lights, breaker panels)

Outside the shack are auxiliary cables, connectors, connection boxes, a transformer, and a disconnect switch.

For the UPS system mechanical and electrical drawings, see "System Design Description 241-SY-101 DACS Uninterruptable Power Supply" (WHC-SD-WM-SD-076) [ref. 6]. See Section 2.4.3.1 for information on trailer instrument power.

2.2.2 UPS Unit

The UPS is a Custom Power model 120-10KNT. It converts 208-V 3-phase to 120-V 1-phase. It is rated for 10 kVA and can supply over 20 min of power to a fully running DACS and over 1 h of power to the DACS if only essential equipment is turned on (see Figure 2). Upon loss of power from the mains, the UPS will instantly (within 1/2 cycle of 60 Hz) take power from the batteries, invert it to 120-V 1-phase, and supply the DACS instrument power. While the power mains are active, the UPS supplies charging current to the batteries.

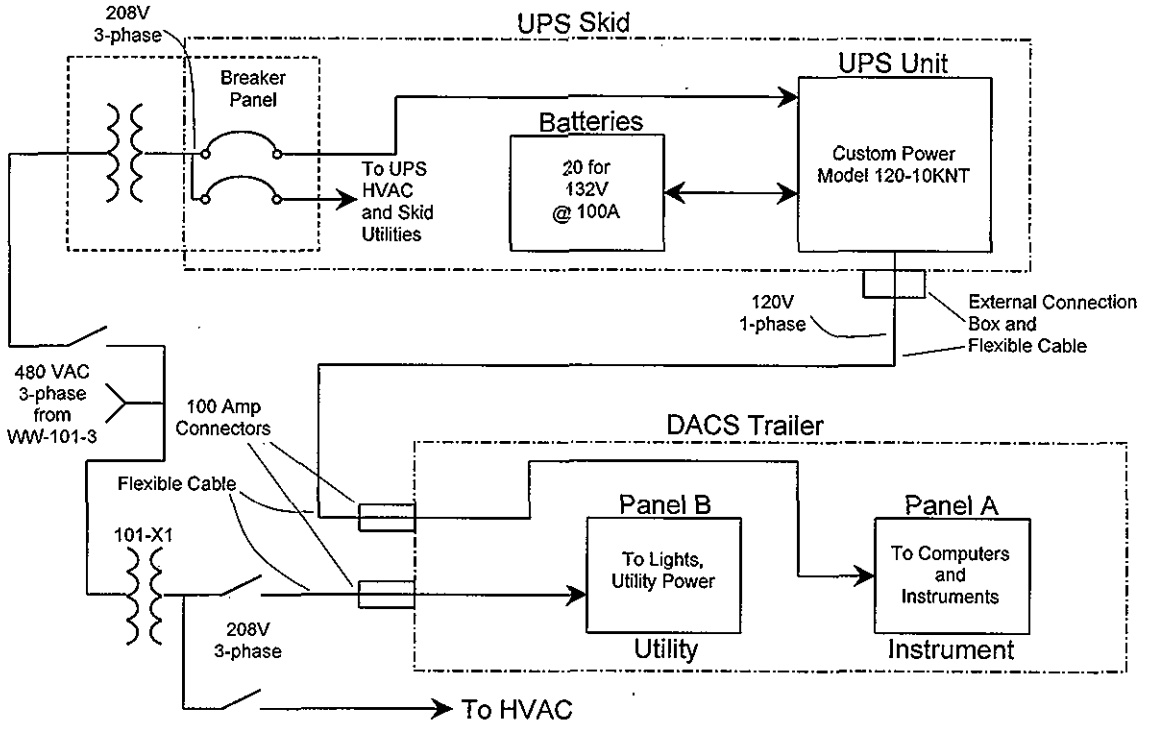


Figure 2. *DACS Electrical Power Block Diagram*

Switches to manually bypass the UPS and to test the batteries under load (both the DACS and a dummy load) are available. The UPS monitors both the incoming line voltage and the battery voltage and provides indicators and alarms. These indicators and alarms are displayed both at the UPS panel and, remotely, in the DACS.

2.2.3 HVAC (for UPS)

The HVAC system is mounted to the outside wall of the UPS shack and supplies forced cool air for the batteries and the UPS unit. It is a Bard model 20WA1, 1-ton unit.

2.2.4 Batteries

Twenty-five batteries are in the UPS shack. Each is a 12-V lead-acid sealed gel battery (shaped like a large car battery). Each battery is rated for 800 amp-hours.

The batteries are located in a cabinet opposite the UPS unit inside the UPS shack. The batteries are on pull-out shelves, arranged in an array of 10 by 2 (with five spares) to give a maximum output of 132 V at 100 amps nominal. The batteries are connected via heavy buss wire and the output of the battery cabinet before it is input to the UPS unit. There is a 100-amp circuit breaker to protect the battery array.

2.2.5 Auxiliary Elements

Attached to the outside of the UPS shack are power cables, junction boxes, and disconnect switches. The essential cables, disconnects, and junction boxes are identified in drawing EG&G NF-50721. All cables and switches not identified are left over from when the UPS shack was used at the Nevada Test Site (NTS). They were used for connecting dummy loads and supplying power to systems other than the trailer.

2.3 HVAC SYSTEM

During the 4th quarter of FY94, Morrison Refrigeration Company replaced the HVAC system at DACS-1. A contract was established with Morrison for future maintenance of the system.

2.4 DACS TRAILER

2.4.1 General

The trailer is a totally self-contained 52 x 12 ft instrumentation trailer designed to contain electronic and computer equipment. Instrument power is supplied via a 10-kVA external UPS (see Section 2.2), while separate utility power comes directly from the mains (see Section 2.1.2). The temperature is maintained by an external HVAC system (see Section 2.3). The trailer is located just outside the fence north of the SY-101 between the fence and the steam line. Details of the trailer mechanical, electrical, fire protection, rack layout, and other systems are given in drawings EG&G NF-2649 and H-2-822861, H-2-822862 and H-2-822863.

The trailer provides a suitable environment to house the computers, data acquisition equipment and other electronics. In addition to the computers and data acquisition equipment the trailer also houses the video camera controls, video monitors, and power supplies.

2.4.2 Trailer Mechanical

The trailer is mounted on a 3-ft-high structure to anchor it to the ground and keep the wheels off the ground. The underside is skirted with aluminum siding. Inside, the trailer is divided into three sections: a workbench, an instrument rack, and a computer console. In addition to those three areas are other amenities located in various places. A partial wall separates the computer consoles from the instrument racks. There are separate outside entrances to both areas. For details on the trailer mechanical see drawing EG&G NF-2649.

2.4.2.1 Bench Area

At one end of the trailer is a small workbench with equipment manuals in the cabinet above the bench and general spare parts (fasteners, cable connectors, some electronic parts).

2.4.2.2 Instrument Rack Area

The rack layout is shown below in Figure 3. In the rack area are 9 each standard 24 x 30 in. deep (19-in. internal) instrument racks, containing the following (listed in order from the bench area):

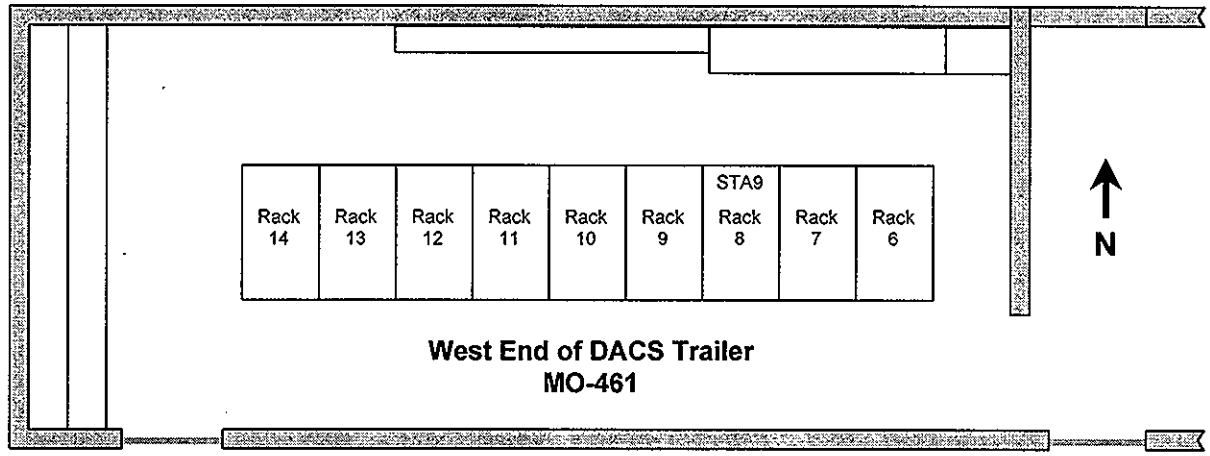


Figure 3. *Rack Layout in the West End of DACS Trailer MO-461*

Rack 14: Open
Rack 13: Open
Rack 12: Open
Rack 11: I/O drop 14, primary and secondary PLCs
Rack 10: Gas-monitoring computers and equipment
Rack 9: Open
Rack 8: STATION9, signal conditioning & test equipment, I/O drop 15, Ethernet Hub
Rack 7 & 6: Signal conditioning equipment, test and troubleshooting equipment and Nicolet fast data-logging equipment

(Note: a distinction is made between the physical trailer and the DACS. Thus the gas monitoring equipment located inside the trailer is not necessarily part of DACS. Likewise, all DACS equipment is not necessarily located inside the trailer.)

Signals flowing into and out of the DACS enter and exit via cables connected to a patch panel located across from racks 8, 9, and 10. The patch panel signals and layout are described in drawing H-2-815401. Modicon communication cables pass through the floor of the trailer.

2.4.2.3 Computer Console Area

In the console area are eight computer station locations, seven of which contain a CyberResearch rack-mount computer chassis containing a Micron Millennia motherboard with a Pentium-II 400 MHz CPU.

The computers are numbered 1 to 3, and 5 to 8 in a clockwise order (the computer at station 4 was removed during the recent 1999 upgrade). The computer console layout is shown below in Figure 4. The functionality of STATIONs 5 through 8 are described in Section 2.6.2. The functionality of STATION1 is described in Section 2.5.6. STATION2 is used for gas monitoring instrumentation (not included within the scope of this document). STATION3 is used as a general-purpose HLAN workstation.

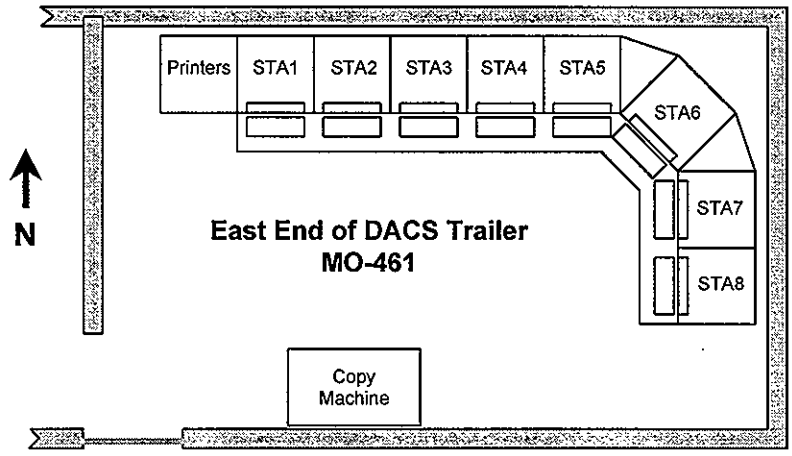


Figure 4. *Computer Console Layout in the East End of DACS Trailer MO-461*

In addition to the computer consoles is a cabinet for the Tektronix Phaser 350 and HP LaserJet 4 printers (these functions are described in Section 2.7.1), a copier, and several cabinets containing documentation and backup disks. Above most of the computer video displays are 5-inch panels containing various alarm annunciators, switches, and readouts.

2.4.3 Trailer Electrical

The trailer has two separate power systems, one for instruments and one for utilities. Utility power is 208 V 3-phase. Instrument power is 120 V 1-phase from the UPS.

2.4.3.1 Instrument Power

Instrument power is supplied via the external UPS to a 4-conductor (3-phase and ground) 100-amp connector on the outside north wall of the trailer. The UPS converts 208 V 3-phase to 120 V 1-phase. At the UPS output connector, three conductors are tied together as the "hot" and the fourth conductor is the return/ground. The power enters the side of the trailer and is routed to breaker panel A. Panel A is wired for 3-phase, but as stated before, all three phases are the same. From the breakers the power is routed to the inside of each rack and console to

power strips in each instrument rack and console rack. Voltage and current are monitored at the breaker panel for display in the DACS (via PLC input and the FIX32 [DACS] screen).

The essential parts of the instrument power connection to the trailer and through the UPS are shown in drawings in the vendor information file.

2.4.3.2 Utility Power

Utility power is supplied via the power mains to a connector on the outside north wall of the trailer. Power from the connector is routed to breaker panel B. The 208 V 3-phase circuit panel is located in the wall dividing the rack area from the console area, adjacent to the instrument power panel A. From the breakers the power is routed to the lights and power strips around the perimeter of the trailer.

The essential parts of the utility power connection to the DACS are shown on drawings in the vendor information file.

2.4.4 Trailer Fire Protection

Trailer fire protection is provided by a Fenwal model 1301 Halon fire suppression system. The Halon bottle is located in a shielded container high outside the East of the trailer and the control system is located in the wall dividing the rack area from the console area. Heat and smoke detectors are located on the ceiling around the trailer. Fire alarm pull-boxes are located next to each door. The trailer system is integrated into the Hanford fire alarm system.

2.4.5 Emergency Lighting

When utility power is lost to the trailer, two Shure-Lite model LM-1 emergency lights provide up to 90 min of emergency lighting. One is located above the copier in the console area. The other is located in the bench area. Power for charging the batteries and to detect the loss of power is provided by outlets on a utility power strip on the wall. However, to be NEC compliant, this will be changed so the (charging) power comes directly from the light power circuit.

2.5 PROGRAMMABLE LOGIC CONTROL (PLC) SYSTEM

2.5.1 General

Figure 5 shows a breakdown of the PLC system as an extension to Figure 1. The PLC system consists of the following:

1. Controllers
2. I/O drops
3. Auxiliary systems

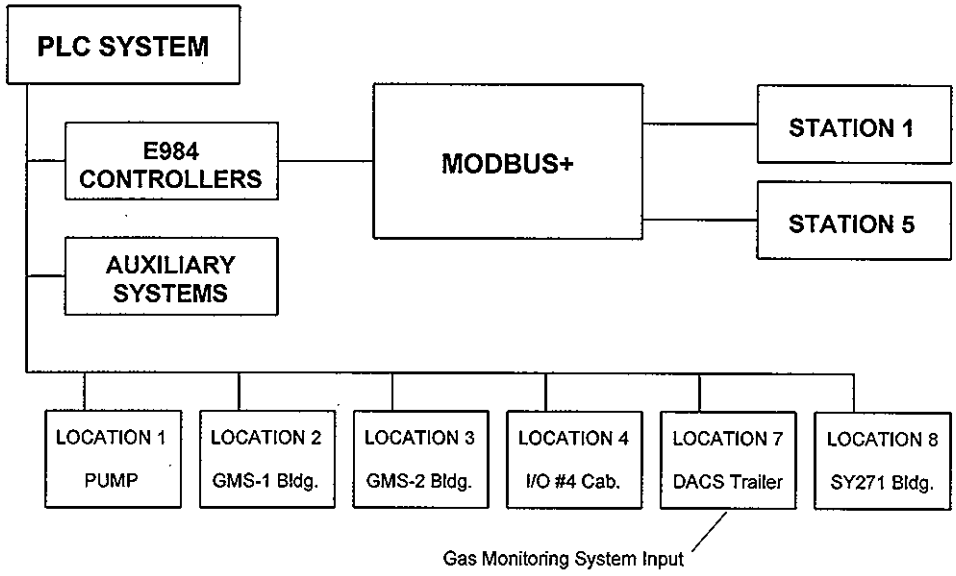


Figure 5. *PLC System Hierarchical Diagram*

2.5.2 Controllers

The controllers are AEG-Modicon model E984. DACS uses the E984 configured for complete redundancy via a second E984 unit operating in a "hot standby" mode and allows switchover from a failed primary E984 to the secondary E984. In the hot standby mode, data from the primary E984 are "shadowed" to the identically configured secondary I/O on a periodic basis. If internal diagnostics detect a watchdog failure, the switchover is executed and provides for a bumpless (i.e., less than one 50-ms scan time) transfer from one controller to the other.

The hot standby is connected using Modicon recommendations. For detailed information on that connection circuitry, consult the Modicon 984 manual. For detailed connection information on the programming, see Section 2.5.6.

2.5.3 Locations (I/O Drops)

2.5.3.1 General

The I/O field is made up of Modicon-AEG 800 series I/O. Typical I/O modules being used on the DACS are: model B875-101 analog input, model B824-16 24-Vdc output, model B885-002 ASCII BASIC, and model B883-200 thermocouple. The I/O is configured in several drops and distributed in the I/O clusters at strategic locations. The I/O is connected to the E984 via dual coaxial cables to the E984 PLC.

There are currently more than 200 channels of I/O that are described in the "Tank 241-101-SY Hydrogen Mitigation Test Functional Design Criteria" [ref. 3]. The I/O modules are housed in environmentally controlled housings with other electronics.

I/O drops 5 and 6 no longer exist. At one time, location 5 was to be used for the MCC building for the Eaton AF5000+ adjustable frequency drives (AFDs, also referred to as variable speed drives, VSDs). The word "location" is used instead of "I/O drop" in some older drawings and documents. The DACS software uses the term "I/O drop" to indicate a tap in the Modicon communications link. Furthermore, the drops are not numbered sequentially, but are related to

the "location" by multiplying by 2 (and adding 1 for multiple drops per location). Thus, location 1 (pump instrumentation cabinet) has drop 1, location 2 (Bldg. GMS-1) has drop 4, and so on. The exception to this is drop 13, which is at location 8. It was changed to 13 from 17 due to addressing limits of the E984 PLCs - they cannot address beyond 16.

This document will use the term "location" to indicate a physical location, and "I/O drop," or just "drop" to indicate a communication tap, to be consistent with the current H-2 drawings, the DACS software, and the tag database listings (FIX32 and Modsoft).

2.5.3.2 Location 1

Location 1 is the set of Modicon modules in a single I/O drop (drop 2), for the mixer pump instrumentation. It consists of two Modicon racks. In the first rack are 3 model B875-101 modules set for 4-20 mA inputs. In the second rack is a model B827-024 digital input (24-V switch) module and a B865-002 BCD input module. There are no outputs (controls) in this I/O drop. The drop is physically located in a NEMA-12 instrument cabinet on top of SY-101 tank southeast of riser 16A. The following pump signals are monitored:

1. Intake and discharge nozzle pressures
2. Pump column gas pressure
3. Motor oil temperature
4. Motor oil moisture limit
5. Rotational motor position
6. Rotational motor limits

2.5.3.3 Location 2

Location 2 is a set of Modicon modules in a single I/O drop (drop 4), for various instruments, but mainly the thermocouples on MIT 17B and MIT 17C. It consists of 2 Modicon racks. In the first rack are two model B875-101 modules set for 1 to 5-V inputs, 1 model B827-024 digital input (24-V switch) module, and one B883-200 thermocouple input module set for type-K thermocouples. In the second rack are five model B883-200 thermocouple input modules set for type-K thermocouples. All B883-200 modules have been modified to have their open-thermocouple detection circuitry disabled to eliminate noise spikes sent to TMACS. There are no outputs (controls) in this I/O drop. The drop is in a small cabinet on the east wall floor inside Bldg. GMS-1. The following signals are monitored:

1. Temperatures for MIT 17B
2. Temperatures for MIT 17C
3. Vent header temperature
4. Vent header relative humidity
5. Tank dome pressure
6. Hydrogen concentration
7. Camera nitrogen pressures
8. ENRAF level gauge, riser 1A
9. ENRAF level gauge, riser 1C

2.5.3.4 Location 3

Location 3 is a set of Modicon modules in a single I/O drop (drop 6) for various gas monitoring diagnostics. It consists of one Modicon rack with four modules: three B875-101 modules and a B827-016 module. There are no outputs (controls) in this I/O drop. The drop is physically located in a cabinet on the south wall of Bldg. GMS-2. The following inputs are monitored:

1. SHMS cabinet trouble
2. Hydrogen concentrations
3. FTIR diagnostics
4. Gas chromatograph diagnostics
5. GMS-2 building temperature

2.5.3.5 Location 4

Location 4 is the set of Modicon modules in two I/O drops (drops 8 and 9) for various instruments. It consists of three Modicon racks. In the first rack are four B875-101 modules set for 4-20 mA. In the second rack is one B875-101 module set for 4-20 mA, one B827-032 module, and one B824-016 module. In the third rack (drop 9) are four model B875-101 modules set for 4-20 mA. There are no outputs (controls) in either I/O drop. The drops are located in I/O cabinet #4 near Riser 1B. The following inputs are monitored:

1. VDTT velocities and temperatures
2. I/O #4 cabinet temperature
3. Hydrogen concentration
4. Area gamma radiation and instrumentation diagnostics

2.5.3.6 Locations 5 and 6

Locations 5 and 6 are not used. Both were to be used in the original system, but have been deleted. Location 5 was the motor control center (MCC) building, but it turned out no Modicon I/O was needed.

2.5.3.7 Location 7

Location 7 is the set of Modicon modules in two I/O drops (drops 14 and 15) for various instruments. It consists of three Modicon racks with nine modules. In the first rack are three model B875-101 modules set for 0-10 V. In the second rack is a model B827 digital input module, a B824 24-V output module, and three B875-101 modules all set for 1-10 V. In the third rack (drop 15) are two model B829 modules, a B828 module, and a B885 ASCII BASIC module. This location is the only one with outputs (controls). The drops are physically located in the DACS trailer (see drawing H-2-822875). The following inputs are monitored:

1. Trailer instrumentation cabinet temperatures
2. UPS diagnostics
3. Video camera diagnostics
4. DACS trailer instrumentation ac current (1-phase)

5. DACS trailer instrumentation ac voltage (1-phase)
6. DACS weather station
7. Emergency stop monitor
8. Pump accelerometers
9. All strain signals
10. All high-frequency strain alarms

In addition to the input modules are instrument output modules B828 and B824-016. The following signals are output from the modules:

1. Emergency stop signal
2. Nicolet trigger
3. Communications timer (internal)

2.5.3.8 Location 8

Location 8 is the set of Modicon modules in two I/O drops (drops 13 and 16) for various instruments, mainly the thermocouples for the tank bottom and side. It consists of two Modicon racks with ten modules. In the first rack are five model B875-101 modules set for 0-5 V. In the second rack are two model B875-101 modules set for 4-20 mA and 0-5 V, and three model B883-200 thermocouple modules set for type-J thermocouples (modified to have their open-thermocouple detection circuitry disabled). There are no outputs (controls) on this I/O drop. The drops are located in the DACS trailer (see drawing H-2-822875). The following inputs are monitored:

1. Vent header flow
2. Tank bottom and side thermocouples
3. Vent header hydrogen concentration

2.5.3.9 Location DACS

This location is used as a place holder for internal signal names or "tags." There are no input or output signals, only internal signals. The physical location is in the DACS trailer. Internal signals in this location are used mainly for diagnostics such as instrument failures, or communication failures. The main PLC abort coil is a tag in this location.

2.5.4 Auxiliary Systems for the PLC

Each I/O drop has a model J890 remote I/O interface module. The J890 is used to control the internal working of the rack(s) in the particular drop, and to communicate with the E984 PLCs in the DACS trailer. Each drop is connected to the E984 controller via coaxial cables configured according to H-2-140169. The J890 modules communicate module status and data to the E984s. The J890s also receive setup information from the E984s for the modules in their rack(s). Each I/O drop also has a model P810 rack power supply.

Where there is more than one Modicon rack in a particular drop, one rack acts as the primary rack while the others are secondary. The primary rack contains the P810 and J890 modules. Communications to the secondary racks are provided via a model W801

multiconductor cable. Power is supplied to the secondary racks via a model W808 cable connecting the two racks.

Where external power is required (i.e., to control relays), power supplies are used. Normally these are 24-V high-current (several Amps) instrument-grade power supplies, physically located beneath the appropriate Modicon model B824-016 module. An example of this is an HP adjustable power supply (set to 24 V) located in the trailer in rack 11 below drop 14 to provide relay power for the E-stop circuits.

2.5.5 Strain Gauge Recording System

2.5.5.1 General

Figure 6 shows the essential components of the strain gauge recording system. In all channels, the strain element is a single active component in a bridge circuit with the bridge completion resistors located above the tank. The bridge excitation voltage for all channels is 10 Volts. The nominal strain gauge resistance is 350 ohms for all channels.

2.5.5.2 Pump Column Strain Gauges

These strain measuring systems are shown in the top half of Figure 6. They do not have a Calex amplifier in the field, nor do they have intrinsic barriers (the pump column interior is not an explosive environment). The Ectron model 776B strain gauge signal processors (amplifiers) are set for a gain of 1000. Strain bridge excitation is provided by the Ectron unit. The Ectron output signals pass through a 6-pole, 1-kHz low-pass Bessel filter. Full-scale output of the Ectron amplifier is +/-10 Volts.

After the Ectron amplifiers, the individual signals are routed via RG-58 and a BNC connector, to a tee. Both paths after the tee provide high impedance, so this tee is a simple BNC tee. One side of the tee is routed to a 2:1 voltage divider, the other side is routed to the input of a Modicon model B875-101 module set for +/-10 Volts input.

2.5.5.3 MIT, VDTT Strain Gauges

These strain measuring systems are shown in the bottom half of Figure 6. A Calex model 460-115 amplifier is used in the field to boost the signal into the trailer and into the Ectron model 776B amplifier. The gain on the Calex amplifiers is set to 200 and the gain on the Ectron amplifier is set to 10. The Calex amplifier module provides the excitation voltage for the strain bridge. The Calex output signals pass through a 2-pole, 9.5-Hz low-pass Bessel filter.

After the Ectron amplifiers, the individual signals are routed via RG-58 and a BNC connector to an individual tee. Both paths after the tee provide high impedance, so the tee is a simple BNC tee. One side of the tee is routed to a 2:1 voltage divider, the other side is routed to the appropriate input of a Modicon model B875-101 module set for +/-10 Volts input. The Modicon inputs are used to feed the strain signals directly to FIX32 for display and archive. These are the "slow" strain signals.

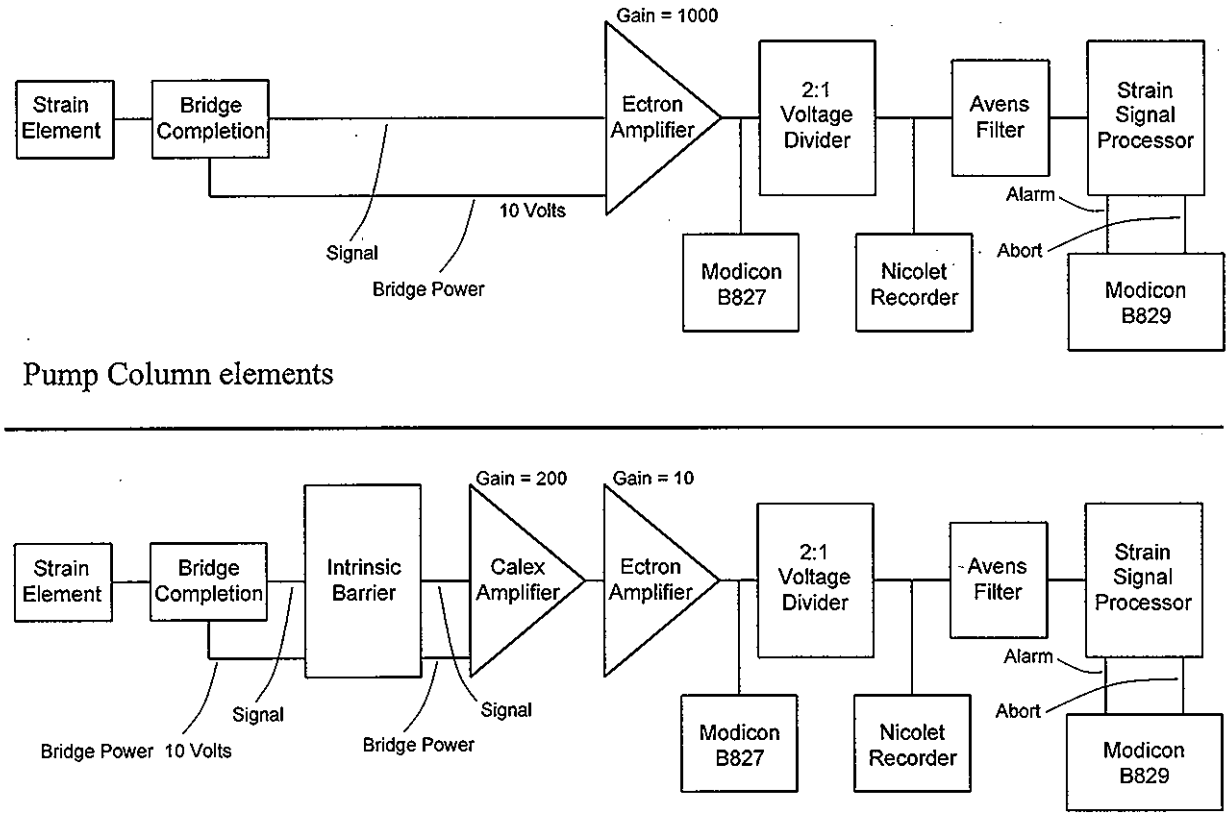


Figure 6. *Strain Gauge System Essential Elements*

2.5.5.4 Nicolet High-Speed Recorder

From the 2:1 divider (after the Ectron amplifier), the signals are again teed with a simple BNC tee. One of each of the signals from the tees is fed via RG-58 and BNC connectors to the appropriate input of the Nicolet model Multipro DAS data recorder with model 120 4-channel input cards. The Nicolet data recorder is set for a maximum input of +/-5 Volts.

The Nicolet data recorder must be controlled by software running under Windows on an external computer (formerly at STATION4). A GPIB cable runs from the Nicolet to the location of STATION4, but is currently not connected to any computer.

The Nicolet has two external triggers and both are used. One trigger is a TTL level input, and the other trigger takes a high-level pulse (although configured for 5 Volts). The TTL trigger input is connected to the output of a Modicon model B828-016 TTL output module (drop 15). *This signal is activated when any low- or high-frequency strain alarms occur.* The other Nicolet trigger input is connected to the output of a Modicon model B824-016 24 Volts switch module (drop 14). *This signal is activated when the pump is running.* Because the pump-run trigger signal is 24 Volts, it is divided by a simple 5:1 voltage divider in line with the signal (47 K ohms series, 10 K ohms shunt, inside a BNC in-line connection box). Both trigger signals are routed via a BNC connector and RG-58 to pigtailed wires at the Modicon module terminal blocks.

2.5.5.5 Strain Signal Processor

From the 2:1 divider (after the Ectron amplifier), the signals are, again, teed with a simple BNC tee. One of each of the signals from the tees are fed via RG-58 and BNC connectors to the appropriate input of an Avens model 4000 high-pass filter chassis located in the bottom of Rack 7. The individual channel filters are all set for a cutoff frequency of 0.1 Hz with a gain of 1.

The filter output signals are routed via RG-58 and BNC connectors to the appropriate inputs of the EG&G N-DP-172 strain signal processor (SSP). The SSP consists of 16 individual channels that each compare their input signals with preset levels. One preset level is for an "alarm" and one level is for an "abort" (an output for the "mean" level is available but not used). The alarm and abort outputs for each channel are 5-V TTL outputs active when the input level is above the respective preset level. The individual alarm and abort outputs are routed via RG-58 cable and BNC connectors to their respective input of a Modicon B829-116 TTL input module. This provides the PLC ladder logic with a direct, discrete signal for alarm and abort for the strain signals.

2.5.5.6 Ectron Calibrator

The Ectron amplifiers have built-in calibration signals that can be switched into the amplifier input. The calibration signal is a three-level signal: full-scale positive, full- scale negative, and zero. The full-scale voltage may be adjusted internally (see the Ectron manual for instructions). The three levels are applied to the input of the amplifier as a return-to-zero (RZ) pulse train. An 8-bit ID code may be programmed into this pulse train (see the Ectron manual for instructions).

An EG&G model N-TF-56 HPSCU calibrator, in rack 7, is used to control the calibration signal to all of the Ectron amplifiers. Cal Enable and Cal Clock signals (with signal return/common) are generated by the model N-TF-56 and are routed to terminal boards in rack 6. From the terminal boards, those signals are routed to the individual amplifiers to pins on J2 of the Ectron amplifiers.

To operate the model N-TF-56, turn the power on, select the rate of the RZ clock with the front panel switch, and switch Cal Enable to Manual (also on the front panel). The Ectron amplifiers will now output their individual calibration signals.

2.5.6 Modicon Console (STATION1)

The first computer rack in the trailer houses the computer that communicates and programs the Modicon E984 PLCs. The computer is a CyberResearch rack-mount computer chassis containing a Micron Millennia motherboard with a Pentium-II 400 MHz CPU. The monitor is a 17" Industrial Computer Source model 9017-R. The connection from the computer to the Modicon PLCs is via a Modbus Plus network connection. The computer is connected to the DACSNet network via a 3Com Fast EtherLink XL NIC. A Kensington Expert Mouse trackball is used for cursor manipulation.

Installed on STATION1 is Windows 95 and Modsoft application software. Modsoft, Modicon's programming and utility software, provides the following functionality: offline program development, online program maintenance, and I/O module status monitoring. The Modsoft protocol uses these utilities for reading/writing registers or discrete inputs/outputs and for broadcasting data.

2.5.7 Modicon-FIX32 Interface

Interface to the FIX32 system is via Modbus-Plus protocol (see Modicon 984 User's manual). A Modbus-Plus connector is on the front of each of the E984 controllers. The Modbus-Plus network begins at the PLC at address 33, then continues to the PLC at address 01, to STATION1, and finally to STATION5. The end-points (PLC at address 33 and STATION5) require a terminated connector (light gray), while all nodes in between require an in-line connector (dark gray).

2.6 Intellution FIX32 (DATA ACQUISITION AND CONTROL)

2.6.1 General

FIX32 is an industrial process control system produced by Intellution, Inc. in Norwood, MA. The software operates under Windows NT, providing multitasking and multithreaded processing. This networked computer system is designed to collect data from operator input, the PLC, and the variable frequency drives, display the data in real time to operators, and log the data for archival and future analysis. Functions embedded in the system for controlling and positioning the pump allow FIX32 to use the data collected from the PLC and variable frequency drives to warn operators of critical conditions.

The nucleus of the DACS is a system of five PCs running FIX32. The PCs are designated as STATION5, STATION6, STATION7, STATION8, and STATION9. STATION9 is located in rack 8 of the equipment rack area of the DACS trailer. The four remaining stations are located in the computer console area of the DACS trailer. In addition to these five FIX32 stations in the DACS trailer, there are four remote stations designated as STATION11, STATION13, STATION15, and STATION17. STATION11 is located in a West Tank Farms office in Bldg. 278WA, and STATION13 is located in the 306E Bldg. STATION15 is located in the 200E area, Bldg. 2750. STATION17 is a mobile DACS Developer RSS. Figure 7 shows a block diagram of the connection between the computers, and Section 2.6.2 explains the primary function of each PC.

2.6.2 FIX32 Stations

STATION5 is a local station, and the FIX32 SCADA node station.
STATION6 is a local station, also connected to HLAN for DACS data access.
STATION7 is a local station.
STATION8 is also a local station, considered the primary pump control station.
STATION9 is a local station used as a Remote Access Server for the RSS stations.
STATIONs 11, 13, 15 and 17 are Remote Supervisory Stations (RSSs).

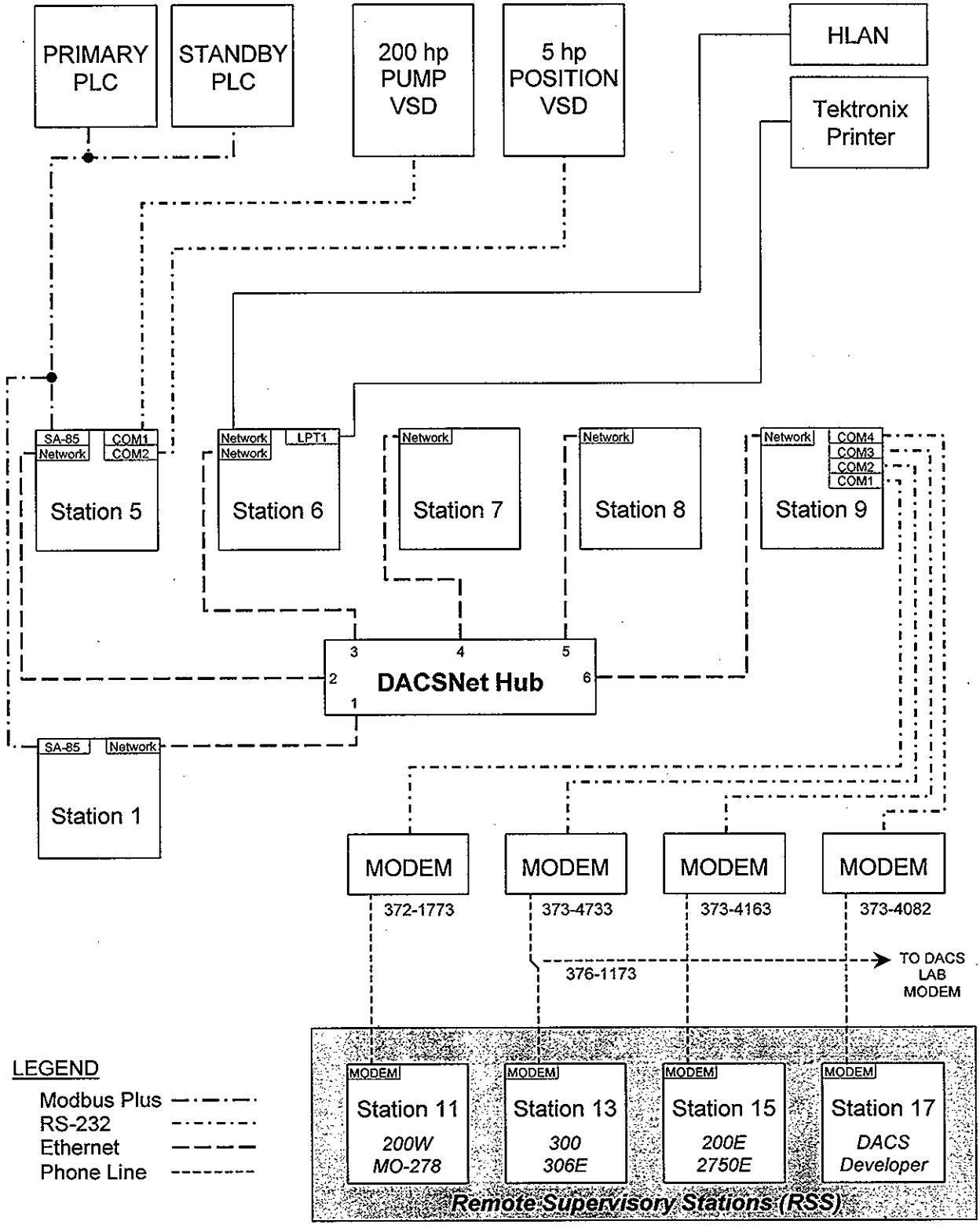


Figure 7. *DACS Computer System Block Diagram*

The computers used in the DACS trailer are CyberResearch rack-mount computer chassis containing a Micron Millennia motherboard with a Pentium-II 400 MHz CPU. The monitor model used is a 17" Industrial Computer Source model 9017-R. STATION11 and STATION15 are Micron Millennia Pentium-II 400 MHz towers, with Hitachi SuperScan Elite 751 19" monitors. Kensington Expert Mouse V. 5.0 model trackballs are used with each PC. The STATION17 computer is a laptop computer, and its configuration is controlled by DACS developers. In the DACS trailer console area the OEM trackballs are replaced with color coded and numbered billiard balls corresponding to the station number. Due to the close proximity of each PC, this practice alleviates potential confusion. The internal configuration for each PC is documented in Appendix A.

STATION5 is the Supervisory, Control and Data Acquisition (SCADA) node for the entire DACS FIX32 system. It provides instrument monitoring, data logging, alarm generation, and PLC I/O control. Essential to these functions are communications with the Modicon PLC via Modbus Plus, and other stations on the DACSNet Ethernet network. Color hardcopies of any screen are easily generated from the FIX32 software, to a Tektronix Phaser 350 printer.

Data monitoring is one of the primary functions of STATION5. Tank instrumentation data and system status information are presented on a number of operator display screens. The operator screens fall into three basic categories plus a MAP screen. The MAP screen shows the organization of all of the other screens in the system. The three screen categories are used for monitoring and are discussed below.

STATION5 is responsible for logging data to it's local hard drive. Every four hours, the data file is closed and a new one is opened, and STATION6 receives a copy of the data and alarm information. The data are used for long-term tank monitoring and to evaluate the results of the pump tests.

STATION5 also contains logic for positioning the pump. This logic uses operator input, the current status of the pump and directional motors, and the current feedback signal levels of the critical variables in the waste tank to determine what the directional motor should do. This task will command the directional motor's frequency drive to move the pump to the operator's desired position when all conditions are correct. STATION8 is the primary station for running the pump, but pump control can be enabled at any local station (STATION5, STATION6, STATION7, and STATION8) with a supervisor-level password.

The mixing pump motor is also controlled through its variable frequency drive by the logic associated with pump operation in STATION5. The logic uses the current values of the critical variables in the tank to decide if commands from the operators to start or stop the pump motors should be honored. If allowable, commands are sent to change the pump's operating status.

There is logic embedded in the FIX32 software to abort the directional or pump motor operation. This task will immediately shut down operation of either motor if any of the abort criteria becomes active. All stations will display alarm conditions in the alarm summary and warn the operator with an audible alarm when a signal goes into alarm state.

The tests that are performed on the waste in the tank involve operating the pump at different speeds and at different angles. A test is selected using the [PUMPRUN] screen from the pump control station (typically STATION8). This selection determines a predetermined set of speeds and angles so that the test parameters can be downloaded easily to the active parameters of the position and mixing pump control logic.

2.6.2.1 STATION11, STATION13, STATION15, and STATION17

Four remote supervisory station (RSS) computers are located outside of the DACS trailer. STATION11 is located in a West Tank Farms office in Bldg. 278WA, STATION13 is located in the 306E Bldg., STATION15 is located in Bldg. 2750, and STATION17 is a mobile RSS used by the DACS software developers. They transfer their network data packets over phone lines at 56k baud using standard v.90 modems (U.S. Robotics 56k external fax modems). The connection of the modems will be discussed in Section 2.6.3.2.

These stations are outside of the DACS trailer. They function just as a local station in the DACS trailer except these stations are "read only." These PCs are able to receive information from the FIX32 system, but no pump control or abort coil resets can be performed from these stations. All alarms are visible on RSS stations. Due to relatively slow data download times through the modems, no trend plots are available from any RSS.

2.6.2.2 STATION5

STATION5, the primary SCADA computer, is connected to the Modicon E984 PLC through the Modbus Plus network via a Modicon SA-85-001 adapter. It also communicates with the AF5000+ AFDs through COM1 (pump motor) and COM2 (directional positioning). The main functions STATION5 performs are as follows:

1. Send and retrieve field values from the Modicon 984 series I/O drops
2. Write those engineering values to disk as FIX32 history files
3. Participate in the watchdog timer with the E984 ladder logic
4. Look for alarm and abort conditions
5. Send aborts to the E984 for inclusion in the abort limit ladder logic
6. Communication with the AF5000+ AFDs
7. Provide pump control sequencing and abort logic

STATION5 appears to the operator as a local view station, and any screen can be viewed with the appropriate password level. STATION5 is capable of becoming the pump control station with a supervisor-level password. STATION5 is connected to the DACSNet hub with a 3Com Fast EtherLink XL NIC.

2.6.2.3 STATION6

The local station STATION6 is linked via the DACSNet Ethernet hub to STATION5 with a 3Com Fast EtherLink XL NIC. STATION6 is capable of becoming the pump control station with a supervisor-level password. The data files generated on STATION5 are sent to STATION6 every four hours. STATION6 is also connected to HLAN with a second 3Com Fast EtherLink XL NIC. This allows password-protected access to the data files resident on STATION6 for data management personnel. The Tektronix Phaser 350 color printer is also physically connected to STATION6 via LPT1. It is shared over the DACSNet network to provide access for all local stations.

2.6.2.4 STATION7

The local station STATION7 is linked via the DACSNet Ethernet hub to STATION5 with a 3Com Fast EtherLink XL NIC. STATION7 is also capable of becoming the pump control station with a supervisor-level password. No other external hardware interfaces are utilized on STATION7.

2.6.2.5 STATION8

The local station STATION8 is linked via the DACSNet Ethernet hub to STATION5 with a 3Com Fast EtherLink XL NIC. STATION8 is the default pump control station. Other local stations can become the pump control station with a supervisor-level password. No other external hardware interfaces are utilized on STATION8.

2.6.2.6 STATION9

The local station STATION9 is linked via the DACSNet Ethernet hub to STATION5 with a 3Com Fast EtherLink XL NIC. STATION9 is the only station that uses Windows NT Server as it's operating system, solely due to licensing requirements for multiple RAS connections (greater than two connections requires Windows NT Server). A Digi 4-port serial I/O card is used to connect directly to the four U.S. Robotics 56k external fax modems. The built-in COM1 and COM2 ports have been disabled in the BIOS.

2.6.3 DACSNet Network

2.6.3.1 General

The FIX32 system supports 10-BaseT and 100-BaseT Ethernet network communications to enable data to be shared between stations. The DACSNet network also supports host communications to multiple supervisory stations, allowing multiple computers to access common data, through Windows NT's Remote Access Service (RAS). DACS uses four RAS connections; more can be accommodated should the need arise. The network connections are shown in Figure 7. STATION1, used primarily for Modsoft PLC programming software, is connected to the DACSNet network for convenient access to system resources (i.e., the Tektronix printer). The DACSNet network uses NetBEUI as the only network protocol (it does not use TCP/IP protocol). All network configuration settings are documented in Appendix B.

2.6.3.2 Physical Connection

The physical network hardware is standard 100-BaseT Ethernet hardware – a 3Com Fast EtherLink XL card for each local station (STATION5, STATION6, STATION 7, STATION8, and STATION9), and a 100-BaseT Ethernet hub. Each of the local FIX32 stations is connected to the 100-BaseT hub with a 100-foot unshielded twisted-pair (UTP) Ethernet cable. The 100-BaseT hub is located in trailer equipment rack 8 (see Figure 3). The hub is a LinkSys EtherFast 10/100 Auto-Sensing 8-Port Workgroup Hub, Model EFAH08W.

The RSS stations are also on the DACSNet, via the STATION9 connection to the hub. All modems used for the DACSNet RAS are U.S. Robotics 56k external fax modems. The modems in the trailer are set for "answer" and the remote modems are set for "dial", all via software configurations in the network setup (see Appendix B).

2.6.3.3 HLAN Connection

In addition to the DACSNet, STATION6 has a connection to the HLAN. This is accomplished via a second Fast EtherLink XL Ethernet card. The HLAN uses TCP/IP as a network protocol, and is administered by Hanford HLAN personnel. This connection is used by data management personnel to obtain DACS data over the HLAN without the need to physically enter the DACS trailer. DACS developers and management will also have access to STATION6 data.

2.7 AUXILIARY SYSTEMS

Auxiliary systems include printers, security keys, external speakers, and annunciator panels.

2.7.1 Printers

There are two printers in use in the console area adjacent to console rack 1. The Tektronix printer is physically connected to STATION6 via LPT1, and all other local stations have access to this shared printer. The HP LaserJet 4 printer is physically connected to STATION3 via LPT1, and is entirely dedicated to STATION3 for HLAN workstation needs.

2.7.2 Security Keys

All FIX32 stations require the use of a security key from Intellution. The purpose of the key is to ensure software license compliance. The FIX32 system will not run on any station that does not have a key installed. This key is physically connected to LPT1 on each station (even RSS stations). If a printer is connected to the computer, it will be connected to the security key (all data is passed-through).

2.7.3 External Speakers

To increase the volume of the alarms from FIX32 stations, external amplified stereo speakers are connected to the output of the built-in sound card from the computer. Only STATION5 will output alarm sounds; all other stations use sound to provide feedback to the operators of error status conditions, security level alerts, and other system sounds. The speakers are mounted under the console platforms for the keyboards.

All speakers used in the DACS trailer and at the RSS stations are Advent model AV009 Powered Partners.

2.7.4 DACS to AF5000+ Interface

The communications link between the AF5000+ AFD units (see Section 2.8) and the DACS are two dedicated RS-232 serial connections between STATION5 and the two motor drives. In addition to the RS-232 serial links, the AFDs are interfaced with two remote keypads, called Soft Touch Operator Panels (S.T.O.P.), located in the DACS trailer computer console area above STATION7. These keypad displays provide drive status and diagnostic information. For more details regarding how these function, consult VI files #22570 and 22571 regarding the Eaton AF5000+. The wiring scheme showing the drive units in the MCC building (Bldg. 271-SY) connecting to the DACS is on drawing H-2-815171.

2.7.5 Video System

The DACS trailer has three separate video systems; two originated from Hanford and one from LANL. The SY-101 in-tank video and the trailer internal surveillance cameras are Hanford systems. They will be briefly described with details found in the H-2 drawings. The external surveillance camera on top of the trailer is provided by LANL and will be described in detail. As an auxiliary to the video systems are the camera controllers, the videotape cassette recorders, and the video modulators. A block diagram of all the trailer video systems is shown in Figure 8.

2.7.5.1 Internal Surveillance Camera

Two CCD cameras are mounted in the console area of the trailer positioned to observe the console operators. The video signal from these cameras is routed through the trailer according to drawing H-2-822870. Video from these cameras is available in the DACS trailer and is modulated on a separate modulator from that shown in Figure 8, on the broadband line for viewing in Bldg. 2750.

2.7.5.2 External Surveillance Camera

A Sony model SSC-M354 black-and-white CCD camera with iris controller, a Rainbow model MEA-II zoom lens with remote control constitute the camera subsystem (for controllers, see Section 2.7.5.4). This subsystem is mounted inside of a Pelco model EH550 camera enclosure (water-tight). The camera subsystem and enclosure are attached to a Pelco model PT570-24P pan and tilt unit (for controller, see Section 2.7.5.3).

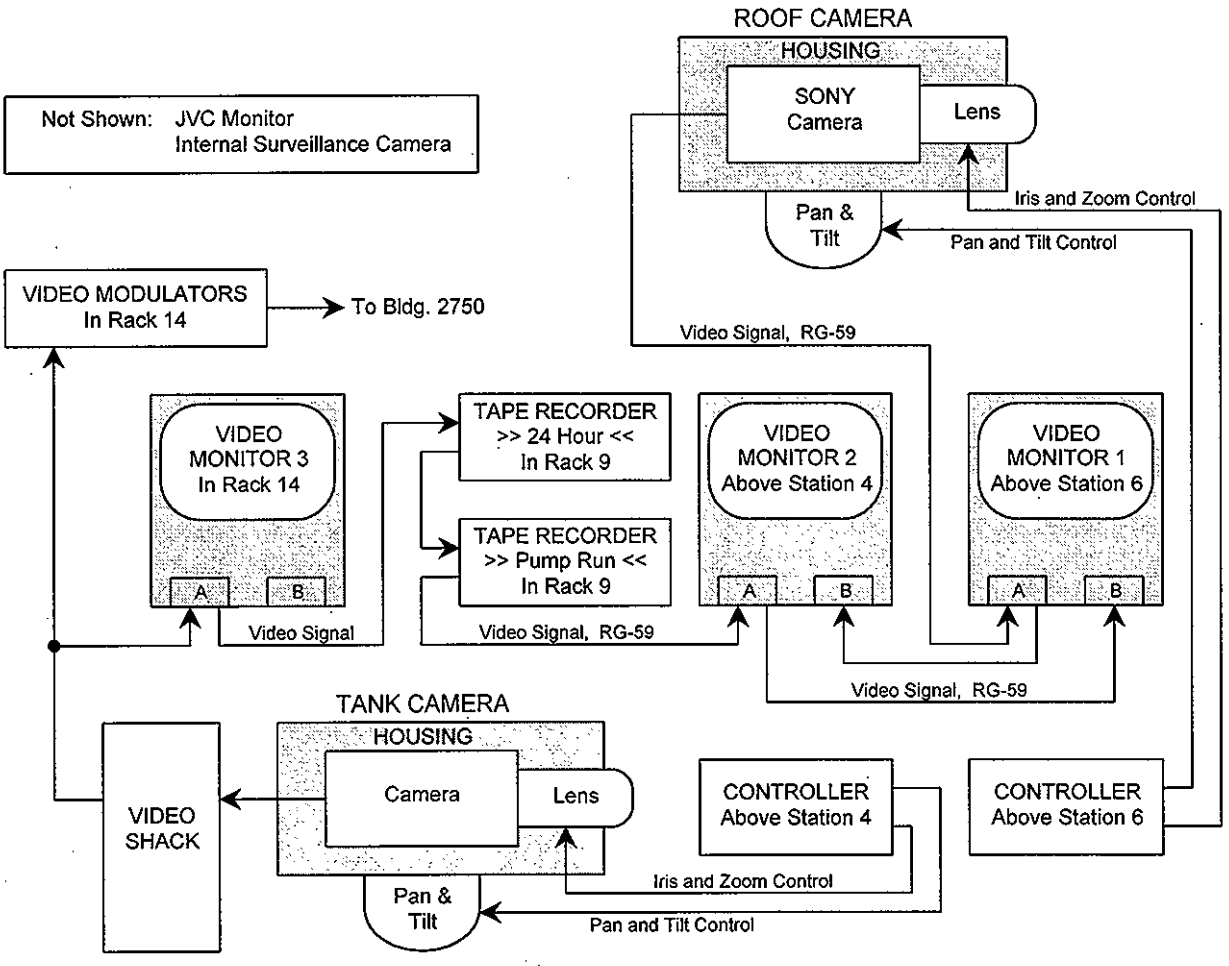


Figure 8. *Trailer Video Systems Block Diagram*

2.7.5.3 Camera Controllers

The trailer roof camera is controlled by a Pelco model MLZ6DT lens control and a Pelco model MPT24DT pan and tilt control. Both controllers are mounted on a panel immediately above STATION6. A separate 24 VAC power supply (transformer) is mounted behind the control panel in console rack 6 and provides power for the pan and tilt motors. The controllers have their own internal power supplies and are connected to 120 VAC -- the controllers provide power to the lens DC motor. The 24 VAC may be monitored at terminals on the control panel. A power switch for all the camera instruments is also located on the panel. Connection between controllers and the camera is made by multiconductor cable. For connection details, see drawing H-2-822870.

NOTE: It is not possible to pan (rotate) the roof camera in a full 360-deg arc. The limit is to the east coming from both clockwise or counterclockwise directions. Damage may result to cables and connectors if the camera is forced to pan further than its limit.

The functions zoom, iris, focus, pan, and tilt are all available. Operation is simple, but for detailed instructions on how to use the controllers, consult the manufacturer's manual (VI file #22671).

For the in-tank camera, a separate remote control unit is provided by the Hanford site video maintenance crew. The functions: zoom, iris, focus, pan, and tilt are all available. Operation is simple, but for detailed instructions on how to use the controllers, consult the manufacturer's manual for the Panasonic control unit. Connection is made between controller and camera by coaxial cable.

2.7.5.4 Video Recorders and Modulators

Video from the in-tank camera flows through the video shack, then into the trailer via RG-59/U coaxial cable and BNC connectors, to a modulator located in the bottom of rack 14 (see Figure 8). The baseband video signal is teed off and routed to the monitor in rack 14 on the "A" side. The signal is modulated onto a broadband cable for transmission to Bldg. 2750.

From the output of the monitor in rack 14 the signal is routed via RG-59 coaxial cable and a BNC connector to two VCRs located in rack 7. The signal is looped through from video-in to video-out using F-type connectors. The first VCR is a special slow recorder that can record 24 hours onto one cassette. The second VCR is a high-quality standard VHS recorder, used when the pump is running.

2.7.5.5 Monitors

The first monitor in line for the in-tank signal is a Sony SSM-221 monochrome (black-and-white) monitor. It has an internal A-B switch to select from two video sources; only the in-tank video is connected. The signal loop is not terminated; the termination switch on back of the monitor is set to Hi-Z.

After the VCRs, the in-tank signal is routed to another Sony SSM-221 located above STATION4 via RG-59 cable and a BNC connector. Here, side A is the in-tank video, and side B is the roof video. The in-tank video is then routed through the monitor above STATION4, to another monitor above STATION6 via RG-59 and BNC connectors The monitor above STATION4 is set for HI-Z termination for the in-tank video and 75 ohms for the roof video on side B.

The monitor above STATION6 is another Sony SSM-221. The in-tank video is now on side B, and the signal line is terminated by switching the internal termination switch on the back of the monitor to 75 ohms. The roof video is side A and it is not terminated (Hi-Z).

A JVC model VM-R140SU color monitor was added to the trailer recently, above STATION5. For connection details see drawing H-2-822870. This monitor shows in-tank video.

2.7.6 Telephone System

There are ten separate dial lines into the trailer. The lines enter the trailer at terminal blocks located outside, above the power connectors. The lines are:

1. 373-4854	2. 373-2630	3. 373-4250
4. 373-2921	5. 372-1773	6. 373-4733
7. 373-4163	8. 373-4082	9. 372-2025
10. 373-4680		

2.7.6.1 AT&T Spirit Rotary PBX

The first three lines listed above are connected to an AT&T model 308/616 3-line rotary switcher (mini-PBX). The output of the switcher is connected to four phones around the trailer. The telephone for output IC#10 is located on the rear wall by rack 12. For output IC#11 the phone is located on the front wall by the white board. For output IC#12: by STATION5 in the corner console area. For output IC#13: by STATION1 (the printer rack). Each of these phones has three lines, which are selected by pushing the appropriate button on the phone instrument. For incoming calls, the designated line will be used and if busy, will signal busy. For outgoing calls, the next available line will be used if one or more is busy.

2.7.6.2 Modem Lines

There are four lines used strictly for modems. Lines 372-1773 (used for STATION11 in Bldg. 278WA), 373-4733 (used for STATION13 in the 306E Bldg.), 373-4163 (used for STATION15 in Bldg. 2750), and 373-4082 (used for STATION17) are used for the modems connected to STATION9 (see Section 2.6.3.2). The modems in the trailer are set for "answer," and the remote modems are set for "dial," so when communications are lost, no one has to man the trailer to reestablish communications (unless a computer needs rebooting).

2.7.6.3 Other Lines

Line 372-2025 is used by gas monitoring system personnel for voice communication to GMS-1 and GMS-2. In addition, there is one separate dedicated phone line in the trailer, 373-4680, used strictly in the console area as a "red line" to Bldg. 2750 (although is not hard-wired).

2.7.7 Weather Station

The weather station sits on the roof of the trailer and consists of separate components to measure wind speed and wind direction. Barometric pressure, temperature, and relative humidity instruments are located on the side of the trailer near the patch panel cable entrance. All roof signals come in on two cables and, with the other signals from the side, are eventually recorded through a Modicon B875-101 set for 0-10 V in Location 7, in the trailer.

2.7.7.1 Wind Speed and Direction Indicator

A SkyVane model 2102/2107 is used to measure wind speed and direction outside the trailer. Separate transducers are used for each measurement. The wind speed transducer is a mini DC generator supplying 0-5 V to a Modicon model B875-101 channel set for 0-5 V (located at drop 14 in the trailer).

The direction transducer is a rotary potentiometer. A separate 5-Vdc power supply located in the trailer patch panel area supplies current to the potentiometer. The 0-5 V direction signal is input a Modicon channel adjacent to the wind-speed input channel.

2.7.7.2 Relative Humidity Indicator

A Rotronics model 1298WD11CF005V-01 humidity gauge is used to measure relative humidity outside the trailer. A separate 24-V power supply is used to power the gauge. This power supply is mounted in rack 11. Relative humidity (RH) is a voltage in the range 0-10 V and is routed to a Modicon B875-101 channel set for the same (located in Drop 14 in the trailer).

2.7.7.3 Outside Temperature Indicator

A Relco model 1018A ambient temperature probe is used to measure outside air temperature. It uses an RTD powered by a separate 24-V power supply in the trailer. The power supply is mounted in the rack 11. Temperature is a voltage in the range from 0-10 V and is routed to a Modicon model B875-101 channel set for the same (located in Drop 14 in the trailer).

2.7.7.4 Barometric Pressure Indicator

A Vaisala model PTA 427 barometer is used to measure barometric pressure outside the trailer. Like the RH gauge, a separate 24-V power supply is used to power the barometer. The power supply is located in rack 11. The pressure signal is routed to a Modicon model B875-101 channel set for 0-10 V (located in Drop 14 in the trailer).

2.7.7.5 Trailer Internal Temperature

Several Relco RTD probes are located at various points inside the trailer to monitor the temperature. These inputs are fed to Modicon model B875-101 channels for recording and display on the FIX32 stations. See drawing EG&G NF-2649 for details on location and connectivity.

2.8 AF5000+ VARIABLE SPEED DRIVE

2.8.1 General

The mixer pump and the rotation motor are both controlled by Eaton model AF5000+ AFDs. The mixer pump motor is controlled by a 200 HP, unit and the rotational motor is controlled by a 5 hp unit. Both units use a 480 Vac pulse width modulated (PWM) controller. This is a state-of-the-art electronic microprocessor-controlled speed controller manufactured by Eaton, Inc. The AF5000+ AFD is designed to provide adjustable speed control for three phase motors. These microprocessor-based pulse-width-modulated (PWM) drives have features allowing custom programming of the drive's performance. The mixer pump and rotation motors are both controlled by AF5000+ AFDs.

2.8.2 STATION5 Interface

The RS-232 serial communication lines between the DACS STATION5 and the serial RS-232 port on each of the drives allows the DACS to remotely control the speed of the mixer pump and the rotation motor.

Data are transferred from the Eaton controllers to STATION5 with the use of the AF5000+ VSD driver (see Appendix C). This VSD information is used to calculate alarms and aborts for pump operations, and to display current VSD parameter status information.

2.8.3 Remote Programming Units

Located above STATION7 are two remote Soft Touch Operator Panels (S.T.O.P.) to control the AF5000+ AFDs directly. For more information consult the manufacturer's operations manual.

2.9 GAS MONITORING SYSTEM

2.9.1 Description

The details of the gas monitoring system (GMS) are beyond the scope of this manual. Briefly, the GMS is composed of an FTIR instrument, several Whittaker hydrogen monitors, and other sampling equipment for measuring concentrations of gasses. Instrument integrators that control the sampling of the gasses are in turn controlled by PCs on the tank farm. The tank farm PCs are connected via Ethernet to a PC in rack 10 in the DACS trailer.

2.9.2 DACS-GMS Interface

All of the GMS data are transmitted via Ethernet to the PC in the trailer. There, the data are encoded and transmitted via RS-232 line from the PC serial port to a Modicon B885-002 ASCII BASIC module (located in Drop 14). Once the data have been received in the ASCII BASIC module, they are decoded and sent to the FIX32 system for display and archive.

2.10 CONTROLS

As mentioned in previous sections, transducers located on the mixer pump that monitor the pump parameters such as flow, pressure, temperature, and strain, interface to the DACS through the Modicon I/O. Other transducers that monitor SY-101 tank parameters such as temperature, waste height, gas pressure, flow, and percent hydrogen are also interfaced through Modicon I/O modules. The DACS monitors, displays, and records the outputs of these transducers to indicate the status of the mixer pump and Tank 101-SY during operation. The DACS assists the test operator in controlling the mixer pump and the mitigation test parameters to within predetermined upper and lower safe operating limits. The DACS compares the incoming data with the stored alarm and abort limits in the software and automatically alerts the operator when limits are exceeded. *The DACS automatically shuts off current to the pump when abort limits are exceeded.*

Under automatic control of the DACS software, the mixer pump can be operated either manually or in preprogrammed sequences. This allows the execution of a disciplined test sequence within a predefined envelope. In this manner, all operations of the pump can be planned in advance.

2.11 EMERGENCY STOP CIRCUIT

NOTE: Repeated activation of the shunt-trip will result in early failure of the circuit breaker. Manually open the circuit breaker before pushing the E-stop buttons.

The emergency stop (E-stop) circuit for the mixer pump consists of shunt trip coils implemented on the main disconnects in the MCC and feeder isolation disconnects of the mixer pump and the rotation motors. The E-stop activation will establish two breaks between the power source and the mixer pump and rotation motors. The two breaks provided are the incoming MCC line breaker and the individual feeder breakers (see drawing H-2-140167 for details). Dual redundant buttons ("panic switches") are provided for the operator to initiate the stop circuit. The buttons are located on a panel above STATION7. There is one for the main pump drive and one for the directional drive. Figure 9 shows details but not exact circuitry (for exact circuitry, see drawing H-2-140167). The E-stop circuits may be activated automatically via a Modicon model B824-016 module in Drop 14, or by pressing the appropriate stop button. The buttons are dual position: pulled out for start, and pushed in for stop. When pulled out, internal lamps illuminate the buttons, and power is supplied to the AF5000+ AFDs. When the buttons are pushed in, the lamps go out and the shunt-trip circuit on the main power breaker is activated, opening the breaker. Both circuits are monitored. If either is activated, a signal is sent to a Modicon model B827-024 module channel in drop 14.

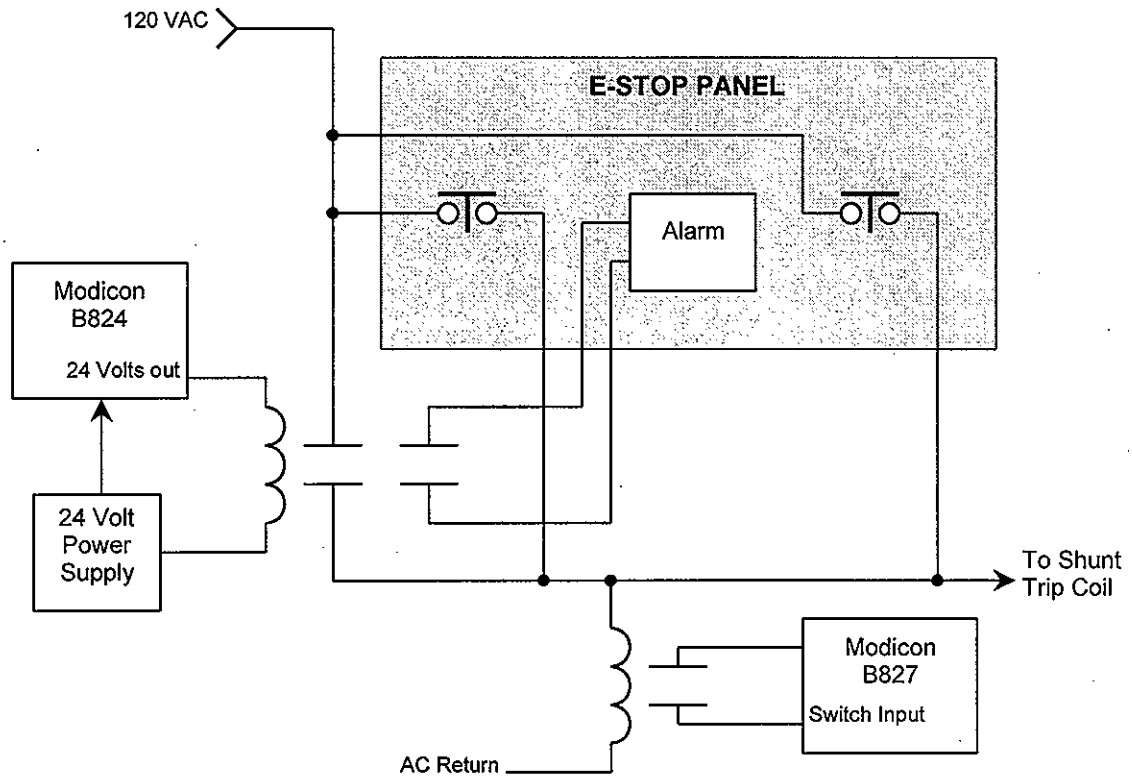


Figure 9. *E-Stop Circuit*

3.0 SYSTEM LIMITATIONS, CASUALTY EVENTS AND RESPONSES

3.1 SYSTEM LIMITATIONS

There are several limitations to the DACS system in these categories: physical, electrical, control software.

3.1.1 Physical Limitations

As mentioned in Section 2.4.2, the trailer has a size limitation. This limits the amount of equipment that can be placed in the trailer. There is approximately 6 ft of usable rack space left in the rack area. In the console area there is very little usable space left. Also not mentioned in Section 2.4.2 is the ceiling height of 6 ft 5 in. This is a low ceiling by most standards, making it difficult for tall people to work in the trailer. In addition to an already low ceiling are the various protruding fire alarm system sensors.

The cable raceways above the patch panel and in the space between the rack section and the console section are quite full of cables, making the addition of new cables difficult.

Part of the DACS is on the tank farm (Locations 1 - 4) and needs "hazardous waste-trained" people to operate, repair, and troubleshoot, whereas the trailer does not require "hazardous waste-trained" personnel. This may make troubleshooting and repair difficult.

3.1.2 Electrical Limitations

The UPS supplies about 20 min to 1 hour of instrument power to the trailer, depending on how much equipment is on. Essential data monitoring may be kept "alive" for about 1 hour, while the whole DACS trailer with all equipment on can operate for about 20 minutes.

The pump rotational motor and the main drive motor are electrically interlocked to prevent both from running at the same time. A so-called "tank sweep" with the jets rotating through the waste is not currently possible.

3.1.3 Control Software Limitations

The control software is designed to shut off an operating pump in a very short time based on any one of dozens of parameters being out of a preset range (i.e., hydrogen concentration above 1000 ppm, or vent header flow above 700 cfm). Once a parameter is detected out of range, an abort occurs, and the pump is shut off.

3.1.3.1 Consequences of Abort Conditions

Ladder logic in the PLC continuously looks for conditions calling for an abort by using limit parameters. If an abort is calculated, a contact is closed in a binary module controlled by the PLC, interrupting power to the pump. In addition, notification of the abort is sent back to FIX32, which sends stop pulses to the pump and directional AFDs.

3.1.3.2 Pump Over-Speed Protection

Every AF5000+ motor drive has a parameter field MAXSPD, the maximum speed in the recorded speed unit that can be programmed through the SPDSET command. If an operator tries to command the drive to run at a value greater than the MAXSPD value, the speed set point becomes the value stored in MAXSPD. The MAXSPD value is stored in nonvolatile RAM so that the last programmed value is present upon power cycling.

FIX32 also protects the set-point entry field from being programmed with values out of range. If an operator tries to over- or under-limit a set point, FIX32 restricts the entered value to the appropriate point.

The AF5000+ AFDs can be controlled by a manual panel or by the DACS. During pump testing the control will be from the DACS over an RS-232 communications link (see Figures 5 and 9). The manual control panels will be disabled to avoid interference with the DACS. Protection against an inadvertent overspeed command is enabled by setting a MAXSPD in nonvolatile memory in the motor drive. This can be done over the communications link. A command to the speed controller to exceed this speed will be disregarded and the speed set to the value of MAXSPD.

3.1.3.3 FIX32 vs. Modicon Speed

The PLC is much faster than FIX32 running on the PC. For real-time response (approximately 50 ms) ladder logic must be used. FIX32 minimum response time is approximately .1 second or greater. For higher level functions that do not require "instant" response, FIX32 may be used.

3.2 CASUALTY EVENTS AND RESPONSES

Several casualty events will be discussed: fire, earthquake, lightning, high winds, and spark or heat sources (other than lightning).

3.2.1 Fire

The Fenwal Halon system should take care of most fires in the DACS. If a fire happens, pull the fire alarm and evacuate the trailer. If the fire is serious, (under supervision of the fire department or cognizant operations) throw to "off" the two disconnect switches located between the HVAC and the MCC shack. The two disconnects are labeled, one for trailer utility and one for trailer instruments.

3.2.2 Earthquake

The DACS trailer was designed to be used in a high-shock environment (at the NTS). The entire structure can withstand an earthquake of high magnitude, including the equipment mounted in the racks (although there is no shock absorption, the structure will remain sound).

Should an earthquake occur, perform the power-down procedure referenced in Section 5.2.6.3, and follow the site emergency action plan.

3.2.3 Lightning

The DACS trailer is designed as an instrumentation trailer, thus it is a basic EM shield at the skin. The trailer is grounded to a lightning grounding system, so little damage should occur inside. Power surges may affect some equipment.

Administrative controls in the SA [ref. 5] forbid running the pump when thunderstorms are close (e.g. 25 miles). If lightning is imminent, when the pump is not operating, the trailer should be shut down using the power-down procedure referenced in Section 5.2.6.3.

3.2.4 High Winds

The trailer is mounted and skirted to withstand high winds up to 75-100 mph. No action is necessary for gusts up to 100 mph. If a tornado is imminent, the trailer should be shut down using the power-down procedure referenced in Section 5.2.6.3, and the site emergency action plan should be followed.

3.2.5 Other Heat and Spark Sources

The instrumentation sensor signals on the mixer pump proper are intrinsically safe by virtue of current-limiting barrier strips (except the strain gauges that are in a nitrogen atmosphere). A mixer pump instrument cabinet, located tank-side in the vicinity of the central pump pit, contains the signal conditioning instrumentation, which includes power supplies, intrinsically safe barrier strips, the I/O drop #1 interface to the DACS, and all other mixer pump instrumentation support hardware. The MIT and VDTT instruments are also intrinsically safe due to current-limiting barriers.

If an intrinsic barrier should fail shut, it would show up as an instrument failure. Pump operation should cease and the problem repaired. Should an intrinsic barrier fail open, it would not be detected by the DACS.

4.0 OPERATIONS

4.1 INTRODUCTION

The three trailer operations are as follow:

1. Pump operation
2. Data logging
3. Configuration changes.

Each will be discussed in general. Maintenance and repair are discussed in Section 5.0. Records of these operations have been kept in the operator's log. The operator's log is the official log. The operator's log is transcribed semi-weekly and is available, along with the archived data. It contains information on pump running, repairs, alarms acknowledged, and more.

4.2 PUMP OPERATION

Tank level maintenance is accomplished by operating the pump in one of four possible modes:

1. Bump
2. 1 Hour Run
3. Tank Sweep
4. Excavation

There are "tests" pre-programmed in the pump control software. The "tests" are made up of three variables namely: time, speed, and angle. Typical values are listed as follows:

1. Time (minutes) 5, 25, 30, 60
2. Speed (rpm) 750, 920, 1000
3. Angle (degrees) 28, 65, 97, 125, 155, 185

4.2.1 Alarms and Aborts

Normal pump operation is kept under control of the Modicon ladder logic and the FIX32 software. All of the tank parameters are continually monitored by the software. Each parameter is compared against 2 limits; an alarm limit and an abort limit. If any one of the parameters is above the alarm limit, an alarm sounds in the trailer, and the event is logged electronically. If any parameter is above the abort limit, the same type of alarm will sound, the event will be logged, and if the pump was running it will be immediately stopped.

The alarm and abort limits are all defined in the SA [ref. 5].

4.2.1.1 Rollover

Several parameters may be simultaneously above the alarm or abort limit. Certain combinations of these parameters (e.g. high vent flow, with high H_2 concentration) define a rollover.

4.2.1.2 ARPs and AOPs

There are written Alarm Response Procedures and Alarm Operational Procedures to follow in cases of certain alarms and aborts. These documents are located in the cabinet adjacent to STATION8.

4.3 DATA LOGGING

The system runs 24 hours a day, even though the pump may not be operating. The system gathers data on the tank. STATION5 is responsible for the data logging operation, also called, "archiving". This data gets transferred every four hours to STATION6. This function is completely automatic. No operator action is required (except to start the process, and reboot if a lock-up occurs).

4.4 CONFIGURATION CHANGES

Changes to the software to accommodate more equipment, to fix bugs, or to add more data logging all fall under the "System Configuration Management Plan for SY-101 DACS" document (HNF-SD-WM-CSCM-023) [ref. 7]. A change control board takes requests for software and hardware changes, reviews them and approves or disapproves the requests. All necessary documentation, ECNs, procedures, etc. are tracked through the board.

Generally, when a change to the software is approved, a cognizant programmer tests the change in the 306E DACS development laboratory simulator, then implements it in the DACS. The change is tested and verified. Appropriate documentation is updated.

When a change to the hardware is approved, a cognizant engineer writes an ECN, and requests personnel to make the change. The change is implemented, tested and verified. Appropriate documentation is updated.

5.0 MAINTENANCE

Several procedures have been defined for performing DACS preventative maintenance. There are two types of maintenance based on who would perform the procedure: computer maintenance and regular system maintenance. In addition, there are periodic checks to the recording system, and calibrations.

5.1 COMPUTER MAINTENANCE

Computer maintenance consists of several procedures to be performed by qualified personnel or under supervision of the cognizant programmer. The list includes:

1. PC filter cleaning
2. PC floppy disk cleaning
3. Other PC maintenance (virus checks, disk compression)
4. Modicon PLC communication checks
5. Startup and shutdown

5.1.1 PC Filter Cleaning

This procedure should be performed monthly, especially when the dust blows outside. To perform this procedure, the PC front keyed door must be opened, and the filter may be easily removed and cleaned.

5.1.2 PC Disk Cleaning

This procedure should be performed monthly, especially when the dust blows outside, or a particular floppy drive is heavily used. To perform this procedure, the power must be turned on to the PCs.

5.1.3 Other PC Maintenance

Other PC maintenance covers incidental items such as cleaning the video screens, replacing printer ink and toner, and replacing paper. These do not require formal procedures, but refer to the manufacturer's directions.

The DACS developers will also need to perform system diagnostic checks on a periodic basis.

5.1.4 Modicon PLC Communication Checks

This procedure should be performed on a regular basis. This procedure is used to check the status of the PLC and can detect problems early, before they are serious.

5.1.5 Startup and Shutdown

The computers are left on 24 hours a day to log data from the SY-101 tank. If for some reason they were shut down, ensure the instrument panel breakers are all on. The switches for the PCs are located behind their individual locked panels. These switches SHOULD BE ON. The switches for the monitors are located inside the small door to the right of the screen.

It is sometimes necessary to shut the trailer down. When this happens, the proper procedure for shutting down is simply to open the circuit breakers. DO NOT turn off individual equipment switches. An exception to this is when the trailer is excessively hot -- turning off unused monitors is acceptable (it also conserves power).

5.2 SYSTEM MAINTENANCE

System maintenance consists of several procedures to be performed by various personnel. The list includes:

1. HVAC general maintenance (per manufacturer specifications)
2. Winterization procedures for the HVAC
3. UPS battery load tests
4. UPS HVAC general maintenance (per manufacturer specifications)
   Note: there is no maintenance required for the UPS batteries
5. Winterization procedures for the UPS
6. Other
7. Startup and shutdown procedures

5.2.1 HVAC Maintenance

The HVAC system was replaced in 1994, and a private contract is in place to maintain the system.

5.2.2 UPS Battery Load Tests

There are two procedures for the UPS: one to check the functionality of the UPS and one to check the battery condition.

The UPS functionality procedure should be performed on a regular basis. This procedure is used to see if the UPS does, in fact, function when the main power is lost, and can detect problems early, before they are serious.

The battery procedure should be performed on a regular basis. This procedure is used to check the condition of the batteries and the UPS unit, and can detect problems early, before they are serious.

5.2.3 UPS HVAC General Maintenance

The manufacturer (Bard) lists no regular maintenance procedure, other than keeping the condenser clean.

5.2.4 Winterization Procedures for the UPS

The manufacturer (Bard) lists no specific procedures for winterization.

5.2.5 Other

The manufacturer's manual (Skyvane) for the weather vane and speed indicator has a yearly oiling schedule.

5.2.6 Startup and Shutdown Procedures

5.2.6.1 HVAC

The HVAC system was replaced in 1994, and a private contract is in place to maintain the system.

5.2.6.2 UPS

The UPS should be tested periodically; thus it is necessary to start and stop the UPS. The *Battery Test Procedure* (see Section 5.2.2) lists the exact order used to start and stop the UPS. Text in the procedure warns that the operator must move certain switches in an exact order, or damage will result to the UPS.

5.2.6.3 Trailer

The trailer as a whole should be shut down in this order:

1. Open the individual instrument breakers
   (DO NOT turn off individual equipment switches)
2. Open the main instrument breaker
3. Open the individual utility breakers (the lights will go out)
4. Open the main utility breaker
5. Turn off the light switches (even though it is dark)
6. Close the doors and lock them, as you leave

To start up the trailer from a cold start, perform the shutdown procedure in reverse order.

5.3 SIGNAL CONDITIONING MAINTENANCE

5.3.1 Strain Channel Signal Checks

This procedure should be performed on a regular basis. This procedure is used to check for noise in the strain signals, and for gross offset and gain errors. The check can (and did) detect problems early, before they are serious.

5.4 CALIBRATION PROCEDURES

The following DACS equipment requires calibration:

1. Modicon B875
2. Modicon B883
3. UPS relay
4. Weather station

5.4.1 Modicon B875 Calibration

The Modicon manual for the model B875-101 analog input module provides a procedure for calibration of the internal 10-V reference. Modicon recommends annual recalibration of the reference. This procedure should be part of a larger procedure for a loop calibration (i.e., CBRS).

5.4.2 Modicon B883 Calibration

Modicon has provided a separate procedure for calibrating the model B883-200 thermocouple modules. Modicon recommends a 3-year cycle for recalibration. This procedure is extensive and should be done by a standards lab. This procedure should be incorporated into a larger (i.e., CBRS) procedure.

5.4.3 UPS Relay Calibrations

Three special relays that are energized at certain voltages. These relays need calibration. EG&G/EM has provided calibration procedures for these relays and it is recommended these relays receive annual recalibration.

5.4.4 Weather Station Calibrations

The manufacturers of the barometric pressure gauge, temperature gauge, and wind speed indicator, all have procedures for calibrating their instruments. Since the weather station has been deemed "indicator only," these instruments do not need calibrating. This may change in the future. If it does, VI file #22671 has the information to calibrate the gauges.

6.0 INSTRUMENTATION

DACS instrumentation provides measurements which can be organized in the following categories: measurements for mixer pump operation, waste tank conditions, riser strain, and DACS trailer status and area monitors. Each of these is discussed in the following sections.

Data enter the DACS via one of four general methods. Knowledge of the method used is necessary in order to determine the resolution of the data.

Most of the analog measurements enter the DACS through Modicon I/O modules which are set up to receive signals ranging from 4-20 mA, 1-5 volts, or 0-5 volts. These modules digitize the signals to a resolution of 12 bits. The range column of the I/O list gives the corresponding range in engineering units. This represents the full range of the input signal. The engineering unit range is used to scale the digitized input, and this scaled value is recorded to disk. The useful range does not always correspond to the full range. In some cases, there is an entry in the subrange column of the channel list which specifies the useful range. If the digitized input signal falls outside of the subrange, the recorded value of the measurement will be pegged at one or the other boundaries of the subrange.

The MIT17B, MIT17C, and tank bottom and side thermocouple measurements enter DACS via Modicon thermocouple modules. These modules are set to produce double precision readings with 0.1 degree F resolution as their output which is recorded without any further scaling.

Data from several analytical instruments enter the DACS via Modicon ASCII/BASIC modules. These modules have built-in BASIC interpreters. BASIC programs are written through which the modules communicate with the instruments via RS-232. The data are then placed in Modicon PLC registers in whatever format is agreed upon with the experimenters. This method allows considerable flexibility concerning the ultimate resolution of the data. The GC1, GC2, GC3, FTIR, and Photo NH3 data all enter the DACS via ASCII/BASIC modules.

Data from the variable speed drives (speed, current, and voltage) enter the DACS via the AF5000+ device driver. This is the only category of data which does not enter via the PLC.

6.1 MIXER PUMP OPERATION MEASUREMENTS

DACS provides measurements which monitor the mixer pump operation. There are measurements for the operating characteristics of the pump motors and for detecting the characteristics and motion of the waste at the pump discharge nozzles and within the pump column.

6.1.1 Mixer Pump Motor Operation

These measurements provide information about the operating state of the mixer pump motor and the pump directional motor. Most of these measurements originate with the variable speed drive and first enter the MOTOR strategy over the RS-232 link. There are 12 measurements giving the motor speed (RPM), the motor voltage, current, percent of load voltage frequency and set-point speed for each motor.

In addition there are measurements for mixer pump motor oil temperature and directional motor position which enter via the Modicon PLC. There are also digital signals which detect moisture in the pump motor oil and when the pump rotational position is at one of its limits.

6.1.2 Discharge Nozzle and Pump Column

DACS provides a set of measurements for detecting the motion and characteristics of the waste as it moves through the mixer pump. These include measurements for discharge nozzle waste temperature, flow and pressure, nozzle tap pressures, and pump column pressure. There are a total of 16 measurements sampled once every second.

6.2 TANK AND WASTE MEASUREMENTS

The bulk of DACS measurements provide information about the characteristics of the tank waste and the conditions inside the tank.

6.2.1 Tank and Waste Temperatures

There are two multifunction instrument "trees" (MIT) within the tank called MIT17B and MIT17C. Each of these instrument trees contain 22 thermocouples spaced along the length of the tree for measuring the temperature of the waste at various levels within the tank. Both MIT17B and MIT17C use type K thermocouples. These are sampled by FIX32 every second.

In addition there are 26 type J thermocouples which measure temperatures around the bottom and side of the inner waste tank. These are also sampled every second.

6.2.2 Tank Waste Level

There are two wire level gauges indicating tank level, located in risers 1A and 1C.

6.2.3 Tank Pressures

There are two instruments which measure dome space pressure.

6.2.4 Vent Header

There are measurements for vent header flow rate, temperature and relative humidity, and hydrogen concentration.

6.2.5 Gas Concentrations

There are three gas chromatographs, called GC1, GC2 and GC3, which provide hydrogen concentration measurements to DACS. These enter the PLC as serial ASCII data through the Modicon ASCII/BASIC modules (see Section 7.8.1.3). The data from GC1 and GC2 are compiled together and enter through one of the ASCII-BASIC modules. The GC3 data is compiled with the infrared spectrometer and photo-NH3 data and sent as another ASCII stream which enters the other ASCII/BASIC module (see Section 7.8.1.2). Information sent with the hydrogen concentrations gives the time of the sample, file ID numbers which index the sample, and hydrogen retention time.

An infrared spectrometer provides measurements of NH3 and N2O concentrations. This is sent along with the gas chromatograph data and includes the file ID and sample time numbers.

A separate set of measurements monitor the gas chromatograph equipment and the IR spectrometer. This information enters DACS via standard Modicon input modules.

Four hydrogen monitors which measure hydrogen concentration in various parts of the dome space and the vent header complete the set of gas-measurement equipment.

6.2.6 Miscellaneous Tank Measurements

There are measurements for the in-tank camera enclosure pressure and nitrogen supply. There are four fluid velocity measurements for measuring waste movement within the tank.

6.3 STRAIN MEASUREMENTS

There are measurements which provide strain readings for the instrument trees and the pump column. These measure the strain on these trees which can be produced by movement of the tank waste. There are measurements for low- and high-frequency strains. There are a total of 9 low-frequency strain measurements; 4 for the pump column, 3 for riser 1B, and 2 for riser 17C.

The high-frequency strain measurements (using the same transducers as the low-frequency strain measurements) were recorded during tank rollover and during pump operation using the Nicolet storage oscilloscope, but is no longer used. If these measurements exceed alarm and abort limits, they are sent to the PLC to cause an alarm or abort condition.

6.4 TRAILER AND AREA MONITORS

Environmental measurements provide information about the DACS trailer status. Sensors inside the trailer measure rack temperatures and the power system status. Other devices outside the trailer indicate weather conditions outside the trailer such as air temperature, wind speed and direction, barometric pressure and relative humidity.

There is also an area radiation monitor which provides tank farm radiation readings and alarms.

7.0 FIX32 SYSTEM SOFTWARE DETAILS

7.1 OVERVIEW

The tasks that are performed by the DACS are allocated to the PLC, the Eaton AF5000+ AFDs, or the FIX32 supervisory control software. The following sections present the functions and details of the DACS design. Included are discussions of the FIX32 software configuration and the PLC, focusing upon how each of these accomplishes their various tasks.

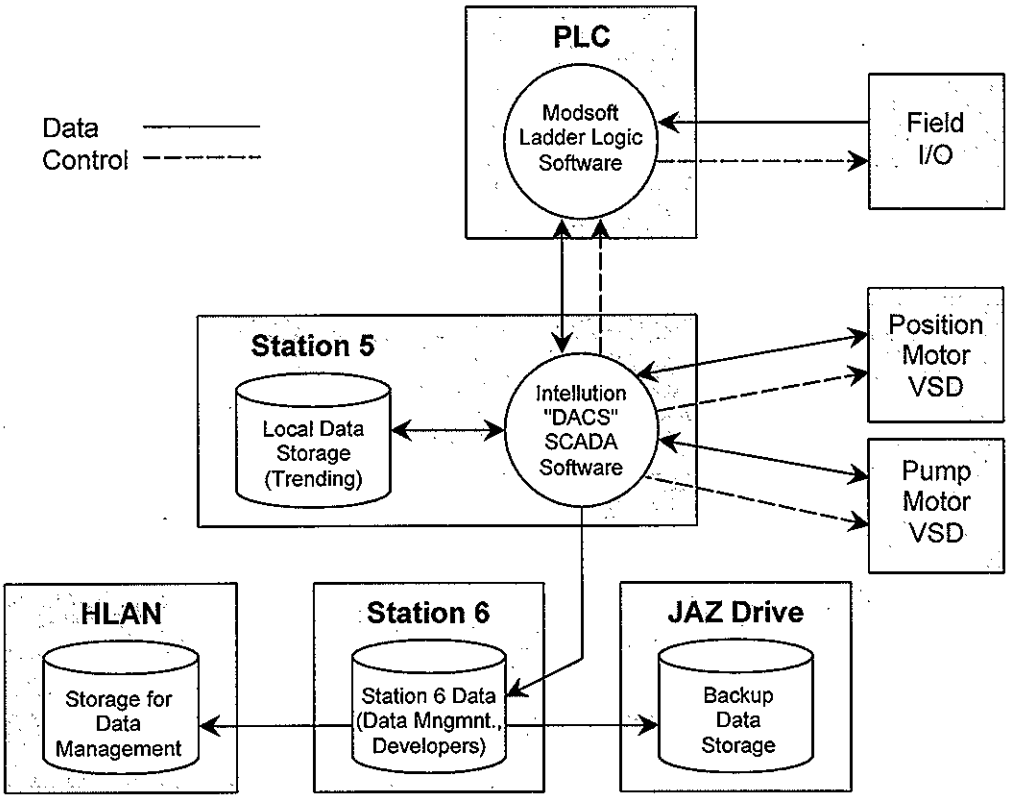


Figure 10. *Data and Control Paths Between Components*

7.2 DATABASE DETAILS

7.2.1 Database Block Types

The FIX32 database contains all DACS I/O tags, as well as numerous other blocks used to support instrument failure alarms, dynamic screen coloring, alarm and abort limit initialization, pump communication parameters, DACSNet network status, and watchdog timers (both for the PLC and DACSNet station online checks).

Appendix D provides the complete DACS database listing, sorted alphabetically by tagname, as well as additional sections for each block type. A listing for the blocks that have specific I/O addresses is also provided.

There are twelve different database block types used for DACS. The block types and their DACS-specific uses are:

- AA (Analog Alarm)
  These blocks are primarily used for bringing in analog field values from the PLC. These blocks, along with the DI blocks (below), are the only blocks used for alarming in DACS.
- AI (Analog Input)
  The majority of these blocks are used to bring in the MIT17B, MIT17C, and TBSTC thermocouple values from the PLC. They are scaled from 0 to 6553.5 to perform a "divide by 10" function, then sent to AO and AA blocks for alarming. A few other AA blocks are used for non-alarming inputs.
- AO (Analog Output)
  AO blocks are used in the thermocouple block chains (see AI block above), for downloading initial values to the PLC for alarms and aborts, for VSD parameters, and miscellaneous blocks that require scripts or PG blocks (see PG blocks below) to write values to a tag.
- AR (Analog Register)
  These blocks are used to write (and read back simultaneously) selected VSD parameters to and from the PLC.
- BL (Boolean)
  BL blocks are typically used in DACS as logical "OR" blocks. These blocks are used for alarms, aborts, instrument problems, and the watchdog timer outputs to the PLC (tags WDTNOT1 and WDTNOT2; see Section 7.2.3).
- CA (Calculation)
  These blocks are used to perform mathematical calculations, as well as to provide the dynamic coloring numerical value for display screens (see Section 7.6.6 for details).
- DI (Digital Input)
  DI blocks are primarily used to read digital bit inputs from the PLC, and to generate instrument problem alarms for display on the [ALARMBAR] and [ALARMSUM] screens. These blocks provide alarming, along with the AA blocks (above).
- DO (Digital Output)
  These blocks are used to write values to the PLC, instrument problems (used to write to SIM addresses for DI blocks to read), and other tags where scripts or PG blocks (below) are required to toggle a digital value. SIM addresses are internal FIX32 memory used to simulate PLC memory.
- DR (Digital Register)
  DR blocks are used solely to read and write the abort enable/disable bits used in the PLC for enabling and disabling abort coils, as controlled by the [ABRTENAB] screen.

- EV (Event/Action)
  Two EV blocks are used for DACS (PLCCOMFA_EV1 and PLCCOMFA_EV2) to detect PLC communication failures.
- PG (Program)
  Multiple PG blocks are used in the database to perform many different functions, most of which control the pump, detect alarms, and provide watchdog timers. Most blocks are always on scan and loop continuously, while some only run once and must be placed on scan by a script to cause it to run again.
- TM (Timer)
  These blocks are used for the tags ELAPSED-TIME and ELAPSED-TIME-TOTAL, which totalize the pump running times for the [PUMPRUN], [PUMPVIEW], and [GASSUM] screens.

7.2.2 PLC I/O

FIX32 communicates with the PLC via Modbus Plus, with the utilization of an Intellution I/O driver called MMP (Modicon Modbus Plus). The MMP driver configurator is used to assign PLC register addresses and associated poll times. The poll times specify how often FIX32 updates the Driver Image Table (DIT). The DIT is a table in FIX32 memory that holds the latest I/O values for all the PLC registers assigned in the driver configurator. The scan times listed in each block (with scan time entries) designate how often the database updates values from the DIT. All blocks currently have a poll time of 1 second each.

7.2.3 Watchdog Timers

The two BL blocks WDTNOT1 and WDTNOT2 are used for the FIX32 to PLC watchdog timer outputs. WDTNOT1 replaces the old GENESIS STATION5 watchdog timer, while WDTNOT2 replaces the old GENESIS STATION8 watchdog timer. *The WDTNOT2 block (and it's associated WDTRESET2 block) will be removed when the PLC ladder logic is updated to remove all references to GENESIS.*

The pulsed output is generated by using a BL block to invert the input and send it to the output. The output of WDTNOT1 is sent to the input of the DO block WDTRESET1, which controls the coil at PLC address 213. The output of WDTRESET1 is also sent to input A of WDTNOT1, which then inverts it again and sends it to WDTRESET1. The scan time of WDTNOT1 is 2 seconds, which will cause the output to the PLC to toggle every 2 seconds, which will reset the timer block in the ladder logic (see Figure 22). This must be accomplished before 8.5 seconds elapses, or the PLC will generate an alarm and cause the abort coil to trip. The WDTNOT2 and WDTRESET2 blocks are functionally equivalent to the WDTNOT1 and WDRESET1 blocks.

7.3 SYSTEM INITIALIZATION – [A1-INIT] SCRIPT

When the FIX32 system is first started on each station, the Intellution program VIEW.EXE (View) is launched. STATION5, prior to launching View, also launches the following additional processes: AF5000.EXE (AF5000+ communication driver), WSACTASK.EXE (Scan, Alarm and Control), HTC.EXE (Historical Trend Collection), and

IOCNTRL.EXE (launches the Modbus Plus I/O driver for the PLCs). Appendix B shows the task configurations for each station.

When View is launched, it looks for a layout file called DEFAULT.LYT. This file contains two lines:

```
FIX/DMACS_GUI_Layout_File_V61
A1-INIT.ODF 2 2 596 796 * A1-INIT.ODF * -1
```

The first line is a file description, while the second line defines the first screen (*.ODF) file that View opens, with screen positioning information. This file may be edited with a text editor, but it is created from View by selecting the "Save Layout" option from the "File" menu and saving "DEFAULT.LYT". This file resides in the \FIX32\PIC directory.

When View opens [A1-INIT], the user will see a blank screen with "INITIALIZING..." in the center and a number counting down to zero. Once the number reaches zero, a sound file is played, the "INITIALIZING..." text becomes invisible, the [WELCOME] screen is loaded and displayed, and the station is ready for use.

The [A1-INIT] screen is always loaded in the background behind the top screen and [ALARMBAR]. This is necessary due to the fact that [A1-INIT] has a "Commands On Opening" script that continually loops while View is running, which will be discussed in Section 7.3.1.

7.3.1 [A1-INIT] "Commands on Opening" Script Details

The [A1-INIT] "Commands on Opening" script is used to initialize system variables, provide [NETSTAT] screen information updates, synchronize all station clocks with STATION5, perform historical archive file transfers, and update gas monitoring instrumentation "last update" dates for the [GASSUM] screen.

The script is listed in its entirety in Appendix E. The following sections discuss the script in sequence.

7.3.1.1 Variable Declarations and Startup

The global variables used with FIX32 scripts and screens are declared in the first section of [A1-INIT]. The declarations are split up into modular sections by function (e.g., security, clocks, archiving, etc.), and are preceded by comments describing the usage for the variables.

Within the SECURITY section, the variable #SECURITY_LEVEL is declared and initialized to a "1", implying the PUBLIC level. It then checks the current login status, and will set #SECURITY_LEVEL to a 2, 3, 4 or 5 if the user is already logged in to the FIX32 system. On initial startup, it will always be a "1".

The STARTUP DELAY section synchronizes the clocks of all stations (other than STATION5) to the time on STATION5. This ensures that all stations display the identical time. This is also done every night at midnight (see section 7.3.1.5) to keep the clocks continually synchronized.

The STARTUP DELAY section also sets a delay time for each station to allow the FIX32 networking subsystem to become initialized and ready prior to opening the [WELCOME] screen and displaying real-time data. Without this delay, an error message would occur,

indicating that the connection to STATION5 is not established. The delay times for each station are listed below in Table 1.

Table 1. *Station Startup Delay Times (in seconds)*

STATION5	STATION6	STATION7	STATION8	STATION9	RSS11	RSS13	RSS15	RSS17
30	60	60	60	60	120	120	120	120

The <PUMPVIEW> vs. <PUMPRUN> button visibility is also initialized within this section. Only STATION5, STATION6, STATION7 and STATION8 are allowed to display the [PUMPRUN] screen and control the pump. The variable #PUMPOPS_VISIBLE will be set to a "1" if the associated tag (i.e., for STATION5 the tag is ST5_PUMPRUN_VIS) is set to a "1". Only one station is allowed to display the [PUMPRUN] screen at any time.

The variable #PREV_PIC is set to "WELCOME" in the event that the [F6] key is pressed prior to leaving the [WELCOME] screen on startup.

7.3.1.2 Networking

This section is used to initialize the online and login status of each station upon startup. These variables are used for the [NETSTAT] screen, discussed in Section 7.3.1.6. When the [A1-INIT] script first runs on each station, the online time and date are set to the current time and date. The login time and date are also set to the current time and date, and the login name and group are set to "PUBLIC" and "VIEW ONLY" (unless the user has previously logged in and restarted View).

Each station also runs its respective watchdog pulse routine (e.g., for STATION5 it is called ST5-WDT.EXE) once. It is run again for each station every 30 seconds, as described in the periodic loop sections (see Sections 7.3.1.6, 7.3.1.7 and 7.3.1.8).

STATION6 has some additional scripting in this section to copy any historical and alarm data still in STATION5's C:\FIX32\HTRDATA\BUFFER directory. It is copied to STATION6's C:\RAW\TRANSFER and D:\DACSDATA directories, and then deleted from STATION5.

After this section has completed, the sound file "C:\FIX32\SOUNDS\SPACE.WAV" is played, and the variable #INIT_DONE is set to a "1". This causes the "INITILIZING..." text on [A1-INIT] to disappear, and the sound is used to notify the user that the station is ready for use.

7.3.1.3 [PUMPRUN] and [GASSUM] Parameters

STATION5 performs several initialization tasks, beginning with this section and ending in Section 7.3.1.4. The pump parameters are initialized by STATION5 to test setup number 1 to ensure that proper pump parameters are loaded into the database, and that valid values are displayed on the [PUMPRUN] and [PUMPVIEW] screens.

The PG block RESET-PUMPRUN is placed on scan, which will stop the pump and directional motors (should either be running), and sets the [PUMPRUN] screen buttons to their initialized state. The [STOPTIME] screen is also closed (if open). See Section 7.7.10 for more information on the [STOPTIME] screen.

All [GASSUM] screen update dates are set to "-N/A-" to indicate to the user that the gas instruments need to provide valid data updates. The PG block 21-MINUTE-DELAY is placed on scan, which will cause the STATION5 periodic loop to wait 21 minutes before setting

the dates (this ensures that all gas instruments have enough time to update prior to setting the date – this is based on the FTIR's 20 minute timeout).

7.3.1.4 Archive File Transfer Initialization

The purpose of this STATION5-specific section is to determine the previous filenames (*.H04 and *.ALM) that FIX32 logged and move them to the C:\FIX32\HTRDATA\BUFFER directory. It then determines the next filenames and stores them back into files (LASTH04.TXT and LASTALM.TXT).

The file C:\FIX32\HTRDATA\LASTH04.TXT contains the last *.H04 file that the FIX32 system was logging to in ASCII text format. This *.H04 file is then copied to the C:\FIX32\HTRDATA\BUFFER directory. This will ensure that STATION6 will pick up the last data file logged.

The file C:\FIX32\HTRDATA\LASTALM.TXT contains the last *.ALM file that the FIX32 system was logging to in ASCII text format. This *.ALM file is also then copied to the C:\FIX32\HTRDATA\BUFFER directory, so that STATION6 can copy it into the archive directories.

The script then builds the next *.H04 filename by reading the system time and date. The hour is always in 4-hour increments. If the hour is less than "4", then the hour used for the filename is "0". Likewise, if the hour is less than "8" but more than "4", then the hour used is "4". This continues to the maximum file hour of "20" (before midnight but after 8:00 P.M.).

The LASTH04.TXT file is deleted, then re-created and the next filename is stored into it in ASCII text format.

The next alarm filename is then created similarly, but building the filename is simpler since the hour is not needed (only one *.ALM file per day).

This ends the STATION5-specific one-time initialization. The following sections are part of the periodic loop that requires [A1-INIT] to remain open in the background.

7.3.1.5 Clock Synchronization with STATION5

This is the first section following the "&LoopForever" label, where the script continually loops back to from the end.

If this is not STATION5, then the script checks to see if the date has changed since the last time the clocks were updated. If the date has not changed, this section is skipped until the next 30-second increment.

If the date has changed, then it's after midnight, and the clock is synchronized with the clock on STATION5. Testing has shown that one clock update per day is sufficient to keep the clocks synchronized.

7.3.1.6 STATION5 Periodic Loop ([GASSUM], [NETSTAT], and archive BUFFER)

STATION5 has the most periodic loop scripting. This section first checks to see if the DO block 21MIN_DO is a "1". It is controlled by the PG block 21-MINUTE-DELAY (21MIN_DO is set to a "1" 21 minutes (1260 seconds) after STATION5's [A1-INIT] script completes).

If at least 21 minutes have elapsed, then the gas instrument tags GC-1, GC-2, GC-2, FTIR, and PHOTO will have their respective last update dates set (if the instrument is reading non-zero values).

The next section of the STATION5 periodic loop is dedicated to the dynamic checking of the online network status for each station, as displayed on the [NETSTAT] screen. STATION5 first runs the C:\FIX32\CustomVB\ST5-WDT.EXE program (see Appendix H). This program reads the value of each station's watchdog timer AO tag (i.e., for STATION6 the tagname is ST6-WDT) and increments it by one. ST5-WDT.EXE will never allow it to exceed five.

There are then eight identical sections (with the exception of station-specific tags for online date and time), one for each of the following stations: STATION6, STATION7, STATION8, STATION9, RSS11, RSS13, RSS15, and RSS17. Each station , if online, is checked to see if the value of it's associated watchdog tag has exceeded 3, and if so, STATION5 opens the associated station's online DO tag (e.g., for STATION6 the online DO tag is ST6-ONLINE). It then sets the online date and time tags (e.g., for STATION6 the tags are ST6-ONLINE-DATE.A_DESC and ST6-ONLINE-TIME.A_DESC) to the current time, showing that the station went offline at that time. If the station was already offline, it is checked instead to see if the value of the station's watchdog tag has dropped below 2, and if so , STATION5 closes the associated station's online DO tag and sets the online date and time tags to the current time, indicating that the station went back online at that time.

All stations other than STATION5 run their own watchdog routines every 30 seconds to reset their watchdog timer tag values to zero, as described in Sections 7.3.1.7 and 7.3.1.8.

The final section of the STATION5 periodic loop checks to see if it is time to perform a 4-hour data transfer to the BUFFER directory from the local archiving directory. This is done by first checking to see if the hour is an even 4-hour increment (0, 4, 8, 12, 16, or 20). If not, the variable #TransferFlag is set to "0" and the STATION5 periodic loop is complete. If it is a 4-hour transfer hour, then if #TransferFlag is "0", and the minutes are greater than zero (one minute past the hour), #TransferFlag is set to a "1" so that the transfer will happen only once per 4-hour period (#TransferFlag is cleared during the next time it is determined that it is not a 4-hour transfer hour). The current *.H04 file is copied from C:\FIX32\HTRDATA\STATION5 to C:\FIX32\HTRDATA\BUFFER, where it resides until STATION6 retrieves it for archiving (see Section 7.3.1.7 below). It then creates an updated LASTH04.TXT file, as described above in section 7.3.1.4.

The *.ALM file for the previous day is then copied to the BUFFER directory, if it is the first check after midnight (the hour will be zero). If it is transferred, then a new LASTALM.TXT file is created.

7.3.1.7 STATION6 Periodic Loop (File Transfers)

This section first runs the C:\FIX32\CustomVB\ST6-WDT.EXE file (see Appendix H), which causes the AO tag ST6-WDT to be set to zero.

It then checks to see if it's time to perform a 4-hour data transfer from STATION5 to STATION6. As with STATION5, this is done by first checking to see if the current hour is an even 4-hour increment (0, 4, 8, 12, 16, or 20). If not, it sets the #TransferFlag2 variable to "0", and the STATION6 periodic loop is complete. If it is a 4-hour transfer hour, and if #TransferFlag2 is "0", and the minutes are greater than one (two minutes past the hour), all *.H04 files from STATION5's C:\FIX32\HTRDATA\BUFFER directory to STATION6's C:\RAW\TRANSFER and D:\DACSDATA directories. All *.H04 files are then deleted from the STATION5's C:\FIX32\HTRDATA\BUFFER directory.

If the hour is zero, indicating it's just after midnight, then all *.ALM files from STATION5's C:\FIX32\HTRDATA\BUFFER directory are copied to STATION6's

C:\RAW\TRANSFER and D:\DACSDATA directories. All *.ALM files are then deleted from the STATION5's C:\FIX32\HTRDATA\BUFFER directory.

The #TransferFlag2 variable is then set to a "1", indicating that the transfer has already taken place and will not be repeated this hour. It will be set to a "0" when the hour is not a 4-hour transfer hour.

It should be noted that when Windows NT first powers up, STATION6 (as well as STATION7, STATION8 and STATION9 – see section 7.3.1.8 below) will connect to STATION5's C:\FIX32 directory and assign it to drive "H:". The "H:" drive is used in the script.

7.3.1.8 STATION7, STATION8, STATION9 and RSS Periodic Loop

This section simply determines which station it is and runs the appropriate watchdog timer routines every 30 seconds to reset their watchdog timer tag values to zero (e.g., for STATION7, C:\FIX32\CustomVB\ST7-WDT.EXE is executed which causes the AO tag ST7-WDT to be set to zero). See Appendix H for details on the watchdog timer routines.

The PAUSE 30 and GOTO LoopForever lines follow this section, which will cause the entire script from the &LoopForever label to continue executing forever, as long as View is running.

7.4 DISPLAY SCREENS

Data monitoring is one of the primary functions of the FIX32 DACS HMI. The data and status monitoring functions of the DACS HMI are accomplished by displaying information to the operators on any of a number of screens including trend and history screens. In addition to providing the monitoring function, some screens allow the operator to input control signals that can initiate processes in FIX32 or ultimately in the PLC.

7.4.1 Overall Display Screen Characteristics

Display screens can be brought up independently on the STATION5, STATION6, STATION7, STATION8 and STATION9 computers in the DACS trailer, as well as the four remote stations (STATION11 in Building MO-278, STATION13 in the 306E Building, STATION15 in Building 2750 and STATION17, the software developer's laptop). All data that travel to and from the remote stations go through the master computer, STATION5, via NetBEUI.

All screens (with the exception of the "Historical Display" trending screen) have a similar title bar. The top row of the title bar contains: the current date and time; the screen title; and two buttons, <MAP> and <PRINT>. Printing requires at least a security level 2. The bottom row of the title bar contains: the current versions of the FIX32 "DACS" HMI software; the current version of the Modsoft "PLC" ladder logic software; the screen name (which is also the file name minus its ".odf" extension); a <HELP> button; and room for up to three additional buttons for navigating to related screens.

All screens (with the exception of [ALARMSUM], [TRENDS] and the "Historical Display" trending screen) have an [ALARMBAR] popup at the bottom. The [ALARMBAR] displays the most recent two alarms. At the far left of [ALARMBAR] is an <ALARM SUMMARY> button for navigating to the [ALARMSUM] screen. The

[ALARMBAR] popup displays the same alarm information as [ALARMSUM], minus the "DATE IN" field.

Navigation between screens is accomplished by selecting any "screen name" buttons on the current screen or on the [MAP] popup. In addition, the function key <F4> navigates to the [ALARMSUM] screen, and <F6> navigates back to the previous screen. For a complete list of the function keys and their programming statements, refer to Appendix F.

Most screens contain values, text or colored indicator lights that will display a thin gray box when the pointer is passed over it. By clicking once, the thin box turns into a thick box. Selecting <F2> at that time brings up the tag details popup for that tag. The tag details popup displays an assortment of information for the tag and, for most tags, a 1-minute trend plot. If no thick box is on the screen, <F2> brings up the general "Tag Status" box, allowing any of the tags in the FIX32 database to be selected and its tag details to be displayed. Exceptions to the above include the [ROLLOVER], [ABRTENAB] and parts of the [TAGSTAT] screens in which selecting the thin box results not in a thick box but in other toggling actions occurring.

A consistent color-coded method of displaying alarm conditions, abort conditions and instrument problem alarm conditions are employed on all applicable screens. There are a few obvious exceptions, but these are noted on the particular screens. The color codes used are as follows:

(a) Black or green text, black, blue or green values, and green boxes or indicator lights - indicates that the tag is OK or in a normal condition
(b) Red text and values - indicates that the tag is in an alarm condition
(c) Flashing red text and values - indicates that the tag is in an abort condition
(d) Yellow text and values - indicates that an instrument problem alarm exists for that tag

Most screens contain values, text or colored indicator lights that will display a thin gray box when the pointer is passed over it. By clicking once, the thin box turns into a thick box. Selecting <F2> at that time brings up the tag details popup for that tag. The tag details popup displays an assortment of information for the tag and, for most tags, a 1-minute trend plot. If no thick box is on the screen, <F2> brings up the general "Tag Status" box, allowing any of the tags in the FIX32 database to be selected and its tag details to be displayed. Exceptions to the above include the [ROLLOVER], [ABRTENAB] and parts of the [TAGSTAT] screens in which selecting the thin box results not in a thick box but in other toggling actions occurring.

7.4.2 Main Display Screen Characteristics

The screens are organized in groups based on their function. A brief description of the screens are given below, and summarized in Table 2. Screen pictures, and details regarding the screen dynamics are given in Appendix E.

- [WELCOME] Screen - When the FIX32 system is started, the [WELCOME] screen appears first. It has buttons that allow access to virtually all other screens. In addition, it displays the following buttons:

  <P-RUN-VIS> - For enabling the pump to be run from STATION5, 6, 7 or 8 (requires supervisor security level 4 to view and change)

  <LOGIN/OUT> - For logging in as a new user or logging out to "PUBLIC", "VIEW ONLY", security level 1

<EXIT> - For exiting the FIX32 DACS HMI software (requires operator security level 3 to exit)

- [MAP] Popup - This is very similar to the [WELCOME] screen. It also has buttons that allow access to virtually all other screens, and is accessible from all of these screens. It does not display the <P-RUN-VIS> or <EXIT> buttons.

- [ALARMSUM] Screen - This is the main alarm summary screen. (Note that an [ALARMBAR] popup also appears at the bottoms of most screens and displays the most recent two alarms.) All new alarms appear in flashing red and are accompanied by an audio alarm. The audio alarm is silenced by selecting the function key <F12> from any of STATIONs 5, 6, 7, 8 or 9 in the DACS trailer. Until acknowledged, the new alarms (and header line of text) continue to flash. An alarm is acknowledged by double-clicking on the individual alarm, or by selecting the <ACK PAGE> button from the [ALARMSUM] screen. Once acknowledged, an alarm quits flashing, a check (√) appears in the "ACK" column, and its text color turns to static red. If the alarm has cleared, the text briefly turns green, then disappears.

  If the header line of text continues to flash, that is an indication that unacknowledged alarms still exist. If viewing [ALARMBAR], it may be necessary to view the [ALARMSUM] screen to see additional unacknowledged alarms. If viewing [ALARMSUM], it may be necessary to scroll up or down to see additional unacknowledged alarms.

  [ALARMSUM] also displays the following buttons:

  <EVENT SUMM> - For selecting any alarm/event summary file from the last 30 days. The file lists alarm details and various events (i.e. logins, logouts, pump start and stop times, station startup and shutdown times, button selections, etc.)

  <PREV SCREEN> - For navigating back to the previous screen; same as selecting the function key <F6>.

  <ACK PAGE> - For acknowledging all of the alarms on the viewable page.

- [CSMAIN] Screen - This is the summary abort status monitoring screen. It provides access to other screens which display more detailed information about the abort status of various instruments. All the screens in this group include a button for resetting the PLC abort coil. This function is discussed in Section 7.6. The screens under the [CSMAIN] group are:

  - [HVTALARM] Screen
  - [PUMPALRM] Screen
  - [STRNALM] Screen
  - [TEMPALM] Screen
  - [MANABRT] Screen

- [MSMAIN] Screen - This screen depicts a schematic representation of the tank showing the locations of the various risers containing instruments. It provides access to tank measurement monitoring screens which display data from the instruments in these risers. The screens under the [MSMAIN] group are:

  - [TBSTC] Screen (accessible only from [MSMAIN] by selecting "To Tank Bottom & Side TCs" box)
  - [MIT17B] Screen
  - [MIT17C] Screen
  - [PUMP] Screen
  - [GASSUM] Screen
  - [SUMMARY] Screen
  - [TEMPRFL] Screen
  - [ROLLOVER] Screen – For the "30-SECOND TRENDS", select the tagname to be plotted by clicking on the tagname. The text and plotted curve appear in blue; unplotted tags display black text.

- [ASMAIN] Screen - This screen allows access to trend and history screens. The screens under the [ASMAIN] group are:

  - [PUMPOPS] Screen – Displays 4-minute trends of the pump oil temperature, motor speed and current
  - [TRENDS] Screen – Contains a matrix of buttons for plotting 1 hr, 4 hr, 12 hr, 24 hr, 72 hr, 7 day or 30 day history plots of predefined tag ("Pen") groups. (Note: Buttons not available at RSS 11, 13, 15 and 17) Clicking on the Pen Group name briefly displays a popup of the tags to be plotted. The plots are displayed on the "Historical Display" screen, a stand-alone application that is part of the FIX32 family)
  - [Historical Display] Screen – Displays a chart plotting the most recent data for the tags in the selected Pen Group. The x-scale defaults to the selected time interval, with the current time at the far right. The y-scale defaults to the predefined scale for the first tag (black pen). The previous 30 days of data is always available for plotting. Features of this screen are described below:

    Note: When the [Historical Display] screen is displayed, the function keys and key macros defined for all other FIX32 screens become disabled. However, <F2> can be used to exit the [Historical Display] screen back to the [TRENDS] screen; and <Ctrl-P> can still be used to print the screen, although no confirmation box is displayed. Other <Ctrl-x> key combinations are available and identified below.

    - Title Bar and Left Header: Displays the chart group name, consisting of the default time duration and general plot description (e.g. "4 HOUR PLOT – PUMP MOTOR PARAMETERS"

- Right Header: Displays the current x-axis time span. This is useful when the x-scale is changed due to a "Zoom" action.
- Auto Update Indicator: Displays, to the right of the header, a small wrist watch with the update time, in minutes. This is the screen update time. Default is no update. Recommended settings are: 1 minute for 1 and 4 hour plots, 5 minutes for 12 and 24 hour plots, and no update for 72 hour, 7 and 30 day plots.
- Legend: Displays the tagname, descriptor and tag value for each tag in the Pen Group selection. Each tag is color-coded. Clicking on the colored tagname changes the y-scale to the values (and color) for that tag.
- Time Cursor: The black vertical line that appears, by default, at the center of the plot. The x-axis time corresponding to the position of the line is displayed in the center of the screen below the plot. The tag values displayed for each tag in the legend also corresponds to this time. When the cursor is moved, either by holding down the left pointing device button and dragging it with the pointer, or by using the left/right arrow keys, the time and tag values change accordingly to reflect the new cursor position.
- "<<", "<", ">", ">>" Buttons: Shifts the displayed time spans backward (<< & <) or forward (> & >>) by a factor times the current time span. Defaults factors are 1.0 for << & >>, and 0.5 for < & >. For example, for a default 4 hour plot, << & >> moves 4 hours backward or forward in time, and < & > moves 2 hours backward or forward in time.
- Menu Bar Items
  - File
    - Open or <Ctrl-O>: Used to open a chart, but all predefined selections are accessible from the [TRENDS] screen. Must be used if a specific chart is stored under a new name for later retrieval and display.
    - Save as...: Must be used to store a specific chart for later retrieval and display. A unique Group Name must be assigned to the chart.
    - Print or <Ctrl-P>: For immediately printing the currently displayed chart screen (no confirmation box).
    - Close: For closing the currently displayed chart group plot.
    - Exit or <F2>: Exits the [Historical Display] screen and returns to the [TRENDS] screen.
  - Edit
    - Copy or <Ctrl-C>: Copies the chart into the Windows NT clipboard. This feature has no use during normal operation, but can be used by system administrators for capturing charts for use in other documents.

- Actions
  - Select Region: Used to select a region for zooming when a pointing device (mouse or trackball) is not present. When selected, a crosshair cursor appears in the middle of the plot. Position the cursor using the arrow keys. The cursor will defines the upper left corner of a zoom box. After the cursor is positioned, select the spacebar, then use the arrow keys to form the zoom box. After the box is formed, select spacebar, then select <Ctrl-Y> to zoom.
  - Zoom or <Ctrl-Y>: Used to zoom in on a region defined by the zoom box. The zoom box is normally formed by holding down the left pointing device button and dragging the pointer until the desired box is formed. See the "Select Region" item above for zooming when a pointing device is not present.
  - Reset to Original: Used to reset the plots to their default scales with the time cursor centered in the middle of the plot. The current time appears at the far right.
  - Set to Current Time: Used to reset the time at the far right of the plot to the current time. This does not change the current ranges of the x-axis time scale or y-axis scale.
  - Anchor Time / UnAnchor Time,
  - Link Window / UnLink Window, and
  - Synchronize Time:
    These three selections are not used during normal operation. They are used when comparing data between multiple charts.
  - Define Time Default...: Used to change the factors for the "<<", "<", ">", ">>" buttons, which allow time shifts backward (<< & <) or forward (> & >>) by the factor times the current time span. Defaults are 1.0 for << & >>, and 0.5 for < & > for each new chart. The allowable range is between 0.01 and 10.
- Options
  - Horizontal Grid: Used to toggle the light gray horizontal grid lines on and off. Default is "on".
  - Vertical Grid: Used to toggle the light gray vertical grid lines on and off. Default is "on".
  - 1 Minute Auto Update,
  - 2 Minute Auto Update, and
  - 5 Minute Auto Update:
    Used to change (or turn off by de-checking) the Auto Update Time for the chart. If a time is selected, a small wrist watch with the update time displays to the right of the

header. This is the screen update time interval. Defaults are: 1 minute for 1 and 4 hour plots; 5 minutes for 12 and 24 hour plots; no update for 72 hour, 7 and 30 day plots.

- No Legend: Removes the legend (tagnames, descriptors and tag values) at the bottom of the chart.
- Primary Legend or
- Alternate Legend: Displays (restores) the default legend.

- Window
  - Cascade: Not used during normal operation. Used to cascade plot windows if more than one chart is opened by using the "File, Open" menu item.
- Font!
  - For changing fonts on the chart; not used during normal operation. Default fonts for any new charts are Arial-Regular-9 for the axes and header, and Courier New-Regular-9 for the Legend. Changing the Font and Font style affect only the axes and header; the legend remains Courier New-Regular. Changing the Size affects the axes, header and legend. Changing the Strikeout and Underline affect only the axes.
- Help
  - Electronic Books: Disabled
  - About...: Disabled

- Miscellaneous Screens - These diagnostics type screens provide additional information on various instruments, the DACS trailer and the DACS network. Included are screens that allow abort coils to be enabled/disabled, alarms to be enabled/disabled, and tags to be placed in auto/manual. The miscellaneous screens are:
  - [DACS] Screen
  - [IOSTATUS] Screen
  - [ABRTENAB] Screen – This screen allows abort coils to be enabled or disabled by clicking once on the box containing the tagname and coil number. This action requires at least a security level 3. The main <Reset PLC Abort Coil> button also appears on this screen.
  - [ABRTCHEK] Screen
  - [MININ] Screen
  - [TAGSTAT] Screen - This screen allows the alarm status of certain tags to be toggled between "Enable" and "Disable" by clicking once on the "E" or "D" box to the left of the tagname. This action requires at least a security level 3. This screen also allows tags to be toggled between the "Auto" and "Manual" modes by clicking once on the "A" or "M" box to the right of the

tagname. This action requires at least a security level 5. Once a tag is placed in the manual mode, current values can be changed by using the <F2> Tag Details feature, or, with a training security level 5, by (double) clicking on the value and entering the new value right on the [TAGSTAT] screen. This feature is only used during troubleshooting or during training.

- [NETSTAT] Screen

- [PUMPRUN] Screen - This screen provides the operator interface for running the mixer pump. It is available either on STATION8 (default at startup), or from STATION5, 6 or 7 (using the supervisor enabled <P-RUN-VIS> button on the [WELCOME] screen). The [PUMPRUN] screen can appear only at one of these four stations at any given time. Setting up a test and running the pump requires at least a security level 3. Details on the [PUMPRUN] screen can be found in Section 7.7.

- [PUMPVIEW] Screen - This screen is similar to [PUMPRUN], the difference being that it does not contain the operator control buttons or allow operator input for test setups. It is for view only. It is available on all stations except the station that is able to display the [PUMPRUN] screen.

7.4.3 Confirmation and Warning Popups

These "popup" screens display warnings, confirmation boxes or provide important information during normal operation. A brief description of the popups are summarized in Table 3. Pictures, and details regarding the popup dynamics, are given in Appendix E.

7.4.4 Help Popups

These "popup" screens are available by selecting the <HELP> button on a screen, and provide useful information pertaining to the specific screen. The help popup for the [WELCOME] screen also contains important phone numbers. These popups have the name [H_*xxxxxx*], where *xxxxxx* is similar to the main screen name.

In addition to the specific screen help, a "General Help" popup also appears just below the screen help. The general help summarizes the function keys and key macros used in the FIX32 DACS HMI, and, for RSSs, displays a <MODEM> button for dialing up to or hanging up from the DACS network. Pictures, and details regarding the help popup dynamics, are given in Appendix E.

7.4.5 [TRENDS] Screen Popups

These "popup" screens are available by selecting any Pen Group name on the [TRENDS] screen. They display the list of tagnames that will be plotted on the "Historical Display" screen. Pictures, and details regarding the [TRENDS] popup dynamics, are given in Appendix E.

7.4.6 Tag Details Screen Popups

These "popup" screens are available by using the <F2> function key described earlier. The tag details popups display an assortment of information for tags and, for most tags, a 1-minute trend plot. Pictures, and details regarding the tag details popup dynamics, are given in Appendix E.

Table 2. DACS FIX32 Main Screens

SCREEN	SCREEN TITLE	COMMENTS
[WELCOME]	DST 241-SY-101 DACS	Screen that appears at system startup
[MAP] Popup	(No Title - Popup window available from most screens)	Very similar to [WELCOME] screen
[ALARMSUM]	Alarm Summary	Main alarm summary screen; the most recent two alarms also appear at the bottoms of most screens
[CSMAIN]	Automatic Alarms and Aborts	Overall alarm and abort summary screen
[HVTALARM]	Hydrogen / Vent Header / Tank	H_2, flow & tank pressure alarm and abort details
[PUMPALRM]	Pump Parameters	Pump parameters alarm and abort details
[STRNALM]	Strain Gauges	Strain gauge alarm and abort details
[TEMPALM]	Temperature - °F	MIT17B alarm and abort details
[MANABRT]	Manual Aborts	H_2, NH_3, and ARM alarm and abort details
[MSMAIN]	Main Riser Profile	Selection screen for other monitoring screens
[TBSTC]	Tank Bottom & Side Thermocouples	TBS TC Temperatures (only from [MSMAIN])
[MIT17B]	Instrument Tree (1) Riser 17B (MIT)	Tank temperatures
[MIT17C]	Instrument Tree (2) Riser 17C (MIT)	Tank temperatures
[PUMP]	Mixer Pump - Riser 12A	Mixer pump instrument readings
[GASSUM]	Gas Summary	Collected gas concentrations and related items
[SUMMARY]	Summary Information	Vent header, In-tank parameters, MIT 17B & 17C temperatures, Area radiation monitor
[TEMPRFL]	MIT Temperature Profiles	Risers 17B and 17C temperature bar graphs
[ROLLOVER]	Imminent Rollover	Runtime trends and temperature profiles to monitor for possible rollover
[ASMAIN]	Runtime Trend Selection Screen	Selection screen for trend displays
[PUMPOPS]	Pump Operations	Runtime trend for pump operation measurements
[TRENDS]	Historical Trending Displays	Buttons for 1-hour to 30-day plots for nearly all logged tags (accessible only in DACS trailer)
---	Historical Display	History plots initiated from [TRENDS] screen
[DACS]	DACS Facilities Management	DACS trailer power, trailer temperatures, UPS and weather station
[IOSTATUS]	I/O Health Status	Modicon PLC racks and modules status
[ABRTENAB]	Abort Enable Checklist	Allows enable/disable of PLC abort coils and indicates coil status
[ABRTCHEK]	Abort Limit Checklist	Used for pump run
[MININ]	Minimum Instrumentation Checklist	Used for pump run
TAGSTAT]	Tag Status (Alarm Disable, Auto/ Manual)	Same tags as [MININ], but allows enable/disable of alarms and placing tags in auto/manual
[NETSTAT]	DACS Network Status	Displays computer online/offline status and user login status
[PUMPRUN] or [PUMPVIEW]	Pump Operation or View of Pump Operation	Screen for running the pump or Viewing the pump run from all other stations

Table 3. DACS FIX32 Confirmation and Warning Popups

POPUP	COMMENTS
[ABORTWRN]	Warning that appears when trying to reset the PLC abort coil in the DACS trailer with a security level less than 3, or when trying to reset the PLC abort coil from an RSS.
[ACKPGWRN]	Warning that appears when trying to acknowledge alarms when selecting the <ACK PAGE> button on the [ALARMSUM] screen with a security level less than 3.
[EXIT]	Confirmation box that appears before exiting the FIX32 DACS HMI when selecting the <EXIT> button on the [WELCOME] screen with a security level of at least 3.
[EXITWARN]	Warning that appears when trying to exit the FIX32 DACS HMI when selecting the <EXIT> button on the [WELCOME] screen with a security level less than 3.
[LOGCHOIC]	Login/Logout confirmation box that appears when selecting the <LOGIN/OUT> button on the [WELCOME] screen or on the [MAP] popup.
[LOGIN]	"Completing Login . . ." information box that appears after a successful login, directing the user to wait (until the information has been updated in the FIX32 database).
[LOGOUT]	"Logging Out . . ." information box that appears after a logout, directing the user to wait (until the information has been updated in the FIX32 database).
[PRINT]	Confirmation box that appears before printing a screen when selecting the <PRINT> button a screen with a security level of at least 2.
[PRINTWRN]	Warning that appears when trying to print a screen when selecting the <PRINT> button on a screen with a security level less than 2.
[PRUNVIS]	Selection box for changing the DACS station (5, 6, 7 or 8) for running the pump. It appears when selecting the <P-RUN-VIS> button on the [WELCOME] screen with a security level of at least 4.
[TOG-NOTE]	Information note that appears when trying to toggle the alarm status of certain tags on the [TAGSTAT] screen that do not allow the status to be changed. A security level of at least 3 is required before the popup even appears.

7.5 DATA LOGGING

An Intellution program called Historical Assign is used to configure historical data collect groups for tags with common data logging rates. Eight collect groups are defined for the DACS tags. Data can be collected at rates of 1, 2, 10, 20, 30 seconds, 1, 2, 10, 20 and 30 minutes. For DACS, assigned logging rates vary from every 10 seconds for critical pump parameters to every 10 minutes for the tank bottom and side thermocouples.

Phase values of 2 second increments from 0 to 58 seconds can also be assigned to each collect group. A phase value offsets the collection process for a collect group by waiting for a specified amount of time to elapse once before allowing the Historical Collect program to begin data collection. Thereafter, data is collected according to the rate defined for the group. Using phase values can help to prevent overruns when collecting data from more than one node. Since overruns have not been a concern for DACS, all collect groups use a phase value of zero.

Data for all collect groups are stored in one data file every 4 hours (8 and 24 hour files are other options). The data file is in Intellution's proprietary *.H04 format. This format is encrypted by Intellution for data integrity, security and compression purposes. The file names are YYMMDDHH.H04, providing six files (~625KB each) per day for all of the DACS data. Details of the Historical Assign file configuration are given in Table 4.

Table 4. The FIX32 Historical Assignment File Configuration

Group Number	Logging Rate	Number of Tags	Contents of File "YYMMDDHH.h04"				
1	10 sec	8	PCR12A01, VR232040,	PDPBASE, VR232050,	PITNO111, ZIMPE112	PITNO110,	VR232020,
2	20 sec	22	TIR17B01, TIR17B06, TIR17B11, TIR17B16, TIR17B21,	TIR17B02, TIR17B07, TIR17B12, TIR17B17, TIR17B22	TIR17B03, TIR17B08, TIR17B13, TIR17B18,	TIR17B04, TIR17B09, TIR17B14, TIR17B19,	TIR17B05, TIR17B10, TIR17B15, TIR17B20,
3	20 sec	22	TIR17C01, TIR17C06, TIR17C11, TIR17C16, TIR17C21,	TIR17C02, TIR17C07, TIR17C12, TIR17C17, TIR17C22	TIR17C03, TIR17C08, TIR17C13, TIR17C18,	TIR17C04, TIR17C09, TIR17C14, TIR17C19,	TIR17C05, TIR17C10, TIR17C15, TIR17C20,
4	10 min	26	TBSTC01, TBSTC06, TBSTC11, TBSTC16, TBSTC21, TBSTC26	TBSTC02, TBSTC07, TBSTC12, TBSTC17, TBSTC22,	TBSTC03, TBSTC08, TBSTC13, TBSTC18, TBSTC23,	TBSTC04, TBSTC09, TBSTC14, TBSTC19, TBSTC24,	TBSTC05, TBSTC10, TBSTC15, TBSTC20, TBSTC25,
5	2 min	10	FT-FILE, FT-NH3C,	FT-TIME, GC3-TIME,	FT-N2OA, GC3-FILE,	FT-N2OC, GC3-RT,	FT-NH3A, GC3-H2
6	2 min	22	PHO-TIME, RG-STAT, GC2-H2, TICMSY18, PITMSY07,	PHO-NH3, RG-TIME, GC2-AREA, PITMSY13, PITMSY10	RGA5TND1, GC1-H2, GC2-RT, TITMSY15,	RGA5TND2, GC1-AREA, PITMSY04, PITMSY16,	RG-RUN, GC1-RT, FITMSY17, PDTMSY12,
7	2 min	9	WIR12A01, WIR17C02,	WIR12A02, WIR1BA01,	WIR12A03, WIR1BA02,	WIR12A04, WIR1BA03	WIR17C01,
8	20 sec	21	LIR01C, PIR17C01, NITJSY06, WSWDIR, ZIMPE142	FTE50001, PIR17B04, NIR17B01, WSWSPD,	FTE50002, FTE50003, WSP1, TIR12A01,	TT10001, NIR05A01, WSH1, TIR12A02,	MT10001, NITKSY06, WST1, LIR01A,

Note: Files are automatically deleted after 30 days on STATION5

The data files reside locally on STATION5 in the C:\FIX32\HTRDATA\STATION5 directory. Every four hours, at 1 minute past the hour, the file (or files) is copied to the C:\FIX32\HTRDATA\BUFFER directory. At two minutes past the hour, the file (or files) is copied to two shared directories on STATION6: C:\RAW\TRANSFER (accessed via HLAN by the data management group) and D:\DACSDATA (accessed via HLAN by the DACS software developers for archiving to a backup JAZ drive). The files in the STATION5 \BUFFER directory are then deleted. The data residing locally on STATION5 is used in the [Historical Display] screens for plotting, at all local DACS stations, up to the previous 30 days of data for any of the logged tags. The data files are automatically purged from STATION5 after 30 days.

Since Intellution does not directly support data logging in other, more common formats, Intellution provides, as part of a developer's toolkit, a program called Historical Data Report. This program will convert a user-definable group of tags from the *.H04 files into a

comma-separated value (CSV) format for any selectable time period. Configuration files may be saved with specific tag lists to ease the conversion task. This necessary process requires the data management personnel to convert the data before other users are able to view the data (using Microsoft Excel, for example).

7.6 ALARMING

All tags generated in the database Analog Alarm (AA) blocks and Digital Input (DI) blocks have the potential for alarming. However, the AA and DI blocks will only generate alarms if: (a) the "Enable Alarming" box is checked *and* (b) the "Alarm Area" is set to "ALL" *and* (c) the value for the block is in an alarm state (see Appendix D for listings of the database blocks). For AA blocks, the alarm state occurs when the value either exceeds any "High" alarm value or drops below any "Low" alarm value (AA tags that alarm may contain either or both alarm levels). For DI blocks, the alarm state occurs when the digital value deviates from its non-alarming "NORMAL" or "OK" state. Most DI block alarms are associated with instrument problem alarms and aborts.

7.6.1 Audio Alarm

When new alarms are generated, they are displayed on the [ALARMSUM] screen in the order that they occur. All new alarms appear in flashing red and are accompanied by an audio alarm. The repetitive audio alarm is generated by playing the "ALARM.WAV" sound file once per second in the ALARM-SOUND PG block:

```
00. SETLIM 0.1000
01. DELAY 1
02. IF UAA_SILENCE_LEVEL > ALARM GOTO 4
03. GOTO 5
04. SETOUT UAA_SILENCE_LEVEL ALARM
05. IF ALARM > UAA_SILENCE_LEVEL GOTO 7
06. GOTO 1
07. PLAYSOUND C:\FIX32\SOUNDS\ALARM.WAV
08. GOTO 1
09. NUL
```

Once per second, the PG block checks to determine if there are new, unacknowledged alarms. This is accomplished by comparing the value of the ALARM AI block with the UAA_SILENCE_LEVEL AO block value. The ALARM block is constantly updated with the current value of the FIX32 built-in alarm counter field C:UAA, the current number of unacknowledged alarms. When the function key <F12> is pressed, a key macro script is executed that sets UAA_SILENCE_LEVEL to ALARM. Also, if UAA_SILENCE_LEVEL should ever exceed the value of ALARM, the PG block above also sets UAA_SILENCE_LEVEL to ALARM. These events cause the logic to skip the program line that plays "ALARM.WAV", thereby silencing the alarm. When new alarms are generated and the number of unacknowledged alarms exceeds the current value of the UAA count since the <F12> silence key was last pressed, the audio alarm once again sounds.

The audio alarm silence function key <F12> script is ignored by RSSs (#RSS=1), and therefore works only from STATIONs 5, 6, 7, 8 or 9 in the DACS trailer. All security levels

permit silencing alarms. An audio alarm sound test to assure that the speakers are functioning properly is available through the <SOUND TEST> button on the [DACS] screen. The "ALARM.WAV" sound file is played once when the button is pressed.

7.6.2 Acknowledging Alarms

Unacknowledged alarms, although silenced, continue to flash in red on the [ALARMSUM] screen until acknowledged. Alarms are acknowledged by either double-clicking anywhere on the flashing alarm text or by selecting the <ACK PAGE> button. A security level 3 is required to acknowledge alarms. This safeguard is implemented by assigning to the AA and DI blocks that permit alarming a "Security Area 1:" equal to "LEVEL3". Any attempt to acknowledge an alarm with a security level less than 3 results in either the FIX32 system popup message "Value is not accessible from this plant area" (when double-clicking on an alarm) or the red popup warning box [ACKPGWRN] displaying "INSUFFICIENT SECURITY LEVEL TO ACKNOWLEDGE ALARMS" (when selecting the <ACK PAGE> button). Once acknowledged, an alarm quits flashing, a check (√) appears in the "ACK" column, and its text color turns to static red. If the alarm has cleared, the text briefly turns green, then disappears.

The <ACK PAGE> button is used to acknowledge all alarms currently visible on the [ALARMSUM] screen. This is accomplished by execution of the ALARMACKALL command in the <ACK PAGE> button script. Alarms not visible on the screen will not be acknowledged by selecting the button. If the number of alarms (both acknowledged and unacknowledged) exceed the number that can fit on the viewable [ALARMSUM] screen, the scroll bars at the right of the screen must be used to view the additional alarms.

A feature of the [ALARMSUM] screen is the flashing header text (red to yellow) when unacknowledged alarms exist. This provides useful information when the number of alarms exceed the number that can be viewed on the screen. Even though all visible alarms may have been acknowledged, the flashing header indicates that unacknowledged alarms still exist. Once all alarms have been acknowledged, the header text returns to static white. The dynamic coloring of the header text is controlled by the value of the ALARM AI block, which obtains its value from C:UAA, the current number of unacknowledged alarms, as discussed in Section 7.6.1.

7.6.3 Enabling/Disabling Alarms

Alarming can be disabled/enabled for some of the AA and DI blocks that permit alarms by using features available on the [TAGSTAT] screen. A security level 3 is required to enable/disable alarms. When a small gray-bordered box containing a white "E" or red "D" is single-clicked, a small black box beneath the "E" and "D" executes an "On Up" script which toggles the alarm status, Tagname.F_ENAB, with the command TOGGLEALARM STATION5: Tagname. Alarms which were enabled become disabled and vice-versa. Alarms displayed on the screen immediately disappear when an alarm is disabled. The visibility of the "E" and "D" boxes are also toggled by the alarm status, Tagname.F_ENAB.

The [TAGSTAT] screen also displays some white-bordered boxes containing either a white "E" or white "D". Selecting these boxes results in the appearance of the red [TOG-NOTE] popup message: "TOGGLE FEATURE NOT AVAILABLE FOR THIS TAG". These tags either have no alarm limits or have alarms which must never be enabled/disabled.

7.6.4 Alarm/Event Summary

All alarms, along with a multitude of events (i.e. logins, logouts, pump start and stop times, station startup and shutdown times, button selections, etc.) are logged into a daily YYMMDD.ALM text file, and archived for future reference. The [ALARMSUM] screen contains an <EVENT SUMM> button for selecting any alarm/event summary file from the last 30 days. When this alarm/event summary feature is used, a red popup reminder note is displayed: "CLOSE ALARM/EVENT BOX WHEN NOT USING". Closure of the box is necessary to maintain execution of scripts running in the background for that station only.

7.6.5 [ALARMBAR] Screen

Although [ALARMSUM] is the main alarm summary screen, the [ALARMBAR] popup appears at the bottoms of most other screens (all except [TRENDS], [Historical Display] and [ALARMSUM]). Alarm features mentioned earlier regarding the [ALARMSUM] screen also apply to [ALARMBAR]. Differences between the two alarm displays are: [ALARMBAR] displays only the most recent two alarms; [ALARMBAR] has no scrolling capabilities; and [ALARMBAR] does not display the "DATE IN" field. Details of the alarm summary link configurations for both [ALARMSUM] and [ALARMBAR] are in Appendix E.

7.6.6 Dynamic Coloring on Screens

Related to alarming is the resultant color-coding used on most screens to display the text and values for tags in alarm states. Tags that are in a "Low" or "High" alarm state are displayed in static red; tags that are in an "Abort" condition are displayed in flashing red; and tags that are used as "Instrument Problem" alarms are displayed in static yellow. Details of the general database block flow logic producing the color coding scheme are illustrated in Figure 11 and described as follows.

In the Figure 11 example, a hypothetical tagname "TAGNAM01" corresponds to a field instrument whose current value is passed from the PLC to a FIX32 Analog Alarm (AA) block. The AA block may have high, low, or both high and low alarm values specified in its alarm value fields. The high and low alarm states become digital inputs to a Boolean (BL) block with the tagname appended with "_BL", i.e. "TAGNAM01_BL". In some cases, there may be no high or low alarms associated with the field instrument, but the dynamic coloring feature is still required for abort alarms or instrument problem alarms. In that case, all inputs to the "TAGNAM01_BL" BL block are "0". There must *always* be a "TAGNAM01_BL" BL block that feeds into the "A" input of the Calculation (CA) block for dynamic coloring using multiple alarm conditions.

In some cases, the same current value of the field instrument is used to indicate an instrument problem alarm. In other words, the high or low alarm value indicates a failed instrument by flagging a reading that is at the upper or lower limit of a particular range, a value that is not realistically probable. In this case, the current value is passed from the PLC to a second AA block with the tagname appended with "-AA" and its second character replaced with a "Z", i.e., "TZGNAM01-AA". The high and low alarm states become digital inputs to another BL block with the "Z" tagname appended with "_BL", i.e. "TZGNAM01_BL". In cases where the high or low alarms are not used to indicate instrument problem alarms, the "TZGNAM01-AA" tag is not required.

Many instrument problem alarms are generated in the PLC ladder logic, whose tag state is passed from the PLC to a Digital Input (DI) block. Although there are exceptions to the naming convention, many take the form of replacing the second character with a "P", i.e. "TPGNAM01". The DI block state becomes another digital inputs to the same "TZGNAM01_BL" BL block mentioned above. The BL block state is passed to a Digital Output (DO) block, "TZGNAM01_DO", that can then be read by another DI block, "TZGNAM01", using the same SIM I/O address. This "Instrument Problem Alarm" tag then feeds into the "C" input of the dynamic coloring CA block.

One major exception to the above is the method that instrument problem alarms are handled for the MIT17B and MIT17C thermocouples. For these tags, the "TZGNAM01-AA" AA block alarms status determines the state of the "TZGNAM01_DO" DO block and consequently the state of the "TZGNAM01" DI block.. This DI block and the PLC-generated problem alarm DI block both feed into the "TZGNAM01_BL" BL block, which then feeds into the "C" input of the dynamic coloring CA block. This allows independent, non-redundant instrument problem alarms to be generated for both sources. In Figure 11, this would be illustrated by showing the AA block feeding into the DO block and showing the Instrument Problem BL block *after* the DO-DI block pair.

All abort alarms are generated in the PLC ladder logic, whose tag states are passed from the PLC to Digital Input (DI) blocks.. A single field instrument may have more than one associated abort value (e.g., a high *and* low value for strain gauges). Each requires its own DI block, with the tagname second character replaced with an "H" ("THGNAM01"), an "L" ("TLGNAM01") or a "C", ("TCGNAM01", not shown in the figure). Multiple abort DI block states are used as digital inputs to a BL block with the tagname appended with "_BLB", i.e. "TAGNAM01_BLB". This BL block then feeds into the "B" input of the dynamic coloring CA block. Single abort DI blocks do not require a BL block but feed directly into the "B" input of the dynamic coloring CA block (the single DI block case is not shown in the figure).

As mentioned above, the normal high or low alarm state feeds input "A", the abort alarm state feeds input "B" and the instrument problem alarm state feeds input "C" of a CA block, tagname "TAGNAME_CA" (see right-center of Figure 11). Inputs "D", "E", and "F" are assigned fixed values of "1", "2", and "4" respectively. When there are no alarms, the value of the CA block is "0". When there is only a high/low alarm, the value is "1" (A x D). When there is an abort alarm with or without high/low alarms and *no* instrument problem alarms, the value of the CA block is either "2" or "3" [(A x D)+(B x E)]. When there is an instrument problem alarm, the value of the CA block is either "4", "5", "6" or "7" [(A x D)+(B x E)+(C x F)].

The display screens then use the values of the CA blocks to define the color thresholds for text, values, and digital indicator lights of specific tags. If the value is "0", the text, values, and lights remain in their default colors (black for text, blue for values, green for lights). If the value is "1" (alarm only), the entities display in static red. If the value is "2" or "3" (at least an abort alarm), the entities display in flashing red. If the value is "4", "5", "6" or "7" (at least an instrument problem alarm), the entities display static yellow.

Again, the convention described above is general and applies to most of the database tags. There are several variations and exceptions, depending on the alarms required for the specific tags. In cases where there is only a single alarm and alarm type, a CA block is not used, and the color threshold is simply defined by the state of the single alarm.

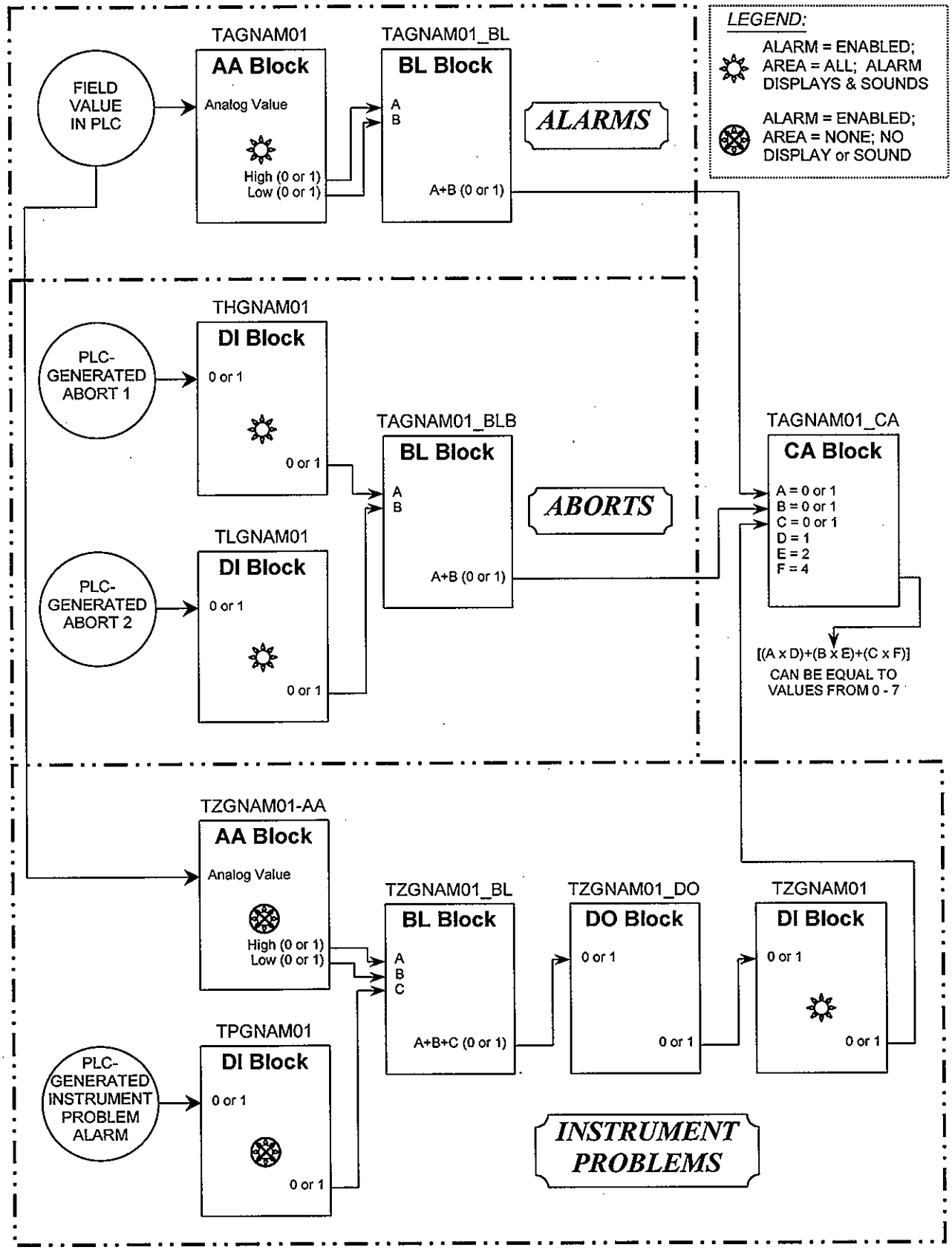


Figure 11. Schematic of Method Used in FIX32 for Screen Alarms Dynamic Coloring

7.7 PUMP CONTROL FUNCTION ([PUMPRUN] SCREEN)

7.7.1 OVERVIEW

The [PUMPRUN] screen (Figure 12 below) relies heavily on scripts within the five user buttons and Test Setup parameters, as well as several Program Blocks (PG) within the database. The five user buttons are listed in the Table 5.

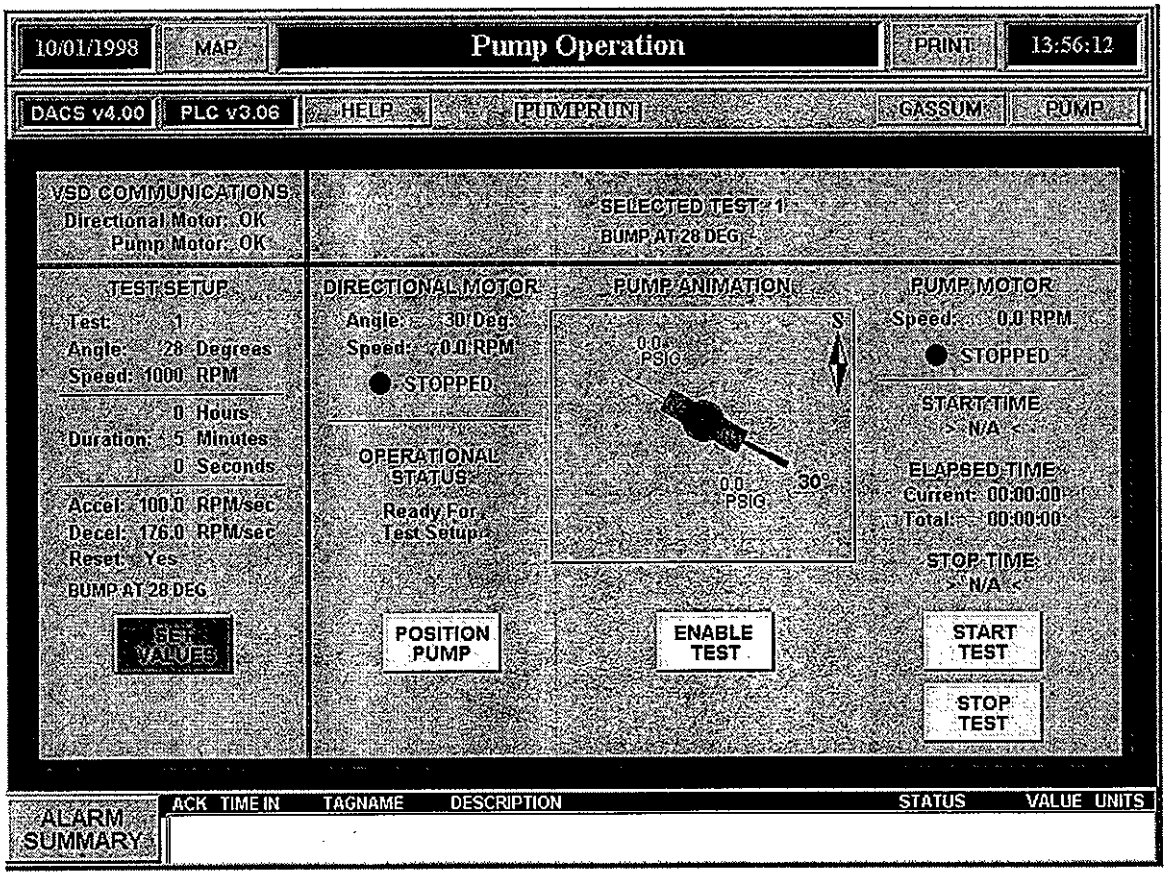


Figure 12. *[PUMPRUN] Screen (Shown Ready to Set Values)*

Table 5. *User Buttons on the [PUMPRUN] Screen*

BUTTON	DESCRIPTION
<SET VALUES>	"Locks-in" Pump Run Parameters
<POSITION PUMP>	Rotates the Directional Motor to Destination Angle
<ENABLE TEST>	Enables 60-Second Timer to Enable the START TEST Button
<START TEST>	Starts the Pump Motor
<STOP TEST/ENABLE STOP>	Stops the Test (Stops DMOTOR/PMOTOR) / Allows 5 Seconds for a PMOTOR Stop While PMOTOR Running

Additional scripts are used for the TEST SETUP portion of the screen to allow the user to select one of 36 pre-defined test setups, or to change any of the test setup parameters individually. They are listed in Appendix E.

The PG blocks used to support [PUMPRUN] are listed in Table 6.

Table 6. *Program Blocks in support of [PUMPRUN] Screen*

PG BLOCK TAGNAME	DESCRIPTION
RESET-PUMPRUN	Resets VSDs & Stops Elapsed Time
POS_PUMP_DONE	Sets Button Status After <POSITION PUMP>
D_RUN_CMD-PG	PG Block for RUN Command to DMOTOR
D_FWD-REV	Directional Motor Forward/Reverse Control
P_RUN_CMD-PG	PG Block for RUN Command to PMOTOR
30-SECOND-TIMEOUT	Pump Running 30-Second Test Timeout
ELAPSED-CLEAR-PG	Clears Elapsed Time Counters
RESET_BUTTONS	Resets Button Status to <SET VALUES>
SET_VAL_DONE	Sets Button Status After <SET VALUES>
ENAB_TEST_DONE	Sets Button Status After <ENABLE TEST>
START_TEST_DONE	Sets Button Status After <START TEST>
ENAB_TEST_TIMER	<ENABLE TEST> 60 Second Timer
PUMP_PROBLEMS	Detects Aborts & Comm Failures

The scripts contained in the PG blocks are shown in detail in Appendix D.

7.7.2 [PUMPRUN] Initialization

When Intellution is first started up on STATION5, the [A1-INIT] "Commands On Opening" script is executed. The section titled "[PUMPRUN] PARAMETERS" performs the initialization for [PUMPRUN]. It initializes all pump parameters to Test Setup 1, and then places the RESET-PUMPRUN PG block on scan. This block sends a "STOP" command to both VSDs, stops the elapsed time counter, and runs the RESET_BUTTONS PG block. RESET_BUTTONS places all five user buttons into the "SET VALUES" mode - where the <SET VALUES> button is green, and the remaining four buttons are gray. The <STOP TEST/ENABLE STOP> button is also set to display the text "STOP TEST".

7.7.3 [PUMPRUN] Screen Scripts

The "Commands On Opening" script for [PUMPRUN]:

```
DECLARE #STOP_OK NUMERIC PICTURE
DECLARE #STOP_TEST_BUSY NUMERIC PICTURE
DECLARE #STOP_PRESSED NUMERIC PICTURE
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "PUMPRUN"
#PROMPT_BUSY = 0
```

```
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
IF STATION5:BUT-COL-POS_PUMP.F_CV == 2
  ONSCAN  STATION5:RESET_BUTTONS
ENDIF
&CheckForPumpRunVis
IF #GS_NODE == "STATION5"
  IF STATION5:ST5_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
    REPLACEPIC * PUMPVIEW
  ENDIF
ENDIF
IF #GS_NODE == "STATION6"
  IF STATION5:ST6_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
    REPLACEPIC * PUMPVIEW
  ENDIF
ENDIF
IF #GS_NODE == "STATION7"
  IF STATION5:ST7_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
    REPLACEPIC * PUMPVIEW
  ENDIF
ENDIF
IF #GS_NODE == "STATION8"
  IF STATION5:ST8_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
    REPLACEPIC * PUMPVIEW
  ENDIF
ENDIF
PAUSE 1
GOTO CheckForPumpRunVis
```

This script checks to see if the <POSITION PUMP> button is yellow, and if so, it places the PG block RESET_BUTTONS on scan. This resets the buttons to a green <SET VALUES> button, with all other buttons gray. It then goes through a sequence of checks to see which station is currently enabled as the pump control station. If the current station no longer has pump control, then the [PUMPRUN] screen is replaced with the [PUMPVIEW] screen. This script then loops continuously through the pump control station checks until the [PUMPRUN] screen is exited.

The "Commands On Closing" script for [PUMPRUN]:

```
IF #PUMPOPS_VISIBLE == 1
  #PREV_PIC = "PUMPRUN"
ENDIF
CLOSEPIC HELPSCREEN
IF STATION5:P_RUN.F_CV == 1
```

```
  SETVAL STATION5:BUT-COL-STOP_TEST.F_CV 1
  SETVAL STATION5:BUT_TEXT_STOP_TEST.F_CV 0
ELSE
  SETVAL STATION5:BUT_TEXT_STOP_TEST.F_CV 1
ENDIF
#PUMP-COUNTER = 0
```

This script will ensure that the correct color and text for the <STOP TEST/ENABLE STOP> button are correct when exiting the screen. If the pump is currently running, it forces it to green, with "ENABLE STOP" text. If the pump is NOT running, the text is forced to "STOP TEST". This is done because the <STOP TEST/ENABLE STOP> script will no longer continue executing once the screen is closed and another one opens. If the user has just pressed the <ENABLE STOP> button and exits the screen (using [F4],[F6], [MAP], the <GASSUM> button, or the <PUMP> button) then the button will be flashing yellow and the text will be "STOP TEST". This script will ensure that the button is returned to a green "ENABLE STOP". See the <STOP TEST/ENABLE STOP> script in Section 7.7.11 for further details.

7.7.4 [PUMPRUN] Security

Level 3 security (or above) is required to perform any control functions or change any Test Setup values on [PUMPRUN]. With insufficient security, the user will be presented with the "DONK.WAV" audio file, and the [PUMPWARN] popup screen will then be displayed for 3 seconds (see Figure 13). Each button and Test Setup parameter script incorporates checking for a security level less than 3. The checking is performed as follows:

```
IF #SECURITY_LEVEL < 3
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PUMPWARN_OPEN == 0
    OPENPIC PUMPWARN
  ENDIF
etc...
```

A more complete description of the overall FIX32 security features is found in Section 7.9. Line 3, *IF #PUMPWARN_OPEN == 0*, is used to prevent multiple copies of [PUMPWARN] to be open at one time. Specific details for each script are listed in Appendix E.

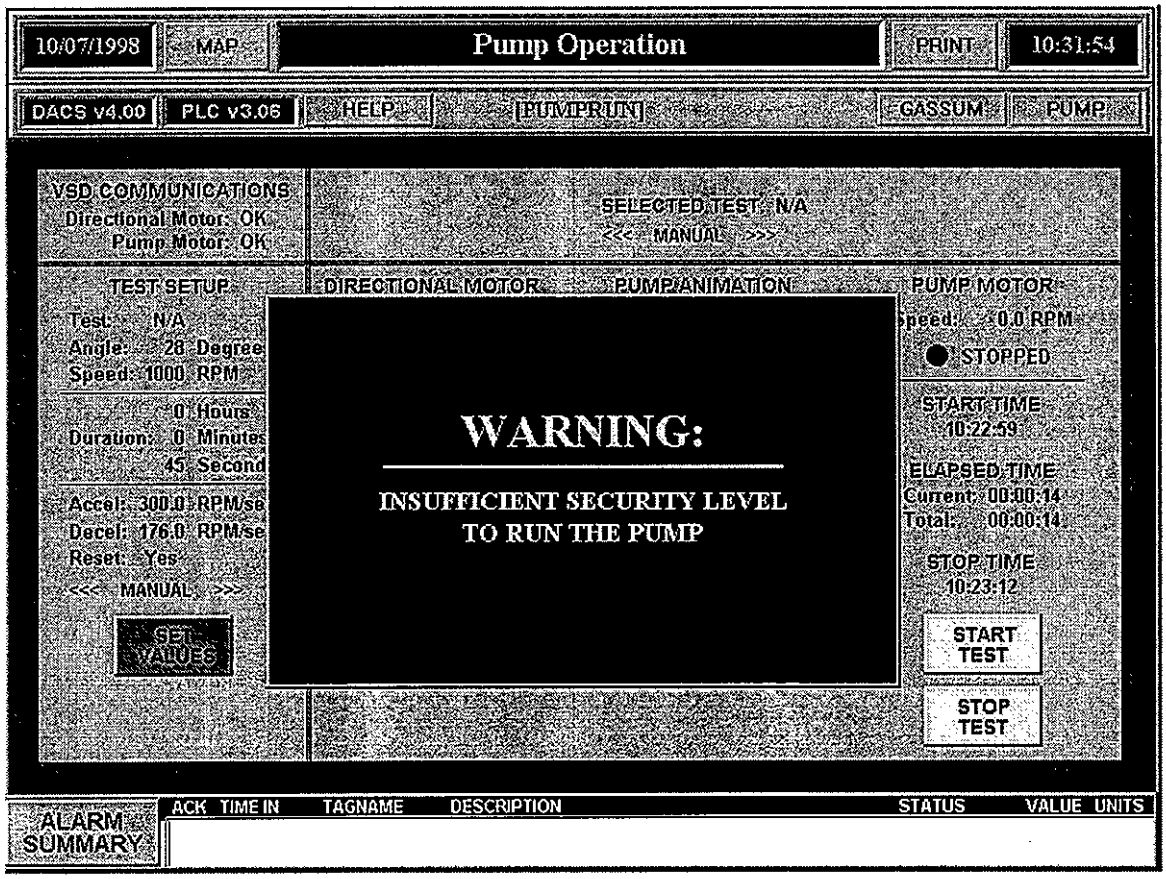


Figure 13. *[PUMPRUN] with [PUMPWARN] Popup Screen*

7.7.5 VSD COMMUNICATIONS

The AF5000+ VSDs communicate with STATION 5 via dedicated RS-232 links; COM1 for the pump motor (PMOTOR) and COM2 for the directional motor (DMOTOR). When either link is detected as bad by the AF5000+ VSD driver (see Appendix C), the appropriate motor dynamic link (P_MOTOR_STAT.A_CV and D_MOTOR_STAT.A_CV) will display a red "BAD". If the link is good, it will display a green "OK". If either VSD is "BAD", a red box (warning the user that VSD communications must be established to run the pump) will cover the <POSITION PUMP> and <ENABLE TEST> buttons. The links will always show a red "BAD" when the breakers to the VSDs in the MCC are open (the VSD keypads in the DACS trailer will display "SERIAL LINK LOST"). A Boolean Block (BL) called VSDS_BAD is used to "OR" P_MOTOR_STAT and D_MOTOR_STAT, which is used to control the visibility of the red VSD communication warning box (see Figure 14).

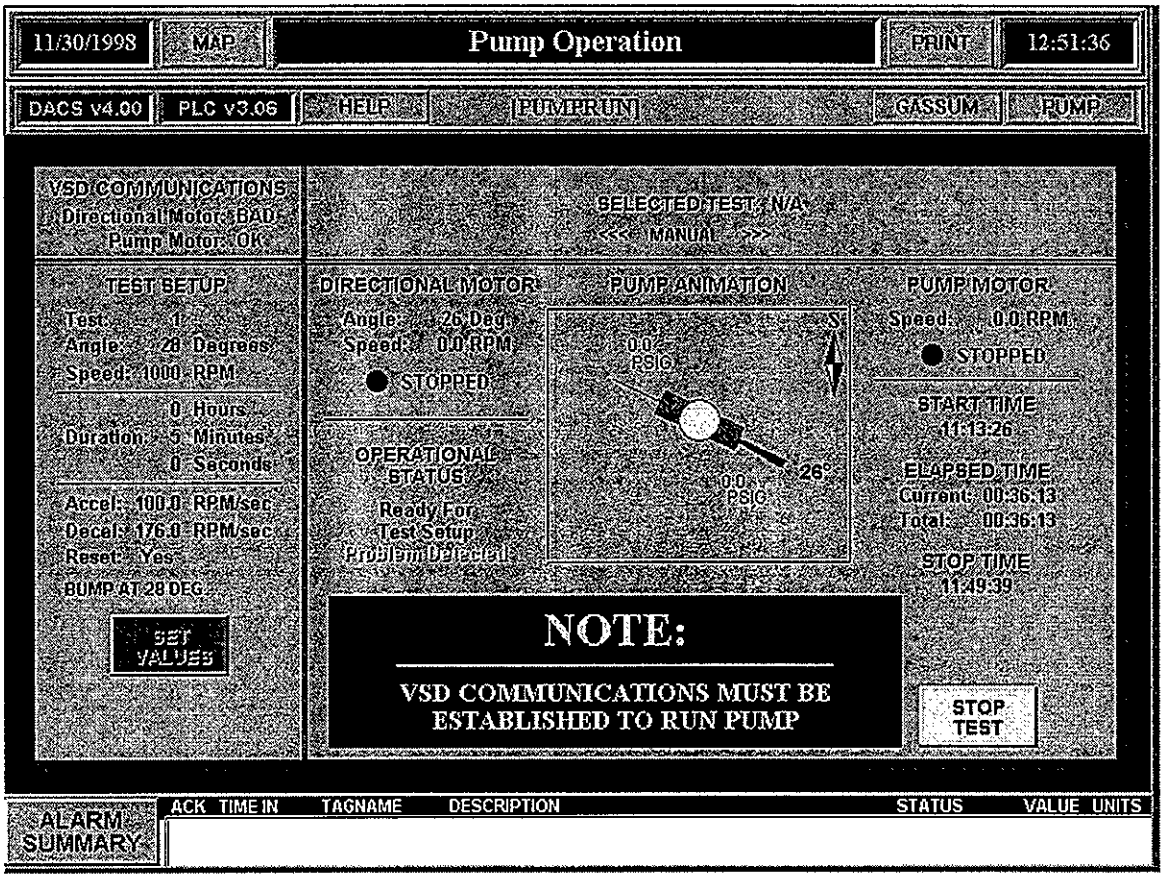
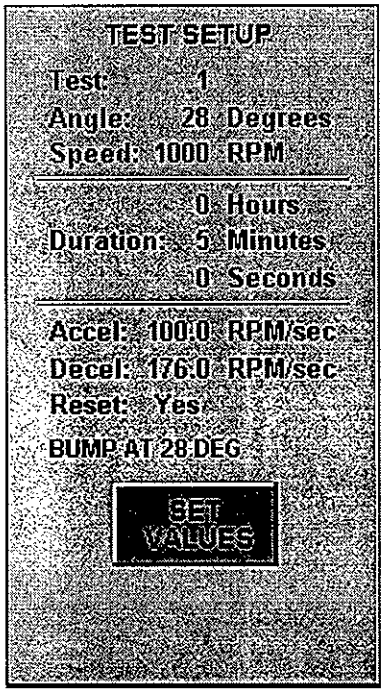


Figure 14. *[PUMPRUN] Screen with BAD VSDs*

7.7.6 TEST SETUP



The TEST SETUP section of [PUMPRUN] is used to display and change specific test parameters: Test Number, Pump Angle, Pump Speed, Test Duration, Pump Acceleration, and Pump Deceleration. Additionally, the user can have the "Total" elapsed time counter reset upon test startup. The description of the test itself is shown just above the <SET VALUES> button. If it is a pre-programmed test (1-36), a specific description (e.g., "BUMP AT 28 DEG") will be displayed. If the user has changed ANY of the TEST SETUP parameters, then the description will be displayed as "<<< MANUAL >>>".

There are actually two complete grouped dynamic links - one is blue, and the other is black. The blue links imply to the user that they can be edited. The visibility of the two grouped dynamic links is controlled by the tag BUT_ACT_SET_VAL.F_CV, which changes state from 0 to 1 if the SET VALUES button is active. If BUT_ACT_SET_VAL.F_CV is 1, the blue links are shown. If BUT_ACT_SET_VAL.F_CV is 0, the black links are displayed. The black links are used for display only. Therefore, the values

can ONLY be changed while the <SET VALUES> button is green . Once the test is underway (after the <SET VALUES> button has been pressed), the TEST SETUP parameters cannot be changed. This ensures that while the test is running, the user will see the correct current parameters in the TEST SETUP section.

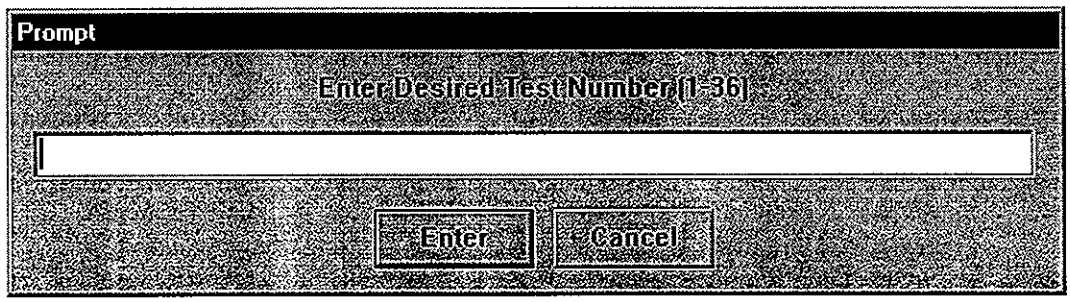
All of the following Test Setup parameters discussed below utilize a unique "On Up" script to verify security level and allow for user input using the "Prompt" command. The "Prompt" command in each script also utilizes a positioning option, which is used in this case to cause the user Prompt dialog box to appear just to the right of the parameter to be changed. The variable #PROMPT_BUSY is used to prevent multiple copies of the user input prompt from opening. All scripts contain the following lines at the beginning of the "On Up" script, and set #PROMPT_BUSY to zero before exiting the script.

```
IF #PROMPT_BUSY == 1
  GOTO DoubleClick
ENDIF
#PROMPT_BUSY = 1
etc...
```

All scripts are documented in Appendix E.

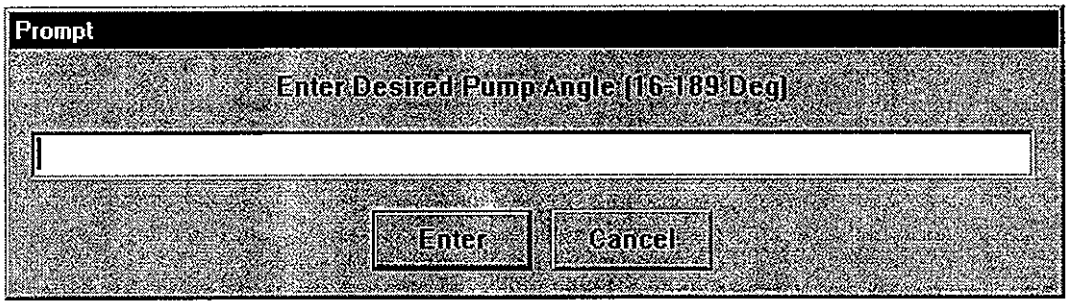
7.7.6.1 Test

The Test dynamic link (UTESTNO.A_DESC) shows the user the currently selected test number (1-36), or "N/A" if any of the parameters have been manually changed. If it is blue, a single click on the value will bring up the prompt for a test number to be entered. If the test number is out of the specified range, the DONK.WAV file will be heard, and the user will be prompted again to enter a new test number (or select <Cancel>). The "On Up" script for this particular parameter is very long due to the fact that all the test setup parameters for all 36 tests are contained within this script.



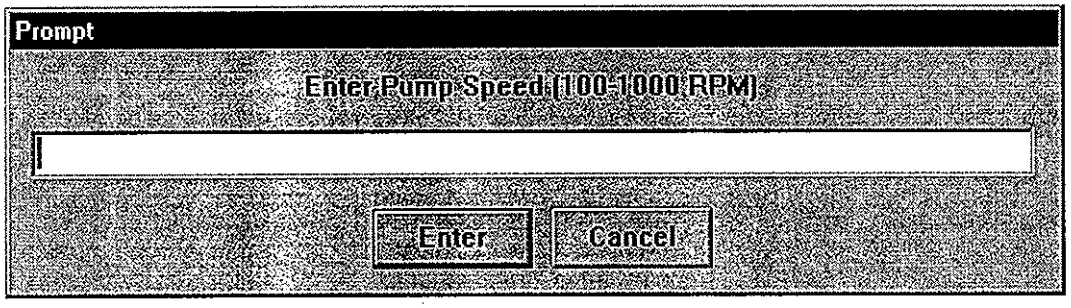
7.7.6.2 Angle

The Angle dynamic link (UANGLE.F_CV) shows the user the currently selected pump angle. If it is blue, a single click on the value will bring up the prompt for a new desired pump angle (16-189 Degrees) to be entered. If the angle is out of the specified range, the DONK.WAV file will be heard, and the user will be prompted again to enter a new angle (or select <Cancel>).



7.7.6.3 Speed

The Speed dynamic link (USPEED.F_CV) shows the user the currently selected pump speed. If it is blue, a single click on the value will bring up the prompt for a new desired pump speed (100-1000 RPM) to be entered. If the speed is out of the specified range, the DONK.WAV file will be heard, and the user will be prompted again to enter a new speed (or select <Cancel>).

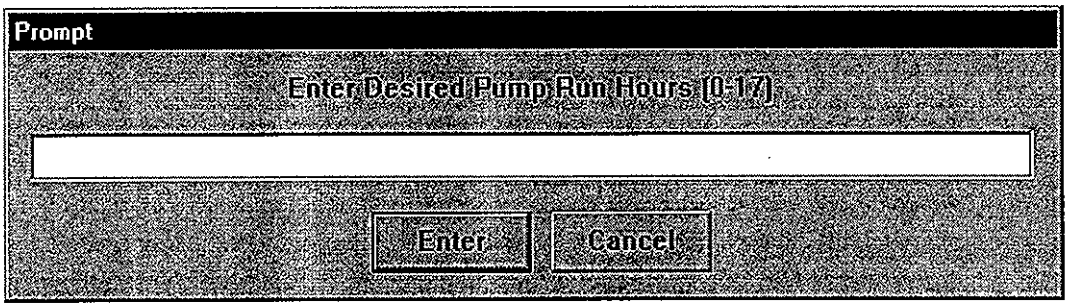


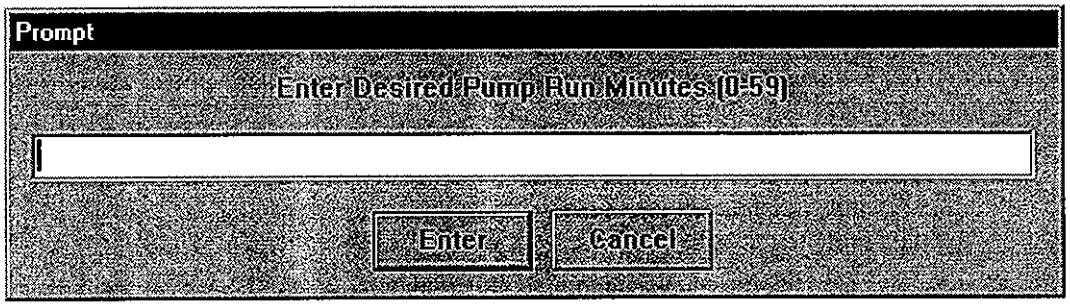
7.7.6.4 Duration (Hours, Minutes, and Seconds)

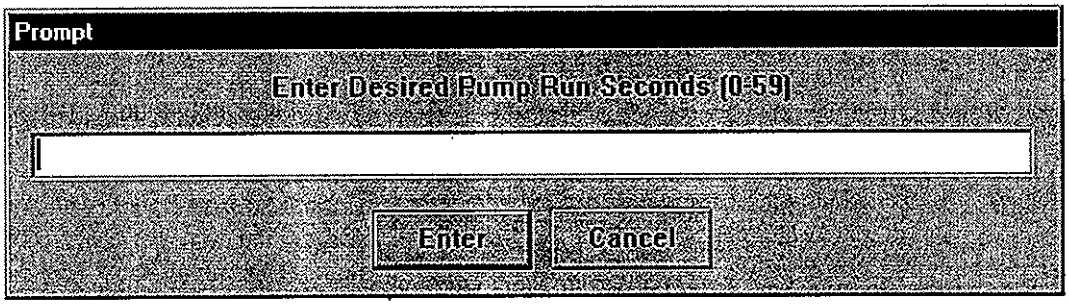
The Duration dynamic links (UHRS.F_CV, UMINS.F_CV, and USECS.F_CV) show the user the currently selected pump run time. If they are blue, a single click on each value will bring up the prompt for a new desired pump run time to be entered. If the time is out of the specified range (0-17 hours, 0-59 minutes, or 0-59 seconds) the DONK.WAV file will be heard, and the user will be prompted again to enter a new time (or select <Cancel>).

The maximum amount of time that the user can run the pump is 17:59:59 (equivalent to 64799 seconds). This is governed by the fact that the PLC register used to hold the countdown timer (Intellution tag PBCALSEC; PLC address 400212) is a 16-bit register; therefore the maximum number of seconds it can hold without an overflow condition is 65535. Should the need arise to run the pump for longer durations, then the PLC ladder logic will need to be modified to handle a larger number of seconds.

NOTE: The user cannot enter a total time of less than 5 seconds. When the user clicks the <SET VALUES> button, the <SET VALUES> script will check for a total time of less than 5 seconds. If it is less than 5 seconds, then USECS.F_CV will be set to 5 seconds.

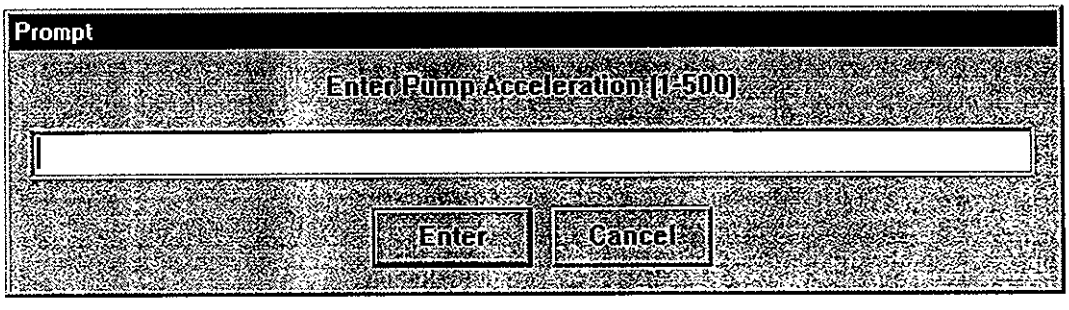






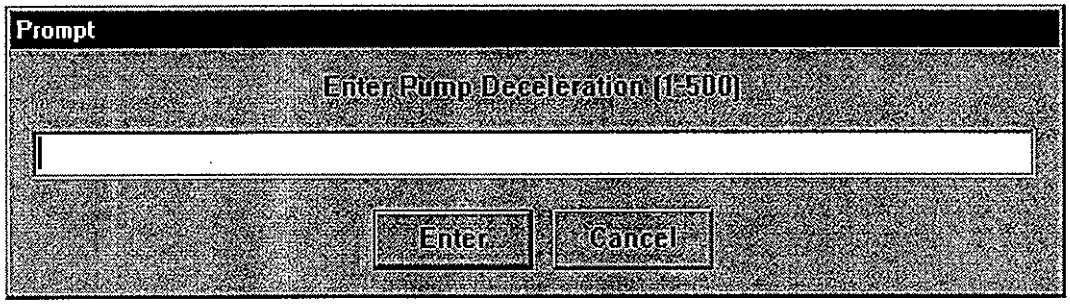
7.7.6.5 Accel

The Accel dynamic link (UACCEL.F_CV) shows the user the currently selected pump acceleration. If it is blue, a single click on the value will bring up the prompt for a new desired pump acceleration (1-500 RPM/sec) to be entered. If the acceleration is out of the specified range, the DONK.WAV file will be heard, and the user will be prompted again to enter a new acceleration (or select <Cancel>).



7.7.6.6 Decel

The Decel dynamic link (UDECEL.F_CV) shows the user the currently selected pump deceleration. If it is blue, a single click on the value will bring up the prompt for a new desired pump deceleration (1-500 RPM/sec) to be entered. If the deceleration is out of the specified range, the DONK.WAV file will be heard, and the user will be prompted again to enter a new deceleration (or select <Cancel>).



7.7.6.7 Reset

The Reset dynamic link (URESTIM.F_CV) shows the user whether the Total Elapsed Time will be reset to zero when <SET VALUES> is clicked. If a "Yes" is displayed, the Total Elapsed Time will be reset, and if a "No" it will continue to accumulate from the last test's run time. If it is blue, a single click on the value will toggle the state of the Reset link.

7.7.6.8 Test Description

The Test Description link (UDESC.A_DESC) shows the user the description for the currently Selected test. The user cannot directly modify this field. If the user has made a change to any of the parameters (other than the test number), then the Test Description link will display "<<< MANUAL >>>". This is done within each TEST SETUP parameter script. If a change has been detected, the following line will be executed:

SETVAL STATION5:UDESC.A_DESC "<<< MANUAL >>>"

7.7.7 <SET VALUES> Button

If the <SET VALUES> button is green but the text is "grayed-out", that indicates that an alarm condition is present that must be cleared prior to running the pump. There are three specific alarm conditions that will cause this: an abort coil has tripped, a VSD is declared "BAD", or a PLC COMM

failure exists. The tag used to control the "grayed-out" <SET VALUES> button is PUMP_PROB (a DO block controlled by the PG block PUMP_PROBLEMS).

When the <SET VALUES> button is highlighted solid green with black text, [PUMPRUN] is ready to run the pump.

This button is constructed of two sets of grouped buttons overlaid on top of each other, with the visibility controlled by the tag PUMP_PROB. With PUMP_PROB = 0, the button has solid text and looks like the button below (on left); with PUMP_PROB = 1, the button has "grayed" text and looks like the button below (on right). The button on the right actually has a gray rectangle grouped underneath it (visible in Draw) to provide easier access to the button, since both buttons are the same size.

PUMP_PROB = 0 PUMP_PROB = 1

PUMP_PROB will be a "1" if the abort coil is tripped, a PLC watchdog failure occurs, or if either VSD stops communicating with Station 5. PUMP_PROB is set and cleared by the PG block PUMP_PROBLEMS.

The function of the "grayed-out" button is to simply "donk" at the user when it is visible, as well as provide the appropriate button-press animation. For the remainder of this discussion, the solid-text button will be described (PUMP_PROB = 0).

The <SET VALUES> button is actually comprised of two buttons – one is shown in the "up" position, and the other is shown in the "down" (or "pressed") position. The "down" button has no dynamic properties – it will be shown if the tag BUT_ANIM_SET_VAL is set to a "1". This is due to the fact that the "up" button has a visibility property based on BUT_ANIM_SET_VAL equal to a "0".

The <SET VALUES> button has an "On Down" script as follows:

```
IF STATION5:SETUP_BUSY.F_CV == 1
  GOTO End
ENDIF
SETVAL STATION5:BUT_ANIM_SET_VAL.F_CV 1
IF #SECURITY_LEVEL < 3
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PUMPWARN_OPEN == 0
    OPENPIC PUMPWARN
  ENDIF
ELSE
  IF STATION5:BUT_ACT_SET_VAL.F_CV == 0
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ENDIF
&End
```

If the tag SETUP_BUSY is a "1", then the button press is ignored. The tag SETUP_BUSY is set and cleared in each script used to enter test setup information (i.e., "Test:", "Angle:", "Speed:", etc.) as described previously. This ensures that the information has been entered and the user is not currently changing test setup parameters.

The script then changes the value of BUT_ANIM_SET_VAL to a "1" to make the "down" button visible to create the effect of a pressed button.

The security level of the current user is then checked to see if it's a "3" or greater. If not, the "DONK.WAV" file is played, and the [PUMPWARN] screen is displayed, notifying the user that they do not have the proper security level to run the pump (see Figure 2).

If the security level is adequate, then a check is made to see if BUT_ACT_SET_VAL is set to a "0". This tag is used to see if the button is currently active (if it's active, it will be displayed in green). If it's a "1", then the "On Down" script exits. If BUT_ACT_SET_VAL is a "0", then the user will hear the DONK.WAV file.

The <SET VALUES> button has an "On Up" script as follows:

```
IF STATION5:SETUP_BUSY.F_CV == 1
  GOTO End
ENDIF
DECLARE #STRING_TEMP STRING SCRIPT
DECLARE #NUM_TEMP NUMERIC SCRIPT
SETVAL   STATION5:BUT_ANIM_SET_VAL.F_CV 0
IF #SECURITY_LEVEL < 3
  GOTO End
ENDIF
IF STATION5:BUT_ACT_SET_VAL.F_CV == 1
  #PUMP-COUNTER = 0
  SETVAL   STATION5:BUT_ACT_SET_VAL.F_CV 0
  SETVAL   STATION5:BUT-COL-SET_VAL.F_CV  0
  SETVAL   STATION5:BUT-COL-POS_PUMP.F_CV  2
  GETVAL   STATION5:UTESTNO.A_DESC #STRING_TEMP
  SETVAL   STATION5:LAST-UTESTNO.A_DESC #STRING_TEMP
  GETVAL   STATION5:UDESC.A_DESC #STRING_TEMP
  SETVAL   STATION5:LAST_UDESC.A_DESC #STRING_TEMP
  GETVAL   STATION5:USPEED.F_CV #NUM_TEMP
  SETVAL   STATION5:VR232060.F_CV #NUM_TEMP
  #NUM_TEMP = #NUM_TEMP + 10
  SETVAL   STATION5:HPSPDAL.F_CV #NUM_TEMP
  #NUM_TEMP = #NUM_TEMP + 10
  SETVAL   STATION5:HPSPDLIM.F_CV #NUM_TEMP
  GETVAL   STATION5:UACCEL.F_CV #NUM_TEMP
  SETVAL   STATION5:P_ACCEL.F_CV #NUM_TEMP
  GETVAL   STATION5:UDECEL.F_CV #NUM_TEMP
  SETVAL   STATION5:P_DECEL.F_CV #NUM_TEMP
  SETVAL   STATION5:START-TIME.A_DESC "> N/A <"
  SETVAL   STATION5:STOP-TIME.A_DESC "> N/A <"
  ONSCAN  STATION5:ELAPSED-CLEAR-PG
  OFFSCAN STATION5:ENAB_TEST_TIMER
  OPENDIG STATION5:ENAB_TEST_TIMEOUT.F_CV
  IF STATION5:D_IN-BAND.F_CV == 1
    ONSCAN STATION5:POS_PUMP_DONE
  ELSE
    ONSCAN STATION5:SET_VAL_DONE
```

```
  ENDIF
ENDIF
IF STATION5:USER_SECONDS.F_CV < 5
  SETVAL STATION5:USECS.F_CV 5
ENDIF
PAUSE 1
GETVAL  STATION5:USER_SECONDS.F_CV #NUM_TEMP
SETVAL  STATION5:PBCALSEC.F_CV #NUM_TEMP
&End
```

This script initially changes the color of the <POSITION PUMP> button to yellow, indicating that the pump position is being evaluated. The end of the script checks to see if the pump is already in position by checking the value of the tag D_IN-BAND. If it is in position, the script places the PG block POS_PUMP_DONE on scan, which causes the <POSITION PUMP> button to become gray. If the pump is not in position, the PG block SET_VAL_DONE is placed on scan, and the <POSITION PUMP> button is illuminated green. This provides feedback to the user that the pump is not in position and the next step is to press the <POSITION PUMP> button.

7.7.8 <POSITION PUMP> Button

The <POSITION PUMP> button is used to rotate the pump to the desired position. The <POSITION PUMP> button will only be active and illuminated green if the <SET VALUES> button has been pressed and the pump is not in the desired position (+/- 2 degrees).

The <POSITION PUMP> button has an "On Down" script as follows:

```
SETVAL  STATION5:BUT_ANIM_POS_PUMP.F_CV  1
IF #SECURITY_LEVEL < 3
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PUMPWARN_OPEN == 0
    OPENPIC PUMPWARN
  ENDIF
ELSE
  IF STATION5:BUT_ACT_POS_PUMP.F_CV == 0
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ENDIF
```

The script above tests to see if the user has the proper security level to rotate the pump (see [PUMPRUN] Security, Section 7.7.4). The DONK.WAV file will be also heard if the <POSITION PUMP> button is not active.

The <POSITION PUMP> button has an "On Up" script as follows:

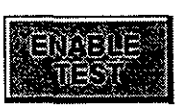
```
SETVAL  STATION5:BUT_ANIM_POS_PUMP.F_CV  0
IF #SECURITY_LEVEL < 3
  GOTO End
ENDIF
IF STATION5:BUT_ACT_POS_PUMP.F_CV == 1
  SETVAL STATION5:BUT_ACT_POS_PUMP.F_CV 0
  SETVAL  STATION5:D_RUN.F_CV 1
  SETVAL  STATION5:BUT-COL-POS_PUMP.F_CV  0
ENDIF
&End
```

This script checks for proper security, and whether the button is active. If it is active, the tag BUT_ACT_POS_PUMP will be set to a "0" to indicate it is no longer active, the tag D_RUN will be set to a "1" (causing the directional motor to become energized), and the color of the button will be changed to gray.

The pump will continue to rotate until it is within 2 degrees of the desired position. This is controlled by the PG block D_RUN_CMD-PG. The tag D_RUN is a DO block with a SIM address, and D_RUN_CMD-PG continually looks at the status of D_RUN. When D_RUN is a "1", and the pump is NOT within it's 2 degree deadband (continually checked by the PG block D_FWD-REV controlling the tag D_IN-BAND), then D_RUN_CMD-PG will close the tag D_RUN_CMD, which the VSD driver looks at to energize the directional motor (the PG block D_FWD-REV also controls the VSD forward and reverse commands).

D_RUN_CMD-PG will change D_RUN to a "0" when the pump is in the desired position, which will stop the directional motor.

7.7.9 <ENABLE TEST> Button



The <ENABLE TEST> button is used to "enable" the selected test (either a pre-programmed test or a manually overridden test) . The <ENABLE TEST> button will be active and illuminated green once the <SET VALUES> button has been pressed and the pump is in the correct position.

The <ENABLE TEST> button has an "On Down" script as follows:

```
SETVAL  STATION5:BUT_ANIM_ENAB_TEST.F_CV  1
IF #SECURITY_LEVEL < 3
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PUMPWARN_OPEN == 0
    OPENPIC PUMPWARN
  ENDIF
ELSE
  IF STATION5:BUT_ACT_ENAB_TEST.F_CV == 0
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
```

```
  ENDIF
ENDIF
```

The script above tests to see if the user has the proper security level to enable the test (see [PUMPRUN] Security, Section 7.7.4). The DONK.WAV file will be also heard if the <ENABLE TEST> button is not active.

The <ENABLE TEST> button has an "On Up" script as follows:

```
SETVAL   STATION5:BUT_ANIM_ENAB_TEST.F_CV 0
IF #SECURITY_LEVEL < 3
  GOTO End
ENDIF
IF STATION5:BUT_ACT_ENAB_TEST.F_CV == 1
  ONSCAN STATION5:ENAB_TEST_TIMER
ENDIF
&End
```

This script first checks for the proper security level to enable the test. If proper security is in place, and the <ENABLE TEST> button is active, then the PG block ENAB_TEST_TIMER is placed on scan. ENAB_TEST_TIMER closes the DO tags ENAB_TEST_TIMEOUT (SIM address) and PBENAB (PLC address used in PLC logic as a "TEST ENABLED" flag), and runs the PG block ENAB_TEST_DONE. ENAB_TEST_DONE causes the <ENABLE TEST> button to become inactive, and the <START TEST> button to become active.

ENAB_TEST_TIMER then waits 60 seconds and checks to see if the DO tag ENAB_TEST_TIMEOUT has been set to a "0". If it has, the script exits. ENAB_TEST_TIMEOUT is set to a "0" if the user presses the <START TEST> button within the 60 second script delay time. If ENAB_TEST_TIMEOUT is still a "1", then ENAB_TEST_TIMEOUT is set to a "0", PBENAB is set to a "0", and the PG block POS_PUMP_DONE is executed, which causes the <ENABLE TEST> button to become active again. The user must then press the <ENABLE TEST> button again to allow the <START TEST> button to become active.

7.7.10 <START TEST> Button

The <START TEST> button is used to start the pump motor and mix the waste in the tank. The <START TEST> button will be active and illuminated green once the <ENABLE TEST> button has been pressed, and will remain illuminated green for 60 seconds (see the previous section describing the <ENABLE TEST> button).

The <START TEST> button has an "On Down" script as follows:

```
SETVAL STATION5:BUT_ANIM_START_TEST.F_CV 1
IF #SECURITY_LEVEL < 3
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PUMPWARN_OPEN == 0
```

```
    OPENPIC PUMPWARN
  ENDIF
ELSE
  IF STATION5:BUT_ACT_START_TEST.F_CV == 0
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ENDIF
```

The script above tests to see if the user has the proper security level to run the pump (see [PUMPRUN] Security, Section 7.7.4). The DONK.WAV file will be also heard if the <START TEST> button is not active.

The <START TEST> button has an "On Up" script as follows:

```
SETVAL   STATION5:BUT_ANIM_START_TEST.F_CV 0
IF #SECURITY_LEVEL < 3
  GOTO End
ENDIF
IF STATION5:BUT_ACT_START_TEST.F_CV == 1
  OPENDIG STATION5:ENAB_TEST_TIMEOUT.F_CV
  SETVAL   STATION5:BUT_ACT_START_TEST.F_CV 0
  SETVAL   STATION5:P_RUN.F_CV 1
  ONSCAN STATION5:START_TEST_DONE
  OPENDIG STATION5:STOP-TIME.F_CV
  SETVAL   STATION5:ELAPSED-TIME-HOLD.F_CV 0
  PAUSE 1
  SETVAL   STATION5:START-TIME.A_DESC #GS_TIME
  MESSAGE ">>>>>  Pump Started  <<<<<"
  OPENPIC STOPTIME
  ONSCAN STATION5:30-SECOND-TIMEOUT
ENDIF
&End
```

This script first checks for the proper security level to run the pump. If proper security is in place, and the <START TEST> button is active, then the DO tag ENAB_TEST_TIMEOUT is set to a "0", and the button is made inactive. The DO tag P_RUN is set to a "1", causing the pump motor to start. The PG block START_TEST_DONE is then placed on scan, which turns the <START TEST> button gray and the <ENABLE STOP/STOP TEST> button to become illuminated green with the words "ENABLE STOP". The DO tag STOP-TIME is set to a "0", to be used as a flag for the screen [STOPTIME].

The DO tag ELAPSED-TIME-HOLD is set to a "0", which starts the elapsed time counter. The description field of START-TIME, which is used to display the pump start time on the [PUMPRUN] screen, is set to the current system time, and a text message indicating that the pump has started is sent to the *.ALM file (to provide an easier method of finding the pump start times in the *.ALM files).

The screen [STOPTIME] is then opened, which has a "Commands On Opening" script as follows:

```
&WaitForPumpStop
IF STATION5:STOP-TIME.F_CV == 1
  OPENDIG STATION5:STOP-TIME.F_CV
  SETVAL STATION5:STOP-TIME.A_DESC #GS_TIME
  MESSAGE ">>>>> Pump Stopped <<<<<"
  PAUSE 2
  CLOSEPIC STOPTIME
ENDIF
PAUSE 1
GOTO WaitForPumpStop
```

This script loops forever while it is open, waiting to see if the DO tag STOP-TIME is set to a "1". If it is a "1" (as set by the STOP TEST button, an abort, or a test timeout), the DO tag STOP-TIME is set to a "0", the description field of STOP-TIME is set to the current system time, a message indicating that the pump has stopped is sent to the *.ALM file, and the screen [STOPTIME] is closed. This screen is not visible during runtime, and is only used to run the script above to provide pump run stop time information to the operators.

Finally, the <START TEST> button "On Up" script places the PG block 30-SECOND-TIMEOUT on scan. This block is used to give the operators the required 30-second warning prior to the end of the test. They then must stop the pump before 30 seconds elapses or a TEST TIMEOUT abort will occur, causing the VSD breakers to trip in the MCC.

7.7.11 <STOP TEST/ENABLE STOP> Buttons

The <STOP TEST/ENABLE STOP> button is a dual-mode button. The button is labeled "STOP TEST" unless the pump motor is running, when it will be labeled "ENABLE STOP". The button is actually two buttons - a <STOP TEST> button on top, and a button with both "ENABLE STOP" and "STOP TEST" text on it.

The <STOP TEST> button has an "On Down" script as follows:

```
CLOSEDIG STATION5:STOP-TIME.F_CV
SETVAL  STATION5:ELAPSED-TIME-HOLD.F_CV 1
ONSCAN  STATION5:RESET-PUMPRUN
#STOP_PRESSED = 1
#STOP_OK = 0
```

This script first sets the DO tag STOP-TIME to a "1", which will be recognized by "Commands On Opening" script for the screen [STOPTIME] (see previous section). The DO tag ELAPSED-TIME-HOLD is then set to a "1", which will stop the elapsed time counter. The PG block RESET-PUMPRUN is then placed on scan, which stops the pump motor and

completely resets the buttons on the [PUMPRUN] screen to their initial states (<SET VALUES> illuminated green, all others gray). The "picture scope" variables #STOP_PRESSED and #STOP_OK are set to a "1" and "0", respectively. These variables are used to control button visibility and are used as flags for the combined <ENABLE STOP/STOP TEST> button (described in the following section).

There is no "On Up" script for the <STOP TEST> button.

The combined <ENABLE STOP/STOP TEST> button has an "On Down" script as follows:

```
SETVAL  STATION5:BUT_ANIM_STOP_TEST.F_CV  1
IF #SECURITY_LEVEL < 3
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PUMPWARN_OPEN == 0
    OPENPIC PUMPWARN
  ENDIF
ELSE
  IF STATION5:BUT_ACT_STOP_TEST.F_CV == 0
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ENDIF
```

This script tests to see if the user has the proper security level to run the pump (see [PUMPRUN] Security, Section 7.7.4). The DONK.WAV file will be also heard if the <STOP TEST> button is not active.

The combined <ENABLE STOP/STOP TEST> button has an "On Up" script as follows:

```
SETVAL  STATION5:BUT_ANIM_STOP_TEST.F_CV  0
IF #STOP_TEST_BUSY == 1
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  GOTO END
ENDIF
IF #SECURITY_LEVEL < 3
  GOTO End
ENDIF
#STOP_TEST_BUSY = 1
IF STATION5:P_RUN.F_CV == 1
  SETVAL  STATION5:BUT_ANIM_STOP_TEST.F_CV  0
  SETVAL  STATION5:BUT-COL-STOP_TEST.F_CV  2
  PAUSE 2
  SETVAL  STATION5:BUT-COL-STOP_TEST.F_CV  3
  SETVAL  STATION5:BUT_TEXT_STOP_TEST.F_CV 1
  #STOP_OK = 1
  #STOP_PRESSED = 0
  PAUSE 3
  IF #STOP_PRESSED == 0
    SETVAL  STATION5:BUT_TEXT_STOP_TEST.F_CV 0
    SETVAL  STATION5:BUT-COL-STOP_TEST.F_CV  1
```

```
  ENDIF
  #STOP_OK = 0
  #STOP_PRESSED = 0
ELSE
  IF STATION5:BUT_ACT_STOP_TEST.F_CV == 1
    OFFSCAN STATION5:ENAB_TEST_TIMER
    OPENDIG STATION5:ENAB_TEST_TIMEOUT.F_CV
    ONSCAN  STATION5:RESET-PUMPRUN
  ENDIF
ENDIF
#STOP_TEST_BUSY = 0
&End
```

The script above first tests to see if the variable #STOP_TEST_BUSY is set to a "1", and if so, the DONK.WAV file will be heard, and the script exits. This is used to keep the script from running again before the script completes if the user presses the <ENABLE STOP> button again.

The security level is then checked, and if the user has insufficient security, the script exits.

The variable #STOP_TEST_BUSY is then set to a "1" to keep it from running again before it completes.

A check is then made to see if the pump is currently running. If not, the PG block ENAB_TEST_TIMER is taken off scan (to stop the 60-second test enable timer if it is currently running), sets the DO tag ENAB_TEST_TIMEOUT to a "0" (clearing the 60-second delay time flag), then places the PG block RESET-PUMPRUN on scan (resets the pump and directional motor "run commands" to "STOP", and completely resets the buttons on the [PUMPRUN] screen to their initial states).

If the pump is currently running, the script changes the color of the button to solid yellow (maintaining the "ENABLE STOP" text) for two seconds. It then changes the text to "STOP TEST", with a flashing yellow button. It sets the flag #STOP_OK to a "1", which then makes the <STOP TEST> button (discussed earlier) to become visible, allowing the button's "On Down" script to stop the pump (if pressed). The flag #STOP_PRESSED is set to a "0", and the script then pauses for 3 seconds. The user must press the flashing yellow <STOP TEST> button during this 3-second period, which stops the pump and sets the flag #STOP_PRESSED to a "1". The script then checks to see if #STOP_PRESSED is a "0", and if so, it changes back to a solid green <ENABLE STOP> button and the pump continues to run.

The flags #STOP_OK and #STOP_PRESSED are then both reset to a "0" whether the user pressed the <STOP TEST> button or not.

The variable #STOP_TEST_BUSY is then reset to a "0" allowing the script to be re-run.

7.8 MODICON PLC FUNCTIONS

The Modicon PLC is responsible for inputting data from the field instrumentation, providing an abort signal when the values of critical measurements exceed their abort limits, providing control signals to field instruments, providing a timer and enable logic for pump

operation, sending data and status information to FIX32 and providing a directional motor simulation. Details of these functions will be presented in the following sections.

Access to and programming of the PLC is provided by the program Modsoft. Modsoft is run on STATION1 in the DACS trailer and communicates with the PLC via the Modbus Plus network.

Using Modsoft, the PLC I/O configuration can be defined, the PLC registers can be allocated and named, and the ladder logic can be produced (refer to Appendix G for additional information on the registers and corresponding symbol table). All of this can be done offline and later downloaded to the PLC, or can be done online in the PLC as it operates. The latter is not a wise policy for making permanent changes, but can be useful for debugging ladder logic.

Modsoft allows the ladder logic programmer to impose a structure on the ladder logic for ease of understanding. It allows the programmer to break the ladder logic into modules known as objects and to connect the objects using flow control logic. Each object can contain any number of ladder logic networks. This structure is converted by Modsoft to an equivalent flat nonstructured form when the logic is downloaded to the PLC. In addition, the ladder logic can be distributed in different logic segments. The segments provide another way to organize the ladder logic program. The logic in each segment can be set to be solved either on each pass or conditionally. Also, an I/O drop can be associated with a segment; the drop inputs and outputs are processed when the associated segment is active.

The current PLC program has logic in the first four segments. The first segment contains only the hot standby block. This block controls the hot standby functions of the PLCs. The second segment contains most of the operational logic and will be discussed extensively below. The third segment contains the block copy logic for creating the FIX32 I/O region. The fourth segment contains the directional motor simulator logic.

Segment two is the only segment in which the logic is divided into objects. It currently has seven objects (P000, P001, and P003 through P007) which execute sequentially (no control structures mediating them). Their functions are listed below:

- P000 (15 Networks) - PLC status logic, test timer and enable logic, instrument control logic.
- P001 (1 Network) - PLC rack and module status logic.
- P003 (64 Networks) - Abort logic and instrument fail logic.
- P004 (10 Networks) - RGA5 ASCII/BASIC module control logic.
- P005 (13 Networks) - GC3 and FTIR ASCII/BASIC module control logic.
- P006 (5 Networks) - High frequency strain alarm filtering.
- P007 (54 Networks) - Thermocouple module setup and control logic.

Modsoft has a documentation feature which allows information about the PLC configuration and ladder logic to be either saved to a file or printed.

7.8.1 Data Collection From the Field

The PLC is responsible for collecting data from the field instruments. These data enter the PLC through any of a number of Modicon I/O modules. There are several different types of modules which accept different types of input - analog voltage or current inputs, thermocouple inputs, digital inputs of varying levels or ASCII serial inputs. There are corresponding types of modules for data output. The input and output modules used in the system and their descriptions are listed in Table 7. The output modules are used for various control functions discussed in Sections 7.8.2 and 7.8.3.

Table 7. *Input and Output Modules Used in DACS*

Module	Description	Signals Accepted
B875-101	8-channel analog input	Configurable for various voltage or current input ranges
B827-024	32-channel digital input	24-V digital input
B885-002	ASCII/BASIC module	RS-232 serial ASCII data
B829-016	16-channel digital input	5-V TTL digital input
B883-200	Thermocouple module	Thermocouple types B, E, J, K, N, R, S, & T
B865-002	TTL Register input	5-V digital output
B824-016	16-chan. digital output	24-V digital output
B828-016	16-chan. digital output	5-V TTL digital output

In order to access data from a module, it must be entered into the PLC configuration table known as the Traffic Cop. This involves specifying in the configuration module of the Modsoft program the module's type, physical location, and the PLC registers which will be used for communication with the module. The physical location is specified in terms of the Modicon I/O drop, the I/O rack within the drop, and the slot within the rack which contains the module.

For most modules, the PLC I/O hardware places the data into the specified registers. From there, the data can be used within the PLC if further logic operations or abort comparisons are required.

The exceptions to this are the B883 thermocouple input modules and the B885 ASCII/BASIC input modules. Both of these require that PLC logic be provided to program module parameters, control the operation of the modules, and handle the interface between the modules and the PLC. In addition, the ASCII/BASIC module contains a built-in BASIC interpreter. A BASIC program must be loaded into this module to control the input of data into the module as well as the interface between the module and the PLC. The logic and programs which operate these modules are discussed in the following sections.

Most of the measurements from the field enter the system through the B875 analog input module. This module can be set to accept inputs with differing characteristics. Commonly used in this system are 1-5 V, 0-5 V and 4-20 mA signals. These inputs are digitized with 12 bits of resolution. This 12-bit value is stored in the lower order 12 bits of the Modicon register corresponding to that channel. The most significant bit of the same register is the out-of-range bit. The B875 module will set this bit if it detects an incoming signal which is out of the range specified when the module is set up. For example, if the module has been set to receive 1 to 5-V inputs and then receives an input of 0 Vs, it will set the out-of-range bit. This out-of-range bit is used for instrument failure detection, a topic which is discussed in Section 7.8.5.

The data from all modules are copied into a contiguous set of registers before being sent to FIX32. This is done to increase the PLC to FIX32 communication efficiency. Refer to Appendix D for a list of database blocks with I/O addresses.

7.8.1.1 ASCII/BASIC Module Operation

The Modicon B885 ASCII/BASIC Module allows ASCII data from a computer or from analytical equipment to be read into the Modicon PLC. The ASCII data are presented via one of two RS-232 ports on the front of the module. The module contains a stripped-down BASIC interpreter. BASIC programs can be written that read the ASCII data from the ports and pass it to the PLC via the command interface registers.

The Module has two operational modes: RUN and PROGRAM. These are selected via a switch on the front panel. In PROGRAM mode, the module communication parameters can be set and the BASIC interpreter accessed for programming. In the RUN mode, the module is under the control of the PLC ladder logic via the command/status registers or under control of its own internal scheduler. These are used to determine which BASIC program stored in the module's memory to execute, and when.

Details of the module configuration, programming, and operation are given in the Modicon B885 ASCII/BASIC Module User Guide.

The DACS uses two ASCII/BASIC Modules: one for the RGA5 gas data (RGA5), and one for gas chromatograph, infrared spectrometer and photo gas concentration data (GC3) (see Appendix H for complete file listings). Both of these require a BASIC program to read the ASCII stream, strip off unwanted characters, format the data for the PLC registers, and send this data to the PLC. They also require ladder logic to control and monitor the operation of the BASIC programs, receive the data from the interface registers, and place it in the appropriate final destination registers.

The BASIC programs and ladder logic are therefore quite similar in concept but differ due to the differing data formats and conventions used by the devices. The RGA5 ladder logic is in Segment 2, Object P004 and the gas chromatograph ladder logic is in Segment 2, Object P005.

7.8.1.2 ASCII/BASIC Module Communications with the Gas Chromatograph

The gas monitoring computer sends its data to the ASCII/BASIC module as a stream of ASCII characters beginning with a STX (start of transmission) character and followed by 14 four-digit ASCII encoded numbers separated by carriage returns (↵) (see Table 8). These communication parameters are: 1200 Baud, 8 bits, 1 stop bit, no parity.

The BASIC program (filename GC3.BAS) in the ASCII/BASIC module is responsible for reading these incoming characters, interpreting them, placing them in registers and sending them to the PLC through the module's command/data register interface.

The PLC ladder logic is responsible for running the BASIC program, issuing commands to read the status of the module, and to read data from the module and placing the data into the proper registers so it can be sent to FIX32.

Table 8. *GC-3 Data Format*

Label	Description	Value Transmitted
STX	Start of Transmission	2
GC3-TIME	GC3 Time of Sample	nnnn↵
GC3-AREA	GC3 Peak area	nnnn↵
GC3-RT	GC3 H2 Retention Time	nnnn↵
GC3-H2	GC3 H2 Concentration	nnnn↵
GC3-FILE	GC3 File ID	nnnn↵
FT-TIME	FTIR Time of Sample	nnnn↵
FT-N2OA	FTIR N2O Area	nnnn↵
FT-N2OC	FTIR N2O Concentration	nnnn↵
FT-NH3A	FTIR NH3 Area	nnnn↵
FT-NH3C	FTIR NH3 Concentration	nnnn↵
FT-FILE	FTIR File ID	nnnn↵
PHO-TIME	Photo NH3 Time of Sample	nnnn↵
PHO-MSB	Photo NH3 Conc. - most significant byte	nnnn↵
PHO-LSB	Photo NH3 Conc. - least significant byte	nnnn↵

nnnn↵ = four ASCII numeric characters followed by a carriage return.

Communication between the PLC and the BASIC module is through the 6 input and 6 output interface registers assigned to the module during configuration. In addition, there is an array of 100 registers internal to the BASIC module which can be accessed by the PLC (up to 5 at a time) through these interface registers. There are also eight status bits which can be set or reset directly by the BASIC program and read by the PLC along with the hardware status bits.

In general, the normal sequence of operation of the system is as follows (for more specifics, see the ladder logic comments, the BASIC program listing and the ASCII/BASIC module manual):

PLC Operation

1. The ladder logic checks the ASCII/BASIC module status register. If there is an error condition, it resets the module. If the BASIC program is not running, it issues the command to run the BASIC program.

2. The ladder logic continues to monitor the status register for error conditions and checks the data ready user flag (GC3_SND8). This is the signal from the BASIC program that a set of data has been read and is ready to be transferred to the PLC.

3. When the data ready flag has been received, the ladder logic goes through a sequence of commands which transfer the data from the ASCII/BASIC module's internal register array. The data are transferred one to four registers at a time and stored in registers in the PLC for transference to FIX32. The 14 data items to be transferred are stored in the ASCII/BASIC module's internal registers 0-13. The PLC ladder logic issues 7 commands in sequence to transfer these 14 data items.

4. The ladder logic sets the ASCII/BASIC module's internal register 30 to 1 (data transfer complete flag). This is the signal to the BASIC program that the data transference is complete.

5. Go to step 1.

BASIC Program Operation

1. The program is initialized by the PLC ladder logic. It immediately sets the data ready flag to zero (although it should already be zero) and the data transfer complete register (register 30) to zero.

2. The program reads characters from serial port 1 until a STX character is received. The start of transmission character signals the beginning of the gas data stream.

3. After the STX is received, the program reads 14 numeric values and stores them in internal registers 0 through 13.

4. The program sets the data ready flag [SND(8)], indicating to the PLC that there is a set of data in the registers to be transferred.

5. The program waits until the data transfer complete flag is set (Register 30). This will indicate that the PLC has transferred the data.

6. The program clears the data ready flag, then exits. When the PLC detects that the program has exited, it will rerun the program.

7.8.1.3 ASCII/BASIC Module Communications with the RGA5 Computer

Following is the data format for the RGA5 ASCII/BASIC module communication:

```
Run=nnn,  Stream=cccccccc,  Date=nn-nn-nn, Time=nn:nn
H2A=nnnn.n, H2A Area=nnnnnnnnn, H2ART=nnn, H2Arf=nnnnn.n
H2B=nnnn.n, H2B Area=nnnnnnnnn, H2BRT=nnn, H2Brf=nnnnn.n
```

where, n = any numeric character and c = any printable ASCII character. *Run* is the run number and is incremented by one with each data stream. *Stream* is set to Tank, Flush or Calib to indicate the source of the data. The BASIC program only looks at the first character of this field. *Date* is the sample date. This is ignored by the BASIC program. *Time* is the time of sample in the format hours:minutes. *H2A* is the GC-1 hydrogen concentration in ppm. *H2A Area* is the GC-1 hydrogen peak area. *H2ART* is the GC-1 hydrogen retention time in seconds. *H2Arf* is the GC-1 hydrogen retention factor. This is ignored by the BASIC program. *H2B* refers to the same information as above except it pertains to GC-2 instead of GC-1. The numeric data will be right justified with leading zeros inserted to preserve the field widths.

The communications parameters are: 1200 baud, 8 bits, no parity, 1 stop bit. The stream must enter the ASCII module via port B. The XON/XOFF protocol should be enabled.

The BASIC program operates by searching the ASCII stream for the word "Run", indicating the start of the data. It then issues reads to the ASCII message processor to input the

data. After the data has been input, the program places the data into contiguous registers to be read by the PLC. In some cases a datum is placed unchanged into a register. In other cases, the data is scaled or manipulated in some way in order to make it fit into a 16 bit register. The PLC is then notified that data is available. When it has read the data, it notifies the BASIC program that the data has been read. The program then exits and is run anew by the PLC.

The issuing of ASCII read messages by the program means that these message formats must be loaded into the memory of the ASCII portion of the ASCII/BASIC module. The following are the ASCII read message formats:

```
RMSG1:   10   S0,D3
RMSG2:   10   S1,A1
RMSG3:   10   S2
RMSG4:   10   S2,D2,D2
RMSG5:   10   S4,F6.1
RMSG6:   10   S6,D1,D4,D4
RMSG7:   10   S9,D3
RMSG8:   10   S10
RMSG9:   10   S10,F6.1
RMSG10:  10   S12,D1,D4,D4
RMSG11:  10   S15,D3
RMSG12:  10   S16
```

In addition, the program uses the prefix capability of the ASCII module to determine the beginning point of the ASCII reads. The prefix instructs the ASCII message processor to ignore all incoming characters until the prefix string is read, then begin the formatted read. In this case, the prefix string of the module must be set to "=." The command to be issued is: PR# 3Dh. Also, the delimiter character should be set to null: DL# 0.

The program must be loaded into RAM 2 of the ASCII/BASIC module.

7.8.1.4 Thermocouple Module Operation

The B883 thermocouple modules receive thermocouple inputs from the MIT17B and MIT17C tank temperatures, and the tank bottom and side thermocouples. Three groups of modules are used: three modules to input the MIT17B tank temperatures (22 measurements), three modules to input the MIT17C tank temperatures (22 measurements), and three to input the tank bottom and side temperatures (26 measurements). These modules require ladder logic to set up and operate the modules.

The ladder logic can be broken into three major sections: (1) creation of the setup table and command table; (2) configuring the module, and (3) operating the module. The configuration of the three modules of each group is the same so only two setup tables are needed. The following is an overview of the ladder logic needed to operate one of the modules.

Figure 15 shows a portion of the ladder logic used to create the thermocouple module setup table. Since no predefined constants are available in ladder logic, the contents of the configuration table must be created from scratch when the PLC is first brought online. The SUB blocks are used to load the values in the top node of the SUB blocks into the registers indicated in the bottom node of the SUB blocks. These registers form the setup table. They are grouped in threes, since these represent command parameters which will later be sent to the thermocouple modules. In the figure the #0301-#0000-#0000 sequence is the thermocouple module STOP

command, and the #0290-#0000-#0000 sequence is the thermocouple module ENTER CONFIGURATION MODE command. A complete list of the available commands can be found in the thermocouple module manual.

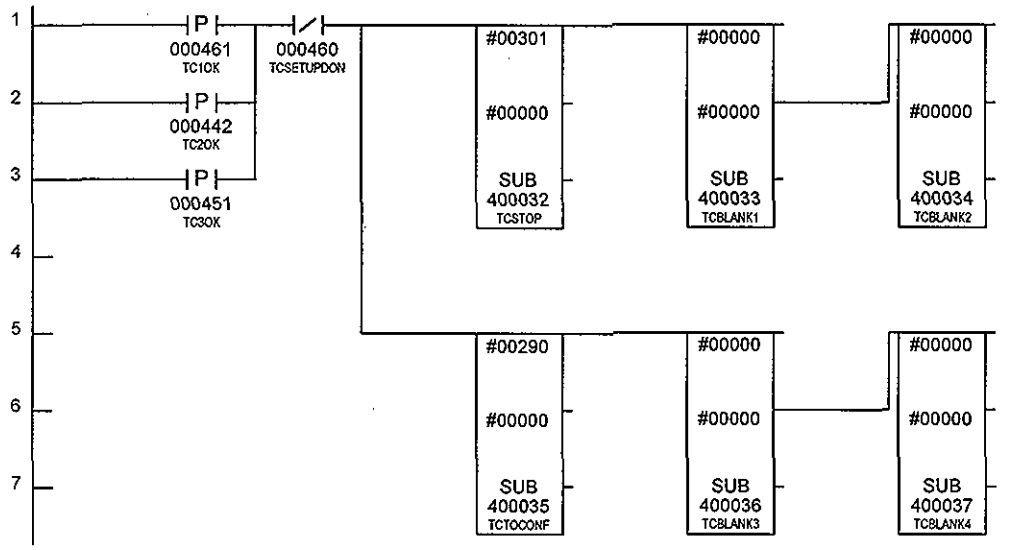


Figure 15. *Ladder Logic for Thermocouple Setup Table Creation*

The setup table, when complete, contains a set of commands which will be issued sequentially to each module in the group during configuration mode. These commands will configure the module, giving it the thermocouple type to expect upon input and the data format in which to report the channel values. Each channel must be configured separately so, although in our case all of the channels are configured the same, we must still set the configuration parameters for each channel.

Figure 16 shows a portion of the ladder logic for command table creation. The command table is a list of commands which will be issued to the module one after another when the system is in operational mode. In our case, the command table consists of 10 read channel value commands, one for each of the ten channels available on a single module. In this case, *ADD* blocks are used to set the channel parameters. The E984 PLCs do not allow constants larger than 999 in a block, so, for example, the "read channel one value" command, 1001, is created by adding 2 to 999.

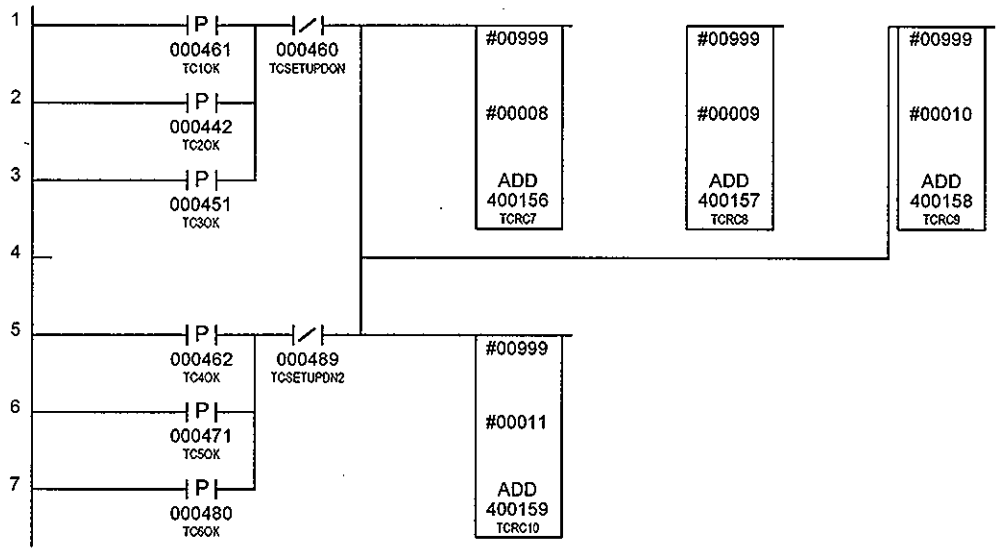


Figure 16. *Ladder Logic for Thermocouple Command Table Creation*

After these two tables have been created, the modules must then be configured according to the commands now in the setup table. Figure 17 shows the logic which issues these configuration commands. Register 40173 is the setup table pointer. This logic will load the three register command sequences into the command registers, 40091-40093, incrementing the setup table pointer each time. This is done until the end of the setup table is reached and coil 435 is set, indicating that configuration is done. The next set of commands is issued when coil 434 goes high indicating that the previous command has been accepted by the module. The setup sequence can also be initiated when a module first comes online (coil 461 goes high) or after an error has occurred (coil 437 goes high).

After the configuration is complete, the thermocouple modules enter operation mode. In this mode, the commands in the command table are executed. When the end of the table is reached, the system resets the command table pointer to the beginning of the table and goes through the table again. The command table consists of commands to read each of the 10 thermocouple data values one after the other.

In Figure 18, register 40150 is the beginning of the command table. Register 40171 is the index into the command table, and register 40172 is the register which receives the value pointed to by the combination of 40150 plus the offset in 40171. This value is loaded into the thermocouple module command interface register, 40091, thereby issuing the command.

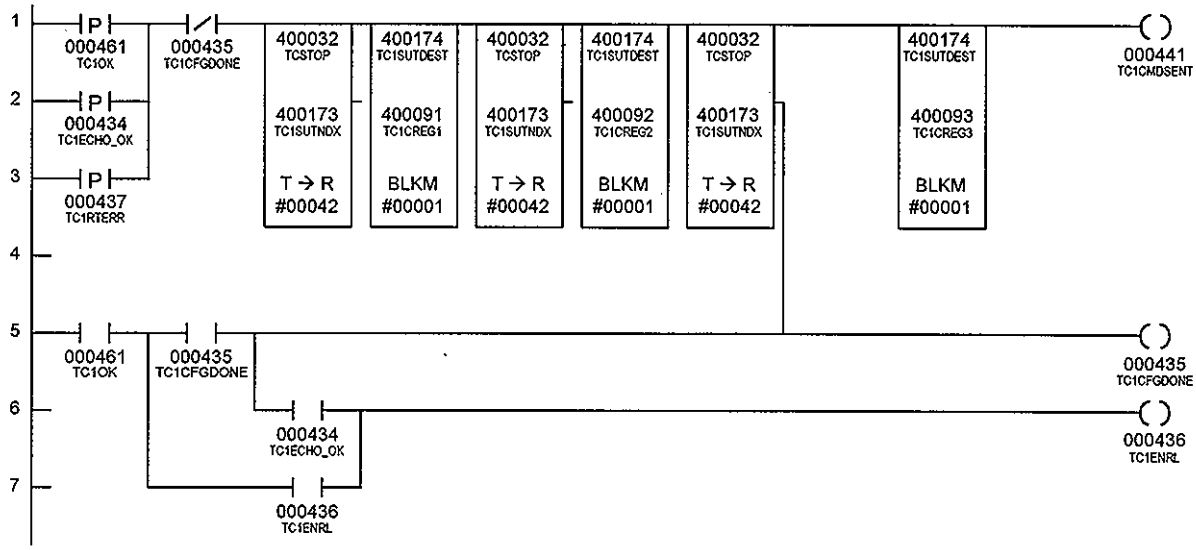


Figure 17. *Ladder Logic for Configuring Thermocouple Modules*

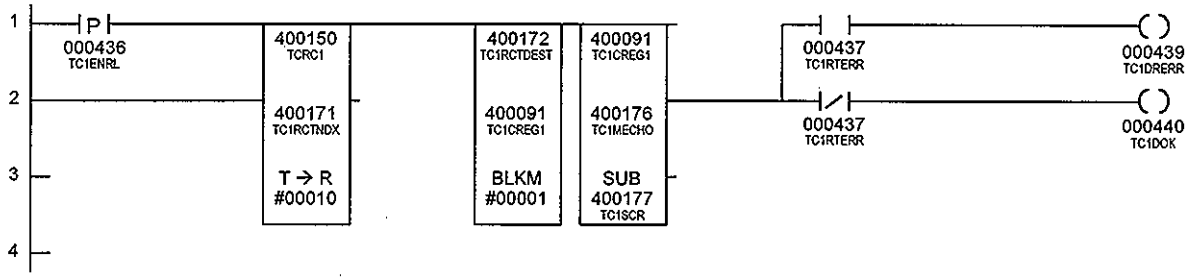


Figure 18. *Thermocouple Operation: Extraction of Commands from Command Table*

Figure 19 shows the ladder logic for reading the data values from the module after the read channel value command has been issued and successfully echoed. Register 40160 is the index to a table called the data value table. This table is where the thermocouple temperature values are stored after they are read. Register 30277 is the interface register which contains the data value from the module. This is placed in the position in the table given by register 40160. This register is automatically incremented. The *ADD* block increments the command table index so that the next command can be issued. If the end of the table has been reached, the *SUB* blocks are activated. These blocks reset the value table index and the command table index to the beginnings of their respective tables so the process can repeat.

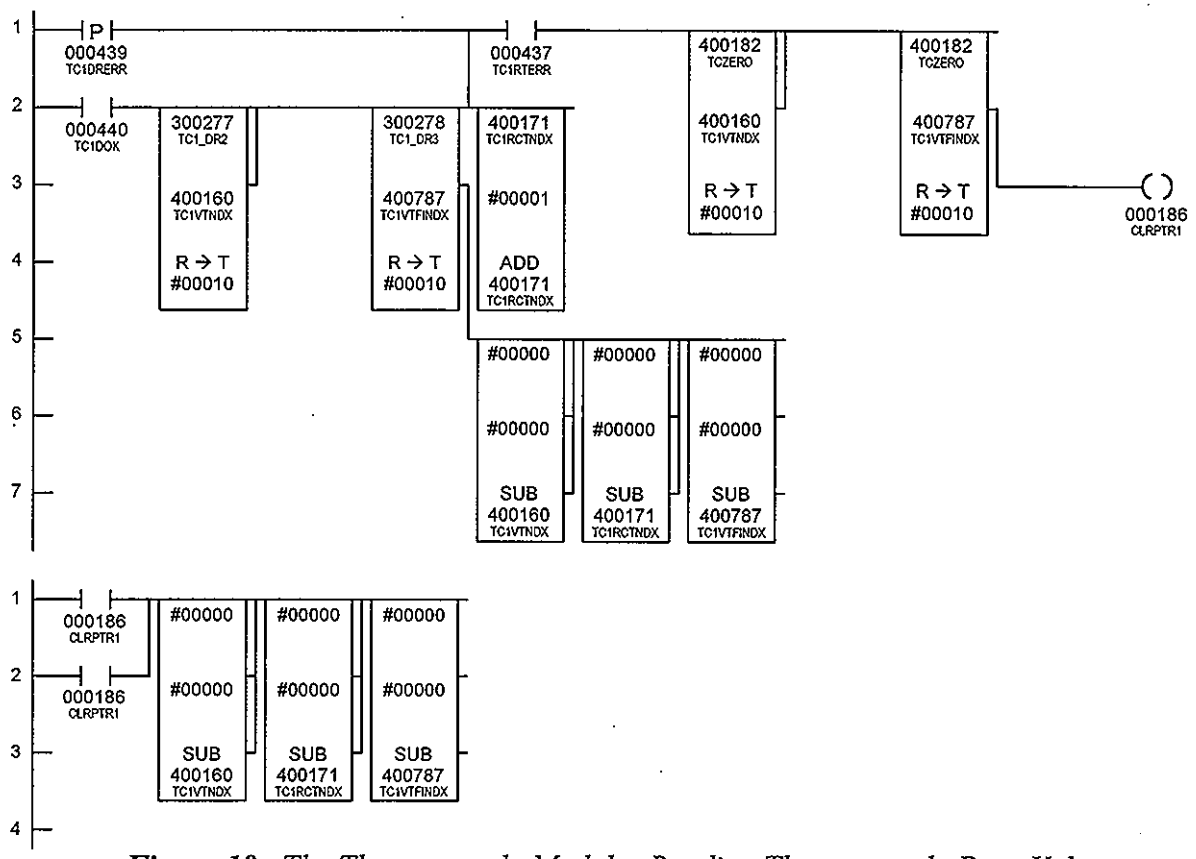


Figure 19. *The Thermocouple Modules Reading Thermocouple Data Values*

The upper pathway is activated when there is an error (coil 437, runtime error, is high). This places a zero into the data value table and resets the data value pointer and the command table pointer.

7.8.2 Abort Functions

One of the primary monitoring functions of the Modicon E984 PLC in the DACS system is to check for over- or under-range conditions on various safety parameters. The PLC is responsible for providing an automatic pump shutoff signal (known as the abort signal) whenever these safety-related or other critical measurements exceed predetermined limits. The abort limits are sent to the PLC from FIX32. The PLC then continually compares the incoming critical measurements to their abort limits and sends the abort signal if any of the limits are exceeded. This function is provided in the PLC rather than in FIX32 since the response time of the PLC is much faster (on the order of 50 ms).

The parameters are sensed by the 984 series I/O at drops or I/O stations distributed around tank 241-SY-101 at surface level, and then transferred to the E984 PLC inside the DACS trailer. Once received by the PLC, these critical values are stored in 30xxx registers. These are two-byte registers that function as repositories for incoming data. Current values of the important parameters are now loaded in the PLC, and are ready for comparison with limit values. This comparison takes place in the ladder logic in the PLC and is of the form below in Figure 20. Register A is the current value register.

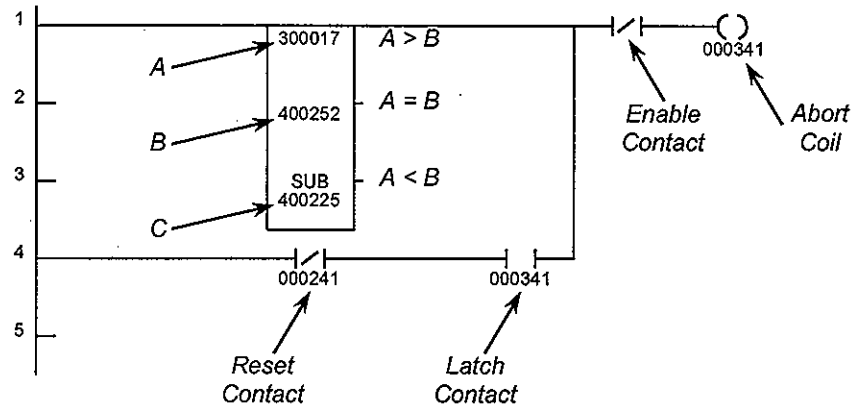


Figure 20. *Abort Limit Testing*

Register B is the 40xxx register containing the limit to be compared with the current value. Register C is the 40xxx register containing the difference between the values in A and B. The subtract block actually has three outputs available for user logic. The top output is activated if A is greater than B. This is the case in which the limit abort logic is mainly interested. With this line high and the reset contact sense in the non-reset condition, the latched abort contact 225 is closed. When it closes, the contact sense in the bottom leg holds or latches the contact closed. Nothing can interrupt power to contact 225 except if the reset contact should close. The reset contact in the above diagram is a "not" of the true reset contact. This means that if the reset contact is open, the ladder element conducts power (is closed).

Values for the abort and alarm limits stored in the 4xxxx registers are written from the FIX32 database in STATION5 to the PLC.

In the PLC, there exists ladder logic similar to the above for every limit abort parameter; however, the latched abort contact is distinct for each parameter. The reset contact is common to all the logic. Figure 21 shows how the many abort contacts are OR'ed together to set a single abort contact. Here the reset contact is identical to that in the previous diagram and all other limit abort logic. The composite abort contact is held closed by the latching leg containing the sense of contact 021. It can only be reset by making the reset contact close. This is done from FIX32. Notice below that the abort contact 225 from the logic above is represented as only one of many such contacts combined to set the composite abort contact.

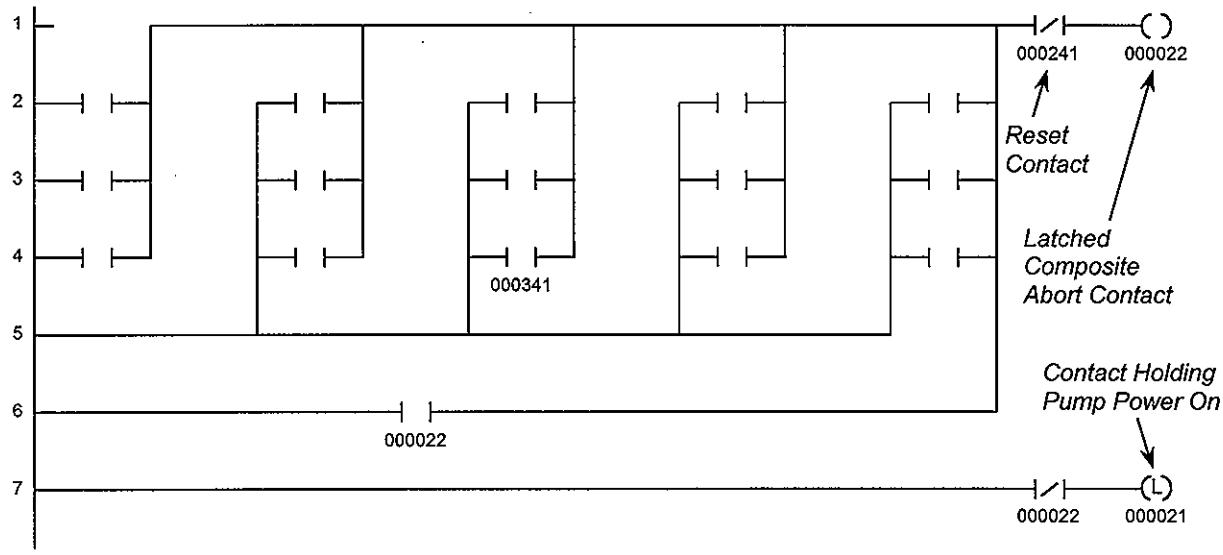


Figure 21. *Composite Abort Contact*

When the latched composite abort contact closes, there is a contact shown in the bottom right-hand corner of the logic above that is opened upon an abort. This power contact is directly connected to a digital output Modicon module that normally holds the power breaker to the pump and directional motors closed. When this contact is opened, the power to the motors is interrupted.

When any of the latched abort contacts closes, the FIX32 screen [CSMAIN] shows the class of the abort along with the alarm limit value, the abort limit value, and a button to another screen with more detail on the abort.

The class of the abort will be one of the following:

- High H2 Concentration
- High Pump Flow
- High Duration Limit
- High Pump Motor Oil Temperature
- High Pump Column Strain
- Low Pump Column Gas Pressure
- VDTT Column Strain
- High Tank Dome Pressure
- High Pump Speed
- High Waste Temperature
- High Pump Motor Current
- High Pump Motor Oil Moisture
- High Pump Column Vibration
- MIT Column Strain
- Low Ventilation Flow

There is also an indicator of the status of the PLC abort coil and a reset button for it. The text on this screen signifying the class of the abort becomes red if a tag in its class has caused an abort. If the operator presses the button next to a class, another more detailed screen is called up. On this next level of display tagnames, tag descriptions, alarm and abort limit values, tag current values, and units are listed. In addition, there is an indicator that other alarms or abort conditions exist as well as an indicator for the PLC abort contact.

As a safety factor, the composite abort contact is read by FIX32. The tagname of the particular block holding this state is LIMABORT. When FIX32 detects a problem, the PG block

PUMP_PROBLEMS causes stop commands to both the pump motor drive and the directional motor drive.

7.8.3 Control Points and Alarm Outputs

The PLC provides a few control and alarm signals other than the pump motor shutoff signal. Other control outputs provided by the PLC are: a signal which triggers the Nicolet data collection system (no longer used) whenever there are indications of a tank rollover, and a signal which shuts off the VDTT flow meters when a high strain is detected on certain risers (also no longer used).

The PLC also contains a watchdog timer which expects to receive regular updates from FIX32. If communications from FIX32 STATION5 to the PLC fail, a signal is sent which sounds an audible alarm. Also, an oscillating signal is provided from the PLC which resets watchdog timers in FIX32 to monitor communication from the PLC to FIX32.

The Nicolet trigger signal is set whenever any of the following occur: (1) there is a high-frequency strain alarm condition, (2) there is a low frequency strain alarm condition, or (3) the pump motor is running. The Nicolet system captures high-speed strain data. This allows the system to be triggered during a tank rollover.

Figure 22 shows the FIX32 to PLC watchdog timer ladder logic. FIX32 sends an alternating digital signal which controls PLC coil 213. This signal alternately resets one of the two timers while allowing the other to run. If communication from FIX32 ceases, one of the two timers will be stuck in the run state and will eventually time out, setting coil 20. This coil is wired to an audible alarm circuit, which produces an alarm when the coil is set.

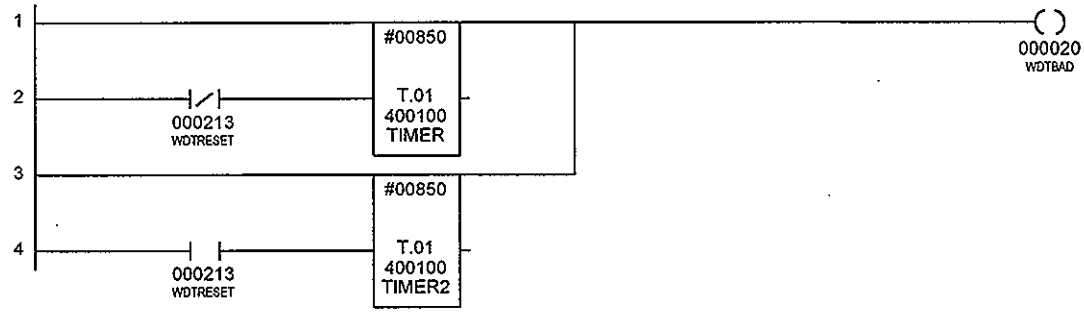


Figure 22. *FIX32 to PLC Watchdog Timer*

7.8.4 Test Timers and Enable Logic

The PLC contains a timer which times the pump tests. The time allowed for the test is sent from FIX32. The PLC timer then runs whenever the pump is running and shuts down the pump whenever the allowed time is exceeded. This provides a backup means for shutting off the pump when the allowed time for the test has elapsed. In most cases, the operator or FIX32 will have already shut off the pump before the allowed time has elapsed.

The PLC also contains test enable logic. This is a logic mechanism which ensures that the timer is set and abort parameter changes are accomplished before the pump is run.

The PLC ladder logic which implements a test enable mechanism and timer for timing pump tests is shown in Figure 23.

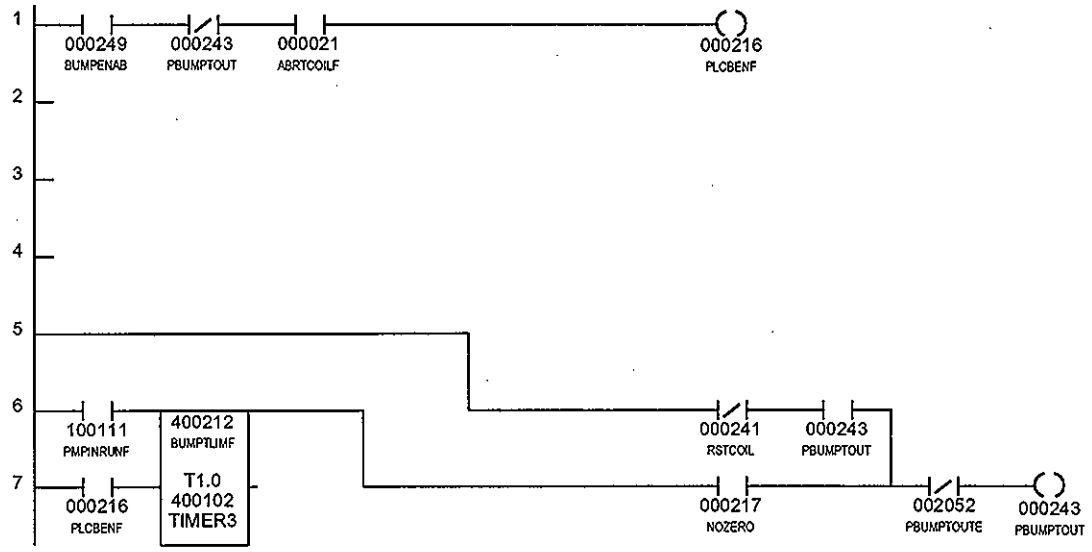


Figure 23. *Test Enable and Timer Logic for Pump Bump*

The pathway in the upper part of the figure is the test timer enable mechanism. The test enable signal originates from FIX32. The operator presses the test enable button on the [PUMPRUN] screen. The enable signal is passed from FIX32 to the PLC where it becomes coil 249. This enable signal starts the test timer as long as there is no abort current in the PLC logic (indicated by coil 21). The enable signal must remain set continuously from FIX32 for the duration of the run. Coil 243 causes the timer to reset when the test time has elapsed regardless of the state of the enable from FIX32. This coil is also incorporated into the pump abort logic, causing the pump to shut off when the allowed test time has elapsed.

The timer block is set to time the duration of a pump run and will shut off the pump if the elapsed time exceeds the allowed time. The allowed time is loaded into register 40212 by the FIX32 [PUMPRUN] screen scripting. The elapsed time is in register 40102. The timer will run only if the test has been enabled (coil 216 is high) and the pump is running (input 10111 is high). If the allowed time elapses the output of the timer will go high. This sets coil 243 high provided that coil 217 is high. Coil 217 is set only if the timer count and elapsed time are both nonzero. This prevents the timer from causing an abort condition before the test has begun.

7.8.5 Data Transfer and Status Information

Most data to be transferred from the PLC to FIX32 is organized into contiguous blocks before transfer. This increases the efficiency of the data transfer. This is accomplished in segment 3 of the ladder logic by using block moves.

Other than the ASCII/BASIC module data and the thermocouple data discussed in Sections 7.8.1.1 and 7.8.1.2, there is one other case in which additional PLC processing is needed to prepare data for FIX32. This is required to slow down the possibly momentary high-frequency strain alarms so that FIX32 can have enough time to detect them before they disappear.

Figure 24 shows the PLC ladder logic used to extend the duration of the high-frequency strain alarms. An alarm can appear as a high on any of the input register 10193, 10195, 10197,

etc. When a positive-going pulse is detected on any of these channels, and if an extended alarm is not already present for that channel, coil 167 is set. This coil indicates that a new alarm has arrived.

In addition, one of the coils 209-215 is set and latched. The coil set is the one corresponding to the alarm received. These are the coils which are sent to FIX32 to become the high-frequency strain alarms. The incoming signal on the 10xxx register could have been just a momentary signal that disappeared before the alarm was transferred to FIX32. The latching mechanism ensures that the alarm will remain long enough to be sent to FIX32.

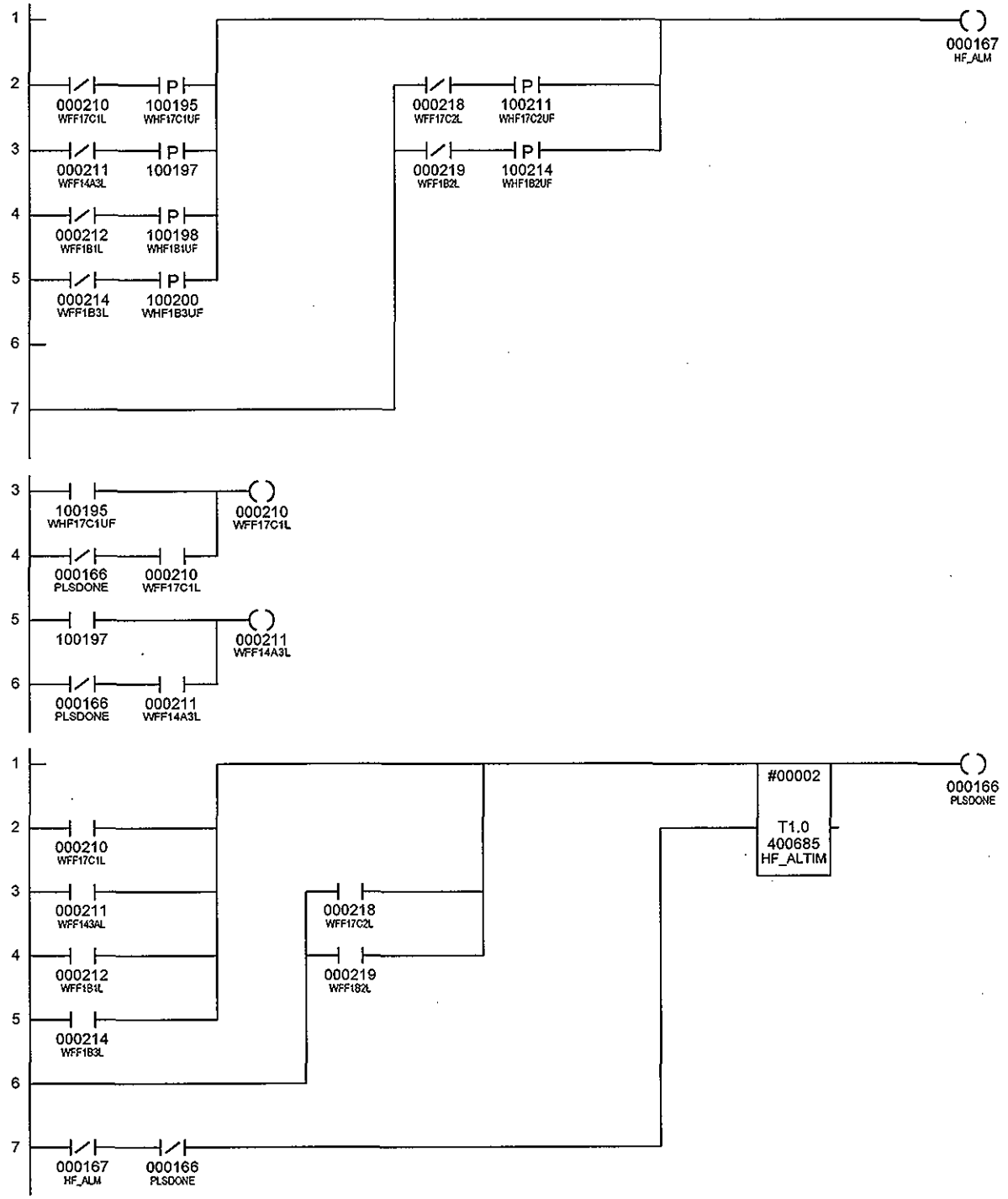


Figure 24. *High-Frequency Strain Alarm Monitoring Logic*

To reset the latches, a timer block is provided. This timer will begin to run if an alarm is received and will time out after 2 seconds causing any latched alarms to be reset. If a second alarm is received before the timer has timed out, the timer count will be reset and the timer will continue to run. This ensures that all latched alarms will remain latched for at least 2 seconds.

The PLC also provides status information to FIX32. It provides a signal which monitors the PLC and the hot standby PLC. This signal is 1 if both PLCs are okay, and 0 if either of them is offline. This information comes from extracting information from the PLC status table which begins at register 40301. Refer to the Modsoft PLC manual "Modicon 984 Programmable Controller Systems Manual" for the details of the status table.

The PLC also provides information to FIX32 about the health status of I/O modules in the system. The following four conditions must be met for a module to indicate good health:

- The slot has been configured in the Traffic Cop.
- The slot contains a module with the correct personality.
- Valid communications exist between the module and the J890.
- Valid communications exist between the J890 and the E984 PLC.

Module health is stored in registers in the Modicon PLC. Different PLCs use different registers. To standardize access to this information, a STAT block is added to the ladder logic. During runtime, the status information is moved to registers defined by the STAT block.

None of the drops are full of modules. Thus, not all of the status registers are of use. A STAT block register contains the I/O health of one crate (alternately referred to as a rack) of modules on a drop. All told, 13 racks are currently in use.

To minimize the communication load, the status registers that correspond to existing racks are copied into a set of transmit registers. It is the transmit registers that FIX32 views.

The movement of the STAT registers to the transmit registers is accomplished by using BLKMs (block moves). The order of the STAT registers is by drop (1 through 32) and by rack (1 through 5) within each drop. Only in cases where two crates have been used within a given drop are the registers contiguous and thus can be handled by a single block move, as shown in Figure 25.

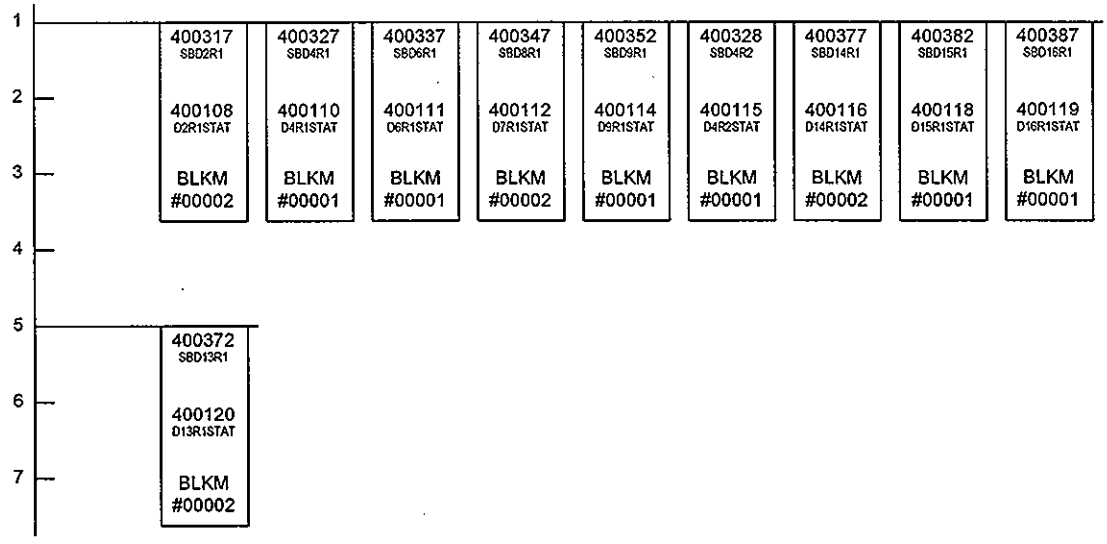


Figure 25. *Block Moves for Transmitting I/O Health Status*

Display of the I/O health is available on the FIX32 [IOSTATUS] screen. Each point in the matrix is tied to the bit corresponding to the module's health. Good health is indicated by a green OK; bad health is indicated by a red BAD.

7.8.6 Directional Motor Simulator

Segment four of the PLC program contains the directional motor simulator logic. This logic simulates the rotation of pump in the lab environment. This logic receives the directional motor acceleration setting, the directional motor speed setpoint and whether or not the motor is in forward or reverse from the Motor strategy. It then increments or decrements the value of ZIMPE112, the position indication.

The simulator is enabled by setting coil 171 to 0 using Modsoft. It also requires the real position encoder (ZIMPE112) be at 0. If there is a non-zero reading for ZIMPE112, then the simulation is disabled and the real value is passed to FIX32.

The simulation logic calculates the number of seconds required to move the directional motor 1 degree. This calculation is based upon the directional motor simulated speed (RPM). The value is calculated using a value of 13.09 degrees for each revolution of the pump motor.

7.9 PASSWORDS AND SECURITY

There are two types of security implemented on the DACS: passwords and FIX32 security keys. The passwords are maintained by the software developers and changed at least annually.

7.9.1 Passwords

Intellution FIX32 supports multi-level, multi-user accounts, each which can be assigned unique passwords. In the current DACS system, only four levels of password entry (levels 2-5) and one "VIEW ONLY" non-access level (level 1) are being utilized. These security levels and the associated groups and permissions granted to each level are listed in Table 9. A given level is granted the permissions of its own level plus all levels below it. All login and logout operations are tracked via daily alarm/event summary files.

The security process is administered as follows:

(1) Each qualified person will choose (or be assigned) a unique login name that identifies them, from 1 to 6 alpha-numeric characters in length with no spaces. The name will be their first or last name, their legitimate nickname, their initials, but no colorful nicknames or aliases. This is not the password, but is required along with the password. It is the name that is displayed on the [WELCOME] screen, the [MAP] popup, the [NETSTAT] screen and on the [LOGIN] popup. All login names are reviewed and are subject to approval.

Table 9. *FIX32 Password Levels and Permissions*

Security Level	Permissions	Group	Example of Login Names	Example of Full Name
5	- Place tags in Auto/Manual; - TRAINING5 Group can also enter values directly on [TAGSTAT] screen	ADMINISTRATOR	ADMIN	ADMINISTRATOR
		TRAINING5	DARREL	DARRELL LAMASTUS
			JIM-E	JIM ELLINGSWORTH
4	- Enable P-RUN-VIS button to allow [PUMPRUN] screen on STA5, STA6 STA7 or STA8;	SUPERVISOR	GREG	GREG GAUCK
			DAVE	DAVE STRASSER
3	- Operate Pump - Reset main abort coil (Except from RSSs); - Acknowledge alarms; - Disable/Enable alarms; - Disable tag abort coils; - Exit Intellution FIX32 program to Windows	OPERATIONS	RICK	RICK THOMPSON
			MITZI	MITZI WHITE
		DEVELOPER	AUGIE	AUGIE ERMI
			ROSS	ROSS TRUITT
2	- PRINT button	GAS TEAM	TOM-S	TOM SCHNEIDER
1	- Navigate and view screens - Silence STA5 audio alarm (Except from RSSs);	VIEW ONLY	PUBLIC	- Boot-up & Logout Default - (No password required)

(2) Each qualified person will choose (or be assigned) their unique password. The password must be at least 6 alpha-numeric characters in length with at least one non-alpha character (a number). Passwords can be up to 20 characters long, but must contain no spaces nor the "pound" sign (#). The DACS software developers will maintain the name/password combinations in the Intellution FIX32 security configuration.

(3) As the need arises, persons/passwords will be added or deleted from the FIX32 security configuration. In addition, passwords are changed at least once per year.

The five security levels listed above apply to operation of the FIX32 DACS HMI software. There is also an administrative password used by the software developers for programming and system configuration. Software changes are done offline using the family of FIX32 programming/configuration software. No one can change the software without the configuration software, administrative password, and the correct configuration security key.

7.9.2 Security Keys

The FIX32 software is protected from unauthorized use and pirating by use of security devices called "keys" or "dongles." The key is attached to the LPT1 port before any printer cable is attached. In addition to copy protection, there is *use* protection built into the keys. There are three levels of keys utilized in DACS, all hierarchical (both in function and cost). The highest level is the "Development Full Function SCADA Node" key; next is the "Runtime Full Function SCADA Node" key; and the lowest is the "Runtime View Node" key. Only STATION5 in the DACS Development Laboratory has a development SCADA node key. STATION5 in the DACS trailer has a runtime SCADA node key. All remaining stations in the DACS trailer, DACS Lab and at RSSs have runtime view node keys.

7.9.3 Security Implementation

There are various components that comprise the overall security system for the FIX32 DACS HMI software. First, there is the operating system user rights policies that are configured in the Windows NT "User Manager" administrative tools program. The Operations (or "OPS") users have less rights than Administrators. The user rights policies are detailed in Appendix B.

Secondly, there is the FIX32 Security Configuration applet that enables definition of user accounts, group accounts, and security areas. For DACS, the group accounts are assigned names, and given authorization to certain application features and specific security areas. The five password levels mentioned above are synonymous with the five security areas available for any given group. Individual user accounts are then assigned to a specific group, thereby defining the security areas (password levels) and application features authorized for that user.

The application features, for example, prevent operators with a level 3 password from performing unauthorized tasks available only to administrators with a level 5 password. Likewise, users with a level 2 password or a "VIEW ONLY" level 1 password are unable to perform tasks authorized to operators with a level 3 password. These include exiting from the HMI DACS program and shutting down the FIX32 software. Also included is access to alarm summary display features on the [ALARMSUM] screen and [ALARMBAR] popup. This is accomplished by assigning level 3 security to all AA and DI blocks that alarm. Details regarding all aspects of the built-in, configurable security features in the FIX32 software are also in Appendix B.

Finally, there is the programmable security feature that is used throughout various screens to prevent unauthorized access to certain functions, many of which are listed under the "Permissions" column in Table 9. This security feature is based on the built-in FIX32 "CHECKRIGHTS" command. On initial startup and after every log out, a local variable #SECURITY_LEVEL is set to "1", equivalent to the security level 1 password for "PUBLIC", "VIEW ONLY". Immediately after a user logs in, a script uses the CHECKRIGHTS command to verify the operator's security area rights:

```
CHECKRIGHTS "LEVEL2" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 2
ENDIF
CHECKRIGHTS "LEVEL3" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 3
ENDIF
CHECKRIGHTS "LEVEL4" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 4
ENDIF
CHECKRIGHTS "LEVEL5" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 5
ENDIF
```

If a user is a member of a group with access rights to a "LEVELX" security area, the CHECKRIGHTS command assigns a "1" to #SEC_CHECK. At the completion of the script, the #SECURITY_LEVEL variable is equal to the security level for the user. The variable #SECURITY_LEVEL is then used throughout the screens to control access to buttons and features through scripting or visibility settings. At RSSs, the #SECURITY_LEVEL variable is used in conjunction with the local variable #RSS to add an extra layer of security. For example, if #RSS=1, (as is the case for remote STATIONs 11, 13, 15 and 17) the user is prevented from resetting the PLC abort coil , independent of the user's security level.

8.0 REFERENCES

1. Westinghouse Hanford Company, "Test Plan for Run-In of 101-SY Mitigation Mixer Pump," WHC-SD-WM-TP-139.

2. T. M. Burke, "Test Plan for Tank 101-SY Mitigation-by-Mixing Test," Westinghouse Hanford Company, WHC-SD-WM-TP-140.

3. T. R. Benegas, "Tank 241-101-SY Hydrogen Mitigation Test Functional Design Criteria," Westinghouse Hanford Company, WHC-SD-WM-FDC-022 (1992).

4. R. W. Truitt, "Functional Design Criteria for Tank SY-101 Hydrogen Mitigation Test Project Data Acquisition and Control System (DACS-1)," Westinghouse Hanford Company, WHC-SD-WM-FDC-031, Rev. 0 (1994).

5. L. H. Sullivan, et al, "A Safety Assessment for Proposed Mixing Operations to Mitigate Episodic Gas Releases in Tank 21-SY-101, Hanford Site, Richland, WA.", Los Alamos National Laboratory, LA-UR-92-3195, Rev. 14 (1995) or higher.

6. G. J. Gauck, "System Design Description 241-SY-101 DACS Uninterruptable Power Supply", Westinghouse Hanford Company, WHC-SD-WM-SD-076, Rev. 0 (1997).

7. G. J. Gauck, "System Configuration Management Plan for 101-SY Hydrogen Mitigation Test Project Data Acquisition and Control System of Tank Waste Remediation System", HNF-SD-WM-CSCM-023, Rev. 2 (1999).

Appendix A – Hardware Configuration

		STATION1	STATION5	STATION6
Computer Description	Computer Type	CyberResearch 19" Rack-Mount, converted from a Micron Millennia Mini-Tower	CyberResearch 19" Rack-Mount, converted from a Micron Millennia Mini-Tower	CyberResearch 19" Rack-Mount, converted from a Micron Millennia Mini-Tower
	Central Processing Unit (CPU)	Pentium II, 400 MHz	Pentium II, 400 MHz	Pentium II, 400 MHz
	Memory	128MB SDRAM	128MB SDRAM	128MB SDRAM
	Hard Drive	10.0 GB	10.0 GB	10.0 GB
	Internal Drives	3.5" Floppy, 32X IDE CD ROM, IOMEGA 100MB Zip	3.5" Floppy, 32X IDE CD ROM, IOMEGA 100MB Zip	3.5" Floppy, 32X IDE CD ROM, IOMEGA 100MB Zip
Backplane Ports And Connectors	PS/2 Keyboard Connector	Micron 104-Key Enhanced Keyboard	Micron 104-Key Enhanced Keyboard	Micron 104-Key Enhanced Keyboard
	PS/2 Mouse Connector	Kensington Expert Mouse 5.0 Trackball	Kensington Expert Mouse 5.0 Trackball	Kensington Expert Mouse 5.0 Trackball
	LPT1 Parallel Port	Not Used	FIX32 Key, Full Function, #SO 099755-004	FIX32 Key, 150 Points, #SO 099755-001 Tektronix Phaser 350 Color Printer
	COM1 Serial Port	Not Used	To Pump Motor Variable Speed Drive	Not Used
	COM2 Serial Port	Not Used	To Directional Motor Variable Speed Drive	Not Used
	Audio Line Out	To Speakers	To Speakers	To Speakers
Expansion Slot Cards	Video Card With 15-Pin Connector	AGP Slot, Diamond Multimedia Viper V330 Card	AGP Slot, Real 3D StarFighter Video Graphics Board	AGP Slot, Real 3D StarFighter Video Graphics Board
	Monitor	Industrial Computer Source 17" Rack-Mount, Model 9017-R	Industrial Computer Source 17" Rack-Mount, Model 9017-R	Industrial Computer Source 17" Rack-Mount, Model 9017-R
	Network Card 1	PCI Slot, 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC, 3C905B-TX for DACSNet Network*	PCI Slot, 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC, 3C905B-TX for DACSNet Network*	PCI Slot, 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC, 3C905B-TX for DACSNet Network*
	Network Card 2	ISA Slot, Modicon Modbus Plus SA85-000 Network Card	ISA Slot, Modicon Modbus Plus SA85-000 Network Card	PCI Slot, 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC, 3C905B-TX for HLAN Network
	Internal Modem	None	None	None
	4-Port Serial Card	None	None	None
	External Modem	None	None	None

		STATION7	STATION8	STATION9
Computer Description	Computer Type	CyberResearch 19" Rack-Mount, converted from a Micron Millennia Mini-Tower	CyberResearch 19" Rack-Mount, converted from a Micron Millennia Mini-Tower	CyberResearch 19" Rack-Mount, converted from a Micron Millennia Mini-Tower
	Central Processing Unit (CPU)	Pentium II, 400 MHz	Pentium II, 400 MHz	Pentium II, 400 MHz
	Memory	128MB SDRAM	128MB SDRAM	128MB SDRAM
	Hard Drive	10.0 GB	10.0 GB	10.0 GB
	Internal Drives	3.5" Floppy, 32X IDE CD ROM, IOMEGA 100MB Zip	3.5" Floppy, 32X IDE CD ROM, IOMEGA 100MB Zip	3.5" Floppy, 32X IDE CD ROM, IOMEGA 100MB Zip
Backplane Ports And Connectors	PS/2 Keyboard Connector	Micron 104-Key Enhanced Keyboard	Micron 104-Key Enhanced Keyboard	CyberResearch Rack-Mount Keyboard with Trackball, Model 01X 1310-PS2
	PS/2 Mouse Connector	Kensington Expert Mouse 5.0 Trackball	Kensington Expert Mouse 5.0 Trackball	
	LPT1 Parallel Port	FIX32 Key, 150 Points, #SO 099755-002	FIX32 Key, 150 Points, #SO 099755-003	FIX32 Key, 150 Points, #SO 104685-001
	COM1 Serial Port	Not Used	Not Used	Disabled
	COM2 Serial Port	Not Used	Not Used	Disabled
	Audio Line Out	To Speakers	To Speakers	To Speakers
Expansion Slot Cards	Video Card With 15-Pin Connector	AGP Slot, Real 3D StarFighter Video Graphics Board	AGP Slot, Real 3D StarFighter Video Graphics Board	AGP Slot, Real 3D StarFighter Video Graphics Board
	Monitor	Industrial Computer Source 17" Rack-Mount, Model 9017-R	Industrial Computer Source 17" Rack-Mount, Model 9017-R	Industrial Computer Source 17" Rack-Mount, Model 9017-R
	Network Card 1	PCI Slot, 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC, 3C905B-TX for DACSNet Network*	PCI Slot, 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC, 3C905B-TX for DACSNet Network*	PCI Slot, 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC, 3C905B-TX for DACSNet Network*
	Network Card 2	None	None	None
	Internal Modem	None	None	None
	4-Port Serial Card	None	None	PCI Slot, Digi Accelport 4r 920 IO PCI 4Port Card
	External Modem	None	None	Connected to Digi 4-Port Serial Card (COM1,2,3,4) for RSSs 11, 13, 15 and 17; Model 3Com U.S. Robotics 56K V.90 FAX EXT Modem

		RSS11	RSS13	RSS15
Computer Description	Computer Type	Micron Millennia Mini-Tower	Micron Millennia MME Mini-Tower	Micron Millennia Mini-Tower
	Central Processing Unit (CPU)	Pentium II, 400 MHz	Pentium 233 MHz	Pentium II, 400 MHz
	Memory	128MB SDRAM	64MB SDRAM	128MB SDRAM
	Hard Drive	10.0 GB	6.4 GB	10.0 GB
	Internal Drives	3.5" Floppy, 32X IDE CD ROM, IOMEGA 100MB Zip	3.5" Floppy, 24X IDE CD ROM, IOMEGA 100MB Zip	3.5" Floppy, 32X IDE CD ROM, IOMEGA 100MB Zip
Backplane Ports And Connectors	PS/2 Keyboard Connector	Micron 104-Key Enhanced Keyboard	Micron 104-Key Enhanced Keyboard	Micron 104-Key Enhanced Keyboard
	PS/2 Mouse Connector	Kensington Expert Mouse 5.0 Trackball	Kensington Expert Mouse 5.0 Trackball	Kensington Expert Mouse 5.0 Trackball
	LPT1 Parallel Port	FIX32 Key, 150 Points, #SO 104685-002	FIX32 Key, 150 Points, #SO 089167-003	FIX32 Key, 150 Points, #SO 104685-003
	COM1 Serial Port	Disabled	Disabled	Disabled
	COM2 Serial Port	Disabled	Disabled	Disabled
	Audio Line Out	To Speakers	To Speakers	To Speakers
Expansion Slot Cards	Video Card With 15-Pin Connector	AGP Slot, Real 3D StarFighter Video Graphics Board	PCI Slot, Diamond Multimedia Stealth 3D Card	AGP Slot, Real 3D StarFighter Video Graphics Board
	Monitor	Hitachi, 19", Model SuperScan Elite 751	Hitachi, 19", Model SuperScan Elite 751	Hitachi, 19", Model SuperScan Elite 751
	Network Card 1	None	None	None
	Network Card 2	None	None	None
	Internal Modem	ISA Slot, COM2, Model 3Com U.S. Robotics 56K V.90 FAX INT Modem	ISA Slot, COM1, Model 3Com U.S. Robotics 56K V.90 FAX INT Modem	ISA Slot, COM2, Model 3Com U.S. Robotics 56K V.90 FAX INT Modem
	4-Port Serial Card	None	None	None
	External Modem	None	None	None

Note: *DACSNet connected via a LINKSYS EtherFast 10/100 Auto-Sensing 8-Port Workgroup Hub, Model EFAH08W.

Appendix B - Windows NT 4.0 / Intellution FIX32 Configuration

Appendix B - Windows NT 4.0 / Intellution FIX32 Configuration

The following sections describe the configuration for both the Windows NT operating system and the Intellution FIX32 software. They are presented in a checklist format so that they can be used for configuring any of the FIX32 stations.

B-1. Global Configuration

Configuration for DACS _____

☐	Install Windows NT Workstation 4.0 on all STA's except DACS STA9 - For registration information, use: "241-SY-101 DACS " and DOE-RL"
☐	Install Windows NT Server 4.0 on DACS STA9 - For registration information, use: "241-SY-101 DACS" and DOE-RL" - For licensing mode, use "Per Server" and "4"
☐	Install Windows NT Service Pack 3 on all STA's
☐	If installing an internal modem on RSSs: - Disable the COM ports (Serial ports A and B in the BIOS Setup Utility) - Install the modem per the manufacturer's instructions - Verify that the computer sound works properly - If there is no sound: - In Control Panel, open the Devices applet and set "cwbaudio" Startup to "Boot"
☐	If necessary, install the Zip Drive fix by executing the "hotfix.exe" program
☐	If necessary, assign the CD-ROM drive to "Drive R:" using "Disk Administrator"
☐	Install Intellution Fix32 v. 6.15 on all STA's - Run "Setup.exe"; then open "Intellution CD" from the "Intellution CD" group - Select "Install Now" - For Software Options, select "FIX Support", "I/O Drivers" (STA5 only), "Fix Electronic Books", and "FIX Options" - For Nodename, use "STATION#" or "RSS#" where # is the Station or RSS number - Select "Networked" and "NetBIOS" - For the driver, select "OTHER"; use the MMP driver v. 6.03b from the floppy disk - For FIX Software Options, highlight everything *except* "Other" - Install FIX Electronic Books - For Remote SCADA Node List, use "STATION5" (except STA5, use all STATIONx and all RSSxx, not including STATION5) Copy \FIX 6.15 SIMs directory, subdirectories and all files from Lab STA5 to all STAs - Install the Intellution Fix32 SIMs on all STA's by copying the files into the appropriate directories Share the C:\FIX32 directory - STA5 only - Share as: "STA5-FIX32"; Permissions: "Everyone" and "Full Control" *Configure MMP driver - STA5 only* - In Control Panel, open the FIX Modbus Plus applet; select SA85-000 Single Port for Card 1 and set the Memory Address to D8000 - In Control Panel, open the Devices applet; set "WinRT" to "Automatic"
☐	Place "Arrow_1.cur" file into the Winnt\Cursors directory
☐	Place "Winhlp32.exe" file into the Winnt directory (dated 04/30/1997 23:00)
☐	Place a copy of "Donk.wav" into the Winnt\Media directory

Configuration for DACS _____

☐	Setup "Users" using "User Manager" All STAs: - Add Username: OPS; Full Name: Operations; Description: West Tank Farm Operations; Set Password; Check "User Cannot Change Password" and "Password Never Expires"; Add only "Users" for "Group Memberships" - For Username: Administrator", verify that "Password Never Expires"; verify that "Group Memberships" is "Administrators" - For Username: Guest, verify that "User Cannot Change Password" and "Password Never Expires"; verify that "Group Memberships" is "Guests" STA6 only - Add individual users that need access to shared directories via HLAN: - Add Username: H00xxxxx; Full Name: H00xxxxx; Description: {Name of Individual}; Set Password; Check "User Cannot Change Password" and "Password Never Expires"; Add only "Users " for "Group Memberships" STA9 only - Add RSS-11, 13, 15 and 17: - Add Username: RSSxx; Full Name: RSS-xx (Location); Description: Remote Dial-in Computer; Set Password; Check "User Cannot Change Password" and "Password Never Expires"; Add only "Users" for "Group Memberships"
☐	Setup "Account Policy" using "User Manager": Select "Password Never Expires"
☐	Setup "User Rights Policy" using "User Manager"according to Table B-1

Table B-1. User Rights Policy

User Rights	Admin.	Backup Operat.	Guests	Power Users	Replic.	Users
Access this computer from network	X	X	X	X	X	X
Act as part of the operating system						
Add workstations as domain						
Back up files and directories	X	X				X
Bypass traverse checking	X	X	X	X	X	X
Change the system time	X			X		X
Create a pagefile	X					
Create a token object						
Create permanent shared objects						
Debug programs	X					
Force shutdown from a remote system	X			X		
Generate security audits						
Increase quotas	X					
Increase scheduling priority	X			X		
Load and unload device drivers	X					X
Lock pages in memory						
Log on as a batch job						
Log on as a service						
Log on locally	X	X	X	X	X	X
Manage auditing and security log	X					
Modify firmware environment values	X					
Profile single process	X			X		
Profile system performance	X					
Replace a process level token						
Restore files and directories	X	X				
Shut down the system	X	X	X	X	X	X
Take ownwership of files or other objects	X					

Configuration for DACS _____

☐	Setup "Users" using "Remote Access Admin" - STA9 only Permissions: - Administrator: "No call back" - Guest: "No call back" - OPS: "No call back" - RSS11: "Grant dialin permission to user" checked; "No call back" - RSS13: "Grant dialin permission to user" checked; "No call back" - RSS15: "Grant dialin permission to user" checked; "No call back" - RSS17: "Grant dialin permission to user" checked; "No call back"

B-2. Network Configuration

Configuration for DACS _____

Configure the networking (NetBEUI, TCP/IP, RAS and MODEMS) according to the setups described on the following pages

Notes: - DACS Trailer STA5, 7 ,8: Windows NT Workstation and NetBEUI
- DACS Trailer STA6: Windows NT Workstation, NetBEUI and TCP/IP
- DACS Trailer STA9: Windows NT Server, NetBEUI and RAS
- RSS11, 13, 15: Windows NT Workstation, NetBEUI and RAS

- Control Panel "Network" Configuration [Must set as "administrator"]

- "Identification" tab: Computer Name: "STATION#" for STA5, 6, 7, 8, 9
"RSS#" for RSS11, 13 & 15
Workgroup: "DACSNET" for All

- "Services" tab: Network Services: "3Com dRMON SmartAgent PC Software" for STA5, 6, 7, 8
"Computer Browser" for All
"NetBIOS Interface" for All
"Remote Access Service" for STA9 & RSS11, 13, 15
"RPC Configuration" for All
"Server" for All
"Workstation" for All

- "NetBIOS Interface" Properties . . .

Lana Number	Network Route	
000	Nbf → EI90x → EI90x1	for STA5, 7, 8, 9
000	Nbf → EI90x → EI90x1	for STA6
001	NetBT → EI90x → EI90x2	
002	NetBT → EI90x → EI90x1	
003	Nbf → EI90x → EI90x2	
000	Nbf → EI90x → EI90x1	for STA9
001	Nbf → NdisWan6	
002	Nbf → NdisWan7	
003	Nbf → NdisWan8	
004	Nbf → NdisWan5	
000	Nbf → NdisWan#	for RSS11,
001	Nbf → NDISLoop → NDISLoop* *(where # may be 4 or 5 and * may be 2 or 3, for example)*	13, 15

- "Remote Access Service" Properties . . .

"COM1 U.S. Robotics 56K FAX EXT Modem (unimodem)" for STA9
"COM2 U.S. Robotics 56K FAX EXT Modem (unimodem)"
"COM3 U.S. Robotics 56K FAX EXT Modem (unimodem)"
"COM4 U.S. Robotics 56K FAX EXT Modem (unimodem)"
For *each* COMx:
- Network . . . Server Settings: "NetBUEI"
Encryption Settings: "Allow any authentication including clear text"
- Configure . . . "Entire Network"
- Configure . . . Port Usage: "Receive calls only"

"COM# U.S. Robotics 56K FAX INT Modem (unimodem)" for RSS11, 13, 15
(where # may be 1 or 2, for example)
- Network . . . Dial Out Protocols: "NetBUEI"
- Configure . . . Port Usage: "Dial out only"

- "RPC Configuration" Properties . . .
Name Service Provider: "Windows NT Locator" for All
Security Service Provider: "Windows NT Security Service" for All

- "Server" Properties . . . for STA9
- Properties . . .
"Minimize Memory Used" checked

- "Protocols" tab:
"NetBEUI Protocol" for All
"TCP/IP Protocol" for STA 6
- Properties . . .

- "IP Address" tab: Adapter: "(1) 3Com Fast EtherLink XL NIC (3C905B-TX)"
Specify an IP Address: IP Address: 130. 97.130. 12
(130. 20. 6. 29 - 306E Lab.)
Subnet Mask: *255.255.255.* 0
Default Gateway: 130. 20. 6. 1
Advanced . . . (Same entries as above)

- "DNS" tab: Host Name: "station6t" ("station6" - 306E Lab.)
Domain: "rl.gov"
DNS Service Search Order: 130. 20. 20. 30
130. 20. 8. 10
130. 20. 64. 29
DNS Suffix Search Order: rl.gov
pnl.gov

- "WINS Address" tab: Adapter: "(3) 3Com Fast EtherLink XL NIC (3C905B-TX)"
Primary WINS Server: 130. 97.168. 14
Secondary WINS Server: 130. 97.100. 73

- "Routing" tab: (Not enabled)

- "*Adapters" tab:*
Network Adapters: (1) 3Com Fast EtherLink XL NIC (3C905B-TX) for STA5, 7, 8
Item Notes: 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC (3C905B-TX)

Network Adapters: (1) 3Com Fast EtherLink XL NIC (3C905B-TX) for STA6
(2) 3Com Fast EtherLink XL NIC (3C905B-TX)
Item Notes: 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC (3C905B-TX)
3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC (3C905B-TX)

Network Adapters: (1) 3Com Fast EtherLink XL NIC (3C905B-TX) for STA9
(2) Digi 4r 920 (PCI) Adapter
Item Notes: 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC (3C905B-TX)
Digi 4r 920 (PCI) Adapter

Network Adapters: (#) MS Loopback Adapter for RSS11, 13, 15
(where # may be 2 or 3, for example)
- Properties . . . Frame Type: 802.3
Item Notes: MS Loopback Adapter

- "Bindings" tab: Show Bindings for: "all services"

- 3Com dRMON SmartAgent PC Software for STA5, 7, 8
-(1) 3Com Fast EtherLink XL NIC (3C905B-TX)
- NetBIOS Interface
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
- Server
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
- Workstation
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)

- 3Com dRMON SmartAgent PC Software for STA6
  - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
  - (2) 3Com Fast EtherLink XL NIC (3C905B-TX)
- NetBIOS Interface
  - WINS Client (TCP/IP)
    - Ø (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
    - (2) 3Com Fast EtherLink XL NIC (3C905B-TX)
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
    - Ø (2) 3Com Fast EtherLink XL NIC (3C905B-TX)
- Server
  - WINS Client (TCP/IP)
    - Ø (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
    - (2) 3Com Fast EtherLink XL NIC (3C905B-TX)
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
    - Ø (2) 3Com Fast EtherLink XL NIC (3C905B-TX)
- Workstation
  - WINS Client (TCP/IP)
    - Ø (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
    - (2) 3Com Fast EtherLink XL NIC (3C905B-TX)
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
    - Ø (2) 3Com Fast EtherLink XL NIC (3C905B-TX)

- 3Com dRMON SmartAgent PC Software for STA9
-(1) 3Com Fast EtherLink XL NIC (3C905B-TX)
- NetBIOS Interface
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
    - (5) Remote Access WAN Wrapper
    - (6) Remote Access WAN Wrapper
    - (7) Remote Access WAN Wrapper
    - (8) Remote Access WAN Wrapper

- Remote Access Server Service
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
    - (5) Remote Access WAN Wrapper
    - (6) Remote Access WAN Wrapper
    - (7) Remote Access WAN Wrapper
    - (8) Remote Access WAN Wrapper
- Server
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)
- Workstation
  - NetBEUI Protocol
    - (1) 3Com Fast EtherLink XL NIC (3C905B-TX)

- NetBIOS Interface — for RSS11, 13, 15
  - NetBEUI Protocol
    - (#) MS Loopback Adapter — *(where # may be 2 or 3, and * may be 4 or 5, for example)*
    - (*) Remote Access WAN Wrapper
- Remote Access Server Service
  - NetBEUI Protocol
    - (#) MS Loopback Adapter
    - (*) Remote Access WAN Wrapper
- Server
  - NetBEUI Protocol
    - (#) MS Loopback Adapter
    - (*) Remote Access WAN Wrapper
- Workstation
  - NetBEUI Protocol
    - (#) MS Loopback Adapter
    - (*) Remote Access WAN Wrapper

☐	Control Panel "Network" configured

- Control Panel "Modem" Configuration — [Must set as "administrator"; verify available settings as "ops"]

  - "General" tab: "U.S. Robotics 56K FAX EXT COM1" — for STA9
    "U.S. Robotics 56K FAX EXT COM2"
    "U.S. Robotics 56K FAX EXT COM3"
    "U.S. Robotics 56K FAX EXT COM4"
    - Properties: (for each COM)
      - "General" tab:
        - Speaker volume: "On"
        - Maximum speed: 115200
      - "Connection" tab:
        - Data bits: 8
        - Parity: None
        - Stop bits: 1

        "Cancel the call if not connected within 60 secs"

        - "Advanced . . ."
          "Use error control": "Compress data"
          "Use flow control": "Hardware (RTS/CTS)"
          "Standard" Modulation type
      - "Address" tab: (Nothing checked)
    - Dialing Properties: - "My Locations" tab: Tone dialing

- "General" tab: "U.S. Robotics 56K FAX INT COM#" for RSS11, 13, 15
  (where # is 1 or 2, for example)
  - Properties:
    - "General" tab:
      - Speaker volume: Between "Off" and "High"
      - Maximum speed: 115200
    - "Connection" tab:
      - Data bits: 8
      - Parity: None
      - Stop bits: 1

      "Cancel the call if not connected within 60 secs"
      "Disconnect a call if idle for more than 30 mins"
      - "Advanced . . ."
        "Use error control": "Compress data"
        "Use flow control": "Hardware (RTS/CTS)"
        "Standard" Modulation type
    - "Address" tab: (Nothing checked)
  - Dialing Properties: - "My Locations" tab: Tone dialing

Profile		Configuration Task
Admin.	Ops	
☐	☐	Control Panel "Modem" configured

- My Computer "Dial-Up Networking" Configuration [Must set as "administrator" and verify available settings as "ops"]
  - Phonebook entry to dial: "DACS Trailer RSS ## Conection" for RSS11, 13, 15
    - More - Edit entry and modem properties . . .
      - "Basic" tab:
        - Entry name: "DACS Trailer RSS ## Conection"
        - Phone number: 37x-xxxx
        - Dial using: U.S. Robotics 56K FAX INT (COM#)
          (where # is 1 or 2, for example)
          - Configure . . . Initial speed (bps): 115200
            Hardware features:
            - "Enable hardware flow control"
            - "Enable modem error control"
            - "Enable modem compression"
      - "Server" tab:
        - Dial-up Server Type: PPP: Windows NT, Windows 95 Plus, Internet
        - Network protocols: NetBEUI
        - "Enable PPP LCP extensions"
      - "Script" tab: - "None"
      - "Security" tab: - "Accept any authentication including clear text"
      - "X.25" tab: - "None"

    - Monitor status . . .
      - "Status" tab: - (Nothing to enter)
      - "Summary" tab - (Nothing to enter)
      - "Preferences" tab - Show status lights "As an icon next to the taskbar clock"

- User preferences . . .
  - "Dialing" tab:
    - "New Location (the current location)" box *not* checked
    - Number of redial attempts: 0
    - Seconds between redial attempts: 15
    - Idle seconds before hanging up: 0
  - "Callback" tab
    - "No, skip callback"
  - "Appearance" tab
    - "Preview phone numbers before dialing"
    - "Start dial-up networking monitor before dialing"
    - "Show connection progress while dialing"
    - "Close on dial"
    - "Use wizard to create new phonebook entries"
    - "Always prompt before auto-dialing"
  - "Phonebook" tab
    - Use "The system phonebook"

- Logon preferences . . .
  - "Dialing" tab:
    - Number of redial attempts: 0
    - Seconds between redial attempts: 15
    - Idle seconds before hanging up: 0
  - "Callback" tab
    - "No, skip callback"
  - "Appearance" tab
    - "Preview phone numbers before dialing"
    - "Show connection progress while dialing"
    - "Close on dial"
  - "Phonebook" tab
    - Use "The system phonebook"

Profile		Configuration Task
Admin.	Ops	
☐	☐	My Computer "Dial-Up Networking" Configured
☐	n/a	For DACS Trailer STA9 and all RSSs: In Control Panel, Services: Set "Remote Access Server" to "Automatic"
☐	n/a	For DACS Trailer STA9: Run "regedit"; Find all instances of "RemoteListen" and set them to "2"
☐	n/a	- Use Windows NT Explorer to share the Fix32 directory: Share Name: STA#-FIX32 for STA5, 6, 7, 8, 9 RSS#-FIX32 for RSS11, 13, 15 where "#" is the Station or RSS number Permissions: "Everyone" and "Full Control" for STA5, 7, 8, 9, RSS11, 13, 15 "Administrators" and "Full Control" for STA6

B-3. User Profile Configurations

Configuration for DACS _____

Profile		Configuration Tasks
Admin.	Ops	
☐		Setup Desktops - Administrator - Place these icons on Desktop: "My Computer", "Network Neighborhood", "Control Panel", "Windows NT Explorer", "Recycle Bin", and "Intellution FIX" Group - For local STAs, place "Startup" (from the FIX Intellution Group) on Desktop and rename it STATION # STARTUP, where # is the station number - For RSSs, place "Rss.exe" (from the FIX32\CustomVb directory) on Desktop and rename it RSS # STARTUP, where # is the RSS number
	☐	- OPS - Place these icons on Desktop: "My Computer", "Network Neighborhood", and "Recycle Bin" - For local STAs, place the "Intellution FIX" Group and "Startup" on Desktop; rename "Startup" to "STATION # STARTUP", where # is the station number - For RSSs, place the "Intellution FIX" Group and "Rss.exe" (from the FIX32\CustomVb directory) on Desktop; rename "Rss.exe" to "RSS # STARTUP", where # is the RSS number
☐		Setup Start Menu "Programs" - Administrator - Using Windows NT Explorer, under "Winnt\Profiles" move the contents of "All Users\Start Menu\Programs" to "Administrator\Start Menu\Programs"; Empty all "Startup" folders - Under \Administrator, \Default User and \Ops, remove contents from the \Sendto folders *except* "3-1/2 Floppy (A)", "Zip Drive (n)"
	☐	- OPS - Under "Winnt\Profiles\Ops", create new folders "Old Start Menu\Programs"; Move the contents of "Ops\Start Menu\Programs" (*except* "Windows NT Explorer") to "Old Start Menu\Programs"
☐		Setup System Trays - Administrator - Remove all icons except for the volume control and the clock
	☐	- OPS - Remove all icons except for the clock
☐	☐	Setup Taskbar Properties - On the "Taskbar Options" tab, check all boxes - On the "Start Menu Programs" tab, <Clear> Document Menu
☐	☐	Run "regedit"; go to HKEY_CURRENT_USER\Control Panel\International; Set "sThousand" to nul ("")

User Profile Configurations (cont.) Configuration for DACS _____

Profile		Configuration Tasks
Admin.	Ops	
		Control Panel Settings
☐	☐	- Date/Time: On "Date & Time" tab, set Date & Time; On "Time Zone" tab, set to Pacific Time Zone and check "Automatically adjust clock for daylight saving changes"
☐	☐	- Display: On "Background" tab - All Profiles: Set "Pattern" to "[None] - Admin.: Set Wallpaper" to "winnt256" (ecxept STA9) Set Wallpaper" to "lanma256" (STA9 only) - Ops: Set Wallpaper" to "Dacs" On "Screen Saver" tab, set "Screen Saver" to [None] On "Appearance" tab, set "Item: Icon Spacing [Horizontal]" to "40" and set "Item: Icon Spacing [Vertical]" to "42"; Line up icons on the Desktop On "Plus!" tab, check only "Show window contents while dragging" On "Settings" tab, verify "65536 Colors", "Small Fonts", "800 x 600 pixels", and "75 (or 85) Hertz"
☐	☐	- Mouse: On "Pointers" tab, set "Normal Select" and "Working in Background" pointers to "Arrow_1.cur" by selecting <Browse>
☐	☐	- Regional Settings: On "Time" tab, set "Time style" to " HH:mm:ss" and "Time separator" to ":" On "Date" tab, set "Short date style" to "MM/dd/yyyy" and "Date separator" to "/"
☐	☐	- Sounds: On "Sounds" tab, set "Asterisk" to " Donk.wav", set "Critical Stop" to "chord.wav", set "Default Beep" to "ding.wav", set "Exclamation" to "Donk.wav", set "Exit Windows" to " Windows NT Logoff Sound.wav", set "Question" to "chord.wav", set "Start Windows" to " Windows NT Logon Sound.wav", and set "Empty Recycle Bin" to "ding.wav"
☐	☐	- System: On "Startup/Shutdown" tab, set "Show list for" to "2 seconds",
☐	☐	- Menu "View", "Options . . .": On "View" tab, select only "Show all files"
☐	☐	On "File Types" tab, select "AudioCD", then select "Edit . . ."; click on "Set Default" until "Play" is *no longer* in **bold**.
☐	☐	- On STA6, 7, 8 & 9 only, use Windows NT Explorer to map a network drive: Drive: H: Path: \\STATION5\STA5-FIX32 Check "Reconnect at Logon"
☐	☐	Connect local printer - Local DACSNet STA6 only: Connect the local color printer and set up share; - Local DACSNet STA5, 7, 8 & 9: Add the local network printer - RSSs only: If available, connect a local printer to the RSS

B-4. Intellution FIX32 Configuration

Configuration for DACS _____

☐ Verify the following C:\FIX32\LOCAL\View.ini file settings on the Zip Source Disc *before* copying it to other stations:

[Cache] CachedPictureCount=5 EnableBitmap=TRUE DisableMessagesFromCache=FALSE [Highlight] Shadow=True Timeout=25 [Miscellaneous] BlinkRate=10 FitToWindow=TRUE IgnoreWidthAndHeightForSubpics=TRUE HotKey=TRUE StringCompare=TRUE	[Environment] Reboot=FALSE TaskSwitch= FALSE MenuBar=FALSE TitleBar=FALSE PopupMenu= FALSE [Scripts] Timeslice=TRUE [Color] PaletteName=

☐ Verify the following C:\FIX32\LOCAL\Htd.ini line entry on the Zip Source Disc *before* copying it to other stations: PrintTimeCursor = 1

Set up the C:\Fix32 directory:

	Station	Instructions
☐	ALL	Copy Visual Basic \CustomVb directory and files from Zip Source Disc to all STAs
☐	5 only	Copy Historical Trending \Htr files from Zip Source Disc to Trailer STA5
☐	5 only	Create Historical Trending Data \Htrdata\Buffer subdirectory on Trailer STA5
☐	5 only	Copy Historical Trending Data \Htrdata files from Lab STA5 to Trailer STA5
☐	5 only	Copy all \Local*.* files from Zip Source Disc to Trailer STA5
☐	ALL	Copy \Local*.^tl, *.aut, *.utl, and Sanames.cfg from Zip Source Disc to all STAs
☐	ALL	Copy \Local\View.ini and Htd.ini from Zip Source Disc to all STAs
☐	ALL	Copy revised Help file "view.hlp" to the \Nls directory from Zip Source Disc to all STAs
☐	5 only	Copy Database \Pdb files from Zip Source Disc to Trailer STA5
☐	ALL	Copy \Pic*.bdf, *.odf, *.kmx, *.ini and *.lyt files from Zip Source Disc to all STAs; *Remove* all Pumprun.*df files from STA9 and all RSSs
☐	ALL	Copy \Sounds directory and files from Zip Source Disc to all STAs
☐	ALL	Copy \Winnt\System32\Vb40032.dll from Zip Source Disc to all STAs

Configuration for DACS _____

Create and share data file directories on Station 6:

	Station	Instructions
☐	6	Create "Data Management" C:\Raw\Transfer directories on Trailer STA6 Share the \Transfer directory: - Share as: "TRANSFER"; Permissions: "Administrators" and "Read" "Users" and "Full Control"
☐	6	Create "Developer" D:\Dacsdata directory on Trailer STA6 Share the \Dacsdata directory: - Share as: "DACSDATA"; Permissions: "Administrator" and "Full Control"

Configuration for DACS _____

Set up the FIX32 System Configuration (SCU):

Path Configuration

STA5	STA6, 7,8,9	RSS11, 13,15	Instructions
☐	n/a	☐	- Use default paths with Base: C:\FIX32
n/a	☐	n/a	- Use default paths with Base: C:\FIX32 - Exceptions: Historical: H:\HTR Historical Data: H:\HTRDATA

Alarm Configuration

STA5	STA6, 7,8,9	RSS11, 13,15	Configuration
☐	☐	☐	- Alarm Printer 1, Disabled - Alarm Printer 2, Disabled - Alarm Printer 3, Disabled - Alarm Printer 4, Disabled
☐	☐	☐	- Alarm Summary Service, Enabled - Modify: Alarm Areas: All Horn Support: Disable Alarm Deletion: Automatic
☐	☐	☐	- Alarm File Service, Enabled (STA5 only; Disabled on others) - Modify: Alarm Areas: All
☐	☐	☐	- Alarm History Service, Enabled - Modify: Alarm Areas: All
☐	☐	☐	- Alarm Network Service, Enabled - Modify, Yes: NAM Control Queue: 5 (STA5 only) NAM Receive Queue: 300 (STA5 only) FMS Call Buffers: 3 (STA5 only) NAC Control Queue: 5 NAC Send Queue: 300 Alarm Summary Queue Entries: 300 Alarm File Queue Entries: 300 (STA5 only) Alarm History Queue Entries: 200
☐	n/a	n/a	- Alarm Startup Queue Service, Enabled - Modify: Summary alarms only
☐	☐	☐	- Default Format Date: 8 Alarm Type: 9 Time: 10 Value: 13 Message Length: 132 Node: 10 Unit: 4 Current Length: 121 Tagname: 20 Description: 40
☐	☐	☐	- Application Message Routing - Operator Message Alarm Areas: All - Recipe Message Alarm Areas: All
☐	☐	☐	- Queue Configuration (Same as "Alarm Network Service" above)

Configuration for DACS _____

Network Configuration

STA5	STA6, 7,8,9	RSS11, 13,15	Configuration
☐	☐	n/a	- Network - Network Support: Checked - Dynamic Connections Checked - Advanced, Yes: Enabled Protocols: NetBIOS Timers: Keep Alive: 90 Send: 30 Receive: 30
n/a	n/a	☐	- Network - Network Support: Checked - Dynamic Connections Checked - Advanced, Yes: Enabled Protocols: NetBIOS Timers: Keep Alive: 90 Send: 60 Receive: 60
☐	n/a	n/a	- Remote Nodes - Configured Remote Nodes: STATION6 STATION7 STATION8 STATION9 RSS11 RSS13 RSS15 RSS17 - Configure, Yes: Protocol: Manual Select Protocol Select Protocol: NetBIOS Timers: Use FIX Network Timers
n/a	☐	☐	- Remote Nodes - Configured Remote Nodes: STATION5 - Configure, Yes: Protocol: Manual Select Protocol Select Protocol: NetBIOS Timers: Use FIX Network Timers

Configuration for DACS _____

SCADA Configuration

STA5	STA6, 7,8,9	RSS11, 13,15	Configuration
☐	☐	☐	- SCADA Support: Enable (STA5 only; Disabled on others)
☐	n/a	n/a	- Database Name: DACS - Configured I/O Drivers SIM - Simulation Driver MMP - Modicon Modbus Plus RES Rev. 6.03b - Configure:Channel 1 only used - Device: PLC - Device Name: PLC - Block Type: PLC - Addressing Type: 6 Digit - Description: (blank) - Primary Route: 01.00.00.00.00 - Backup Route: --.--.--.--.-- - Bit Base: 1-16 - Setup - Node Address - Adapter Number: Card 0 - SA85 Node Address: 12 - Error Handling - Reply Timeout: 1.0 - Delay: 10.0 - Retries: 3 - MBP Parameters - Global Data: 0 - Slave Paths: None - Master Paths: 1 - Advanced - Node Address - Adapter Number: None - I/O Blocks configured according to Table B-2

Table B-2. I/O Block Configuration

I/O Block	Start	End	Length	Data Type	Poll Time	Access Time	Exception Type	Dead Band
1	000201	000600	400	Digital	1.0	300.0	Disabled	0.
2	002001	002200	200	Digital	1.0	300.0	Disabled	0.
3	400001	400125	125	Unsigned	1.0	300.0	Disabled	0.
4	400126	400250	125	Unsigned	1.0	300.0	Disabled	0.
5	400251	400375	125	Unsigned	1.0	300.0	Disabled	0.
6	402001	402125	125	Unsigned	1.0	300.0	Disabled	0.
7	402126	402250	125	Unsigned	1.0	300.0	Disabled	0.
8	409000	409000	1	Unsigned	1.0	300.0	Disabled	0.
9	000184	000200	17	Digital	1.0	300.0	Disabled	0.

Configuration for DACS _____

Task Configuration

STA5	STA6, 7,8,9	RSS11, 13,15	Configuration
☐	n/a	n/a	- Configured Tasks * C:\FIX32\CUSTOMVB\AF-5000.EXE (Minimized) % C:\FIX32\WSACTASK.EXE Q300 (Background) % C:\FIX32\HTC.EXE (Background) C:\FIX32\VIEW.EXE (Normal) % C:\FIX32\IOCNTRL.EXE /a (Background)
n/a	☐	☐	- Configured Tasks C:\FIX32\VIEW.EXE (Normal)

Security Configuration

STA5	STA6, 7,8,9	RSS11, 13,15	Configuration
☐	☐	☐	1. User Accounts - Current Users, Modify: - Each current user is configured according to Table B-3 Note: Table B-3 is an example and does not represent the actual security user configuration since current users change with time. The DACS software Administrator will maintain the current list.

Table B-3. Current User Configuration (Example)

Full Name	Login Name	Group Membership
ADMINISTRATOR	ADMIN	ADMINISTRATOR
AUGIE ERMI	AUGIE	DEVELOPER
DARRELL LAMASTUS	DARREL	TRAINING5
GREG GAUCK	GREG	SUPERVISOR
PUBLIC	PUBLIC	VIEW ONLY
TOM SCHNEIDER	TOM-S	GAS TEAM

Configuration for DACS _____

Security Configuration (cont.)

STA5	STA6, 7,8,9	RSS11, 13,15	Configuration
☐	☐	☐	2. Group Accounts - Current Groups, Modify: - Each current group is configured according to Table B-4 Note: Table B-4 may not be up-to-date since current groups may change with time. The DACS software Administrator will maintain the current list.

Table B-4. Current Groups Configuration (Example)

Group Name	Security Areas	Application Features
ADMINISTRATOR	LEVEL1 LEVEL2 LEVEL3 LEVEL4 LEVEL5 F to P	All Application Features
DEVELOPER and OPERATIONS	LEVEL1 LEVEL2 LEVEL3	View Background Task Exit FIX - System Shutdown Alarm Summary Display Run a Task from View Exit from View Historical Trend Display View Only
GAS TEAM	LEVEL1 LEVEL2	View Run a Task from View Historical Trend Display View Only
SUPERVISOR and TRAINING5	LEVEL1 LEVEL2 LEVEL3 LEVEL4 LEVEL5	View Background Task Exit FIX - System Shutdown Alarm Summary Display Run a Task from View Exit from View Historical Trend Display View Only
VIEW ONLY	LEVEL1	View Run a Task from View Historical Trend Display View Only

Configuration for DACS _____

Security Configuration (cont.)

STA5	STA6, 7,8,9	RSS11, 13,15	Configuration
☐	☐	☐	3. Configuration - User Based Security: Enabled - Security Path: C:\FIX32\LOCAL - Backup Path: C:\FIX32\LOCAL
☐	☐	☐	4. Automatic Login at Startup: - Modify: Node: RSS11 Application User: PUBLIC Node: RSS13 Application User: PUBLIC Node: RSS15 Application User: PUBLIC Node: RSS17 Application User: PUBLIC Node: STATION5 Application User: PUBLIC Node: STATION6 Application User: PUBLIC Node: STATION7 Application User: PUBLIC Node: STATION8 Application User: PUBLIC Node: STATION9 Application User: PUBLIC
☐	☐	☐	5. Security Area Naming: - Security Areas: 1 LEVEL1 12 L 2 LEVEL2 13 M 3 LEVEL3 14 N 4 LEVEL4 15 O 5 LEVEL5 16 P 6 F 17 7 G 18 8 H . 9 I . 10 J 253 11 K 254

Appendix C – Visual Basic Programs

Section C-1. AF5000+ VSD Driver Description

The AF5000+ VSD driver (v.1.095) is a Microsoft Visual Basic (version 4.0) application that runs under Microsoft Windows NT 4.0 as a standalone task. The function of the driver is to interface between the Intellution FIX32 DACS database and both Eaton AF5000+ Variable Speed Drives (VSDs) for the 241-SY-101 mixer pump motor (PMOTOR) and directional motor (DMOTOR).

It accomplishes this task with the utilization of the Intellution FIX32 Easy Database Access (EDA) library. The driver continually updates various PMOTOR and DMOTOR parameters (speed, voltage, current, etc.) and checks the DACS database for command requests (start/stop, acceleration changes, speed setpoints, etc.). It polls the VSDs every 1.5 seconds while they are online, and will declare them "BAD" if no response is detected. This implies that the breakers to the VSDs are open. While the VSDs are declared "BAD", the driver will check them for renewed communications every 30 seconds.

The driver is resident on STATION5, and will not start unless the Intellution FIX32 system on STATION5 has been started. It is loaded automatically by the System Configuration Utility (SCU), and has been written to ensure that multiple copies of the driver will not run concurrently. In the Timer1.Timer subroutine (PMOTOR parameter updates), it also checks the status of the Intellution FIX32 system, and will automatically exit when it detects that the Intellution FIX32 system has been terminated.

The DACS database tags utilized by the driver are shown in Table C-1.

Table C-1. *DACS Database Tags Used by the VSD Driver*

TAGNAME	DESCRIPTION	STATUS/COMMAND
P_RUN_CMD	PMOTOR "RUN" Command	COMMAND
D_RUN_CMD	DMOTOR "RUN" Command	COMMAND
P_RUN_STAT	PMOTOR "RUNNING/STOPPED" Status	STATUS
D_RUN_STAT	DMOTOR "RUNNING/STOPPED" Status	STATUS
P_MOTOR_STAT	PMOTOR "OK/BAD" Status	STATUS
D_MOTOR_STAT	DMOTOR "OK/BAD" Status	STATUS
P_ACCEL	PMOTOR Acceleration Setpoint	COMMAND
D_ACCEL	DMOTOR Acceleration Setpoint	COMMAND
P_DECEL	PMOTOR Deceleration Setpoint	COMMAND
D_DECEL	DMOTOR Deceleration Setpoint	COMMAND
VR232050F *	PMOTOR Real-Time Speed	STATUS
VR232110	DMOTOR Real-Time Speed	STATUS
VR232040F *	PMOTOR Real-Time Current	STATUS
VR232100F	DMOTOR Real-Time Current	STATUS
VR232020	PMOTOR Real-Time Voltage	STATUS
VR232080	DMOTOR Real-Time Voltage	STATUS
VR232060	PMOTOR Speed Setpoint	COMMAND
VR232120	DMOTOR Speed Setpoint	COMMAND

** Note: VR232040F (PMOTOR Real-Time Current) and VR232050F (PMOTOR Real-Time Speed) have an "F" appended to the tagnames due to the use of AI/AO blocks in place of AR blocks in the database. This was necessary to facilitate AUTO/MANUAL capability in Intellution FIX32 for these two tags for use by Training personnel.*

The AF5000+ VSD Driver User Interface is pictured below in Figure C-1. The interface is minimized upon startup, so under normal conditions it will not be visible. To maximize and observe the driver for diagnostic purposes, the user must be logged in with Administrator rights on STATION5. Use <Alt-Tab> until the "AF-5000 Driver" is highlighted, which will bring the driver to the foreground and maximize it. The user interface will show the current driver version number in the lower right-hand corner. The DMOTOR and PMOTOR Comm status indicators will be yellow during communication attempts with the corresponding VSD, and will be white while idle. The Status indicators will be green while communications are good with the VSDs, and will be red when the VSDs are not communicating and are declared "BAD". The current poll times for each VSD are presented in the respective Poll display box (1500 milliseconds for "GOOD" communications and 30000 milliseconds while communications are declared "BAD"). The <Exit> button allows the user to manually stop the communications between the VSDs and the Intellution FIX32 DACS database.

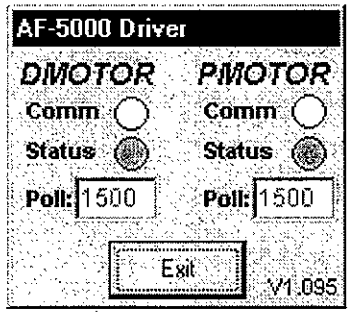


Figure C-1. *AF5000+ Driver User Interface*

The remaining information within this section consists of the complete source code listings for the AF5000+ VSD Driver.

General Declarations

```
Dim Shared Node As String * NODE_NAME_SIZE        ' for NTF
Dim Shared Nodename As String * NODE_NAME_SIZE    ' for PDB get/save/load
Dim Shared PDBname As String * 256
Dim Shared DBType As String * 4
Dim Shared DBTypeIndex As Integer
Dim Shared Tagname As String * BIG_TAGSIZ  ' PMOTOR
Dim Shared Tagname2 As String * BIG_TAGSIZ ' DMOTOR
Dim Shared Field As String * FIELDSIZ
Dim Shared Value As String * 256       ' PMOTOR transfer string
Dim Shared Value2 As String * 256      ' DMOTOR transfer string
Dim Shared ProgName As String * 12
Dim Shared G As Long
Dim Shared TH As Long
Dim Shared eda_err As Integer          ' PMOTOR error number
Dim Shared eda_err2 As Integer         ' DMOTOR error number
Dim Shared ErrorText As String * 80    ' PMOTOR error text
Dim Shared ErrorText2 As String * 80   ' DMOTOR error text
Dim Shared LogShort As String * 8
Dim Shared LogLong As String * 32
Dim Shared Pkey As Long
Dim Shared FValue As Single
Dim Shared DataResponseTimeOut As Single  ' Timeout flag for PMOTOR offline
Dim Shared DataResponseTimeOut2 As Single ' Timeout flag for DMOTOR offline
```

```
Dim Shared NoDebug As Single       ' Debugging flag
Dim Shared P_Motor_Bad As Single   ' PMOTOR is "BAD" flag
Dim Shared D_Motor_Bad As Single   ' DMOTOR is "BAD" flag
```

Command1.Click

```
Private Sub Command1_Click()

  ' Disable the Timers, close the serial ports & exit...
  ErrorTimer.Enabled = False
  ErrorTimer2.Enabled = False
  PMOTOR.PortOpen = False
  DMOTOR.PortOpen = False
  End

End Sub
```

ErrorTimer.Timer

```
Private Sub ErrorTimer_Timer()

' Used for PMOTOR health status
  DataResponseTimeOut = 1

End Sub
```

ErrorTimer2.Timer

```
Private Sub ErrorTimer2_Timer()

' Used for DMOTOR health status
 DataResponseTimeOut2 = 1

End Sub
```

Form.Load

```
'AF-5000 VSD Driver for DACS Intellution Upgrade
'02-FEB-1999 RW Truitt
'Version 1.095
'Copyright 1998, 1999 PLCs Plus International

Private Sub Form_Load()

On Error GoTo ErrorMessage
    NoDebug = 1 ' 0 = Debug Mode ON, 1 = Debug Mode OFF
    If NoDebug = 0 Then GoTo DoRun

    ' Delay on startup so that FIX32 SAC can initialize the database first
StartUpDelay:
    For Counter = 1 To 30000
        Dummy = DoEvents()
    Next Counter

    ' ------------------------------------------------------PMOTOR
    ' Initialize COM port for PMOTOR (COM1)
    PMOTOR.CommPort = 1
    ' 9600 baud, no parity, 8 data, and 1 stop bit.
    PMOTOR.Settings = "9600,N,8,1"
```

```
    ' Tell the control to read entire buffer when Input is used.
    PMOTOR.InputLen = 0
    ' Open the port.
    PMOTOR.PortOpen = True
    ' Assign the control to COM1
    PMOTOR.Output = "caddr=1;"
    ' Display version number on form
    Version.Caption = "V1.095"
    ' Show the polling times (typically 1.5 seconds)
    Refresh1.Text = (Timer1.Interval)
    Refresh2.Text = (Timer2.Interval)
    Counter = 0
    ' Read input until Carriage Return is detected (maximum of 10000 times)
    Do
        Dummy = DoEvents()
        InString$ = PMOTOR.Input
        Counter = Counter + 1
        If Counter = 10000 Then Exit Do
    Loop Until InStr(InString$, vbCr)

    ' ------------------------------------------------------DMOTOR
    ' Initialize COM port for DMOTOR (COM2)
    DMOTOR.CommPort = 2
    ' 9600 baud, no parity, 8 data, and 1 stop bit.
    DMOTOR.Settings = "9600,N,8,1"
    ' Tell the control to read entire buffer when Input is used.
    DMOTOR.InputLen = 0
    ' Open the port
    DMOTOR.PortOpen = True
    ' Assign the control to COM2
    DMOTOR.Output = "caddr=2;"
    Counter = 0
    Do
        Dummy = DoEvents()
        InString$ = DMOTOR.Input
        Counter = Counter + 1
        If Counter = 10000 Then Exit Do
    Loop Until InStr(InString$, vbCr)

    ' ------------------------------------------------------------
    ' Now initialize Intellution FIX Tags on STATION5
DoRun: '
    ' Common variables used for all EDA calls
    Node = "STATION5"
    Field = "A_CV"
    Pkey = &H8000DBBB

    ' Set P_RUN_CMD to "STOP"
    Tagname = "P_RUN_CMD"
    Value = "STOP"
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)

    ' Set D_RUN_CMD to "STOP"
    Tagname = "D_RUN_CMD"
    Value = "STOP"
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)

    ' Initialize P_MOTOR_STAT and D_MOTOR_STAT to "OK"
    Value = "OK"
```

```
    Tagname = "P_MOTOR_STAT"
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
    Tagname = "D_MOTOR_STAT"
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
    GoTo EndLoad

ErrorMessage: ' Another instance of driver running...
    End

EndLoad: '
    ' ------------------------------------------------------------------
    'Set DMOTOR ACCEL Setpoint to 500
    Tagname = "D_ACCEL"
    Value = "500"
    'eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
    DAccelSet$ = Value
    D_Command$ = "ACCEL =" & DAccelSet$ & ";"
    Dummy = DoEvents()
    DMOTOR.Output = D_Command$
    Counter = 0
    Do
       Dummy = DoEvents()
       InString$ = DMOTOR.Input
       Counter = Counter + 1
       If Counter = 10000 Then Exit Do
    Loop Until InStr(InString$, vbCr)

    ' ------------------------------------------------------------------
    'Set DMOTOR DECEL Setpoint to 500
    Tagname = "D_DECEL"
    Value = "500"
    DDecelSet$ = Value
    D_Command$ = "DECEL =" & DDecelSet$ & ";"
    Dummy = DoEvents()
    DMOTOR.Output = D_Command$
    Counter = 0
    Do
       Dummy = DoEvents()
       InString$ = DMOTOR.Input
       Counter = Counter + 1
       If Counter = 10000 Then Exit Do
    Loop Until InStr(InString$, vbCr)

    ' ------------------------------------------------------------------
    'Set DMOTOR Speed Setpoint to 100
    Tagname = "VR232120"
    Value = "100"
    DSpeedSet$ = Value
    D_Command$ = "SPDSET =" & DSpeedSet$ & ";"
    Dummy = DoEvents()
    DMOTOR.Output = D_Command$
    Counter = 0
    Do
       Dummy = DoEvents()
       InString$ = DMOTOR.Input
       Counter = Counter + 1
       If Counter = 10000 Then Exit Do
    Loop Until InStr(InString$, vbCr)
```

```
    ' ---------------------------------------------------------------
    ' Initialize status colors, start polling timers & declare all OK
    PStat.FillColor = &HFF00& ' Green
    DStat.FillColor = &HFF00& ' Green
    Timer1.Enabled = True
    Timer2.Enabled = True
    P_Motor_Bad = 0 ' Declare PMOTOR OK initially
    D_Motor_Bad = 0 ' Declare DMOTOR OK initially
End Sub
```

Form.Terminate

```
Private Sub Form_Terminate()

   ErrorTimer.Enabled = False
   ErrorTimer2.Enabled = False

End Sub
```

Form.Unload

```
Private Sub Form_Unload(Cancel As Integer)

   Timer1.Enabled = False
   Timer2.Enabled = False

End Sub
```

Timer1.Timer

```
' AF-5000 Pump Motor Poll Routine (PMOTOR)
'
Private Sub Timer1_Timer()

' Disable poll timer while in this module
Timer1.Enabled = False
PBusy.FillColor = &HFFFF& ' Yellow PMOTOR Comm Indicator
On Error Resume Next

' If PMOTOR is declared BAD, reset COM1
    If P_Motor_Bad = 1 Then
        ' Re-initialize COM port for PMOTOR (COM1)
        PMOTOR.Settings = "9600,N,8,1"
        PMOTOR.InputLen = 0
        PMOTOR.PortOpen = False
        PMOTOR.PortOpen = True
        PMOTOR.Output = "caddr=1;"
        Counter = 0
        Do
            Dummy = DoEvents()
            InString$ = PMOTOR.Input
            Counter = Counter + 1
            If Counter = 50000 Then Exit Do
        Loop Until InStr(InString$, vbCr)
    End If

    ' Status (RUNNING/STOPPED)
    PMOTOR.Output = "status=?;"
    Status$ = ""
```

```
    DataResponseTimeOut = 0
    ErrorTimer.Enabled = True ' 4 second timeout
    Do
        Dummy = DoEvents()
        InString$ = PMOTOR.Input
        Status$ = Status$ & InString$
        If DataResponseTimeOut = 1 Then
            P_Motor_Bad = 1
            ' Tell Station 5 PMOTOR is BAD
            Tagname = "P_MOTOR_STAT"
            Value = "BAD"
            eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
            PStat.FillColor = &HFF& ' Red PMOTOR Status Indicator
            Timer1.Interval = 30000
            Refresh1.Text = (Timer1.Interval)
            GoTo NextTime
        End If
    Loop Until InStr(InString$, vbCr)
    ErrorTimer.Enabled = 0

    If Left(Status$, 8) = "STATUS=R" Then
       Status$ = "RUNNING"
    Else
       Status$ = "STOPPED"
    End If

  ' Write RUNNING/STOPPED status to FIX32
    Tagname = "P_RUN_STAT"
    Value = Status$
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)

  ' Read the Speed from PMOTOR
    PMOTOR.Output = "SPEED=?;"
    Speed1$ = ""
    Counter = 0
    Do
        Dummy = DoEvents()
        InString$ = PMOTOR.Input
        Speed1$ = Speed1$ & InString$
        Counter = Counter + 1
        If Counter = 10000 Then GoTo NextTime
    Loop Until InStr(InString$, vbCr)
    Spos = InStr(Speed1$, "SPEED=")
    SemiPos = InStr(Speed1$, ";")
    SpLen = SemiPos - 7
    SpStart = Spos + 6
    Speeds = Mid(Speed1$, SpStart, SpLen)
    Speed = Val(Speeds)

  ' Read the Motor Amps from PMOTOR
    PMOTOR.Output = "MOTORA=?;"
    MotorA1$ = ""
    Counter = 0
    Do
        Dummy = DoEvents()
        InString$ = PMOTOR.Input
        MotorA1$ = MotorA1$ & InString$
        Counter = Counter + 1
        If Counter = 10000 Then GoTo NextTime
```

```
    Loop Until InStr(InString$, vbCr)
    MApos = InStr(MotorA1$, "MOTORA=")
    SemiPos = InStr(MotorA1$, ";")
    MALen = SemiPos - 8
    MAStart = MApos + 7
    MotorAs = Mid(MotorA1$, MAStart, MALen)
    MotorA = Val(MotorAs)

  ' Read the Motor Volts from PMOTOR
    PMOTOR.Output = "MOTORV=?;"
    MotorV1$ = ""
    Counter = 0
    Do
        Dummy = DoEvents()
        InString$ = PMOTOR.Input
        MotorV1$ = MotorV1$ & InString$
        Counter = Counter + 1
        If Counter = 10000 Then GoTo NextTime
    Loop Until InStr(InString$, vbCr)
    MVpos = InStr(MotorV1$, "MOTORV=")
    SemiPos = InStr(MotorV1$, ";")
    MVLen = SemiPos - 8
    MVStart = MVpos + 7
    MotorVs = Mid(MotorV1$, MVStart, MVLen)
    MotorV = Val(MotorVs)

    ' Send the Speed data to Intellution ------------------------------
    Tagname = "VR232050F"
    Value = Speeds
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
    ' ----------------------------------------------------------------
    ' Send the Current data to Intellution
    Tagname = "VR232040F"
    Value = MotorA
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
    ' ----------------------------------------------------------------
    ' Send the Voltage data to Intellution
    Tagname = "VR232020"
    Value = MotorV
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
    ' ----------------------------------------------------------------
    'Read the Speed Setpoint Setting from Intellution & Set PMOTOR
    Tagname = "VR232060"
    Value = ""
    eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
    PSpeedSet$ = Value
    ' First set SPDSET
    P_Command$ = "SPDSET =" & PSpeedSet$ & ";"
    Dummy = DoEvents()
    PMOTOR.Output = P_Command$
    Counter = 0
    Do
       Dummy = DoEvents()
       InString$ = PMOTOR.Input
       Counter = Counter + 1
       If Counter = 10000 Then GoTo NextTime
    Loop Until InStr(InString$, vbCr)
    ' Now set MAXSPD
    P_Command$ = "MAXSPD =" & PSpeedSet$ & ";"
```

```
Dummy = DoEvents()
PMOTOR.Output = P_Command$
Counter = 0
Do
   Dummy = DoEvents()
   InString$ = PMOTOR.Input
   Counter = Counter + 1
   If Counter = 10000 Then GoTo NextTime
Loop Until InStr(InString$, vbCr)
' ------------------------------------------------------------------
'Read the ACCEL Setpoint Setting from Intellution & Set PMOTOR
Tagname = "P_ACCEL"
Value = ""
eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
PAccelSet$ = Value
P_Command$ = "ACCEL =" & PAccelSet$ & ";"
Dummy = DoEvents()
PMOTOR.Output = P_Command$
Counter = 0
Do
   Dummy = DoEvents()
   InString$ = PMOTOR.Input
   Counter = Counter + 1
   If Counter = 10000 Then GoTo NextTime
Loop Until InStr(InString$, vbCr)
' ------------------------------------------------------------------
'Read the DECEL Setpoint Setting from Intellution & Set PMOTOR
Tagname = "P_DECEL"
Value = ""
eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
PDecelSet$ = Value
P_Command$ = "DECEL =" & PDecelSet$ & ";"
Dummy = DoEvents()
PMOTOR.Output = P_Command$
Counter = 0
Do
   Dummy = DoEvents()
   InString$ = PMOTOR.Input
   Counter = Counter + 1
   If Counter = 10000 Then GoTo NextTime
Loop Until InStr(InString$, vbCr)
' ------------------------------------------------------------------
'Read the Run Command from Intellution
Tagname = "P_RUN_CMD"
Value = ""
eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
Run$ = Left(Value, 1)
If Run$ = "R" Then
   P_Command$ = "start;"
Else
   P_Command$ = "stop;"
End If
Dummy = DoEvents()
'START or STOP PMOTOR
PMOTOR.Output = P_Command$
Counter = 0
Do
   Dummy = DoEvents()
   InString$ = PMOTOR.Input
```

```
        Counter = Counter + 1
        If Counter = 10000 Then GoTo NextTime
    Loop Until InStr(InString$, vbCr)
    ' ------------------------------------------------------------------
    ' If PMOTOR was bad, it's OK now
      If P_Motor_Bad = 1 Then
            ' Tell Station 5 PMOTOR is OK now...
            Tagname = "P_MOTOR_STAT"
            Value = "OK"
            eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
            P_Motor_Bad = 0
            PStat.FillColor = &HFF00& ' Green PMOTOR Status Indicator
            Timer1.Interval = 1500
            Refresh1.Text = (Timer1.Interval)
      End If

NextTime: '
PBusy.FillColor = &HFFFFFF ' White PMOTOR Comm Indicator
Timer1.Enabled = True ' Re-enable poll timer
' Now check to see if FIX32 has terminated
  Tagname = "P_DECEL"
  Value = ""
  eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
  PDecelSet$ = Value
  ' If it has terminated, exit the VSD Driver
  ' (2005 = "Unable to connect to node.")
  If eda_err = 2005 Then
   End
  End If

End Sub

Timer2.Timer

' AF-5000 Directional Motor Poll Routine (DMOTOR)
'
Private Sub Timer2_Timer()

' Disable poll timer while in this module
Timer2.Enabled = False
DBusy.FillColor = &HFFFF& ' Yellow DMOTOR Comm Indicator
On Error Resume Next

' If PMOTOR is declared BAD, reset COM2
    If D_Motor_Bad = 1 Then
        'Re-initialize COM port for DMOTOR (COM2)
        DMOTOR.Settings = "9600,N,8,1"
        DMOTOR.InputLen = 0
        DMOTOR.PortOpen = False
        DMOTOR.PortOpen = True
        DMOTOR.Output = "caddr=2;"
        Counter = 0
        Do
            Dummy = DoEvents()
            InString$ = DMOTOR.Input
            Counter = Counter + 1
            If Counter = 50000 Then Exit Do
        Loop Until InStr(InString$, vbCr)
    End If
```

```
    ' Status (RUNNING/STOPPED)
    DMOTOR.Output = "status=?;"
    Status2$ = ""
    DataResponseTimeOut2 = 0
    ErrorTimer2.Enabled = True ' 4 second timeout
    Do
        Dummy = DoEvents()
        InString2$ = DMOTOR.Input
        Status2$ = Status2$ & InString2$
        ' Check to see if ErrorTimer2 timed out
        If DataResponseTimeOut2 = 1 Then
            D_Motor_Bad = 1
            ' Tell Station 5 DMOTOR is BAD
            Tagname2 = "D_MOTOR_STAT"
            Value2 = "BAD"
            eda_err2 = eda_set_one_ascii(Node, Tagname2, Field, Value2, Pkey)
            DStat.FillColor = &HFF& ' Red DMOTOR Status Indicator
            Timer2.Interval = 30000
            Refresh2.Text = (Timer2.Interval)
            GoTo NextTime2
        End If
    Loop Until InStr(InString2$, vbCr)
    ErrorTimer2.Enabled = 0

    If Left(Status2$, 8) = "STATUS=R" Then
       Status2$ = "RUNNING"
    Else
       Status2$ = "STOPPED"
    End If

  ' Write RUNNING/STOPPED status to FIX32
    Tagname2 = "D_RUN_STAT"
    Value2 = Status2$
    eda_err2 = eda_set_one_ascii(Node, Tagname2, Field, Value2, Pkey)

  ' Read the Speed from DMOTOR
    DMOTOR.Output = "SPEED=?;"
    Speed2$ = ""
    Counter = 0
    Do
        Dummy = DoEvents()
        InString2$ = DMOTOR.Input
        Speed2$ = Speed2$ & InString2$
        Counter = Counter + 1
        If Counter = 10000 Then GoTo NextTime2
    Loop Until InStr(InString2$, vbCr)
    Spos2 = InStr(Speed2$, "SPEED=")
    SemiPos2 = InStr(Speed2$, ";")
    SpLen2 = SemiPos2 - 7
    SpStart2 = Spos2 + 6
    Speeds2 = Mid(Speed2$, SpStart2, SpLen2)
    SpeedD = Val(Speeds2)

  ' Read the Motor Amps from DMOTOR
    DMOTOR.Output = "MOTORA=?;"
    MotorA2$ = ""
    Counter = 0
    Do
```

```
        Dummy = DoEvents()
        InString2$ = DMOTOR.Input
        MotorA2$ = MotorA2$ & InString2$
        Counter = Counter + 1
        If Counter = 10000 Then GoTo NextTime2
    Loop Until InStr(InString2$, vbCr)
    MApos2 = InStr(MotorA2$, "MOTORA=")
    SemiPos2 = InStr(MotorA2$, ";")
    MALen2 = SemiPos2 - 8
    MAStart2 = MApos2 + 7
    MotorAs2 = Mid(MotorA2$, MAStart2, MALen2)
    MotorAD = Val(MotorAs2)

'   Read the Motor Volts from DMOTOR
    DMOTOR.Output = "MOTORV=?;"
    MotorV2$ = ""
    Counter = 0
    Do
        Dummy = DoEvents()
        InString2$ = DMOTOR.Input
        MotorV2$ = MotorV2$ & InString2$
        Counter = Counter + 1
        If Counter = 10000 Then GoTo NextTime2
    Loop Until InStr(InString2$, vbCr)
    MVpos2 = InStr(MotorV2$, "MOTORV=")
    SemiPos2 = InStr(MotorV2$, ";")
    MVLen2 = SemiPos2 - 8
    MVStart2 = MVpos2 + 7
    MotorVs2 = Mid(MotorV2$, MVStart2, MVLen2)
    MotorVD = Val(MotorVs2)

    ' Send the Speed data to Intellution ------------------------------
    Tagname2 = "VR232110"
    Value2 = SpeedD
    eda_err2 = eda_set_one_ascii(Node, Tagname2, Field, Value2, Pkey)
    ' ----------------------------------------------------------------
    ' Send the Current data to Intellution
    Tagname2 = "VR232100"
    Value2 = MotorAD
    eda_err2 = eda_set_one_ascii(Node, Tagname2, Field, Value2, Pkey)
    ' ----------------------------------------------------------------
    ' Send the Voltage data to Intellution
    Tagname2 = "VR232080"
    Value2 = MotorVD
    eda_err2 = eda_set_one_ascii(Node, Tagname2, Field, Value2, Pkey)
    ' ----------------------------------------------------------------
    'Read the Run Command from Intellution
    Tagname2 = "D_RUN_CMD"
    Value2 = ""
    eda_err2 = eda_get_one_ascii(Node, Tagname2, Field, Value2)
    Run2$ = Left(Value2, 1)
    If Run2$ = "R" Then
       D_Command$ = "start;"
    Else
       D_Command$ = "stop;"
    End If
    Dummy = DoEvents()
    DMOTOR.Output = D_Command$
    Counter = 0
```

```
    Do
       Dummy = DoEvents()
       InString2$ = DMOTOR.Input
       Counter = Counter + 1
       If Counter = 10000 Then GoTo NextTime2
    Loop Until InStr(InString2$, vbCr)
    ' ------------------------------------------------------------------
    'Read the Reverse Command from Intellution
    Tagname2 = "D_REV_CMD"
    Value2 = ""
    eda_err2 = eda_get_one_ascii(Node, Tagname2, Field, Value2)
    Reverse$ = Left(Value2, 1)
    If Reverse$ = "R" Then
       D_Command$ = "REVERS;"
    Else
       D_Command$ = "FORWRD;"
    End If
    Dummy = DoEvents()
    'START or STOP DMOTOR
    DMOTOR.Output = D_Command$
    Counter = 0
    Do
      Dummy = DoEvents()
      InString2$ = DMOTOR.Input
      Counter = Counter + 1
      If Counter = 10000 Then GoTo NextTime2
    Loop Until InStr(InString2$, vbCr)
    ' ------------------------------------------------------------------
    ' If DMOTOR was bad, it's OK now
      If D_Motor_Bad = 1 Then
            ' Tell Station 5 DMOTOR is OK now...
            Tagname2 = "D_MOTOR_STAT"
            Value2 = "OK"
            eda_err2 = eda_set_one_ascii(Node, Tagname2, Field, Value2, Pkey)
            D_Motor_Bad = 0
            DStat.FillColor = &HFF00& ' Green DMOTOR Status Indicator
            Timer2.Interval = 1500
            Refresh2.Text = (Timer2.Interval)
      End If

NextTime2: '
DBusy.FillColor = &HFFFFFF ' White DMOTOR Comm Indicator
Timer2.Enabled = True ' Re-enable poll timer
End Sub
```

Section C-2. RSS.EXE Description

RSS.EXE is a Microsoft Visual Basic (version 4.0) application that runs under Microsoft Windows NT 4.0 as a standalone task. The function of the program is to provide an easy method for operators to dial the RAS connection to STATION9 and to launch the FIX32 system once the connection has been established. This was found to be necessary to ensure that a NetBEUI session has been established prior to launching FIX32 – otherwise a fatal error will occur. If this should happen, the FIX32 system must be shut down and restarted after the RAS connection has been established.

This program resides on all station under the C:\FIX32\CustomVB directory, and is used only on RSS stations. It is launched by the shortcut icon on the RSS desktop. Once launched, the user will be presented with the RAS dialup dialog box; then the DACS RSS StartUp dialog box (Figure C-2 below) will be displayed. The user should wait until the connection has been made, then press the <Continue> button to launch the FIX32 system on that RSS station. If FIX32 is already running, then View is launched. If the user presses the <Cancel> button, the RSS.EXE program is exited without launching FIX32 or View.

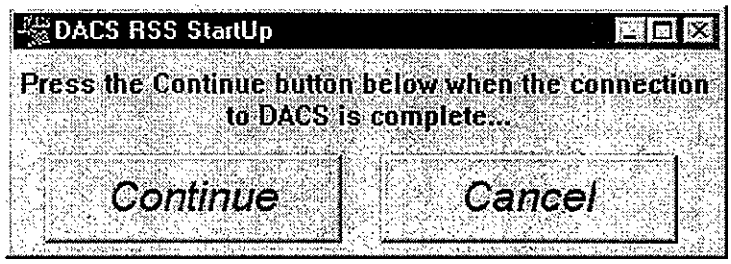


Figure C-2. *RSS.EXE User Interface*

The remaining information within this section consists of the source code listings for the RSS.EXE program.

Form.Load

```
Private Sub Form_Load()
   ' In Microsoft Windows:
' Specifying 1 as the second argument opens the application in
' normal size and gives it the focus.

RetVal = Shell("C:\WINNT\SYSTEM32\RASPHONE.EXE", 1)     ' Run RASPhone.
End Sub
```

Command1.Click

```
Private Sub Command1_Click()
  RetVal = Shell("C:\FIX32\FIX.EXE", 1)     ' Run FIX32.
  RetVal = Shell("C:\FIX32\VIEW.EXE", 1)    ' Run VIEW.
  End
End Sub
```

Command2.Click

```
Private Sub Command2_Click()
  End
End Sub
```

Section C-3. ST5-WDT.EXE Description

ST5-WDT.EXE is a Microsoft Visual Basic (version 4.0) application that runs under Microsoft Windows NT 4.0 as a standalone task, on STATION5 only. The function of the program is to increment the other station's watchdog timer tags by one (ST6-WDT, ST7-WDT, ST8-WDT, ST9-WDT, ST11-WDT, ST13-WDT, ST15-WDT and ST17-WDT) until they reach the value of five. This happens every 30 seconds in the [A1-INIT] script (see Section 7.3.1.6 for STATION5's periodic loop details). The other stations run their respective watchdog timer reset routines every 30 seconds, as described in Section C-4. The other stations will reset the watchdog timer tags to zero, while STATION5 continually increments them. Should a station disconnect from the network, or have another problem and does not run the watchdog timer reset routine every 30 seconds, then ST5-WDT.EXE will increment it up to 5 and [A1-INIT] will declare the station offline, as displayed on the [NETSTAT] screen.

This program resides on all station under the C:\FIX32\CustomVB directory, and is used only on STATION5.

The remaining information within this section consists of the source code listings for the ST5-WDT.EXE program.

General Declarations

```
Dim Shared Node As String * NODE_NAME_SIZE         ' for NTF
Dim Shared Nodename As String * NODE_NAME_SIZE     ' for PDB get/save/load
Dim Shared PDBname As String * 256
Dim Shared DBType As String * 4
Dim Shared DBTypeIndex As Integer
Dim Shared Tagname As String * BIG_TAGSIZ  ' PMOTOR
Dim Shared Tagname2 As String * BIG_TAGSIZ ' DMOTOR
Dim Shared Field As String * FIELDSIZ
Dim Shared Value As String * 256       ' Must hold largest field or you
      will GPF! (PMOTOR)
Dim Shared Value2 As String * 256      ' DMOTOR
Dim Shared ProgName As String * 12
Dim Shared G As Long
Dim Shared TH As Long
Dim Shared eda_err As Integer
Dim Shared eda_err2 As Integer
Dim Shared ErrorText As String * 80
Dim Shared ErrorText2 As String * 80
Dim Shared LogShort As String * 8
Dim Shared LogLong As String * 32
Dim Shared Pkey As Long
Dim Shared FValue As Single
```

Form.Load

```
'DACS Intellution Upgrade
'Station 5 Watch Dog Timer Increment Routine
'23-APR-1998 RW Truitt
'Version 1.00
'Copyright 1998 PLCs Plus Incorporated

Private Sub Form_Load()

  Node = "STATION5"
  Field = "A_CV"
```

```
Pkey = &H8000DBBB
' ------------------------------------------
'Read ST6-WDT from Intellution
Tagname = "ST6-WDT"
Value = "0"
eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
Total = Val(Value)
Total = Total + 1
If Total > 5 Then
   Total = 5
End If
Value = Str(Total)
eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
' ------------------------------------------
'Read ST7-WDT from Intellution
Tagname = "ST7-WDT"
Value = "0"
eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
Total = Val(Value)
Total = Total + 1
If Total > 5 Then
   Total = 5
End If
Value = Str(Total)
eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
' ------------------------------------------
'Read ST8-WDT from Intellution
Tagname = "ST8-WDT"
Value = "0"
eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
Total = Val(Value)
Total = Total + 1
If Total > 5 Then
   Total = 5
End If
Value = Str(Total)
eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
' ------------------------------------------
'Read ST9-WDT from Intellution
Tagname = "ST9-WDT"
Value = "0"
eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
Total = Val(Value)
Total = Total + 1
If Total > 5 Then
   Total = 5
End If
Value = Str(Total)
eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
' ------------------------------------------
'Read ST11-WDT from Intellution
Tagname = "ST11-WDT"
Value = "0"
eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
Total = Val(Value)
Total = Total + 1
If Total > 5 Then
   Total = 5
End If
```

```
   Value = Str(Total)
   eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
   ' ------------------------------------------------
   'Read ST13-WDT from Intellution
   Tagname = "ST13-WDT"
   Value = "0"
   eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
   Total = Val(Value)
   Total = Total + 1
   If Total > 5 Then
      Total = 5
   End If
   Value = Str(Total)
   eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
   ' ------------------------------------------------
   'Read ST15-WDT from Intellution
   Tagname = "ST15-WDT"
   Value = "0"
   eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
   Total = Val(Value)
   Total = Total + 1
   If Total > 5 Then
      Total = 5
   End If
   Value = Str(Total)
   eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
   ' ------------------------------------------------
    'Read ST17-WDT from Intellution
   Tagname = "ST17-WDT"
   Value = "0"
   eda_err = eda_get_one_ascii(Node, Tagname, Field, Value)
   Total = Val(Value)
   Total = Total + 1
   If Total > 5 Then
      Total = 5
   End If
   Value = Str(Total)
   eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
   ' ------------------------------------------------
End
End Sub
```

Section C-4. ST6(7,8,9,11,13,15,17)-WDT.EXE Description

ST6-WDT.EXE, ST7-WDT.EXE, ST8-WDT.EXE, ST9-WDT.EXE, ST11-WDT.EXE, ST13-WDT.EXE, ST15-WDT.EXE and ST17-WDT.EXE are Microsoft Visual Basic (version 4.0) applications that run under Microsoft Windows NT 4.0 as standalone tasks. The function of each of the programs is to reset the respective station's watchdog timer tag values to zero (e.g., for STATION6, C:\FIX32\CustomVB\ST6-WDT.EXE is executed which causes the AO tag ST6-WDT to be set to zero).

These programs reside on all stations under the C:\FIX32\CustomVB directory, and are used only on the respective station (i.e., for STATION7 only ST7-WDT.EXE is used, and for RSS-15 only ST15-WDT.EXE is used).

The remaining information consists of the source code listings for the programs.

General Declarations

```
Dim Shared Node As String * NODE_NAME_SIZE          ' for NTF
Dim Shared Nodename As String * NODE_NAME_SIZE      ' for PDB get/save/load
Dim Shared PDBname As String * 256
Dim Shared DBType As String * 4
Dim Shared DBTypeIndex As Integer
Dim Shared Tagname As String * BIG_TAGSIZ  ' PMOTOR
Dim Shared Tagname2 As String * BIG_TAGSIZ ' DMOTOR
Dim Shared Field As String * FIELDSIZ
Dim Shared Value As String * 256        ' Must hold largest field or you
      will GPF! (PMOTOR)
Dim Shared Value2 As String * 256       ' DMOTOR
Dim Shared ProgName As String * 12
Dim Shared G As Long
Dim Shared TH As Long
Dim Shared eda_err As Integer
Dim Shared eda_err2 As Integer
Dim Shared ErrorText As String * 80
Dim Shared ErrorText2 As String * 80
Dim Shared LogShort As String * 8
Dim Shared LogLong As String * 32
Dim Shared Pkey As Long
Dim Shared FValue As Single
```

Form.Load

```
'DACS Intellution Upgrade
'Remote Station Watch Dog Timer Zero
'23-APR-1998 RW Truitt
'Version 1.00
'Copyright 1998 PLCs Plus Incorporated

Private Sub Form_Load()

    Node = "STATION5"
    Field = "A_CV"
    Pkey = &H8000DBBB
    Tagname = "ST6-WDT"
    Value = "0"
    eda_err = eda_set_one_ascii(Node, Tagname, Field, Value, Pkey)
    End
End Sub
```

Appendix D - FIX32 DATABASE BLOCKS

Table D-1. All Database Blocks

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
17BTCERR	DI	MIT17B I/O Module Halt Error	1	1202:8	
17BTCERR_BL	BL	OR Block - MIT17B I/O Module Halt Error	1	----	17BTCERR_DO
17BTCERR_DO	DO	DO Block - MIT17B I/O Module Halt Error	----	1202:8	17BTCERR
17CTCERR	DI	MIT17C I/O Module Halt Error	1	1202:9	
17CTCERR_BL	BL	OR Block - MIT17C I/O Module Halt Error	1	----	17CTCERR_DO
17CTCERR_DO	DO	DO Block - MIT17C I/O Module Halt Error	----	1202:9	17CTCERR
21-MINUTE-DELAY	PG	Wait 21 Minutes for Gas Timers	1	----	
21MIN_DO	DO	DO Block for 21 Minute Gas Timer Delay	----	1357:2	
30-SECOND-TIMEOUT	PG	Pump Running 30-Second Test Timeout	1	----	
30SEC-WARN	DI	30 Seconds Until End of Test	1	1357:0	
30SEC-WARN_DO	DO	DO Block for 30 Sec Until End of Test	----	1357:0	30SEC-WARN
A5ABORT	DI	AF5000 Communications Abort	0.50	PLC:000491	
A5ABRT	DO	AF5000 Communications Failure	----	PLC:000251	
ABRTCOIL	DI	PLC Abort Coil	0.50	PLC:002042	
ALARM	AI	Unacknowledged Alarms	1	C:UAA	
ALARM-SOUND	PG	PLAYS ALARM SOUND FOR UAA	1	----	
ALWAYS_ON	DO	CONSTANT "1"	----	0:1	
ALWAYS_ON_DI1	DI	CONSTANT "1" for ELAPSED-TIME TM Block	1	0:1	ELAPSED-TIME
ALWAYS_ON_DI2	DI	CONSTANT "1" for USER_SECONDS CA Block	0.20	0:1	USER_SECONDS
ALWAYS_ON_DI4	DI	CONSTANT "1" for CURPRED CA Block	1	0:1	CURPRED
ALWAYS_ON_DI5	DI	CONSTANT "1" for COUNTDOWN-HRS CA Block	1	0:1	COUNTDOWN-HRS
ALWAYS_ON_DI6	DI	CONSTANT "1" for COUNTDOWN-MINS CA Block	0.20	0:1	COUNTDOWN-MINS
ALWAYS_ON_DI7	DI	CONSTANT "1" for COUNTDOWN-SECS CA Block	0.20	0:1	COUNTDOWN-SECS
ARMABORT	DI	HMT High Gamma Radiation	0.50	PLC:002025	
ARMALM	DI	HMT Area Gamma Radiation Monitor	0.50	PLC:002026	
ARMFAIL	DI	ARM Instrument Failure	0.50	PLC:002027	
ARMGAMMA	AA	HMT Gamma Radiation	1	1111	
ARMGAMMA-AO	AO	AO Block for HMT Gamma Radiation	----	1111	ARMGAMMA
ARMGAMMA-CA	CA	HMT Gamma Radiation Calculation	----	----	ARMGAMMA-AO
ARMGAMMA_BL	BL	OR Block for ARMGAMMA Dynamic Coloring	1	----	ARMGAMMA_CA
ARMGAMMA_CA	CA	CA Block for ARMGAMMA Dynamic Coloring	----	----	
ARMGEXP	AA	Used to Calculate ARMGAMMA	1	PLC:402092	ARMGAMMA-CA
BUT-COL-ENAB_TEST	AO	ENABLE TEST BUTTON COLOR	----	1353	
BUT-COL-POS_PUMP	AO	POSITION PUMP BUTTON COLOR	----	1352	
BUT-COL-SET_VAL	AO	SET VALUES BUTTON COLOR	----	1351	
BUT-COL-START_TEST	AO	START TEST BUTTON COLOR	----	1354	
BUT-COL-STOP_TEST	AO	STOP TEST BUTTON COLOR	----	1355	
BUT_ACT_ENAB_TEST	DO	Activate ENABLE TEST Button	----	1350:13	
BUT_ACT_POS_PUMP	DO	Activate POSITION PUMP Button	----	1350:12	
BUT_ACT_SET_VAL	DO	Activate SET VALUES Button	----	1350:11	
BUT_ACT_START_TEST	DO	Activate START TEST Button	----	1350:14	
BUT_ACT_STOP_TEST	DO	Activate STOP TEST Button	----	1350:15	
BUT_ANIM_ENAB_TEST	DO	ENABLE TEST Button Animation	----	1350:2	
BUT_ANIM_POS_PUMP	DO	POSITION PUMP Button Animation	----	1350:1	
BUT_ANIM_SET_VAL	DO	SET VALUES Button Animation	----	1350:0	
BUT_ANIM_START_TEST	DO	START TEST Button Animation	----	1350:3	
BUT_ANIM_STOP_TEST	DO	STOP TEST Button Animation	----	1350:4	
BUT_TEXT_STOP_TEST	DO	ENABLE STOP / STOP TEST BUTTON TEXT	----	1350:6	
BYJYSO18	DI	Cabinet Trouble Riser 16A SHMS 1	0.50	PLC:002029	
BYKSYO18	DI	Cabinet Trouble Exhaust Header #2	0.50	PLC:002030	
COMABRT	DO	Communications Abort (Latched)	----	PLC:000250	
COUNTDOWN	CA	Pump Run Remaining Time (Seconds)	----	----	
COUNTDOWN-HRS	CA	Total Hours Remaining in Pump Run	----	----	COUNTDOWN-HRS_100
COUNTDOWN-HRS_100	CA	COUNTDOWN-HRS + 100 (PUMPRUN Formatting)	----	----	
COUNTDOWN-MINS	CA	Total Minutes Remaining in Pump Run	----	----	COUNTDOWN-MINS_100
COUNTDOWN-MINS_100	CA	COUNTDOWN-MINS +100 (PUMPRUN Formatting)	----	----	
COUNTDOWN-SECS	CA	Total Seconds Remaining in Pump Run	----	----	COUNTDOWN-SECS_100
COUNTDOWN-SECS_100	CA	COUNTDOWN-SECS +100 (PUMPRUN Formatting)	----	----	
CURABRT	CA	Abort for Pump Current Draw	----	----	
CURALRM	CA	Alarm for Pump Current Draw	----	----	CURABRT
CURPRED	CA	Predicted Pump Current Draw	----	----	CURALRM
D2R1S4STAT	DI	Drop 2 Rack 1 Slot 4 I/O Health Status	1	PLC:400108:13	
D2R1S5STAT	DI	Drop 2 Rack 1 Slot 5 I/O Health Status	1	PLC:400108:12	
D2R1S6STAT	DI	Drop 2 Rack 1 Slot 6 I/O Health Status	1	PLC:400108:11	
D2R2S3STAT	DI	Drop 2 Rack 2 Slot 3 I/O Health Status	1	PLC:400109:14	
D2R2S4STAT	DI	Drop 2 Rack 2 Slot 4 I/O Health Status	1	PLC:400109:13	
D4R1S4STAT	DI	Drop 4 Rack 1 Slot 4 I/O Health Status	1	PLC:400110:13	
D4R1S5STAT	DI	Drop 4 Rack 1 Slot 5 I/O Health Status	1	PLC:400110:12	
D4R1S6STAT	DI	Drop 4 Rack 1 Slot 6 I/O Health Status	1	PLC:400110:11	
D4R1S7STAT	DI	Drop 4 Rack 1 Slot 7 I/O Health Status	1	PLC:400110:10	
D4R2S3STAT	DI	Drop 4 Rack 2 Slot 3 I/O Health Status	1	PLC:400115:14	
D4R2S4STAT	DI	Drop 4 Rack 2 Slot 4 I/O Health Status	1	PLC:400115:13	
D4R2S5STAT	DI	Drop 4 Rack 2 Slot 5 I/O Health Status	1	PLC:400115:12	
D4R2S6STAT	DI	Drop 4 Rack 2 Slot 6 I/O Health Status	1	PLC:400115:11	
D4R2S7STAT	DI	Drop 4 Rack 2 Slot 7 I/O Health Status	1	PLC:400115:10	
D6R1S4STAT	DI	Drop 6 Rack 1 Slot 4 I/O Health Status	1	PLC:400111:13	
D6R1S5STAT	DI	Drop 6 Rack 1 Slot 5 I/O Health Status	1	PLC:400111:12	
D6R1S6STAT	DI	Drop 6 Rack 1 Slot 6 I/O Health Status	1	PLC:400111:11	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
D6R1S7STAT	DI	Drop 6 Rack 1 Slot 7 I/O Health Status	1	PLC:400111:10	
D8R1S4STAT	DI	Drop 8 Rack 1 Slot 4 I/O Health Status	1	PLC:400112:13	
D8R1S5STAT	DI	Drop 8 Rack 1 Slot 5 I/O Health Status	1	PLC:400112:12	
D8R1S6STAT	DI	Drop 8 Rack 1 Slot 6 I/O Health Status	1	PLC:400112:11	
D8R1S7STAT	DI	Drop 8 Rack 1 Slot 7 I/O Health Status	1	PLC:400112:10	
D8R2S3STAT	DI	Drop 8 Rack 2 Slot 3 I/O Health Status	1	PLC:400113:14	
D8R2S4STAT	DI	Drop 8 Rack 2 Slot 4 I/O Health Status	1	PLC:400113:13	
D8R2S5STAT	DI	Drop 8 Rack 2 Slot 5 I/O Health Status	1	PLC:400113:12	
D9R1S4STAT	DI	Drop 9 Rack 1 Slot 4 I/O Health Status	1	PLC:400114:13	
D9R1S5STAT	DI	Drop 9 Rack 1 Slot 5 I/O Health Status	1	PLC:400114:12	
D9R1S6STAT	DI	Drop 9 Rack 1 Slot 6 I/O Health Status	1	PLC:400114:11	
D9R1S7STAT	DI	Drop 9 Rack 1 Slot 7 I/O Health Status	1	PLC:400114:10	
D13R1S4STAT	DI	Drop 13 Rack 1 Slot 4 I/O Health Status	1	PLC:400120:13	
D13R1S5STAT	DI	Drop 13 Rack 1 Slot 5 I/O Health Status	1	PLC:400120:12	
D13R1S6STAT	DI	Drop 13 Rack 1 Slot 6 I/O Health Status	1	PLC:400120:11	
D13R1S7STAT	DI	Drop 13 Rack 1 Slot 7 I/O Health Status	1	PLC:400120:10	
D13R1S8STAT	DI	Drop 13 Rack 1 Slot 8 I/O Health Status	1	PLC:400120:9	
D14R1S4STAT	DI	Drop 14 Rack 1 Slot 4 I/O Health Status	1	PLC:400116:13	
D14R1S5STAT	DI	Drop 14 Rack 1 Slot 5 I/O Health Status	1	PLC:400116:12	
D14R1S6STAT	DI	Drop 14 Rack 1 Slot 6 I/O Health Status	1	PLC:400116:11	
D14R2S3STAT	DI	Drop 14 Rack 2 Slot 3 I/O Health Status	1	PLC:400117:14	
D14R2S4STAT	DI	Drop 14 Rack 2 Slot 4 I/O Health Status	1	PLC:400117:13	
D14R2S5STAT	DI	Drop 14 Rack 2 Slot 5 I/O Health Status	1	PLC:400117:12	
D14R2S6STAT	DI	Drop 14 Rack 2 Slot 6 I/O Health Status	1	PLC:400117:11	
D14R2S7STAT	DI	Drop 14 Rack 2 Slot 7 I/O Health Status	1	PLC:400117:10	
D15R1S4STAT	DI	Drop 15 Rack 1 Slot 4 I/O Health Status	1	PLC:400118:13	
D15R1S5STAT	DI	Drop 15 Rack 1 Slot 5 I/O Health Status	1	PLC:400118:12	
D15R1S6STAT	DI	Drop 15 Rack 1 Slot 6 I/O Health Status	1	PLC:400118:11	
D15R1S7STAT	DI	Drop 15 Rack 1 Slot 7 I/O Health Status	1	PLC:400118:10	
D16R1S4STAT	DI	Drop 16 Rack 1 Slot 4 I/O Health Status	1	PLC:400119:13	
D16R1S5STAT	DI	Drop 16 Rack 1 Slot 5 I/O Health Status	1	PLC:400119:12	
D16R1S6STAT	DI	Drop 16 Rack 1 Slot 6 I/O Health Status	1	PLC:400119:11	
D16R1S7STAT	DI	Drop 16 Rack 1 Slot 7 I/O Health Status	1	PLC:400119:10	
D16R1S8STAT	DI	Drop 16 Rack 1 Slot 8 I/O Health Status	1	PLC:400119:9	
D_ACCEL	AO	Directional Motor Acceleration	----	PLC:400221	
D_ANGLE_DIFF	CA	Diff. Between Current & Desired Position	----	----	D_ANGLE_DIFF_ABS
D_ANGLE_DIFF_ABS	CA	ABS Diff. Between Current & Desired Pos.	----	----	
D_CHANGED	DI	Directional Motor Changed During Run	1	1812:2	
D_CHANGED_DO	DO	DO Block For D_CHANGED	----	1812:2	D_CHANGED
D_DECEL	AO	Directional Motor Deceleration	----	1810	
D_FWD-REV	PG	Directional Motor Forward/Reverse Contrl	1	----	
D_IN-BAND	DO	Directional Motor Within +/- 2 Deg Band	----	1301:3	
D_MOTOR_STAT	DO	Communication Status of DMOTOR	----	1301:2	
D_REV_CMD	DO	Reverse Command to DMOTOR	----	1812:1	REVERSE
D_RUN	DO	Run Command to D_RUN_CMD	----	1311:4	
D_RUN_CMD	DO	Run Command to DMOTOR	----	1301:0	
D_RUN_CMD-PG	PG	PG Block for RUN Command to DMOTOR	1	----	
D_RUN_STAT	DO	Run Status of DMOTOR	----	1301:1	
ELAPSED-CLEAR-PG	PG	Clears Elapsed Time Counters	1	----	
ELAPSED-TIME	TM	Pump Run Elapsed Time	----	----	ELAPSED-TIME-TOTAL
ELAPSED-TIME-HOLD	DO	Hold for Elapsed Time	----	1806:1	
ELAPSED-TIME-HOLD-DI	DI	DI Block - Hold for Elapsed Time	0.50	1806:1	
ELAPSED-TIME-RESET	DO	Reset for Elapsed Time	----	1806:0	
ELAPSED-TIME-RESET-DI	DI	DI Block - Reset for Elapsed Time	0.50	1806:0	
ELAPSED-TIME-TOTAL	TM	Pump Run Total Elapsed Time	----	----	
ELAPSED-TIME-TOTAL-RESET	DO	Reset for Total Elapsed Time	----	1806:2	
ELAPSED-TIME-TOTAL-RESET-DI	DI	DI Block - Reset for Total Elapsed Time	0.50	1806:2	
ENAB_TEST_DONE	PG	Sets Button Status After ENABLE TEST	1	----	
ENAB_TEST_TIMEOUT	DO	ENABLE TEST 60 Second Timer Flag	----	1812:0	
ENAB_TEST_TIMER	PG	ENABLE TEST 60 Second Timer	1	----	
FCE5000X_BL	BL	OR Block for FTE50001,2 Aborts	1	----	
FCE50001	DI	Low Ventilation Flow Abort 1	0.50	PLC:000308	
FCE50001E	DR	Low Ventilation Flow Abort 1 Enable	----	PLC:002105	
FCE50002	DI	Low Ventilation Flow Abort 2	0.50	PLC:000309	
FCE50002E	DR	Low Ventilation Flow Abort 2 Enable	----	PLC:002106	
FHE50001	DI	High Ventilation Flow Abort 1	0.50	PLC:000342	
FHE50001E	DR	High Vent Flow Abort 1 Enable	----	PLC:002139	
FHE50002	DI	High Ventilation Flow Abort 2	0.50	PLC:000343	
FHE50002E	DR	High Vent Flow Abort 2 Enable	----	PLC:002140	
FICABORT	DI	FIC Tank Level Alarm	0.50	PLC:002028	
FITMSY17	AA	FTIR Sample Gas Flow	1	PLC:402026	
FPE50001	DI	FTE50001 Out of Range Bit	0.50	PLC:000550	
FPE50002	DI	FTE50002 Out of Range Bit	0.50	PLC:000551	
FPE50003	DI	FTE50003 Out of Range Bit	0.50	PLC:000555	
FSLMSY18	DI	FTIR Low Flow Switch (0.3 GPM)	0.50	PLC:002031	
FT-DATE-DESC	BL	10/07	5	----	
FT-FILE	AA	FTIR File ID	5	PLC:402189	
FT-INST	DI	Instrument Problem - FT-NH3	5	17:1	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
FT-INST_BL	BL	OR Block for Instrument Problem FT-NH3	5	----	FT-INST_DO
FT-INST_DO	DO	DO Block for Instrument Problem FT-NH3	----	17:1	FT-INST
FT-N2OA	AA	FTIR N2O Peak Area	5	PLC:402185	
FT-N2OC	AA	FTIR N2O Concentration	5	PLC:402186	
FT-N2OC_BL	BL	OR Block for FT-N2OC Alarms	5	----	FT-N2OC_CA
FT-N2OC_CA	CA	CA Block for FT-N2OC Dynamic Coloring	----	----	
FT-NH3A	AA	FTIR NH3 Peak Area (x 100)	5	PLC:402187	
FT-NH3C	AA	FTIR NH3 Concentration	5	PLC:402188	
FT-NH3C_BL	BL	OR Block for FT-NH3C Alarms	5	----	FT-NH3C_CA
FT-NH3C_CA	CA	CA Block for FT-NH3C Dynamic Coloring	----	----	
FT-TIME	AA	FTIR Time of Sample	5	PLC:402190	
FTE5000X_BL	BL	OR Block for FTE50001,2 Alarms	1	----	FTE5000X_CA
FTE5000X_CA	CA	CA Block for FTE50001,2 Dyn.Coloring	----	----	
FTE50001	AA	Vent Header Flow Low Range	0.50	PLC:402061	
FTE50001_BL	BL	OR Block for FTE50001 Alarms	1	----	FTE50001_CA
FTE50001_BLB	BL	OR Block for FTE50001 Aborts	1	----	
FTE50001_CA	CA	CA Block for FTE50001 Dynamic Coloring	----	----	
FTE50002	AA	Vent Header Flow High Range	0.50	PLC:402023	
FTE50002_BL	BL	OR Block for FTE50002 Alarms	1	----	FTE50002_CA
FTE50002_BLB	BL	OR Block for FTE50002 Aborts	1	----	
FTE50002_CA	CA	CA Block for FTE50002 Dynamic Coloring	----	----	
FTE50003	AA	SY Tank Farm Exhaust Flow	0.50	PLC:402088	
FTE50003_BL	BL	OR Block for FTE50003 Alarms	1	----	FTE50003_CA
FTE50003_CA	CA	CA Block for FTE50003 Dynamic Coloring	----	----	
FTFILEPREV	AO	FTIR Previous File Number	----	12	
FTWDT	PG	FTIR File Update Watchdog Timer	1	----	
FT_ZERO	DO	FTIR Update - Zero Control	----	PLC:002152	
FZ-NH3C-AA	AA	AA Block for Instrument Problem FT-NH3C	5	PLC:402188	
FZE50001	DI	Instrument Problem - FTE50001	1	1201:12	
FZE50001_BL	BL	OR Block for Instrument Problem FTE50001	1	----	FZE50001_DO
FZE50001_DO	DO	DO Block for Instrument Problem FTE50001	----	1201:12	FZE50001
FZE50002	DI	Instrument Problem - FTE50002	1	1201:4	
FZE50002_BL	BL	OR Block for Instrument Problem FTE50002	1	----	FZE50002_DO
FZE50002_DO	DO	DO Block for Instrument Problem FTE50002	----	1201:4	FZE50002
FZE50003	DI	Instrument Problem - FTE50003	1	1202:7	
FZE50003_BL	BL	OR Block for Instrument Problem FTE50003	1	----	FZE50003_DO
FZE50003_DO	DO	DO Block for Instrument Problem FTE50003	----	1202:7	FZE50003
GC1-AREA	CA	GC1 Area of Peak	----	----	
GC1-ARHI	AA	GC-1 Area High Portion	5	PLC:402141	GC1-ARLO
GC1-ARLO	AA	GC-1 Area Low Portion	5	PLC:402142	GC1-AREA
GC1-CHK	CA	GC-1 Time Update If Non-Zero	----	----	GC1-TIME-AO
GC1-DATE-DESC	BL	10/07	5	----	
GC1-H2	AA	GC-1 Hydrogen Concentration	5	PLC:402140	
GC1-H2_BL	BL	OR Block for GC1-H2 Alarms	5	----	GC1-H2_CA
GC1-H2_CA	CA	CA Block for GC1-H2 Dynamic Coloring	----	----	
GC1-INST	DI	Instrument Problem - GC1	5	16:1	
GC1-INST_BL	BL	OR Block for Instrument Problem - GC1	5	----	GC1-INST_DO
GC1-INST_DO	DO	DO Block for Instrument Problem - GC1	----	16:1	GC1-INST
GC1-RT	AA	GC-1 Retention Time	5	PLC:402143	
GC1-TIME	AI	GC-1 Last Valid Update Time	5	1103	
GC1-TIME-AO	AO	AO Block for GC-1 Last Valid Update Time	----	1103	GC1-TIME
GC1-ZVAL	DI	GC-1 Zero Value Alarm	5	16:3	
GC1-ZVAL_DO	DO	DO Block for GC-1 Zero Value Alarm	----	16:3	GC1-ZVAL
GC2-AREA	CA	GC2 Area of Peak	----	----	
GC2-ARHI	AA	GC-2 Area High Portion	5	PLC:402145	GC2-ARLO
GC2-ARLO	AA	GC-2 Area Low Portion	5	PLC:402146	GC2-AREA
GC2-CHK	CA	GC-2 Time Update If Non-Zero	----	----	GC2-TIME-AO
GC2-DATE-DESC	BL	10/07	5	----	
GC2-H2	AA	GC-2 Hydrogen Concentration	5	PLC:402144	
GC2-H2_BL	BL	OR Block for GC2-H2 Alarms	5	----	GC2-H2_CA
GC2-H2_CA	CA	CA Block for GC2-H2 Dynamic Coloring	----	----	
GC2-INST	DI	Instrument Problem - GC2	5	16:2	
GC2-INST_BL	BL	OR Block for Instrument Problem - GC2	5	----	GC2-INST_DO
GC2-INST_DO	DO	DO Block for Instrument Problem - GC2	----	16:2	GC2-INST
GC2-RT	AA	GC-2 Hydrogen Retention Time	5	PLC:402147	
GC2-TIME	AI	GC-2 Last Valid Update Time	5	1104	
GC2-TIME-AO	AO	AO Block for GC-2 Last Valid Update Time	----	1104	GC2-TIME
GC2-ZVAL	DI	GC-2 Zero Value Alarm	5	16:4	
GC2-ZVAL_DO	DO	DO Block for GC-2 Zero Value Alarm	----	16:4	GC2-ZVAL
GC3-DATE-DESC	BL	10/07	5	----	
GC3-FILE	AA	GC-3 File ID	5	PLC:402182	
GC3-H2	AA	GC-3 Hydrogen Concentration (0-1000 ppm)	5	PLC:402184	
GC3-H2_BL	BL	OR Block for GC3-H2 Alarms	5	----	GC3-H2_CA
GC3-H2_CA	CA	CA Block for GC3-H2 Dynamic Coloring	----	----	
GC3-INST	DI	Instrument Problem - GC3	5	15:1	
GC3-INST_BL	BL	OR Block for Instrument Problem - GC3	5	----	GC3-INST_DO
GC3-INST_DO	DO	DO Block for Instrument Problem - GC3	----	15:1	GC3-INST
GC3-RT	AA	GC-3 Hydrogen Retention Time (MIN/100)	5	PLC:402181	
GC3-TIME	AA	GC-3 Time of Sample	5	PLC:402183	
GC3-ZVAL	DI	GC-3 Zero Value Alarm	5	15:2	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
GC3-ZVAL_DO	DO	DO Block for GC-3 Zero Value Alarm	----	15:2	GC3-ZVAL
GC3FILEPREV	AO	GC3 Previous File Number	----	10	
GC3WDT	PG	GC3 Update Watchdog Timer	1	----	
GC3_ZERO	DO	GC3-H2 Update - Zero Control	----	PLC:002151	
H1BCSCV	AA	High 1B Column Strain Abort Limit	5	PLC:400237	
H1BCSLIM	AO	High 1B Column Strain Abort Limit	----	PLC:400237	
H1BSAL	AO	High 1B Strain Alarm Limit	----	PLC:400201	
H2ABORT	DI	High H2 Abort	0.50	PLC:000225	
H12ASAL	AO	High 12A Strain Alarm Limit	----	PLC:400227	
H17BCSAL	AO	High 17C Strain Alarm Limit	----	PLC:400230	
H17CSCV	AA	High 17C Column Strain Abort Limit	5	PLC:400233	
H17CSLIM	AO	High 17C Column Strain Abort Limit	----	PLC:400233	
HH2CV	AA	High Hydrogen Abort Limit	5	PLC:400200	
HH2LIM	AO	High Hydrogen Abort Limit	----	PLC:400200	
HH2LIM2	AO	High H2 Abort Limit for 0-30 Gauge	----	PLC:400232	
HH22CV	AA	High H2 Abort Limit for 0-30 Gauge	5	PLC:400232	
HILIM	AO	Set to 4095	----	PLC:400205	
HPC-PG	PG	High Pump Current Alarm/Abort Set	1	----	
HPCABRT	AO	High Pump Motor Current Abort Limit	----	PLC:400208	
HPCALM	AO	High Pump Motor Current Alarm Limit	----	PLC:400211	
HPCSCV	AA	High Pump Column Strain Abort Limit	5	PLC:400224	
HPCSLIM	AO	High Pump Column Strain Abort Limit	----	PLC:400224	
HPMOTCV	AA	High Motor Oil Temp Abort Limit	5	PLC:400206	
HPMOTLIM	AO	High Motor Oil Temp Abort Limit	----	PLC:400206	
HPSPDAL	AO	High Pump Speed Alarm Limit	----	PLC:400214	
HPSPDLIM	AO	High Pump Speed Abort Limit	----	PLC:400213	
HTDP2CV	AA	High Tank Dome Pressure Abort Limit 2	5	PLC:400236	
HTDPCV	AA	High Tank Dome Pressure Abort Limit	5	PLC:400204	
HTDPLIM	AO	High Tank Dome Pressure Abort Limit	----	PLC:400204	
HTDPLIM2	AO	High Tank Dome Pressure Abort Limit 2	----	PLC:400236	
HTEMPCV	AA	High Temp Abort Limit	5	PLC:400203	
HTEMPLIM	AO	High Temp Abort Limit	----	PLC:400203	
HVFL1CV	AA	High Vent Flow Abort Limit 1	5	PLC:400253	
HVFL2CV	AA	High Vent Flow Abort Limit 2	5	PLC:400254	
HVFLLIM1	AO	High Vent Flow Abort Limit 1	----	PLC:400253	
HVFLLIM2	AO	High Vent Flow Abort Limit 2	----	PLC:400254	
L1BCSCV	AA	Low 1B Column Strain Abort Limit	5	PLC:400241	
L1BCSLIM	AO	Low 1B Column Strain Abort Limit	----	PLC:400241	
L1BSAL	AO	Low 1B Strain Alarm Limit	----	PLC:400202	
L12ASAL	AO	Low 12A Strain Alarm Limit	----	PLC:400229	
L17BCSAL	AO	Low 17C Strain Alarm Limit	----	PLC:400231	
L17CSCV	AA	Low 17C Column Strain Abort Limit	5	PLC:400240	
L17CSLIM	AO	Low 17C Column Strain Abort Limit	----	PLC:400240	
LAST-UTESTNO	AO	N/A	----	1803	
LAST_UDESC	DO	<<< MANUAL >>>	----	1358:1	
LIR01A	AA	ENRAF Wire Gauge Tank Level Riser 1A	0.50	PLC:402024	
LIR01A_BL	BL	OR Block for LIR01A Alarms	1	----	LIR01A_CA
LIR01A_CA	CA	CA Block for LIR01A Dynamic Coloring	----	----	
LIR01C	AA	ENRAF Wire Gauge Tank Level Riser 1C	0.50	PLC:402027	
LIR01C_BL	BL	OR Block for LIR01C Alarms	1	----	LIR01C_CA
LIR01C_CA	CA	CA Block for LIR01C Dynamic Coloring	----	----	
LPCGPCV	AA	Low Pump Column Gas Pressure Abort Limit	5	PLC:400252	
LPCGPLIM	AO	Low Pump Column Gas Pressure Abort Limit	----	PLC:400252	
LPCSCV	AA	Low Pump Column Strain Abort Limit	5	PLC:400238	
LPCSLIM	AO	Low Pump Column Strain Abort Limit	----	PLC:400238	
LPR01A	DI	LIR01A Out of Range Bit	0.50	PLC:000557	
LPR01C	DI	LIR01C Out of Range Bit	0.50	PLC:000564	
LVFL2CV	AA	Low Vent Flow Abort High Range	5	PLC:400235	
LVFLCV	AA	Low Vent Flow Abort Limit Low Range	5	PLC:400207	
LVFLLIM	AO	Low Vent Flow Abort Limit Low Range	----	PLC:400207	
LVFLLIM2	AO	Low Vent Flow Abort High Range	----	PLC:400235	
LZR01A	DI	Instrument Problem - LIR01A	1	1201:5	
LZR01A_BL	BL	OR Block for Instrument Problem LIR01A	1	----	LZR01A_DO
LZR01A_DO	DO	DO Block for Instrument Problem LIR01A	----	1201:5	LZR01A
LZR01C	DI	Instrument Problem - LIR01C	1	1201:6	
LZR01C_BL	BL	OR Block for Instrument Problem LIR01C	1	----	LZR01C_DO
LZR01C_DO	DO	DO Block for Instrument Problem LIR01C	----	1201:6	LZR01C
MIP00001	DI	Moisture in Pump Motor Oil 1	0.50	PLC:002017	
MIP00001C	DI	MIP00001 Coil Status	0.50	PLC:000255	
MIP00001E	DR	Moisture in Pump Motor Oil Abort Enable	----	PLC:002068	
MT10001	AA	Vent Header Relative Humidity	0.50	PLC:402021	
NCR05A01	DI	Hi H2 Abort - Pump	0.50	PLC:000260	
NCR05A01E	DR	High H2 Abort - Pump Enable	----	PLC:002057	
NCR17B01	DI	Hi H2 - Riser 17B Abort	0.50	PLC:000259	
NCR17B01E	DR	High H2 - Riser 17B Abort Enable	----	PLC:002056	
NCTJSY06	DI	Hi H2 - Riser 16A Abort	0.50	PLC:000258	
NCTJSY06E	DR	High H2 - Riser 16A Abort Enable	----	PLC:002055	
NCTKSY06	DI	Hi H2 - Vent Header Abort	0.50	PLC:000257	
NCTKSY06E	DR	High H2 - Vent Header Abort Enable	----	PLC:002054	
NH3STACK	DI	High PHO-NH3 Concentration (B&K)	5	18:2	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
NH3STACK_DO	DO	DO Block for High PHO-NH3 Concentration	----	18:2	NH3STACK
NIR05A01	AA	Mixer Pump Whittaker Monitor High H2	0.50	PLC:402037	
NIR05A01_BL	BL	OR Block for NIR05A01 Alarms	1	----	NIR05A01_CA
NIR05A01_CA	CA	CA Block for NIR05A01 Dynamic Coloring	----	----	
NIR17B01	AA	Whittaker Monitor High H2	0.50	PLC:402036	
NIR17B01_BL	BL	OR Block for NIR17B01 Alarms	1	----	NIR17B01_CA
NIR17B01_CA	CA	CA Block for NIR17B01 Dynamic Coloring	----	----	
NITHDR01	AA	Head Hydrogen Concentration	0.50	PLC:402065	
NITJSY06	AA	0-10% H2 Riser 16A SHMS 1	0.50	PLC:402034	
NITJSY06_BL	BL	OR Block for NITJSY06 Alarms	1	----	NITJSY06_CA
NITJSY06_CA	CA	CA Block for NITJSY06 Dynamic Coloring	----	----	
NITKSY06	AA	0-10% H2 Vent Header SHMS 2	0.50	PLC:402035	NZTKSY06-AA
NITKSY06_BL	BL	OR Block for NITKSY06 Alarms	1	----	NITKSY06_CA
NITKSY06_CA	CA	CA Block for NITKSY06 Dynamic Coloring	----	----	
NI_BL	BL	OR Block for NI (Whittaker) Alarms	1	----	NI_CA
NI_CA	CA	CA Block for NI (Whittaker) Dyn.Coloring	----	----	
NPR05A01	DI	NIR05A01 Out of Range Bit	0.50	PLC:000517	
NPR17B01	DI	NIR17B01 Out of Range Bit	0.50	PLC:000515	
NPTJSY06	DI	NITJSY06 Out of Range Bit	0.50	PLC:000516	
NPTKSY06	DI	NITKSY06 Out of Range Bit	0.50	PLC:000518	
NZR05A01	DI	Instrument Problem - NIR05A01	1	1201:11	
NZR05A01_BL	BL	OR Block for Instrument Problem NIR05A01	1	----	NZR05A01_DO
NZR05A01_DO	DO	DO Block for Instrument Problem NIR05A01	----	1201:11	NZR05A01
NZR17B01	DI	Instrument Problem - NIR17B01	1	1201:10	
NZR17B01_BL	BL	OR Block for Instrument Problem NIR17B01	1	----	NZR17B01_DO
NZR17B01_DO	DO	DO Block for Instrument Problem NIR17B01	----	1201:10	NZR17B01
NZTJSY06	DI	Instrument Problem - NITJSY06	1	1201:8	
NZTJSY06_BL	BL	OR Block for Instrument Problem NITJSY06	1	----	NZTJSY06_DO
NZTJSY06_DO	DO	DO Block for Instrument Problem NITJSY06	----	1201:8	NZTJSY06
NZTKSY06	DI	Instrument Problem - NITKSY06	1	1201:9	
NZTKSY06-AA	AA	AA Block for Instrument Problem NITKSY06	0.50	PLC:402035	
NZTKSY06_BL	BL	OR Block for Instrument Problem NITKSY06	1	----	NZTKSY06_DO
NZTKSY06_DO	DO	DO Block for Instrument Problem NITKSY06	----	1201:9	NZTKSY06
OOR_0-5V	DI	Out of Range for 0-5V Channels	0.50	PLC:000372	
PBCALSEC	AO	Copies USER_SECONDS to PLC	----	PLC:400212	
PBENAB	DO	Phase B Test Enable	----	PLC:000249	
PBUMPTOUT	DI	Pump Bump Timeout Abort	0.50	PLC:000243	
PBUMPTOUTE	DR	Pump Bump Timeout Abort Enable	----	PLC:002052	
PCR12A01	AA	Pump Volute Pressure Minus Baseline	0.50	PLC:402129	
PCR17B04	DI	High Tank Dome Pressure Abort 2	0.50	PLC:000311	
PCR17B04E	DR	High Tank Dome Pressure Abort 2 Enable	----	PLC:002108	
PCR17C01	DI	High Tank Dome Pressure Abort 1	0.50	PLC:000310	
PCR17C01E	DR	High Tank Dome Pressure Abort 1 Enable	----	PLC:002107	
PCR17_BL	BL	OR Block for PIR17B04,C01 Aborts	1	----	
PCURRENT_CA	CA	CA Block for Pump Current Dyn. Coloring	----	----	
PDTMSY12	AA	GC-3 Differential Pressure	0.50	PLC:402031	
PHO-DATE-DESC	BL	10/07	5	----	
PHO-INST	DI	Instrument Problem - PHO-NH3	5	18:1	
PHO-INST_BL	BL	OR Block for Instrument Problem - PHO	5	----	PHO-INST_DO
PHO-INST_DO	DO	DO Block for Instrument Problem - PHO	----	18:1	PHO-INST
PHO-LSB	AA	Photo NH3 Concentration LSB	5	PLC:402156	PHO-NH3-CA
PHO-MSB	AA	Photo NH3 Concentration MSB	5	PLC:402155	PHO-LSB
PHO-NH3	AA	PHO-NH3 Concentration	5	14	
PHO-NH3-AO	AO	AO Block for PHO-NH3 Concentration	----	14	PHO-NH3
PHO-NH3-CA	CA	Calculation of Stack NH3 Concentration	----	----	PHO-NH3-AO
PHO-NH3_BL	BL	OR Block for PHO-NH3 Alarms	5	----	PHO-NH3_CA
PHO-NH3_CA	CA	CA Block for PHO-NH3 Dynamic Coloring	----	----	
PHO-TIME	AA	Photo NH3 Sample Time	5	PLC:402158	
PHOTIMEPREV	AO	PHO Previous Time Value	----	13	
PHOWDT	PG	PHO-Time Update Watchdog Timer	1	----	
PHO_ZERO	DO	PHO Update - Zero Control	----	PLC:002153	
PIO10001	AA	Camera Enclosure Purge Pressure	0.50	PLC:402089	
PIO20002	AA	Nitrogen Supply	0.50	PLC:402090	
PIR12A01	AA	Mixer Pump Pressure	0.50	PLC:402007	PZR12A01-AA
PIR12A01_BL	BL	OR Block for PIR12A01 Alarms	1	----	PIR12A01_CA
PIR12A01_CA	CA	CA Block for PIR12A01 Dynamic Coloring	----	----	
PIR17B04	AA	MIT Tank Dome Pressure	0.50	PLC:402033	PZR17B04-AA
PIR17B04_BL	BL	OR Block for PIR17B04 Alarms	1	----	PIR17B04_CA
PIR17B04_CA	CA	CA Block for PIR17B04 Dynamic Coloring	----	----	
PIR17C01	AA	Tank Dome Pressure Riser 17C	0.50	PLC:402062	PZR17C01-AA
PIR17C01_BL	BL	OR Block for PIR17C01 Alarms	1	----	PIR17C01_CA
PIR17C01_CA	CA	CA Block for PIR17C01 Dynamic Coloring	----	----	
PIR17_BL	BL	OR Block for PIR17B04,C01 Alarms	1	----	PIR17_CA
PIR17_CA	CA	CA Block for PIR17B04,C01 Dyn. Coloring	----	----	
PITMSY04	AA	Sampling Inlet Pressure	0.50	PLC:402032	
PITMSY07	AA	GC-1 Sample Pressure	0.50	PLC:402028	
PITMSY10	AA	GC-2 Sample Pressure	0.50	PLC:402068	
PITMSY13	AA	GC-3 Sample Pressure	0.50	PLC:402020	
PITMSY16	AA	FTIR Sample Pressure	0.50	PLC:402025	
PITMSY19	DI	FTIR Purge / Air Bearing Pressure	0.50	PLC:002033	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
PITNO110	AA	Mixer Pump Nozzle 1 Tap Pressure	0.50	PLC:402018	
PITNO110_BL	BL	OR Block for PITNO110 Alarms	1	----	PITNO110_CA
PITNO110_CA	CA	CA Block for PITNO110 Dynamic Coloring	----	----	
PITNO111	AA	Mixer Pump Nozzle 2 Tap Pressure	0.50	PLC:402017	
PITNO111_BL	BL	OR Block for PITNO111 Alarms	1	----	PITNO111_CA
PITNO111_CA	CA	CA Block for PITNO111 Dynamic Coloring	----	----	
PLCBEN	DI	Latched Bump Enable From PLC	0.50	PLC:002043	
PLCCOMFA	DI	PLC Communications Failure	1	1205:0	
PLCCOMFA_DO	DO	DO Block for PLC Communications Failure	----	1205:0	PLCCOMFA
PLCCOMFA_EV1	EV	----	----	----	
PLCCOMFA_EV2	EV	----	----	----	
PLCOK	DI	1 - PLC OK; 0 - PLC Problem	0.50	PLC:002046	
PLCPMCAB	AA	High Pump Motor Current Abort Limit	0.50	PLC:402231	
PLCPMCAL	AA	Pump Motor Current Alarm Value	0.50	PLC:402232	
PLCPSLIM	AA	Pump Speed Abort Limit From PLC	5	PLC:402221	
PLCSPDAL	AA	Pump Speed Alarm Limit	5	PLC:402222	
PLCVER	AA	PLC Ladder Logic Version	30	PLC:409000	
PLCWD	DI	PLC Watchdog Timer Reset	0.50	PLC:002044	PLCCOMFA_EV1
PLCWDT	PG	PLC to Station 5 Watchdog Timer	1	----	
PLCWDTFA	DI	PLC Watch Dog Timer Failure	1	1205:1	
PLCWDTFA_DO	DO	DO Block for PLC Watch Dog Timer Failure	----	1205:1	PLCWDTFA
PMCALARM	DI	Pump Motor Current Alarm	0.50	PLC:002049	PCURRENT_CA
PMPINRUN	DI	Pump In Run Signal	0.50	PLC:002034	PLCCOMFA_EV2
POS_PUMP_DONE	PG	Sets Button Status After POSITION PUMP	1	----	
PPR12A01	DI	PIR12A01 Out of Range Bit	0.50	PLC:000546	
PPR17B04	DI	PIR17B04 Out of Range Bit	0.50	PLC:000548	
PPR17C01	DI	PIR17C01 Out of Range Bit	0.50	PLC:000552	
PSPALARM	DI	Pump Speed Alarm	0.50	PLC:002051	PSPEED_CA
PSPEED_CA	CA	CA Block for Pump Speed Dyn. Coloring	----	----	
PULSECOIL	PG	Abort Coil 12 second Reset	1	----	
PUMP_PROB	DO	Pump Problem Detected	----	1350:10	
PUMP_PROBLEMS	PG	Detects Aborts & Comm Failures	1	----	
PWYO1001	DI	Camera Power ON (24 VDC)	0.50	PLC:002022	
PXO10001	DI	Loss of Camera Purge (0 VDC)	0.50	PLC:002023	
PZR12A01	DI	Instrument Problem - PIR12A01	1	1201:3	
PZR12A01-AA	AA	AA Block for Instrument Problem PIR12A01	0.50	PLC:402007	
PZR12A01_BL	BL	OR Block for Instrument Problem PIR12A01	1	----	PZR12A01_DO
PZR12A01_DO	DO	DO Block for Instrument Problem PIR12A01	----	1201:3	PZR12A01
PZR17B04	DI	Instrument Problem - PIR17B04	1	1201:7	
PZR17B04-AA	AA	AA Block for Instrument Problem PIR17B04	0.50	PLC:402033	
PZR17B04_BL	BL	OR Block for Instrument Problem PIR17B04	1	----	PZR17B04_DO
PZR17B04_DO	DO	DO Block for Instrument Problem PIR17B04	----	1201:7	PZR17B04
PZR17C01	DI	Instrument Problem - PIR17C01	1	1201:13	
PZR17C01-AA	AA	AA Block for Instrument Problem PIR17C01	0.50	PLC:402062	
PZR17C01_BL	BL	OR Block for Instrument Problem PIR17C01	1	----	PZR17C01_DO
PZR17C01_DO	DO	DO Block for Instrument Problem PIR17C01	----	1201:13	PZR17C01
PZTNO110	DI	Instrument Problem - PITNO110	1	1202:11	
PZTNO110-AA	AA	AA Block for Instrument Problem PITNO110	0.50	PLC:402018	
PZTNO110_BL	BL	OR Block for Instrument Problem PITNO110	1	----	PZTNO110_DO
PZTNO110_DO	DO	DO Block for Instrument Problem PITNO110	----	1202:11	PZTNO110
PZTNO111	DI	Instrument Problem - PITNO111	1	1202:12	
PZTNO111-AA	AA	AA Block for Instrument Problem PITNO111	0.50	PLC:402017	
PZTNO111_BL	BL	OR Block for Instrument Problem PITNO111	1	----	PZTNO111_DO
PZTNO111_DO	DO	DO Block for Instrument Problem PITNO111	----	1202:12	PZTNO111
P_ACCEL	AO	Pump Motor Acceleration	----	1807	
P_DECEL	AO	Pump Motor Deceleration	----	1808	
P_MOTOR_STAT	DO	Communication Status of PMOTOR	----	1311:2	
P_RUN	DO	Run Command to P_RUN_CMD	----	1311:3	
P_RUN_CMD	DO	Run Command to PMOTOR	----	1311:1	
P_RUN_CMD-PG	PG	PG Block for RUN Command to PMOTOR	1	----	
P_RUN_STAT	DO	Run Status of PMOTOR	----	1311:0	
RESET-PUMPRUN	PG	Resets VSDs & Stops Elapsed Time	1	----	
RESET_BUTTONS	PG	Resets Button Status to SET VALUES	1	----	
REVERSE	DO	Reverse Flag to PLC	----	PLC:000244	
RG-RUN	AA	RGA-5 Run Number	5	PLC:402137	
RG-STAT	AA	RGA-5 Stat (0=Tank, 1=Cal, 2=Flush)	5	PLC:402138	
RG-TIME	AA	RGA-5 Time of Sample	5	PLC:402139	
RG-TIME1	AA	RGA-5 Time of Sample (GC-1)	5	PLC:402139	GC1-CHK
RG-TIME2	AA	RGA-5 Time of Sample (GC-2)	5	PLC:402139	GC2-CHK
RGA5TND1	AA	RGA5 Trend Output 1	5	PLC:402063	
RGA5TND2	AA	RGA5 Trend Output 2	5	PLC:402064	
RGA5_ZERO	DO	RGA-5 Update Zero Control	----	PLC:002150	
RGRUNPREV	AO	RGA-5 Previous Run Number	----	11	
RGWDT	PG	RGA-5 Update Watchdog Timer	1	----	
RSTCOIL	DO	Abort Coil Reset	----	PLC:000241	
SETUP_BUSY	DO	Busy Flag for Test Setup	----	1357:1	
SET_VAL_DONE	PG	Sets Button Status After SET VALUES	1	----	
SHOW-ANGLE	BL	OR Block for [PUMPRUN] D_MOTOR Direction	0.50	----	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
ST5-LOGIN	DO		----	100:0	
ST5-LOGIN-DATE	DO		----	100:1	
ST5-LOGIN-GROUP	DO		----	100:2	
ST5-LOGIN-TIME	DO		----	100:3	
ST5-ONLINE	DO	Station5 Online/Offline Indication	----	100:4	
ST5-ONLINE-DATE	DO	01/01	----	100:5	
ST5-ONLINE-TIME	DO	00:00	----	100:6	
ST5-WDT	AO	Station5 Online Watchdog Timer	----	110	
ST5COMFA	DI	STATION5 Communication Failure Abort	0.50	PLC:002048	
ST5_PUMPRUN_VIS	DO	Station5 PUMPRUN Button Visibility Check	----	1356:0	
ST6-LOGIN	DO		----	101:0	
ST6-LOGIN-DATE	DO		----	101:1	
ST6-LOGIN-GROUP	DO		----	101:2	
ST6-LOGIN-TIME	DO		----	101:3	
ST6-ONLINE	DO	Station6 Online/Offline Indication	----	101:4	
ST6-ONLINE-DATE	DO	01/01	----	101:5	
ST6-ONLINE-TIME	DO	00:00	----	101:6	
ST6-WDT	AO	Station6 Online Watchdog Timer	----	111	
ST6_PUMPRUN_VIS	DO	Station6 PUMPRUN Button Visibility Check	----	1356:1	
ST7-LOGIN	DO		----	102:0	
ST7-LOGIN-DATE	DO		----	102:1	
ST7-LOGIN-GROUP	DO		----	102:2	
ST7-LOGIN-TIME	DO		----	102:3	
ST7-ONLINE	DO	Station7 Online/Offline Indication	----	102:4	
ST7-ONLINE-DATE	DO	01/01	----	102:5	
ST7-ONLINE-TIME	DO	00:00	----	102:6	
ST7-WDT	AO	Station7 Online Watchdog Timer	----	112	
ST7_PUMPRUN_VIS	DO	Station7 PUMPRUN Button Visibility Check	----	1356:2	
ST8-LOGIN	DO		----	103:0	
ST8-LOGIN-DATE	DO		----	103:1	
ST8-LOGIN-GROUP	DO		----	103:2	
ST8-LOGIN-TIME	DO		----	103:3	
ST8-ONLINE	DO	Station8 Online/Offline Indication	----	103:4	
ST8-ONLINE-DATE	DO	01/01	----	103:5	
ST8-ONLINE-TIME	DO	00:00	----	103:6	
ST8-WDT	AO	Station8 Online Watchdog Timer	----	113	
ST8COMFA	DI	STA5 Comm. Failure Abort (Old STA8)	0.50	PLC:002045	
ST8_PUMPRUN_VIS	DO	Station8 PUMPRUN Button Visibility Check	----	1356:3	
ST9-LOGIN	DO		----	104:0	
ST9-LOGIN-DATE	DO		----	104:1	
ST9-LOGIN-GROUP	DO		----	104:2	
ST9-LOGIN-TIME	DO		----	104:3	
ST9-ONLINE	DO	Station9 Online/Offline Indication	----	104:4	
ST9-ONLINE-DATE	DO	01/01	----	104:5	
ST9-ONLINE-TIME	DO	00:00	----	104:6	
ST9-WDT	AO	Station9 Online Watchdog Timer	----	114	
ST11-LOGIN	DO		----	105:0	
ST11-LOGIN-DATE	DO		----	105:1	
ST11-LOGIN-GROUP	DO		----	105:2	
ST11-LOGIN-TIME	DO		----	105:3	
ST11-ONLINE	DO	Station11 Online/Offline Indication	----	105:4	
ST11-ONLINE-DATE	DO	01/01	----	105:5	
ST11-ONLINE-TIME	DO	00:00	----	105:6	
ST11-WDT	AO	Station11 Online Watchdog Timer	----	115	
ST13-LOGIN	DO		----	106:0	
ST13-LOGIN-DATE	DO		----	106:1	
ST13-LOGIN-GROUP	DO		----	106:2	
ST13-LOGIN-TIME	DO		----	106:3	
ST13-ONLINE	DO	Station13 Online/Offline Indication	----	106:4	
ST13-ONLINE-DATE	DO	01/01	----	106:5	
ST13-ONLINE-TIME	DO	00:00	----	106:6	
ST13-WDT	AO	Station13 Online Watchdog Timer	----	116	
ST15-LOGIN	DO		----	107:0	
ST15-LOGIN-DATE	DO		----	107:1	
ST15-LOGIN-GROUP	DO		----	107:2	
ST15-LOGIN-TIME	DO		----	107:3	
ST15-ONLINE	DO	Station15 Online/Offline Indication	----	107:4	
ST15-ONLINE-DATE	DO	01/01	----	107:5	
ST15-ONLINE-TIME	DO	00:00	----	107:6	
ST15-WDT	AO	Station15 Online Watchdog Timer	----	117	
ST17-LOGIN	DO		----	108:0	
ST17-LOGIN-DATE	DO		----	108:1	
ST17-LOGIN-GROUP	DO		----	108:2	
ST17-LOGIN-TIME	DO		----	108:3	
ST17-ONLINE	DO	Station17 Online/Offline Indication	----	108:4	
ST17-ONLINE-DATE	DO	01/01	----	108:5	
ST17-ONLINE-TIME	DO	00:00	----	108:6	
ST17-WDT	AO	Station17 Online Watchdog Timer	----	118	
START-TIME	DO	> N/A <	----	1806:3	
START_TEST_DONE	PG	Sets Button Status After START TEST	1	----	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
STOP-TIME	DO	> N/A <	----	1806:4	
TASLMSY2	DI	Sample Trace Heat Alarm Low (65 Deg F)	0.50	PLC:002032	
TBSTC01	AA	Tank Bottom & Side TC #1	0.50	1045	
TBSTC01-AI	AI	AI Block for TBSTC01 (From PLC)	0.50	PLC:402216	TBSTC01-AO
TBSTC01-AO	AO	Tank Bottom & Side TC #1	----	1045	TBSTC01
TBSTC02	AA	Tank Bottom & Side TC #2	0.50	1046	
TBSTC02-AI	AI	AI Block for TBSTC02 (From PLC)	0.50	PLC:402199	TBSTC02-AO
TBSTC02-AO	AO	Tank Bottom & Side TC #2	----	1046	TBSTC02
TBSTC03	AA	Tank Bottom & Side TC #3	0.50	1047	
TBSTC03-AI	AI	AI Block for TBSTC03 (From PLC)	0.50	PLC:402208	TBSTC03-AO
TBSTC03-AO	AO	Tank Bottom & Side TC #3	----	1047	TBSTC03
TBSTC04	AA	Tank Bottom & Side TC #4	0.50	1048	
TBSTC04-AI	AI	AI Block for TBSTC04 (From PLC)	0.50	PLC:402148	TBSTC04-AO
TBSTC04-AO	AO	Tank Bottom & Side TC #4	----	1048	TBSTC04
TBSTC05	AA	Tank Bottom & Side TC #5	0.50	1049	
TBSTC05-AI	AI	AI Block for TBSTC05 (From PLC)	0.50	PLC:402200	TBSTC05-AO
TBSTC05-AO	AO	Tank Bottom & Side TC #5	----	1049	TBSTC05
TBSTC06	AA	Tank Bottom & Side TC #6	0.50	1050	
TBSTC06-AI	AI	AI Block for TBSTC06 (From PLC)	0.50	PLC:402209	TBSTC06-AO
TBSTC06-AO	AO	Tank Bottom & Side TC #6	----	1050	TBSTC06
TBSTC07	AA	Tank Bottom & Side TC #7	0.50	1051	
TBSTC07-AI	AI	AI Block for TBSTC07 (From PLC)	0.50	PLC:402149	TBSTC07-AO
TBSTC07-AO	AO	Tank Bottom & Side TC #7	----	1051	TBSTC07
TBSTC08	AA	Tank Bottom & Side TC #8	0.50	1052	
TBSTC08-AI	AI	AI Block for TBSTC08 (From PLC)	0.50	PLC:402201	TBSTC08-AO
TBSTC08-AO	AO	Tank Bottom & Side TC #8	----	1052	TBSTC08
TBSTC09	AA	Tank Bottom & Side TC #9	0.50	1053	
TBSTC09-AI	AI	AI Block for TBSTC09 (From PLC)	0.50	PLC:402210	TBSTC09-AO
TBSTC09-AO	AO	Tank Bottom & Side TC #9	----	1053	TBSTC09
TBSTC10	AA	Tank Bottom & Side TC #10	0.50	1054	
TBSTC10-AI	AI	AI Block for TBSTC10 (From PLC)	0.50	PLC:402193	TBSTC10-AO
TBSTC10-AO	AO	Tank Bottom & Side TC #10	----	1054	TBSTC10
TBSTC11	AA	Tank Bottom & Side TC #11	0.50	1055	
TBSTC11-AI	AI	AI Block for TBSTC11 (From PLC)	0.50	PLC:402202	TBSTC11-AO
TBSTC11-AO	AO	Tank Bottom & Side TC #11	----	1055	TBSTC11
TBSTC12	AA	Tank Bottom & Side TC #12	0.50	1056	
TBSTC12-AI	AI	AI Block for TBSTC12 (From PLC)	0.50	PLC:402211	TBSTC12-AO
TBSTC12-AO	AO	Tank Bottom & Side TC #12	----	1056	TBSTC12
TBSTC13	AA	Tank Bottom & Side TC #13	0.50	1057	
TBSTC13-AI	AI	AI Block for TBSTC13 (From PLC)	0.50	PLC:402194	TBSTC13-AO
TBSTC13-AO	AO	Tank Bottom & Side TC #13	----	1057	TBSTC13
TBSTC14	AA	Tank Bottom & Side TC #14	0.50	1058	
TBSTC14-AI	AI	AI Block for TBSTC14 (From PLC)	0.50	PLC:402203	TBSTC14-AO
TBSTC14-AO	AO	Tank Bottom & Side TC #14	----	1058	TBSTC14
TBSTC15	AA	Tank Bottom & Side TC #15	0.50	1059	
TBSTC15-AI	AI	AI Block for TBSTC15 (From PLC)	0.50	PLC:402215	TBSTC15-AO
TBSTC15-AO	AO	Tank Bottom & Side TC #15	----	1059	TBSTC15
TBSTC16	AA	Tank Bottom & Side TC #16	0.50	1060	
TBSTC16-AI	AI	AI Block for TBSTC16 (From PLC)	0.50	PLC:402195	TBSTC16-AO
TBSTC16-AO	AO	Tank Bottom & Side TC #16	----	1060	TBSTC16
TBSTC17	AA	Tank Bottom & Side TC #17	0.50	1061	
TBSTC17-AI	AI	AI Block for TBSTC17 (From PLC)	0.50	PLC:402204	TBSTC17-AO
TBSTC17-AO	AO	Tank Bottom & Side TC #17	----	1061	TBSTC17
TBSTC18	AA	Tank Bottom & Side TC #18	0.50	1062	
TBSTC18-AI	AI	AI Block for TBSTC18 (From PLC)	0.50	PLC:402212	TBSTC18-AO
TBSTC18-AO	AO	Tank Bottom & Side TC #18	----	1062	TBSTC18
TBSTC19	AA	Tank Bottom & Side TC #19	0.50	1063	
TBSTC19-AI	AI	AI Block for TBSTC19 (From PLC)	0.50	PLC:402196	TBSTC19-AO
TBSTC19-AO	AO	Tank Bottom & Side TC #19	----	1063	TBSTC19
TBSTC20	AA	Tank Bottom & Side TC #20	0.50	1064	
TBSTC20-AI	AI	AI Block for TBSTC20 (From PLC)	0.50	PLC:402205	TBSTC20-AO
TBSTC20-AO	AO	Tank Bottom & Side TC #20	----	1064	TBSTC20
TBSTC21	AA	Tank Bottom & Side TC #21	0.50	1065	
TBSTC21-AI	AI	AI Block for TBSTC21 (From PLC)	0.50	PLC:402213	TBSTC21-AO
TBSTC21-AO	AO	Tank Bottom & Side TC #21	----	1065	TBSTC21
TBSTC22	AA	Tank Bottom & Side TC #22	0.50	1066	
TBSTC22-AI	AI	AI Block for TBSTC22 (From PLC)	0.50	PLC:402197	TBSTC22-AO
TBSTC22-AO	AO	Tank Bottom & Side TC #22	----	1066	TBSTC22
TBSTC23	AA	Tank Bottom & Side TC #23	0.50	1067	
TBSTC23-AI	AI	AI Block for TBSTC23 (From PLC)	0.50	PLC:402206	TBSTC23-AO
TBSTC23-AO	AO	Tank Bottom & Side TC #23	----	1067	TBSTC23
TBSTC24	AA	Tank Bottom & Side TC #24	0.50	1068	
TBSTC24-AI	AI	AI Block for TBSTC24 (From PLC)	0.50	PLC:402214	TBSTC24-AO
TBSTC24-AO	AO	Tank Bottom & Side TC #24	----	1068	TBSTC24
TBSTC25	AA	Tank Bottom & Side TC #25	0.50	1069	
TBSTC25-AI	AI	AI Block for TBSTC25 (From PLC)	0.50	PLC:402198	TBSTC25-AO
TBSTC25-AO	AO	Tank Bottom & Side TC #25	----	1069	TBSTC25
TBSTC26	AA	Tank Bottom & Side TC #26	0.50	1070	
TBSTC26-AI	AI	AI Block for TBSTC26 (From PLC)	0.50	PLC:402207	TBSTC26-AO
TBSTC26-AO	AO	Tank Bottom & Side TC #26	----	1070	TBSTC26

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TBSTCERR	DI	TBS I/O Module Halt Error	1	1202:10	
TBSTCERR_BL	BL	OR Block - TBS I/O Module Halt Error	1	----	TBSTCERR_DO
TBSTCERR_DO	DO	DO Block - TBS I/O Module Halt Error	----	1202:10	TBSTCERR
TCMOD1ERR	DI	D4 R2 S4 MIT17C TC Module 1 Halt Error	1	PLC:000438	
TCMOD2ERR	DI	D4 R2 S5 MIT17C TC Module 2 Halt Error	1	PLC:000447	
TCMOD3ERR	DI	D4 R2 S6 MIT17C TC Module 3 Halt Error	1	PLC:000456	
TCMOD4ERR	DI	D13 R1 S4 TBS TC Module 4 Halt Error	1	PLC:000467	
TCMOD5ERR	DI	D13 R1 S5 TBS TC Module 5 Halt Error	1	PLC:000476	
TCMOD6ERR	DI	D13 R1 S6 TBS TC Module 6 Halt Error	1	PLC:000485	
TCMOD7ERR	DI	D4 R1 S7 MIT17B TC Module 7 Halt Error	1	PLC:000236	
TCMOD8ERR	DI	D4 R2 S3 MIT17B TC Module 8 Halt Error	1	PLC:000565	
TCMOD9ERR	DI	D4 R2 S7 MIT17B TC Module 9 Halt Error	1	PLC:000574	
TCR12A01	DI	High Pump Motor Oil Temperature Abort 1	0.50	PLC:000306	
TCR12A01E	DR	High Pump Motor Oil Temp Abort 1 Enable	----	PLC:002103	
TCR12A02	DI	High Pump Motor Oil Temperature Abort 2	0.50	PLC:000307	
TCR12A02E	DR	High Pump Motor Oil Temp Abort 2 Enable	----	PLC:002104	
TCR12A_BL	BL	OR Block 1 for TIR12A Aborts	1	----	
TCR17B01	DI	High Temperature Abort 17B01	0.50	PLC:000278	
TCR17B01E	DR	High Temperature Abort 17B01 Enable	----	PLC:002075	
TCR17B02	DI	High Temperature Abort 17B02	0.50	PLC:000279	
TCR17B02E	DR	High Temperature Abort 17B02 Enable	----	PLC:002076	
TCR17B03	DI	High Temperature Abort 17B03	0.50	PLC:000280	
TCR17B03E	DR	High Temperature Abort 17B03 Enable	----	PLC:002077	
TCR17B04	DI	High Temperature Abort 17B04	0.50	PLC:000281	
TCR17B04E	DR	High Temperature Abort 17B04 Enable	----	PLC:002078	
TCR17B05	DI	High Temperature Abort 17B05	0.50	PLC:000282	
TCR17B05E	DR	High Temperature Abort 17B05 Enable	----	PLC:002079	
TCR17B06	DI	High Temperature Abort 17B06	0.50	PLC:000283	
TCR17B06E	DR	High Temperature Abort 17B06 Enable	----	PLC:002080	
TCR17B07	DI	High Temperature Abort 17B07	0.50	PLC:000284	
TCR17B07E	DR	High Temperature Abort 17B07 Enable	----	PLC:002081	
TCR17B08	DI	High Temperature Abort 17B08	0.50	PLC:000285	
TCR17B08E	DR	High Temperature Abort 17B08 Enable	----	PLC:002082	
TCR17B09	DI	High Temperature Abort 17B09	0.50	PLC:000286	
TCR17B09E	DR	High Temperature Abort 17B09 Enable	----	PLC:002083	
TCR17B10	DI	High Temperature Abort 17B10	0.50	PLC:000287	
TCR17B10E	DR	High Temperature Abort 17B10 Enable	----	PLC:002084	
TCR17B11	DI	High Temperature Abort 17B11	0.50	PLC:000288	
TCR17B11E	DR	High Temperature Abort 17B11 Enable	----	PLC:002085	
TCR17B12	DI	High Temperature Abort 17B12	0.50	PLC:000289	
TCR17B12E	DR	High Temperature Abort 17B12 Enable	----	PLC:002086	
TCR17B13	DI	High Temperature Abort 17B13	0.50	PLC:000290	
TCR17B13E	DR	High Temperature Abort 17B13 Enable	----	PLC:002087	
TCR17B14	DI	High Temperature Abort 17B14	0.50	PLC:000291	
TCR17B14E	DR	High Temperature Abort 17B14 Enable	----	PLC:002088	
TCR17B15	DI	High Temperature Abort 17B15	0.50	PLC:000292	
TCR17B15E	DR	High Temperature Abort 17B15 Enable	----	PLC:002089	
TCR17B16	DI	High Temperature Abort 17B16	0.50	PLC:000293	
TCR17B16E	DR	High Temperature Abort 17B16 Enable	----	PLC:002090	
TCR17B17	DI	High Temperature Abort 17B17	0.50	PLC:000294	
TCR17B17E	DR	High Temperature Abort 17B17 Enable	----	PLC:002091	
TCR17B18	DI	High Temperature Abort 17B18	0.50	PLC:000295	
TCR17B18E	DR	High Temperature Abort 17B18 Enable	----	PLC:002092	
TCR17B19	DI	High Temperature Abort 17B19	0.50	PLC:000296	
TCR17B19E	DR	High Temperature Abort 17B19 Enable	----	PLC:002093	
TCR17B20	DI	High Temperature Abort 17B20	0.50	PLC:000297	
TCR17B20E	DR	High Temperature Abort 17B20 Enable	----	PLC:002094	
TCR17B21	DI	High Temperature Abort 17B21	0.50	PLC:000298	
TCR17B21E	DR	High Temperature Abort 17B21 Enable	----	PLC:002095	
TCR17B22	DI	High Temperature Abort 17B22	0.50	PLC:000299	
TCR17B22E	DR	High Temperature Abort 17B22 Enable	----	PLC:002096	
TCR17B_BL1	BL	OR Block 1 for TIR17B Aborts	1	----	
TCR17B_BL2	BL	OR Block 2 for TIR17B Aborts	1	----	
TCR17B_BL3	BL	OR Block 3 for TIR17B Aborts	1	----	
TICMSY18	AA	FTIR Cooling Water Temperature	0.50	PLC:402029	
TII04CAB	AA	I/O #4 Cabinet Temp	0.50	PLC:402067	
TIR12A01	AA	Mixer Pump Motor Oil Temp 1	0.50	PLC:402004	TZR12A01-AA
TIR12A01_BL	BL	OR Block for TIR12A01 Alarms	1	----	TIR12A01_CA
TIR12A01_CA	CA	CA Block for TIR12A01 Dynamic Coloring	----	----	
TIR12A02	AA	Mixer Pump Motor Oil Temp 2	0.50	PLC:402003	TZR12A02-AA
TIR12A02_BL	BL	OR Block for TIR12A02 Alarms	1	----	TIR12A02_CA
TIR12A02_CA	CA	CA Block for TIR12A02 Dynamic Coloring	----	----	
TIR12A_BL	BL	OR Block 1 for TIR12A Alarms	1	----	TIR12A_CA
TIR12A_CA	CA	CA Block for TIR12A Dynamic Coloring	----	----	
TIR17B01	AA	Tank Temperature Riser 17B - 4"	0.50	1001	TZR17B01-AA
TIR17B01-AI	AI	AI Block for TIR17B01 (From PLC)	0.50	PLC:402132	TIR17B01-AO
TIR17B01-AO	AO	Tank Temperature Riser 17B - 4"	----	1001	TIR17B01
TIR17B01_BL	BL	OR Block for TIR17B01 Alarms	1	----	TIR17B01_CA
TIR17B01_CA	CA	CA Block for TIR17B01 Dynamic Coloring	----	----	

Block Tag_Name	Type	Tag_Description	Scan Time	I/O Address	Next Block
TIR17B02	AA	Tank Temperature Riser 17B - 16"	0.50	1002	TZR17B02-AA
TIR17B02-AI	AI	AI Block for TIR17B02 (From PLC)	0.50	PLC:402133	TIR17B02-AO
TIR17B02-AO	AO	Tank Temperature Riser 17B - 16"	----	1002	TIR17B02
TIR17B02_BL	BL	OR Block for TIR17B02 Alarms	1	----	TIR17B02_CA
TIR17B02_CA	CA	CA Block for TIR17B02 Dynamic Coloring	----	----	
TIR17B03	AA	Tank Temperature Riser 17B - 28"	0.50	1003	TZR17B03-AA
TIR17B03-AI	AI	AI Block for TIR17B03 (From PLC)	0.50	PLC:402134	TIR17B03-AO
TIR17B03-AO	AO	Tank Temperature Riser 17B - 28"	----	1003	TIR17B03
TIR17B03_BL	BL	OR Block for TIR17B03 Alarms	1	----	TIR17B03_CA
TIR17B03_CA	CA	CA Block for TIR17B03 Dynamic Coloring	----	----	
TIR17B04	AA	Tank Temperature Riser 17B - 52"	0.50	1004	TZR17B04-AA
TIR17B04-AI	AI	AI Block for TIR17B04 (From PLC)	0.50	PLC:402135	TIR17B04-AO
TIR17B04-AO	AO	Tank Temperature Riser 17B - 52"	----	1004	TIR17B04
TIR17B04_BL	BL	OR Block for TIR17B04 Alarms	1	----	TIR17B04_CA
TIR17B04_CA	CA	CA Block for TIR17B04 Dynamic Coloring	----	----	
TIR17B05	AA	Tank Temperature Riser 17B - 76"	0.50	1005	TZR17B05-AA
TIR17B05-AI	AI	AI Block for TIR17B05 (From PLC)	0.50	PLC:402136	TIR17B05-AO
TIR17B05-AO	AO	Tank Temperature Riser 17B - 76"	----	1005	TIR17B05
TIR17B05_BL	BL	OR Block for TIR17B05 Alarms	1	----	TIR17B05_CA
TIR17B05_CA	CA	CA Block for TIR17B05 Dynamic Coloring	----	----	
TIR17B06	AA	Tank Temperature Riser 17B - 100"	0.50	1006	TZR17B06-AA
TIR17B06-AI	AI	AI Block for TIR17B06 (From PLC)	0.50	PLC:402150	TIR17B06-AO
TIR17B06-AO	AO	Tank Temperature Riser 17B - 100"	----	1006	TIR17B06
TIR17B06_BL	BL	OR Block for TIR17B06 Alarms	1	----	TIR17B06_CA
TIR17B06_CA	CA	CA Block for TIR17B06 Dynamic Coloring	----	----	
TIR17B07	AA	Tank Temperature Riser 17B - 112"	0.50	1007	TZR17B07-AA
TIR17B07-AI	AI	AI Block for TIR17B07 (From PLC)	0.50	PLC:402151	TIR17B07-AO
TIR17B07-AO	AO	Tank Temperature Riser 17B - 112"	----	1007	TIR17B07
TIR17B07_BL	BL	OR Block for TIR17B07 Alarms	1	----	TIR17B07_CA
TIR17B07_CA	CA	CA Block for TIR17B07 Dynamic Coloring	----	----	
TIR17B08	AA	Tank Temperature Riser 17B - 124"	0.50	1008	TZR17B08-AA
TIR17B08-AI	AI	AI Block for TIR17B08 (From PLC)	0.50	PLC:402152	TIR17B08-AO
TIR17B08-AO	AO	Tank Temperature Riser 17B - 124"	----	1008	TIR17B08
TIR17B08_BL	BL	OR Block for TIR17B08 Alarms	1	----	TIR17B08_CA
TIR17B08_CA	CA	CA Block for TIR17B08 Dynamic Coloring	----	----	
TIR17B09	AA	Tank Temperature Riser 17B - 148"	0.50	1009	TZR17B09-AA
TIR17B09-AI	AI	AI Block for TIR17B09 (From PLC)	0.50	PLC:402153	TIR17B09-AO
TIR17B09-AO	AO	Tank Temperature Riser 17B - 148"	----	1009	TIR17B09
TIR17B09_BL	BL	OR Block for TIR17B09 Alarms	1	----	TIR17B09_CA
TIR17B09_CA	CA	CA Block for TIR17B09 Dynamic Coloring	----	----	
TIR17B10	AA	Tank Temperature Riser 17B - 172"	0.50	1010	TZR17B10-AA
TIR17B10-AI	AI	AI Block for TIR17B10 (From PLC)	0.50	PLC:402154	TIR17B10-AO
TIR17B10-AO	AO	Tank Temperature Riser 17B - 172"	----	1010	TIR17B10
TIR17B10_BL	BL	OR Block for TIR17B10 Alarms	1	----	TIR17B10_CA
TIR17B10_CA	CA	CA Block for TIR17B10 Dynamic Coloring	----	----	
TIR17B11	AA	Tank Temperature Riser 17B - 196"	0.50	1011	TZR17B11-AA
TIR17B11-AI	AI	AI Block for TIR17B11 (From PLC)	0.50	PLC:402157	TIR17B11-AO
TIR17B11-AO	AO	Tank Temperature Riser 17B - 196"	----	1011	TIR17B11
TIR17B11_BL	BL	OR Block for TIR17B11 Alarms	1	----	TIR17B11_CA
TIR17B11_CA	CA	CA Block for TIR17B11 Dynamic Coloring	----	----	
TIR17B12	AA	Tank Temperature Riser 17B - 208"	0.50	1012	TZR17B12-AA
TIR17B12-AI	AI	AI Block for TIR17B12 (From PLC)	0.50	PLC:402191	TIR17B12-AO
TIR17B12-AO	AO	Tank Temperature Riser 17B - 208"	----	1012	TIR17B12
TIR17B12_BL	BL	OR Block for TIR17B12 Alarms	1	----	TIR17B12_CA
TIR17B12_CA	CA	CA Block for TIR17B12 Dynamic Coloring	----	----	
TIR17B13	AA	Tank Temperature Riser 17B - 220"	0.50	1013	TZR17B13-AA
TIR17B13-AI	AI	AI Block for TIR17B13 (From PLC)	0.50	PLC:402192	TIR17B13-AO
TIR17B13-AO	AO	Tank Temperature Riser 17B - 220"	----	1013	TIR17B13
TIR17B13_BL	BL	OR Block for TIR17B13 Alarms	1	----	TIR17B13_CA
TIR17B13_CA	CA	CA Block for TIR17B13 Dynamic Coloring	----	----	
TIR17B14	AA	Tank Temperature Riser 17B - 232"	0.50	1014	TZR17B14-AA
TIR17B14-AI	AI	AI Block for TIR17B14 (From PLC)	0.50	PLC:402233	TIR17B14-AO
TIR17B14-AO	AO	Tank Temperature Riser 17B - 232"	----	1014	TIR17B14
TIR17B14_BL	BL	OR Block for TIR17B14 Alarms	1	----	TIR17B14_CA
TIR17B14_CA	CA	CA Block for TIR17B14 Dynamic Coloring	----	----	
TIR17B15	AA	Tank Temperature Riser 17B - 244"	0.50	1015	TZR17B15-AA
TIR17B15-AI	AI	AI Block for TIR17B15 (From PLC)	0.50	PLC:402234	TIR17B15-AO
TIR17B15-AO	AO	Tank Temperature Riser 17B - 244"	----	1015	TIR17B15
TIR17B15_BL	BL	OR Block for TIR17B15 Alarms	1	----	TIR17B15_CA
TIR17B15_CA	CA	CA Block for TIR17B15 Dynamic Coloring	----	----	
TIR17B16	AA	Tank Temperature Riser 17B - 268"	0.50	1016	TZR17B16-AA
TIR17B16-AI	AI	AI Block for TIR17B16 (From PLC)	0.50	PLC:402235	TIR17B16-AO
TIR17B16-AO	AO	Tank Temperature Riser 17B - 268"	----	1016	TIR17B16
TIR17B16_BL	BL	OR Block for TIR17B16 Alarms	1	----	TIR17B16_CA
TIR17B16_CA	CA	CA Block for TIR17B16 Dynamic Coloring	----	----	
TIR17B17	AA	Tank Temperature Riser 17B - 292"	0.50	1017	TZR17B17-AA
TIR17B17-AI	AI	AI Block for TIR17B17 (From PLC)	0.50	PLC:402236	TIR17B17-AO
TIR17B17-AO	AO	Tank Temperature Riser 17B - 292"	----	1017	TIR17B17
TIR17B17_BL	BL	OR Block for TIR17B17 Alarms	1	----	TIR17B17_CA
TIR17B17_CA	CA	CA Block for TIR17B17 Dynamic Coloring	----	----	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TIR17B18	AA	Tank Temperature Riser 17B - 316"	0.50	1018	TZR17B18-AA
TIR17B18-AI	AI	AI Block for TIR17B18 (From PLC)	0.50	PLC:402237	TIR17B18-AO
TIR17B18-AO	AO	Tank Temperature Riser 17B - 326"	----	1018	TIR17B18
TIR17B18_BL	BL	OR Block for TIR17B18 Alarms	1	----	TIR17B18_CA
TIR17B18_CA	CA	CA Block for TIR17B18 Dynamic Coloring	----	----	
TIR17B19	AA	Tank Temperature Riser 17B - 340"	0.50	1019	TZR17B19-AA
TIR17B19-AI	AI	AI Block for TIR17B19 (From PLC)	0.50	PLC:402238	TIR17B19-AO
TIR17B19-AO	AO	Tank Temperature Riser 17B - 340"	----	1019	TIR17B19
TIR17B19_BL	BL	OR Block for TIR17B19 Alarms	1	----	TIR17B19_CA
TIR17B19_CA	CA	CA Block for TIR17B19 Dynamic Coloring	----	----	
TIR17B20	AA	Tank Temperature Riser 17B - 364"	0.50	1020	TZR17B20-AA
TIR17B20-AI	AI	AI Block for TIR17B20 (From PLC)	0.50	PLC:402239	TIR17B20-AO
TIR17B20-AO	AO	Tank Temperature Riser 17B - 364"	----	1020	TIR17B20
TIR17B20_BL	BL	OR Block for TIR17B20 Alarms	1	----	TIR17B20_CA
TIR17B20_CA	CA	CA Block for TIR17B20 Dynamic Coloring	----	----	
TIR17B21	AA	Tank Temperature Riser 17B - 392"	0.50	1021	TZR17B21-AA
TIR17B21-AI	AI	AI Block for TIR17B21 (From PLC)	0.50	PLC:402240	TIR17B21-AO
TIR17B21-AO	AO	Tank Temperature Riser 17B - 392"	----	1021	TIR17B21
TIR17B21_BL	BL	OR Block for TIR17B21 Alarms	1	----	TIR17B21_CA
TIR17B21_CA	CA	CA Block for TIR17B21 Dynamic Coloring	----	----	
TIR17B22	AA	Tank Temperature Riser 17B - 402"	0.50	1022	TZR17B22-AA
TIR17B22-AI	AI	AI Block for TIR17B22 (From PLC)	0.50	PLC:402241	TIR17B22-AO
TIR17B22-AO	AO	Tank Temperature Riser 17B - 402"	----	1022	TIR17B22
TIR17B22_BL	BL	OR Block for TIR17B22 Alarms	1	----	TIR17B22_CA
TIR17B22_CA	CA	CA Block for TIR17B22 Dynamic Coloring	----	----	
TIR17B_BL1	BL	OR Block 1 for TIR17B Alarms	1	----	
TIR17B_BL2	BL	OR Block 2 for TIR17B Alarms	1	----	
TIR17B_BL3	BL	OR Block 3 for TIR17B Alarms	1	----	TIR17B_CA
TIR17B_CA	CA	CA Block for TIR17B Dynamic Coloring	----	----	
TIR17C01	AA	Tank Temperature Riser 17C - 4"	0.50	1023	TZR17C01-AA
TIR17C01-AI	AI	AI Block for TIR17C01 (From PLC)	0.50	PLC:402159	TIR17C01-AO
TIR17C01-AO	AO	Tank Temperature Riser 17C - 4"	----	1023	TIR17C01
TIR17C01_BL	BL	OR Block for TIR17C01 Alarms	1	----	TIR17C01_CA
TIR17C01_CA	CA	CA Block for TIR17C01 Dynamic Coloring	----	----	
TIR17C02	AA	Tank Temperature Riser 17C - 16"	0.50	1024	TZR17C02-AA
TIR17C02-AI	AI	AI Block for TIR17C02 (From PLC)	0.50	PLC:402160	TIR17C02-AO
TIR17C02-AO	AO	Tank Temperature Riser 17C - 16"	----	1024	TIR17C02
TIR17C02_BL	BL	OR Block for TIR17C02 Alarms	1	----	TIR17C02_CA
TIR17C02_CA	CA	CA Block for TIR17C02 Dynamic Coloring	----	----	
TIR17C03	AA	Tank Temperature Riser 17C - 28"	0.50	1025	TZR17C03-AA
TIR17C03-AI	AI	AI Block for TIR17C03 (From PLC)	0.50	PLC:402161	TIR17C03-AO
TIR17C03-AO	AO	Tank Temperature Riser 17C - 28"	----	1025	TIR17C03
TIR17C03_BL	BL	OR Block for TIR17C03 Alarms	1	----	TIR17C03_CA
TIR17C03_CA	CA	CA Block for TIR17C03 Dynamic Coloring	----	----	
TIR17C04	AA	Tank Temperature Riser 17C - 52"	0.50	1026	TZR17C04-AA
TIR17C04-AI	AI	AI Block for TIR17C04 (From PLC)	0.50	PLC:402162	TIR17C04-AO
TIR17C04-AO	AO	Tank Temperature Riser 17C - 52"	----	1026	TIR17C04
TIR17C04_BL	BL	OR Block for TIR17C04 Alarms	1	----	TIR17C04_CA
TIR17C04_CA	CA	CA Block for TIR17C04 Dynamic Coloring	----	----	
TIR17C05	AA	Tank Temperature Riser 17C - 76"	0.50	1027	TZR17C05-AA
TIR17C05-AI	AI	AI Block for TIR17C05 (From PLC)	0.50	PLC:402163	TIR17C05-AO
TIR17C05-AO	AO	Tank Temperature Riser 17C - 76"	----	1027	TIR17C05
TIR17C05_BL	BL	OR Block for TIR17C05 Alarms	1	----	TIR17C05_CA
TIR17C05_CA	CA	CA Block for TIR17C05 Dynamic Coloring	----	----	
TIR17C06	AA	Tank Temperature Riser 17C - 100"	0.50	1028	TZR17C06-AA
TIR17C06-AI	AI	AI Block for TIR17C06 (From PLC)	0.50	PLC:402164	TIR17C06-AO
TIR17C06-AO	AO	Tank Temperature Riser 17C - 100"	----	1028	TIR17C06
TIR17C06_BL	BL	OR Block for TIR17C06 Alarms	1	----	TIR17C06_CA
TIR17C06_CA	CA	CA Block for TIR17C06 Dynamic Coloring	----	----	
TIR17C07	AA	Tank Temperature Riser 17C - 112"	0.50	1029	TZR17C07-AA
TIR17C07-AI	AI	AI Block for TIR17C07 (From PLC)	0.50	PLC:402165	TIR17C07-AO
TIR17C07-AO	AO	Tank Temperature Riser 17C - 112"	----	1029	TIR17C07
TIR17C07_BL	BL	OR Block for TIR17C07 Alarms	1	----	TIR17C07_CA
TIR17C07_CA	CA	CA Block for TIR17C07 Dynamic Coloring	----	----	
TIR17C08	AA	Tank Temperature Riser 17C - 124"	0.50	1030	TZR17C08-AA
TIR17C08-AI	AI	AI Block for TIR17C08 (From PLC)	0.50	PLC:402166	TIR17C08-AO
TIR17C08-AO	AO	Tank Temperature Riser 17C - 124"	----	1030	TIR17C08
TIR17C08_BL	BL	OR Block for TIR17C08 Alarms	1	----	TIR17C08_CA
TIR17C08_CA	CA	CA Block for TIR17C08 Dynamic Coloring	----	----	
TIR17C09	AA	Tank Temperature Riser 17C - 148"	0.50	1031	TZR17C09-AA
TIR17C09-AI	AI	AI Block for TIR17C09 (From PLC)	0.50	PLC:402167	TIR17C09-AO
TIR17C09-AO	AO	Tank Temperature Riser 17C - 148"	----	1031	TIR17C09
TIR17C09_BL	BL	OR Block for TIR17C09 Alarms	1	----	TIR17C09_CA
TIR17C09_CA	CA	CA Block for TIR17C09 Dynamic Coloring	----	----	
TIR17C10	AA	Tank Temperature Riser 17C - 172"	0.50	1032	TZR17C10-AA
TIR17C10-AI	AI	AI Block for TIR17C10 (From PLC)	0.50	PLC:402168	TIR17C10-AO
TIR17C10-AO	AO	Tank Temperature Riser 17C - 172"	----	1032	TIR17C10
TIR17C10_BL	BL	OR Block for TIR17C10 Alarms	1	----	TIR17C10_CA
TIR17C10_CA	CA	CA Block for TIR17C10 Dynamic Coloring	----	----	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TIR17C11	AA	Tank Temperature Riser 17C - 196"	0.50	1033	TZR17C11-AA
TIR17C11-AI	AI	AI Block for TIR17C11 (From PLC)	0.50	PLC:402169	TIR17C11-AO
TIR17C11-AO	AO	Tank Temperature Riser 17C - 196"	----	1033	TIR17C11
TIR17C11_BL	BL	OR Block for TIR17C11 Alarms	1	----	TIR17C11_CA
TIR17C11_CA	CA	CA Block for TIR17C11 Dynamic Coloring	----	----	
TIR17C12	AA	Tank Temperature Riser 17C - 208"	0.50	1034	TZR17C12-AA
TIR17C12-AI	AI	AI Block for TIR17C12 (From PLC)	0.50	PLC:402170	TIR17C12-AO
TIR17C12-AO	AO	Tank Temperature Riser 17C - 208"	----	1034	TIR17C12
TIR17C12_BL	BL	OR Block for TIR17C12 Alarms	1	----	TIR17C12_CA
TIR17C12_CA	CA	CA Block for TIR17C12 Dynamic Coloring	----	----	
TIR17C13	AA	Tank Temperature Riser 17C - 220"	0.50	1035	TZR17C13-AA
TIR17C13-AI	AI	AI Block for TIR17C13 (From PLC)	0.50	PLC:402171	TIR17C13-AO
TIR17C13-AO	AO	Tank Temperature Riser 17C - 220"	----	1035	TIR17C13
TIR17C13_BL	BL	OR Block for TIR17C13 Alarms	1	----	TIR17C13_CA
TIR17C13_CA	CA	CA Block for TIR17C13 Dynamic Coloring	----	----	
TIR17C14	AA	Tank Temperature Riser 17C - 232"	0.50	1036	TZR17C14-AA
TIR17C14-AI	AI	AI Block for TIR17C14 (From PLC)	0.50	PLC:402172	TIR17C14-AO
TIR17C14-AO	AO	Tank Temperature Riser 17C - 232"	----	1036	TIR17C14
TIR17C14_BL	BL	OR Block for TIR17C14 Alarms	1	----	TIR17C14_CA
TIR17C14_CA	CA	CA Block for TIR17C14 Dynamic Coloring	----	----	
TIR17C15	AA	Tank Temperature Riser 17C - 244"	0.50	1037	TZR17C15-AA
TIR17C15-AI	AI	AI Block for TIR17C15 (From PLC)	0.50	PLC:402173	TIR17C15-AO
TIR17C15-AO	AO	Tank Temperature Riser 17C - 244"	----	1037	TIR17C15
TIR17C15_BL	BL	OR Block for TIR17C15 Alarms	1	----	TIR17C15_CA
TIR17C15_CA	CA	CA Block for TIR17C15 Dynamic Coloring	----	----	
TIR17C16	AA	Tank Temperature Riser 17C - 292"	0.50	1038	TZR17C16-AA
TIR17C16-AI	AI	AI Block for TIR17C16 (From PLC)	0.50	PLC:402174	TIR17C16-AO
TIR17C16-AO	AO	Tank Temperature Riser 17C - 292"	----	1038	TIR17C16
TIR17C16_BL	BL	OR Block for TIR17C16 Alarms	1	----	TIR17C16_CA
TIR17C16_CA	CA	CA Block for TIR17C16 Dynamic Coloring	----	----	
TIR17C17	AA	Tank Temperature Riser 17C - 316"	0.50	1039	TZR17C17-AA
TIR17C17-AI	AI	AI Block for TIR17C17 (From PLC)	0.50	PLC:402175	TIR17C17-AO
TIR17C17-AO	AO	Tank Temperature Riser 17C - 316"	----	1039	TIR17C17
TIR17C17_BL	BL	OR Block for TIR17C17 Alarms	1	----	TIR17C17_CA
TIR17C17_CA	CA	CA Block for TIR17C17 Dynamic Coloring	----	----	
TIR17C18	AA	Tank Temperature Riser 17C - 340"	0.50	1040	TZR17C18-AA
TIR17C18-AI	AI	AI Block for TIR17C18 (From PLC)	0.50	PLC:402176	TIR17C18-AO
TIR17C18-AO	AO	Tank Temperature Riser 17C - 340"	----	1040	TIR17C18
TIR17C18_BL	BL	OR Block for TIR17C18 Alarms	1	----	TIR17C18_CA
TIR17C18_CA	CA	CA Block for TIR17C18 Dynamic Coloring	----	----	
TIR17C19	AA	Tank Temperature Riser 17C - 364"	0.50	1041	TZR17C19-AA
TIR17C19-AI	AI	AI Block for TIR17C19 (From PLC)	0.50	PLC:402177	TIR17C19-AO
TIR17C19-AO	AO	Tank Temperature Riser 17C - 364"	----	1041	TIR17C19
TIR17C19_BL	BL	OR Block for TIR17C19 Alarms	1	----	TIR17C19_CA
TIR17C19_CA	CA	CA Block for TIR17C19 Dynamic Coloring	----	----	
TIR17C20	AA	Tank Temperature Riser 17C - 392"	0.50	1042	TZR17C20-AA
TIR17C20-AI	AI	AI Block for TIR17C20 (From PLC)	0.50	PLC:402178	TIR17C20-AO
TIR17C20-AO	AO	Tank Temperature Riser 17C - 392"	----	1042	TIR17C20
TIR17C20_BL	BL	OR Block for TIR17C20 Alarms	1	----	TIR17C20_CA
TIR17C20_CA	CA	CA Block for TIR17C20 Dynamic Coloring	----	----	
TIR17C21	AA	Tank Temperature Riser 17C - 402"	0.50	1043	TZR17C21-AA
TIR17C21-AI	AI	AI Block for TIR17C21 (From PLC)	0.50	PLC:402179	TIR17C21-AO
TIR17C21-AO	AO	Tank Temperature Riser 17C - 402"	----	1043	TIR17C21
TIR17C21_BL	BL	OR Block for TIR17C21 Alarms	1	----	TIR17C21_CA
TIR17C21_CA	CA	CA Block for TIR17C21 Dynamic Coloring	----	----	
TIR17C22	AA	Tank Temperature Riser 17C - 425"	0.50	1044	TZR17C22-AA
TIR17C22-AI	AI	AI Block for TIR17C22 (From PLC)	0.50	PLC:402180	TIR17C22-AO
TIR17C22-AO	AO	Tank Temperature Riser 17C - 425"	----	1044	TIR17C22
TIR17C22_BL	BL	OR Block for TIR17C22 Alarms	1	----	TIR17C22_CA
TIR17C22_CA	CA	CA Block for TIR17C22 Dynamic Coloring	----	----	
TITMSY15	AA	FTIR Sample Gas Temperature	0.50	PLC:402022	
TITMSY25	AA	GMS-2 Building Temperature	0.50	PLC:402030	
TIVDTCAB	AA	VDTT Instrument Cabinet Temp	0.50	PLC:402066	
TPR12A01	DI	TIR12A01 Out of Range Bit	0.50	PLC:000545	
TPR12A02	DI	TIR12A02 Out of Range Bit	0.50	PLC:000547	
TRA1A	AA	DACS-1 Trailer Current Phase A	0.50	PLC:402093	
TRA1B	AA	DACS-1 Trailer Current Phase B	0.50	PLC:402094	
TRA1C	AA	DACS-1 Trailer Current Phase C	0.50	PLC:402095	
TRT1	AA	Trailer Temperature Rear Rack 2	0.50	PLC:402097	
TRT2	AA	Trailer Temperature Rear Rack 4	0.50	PLC:402105	
TRT3	AA	Trailer Temperature Rear Rack 6	0.50	PLC:402098	
TRT4	AA	Trailer Temperature Rear Rack 8	0.50	PLC:402106	
TRT5	AA	Trailer Temperature Front Rack 1	0.50	PLC:402099	
TRT6	AA	Trailer Temperature Front Rack 3	0.50	PLC:402107	
TRT7	AA	Trailer Temperature Front Rack 5	0.50	PLC:402100	
TRT8	AA	Trailer Temperature Front Rack 6	0.50	PLC:402108	
TRT9	AA	Trailer Temperature Front Rack 8	0.50	PLC:402101	
TRT10	AA	Trailer Temperature Ambient	0.50	PLC:402102	
TRT11	AA	Trailer Temperature Rear Rack 9	0.50	PLC:402109	
TRV1	AA	DACS-1 Trailer Voltage	0.50	PLC:402096	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TT10001	AA	Vent Header Temperature	0.50	PLC:402019	
TZR12A01	DI	Instrument Problem - TIR12A01	1	1201:0	
TZR12A01-AA	AA	AA Block for Instrument Problem TIR12A01	0.50	PLC:402004	
TZR12A01_BL	BL	OR Block for Instrument Problem TIR12A01	1	----	TZR12A01_DO
TZR12A01_DO	DO	DO Block for Instrument Problem TIR12A01	----	1201:0	TZR12A01
TZR12A02	DI	Instrument Problem - TIR12A02	1	1201:1	
TZR12A02-AA	AA	AA Block for Instrument Problem TIR12A02	0.50	PLC:402003	
TZR12A02_BL	BL	OR Block for Instrument Problem TIR12A02	1	----	TZR12A02_DO
TZR12A02_DO	DO	DO Block for Instrument Problem TIR12A02	----	1201:1	TZR12A02
TZR17B01	DI	Instrument Problem - TIR17B01	1	1081:0	
TZR17B01-AA	AA	AA Block for Instrument Problem TIR17B01	0.50	1001	
TZR17B01_BL	BL	OR Block for Instrument Problem TIR17B01	1	----	
TZR17B01_DO	DO	DO Block for Instrument Problem TIR17B01	----	1081:0	TZR17B01
TZR17B02	DI	Instrument Problem - TIR17B02	1	1081:1	
TZR17B02-AA	AA	AA Block for Instrument Problem TIR17B02	0.50	1002	
TZR17B02_BL	BL	OR Block for Instrument Problem TIR17B02	1	----	
TZR17B02_DO	DO	DO Block for Instrument Problem TIR17B02	----	1081:1	TZR17B02
TZR17B03	DI	Instrument Problem - TIR17B03	1	1081:2	
TZR17B03-AA	AA	AA Block for Instrument Problem TIR17B03	0.50	1003	
TZR17B03_BL	BL	OR Block for Instrument Problem TIR17B03	1	----	
TZR17B03_DO	DO	DO Block for Instrument Problem TIR17B03	----	1081:2	TZR17B03
TZR17B04	DI	Instrument Problem - TIR17B04	1	1081:3	
TZR17B04-AA	AA	AA Block for Instrument Problem TIR17B04	0.50	1004	
TZR17B04_BL	BL	OR Block for Instrument Problem TIR17B04	1	----	
TZR17B04_DO	DO	DO Block for Instrument Problem TIR17B04	----	1081:3	TZR17B04
TZR17B05	DI	Instrument Problem - TIR17B05	1	1081:4	
TZR17B05-AA	AA	AA Block for Instrument Problem TIR17B05	0.50	1005	
TZR17B05_BL	BL	OR Block for Instrument Problem TIR17B05	1	----	
TZR17B05_DO	DO	DO Block for Instrument Problem TIR17B05	----	1081:4	TZR17B05
TZR17B06	DI	Instrument Problem - TIR17B06	1	1081:5	
TZR17B06-AA	AA	AA Block for Instrument Problem TIR17B06	0.50	1006	
TZR17B06_BL	BL	OR Block for Instrument Problem TIR17B06	1	----	
TZR17B06_DO	DO	DO Block for Instrument Problem TIR17B06	----	1081:5	TZR17B06
TZR17B07	DI	Instrument Problem - TIR17B07	1	1081:6	
TZR17B07-AA	AA	AA Block for Instrument Problem TIR17B07	0.50	1007	
TZR17B07_BL	BL	OR Block for Instrument Problem TIR17B07	1	----	
TZR17B07_DO	DO	DO Block for Instrument Problem TIR17B07	----	1081:6	TZR17B07
TZR17B08	DI	Instrument Problem - TIR17B08	1	1081:7	
TZR17B08-AA	AA	AA Block for Instrument Problem TIR17B08	0.50	1008	
TZR17B08_BL	BL	OR Block for Instrument Problem TIR17B08	1	----	
TZR17B08_DO	DO	DO Block for Instrument Problem TIR17B08	----	1081:7	TZR17B08
TZR17B09	DI	Instrument Problem - TIR17B09	1	1081:8	
TZR17B09-AA	AA	AA Block for Instrument Problem TIR17B09	0.50	1009	
TZR17B09_BL	BL	OR Block for Instrument Problem TIR17B09	1	----	
TZR17B09_DO	DO	DO Block for Instrument Problem TIR17B09	----	1081:8	TZR17B09
TZR17B10	DI	Instrument Problem - TIR17B10	1	1081:9	
TZR17B10-AA	AA	AA Block for Instrument Problem TIR17B10	0.50	1010	
TZR17B10_BL	BL	OR Block for Instrument Problem TIR17B10	1	----	
TZR17B10_DO	DO	DO Block for Instrument Problem TIR17B10	----	1081:9	TZR17B10
TZR17B11	DI	Instrument Problem - TIR17B11	1	1081:10	
TZR17B11-AA	AA	AA Block for Instrument Problem TIR17B11	0.50	1011	
TZR17B11_BL	BL	OR Block for Instrument Problem TIR17B11	1	----	
TZR17B11_DO	DO	DO Block for Instrument Problem TIR17B11	----	1081:10	TZR17B11
TZR17B12	DI	Instrument Problem - TIR17B12	1	1081:11	
TZR17B12-AA	AA	AA Block for Instrument Problem TIR17B12	0.50	1012	
TZR17B12_BL	BL	OR Block for Instrument Problem TIR17B12	1	----	
TZR17B12_DO	DO	DO Block for Instrument Problem TIR17B12	----	1081:11	TZR17B12
TZR17B13	DI	Instrument Problem - TIR17B13	1	1081:12	
TZR17B13-AA	AA	AA Block for Instrument Problem TIR17B13	0.50	1013	
TZR17B13_BL	BL	OR Block for Instrument Problem TIR17B13	1	----	
TZR17B13_DO	DO	DO Block for Instrument Problem TIR17B13	----	1081:12	TZR17B13
TZR17B14	DI	Instrument Problem - TIR17B14	1	1081:13	
TZR17B14-AA	AA	AA Block for Instrument Problem TIR17B14	0.50	1014	
TZR17B14_BL	BL	OR Block for Instrument Problem TIR17B14	1	----	
TZR17B14_DO	DO	DO Block for Instrument Problem TIR17B14	----	1081:13	TZR17B14
TZR17B15	DI	Instrument Problem - TIR17B15	1	1081:14	
TZR17B15-AA	AA	AA Block for Instrument Problem TIR17B15	0.50	1015	
TZR17B15_BL	BL	OR Block for Instrument Problem TIR17B15	1	----	
TZR17B15_DO	DO	DO Block for Instrument Problem TIR17B15	----	1081:14	TZR17B15
TZR17B16	DI	Instrument Problem - TIR17B16	1	1081:15	
TZR17B16-AA	AA	AA Block for Instrument Problem TIR17B16	0.50	1016	
TZR17B16_BL	BL	OR Block for Instrument Problem TIR17B16	1	----	
TZR17B16_DO	DO	DO Block for Instrument Problem TIR17B16	----	1081:15	TZR17B16
TZR17B17	DI	Instrument Problem - TIR17B17	1	1082:0	
TZR17B17-AA	AA	AA Block for Instrument Problem TIR17B17	0.50	1017	
TZR17B17_BL	BL	OR Block for Instrument Problem TIR17B17	1	----	
TZR17B17_DO	DO	DO Block for Instrument Problem TIR17B17	----	1082:0	TZR17B17

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TZR17B18	DI	Instrument Problem - TIR17B18	1	1082:1	
TZR17B18-AA	AA	AA Block for Instrument Problem TIR17B18	0.50	1018	
TZR17B18_BL	BL	OR Block for Instrument Problem TIR17B18	1	----	
TZR17B18_DO	DO	DO Block for Instrument Problem TIR17B18	----	1082:1	TZR17B18
TZR17B19	DI	Instrument Problem - TIR17B19	1	1082:2	
TZR17B19-AA	AA	AA Block for Instrument Problem TIR17B19	0.50	1019	
TZR17B19_BL	BL	OR Block for Instrument Problem TIR17B19	1	----	
TZR17B19_DO	DO	DO Block for Instrument Problem TIR17B19	----	1082:2	TZR17B19
TZR17B20	DI	Instrument Problem - TIR17B20	1	1082:3	
TZR17B20-AA	AA	AA Block for Instrument Problem TIR17B20	0.50	1020	
TZR17B20_BL	BL	OR Block for Instrument Problem TIR17B20	1	----	
TZR17B20_DO	DO	DO Block for Instrument Problem TIR17B20	----	1082:3	TZR17B20
TZR17B21	DI	Instrument Problem - TIR17B21	1	1082:4	
TZR17B21-AA	AA	AA Block for Instrument Problem TIR17B21	0.50	1021	
TZR17B21_BL	BL	OR Block for Instrument Problem TIR17B21	1	----	
TZR17B21_DO	DO	DO Block for Instrument Problem TIR17B21	----	1082:4	TZR17B21
TZR17B22	DI	Instrument Problem - TIR17B22	1	1082:5	
TZR17B22-AA	AA	AA Block for Instrument Problem TIR17B22	0.50	1022	
TZR17B22_BL	BL	OR Block for Instrument Problem TIR17B22	1	----	
TZR17B22_DO	DO	DO Block for Instrument Problem TIR17B22	----	1082:5	TZR17B22
TZR17C01	DI	Instrument Problem - TIR17C01	1	1083:0	
TZR17C01-AA	AA	AA Block for Instrument Problem TIR17C01	0.50	1023	
TZR17C01_BL	BL	OR Block for Instrument Problem TIR17C01	1	----	
TZR17C01_DO	DO	DO Block for Instrument Problem TIR17C01	----	1083:0	TZR17C01
TZR17C02	DI	Instrument Problem - TIR17C02	1	1083:1	
TZR17C02-AA	AA	AA Block for Instrument Problem TIR17C02	0.50	1024	
TZR17C02_BL	BL	OR Block for Instrument Problem TIR17C02	1	----	
TZR17C02_DO	DO	DO Block for Instrument Problem TIR17C02	----	1083:1	TZR17C02
TZR17C03	DI	Instrument Problem - TIR17C03	1	1083:2	
TZR17C03-AA	AA	AA Block for Instrument Problem TIR17C03	0.50	1025	
TZR17C03_BL	BL	OR Block for Instrument Problem TIR17C03	1	----	
TZR17C03_DO	DO	DO Block for Instrument Problem TIR17C03	----	1083:2	TZR17C03
TZR17C04	DI	Instrument Problem - TIR17C04	1	1083:3	
TZR17C04-AA	AA	AA Block for Instrument Problem TIR17C04	0.50	1026	
TZR17C04_BL	BL	OR Block for Instrument Problem TIR17C04	1	----	
TZR17C04_DO	DO	DO Block for Instrument Problem TIR17C04	----	1083:3	TZR17C04
TZR17C05	DI	Instrument Problem - TIR17C05	1	1083:4	
TZR17C05-AA	AA	AA Block for Instrument Problem TIR17C05	0.50	1027	
TZR17C05_BL	BL	OR Block for Instrument Problem TIR17C05	1	----	
TZR17C05_DO	DO	DO Block for Instrument Problem TIR17C05	----	1083:4	TZR17C05
TZR17C06	DI	Instrument Problem - TIR17C06	1	1083:5	
TZR17C06-AA	AA	AA Block for Instrument Problem TIR17C06	0.50	1028	
TZR17C06_BL	BL	OR Block for Instrument Problem TIR17C06	1	----	
TZR17C06_DO	DO	DO Block for Instrument Problem TIR17C06	----	1083:5	TZR17C06
TZR17C07	DI	Instrument Problem - TIR17C07	1	1083:6	
TZR17C07-AA	AA	AA Block for Instrument Problem TIR17C07	0.50	1029	
TZR17C07_BL	BL	OR Block for Instrument Problem TIR17C07	1	----	
TZR17C07_DO	DO	DO Block for Instrument Problem TIR17C07	----	1083:6	TZR17C07
TZR17C08	DI	Instrument Problem - TIR17C08	1	1083:7	
TZR17C08-AA	AA	AA Block for Instrument Problem TIR17C08	0.50	1030	
TZR17C08_BL	BL	OR Block for Instrument Problem TIR17C08	1	----	
TZR17C08_DO	DO	DO Block for Instrument Problem TIR17C08	----	1083:7	TZR17C08
TZR17C09	DI	Instrument Problem - TIR17C09	1	1083:8	
TZR17C09-AA	AA	AA Block for Instrument Problem TIR17C09	0.50	1031	
TZR17C09_BL	BL	OR Block for Instrument Problem TIR17C09	1	----	
TZR17C09_DO	DO	DO Block for Instrument Problem TIR17C09	----	1083:8	TZR17C09
TZR17C10	DI	Instrument Problem - TIR17C10	1	1083:9	
TZR17C10-AA	AA	AA Block for Instrument Problem TIR17C10	0.50	1032	
TZR17C10_BL	BL	OR Block for Instrument Problem TIR17C10	1	----	
TZR17C10_DO	DO	DO Block for Instrument Problem TIR17C10	----	1083:9	TZR17C10
TZR17C11	DI	Instrument Problem - TIR17C11	1	1083:10	
TZR17C11-AA	AA	AA Block for Instrument Problem TIR17C11	0.50	1033	
TZR17C11_BL	BL	OR Block for Instrument Problem TIR17C11	1	----	
TZR17C11_DO	DO	DO Block for Instrument Problem TIR17C11	----	1083:10	TZR17C11
TZR17C12	DI	Instrument Problem - TIR17C12	1	1083:11	
TZR17C12-AA	AA	AA Block for Instrument Problem TIR17C12	0.50	1034	
TZR17C12_BL	BL	OR Block for Instrument Problem TIR17C12	1	----	
TZR17C12_DO	DO	DO Block for Instrument Problem TIR17C12	----	1083:11	TZR17C12
TZR17C13	DI	Instrument Problem - TIR17C13	1	1083:12	
TZR17C13-AA	AA	AA Block for Instrument Problem TIR17C13	0.50	1035	
TZR17C13_BL	BL	OR Block for Instrument Problem TIR17C13	1	----	
TZR17C13_DO	DO	DO Block for Instrument Problem TIR17C13	----	1083:12	TZR17C13
TZR17C14	DI	Instrument Problem - TIR17C14	1	1083:13	
TZR17C14-AA	AA	AA Block for Instrument Problem TIR17C14	0.50	1036	
TZR17C14_BL	BL	OR Block for Instrument Problem TIR17C14	1	----	
TZR17C14_DO	DO	DO Block for Instrument Problem TIR17C14	----	1083:13	TZR17C14
TZR17C15	DI	Instrument Problem - TIR17C15	1	1083:14	
TZR17C15-AA	AA	AA Block for Instrument Problem TIR17C15	0.50	1037	
TZR17C15_BL	BL	OR Block for Instrument Problem TIR17C15	1	----	
TZR17C15_DO	DO	DO Block for Instrument Problem TIR17C15	----	1083:14	TZR17C15

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TZR17C16	DI	Instrument Problem - TIR17C16	1	1083:15	
TZR17C16-AA	AA	AA Block for Instrument Problem TIR17C16	0.50	1038	
TZR17C16_BL	BL	OR Block for Instrument Problem TIR17C16	1	----	
TZR17C16_DO	DO	DO Block for Instrument Problem TIR17C16	----	1083:15	TZR17C16
TZR17C17	DI	Instrument Problem - TIR17C17	1	1084:0	
TZR17C17-AA	AA	AA Block for Instrument Problem TIR17C17	0.50	1039	
TZR17C17_BL	BL	OR Block for Instrument Problem TIR17C17	1	----	
TZR17C17_DO	DO	DO Block for Instrument Problem TIR17C17	----	1084:0	TZR17C17
TZR17C18	DI	Instrument Problem - TIR17C18	1	1084:1	
TZR17C18-AA	AA	AA Block for Instrument Problem TIR17C18	0.50	1040	
TZR17C18_BL	BL	OR Block for Instrument Problem TIR17C18	1	----	
TZR17C18_DO	DO	DO Block for Instrument Problem TIR17C18	----	1084:1	TZR17C18
TZR17C19	DI	Instrument Problem - TIR17C19	1	1084:2	
TZR17C19-AA	AA	AA Block for Instrument Problem TIR17C19	0.50	1041	
TZR17C19_BL	BL	OR Block for Instrument Problem TIR17C19	1	----	
TZR17C19_DO	DO	DO Block for Instrument Problem TIR17C19	----	1084:2	TZR17C19
TZR17C20	DI	Instrument Problem - TIR17C20	1	1084:3	
TZR17C20-AA	AA	AA Block for Instrument Problem TIR17C20	0.50	1042	
TZR17C20_BL	BL	OR Block for Instrument Problem TIR17C20	1	----	
TZR17C20_DO	DO	DO Block for Instrument Problem TIR17C20	----	1084:3	TZR17C20
TZR17C21	DI	Instrument Problem - TIR17C21	1	1084:4	
TZR17C21-AA	AA	AA Block for Instrument Problem TIR17C21	0.50	1043	
TZR17C21_BL	BL	OR Block for Instrument Problem TIR17C21	1	----	
TZR17C21_DO	DO	DO Block for Instrument Problem TIR17C21	----	1084:4	TZR17C21
TZR17C22	DI	Instrument Problem - TIR17C22	1	1084:5	
TZR17C22-AA	AA	AA Block for Instrument Problem TIR17C22	0.50	1044	
TZR17C22_BL	BL	OR Block for Instrument Problem TIR17C22	1	----	
TZR17C22_DO	DO	DO Block for Instrument Problem TIR17C22	----	1084:5	TZR17C22
UAA_SILENCE_LEVEL	AO	UAA Count When Silence Key Pressed	----	1330	
UACCEL	AO	Desired Pump Acceleration	----	1824	
UANGLE	AO	Directional Motor Angle for Test Setup	----	1801	
UDECEL	AO	Desired Pump Deceleration	----	1825	
UDESC	DO	BUMP AT 28 DEG	----	1358:0	
UHRS	AO	Desired Test Hours	----	1821	
UMINS	AO	Desired Test Minutes	----	1822	
UPSBY1	DI	UPS System On Bypass Alarm	0.50	PLC:002020	
UPSFA1	DI	UPS Output Failure Alarm	0.50	PLC:002021	
UPSLV1	DI	UPS Low Voltage	0.50	PLC:002019	
UPSOT1	DI	UPS Over Temperature Closure	0.50	PLC:002018	
UPSPI1	DI	UPS AC Power Input	0.50	PLC:002024	
UPST1	AA	UPS Temperature	0.50	PLC:402103	
URESTIM	DO	Bit to Reset Test Elapsed Time	----	1350:9	
USECS	AO	Desired Test Seconds	----	1823	
USER_SECONDS	CA	User Time in Seconds	----	----	COUNTDOWN
USPEED	AO	PMotor Speed for Test Setup	----	1804	
UTESTNO	AO	1	----	1802	
VC232040	DI	High Pump Motor Current Abort	0.50	PLC:000325	
VC232040E	DR	High Pump Motor Current Abort Enable	----	PLC:002122	
VC232050	DI	High Pump Motor Speed Abort	0.50	PLC:000326	
VC232050E	DR	High Pump Motor Speed Abort Enable	----	PLC:002123	
VERSION	AO	DACS v4.01	----	1999	
VR232020	AR	Mixer Pump Motor Voltage	----	PLC:400215	
VR232040	AI	Pump Motor Current	1	1320	VR232040-AO
VR232040-AO	AO	Pump Motor Current To PLC	----	PLC:400219	
VR232040F	AO	Pump Motor Current From VSD	----	1320	VR232040
VR232040_BL	BL	OR Block for VR232040 Alarms	1	----	VR232040_CA
VR232040_CA	CA	CA Block for VR232040 Dynamic Coloring	----	----	
VR232050	AI	Pump Speed	1	1321	VR232050-AO
VR232050-AO	AO	Pump Speed To PLC	----	PLC:400220	
VR232050F	AO	Pump Speed From VSD	----	1321	VR232050
VR232050_BL	BL	OR Block for VR232050 Alarms	1	----	VR232050_CA
VR232050_CA	CA	CA Block for VR232050 Dynamic Coloring	----	----	
VR232060	AO	Pump Speed Setpoint	----	1811	
VR232080	AR	Rotational Motor Voltage	----	PLC:400216	
VR232100	AR	Rotational Motor Current	----	PLC:400217	
VR232110	AR	Rotational Motor Speed	----	PLC:400218	
VR232120	AR	Directional Speed Setpoint	----	PLC:400222	
VSDS_BAD	BL	At Least One VSD is Not Communicating	1	----	A5ABRT
WCR1BA01	DI	High VDTT Column 1B Strain Abort 1	0.50	PLC:000320	
WCR1BA01E	DR	Hi VDTT Column 1B Strain Abort 1 Enable	----	PLC:002117	
WCR1BA02	DI	High 1B-2 Strain Abort	0.50	PLC:000337	
WCR1BA02E	DR	High 1B-2 Strain Abort Enable	----	PLC:002134	
WCR1BA03	DI	High VDTT Column 1B Strain Abort 2	0.50	PLC:000321	
WCR1BA03E	DR	Hi VDTT Column 1B Strain Abort 2 Enable	----	PLC:002118	
WCR1BA_BL	BL	OR Block for WIR1BA Aborts	1	----	
WCR12A01	DI	High Pump Column Strain Abort 1	0.50	PLC:000313	
WCR12A01E	DR	High Pump Column Strain Abort 1 Enable	----	PLC:002110	
WCR12A02	DI	High Pump Column Strain Abort 2	0.50	PLC:000314	
WCR12A02E	DR	High Pump Column Strain Abort 2 Enable	----	PLC:002111	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
WCR12A03	DI	High Pump Column Strain Abort 3	0.50	PLC:000315	
WCR12A03E	DR	High Pump Column Strain Abort 3 Enable	----	PLC:002112	
WCR12A04	DI	High Pump Column Strain Abort 4	0.50	PLC:000316	
WCR12A04E	DR	High Pump Column Strain Abort 4 Enable	----	PLC:002113	
WCR12A_BL	BL	OR Block for WIR12A Aborts	1	----	
WCR17C01	DI	High MIT 17C Column Strain Abort 1	0.50	PLC:000323	
WCR17C01E	DR	Hi MIT 17C Column Strain Abort 1 Enable	----	PLC:002120	
WCR17C02	DI	High MIT 17C Column Strain Abort 2	0.50	PLC:000324	
WCR17C02E	DR	Hi MIT 17C Column Strain Abort 2 Enable	----	PLC:002121	
WCR17C_BL	BL	OR Block for WIR17C Aborts	1	----	
WDTNOT1	BL	STA5 to PLC Watchdog Timer	2	----	WDTRESET1
WDTNOT2	BL	STA5 to PLC Watchdog Timer (Old ST8)	2	----	WDTRESET2
WDTRESET1	DO	Station 5 Watchdog Timer Reset	----	PLC:000213	
WDTRESET2	DO	Station 5 Watchdog Timer Reset (Old ST8)	----	PLC:000242	
WHF1B1B	DI	Strain Gauge 1B-1 Hi Freq Abort	0.50	PLC:002006	
WHF1B1BC	DI	WHF1B1B Coil Status	0.50	PLC:000247	
WHF1B1BE	DR	Strain Gauge 1B-1 Hi Freq Abort Enable	----	PLC:002063	
WHF1B1L	DI	Str Gage 1B-1 Hi Freq Alarm (Latched)	0.50	PLC:002037	
WHF1B1U	DI	Str Gage 1B-1 Hi Freq Alarm (Unlatched)	0.50	PLC:002005	
WHF1B2B	DI	Strain Gauge 1B-2 Hi Freq Abort	0.50	PLC:002013	
WHF1B2BC	DI	WHF1B2B Coil Status	0.50	PLC:000253	
WHF1B2BE	DR	Strain Gauge 1B-2 Hi Freq Abort Enable	----	PLC:002066	
WHF1B2L	DI	Str Gage 1B-2 Hi Freq Alarm (Latched)	0.50	PLC:002041	
WHF1B2U	DI	Str Gage 1B-2 Hi Freq Alarm (Unlatched)	0.50	PLC:002012	
WHF1B3B	DI	Strain Gauge 1B-3 Hi Freq Abort	0.50	PLC:002014	
WHF1B3BC	DI	WHF1B3B Coil Status	0.50	PLC:000254	
WHF1B3BE	DR	Strain Gauge 1B-3 Hi Freq Abort Enable	----	PLC:002067	
WHF1B3L	DI	Str Gage 1B-3 Hi Freq Alarm (Latched)	0.50	PLC:002038	
WHF1B3U	DI	Str Gage 1B-3 Hi Freq Alarm (Unlatched)	0.50	PLC:002007	
WHF17C1B	DI	Strain Gauge 17C-1 Hi Freq Abort	0.50	PLC:002004	
WHF17C1BC	DI	WHF17C1B Coil Status	0.50	PLC:000246	
WHF17C1BE	DR	Strain Gauge 17C-1 Hi Freq Abort Enable	----	PLC:002062	
WHF17C1L	DI	Str Gage 17C-1 Hi Freq Alarm (Latched)	0.50	PLC:002036	
WHF17C1U	DI	Str Gage 17C-1 Hi Freq Alarm (Unlatched)	0.50	PLC:002003	
WHF17C2B	DI	Strain Gauge 17C-2 Hi Freq Abort	0.50	PLC:002011	
WHF17C2BC	DI	WHF17C2B Coil Status	0.50	PLC:000252	
WHF17C2BE	DR	Strain Gauge 17C-2 Hi Freq Abort Enable	----	PLC:002065	
WHF17C2L	DI	Str Gage 17C-2 Hi Freq Alarm (Latched)	0.50	PLC:002040	
WHF17C2U	DI	Str Gage 17C-2 Hi Freq Alarm (Unlatched)	0.50	PLC:002010	
WIR1BA01	AA	Strain Gauge #1 Riser 1B at Level 530"	0.50	PLC:402077	
WIR1BA01_BL	BL	OR Block for WIR1BA01 Alarms	1	----	WIR1BA01_CA
WIR1BA01_BLB	BL	OR Block for WIR1BA01 Aborts	1	----	WIR1BA01_BL
WIR1BA01_CA	CA	CA Block for WIR1BA01 Dynamic Coloring	----	----	
WIR1BA02	AA	Strain Gauge #2 Riser 1B at Level 530"	0.50	PLC:402069	
WIR1BA02_BL	BL	OR Block for WIR1BA02 Alarms	1	----	WIR1BA02_CA
WIR1BA02_BLB	BL	OR Block for WIR1BA02 Aborts	1	----	WIR1BA02_BL
WIR1BA02_CA	CA	CA Block for WIR1BA02 Dynamic Coloring	----	----	
WIR1BA03	AA	Strain Gauge #3 Riser 1B at Level 530"	0.50	PLC:402078	
WIR1BA03_BL	BL	OR Block for WIR1BA03 Alarms	1	----	WIR1BA03_CA
WIR1BA03_BLB	BL	OR Block for WIR1BA03 Aborts	1	----	WIR1BA03_BL
WIR1BA03_CA	CA	CA Block for WIR1BA03 Dynamic Coloring	----	----	
WIR1BA_BL	BL	OR Block for WIR1BA Alarms	1	----	WIR1BA_CA
WIR1BA_CA	CA	CA Block for WIR1BA Dynamic Coloring	----	----	
WIR12A01	AA	Pump Support Column Strain #1	0.50	PLC:402073	
WIR12A01_BL	BL	OR Block for WIR12A01 Alarms	1	----	WIR12A01_CA
WIR12A01_BLB	BL	OR Block for WIR12A01 Aborts	1	----	WIR12A01_BL
WIR12A01_CA	CA	CA Block for WIR12A01 Dynamic Coloring	----	----	
WIR12A02	AA	Pump Support Column Strain #2	0.50	PLC:402080	
WIR12A02_BL	BL	OR Block for WIR12A02 Alarms	1	----	WIR12A02_CA
WIR12A02_BLB	BL	OR Block for WIR12A02 Aborts	1	----	WIR12A02_BL
WIR12A02_CA	CA	CA Block for WIR12A02 Dynamic Coloring	----	----	
WIR12A03	AA	Pump Support Column Strain #3	0.50	PLC:402074	
WIR12A03_BL	BL	OR Block for WIR1BA03 Alarms	1	----	WIR12A03_CA
WIR12A03_BLB	BL	OR Block for WIR12A03 Aborts	1	----	WIR12A03_BL
WIR12A03_CA	CA	CA Block for WIR12A03 Dynamic Coloring	----	----	
WIR12A04	AA	Pump Support Column Strain #4	0.50	PLC:402071	
WIR12A04_BL	BL	OR Block for WIR12A04 Alarms	1	----	WIR12A04_CA
WIR12A04_BLB	BL	OR Block for WIR12A04 Aborts	1	----	WIR12A04_BL
WIR12A04_CA	CA	CA Block for WIR12A04 Dynamic Coloring	----	----	
WIR12A_BL	BL	OR Block for WIR12A Alarms	1	----	WIR12A_CA
WIR12A_CA	CA	CA Block for WIR12A Dynamic Coloring	----	----	
WIR17C01	AA	Strain Gauge #1 Riser 17C at Lvl 465.5"	0.50	PLC:402081	
WIR17C01_BL	BL	OR Block for WIR17C01 Alarms	1	----	WIR17C01_CA
WIR17C01_BLB	BL	OR Block for WIR17C01 Aborts	1	----	WIR17C01_BL
WIR17C01_CA	CA	CA Block for WIR17C01 Dynamic Coloring	----	----	
WIR17C02	AA	Strain Gauge #2 Riser 17C at Lvl 465.5"	0.50	PLC:402076	
WIR17C02_BL	BL	OR Block for WIR17C02 Alarms	1	----	WIR17C02_CA
WIR17C02_BLB	BL	OR Block for WIR17C02 Aborts	1	----	WIR17C02_BL
WIR17C02_CA	CA	CA Block for WIR17C02 Dynamic Coloring	----	----	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
WIR17C_BL	BL	OR Block for WIR17C Alarms	1	----	WIR17C_CA
WIR17C_CA	CA	CA Block for WIR17C Dynamic Coloring	----	----	
WLR1BA01	DI	Low 1B-1 Strain Abort	0.50	PLC:000334	
WLR1BA01E	DR	Low 1B-1 Strain Abort Enable	----	PLC:002131	
WLR1BA02	DI	Low 1B-2 Strain Abort	0.50	PLC:000335	
WLR1BA02E	DR	Low 1B-2 Strain Abort Enable	----	PLC:002132	
WLR1BA03	DI	Low 1B-3 Strain Abort	0.50	PLC:000336	
WLR1BA03E	DR	Low 1B-3 Strain Abort Enable	----	PLC:002133	
WLR12A01	DI	Low 12A-1 Strain Abort	0.50	PLC:000256	
WLR12A01E	DR	Low 12A-1 Strain Abort Enable	----	PLC:002053	
WLR12A02	DI	Low 12A-2 Strain Abort	0.50	PLC:000262	
WLR12A02E	DR	Low 12A-2 Strain Abort Enable	----	PLC:002059	
WLR12A03	DI	Low 12A-3 Strain Abort	0.50	PLC:000263	
WLR12A03E	DR	Low 12A-3 Strain Abort Enable	----	PLC:002060	
WLR12A04	DI	Low 12A-4 Strain Abort	0.50	PLC:000331	
WLR12A04E	DR	Low 12A-4 Strain Abort Enable	----	PLC:002128	
WLR17C01	DI	Low 17C-1 Strain Abort	0.50	PLC:000339	
WLR17C01E	DR	Low 17C-1 Strain Abort Enable	----	PLC:002136	
WLR17C02	DI	Low 17C-2 Strain Abort	0.50	PLC:000340	
WLR17C02E	DR	Low 17C-2 Strain Abort Enable	----	PLC:002137	
WPR1BA01	DI	WIR1BA01 Out of Range Bit	0.50	PLC:000558	
WPR1BA02	DI	WIR1BA02 Out of Range Bit	0.50	PLC:000562	
WPR1BA03	DI	WIR1BA03 Out of Range Bit	0.50	PLC:000560	
WPR12A01	DI	WIR12A01 Out of Range Bit	0.50	PLC:000553	
WPR12A02	DI	WIR12A02 Out of Range Bit	0.50	PLC:000549	
WPR12A03	DI	WIR12A03 Out of Range Bit	0.50	PLC:000554	
WPR12A04	DI	WIR12A04 Out of Range Bit	0.50	PLC:000556	
WPR17C01	DI	WIR17C01 Out of Range Bit	0.50	PLC:000561	
WPR17C02	DI	WIR17C02 Out of Range Bit	0.50	PLC:000559	
WSH1	AA	DACS-1 Weather Station Humidity	0.50	PLC:402085	
WSP1	AA	DACS-1 Weather Station Barometric Press	0.50	PLC:402087	
WST1	AA	DACS-1 Weather Station Temperature	0.50	PLC:402104	
WSWDIR	AA	DACS-1 Weather Station Wind Direction	0.50	PLC:402086	
WSWSPD	AA	DACS-1 Weather Station Wind Speed	0.50	PLC:402091	
WZR1BA01	DI	Instrument Problem - WIR1BA01	1	1202:3	
WZR1BA01_BL	BL	OR Block for Instrument Problem WIR1BA01	1	----	WZR1BA01_DO
WZR1BA01_DO	DO	DO Block for Instrument Problem WIR1BA01	----	1202:3	WZR1BA01
WZR1BA02	DI	Instrument Problem - WIR1BA02	1	1201:14	
WZR1BA02_BL	BL	OR Block for Instrument Problem WIR1BA02	1	----	WZR1BA02_DO
WZR1BA02_DO	DO	DO Block for Instrument Problem WIR1BA02	----	1201:14	WZR1BA02
WZR1BA03	DI	Instrument Problem - WIR1BA03	1	1202:4	
WZR1BA03_BL	BL	OR Block for Instrument Problem WIR1BA03	1	----	WZR1BA03_DO
WZR1BA03_DO	DO	DO Block for Instrument Problem WIR1BA03	----	1202:4	WZR1BA03
WZR12A01	DI	Instrument Problem - WIR12A01	1	1202:0	
WZR12A01_BL	BL	OR Block for Instrument Problem WIR12A01	1	----	WZR12A01_DO
WZR12A01_DO	DO	DO Block for Instrument Problem WIR12A01	----	1202:0	WZR12A01
WZR12A02	DI	Instrument Problem - WIR12A02	1	1202:5	
WZR12A02_BL	BL	OR Block for Instrument Problem WIR12A02	1	----	WZR12A02_DO
WZR12A02_DO	DO	DO Block for Instrument Problem WIR12A02	----	1202:5	WZR12A02
WZR12A03	DI	Instrument Problem - WIR12A03	1	1202:1	
WZR12A03_BL	BL	OR Block for Instrument Problem WIR12A03	1	----	WZR12A03_DO
WZR12A03_DO	DO	DO Block for Instrument Problem WIR12A03	----	1202:1	WZR12A03
WZR12A04	DI	Instrument Problem - WIR12A04	1	1201:15	
WZR12A04_BL	BL	OR Block for Instrument Problem WIR12A04	1	----	WZR12A04_DO
WZR12A04_DO	DO	DO Block for Instrument Problem WIR12A04	----	1201:15	WZR12A04
WZR17C01	DI	Instrument Problem - WIR17C01	1	1202:6	
WZR17C01_BL	BL	OR Block for Instrument Problem WIR17C01	1	----	WZR17C01_DO
WZR17C01_DO	DO	DO Block for Instrument Problem WIR17C01	----	1202:6	WZR17C01
WZR17C02	DI	Instrument Problem - WIR17C02	1	1202:2	
WZR17C02_BL	BL	OR Block for Instrument Problem WIR17C02	1	----	WZR17C02_DO
WZR17C02_DO	DO	DO Block for Instrument Problem WIR17C02	----	1202:2	WZR17C02
ZERO_DO	DO	Digital Zero Constant Value	----	0:0	
ZIMPE112	AA	Motor Position Encoder BCD	0.50	PLC:402131	D_ANGLE_DIFF
ZIMPE142	AA	Mixer Pump Column Gas Pressure	0.50	PLC:402006	ZZMPE142-AA
ZIMPE142_BL	BL	OR Block for ZIMPE142 Alarms	1	----	ZIMPE142_CA
ZIMPE142_BL2	BL	OR Block 2 for ZIMPE142 Alarms	1	----	ZIMPE142_CA2
ZIMPE142_CA	CA	CA Block for ZIMPE142 Dynamic Coloring	----	----	
ZIMPE142_CA2	CA	CA Block for ZIMPE142 CSMAIN Coloring	----	----	
ZIMPE143	DI	Pump Oscil Motor Limit Switch CW	0.50	PLC:002016	ZIMPE144
ZIMPE143C	DI	ZIMPE143 Coil Status	0.50	PLC:000184	
ZIMPE143E	DR	CW Limit Switch Abort Enable	----	PLC:002069	
ZIMPE144	DI	Pump Oscil Motor Limit Switch CCW	0.50	PLC:002015	
ZIMPE144C	DI	ZIMPE144 Coil Status	0.50	PLC:000185	
ZIMPE144E	DR	CCW Limit Switch Abort Enable	----	PLC:002070	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
ZLMPE142	DI	Low Pump Column Gas Pressure Abort	0.50	PLC:000341	
ZLMPE142E	DR	Low Pump Column Gas Press Abort Enable	----	PLC:002138	
ZPMPE142	DI	ZIMPE142 Out of Range Bit	0.50	PLC:000563	
ZZMPE142	DI	Instrument Problem - ZIMPE142	1	1201:2	
ZZMPE142-AA	AA	AA Block for Instrument Problem ZIMPE142	0.50	PLC:402006	
ZZMPE142_BL	BL	OR Block for Instrument Problem ZIMPE142	1	----	ZZMPE142_DO
ZZMPE142_DO	DO	DO Block for Instrument Problem ZIMPE142	----	1201:2	ZZMPE142

Table D-2. Blocks with I/O Addresses

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
ZERO_DO	DO	Digital Zero Constant Value	----	0:0	
ALWAYS_ON	DO	CONSTANT "1"	----	0:1	
ALWAYS_ON_DI1	DI	CONSTANT "1" for ELAPSED-TIME TM Block	1	0:1	ELAPSED-TIME
ALWAYS_ON_DI2	DI	CONSTANT "1" for USER_SECONDS CA Block	1	0:1	USER_SECONDS
ALWAYS_ON_DI4	DI	CONSTANT "1" for CURPRED CA Block	1	0:1	CURPRED
ALWAYS_ON_DI5	DI	CONSTANT "1" for COUNTDOWN-HRS CA Block	1	0:1	COUNTDOWN-HRS
ALWAYS_ON_DI6	DI	CONSTANT "1" for COUNTDOWN-MINS CA Block	1	0:1	COUNTDOWN-MINS
ALWAYS_ON_DI7	DI	CONSTANT "1" for COUNTDOWN-SECS CA Block	1	0:1	COUNTDOWN-SECS
GC3FILEPREV	AO	GC3 Previous File Number	----	10	
RGRUNPREV	AO	RGA-5 Previous Run Number	----	11	
FTFILEPREV	AO	FTIR Previous File Number	----	12	
PHOTIMEPREV	AO	PHO Previous Time Value	----	13	
PHO-NH3	AA	PHO-NH3 Concentration	5	14	
PHO-NH3-AO	AO	AO Block for PHO-NH3 Concentration	----	14	PHO-NH3
GC3-INST	DI	Instrument Problem - GC3	5	15:1	
GC3-INST_DO	DO	DO Block for Instrument Problem - GC3	----	15:1	GC3-INST
GC3-ZVAL	DI	GC-3 Zero Value Alarm	5	15:2	
GC3-ZVAL_DO	DO	DO Block for GC-3 Zero Value Alarm	----	15:2	GC3-ZVAL
GC1-INST	DI	Instrument Problem - GC1	5	16:1	
GC1-INST_DO	DO	DO Block for Instrument Problem - GC1	----	16:1	GC1-INST
GC2-INST	DI	Instrument Problem - GC2	5	16:2	
GC2-INST_DO	DO	DO Block for Instrument Problem - GC2	----	16:2	GC2-INST
GC1-ZVAL	DI	GC-1 Zero Value Alarm	5	16:3	
GC1-ZVAL_DO	DO	DO Block for GC-1 Zero Value Alarm	----	16:3	GC1-ZVAL
GC2-ZVAL	DI	GC-2 Zero Value Alarm	5	16:4	
GC2-ZVAL_DO	DO	DO Block for GC-2 Zero Value Alarm	----	16:4	GC2-ZVAL
FT-INST	DI	Instrument Problem - FT-NH3	5	17:1	
FT-INST_DO	DO	DO Block for Instrument Problem FT-NH3	----	17:1	FT-INST
PHO-INST	DI	Instrument Problem - PHO-NH3	5	18:1	
PHO-INST_DO	DO	DO Block for Instrument Problem - PHO	----	18:1	PHO-INST
NH3STACK	DI	High PHO-NH3 Concentration (B&K)	5	18:2	
NH3STACK_DO	DO	DO Block for High PHO-NH3 Concentration	----	18:2	NH3STACK
ST5-LOGIN	DO		----	100:0	
ST5-LOGIN-DATE	DO		----	100:1	
ST5-LOGIN-GROUP	DO		----	100:2	
ST5-LOGIN-TIME	DO		----	100:3	
ST5-ONLINE	DO	Station5 Online/Offline Indication	----	100:4	
ST5-ONLINE-DATE	DO	01/01	----	100:5	
ST5-ONLINE-TIME	DO	00:00	----	100:6	
ST6-LOGIN	DO		----	101:0	
ST6-LOGIN-DATE	DO		----	101:1	
ST6-LOGIN-GROUP	DO		----	101:2	
ST6-LOGIN-TIME	DO		----	101:3	
ST6-ONLINE	DO	Station6 Online/Offline Indication	----	101:4	
ST6-ONLINE-DATE	DO	01/01	----	101:5	
ST6-ONLINE-TIME	DO	00:00	----	101:6	
ST7-LOGIN	DO		----	102:0	
ST7-LOGIN-DATE	DO		----	102:1	
ST7-LOGIN-GROUP	DO		----	102:2	
ST7-LOGIN-TIME	DO		----	102:3	
ST7-ONLINE	DO	Station7 Online/Offline Indication	----	102:4	
ST7-ONLINE-DATE	DO	01/01	----	102:5	
ST7-ONLINE-TIME	DO	00:00	----	102:6	
ST8-LOGIN	DO		----	103:0	
ST8-LOGIN-DATE	DO		----	103:1	
ST8-LOGIN-GROUP	DO		----	103:2	
ST8-LOGIN-TIME	DO		----	103:3	
ST8-ONLINE	DO	Station8 Online/Offline Indication	----	103:4	
ST8-ONLINE-DATE	DO	01/01	----	103:5	
ST8-ONLINE-TIME	DO	00:00	----	103:6	
ST9-LOGIN	DO		----	104:0	
ST9-LOGIN-DATE	DO		----	104:1	
ST9-LOGIN-GROUP	DO		----	104:2	
ST9-LOGIN-TIME	DO		----	104:3	
ST9-ONLINE	DO	Station9 Online/Offline Indication	----	104:4	
ST9-ONLINE-DATE	DO	01/01	----	104:5	
ST9-ONLINE-TIME	DO	00:00	----	104:6	
ST11-LOGIN	DO		----	105:0	
ST11-LOGIN-DATE	DO		----	105:1	
ST11-LOGIN-GROUP	DO		----	105:2	
ST11-LOGIN-TIME	DO		----	105:3	
ST11-ONLINE	DO	Station11 Online/Offline Indication	----	105:4	
ST11-ONLINE-DATE	DO	01/01	----	105:5	
ST11-ONLINE-TIME	DO	00:00	----	105:6	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
ST13-LOGIN	DO		----	106:0	
ST13-LOGIN-DATE	DO		----	106:1	
ST13-LOGIN-GROUP	DO		----	106:2	
ST13-LOGIN-TIME	DO		----	106:3	
ST13-ONLINE	DO	Station13 Online/Offline Indication	----	106:4	
ST13-ONLINE-DATE	DO	01/01	----	106:5	
ST13-ONLINE-TIME	DO	00:00	----	106:6	
ST15-LOGIN	DO		----	107:0	
ST15-LOGIN-DATE	DO		----	107:1	
ST15-LOGIN-GROUP	DO		----	107:2	
ST15-LOGIN-TIME	DO		----	107:3	
ST15-ONLINE	DO	Station15 Online/Offline Indication	----	107:4	
ST15-ONLINE-DATE	DO	01/01	----	107:5	
ST15-ONLINE-TIME	DO	00:00	----	107:6	
ST17-LOGIN	DO		----	108:0	
ST17-LOGIN-DATE	DO		----	108:1	
ST17-LOGIN-GROUP	DO		----	108:2	
ST17-LOGIN-TIME	DO		----	108:3	
ST17-ONLINE	DO	Station17 Online/Offline Indication	----	108:4	
ST17-ONLINE-DATE	DO	01/01	----	108:5	
ST17-ONLINE-TIME	DO	00:00	----	108:6	
ST5-WDT	AO	Station5 Online Watchdog Timer	----	110	
ST6-WDT	AO	Station6 Online Watchdog Timer	----	111	
ST7-WDT	AO	Station7 Online Watchdog Timer	----	112	
ST8-WDT	AO	Station8 Online Watchdog Timer	----	113	
ST9-WDT	AO	Station9 Online Watchdog Timer	----	114	
ST11-WDT	AO	Station11 Online Watchdog Timer	----	115	
ST13-WDT	AO	Station13 Online Watchdog Timer	----	116	
ST15-WDT	AO	Station15 Online Watchdog Timer	----	117	
ST17-WDT	AO	Station17 Online Watchdog Timer	----	118	
TIR17B01	AA	Tank Temperature Riser 17B - 4"	0.50	1001	TZR17B01-AA
TIR17B01-AO	AO	Tank Temperature Riser 17B - 4"	----	1001	TIR17B01
TZR17B01-AA	AA	AA Block for Instrument Problem TIR17B01	0.50	1001	
TIR17B02	AA	Tank Temperature Riser 17B - 16"	0.50	1002	TZR17B02-AA
TIR17B02-AO	AO	Tank Temperature Riser 17B - 16"	----	1002	TIR17B02
TZR17B02-AA	AA	AA Block for Instrument Problem TIR17B02	0.50	1002	
TIR17B03	AA	Tank Temperature Riser 17B - 28"	0.50	1003	TZR17B03-AA
TIR17B03-AO	AO	Tank Temperature Riser 17B - 28"	----	1003	TIR17B03
TZR17B03-AA	AA	AA Block for Instrument Problem TIR17B03	0.50	1003	
TIR17B04	AA	Tank Temperature Riser 17B - 52"	0.50	1004	TZR17B04-AA
TIR17B04-AO	AO	Tank Temperature Riser 17B - 52"	----	1004	TIR17B04
TZR17B04-AA	AA	AA Block for Instrument Problem TIR17B04	0.50	1004	
TIR17B05	AA	Tank Temperature Riser 17B - 76"	0.50	1005	TZR17B05-AA
TIR17B05-AO	AO	Tank Temperature Riser 17B - 76"	----	1005	TIR17B05
TZR17B05-AA	AA	AA Block for Instrument Problem TIR17B05	0.50	1005	
TIR17B06	AA	Tank Temperature Riser 17B - 100"	0.50	1006	TZR17B06-AA
TIR17B06-AO	AO	Tank Temperature Riser 17B - 100"	----	1006	TIR17B06
TZR17B06-AA	AA	AA Block for Instrument Problem TIR17B06	0.50	1006	
TIR17B07	AA	Tank Temperature Riser 17B - 112"	0.50	1007	TZR17B07-AA
TIR17B07-AO	AO	Tank Temperature Riser 17B - 112"	----	1007	TIR17B07
TZR17B07-AA	AA	AA Block for Instrument Problem TIR17B07	0.50	1007	
TIR17B08	AA	Tank Temperature Riser 17B - 124"	0.50	1008	TZR17B08-AA
TIR17B08-AO	AO	Tank Temperature Riser 17B - 124"	----	1008	TIR17B08
TZR17B08-AA	AA	AA Block for Instrument Problem TIR17B08	0.50	1008	
TIR17B09	AA	Tank Temperature Riser 17B - 148"	0.50	1009	TZR17B09-AA
TIR17B09-AO	AO	Tank Temperature Riser 17B - 148"	----	1009	TIR17B09
TZR17B09-AA	AA	AA Block for Instrument Problem TIR17B09	0.50	1009	
TIR17B10	AA	Tank Temperature Riser 17B - 172"	0.50	1010	TZR17B10-AA
TIR17B10-AO	AO	Tank Temperature Riser 17B - 172"	----	1010	TIR17B10
TZR17B10-AA	AA	AA Block for Instrument Problem TIR17B10	0.50	1010	
TIR17B11	AA	Tank Temperature Riser 17B - 196"	0.50	1011	TZR17B11-AA
TIR17B11-AO	AO	Tank Temperature Riser 17B - 196"	----	1011	TIR17B11
TZR17B11-AA	AA	AA Block for Instrument Problem TIR17B11	0.50	1011	
TIR17B12	AA	Tank Temperature Riser 17B - 208"	0.50	1012	TZR17B12-AA
TIR17B12-AO	AO	Tank Temperature Riser 17B - 208"	----	1012	TIR17B12
TZR17B12-AA	AA	AA Block for Instrument Problem TIR17B12	0.50	1012	
TIR17B13	AA	Tank Temperature Riser 17B - 220"	0.50	1013	TZR17B13-AA
TIR17B13-AO	AO	Tank Temperature Riser 17B - 220"	----	1013	TIR17B13
TZR17B13-AA	AA	AA Block for Instrument Problem TIR17B13	0.50	1013	
TIR17B14	AA	Tank Temperature Riser 17B - 232"	0.50	1014	TZR17B14-AA
TIR17B14-AO	AO	Tank Temperature Riser 17B - 232"	----	1014	TIR17B14
TZR17B14-AA	AA	AA Block for Instrument Problem TIR17B14	0.50	1014	
TIR17B15	AA	Tank Temperature Riser 17B - 244"	0.50	1015	TZR17B15-AA
TIR17B15-AO	AO	Tank Temperature Riser 17B - 244"	----	1015	TIR17B15
TZR17B15-AA	AA	AA Block for Instrument Problem TIR17B15	0.50	1015	
TIR17B16	AA	Tank Temperature Riser 17B - 268"	0.50	1016	TZR17B16-AA
TIR17B16-AO	AO	Tank Temperature Riser 17B - 268"	----	1016	TIR17B16
TZR17B16-AA	AA	AA Block for Instrument Problem TIR17B16	0.50	1016	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TIR17B17	AA	Tank Temperature Riser 17B - 292"	0.50	1017	TZR17B17-AA
TIR17B17-AO	AO	Tank Temperature Riser 17B - 292"	----	1017	TIR17B17
TZR17B17-AA	AA	AA Block for Instrument Problem TIR17B17	0.50	1017	
TIR17B18	AA	Tank Temperature Riser 17B - 316"	0.50	1018	TZR17B18-AA
TIR17B18-AO	AO	Tank Temperature Riser 17B - 326"	----	1018	TIR17B18
TZR17B18-AA	AA	AA Block for Instrument Problem TIR17B18	0.50	1018	
TIR17B19	AA	Tank Temperature Riser 17B - 340"	0.50	1019	TZR17B19-AA
TIR17B19-AO	AO	Tank Temperature Riser 17B - 340"	----	1019	TIR17B19
TZR17B19-AA	AA	AA Block for Instrument Problem TIR17B19	0.50	1019	
TIR17B20	AA	Tank Temperature Riser 17B - 364"	0.50	1020	TZR17B20-AA
TIR17B20-AO	AO	Tank Temperature Riser 17B - 364"	----	1020	TIR17B20
TZR17B20-AA	AA	AA Block for Instrument Problem TIR17B20	0.50	1020	
TIR17B21	AA	Tank Temperature Riser 17B - 392"	0.50	1021	TZR17B21-AA
TIR17B21-AO	AO	Tank Temperature Riser 17B - 392"	----	1021	TIR17B21
TZR17B21-AA	AA	AA Block for Instrument Problem TIR17B21	0.50	1021	
TIR17B22	AA	Tank Temperature Riser 17B - 402"	0.50	1022	TZR17B22-AA
TIR17B22-AO	AO	Tank Temperature Riser 17B - 402"	----	1022	TIR17B22
TZR17B22-AA	AA	AA Block for Instrument Problem TIR17B22	0.50	1022	
TIR17C01	AA	Tank Temperature Riser 17C - 4"	0.50	1023	TZR17C01-AA
TIR17C01-AO	AO	Tank Temperature Riser 17C - 4"	----	1023	TIR17C01
TZR17C01-AA	AA	AA Block for Instrument Problem TIR17C01	0.50	1023	
TIR17C02	AA	Tank Temperature Riser 17C - 16"	0.50	1024	TZR17C02-AA
TIR17C02-AO	AO	Tank Temperature Riser 17C - 16"	----	1024	TIR17C02
TZR17C02-AA	AA	AA Block for Instrument Problem TIR17C02	0.50	1024	
TIR17C03	AA	Tank Temperature Riser 17C - 28"	0.50	1025	TZR17C03-AA
TIR17C03-AO	AO	Tank Temperature Riser 17C - 28"	----	1025	TIR17C03
TZR17C03-AA	AA	AA Block for Instrument Problem TIR17C03	0.50	1025	
TIR17C04	AA	Tank Temperature Riser 17C - 52"	0.50	1026	TZR17C04-AA
TIR17C04-AO	AO	Tank Temperature Riser 17C - 52"	----	1026	TIR17C04
TZR17C04-AA	AA	AA Block for Instrument Problem TIR17C04	0.50	1026	
TIR17C05	AA	Tank Temperature Riser 17C - 76"	0.50	1027	TZR17C05-AA
TIR17C05-AO	AO	Tank Temperature Riser 17C - 76"	----	1027	TIR17C05
TZR17C05-AA	AA	AA Block for Instrument Problem TIR17C05	0.50	1027	
TIR17C06	AA	Tank Temperature Riser 17C - 100"	0.50	1028	TZR17C06-AA
TIR17C06-AO	AO	Tank Temperature Riser 17C - 100"	----	1028	TIR17C06
TZR17C06-AA	AA	AA Block for Instrument Problem TIR17C06	0.50	1028	
TIR17C07	AA	Tank Temperature Riser 17C - 112"	0.50	1029	TZR17C07-AA
TIR17C07-AO	AO	Tank Temperature Riser 17C - 112"	----	1029	TIR17C07
TZR17C07-AA	AA	AA Block for Instrument Problem TIR17C07	0.50	1029	
TIR17C08	AA	Tank Temperature Riser 17C - 124"	0.50	1030	TZR17C08-AA
TIR17C08-AO	AO	Tank Temperature Riser 17C - 124"	----	1030	TIR17C08
TZR17C08-AA	AA	AA Block for Instrument Problem TIR17C08	0.50	1030	
TIR17C09	AA	Tank Temperature Riser 17C - 148"	0.50	1031	TZR17C09-AA
TIR17C09-AO	AO	Tank Temperature Riser 17C - 148"	----	1031	TIR17C09
TZR17C09-AA	AA	AA Block for Instrument Problem TIR17C09	0.50	1031	
TIR17C10	AA	Tank Temperature Riser 17C - 172"	0.50	1032	TZR17C10-AA
TIR17C10-AO	AO	Tank Temperature Riser 17C - 172"	----	1032	TIR17C10
TZR17C10-AA	AA	AA Block for Instrument Problem TIR17C10	0.50	1032	
TIR17C11	AA	Tank Temperature Riser 17C - 196"	0.50	1033	TZR17C11-AA
TIR17C11-AO	AO	Tank Temperature Riser 17C - 196"	----	1033	TIR17C11
TZR17C11-AA	AA	AA Block for Instrument Problem TIR17C11	0.50	1033	
TIR17C12	AA	Tank Temperature Riser 17C - 208"	0.50	1034	TZR17C12-AA
TIR17C12-AO	AO	Tank Temperature Riser 17C - 208"	----	1034	TIR17C12
TZR17C12-AA	AA	AA Block for Instrument Problem TIR17C12	0.50	1034	
TIR17C13	AA	Tank Temperature Riser 17C - 220"	0.50	1035	TZR17C13-AA
TIR17C13-AO	AO	Tank Temperature Riser 17C - 220"	----	1035	TIR17C13
TZR17C13-AA	AA	AA Block for Instrument Problem TIR17C13	0.50	1035	
TIR17C14	AA	Tank Temperature Riser 17C - 232"	0.50	1036	TZR17C14-AA
TIR17C14-AO	AO	Tank Temperature Riser 17C - 232"	----	1036	TIR17C14
TZR17C14-AA	AA	AA Block for Instrument Problem TIR17C14	0.50	1036	
TIR17C15	AA	Tank Temperature Riser 17C - 244"	0.50	1037	TZR17C15-AA
TIR17C15-AO	AO	Tank Temperature Riser 17C - 244"	----	1037	TIR17C15
TZR17C15-AA	AA	AA Block for Instrument Problem TIR17C15	0.50	1037	
TIR17C16	AA	Tank Temperature Riser 17C - 292"	0.50	1038	TZR17C16-AA
TIR17C16-AO	AO	Tank Temperature Riser 17C - 292"	----	1038	TIR17C16
TZR17C16-AA	AA	AA Block for Instrument Problem TIR17C16	0.50	1038	
TIR17C17	AA	Tank Temperature Riser 17C - 316"	0.50	1039	TZR17C17-AA
TIR17C17-AO	AO	Tank Temperature Riser 17C - 316"	----	1039	TIR17C17
TZR17C17-AA	AA	AA Block for Instrument Problem TIR17C17	0.50	1039	
TIR17C18	AA	Tank Temperature Riser 17C - 340"	0.50	1040	TZR17C18-AA
TIR17C18-AO	AO	Tank Temperature Riser 17C - 340"	----	1040	TIR17C18
TZR17C18-AA	AA	AA Block for Instrument Problem TIR17C18	0.50	1040	
TIR17C19	AA	Tank Temperature Riser 17C - 364"	0.50	1041	TZR17C19-AA
TIR17C19-AO	AO	Tank Temperature Riser 17C - 364"	----	1041	TIR17C19
TZR17C19-AA	AA	AA Block for Instrument Problem TIR17C19	0.50	1041	
TIR17C20	AA	Tank Temperature Riser 17C - 392"	0.50	1042	TZR17C20-AA
TIR17C20-AO	AO	Tank Temperature Riser 17C - 392"	----	1042	TIR17C20
TZR17C20-AA	AA	AA Block for Instrument Problem TIR17C20	0.50	1042	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TIR17C21	AA	Tank Temperature Riser 17C - 402"	0.50	1043	TZR17C21-AA
TIR17C21-AO	AO	Tank Temperature Riser 17C - 402"	----	1043	TIR17C21
TZR17C21-AA	AA	AA Block for Instrument Problem TIR17C21	0.50	1043	
TIR17C22	AA	Tank Temperature Riser 17C - 425"	0.50	1044	TZR17C22-AA
TIR17C22-AO	AO	Tank Temperature Riser 17C - 425"	----	1044	TIR17C22
TZR17C22-AA	AA	AA Block for Instrument Problem TIR17C22	0.50	1044	
TBSTC01	AA	Tank Bottom & Side TC #1	0.50	1045	
TBSTC01-AO	AO	Tank Bottom & Side TC #1	----	1045	TBSTC01
TBSTC02	AA	Tank Bottom & Side TC #2	0.50	1046	
TBSTC02-AO	AO	Tank Bottom & Side TC #2	----	1046	TBSTC02
TBSTC03	AA	Tank Bottom & Side TC #3	0.50	1047	
TBSTC03-AO	AO	Tank Bottom & Side TC #3	----	1047	TBSTC03
TBSTC04	AA	Tank Bottom & Side TC #4	0.50	1048	
TBSTC04-AO	AO	Tank Bottom & Side TC #4	----	1048	TBSTC04
TBSTC05	AA	Tank Bottom & Side TC #5	0.50	1049	
TBSTC05-AO	AO	Tank Bottom & Side TC #5	----	1049	TBSTC05
TBSTC06	AA	Tank Bottom & Side TC #6	0.50	1050	
TBSTC06-AO	AO	Tank Bottom & Side TC #6	----	1050	TBSTC06
TBSTC07	AA	Tank Bottom & Side TC #7	0.50	1051	
TBSTC07-AO	AO	Tank Bottom & Side TC #7	----	1051	TBSTC07
TBSTC08	AA	Tank Bottom & Side TC #8	0.50	1052	
TBSTC08-AO	AO	Tank Bottom & Side TC #8	----	1052	TBSTC08
TBSTC09	AA	Tank Bottom & Side TC #9	0.50	1053	
TBSTC09-AO	AO	Tank Bottom & Side TC #9	----	1053	TBSTC09
TBSTC10	AA	Tank Bottom & Side TC #10	0.50	1054	
TBSTC10-AO	AO	Tank Bottom & Side TC #10	----	1054	TBSTC10
TBSTC11	AA	Tank Bottom & Side TC #11	0.50	1055	
TBSTC11-AO	AO	Tank Bottom & Side TC #11	----	1055	TBSTC11
TBSTC12	AA	Tank Bottom & Side TC #12	0.50	1056	
TBSTC12-AO	AO	Tank Bottom & Side TC #12	----	1056	TBSTC12
TBSTC13	AA	Tank Bottom & Side TC #13	0.50	1057	
TBSTC13-AO	AO	Tank Bottom & Side TC #13	----	1057	TBSTC13
TBSTC14	AA	Tank Bottom & Side TC #14	0.50	1058	
TBSTC14-AO	AO	Tank Bottom & Side TC #14	----	1058	TBSTC14
TBSTC15	AA	Tank Bottom & Side TC #15	0.50	1059	
TBSTC15-AO	AO	Tank Bottom & Side TC #15	----	1059	TBSTC15
TBSTC16	AA	Tank Bottom & Side TC #16	0.50	1060	
TBSTC16-AO	AO	Tank Bottom & Side TC #16	----	1060	TBSTC16
TBSTC17	AA	Tank Bottom & Side TC #17	0.50	1061	
TBSTC17-AO	AO	Tank Bottom & Side TC #17	----	1061	TBSTC17
TBSTC18	AA	Tank Bottom & Side TC #18	0.50	1062	
TBSTC18-AO	AO	Tank Bottom & Side TC #18	----	1062	TBSTC18
TBSTC19	AA	Tank Bottom & Side TC #19	0.50	1063	
TBSTC19-AO	AO	Tank Bottom & Side TC #19	----	1063	TBSTC19
TBSTC20	AA	Tank Bottom & Side TC #20	0.50	1064	
TBSTC20-AO	AO	Tank Bottom & Side TC #20	----	1064	TBSTC20
TBSTC21	AA	Tank Bottom & Side TC #21	0.50	1065	
TBSTC21-AO	AO	Tank Bottom & Side TC #21	----	1065	TBSTC21
TBSTC22	AA	Tank Bottom & Side TC #22	0.50	1066	
TBSTC22-AO	AO	Tank Bottom & Side TC #22	----	1066	TBSTC22
TBSTC23	AA	Tank Bottom & Side TC #23	0.50	1067	
TBSTC23-AO	AO	Tank Bottom & Side TC #23	----	1067	TBSTC23
TBSTC24	AA	Tank Bottom & Side TC #24	0.50	1068	
TBSTC24-AO	AO	Tank Bottom & Side TC #24	----	1068	TBSTC24
TBSTC25	AA	Tank Bottom & Side TC #25	0.50	1069	
TBSTC25-AO	AO	Tank Bottom & Side TC #25	----	1069	TBSTC25
TBSTC26	AA	Tank Bottom & Side TC #26	0.50	1070	
TBSTC26-AO	AO	Tank Bottom & Side TC #26	----	1070	TBSTC26
TZR17B01	DI	Instrument Problem - TIR17B01	1	1081:0	
TZR17B01_DO	DO	DO Block for Instrument Problem TIR17B01	----	1081:0	TZR17B01
TZR17B02	DI	Instrument Problem - TIR17B02	1	1081:1	
TZR17B02_DO	DO	DO Block for Instrument Problem TIR17B02	----	1081:1	TZR17B02
TZR17B03	DI	Instrument Problem - TIR17B03	1	1081:2	
TZR17B03_DO	DO	DO Block for Instrument Problem TIR17B03	----	1081:2	TZR17B03
TZR17B04	DI	Instrument Problem - TIR17B04	1	1081:3	
TZR17B04_DO	DO	DO Block for Instrument Problem TIR17B04	----	1081:3	TZR17B04
TZR17B05	DI	Instrument Problem - TIR17B05	1	1081:4	
TZR17B05_DO	DO	DO Block for Instrument Problem TIR17B05	----	1081:4	TZR17B05
TZR17B06	DI	Instrument Problem - TIR17B06	1	1081:5	
TZR17B06_DO	DO	DO Block for Instrument Problem TIR17B06	----	1081:5	TZR17B06
TZR17B07	DI	Instrument Problem - TIR17B07	1	1081:6	
TZR17B07_DO	DO	DO Block for Instrument Problem TIR17B07	----	1081:6	TZR17B07
TZR17B08	DI	Instrument Problem - TIR17B08	1	1081:7	
TZR17B08_DO	DO	DO Block for Instrument Problem TIR17B08	----	1081:7	TZR17B08
TZR17B09	DI	Instrument Problem - TIR17B09	1	1081:8	
TZR17B09_DO	DO	DO Block for Instrument Problem TIR17B09	----	1081:8	TZR17B09
TZR17B10	DI	Instrument Problem - TIR17B10	1	1081:9	
TZR17B10_DO	DO	DO Block for Instrument Problem TIR17B10	----	1081:9	TZR17B10
TZR17B11	DI	Instrument Problem - TIR17B11	1	1081:10	
TZR17B11_DO	DO	DO Block for Instrument Problem TIR17B11	----	1081:10	TZR17B11

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TZR17B12	DI	Instrument Problem - TIR17B12	1	1081:11	
TZR17B12_DO	DO	DO Block for Instrument Problem TIR17B12	----	1081:11	TZR17B12
TZR17B13	DI	Instrument Problem - TIR17B13	1	1081:12	
TZR17B13_DO	DO	DO Block for Instrument Problem TIR17B13	----	1081:12	TZR17B13
TZR17B14	DI	Instrument Problem - TIR17B14	1	1081:13	
TZR17B14_DO	DO	DO Block for Instrument Problem TIR17B14	----	1081:13	TZR17B14
TZR17B15	DI	Instrument Problem - TIR17B15	1	1081:14	
TZR17B15_DO	DO	DO Block for Instrument Problem TIR17B15	----	1081:14	TZR17B15
TZR17B16	DI	Instrument Problem - TIR17B16	1	1081:15	
TZR17B16_DO	DO	DO Block for Instrument Problem TIR17B16	----	1081:15	TZR17B16
TZR17B17	DI	Instrument Problem - TIR17B17	1	1082:0	
TZR17B17_DO	DO	DO Block for Instrument Problem TIR17B17	----	1082:0	TZR17B17
TZR17B18	DI	Instrument Problem - TIR17B18	1	1082:1	
TZR17B18_DO	DO	DO Block for Instrument Problem TIR17B18	----	1082:1	TZR17B18
TZR17B19	DI	Instrument Problem - TIR17B19	1	1082:2	
TZR17B19_DO	DO	DO Block for Instrument Problem TIR17B19	----	1082:2	TZR17B19
TZR17B20	DI	Instrument Problem - TIR17B20	1	1082:3	
TZR17B20_DO	DO	DO Block for Instrument Problem TIR17B20	----	1082:3	TZR17B20
TZR17B21	DI	Instrument Problem - TIR17B21	1	1082:4	
TZR17B21_DO	DO	DO Block for Instrument Problem TIR17B21	----	1082:4	TZR17B21
TZR17B22	DI	Instrument Problem - TIR17B22	1	1082:5	
TZR17B22_DO	DO	DO Block for Instrument Problem TIR17B22	----	1082:5	TZR17B22
TZR17C01	DI	Instrument Problem - TIR17C01	1	1083:0	
TZR17C01_DO	DO	DO Block for Instrument Problem TIR17C01	----	1083:0	TZR17C01
TZR17C02	DI	Instrument Problem - TIR17C02	1	1083:1	
TZR17C02_DO	DO	DO Block for Instrument Problem TIR17C02	----	1083:1	TZR17C02
TZR17C03	DI	Instrument Problem - TIR17C03	1	1083:2	
TZR17C03_DO	DO	DO Block for Instrument Problem TIR17C03	----	1083:2	TZR17C03
TZR17C04	DI	Instrument Problem - TIR17C04	1	1083:3	
TZR17C04_DO	DO	DO Block for Instrument Problem TIR17C04	----	1083:3	TZR17C04
TZR17C05	DI	Instrument Problem - TIR17C05	1	1083:4	
TZR17C05_DO	DO	DO Block for Instrument Problem TIR17C05	----	1083:4	TZR17C05
TZR17C06	DI	Instrument Problem - TIR17C06	1	1083:5	
TZR17C06_DO	DO	DO Block for Instrument Problem TIR17C06	----	1083:5	TZR17C06
TZR17C07	DI	Instrument Problem - TIR17C07	1	1083:6	
TZR17C07_DO	DO	DO Block for Instrument Problem TIR17C07	----	1083:6	TZR17C07
TZR17C08	DI	Instrument Problem - TIR17C08	1	1083:7	
TZR17C08_DO	DO	DO Block for Instrument Problem TIR17C08	----	1083:7	TZR17C08
TZR17C09	DI	Instrument Problem - TIR17C09	1	1083:8	
TZR17C09_DO	DO	DO Block for Instrument Problem TIR17C09	----	1083:8	TZR17C09
TZR17C10	DI	Instrument Problem - TIR17C10	1	1083:9	
TZR17C10_DO	DO	DO Block for Instrument Problem TIR17C10	----	1083:9	TZR17C10
TZR17C11	DI	Instrument Problem - TIR17C11	1	1083:10	
TZR17C11_DO	DO	DO Block for Instrument Problem TIR17C11	----	1083:10	TZR17C11
TZR17C12	DI	Instrument Problem - TIR17C12	1	1083:11	
TZR17C12_DO	DO	DO Block for Instrument Problem TIR17C12	----	1083:11	TZR17C12
TZR17C13	DI	Instrument Problem - TIR17C13	1	1083:12	
TZR17C13_DO	DO	DO Block for Instrument Problem TIR17C13	----	1083:12	TZR17C13
TZR17C14	DI	Instrument Problem - TIR17C14	1	1083:13	
TZR17C14_DO	DO	DO Block for Instrument Problem TIR17C14	----	1083:13	TZR17C14
TZR17C15	DI	Instrument Problem - TIR17C15	1	1083:14	
TZR17C15_DO	DO	DO Block for Instrument Problem TIR17C15	----	1083:14	TZR17C15
TZR17C16	DI	Instrument Problem - TIR17C16	1	1083:15	
TZR17C16_DO	DO	DO Block for Instrument Problem TIR17C16	----	1083:15	TZR17C16
TZR17C17	DI	Instrument Problem - TIR17C17	1	1084:0	
TZR17C17_DO	DO	DO Block for Instrument Problem TIR17C17	----	1084:0	TZR17C17
TZR17C18	DI	Instrument Problem - TIR17C18	1	1084:1	
TZR17C18_DO	DO	DO Block for Instrument Problem TIR17C18	----	1084:1	TZR17C18
TZR17C19	DI	Instrument Problem - TIR17C19	1	1084:2	
TZR17C19_DO	DO	DO Block for Instrument Problem TIR17C19	----	1084:2	TZR17C19
TZR17C20	DI	Instrument Problem - TIR17C20	1	1084:3	
TZR17C20_DO	DO	DO Block for Instrument Problem TIR17C20	----	1084:3	TZR17C20
TZR17C21	DI	Instrument Problem - TIR17C21	1	1084:4	
TZR17C21_DO	DO	DO Block for Instrument Problem TIR17C21	----	1084:4	TZR17C21
TZR17C22	DI	Instrument Problem - TIR17C22	1	1084:5	
TZR17C22_DO	DO	DO Block for Instrument Problem TIR17C22	----	1084:5	TZR17C22
GC1-TIME	AI	GC-1 Last Valid Update Time	5	1103	
GC1-TIME-AO	AO	AO Block for GC-1 Last Valid Update Time	----	1103	GC1-TIME
GC2-TIME	AI	GC-2 Last Valid Update Time	5	1104	
GC2-TIME-AO	AO	AO Block for GC-2 Last Valid Update Time	----	1104	GC2-TIME
ARMGAMMA	AA	HMT Gamma Radiation	1	1111	
ARMGAMMA-AO	AO	AO Block for HMT Gamma Radiation	----	1111	ARMGAMMA
TZR12A01	DI	Instrument Problem - TIR12A01	1	1201:0	
TZR12A01_DO	DO	DO Block for Instrument Problem TIR12A01	----	1201:0	TZR12A01
TZR12A02	DI	Instrument Problem - TIR12A02	1	1201:1	
TZR12A02_DO	DO	DO Block for Instrument Problem TIR12A02	----	1201:1	TZR12A02
ZZMPE142	DI	Instrument Problem - ZIMPE142	1	1201:2	
ZZMPE142_DO	DO	DO Block for Instrument Problem ZIMPE142	----	1201:2	ZZMPE142
PZR12A01	DI	Instrument Problem - PIR12A01	1	1201:3	
PZR12A01_DO	DO	DO Block for Instrument Problem PIR12A01	----	1201:3	PZR12A01

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
FZE50002	DI	Instrument Problem - FTE50002	1	1201:4	
FZE50002_DO	DO	DO Block for Instrument Problem FTE50002	----	1201:4	FZE50002
LZR01A	DI	Instrument Problem - LIR01A	1	1201:5	
LZR01A_DO	DO	DO Block for Instrument Problem LIR01A	----	1201:5	LZR01A
LZR01C	DI	Instrument Problem - LIR01C	1	1201:6	
LZR01C_DO	DO	DO Block for Instrument Problem LIR01C	----	1201:6	LZR01C
PZR17B04	DI	Instrument Problem - PIR17B04	1	1201:7	
PZR17B04_DO	DO	DO Block for Instrument Problem PIR17B04	----	1201:7	PZR17B04
NZTJSY06	DI	Instrument Problem - NITJSY06	1	1201:8	
NZTJSY06_DO	DO	DO Block for Instrument Problem NITJSY06	----	1201:8	NZTJSY06
NZTKSY06	DI	Instrument Problem - NITKSY06	1	1201:9	
NZTKSY06_DO	DO	DO Block for Instrument Problem NITKSY06	----	1201:9	NZTKSY06
NZR17B01	DI	Instrument Problem - NIR17B01	1	1201:10	
NZR17B01_DO	DO	DO Block for Instrument Problem NIR17B01	----	1201:10	NZR17B01
NZR05A01	DI	Instrument Problem - NIR05A01	1	1201:11	
NZR05A01_DO	DO	DO Block for Instrument Problem NIR05A01	----	1201:11	NZR05A01
FZE50001	DI	Instrument Problem - FTE50001	1	1201:12	
FZE50001_DO	DO	DO Block for Instrument Problem FTE50001	----	1201:12	FZE50001
PZR17C01	DI	Instrument Problem - PIR17C01	1	1201:13	
PZR17C01_DO	DO	DO Block for Instrument Problem PIR17C01	----	1201:13	PZR17C01
WZR1BA02	DI	Instrument Problem - WIR1BA02	1	1201:14	
WZR1BA02_DO	DO	DO Block for Instrument Problem WIR1BA02	----	1201:14	WZR1BA02
WZR12A04	DI	Instrument Problem - WIR12A04	1	1201:15	
WZR12A04_DO	DO	DO Block for Instrument Problem WIR12A04	----	1201:15	WZR12A04
WZR12A01	DI	Instrument Problem - WIR12A01	1	1202:0	
WZR12A01_DO	DO	DO Block for Instrument Problem WIR12A01	----	1202:0	WZR12A01
WZR12A03	DI	Instrument Problem - WIR12A03	1	1202:1	
WZR12A03_DO	DO	DO Block for Instrument Problem WIR12A03	----	1202:1	WZR12A03
WZR17C02	DI	Instrument Problem - WIR17C02	1	1202:2	
WZR17C02_DO	DO	DO Block for Instrument Problem WIR17C02	----	1202:2	WZR17C02
WZR1BA01	DI	Instrument Problem - WIR1BA01	1	1202:3	
WZR1BA01_DO	DO	DO Block for Instrument Problem WIR1BA01	----	1202:3	WZR1BA01
WZR1BA03	DI	Instrument Problem - WIR1BA03	1	1202:4	
WZR1BA03_DO	DO	DO Block for Instrument Problem WIR1BA03	----	1202:4	WZR1BA03
WZR12A02	DI	Instrument Problem - WIR12A02	1	1202:5	
WZR12A02_DO	DO	DO Block for Instrument Problem WIR12A02	----	1202:5	WZR12A02
WZR17C01	DI	Instrument Problem - WIR17C01	1	1202:6	
WZR17C01_DO	DO	DO Block for Instrument Problem WIR17C01	----	1202:6	WZR17C01
FZE50003	DI	Instrument Problem - FTE50003	1	1202:7	
FZE50003_DO	DO	DO Block for Instrument Problem FTE50003	----	1202:7	FZE50003
17BTCERR	DI	MIT17B I/O Module Halt Error	1	1202:8	
17BTCERR_DO	DO	DO Block - MIT17B I/O Module Halt Error	----	1202:8	17BTCERR
17CTCERR	DI	MIT17C I/O Module Halt Error	1	1202:9	
17CTCERR_DO	DO	DO Block - MIT17C I/O Module Halt Error	----	1202:9	17CTCERR
TBSTCERR	DI	TBS I/O Module Halt Error	1	1202:10	
TBSTCERR_DO	DO	DO Block - TBS I/O Module Halt Error	----	1202:10	TBSTCERR
PZTNO110	DI	Instrument Problem - PITNO110	1	1202:11	
PZTNO110_DO	DO	DO Block for Instrument Problem PITNO110	----	1202:11	PZTNO110
PZTNO111	DI	Instrument Problem - PITNO111	1	1202:12	
PZTNO111_DO	DO	DO Block for Instrument Problem PITNO111	----	1202:12	PZTNO111
PLCCOMFA	DI	PLC Communications Failure	1	1205:0	
PLCCOMFA_DO	DO	DO Block for PLC Communications Failure	----	1205:0	PLCCOMFA
PLCWDTFA	DI	PLC Watch Dog Timer Failure	1	1205:1	
PLCWDTFA_DO	DO	DO Block for PLC Watch Dog Timer Failure	----	1205:1	PLCWDTFA
D_RUN_CMD	DO	Run Command to DMOTOR	----	1301:0	
D_RUN_STAT	DO	Run Status of DMOTOR	----	1301:1	
D_MOTOR_STAT	DO	Communication Status of DMOTOR	----	1301:2	
D_IN-BAND	DO	Directional Motor Within +/- 2 Deg Band	----	1301:3	
P_RUN_STAT	DO	Run Status of PMOTOR	----	1311:0	
P_RUN_CMD	DO	Run Command to PMOTOR	----	1311:1	
P_MOTOR_STAT	DO	Communication Status of PMOTOR	----	1311:2	
P_RUN	DO	Run Command to P_RUN_CMD	----	1311:3	
D_RUN	DO	Run Command to D_RUN_CMD	----	1311:4	
VR232040	AI	Pump Motor Current	1	1320	VR232040-AO
VR232040F	AO	Pump Motor Current From VSD	----	1320	VR232040
VR232050	AI	Pump Speed	1	1321	VR232050-AO
VR232050F	AO	Pump Speed From VSD	----	1321	VR232050
UAA_SILENCE_LEVEL	AO	UAA Count When Silence Key Pressed	----	1330	
BUT_ANIM_SET_VAL	DO	SET VALUES Button Animation	----	1350:0	
BUT_ANIM_POS_PUMP	DO	POSITION PUMP Button Animation	----	1350:1	
BUT_ANIM_ENAB_TEST	DO	ENABLE TEST Button Animation	----	1350:2	
BUT_ANIM_START_TEST	DO	START TEST Button Animation	----	1350:3	
BUT_ANIM_STOP_TEST	DO	STOP TEST Button Animation	----	1350:4	
BUT_TEXT_STOP_TEST	DO	ENABLE STOP / STOP TEST BUTTON TEXT	----	1350:6	
URESTIM	DO	Bit to Reset Test Elapsed Time	----	1350:9	
PUMP_PROB	DO	Pump Problem Detected	----	1350:10	

Block Tag_Name	Type	Tag Description	Scan Time	I/O Address	Next Block
BUT_ACT_SET_VAL	DO	Activate SET VALUES Button	----	1350:11	
BUT_ACT_POS_PUMP	DO	Activate POSITION PUMP Button	----	1350:12	
BUT_ACT_ENAB_TEST	DO	Activate ENABLE TEST Button	----	1350:13	
BUT_ACT_START_TEST	DO	Activate START TEST Button	----	1350:14	
BUT_ACT_STOP_TEST	DO	Activate STOP TEST Button	----	1350:15	
BUT-COL-SET_VAL	AO	SET VALUES BUTTON COLOR	----	1351	
BUT-COL-POS_PUMP	AO	POSITION PUMP BUTTON COLOR	----	1352	
BUT-COL-ENAB_TEST	AO	ENABLE TEST BUTTON COLOR	----	1353	
BUT-COL-START_TEST	AO	START TEST BUTTON COLOR	----	1354	
BUT-COL-STOP_TEST	AO	STOP TEST BUTTON COLOR	----	1355	
ST5_PUMPRUN_VIS	DO	Station5 PUMPRUN Button Visibility Check	----	1356:0	
ST6_PUMPRUN_VIS	DO	Station6 PUMPRUN Button Visibility Check	----	1356:1	
ST7_PUMPRUN_VIS	DO	Station7 PUMPRUN Button Visibility Check	----	1356:2	
ST8_PUMPRUN_VIS	DO	Station8 PUMPRUN Button Visibility Check	----	1356:3	
30SEC-WARN	DI	30 Seconds Until End of Test	1	1357:0	
30SEC-WARN_DO	DO	DO Block for 30 Sec Until End of Test	----	1357:0	30SEC-WARN
SETUP_BUSY	DO	Busy Flag for Test Setup	----	1357:1	
21MIN_DO	DO	DO Block for 21 Minute Gas Timer Delay	----	1357:2	
UDESC	DO	BUMP AT 28 DEG	----	1358:0	
LAST_UDESC	DO	<<< MANUAL >>>	----	1358:1	
UANGLE	AO	Directional Motor Angle for Test Setup	----	1801	
UTESTNO	AO	1	----	1802	
LAST-UTESTNO	AO	N/A	----	1803	
USPEED	AO	PMotor Speed for Test Setup	----	1804	
ELAPSED-TIME-RESET	DO	Reset for Elapsed Time	----	1806:0	
ELAPSED-TIME-RESET-DI	DI	DI Block - Reset for Elapsed Time	0.50	1806:0	
ELAPSED-TIME-HOLD	DO	Hold for Elapsed Time	----	1806:1	
ELAPSED-TIME-HOLD-DI	DI	DI Block - Hold for Elapsed Time	0.50	1806:1	
ELAPSED-TIME-TOTAL-RESET	DO	Reset for Total Elapsed Time	----	1806:2	
ELAPSED-TIME-TOTAL-RESET-DI	DI	DI Block - Reset for Total Elapsed Time	0.50	1806:2	
START-TIME	DO	> N/A <	----	1806:3	
STOP-TIME	DO	> N/A <	----	1806:4	
P_ACCEL	AO	Pump Motor Acceleration	----	1807	
P_DECEL	AO	Pump Motor Deceleration	----	1808	
D_DECEL	AO	Directional Motor Deceleration	----	1810	
VR232060	AO	Pump Speed Setpoint	----	1811	
ENAB_TEST_TIMEOUT	DO	ENABLE TEST 60 Second Timer Flag	----	1812:0	
D_REV_CMD	DO	Reverse Command to DMOTOR	----	1812:1	REVERSE
D_CHANGED	DI	Directional Motor Changed During Run	1	1812:2	
D_CHANGED_DO	DO	DO Block For D_CHANGED	----	1812:2	D_CHANGED
UHRS	AO	Desired Test Hours	----	1821	
UMINS	AO	Desired Test Minutes	----	1822	
USECS	AO	Desired Test Seconds	----	1823	
UACCEL	AO	Desired Pump Acceleration	----	1824	
UDECEL	AO	Desired Pump Deceleration	----	1825	
VERSION	AO	DACS v4.01	----	1999	
ALARM	AI	Unacknowledged Alarms	1	C:UAA	
ZIMPE143C	DI	ZIMPE143 Coil Status	0.50	PLC:000184	
ZIMPE144C	DI	ZIMPE144 Coil Status	0.50	PLC:000185	
WDTRESET1	DO	Station 5 Watchdog Timer Reset	----	PLC:000213	
H2ABORT	DI	High H2 Abort	0.50	PLC:000225	
TCMOD7ERR	DI	D4 R1 S7 MIT17B TC Module 7 Halt Error	1	PLC:000236	
RSTCOIL	DO	Abort Coil Reset	----	PLC:000241	
WDTRESET2	DO	Station 5 Watchdog Timer Reset (Old ST8)	----	PLC:000242	
PBUMPTOUT	DI	Pump Bump Timeout Abort	0.50	PLC:000243	
REVERSE	DO	Reverse Flag to PLC	----	PLC:000244	
WHF17C1BC	DI	WHF17C1B Coil Status	0.50	PLC:000246	
WHF1B1BC	DI	WHF1B1B Coil Status	0.50	PLC:000247	
PBENAB	DO	Phase B Test Enable	----	PLC:000249	
COMABRT	DO	Communications Abort (Latched)	----	PLC:000250	
A5ABRT	DO	AF5000 Communications Failure	----	PLC:000251	
WHF17C2BC	DI	WHF17C2B Coil Status	0.50	PLC:000252	
WHF1B2BC	DI	WHF1B2B Coil Status	0.50	PLC:000253	
WHF1B3BC	DI	WHF1B3B Coil Status	0.50	PLC:000254	
MIP00001C	DI	MIP00001 Coil Status	0.50	PLC:000255	
WLR12A01	DI	Low 12A-1 Strain Abort	0.50	PLC:000256	
NCTKSY06	DI	Hi H2 - Vent Header Abort	0.50	PLC:000257	
NCTJSY06	DI	Hi H2 - Riser 16A Abort	0.50	PLC:000258	
NCR17B01	DI	Hi H2 - Riser 17B Abort	0.50	PLC:000259	
NCR05A01	DI	Hi H2 Abort - Pump	0.50	PLC:000260	
WLR12A02	DI	Low 12A-2 Strain Abort	0.50	PLC:000262	
WLR12A03	DI	Low 12A-3 Strain Abort	0.50	PLC:000263	
TCR17B01	DI	High Temperature Abort 17B01	0.50	PLC:000278	
TCR17B02	DI	High Temperature Abort 17B02	0.50	PLC:000279	
TCR17B03	DI	High Temperature Abort 17B03	0.50	PLC:000280	
TCR17B04	DI	High Temperature Abort 17B04	0.50	PLC:000281	
TCR17B05	DI	High Temperature Abort 17B05	0.50	PLC:000282	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TCR17B06	DI	High Temperature Abort 17B06	0.50	PLC:000283	
TCR17B07	DI	High Temperature Abort 17B07	0.50	PLC:000284	
TCR17B08	DI	High Temperature Abort 17B08	0.50	PLC:000285	
TCR17B09	DI	High Temperature Abort 17B09	0.50	PLC:000286	
TCR17B10	DI	High Temperature Abort 17B10	0.50	PLC:000287	
TCR17B11	DI	High Temperature Abort 17B11	0.50	PLC:000288	
TCR17B12	DI	High Temperature Abort 17B12	0.50	PLC:000289	
TCR17B13	DI	High Temperature Abort 17B13	0.50	PLC:000290	
TCR17B14	DI	High Temperature Abort 17B14	0.50	PLC:000291	
TCR17B15	DI	High Temperature Abort 17B15	0.50	PLC:000292	
TCR17B16	DI	High Temperature Abort 17B16	0.50	PLC:000293	
TCR17B17	DI	High Temperature Abort 17B17	0.50	PLC:000294	
TCR17B18	DI	High Temperature Abort 17B18	0.50	PLC:000295	
TCR17B19	DI	High Temperature Abort 17B19	0.50	PLC:000296	
TCR17B20	DI	High Temperature Abort 17B20	0.50	PLC:000297	
TCR17B21	DI	High Temperature Abort 17B21	0.50	PLC:000298	
TCR17B22	DI	High Temperature Abort 17B22	0.50	PLC:000299	
TCR12A01	DI	High Pump Motor Oil Temperature Abort 1	0.50	PLC:000306	
TCR12A02	DI	High Pump Motor Oil Temperature Abort 2	0.50	PLC:000307	
FCE50001	DI	Low Ventilation Flow Abort 1	0.50	PLC:000308	
FCE50002	DI	Low Ventilation Flow Abort 2	0.50	PLC:000309	
PCR17C01	DI	High Tank Dome Pressure Abort 1	0.50	PLC:000310	
PCR17B04	DI	High Tank Dome Pressure Abort 2	0.50	PLC:000311	
WCR12A01	DI	High Pump Column Strain Abort 1	0.50	PLC:000313	
WCR12A02	DI	High Pump Column Strain Abort 2	0.50	PLC:000314	
WCR12A03	DI	High Pump Column Strain Abort 3	0.50	PLC:000315	
WCR12A04	DI	High Pump Column Strain Abort 4	0.50	PLC:000316	
WCR1BA01	DI	High VDTT Column 1B Strain Abort 1	0.50	PLC:000320	
WCR1BA03	DI	High VDTT Column 1B Strain Abort 2	0.50	PLC:000321	
WCR17C01	DI	High MIT 17C Column Strain Abort 1	0.50	PLC:000323	
WCR17C02	DI	High MIT 17C Column Strain Abort 2	0.50	PLC:000324	
VC232040	DI	High Pump Motor Current Abort	0.50	PLC:000325	
VC232050	DI	High Pump Motor Speed Abort	0.50	PLC:000326	
WLR12A04	DI	Low 12A-4 Strain Abort	0.50	PLC:000331	
WLR1BA01	DI	Low 1B-1 Strain Abort	0.50	PLC:000334	
WLR1BA02	DI	Low 1B-2 Strain Abort	0.50	PLC:000335	
WLR1BA03	DI	Low 1B-3 Strain Abort	0.50	PLC:000336	
WCR1BA02	DI	High 1B-2 Strain Abort	0.50	PLC:000337	
WLR17C01	DI	Low 17C-1 Strain Abort	0.50	PLC:000339	
WLR17C02	DI	Low 17C-2 Strain Abort	0.50	PLC:000340	
ZLMPE142	DI	Low Pump Column Gas Pressure Abort	0.50	PLC:000341	
FHE50001	DI	High Ventilation Flow Abort 1	0.50	PLC:000342	
FHE50002	DI	High Ventilation Flow Abort 2	0.50	PLC:000343	
OOR_0-5V	DI	Out of Range for 0-5V Channels	0.50	PLC:000372	
TCMOD1ERR	DI	D4 R2 S4 MIT17C TC Module 1 Halt Error	1	PLC:000438	
TCMOD2ERR	DI	D4 R2 S5 MIT17C TC Module 2 Halt Error	1	PLC:000447	
TCMOD3ERR	DI	D4 R2 S6 MIT17C TC Module 3 Halt Error	1	PLC:000456	
TCMOD4ERR	DI	D13 R1 S4 TBS TC Module 4 Halt Error	1	PLC:000467	
TCMOD5ERR	DI	D13 R1 S5 TBS TC Module 5 Halt Error	1	PLC:000476	
TCMOD6ERR	DI	D13 R1 S6 TBS TC Module 6 Halt Error	1	PLC:000485	
A5ABORT	DI	AF5000 Communications Abort	0.50	PLC:000491	
NPR17B01	DI	NIR17B01 Out of Range Bit	0.50	PLC:000515	
NPTJSY06	DI	NITJSY06 Out of Range Bit	0.50	PLC:000516	
NPR05A01	DI	NIR05A01 Out of Range Bit	0.50	PLC:000517	
NPTKSY06	DI	NITKSY06 Out of Range Bit	0.50	PLC:000518	
TPR12A01	DI	TIR12A01 Out of Range Bit	0.50	PLC:000545	
PPR12A01	DI	PIR12A01 Out of Range Bit	0.50	PLC:000546	
TPR12A02	DI	TIR12A02 Out of Range Bit	0.50	PLC:000547	
PPR17B04	DI	PIR17B04 Out of Range Bit	0.50	PLC:000548	
WPR12A02	DI	WIR12A02 Out of Range Bit	0.50	PLC:000549	
FPE50001	DI	FTE50001 Out of Range Bit	0.50	PLC:000550	
FPE50002	DI	FTE50002 Out of Range Bit	0.50	PLC:000551	
PPR17C01	DI	PIR17C01 Out of Range Bit	0.50	PLC:000552	
WPR12A01	DI	WIR12A01 Out of Range Bit	0.50	PLC:000553	
WPR12A03	DI	WIR12A03 Out of Range Bit	0.50	PLC:000554	
FPE50003	DI	FTE50003 Out of Range Bit	0.50	PLC:000555	
WPR12A04	DI	WIR12A04 Out of Range Bit	0.50	PLC:000556	
LPR01A	DI	LIR01A Out of Range Bit	0.50	PLC:000557	
WPR1BA01	DI	WIR1BA01 Out of Range Bit	0.50	PLC:000558	
WPR17C02	DI	WIR17C02 Out of Range Bit	0.50	PLC:000559	
WPR1BA03	DI	WIR1BA03 Out of Range Bit	0.50	PLC:000560	
WPR17C01	DI	WIR17C01 Out of Range Bit	0.50	PLC:000561	
WPR1BA02	DI	WIR1BA02 Out of Range Bit	0.50	PLC:000562	
ZPMPE142	DI	ZIMPE142 Out of Range Bit	0.50	PLC:000563	
LPR01C	DI	LIR01C Out of Range Bit	0.50	PLC:000564	
TCMOD8ERR	DI	D4 R2 S3 MIT17B TC Module 8 Halt Error	1	PLC:000565	
TCMOD9ERR	DI	D4 R2 S7 MIT17B TC Module 9 Halt Error	1	PLC:000574	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
WHF17C1U	DI	Str Gage 17C-1 Hi Freq Alarm (Unlatched)	0.50	PLC:002003	
WHF17C1B	DI	Strain Gauge 17C-1 Hi Freq Abort	0.50	PLC:002004	
WHF1B1U	DI	Str Gage 1B-1 Hi Freq Alarm (Unlatched)	0.50	PLC:002005	
WHF1B1B	DI	Strain Gauge 1B-1 Hi Freq Abort	0.50	PLC:002006	
WHF1B3U	DI	Str Gage 1B-3 Hi Freq Alarm (Unlatched)	0.50	PLC:002007	
WHF17C2U	DI	Str Gage 17C-2 Hi Freq Alarm (Unlatched)	0.50	PLC:002010	
WHF17C2B	DI	Strain Gauge 17C-2 Hi Freq Abort	0.50	PLC:002011	
WHF1B2U	DI	Str Gage 1B-2 Hi Freq Alarm (Unlatched)	0.50	PLC:002012	
WHF1B2B	DI	Strain Gauge 1B-2 Hi Freq Abort	0.50	PLC:002013	
WHF1B3B	DI	Strain Gauge 1B-3 Hi Freq Abort	0.50	PLC:002014	
ZIMPE144	DI	Pump Oscil Motor Limit Switch CCW	0.50	PLC:002015	
ZIMPE143	DI	Pump Oscil Motor Limit Switch CW	0.50	PLC:002016	ZIMPE144
MIP00001	DI	Moisture in Pump Motor Oil 1	0.50	PLC:002017	
UPSOT1	DI	UPS Over Temperature Closure	0.50	PLC:002018	
UPSLV1	DI	UPS Low Voltage	0.50	PLC:002019	
UPSBY1	DI	UPS System On Bypass Alarm	0.50	PLC:002020	
UPSFA1	DI	UPS Output Failure Alarm	0.50	PLC:002021	
PWYO1001	DI	Camera Power ON (24 VDC)	0.50	PLC:002022	
PXO10001	DI	Loss of Camera Purge (0 VDC)	0.50	PLC:002023	
UPSPI1	DI	UPS AC Power Input	0.50	PLC:002024	
ARMABORT	DI	HMT High Gamma Radiation	0.50	PLC:002025	
ARMALM	DI	HMT Area Gamma Radiation Monitor	0.50	PLC:002026	
ARMFAIL	DI	ARM Instrument Failure	0.50	PLC:002027	
FICABORT	DI	FIC Tank Level Alarm	0.50	PLC:002028	
BYJYSO18	DI	Cabinet Trouble Riser 16A SHMS 1	0.50	PLC:002029	
BYKSYO18	DI	Cabinet Trouble Exhaust Header #2	0.50	PLC:002030	
FSLMSY18	DI	FTIR Low Flow Switch (0.3 GPM)	0.50	PLC:002031	
TASLMSY2	DI	Sample Trace Heat Alarm Low (65 Deg F)	0.50	PLC:002032	
PITMSY19	DI	FTIR Purge / Air Bearing Pressure	0.50	PLC:002033	
PMPINRUN	DI	Pump In Run Signal	0.50	PLC:002034	PLCCOMFA_EV2
WHF17C1L	DI	Str Gage 17C-1 Hi Freq Alarm (Latched)	0.50	PLC:002036	
WHF1B1L	DI	Str Gage 1B-1 Hi Freq Alarm (Latched)	0.50	PLC:002037	
WHF1B3L	DI	Str Gage 1B-3 Hi Freq Alarm (Latched)	0.50	PLC:002038	
WHF17C2L	DI	Str Gage 17C-2 Hi Freq Alarm (Latched)	0.50	PLC:002040	
WHF1B2L	DI	Str Gage 1B-2 Hi Freq Alarm (Latched)	0.50	PLC:002041	
ABRTCOIL	DI	PLC Abort Coil	0.50	PLC:002042	
PLCBEN	DI	Latched Bump Enable From PLC	0.50	PLC:002043	
PLCWD	DI	PLC Watchdog Timer Reset	0.50	PLC:002044	PLCCOMFA_EV1
ST8COMFA	DI	STA5 Comm. Failure Abort (Old STA8)	0.50	PLC:002045	
PLCOK	DI	1 - PLC OK; 0 - PLC Problem	0.50	PLC:002046	
ST5COMFA	DI	STATION5 Communication Failure Abort	0.50	PLC:002048	
PMCALARM	DI	Pump Motor Current Alarm	0.50	PLC:002049	PCURRENT_CA
PSPALARM	DI	Pump Speed Alarm	0.50	PLC:002051	PSPEED_CA
PBUMPTOUTE	DR	Pump Bump Timeout Abort Enable	----	PLC:002052	
WLR12A01E	DR	Low 12A-1 Strain Abort Enable	----	PLC:002053	
NCTKSY06E	DR	High H2 - Vent Header Abort Enable	----	PLC:002054	
NCTJSY06E	DR	High H2 - Riser 16A Abort Enable	----	PLC:002055	
NCR17B01E	DR	High H2 - Riser 17B Abort Enable	----	PLC:002056	
NCR05A01E	DR	High H2 Abort - Pump Enable	----	PLC:002057	
WLR12A02E	DR	Low 12A-2 Strain Abort Enable	----	PLC:002059	
WLR12A03E	DR	Low 12A-3 Strain Abort Enable	----	PLC:002060	
WHF17C1BE	DR	Strain Gauge 17C-1 Hi Freq Abort Enable	----	PLC:002062	
WHF1B1BE	DR	Strain Gauge 1B-1 Hi Freq Abort Enable	----	PLC:002063	
WHF17C2BE	DR	Strain Gauge 17C-2 Hi Freq Abort Enable	----	PLC:002065	
WHF1B2BE	DR	Strain Gauge 1B-2 Hi Freq Abort Enable	----	PLC:002066	
WHF1B3BE	DR	Strain Gauge 1B-3 Hi Freq Abort Enable	----	PLC:002067	
MIP00001E	DR	Moisture in Pump Motor Oil Abort Enable	----	PLC:002068	
ZIMPE143E	DR	CW Limit Switch Abort Enable	----	PLC:002069	
ZIMPE144E	DR	CCW Limit Switch Abort Enable	----	PLC:002070	
TCR17B01E	DR	High Temperature Abort 17B01 Enable	----	PLC:002075	
TCR17B02E	DR	High Temperature Abort 17B02 Enable	----	PLC:002076	
TCR17B03E	DR	High Temperature Abort 17B03 Enable	----	PLC:002077	
TCR17B04E	DR	High Temperature Abort 17B04 Enable	----	PLC:002078	
TCR17B05E	DR	High Temperature Abort 17B05 Enable	----	PLC:002079	
TCR17B06E	DR	High Temperature Abort 17B06 Enable	----	PLC:002080	
TCR17B07E	DR	High Temperature Abort 17B07 Enable	----	PLC:002081	
TCR17B08E	DR	High Temperature Abort 17B08 Enable	----	PLC:002082	
TCR17B09E	DR	High Temperature Abort 17B09 Enable	----	PLC:002083	
TCR17B10E	DR	High Temperature Abort 17B10 Enable	----	PLC:002084	
TCR17B11E	DR	High Temperature Abort 17B11 Enable	----	PLC:002085	
TCR17B12E	DR	High Temperature Abort 17B12 Enable	----	PLC:002086	
TCR17B13E	DR	High Temperature Abort 17B13 Enable	----	PLC:002087	
TCR17B14E	DR	High Temperature Abort 17B14 Enable	----	PLC:002088	
TCR17B15E	DR	High Temperature Abort 17B15 Enable	----	PLC:002089	
TCR17B16E	DR	High Temperature Abort 17B16 Enable	----	PLC:002090	
TCR17B17E	DR	High Temperature Abort 17B17 Enable	----	PLC:002091	
TCR17B18E	DR	High Temperature Abort 17B18 Enable	----	PLC:002092	
TCR17B19E	DR	High Temperature Abort 17B19 Enable	----	PLC:002093	
TCR17B20E	DR	High Temperature Abort 17B20 Enable	----	PLC:002094	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TCR17B21E	DR	High Temperature Abort 17B21 Enable	----	PLC:002095	
TCR17B22E	DR	High Temperature Abort 17B22 Enable	----	PLC:002096	
TCR12A01E	DR	High Pump Motor Oil Temp Abort 1 Enable	----	PLC:002103	
TCR12A02E	DR	High Pump Motor Oil Temp Abort 2 Enable	----	PLC:002104	
FCE50001E	DR	Low Ventilation Flow Abort 1 Enable	----	PLC:002105	
FCE50002E	DR	Low Ventilation Flow Abort 2 Enable	----	PLC:002106	
PCR17C01E	DR	High Tank Dome Pressure Abort 1 Enable	----	PLC:002107	
PCR17B04E	DR	High Tank Dome Pressure Abort 2 Enable	----	PLC:002108	
WCR12A01E	DR	High Pump Column Strain Abort 1 Enable	----	PLC:002110	
WCR12A02E	DR	High Pump Column Strain Abort 2 Enable	----	PLC:002111	
WCR12A03E	DR	High Pump Column Strain Abort 3 Enable	----	PLC:002112	
WCR12A04E	DR	High Pump Column Strain Abort 4 Enable	----	PLC:002113	
WCR1BA01E	DR	Hi VDTT Column 1B Strain Abort 1 Enable	----	PLC:002117	
WCR1BA03E	DR	Hi VDTT Column 1B Strain Abort 2 Enable	----	PLC:002118	
WCR17C01E	DR	Hi MIT 17C Column Strain Abort 1 Enable	----	PLC:002120	
WCR17C02E	DR	Hi MIT 17C Column Strain Abort 2 Enable	----	PLC:002121	
VC232040E	DR	High Pump Motor Current Abort Enable	----	PLC:002122	
VC232050E	DR	High Pump Motor Speed Abort Enable	----	PLC:002123	
WLR12A04E	DR	Low 12A-4 Strain Abort Enable	----	PLC:002128	
WLR1BA01E	DR	Low 1B-1 Strain Abort Enable	----	PLC:002131	
WLR1BA02E	DR	Low 1B-2 Strain Abort Enable	----	PLC:002132	
WLR1BA03E	DR	Low 1B-3 Strain Abort Enable	----	PLC:002133	
WCR1BA02E	DR	High 1B-2 Strain Abort Enable	----	PLC:002134	
WLR17C01E	DR	Low 17C-1 Strain Abort Enable	----	PLC:002136	
WLR17C02E	DR	Low 17C-2 Strain Abort Enable	----	PLC:002137	
ZLMPE142E	DR	Low Pump Column Gas Press Abort Enable	----	PLC:002138	
FHE50001E	DR	High Vent Flow Abort 1 Enable	----	PLC:002139	
FHE50002E	DR	High Vent Flow Abort 2 Enable	----	PLC:002140	
RGA5_ZERO	DO	RGA-5 Update Zero Control	----	PLC:002150	
GC3_ZERO	DO	GC3-H2 Update - Zero Control	----	PLC:002151	
FT_ZERO	DO	FTIR Update - Zero Control	----	PLC:002152	
PHO_ZERO	DO	PHO Update - Zero Control	----	PLC:002153	
D2R1S6STAT	DI	Drop 2 Rack 1 Slot 6 I/O Health Status	1	PLC:400108:11	
D2R1S5STAT	DI	Drop 2 Rack 1 Slot 5 I/O Health Status	1	PLC:400108:12	
D2R1S4STAT	DI	Drop 2 Rack 1 Slot 4 I/O Health Status	1	PLC:400108:13	
D2R2S4STAT	DI	Drop 2 Rack 2 Slot 4 I/O Health Status	1	PLC:400109:13	
D2R2S3STAT	DI	Drop 2 Rack 2 Slot 3 I/O Health Status	1	PLC:400109:14	
D4R1S7STAT	DI	Drop 4 Rack 1 Slot 7 I/O Health Status	1	PLC:400110:10	
D4R1S6STAT	DI	Drop 4 Rack 1 Slot 6 I/O Health Status	1	PLC:400110:11	
D4R1S5STAT	DI	Drop 4 Rack 1 Slot 5 I/O Health Status	1	PLC:400110:12	
D4R1S4STAT	DI	Drop 4 Rack 1 Slot 4 I/O Health Status	1	PLC:400110:13	
D6R1S7STAT	DI	Drop 6 Rack 1 Slot 7 I/O Health Status	1	PLC:400111:10	
D6R1S6STAT	DI	Drop 6 Rack 1 Slot 6 I/O Health Status	1	PLC:400111:11	
D6R1S5STAT	DI	Drop 6 Rack 1 Slot 5 I/O Health Status	1	PLC:400111:12	
D6R1S4STAT	DI	Drop 6 Rack 1 Slot 4 I/O Health Status	1	PLC:400111:13	
D8R1S7STAT	DI	Drop 8 Rack 1 Slot 7 I/O Health Status	1	PLC:400112:10	
D8R1S6STAT	DI	Drop 8 Rack 1 Slot 6 I/O Health Status	1	PLC:400112:11	
D8R1S5STAT	DI	Drop 8 Rack 1 Slot 5 I/O Health Status	1	PLC:400112:12	
D8R1S4STAT	DI	Drop 8 Rack 1 Slot 4 I/O Health Status	1	PLC:400112:13	
D8R2S5STAT	DI	Drop 8 Rack 2 Slot 5 I/O Health Status	1	PLC:400113:12	
D8R2S4STAT	DI	Drop 8 Rack 2 Slot 4 I/O Health Status	1	PLC:400113:13	
D8R2S3STAT	DI	Drop 8 Rack 2 Slot 3 I/O Health Status	1	PLC:400113:14	
D9R1S7STAT	DI	Drop 9 Rack 1 Slot 7 I/O Health Status	1	PLC:400114:10	
D9R1S6STAT	DI	Drop 9 Rack 1 Slot 6 I/O Health Status	1	PLC:400114:11	
D9R1S5STAT	DI	Drop 9 Rack 1 Slot 5 I/O Health Status	1	PLC:400114:12	
D9R1S4STAT	DI	Drop 9 Rack 1 Slot 4 I/O Health Status	1	PLC:400114:13	
D4R2S7STAT	DI	Drop 4 Rack 2 Slot 7 I/O Health Status	1	PLC:400115:10	
D4R2S6STAT	DI	Drop 4 Rack 2 Slot 6 I/O Health Status	1	PLC:400115:11	
D4R2S5STAT	DI	Drop 4 Rack 2 Slot 5 I/O Health Status	1	PLC:400115:12	
D4R2S4STAT	DI	Drop 4 Rack 2 Slot 4 I/O Health Status	1	PLC:400115:13	
D4R2S3STAT	DI	Drop 4 Rack 2 Slot 3 I/O Health Status	1	PLC:400115:14	
D14R1S6STAT	DI	Drop 14 Rack 1 Slot 6 I/O Health Status	1	PLC:400116:11	
D14R1S5STAT	DI	Drop 14 Rack 1 Slot 5 I/O Health Status	1	PLC:400116:12	
D14R1S4STAT	DI	Drop 14 Rack 1 Slot 4 I/O Health Status	1	PLC:400116:13	
D14R2S7STAT	DI	Drop 14 Rack 2 Slot 7 I/O Health Status	1	PLC:400117:10	
D14R2S6STAT	DI	Drop 14 Rack 2 Slot 6 I/O Health Status	1	PLC:400117:11	
D14R2S5STAT	DI	Drop 14 Rack 2 Slot 5 I/O Health Status	1	PLC:400117:12	
D14R2S4STAT	DI	Drop 14 Rack 2 Slot 4 I/O Health Status	1	PLC:400117:13	
D14R2S3STAT	DI	Drop 14 Rack 2 Slot 3 I/O Health Status	1	PLC:400117:14	
D15R1S7STAT	DI	Drop 15 Rack 1 Slot 7 I/O Health Status	1	PLC:400118:10	
D15R1S6STAT	DI	Drop 15 Rack 1 Slot 6 I/O Health Status	1	PLC:400118:11	
D15R1S5STAT	DI	Drop 15 Rack 1 Slot 5 I/O Health Status	1	PLC:400118:12	
D15R1S4STAT	DI	Drop 15 Rack 1 Slot 4 I/O Health Status	1	PLC:400118:13	
D16R1S8STAT	DI	Drop 16 Rack 1 Slot 8 I/O Health Status	1	PLC:400119:9	
D16R1S7STAT	DI	Drop 16 Rack 1 Slot 7 I/O Health Status	1	PLC:400119:10	
D16R1S6STAT	DI	Drop 16 Rack 1 Slot 6 I/O Health Status	1	PLC:400119:11	
D16R1S5STAT	DI	Drop 16 Rack 1 Slot 5 I/O Health Status	1	PLC:400119:12	
D16R1S4STAT	DI	Drop 16 Rack 1 Slot 4 I/O Health Status	1	PLC:400119:13	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
D13R1S8STAT	DI	Drop 13 Rack 1 Slot 8 I/O Health Status	1	PLC:400120:9	
D13R1S7STAT	DI	Drop 13 Rack 1 Slot 7 I/O Health Status	1	PLC:400120:10	
D13R1S6STAT	DI	Drop 13 Rack 1 Slot 6 I/O Health Status	1	PLC:400120:11	
D13R1S5STAT	DI	Drop 13 Rack 1 Slot 5 I/O Health Status	1	PLC:400120:12	
D13R1S4STAT	DI	Drop 13 Rack 1 Slot 4 I/O Health Status	1	PLC:400120:13	
HH2CV	AA	High Hydrogen Abort Limit	5	PLC:400200	
HH2LIM	AO	High Hydrogen Abort Limit	----	PLC:400200	
H1BSAL	AO	High 1B Strain Alarm Limit	----	PLC:400201	
L1BSAL	AO	Low 1B Strain Alarm Limit	----	PLC:400202	
HTEMPCV	AA	High Temp Abort Limit	5	PLC:400203	
HTEMPLIM	AO	High Temp Abort Limit	----	PLC:400203	
HTDPCV	AA	High Tank Dome Pressure Abort Limit	5	PLC:400204	
HTDPLIM	AO	High Tank Dome Pressure Abort Limit	----	PLC:400204	
HILIM	AO	Set to 4095	----	PLC:400205	
HPMOTCV	AA	High Motor Oil Temp Abort Limit	5	PLC:400206	
HPMOTLIM	AO	High Motor Oil Temp Abort Limit	----	PLC:400206	
LVFLCV	AA	Low Vent Flow Abort Limit Low Range	5	PLC:400207	
LVFLLIM	AO	Low Vent Flow Abort Limit Low Range	----	PLC:400207	
HPCABRT	AO	High Pump Motor Current Abort Limit	----	PLC:400208	
HPCALM	AO	High Pump Motor Current Alarm Limit	----	PLC:400211	
PBCALSEC	AO	Copies USER_SECONDS to PLC	----	PLC:400212	
HPSPDLIM	AO	High Pump Speed Abort Limit	----	PLC:400213	
HPSPDAL	AO	High Pump Speed Alarm Limit	----	PLC:400214	
VR232020	AR	Mixer Pump Motor Voltage	----	PLC:400215	
VR232080	AR	Rotational Motor Voltage	----	PLC:400216	
VR232100	AR	Rotational Motor Current	----	PLC:400217	
VR232110	AR	Rotational Motor Speed	----	PLC:400218	
VR232040-AO	AO	Pump Motor Current To PLC	----	PLC:400219	
VR232050-AO	AO	Pump Speed To PLC	----	PLC:400220	
D_ACCEL	AO	Directional Motor Acceleration	----	PLC:400221	
VR232120	AR	Directional Speed Setpoint	----	PLC:400222	
HPCSCV	AA	High Pump Column Strain Abort Limit	5	PLC:400224	
HPCSLIM	AO	High Pump Column Strain Abort Limit	----	PLC:400224	
H12ASAL	AO	High 12A Strain Alarm Limit	----	PLC:400227	
L12ASAL	AO	Low 12A Strain Alarm Limit	----	PLC:400229	
H17BCSAL	AO	High 17C Strain Alarm Limit	----	PLC:400230	
L17BCSAL	AO	Low 17C Strain Alarm Limit	----	PLC:400231	
HH2LIM2	AO	High H2 Abort Limit for 0-30 Gauge	----	PLC:400232	
HH22CV	AA	High H2 Abort Limit for 0-30 Gauge	5	PLC:400232	
H17CSCV	AA	High 17C Column Strain Abort Limit	5	PLC:400233	
H17CSLIM	AO	High 17C Column Strain Abort Limit	----	PLC:400233	
LVFL2CV	AA	Low Vent Flow Abort High Range	5	PLC:400235	
LVFLLIM2	AO	Low Vent Flow Abort High Range	----	PLC:400235	
HTDP2CV	AA	High Tank Dome Pressure Abort Limit 2	5	PLC:400236	
HTDPLIM2	AO	High Tank Dome Pressure Abort Limit 2	----	PLC:400236	
H1BCSCV	AA	High 1B Column Strain Abort Limit	5	PLC:400237	
H1BCSLIM	AO	High 1B Column Strain Abort Limit	----	PLC:400237	
LPCSCV	AA	Low Pump Column Strain Abort Limit	5	PLC:400238	
LPCSLIM	AO	Low Pump Column Strain Abort Limit	----	PLC:400238	
L17CSCV	AA	Low 17C Column Strain Abort Limit	5	PLC:400240	
L17CSLIM	AO	Low 17C Column Strain Abort Limit	----	PLC:400240	
L1BCSCV	AA	Low 1B Column Strain Abort Limit	5	PLC:400241	
L1BCSLIM	AO	Low 1B Column Strain Abort Limit	----	PLC:400241	
LPCGPCV	AA	Low Pump Column Gas Pressure Abort Limit	5	PLC:400252	
LPCGPLIM	AO	Low Pump Column Gas Pressure Abort Limit	----	PLC:400252	
HVFL1CV	AA	High Vent Flow Abort Limit 1	5	PLC:400253	
HVFLLIM1	AO	High Vent Flow Abort Limit 1	----	PLC:400253	
HVFL2CV	AA	High Vent Flow Abort Limit 2	5	PLC:400254	
HVFLLIM2	AO	High Vent Flow Abort Limit 2	----	PLC:400254	
TIR12A02	AA	Mixer Pump Motor Oil Temp 2	0.50	PLC:402003	TZR12A02-AA
TZR12A02-AA	AA	AA Block for Instrument Problem TIR12A02	0.50	PLC:402003	
TIR12A01	AA	Mixer Pump Motor Oil Temp 1	0.50	PLC:402004	TZR12A01-AA
TZR12A01-AA	AA	AA Block for Instrument Problem TIR12A01	0.50	PLC:402004	
ZIMPE142	AA	Mixer Pump Column Gas Pressure	0.50	PLC:402006	ZZMPE142-AA
ZZMPE142-AA	AA	AA Block for Instrument Problem ZIMPE142	0.50	PLC:402006	
PIR12A01	AA	Mixer Pump Pressure	0.50	PLC:402007	PZR12A01-AA
PZR12A01-AA	AA	AA Block for Instrument Problem PIR12A01	0.50	PLC:402007	
PITNO111	AA	Mixer Pump Nozzle 2 Tap Pressure	0.50	PLC:402017	
PZTNO111-AA	AA	AA Block for Instrument Problem PITNO111	0.50	PLC:402017	
PITNO110	AA	Mixer Pump Nozzle 1 Tap Pressure	0.50	PLC:402018	
PZTNO110-AA	AA	AA Block for Instrument Problem PITNO110	0.50	PLC:402018	
TT10001	AA	Vent Header Temperature	0.50	PLC:402019	
PITMSY13	AA	GC-3 Sample Pressure	0.50	PLC:402020	
MT10001	AA	Vent Header Relative Humidity	0.50	PLC:402021	
TITMSY15	AA	FTIR Sample Gas Temperature	0.50	PLC:402022	
FTE50002	AA	Vent Header Flow High Range	0.50	PLC:402023	
LIR01A	AA	ENRAF Wire Gauge Tank Level Riser 1A	0.50	PLC:402024	
PITMSY16	AA	FTIR Sample Pressure	0.50	PLC:402025	
FITMSY17	AA	FTIR Sample Gas Flow	1	PLC:402026	
LIR01C	AA	ENRAF Wire Gauge Tank Level Riser 1C	0.50	PLC:402027	

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
PITMSY07	AA	GC-1 Sample Pressure	0.50	PLC:402028	
TICMSY18	AA	FTIR Cooling Water Temperature	0.50	PLC:402029	
TITMSY25	AA	GMS-2 Building Temperature	0.50	PLC:402030	
PDTMSY12	AA	GC-3 Differential Pressure	0.50	PLC:402031	
PITMSY04	AA	Sampling Inlet Pressure	0.50	PLC:402032	
PIR17B04	AA	MIT Tank Dome Pressure	0.50	PLC:402033	PZR17B04-AA
PZR17B04-AA	AA	AA Block for Instrument Problem PIR17B04	0.50	PLC:402033	
NITJSY06	AA	0-10% H2 Riser 16A SHMS 1	0.50	PLC:402034	
NITKSY06	AA	0-10% H2 Vent Header SHMS 2	0.50	PLC:402035	NZTKSY06-AA
NZTKSY06-AA	AA	AA Block for Instrument Problem NITKSY06	0.50	PLC:402035	
NIR17B01	AA	Whittaker Monitor High H2	0.50	PLC:402036	
NIR05A01	AA	Mixer Pump Whittaker Monitor High H2	0.50	PLC:402037	
FTE50001	AA	Vent Header Flow Low Range	0.50	PLC:402061	
PIR17C01	AA	Tank Dome Pressure Riser 17C	0.50	PLC:402062	PZR17C01-AA
PZR17C01-AA	AA	AA Block for Instrument Problem PIR17C01	0.50	PLC:402062	
RGA5TND1	AA	RGA5 Trend Output 1	5	PLC:402063	
RGA5TND2	AA	RGA5 Trend Output 2	5	PLC:402064	
NITHDR01	AA	Head Hydrogen Concentration	0.50	PLC:402065	
TIVDTCAB	AA	VDTT Instrument Cabinet Temp	0.50	PLC:402066	
TII04CAB	AA	I/O #4 Cabinet Temp	0.50	PLC:402067	
PITMSY10	AA	GC-2 Sample Pressure	0.50	PLC:402068	
WIR1BA02	AA	Strain Gauge #2 Riser 1B at Level 530"	0.50	PLC:402069	
WIR12A04	AA	Pump Support Column Strain #4	0.50	PLC:402071	
WIR12A01	AA	Pump Support Column Strain #1	0.50	PLC:402073	
WIR12A03	AA	Pump Support Column Strain #3	0.50	PLC:402074	
WIR17C02	AA	Strain Gauge #2 Riser 17C at Lvl 465.5"	0.50	PLC:402076	
WIR1BA01	AA	Strain Gauge #1 Riser 1B at Level 530"	0.50	PLC:402077	
WIR1BA03	AA	Strain Gauge #3 Riser 1B at Level 530"	0.50	PLC:402078	
WIR12A02	AA	Pump Support Column Strain #2	0.50	PLC:402080	
WIR17C01	AA	Strain Gauge #1 Riser 17C at Lvl 465.5"	0.50	PLC:402081	
WSH1	AA	DACS-1 Weather Station Humidity	0.50	PLC:402085	
WSWDIR	AA	DACS-1 Weather Station Wind Direction	0.50	PLC:402086	
WSP1	AA	DACS-1 Weather Station Barometric Press	0.50	PLC:402087	
FTE50003	AA	SY Tank Farm Exhaust Flow	0.50	PLC:402088	
PIO10001	AA	Camera Enclosure Purge Pressure	0.50	PLC:402089	
PIO20002	AA	Nitrogen Supply	0.50	PLC:402090	
WSWSPD	AA	DACS-1 Weather Station Wind Speed	0.50	PLC:402091	
ARMGEXP	AA	Used to Calculate ARMGAMMA	1	PLC:402092	ARMGAMMA-CA
TRA1A	AA	DACS-1 Trailer Current Phase A	0.50	PLC:402093	
TRA1B	AA	DACS-1 Trailer Current Phase B	0.50	PLC:402094	
TRA1C	AA	DACS-1 Trailer Current Phase C	0.50	PLC:402095	
TRV1	AA	DACS-1 Trailer Voltage	0.50	PLC:402096	
TRT1	AA	Trailer Temperature Rear Rack 2	0.50	PLC:402097	
TRT3	AA	Trailer Temperature Rear Rack 6	0.50	PLC:402098	
TRT5	AA	Trailer Temperature Front Rack 1	0.50	PLC:402099	
TRT7	AA	Trailer Temperature Front Rack 5	0.50	PLC:402100	
TRT9	AA	Trailer Temperature Front Rack 8	0.50	PLC:402101	
TRT10	AA	Trailer Temperature Ambient	0.50	PLC:402102	
UPST1	AA	UPS Temperature	0.50	PLC:402103	
WST1	AA	DACS-1 Weather Station Temperature	0.50	PLC:402104	
TRT2	AA	Trailer Temperature Rear Rack 4	0.50	PLC:402105	
TRT4	AA	Trailer Temperature Rear Rack 8	0.50	PLC:402106	
TRT6	AA	Trailer Temperature Front Rack 3	0.50	PLC:402107	
TRT8	AA	Trailer Temperature Front Rack 6	0.50	PLC:402108	
TRT11	AA	Trailer Temperature Rear Rack 9	0.50	PLC:402109	
PCR12A01	AA	Pump Volute Pressure Minus Baseline	0.50	PLC:402129	
ZIMPE112	AA	Motor Position Encoder BCD	0.50	PLC:402131	D_ANGLE_DIFF
TIR17B01-AI	AI	AI Block for TIR17B01 (From PLC)	0.50	PLC:402132	TIR17B01-AO
TIR17B02-AI	AI	AI Block for TIR17B02 (From PLC)	0.50	PLC:402133	TIR17B02-AO
TIR17B03-AI	AI	AI Block for TIR17B03 (From PLC)	0.50	PLC:402134	TIR17B03-AO
TIR17B04-AI	AI	AI Block for TIR17B04 (From PLC)	0.50	PLC:402135	TIR17B04-AO
TIR17B05-AI	AI	AI Block for TIR17B05 (From PLC)	0.50	PLC:402136	TIR17B05-AO
RG-RUN	AA	RGA-5 Run Number	5	PLC:402137	
RG-STAT	AA	RGA-5 Stat (0=Tank, 1=Cal, 2=Flush)	5	PLC:402138	
RG-TIME	AA	RGA-5 Time of Sample	5	PLC:402139	
RG-TIME1	AA	RGA-5 Time of Sample (GC-1)	5	PLC:402139	GC1-CHK
RG-TIME2	AA	RGA-5 Time of Sample (GC-2)	5	PLC:402139	GC2-CHK
GC1-H2	AA	GC-1 Hydrogen Concentration	5	PLC:402140	
GC1-ARHI	AA	GC-1 Area High Portion	5	PLC:402141	GC1-ARLO
GC1-ARLO	AA	GC-1 Area Low Portion	5	PLC:402142	GC1-AREA
GC1-RT	AA	GC-1 Retention Time	5	PLC:402143	
GC2-H2	AA	GC-2 Hydrogen Concentration	5	PLC:402144	
GC2-ARHI	AA	GC-2 Area High Portion	5	PLC:402145	GC2-ARLO
GC2-ARLO	AA	GC-2 Area Low Portion	5	PLC:402146	GC2-AREA
GC2-RT	AA	GC-2 Hydrogen Retention Time	5	PLC:402147	
TBSTC04-AI	AI	AI Block for TBSTC04 (From PLC)	0.50	PLC:402148	TBSTC04-AO
TBSTC07-AI	AI	AI Block for TBSTC07 (From PLC)	0.50	PLC:402149	TBSTC07-AO

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TIR17B06-AI	AI	AI Block for TIR17B06 (From PLC)	0.50	PLC:402150	TIR17B06-AO
TIR17B07-AI	AI	AI Block for TIR17B07 (From PLC)	0.50	PLC:402151	TIR17B07-AO
TIR17B08-AI	AI	AI Block for TIR17B08 (From PLC)	0.50	PLC:402152	TIR17B08-AO
TIR17B09-AI	AI	AI Block for TIR17B09 (From PLC)	0.50	PLC:402153	TIR17B09-AO
TIR17B10-AI	AI	AI Block for TIR17B10 (From PLC)	0.50	PLC:402154	TIR17B10-AO
PHO-MSB	AA	Photo NH3 Concentration MSB	5	PLC:402155	PHO-LSB
PHO-LSB	AA	Photo NH3 Concentration LSB	5	PLC:402156	PHO-NH3-CA
TIR17B11-AI	AI	AI Block for TIR17B11 (From PLC)	0.50	PLC:402157	TIR17B11-AO
PHO-TIME	AA	Photo NH3 Sample Time	5	PLC:402158	
TIR17C01-AI	AI	AI Block for TIR17C01 (From PLC)	0.50	PLC:402159	TIR17C01-AO
TIR17C02-AI	AI	AI Block for TIR17C02 (From PLC)	0.50	PLC:402160	TIR17C02-AO
TIR17C03-AI	AI	AI Block for TIR17C03 (From PLC)	0.50	PLC:402161	TIR17C03-AO
TIR17C04-AI	AI	AI Block for TIR17C04 (From PLC)	0.50	PLC:402162	TIR17C04-AO
TIR17C05-AI	AI	AI Block for TIR17C05 (From PLC)	0.50	PLC:402163	TIR17C05-AO
TIR17C06-AI	AI	AI Block for TIR17C06 (From PLC)	0.50	PLC:402164	TIR17C06-AO
TIR17C07-AI	AI	AI Block for TIR17C07 (From PLC)	0.50	PLC:402165	TIR17C07-AO
TIR17C08-AI	AI	AI Block for TIR17C08 (From PLC)	0.50	PLC:402166	TIR17C08-AO
TIR17C09-AI	AI	AI Block for TIR17C09 (From PLC)	0.50	PLC:402167	TIR17C09-AO
TIR17C10-AI	AI	AI Block for TIR17C10 (From PLC)	0.50	PLC:402168	TIR17C10-AO
TIR17C11-AI	AI	AI Block for TIR17C11 (From PLC)	0.50	PLC:402169	TIR17C11-AO
TIR17C12-AI	AI	AI Block for TIR17C12 (From PLC)	0.50	PLC:402170	TIR17C12-AO
TIR17C13-AI	AI	AI Block for TIR17C13 (From PLC)	0.50	PLC:402171	TIR17C13-AO
TIR17C14-AI	AI	AI Block for TIR17C14 (From PLC)	0.50	PLC:402172	TIR17C14-AO
TIR17C15-AI	AI	AI Block for TIR17C15 (From PLC)	0.50	PLC:402173	TIR17C15-AO
TIR17C16-AI	AI	AI Block for TIR17C16 (From PLC)	0.50	PLC:402174	TIR17C16-AO
TIR17C17-AI	AI	AI Block for TIR17C17 (From PLC)	0.50	PLC:402175	TIR17C17-AO
TIR17C18-AI	AI	AI Block for TIR17C18 (From PLC)	0.50	PLC:402176	TIR17C18-AO
TIR17C19-AI	AI	AI Block for TIR17C19 (From PLC)	0.50	PLC:402177	TIR17C19-AO
TIR17C20-AI	AI	AI Block for TIR17C20 (From PLC)	0.50	PLC:402178	TIR17C20-AO
TIR17C21-AI	AI	AI Block for TIR17C21 (From PLC)	0.50	PLC:402179	TIR17C21-AO
TIR17C22-AI	AI	AI Block for TIR17C22 (From PLC)	0.50	PLC:402180	TIR17C22-AO
GC3-RT	AA	GC-3 Hydrogen Retention Time (MIN/100)	5	PLC:402181	
GC3-FILE	AA	GC-3 File ID	5	PLC:402182	
GC3-TIME	AA	GC-3 Time of Sample	5	PLC:402183	
GC3-H2	AA	GC-3 Hydrogen Concentration (0-1000 ppm)	5	PLC:402184	
FT-N2OA	AA	FTIR N2O Peak Area	5	PLC:402185	
FT-N2OC	AA	FTIR N2O Concentration	5	PLC:402186	
FT-NH3A	AA	FTIR NH3 Peak Area (x 100)	5	PLC:402187	
FT-NH3C	AA	FTIR NH3 Concentration	5	PLC:402188	
FZ-NH3C-AA	AA	AA Block for Instrument Problem FT-NH3C	5	PLC:402188	
FT-FILE	AA	FTIR File ID	5	PLC:402189	
FT-TIME	AA	FTIR Time of Sample	5	PLC:402190	
TIR17B12-AI	AI	AI Block for TIR17B12 (From PLC)	0.50	PLC:402191	TIR17B12-AO
TIR17B13-AI	AI	AI Block for TIR17B13 (From PLC)	0.50	PLC:402192	TIR17B13-AO
TBSTC10-AI	AI	AI Block for TBSTC10 (From PLC)	0.50	PLC:402193	TBSTC10-AO
TBSTC13-AI	AI	AI Block for TBSTC13 (From PLC)	0.50	PLC:402194	TBSTC13-AO
TBSTC16-AI	AI	AI Block for TBSTC16 (From PLC)	0.50	PLC:402195	TBSTC16-AO
TBSTC19-AI	AI	AI Block for TBSTC19 (From PLC)	0.50	PLC:402196	TBSTC19-AO
TBSTC22-AI	AI	AI Block for TBSTC22 (From PLC)	0.50	PLC:402197	TBSTC22-AO
TBSTC25-AI	AI	AI Block for TBSTC25 (From PLC)	0.50	PLC:402198	TBSTC25-AO
TBSTC02-AI	AI	AI Block for TBSTC02 (From PLC)	0.50	PLC:402199	TBSTC02-AO
TBSTC05-AI	AI	AI Block for TBSTC05 (From PLC)	0.50	PLC:402200	TBSTC05-AO
TBSTC08-AI	AI	AI Block for TBSTC08 (From PLC)	0.50	PLC:402201	TBSTC08-AO
TBSTC11-AI	AI	AI Block for TBSTC11 (From PLC)	0.50	PLC:402202	TBSTC11-AO
TBSTC14-AI	AI	AI Block for TBSTC14 (From PLC)	0.50	PLC:402203	TBSTC14-AO
TBSTC17-AI	AI	AI Block for TBSTC17 (From PLC)	0.50	PLC:402204	TBSTC17-AO
TBSTC20-AI	AI	AI Block for TBSTC20 (From PLC)	0.50	PLC:402205	TBSTC20-AO
TBSTC23-AI	AI	AI Block for TBSTC23 (From PLC)	0.50	PLC:402206	TBSTC23-AO
TBSTC26-AI	AI	AI Block for TBSTC26 (From PLC)	0.50	PLC:402207	TBSTC26-AO
TBSTC03-AI	AI	AI Block for TBSTC03 (From PLC)	0.50	PLC:402208	TBSTC03-AO
TBSTC06-AI	AI	AI Block for TBSTC06 (From PLC)	0.50	PLC:402209	TBSTC06-AO
TBSTC09-AI	AI	AI Block for TBSTC09 (From PLC)	0.50	PLC:402210	TBSTC09-AO
TBSTC12-AI	AI	AI Block for TBSTC12 (From PLC)	0.50	PLC:402211	TBSTC12-AO
TBSTC18-AI	AI	AI Block for TBSTC18 (From PLC)	0.50	PLC:402212	TBSTC18-AO
TBSTC21-AI	AI	AI Block for TBSTC21 (From PLC)	0.50	PLC:402213	TBSTC21-AO
TBSTC24-AI	AI	AI Block for TBSTC24 (From PLC)	0.50	PLC:402214	TBSTC24-AO
TBSTC15-AI	AI	AI Block for TBSTC15 (From PLC)	0.50	PLC:402215	TBSTC15-AO
TBSTC01-AI	AI	AI Block for TBSTC01 (From PLC)	0.50	PLC:402216	TBSTC01-AO
PLCPSLIM	AA	Pump Speed Abort Limit From PLC	5	PLC:402221	
PLCSPDAL	AA	Pump Speed Alarm Limit	5	PLC:402222	
PLCPMCAB	AA	High Pump Motor Current Abort Limit	0.50	PLC:402231	
PLCPMCAL	AA	Pump Motor Current Alarm Value	0.50	PLC:402232	
TIR17B14-AI	AI	AI Block for TIR17B14 (From PLC)	0.50	PLC:402233	TIR17B14-AO
TIR17B15-AI	AI	AI Block for TIR17B15 (From PLC)	0.50	PLC:402234	TIR17B15-AO
TIR17B16-AI	AI	AI Block for TIR17B16 (From PLC)	0.50	PLC:402235	TIR17B16-AO
TIR17B17-AI	AI	AI Block for TIR17B17 (From PLC)	0.50	PLC:402236	TIR17B17-AO
TIR17B18-AI	AI	AI Block for TIR17B18 (From PLC)	0.50	PLC:402237	TIR17B18-AO
TIR17B19-AI	AI	AI Block for TIR17B19 (From PLC)	0.50	PLC:402238	TIR17B19-AO
TIR17B20-AI	AI	AI Block for TIR17B20 (From PLC)	0.50	PLC:402239	TIR17B20-AO

Block Tag Name	Type	Tag Description	Scan Time	I/O Address	Next Block
TIR17B21-AI	AI	AI Block for TIR17B21 (From PLC)	0.50	PLC:402240	TIR17B21-AO
TIR17B22-AI	AI	AI Block for TIR17B22 (From PLC)	0.50	PLC:402241	TIR17B22-AO
PLCVER	AA	PLC Ladder Logic Version	30	PLC:409000	

Table D-3. Analog Alarm (AA) Blocks - Part 1: Addresses & Limits

AA Block Tag Name	Tag Description	Scan Time	I/O Address	Signal Cond.	Low Limit	High Limit	Units
ARMGAMMA	HMT Gamma Radiation	1	1111		0.00	999.99	mR/h
ARMGEXP	Used to Calculate ARMGAMMA	1	PLC:402092	12AL	0	5	VOLT
FITMSY17	FTIR Sample Gas Flow	1	PLC:402026	12AL	0.0	10.0	INWG
FT-FILE	FTIR File ID	5	PLC:402189	NONE	0	65535	----
FT-N2OA	FTIR N2O Peak Area	5	PLC:402185	NONE	0	65535	----
FT-N2OC	FTIR N2O Concentration	5	PLC:402186	NONE	0	65535	PPM
FT-NH3A	FTIR NH3 Peak Area (x 100)	5	PLC:402187	NONE	0	65535	----
FT-NH3C	FTIR NH3 Concentration	5	PLC:402188	NONE	0	65535	PPM
FT-TIME	FTIR Time of Sample	5	PLC:402190	NONE	0	65535	HHMM
FTE50001	Vent Header Flow Low Range	0.50	PLC:402061	12AL	0	1275	CFM
FTE50002	Vent Header Flow High Range	0.50	PLC:402023	12AL	-1000	7333	CFM
FTE50003	SY Tank Farm Exhaust Flow	0.50	PLC:402088	12AL	0	1274	CFM
FZ-NH3C-AA	AA Block for Instrument Problem FT-NH3C	5	PLC:402188	NONE	0.00	65535.00	PPM
GC1-ARHI	GC-1 Area High Portion	5	PLC:402141	NONE	0	65535	----
GC1-ARLO	GC-1 Area Low Portion	5	PLC:402142	NONE	0	65535	----
GC1-H2	GC-1 Hydrogen Concentration	5	PLC:402140	LIN	0.000	9999.900	PPM
GC1-RT	GC-1 Retention Time	5	PLC:402143	NONE	0	65535	SEC
GC2-ARHI	GC-2 Area High Portion	5	PLC:402145	NONE	0	65535	----
GC2-ARLO	GC-2 Area Low Portion	5	PLC:402146	NONE	0	65535	----
GC2-H2	GC-2 Hydrogen Concentration	5	PLC:402144	LIN	0.000	9999.900	PPM
GC2-RT	GC-2 Hydrogen Retention Time	5	PLC:402147	NONE	0	65535	SEC
GC3-FILE	GC-3 File ID	5	PLC:402182	NONE	0	65535	----
GC3-H2	GC-3 Hydrogen Concentration (0-1000 ppm)	5	PLC:402184	NONE	0.00	65535.00	PPM
GC3-RT	GC-3 Hydrogen Retention Time (MIN/100)	5	PLC:402181	NONE	0	65535	----
GC3-TIME	GC-3 Time of Sample	5	PLC:402183	NONE	0	65535	HHMM
H1BCSCV	High 1B Column Strain Abort Limit	5	PLC:400237	12AL	-684	684	u"/"
H17CSCV	High 17C Column Strain Abort Limit	5	PLC:400233	12AL	-684.0	684.0	u"/"
HH2CV	High Hydrogen Abort Limit	5	PLC:400200	12AL	0.00	10.00	%
HH22CV	High H2 Abort Limit for 0-30 Gauge	5	PLC:400232	12AL	0.00	1.00	%
HPCSCV	High Pump Column Strain Abort Limit	5	PLC:400224	12AL	-684	684	u"/"
HPMOTCV	High Motor Oil Temp Abort Limit	5	PLC:400206	12AL	32.0	383.0	DegF
HTDP2CV	High Tank Dome Pressure Abort Limit 2	5	PLC:400236	12AL	-5	20	INWG
HTDPCV	High Tank Dome Pressure Abort Limit	5	PLC:400204	12AL	-6.00	4.00	INWG
HTEMPCV	High Temp Abort Limit	5	PLC:400203	12AL	0.0	409.5	DegF
HVFL1CV	High Vent Flow Abort Limit 1	5	PLC:400253	12AL	0	1275	CFM
HVFL2CV	High Vent Flow Abort Limit 2	5	PLC:400254	12AL	-1000	7335	CFM
L1BCSCV	Low 1B Column Strain Abort Limit	5	PLC:400241	12AL	-684	684	u"/"
L17CSCV	Low 17C Column Strain Abort Limit	5	PLC:400240	12AL	-684	684	u"/"
LIR01A	ENRAF Wire Gauge Tank Level Riser 1A	0.50	PLC:402024	12AL	370	470	INCH
LIR01C	ENRAF Wire Gauge Tank Level Riser 1C	0.50	PLC:402027	12AL	370	470	INCH
LPCGPCV	Low Pump Column Gas Pressure Abort Limit	5	PLC:400252	12AL	0	25	PSIG
LPCSCV	Low Pump Column Strain Abort Limit	5	PLC:400238	12AL	-684	684	u"/"
LVFL2CV	Low Vent Flow Abort High Range	5	PLC:400235	12AL	-1000	7335	CFM
LVFLCV	Low Vent Flow Abort Limit Low Range	5	PLC:400207	12AL	0	1275	CFM
MT10001	Vent Header Relative Humidity	0.50	PLC:402021	12AL	0.00	100.00	%
NIR05A01	Mixer Pump Whittaker Monitor High H2	0.50	PLC:402037	12AL	0.00	10.00	%
NIR17B01	Whittaker Monitor High H2	0.50	PLC:402036	12AL	0.00	1.00	%
NITHDR01	Head Hydrogen Concentration	0.50	PLC:402065	12AL	0	10	%
NITJSY06	0-10% H2 Riser 16A SHMS 1	0.50	PLC:402034	12AL	0.00	10.00	%
NITKSY06	0-10% H2 Vent Header SHMS 2	0.50	PLC:402035	12AL	0.00	10.00	%
NZTKSY06-AA	AA Block for Instrument Problem NITKSY06	0.50	PLC:402035	12AL	0.000	10.000	%
PCR12A01	Pump Volute Pressure Minus Baseline	0.50	PLC:402129	12AL	0.0	150.0	PSID
PDPBASE	Pump Discharge Pressure Baseline	0.50	PLC:402130	12AL	0.0	150.0	PSIG
PDTMSY12	GC-3 Differential Pressure	0.50	PLC:402031	12AL	0	250	INWG
PHO-LSB	Photo NH3 Concentration LSB	5	PLC:402156	NONE	0	65535	----
PHO-MSB	Photo NH3 Concentration MSB	5	PLC:402155	NONE	0	65535	----
PHO-NH3	PHO-NH3 Concentration	5	14		0	100000	PPM
PHO-TIME	Photo NH3 Sample Time	5	PLC:402158	NONE	0	65535	HHMM
PIO10001	Camera Enclosure Purge Pressure	0.50	PLC:402089	12AL	0	30	INWG
PIO20002	Nitrogen Supply	0.50	PLC:402090	12AL	0	3000	PSIG
PIR12A01	Mixer Pump Pressure	0.50	PLC:402007	12AL	0.0	150.0	PSIG
PIR17B04	MIT Tank Dome Pressure	0.50	PLC:402033	12AL	-5.0	20.0	INWG
PIR17C01	Tank Dome Pressure Riser 17C	0.50	PLC:402062	12AL	-6.0	4.0	INWG
PITMSY04	Sampling Inlet Pressure	0.50	PLC:402032	12AL	0	30	PSIA
PITMSY07	GC-1 Sample Pressure	0.50	PLC:402028	12AL	0.0	30.0	PSIA
PITMSY10	GC-2 Sample Pressure	0.50	PLC:402068	12AL	0	30	PSIA
PITMSY13	GC-3 Sample Pressure	0.50	PLC:402020	12AL	0	30	PSIA
PITMSY16	FTIR Sample Pressure	0.50	PLC:402025	12AL	0.0	30.0	PSIA
PITNO110	Mixer Pump Nozzle 1 Tap Pressure	0.50	PLC:402018	12AL	-10	90	PSIG
PITNO111	Mixer Pump Nozzle 2 Tap Pressure	0.50	PLC:402017	12AL	-10	90	PSIG
PLCPMCAB	High Pump Motor Current Abort Limit	0.50	PLC:402231	LIN	0	225	AMPS
PLCPMCAL	Pump Motor Current Alarm Value	0.50	PLC:402232	LIN	0	225	AMPS
PLCPSLIM	Pump Speed Abort Limit From PLC	5	PLC:402221	LIN	0.0	1020.0	RPM
PLCSPDAL	Pump Speed Alarm Limit	5	PLC:402222	LIN	0.0	1020.0	RPM
PLCVER	PLC Ladder Logic Version	30	PLC:409000	LIN	0.00	655.35	----

AA Block Tag Name	Tag Description	Scan Time	I/O Address	Signal Cond.	Low Limit	High Limit	Units
PZR12A01-AA	AA Block for Instrument Problem PIR12A01	0.50	PLC:402007	12AL	0.0	150.0	PSIG
PZR17B04-AA	AA Block for Instrument Problem PIR17B04	0.50	PLC:402033	12AL	-5.0	20.0	INWG
PZR17C01-AA	AA Block for Instrument Problem PIR17C01	0.50	PLC:402062	12AL	-6.0	4.0	INWG
PZTNO110-AA	AA Block for Instrument Problem PITNO110	0.50	PLC:402018	12AL	-10.0	90.0	PSIG
PZTNO111-AA	AA Block for Instrument Problem PITNO111	0.50	PLC:402017	12AL	-10.0	90.0	PSIG
RG-RUN	RGA-5 Run Number	5	PLC:402137	NONE	0	65535	----
RG-STAT	RGA-5 Stat (0=Tank, 1=Cal, 2=Flush)	5	PLC:402138	NONE	0	65535	----
RG-TIME	RGA-5 Time of Sample	5	PLC:402139	NONE	0	65535	HHMM
RG-TIME1	RGA-5 Time of Sample (GC-1)	5	PLC:402139	NONE	0	65535	HHMM
RG-TIME2	RGA-5 Time of Sample (GC-2)	5	PLC:402139	NONE	0	65535	HHMM
RGA5TND1	RGA5 Trend Output 1	5	PLC:402063	12AL	0	10	VOLT
RGA5TND2	RGA5 Trend Output 2	5	PLC:402064	12AL	0	10	VOLT
TBSTC01	Tank Bottom & Side TC #1	0.50	1045		80.0	140.0	DegF
TBSTC02	Tank Bottom & Side TC #2	0.50	1046		80.0	140.0	DegF
TBSTC03	Tank Bottom & Side TC #3	0.50	1047		80.0	140.0	DegF
TBSTC04	Tank Bottom & Side TC #4	0.50	1048		80.0	140.0	DegF
TBSTC05	Tank Bottom & Side TC #5	0.50	1049		80.0	140.0	DegF
TBSTC06	Tank Bottom & Side TC #6	0.50	1050		80.0	140.0	DegF
TBSTC07	Tank Bottom & Side TC #7	0.50	1051		80.0	140.0	DegF
TBSTC08	Tank Bottom & Side TC #8	0.50	1052		80.0	140.0	DegF
TBSTC09	Tank Bottom & Side TC #9	0.50	1053		80.0	140.0	DegF
TBSTC10	Tank Bottom & Side TC #10	0.50	1054		80.0	140.0	DegF
TBSTC11	Tank Bottom & Side TC #11	0.50	1055		80.0	140.0	DegF
TBSTC12	Tank Bottom & Side TC #12	0.50	1056		80.0	140.0	DegF
TBSTC13	Tank Bottom & Side TC #13	0.50	1057		80.0	140.0	DegF
TBSTC14	Tank Bottom & Side TC #14	0.50	1058		80.0	140.0	DegF
TBSTC15	Tank Bottom & Side TC #15	0.50	1059		80.0	140.0	DegF
TBSTC16	Tank Bottom & Side TC #16	0.50	1060		80.0	140.0	DegF
TBSTC17	Tank Bottom & Side TC #17	0.50	1061		80.0	140.0	DegF
TBSTC18	Tank Bottom & Side TC #18	0.50	1062		80.0	140.0	DegF
TBSTC19	Tank Bottom & Side TC #19	0.50	1063		80.0	140.0	DegF
TBSTC20	Tank Bottom & Side TC #20	0.50	1064		80.0	140.0	DegF
TBSTC21	Tank Bottom & Side TC #21	0.50	1065		80.0	140.0	DegF
TBSTC22	Tank Bottom & Side TC #22	0.50	1066		80.0	140.0	DegF
TBSTC23	Tank Bottom & Side TC #23	0.50	1067		80.0	140.0	DegF
TBSTC24	Tank Bottom & Side TC #24	0.50	1068		80.0	140.0	DegF
TBSTC25	Tank Bottom & Side TC #25	0.50	1069		80.0	140.0	DegF
TBSTC26	Tank Bottom & Side TC #26	0.50	1070		80.0	140.0	DegF
TICMSY18	FTIR Cooling Water Temperature	0.50	PLC:402029	12AL	32	150	DegF
TII04CAB	I/O #4 Cabinet Temp	0.50	PLC:402067	12AL	50	120	DegF
TIR12A01	Mixer Pump Motor Oil Temp 1	0.50	PLC:402004	12AL	32.0	383.0	DegF
TIR12A02	Mixer Pump Motor Oil Temp 2	0.50	PLC:402003	12AL	32.0	383.0	DegF
TIR17B01	Tank Temperature Riser 17B - 4"	0.50	1001		70.0	140.0	DegF
TIR17B02	Tank Temperature Riser 17B - 16"	0.50	1002		70.0	140.0	DegF
TIR17B03	Tank Temperature Riser 17B - 28"	0.50	1003		70.0	140.0	DegF
TIR17B04	Tank Temperature Riser 17B - 52"	0.50	1004		70.0	140.0	DegF
TIR17B05	Tank Temperature Riser 17B - 76"	0.50	1005		70.0	140.0	DegF
TIR17B06	Tank Temperature Riser 17B - 100"	0.50	1006		70.0	140.0	DegF
TIR17B07	Tank Temperature Riser 17B - 112"	0.50	1007		70.0	140.0	DegF
TIR17B08	Tank Temperature Riser 17B - 124"	0.50	1008		70.0	140.0	DegF
TIR17B09	Tank Temperature Riser 17B - 148"	0.50	1009		70.0	140.0	DegF
TIR17B10	Tank Temperature Riser 17B - 172"	0.50	1010		70.0	140.0	DegF
TIR17B11	Tank Temperature Riser 17B - 196"	0.50	1011		70.0	140.0	DegF
TIR17B12	Tank Temperature Riser 17B - 208"	0.50	1012		70.0	140.0	DegF
TIR17B13	Tank Temperature Riser 17B - 220"	0.50	1013		70.0	140.0	DegF
TIR17B14	Tank Temperature Riser 17B - 232"	0.50	1014		70.0	140.0	DegF
TIR17B15	Tank Temperature Riser 17B - 244"	0.50	1015		70.0	140.0	DegF
TIR17B16	Tank Temperature Riser 17B - 268"	0.50	1016		70.0	140.0	DegF
TIR17B17	Tank Temperature Riser 17B - 292"	0.50	1017		70.0	140.0	DegF
TIR17B18	Tank Temperature Riser 17B - 316"	0.50	1018		70.0	140.0	DegF
TIR17B19	Tank Temperature Riser 17B - 340"	0.50	1019		70.0	140.0	DegF
TIR17B20	Tank Temperature Riser 17B - 364"	0.50	1020		70.0	140.0	DegF
TIR17B21	Tank Temperature Riser 17B - 392"	0.50	1021		70.0	140.0	DegF
TIR17B22	Tank Temperature Riser 17B - 402"	0.50	1022		70.0	140.0	DegF
TIR17C01	Tank Temperature Riser 17C - 4"	0.50	1023		70.0	140.0	DegF
TIR17C02	Tank Temperature Riser 17C - 16"	0.50	1024		70.0	140.0	DegF
TIR17C03	Tank Temperature Riser 17C - 28"	0.50	1025		70.0	140.0	DegF
TIR17C04	Tank Temperature Riser 17C - 52"	0.50	1026		70.0	140.0	DegF
TIR17C05	Tank Temperature Riser 17C - 76"	0.50	1027		70.0	140.0	DegF
TIR17C06	Tank Temperature Riser 17C - 100"	0.50	1028		70.0	140.0	DegF
TIR17C07	Tank Temperature Riser 17C - 112"	0.50	1029		70.0	140.0	DegF
TIR17C08	Tank Temperature Riser 17C - 124"	0.50	1030		70.0	140.0	DegF
TIR17C09	Tank Temperature Riser 17C - 148"	0.50	1031		70.0	140.0	DegF
TIR17C10	Tank Temperature Riser 17C - 172"	0.50	1032		70.0	140.0	DegF
TIR17C11	Tank Temperature Riser 17C - 196"	0.50	1033		70.0	140.0	DegF
TIR17C12	Tank Temperature Riser 17C - 208"	0.50	1034		70.0	140.0	DegF
TIR17C13	Tank Temperature Riser 17C - 220"	0.50	1035		70.0	140.0	DegF
TIR17C14	Tank Temperature Riser 17C - 232"	0.50	1036		70.0	140.0	DegF
TIR17C15	Tank Temperature Riser 17C - 244"	0.50	1037		70.0	140.0	DegF

AA Block Tag Name	Tag Description	Scan Time	I/O Address	Signal Cond.	Low Limit	High Limit	Units
TIR17C16	Tank Temperature Riser 17C - 292"	0.50	1038		70.0	140.0	DegF
TIR17C17	Tank Temperature Riser 17C - 316"	0.50	1039		70.0	140.0	DegF
TIR17C18	Tank Temperature Riser 17C - 340"	0.50	1040		70.0	140.0	DegF
TIR17C19	Tank Temperature Riser 17C - 364"	0.50	1041		70.0	140.0	DegF
TIR17C20	Tank Temperature Riser 17C - 392"	0.50	1042		70.0	140.0	DegF
TIR17C21	Tank Temperature Riser 17C - 402"	0.50	1043		70.0	140.0	DegF
TIR17C22	Tank Temperature Riser 17C - 425"	0.50	1044		70.0	140.0	DegF
TITMSY15	FTIR Sample Gas Temperature	0.50	PLC:402022	12AL	32.0	150.0	DegF
TITMSY25	GMS-2 Building Temperature	0.50	PLC:402030	12AL	32	150	DegF
TIVDTCAB	VDTT Instrument Cabinet Temp	0.50	PLC:402066	12AL	50	120	DegF
TRA1A	DACS-1 Trailer Current Phase A	0.50	PLC:402093	12AL	0	100	AMPS
TRA1B	DACS-1 Trailer Current Phase B	0.50	PLC:402094	12AL	0	100	AMPS
TRA1C	DACS-1 Trailer Current Phase C	0.50	PLC:402095	12AL	0	100	AMPS
TRT1	Trailer Temperature Rear Rack 2	0.50	PLC:402097	12AL	-57.53	301.70	DegF
TRT2	Trailer Temperature Rear Rack 4	0.50	PLC:402105	12AL	-57.53	301.70	DegF
TRT3	Trailer Temperature Rear Rack 6	0.50	PLC:402098	12AL	-57.53	301.70	DegF
TRT4	Trailer Temperature Rear Rack 8	0.50	PLC:402106	12AL	-57.53	301.70	DegF
TRT5	Trailer Temperature Front Rack 1	0.50	PLC:402099	12AL	-57.53	301.70	DegF
TRT6	Trailer Temperature Front Rack 3	0.50	PLC:402107	12AL	-57.53	301.70	DegF
TRT7	Trailer Temperature Front Rack 5	0.50	PLC:402100	12AL	-57.53	301.70	DegF
TRT8	Trailer Temperature Front Rack 6	0.50	PLC:402108	12AL	-57.53	301.70	DegF
TRT9	Trailer Temperature Front Rack 8	0.50	PLC:402101	12AL	-57.53	301.70	DegF
TRT10	Trailer Temperature Ambient	0.50	PLC:402102	12AL	-57.53	301.70	DegF
TRT11	Trailer Temperature Rear Rack 9	0.50	PLC:402109	12AL	-57.53	301.70	DegF
TRV1	DACS-1 Trailer Voltage	0.50	PLC:402096	12AL	0	130	VOLT
TT10001	Vent Header Temperature	0.50	PLC:402019	12AL	30.0	140.0	DegF
TZR12A01-AA	AA Block for Instrument Problem TIR12A01	0.50	PLC:402004	12AL	32.0	383.0	DegF
TZR12A02-AA	AA Block for Instrument Problem TIR12A02	0.50	PLC:402003	12AL	32.0	383.0	DegF
TZR17B01-AA	AA Block for Instrument Problem TIR17B01	0.50	1001		70.00	140.00	DegF
TZR17B02-AA	AA Block for Instrument Problem TIR17B02	0.50	1002		70.00	140.00	DegF
TZR17B03-AA	AA Block for Instrument Problem TIR17B03	0.50	1003		70.00	140.00	DegF
TZR17B04-AA	AA Block for Instrument Problem TIR17B04	0.50	1004		70.00	140.00	DegF
TZR17B05-AA	AA Block for Instrument Problem TIR17B05	0.50	1005		70.00	140.00	DegF
TZR17B06-AA	AA Block for Instrument Problem TIR17B06	0.50	1006		70.00	140.00	DegF
TZR17B07-AA	AA Block for Instrument Problem TIR17B07	0.50	1007		70.00	140.00	DegF
TZR17B08-AA	AA Block for Instrument Problem TIR17B08	0.50	1008		70.00	140.00	DegF
TZR17B09-AA	AA Block for Instrument Problem TIR17B09	0.50	1009		70.00	140.00	DegF
TZR17B10-AA	AA Block for Instrument Problem TIR17B10	0.50	1010		70.00	140.00	DegF
TZR17B11-AA	AA Block for Instrument Problem TIR17B11	0.50	1011		70.00	140.00	DegF
TZR17B12-AA	AA Block for Instrument Problem TIR17B12	0.50	1012		70.00	140.00	DegF
TZR17B13-AA	AA Block for Instrument Problem TIR17B13	0.50	1013		70.00	140.00	DegF
TZR17B14-AA	AA Block for Instrument Problem TIR17B14	0.50	1014		70.00	140.00	DegF
TZR17B15-AA	AA Block for Instrument Problem TIR17B15	0.50	1015		70.00	140.00	DegF
TZR17B16-AA	AA Block for Instrument Problem TIR17B16	0.50	1016		70.00	140.00	DegF
TZR17B17-AA	AA Block for Instrument Problem TIR17B17	0.50	1017		70.00	140.00	DegF
TZR17B18-AA	AA Block for Instrument Problem TIR17B18	0.50	1018		70.00	140.00	DegF
TZR17B19-AA	AA Block for Instrument Problem TIR17B19	0.50	1019		70.00	140.00	DegF
TZR17B20-AA	AA Block for Instrument Problem TIR17B20	0.50	1020		70.00	140.00	DegF
TZR17B21-AA	AA Block for Instrument Problem TIR17B21	0.50	1021		70.00	140.00	DegF
TZR17B22-AA	AA Block for Instrument Problem TIR17B22	0.50	1022		70.00	140.00	DegF
TZR17C01-AA	AA Block for Instrument Problem TIR17C01	0.50	1023		70.00	140.00	DegF
TZR17C02-AA	AA Block for Instrument Problem TIR17C02	0.50	1024		70.00	140.00	DegF
TZR17C03-AA	AA Block for Instrument Problem TIR17C03	0.50	1025		70.00	140.00	DegF
TZR17C04-AA	AA Block for Instrument Problem TIR17C04	0.50	1026		70.00	140.00	DegF
TZR17C05-AA	AA Block for Instrument Problem TIR17C05	0.50	1027		70.00	140.00	DegF
TZR17C06-AA	AA Block for Instrument Problem TIR17C06	0.50	1028		70.00	140.00	DegF
TZR17C07-AA	AA Block for Instrument Problem TIR17C07	0.50	1029		70.00	140.00	DegF
TZR17C08-AA	AA Block for Instrument Problem TIR17C08	0.50	1030		70.00	140.00	DegF
TZR17C09-AA	AA Block for Instrument Problem TIR17C09	0.50	1031		70.00	140.00	DegF
TZR17C10-AA	AA Block for Instrument Problem TIR17C10	0.50	1032		70.00	140.00	DegF
TZR17C11-AA	AA Block for Instrument Problem TIR17C11	0.50	1033		70.00	140.00	DegF
TZR17C12-AA	AA Block for Instrument Problem TIR17C12	0.50	1034		70.00	140.00	DegF
TZR17C13-AA	AA Block for Instrument Problem TIR17C13	0.50	1035		70.00	140.00	DegF
TZR17C14-AA	AA Block for Instrument Problem TIR17C14	0.50	1036		70.00	140.00	DegF
TZR17C15-AA	AA Block for Instrument Problem TIR17C15	0.50	1037		70.00	140.00	DegF
TZR17C16-AA	AA Block for Instrument Problem TIR17C16	0.50	1038		70.00	140.00	DegF
TZR17C17-AA	AA Block for Instrument Problem TIR17C17	0.50	1039		70.00	140.00	DegF
TZR17C18-AA	AA Block for Instrument Problem TIR17C18	0.50	1040		70.00	140.00	DegF
TZR17C19-AA	AA Block for Instrument Problem TIR17C19	0.50	1041		70.00	140.00	DegF
TZR17C20-AA	AA Block for Instrument Problem TIR17C20	0.50	1042		70.00	140.00	DegF
TZR17C21-AA	AA Block for Instrument Problem TIR17C21	0.50	1043		70.00	140.00	DegF
TZR17C22-AA	AA Block for Instrument Problem TIR17C22	0.50	1044		70.00	140.00	DegF
UPST1	UPS Temperature	0.50	PLC:402103	12AL	-57.53	301.70	DegF
WIR1BA01	Strain Gauge #1 Riser 1B at Level 530"	0.50	PLC:402077	12AL	-684.0	684.0	u"/"
WIR1BA02	Strain Gauge #2 Riser 1B at Level 530"	0.50	PLC:402069	12AL	-684	684	u"/"
WIR1BA03	Strain Gauge #3 Riser 1B at Level 530"	0.50	PLC:402078	12AL	-684.0	684.0	u"/"
WIR12A01	Pump Support Column Strain #1	0.50	PLC:402073	12AL	-684.0	684.0	u"/"
WIR12A02	Pump Support Column Strain #2	0.50	PLC:402080	12AL	-684.0	684.0	u"/"
WIR12A03	Pump Support Column Strain #3	0.50	PLC:402074	12AL	-684.0	684.0	u"/"
WIR12A04	Pump Support Column Strain #4	0.50	PLC:402071	12AL	-684.0	684.0	u"/"

AA Block Tag Name	Tag Description	Scan Time	I/O Address	Signal Cond.	Low Limit	High Limit	Units
WIR17C01	Strain Gauge #1 Riser 17C at Lvl 465.5"	0.50	PLC:402081	12AL	-684.0	684.0	u"/"
WIR17C02	Strain Gauge #2 Riser 17C at Lvl 465.5"	0.50	PLC:402076	12AL	-684.0	684.0	u"/"
WSH1	DACS-1 Weather Station Humidity	0.50	PLC:402085	12AL	0	100	%
WSP1	DACS-1 Weather Station Barometric Press	0.50	PLC:402087	12AL	11.60	15.37	PSIA
WST1	DACS-1 Weather Station Temperature	0.50	PLC:402104	12AL	-57.53	301.70	DegF
WSWDIR	DACS-1 Weather Station Wind Direction	0.50	PLC:402086	12AL	0	360	DEG
WSWSPD	DACS-1 Weather Station Wind Speed	0.50	PLC:402091	12AL	0.000	72.473	MPH
ZIMPE112	Motor Position Encoder BCD	0.50	PLC:402131	NONE	0	200	DEG
ZIMPE142	Mixer Pump Column Gas Pressure	0.50	PLC:402006	12AL	0.0	25.0	PSIG
ZZMPE142-AA	AA Block for Instrument Problem ZIMPE142	0.50	PLC:402006	12AL	0.0	25.0	PSIG

Table D-4. Analog Alarm (AA) Blocks - Part 2: Alarm Parameters

AA Block Tag Name	Tag Description	Alarm Enab?	Alarm Area	Low Alarm	High Alarm	Low or High Contact Name	Out Mode
ARMGAMMA	HMT Gamma Radiation	NO	NONE				
ARMGEXP	Used to Calculate ARMGAMMA	NO	NONE				
FITMSY17	FTIR Sample Gas Flow	NO	NONE				
FT-FILE	FTIR File ID	NO	NONE				
FT-N2OA	FTIR N2O Peak Area	NO	NONE				
FT-N2OC	FTIR N2O Concentration	NO	NONE				
FT-NH3A	FTIR NH3 Peak Area (x 100)	NO	NONE				
FT-NH3C	FTIR NH3 Concentration	YES	ALL		3000		
FT-TIME	FTIR Time of Sample	NO	NONE				
FTE50001	Vent Header Flow Low Range	YES	ALL	425	675		
FTE50002	Vent Header Flow High Range	YES	ALL	425	675		
FTE50003	SY Tank Farm Exhaust Flow	NO	NONE				
FZ-NH3C-AA	AA Block for Instrument Problem FT-NH3C	YES	NONE	0.01			
GC1-ARHI	GC-1 Area High Portion	NO	NONE				
GC1-ARLO	GC-1 Area Low Portion	NO	NONE				
GC1-H2	GC-1 Hydrogen Concentration	YES	NONE	0.001		GC1-ZVAL_DO.F_CV	RTN
GC1-RT	GC-1 Retention Time	NO	NONE				
GC2-ARHI	GC-2 Area High Portion	NO	NONE				
GC2-ARLO	GC-2 Area Low Portion	NO	NONE				
GC2-H2	GC-2 Hydrogen Concentration	YES	NONE	0.001		GC2-ZVAL_DO.F_CV	RTN
GC2-RT	GC-2 Hydrogen Retention Time	NO	NONE				
GC3-FILE	GC-3 File ID	NO	NONE				
GC3-H2	GC-3 Hydrogen Concentration (0-1000 ppm)	YES	NONE	0.01		GC3-ZVAL_DO.F_CV	RTN
GC3-RT	GC-3 Hydrogen Retention Time (MIN/100)	NO	NONE				
GC3-TIME	GC-3 Time of Sample	NO	NONE				
H1BCSCV	High 1B Column Strain Abort Limit	NO	NONE				
H17CSCV	High 17C Column Strain Abort Limit	NO	NONE				
HH2CV	High Hydrogen Abort Limit	NO	NONE				
HH22CV	High H2 Abort Limit for 0-30 Gauge	NO	NONE				
HPCSCV	High Pump Column Strain Abort Limit	NO	NONE				
HPMOTCV	High Motor Oil Temp Abort Limit	NO	NONE				
HTDP2CV	High Tank Dome Pressure Abort Limit 2	NO	NONE				
HTDPCV	High Tank Dome Pressure Abort Limit	NO	NONE				
HTEMPCV	High Temp Abort Limit	NO	NONE				
HVFL1CV	High Vent Flow Abort Limit 1	NO	NONE				
HVFL2CV	High Vent Flow Abort Limit 2	NO	NONE				
L1BCSCV	Low 1B Column Strain Abort Limit	NO	NONE				
L17CSCV	Low 17C Column Strain Abort Limit	NO	NONE				
LIR01A	ENRAF Wire Gauge Tank Level Riser 1A	NO	NONE				
LIR01C	ENRAF Wire Gauge Tank Level Riser 1C	NO	NONE				
LPCGPCV	Low Pump Column Gas Pressure Abort Limit	NO	NONE				
LPCSCV	Low Pump Column Strain Abort Limit	NO	NONE				
LVFL2CV	Low Vent Flow Abort High Range	NO	NONE				
LVFLCV	Low Vent Flow Abort Limit Low Range	NO	NONE				
MT10001	Vent Header Relative Humidity	NO	NONE				
NIR05A01	Mixer Pump Whittaker Monitor High H2	YES	ALL		0.56		
NIR17B01	Whittaker Monitor High H2	YES	ALL		0.56		
NITHDR01	Head Hydrogen Concentration	NO	NONE				
NITJSY06	0-10% H2 Riser 16A SHMS 1	YES	ALL		0.56		
NITKSY06	0-10% H2 Vent Header SHMS 2	YES	ALL		0.56		
NZTKSY06-AA	AA Block for Instrument Problem NITKSY06	YES	NONE	0.001			
PCR12A01	Pump Volute Pressure Minus Baseline	NO	NONE				
PDPBASE	Pump Discharge Pressure Baseline	NO	NONE				
PDTMSY12	GC-3 Differential Pressure	NO	NONE				
PHO-LSB	Photo NH3 Concentration LSB	NO	NONE				
PHO-MSB	Photo NH3 Concentration MSB	NO	NONE				
PHO-NH3	PHO-NH3 Concentration	YES	NONE		1000	NH3STACK_DO.F_CV	RTN
PHO-TIME	Photo NH3 Sample Time	NO	NONE				
PIO10001	Camera Enclosure Purge Pressure	NO	NONE				
PIO20002	Nitrogen Supply	NO	NONE				
PIR12A01	Mixer Pump Pressure	NO	NONE				
PIR17B04	MIT Tank Dome Pressure	YES	ALL		-1.5		
PIR17C01	Tank Dome Pressure Riser 17C	YES	ALL	-3.9	-1.5		
PITMSY04	Sampling Inlet Pressure	NO	NONE				
PITMSY07	GC-1 Sample Pressure	NO	NONE				
PITMSY10	GC-2 Sample Pressure	NO	NONE				
PITMSY13	GC-3 Sample Pressure	NO	NONE				
PITMSY16	FTIR Sample Pressure	NO	NONE				
PITNO110	Mixer Pump Nozzle 1 Tap Pressure	NO	NONE				
PITNO111	Mixer Pump Nozzle 2 Tap Pressure	NO	NONE				
PLCPMCAB	High Pump Motor Current Abort Limit	NO	NONE				
PLCPMCAL	Pump Motor Current Alarm Value	NO	NONE				
PLCPSLIM	Pump Speed Abort Limit From PLC	NO	NONE				
PLCSPDAL	Pump Speed Alarm Limit	NO	NONE				
PLCVER	PLC Ladder Logic Version	NO	NONE				

AA Block Tag Name	Tag Description	Alarm Enab?	Alarm Area	Low Alarm	High Alarm	Low or High Contact Name	Out Mode
PZR12A01-AA	AA Block for Instrument Problem PIR12A01	YES	NONE	0.1	149.9		
PZR17B04-AA	AA Block for Instrument Problem PIR17B04	YES	NONE	-4.9			
PZR17C01-AA	AA Block for Instrument Problem PIR17C01	YES	NONE	-5.9			
PZTNO110-AA	AA Block for Instrument Problem PITNO110	YES	NONE	-9.9			
PZTNO111-AA	AA Block for Instrument Problem PITNO111	YES	NONE	-9.9			
RG-RUN	RGA-5 Run Number	NO	NONE				
RG-STAT	RGA-5 Stat (0=Tank, 1=Cal, 2=Flush)	NO	NONE				
RG-TIME	RGA-5 Time of Sample	NO	NONE				
RG-TIME1	RGA-5 Time of Sample (GC-1)	NO	NONE				
RG-TIME2	RGA-5 Time of Sample (GC-2)	NO	NONE				
RGA5TND1	RGA5 Trend Output 1	NO	NONE				
RGA5TND2	RGA5 Trend Output 2	NO	NONE				
TBSTC01	Tank Bottom & Side TC #1	NO	NONE				
TBSTC02	Tank Bottom & Side TC #2	NO	NONE				
TBSTC03	Tank Bottom & Side TC #3	NO	NONE				
TBSTC04	Tank Bottom & Side TC #4	NO	NONE				
TBSTC05	Tank Bottom & Side TC #5	NO	NONE				
TBSTC06	Tank Bottom & Side TC #6	NO	NONE				
TBSTC07	Tank Bottom & Side TC #7	NO	NONE				
TBSTC08	Tank Bottom & Side TC #8	NO	NONE				
TBSTC09	Tank Bottom & Side TC #9	NO	NONE				
TBSTC10	Tank Bottom & Side TC #10	NO	NONE				
TBSTC11	Tank Bottom & Side TC #11	NO	NONE				
TBSTC12	Tank Bottom & Side TC #12	NO	NONE				
TBSTC13	Tank Bottom & Side TC #13	NO	NONE				
TBSTC14	Tank Bottom & Side TC #14	NO	NONE				
TBSTC15	Tank Bottom & Side TC #15	NO	NONE				
TBSTC16	Tank Bottom & Side TC #16	NO	NONE				
TBSTC17	Tank Bottom & Side TC #17	NO	NONE				
TBSTC18	Tank Bottom & Side TC #18	NO	NONE				
TBSTC19	Tank Bottom & Side TC #19	NO	NONE				
TBSTC20	Tank Bottom & Side TC #20	NO	NONE				
TBSTC21	Tank Bottom & Side TC #21	NO	NONE				
TBSTC22	Tank Bottom & Side TC #22	NO	NONE				
TBSTC23	Tank Bottom & Side TC #23	NO	NONE				
TBSTC24	Tank Bottom & Side TC #24	NO	NONE				
TBSTC25	Tank Bottom & Side TC #25	NO	NONE				
TBSTC26	Tank Bottom & Side TC #26	NO	NONE				
TICMSY18	FTIR Cooling Water Temperature	NO	NONE				
TII04CAB	I/O #4 Cabinet Temp	NO	NONE				
TIR12A01	Mixer Pump Motor Oil Temp 1	YES	ALL		190.0		
TIR12A02	Mixer Pump Motor Oil Temp 2	YES	ALL		190.0		
TIR17B01	Tank Temperature Riser 17B - 4"	YES	ALL		130.0		
TIR17B02	Tank Temperature Riser 17B - 16"	YES	ALL		130.0		
TIR17B03	Tank Temperature Riser 17B - 28"	YES	ALL		130.0		
TIR17B04	Tank Temperature Riser 17B - 52"	YES	ALL		130.0		
TIR17B05	Tank Temperature Riser 17B - 76"	YES	ALL		130.0		
TIR17B06	Tank Temperature Riser 17B - 100"	YES	ALL		130.0		
TIR17B07	Tank Temperature Riser 17B - 112"	YES	ALL		130.0		
TIR17B08	Tank Temperature Riser 17B - 124"	YES	ALL		130.0		
TIR17B09	Tank Temperature Riser 17B - 148"	YES	ALL		130.0		
TIR17B10	Tank Temperature Riser 17B - 172"	YES	ALL		130.0		
TIR17B11	Tank Temperature Riser 17B - 196"	YES	ALL		130.0		
TIR17B12	Tank Temperature Riser 17B - 208"	YES	ALL		130.0		
TIR17B13	Tank Temperature Riser 17B - 220"	YES	ALL		130.0		
TIR17B14	Tank Temperature Riser 17B - 232"	YES	ALL		130.0		
TIR17B15	Tank Temperature Riser 17B - 244"	YES	ALL		130.0		
TIR17B16	Tank Temperature Riser 17B - 268"	YES	ALL		130.0		
TIR17B17	Tank Temperature Riser 17B - 292"	YES	ALL		130.0		
TIR17B18	Tank Temperature Riser 17B - 316"	YES	ALL		130.0		
TIR17B19	Tank Temperature Riser 17B - 340"	YES	ALL		130.0		
TIR17B20	Tank Temperature Riser 17B - 364"	YES	ALL		130.0		
TIR17B21	Tank Temperature Riser 17B - 392"	YES	ALL		130.0		
TIR17B22	Tank Temperature Riser 17B - 402"	YES	ALL		130.0		
TIR17C01	Tank Temperature Riser 17C - 4"	NO	NONE				
TIR17C02	Tank Temperature Riser 17C - 16"	NO	NONE				
TIR17C03	Tank Temperature Riser 17C - 28"	NO	NONE				
TIR17C04	Tank Temperature Riser 17C - 52"	NO	NONE				
TIR17C05	Tank Temperature Riser 17C - 76"	NO	NONE				
TIR17C06	Tank Temperature Riser 17C - 100"	NO	NONE				
TIR17C07	Tank Temperature Riser 17C - 112"	NO	NONE				
TIR17C08	Tank Temperature Riser 17C - 124"	NO	NONE				
TIR17C09	Tank Temperature Riser 17C - 148"	NO	NONE				
TIR17C10	Tank Temperature Riser 17C - 172"	NO	NONE				
TIR17C11	Tank Temperature Riser 17C - 196"	NO	NONE				
TIR17C12	Tank Temperature Riser 17C - 208"	NO	NONE				
TIR17C13	Tank Temperature Riser 17C - 220"	NO	NONE				
TIR17C14	Tank Temperature Riser 17C - 232"	NO	NONE				
TIR17C15	Tank Temperature Riser 17C - 244"	NO	NONE				

AA Block Tag Name	Tag Description	Alarm Enab?	Alarm Area	Low Alarm	High Alarm	Low or High Contact Name	Out Mode
TIR17C16	Tank Temperature Riser 17C - 292"	NO	NONE				
TIR17C17	Tank Temperature Riser 17C - 316"	NO	NONE				
TIR17C18	Tank Temperature Riser 17C - 340"	NO	NONE				
TIR17C19	Tank Temperature Riser 17C - 364"	NO	NONE				
TIR17C20	Tank Temperature Riser 17C - 392"	NO	NONE				
TIR17C21	Tank Temperature Riser 17C - 402"	NO	NONE				
TIR17C22	Tank Temperature Riser 17C - 425"	NO	NONE				
TITMSY15	FTIR Sample Gas Temperature	NO	NONE				
TITMSY25	GMS-2 Building Temperature	NO	NONE				
TIVDTCAB	VDTT Instrument Cabinet Temp	NO	NONE				
TRA1A	DACS-1 Trailer Current Phase A	NO	NONE				
TRA1B	DACS-1 Trailer Current Phase B	NO	NONE				
TRA1C	DACS-1 Trailer Current Phase C	NO	NONE				
TRT1	Trailer Temperature Rear Rack 2	NO	NONE				
TRT2	Trailer Temperature Rear Rack 4	NO	NONE				
TRT3	Trailer Temperature Rear Rack 6	NO	NONE				
TRT4	Trailer Temperature Rear Rack 8	NO	NONE				
TRT5	Trailer Temperature Front Rack 1	NO	NONE				
TRT6	Trailer Temperature Front Rack 3	NO	NONE				
TRT7	Trailer Temperature Front Rack 5	NO	NONE				
TRT8	Trailer Temperature Front Rack 6	NO	NONE				
TRT9	Trailer Temperature Front Rack 8	NO	NONE				
TRT10	Trailer Temperature Ambient	NO	NONE				
TRT11	Trailer Temperature Rear Rack 9	NO	NONE				
TRV1	DACS-1 Trailer Voltage	NO	NONE				
TT10001	Vent Header Temperature	NO	NONE				
TZR12A01-AA	AA Block for Instrument Problem TIR12A01	YES	NONE	32.1			
TZR12A02-AA	AA Block for Instrument Problem TIR12A02	YES	NONE	32.1			
TZR17B01-AA	AA Block for Instrument Problem TIR17B01	YES	NONE	70.01		TZR17B01_DO.F_CV	RTN
TZR17B02-AA	AA Block for Instrument Problem TIR17B02	YES	NONE	70.01		TZR17B02_DO.F_CV	RTN
TZR17B03-AA	AA Block for Instrument Problem TIR17B03	YES	NONE	70.01		TZR17B03_DO.F_CV	RTN
TZR17B04-AA	AA Block for Instrument Problem TIR17B04	YES	NONE	70.01		TZR17B04_DO.F_CV	RTN
TZR17B05-AA	AA Block for Instrument Problem TIR17B05	YES	NONE	70.01		TZR17B05_DO.F_CV	RTN
TZR17B06-AA	AA Block for Instrument Problem TIR17B06	YES	NONE	70.01		TZR17B06_DO.F_CV	RTN
TZR17B07-AA	AA Block for Instrument Problem TIR17B07	YES	NONE	70.01		TZR17B07_DO.F_CV	RTN
TZR17B08-AA	AA Block for Instrument Problem TIR17B08	YES	NONE	70.01		TZR17B08_DO.F_CV	RTN
TZR17B09-AA	AA Block for Instrument Problem TIR17B09	YES	NONE	70.01		TZR17B09_DO.F_CV	RTN
TZR17B10-AA	AA Block for Instrument Problem TIR17B10	YES	NONE	70.01		TZR17B10_DO.F_CV	RTN
TZR17B11-AA	AA Block for Instrument Problem TIR17B11	YES	NONE	70.01		TZR17B11_DO.F_CV	RTN
TZR17B12-AA	AA Block for Instrument Problem TIR17B12	YES	NONE	70.01		TZR17B12_DO.F_CV	RTN
TZR17B13-AA	AA Block for Instrument Problem TIR17B13	YES	NONE	70.01		TZR17B13_DO.F_CV	RTN
TZR17B14-AA	AA Block for Instrument Problem TIR17B14	YES	NONE	70.01		TZR17B14_DO.F_CV	RTN
TZR17B15-AA	AA Block for Instrument Problem TIR17B15	YES	NONE	70.01		TZR17B15_DO.F_CV	RTN
TZR17B16-AA	AA Block for Instrument Problem TIR17B16	YES	NONE	70.01		TZR17B16_DO.F_CV	RTN
TZR17B17-AA	AA Block for Instrument Problem TIR17B17	YES	NONE	70.01		TZR17B17_DO.F_CV	RTN
TZR17B18-AA	AA Block for Instrument Problem TIR17B18	YES	NONE	70.01		TZR17B18_DO.F_CV	RTN
TZR17B19-AA	AA Block for Instrument Problem TIR17B19	YES	NONE	70.01		TZR17B19_DO.F_CV	RTN
TZR17B20-AA	AA Block for Instrument Problem TIR17B20	YES	NONE	70.01		TZR17B20_DO.F_CV	RTN
TZR17B21-AA	AA Block for Instrument Problem TIR17B21	YES	NONE	70.01		TZR17B21_DO.F_CV	RTN
TZR17B22-AA	AA Block for Instrument Problem TIR17B22	YES	NONE	70.01		TZR17B22_DO.F_CV	RTN
TZR17C01-AA	AA Block for Instrument Problem TIR17C01	YES	NONE	70.01		TZR17C01_DO.F_CV	RTN
TZR17C02-AA	AA Block for Instrument Problem TIR17C02	YES	NONE	70.01		TZR17C02_DO.F_CV	RTN
TZR17C03-AA	AA Block for Instrument Problem TIR17C03	YES	NONE	70.01		TZR17C03_DO.F_CV	RTN
TZR17C04-AA	AA Block for Instrument Problem TIR17C04	YES	NONE	70.01		TZR17C04_DO.F_CV	RTN
TZR17C05-AA	AA Block for Instrument Problem TIR17C05	YES	NONE	70.01		TZR17C05_DO.F_CV	RTN
TZR17C06-AA	AA Block for Instrument Problem TIR17C06	YES	NONE	70.01		TZR17C06_DO.F_CV	RTN
TZR17C07-AA	AA Block for Instrument Problem TIR17C07	YES	NONE	70.01		TZR17C07_DO.F_CV	RTN
TZR17C08-AA	AA Block for Instrument Problem TIR17C08	YES	NONE	70.01		TZR17C08_DO.F_CV	RTN
TZR17C09-AA	AA Block for Instrument Problem TIR17C09	YES	NONE	70.01		TZR17C09_DO.F_CV	RTN
TZR17C10-AA	AA Block for Instrument Problem TIR17C10	YES	NONE	70.01		TZR17C10_DO.F_CV	RTN
TZR17C11-AA	AA Block for Instrument Problem TIR17C11	YES	NONE	70.01		TZR17C11_DO.F_CV	RTN
TZR17C12-AA	AA Block for Instrument Problem TIR17C12	YES	NONE	70.01		TZR17C12_DO.F_CV	RTN
TZR17C13-AA	AA Block for Instrument Problem TIR17C13	YES	NONE	70.01		TZR17C13_DO.F_CV	RTN
TZR17C14-AA	AA Block for Instrument Problem TIR17C14	YES	NONE	70.01		TZR17C14_DO.F_CV	RTN
TZR17C15-AA	AA Block for Instrument Problem TIR17C15	YES	NONE	70.01		TZR17C15_DO.F_CV	RTN
TZR17C16-AA	AA Block for Instrument Problem TIR17C16	YES	NONE	70.01		TZR17C16_DO.F_CV	RTN
TZR17C17-AA	AA Block for Instrument Problem TIR17C17	YES	NONE	70.01		TZR17C17_DO.F_CV	RTN
TZR17C18-AA	AA Block for Instrument Problem TIR17C18	YES	NONE	70.01		TZR17C18_DO.F_CV	RTN
TZR17C19-AA	AA Block for Instrument Problem TIR17C19	YES	NONE	70.01		TZR17C19_DO.F_CV	RTN
TZR17C20-AA	AA Block for Instrument Problem TIR17C20	YES	NONE	70.01		TZR17C20_DO.F_CV	RTN
TZR17C21-AA	AA Block for Instrument Problem TIR17C21	YES	NONE	70.01		TZR17C21_DO.F_CV	RTN
TZR17C22-AA	AA Block for Instrument Problem TIR17C22	YES	NONE	70.01		TZR17C22_DO.F_CV	RTN
UPST1	UPS Temperature	NO	NONE				
WIR1BA01	Strain Gauge #1 Riser 1B at Level 530"	YES	ALL	-317.0	317.0		
WIR1BA02	Strain Gauge #2 Riser 1B at Level 530"	YES	ALL	-317	317		
WIR1BA03	Strain Gauge #3 Riser 1B at Level 530"	YES	ALL	-317.0	317.0		
WIR12A01	Pump Support Column Strain #1	YES	ALL	-145.5	145.5		
WIR12A02	Pump Support Column Strain #2	YES	ALL	-145.5	145.5		
WIR12A03	Pump Support Column Strain #3	YES	ALL	-145.5	145.5		
WIR12A04	Pump Support Column Strain #4	YES	ALL	-145.5	145.5		

AA Block Tag Name	Tag Description	Alarm Enab?	Alarm Area	Low Alarm	High Alarm	Low or High Contact Name	Out Mode
WIR17C01	Strain Gauge #1 Riser 17C at Lvl 465.5"	YES	ALL	-267.0	267.0		
WIR17C02	Strain Gauge #2 Riser 17C at Lvl 465.5"	YES	ALL	-267.0	267.0		
WSH1	DACS-1 Weather Station Humidity	NO	NONE				
WSP1	DACS-1 Weather Station Barometric Press	NO	NONE				
WST1	DACS-1 Weather Station Temperature	NO	NONE				
WSWDIR	DACS-1 Weather Station Wind Direction	NO	NONE				
WSWSPD	DACS-1 Weather Station Wind Speed	NO	NONE				
ZIMPE112	Motor Position Encoder BCD	YES	ALL	16	189		
ZIMPE142	Mixer Pump Column Gas Pressure	YES	ALL	9.0			
ZZMPE142-AA	AA Block for Instrument Problem ZIMPE142	YES	NONE		24.9		

Note: All AA Blocks with Alarm Enab? = "YES" and Alarm Area = "ALL" have Security Area 1 = "LEVEL3"

Table D-5. Analog Input (AI) Blocks

AI Block Tag Name	Tag Description	Scan Time	I/O Address	Signal Cond.	Low Limit	High Limit	Units
ALARM	Unacknowledged Alarms	1	C:UAA		0	300	----
GC1-TIME	GC-1 Last Valid Update Time	5	1103		0	65535	HHMM
GC2-TIME	GC-2 Last Valid Update Time	5	1104		0	65535	HHMM
TBSTC01-AI	AI Block for TBSTC01 (From PLC)	0.50	PLC:402216	LIN	0.0	6553.5	DegF
TBSTC02-AI	AI Block for TBSTC02 (From PLC)	0.50	PLC:402199	LIN	0.0	6553.5	DegF
TBSTC03-AI	AI Block for TBSTC03 (From PLC)	0.50	PLC:402208	LIN	0.0	6553.5	DegF
TBSTC04-AI	AI Block for TBSTC04 (From PLC)	0.50	PLC:402148	LIN	0.0	6553.5	DegF
TBSTC05-AI	AI Block for TBSTC05 (From PLC)	0.50	PLC:402200	LIN	0.0	6553.5	DegF
TBSTC06-AI	AI Block for TBSTC06 (From PLC)	0.50	PLC:402209	LIN	0.0	6553.5	DegF
TBSTC07-AI	AI Block for TBSTC07 (From PLC)	0.50	PLC:402149	LIN	0.0	6553.5	DegF
TBSTC08-AI	AI Block for TBSTC08 (From PLC)	0.50	PLC:402201	LIN	0.0	6553.5	DegF
TBSTC09-AI	AI Block for TBSTC09 (From PLC)	0.50	PLC:402210	LIN	0.0	6553.5	DegF
TBSTC10-AI	AI Block for TBSTC10 (From PLC)	0.50	PLC:402193	LIN	0.0	6553.5	DegF
TBSTC11-AI	AI Block for TBSTC11 (From PLC)	0.50	PLC:402202	LIN	0.0	6553.5	DegF
TBSTC12-AI	AI Block for TBSTC12 (From PLC)	0.50	PLC:402211	LIN	0.0	6553.5	DegF
TBSTC13-AI	AI Block for TBSTC13 (From PLC)	0.50	PLC:402194	LIN	0.0	6553.5	DegF
TBSTC14-AI	AI Block for TBSTC14 (From PLC)	0.50	PLC:402203	LIN	0.0	6553.5	DegF
TBSTC15-AI	AI Block for TBSTC15 (From PLC)	0.50	PLC:402215	LIN	0.0	6553.5	DegF
TBSTC16-AI	AI Block for TBSTC16 (From PLC)	0.50	PLC:402195	LIN	0.0	6553.5	DegF
TBSTC17-AI	AI Block for TBSTC17 (From PLC)	0.50	PLC:402204	LIN	0.0	6553.5	DegF
TBSTC18-AI	AI Block for TBSTC18 (From PLC)	0.50	PLC:402212	LIN	0.0	6553.5	DegF
TBSTC19-AI	AI Block for TBSTC19 (From PLC)	0.50	PLC:402196	LIN	0.0	6553.5	DegF
TBSTC20-AI	AI Block for TBSTC20 (From PLC)	0.50	PLC:402205	LIN	0.0	6553.5	DegF
TBSTC21-AI	AI Block for TBSTC21 (From PLC)	0.50	PLC:402213	LIN	0.0	6553.5	DegF
TBSTC22-AI	AI Block for TBSTC22 (From PLC)	0.50	PLC:402197	LIN	0.0	6553.5	DegF
TBSTC23-AI	AI Block for TBSTC23 (From PLC)	0.50	PLC:402206	LIN	0.0	6553.5	DegF
TBSTC24-AI	AI Block for TBSTC24 (From PLC)	0.50	PLC:402214	LIN	0.0	6553.5	DegF
TBSTC25-AI	AI Block for TBSTC25 (From PLC)	0.50	PLC:402198	LIN	0.0	6553.5	DegF
TBSTC26-AI	AI Block for TBSTC26 (From PLC)	0.50	PLC:402207	LIN	0.0	6553.5	DegF
TIR17B01-AI	AI Block for TIR17B01 (From PLC)	0.50	PLC:402132	LIN	0.0	6553.5	DegF
TIR17B02-AI	AI Block for TIR17B02 (From PLC)	0.50	PLC:402133	LIN	0.0	6553.5	DegF
TIR17B03-AI	AI Block for TIR17B03 (From PLC)	0.50	PLC:402134	LIN	0.0	6553.5	DegF
TIR17B04-AI	AI Block for TIR17B04 (From PLC)	0.50	PLC:402135	LIN	0.0	6553.5	DegF
TIR17B05-AI	AI Block for TIR17B05 (From PLC)	0.50	PLC:402136	LIN	0.0	6553.5	DegF
TIR17B06-AI	AI Block for TIR17B06 (From PLC)	0.50	PLC:402150	LIN	0.0	6553.5	DegF
TIR17B07-AI	AI Block for TIR17B07 (From PLC)	0.50	PLC:402151	LIN	0.0	6553.5	DegF
TIR17B08-AI	AI Block for TIR17B08 (From PLC)	0.50	PLC:402152	LIN	0.0	6553.5	DegF
TIR17B09-AI	AI Block for TIR17B09 (From PLC)	0.50	PLC:402153	LIN	0.0	6553.5	DegF
TIR17B10-AI	AI Block for TIR17B10 (From PLC)	0.50	PLC:402154	LIN	0.0	6553.5	DegF
TIR17B11-AI	AI Block for TIR17B11 (From PLC)	0.50	PLC:402157	LIN	0.0	6553.5	DegF
TIR17B12-AI	AI Block for TIR17B12 (From PLC)	0.50	PLC:402191	LIN	0.0	6553.5	DegF
TIR17B13-AI	AI Block for TIR17B13 (From PLC)	0.50	PLC:402192	LIN	0.0	6553.5	DegF
TIR17B14-AI	AI Block for TIR17B14 (From PLC)	0.50	PLC:402233	LIN	0.0	6553.5	DegF
TIR17B15-AI	AI Block for TIR17B15 (From PLC)	0.50	PLC:402234	LIN	0.0	6553.5	DegF
TIR17B16-AI	AI Block for TIR17B16 (From PLC)	0.50	PLC:402235	LIN	0.0	6553.5	DegF
TIR17B17-AI	AI Block for TIR17B17 (From PLC)	0.50	PLC:402236	LIN	0.0	6553.5	DegF
TIR17B18-AI	AI Block for TIR17B18 (From PLC)	0.50	PLC:402237	LIN	0.0	6553.5	DegF
TIR17B19-AI	AI Block for TIR17B19 (From PLC)	0.50	PLC:402238	LIN	0.0	6553.5	DegF
TIR17B20-AI	AI Block for TIR17B20 (From PLC)	0.50	PLC:402239	LIN	0.0	6553.5	DegF
TIR17B21-AI	AI Block for TIR17B21 (From PLC)	0.50	PLC:402240	LIN	0.0	6553.5	DegF
TIR17B22-AI	AI Block for TIR17B22 (From PLC)	0.50	PLC:402241	LIN	0.0	6553.5	DegF
TIR17C01-AI	AI Block for TIR17C01 (From PLC)	0.50	PLC:402159	LIN	0.0	6553.5	DegF
TIR17C02-AI	AI Block for TIR17C02 (From PLC)	0.50	PLC:402160	LIN	0.0	6553.5	DegF
TIR17C03-AI	AI Block for TIR17C03 (From PLC)	0.50	PLC:402161	LIN	0.0	6553.5	DegF
TIR17C04-AI	AI Block for TIR17C04 (From PLC)	0.50	PLC:402162	LIN	0.0	6553.5	DegF
TIR17C05-AI	AI Block for TIR17C05 (From PLC)	0.50	PLC:402163	LIN	0.0	6553.5	DegF
TIR17C06-AI	AI Block for TIR17C06 (From PLC)	0.50	PLC:402164	LIN	0.0	6553.5	DegF
TIR17C07-AI	AI Block for TIR17C07 (From PLC)	0.50	PLC:402165	LIN	0.0	6553.5	DegF
TIR17C08-AI	AI Block for TIR17C08 (From PLC)	0.50	PLC:402166	LIN	0.0	6553.5	DegF
TIR17C09-AI	AI Block for TIR17C09 (From PLC)	0.50	PLC:402167	LIN	0.0	6553.5	DegF
TIR17C10-AI	AI Block for TIR17C10 (From PLC)	0.50	PLC:402168	LIN	0.0	6553.5	DegF
TIR17C11-AI	AI Block for TIR17C11 (From PLC)	0.50	PLC:402169	LIN	0.0	6553.5	DegF
TIR17C12-AI	AI Block for TIR17C12 (From PLC)	0.50	PLC:402170	LIN	0.0	6553.5	DegF
TIR17C13-AI	AI Block for TIR17C13 (From PLC)	0.50	PLC:402171	LIN	0.0	6553.5	DegF
TIR17C14-AI	AI Block for TIR17C14 (From PLC)	0.50	PLC:402172	LIN	0.0	6553.5	DegF
TIR17C15-AI	AI Block for TIR17C15 (From PLC)	0.50	PLC:402173	LIN	0.0	6553.5	DegF
TIR17C16-AI	AI Block for TIR17C16 (From PLC)	0.50	PLC:402174	LIN	0.0	6553.5	DegF
TIR17C17-AI	AI Block for TIR17C17 (From PLC)	0.50	PLC:402175	LIN	0.0	6553.5	DegF
TIR17C18-AI	AI Block for TIR17C18 (From PLC)	0.50	PLC:402176	LIN	0.0	6553.5	DegF
TIR17C19-AI	AI Block for TIR17C19 (From PLC)	0.50	PLC:402177	LIN	0.0	6553.5	DegF
TIR17C20-AI	AI Block for TIR17C20 (From PLC)	0.50	PLC:402178	LIN	0.0	6553.5	DegF
TIR17C21-AI	AI Block for TIR17C21 (From PLC)	0.50	PLC:402179	LIN	0.0	6553.5	DegF
TIR17C22-AI	AI Block for TIR17C22 (From PLC)	0.50	PLC:402180	LIN	0.0	6553.5	DegF
VR232040	Pump Motor Current	1	1320		0.0	225.0	AMPS
VR232050	Pump Speed	1	1321		0.0	1020.0	RPM

Table D-6. Analog Output (AO) Blocks

AO Block Tag_Name	Tag Description	I/O Address	Signal Cond.	Low Limit	High Limit	Units	Init. Value
ARMGAMMA-AO	AO Block for HMT Gamma Radiation	1111		0.00	999.99	mR/H	
BUT-COL-ENAB_TEST	ENABLE TEST BUTTON COLOR	1353		0	4	----	0
BUT-COL-POS_PUMP	POSITION PUMP BUTTON COLOR	1352		0	4	----	0
BUT-COL-SET_VAL	SET VALUES BUTTON COLOR	1351		0	4	----	1
BUT-COL-START_TEST	START TEST BUTTON COLOR	1354		0	4	----	0
BUT-COL-STOP_TEST	STOP TEST BUTTON COLOR	1355		0	4	----	0
D_ACCEL	Directional Motor Acceleration	PLC:400221	LIN	0	1000	/m/s	500
D_DECEL	Directional Motor Deceleration	1810		0	1000	/m/s	500
FTFILEPREV	FTIR Previous File Number	12		0	65535	----	0
GC1-TIME-AO	AO Block for GC-1 Last Valid Update Time	1103		0	65535	----	0
GC2-TIME-AO	AO Block for GC-2 Last Valid Update Time	1104		0	65535	----	0
GC3FILEPREV	GC3 Previous File Number	10		0	65535	----	0
H1BCSLIM	High 1B Column Strain Abort Limit	PLC:400237	12AL	-684	684	u"/"	546
H1BSAL	High 1B Strain Alarm Limit	PLC:400201	12AL	-684	684	u"/"	317
H12ASAL	High 12A Strain Alarm Limit	PLC:400227	12AL	-684.0	684.0	u"/"	145.5
H17BCSAL	High 17C Strain Alarm Limit	PLC:400230	12AL	-684.0	684.0	u"/"	267.0
H17CSLIM	High 17C Column Strain Abort Limit	PLC:400233	12AL	-684	684	u"/"	357
HH2LIM	High Hydrogen Abort Limit	PLC:400200	12AL	0.000	10.000	%	0.750
HH2LIM2	High H2 Abort Limit for 0-30 Gauge	PLC:400232	12AL	0.00	1.00	%	0.75
HILIM	Set to 4095	PLC:400205	12AL	0	4095	----	4095
HPCABRT	High Pump Motor Current Abort Limit	PLC:400208	LIN	0.0	225.0	AMPS	1.0
HPCALM	High Pump Motor Current Alarm Limit	PLC:400211	LIN	0.0	225.0	AMPS	1.0
HPCSLIM	High Pump Column Strain Abort Limit	PLC:400224	12AL	-684	684	u"/"	194
HPMOTLIM	High Motor Oil Temp Abort Limit	PLC:400206	12AL	32	383	DegF	225
HPSPDAL	High Pump Speed Alarm Limit	PLC:400214	LIN	0.0	1020.0	RPM	1010.0
HPSPDLIM	High Pump Speed Abort Limit	PLC:400213	LIN	0.0	1020.0	RPM	1020.0
HTDPLIM	High Tank Dome Pressure Abort Limit	PLC:400204	12AL	-6.0	4.0	INWG	-1.0
HTDPLIM2	High Tank Dome Pressure Abort Limit 2	PLC:400236	12AL	-5.0	20.0	INWG	-1.0
HTEMPLIM	High Temp Abort Limit	PLC:400203	12AL	0.0	409.5	DegF	135.0
HVFLLIM1	High Vent Flow Abort Limit 1	PLC:400253	12AL	0.0	1275.0	CFM	700.0
HVFLLIM2	High Vent Flow Abort Limit 2	PLC:400254	12AL	-1000.0	7335.0	CFM	700.4
L1BCSLIM	Low 1B Column Strain Abort Limit	PLC:400241	12AL	-684	684	u"/"	-546
L1BSAL	Low 1B Strain Alarm Limit	PLC:400202	12AL	-684	684	u"/"	-317
L12ASAL	Low 12A Strain Alarm Limit	PLC:400229	12AL	-684.0	684.0	u"/"	-145.5
L17BCSAL	Low 17C Strain Alarm Limit	PLC:400231	12AL	-684.0	684.0	u"/"	-267.0
L17CSLIM	Low 17C Column Strain Abort Limit	PLC:400240	12AL	-684	684	u"/"	-357
LAST-UTESTNO	N/A	1803		1	99	----	1
LPCGPLIM	Low Pump Column Gas Pressure Abort Limit	PLC:400252	12AL	0.0	25.0	PSIG	7.0
LPCSLIM	Low Pump Column Strain Abort Limit	PLC:400238	12AL	-684	684	u"/"	-194
LVFLLIM	Low Vent Flow Abort Limit Low Range	PLC:400207	12AL	0	1275	CFM	400
LVFLLIM2	Low Vent Flow Abort High Range	PLC:400235	12AL	-1000	7335	CFM	400
PBCALSEC	Copies USER_SECONDS to PLC	PLC:400212	NONE	0	90000	sec	0
PHO-NH3-AO	AO Block for PHO-NH3 Concentration	14		0	100000	PPM	0
PHOTIMEPREV	PHO Previous Time Value	13		0	65535	----	0
P_ACCEL	Pump Motor Acceleration	1807		0.0	500.0	/m/s	100.0
P_DECEL	Pump Motor Deceleration	1808		0.0	500.0	/m/s	176.0
RGRUNPREV	RGA-5 Previous Run Number	11		0	65535	----	0
ST5-WDT	Station5 Online Watchdog Timer	110		0	6	----	
ST6-WDT	Station6 Online Watchdog Timer	111		0	6	----	
ST7-WDT	Station7 Online Watchdog Timer	112		0	6	----	
ST8-WDT	Station8 Online Watchdog Timer	113		0	6	----	
ST9-WDT	Station9 Online Watchdog Timer	114		0	6	----	
ST11-WDT	Station11 Online Watchdog Timer	115		0	6	----	
ST13-WDT	Station13 Online Watchdog Timer	116		0	6	----	
ST15-WDT	Station15 Online Watchdog Timer	117		0	6	----	
ST17-WDT	Station17 Online Watchdog Timer	118		0	6	----	
TBSTC01-AO	Tank Bottom & Side TC #1	1045		80.0	140.0	DegF	
TBSTC02-AO	Tank Bottom & Side TC #2	1046		80.0	140.0	DegF	
TBSTC03-AO	Tank Bottom & Side TC #3	1047		80.0	140.0	DegF	
TBSTC04-AO	Tank Bottom & Side TC #4	1048		80.0	140.0	DegF	
TBSTC05-AO	Tank Bottom & Side TC #5	1049		80.0	140.0	DegF	
TBSTC06-AO	Tank Bottom & Side TC #6	1050		80.0	140.0	DegF	
TBSTC07-AO	Tank Bottom & Side TC #7	1051		80.0	140.0	DegF	
TBSTC08-AO	Tank Bottom & Side TC #8	1052		80.0	140.0	DegF	
TBSTC09-AO	Tank Bottom & Side TC #9	1053		80.0	140.0	DegF	
TBSTC10-AO	Tank Bottom & Side TC #10	1054		80.0	140.0	DegF	
TBSTC11-AO	Tank Bottom & Side TC #11	1055		80.0	140.0	DegF	
TBSTC12-AO	Tank Bottom & Side TC #12	1056		80.0	140.0	DegF	
TBSTC13-AO	Tank Bottom & Side TC #13	1057		80.0	140.0	DegF	
TBSTC14-AO	Tank Bottom & Side TC #14	1058		80.0	140.0	DegF	
TBSTC15-AO	Tank Bottom & Side TC #15	1059		80.0	140.0	DegF	
TBSTC16-AO	Tank Bottom & Side TC #16	1060		80.0	140.0	DegF	
TBSTC17-AO	Tank Bottom & Side TC #17	1061		80.0	140.0	DegF	
TBSTC18-AO	Tank Bottom & Side TC #18	1062		80.0	140.0	DegF	
TBSTC19-AO	Tank Bottom & Side TC #19	1063		80.0	140.0	DegF	
TBSTC20-AO	Tank Bottom & Side TC #20	1064		80.0	140.0	DegF	

AO Block Tag Name	Tag Description	I/O Address	Signal Cond.	Low Limit	High Limit	Units	Init. Value
TBSTC21-AO	Tank Bottom & Side TC #21	1065		80.0	140.0	DegF	
TBSTC22-AO	Tank Bottom & Side TC #22	1066		80.0	140.0	DegF	
TBSTC23-AO	Tank Bottom & Side TC #23	1067		80.0	140.0	DegF	
TBSTC24-AO	Tank Bottom & Side TC #24	1068		80.0	140.0	DegF	
TBSTC25-AO	Tank Bottom & Side TC #25	1069		80.0	140.0	DegF	
TBSTC26-AO	Tank Bottom & Side TC #26	1070		80.0	140.0	DegF	
TIR17B01-AO	Tank Temperature Riser 17B - 4"	1001		70.0	140.0	DegF	
TIR17B02-AO	Tank Temperature Riser 17B - 16"	1002		70.0	140.0	DegF	
TIR17B03-AO	Tank Temperature Riser 17B - 28"	1003		70.0	140.0	DegF	
TIR17B04-AO	Tank Temperature Riser 17B - 52"	1004		70.0	140.0	DegF	
TIR17B05-AO	Tank Temperature Riser 17B - 76"	1005		70.0	140.0	DegF	
TIR17B06-AO	Tank Temperature Riser 17B - 100"	1006		70.0	140.0	DegF	
TIR17B07-AO	Tank Temperature Riser 17B - 112"	1007		70.0	140.0	DegF	
TIR17B08-AO	Tank Temperature Riser 17B - 124"	1008		70.0	140.0	DegF	
TIR17B09-AO	Tank Temperature Riser 17B - 148"	1009		70.0	140.0	DegF	
TIR17B10-AO	Tank Temperature Riser 17B - 172"	1010		70.0	140.0	DegF	
TIR17B11-AO	Tank Temperature Riser 17B - 196"	1011		70.0	140.0	DegF	
TIR17B12-AO	Tank Temperature Riser 17B - 208"	1012		70.0	140.0	DegF	
TIR17B13-AO	Tank Temperature Riser 17B - 220"	1013		70.0	140.0	DegF	
TIR17B14-AO	Tank Temperature Riser 17B - 232"	1014		70.0	140.0	DegF	
TIR17B15-AO	Tank Temperature Riser 17B - 244"	1015		70.0	140.0	DegF	
TIR17B16-AO	Tank Temperature Riser 17B - 268"	1016		70.0	140.0	DegF	
TIR17B17-AO	Tank Temperature Riser 17B - 292"	1017		70.0	140.0	DegF	
TIR17B18-AO	Tank Temperature Riser 17B - 326"	1018		70.0	140.0	DegF	
TIR17B19-AO	Tank Temperature Riser 17B - 340"	1019		70.0	140.0	DegF	
TIR17B20-AO	Tank Temperature Riser 17B - 364"	1020		70.0	140.0	DegF	
TIR17B21-AO	Tank Temperature Riser 17B - 392"	1021		70.0	140.0	DegF	
TIR17B22-AO	Tank Temperature Riser 17B - 402"	1022		70.0	140.0	DegF	
TIR17C01-AO	Tank Temperature Riser 17C - 4"	1023		70.0	140.0	DegF	
TIR17C02-AO	Tank Temperature Riser 17C - 16"	1024		70.0	140.0	DegF	
TIR17C03-AO	Tank Temperature Riser 17C - 28"	1025		70.0	140.0	DegF	
TIR17C04-AO	Tank Temperature Riser 17C - 52"	1026		70.0	140.0	DegF	
TIR17C05-AO	Tank Temperature Riser 17C - 76"	1027		70.0	140.0	DegF	
TIR17C06-AO	Tank Temperature Riser 17C - 100"	1028		70.0	140.0	DegF	
TIR17C07-AO	Tank Temperature Riser 17C - 112"	1029		70.0	140.0	DegF	
TIR17C08-AO	Tank Temperature Riser 17C - 124"	1030		70.0	140.0	DegF	
TIR17C09-AO	Tank Temperature Riser 17C - 148"	1031		70.0	140.0	DegF	
TIR17C10-AO	Tank Temperature Riser 17C - 172"	1032		70.0	140.0	DegF	
TIR17C11-AO	Tank Temperature Riser 17C - 196"	1033		70.0	140.0	DegF	
TIR17C12-AO	Tank Temperature Riser 17C - 208"	1034		70.0	140.0	DegF	
TIR17C13-AO	Tank Temperature Riser 17C - 220"	1035		70.0	140.0	DegF	
TIR17C14-AO	Tank Temperature Riser 17C - 232"	1036		70.0	140.0	DegF	
TIR17C15-AO	Tank Temperature Riser 17C - 244"	1037		70.0	140.0	DegF	
TIR17C16-AO	Tank Temperature Riser 17C - 292"	1038		70.0	140.0	DegF	
TIR17C17-AO	Tank Temperature Riser 17C - 316"	1039		70.0	140.0	DegF	
TIR17C18-AO	Tank Temperature Riser 17C - 340"	1040		70.0	140.0	DegF	
TIR17C19-AO	Tank Temperature Riser 17C - 364"	1041		70.0	140.0	DegF	
TIR17C20-AO	Tank Temperature Riser 17C - 392"	1042		70.0	140.0	DegF	
TIR17C21-AO	Tank Temperature Riser 17C - 402"	1043		70.0	140.0	DegF	
TIR17C22-AO	Tank Temperature Riser 17C - 425"	1044		70.0	140.0	DegF	
UAA_SILENCE_LEVEL	UAA Count When Silence Key Pressed	1330		0	300	----	0
UACCEL	Desired Pump Acceleration	1824		0	500	/m/s	100
UANGLE	Directional Motor Angle for Test Setup	1801		15	190	Deg	28
UDECEL	Desired Pump Deceleration	1825		0	500	/m/s	176
UHRS	Desired Test Hours	1821		0	24	Hrs	0
UMINS	Desired Test Minutes	1822		0	59	Mins	5
USECS	Desired Test Seconds	1823		0	59	Secs	0
USPEED	PMotor Speed for Test Setup	1804		0.0	1020.0	RPM	1000.0
UTESTNO	N/A	1802		1	99	----	1
VERSION	DACS v4.01	1999		0.00	100.00	----	4.01
VR232040-AO	Pump Motor Current To PLC	PLC:400219	LIN	0.0	225.0	AMPS	0.0
VR232040F	Pump Motor Current From VSD	1320		0.0	225.0	AMPS	0.0
VR232050-AO	Pump Speed To PLC	PLC:400220	LIN	0.0	1020.0	RPM	0.0
VR232050F	Pump Speed From VSD	1321		0.0	1020.0	RPM	0.0
VR232060	Pump Speed Setpoint	1811		0.0	1020.0	RPM	1000.0

Table D-7. Analog Register (AR) Blocks

AR Block Tag Name	Tag Description	I/O Address	Signal Cond.	Low Limit	High Limit	Units
VR232020	Mixer Pump Motor Voltage	PLC:400215	LIN	0.0	460.0	VAC
VR232080	Rotational Motor Voltage	PLC:400216	LIN	0.0	460.0	VAC
VR232100	Rotational Motor Current	PLC:400217	LIN	0.0	20.0	AMPS
VR232110	Rotational Motor Speed	PLC:400218	LIN	0.0	1200.0	RPM
VR232120	Directional Speed Setpoint	PLC:400222	LIN	0	65535	RPM

Table D-8. Boolean (BL) or "OR" Blocks

BL Block Tag Name	Tag Description	Scan Time	Open Label	Close Label	Inputs	Output Calc.
17BTCERR_BL	OR Block - MIT17B I/O Module Halt Error	1	OK	ERROR	A. TCMOD7ERR B. TCMOD8ERR C. TCMOD9ERR	((A+B)+C)
17CTCERR_BL	OR Block - MIT17C I/O Module Halt Error	1	OK	ERROR	A. TCMOD1ERR B. TCMOD2ERR C. TCMOD3ERR	((A+B)+C)
ARMGAMMA_BL	OR Block for ARMGAMMA Dynamic Coloring	1	OPEN	CLOSE	A. ARMALM B. ARMABORT	(A+B)
FCE5000X_BL	OR Block for FTE50001,2 Aborts	1	NORMAL	ALARM	A. FCE50001 B. FCE50002	(A+B)
FT-DATE-DESC	09/16	5	OPEN	CLOSE	A. 0	A
FT-INST_BL	OR Block for Instrument Problem FT-NH3	5	OPEN	CLOSE	A. FT_ZERO B. FZ-NH3C-AA:LO H. FZ-NH3C-AA:UNDER	((A+B)+H)
FT-N2OC_BL	OR Block for FT-N2OC Alarms	5	OPEN	CLOSE	A. 0	A
FT-NH3C_BL	OR Block for FT-NH3C Alarms	5	OPEN	CLOSE	A. FT-NH3C:HI	A
FTE5000X_BL	OR Block for FTE50001,2 Alarms	1	NORMAL	ALARM	A. FTE50001:LO B. FTE50002:LO	(A+B)
FTE50001_BL	OR Block for FTE50001 Alarms	1	NORMAL	ALARM	A. FTE50001:HI B. FTE50001_CA	(A+B)
FTE50001_BLB	OR Block for FTE50001 Aborts	1	NORMAL	ALARM	A. FHE50001 B. FCE50001	(A+B)
FTE50002_BL	OR Block for FTE50002 Alarms	1	NORMAL	ALARM	A. FTE50002:HI B. FTE50002:LO	(A+B)
FTE50002_BLB	OR Block for FTE50002 Aborts	1	NORMAL	ALARM	A. FHE50002 B. FCE50002	(A+B)
FTE50003_BL	OR Block for FTE50003 Alarms	1	NORMAL	ALARM	A. 0	A
FZE50001_BL	OR Block for Instrument Problem FTE50001	1	OK	PROBLEM	A. FPE50001	A
FZE50002_BL	OR Block for Instrument Problem FTE50002	1	OK	PROBLEM	A. FPE50002	A
FZE50003_BL	OR Block for Instrument Problem FTE50003	1	OK	PROBLEM	A. FPE50003	A
GC1-DATE-DESC	09/16	5	OPEN	CLOSE	A. 0	A
GC1-H2_BL	OR Block for GC1-H2 Alarms	5	OPEN	CLOSE	A. 0	A
GC1-INST_BL	OR Block for Instrument Problem - GC1	5	OPEN	CLOSE	A. RGA5_ZERO B. GC1-ZVAL	(A+B)
GC2-DATE-DESC	09/16	5	OPEN	CLOSE	A. 0	A
GC2-H2_BL	OR Block for GC2-H2 Alarms	5	OPEN	CLOSE	A. 0	A
GC2-INST_BL	OR Block for Instrument Problem - GC2	5	OPEN	CLOSE	A. RGA5_ZERO B. GC2-ZVAL	(A+B)
GC3-DATE-DESC	09/16	5	OPEN	CLOSE	A. 0	A
GC3-H2_BL	OR Block for GC3-H2 Alarms	5	OPEN	CLOSE	A. 0	A
GC3-INST_BL	OR Block for Instrument Problem - GC3	5	OPEN	CLOSE	A. GC3_ZERO B. GC3-ZVAL	(A+B)
LIR01A_BL	OR Block for LIR01A Alarms	1	NORMAL	ALARM	A. 0	A
LIR01C_BL	OR Block for LIR01C Alarms	1	NORMAL	ALARM	A. 0	A
LZR01A_BL	OR Block for Instrument Problem LIR01A	1	OK	PROBLEM	A. LPR01A	A
LZR01C_BL	OR Block for Instrument Problem LIR01C	1	OK	PROBLEM	A. LPR01C	A
NIR05A01_BL	OR Block for NIR05A01 Alarms	1	OPEN	CLOSE	A. NIR05A01:HI	A
NIR17B01_BL	OR Block for NIR17B01 Alarms	1	OPEN	CLOSE	A. NIR17B01:HI	A
NITJSY06_BL	OR Block for NITJSY06 Alarms	1	NORMAL	ALARM	A. NITJSY06:HI	A
NITKSY06_BL	OR Block for NITKSY06 Alarms	1	NORMAL	ALARM	A. NITKSY06:HI	A
NI_BL	OR Block for NI (Whittaker) Alarms	1	NORMAL	ALARM	A. NITKSY06:HI B. NITJSY06:HI C. NIR17B01:HI D. NIR05A01:HI	(((A+B)+C)+D)
NZR05A01_BL	OR Block for Instrument Problem NIR05A01	1	OK	PROBLEM	A. NPR05A01	A
NZR17B01_BL	OR Block for Instrument Problem NIR17B01	1	OK	PROBLEM	A. NPR17B01	A
NZTJSY06_BL	OR Block for Instrument Problem NITJSY06	1	OK	PROBLEM	A. NPTJSY06	A
NZTKSY06_BL	OR Block for Instrument Problem NITKSY06	1	OK	PROBLEM	A. NPTKSY06 B. NZTKSY06-AA:LO H. NZTKSY06-AA:UNDER	((A+B)+H)

BL Block Tag_Name	Tag Description	Scan Time	Open Label	Close Label	Inputs	Output Calc.
PCR17_BL	OR Block for PIR17B04,C01 Aborts	1	NORMAL	ALARM	A. PCR17B04 B. PCR17C01	 (A+B)
PHO-DATE-DESC	09/16	5	OPEN	CLOSE	A. 0	A
PHO-INST_BL	OR Block for Instrument Problem - PHO	5	OPEN	CLOSE	A. PHO_ZERO	A
PHO-NH3_BL	OR Block for PHO-NH3 Alarms	5	OPEN	CLOSE	A. PHO-NH3:HI	A
PIR12A01_BL	OR Block for PIR12A01 Alarms	1	NORMAL	ALARM	A. 0	A
PIR17B04_BL	OR Block for PIR17B04 Alarms	1	NORMAL	ALARM	A. PIR17B04:HI	A
PIR17C01_BL	OR Block for PIR17C01 Alarms	1	NORMAL	ALARM	A. PIR17C01:HI B. PIR17C01:LO	 (A+B)
PIR17_BL	OR Block for PIR17B04,C01 Alarms	1	NORMAL	ALARM	A. PIR17B04:HI B. PIR17C01:HI	 (A+B)
PITNO110_BL	OR Block for PITNO110 Alarms	1	NORMAL	ALARM	A. 0	A
PITNO111_BL	OR Block for PITNO111 Alarms	1	NORMAL	ALARM	A. 0	A
PZR12A01_BL	OR Block for Instrument Problem PIR12A01	1	OK	PROBLEM	A. PPR12A01 B. PZR12A01-AA:HI C. PZR12A01-AA:LO G. PZR12A01-AA:OVER H. PZR12A01-AA:UNDER	 (((((A+B)+C)+G)+H)
PZR17B04_BL	OR Block for Instrument Problem PIR17B04	1	OK	PROBLEM	A. PPR17B04 B. PZR17B04-AA:LO H. PZR17B04-AA:UNDER	 ((A+B)+H)
PZR17C01_BL	OR Block for Instrument Problem PIR17C01	1	OK	PROBLEM	A. PPR17C01 B. PZR17C01-AA:LO H. PZR17C01-AA:UNDER	 ((A+B)+H)
PZTNO110_BL	OR Block for Instrument Problem PITNO110	1	OK	PROBLEM	A. PZTNO110-AA:LO H. PZTNO110-AA:UNDER	 (A+H)
PZTNO111_BL	OR Block for Instrument Problem PITNO111	1	OK	PROBLEM	A. PZTNO111-AA:LO H. PZTNO111-AA:UNDER	 (A+H)
SHOW-ANGLE	OR Block for [PUMPRUN] D_MOTOR Direction	0.50	SHOW	NO SHOW	A. D_RUN B. BUT_ACT_POS_PUMP	 (A+B)
TBSTCERR_BL	OR Block - TBS I/O Module Halt Error	1	OK	ERROR	A. TCMOD4ERR B. TCMOD5ERR C. TCMOD6ERR	 ((A+B)+C)
TCR12A_BL	OR Block 1 for TIR12A Aborts	1	NORMAL	ALARM	A. TCR12A01 B. TCR12A02	 (A+B)
TCR17B_BL1	OR Block 1 for TIR17B Aborts	1	NORMAL	ALARM	A. TCR17B01 B. TCR17B02 C. TCR17B03 D. TCR17B04 E. TCR17B05 F. TCR17B06 G. TCR17B07 H. TCR17B08	 (((((((A+B)+C)+D)+E)+F)+G)+H)
TCR17B_BL2	OR Block 2 for TIR17B Aborts	1	NORMAL	ALARM	A. TCR17B_BL1 B. TCR17B09 C. TCR17B10 D. TCR17B11 E. TCR17B12 F. TCR17B13 G. TCR17B14 H. TCR17B15	 (((((((A+B)+C)+D)+E)+F)+G)+H)
TCR17B_BL3	OR Block 3 for TIR17B Aborts	1	NORMAL	ALARM	A. TCR17B_BL2 B. TCR17B16 C. TCR17B17 D. TCR17B18 E. TCR17B19 F. TCR17B20 G. TCR17B21 H. TCR17B22	 (((((((A+B)+C)+D)+E)+F)+G)+H)

BL Block Tag Name	Tag Description	Scan Time	Open Label	Close Label	Inputs	Output Calc.
TIR12A01_BL	OR Block for TIR12A01 Alarms	1	NORMAL	ALARM	A. TIR12A01:HI	A
TIR12A02_BL	OR Block for TIR12A02 Alarms	1	NORMAL	ALARM	A. TIR12A02:HI	A
TIR12A_BL	OR Block 1 for TIR12A Alarms	1	NORMAL	ALARM	A. TIR12A01:HI B. TIR12A02:HI	(A+B)
TIR17B01_BL	OR Block for TIR17B01 Alarms	1	NORMAL	ALARM	A. TIR17B01:HI	A
TIR17B02_BL	OR Block for TIR17B02 Alarms	1	NORMAL	ALARM	A. TIR17B02:HI	A
TIR17B03_BL	OR Block for TIR17B03 Alarms	1	NORMAL	ALARM	A. TIR17B03:HI	A
TIR17B04_BL	OR Block for TIR17B04 Alarms	1	NORMAL	ALARM	A. TIR17B04:HI	A
TIR17B05_BL	OR Block for TIR17B05 Alarms	1	NORMAL	ALARM	A. TIR17B05:HI	A
TIR17B06_BL	OR Block for TIR17B06 Alarms	1	NORMAL	ALARM	A. TIR17B06:HI	A
TIR17B07_BL	OR Block for TIR17B07 Alarms	1	NORMAL	ALARM	A. TIR17B07:HI	A
TIR17B08_BL	OR Block for TIR17B08 Alarms	1	NORMAL	ALARM	A. TIR17B08:HI	A
TIR17B09_BL	OR Block for TIR17B09 Alarms	1	NORMAL	ALARM	A. TIR17B09:HI	A
TIR17B10_BL	OR Block for TIR17B10 Alarms	1	NORMAL	ALARM	A. TIR17B10:HI	A
TIR17B11_BL	OR Block for TIR17B11 Alarms	1	NORMAL	ALARM	A. TIR17B11:HI	A
TIR17B12_BL	OR Block for TIR17B12 Alarms	1	NORMAL	ALARM	A. TIR17B12:HI	A
TIR17B13_BL	OR Block for TIR17B13 Alarms	1	NORMAL	ALARM	A. TIR17B13:HI	A
TIR17B14_BL	OR Block for TIR17B14 Alarms	1	NORMAL	ALARM	A. TIR17B14:HI	A
TIR17B15_BL	OR Block for TIR17B15 Alarms	1	NORMAL	ALARM	A. TIR17B15:HI	A
TIR17B16_BL	OR Block for TIR17B16 Alarms	1	NORMAL	ALARM	A. TIR17B16:HI	A
TIR17B17_BL	OR Block for TIR17B17 Alarms	1	NORMAL	ALARM	A. TIR17B17:HI	A
TIR17B18_BL	OR Block for TIR17B18 Alarms	1	NORMAL	ALARM	A. TIR17B18:HI	A
TIR17B19_BL	OR Block for TIR17B19 Alarms	1	NORMAL	ALARM	A. TIR17B19:HI	A
TIR17B20_BL	OR Block for TIR17B20 Alarms	1	NORMAL	ALARM	A. TIR17B20:HI	A
TIR17B21_BL	OR Block for TIR17B21 Alarms	1	NORMAL	ALARM	A. TIR17B21:HI	A
TIR17B22_BL	OR Block for TIR17B22 Alarms	1	NORMAL	ALARM	A. TIR17B22:HI	A
TIR17B_BL1	OR Block 1 for TIR17B Alarms	1	NORMAL	ALARM	A. TIR17B01:HI B. TIR17B02:HI C. TIR17B03:HI D. TIR17B04:HI E. TIR17B05:HI F. TIR17B06:HI G. TIR17B07:HI H. TIR17B08:HI	((((((A+B)+C)+D)+E)+F)+G)+H)
TIR17B_BL2	OR Block 2 for TIR17B Alarms	1	NORMAL	ALARM	A. TIR17B_BL1 B. TIR17B09:HI C. TIR17B10:HI D. TIR17B11:HI E. TIR17B12:HI F. TIR17B13:HI G. TIR17B14:HI H. TIR17B15:HI	((((((A+B)+C)+D)+E)+F)+G)+H)
TIR17B_BL3	OR Block 3 for TIR17B Alarms	1	NORMAL	ALARM	A. TIR17B_BL2 B. TIR17B16:HI C. TIR17B17:HI D. TIR17B18:HI E. TIR17B19:HI F. TIR17B20:HI G. TIR17B21:HI H. TIR17B22:HI	((((((A+B)+C)+D)+E)+F)+G)+H)
TIR17C01_BL	OR Block for TIR17C01 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C02_BL	OR Block for TIR17C02 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C03_BL	OR Block for TIR17C03 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C04_BL	OR Block for TIR17C04 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C05_BL	OR Block for TIR17C05 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C06_BL	OR Block for TIR17C06 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C07_BL	OR Block for TIR17C07 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C08_BL	OR Block for TIR17C08 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C09_BL	OR Block for TIR17C09 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C10_BL	OR Block for TIR17C10 Alarms	1	NORMAL	ALARM	A. 0	A

BL Block Tag Name	Tag Description	Scan Time	Open Label	Close Label	Inputs	Output Calc.
TIR17C11_BL	OR Block for TIR17C11 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C12_BL	OR Block for TIR17C12 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C13_BL	OR Block for TIR17C13 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C14_BL	OR Block for TIR17C14 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C15_BL	OR Block for TIR17C15 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C16_BL	OR Block for TIR17C16 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C17_BL	OR Block for TIR17C17 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C18_BL	OR Block for TIR17C18 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C19_BL	OR Block for TIR17C19 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C20_BL	OR Block for TIR17C20 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C21_BL	OR Block for TIR17C21 Alarms	1	NORMAL	ALARM	A. 0	A
TIR17C22_BL	OR Block for TIR17C22 Alarms	1	NORMAL	ALARM	A. 0	A
TZR12A01_BL	OR Block for Instrument Problem TIR12A01	1	OK	PROBLEM	A. TPR12A01 B. TZR12A01-AA:LO H. TZR12A01-AA:UNDER	((A+B)+H)
TZR12A02_BL	OR Block for Instrument Problem TIR12A02	1	OK	PROBLEM	A. TPR12A02 B. TZR12A02-AA:LO H. TZR12A02-AA:UNDER	((A+B)+H)
TZR17B01_BL	OR Block for Instrument Problem TIR17B01	1	OK	PROBLEM	A. TZR17B01 B. TCMOD7ERR	(A+B)
TZR17B02_BL	OR Block for Instrument Problem TIR17B02	1	OK	PROBLEM	A. TZR17B02 B. TCMOD8ERR	(A+B)
TZR17B03_BL	OR Block for Instrument Problem TIR17B03	1	OK	PROBLEM	A. TZR17B03 B. TCMOD9ERR	(A+B)
TZR17B04_BL	OR Block for Instrument Problem TIR17B04	1	OK	PROBLEM	A. TZR17B04 B. TCMOD7ERR	(A+B)
TZR17B05_BL	OR Block for Instrument Problem TIR17B05	1	OK	PROBLEM	A. TZR17B05 B. TCMOD8ERR	(A+B)
TZR17B06_BL	OR Block for Instrument Problem TIR17B06	1	OK	PROBLEM	A. TZR17B06 B. TCMOD9ERR	(A+B)
TZR17B07_BL	OR Block for Instrument Problem TIR17B07	1	OK	PROBLEM	A. TZR17B07 B. TCMOD7ERR	(A+B)
TZR17B08_BL	OR Block for Instrument Problem TIR17B08	1	OK	PROBLEM	A. TZR17B08 B. TCMOD8ERR	(A+B)
TZR17B09_BL	OR Block for Instrument Problem TIR17B09	1	OK	PROBLEM	A. TZR17B09 B. TCMOD9ERR	(A+B)
TZR17B10_BL	OR Block for Instrument Problem TIR17B10	1	OK	PROBLEM	A. TZR17B10 B. TCMOD7ERR	(A+B)
TZR17B11_BL	OR Block for Instrument Problem TIR17B11	1	OK	PROBLEM	A. TZR17B11 B. TCMOD8ERR	(A+B)
TZR17B12_BL	OR Block for Instrument Problem TIR17B12	1	OK	PROBLEM	A. TZR17B12 B. TCMOD9ERR	(A+B)
TZR17B13_BL	OR Block for Instrument Problem TIR17B13	1	OK	PROBLEM	A. TZR17B13 B. TCMOD7ERR	(A+B)
TZR17B14_BL	OR Block for Instrument Problem TIR17B14	1	OK	PROBLEM	A. TZR17B14 B. TCMOD8ERR	(A+B)
TZR17B15_BL	OR Block for Instrument Problem TIR17B15	1	OK	PROBLEM	A. TZR17B15 B. TCMOD9ERR	(A+B)
TZR17B16_BL	OR Block for Instrument Problem TIR17B16	1	OK	PROBLEM	A. TZR17B16 B. TCMOD7ERR	(A+B)
TZR17B17_BL	OR Block for Instrument Problem TIR17B17	1	OK	PROBLEM	A. TZR17B17 B. TCMOD8ERR	(A+B)
TZR17B18_BL	OR Block for Instrument Problem TIR17B18	1	OK	PROBLEM	A. TZR17B18 B. TCMOD9ERR	(A+B)
TZR17B19_BL	OR Block for Instrument Problem TIR17B19	1	OK	PROBLEM	A. TZR17B19 B. TCMOD7ERR	(A+B)
TZR17B20_BL	OR Block for Instrument Problem TIR17B20	1	OK	PROBLEM	A. TZR17B20 B. TCMOD8ERR	(A+B)
TZR17B21_BL	OR Block for Instrument Problem TIR17B21	1	OK	PROBLEM	A. TZR17B21 B. TCMOD9ERR	(A+B)
TZR17B22_BL	OR Block for Instrument Problem TIR17B22	1	OK	PROBLEM	A. TZR17B22 B. TCMOD7ERR	(A+B)
TZR17C01_BL	OR Block for Instrument Problem TIR17C01	1	OK	PROBLEM	A. TZR17C01 B. TCMOD1ERR	(A+B)

BL Block Tag Name	Tag Description	Scan Time	Open Label	Close Label	Inputs	Output Calc.
TZR17C02_BL	OR Block for Instrument Problem TIR17C02	1	OK	PROBLEM	A. TZR17C02 B. TCMOD2ERR	(A+B)
TZR17C03_BL	OR Block for Instrument Problem TIR17C03	1	OK	PROBLEM	A. TZR17C03 B. TCMOD3ERR	(A+B)
TZR17C04_BL	OR Block for Instrument Problem TIR17C04	1	OK	PROBLEM	A. TZR17C04 B. TCMOD1ERR	(A+B)
TZR17C05_BL	OR Block for Instrument Problem TIR17C05	1	OK	PROBLEM	A. TZR17C05 B. TCMOD2ERR	(A+B)
TZR17C06_BL	OR Block for Instrument Problem TIR17C06	1	OK	PROBLEM	A. TZR17C06 B. TCMOD3ERR	(A+B)
TZR17C07_BL	OR Block for Instrument Problem TIR17C07	1	OK	PROBLEM	A. TZR17C07 B. TCMOD1ERR	(A+B)
TZR17C08_BL	OR Block for Instrument Problem TIR17C08	1	OK	PROBLEM	A. TZR17C08 B. TCMOD2ERR	(A+B)
TZR17C09_BL	OR Block for Instrument Problem TIR17C09	1	OK	PROBLEM	A. TZR17C09 B. TCMOD3ERR	(A+B)
TZR17C10_BL	OR Block for Instrument Problem TIR17C10	1	OK	PROBLEM	A. TZR17C10 B. TCMOD1ERR	(A+B)
TZR17C11_BL	OR Block for Instrument Problem TIR17C11	1	OK	PROBLEM	A. TZR17C11 B. TCMOD2ERR	(A+B)
TZR17C12_BL	OR Block for Instrument Problem TIR17C12	1	OK	PROBLEM	A. TZR17C12 B. TCMOD3ERR	(A+B)
TZR17C13_BL	OR Block for Instrument Problem TIR17C13	1	OK	PROBLEM	A. TZR17C13 B. TCMOD1ERR	(A+B)
TZR17C14_BL	OR Block for Instrument Problem TIR17C14	1	OK	PROBLEM	A. TZR17C14 B. TCMOD2ERR	(A+B)
TZR17C15_BL	OR Block for Instrument Problem TIR17C15	1	OK	PROBLEM	A. TZR17C15 B. TCMOD3ERR	(A+B)
TZR17C16_BL	OR Block for Instrument Problem TIR17C16	1	OK	PROBLEM	A. TZR17C16 B. TCMOD1ERR	(A+B)
TZR17C17_BL	OR Block for Instrument Problem TIR17C17	1	OK	PROBLEM	A. TZR17C17 B. TCMOD2ERR	(A+B)
TZR17C18_BL	OR Block for Instrument Problem TIR17C18	1	OK	PROBLEM	A. TZR17C18 B. TCMOD3ERR	(A+B)
TZR17C19_BL	OR Block for Instrument Problem TIR17C19	1	OK	PROBLEM	A. TZR17C19 B. TCMOD1ERR	(A+B)
TZR17C20_BL	OR Block for Instrument Problem TIR17C20	1	OK	PROBLEM	A. TZR17C20 B. TCMOD2ERR	(A+B)
TZR17C21_BL	OR Block for Instrument Problem TIR17C21	1	OK	PROBLEM	A. TZR17C21 B. TCMOD3ERR	(A+B)
TZR17C22_BL	OR Block for Instrument Problem TIR17C22	1	OK	PROBLEM	A. TZR17C22 B. TCMOD1ERR	(A+B)
VR232040_BL	OR Block for VR232040 Alarms	1	OPEN	CLOSE	A. PMCALARM	A
VR232050_BL	OR Block for VR232050 Alarms	1	OPEN	CLOSE	A. PSPALARM	A
VSDS_BAD	At Least One VSD is Not Communicating	1	OK	BAD	A. D_MOTOR_STAT B. P_MOTOR_STAT	(A+B)
WCR1BA_BL	OR Block for WIR1BA Aborts	1	NORMAL	ALARM	A. WLR1BA01 B. WLR1BA02 C. WLR1BA03 D. WCR1BA01 E. WCR1BA02 F. WCR1BA03	(((((A+B)+C)+D)+E)+F)
WCR12A_BL	OR Block for WIR12A Aborts	1	NORMAL	ALARM	A. WLR12A01 B. WLR12A02 C. WLR12A03 D. WLR12A04 E. WCR12A01 F. WCR12A02 G. WCR12A03 H. WCR12A04	(((((((A+B)+C)+D)+E)+F)+G)+H)
WCR17C_BL	OR Block for WIR17C Aborts	1	NORMAL	ALARM	A. WLR17C01 B. WLR17C02 C. WCR17C01 D. WCR17C02	(((A+B)+C)+D)
WDTNOT1	STA5 to PLC Watchdog Timer	2	OPEN	CLOSE	A. WDTRESET	(-A)
WDTNOT2	STA5 to PLC Watchdog Timer (Old ST8)	2	OPEN	CLOSE	A. WDTRESET	(-A)

BL Block Tag Name	Tag Description	Scan Time	Open Label	Close Label	Inputs	Output Calc.
WIR1BA01_BL	OR Block for WIR1BA01 Alarms	1	NORMAL	ALARM	A. WIR1BA01:HI B. WIR1BA01:LO	(A+B)
WIR1BA01_BLB	OR Block for WIR1BA01 Aborts	1	NORMAL	ALARM	A. WCR1BA01 B. WLR1BA01	(A+B)
WIR1BA02_BL	OR Block for WIR1BA02 Alarms	1	NORMAL	ALARM	A. WIR1BA02:HI B. WIR1BA02:LO	(A+B)
WIR1BA02_BLB	OR Block for WIR1BA02 Aborts	1	NORMAL	ALARM	A. WCR1BA02 B. WLR1BA02	(A+B)
WIR1BA03_BL	OR Block for WIR1BA03 Alarms	1	NORMAL	ALARM	A. WIR1BA03:HI B. WIR1BA03:LO	(A+B)
WIR1BA03_BLB	OR Block for WIR1BA03 Aborts	1	NORMAL	ALARM	A. WCR1BA03 B. WLR1BA03	(A+B)
WIR1BA_BL	OR Block for WIR1BA Alarms	1	NORMAL	ALARM	A. WIR1BA01:LO B. WIR1BA02:LO C. WIR1BA03:LO D. WIR1BA01:HI E. WIR1BA02:HI F. WIR1BA03:HI	((((A+B)+C)+D)+E)+F)
WIR12A01_BL	OR Block for WIR12A01 Alarms	1	NORMAL	ALARM	A. WIR12A01:HI B. WIR12A01:LO	(A+B)
WIR12A01_BLB	OR Block for WIR12A01 Aborts	1	NORMAL	ALARM	A. WCR12A01 B. WLR12A01	(A+B)
WIR12A02_BL	OR Block for WIR12A02 Alarms	1	NORMAL	ALARM	A. WIR12A02:HI B. WIR12A02:LO	(A+B)
WIR12A02_BLB	OR Block for WIR12A02 Aborts	1	NORMAL	ALARM	A. WCR12A02 B. WLR12A02	(A+B)
WIR12A03_BL	OR Block for WIR1BA03 Alarms	1	NORMAL	ALARM	A. WIR12A03:HI B. WIR12A03:LO	(A+B)
WIR12A03_BLB	OR Block for WIR12A03 Aborts	1	NORMAL	ALARM	A. WCR12A03 B. WLR12A03	(A+B)
WIR12A04_BL	OR Block for WIR12A04 Alarms	1	NORMAL	ALARM	A. WIR12A04:HI B. WIR12A04:LO	(A+B)
WIR12A04_BLB	OR Block for WIR12A04 Aborts	1	NORMAL	ALARM	A. WCR12A04 B. WLR12A04	(A+B)
WIR12A_BL	OR Block for WIR12A Alarms	1	NORMAL	ALARM	A. WIR12A01:LO B. WIR12A02:LO C. WIR12A03:LO D. WIR12A04:LO E. WIR12A01:HI F. WIR12A02:HI G. WIR12A03:HI H. WIR12A04:HI	((((((A+B)+C)+D)+E)+F)+G)+H)
WIR17C01_BL	OR Block for WIR17C01 Alarms	1	NORMAL	ALARM	A. WIR17C01:HI B. WIR17C01:LO	(A+B)
WIR17C01_BLB	OR Block for WIR17C01 Aborts	1	NORMAL	ALARM	A. WCR17C01 B. WLR17C01	(A+B)
WIR17C02_BL	OR Block for WIR17C02 Alarms	1	NORMAL	ALARM	A. WIR17C02:HI B. WIR17C02:LO	(A+B)
WIR17C02_BLB	OR Block for WIR17C02 Aborts	1	NORMAL	ALARM	A. WCR17C02 B. WLR17C02	(A+B)
WIR17C_BL	OR Block for WIR17C Alarms	1	NORMAL	ALARM	A. WIR17C01:LO B. WIR17C02:LO C. WIR17C01:HI D. WIR17C02:HI	(((A+B)+C)+D)
WZR1BA01_BL	OR Block for Instrument Problem WIR1BA01	1	OK	PROBLEM	A. WPR1BA01	A
WZR1BA02_BL	OR Block for Instrument Problem WIR1BA02	1	OK	PROBLEM	A. WPR1BA02	A
WZR12A03_BL	OR Block for Instrument Problem WIR12A03	1	OK	PROBLEM	A. WPR12A03	A
WZR12A01_BL	OR Block for Instrument Problem WIR12A01	1	OK	PROBLEM	A. WPR12A01	A
WZR12A02_BL	OR Block for Instrument Problem WIR12A02	1	OK	PROBLEM	A. WPR12A02	A
WZR1BA03_BL	OR Block for Instrument Problem WIR1BA03	1	OK	PROBLEM	A. WPR1BA03	A
WZR12A04_BL	OR Block for Instrument Problem WIR12A04	1	OK	PROBLEM	A. WPR12A04	A
WZR17C01_BL	OR Block for Instrument Problem WIR17C01	1	OK	PROBLEM	A. WPR17C01	A
WZR17C02_BL	OR Block for Instrument Problem WIR17C02	1	OK	PROBLEM	A. WPR17C02	A

BL Block Tag Name	Scan Tag Description	Open Time	Close Label	Label	Output Inputs	Calc.
ZIMPE142_BL	OR Block for ZIMPE142 Alarms	1	NORMAL	ALARM	A. ZIMPE142:LO	A
ZIMPE142_BL2	OR Block 2 for ZIMPE142 Alarms	1	NORMAL	ALARM	A. ZIMPE142_BL	A
ZZMPE142_BL	OR Block for Instrument Problem ZIMPE142	1	OK	PROBLEM	A. ZPMPE142 B. ZZMPE142-AA:HI H. ZZMPE142-AA:OVER	((A+B)+H)

Table D-9. Calculation (CA) Blocks

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
ARMGAMMA-CA	HMT Gamma Radiation Calculation	0.01	999.99	mR/H	A. ARMGEXP B. 10 C. 2	(B^(A-C))
ARMGAMMA_CA	CA Block for ARMGAMMA Dynamic Coloring	0	8	----	A. ARMGAMMA_BL C. ARMFAIL.F_CV D. 1 E. 2 F. 4	((A*D)+((D-C)*F))
COUNTDOWN	Pump Run Remaining Time (Seconds)	0	89999	Secs	A. USER_SECONDS B. ELAPSED-TIME.F_CV	(A-B)
COUNTDOWN-HRS	Total Hours Remaining in Pump Run	0	24	Hrs	A. ALWAYS_ON_DI5 B. COUNTDOWN.F_CV C. 3600	INT((B/C))
COUNTDOWN-HRS_100	COUNTDOWN-HRS + 100 (PUMPRUN Formatting)	0	124	Hrs	A. COUNTDOWN-HRS B. 100	(A+B)
COUNTDOWN-MINS	Total Minutes Remaining in Pump Run	0	59	Mins	A. ALWAYS_ON_DI6 B. COUNTDOWN.F_CV C. COUNTDOWN-HRS.F_CV D. 3600 E. 60	INT(((B-(C*D))/E))
COUNTDOWN-MINS_100	COUNTDOWN-MINS +100 (PUMPRUN Formatting)	0	159	Mins	A. COUNTDOWN-MINS B. 100	(A+B)
COUNTDOWN-SECS	Total Seconds Remaining in Pump Run	0	59	Secs	A. ALWAYS_ON_DI7 B. COUNTDOWN.F_CV C. COUNTDOWN-HRS.F_CV D. COUNTDOWN-MINS.F_CV E. 3600 F. 60	INT((B-((C*E)+(D*F))))
COUNTDOWN-SECS_100	COUNTDOWN-SECS +100 (PUMPRUN Formatting)	0	159	Secs	A. COUNTDOWN-SECS B. 100	(A+B)
CURABRT	Abort for Pump Current Draw	0.0	200.0	AMPS	A. CURALRM B. CURPRED.F_CV C. 1.4	(B*C)
CURALRM	Alarm for Pump Current Draw	0.0	200.0	AMPS	A. CURPRED B. 1.2	(A*B)
CURPRED	Predicted Pump Current Draw	0.0	200.0	AMPS	A. ALWAYS_ON_DI4 B. VR232060.F_CV C. 86.652 D. -0.0583 E. 1.1317 F. 0.0001	(C+((D*B)+((E*F)*(B*B))))
D_ANGLE_DIFF	Diff. Between Current & Desired Position	-200.0	200.0	Deg	A. ZIMPE112 B. UANGLE.F_CV	(A-B)
D_ANGLE_DIFF_ABS	ABS Diff. Between Current & Desired Pos.	0.0	200.0	Deg	A. D_ANGLE_DIFF	ABS(A)
FT-N2OC_CA	CA Block for FT-N2OC Dynamic Coloring	0	8	----	A. FT-N2OC_BL C. FT-INST.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
FT-NH3C_CA	CA Block for FT-NH3C Dynamic Coloring	0	8	----	A. FT-NH3C_BL C. FT-INST.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
FTE5000X_CA	CA Block for FTE50001,2 Dyn.Coloring	0	8	----	A. FTE5000X_BL B. FCE5000X_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
FTE50001_CA	CA Block for FTE50001 Dynamic Coloring	0	8	----	A. FTE50001_BL B. FTE50001_BLB.F_CV C. FZE50001.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
FTE50002_CA	CA Block for FTE50002 Dynamic Coloring	0	8	----	A. FTE50002_BL B. FTE50002_BLB.F_CV C. FZE50002.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
FTE50003_CA	CA Block for FTE50003 Dynamic Coloring	0	8	----	A. FTE50003_BL C. FZE50003.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
GC1-AREA	GC1 Area of Peak	0	1.0E+09	----	A. GC1-ARLO B. GC1-ARHI.F_CV C. 32000	(A+(B*C))
GC1-CHK	GC-1 Time Update If Non-Zero	0	2400	----	A. RG-TIME1 B. GC1-TIME.F_CV C. -1 D. GC1-ZVAL.F_CV	((A*ABS((C+D)))+(B*D))
GC1-H2_CA	CA Block for GC1-H2 Dynamic Coloring	0	8	----	A. GC1-H2_BL C. GC1-INST.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
GC2-AREA	GC2 Area of Peak	0	1.0E+09	----	A. GC2-ARLO B. GC2-ARHI.F_CV C. 32000	(A+(B*C))
GC2-CHK	GC-2 Time Update If Non-Zero	0	2400	----	A. RG-TIME2 B. GC2-TIME.F_CV C. -1 D. GC2-ZVAL.F_CV	((A*ABS((C+D)))+(B*D))
GC2-H2_CA	CA Block for GC2-H2 Dynamic Coloring	0	8	----	A. GC2-H2_BL C. GC2-INST.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
GC3-H2_CA	CA Block for GC3-H2 Dynamic Coloring	0	8	----	A. GC3-H2_BL GC3-INST.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
LIR01A_CA	CA Block for LIR01A Dynamic Coloring	0	8	----	A. LIR01A_BL C. LZR01A.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
LIR01C_CA	CA Block for LIR01C Dynamic Coloring	0	8	----	A. LIR01C_BL LZR01C.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
NIR05A01_CA	CA Block for NIR05A01 Dynamic Coloring	0	8	----	A. NIR05A01_BL B. NCR05A01.F_CV C. NZR05A01.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
NIR17B01_CA	CA Block for NIR17B01 Dynamic Coloring	0	8	----	A. NIR17B01_BL B. NCR17B01.F_CV C. NZR17B01.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
NITJSY06_CA	CA Block for NITJSY06 Dynamic Coloring	0	8	----	A. NITJSY06_BL B. NCTJSY06.F_CV C. NZTJSY06.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
NITKSY06_CA	CA Block for NITKSY06 Dynamic Coloring	0	8	----	A. NITKSY06_BL B. NCTKSY06.F_CV C. NZTKSY06.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
NI_CA	CA Block for NI (Whittaker) Dyn.Coloring	0	8	----	A. NI_BL B. H2ABORT.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
PCURRENT_CA	CA Block for Pump Current Dyn. Coloring	0	8	----	A. PMCALARM B. VC232040.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
PHO-NH3-CA	Calculation of Stack NH3 Concentration	0E+00	1E+08	PPM	A. PHO-LSB B. PHO-MSB.F_CV C. 10000	(A+(B*C))
PHO-NH3_CA	CA Block for PHO-NH3 Dynamic Coloring	0	8	----	A. PHO-NH3_BL C. PHO-INST.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
PIR12A01_CA	CA Block for PIR12A01 Dynamic Coloring	0	8	----	A. PIR12A01_BL C. PZR12A01.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
PIR17B04_CA	CA Block for PIR17B04 Dynamic Coloring	0	8	----	A. PIR17B04_BL B. PCR17B04.F_CV C. PZR17B04.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
PIR17C01_CA	CA Block for PIR17C01 Dynamic Coloring	0	8	----	A. PIR17C01_BL B. PCR17C01.F_CV C. PZR17C01.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
PIR17_CA	CA Block for PIR17B04,C01 Dyn. Coloring	0	8	----	A. PIR17_BL B. PCR17_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
PITNO110_CA	CA Block for PITNO110 Dynamic Coloring	0	8	----	A. PITNO110_BL C. PZTNO110.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
PITNO111_CA	CA Block for PITNO111 Dynamic Coloring	0	8	----	A. PITNO111_BL C. PZTNO111.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
PSPEED_CA	CA Block for Pump Speed Dyn. Coloring	0	8	----	A. PSPALARM B. VC232050.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
TIR12A01_CA	CA Block for TIR12A01 Dynamic Coloring	0	8	----	A. TIR12A01_BL B. TCR12A01.F_CV C. TZR12A01.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR12A02_CA	CA Block for TIR12A02 Dynamic Coloring	0	8	----	A. TIR12A02_BL B. TCR12A02.F_CV C. TZR12A02.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR12A_CA	CA Block for TIR12A Dynamic Coloring	0	8	----	A. TIR12A_BL B. TCR12A_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
TIR17B01_CA	CA Block for TIR17B01 Dynamic Coloring	0	8	----	A. TIR17B01_BL B. TCR17B01.F_CV C. TZR17B01_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B02_CA	CA Block for TIR17B02 Dynamic Coloring	0	8	----	A. TIR17B02_BL B. TCR17B02.F_CV C. TZR17B02_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B03_CA	CA Block for TIR17B03 Dynamic Coloring	0	8	----	A. TIR17B03_BL B. TCR17B03.F_CV C. TZR17B03_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B04_CA	CA Block for TIR17B04 Dynamic Coloring	0	8	----	A. TIR17B04_BL B. TCR17B04.F_CV C. TZR17B04_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B05_CA	CA Block for TIR17B05 Dynamic Coloring	0	8	----	A. TIR17B05_BL B. TCR17B05.F_CV C. TZR17B05_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B06_CA	CA Block for TIR17B06 Dynamic Coloring	0	8	----	A. TIR17B06_BL B. TCR17B06.F_CV C. TZR17B06_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B07_CA	CA Block for TIR17B07 Dynamic Coloring	0	8	----	A. TIR17B07_BL B. TCR17B07.F_CV C. TZR17B07_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B08_CA	CA Block for TIR17B08 Dynamic Coloring	0	8	----	A. TIR17B08_BL B. TCR17B08.F_CV C. TZR17B08_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
TIR17B09_CA	CA Block for TIR17B09 Dynamic Coloring	0	8	----	A. TIR17B09_BL B. TCR17B09.F_CV C. TZR17B09_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B10_CA	CA Block for TIR17B10 Dynamic Coloring	0	8	----	A. TIR17B10_BL B. TCR17B10.F_CV C. TZR17B10_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B11_CA	CA Block for TIR17B11 Dynamic Coloring	0	8	----	A. TIR17B11_BL B. TCR17B11.F_CV C. TZR17B11_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B12_CA	CA Block for TIR17B12 Dynamic Coloring	0	8	----	A. TIR17B12_BL B. TCR17B12.F_CV C. TZR17B12_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B13_CA	CA Block for TIR17B13 Dynamic Coloring	0	8	----	A. TIR17B13_BL B. TCR17B13.F_CV C. TZR17B13_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B14_CA	CA Block for TIR17B14 Dynamic Coloring	0	8	----	A. TIR17B14_BL B. TCR17B14.F_CV C. TZR17B14_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B15_CA	CA Block for TIR17B15 Dynamic Coloring	0	8	----	A. TIR17B15_BL B. TCR17B15.F_CV C. TZR17B15_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B16_CA	CA Block for TIR17B16 Dynamic Coloring	0	8	----	A. TIR17B16_BL B. TCR17B16.F_CV C. TZR17B16_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B17_CA	CA Block for TIR17B17 Dynamic Coloring	0	8	----	A. TIR17B17_BL B. TCR17B17.F_CV C. TZR17B17_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B18_CA	CA Block for TIR17B18 Dynamic Coloring	0	8	----	A. TIR17B18_BL B. TCR17B18.F_CV C. TZR17B18_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
TIR17B19_CA	CA Block for TIR17B19 Dynamic Coloring	0	8	----	A. TIR17B19_BL B. TCR17B19.F_CV C. TZR17B19_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B20_CA	CA Block for TIR17B20 Dynamic Coloring	0	8	----	A. TIR17B20_BL B. TCR17B20.F_CV C. TZR17B20_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B21_CA	CA Block for TIR17B21 Dynamic Coloring	0	8	----	A. TIR17B21_BL B. TCR17B21.F_CV C. TZR17B21_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B22_CA	CA Block for TIR17B22 Dynamic Coloring	0	8	----	A. TIR17B22_BL B. TCR17B22.F_CV C. TZR17B22_BL.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
TIR17B_CA	CA Block for TIR17B Dynamic Coloring	0	8	----	A. TIR17B_BL3 B. TCR17B_BL3.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
TIR17C01_CA	CA Block for TIR17C01 Dynamic Coloring	0	8	----	A. TIR17C01_BL C. TZR17C01_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C02_CA	CA Block for TIR17C02 Dynamic Coloring	0	8	----	A. TIR17C02_BL C. TZR17C02_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C03_CA	CA Block for TIR17C03 Dynamic Coloring	0	8	----	A. TIR17C03_BL C. TZR17C03_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C04_CA	CA Block for TIR17C04 Dynamic Coloring	0	8	----	A. TIR17C04_BL C. TZR17C04_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C05_CA	CA Block for TIR17C05 Dynamic Coloring	0	8	----	A. TIR17C05_BL C. TZR17C05_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C06_CA	CA Block for TIR17C06 Dynamic Coloring	0	8	----	A. TIR17C06_BL C. TZR17C06_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C07_CA	CA Block for TIR17C07 Dynamic Coloring	0	8	----	A. TIR17C07_BL C. TZR17C07_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C08_CA	CA Block for TIR17C08 Dynamic Coloring	0	8	----	A. TIR17C08_BL C. TZR17C08_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
TIR17C09_CA	CA Block for TIR17C09 Dynamic Coloring	0	8	----	A. TIR17C09_BL C. TZR17C09_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C10_CA	CA Block for TIR17C10 Dynamic Coloring	0	8	----	A. TIR17C10_BL C. TZR17C10_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C11_CA	CA Block for TIR17C11 Dynamic Coloring	0	8	----	A. TIR17C11_BL C. TZR17C11_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C12_CA	CA Block for TIR17C12 Dynamic Coloring	0	8	----	A. TIR17C12_BL C. TZR17C12_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C13_CA	CA Block for TIR17C13 Dynamic Coloring	0	8	----	A. TIR17C13_BL C. TZR17C13_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C14_CA	CA Block for TIR17C14 Dynamic Coloring	0	8	----	A. TIR17C14_BL C. TZR17C14_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C15_CA	CA Block for TIR17C15 Dynamic Coloring	0	8	----	A. TIR17C15_BL C. TZR17C15_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C16_CA	CA Block for TIR17C16 Dynamic Coloring	0	8	----	A. TIR17C16_BL C. TZR17C16_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C17_CA	CA Block for TIR17C17 Dynamic Coloring	0	8	----	A. TIR17C17_BL C. TZR17C17_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C18_CA	CA Block for TIR17C18 Dynamic Coloring	0	8	----	A. TIR17C18_BL C. TZR17C18_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C19_CA	CA Block for TIR17C19 Dynamic Coloring	0	8	----	A. TIR17C19_BL C. TZR17C19_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C20_CA	CA Block for TIR17C20 Dynamic Coloring	0	8	----	A. TIR17C20_BL C. TZR17C20_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C21_CA	CA Block for TIR17C21 Dynamic Coloring	0	8	----	A. TIR17C21_BL C. TZR17C21_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))
TIR17C22_CA	CA Block for TIR17C22 Dynamic Coloring	0	8	----	A. TIR17C22_BL C. TZR17C22_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(C*F))

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
USER_SECONDS	User Time in Seconds	0E+00	1E+08	Secs	A. ALWAYS_ON_DI2 B. UHRS.F_CV C. UMINS.F_CV D. USECS.F_CV E. 3600 F. 60	(((B*E)+(C*F))+D)
VR232040_CA	CA Block for VR232040 Dynamic Coloring	0	8	----	A. VR232040_BL B. VC232040.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
VR232050_CA	CA Block for VR232050 Dynamic Coloring	0	8	----	A. VR232050_BL B. VC232050.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
WIR1BA01_CA	CA Block for WIR1BA01 Dynamic Coloring	0	8	----	A. WIR1BA01_BL B. WIR1BA01_BLB.F_CV C. WZR1BA01.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR1BA02_CA	CA Block for WIR1BA02 Dynamic Coloring	0	8	----	A. WIR1BA02_BL B. WIR1BA02_BLB.F_CV C. WZR1BA02.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR1BA03_CA	CA Block for WIR1BA03 Dynamic Coloring	0	8	----	A. WIR1BA03_BL B. WIR1BA03_BLB.F_CV C. WZR1BA03.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR1BA_CA	CA Block for WIR1BA Dynamic Coloring	0	8	----	A. WIR1BA_BL B. WCR1BA_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
WIR12A01_CA	CA Block for WIR12A01 Dynamic Coloring	0	8	----	A. WIR12A01_BL B. WIR12A01_BLB.F_CV C. WZR12A01.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR12A02_CA	CA Block for WIR12A02 Dynamic Coloring	0	8	----	A. WIR12A02_BL B. WIR12A02_BLB.F_CV C. WZR12A02.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR12A03_CA	CA Block for WIR12A03 Dynamic Coloring	0	8	----	A. WIR12A03_BL B. WIR12A03_BLB.F_CV C. WZR12A03.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR12A04_CA	CA Block for WIR12A04 Dynamic Coloring	0	8	----	A. WIR12A04_BL B. WIR12A04_BLB.F_CV C. WZR12A04.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR12A_CA	CA Block for WIR12A Dynamic Coloring	0	8	----	A. WIR12A_BL B. WCR12A_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))

CA Block Tag Name	Tag Description	Low Limit	High Limit	Units	Inputs	Output Calc.
WIR17C01_CA	CA Block for WIR17C01 Dynamic Coloring	0	8	----	A. WIR17C01_BL B. WIR17C01_BLB.F_CV C. WZR17C01.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR17C02_CA	CA Block for WIR17C02 Dynamic Coloring	0	8	----	A. WIR17C02_BL B. WIR17C02_BLB.F_CV C. WZR17C02.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
WIR17C_CA	CA Block for WIR17C Dynamic Coloring	0	8	----	A. WIR17C_BL B. WCR17C_BL.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))
ZIMPE142_CA	CA Block for ZIMPE142 Dynamic Coloring	0	8	----	A. ZIMPE142_BL B. ZLMPE142.F_CV C. ZZMPE142.F_CV D. 1 E. 2 F. 4	(((A*D)+(B*E))+(C*F))
ZIMPE142_CA2	CA Block for ZIMPE142 CSMAIN Coloring	0	8	----	A. ZIMPE142_BL2 B. ZLMPE142.F_CV D. 1 E. 2 F. 4	((A*D)+(B*E))

Table D-10. Digital Input (DI) Blocks

DI Block Tag Name	Tag Description	Scan Time	I/O Address	Open Label	Close Label	Alarm Enab?	Alarm Area
17BTCERR	MIT17B I/O Module Halt Error	1	1202:8	OK	ERROR	YES	ALL
17CTCERR	MIT17C I/O Module Halt Error	1	1202:9	OK	ERROR	YES	ALL
30SEC-WARN	30 Seconds Until End of Test	1	1357:0	OK	WARNING	YES	ALL
A5ABORT	AF5000 Communications Abort	0.50	PLC:000491	NORMAL	ABORT	YES	ALL
ABRTCOIL	PLC Abort Coil	0.50	PLC:002042	NORMAL	ABORT	YES	ALL
ALWAYS_ON_DI1	CONSTANT "1" for ELAPSED-TIME TM Block	1	0:1	OFF	ON	NO	NONE
ALWAYS_ON_DI2	CONSTANT "1" for USER_SECONDS CA Block	0.20	0:1	OFF	ON	NO	NONE
ALWAYS_ON_DI4	CONSTANT "1" for CURPRED CA Block	1	0:1	OFF	ON	NO	NONE
ALWAYS_ON_DI5	CONSTANT "1" for COUNTDOWN-HRS CA Block	1	0:1	OFF	ON	NO	NONE
ALWAYS_ON_DI6	CONSTANT "1" for COUNTDOWN-MINS CA Block	0.20	0:1	OFF	ON	NO	NONE
ALWAYS_ON_DI7	CONSTANT "1" for COUNTDOWN-SECS CA Block	0.20	0:1	OFF	ON	NO	NONE
ARMABORT	HMT High Gamma Radiation	0.50	PLC:002025	NORMAL	ALARM	YES	ALL
ARMALM	HMT Area Gamma Radiation Monitor	0.50	PLC:002026	NORMAL	ALARM	YES	ALL
ARMFAIL	ARM Instrument Failure	0.50	PLC:002027	PROBLEM	NORMAL	YES	ALL
BYJYSO18	Cabinet Trouble Riser 16A SHMS 1	0.50	PLC:002029	NORMAL	ALARM	NO	NONE
BYKSYO18	Cabinet Trouble Exhaust Header #2	0.50	PLC:002030	NORMAL	ALARM	NO	NONE
D2R1S4STAT	Drop 2 Rack 1 Slot 4 I/O Health Status	1	PLC:400108:13	BAD	OK	YES	ALL
D2R1S5STAT	Drop 2 Rack 1 Slot 5 I/O Health Status	1	PLC:400108:12	BAD	OK	YES	ALL
D2R1S6STAT	Drop 2 Rack 1 Slot 6 I/O Health Status	1	PLC:400108:11	BAD	OK	YES	ALL
D2R2S3STAT	Drop 2 Rack 2 Slot 3 I/O Health Status	1	PLC:400109:14	BAD	OK	YES	ALL
D2R2S4STAT	Drop 2 Rack 2 Slot 4 I/O Health Status	1	PLC:400109:13	BAD	OK	YES	ALL
D4R1S4STAT	Drop 4 Rack 1 Slot 4 I/O Health Status	1	PLC:400110:13	BAD	OK	YES	ALL
D4R1S5STAT	Drop 4 Rack 1 Slot 5 I/O Health Status	1	PLC:400110:12	BAD	OK	YES	ALL
D4R1S6STAT	Drop 4 Rack 1 Slot 6 I/O Health Status	1	PLC:400110:11	BAD	OK	YES	ALL
D4R1S7STAT	Drop 4 Rack 1 Slot 7 I/O Health Status	1	PLC:400110:10	BAD	OK	YES	ALL
D4R2S3STAT	Drop 4 Rack 2 Slot 3 I/O Health Status	1	PLC:400115:14	BAD	OK	YES	ALL
D4R2S4STAT	Drop 4 Rack 2 Slot 4 I/O Health Status	1	PLC:400115:13	BAD	OK	YES	ALL
D4R2S5STAT	Drop 4 Rack 2 Slot 5 I/O Health Status	1	PLC:400115:12	BAD	OK	YES	ALL
D4R2S6STAT	Drop 4 Rack 2 Slot 6 I/O Health Status	1	PLC:400115:11	BAD	OK	YES	ALL
D4R2S7STAT	Drop 4 Rack 2 Slot 7 I/O Health Status	1	PLC:400115:10	BAD	OK	YES	ALL
D6R1S4STAT	Drop 6 Rack 1 Slot 4 I/O Health Status	1	PLC:400111:13	BAD	OK	YES	ALL
D6R1S5STAT	Drop 6 Rack 1 Slot 5 I/O Health Status	1	PLC:400111:12	BAD	OK	YES	ALL
D6R1S6STAT	Drop 6 Rack 1 Slot 6 I/O Health Status	1	PLC:400111:11	BAD	OK	YES	ALL
D6R1S7STAT	Drop 6 Rack 1 Slot 7 I/O Health Status	1	PLC:400111:10	BAD	OK	YES	ALL
D8R1S4STAT	Drop 8 Rack 1 Slot 4 I/O Health Status	1	PLC:400112:13	BAD	OK	YES	ALL
D8R1S5STAT	Drop 8 Rack 1 Slot 5 I/O Health Status	1	PLC:400112:12	BAD	OK	YES	ALL
D8R1S6STAT	Drop 8 Rack 1 Slot 6 I/O Health Status	1	PLC:400112:11	BAD	OK	YES	ALL
D8R1S7STAT	Drop 8 Rack 1 Slot 7 I/O Health Status	1	PLC:400112:10	BAD	OK	YES	ALL
D8R2S3STAT	Drop 8 Rack 2 Slot 3 I/O Health Status	1	PLC:400113:14	BAD	OK	YES	ALL
D8R2S4STAT	Drop 8 Rack 2 Slot 4 I/O Health Status	1	PLC:400113:13	BAD	OK	YES	ALL
D8R2S5STAT	Drop 8 Rack 2 Slot 5 I/O Health Status	1	PLC:400113:12	BAD	OK	YES	ALL
D9R1S4STAT	Drop 9 Rack 1 Slot 4 I/O Health Status	1	PLC:400114:13	BAD	OK	YES	ALL
D9R1S5STAT	Drop 9 Rack 1 Slot 5 I/O Health Status	1	PLC:400114:12	BAD	OK	YES	ALL
D9R1S6STAT	Drop 9 Rack 1 Slot 6 I/O Health Status	1	PLC:400114:11	BAD	OK	YES	ALL
D9R1S7STAT	Drop 9 Rack 1 Slot 7 I/O Health Status	1	PLC:400114:10	BAD	OK	YES	ALL
D13R1S4STAT	Drop 13 Rack 1 Slot 4 I/O Health Status	1	PLC:400120:13	BAD	OK	YES	ALL
D13R1S5STAT	Drop 13 Rack 1 Slot 5 I/O Health Status	1	PLC:400120:12	BAD	OK	YES	ALL
D13R1S6STAT	Drop 13 Rack 1 Slot 6 I/O Health Status	1	PLC:400120:11	BAD	OK	YES	ALL
D13R1S7STAT	Drop 13 Rack 1 Slot 7 I/O Health Status	1	PLC:400120:10	BAD	OK	YES	ALL
D13R1S8STAT	Drop 13 Rack 1 Slot 8 I/O Health Status	1	PLC:400120:9	BAD	OK	YES	ALL
D14R1S4STAT	Drop 14 Rack 1 Slot 4 I/O Health Status	1	PLC:400116:13	BAD	OK	YES	ALL
D14R1S5STAT	Drop 14 Rack 1 Slot 5 I/O Health Status	1	PLC:400116:12	BAD	OK	YES	ALL
D14R1S6STAT	Drop 14 Rack 1 Slot 6 I/O Health Status	1	PLC:400116:11	BAD	OK	YES	ALL
D14R2S3STAT	Drop 14 Rack 2 Slot 3 I/O Health Status	1	PLC:400117:14	BAD	OK	YES	ALL
D14R2S4STAT	Drop 14 Rack 2 Slot 4 I/O Health Status	1	PLC:400117:13	BAD	OK	YES	ALL
D14R2S5STAT	Drop 14 Rack 2 Slot 5 I/O Health Status	1	PLC:400117:12	BAD	OK	YES	ALL
D14R2S6STAT	Drop 14 Rack 2 Slot 6 I/O Health Status	1	PLC:400117:11	BAD	OK	YES	ALL
D14R2S7STAT	Drop 14 Rack 2 Slot 7 I/O Health Status	1	PLC:400117:10	BAD	OK	YES	ALL
D15R1S4STAT	Drop 15 Rack 1 Slot 4 I/O Health Status	1	PLC:400118:13	BAD	OK	YES	ALL
D15R1S5STAT	Drop 15 Rack 1 Slot 5 I/O Health Status	1	PLC:400118:12	BAD	OK	YES	ALL
D15R1S6STAT	Drop 15 Rack 1 Slot 6 I/O Health Status	1	PLC:400118:11	BAD	OK	YES	ALL
D15R1S7STAT	Drop 15 Rack 1 Slot 7 I/O Health Status	1	PLC:400118:10	BAD	OK	YES	ALL
D16R1S4STAT	Drop 16 Rack 1 Slot 4 I/O Health Status	1	PLC:400119:13	BAD	OK	YES	ALL
D16R1S5STAT	Drop 16 Rack 1 Slot 5 I/O Health Status	1	PLC:400119:12	BAD	OK	YES	ALL
D16R1S6STAT	Drop 16 Rack 1 Slot 6 I/O Health Status	1	PLC:400119:11	BAD	OK	YES	ALL
D16R1S7STAT	Drop 16 Rack 1 Slot 7 I/O Health Status	1	PLC:400119:10	BAD	OK	YES	ALL
D16R1S8STAT	Drop 16 Rack 1 Slot 8 I/O Health Status	1	PLC:400119:9	BAD	OK	YES	ALL
D_CHANGED	Directional Motor Changed During Run	1	1812:2	OK	CHANGED	YES	ALL
ELAPSED-TIME-HOLD-DI	DI Block - Hold for Elapsed Time	0.50	1806:1	OPEN	CLOSE	NO	NONE
ELAPSED-TIME-RESET-DI	DI Block - Reset for Elapsed Time	0.50	1806:0	NORMAL	RESET	NO	NONE
ELAPSED-TIME-TOTAL-RESET-DI	DI Block - Reset for Total Elapsed Time	0.50	1806:2	NORMAL	RESET	NO	NONE
FCE50001	Low Ventilation Flow Abort 1	0.50	PLC:000308	NORMAL	ABORT	YES	ALL
FCE50002	Low Ventilation Flow Abort 2	0.50	PLC:000309	NORMAL	ABORT	YES	ALL
FHE50001	High Ventilation Flow Abort 1	0.50	PLC:000342	NORMAL	ABORT	YES	ALL
FHE50002	High Ventilation Flow Abort 2	0.50	PLC:000343	NORMAL	ABORT	YES	ALL

DI Block Tag Name	Tag Description	Scan Time	I/O Address	Open Label	Close Label	Alarm Enab?	Alarm Area
FICABORT	FIC Tank Level Alarm	0.50	PLC:002028	NORMAL	ALARM	NO	NONE
FPE50001	FTE50001 Out of Range Bit	0.50	PLC:000550	OK	PROBLEM	NO	NONE
FPE50002	FTE50002 Out of Range Bit	0.50	PLC:000551	OK	PROBLEM	NO	NONE
FPE50003	FTE50003 Out of Range Bit	0.50	PLC:000555	OK	PROBLEM	NO	NONE
FSLMSY18	FTIR Low Flow Switch (0.3 GPM)	0.50	PLC:002031	NORMAL	ALARM	NO	NONE
FT-INST	Instrument Problem - FT-NH3	5	17:1	OK	PROBLEM	YES	ALL
FZE50001	Instrument Problem - FTE50001	1	1201:12	OK	PROBLEM	YES	ALL
FZE50002	Instrument Problem - FTE50002	1	1201:4	OK	PROBLEM	YES	ALL
FZE50003	Instrument Problem - FTE50003	1	1202:7	OK	PROBLEM	YES	ALL
GC1-INST	Instrument Problem - GC1	5	16:1	OK	PROBLEM	YES	ALL
GC1-ZVAL	GC-1 Zero Value Alarm	5	16:3	OK	ALARM	YES	ALL
GC2-INST	Instrument Problem - GC2	5	16:2	OK	PROBLEM	YES	ALL
GC2-ZVAL	GC-2 Zero Value Alarm	5	16:4	OK	ALARM	YES	ALL
GC3-INST	Instrument Problem - GC3	5	15:1	OK	PROBLEM	YES	ALL
GC3-ZVAL	GC-3 Zero Value Alarm	5	15:2	OK	ALARM	YES	ALL
H2ABORT	High H2 Abort	0.50	PLC:000225	NORMAL	ABORT	YES	ALL
LPR01A	LIR01A Out of Range Bit	0.50	PLC:000557	OK	PROBLEM	NO	NONE
LPR01C	LIR01C Out of Range Bit	0.50	PLC:000564	OK	PROBLEM	NO	NONE
LZR01A	Instrument Problem - LIR01A	1	1201:5	OK	PROBLEM	YES	ALL
LZR01C	Instrument Problem - LIR01C	1	1201:6	OK	PROBLEM	YES	ALL
MIP00001	Moisture in Pump Motor Oil 1	0.50	PLC:002017	NORMAL	ABORT	YES	ALL
MIP00001C	MIP00001 Coil Status	0.50	PLC:000255	NORMAL	CLOSED	NO	NONE
NCR05A01	Hi H2 Abort - Pump	0.50	PLC:000260	NORMAL	ABORT	YES	ALL
NCR17B01	Hi H2 - Riser 17B Abort	0.50	PLC:000259	NORMAL	ABORT	YES	ALL
NCTJSY06	Hi H2 - Riser 16A Abort	0.50	PLC:000258	NORMAL	ABORT	YES	ALL
NCTKSY06	Hi H2 - Vent Header Abort	0.50	PLC:000257	NORMAL	ABORT	YES	ALL
NH3STACK	High PHO-NH3 Concentration (B&K)	5	18:2	OK	ALARM	YES	ALL
NPR05A01	NIR05A01 Out of Range Bit	0.50	PLC:000517	OK	PROBLEM	NO	NONE
NPR17B01	NIR17B01 Out of Range Bit	0.50	PLC:000515	OK	PROBLEM	NO	NONE
NPTJSY06	NITJSY06 Out of Range Bit	0.50	PLC:000516	OK	PROBLEM	NO	NONE
NPTKSY06	NITKSY06 Out of Range Bit	0.50	PLC:000518	OK	PROBLEM	NO	NONE
NZR05A01	Instrument Problem - NIR05A01	1	1201:11	OK	PROBLEM	YES	ALL
NZR17B01	Instrument Problem - NIR17B01	1	1201:10	OK	PROBLEM	YES	ALL
NZTJSY06	Instrument Problem - NITJSY06	1	1201:8	OK	PROBLEM	YES	ALL
NZTKSY06	Instrument Problem - NITKSY06	1	1201:9	OK	PROBLEM	YES	ALL
OOR_0-5V	Out of Range for 0-5V Channels	0.50	PLC:000372	NORMAL	ABORT	YES	ALL
PBUMPTOUT	Pump Bump Timeout Abort	0.50	PLC:000243	NORMAL	ABORT	YES	ALL
PCR17B04	High Tank Dome Pressure Abort 2	0.50	PLC:000311	NORMAL	ABORT	YES	ALL
PCR17C01	High Tank Dome Pressure Abort 1	0.50	PLC:000310	NORMAL	ABORT	YES	ALL
PHO-INST	Instrument Problem - PHO-NH3	5	18:1	OK	PROBLEM	YES	ALL
PITMSY19	FTIR Purge / Air Bearing Pressure	0.50	PLC:002033	NORMAL	ALARM	NO	NONE
PLCBEN	Latched Bump Enable From PLC	0.50	PLC:002043	OPEN	LATCHED	NO	NONE
PLCCOMFA	PLC Communications Failure	1	1205:0	OK	FAILED	YES	ALL
PLCOK	1 - PLC OK; 0 - PLC Problem	0.50	PLC:002046	PROBLEM	OK	YES	ALL
PLCWD	PLC Watchdog Timer Reset	0.50	PLC:002044	OPEN	CLOSE	YES	NONE
PLCWDTFA	PLC Watch Dog Timer Failure	1	1205:1	OK	FAILED	YES	ALL
PMCALARM	Pump Motor Current Alarm	0.50	PLC:002049	NORMAL	ALARM	YES	ALL
PMPINRUN	Pump In Run Signal	0.50	PLC:002034	OFF	RUN	YES	NONE
PPR12A01	PIR12A01 Out of Range Bit	0.50	PLC:000546	OK	PROBLEM	NO	NONE
PPR17B04	PIR17B04 Out of Range Bit	0.50	PLC:000548	OK	PROBLEM	NO	NONE
PPR17C01	PIR17C01 Out of Range Bit	0.50	PLC:000552	OK	PROBLEM	NO	NONE
PSPALARM	Pump Speed Alarm	0.50	PLC:002051	NORMAL	ALARM	YES	ALL
PWYO1001	Camera Power ON (24 VDC)	0.50	PLC:002022	OPEN	CLOSED	NO	NONE
PXO10001	Loss of Camera Purge (0 VDC)	0.50	PLC:002023	OPEN	CLOSED	NO	NONE
PZR12A01	Instrument Problem - PIR12A01	1	1201:3	OK	PROBLEM	YES	ALL
PZR17B04	Instrument Problem - PIR17B04	1	1201:7	OK	PROBLEM	YES	ALL
PZR17C01	Instrument Problem - PIR17C01	1	1201:13	OK	PROBLEM	YES	ALL
PZTNO110	Instrument Problem - PITNO110	1	1202:11	OK	PROBLEM	YES	ALL
PZTNO111	Instrument Problem - PITNO111	1	1202:12	OK	PROBLEM	YES	ALL
ST5COMFA	STATION5 Communication Failure Abort	0.50	PLC:002048	NORMAL	ABORT	YES	ALL
ST8COMFA	STA5 Comm. Failure Abort (Old STA8)	0.50	PLC:002045	NORMAL	ABORT	NO	NONE
TASLMSY2	Sample Trace Heat Alarm Low (65 Deg F)	0.50	PLC:002032	NORMAL	ALARM	NO	NONE
TBSTCERR	TBS I/O Module Halt Error	1	1202:10	OK	ERROR	YES	ALL
TCMOD1ERR	D4 R2 S4 MIT17C TC Module 1 Halt Error	1	PLC:000438	OK	ERROR	NO	NONE
TCMOD2ERR	D4 R2 S5 MIT17C TC Module 2 Halt Error	1	PLC:000447	OK	ERROR	NO	NONE
TCMOD3ERR	D4 R2 S6 MIT17C TC Module 3 Halt Error	1	PLC:000456	OK	ERROR	NO	NONE
TCMOD4ERR	D13 R1 S4 TBS TC Module 4 Halt Error	1	PLC:000467	OK	ERROR	NO	NONE
TCMOD5ERR	D13 R1 S5 TBS TC Module 5 Halt Error	1	PLC:000476	OK	ERROR	NO	NONE
TCMOD6ERR	D13 R1 S6 TBS TC Module 6 Halt Error	1	PLC:000485	OK	ERROR	NO	NONE
TCMOD7ERR	D4 R1 S7 MIT17B TC Module 7 Halt Error	1	PLC:000236	OK	ERROR	NO	NONE
TCMOD8ERR	D4 R2 S3 MIT17B TC Module 8 Halt Error	1	PLC:000565	OK	ERROR	NO	NONE
TCMOD9ERR	D4 R2 S7 MIT17B TC Module 9 Halt Error	1	PLC:000574	OK	ERROR	NO	NONE
TCR12A01	High Pump Motor Oil Temperature Abort 1	0.50	PLC:000306	NORMAL	ABORT	YES	ALL
TCR12A02	High Pump Motor Oil Temperature Abort 2	0.50	PLC:000307	NORMAL	ABORT	YES	ALL
TCR17B01	High Temperature Abort 17B01	0.50	PLC:000278	NORMAL	ABORT	YES	ALL
TCR17B02	High Temperature Abort 17B02	0.50	PLC:000279	NORMAL	ABORT	YES	ALL
TCR17B03	High Temperature Abort 17B03	0.50	PLC:000280	NORMAL	ABORT	YES	ALL
TCR17B04	High Temperature Abort 17B04	0.50	PLC:000281	NORMAL	ABORT	YES	ALL
TCR17B05	High Temperature Abort 17B05	0.50	PLC:000282	NORMAL	ABORT	YES	ALL

DI Block Tag Name	Tag Description	Scan Time	I/O Address	Open Label	Close Label	Alarm Enab?	Alarm Area
TCR17B06	High Temperature Abort 17B06	0.50	PLC:000283	NORMAL	ABORT	YES	ALL
TCR17B07	High Temperature Abort 17B07	0.50	PLC:000284	NORMAL	ABORT	YES	ALL
TCR17B08	High Temperature Abort 17B08	0.50	PLC:000285	NORMAL	ABORT	YES	ALL
TCR17B09	High Temperature Abort 17B09	0.50	PLC:000286	NORMAL	ABORT	YES	ALL
TCR17B10	High Temperature Abort 17B10	0.50	PLC:000287	NORMAL	ABORT	YES	ALL
TCR17B11	High Temperature Abort 17B11	0.50	PLC:000288	NORMAL	ABORT	YES	ALL
TCR17B12	High Temperature Abort 17B12	0.50	PLC:000289	NORMAL	ABORT	YES	ALL
TCR17B13	High Temperature Abort 17B13	0.50	PLC:000290	NORMAL	ABORT	YES	ALL
TCR17B14	High Temperature Abort 17B14	0.50	PLC:000291	NORMAL	ABORT	YES	ALL
TCR17B15	High Temperature Abort 17B15	0.50	PLC:000292	NORMAL	ABORT	YES	ALL
TCR17B16	High Temperature Abort 17B16	0.50	PLC:000293	NORMAL	ABORT	YES	ALL
TCR17B17	High Temperature Abort 17B17	0.50	PLC:000294	NORMAL	ABORT	YES	ALL
TCR17B18	High Temperature Abort 17B18	0.50	PLC:000295	NORMAL	ABORT	YES	ALL
TCR17B19	High Temperature Abort 17B19	0.50	PLC:000296	NORMAL	ABORT	YES	ALL
TCR17B20	High Temperature Abort 17B20	0.50	PLC:000297	NORMAL	ABORT	YES	ALL
TCR17B21	High Temperature Abort 17B21	0.50	PLC:000298	NORMAL	ABORT	YES	ALL
TCR17B22	High Temperature Abort 17B22	0.50	PLC:000299	NORMAL	ABORT	YES	ALL
TPR12A01	TIR12A01 Out of Range Bit	0.50	PLC:000545	OK	PROBLEM	NO	NONE
TPR12A02	TIR12A02 Out of Range Bit	0.50	PLC:000547	OK	PROBLEM	NO	NONE
TZR12A01	Instrument Problem - TIR12A01	1	1201:0	OK	PROBLEM	YES	ALL
TZR12A02	Instrument Problem - TIR12A02	1	1201:1	OK	PROBLEM	YES	ALL
TZR17B01	Instrument Problem - TIR17B01	1	1081:0	OK	PROBLEM	YES	ALL
TZR17B02	Instrument Problem - TIR17B02	1	1081:1	OK	PROBLEM	YES	ALL
TZR17B03	Instrument Problem - TIR17B03	1	1081:2	OK	PROBLEM	YES	ALL
TZR17B04	Instrument Problem - TIR17B04	1	1081:3	OK	PROBLEM	YES	ALL
TZR17B05	Instrument Problem - TIR17B05	1	1081:4	OK	PROBLEM	YES	ALL
TZR17B06	Instrument Problem - TIR17B06	1	1081:5	OK	PROBLEM	YES	ALL
TZR17B07	Instrument Problem - TIR17B07	1	1081:6	OK	PROBLEM	YES	ALL
TZR17B08	Instrument Problem - TIR17B08	1	1081:7	OK	PROBLEM	YES	ALL
TZR17B09	Instrument Problem - TIR17B09	1	1081:8	OK	PROBLEM	YES	ALL
TZR17B10	Instrument Problem - TIR17B10	1	1081:9	OK	PROBLEM	YES	ALL
TZR17B11	Instrument Problem - TIR17B11	1	1081:10	OK	PROBLEM	YES	ALL
TZR17B12	Instrument Problem - TIR17B12	1	1081:11	OK	PROBLEM	YES	ALL
TZR17B13	Instrument Problem - TIR17B13	1	1081:12	OK	PROBLEM	YES	ALL
TZR17B14	Instrument Problem - TIR17B14	1	1081:13	OK	PROBLEM	YES	ALL
TZR17B15	Instrument Problem - TIR17B15	1	1081:14	OK	PROBLEM	YES	ALL
TZR17B16	Instrument Problem - TIR17B16	1	1081:15	OK	PROBLEM	YES	ALL
TZR17B17	Instrument Problem - TIR17B17	1	1082:0	OK	PROBLEM	YES	ALL
TZR17B18	Instrument Problem - TIR17B18	1	1082:1	OK	PROBLEM	YES	ALL
TZR17B19	Instrument Problem - TIR17B19	1	1082:2	OK	PROBLEM	YES	ALL
TZR17B20	Instrument Problem - TIR17B20	1	1082:3	OK	PROBLEM	YES	ALL
TZR17B21	Instrument Problem - TIR17B21	1	1082:4	OK	PROBLEM	YES	ALL
TZR17B22	Instrument Problem - TIR17B22	1	1082:5	OK	PROBLEM	YES	ALL
TZR17C01	Instrument Problem - TIR17C01	1	1083:0	OK	PROBLEM	YES	ALL
TZR17C02	Instrument Problem - TIR17C02	1	1083:1	OK	PROBLEM	YES	ALL
TZR17C03	Instrument Problem - TIR17C03	1	1083:2	OK	PROBLEM	YES	ALL
TZR17C04	Instrument Problem - TIR17C04	1	1083:3	OK	PROBLEM	YES	ALL
TZR17C05	Instrument Problem - TIR17C05	1	1083:4	OK	PROBLEM	YES	ALL
TZR17C06	Instrument Problem - TIR17C06	1	1083:5	OK	PROBLEM	YES	ALL
TZR17C07	Instrument Problem - TIR17C07	1	1083:6	OK	PROBLEM	YES	ALL
TZR17C08	Instrument Problem - TIR17C08	1	1083:7	OK	PROBLEM	YES	ALL
TZR17C09	Instrument Problem - TIR17C09	1	1083:8	OK	PROBLEM	YES	ALL
TZR17C10	Instrument Problem - TIR17C10	1	1083:9	OK	PROBLEM	YES	ALL
TZR17C11	Instrument Problem - TIR17C11	1	1083:10	OK	PROBLEM	YES	ALL
TZR17C12	Instrument Problem - TIR17C12	1	1083:11	OK	PROBLEM	YES	ALL
TZR17C13	Instrument Problem - TIR17C13	1	1083:12	OK	PROBLEM	YES	ALL
TZR17C14	Instrument Problem - TIR17C14	1	1083:13	OK	PROBLEM	YES	ALL
TZR17C15	Instrument Problem - TIR17C15	1	1083:14	OK	PROBLEM	YES	ALL
TZR17C16	Instrument Problem - TIR17C16	1	1083:15	OK	PROBLEM	YES	ALL
TZR17C17	Instrument Problem - TIR17C17	1	1084:0	OK	PROBLEM	YES	ALL
TZR17C18	Instrument Problem - TIR17C18	1	1084:1	OK	PROBLEM	YES	ALL
TZR17C19	Instrument Problem - TIR17C19	1	1084:2	OK	PROBLEM	NO	NONE
TZR17C20	Instrument Problem - TIR17C20	1	1084:3	OK	PROBLEM	YES	ALL
TZR17C21	Instrument Problem - TIR17C21	1	1084:4	OK	PROBLEM	YES	ALL
TZR17C22	Instrument Problem - TIR17C22	1	1084:5	OK	PROBLEM	NO	NONE
UPSBY1	UPS System On Bypass Alarm	0.50	PLC:002020	ALARM	NORMAL	YES	ALL
UPSFA1	UPS Output Failure Alarm	0.50	PLC:002021	ALARM	NORMAL	YES	ALL
UPSLV1	UPS Low Voltage	0.50	PLC:002019	ALARM	NORMAL	YES	ALL
UPSOT1	UPS Over Temperature Closure	0.50	PLC:002018	ALARM	NORMAL	YES	ALL
UPSPI1	UPS AC Power Input	0.50	PLC:002024	ALARM	NORMAL	YES	ALL
VC232040	High Pump Motor Current Abort	0.50	PLC:000325	NORMAL	ABORT	YES	ALL
VC232050	High Pump Motor Speed Abort	0.50	PLC:000326	NORMAL	ABORT	YES	ALL
WCR1BA01	High VDTT Column 1B Strain Abort 1	0.50	PLC:000320	NORMAL	ABORT	YES	ALL
WCR1BA02	High 1B-2 Strain Abort	0.50	PLC:000337	NORMAL	ABORT	YES	ALL
WCR1BA03	High VDTT Column 1B Strain Abort 2	0.50	PLC:000321	NORMAL	ABORT	YES	ALL
WCR12A01	High Pump Column Strain Abort 1	0.50	PLC:000313	NORMAL	ABORT	YES	ALL
WCR12A02	High Pump Column Strain Abort 2	0.50	PLC:000314	NORMAL	ABORT	YES	ALL
WCR12A03	High Pump Column Strain Abort 3	0.50	PLC:000315	NORMAL	ABORT	YES	ALL
WCR12A04	High Pump Column Strain Abort 4	0.50	PLC:000316	NORMAL	ABORT	YES	ALL

DI Block Tag Name	Tag Description	Scan Time	I/O Address	Open Label	Close Label	Alarm Enab?	Alarm Area
WCR17C01	High MIT 17C Column Strain Abort 1	0.50	PLC:000323	NORMAL	ABORT	YES	ALL
WCR17C02	High MIT 17C Column Strain Abort 2	0.50	PLC:000324	NORMAL	ABORT	YES	ALL
WHF1B1B	Strain Gauge 1B-1 Hi Freq Abort	0.50	PLC:002006	NORMAL	ABORT	YES	ALL
WHF1B1BC	WHF1B1B Coil Status	0.50	PLC:000247	NORMAL	CLOSED	NO	NONE
WHF1B1L	Str Gage 1B-1 Hi Freq Alarm (Latched)	0.50	PLC:002037	NORMAL	ALARM	YES	ALL
WHF1B1U	Str Gage 1B-1 Hi Freq Alarm (Unlatched)	0.50	PLC:002005	NORMAL	ALARM	NO	NONE
WHF1B2B	Strain Gauge 1B-2 Hi Freq Abort	0.50	PLC:002013	NORMAL	ABORT	YES	ALL
WHF1B2BC	WHF1B2B Coil Status	0.50	PLC:000253	NORMAL	CLOSED	NO	NONE
WHF1B2L	Str Gage 1B-2 Hi Freq Alarm (Latched)	0.50	PLC:002041	NORMAL	ALARM	YES	ALL
WHF1B2U	Str Gage 1B-2 Hi Freq Alarm (Unlatched)	0.50	PLC:002012	NORMAL	ALARM	NO	NONE
WHF1B3B	Strain Gauge 1B-3 Hi Freq Abort	0.50	PLC:002014	NORMAL	ABORT	YES	ALL
WHF1B3BC	WHF1B3B Coil Status	0.50	PLC:000254	NORMAL	CLOSED	NO	NONE
WHF1B3L	Str Gage 1B-3 Hi Freq Alarm (Latched)	0.50	PLC:002038	NORMAL	ALARM	YES	ALL
WHF1B3U	Str Gage 1B-3 Hi Freq Alarm (Unlatched)	0.50	PLC:002007	NORMAL	ALARM	NO	NONE
WHF17C1B	Strain Gauge 17C-1 Hi Freq Abort	0.50	PLC:002004	NORMAL	ABORT	YES	ALL
WHF17C1BC	WHF17C1B Coil Status	0.50	PLC:000246	NORMAL	CLOSED	NO	NONE
WHF17C1L	Str Gage 17C-1 Hi Freq Alarm (Latched)	0.50	PLC:002036	NORMAL	ALARM	YES	ALL
WHF17C1U	Str Gage 17C-1 Hi Freq Alarm (Unlatched)	0.50	PLC:002003	NORMAL	ALARM	NO	NONE
WHF17C2B	Strain Gauge 17C-2 Hi Freq Abort	0.50	PLC:002011	NORMAL	ABORT	YES	ALL
WHF17C2BC	WHF17C2B Coil Status	0.50	PLC:000252	NORMAL	CLOSED	NO	NONE
WHF17C2L	Str Gage 17C-2 Hi Freq Alarm (Latched)	0.50	PLC:002040	NORMAL	ALARM	YES	ALL
WHF17C2U	Str Gage 17C-2 Hi Freq Alarm (Unlatched)	0.50	PLC:002010	NORMAL	ALARM	NO	NONE
WLR1BA01	Low 1B-1 Strain Abort	0.50	PLC:000334	NORMAL	ABORT	YES	ALL
WLR1BA02	Low 1B-2 Strain Abort	0.50	PLC:000335	NORMAL	ABORT	YES	ALL
WLR1BA03	Low 1B-3 Strain Abort	0.50	PLC:000336	NORMAL	ABORT	YES	ALL
WLR12A01	Low 12A-1 Strain Abort	0.50	PLC:000256	NORMAL	ABORT	YES	ALL
WLR12A02	Low 12A-2 Strain Abort	0.50	PLC:000262	NORMAL	ABORT	YES	ALL
WLR12A03	Low 12A-3 Strain Abort	0.50	PLC:000263	NORMAL	ABORT	YES	ALL
WLR12A04	Low 12A-4 Strain Abort	0.50	PLC:000331	NORMAL	ABORT	YES	ALL
WLR17C01	Low 17C-1 Strain Abort	0.50	PLC:000339	NORMAL	ABORT	YES	ALL
WLR17C02	Low 17C-2 Strain Abort	0.50	PLC:000340	NORMAL	ABORT	YES	ALL
WPR1BA01	WIR1BA01 Out of Range Bit	0.50	PLC:000558	OK	PROBLEM	NO	NONE
WPR1BA02	WIR1BA02 Out of Range Bit	0.50	PLC:000562	OK	PROBLEM	NO	NONE
WPR1BA03	WIR1BA03 Out of Range Bit	0.50	PLC:000560	OK	PROBLEM	NO	NONE
WPR12A01	WIR12A01 Out of Range Bit	0.50	PLC:000553	OK	PROBLEM	NO	NONE
WPR12A02	WIR12A02 Out of Range Bit	0.50	PLC:000549	OK	PROBLEM	NO	NONE
WPR12A03	WIR12A03 Out of Range Bit	0.50	PLC:000554	OK	PROBLEM	NO	NONE
WPR12A04	WIR12A04 Out of Range Bit	0.50	PLC:000556	OK	PROBLEM	NO	NONE
WPR17C01	WIR17C01 Out of Range Bit	0.50	PLC:000561	OK	PROBLEM	NO	NONE
WPR17C02	WIR17C02 Out of Range Bit	0.50	PLC:000559	OK	PROBLEM	NO	NONE
WZR1BA01	Instrument Problem - WIR1BA01	1	1202:3	OK	PROBLEM	YES	ALL
WZR1BA02	Instrument Problem - WIR1BA02	1	1201:14	OK	PROBLEM	YES	ALL
WZR1BA03	Instrument Problem - WIR1BA03	1	1202:4	OK	PROBLEM	YES	ALL
WZR12A01	Instrument Problem - WIR12A01	1	1202:0	OK	PROBLEM	YES	ALL
WZR12A02	Instrument Problem - WIR12A02	1	1202:5	OK	PROBLEM	YES	ALL
WZR12A03	Instrument Problem - WIR12A03	1	1202:1	OK	PROBLEM	YES	ALL
WZR12A04	Instrument Problem - WIR12A04	1	1201:15	OK	PROBLEM	YES	ALL
WZR17C01	Instrument Problem - WIR17C01	1	1202:6	OK	PROBLEM	YES	ALL
WZR17C02	Instrument Problem - WIR17C02	1	1202:2	OK	PROBLEM	YES	ALL
ZIMPE143	Pump Oscil Motor Limit Switch CW	0.50	PLC:002016	NORMAL	ABORT	YES	ALL
ZIMPE143C	ZIMPE143 Coil Status	0.50	PLC:000184	NORMAL	CLOSED	NO	NONE
ZIMPE144	Pump Oscil Motor Limit Switch CCW	0.50	PLC:002015	NORMAL	ABORT	YES	ALL
ZIMPE144C	ZIMPE144 Coil Status	0.50	PLC:000185	NORMAL	CLOSED	NO	NONE
ZLMPE142	Low Pump Column Gas Pressure Abort	0.50	PLC:000341	NORMAL	ABORT	YES	ALL
ZPMPE142	ZIMPE142 Out of Range Bit	0.50	PLC:000563	OK	PROBLEM	NO	NONE
ZZMPE142	Instrument Problem - ZIMPE142	1	1201:2	OK	PROBLEM	YES	ALL

Note: All DI Blocks with Alarm Enab? = "YES" and Alarm Area = "ALL" have Security Area 1 = "LEVEL3"

Table D-11. Digital Output (DO) Blocks

DO Block Tag Name	Tag Description	I/O Address	Open Label	Close Label	Init. Value
17BTCERR_DO	DO Block - MIT17B I/O Module Halt Error	1202:8	OPEN	CLOSE	OPEN
17CTCERR_DO	DO Block - MIT17C I/O Module Halt Error	1202:9	OPEN	CLOSE	OPEN
21MIN_DO	DO Block for 21 Minute Gas Timer Delay	1357:2	WAITING	DONE	WAITING
30SEC-WARN_DO	DO Block for 30 Sec Until End of Test	1357:0	OK	WARNING	OK
A5ABRT	AF5000 Communications Failure	PLC:000251	OK	FAIL	OK
ALWAYS_ON	CONSTANT "1"	0:1	OFF	ON	ON
BUT_ACT_ENAB_TEST	Activate ENABLE TEST Button	1350:13	DISAB	ACTIVE	DISAB
BUT_ACT_POS_PUMP	Activate POSITION PUMP Button	1350:12	DISAB	ACTIVE	DISAB
BUT_ACT_SET_VAL	Activate SET VALUES Button	1350:11	DISAB	ACTIVE	ACTIVE
BUT_ACT_START_TEST	Activate START TEST Button	1350:14	DISAB	ACTIVE	DISAB
BUT_ACT_STOP_TEST	Activate STOP TEST Button	1350:15	DISAB	ACTIVE	DISAB
BUT_ANIM_ENAB_TEST	ENABLE TEST Button Animation	1350:2	UP	DOWN	UP
BUT_ANIM_POS_PUMP	POSITION PUMP Button Animation	1350:1	UP	DOWN	UP
BUT_ANIM_SET_VAL	SET VALUES Button Animation	1350:0	UP	DOWN	UP
BUT_ANIM_START_TEST	START TEST Button Animation	1350:3	UP	DOWN	UP
BUT_ANIM_STOP_TEST	STOP TEST Button Animation	1350:4	UP	DOWN	UP
BUT_TEXT_STOP_TEST	ENABLE STOP / STOP TEST BUTTON TEXT	1350:6	ENABLE	STOP	STOP
COMABRT	Communications Abort (Latched)	PLC:000250	ON	OFF	ON
D_CHANGED_DO	DO Block For D_CHANGED	1812:2	OK	CHANGED	OK
D_IN-BAND	Directional Motor Within +/- 2 Deg Band	1301:3	OUTBAND	INBAND	OUTBAND
D_MOTOR_STAT	Communication Status of DMOTOR	1301:2	OK	BAD	OK
D_REV_CMD	Reverse Command to DMOTOR	1812:1	FORWRD	REVERS	FORWRD
D_RUN	Run Command to D_RUN_CMD	1311:4	STOP	RUN	STOP
D_RUN_CMD	Run Command to DMOTOR	1301:0	STOP	RUN	STOP
D_RUN_STAT	Run Status of DMOTOR	1301:1	STOPPED	RUNNING	STOPPED
ELAPSED-TIME-HOLD	Hold for Elapsed Time	1806:1	NORMAL	HOLD	HOLD
ELAPSED-TIME-RESET	Reset for Elapsed Time	1806:0	NORMAL	RESET	NORMAL
ELAPSED-TIME-TOTAL-RESET	Reset for Total Elapsed Time	1806:2	NORMAL	RESET	NORMAL
ENAB_TEST_TIMEOUT	ENABLE TEST 60 Second Timer Flag	1812:0	CLEAR	COUNTIN	CLEAR
FT-INST_DO	DO Block for Instrument Problem FT-NH3	17:1	OPEN	CLOSE	OPEN
FT_ZERO	FTIR Update - Zero Control	PLC:002152	OK	ZERO	OK
FZE50001_DO	DO Block for Instrument Problem FTE50001	1201:12	OK	PROBLEM	OK
FZE50002_DO	DO Block for Instrument Problem FTE50002	1201:4	OK	PROBLEM	OK
FZE50003_DO	DO Block for Instrument Problem FTE50003	1202:7	OK	PROBLEM	OK
GC1-INST_DO	DO Block for Instrument Problem - GC1	16:1	OPEN	CLOSE	OPEN
GC1-ZVAL_DO	DO Block for GC-1 Zero Value Alarm	16:3	OPEN	CLOSE	OPEN
GC2-INST_DO	DO Block for Instrument Problem - GC2	16:2	OPEN	CLOSE	OPEN
GC2-ZVAL_DO	DO Block for GC-2 Zero Value Alarm	16:4	OPEN	CLOSE	OPEN
GC3-INST_DO	DO Block for Instrument Problem - GC3	15:1	OPEN	CLOSE	OPEN
GC3-ZVAL_DO	DO Block for GC-3 Zero Value Alarm	15:2	OPEN	CLOSE	OPEN
GC3_ZERO	GC3-H2 Update - Zero Control	PLC:002151	OK	ZERO	OK
LAST_UDESC	<<< MANUAL >>>	1358:1	OPEN	CLOSE	OPEN
LZR01A_DO	DO Block for Instrument Problem LIR01A	1201:5	OK	PROBLEM	OK
LZR01C_DO	DO Block for Instrument Problem LIR01C	1201:6	OK	PROBLEM	OK
NH3STACK_DO	DO Block for High PHO-NH3 Concentration	18:2	OK	ALARM	OK
NZR05A01_DO	DO Block for Instrument Problem NIR05A01	1201:11	OK	PROBLEM	OK
NZR17B01_DO	DO Block for Instrument Problem NIR17B01	1201:10	OK	PROBLEM	OK
NZTJSY06_DO	DO Block for Instrument Problem NITJSY06	1201:8	OK	PROBLEM	OK
NZTKSY06_DO	DO Block for Instrument Problem NITKSY06	1201:9	OK	PROBLEM	OK
PBENAB	Phase B Test Enable	PLC:000249	DISABLE	ENABLE	DISABLE
PHO-INST_DO	DO Block for Instrument Problem - PHO	18:1	OPEN	CLOSE	OPEN
PHO_ZERO	PHO Update - Zero Control	PLC:002153	OK	ZERO	OK
PLCCOMFA_DO	DO Block for PLC Communications Failure	1205:0	OK	FAILED	OK
PLCWDTFA_DO	DO Block for PLC Watch Dog Timer Failure	1205:1	OK	FAILED	OK
PUMP_PROB	Pump Problem Detected	1350:10	OK	PROBLEM	OK
PZR12A01_DO	DO Block for Instrument Problem PIR12A01	1201:3	OK	PROBLEM	OK
PZR17B04_DO	DO Block for Instrument Problem PIR17B04	1201:7	OK	PROBLEM	OK
PZR17C01_DO	DO Block for Instrument Problem PIR17C01	1201:13	OK	PROBLEM	OK
PZTNO110_DO	DO Block for Instrument Problem PITNO110	1202:11	OK	PROBLEM	OK
PZTNO111_DO	DO Block for Instrument Problem PITNO111	1202:12	OK	PROBLEM	OK
P_MOTOR_STAT	Communication Status of PMOTOR	1311:2	OK	BAD	OK
P_RUN	Run Command to P_RUN_CMD	1311:3	STOP	RUN	STOP
P_RUN_CMD	Run Command to PMOTOR	1311:1	STOP	RUN	STOP
P_RUN_STAT	Run Status of PMOTOR	1311:0	STOPPED	RUNNING	STOPPED
REVERSE	Reverse Flag to PLC	PLC:000244	FWD	REV	FWD
RGA5_ZERO	RGA-5 Update Zero Control	PLC:002150	OK	ZERO	OK
RSTCOIL	Abort Coil Reset	PLC:000241	ON	OFF	ON
SETUP_BUSY	Busy Flag for Test Setup	1357:1	OK	BUSY	OK
ST5-LOGIN		100:0	OPEN	CLOSE	
ST5-LOGIN-DATE		100:1	OPEN	CLOSE	
ST5-LOGIN-GROUP		100:2	OPEN	CLOSE	
ST5-LOGIN-TIME		100:3	OPEN	CLOSE	
ST5-ONLINE	Station5 Online/Offline Indication	100:4	OFFLINE	ONLINE	
ST5-ONLINE-DATE	01/01	100:5	OPEN	CLOSE	
ST5-ONLINE-TIME	00:00	100:6	OPEN	CLOSE	
ST5_PUMPRUN_VIS	Station5 PUMPRUN Button Visibility Check	1356:0	INVISIB	VISIBLE	INVISIB

DO Block Tag Name	Tag Description	I/O Address	Open Label	Close Label	Init. Value
ST6-LOGIN		101:0	OPEN	CLOSE	
ST6-LOGIN-DATE		101:1	OPEN	CLOSE	
ST6-LOGIN-GROUP		101:2	OPEN	CLOSE	
ST6-LOGIN-TIME		101:3	OPEN	CLOSE	
ST6-ONLINE	Station6 Online/Offline Indication	101:4	OFFLINE	ONLINE	
ST6-ONLINE-DATE	01/01	101:5	OPEN	CLOSE	
ST6-ONLINE-TIME	00:00	101:6	OPEN	CLOSE	
ST6_PUMPRUN_VIS	Station6 PUMPRUN Button Visibility Check	1356:1	INVISIB	VISIBLE	INVISIB
ST7-LOGIN		102:0	OPEN	CLOSE	
ST7-LOGIN-DATE		102:1	OPEN	CLOSE	
ST7-LOGIN-GROUP		102:2	OPEN	CLOSE	
ST7-LOGIN-TIME		102:3	OPEN	CLOSE	
ST7-ONLINE	Station7 Online/Offline Indication	102:4	OFFLINE	ONLINE	
ST7-ONLINE-DATE	01/01	102:5	OPEN	CLOSE	
ST7-ONLINE-TIME	00:00	102:6	OPEN	CLOSE	
ST7_PUMPRUN_VIS	Station7 PUMPRUN Button Visibility Check	1356:2	INVISIB	VISIBLE	INVISIB
ST8-LOGIN		103:0	OPEN	CLOSE	
ST8-LOGIN-DATE		103:1	OPEN	CLOSE	
ST8-LOGIN-GROUP		103:2	OPEN	CLOSE	
ST8-LOGIN-TIME		103:3	OPEN	CLOSE	
ST8-ONLINE	Station8 Online/Offline Indication	103:4	OFFLINE	ONLINE	
ST8-ONLINE-DATE	01/01	103:5	OPEN	CLOSE	
ST8-ONLINE-TIME	00:00	103:6	OPEN	CLOSE	
ST8_PUMPRUN_VIS	Station8 PUMPRUN Button Visibility Check	1356:3	INVISIB	VISIBLE	VISIBLE
ST9-LOGIN		104:0	OPEN	CLOSE	
ST9-LOGIN-DATE		104:1	OPEN	CLOSE	
ST9-LOGIN-GROUP		104:2	OPEN	CLOSE	
ST9-LOGIN-TIME		104:3	OPEN	CLOSE	
ST9-ONLINE	Station9 Online/Offline Indication	104:4	OFFLINE	ONLINE	
ST9-ONLINE-DATE	01/01	104:5	OPEN	CLOSE	
ST9-ONLINE-TIME	00:00	104:6	OPEN	CLOSE	
ST11-LOGIN		105:0	OPEN	CLOSE	
ST11-LOGIN-DATE		105:1	OPEN	CLOSE	
ST11-LOGIN-GROUP		105:2	OPEN	CLOSE	
ST11-LOGIN-TIME		105:3	OPEN	CLOSE	
ST11-ONLINE	Station11 Online/Offline Indication	105:4	OFFLINE	ONLINE	
ST11-ONLINE-DATE	01/01	105:5	OPEN	CLOSE	
ST11-ONLINE-TIME	00:00	105:6	OPEN	CLOSE	
ST13-LOGIN		106:0	OPEN	CLOSE	
ST13-LOGIN-DATE		106:1	OPEN	CLOSE	
ST13-LOGIN-GROUP		106:2	OPEN	CLOSE	
ST13-LOGIN-TIME		106:3	OPEN	CLOSE	
ST13-ONLINE	Station13 Online/Offline Indication	106:4	OFFLINE	ONLINE	
ST13-ONLINE-DATE	01/01	106:5	OPEN	CLOSE	
ST13-ONLINE-TIME	00:00	106:6	OPEN	CLOSE	
ST15-LOGIN		107:0	OPEN	CLOSE	
ST15-LOGIN-DATE		107:1	OPEN	CLOSE	
ST15-LOGIN-GROUP		107:2	OPEN	CLOSE	
ST15-LOGIN-TIME		107:3	OPEN	CLOSE	
ST15-ONLINE	Station15 Online/Offline Indication	107:4	OFFLINE	ONLINE	
ST15-ONLINE-DATE	01/01	107:5	OPEN	CLOSE	
ST15-ONLINE-TIME	00:00	107:6	OPEN	CLOSE	
ST17-LOGIN		108:0	OPEN	CLOSE	
ST17-LOGIN-DATE		108:1	OPEN	CLOSE	
ST17-LOGIN-GROUP		108:2	OPEN	CLOSE	
ST17-LOGIN-TIME		108:3	OPEN	CLOSE	
ST17-ONLINE	Station17 Online/Offline Indication	108:4	OFFLINE	ONLINE	
ST17-ONLINE-DATE	01/01	108:5	OPEN	CLOSE	
ST17-ONLINE-TIME	00:00	108:6	OPEN	CLOSE	
START-TIME	09:26:03	1806:3	OPEN	CLOSE	OPEN
STOP-TIME	09:26:39	1806:4	OPEN	CLOSE	OPEN
TBSTCERR_DO	DO Block - TBS I/O Module Halt Error	1202:10	OPEN	CLOSE	OPEN
TZR12A01_DO	DO Block for Instrument Problem TIR12A01	1201:0	OK	PROBLEM	OK
TZR12A02_DO	DO Block for Instrument Problem TIR12A02	1201:1	OK	PROBLEM	OK
TZR17B01_DO	DO Block for Instrument Problem TIR17B01	1081:0	OK	PROBLEM	OK
TZR17B02_DO	DO Block for Instrument Problem TIR17B02	1081:1	OK	PROBLEM	OK
TZR17B03_DO	DO Block for Instrument Problem TIR17B03	1081:2	OK	PROBLEM	OK
TZR17B04_DO	DO Block for Instrument Problem TIR17B04	1081:3	OK	PROBLEM	OK
TZR17B05_DO	DO Block for Instrument Problem TIR17B05	1081:4	OK	PROBLEM	OK
TZR17B06_DO	DO Block for Instrument Problem TIR17B06	1081:5	OK	PROBLEM	OK
TZR17B07_DO	DO Block for Instrument Problem TIR17B07	1081:6	OK	PROBLEM	OK
TZR17B08_DO	DO Block for Instrument Problem TIR17B08	1081:7	OK	PROBLEM	OK
TZR17B09_DO	DO Block for Instrument Problem TIR17B09	1081:8	OK	PROBLEM	OK
TZR17B10_DO	DO Block for Instrument Problem TIR17B10	1081:9	OK	PROBLEM	OK
TZR17B11_DO	DO Block for Instrument Problem TIR17B11	1081:10	OK	PROBLEM	OK
TZR17B12_DO	DO Block for Instrument Problem TIR17B12	1081:11	OK	PROBLEM	OK
TZR17B13_DO	DO Block for Instrument Problem TIR17B13	1081:12	OK	PROBLEM	OK
TZR17B14_DO	DO Block for Instrument Problem TIR17B14	1081:13	OK	PROBLEM	OK
TZR17B15_DO	DO Block for Instrument Problem TIR17B15	1081:14	OK	PROBLEM	OK

DO Block Tag Name	Tag Description	I/O Address	Open Label	Close Label	Init. Value
TZR17B16_DO	DO Block for Instrument Problem TIR17B16	1081:15	OK	PROBLEM	OK
TZR17B17_DO	DO Block for Instrument Problem TIR17B17	1082:0	OK	PROBLEM	OK
TZR17B18_DO	DO Block for Instrument Problem TIR17B18	1082:1	OK	PROBLEM	OK
TZR17B19_DO	DO Block for Instrument Problem TIR17B19	1082:2	OK	PROBLEM	OK
TZR17B20_DO	DO Block for Instrument Problem TIR17B20	1082:3	OK	PROBLEM	OK
TZR17B21_DO	DO Block for Instrument Problem TIR17B21	1082:4	OK	PROBLEM	OK
TZR17B22_DO	DO Block for Instrument Problem TIR17B22	1082:5	OK	PROBLEM	OK
TZR17C01_DO	DO Block for Instrument Problem TIR17C01	1083:0	OK	PROBLEM	OK
TZR17C02_DO	DO Block for Instrument Problem TIR17C02	1083:1	OK	PROBLEM	OK
TZR17C03_DO	DO Block for Instrument Problem TIR17C03	1083:2	OK	PROBLEM	OK
TZR17C04_DO	DO Block for Instrument Problem TIR17C04	1083:3	OK	PROBLEM	OK
TZR17C05_DO	DO Block for Instrument Problem TIR17C05	1083:4	OK	PROBLEM	OK
TZR17C06_DO	DO Block for Instrument Problem TIR17C06	1083:5	OK	PROBLEM	OK
TZR17C07_DO	DO Block for Instrument Problem TIR17C07	1083:6	OK	PROBLEM	OK
TZR17C08_DO	DO Block for Instrument Problem TIR17C08	1083:7	OK	PROBLEM	OK
TZR17C09_DO	DO Block for Instrument Problem TIR17C09	1083:8	OK	PROBLEM	OK
TZR17C10_DO	DO Block for Instrument Problem TIR17C10	1083:9	OK	PROBLEM	OK
TZR17C11_DO	DO Block for Instrument Problem TIR17C11	1083:10	OK	PROBLEM	OK
TZR17C12_DO	DO Block for Instrument Problem TIR17C12	1083:11	OK	PROBLEM	OK
TZR17C13_DO	DO Block for Instrument Problem TIR17C13	1083:12	OK	PROBLEM	OK
TZR17C14_DO	DO Block for Instrument Problem TIR17C14	1083:13	OK	PROBLEM	OK
TZR17C15_DO	DO Block for Instrument Problem TIR17C15	1083:14	OK	PROBLEM	OK
TZR17C16_DO	DO Block for Instrument Problem TIR17C16	1083:15	OK	PROBLEM	OK
TZR17C17_DO	DO Block for Instrument Problem TIR17C17	1084:0	OK	PROBLEM	OK
TZR17C18_DO	DO Block for Instrument Problem TIR17C18	1084:1	OK	PROBLEM	OK
TZR17C19_DO	DO Block for Instrument Problem TIR17C19	1084:2	OK	PROBLEM	OK
TZR17C20_DO	DO Block for Instrument Problem TIR17C20	1084:3	OK	PROBLEM	OK
TZR17C21_DO	DO Block for Instrument Problem TIR17C21	1084:4	OK	PROBLEM	OK
TZR17C22_DO	DO Block for Instrument Problem TIR17C22	1084:5	OK	PROBLEM	OK
UDESC	<<< MANUAL >>>	1358:0	OPEN	CLOSE	OPEN
URESTIM	Bit to Reset Test Elapsed Time	1350:9	No	Yes	Yes
WDTRESET1	Station 5 Watchdog Timer Reset	PLC:000213	OPEN	CLOSE	OPEN
WDTRESET2	Station 5 Watchdog Timer Reset (Old ST8)	PLC:000242	OPEN	CLOSE	OPEN
WZR1BA01_DO	DO Block for Instrument Problem WIR1BA01	1202:3	OK	PROBLEM	OK
WZR1BA02_DO	DO Block for Instrument Problem WIR1BA02	1201:14	OK	PROBLEM	OK
WZR1BA03_DO	DO Block for Instrument Problem WIR1BA03	1202:4	OK	PROBLEM	OK
WZR12A01_DO	DO Block for Instrument Problem WIR12A01	1202:0	OK	PROBLEM	OK
WZR12A02_DO	DO Block for Instrument Problem WIR12A02	1202:5	OK	PROBLEM	OK
WZR12A03_DO	DO Block for Instrument Problem WIR12A03	1202:1	OK	PROBLEM	OK
WZR12A04_DO	DO Block for Instrument Problem WIR12A04	1201:15	OK	PROBLEM	OK
WZR17C01_DO	DO Block for Instrument Problem WIR17C01	1202:6	OK	PROBLEM	OK
WZR17C02_DO	DO Block for Instrument Problem WIR17C02	1202:2	OK	PROBLEM	OK
ZERO_DO	Digital Zero Constant Value	0:0	ZERO	ONE	ZERO
ZZMPE142_DO	DO Block for Instrument Problem ZIMPE142	1201:2	OK	PROBLEM	OK

Table D-12. Digital Register (DR) Blocks

DR Block Tag Name	Tag Description	I/O Address	Open Label	Close Label
FCE50001E	Low Ventilation Flow Abort 1 Enable	PLC:002105	ENABLE	DISABLE
FCE50002E	Low Ventilation Flow Abort 2 Enable	PLC:002106	ENABLE	DISABLE
FHE50001E	High Vent Flow Abort 1 Enable	PLC:002139	ENABLE	DISABLE
FHE50002E	High Vent Flow Abort 2 Enable	PLC:002140	ENABLE	DISABLE
MIP00001E	Moisture in Pump Motor Oil Abort Enable	PLC:002068	ENABLE	DISABLE
NCR05A01E	High H2 Abort - Pump Enable	PLC:002057	ENABLE	DISABLE
NCR17B01E	High H2 - Riser 17B Abort Enable	PLC:002056	ENABLE	DISABLE
NCTJSY06E	High H2 - Riser 16A Abort Enable	PLC:002055	ENABLE	DISABLE
NCTKSY06E	High H2 - Vent Header Abort Enable	PLC:002054	ENABLE	DISABLE
PBUMPTOUTE	Pump Bump Timeout Abort Enable	PLC:002052	ENABLE	DISABLE
PCR17B04E	High Tank Dome Pressure Abort 2 Enable	PLC:002108	ENABLE	DISABLE
PCR17C01E	High Tank Dome Pressure Abort 1 Enable	PLC:002107	ENABLE	DISABLE
TCR12A01E	High Pump Motor Oil Temp Abort 1 Enable	PLC:002103	ENABLE	DISABLE
TCR12A02E	High Pump Motor Oil Temp Abort 2 Enable	PLC:002104	ENABLE	DISABLE
TCR17B01E	High Temperature Abort 17B01 Enable	PLC:002075	ENABLE	DISABLE
TCR17B02E	High Temperature Abort 17B02 Enable	PLC:002076	ENABLE	DISABLE
TCR17B03E	High Temperature Abort 17B03 Enable	PLC:002077	ENABLE	DISABLE
TCR17B04E	High Temperature Abort 17B04 Enable	PLC:002078	ENABLE	DISABLE
TCR17B05E	High Temperature Abort 17B05 Enable	PLC:002079	ENABLE	DISABLE
TCR17B06E	High Temperature Abort 17B06 Enable	PLC:002080	ENABLE	DISABLE
TCR17B07E	High Temperature Abort 17B07 Enable	PLC:002081	ENABLE	DISABLE
TCR17B08E	High Temperature Abort 17B08 Enable	PLC:002082	ENABLE	DISABLE
TCR17B09E	High Temperature Abort 17B09 Enable	PLC:002083	ENABLE	DISABLE
TCR17B10E	High Temperature Abort 17B10 Enable	PLC:002084	ENABLE	DISABLE
TCR17B11E	High Temperature Abort 17B11 Enable	PLC:002085	ENABLE	DISABLE
TCR17B12E	High Temperature Abort 17B12 Enable	PLC:002086	ENABLE	DISABLE
TCR17B13E	High Temperature Abort 17B13 Enable	PLC:002087	ENABLE	DISABLE
TCR17B14E	High Temperature Abort 17B14 Enable	PLC:002088	ENABLE	DISABLE
TCR17B15E	High Temperature Abort 17B15 Enable	PLC:002089	ENABLE	DISABLE
TCR17B16E	High Temperature Abort 17B16 Enable	PLC:002090	ENABLE	DISABLE
TCR17B17E	High Temperature Abort 17B17 Enable	PLC:002091	ENABLE	DISABLE
TCR17B18E	High Temperature Abort 17B18 Enable	PLC:002092	ENABLE	DISABLE
TCR17B19E	High Temperature Abort 17B19 Enable	PLC:002093	ENABLE	DISABLE
TCR17B20E	High Temperature Abort 17B20 Enable	PLC:002094	ENABLE	DISABLE
TCR17B21E	High Temperature Abort 17B21 Enable	PLC:002095	ENABLE	DISABLE
TCR17B22E	High Temperature Abort 17B22 Enable	PLC:002096	ENABLE	DISABLE
VC232040E	High Pump Motor Current Abort Enable	PLC:002122	ENABLE	DISABLE
VC232050E	High Pump Motor Speed Abort Enable	PLC:002123	ENABLE	DISABLE
WCR1BA01E	Hi VDTT Column 1B Strain Abort 1 Enable	PLC:002117	ENABLE	DISABLE
WCR1BA02E	High 1B-2 Strain Abort Enable	PLC:002134	ENABLE	DISABLE
WCR1BA03E	Hi VDTT Column 1B Strain Abort 2 Enable	PLC:002118	ENABLE	DISABLE
WCR12A01E	High Pump Column Strain Abort 1 Enable	PLC:002110	ENABLE	DISABLE
WCR12A02E	High Pump Column Strain Abort 2 Enable	PLC:002111	ENABLE	DISABLE
WCR12A03E	High Pump Column Strain Abort 3 Enable	PLC:002112	ENABLE	DISABLE
WCR12A04E	High Pump Column Strain Abort 4 Enable	PLC:002113	ENABLE	DISABLE
WCR17C01E	Hi MIT 17C Column Strain Abort 1 Enable	PLC:002120	ENABLE	DISABLE
WCR17C02E	Hi MIT 17C Column Strain Abort 2 Enable	PLC:002121	ENABLE	DISABLE
WHF1B1BE	Strain Gauge 1B-1 Hi Freq Abort Enable	PLC:002063	ENABLE	DISABLE
WHF1B2BE	Strain Gauge 1B-2 Hi Freq Abort Enable	PLC:002066	ENABLE	DISABLE
WHF1B3BE	Strain Gauge 1B-3 Hi Freq Abort Enable	PLC:002067	ENABLE	DISABLE
WHF17C1BE	Strain Gauge 17C-1 Hi Freq Abort Enable	PLC:002062	ENABLE	DISABLE
WHF17C2BE	Strain Gauge 17C-2 Hi Freq Abort Enable	PLC:002065	ENABLE	DISABLE
WLR1BA01E	Low 1B-1 Strain Abort Enable	PLC:002131	ENABLE	DISABLE
WLR1BA02E	Low 1B-2 Strain Abort Enable	PLC:002132	ENABLE	DISABLE
WLR1BA03E	Low 1B-3 Strain Abort Enable	PLC:002133	ENABLE	DISABLE
WLR12A01E	Low 12A-1 Strain Abort Enable	PLC:002053	ENABLE	DISABLE
WLR12A02E	Low 12A-2 Strain Abort Enable	PLC:002059	ENABLE	DISABLE
WLR12A03E	Low 12A-3 Strain Abort Enable	PLC:002060	ENABLE	DISABLE
WLR12A04E	Low 12A-4 Strain Abort Enable	PLC:002128	ENABLE	DISABLE
WLR17C01E	Low 17C-1 Strain Abort Enable	PLC:002136	ENABLE	DISABLE
WLR17C02E	Low 17C-2 Strain Abort Enable	PLC:002137	ENABLE	DISABLE
ZIMPE143E	CW Limit Switch Abort Enable	PLC:002069	ENABLE	DISABLE
ZIMPE144E	CCW Limit Switch Abort Enable	PLC:002070	ENABLE	DISABLE
ZLMPE142E	Low Pump Column Gas Press Abort Enable	PLC:002138	ENABLE	DISABLE

Table D-13. Event Action (EV) Block

EV Block Tag Name	Previous Block	Logic Statement 1	Logic Statement 2
PLCCOMFA_EV1	PLCWD	IF: ALARM = COMM THEN: CLOSE PLCCOMFA_DO ELSE: OPEN PLCCOMFA_DO	IF: ALARM = COMM THEN: RUN RESET-PUMPRUN ELSE: ----
PLCCOMFA_EV2	PMPINRUN	IF: ALARM = COMM THEN: CLOSE PUMP_PROB ELSE: ----	IF: ALARM = COMM THEN: OPEN P_RUN_CMD ELSE: ----

Table D-14. Program (PG) Blocks

PG Block Tag Name	Tag Description and Block Comments	Init. Scan	Scan Time	Programming Statements
21-MINUTE-DELAY	Wait 21 Minutes for Gas Timers ; Block placed ONSCAN by [A1-INIT]; ; Waits 21 minutes on startup before ; [A1-INIT] determines the correct ; [GASSUM] "Last Update Dates"	OFF	1	00. SETLIM 0.1000 01. OPEN 21MIN_DO 02. DELAY 1260 03. CLOSE 21MIN_DO 04. END 05. NUL
30-SECOND-TIMEOUT	Pump Running 30-Second Test Timeout ; When the [PUMPRUN] Current Elapsed ; Time is within 30 seconds of the ; planned Test Setup Duration, and ; the pump is running (P_RUN = 1), ; then the "30 Seconds Until End ; of Test" Alarm (30SEC-WARN_DO) is ; toggled.	OFF	1	00. SETLIM 0.1000 01. IF COUNTDOWN <= 30.00 GOTO 4 02. IF P_RUN = 0.00 GOTO 7 03. GOTO 1 04. CLOSE 30SEC-WARN_DO 05. DELAY 1 06. OPEN 30SEC-WARN_DO 07. END 08. NUL
ALARM-SOUND	PLAYS ALARM SOUND FOR UAA ; ALARM.F_CV is the current number ; of unacknowledged alarms at ; SIM C:UAA ; UAA_SILENCE_LEVEL is set to UAA ; when the <F12> key is pressed	ON	1	00. SETLIM 0.1000 01. DELAY 1 02. IF UAA_SILENCE_LEVEL > ALARM GOTO 4 03. GOTO 5 04. SETOUT UAA_SILENCE_LEVEL ALARM 05. IF ALARM > UAA_SILENCE_LEVEL GOTO 7 06. GOTO 1 07. PLAYSOUND C:\FIX32\SOUNDS\ALARM.WAV 08. GOTO 1 09. NUL
D_FWD-REV	Directional Motor Forward/Reverse Contrl ; D_ANGLE_DIFF is Current (ZIMPE112) ; minus Target (UANGLE) Pump Angle ; Forward command (OPEN D_REV_CMD) to ; DMOTOR if ZIMPE112 < Target ; Reverse command (CLOSE D_REV_CMD) to ; DMOTOR if ZIMPE112 > Target ; If ZIMPE112 not within +/-2 deg of ; Target (not In-Band), D_IN-BAND = 0 ; If ZIMPE112 within +/-2 deg of ; Target (In-Band), D_IN-BAND = 1	ON	1	00. SETLIM 0.1000 01. DELAY 1 02. IF D_ANGLE_DIFF < 0.00 GOTO 3 03. GOTO 6 04. OPEN D_REV_CMD 05. GOTO 7 06. CLOSE D_REV_CMD 07. IF D_ANGLE_DIFF_ABS < 2.10 GOTO 10 08. OPEN D_IN-BAND 09. GOTO 1 10. CLOSE D_IN-BAND 11. GOTO 1 12. NUL
D_RUN_CMD-PG	PG Block for RUN Command to DMOTOR ; If <POSITION PUMP> button on ; [PUMPRUN] is selected (D_RUN = 1), ; check for "In-Band" ; If ZIMPE112 not within +/-2 deg of ; Target (D_IN-BAND = 0), then ; run the directional motor ; (CLOSE D_RUN_CMD) ; If ZIMPE112 is In-Band, stop the ; directional motor (OPEN D_RUN_CMD) ; and run POS_PUMP_DONE PG block	ON	1	00. SETLIM 0.1000 01. DELAY 1 02. IF D_RUN = 1.00 GOTO 5 03. OPEN D_RUN_CMD 04. GOTO 2 05. IF D_IN-BAND = 0.00 GOTO 10 06. OPEN D_RUN_CMD 07. OPEN D_RUN 08. RUN POS_PUMP_DONE 09. GOTO 1 10. CLOSE D_RUN_CMD 11. GOTO 1 12. NUL
ELAPSED-CLEAR-PG	Clears Elapsed Time Counters ; Block placed ONSCAN by the <SET VALUES> button on [PUMPRUN] ; ; Resets [PUMPRUN] Current Elapsed Time ; ; If URESTIM = 1 (Reset = Yes), resets ; [PUMPRUN] Total Elapsed Time ; ; Resets are repeated to assure that ; the commands are executed	ON	1	00. SETLIM 0.1000 01. CLOSE ELAPSED-TIME-RESET 02. DELAY 1 03. OPEN ELAPSED-TIME-RESET 04. IF URESTIM = 0.00 GOTO 8 05. CLOSE ELAPSED-TIME-TOTAL-RESET 06. DELAY 1 07. OPEN ELAPSED-TIME-TOTAL-RESET 08. CLOSE ELAPSED-TIME-RESET 09. DELAY 1 10. OPEN ELAPSED-TIME-RESET 11. IF URESTIM = 0.00 GOTO 15 12. CLOSE ELAPSED-TIME-TOTAL-RESET 13. DELAY 1 14. OPEN ELAPSED-TIME-TOTAL-RESET 15. END 16. NUL

PG Block Tag Name	Tag Description and Block Comments	Init. Scan	Scan Time	Programming Statements
ENAB_TEST_DONE	Sets Button Status After ENABLE TEST	ON	1	00. SETLIM 0.1000 01. OPEN BUT_ANIM_SET_VAL 02. OPEN BUT_ANIM_POS_PUMP 03. OPEN BUT_ANIM_ENAB_TEST 04. OPEN BUT_ANIM_START_TEST 05. OPEN BUT_ANIM_STOP_TEST 06. CLOSE BUT_TEXT_STOP_TEST 07. SETOUT BUT-COL-SET_VAL 0.00 08. SETOUT BUT-COL-POS_PUMP 0.00 09. SETOUT BUT-COL-ENAB_TEST 0.00 10. SETOUT BUT-COL-START_TEST 1.00 11. SETOUT BUT-COL-STOP_TEST 1.00 12. OPEN BUT_ACT_SET_VAL 13. OPEN BUT_ACT_POS_PUMP 14. OPEN BUT_ACT_ENAB_TEST 15. CLOSE BUT_ACT_START_TEST 16. CLOSE BUT_ACT_STOP_TEST 17. END 18. NUL
	; Configures the {PUMPRUN} buttons ; after <ENABLE TEST> selected: ; ; <START TEST> active & green; ; <STOP TEST> active & green; ; all other buttons inactive ; and grey			
ENAB_TEST_TIMER	ENABLE TEST 60 Second Timer	OFF	1	00. SETLIM 0.1000 01. CLOSE ENAB_TEST_TIMEOUT 02. CLOSE PBENAB 03. RUN ENAB_TEST_DONE 04. DELAY 60 05. IF ENAB_TEST_TIMEOUT = 0.00 GOTO 9 06. OPEN ENAB_TEST_TIMEOUT 07. OPEN PBENAB 08. RUN POS_PUMP_DONE 09. END 10. NUL
	; Block placed ONSCAN by the ; <ENABLE TEST> button on {PUMPRUN} ; If the 60 second timer flag is not ; opened (ENAB_TEST_TIMEOUT still = 1) ; due to not selecting <START TEST> ; within 60 seconds, then {PUMPRUN} ; reverts back to the "Enable Test" ; configuration following the ; positioning of the pump.			
FTWDT	FTIR File Update Watchdog Timer	ON	1	00. SETLIM 0.1000 01. MAXWAIT 1200 02. WAITFOR FT-FILE != FTFILEPREV 03. IF FT-FILE = FTFILEPREV GOTO 7 04. OPEN FT_ZERO 05. SETOUT FTFILEPREV FT-FILE 06. GOTO 1 07. CLOSE FT_ZERO 08. GOTO 1 09. NUL
	; If FT-FILE is not updated after ; 1200 seconds, FT-ZERO is ; closed. This results in the ; "Last Update Date & Time" to ; be frozen on {GASSUM}.			
GC3WDT	GC3 Update Watchdog Timer	ON	1	00. SETLIM 0.1000 01. MAXWAIT 450 02. WAITFOR GC3-FILE != GC3FILEPREV 03. IF GC3-FILE = GC3FILEPREV GOTO 7 04. OPEN GC3_ZERO 05. SETOUT GC3FILEPREV GC3-FILE 06. GOTO 1 07. CLOSE GC3_ZERO 08. GOTO 1 09. NUL
	; If GC3-FILE is not updated after ; 450 seconds, GC3-ZERO is ; closed. This results in the ; "Last Update Date & Time" to ; be frozen on {GASSUM}.			
HPC-PG	High Pump Current Alarm/Abort Set	ON	1	00. SETLIM 0.1000 01. DELAY 10 02. DELAY 1 03. SETOUT HPCALM CURALRM 04. SETOUT HPCABRT CURABRT 05. GOTO 2 06. NUL
	; Assigns values to the High Pump ; Motor Current Alarm & Abort ; limits as calculated from the ; Test Setup pump speed			
PHOWDT	PHO-Time Update Watchdog Timer	ON	1	00. SETLIM 0.1000 01. MAXWAIT 900 02. WAITFOR PHO-TIME != PHOTIMEPREV 03. IF PHO-TIME = PHOTIMEPREV GOTO 7 04. OPEN PHO_ZERO 05. SETOUT PHOTIMEPREV PHO-TIME 06. GOTO 1 07. CLOSE PHO_ZERO 08. GOTO 1 09. NUL
	; If PHO-TIME is not updated after ; 900 seconds, PHO-ZERO is ; closed. This results in the ; "Last Update Date & Time" to ; be frozen on {GASSUM}.			

PG Block Tag Name	Tag Description and Block Comments	Init. Scan	Scan Time	Programming Statements
PLCWDT	PLC to Station 5 Watchdog Timer ; If PLCWD fails to toggle within ; 30 seconds, PLCWDTFA (the PLC ; Watchdog Timer Failure Alarm) ; is closed	ON	1	00. SETLIM 0.1000 01. MAXWAIT 30 02. IF PLCWD = 0.00 GOTO 7 03. WAITFOR PLCWD = 0.00 04. IF PLCWD = 1.00 GOTO 11 05. OPEN PLCWDTFA_DO 06. GOTO 1 07. WAITFOR PLCWD = 1.00 08. IF PLCWD = 0.00 GOTO 11 09. OPEN PLCWDTFA_DO 10. GOTO 1 11. CLOSE PLCWDTFA_DO 12. GOTO 1 13. NUL
POS_PUMP_DONE	Sets Button Status After POSITION PUMP ; Configures the [PUMPRUN] buttons ; after either ; (a) <SET VALUES> is selected and ; the pump is already within ; +/-2 deg of the Target ; (D_IN-BAND = 1); or ; (b) <POSITION PUMP> is selected ; and the pump has rotated ; to within its Target band. ; ; <ENABLE TEST> active & green; ; <STOP TEST> active & green; ; all other buttons inactive ; and grey	ON	1	00. SETLIM 0.1000 01. OPEN BUT_ANIM_SET_VAL 02. OPEN BUT_ANIM_POS_PUMP 03. OPEN BUT_ANIM_ENAB_TEST 04. OPEN BUT_ANIM_START_TEST 05. OPEN BUT_ANIM_STOP_TEST 06. CLOSE BUT_TEXT_STOP_TEST 07. SETOUT BUT-COL-SET_VAL 0.00 08. SETOUT BUT-COL-POS_PUMP 0.00 09. SETOUT BUT-COL-ENAB_TEST 1.00 10. SETOUT BUT-COL-START_TEST 0.00 11. SETOUT BUT-COL-STOP_TEST 1.00 12. OPEN BUT_ACT_SET_VAL 13. OPEN BUT_ACT_POS_PUMP 14. CLOSE BUT_ACT_ENAB_TEST 15. OPEN BUT_ACT_START_TEST 16. CLOSE BUT_ACT_STOP_TEST 17. END 18. NUL
PULSECOIL	Abort Coil 12 second Reset ; Assures that all looping ; Program Blocks are placed ; "On Scan" when the "Reset PLC ; Abort Coil" button is pressed. ; ; ; ; ; ; Resets the PLC Abort Coil ; after a 12 second delay	ON	1	00. SETLIM 0.1000 01. RUN D_FWD-REV 02. RUN D_RUN_CMD-PG 03. RUN FTWDT 04. RUN GC3WDT 05. RUN HPC-PG 06. RUN PHOWDT 07. RUN PLCWDT 08. RUN PUMP_PROBLEMS 09. RUN P_RUN_CMD-PG 10. RUN RGWDT 11. IF RSTCOIL = 0.00 GOTO 13 11. DELAY 12 12. OPEN RSTCOIL 13. END 14. NUL
PUMP_PROBLEMS	Detects Aborts & Comm Failures ; If (a) an abort condition, ; (b) a PLC communication ; failure, or (c) a VSD ; communication failure ; occurs, STOP TIME and ; ELAPSED TIME are assigned, ; and the pump motors are ; stopped (RUN RESET-PUMPRUN). ; Also, PUMP_PROB is set to 1, ; enabling the flashing yellow ; "Problem" messages to appear.	ON	1	00. SETLIM 0.1000 01. DELAY 1 02. IF ABRTCOIL = 1.00 GOTO 7 03. IF PLCCOMFA = 1.00 GOTO 7 04. IF VSDS_BAD = 1.00 GOTO 7 05. OPEN PUMP_PROB 06. GOTO 1 07. CLOSE PUMP_PROB 08. IF BUT_ACT_SET_VAL = 1.00 GOTO 1 09. CLOSE STOP-TIME 10. CLOSE ELAPSED-TIME-HOLD 11. RUN RESET-PUMPRUN 12. GOTO 1 13. NUL

PG Block Tag Name	Tag Description and Block Comments	Init. Scan	Scan Time	Programming Statements
P_RUN_CMD-PG	PG Block for RUN Command to PMOTOR ; If <START TEST> button on [PUMPRUN] ; is selected (P_RUN = 1), check ; to determine if the pump is ; still within the +/-2 deg ; Target band (D_ANGLE_DIFF_ABS) ; If above is OK, then check to see if ; ZIMPE112 is within its proper ; range (15-190 deg) ; If above is OK, then keep running the ; pump motor (CLOSE P_RUN_CMD) ; If any of the above is not OK, then ; stop the pump motor ; (OPEN P_RUN_CMD)	ON	1	00. SETLIM 0.1000 01. DELAY 1 02. IF P_RUN = 1.00 GOTO 5 03. OPEN P_RUN_CMD 04. GOTO 1 05. IF D_ANGLE_DIFF_ABS < 2.10 GOTO 12 06. OPEN P_RUN_CMD 07. CLOSE D_CHANGED_DO 08. DELAY 1 09. OPEN D_CHANGED_DO 10. RUN RESET-PUMPRUN 11. GOTO 1 12. IF ZIMPE112 < 191.00 GOTO 15 13. OPEN P_RUN_CMD 14. GOTO 1 15. IF ZIMPE112 > 14.00 GOTO 18 16. OPEN P_RUN_CMD 17. GOTO 1 18. CLOSE P_RUN_CMD 19. GOTO 1 20. NUL
RESET-PUMPRUN	Resets VSDs & Stops Elapsed Time ; Opens "Test Enable" to PLC (PBENAB), ; stops both the directional and ; pump motors (D_RUN and P_RUN), ; assigns the STOP TIME and ; ELAPSED TIME, and configures the ; [PUMPRUN] buttons to "Set Values"	ON	1	00. SETLIM 0.1000 01. OPEN PBENAB 02. OPEN D_RUN 03. OPEN P_RUN 04. CLOSE STOP-TIME 05. CLOSE ELAPSED-TIME-HOLD 06. RUN RESET_BUTTONS 07. END 08. NUL
RESET_BUTTONS	Resets Button Status to SET VALUES ; Configures the [PUMPRUN] buttons ; to the "Set Values" ; Configuration either after the ; <STOP TEST> button is selected ; or a problem is detected: ; ; <SET VAUES> active & green; ; all other buttons inactive ; and grey	ON	1	00. SETLIM 0.1000 01. OPEN BUT_ANIM_SET_VAL 02. OPEN BUT_ANIM_POS_PUMP 03. OPEN BUT_ANIM_ENAB_TEST 04. OPEN BUT_ANIM_START_TEST 05. OPEN BUT_ANIM_STOP_TEST 06. CLOSE BUT_TEXT_STOP_TEST 07. SETOUT BUT-COL-POS_PUMP 0.00 08. SETOUT BUT-COL-ENAB_TEST 0.00 09. SETOUT BUT-COL-START_TEST 0.00 10. SETOUT BUT-COL-STOP_TEST 0.00 11. SETOUT BUT-COL-SET_VAL 1.00 12. OPEN BUT_ACT_POS_PUMP 13. OPEN BUT_ACT_ENAB_TEST 14. OPEN BUT_ACT_START_TEST 15. OPEN BUT_ACT_STOP_TEST 16. CLOSE BUT_ACT_SET_VAL 17. END 18. NUL
RGWDT	RGA-5 Update Watchdog Timer ; If RG-RUN is not updated after ; 450 seconds, RGA5-ZERO is ; closed. This results in the ; "Last Update Date & Time" to ; be frozen on [GASSUM].	ON	1	00. SETLIM 0.1000 01. MAXWAIT 450 02. WAITFOR RG-RUN != RGRUNPREV 03. IF RG-RUN = RGRUNPREV GOTO 7 04. OPEN RGA5_ZERO 05. SETOUT RGRUNPREV RG-RUN 06. GOTO 1 07. CLOSE RGA5_ZERO 08. GOTO 1 09. NUL

PG Block Tag Name	Tag Description and Block Comments	Init. Scan	Scan Time	Programming Statements
SET_VAL_DONE	Sets Button Status After SET VALUES	ON	1	00. SETLIM 0.1000 01. OPEN BUT_ANIM_SET_VAL 02. OPEN BUT_ANIM_POS_PUMP 03. OPEN BUT_ANIM_ENAB_TEST 04. OPEN BUT_ANIM_START_TEST 05. OPEN BUT_ANIM_STOP_TEST 06. CLOSE BUT_TEXT_STOP_TEST 07. SETOUT BUT-COL-SET_VAL 0.00 08. SETOUT BUT-COL-POS_PUMP 1.00 09. SETOUT BUT-COL-ENAB_TEST 0.00 10. SETOUT BUT-COL-START_TEST 0.00 11. SETOUT BUT-COL-STOP_TEST 1.00 12. OPEN BUT_ACT_SET_VAL 13. CLOSE BUT_ACT_POS_PUMP 14. OPEN BUT_ACT_ENAB_TEST 15. OPEN BUT_ACT_START_TEST 16. CLOSE BUT_ACT_STOP_TEST 17. END 18. NUL
	; Configures the [PUMPRUN] buttons ; after <SET VALUES> is selected ; and the pump is not within ; +/-2 deg of the Target band ; (D_IN-BAND = 0): ; ; <POSITION PUMP> active & green; ; <STOP TEST> active & green; ; all other buttons inactive ; and grey			
START_TEST_DONE	Sets Button Status After START TEST	ON	1	00. SETLIM 0.1000 01. OPEN BUT_ANIM_SET_VAL 02. OPEN BUT_ANIM_POS_PUMP 03. OPEN BUT_ANIM_ENAB_TEST 04. OPEN BUT_ANIM_START_TEST 05. OPEN BUT_ANIM_STOP_TEST 06. OPEN BUT_TEXT_STOP_TEST 07. SETOUT BUT-COL-SET_VAL 0.00 08. SETOUT BUT-COL-POS_PUMP 0.00 09. SETOUT BUT-COL-ENAB_TEST 0.00 10. SETOUT BUT-COL-START_TEST 0.00 11. SETOUT BUT-COL-STOP_TEST 1.00 12. OPEN BUT_ACT_SET_VAL 13. OPEN BUT_ACT_POS_PUMP 14. OPEN BUT_ACT_ENAB_TEST 15. OPEN BUT_ACT_START_TEST 16. CLOSE BUT_ACT_STOP_TEST 17. END 18. NUL
	; Configures the [PUMPRUN] buttons ; after <START TEST> is selected: ; ; <ENABLE STOP> active & green; ; all other buttons inactive ; and grey			

Table D-15. Timer (TM) Blocks

TM Block Tag Name	Tag Description	Dir.	Target and Preset Values	Startup Clear	Reset and Hold Tags
ELAPSED-TIME	Pump Run Elapsed Time	UP	T: 365:00:00:00 P: 000:00:00:00	YES	R: ELAPSED-TIME-RESET-DI H: ELAPSED-TIME-HOLD-DI
ELAPSED-TIME-TOTAL	Pump Run Total Elapsed Time	UP	T: 365:00:00:00 P: 000:00:00:00	YES	R: ELAPSED-TIME-TOTAL-RESET-DI H: ELAPSED-TIME-HOLD-DI

Note: All TM Blocks have Condition = Always and No Alarms

This document was too large to scan as a single document; therefore, it has been divided into smaller sections.

Section 2 of 2

Document Information			
Document #	SD-WM-SDD-045	**Revision**	4
Title	SYS DESIGN DESCRIPTION FOR THE SY101 HYDROGEN MITIGATION TEST PROJECT DATA ACQUISITION & CONTROL SYS (DACS-1)		
Date	04/01/1999		
Originator	ERMI AM	**Originator Co.**	COGEMA
Recipient		**Recipient Co.**	
References			
Keywords			
Projects			
Other Information			

Appendix E - FIX32 Screen Descriptions and Dynamics

Table E-1. Main Screens

Picture File Name	Dimensions		Refresh Rate	Picture Type	Window Properties	Script On Opening	Script On Closing	Page No.
	Width	Height						
A1-INIT.odf	7.940"	5.940"	1.0 sec	Standard	---	Yes	---	E-3
TITLEBAR#	7.940"	0.910	---	---	---	---	---	E-17
ABRTCHEK.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-18
ABRTENAB.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-20
ALARMBAR.odf	7.940"	0.480"	0.1 sec	Popup	On Top	Yes	Yes	E-23
ALARMSUM.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes	Yes	E-24
ASMAIN.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-27
CSMAIN.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-28
DACS.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-30
GASSUM.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes	Yes**	E-32
Historical Display@	---	---	---	---	---	---	---	E-35
HVTALARM.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-40
IOSTATUS.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-42
MANABRT.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-44
MAP.odf	4.350"	3.160"	0.5 sec	Popup	On Top	Yes	Yes	E-46
MININ.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-49
MIT17B.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-51
MIT17C.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-53
MSMAIN.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-55
NETSTAT.odf	7.940"	5.940"	0.5 sec	Standard	---	Yes*	Yes**	E-57
PUMP.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes	Yes**	E-59
PUMPALRM.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-61
PUMPOPS.odf	7.940"	5.940"	0.4 sec	Standard	---	Yes*	Yes**	E-63
PUMPRUN.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes	Yes	E-65
PUMPVIEW.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-86
ROLLOVER.odf	7.940"	5.940"	0.4 sec	Standard	---	Yes*	Yes**	E-90
STOPTIME.odf	7.920"	0.250"	0.1 sec	Standard	---	Yes	---	E-93
STRNALM.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-94
SUMMARY.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-96
TAGSTAT.odf	7.940"	5.940"	0.5 sec	Standard	---	Yes	Yes	E-98
TBSTC.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-101
TEMPALM.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-103
TEMPRFL.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes*	Yes**	E-105
TRENDS.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes	Yes	E-107
WELCOME.odf	7.940"	5.940"	0.1 sec	Standard	---	Yes	Yes**	E-109

Not a stand-alone screen, but it appears at the top of all "Standard, Main Screens"

@ Not a FIX32 screen; from stand-alone Historical Display application accessed from [TRENDS] screen

* The Script "On Opening" is:

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "<Picture Name>"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

** The Script "On Closing" is:

```
#PREV_PIC = "<Picture Name>"
CLOSEPIC <Help Popup Name>
```

where <Picture Name> is the Picture File Name, minus the ".odf",
and <Help Popup Name> is the corresponding Help Popup File Name, minus the ".odf"

All other Scripts are listed with their respective screens

Screen Filename: A1-INIT.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 1.0 sec

Script "On Opening":

```
; [INIT] - Used for Visibility of "Initializing..."
DECLARE #INIT_DONE NUMERIC GLOBAL

; Used for RSS Identification
DECLARE #RSS NUMERIC GLOBAL

; {All Screens} - Prevents Multiple Copies of MAP from Opening
DECLARE #MAP_OPEN NUMERIC GLOBAL

;=================SECURITY=====================================
; Tracks Current User That Is Logged In
DECLARE #CURRENT_LOGIN STRING GLOBAL
DECLARE #CURRENT_LOGIN_GROUP STRING GLOBAL
STRTOK #GS_LOGIN_NAME 0 7 #CURRENT_LOGIN
STRTOK #GS_GROUP 0 13 #CURRENT_LOGIN_GROUP

; LOGIN Script Complete Flag
DECLARE #LOGIN_DONE NUMERIC GLOBAL
#LOGIN_DONE = 1

; Used for CHECKRIGHTS
DECLARE #SEC_CHECK NUMERIC GLOBAL

; Station Specific Current Security Level
DECLARE #SECURITY_LEVEL NUMERIC GLOBAL
```

```
#SECURITY_LEVEL = 1
CHECKRIGHTS "LEVEL2" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 2
ENDIF
CHECKRIGHTS "LEVEL3" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 3
ENDIF
CHECKRIGHTS "LEVEL4" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 4
ENDIF
CHECKRIGHTS "LEVEL5" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 5
ENDIF

;================ARCHIVE FILE VARIABLES=========================
; Used to Copy Archive Files to BUFFER Directory (for STATION6 Transfer)
DECLARE #FILE-YEAR STRING GLOBAL
DECLARE #FILE-MONTH STRING GLOBAL
DECLARE #FILE-DAY STRING GLOBAL
DECLARE #FILE-HOUR STRING GLOBAL
DECLARE #FILE-HOURNUM NUMERIC GLOBAL
DECLARE #NEXT-H04NAME STRING GLOBAL
DECLARE #NEXT-ALMNAME STRING GLOBAL
DECLARE #FILENUMBER NUMERIC GLOBAL
DECLARE #FILE-MINUTES NUMERIC GLOBAL
DECLARE #HOUR-CHECK NUMERIC GLOBAL

DECLARE #TransferFlag NUMERIC GLOBAL
DECLARE #TransferFlag2 NUMERIC GLOBAL

;================CLOCKS=========================================
; Used to Initialize Online&Login Dates&Times from Computer Clock
DECLARE #ONLINE-DATE STRING GLOBAL
DECLARE #ONLINE-TIME STRING GLOBAL
DECLARE #LOGIN-DATE STRING GLOBAL
DECLARE #LOGIN-TIME STRING GLOBAL
STRTOK #GS_DATE 0 5 #ONLINE-DATE
STRTOK #GS_TIME 0 5 #ONLINE-TIME
STRTOK #GS_DATE 0 5 #LOGIN-DATE
STRTOK #GS_TIME 0 5 #LOGIN-TIME

; Used to Synchronize Network System Clocks
DECLARE #DATE_NOW STRING GLOBAL
DECLARE #OLD_DATE STRING GLOBAL
STRTOK #GS_DATE 0 5 #DATE_NOW
STRTOK #DATE_NOW 0 5 #OLD_DATE

;================STARTUP DELAY==================================
; Allow time for tags to become valid at remote nodes before script executes
DECLARE #STARTUP_WAIT NUMERIC PICTURE
IF #GS_NODE != "STATION5"
  #STARTUP_WAIT = 60
  RUNTASK C:\WINNT\SYSTEM32\NET.EXE "TIME \\STATION5 /SET /Y"
ELSE
  #STARTUP_WAIT = 30
ENDIF
IF #GS_NODE == "RSS11"
  #STARTUP_WAIT = 120
ENDIF
IF #GS_NODE == "RSS13"
  #STARTUP_WAIT = 120
```

```
ENDIF
IF #GS_NODE == "RSS15"
  #STARTUP_WAIT = 120
ENDIF
IF #GS_NODE == "RSS17"
  #STARTUP_WAIT = 120
ENDIF
&Wait_Some_More
PAUSE 1
IF #STARTUP_WAIT > 0
   #STARTUP_WAIT = #STARTUP_WAIT - 1
   GOTO Wait_Some_More
ENDIF
;===============DECLARATIONS & INITIALIZATIONS==================
; Prevents Function Key Interupt Scripting Problems
DECLARE #F-KEY_BUSY NUMERIC GLOBAL

; [MAP] - Used to Open Next Screen
DECLARE #NEXT_PIC STRING GLOBAL

; {All Screens} - Used for the MAP Button Animation
DECLARE #MAP_BUTTON_STAT NUMERIC GLOBAL

; {All Screens} - Used for PRINT Confirmation
DECLARE #PRINT_YES NUMERIC GLOBAL
DECLARE #PRINT_OPEN NUMERIC GLOBAL
DECLARE #PRINTWRN_OPEN NUMERIC GLOBAL

; {All Screens} - Used in "On Open" Scripts and F1 Key for HELP Screens
DECLARE #CURRENT_PIC STRING GLOBAL

; {All Screens} - Prevents Multiple Copies of HELP from Opening
DECLARE #HELP_OPEN NUMERIC GLOBAL

; {H_GENERL} - Used to Open Dial-Up Networking Box
DECLARE #MODEM_SELECTED NUMERIC GLOBAL

; [WELCOME] - Prevents Multiple Copies of PRUNVIS from Opening
DECLARE #PRUNVIS_OPEN NUMERIC GLOBAL

; [WELCOME] - Controls Visibility of "PUMPOPS" Button
DECLARE #PUMPOPS_VISIBLE NUMERIC GLOBAL
IF #GS_NODE == "STATION5"
  IF STATION5:ST5_PUMPRUN_VIS.F_CV == 1
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION6"
  IF STATION5:ST6_PUMPRUN_VIS.F_CV == 1
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION7"
  IF STATION5:ST7_PUMPRUN_VIS.F_CV == 1
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION8"
  IF STATION5:ST8_PUMPRUN_VIS.F_CV == 1
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF

; [ALARMBAR] - Indicates ALARMBAR Currently Open
DECLARE #ALARMBAR_OPEN NUMERIC GLOBAL
```

```
; [ALARMBAR] - Used for the ALARM SUMMARY Button Animation
DECLARE #ALARM_SUM_BUTTON_STAT NUMERIC GLOBAL

; [ALARMSUM] - Opens or Refreshes ALARMSUM Screen Using F4
DECLARE #ALARM_SUM_OPEN NUMERIC GLOBAL
DECLARE #ALARM_SUM_REFRESH NUMERIC GLOBAL

; [ALARMSUM] - Used for ACK PAGE Security
DECLARE #ACKPGWRN_OPEN NUMERIC GLOBAL

; [ALARMSUM] and F6 - Defines Previous Screen
DECLARE #PREV_PIC STRING GLOBAL

; Initializes PREV_PIC - Eliminates Potential F6 Error After Startup
#PREV_PIC = "WELCOME"

; [ALARMSUM] -  Prevents Multiple Copies of EVENT/SUMM from Opening
DECLARE #EVENT_SUMM_OPEN NUMERIC GLOBAL

; {Some Screens} - Used for the ABORT Button Animation, Warning
DECLARE #ABORT_BUTTON_STAT NUMERIC GLOBAL
DECLARE #ABORTWRN_OPEN NUMERIC GLOBAL

; [ROLLOVER] - Used for Plot Selections
DECLARE #LEVEL_PLOT_VIS NUMERIC GLOBAL
DECLARE #HYDROGEN_PLOT_VIS NUMERIC GLOBAL
DECLARE #PRESSURE_PLOT_VIS NUMERIC GLOBAL
DECLARE #FLOW_PLOT_VIS NUMERIC GLOBAL

; [TRENDS] - Indicates TREND Screen Currently Open
DECLARE #TRENDS_OPEN NUMERIC GLOBAL

; [MININ] - Prevents Tag Status Box from Opening on MININ Screen
DECLARE #TOG_NOTE_OPEN NUMERIC GLOBAL

; [PUMPRUN] - Prevents Multiple Copies of PUMPWARN from Opening
DECLARE #PUMPWARN_OPEN NUMERIC GLOBAL

;=================NETWORKING & SECURITY====================
; [NETSTAT] - Used for Station Online/Login Status
IF #GS_NODE == "STATION5"
  CLOSEDIG   STATION5:ST5-ONLINE.F_CV
  RUNTASK  C:\FIX32\CustomVB\ST5-WDT.EXE
  RUNTASK  C:\FIX32\CustomVB\ST5-WDT.EXE
  SETVAL STATION5:ST5-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST5-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST5-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST5-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST5-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST5-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
ENDIF
IF #GS_NODE == "STATION6"
  CLOSEDIG   STATION5:ST6-ONLINE.F_CV
  RUNTASK C:\FIX32\CustomVB\ST6-WDT.EXE
  SETVAL STATION5:ST6-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST6-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST6-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST6-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST6-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST6-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  COPY H:\HTRDATA\BUFFER\*.H04 C:\RAW\TRANSFER
  COPY H:\HTRDATA\BUFFER\*.H04 D:\DACSDATA
  DELETE H:\HTRDATA\BUFFER\*.H04
  COPY H:\HTRDATA\BUFFER\*.ALM C:\RAW\TRANSFER
```

```
  COPY H:\HTRDATA\BUFFER\*.ALM D:\DACSDATA
  DELETE H:\HTRDATA\BUFFER\*.ALM
ENDIF
IF #GS_NODE == "STATION7"
  CLOSEDIG  STATION5:ST7-ONLINE.F_CV
  RUNTASK C:\FIX32\CustomVB\ST7-WDT.EXE
  SETVAL STATION5:ST7-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST7-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST7-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST7-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST7-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST7-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
ENDIF
IF #GS_NODE == "STATION8"
  CLOSEDIG  STATION5:ST8-ONLINE.F_CV
  RUNTASK C:\FIX32\CustomVB\ST8-WDT.EXE
  SETVAL STATION5:ST8-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST8-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST8-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST8-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST8-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST8-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
ENDIF
IF #GS_NODE == "STATION9"
  CLOSEDIG  STATION5:ST9-ONLINE.F_CV
  RUNTASK C:\FIX32\CustomVB\ST9-WDT.EXE
  SETVAL STATION5:ST9-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST9-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST9-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST9-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST9-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST9-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
ENDIF
IF #GS_NODE == "RSS11"
  #RSS = 1
  CLOSEDIG  STATION5:ST11-ONLINE.F_CV
  RUNTASK C:\FIX32\CustomVB\ST11-WDT.EXE
  SETVAL STATION5:ST11-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST11-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST11-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST11-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST11-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST11-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
ENDIF
IF #GS_NODE == "RSS13"
  #RSS = 1
  CLOSEDIG  STATION5:ST13-ONLINE.F_CV
  RUNTASK C:\FIX32\CustomVB\ST13-WDT.EXE
  SETVAL STATION5:ST13-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST13-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST13-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST13-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST13-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST13-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
ENDIF
IF #GS_NODE == "RSS15"
  #RSS = 1
  CLOSEDIG  STATION5:ST15-ONLINE.F_CV
  RUNTASK C:\FIX32\CustomVB\ST15-WDT.EXE
  SETVAL STATION5:ST15-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST15-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST15-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST15-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST15-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST15-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
```

```
ENDIF
IF #GS_NODE == "RSS17"
  #RSS = 1
  CLOSEDIG  STATION5:ST17-ONLINE.F_CV
  RUNTASK C:\FIX32\CustomVB\ST17-WDT.EXE
  SETVAL STATION5:ST17-ONLINE-DATE.A_DESC #ONLINE-DATE
  SETVAL STATION5:ST17-ONLINE-TIME.A_DESC #ONLINE-TIME
  SETVAL STATION5:ST17-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST17-LOGIN-TIME.A_DESC #LOGIN-TIME
  SETVAL STATION5:ST17-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST17-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
ENDIF

;================================================================

PLAYSOUND "C:\FIX32\SOUNDS\SPACE.WAV"
OPENPIC WELCOME

#INIT_DONE = 1

;================[PUMPRUN] PARAMETERS=========================

; [PUMPRUN] - Used for STOP TEST / ENABLE STOP button
DECLARE #PUMP-COUNTER NUMERIC GLOBAL

; [PUMPRUN] - Prevents Multiple Prompt Boxes from Opening
DECLARE #PROMPT_BUSY NUMERIC GLOBAL

IF #GS_NODE == "STATION5"
  SETVAL STATION5:UTESTNO.A_DESC "1"
  SETVAL STATION5:UANGLE.F_CV 28
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 5
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "BUMP AT 28 DEG"
  SETVAL STATION5:LAST-UTESTNO.A_DESC "N/A"
  SETVAL STATION5:LAST_UDESC.A_DESC ">>> N/A <<<"
  SETVAL STATION5:START-TIME.A_DESC "> N/A <"
  SETVAL STATION5:STOP-TIME.A_DESC "> N/A <"
  ONSCAN STATION5:RESET-PUMPRUN
  CLOSEPIC STOPTIME
  SETVAL STATION5:VR232120.F_CV 100

;================[GASSUM] PARAMETERS=========================

  ; [GASSUM] - Used to Extract Screen Dates from Computer Clock
  DECLARE #GAS-DATE STRING GLOBAL

  ; [GASSUM] - Initialize Dates to N/A
  SETVAL STATION5:GC1-DATE-DESC.A_DESC "-N/A-"
  SETVAL STATION5:GC2-DATE-DESC.A_DESC "-N/A-"
  SETVAL STATION5:GC3-DATE-DESC.A_DESC "-N/A-"
  SETVAL STATION5:FT-DATE-DESC.A_DESC "-N/A-"
  SETVAL STATION5:PHO-DATE-DESC.A_DESC "-N/A-"

;================================================================

  ; Wait 21 minutes for Gas Timers
  ONSCAN STATION5:21-MINUTE-DELAY

;===============ARCHIVE FILE TRANSFER=========================
```

```
; Read the Last *.H04 Filename From LASTH04.TXT
FILEOPEN  C:\FIX32\HTRDATA\LASTH04.TXT  #FILENUMBER
FILEREAD  #FILENUMBER  #NEXT-H04NAME
FILECLOSE  #FILENUMBER
;Now Copy #NEXT-H04NAME To \\STATION5\C:\FIX32\HTRDATA\BUFFER
COPY  #NEXT-H04NAME C:\FIX32\HTRDATA\BUFFER

; Read the Last *.ALM Filename From LASTALM.TXT
FILEOPEN  C:\FIX32\HTRDATA\LASTALM.TXT  #FILENUMBER
FILEREAD  #FILENUMBER  #NEXT-ALMNAME
FILECLOSE  #FILENUMBER
;Now Copy #NEXT-ALMNAME To \\STATION5\C:\FIX32\HTRDATA\BUFFER
COPY  #NEXT-ALMNAME C:\FIX32\HTRDATA\BUFFER


;Determine Next Filename
STRTOK #GS_DATE 8 2 #FILE-YEAR
STRTOK #GS_DATE 0 2 #FILE-MONTH
STRTOK #GS_DATE 3 2 #FILE-DAY
STRTOK #GS_TIME 0 2 #FILE-HOUR
STRTONUM  #FILE-HOUR  #FILE-HOURNUM

IF #FILE-HOURNUM <24
  IF #FILE-HOURNUM <20
    IF #FILE-HOURNUM <16
      IF #FILE-HOURNUM <12
        IF #FILE-HOURNUM <8
          IF #FILE-HOURNUM <4
            #FILE-HOURNUM =  0
            GOTO DoneWithHourCheck
          ENDIF
          #FILE-HOURNUM =  4
          GOTO DoneWithHourCheck
        ENDIF
        #FILE-HOURNUM =  8
        GOTO DoneWithHourCheck
      ENDIF
      #FILE-HOURNUM =  12
      GOTO DoneWithHourCheck
    ENDIF
    #FILE-HOURNUM =  16
    GOTO DoneWithHourCheck
  ENDIF
  #FILE-HOURNUM =  20
ENDIF
&DoneWithHourCheck

NUMTOSTR #FILE-HOURNUM "%02.f" #FILE-HOUR

; Do the next *.H04 file...

#NEXT-H04NAME = "C:\FIX32\HTRDATA\STATION5\"
STRCAT  #NEXT-H04NAME  #FILE-YEAR  2
STRCAT  #NEXT-H04NAME  #FILE-MONTH  2
STRCAT  #NEXT-H04NAME  #FILE-DAY  2
STRCAT  #NEXT-H04NAME  #FILE-HOUR  2
STRCAT  #NEXT-H04NAME  ".H04"

;Delete The OLD LASTH04.TXT
DELETE C:\FIX32\HTRDATA\LASTH04.TXT

; Store the Last Filename Into LASTH04.TXT
FILEOPEN  C:\FIX32\HTRDATA\LASTH04.TXT  #FILENUMBER
FILEWRITE  #FILENUMBER  #NEXT-H04NAME
```

```
  FILECLOSE  #FILENUMBER

  ; Now do the next *.ALM file...

  #NEXT-ALMNAME = "C:\FIX32\ALM\"
  STRCAT  #NEXT-ALMNAME  #FILE-YEAR  2
  STRCAT  #NEXT-ALMNAME  #FILE-MONTH  2
  STRCAT  #NEXT-ALMNAME  #FILE-DAY  2
  STRCAT  #NEXT-ALMNAME  ".ALM"

  ;Delete The OLD LASTALM.TXT
  DELETE C:\FIX32\HTRDATA\LASTALM.TXT

  ; Store the Last *.ALM Filename Into LASTALM.TXT
  FILEOPEN  C:\FIX32\HTRDATA\LASTALM.TXT  #FILENUMBER
  FILEWRITE  #FILENUMBER  #NEXT-ALMNAME
  FILECLOSE  #FILENUMBER

ENDIF
; Finished Station 5 IF/ENDIF

;================================================BEGIN LOOP-FOREVER

&LoopForever

; Synchronize All Station Clocks with Station 5 at Midnight
IF #GS_NODE != "STATION5"
 STRTOK #GS_DATE 0 5 #DATE_NOW
 IF #DATE_NOW != #OLD_DATE
  RUNTASK C:\WINNT\SYSTEM32\NET.EXE "TIME \\STATION5 /SET /Y"
  STRTOK #GS_DATE 0 5 #DATE_NOW
  STRTOK #DATE_NOW 0 5 #OLD_DATE
 ENDIF
ENDIF

IF #GS_NODE == "STATION5"

  IF STATION5:21MIN_DO.F_CV == 1
    ; [GASSUM] - Determine Correct Dates for LAST UPDATE DATE
    STRTOK #GS_DATE 0 5 #GAS-DATE
    IF STATION5:GC1-ZVAL.F_CV == 0
      IF STATION5:GC1-DATE-DESC.A_DESC != #GAS-DATE
        SETVAL STATION5:GC1-DATE-DESC.A_DESC #GAS-DATE
      ENDIF
    ENDIF
    IF STATION5:GC2-ZVAL.F_CV == 0
      IF STATION5:GC2-DATE-DESC.A_DESC != #GAS-DATE
        SETVAL  STATION5:GC2-DATE-DESC.A_DESC #GAS-DATE
      ENDIF
    ENDIF
    IF STATION5:GC3_ZERO.F_CV == 0
      IF STATION5:GC3-DATE-DESC.A_DESC != #GAS-DATE
        SETVAL  STATION5:GC3-DATE-DESC.A_DESC #GAS-DATE
      ENDIF
    ENDIF
    IF STATION5:FT_ZERO.F_CV == 0
      IF STATION5:FT-DATE-DESC.A_DESC != #GAS-DATE
        SETVAL  STATION5:FT-DATE-DESC.A_DESC #GAS-DATE
      ENDIF
    ENDIF
    IF STATION5:PHO_ZERO.F_CV == 0
      IF STATION5:PHO-DATE-DESC.A_DESC != #GAS-DATE
        SETVAL  STATION5:PHO-DATE-DESC.A_DESC #GAS-DATE
      ENDIF
    ENDIF
```

```
ENDIF

; Updates Login User Name/Group, Date/Time and Security Level
RUNTASK  C:\FIX32\CustomVB\ST5-WDT.EXE

IF STATION5:ST6-ONLINE.F_CV == 1
  IF STATION5:ST6-WDT.F_CV > 3
    OPENDIG STATION5:ST6-ONLINE.F_CV
    STRTOK #GS_DATE 0 5 #ONLINE-DATE
    STRTOK #GS_TIME 0 5 #ONLINE-TIME
    SETVAL STATION5:ST6-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST6-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
ELSE
   IF STATION5:ST6-WDT.F_CV < 2
    CLOSEDIG STATION5:ST6-ONLINE.F_CV
    STRTOK #GS_DATE 0 5 #ONLINE-DATE
    STRTOK #GS_TIME 0 5 #ONLINE-TIME
    SETVAL STATION5:ST6-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST6-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
ENDIF

IF STATION5:ST7-ONLINE.F_CV == 1
  IF STATION5:ST7-WDT.F_CV > 3
    OPENDIG STATION5:ST7-ONLINE.F_CV
    STRTOK #GS_DATE 0 5 #ONLINE-DATE
    STRTOK #GS_TIME 0 5 #ONLINE-TIME
    SETVAL STATION5:ST7-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST7-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
ELSE
    IF STATION5:ST7-WDT.F_CV < 2
      CLOSEDIG STATION5:ST7-ONLINE.F_CV
      STRTOK #GS_DATE 0 5 #ONLINE-DATE
      STRTOK #GS_TIME 0 5 #ONLINE-TIME
      SETVAL STATION5:ST7-ONLINE-DATE.A_DESC #ONLINE-DATE
      SETVAL STATION5:ST7-ONLINE-TIME.A_DESC #ONLINE-TIME
    ENDIF
ENDIF

IF STATION5:ST8-ONLINE.F_CV == 1
  IF STATION5:ST8-WDT.F_CV > 3
    OPENDIG STATION5:ST8-ONLINE.F_CV
    STRTOK #GS_DATE 0 5 #ONLINE-DATE
    STRTOK #GS_TIME 0 5 #ONLINE-TIME
    SETVAL STATION5:ST8-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST8-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
ELSE
    IF STATION5:ST8-WDT.F_CV < 2
      CLOSEDIG STATION5:ST8-ONLINE.F_CV
      STRTOK #GS_DATE 0 5 #ONLINE-DATE
      STRTOK #GS_TIME 0 5 #ONLINE-TIME
      SETVAL STATION5:ST8-ONLINE-DATE.A_DESC #ONLINE-DATE
      SETVAL STATION5:ST8-ONLINE-TIME.A_DESC #ONLINE-TIME
    ENDIF
ENDIF

IF STATION5:ST9-ONLINE.F_CV == 1
  IF STATION5:ST9-WDT.F_CV > 3
    OPENDIG STATION5:ST9-ONLINE.F_CV
    STRTOK #GS_DATE 0 5 #ONLINE-DATE
    STRTOK #GS_TIME 0 5 #ONLINE-TIME
    SETVAL STATION5:ST9-ONLINE-DATE.A_DESC #ONLINE-DATE
```

```
    SETVAL STATION5:ST9-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
ELSE
    IF STATION5:ST9-WDT.F_CV < 2
     CLOSEDIG STATION5:ST9-ONLINE.F_CV
     STRTOK #GS_DATE 0 5 #ONLINE-DATE
     STRTOK #GS_TIME 0 5 #ONLINE-TIME
     SETVAL STATION5:ST9-ONLINE-DATE.A_DESC #ONLINE-DATE
     SETVAL STATION5:ST9-ONLINE-TIME.A_DESC #ONLINE-TIME
    ENDIF
ENDIF

IF STATION5:ST11-ONLINE.F_CV == 1
  IF STATION5:ST11-WDT.F_CV > 3
    OPENDIG STATION5:ST11-ONLINE.F_CV
    STRTOK #GS_DATE 0 5 #ONLINE-DATE
    STRTOK #GS_TIME 0 5 #ONLINE-TIME
    SETVAL STATION5:ST11-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST11-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
ELSE
    IF STATION5:ST11-WDT.F_CV < 2
     CLOSEDIG STATION5:ST11-ONLINE.F_CV
     STRTOK #GS_DATE 0 5 #ONLINE-DATE
     STRTOK #GS_TIME 0 5 #ONLINE-TIME
     SETVAL STATION5:ST11-ONLINE-DATE.A_DESC #ONLINE-DATE
     SETVAL STATION5:ST11-ONLINE-TIME.A_DESC #ONLINE-TIME
    ENDIF
ENDIF

; If Station 13 is ONLINE, check to see if timeout has occurred...
IF STATION5:ST13-ONLINE.F_CV == 1
  IF STATION5:ST13-WDT.F_CV > 3
    OPENDIG STATION5:ST13-ONLINE.F_CV
    STRTOK #GS_DATE 0 5 #ONLINE-DATE
    STRTOK #GS_TIME 0 5 #ONLINE-TIME
    SETVAL STATION5:ST13-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST13-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
; Otherwise, See if Station 13 has returned ONLINE
ELSE
    IF STATION5:ST13-WDT.F_CV < 2
     CLOSEDIG STATION5:ST13-ONLINE.F_CV
     STRTOK #GS_DATE 0 5 #ONLINE-DATE
     STRTOK #GS_TIME 0 5 #ONLINE-TIME
     SETVAL STATION5:ST13-ONLINE-DATE.A_DESC #ONLINE-DATE
     SETVAL STATION5:ST13-ONLINE-TIME.A_DESC #ONLINE-TIME
    ENDIF
ENDIF

IF STATION5:ST15-ONLINE.F_CV == 1
  IF STATION5:ST15-WDT.F_CV > 4
    OPENDIG STATION5:ST15-ONLINE.F_CV
    STRTOK #GS_DATE 0 5 #ONLINE-DATE
    STRTOK #GS_TIME 0 5 #ONLINE-TIME
    SETVAL STATION5:ST15-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST15-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
ELSE
    IF STATION5:ST15-WDT.F_CV < 2
     CLOSEDIG STATION5:ST15-ONLINE.F_CV
     STRTOK #GS_DATE 0 5 #ONLINE-DATE
     STRTOK #GS_TIME 0 5 #ONLINE-TIME
     SETVAL STATION5:ST15-ONLINE-DATE.A_DESC #ONLINE-DATE
     SETVAL STATION5:ST15-ONLINE-TIME.A_DESC #ONLINE-TIME
```

```
    ENDIF
  ENDIF

  IF STATION5:ST17-ONLINE.F_CV == 1
    IF STATION5:ST17-WDT.F_CV > 4
      OPENDIG STATION5:ST17-ONLINE.F_CV
      STRTOK #GS_DATE 0 5 #ONLINE-DATE
      STRTOK #GS_TIME 0 5 #ONLINE-TIME
      SETVAL STATION5:ST17-ONLINE-DATE.A_DESC #ONLINE-DATE
      SETVAL STATION5:ST17-ONLINE-TIME.A_DESC #ONLINE-TIME
    ENDIF
  ELSE
      IF STATION5:ST17-WDT.F_CV < 2
        CLOSEDIG STATION5:ST17-ONLINE.F_CV
        STRTOK #GS_DATE 0 5 #ONLINE-DATE
        STRTOK #GS_TIME 0 5 #ONLINE-TIME
        SETVAL STATION5:ST17-ONLINE-DATE.A_DESC #ONLINE-DATE
        SETVAL STATION5:ST17-ONLINE-TIME.A_DESC #ONLINE-TIME
      ENDIF
  ENDIF

  ; Determine If It's Time To Perform a 4-Hour Data Transfer

  STRTOK #GS_TIME 0 2 #FILE-HOUR
  STRTONUM  #FILE-HOUR  #FILE-HOURNUM
  #HOUR-CHECK = #FILE-HOURNUM
  #FILE-MINUTES = #GN_MIN

  IF #HOUR-CHECK == 0
    GOTO OnHour
  ENDIF
  IF #HOUR-CHECK == 4
    GOTO OnHour
  ENDIF
  IF #HOUR-CHECK == 8
    GOTO OnHour
  ENDIF
  IF #HOUR-CHECK == 12
    GOTO OnHour
  ENDIF
  IF #HOUR-CHECK == 16
    GOTO OnHour
  ENDIF
  IF #HOUR-CHECK == 20
    GOTO OnHour
  ENDIF

; Not A 4-Hour Transfer Time Period
#TransferFlag = 0
GOTO EndOfTransfer

&OnHour
IF #TransferFlag == 0
  IF #FILE-MINUTES >0
    #TransferFlag = 1
    COPY #NEXT-H04NAME C:\FIX32\HTRDATA\BUFFER
    ;Determine Next Filename
    STRTOK #GS_DATE 8 2 #FILE-YEAR
    STRTOK #GS_DATE 0 2 #FILE-MONTH
    STRTOK #GS_DATE 3 2 #FILE-DAY
    STRTOK #GS_TIME 0 2 #FILE-HOUR
    STRTONUM  #FILE-HOUR  #FILE-HOURNUM

    IF #FILE-HOURNUM <24
      IF #FILE-HOURNUM <20
```

```
      IF #FILE-HOURNUM <16
        IF #FILE-HOURNUM <12
          IF #FILE-HOURNUM <8
            IF #FILE-HOURNUM <4
              #FILE-HOURNUM = 0
              GOTO DoneWithHourCheck2
            ENDIF
            #FILE-HOURNUM = 4
            GOTO DoneWithHourCheck2
          ENDIF
          #FILE-HOURNUM = 8
          GOTO DoneWithHourCheck2
        ENDIF
        #FILE-HOURNUM = 12
        GOTO DoneWithHourCheck2
      ENDIF
      #FILE-HOURNUM = 16
      GOTO DoneWithHourCheck2
    ENDIF
    #FILE-HOURNUM = 20
  ENDIF
  &DoneWithHourCheck2

  NUMTOSTR #FILE-HOURNUM "%02.f" #FILE-HOUR

  ; Do the *.H04 file...

  #NEXT-H04NAME = "C:\FIX32\HTRDATA\STATION5\"
  STRCAT #NEXT-H04NAME #FILE-YEAR 2
  STRCAT #NEXT-H04NAME #FILE-MONTH 2
  STRCAT #NEXT-H04NAME #FILE-DAY 2
  STRCAT #NEXT-H04NAME #FILE-HOUR 2
  STRCAT #NEXT-H04NAME ".H04"

  ;Delete The OLD LASTH04.TXT
  DELETE C:\FIX32\HTRDATA\LASTH04.TXT

  ; Store the Last Filename Into LASTH04.TXT
  FILEOPEN C:\FIX32\HTRDATA\LASTH04.TXT #FILENUMBER
  FILEWRITE #FILENUMBER #NEXT-H04NAME
  FILECLOSE #FILENUMBER

  ; Now do the *.ALM file ONLY if just after midnight...

  IF #HOUR-CHECK == 0

    COPY #NEXT-ALMNAME C:\FIX32\HTRDATA\BUFFER
    #NEXT-ALMNAME = "C:\FIX32\ALM\"
    STRCAT #NEXT-ALMNAME #FILE-YEAR 2
    STRCAT #NEXT-ALMNAME #FILE-MONTH 2
    STRCAT #NEXT-ALMNAME #FILE-DAY 2
    STRCAT #NEXT-ALMNAME ".ALM"

    ;Delete The OLD LASTALM.TXT
    DELETE C:\FIX32\HTRDATA\LASTALM.TXT

    ; Store the Last *.ALM Filename Into LASTALM.TXT
    FILEOPEN C:\FIX32\HTRDATA\LASTALM.TXT #FILENUMBER
    FILEWRITE #FILENUMBER #NEXT-ALMNAME
    FILECLOSE #FILENUMBER

  ENDIF

 ENDIF
ENDIF
```

```
&EndOfTransfer

ENDIF
; End Of STATION5 Periodic Loop

IF #GS_NODE == "STATION6"
  RUNTASK  C:\FIX32\CustomVB\ST6-WDT.EXE

  ; Determine If It's Time To Perform a 4-Hour Data Transfer

  STRTOK #GS_TIME 0 2 #FILE-HOUR
  STRTONUM  #FILE-HOUR  #FILE-HOURNUM
  #HOUR-CHECK = #FILE-HOURNUM
  #FILE-MINUTES = #GN_MIN

  IF #HOUR-CHECK == 0
    GOTO OnHour2
  ENDIF
  IF #HOUR-CHECK == 4
    GOTO OnHour2
  ENDIF
  IF #HOUR-CHECK == 8
    GOTO OnHour2
  ENDIF
  IF #HOUR-CHECK == 12
    GOTO OnHour2
  ENDIF
  IF #HOUR-CHECK == 16
    GOTO OnHour2
  ENDIF
  IF #HOUR-CHECK == 20
    GOTO OnHour2
  ENDIF

; Not A 4-Hour Transfer Time Period
#TransferFlag2 = 0
GOTO EndOfTransfer2

&OnHour2
IF #TransferFlag2 == 0
  IF #FILE-MINUTES >1
    COPY H:\HTRDATA\BUFFER\*.H04 C:\RAW\TRANSFER
    COPY H:\HTRDATA\BUFFER\*.H04 D:\DACSDATA
    DELETE H:\HTRDATA\BUFFER\*.H04

    ; If midnight, transfer *.ALM files
    IF #HOUR-CHECK == 0
      COPY H:\HTRDATA\BUFFER\*.ALM C:\RAW\TRANSFER
      COPY H:\HTRDATA\BUFFER\*.ALM D:\DACSDATA
      DELETE H:\HTRDATA\BUFFER\*.ALM
    ENDIF

    #TransferFlag2 = 1
  ENDIF
ENDIF

&EndOfTransfer2

ENDIF

IF #GS_NODE == "STATION7"
  RUNTASK  C:\FIX32\CustomVB\ST7-WDT.EXE
ENDIF
```

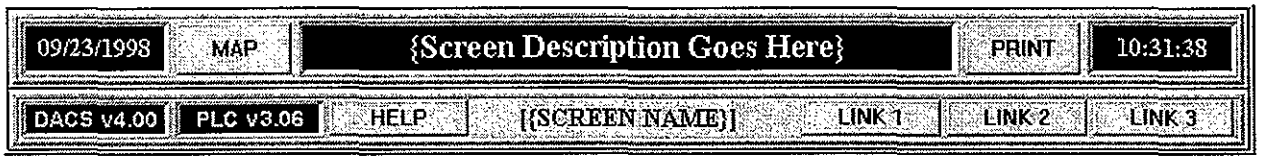
```
IF #GS_NODE == "STATION8"
  RUNTASK  C:\FIX32\CustomVB\ST8-WDT.EXE
ENDIF

IF #GS_NODE == "STATION9"
  RUNTASK  C:\FIX32\CustomVB\ST9-WDT.EXE
ENDIF

IF #GS_NODE == "RSS11"
  RUNTASK  C:\FIX32\CustomVB\ST11-WDT.EXE
ENDIF

IF #GS_NODE == "RSS13"
  RUNTASK  C:\FIX32\CustomVB\ST13-WDT.EXE
ENDIF

IF #GS_NODE == "RSS15"
  RUNTASK  C:\FIX32\CustomVB\ST15-WDT.EXE
ENDIF

IF #GS_NODE == "RSS17"
  RUNTASK  C:\FIX32\CustomVB\ST17-WDT.EXE
ENDIF

PAUSE 30

GOTO LoopForever
;=====================================================END LOOP FOREVER
```

[A1-INIT] Screen Dynamics:

"INITIALIZING..." Text and
Number (Seconds Countdown): Visibility: #INIT_DONE {0: Visible}
Number (Seconds Countdown): Data Link : #STARTUP_WAIT

Screen Name: "TITLEBAR"

Note: "TITLEBAR" is *not* a stand-alone screen, but it appears at the top of all "Standard, Main Screens". It consists of parts common to every screen and parts customized to each screen.



Customizable Parts of TITLEBAR: Refer to the standard, main screens for specifics

{Screen Description}:	Brief Description of each main screen
{Screen Name}:	Screen file name (minus the ".odf" file extension)
<HELP> Button:	Opens Help Pop-up screen, unique to each main screen
<LINK 1> Button (optional):	Replaces the current screen with the screen name on the button
<LINK 2> Button (optional):	Replaces the current screen with the screen name on the button
<LINK 3> Button (optional):	Replaces the current screen with the screen name on the button

Common Parts of TITLEBAR:

Date Link: Displays current date in mm/dd/yyyy format based on system clock

Time Link: Displays current time in hh:mm:ss am/pm format based on system clock

"DACS vX.XX": Data Link Tagname: VERSION.A_DESC;
The current version of the Intellution HMI software configuration

PLC v"X.XX": Data Link Tagname: PLCVER.F_CV;
The current version of the PLC ladder logic configuration

<MAP> Button: All main screens *exept* [WELCOME]

Button script:

```
; Prevents multiple copies of MAP from opening.
IF #MAP_OPEN ==0
  OPENPIC MAP
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<MAP> Button: [WELCOME] screen only

Top <MAP>: No Dynamic Properties

All Components:
Rectangle only:

Visibility:	#MAP_BUTTON_STAT {0: Visible}
"On Down":	#MAP_BUTTON_STAT = 1
"On Up":	PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV #MAP_BUTTON_STAT = 0

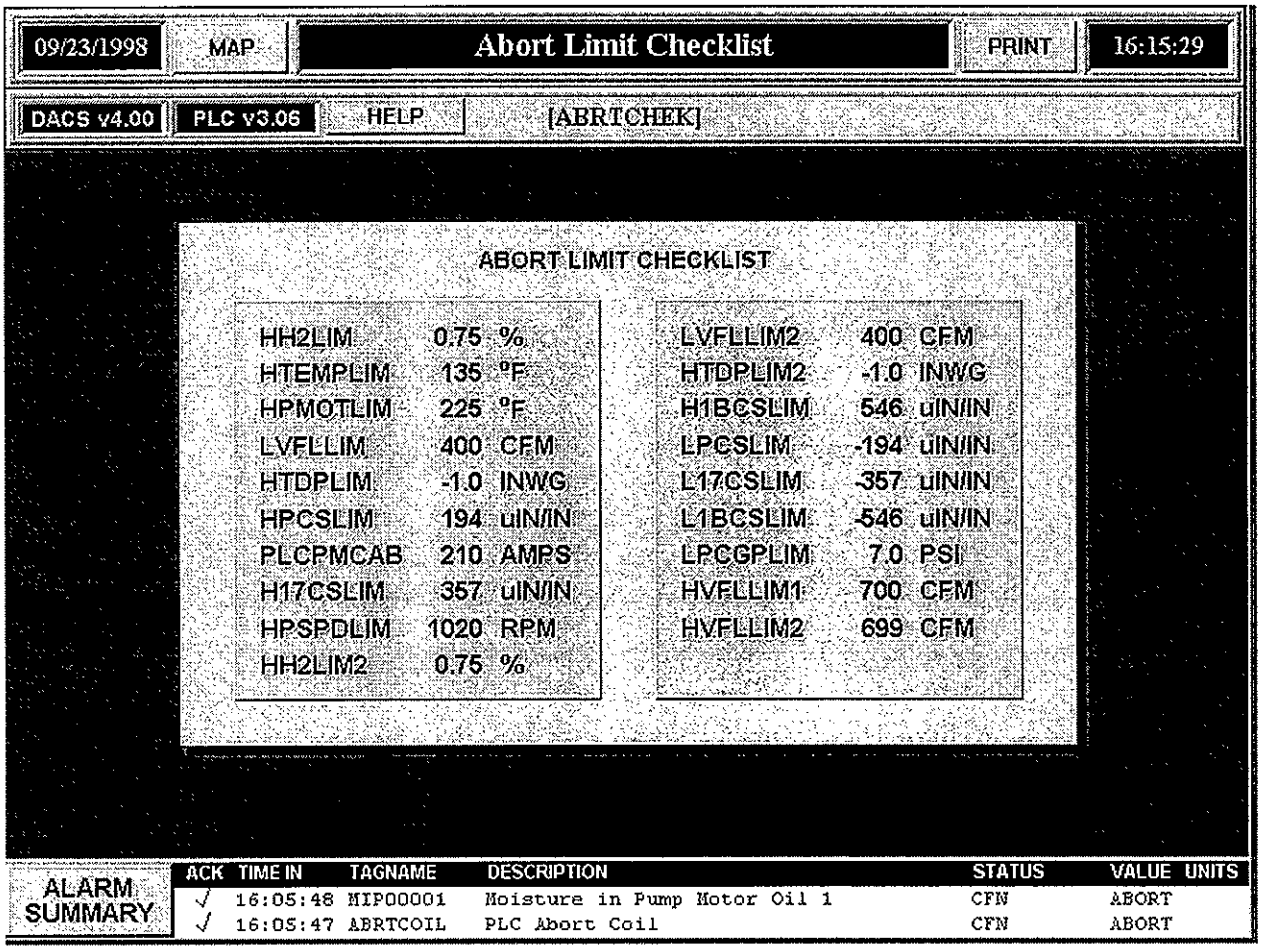
Bottom <MAP>: No Dynamic Properties

<PRINT> Button:

```
IF #SECURITY_LEVEL >= 1.5
  IF #PRINT_OPEN == 0
    OPENPIC  PRINT
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PRINTWRN_OPEN == 0
    OPENPIC PRINTWRN
  ENDIF
ENDIF
```

Screen Filename: ABRTCHEK.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "ABRTCHEK"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "ABRTCHEK"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

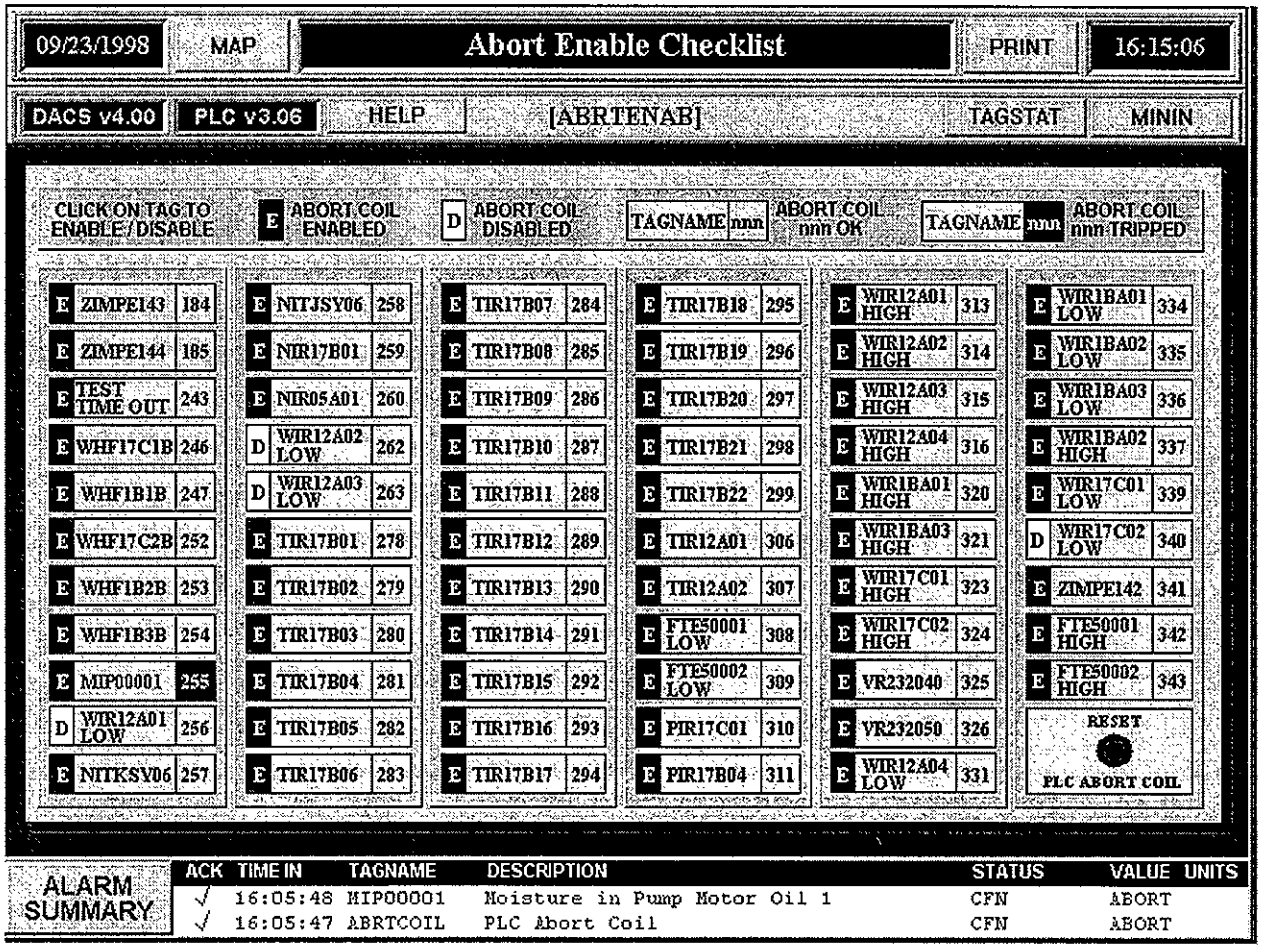
```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
  OPENPIC H_ABRTCH
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

[ABRTCHEK] Screen Dynamics:

Description	Data Link Tagname	Description	Data Link Tagname
HH2LIM	HH2CV	LVFLLIM2	LVFL2CV
HTEMPLIM	HTEMPCV	HTDPLIM2	HTDP2CV
HPMOTLIM	HPMOTCV	H1BCSLIM	H1BCSCV
LVFLLIM	LVFLCV	LPCSLIM	LPCSCV
HTDPLIM	HTDPCV	L17CSLIM	L17CSCV
HPCSLIM	HPCSCV	L1BCSLIM	L1BCSCV
PLCPMCAB	PLCPMCAB	LPCGPLIM	LPCGPCV
H17CSLIM	H17CSCV	HVFLLIM1	HVFL1CV
HPSPDLIM	PLCPSLIM	HVFLLIM2	HVFL2CV
HH2LIM2	HH22CV	---	---

Screen Filename: ABRTENAB.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "ABRTENAB"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "ABRTENAB"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
  OPENPIC H_ABRTEN
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<TAGSTAT>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TAGSTAT
```

<MININ>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC MININ
```

[ABRTENAB] Screen Dynamics:

Button Example:

Top Rectangle Components:

Left Small Rectangle:	Color:	TAGNAME-E.F_CV {(0: Green), (1: Yellow)}
White "E":	Visibility:	TAGNAME-E.F_CV {0: Visible}
Black "D":	Visibility:	TAGNAME-E.F_CV {1: Visible}
"TAGNAME" Button Text:	Color:	TAGNAME-C.F_CV {(0: Black), (1: Flashing Red)}
Right Small Rectangle:	Color:	TAGNAME-C.F_CV {(0: Gray), (1: Flashing Red)}
Coil Number:	Color:	TAGNAME-C.F_CV {(0: Black), (1: White)}
Bottom Black Rectangle:	Visibility:	#SECURITY_LEVEL {> 2.5: Visible}
Bottom Black Rectangle:	"On Up":	TOGGLEDIG STATION5:TAGNAME-E.F_CV

For the actual tags, use the following table to determine the screen dynamics:

Replace "TAGNAME" Text With	Replace "TAGNAME-E" With	Replace " TAGNAME-C" With	Replace "TAGNAME" Text With	Replace "TAGNAME-E" With	Replace "TAGNAME-C" With
ZIMPE143	ZIMPE143E	ZIMPE143C	FTE50002 LOW	FCE50002E	FCE50002
ZIMPE144	ZIMPE144E	ZIMPE144C	PIR17C01	PCR17C01E	PCR17C01
TEST TIME OUT	PBUMPTOUTE	PBUMPTOUT	PIR17B04	PCR17B04E	PCR17B04
WHF17C1B	WHF17C1BE	WHF17C1BC	WIR12A01 HIGH	WCR12A01E	WCR12A01
WHF1B1B	WHF1B1BE	WHF1B1BC	WIR12A02 HIGH	WCR12A02E	WCR12A02
WHF17C2B	WHF17C2BE	WHF17C2BC	WIR12A03 HIGH	WCR12A03E	WCR12A03
WHF1B2B	WHF1B2BE	WHF1B2BC	WIR12A04 HIGH	WCR12A04E	WCR12A04
WHF1B3B	WHF1B3BE	WHF1B3BC	WIR1BA01 HIGH	WCR1BA01E	WCR1BA01
MIP00001	MIP00001E	MIP00001C	WIR1BA03 HIGH	WCR1BA03E	WCR1BA03
WIR12A01 LOW	WLR12A01E	WLR12A01	WIR17C01 HIGH	WCR17C01E	WCR17C01
NITKSY06	NCTKSY06E	NCTKSY06	WIR17C02 HIGH	WCR17C02E	WCR17C02
NITJSY06	NCTJSY06E	NCTJSY06	VR232040	VC232040E	VC232040
NIR17B01	NCR17B01E	NCR17B01	VR232050	VC232050E	VC232050
NIR05A01	NCR05A01E	NCR05A01	WIR12A04 LOW	WLR12A04E	WLR12A04
WIR12A02 LOW	WLR12A02E	WLR12A02	WIR1BA01 LOW	WLR1BA01E	WLR1BA01
WIR12A03 LOW	WLR12A03E	WLR12A03	WIR1BA02 LOW	WLR1BA02E	WLR1BA02
TIR17B01	TCR17B01E	TCR17B01	WIR1BA03 LOW	WLR1BA03E	WLR1BA03
TIR17B02	TCR17B02E	TCR17B02	WIR1BA02 HIGH	WCR1BA02E	WCR1BA02
↓	↓	↓	WIR17C01 LOW	WLR17C01E	WLR17C01
TIR17B21	TCR17B21E	TCR17B21	WIR17C02 LOW	WLR17C02E	WLR17C02
TIR17B22	TCR17B22E	TCR17B22	ZIMPE142	ZLMPE142E	ZLMPE142
TIR12A01	TCR12A01E	TCR12A01	FTE50001 HIGH	FHE50001E	FHE50001
TIR12A02	TCR12A02E	TCR12A02	FTE50002 HIGH	FHE50002E	FHE50002
FTE50001 LOW	FCE50001E	FCE50001	---	---	---

RESET PLC ABORT COIL Button:

Top Larger Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Visibility #ABORT_BUTTON_STAT {0: Visible}

"On Down":

```
IF #RSS == 1
  IF #ABORTWRN_OPEN == 0
    OPENPIC ABORTWRN
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ELSE
  IF #SECURITY_LEVEL >= 2.5
    #ABORT_BUTTON_STAT = 1
    CLOSEDIG STATION5:RSTCOIL.F_CV
    ONSCAN STATION5:PULSECOIL
  ELSE
    IF #ABORTWRN_OPEN == 0
      OPENPIC ABORTWRN
    ELSE
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    ENDIF
  ENDIF
ENDIF
```

"On Up": #ABORT_BUTTON_STAT = 0

Bottom Smaller Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Screen Filename: ALARMBAR.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 7.940" w x 0.480" h
Screen Refresh Rate: 0.1 sec

ALARM SUMMARY

ACK	TIME IN	TAGNAME	DESCRIPTION	STATUS	VALUE	UNITS
√	01:46:14	MIP00001	Moisture in Pump Motor Oil 1	CFN	ABORT	
√	01:46:13	ABRTCOIL	PLC Abort Coil	CFN	ABORT	

Script "On Opening": #ALARMBAR_OPEN = 1

Script "On Closing": #ALARMBAR_OPEN = 0

Specific Dynamics & Scripts:

<ALARM SUMMARY> Button:
Top < ALARM SUMMARY>: "On Down": #ALARM_SUM_BUTTON_STAT = 1
"On Up": #ALARM_SUM_BUTTON_STAT = 0
CLOSEPIC MAP
CLOSEPIC EXIT
CLOSEPIC EXITWARN
CLOSEPIC ACTIVEPIC
OPENPIC ALARMSUM 0,0,794,596

Top < ALARM SUMMARY Components: Visibility: #ALARM_SUM_BUTTON_STAT {0: Visible}

Bottom < ALARM SUMMARY>: No Dynamic Properties

Column Header Text: Color: ALARM.F_CV {(0: White), (>0: Flashing Red / Yellow)}

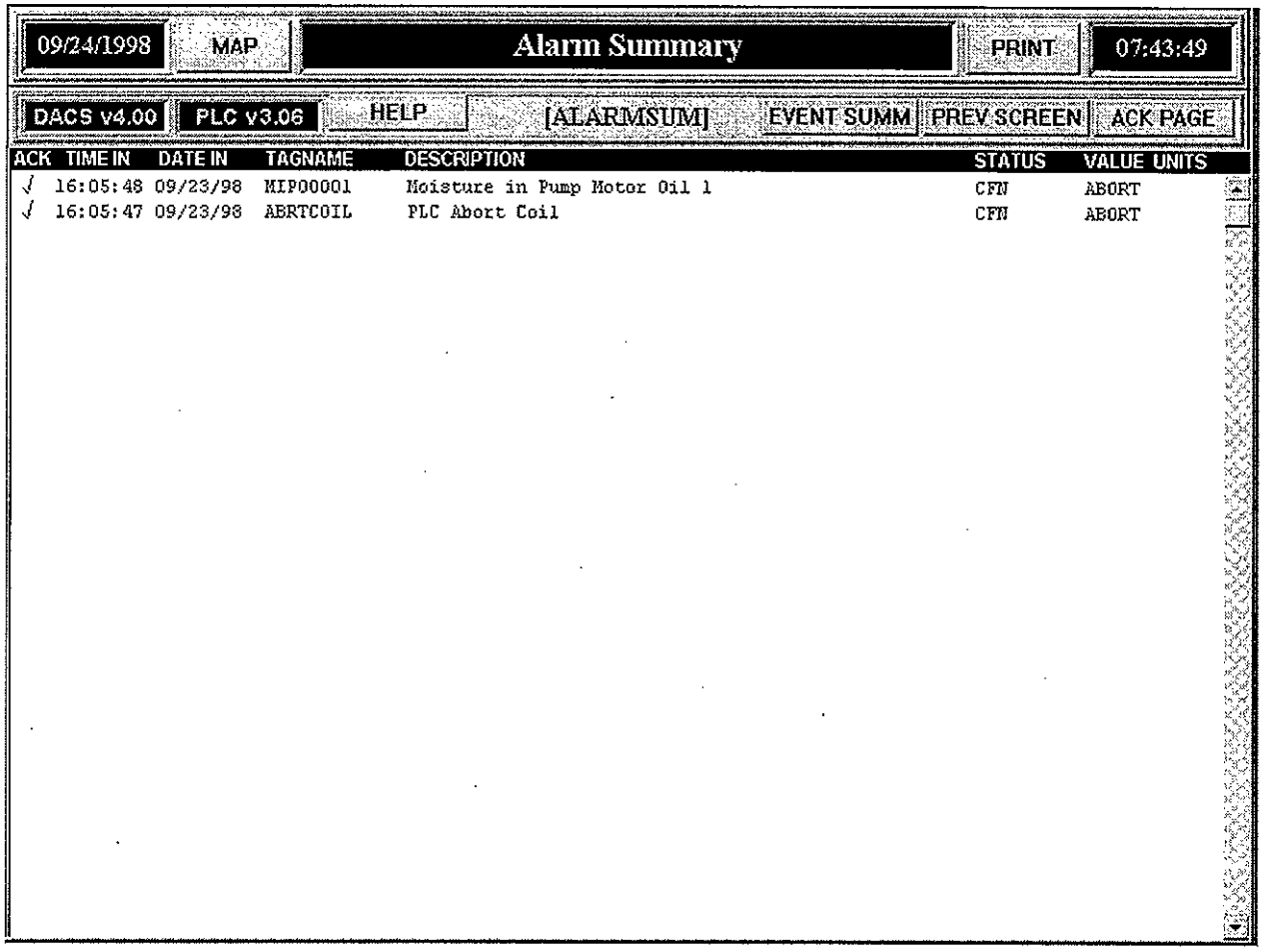
Alarm Summary Link:
Alarm Summary Configuration: Sort Control: Time In, Descending
Other: Disable Control Boarder
Blink on a new alarm

Column Format:
Time In: Length = 9
Tagname: Length = 11
Description: Length = 39
Status: Length = 7
Value: Length = 10
A_ETAG: Length = 5

Color Settings:
OK: Green
High: Red
Low: Red
Change from Normal: Red
Communicat.: Red
Over-range: Gray
Under-range: Gray

Screen Filename: ALARMSUM.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
CLOSEPIC ALARMBAR
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "ALARMSUM"
#ALARM_SUM_OPEN = 1
```

Script "On Closing":

```
; Refreshes ALARMSUM Screen on F4 Key
IF #ALARM_SUM_REFRESH == 1
  #ALARM_SUM_REFRESH = 0
  OPENPIC ALARMSUM
  GOTO END
ENDIF
CLOSEPIC HELPSCREEN
; Open PREV_PIC if MAP is not open
IF #MAP_OPEN == 0
  OPENPIC #PREV_PIC
ENDIF

; If MAP is open, check to see if NEXT_PIC selected
IF #MAP_OPEN == 1
  IF #NEXT_PIC == "NONE"
    OPENPIC #PREV_PIC
  ENDIF
ENDIF

#ALARM_SUM_OPEN = 0
```

```
&END
```

Screen Buttons:

```
<HELP>
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_ALMSUM
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF

<EVENT SUM>
IF #EVENT_SUMM_OPEN == 1
  GOTO End_of_Script
ENDIF
IF #LOGIN_DONE == 0
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  GOTO End_of_Script
ENDIF
#EVENT_SUMM_OPEN = 1
CLOSEPIC MAP
CLOSEPIC LOGCHOIC
CLOSEPIC PRINT
CLOSEPIC PRINTWRN
CLOSEPIC ACKPGWRN
CLOSEPIC HELPSCREEN
; Used for Selecting & Viewing Alarm/Event Summary Files
DECLARE #FULLPATH STRING
DECLARE #FILE_NAME STRING
DECLARE #ALM_PATH STRING
DECLARE #SELECT STRING
DECLARE #TITLE STRING
#FULLPATH =  "\\STATION5\STA5-FIX32\ALM\"
#ALM_PATH =  "\\STATION5\STA5-FIX32\ALM\*.ALM"
#SELECT = "Select An Alarm/Event Summary File"
FILELIST  #ALM_PATH #FILE_NAME #SELECT
STRCAT #FULLPATH #FILE_NAME
STRCAT #FULLPATH ".ALM"
#TITLE = "Alarm/Event Summary File "
STRCAT #TITLE #FULLPATH
VIEW #FULLPATH #TITLE
#EVENT_SUMM_OPEN = 0
&End_of_Script

<PREV SCREEN>
CLOSEPIC MAP
CLOSEPIC ACTIVEPIC

<ACK PAGE>
IF #SECURITY_LEVEL >= 2.5
  ALARMACKALL
ELSE
  IF #ACKPGWRN_OPEN == 0
    OPENPIC ACKPGWRN
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ENDIF
```

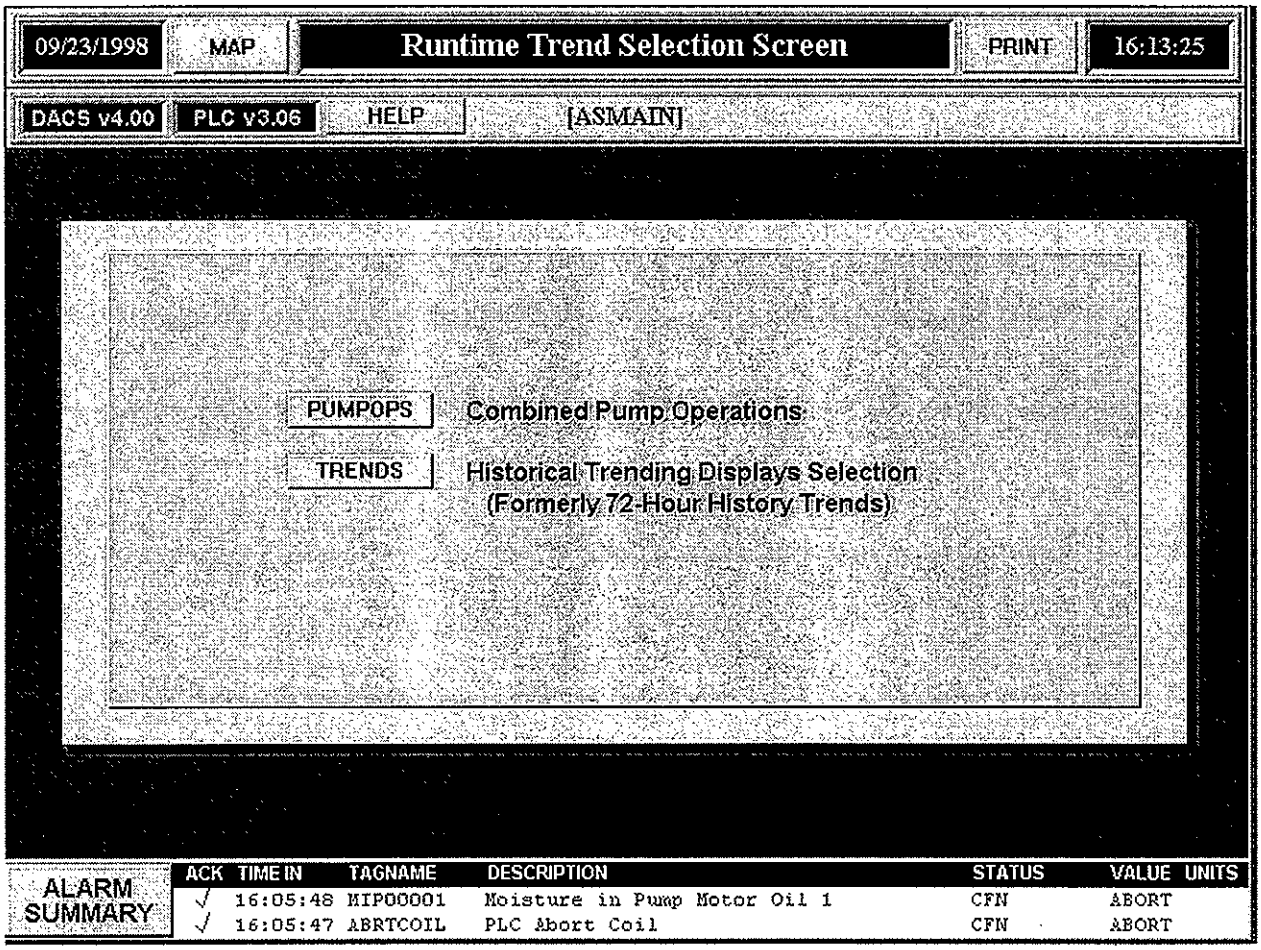
[ALARMSUM] Screen Dynamics:

"NOTE" Box: Visibility: #EVENT_SUMM_OPEN {1: Visible}

Column Header Text:	Color:	ALARM.F_CV {(0: White), (>0: Flashing Red / Yellow)}
Alarm Summary Link:		
Alarm Summary Configuration:	Sort Control:	Time In, Descending
	Other:	Blink on a new alarm
Column Format:	Time In:	Length = 9
	Date In:	Length = 10
	Tagname:	Length = 13
	Description:	Length = 52
	Status:	Length = 8
	Value:	Length = 8
	A_ETAG:	Length = 5
Color Settings:	OK:	Green
	High:	Red
	Low:	Red
	Change from Normal:	Red
	Communicat.:	Red
	Over-range:	Gray
	Under-range:	Gray

Screen Filename: ASMAIN.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "ASMAIN"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "ASMAIN"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_ASMAIN
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<PUMPOPS>

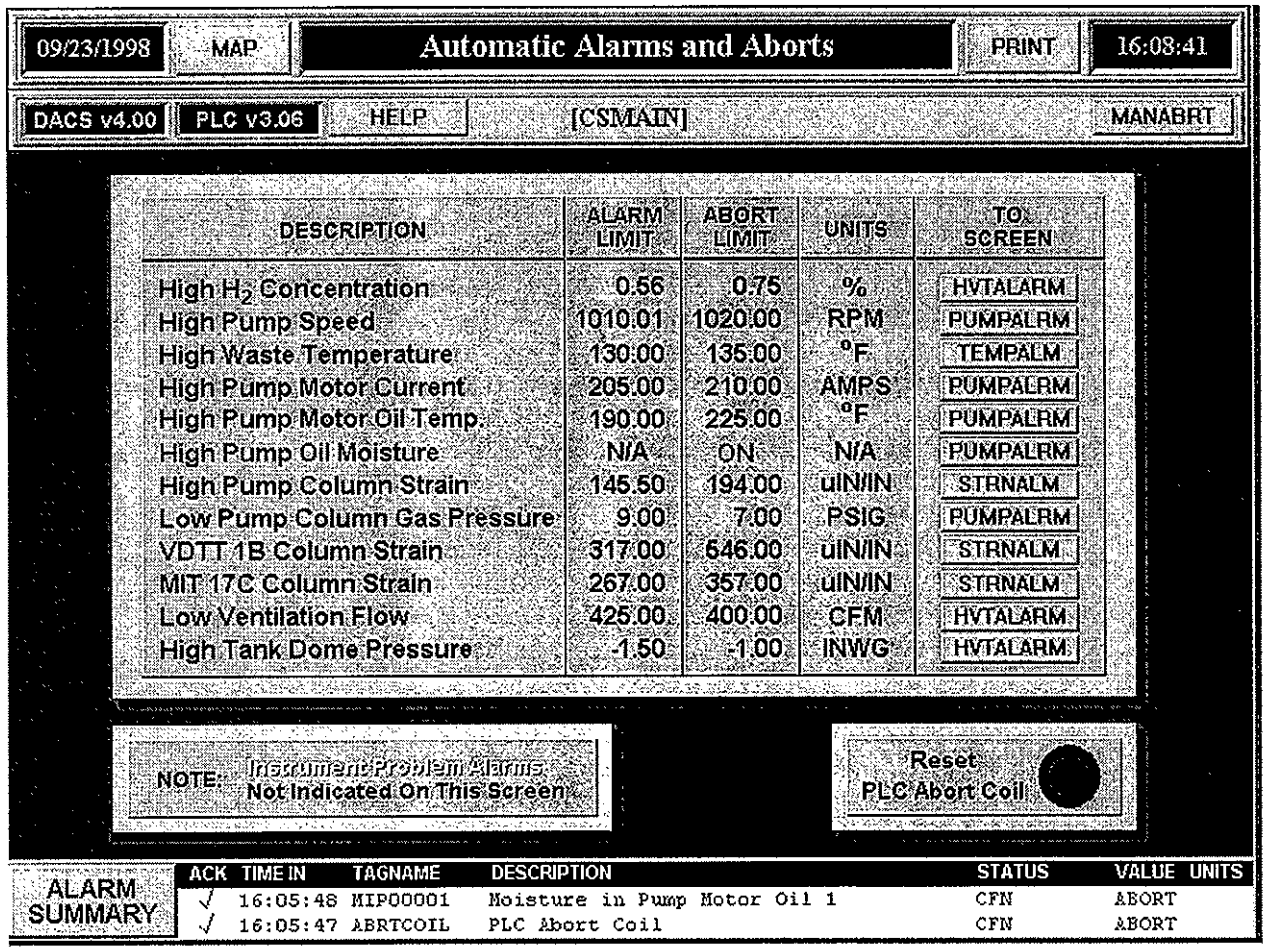
```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMPOPS
```

<TRENDS>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TRENDS
```

Screen Filename: CSMAIN.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "CSMAIN"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "CSMAIN"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_CSMAIN
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<MANABRT>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC MANABRT
```

<HVTALARM>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC HVTALARM
```

<PUMPALRM >

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMPALRM
```

<TEMPALM> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TEMPALM

<STRNALM> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC STRNALM

[CSMAIN] Screen Dynamics:

Description	Description & Units Coloring: 0: Black >0 to 1: Red >1 to 3: Flashing Red	Alarm Limit		Abort Limit	
		Data Link Tagname	Dynamic Coloring: 0: Blue 1: Red	Data Link Tagname	Dynamic Coloring: 0: Blue 1: Flashing Red
High H_2 Concentration	NI_CA	NIR05A01.F_HI	NI_BL	HH2LIM	H2ABORT
High Pump Speed	PSPEED_CA	PLCSPDAL	PSPALARM	PLCPSLIM	VC232050
High Waste Temperature	TIR17B_CA	TIR17B01.F_HI	TIR17B_BL3	HTEMPLIM	TCR17B_BL3
High Pump Motor Current	PCURRENT_CA	PLCPMCAL	PMCALARM	PLCPMCAB	VC232040
High Pump Motor Oil Temp.	TIR12A_CA	TIR12A01.F_HI	TIR12A_BL	HPMOTLIM	TCR12A_BL
High Pump Oil Moisture	MIP00001*	---	---	---	MIP00001
High Pump Column Strain	WIR12A_CA	WIR12A01.F_HI	WIR12A_BL	HPCSLIM	WCR12A_BL
Low Pump Column Gas Pressure	ZIMPE142_CA2	ZIMPE142.F_LO	ZIMPE142**	LPCGPLIM	ZLMPE142
VDTT 1B Column Strain	*WIR1BA_CA*	*WIR1BA01.F_HI*	*WIR1BA_BL*	*H1BCSLIM*	*WCR1BA_BL*
MIT 17C Column Strain	WIR17C_CA	WIR17C01.F_HI	WIR17C_BL	H17CSLIM	WCR17C_BL
Low Ventilation Flow	FTE5000X_CA	FTE50001.F_LO	FTE5000X_BL	LVFLLIM	FCE5000X_BL
High Tank Dome Pressure	PIR17_CA	PIR17C01.F_HI	PIR17_BL	HTDPLIM	PCR17_BL

* Exception: 0: Black; 1: Flashing Red
** Exception: OK: Blue; Low: Red

RESET PLC ABORT COIL Button:

Top Larger Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}
Visibility #ABORT_BUTTON_STAT {0: Visible}
"On Down":

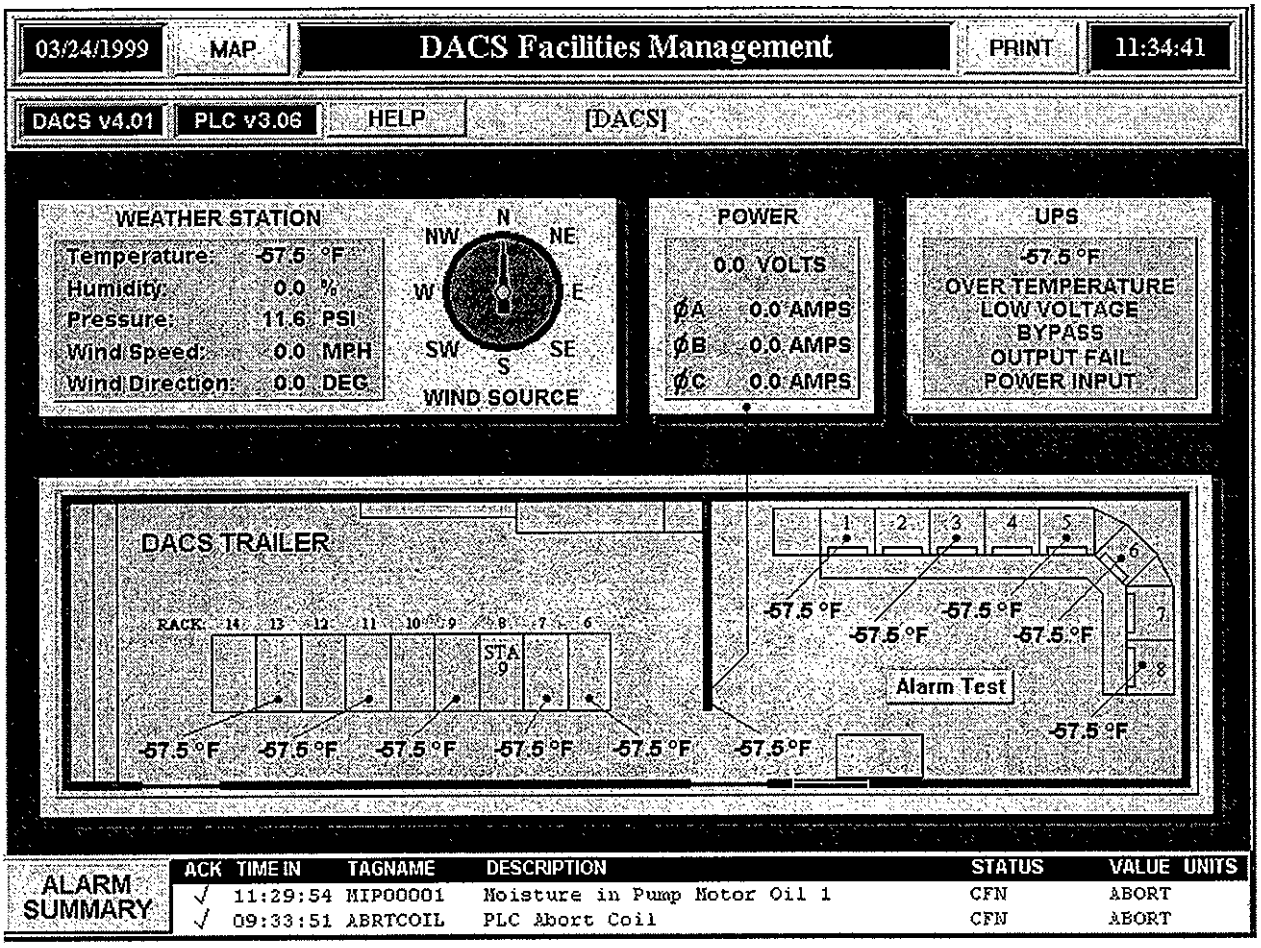
```
IF #RSS == 1
  IF #ABORTWRN_OPEN == 0
    OPENPIC ABORTWRN
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ELSE
  IF #SECURITY_LEVEL >= 2.5
    #ABORT_BUTTON_STAT = 1
    CLOSEDIG STATION5:RSTCOIL.F_CV
    ONSCAN STATION5:PULSECOIL
  ELSE
    IF #ABORTWRN_OPEN == 0
      OPENPIC ABORTWRN
    ELSE
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    ENDIF
  ENDIF
ENDIF
```

"On Up": #ABORT_BUTTON_STAT = 0

Bottom Smaller Round Button: Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Screen Filename: DACS.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "DACS"
DECLARE #ALARMTEST NUMERIC PICTURE
IF #GS_NODE == "STATION5"
 #ALARMTEST = 1
ENDIF
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR 547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "DACS"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<Alarm Test> Visibility: #ALARMTEST {1.0: Visible}

<Alarm Test> Script: PLAYSOUND C:\FIX32\SOUNDS\ALARM.WAV

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_DACS
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

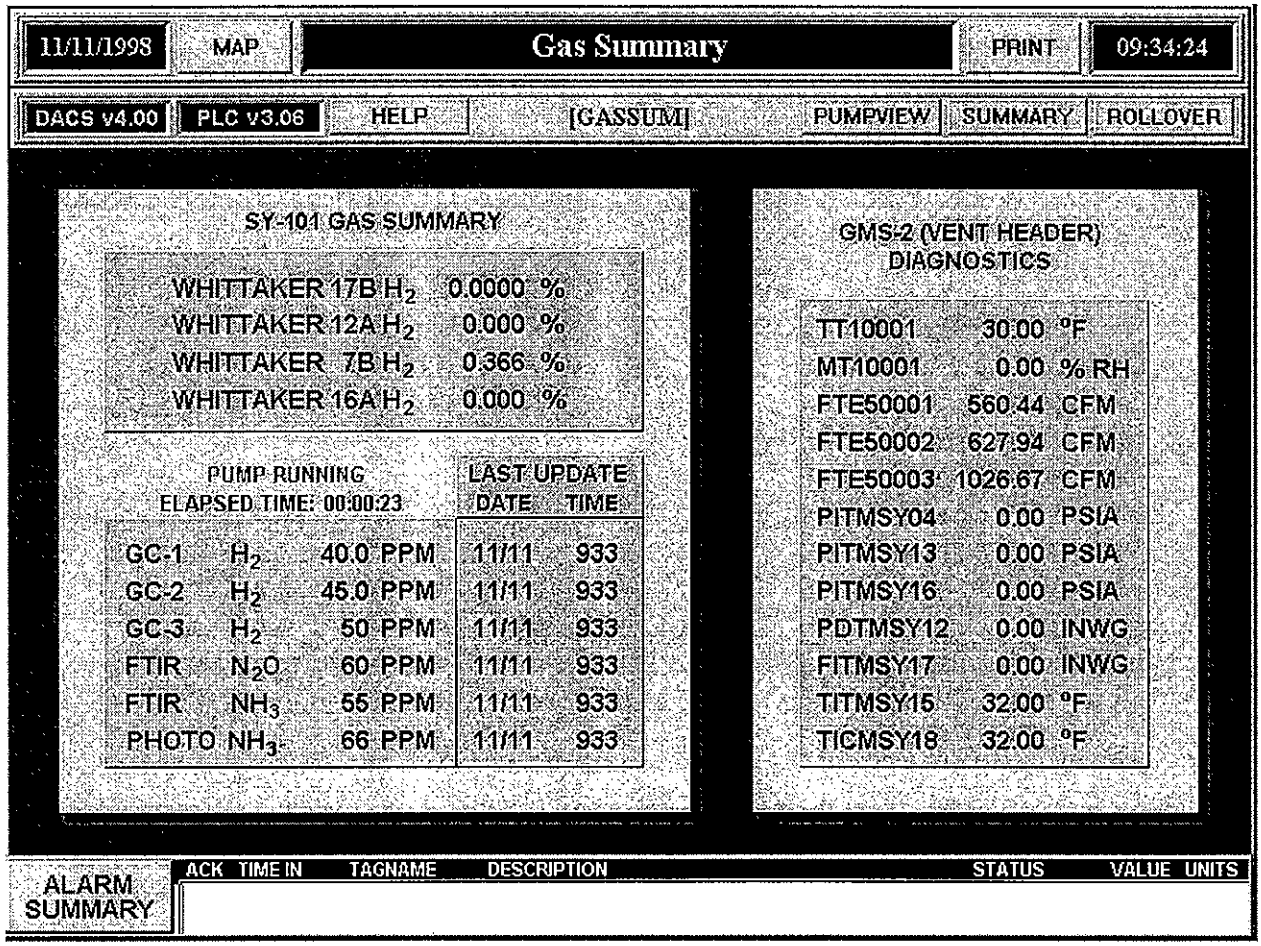
[DACS] Screen Dynamics:

Collective Description	Individual Description	Data Link Tagname	Dynamic Coloring: 0: Red 1: Green
Weather Station	Temperature	WST1	---
	Humidity	WSH1	---
	Pressure	WSP1	---
	Wind Speed	WSWSPD	---
	Wind Direction	WSWDIR	---
Power	Volts	TRV1	---
	ϕA Amps	TRA1A	---
	ϕB Amps	TRA1B	---
	ϕC Amps	TRA1C	---
UPS	Temperature	UPST1	---
	OVER TEMPERATURE	---	UPSOT1
	LOW VOLTAGE	---	UPSLV1
	BYPASS	---	UPSBY1
	OUTPUT FAIL	---	UPSFA1
	POWER INPUT	---	UPSPI1
DACS Trailer	Rack 13 Temperature	TRT1	---
	Rack 11 Temperature	TRT2	---
	Rack 9 Temperature	TRT3	---
	Rack 7 Temperature	TRT4	---
	Station 1 Temperature	TRT5	---
	Station 3 Temperature	TRT6	---
	Station 5 Temperature	TRT7	---
	Station 6 Temperature	TRT8	---
	Station 8 Temperature	TRT9	---
	Panel Temperature	TRT10	
	Rack 6 Temperature	TRT11	---

WIND SOURCE Gauge Needle: Rotation: Tagname: WSWDIR
X = 3.992, Y = 2.602
Limits: 0 to 360
Angles: 0 to 360

Screen Filename: GASSUM.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "GASSUM"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
&CheckForPumpRunVis
IF #GS_NODE == "STATION5"
  IF STATION5:ST5_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION6"
  IF STATION5:ST6_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION7"
  IF STATION5:ST7_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
```

```
ENDIF
IF #GS_NODE == "STATION8"
  IF STATION5:ST8_PUMPRUN_VIS.F_CV == 0
   #PUMPOPS_VISIBLE = 0
  ELSE
   #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
PAUSE 2
GOTO CheckForPumpRunVis
```

Script "On Closing":

```
#PREV_PIC = "GASSUM"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

```
<HELP>              IF #HELP_OPEN == 0
                      #HELP_OPEN = 1
                    OPENPIC H_GASSUM
                    ELSE
                      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                    ENDIF

<PUMPRUN>           #PUMPOPS_VISIBLE = {1: Visible}
    <PUMPRUN>           CLOSEPIC MAP
                        REPLACEPIC ACTIVEPIC PUMPRUN

<PUMPVIEW>          #PUMPOPS_VISIBLE = {0: Visible}
    <PUMPVIEW>          CLOSEPIC MAP
                        REPLACEPIC ACTIVEPIC PUMPVIEW


<SUMMARY>           CLOSEPIC MAP
                    REPLACEPIC ACTIVEPIC SUMMARY

<ROLLOVER>          CLOSEPIC MAP
                    REPLACEPIC ACTIVEPIC ROLLOVER
```

[GASSUM] Screen Dynamics:

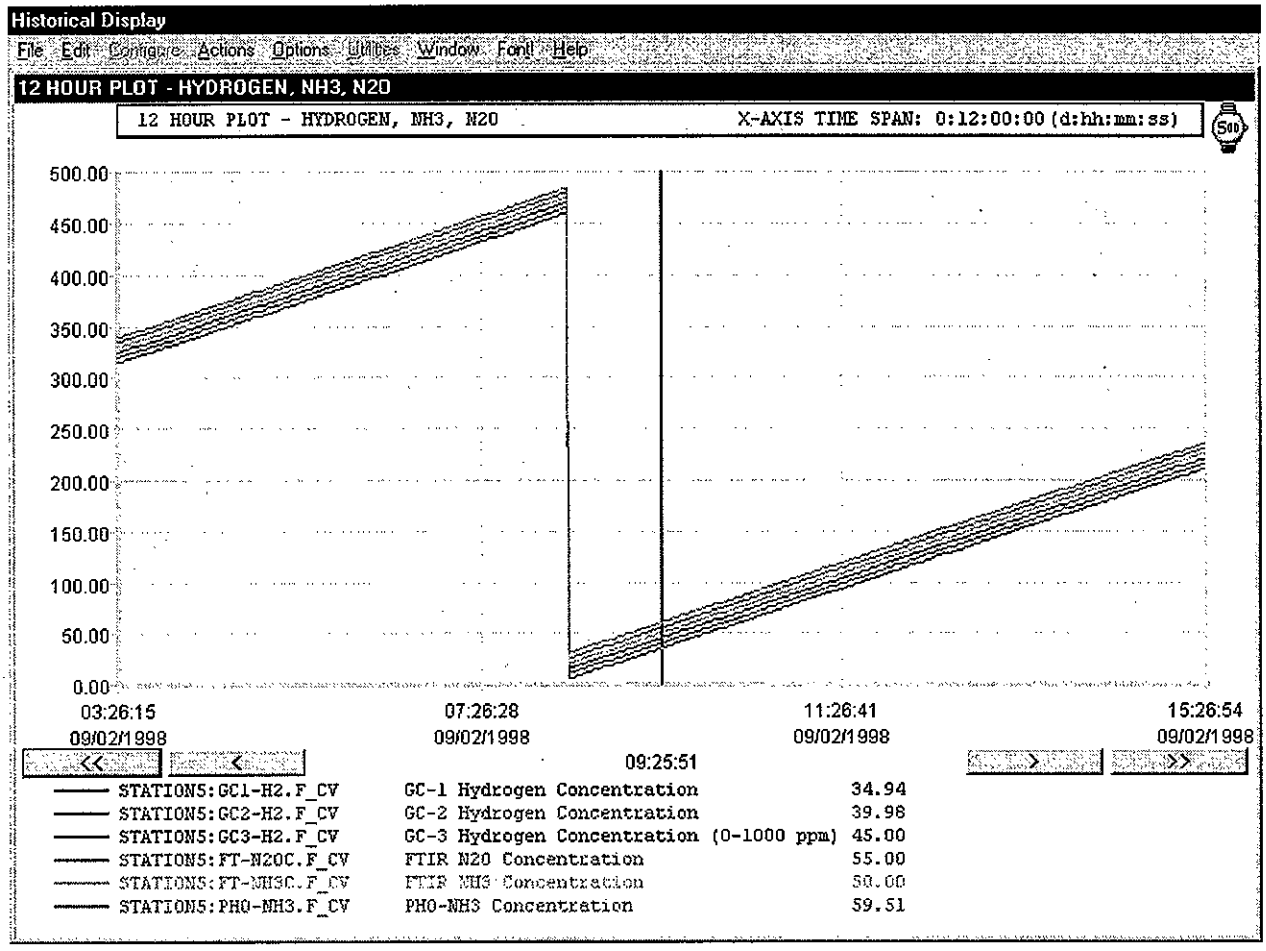
Description	Data Link Tagname	Description, Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow	LAST UPDATE DATE Data Link Tagname	LAST UPDATE TIME Data Link Tagname
Whittaker 17B H_2	NIR17B01	NIR17B01_CA	---	---
Whittaker 12A H_2	NIR05A01	NIR05A01_CA	---	---
Whittaker 7B H_2	NITKSY06	NITKSY06_CA	---	---
Whittaker 16A H_2	NITJSY06	NITJSY06_CA	---	---
GC-1 H_2	GC1-H2	GC1-H2_CA	GC1-DATE-DESC.A_DESC	GC1-TIME
GC-2 H_2	GC2-H2	GC2-H2_CA	GC2-DATE-DESC.A_DESC	GC2-TIME
GC-3 H_2	GC3-H2	GC3-H2_CA	GC3-DATE-DESC.A_DESC	GC3-TIME
FTIR N_20	FT-N2OC	FT-N2OC_CA	FT-DATE-DESC.A_DESC	FT-TIME
FTIR NH_3	FT-NH3C	FT-NH3C_CA	FT-DATE-DESC.A_DESC	FT-TIME
PHOTO NH_3	PHO-NH3	PHO-NH3_CA	PHO-DATE-DESC.A_DESC	PHO-TIME
TT10001	TT10001	---	---	---
MT10001	MT10001	---	---	---
FTE50001	FTE50001	FTE50001_CA	---	---
FTE50002	FTE50002	FTE50002_CA	---	---
FTE50003	FTE50003	FTE50003_CA	---	---
PITMSY04	PITMSY04	---	---	---
PITMSY13	PITMSY13	---	---	---
PITMSY16	PITMSY16	---	---	---
PDTMSY12	PDTMSY12	---	---	---
FITMSY17	FITMSY17	---	---	---
TITMSY15	TITMSY15	---	---	---
TICMSY18	TICMSY18	---	---	---

PUMP RUNNING Information:
Visibility: P_RUN_STAT.F_CV = {1: Visible}

Elapsed Time Tagname:
(Note: A gray box covers the "dd:" (days) field)
ELAPSED-TIME.A_CV

Screen Name: "Historical Display"

Note: "Historical Display" is *not* a FIX32 screen, but is part of a stand-alone application that works with the FIX32 software. It is accessed from the [TRENDS] screen. A more complete description of the Historical Display features is given elsewhere.



Define Time Groups:

Time Group	Start Date	Start Time	Time Span		X Axis*	
	Days Before Today	Time Before Now	Duration – DD:HH:MM:SS	Fixed Interval	Number of Tick Marks	Number of Labels
1 Hour	0	01:00:00	00:01:00:00	00:00:00	4	4
4 Hours	0	04:00:00	00:04:00:00	00:00:00	5	5
12 Hours	0	12:00:00	00:12:00:00	00:00:00	4	4
24 Hours	1	00:00:10	01:00:00:00	00:00:00	4	4
72 Hours	3	00:00:10	03:00:00:00	00:00:00	4	4
7 Days	7	00:00:10	07:00:00:00	00:00:00	4	4
30 Days	30	00:00:10	30:00:00:00	00:00:00	4	4

* "Vertical Grid" and "Display Date" checked for all Time Groups

[Historical Display] (cont.)

Define Pen Groups:

Pen Group	Pens	EGUs		Y Axis	
		Low Limit	High Limit	Number of Tick Marks	Number of Labels
TANK FLOW, PRESSURE, H2	1. FTE50001	0	1000	6	6
	2. FTE50002	0	1000		
	3. FTE50003	0	1250		
	4. PIR17B04	-4.00	1.00		
	5. PIR17C01	-4.00	1.00		
	6. GC2-H2	0.0	1000.0		
	7. GC3-H2	0.0	500.0		
	8. NIR17B01	0.000	1.000		
TANK LEVEL, STRAIN	1. LIR01A	350	500	7	7
	2. LIR01C	350	500		
	3. WIR12A04	-300	300		
PUMP MOTOR PARAMETERS	1. ZIMPE112	0	250	6	6
	2. ZIMPE142	0.0	25.0		
	3. VR232020	0.0	500.0		
	4. VR232040	0.0	250.0		
	5. VR232050	0	1250		
	6. TIR12A01	0.0	500.0		
	7. TIR12A02	0.0	500.0		
PUMP PRESSURES, STRAINS	1. PDPBASE	0.0	150.0	7	7
	2. PCR12A01	0.0	150.0		
	3. PITNO110	-20.0	100.0		
	4. PITNO111	-20.0	100.0		
	5. WIR12A01	-750.0	750.0		
	6. WIR12A02	-750.0	750.0		
	7. WIR12A03	-750.0	750.0		
	8. WIR12A04	-750.0	750.0		
STRAIN GAUGES	1. WIR12A01	-750.0	750.0	7	7
	2. WIR12A02	-750.0	750.0		
	3. WIR12A03	-750.0	750.0		
	4. WIR12A04	-750.0	750.0		
	5. WIR17C01	-750.0	750.0		
	6. WIR17C02	-750.0	750.0		
	7. WIR1BA01	-750.0	750.0		
	8. WIR1BA02	-750.0	750.0		
HYDROGEN, VENT HEADER	1. NIR05A01	0.00	10.00	11	11
	2. NITKSY06	0.00	10.00		
	3. NITJSY06	0.00	10.00		
	4. NIR17B01	0.00	1.00		
	5. TT10001	40.00	140.00		
	6. MT10001	0.0	100.0		

Notes:

- "Show Y-Axis Label" checked for all pens
- "Pen Colors": 1-Black, 2-Red, 3-Blue, 4-Magenta, 5-Orange, 6-Light Blue, 7-Green, 8-Brown
- "Historical" and Line Style "Show Line" selected for all pens
- "Sample" Mode selected for all pens
- Y-Axis "Horizontal Grid" checked for all pen groups

[Historical Display] (cont.)

Define Pen Groups (cont.):

Pen Group	Pens	EGUs		Y Axis	
		Low Limit	High Limit	Number of Tick Marks	Number of Labels
HYDROGEN, NH3, N20	1. GC1-H2	0.00	500.00	11	11
	2. GC2-H2	0.00	500.00		
	3. GC3-H2	0.00	500.00		
	4. FT-N2OC	0.00	500.00		
	5. FT-NH3C	0.00	500.00		
	6. PHO-NH3	0.00	500.00		
MIT17B01-08	1. TIR17B01	70.0	140.0	8	8
	2. TIR17B02	70.0	140.0		
	3. TIR17B03	70.0	140.0		
	4. TIR17B04	70.0	140.0		
	5. TIR17B05	70.0	140.0		
	6. TIR17B06	70.0	140.0		
	7. TIR17B07	70.0	140.0		
	8. TIR17B08	70.0	140.0		
MIT17B09-15	1. TIR17B09	70.0	140.0	8	8
	2. TIR17B10	70.0	140.0		
	3. TIR17B11	70.0	140.0		
	4. TIR17B12	70.0	140.0		
	5. TIR17B13	70.0	140.0		
	6. TIR17B14	70.0	140.0		
	7. TIR17B15	70.0	140.0		
MIT17B16-22	1. TIR17B16	70.0	140.0	8	8
	2. TIR17B17	70.0	140.0		
	3. TIR17B18	70.0	140.0		
	4. TIR17B19	70.0	140.0		
	5. TIR17B20	70.0	140.0		
	6. TIR17B21	70.0	140.0		
	7. TIR17B22	70.0	140.0		
MIT17C01-08	1. TIR17C01	70.0	140.0	8	8
	2. TIR17C02	70.0	140.0		
	3. TIR17C03	70.0	140.0		
	4. TIR17C04	70.0	140.0		
	5. TIR17C05	70.0	140.0		
	6. TIR17C06	70.0	140.0		
	7. TIR17C07	70.0	140.0		
	8. TIR17C08	70.0	140.0		

Notes:

- "Show Y-Axis Label" checked for all pens
- "Pen Colors": 1-Black, 2-Red, 3-Blue, 4-Magenta, 5-Orange, 6-Light Blue, 7-Green, 8-Brown
- "Historical" and Line Style "Show Line" selected for all pens
- "Sample" Mode selected for all pens
- Y-Axis "Horizontal Grid" checked for all pen groups

[Historical Display] (cont.)

Define Pen Groups (cont.):

Pen Group	Pens	EGUs		Y Axis	
		Low Limit	High Limit	Number of Tick Marks	Number of Labels
MIT17C09-15	1. TIR17C09	70.0	140.0	8	8
	2. TIR17C10	70.0	140.0		
	3. TIR17C11	70.0	140.0		
	4. TIR17C12	70.0	140.0		
	5. TIR17C13	70.0	140.0		
	6. TIR17C14	70.0	140.0		
	7. TIR17C15	70.0	140.0		
MIT17C16-21	1. TIR17C16	70.0	140.0	8	8
	2. TIR17C17	70.0	140.0		
	3. TIR17C18	70.0	140.0		
	4. TIR17C20	70.0	140.0		
	5. TIR17C21	70.0	140.0		
TBS TCs 1-8	1. TBSTC01	80.0	140.0	7	7
	2. TBSTC02	80.0	140.0		
	3. TBSTC03	80.0	140.0		
	4. TBSTC04	80.0	140.0		
	5. TBSTC05	80.0	140.0		
	6. TBSTC06	80.0	140.0		
	7. TBSTC08	80.0	140.0		
TBS TCs 9-18	1. TBSTC09	80.0	140.0	7	7
	2. TBSTC11	80.0	140.0		
	3. TBSTC12	80.0	140.0		
	4. TBSTC13	80.0	140.0		
	5. TBSTC15	80.0	140.0		
	6. TBSTC16	80.0	140.0		
	7. TBSTC17	80.0	140.0		
	8. TBSTC18	80.0	140.0		
TBS TCs 19-26	1. TBSTC19	80.0	140.0	7	7
	2. TBSTC20	80.0	140.0		
	3. TBSTC21	80.0	140.0		
	4. TBSTC22	80.0	140.0		
	5. TBSTC23	80.0	140.0		
	6. TBSTC25	80.0	140.0		
	7. TBSTC26	80.0	140.0		
WEATHER STATION	1. WST1	-50.0	150.0	6	6
	2. WSH1	0.0	100.0		
	3. WSP1	11.00	16.00		
	4. WSWSPD	0.0	75.0		

Notes:

- "Show.Y-Axis Label" checked for all pens
- "Pen Colors": 1-Black, 2-Red, 3-Blue, 4-Magenta, 5-Orange, 6-Light Blue, 7-Green, 8-Brown
- "Historical" and Line Style "Show Line" selected for all pens
- "Sample" Mode selected for all pens
- Y-Axis "Horizontal Grid" checked for all pen groups

[Historical Display] (cont.)

Define Chart Groups:

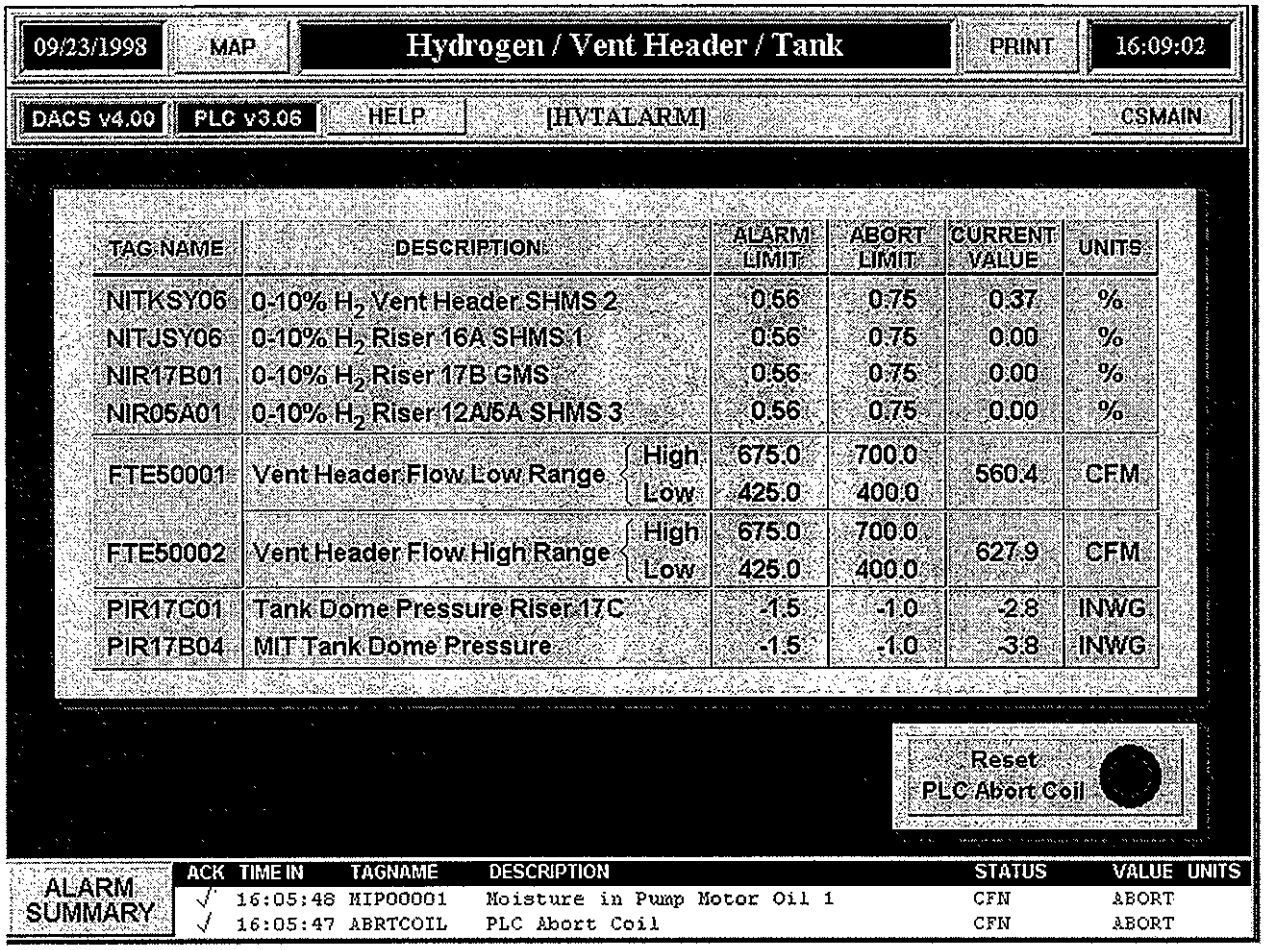
17 Pen Groups	x	7 Time Groups	=	119 Chart Groups*
TANK FLOW, PRESSURE, H2		1 Hour		<Time Group> PLOT - TANK FLOW, PRESSURE, H2'"
TANK LEVEL, STRAIN		4 Hours		<Time Group> PLOT - TANK LEVEL, STRAIN'"
PUMP MOTOR PARAMETERS		12 Hours		<Time Group> PLOT - PUMP MOTOR PARAMETERS'"
PUMP PRESSURES, STRAINS		24 Hours		<Time Group> PLOT - PUMP PRESSURES, STRAINS'"
STRAIN GAUGES		72 Hours		<Time Group> PLOT - STRAIN GAUGES'"
HYDROGEN, VENT HEADER		7 Days		<Time Group> PLOT - HYDROGEN, VENT HEADER'"
HYDROGEN, NH3, N2O		30 Days		<Time Group> PLOT - HYDROGEN, NH3, N2O'"
MIT17B01-08				<Time Group> PLOT - MIT17B TCs 1-8'"
MIT17B09-15				<Time Group> PLOT - MIT17B TCs 9-15'"
MIT17B16-22				<Time Group> PLOT - MIT17B TCs 16-22'"
MIT17C01-08				<Time Group> PLOT - MIT17C TCs 1-8'"
MIT17C09-15				<Time Group> PLOT - MIT17C TCs 9-15'"
MIT17C16-21				<Time Group> PLOT - MIT17C TCs 16-21'"
TBS TCs 1-8				<Time Group> PLOT - TBS TCs 1-8'"
TBS TCs 9-18				<Time Group> PLOT - TBS TCs 9-18'"
TBS TCs 19-26				<Time Group> PLOT - TBS TCs 19-26'"
WEATHER STATION				<Time Group> PLOT - WEATHER STATION'"

* Note - Replace <Time Group> with each of the following to define the 119 Chart Groups:
1 HOUR, 4 HOUR, 12 HOUR, 24 HOUR, 72 HOUR, 7 DAY and 30 DAY

119 Chart Groups*	Primary And Alternate Legend	*Header*** ("Visible" and "Border" checked for all)				
1 HOUR PLOT - <Pen Group>		Label	Item	Row	Col.	Length
4 HOUR PLOT - <Pen Group>	Max. Length		CHART GROUP	1	1	39
12 HOUR PLOT - <Pen Group>	Tagname 25	X-AXIS TIME SPAN:	DURATION	1	36	39
24 HOUR PLOT - <Pen Group>	Descriptor 40	(d:hh:mm:ss)		1	54	14
72 HOUR PLOT - <Pen Group>	Tag Value 13					
7 DAY PLOT - <Pen Group>						
30 DAY PLOT - <Pen Group>						

* Replace <Pen Group> with each of the 17 Pen Group descriptions to define the 119 Chart Groups
** For the "30 DAY PLOT" Chart Groups, replace Label "(d:hh:mm:ss)" with "(dd:hh:mm:ss)"

Screen Filename: HVTALARM.odf
Picture Type: Standard
Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "HVTALARM"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "HVTALARM"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_HVTALM
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<CSMAIN>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC CSMAIN
```

[HVTALARM] Screen Dynamics:

Description	Current Value Data Link Tagname	Description, Current Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
0-10% H_2 Vent Header SHMS 2	NITKSY06	NITKSY06_CA
0-10% H_2 Riser 16A SHMS 1	NITJSY06	NITJSY06_CA
0-10% H_2 Riser 17B GMS	NIR17B01	NIR17B01_CA
0-10% H_2 Riser 12A/5A SHMS 3	NIR05A01	NIR05A01_CA
Vent Header Flow Low Range - High	FTE50001	FTE50001_CA
Vent Header Flow Low Range - Low		
Vent Header Flow High Range - High	FTE50002	FTE50002_CA
Vent Header Flow High Range - Low		
Tank Dome Pressure Riser 17C	PIR17C01	PIR17C01_CA
MIT Tank Dome Pressure	PIR17B04	PIR17B04_CA

Description	Alarm Limit		Abort Limit	
	Data Link Tagname	Dynamic Coloring: OK: Blue HIGH,LO: Red	Data Link Tagname	Dynamic Coloring: 0: Blue 1: Flashing Red
0-10% H_2 Vent Header SHMS 2	NITKSY06.F_HI	NITKSY06	HH2LIM	NCTKSY06
0-10% H_2 Riser 16A SHMS 1	NITJSY06.F_HI	NITJSY06	HH2LIM	NCTJSY06
0-10% H_2 Riser 17B GMS	NIR17B01.F_HI	NIR17B01	HH2LIM	NCR17B01
0-10% H_2 Riser 12A/5A SHMS 3	NIR05A01.F_HI	NIR05A01	HH2LIM	NCR05A01
Vent Header Flow Low Range - High	FTE50001.F_HI	FTE50001	HVFLLIM1	FHE50001
Vent Header Flow Low Range - Low	FTE50001.F_LO	FTE50001	LVFLLIM	FCE50001
Vent Header Flow High Range - High	FTE50002.F_HI	FTE50002	HVFLLIM2	FHE50002
Vent Header Flow High Range - Low	FTE50002.F_LO	FTE50002	LVFLLIM2	FCE50002
Tank Dome Pressure Riser 17C	PIR17C01.F_HI	PIR17C01	HTDPLIM	PCR17C01
MIT Tank Dome Pressure	PIR17B04.F_HI	PIR17B04	HTDPLIM	PCR17B04

RESET PLC ABORT COIL Button:

Top Larger Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Visibility #ABORT_BUTTON_STAT {0: Visible}

"On Down":

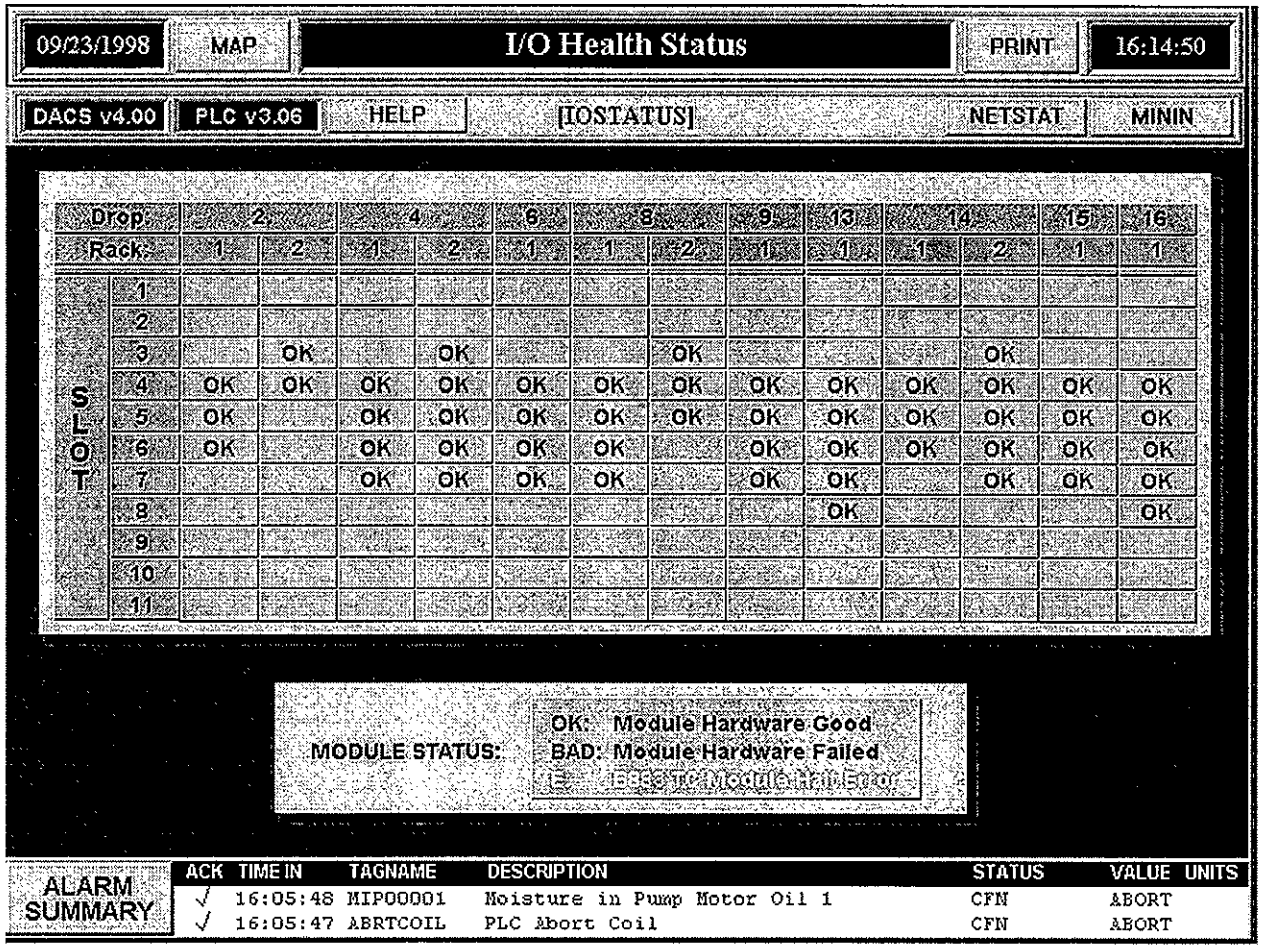
```
IF #RSS == 1
  IF #ABORTWRN_OPEN == 0
    OPENPIC ABORTWRN
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ELSE
  IF #SECURITY_LEVEL >= 2.5
    #ABORT_BUTTON_STAT = 1
    CLOSEDIG STATION5:RSTCOIL.F_CV
    ONSCAN STATION5:PULSECOIL
  ELSE
    IF #ABORTWRN_OPEN == 0
      OPENPIC ABORTWRN
    ELSE
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    ENDIF
  ENDIF
ENDIF
```

"On Up": #ABORT_BUTTON_STAT = 0

Bottom Smaller Round Button: Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Screen Filename: IOSTATUS.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "IOSTATUS"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "IOSTATUS"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_IOSTAT
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<NETSTAT>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC NETSTAT
```

<MININ>

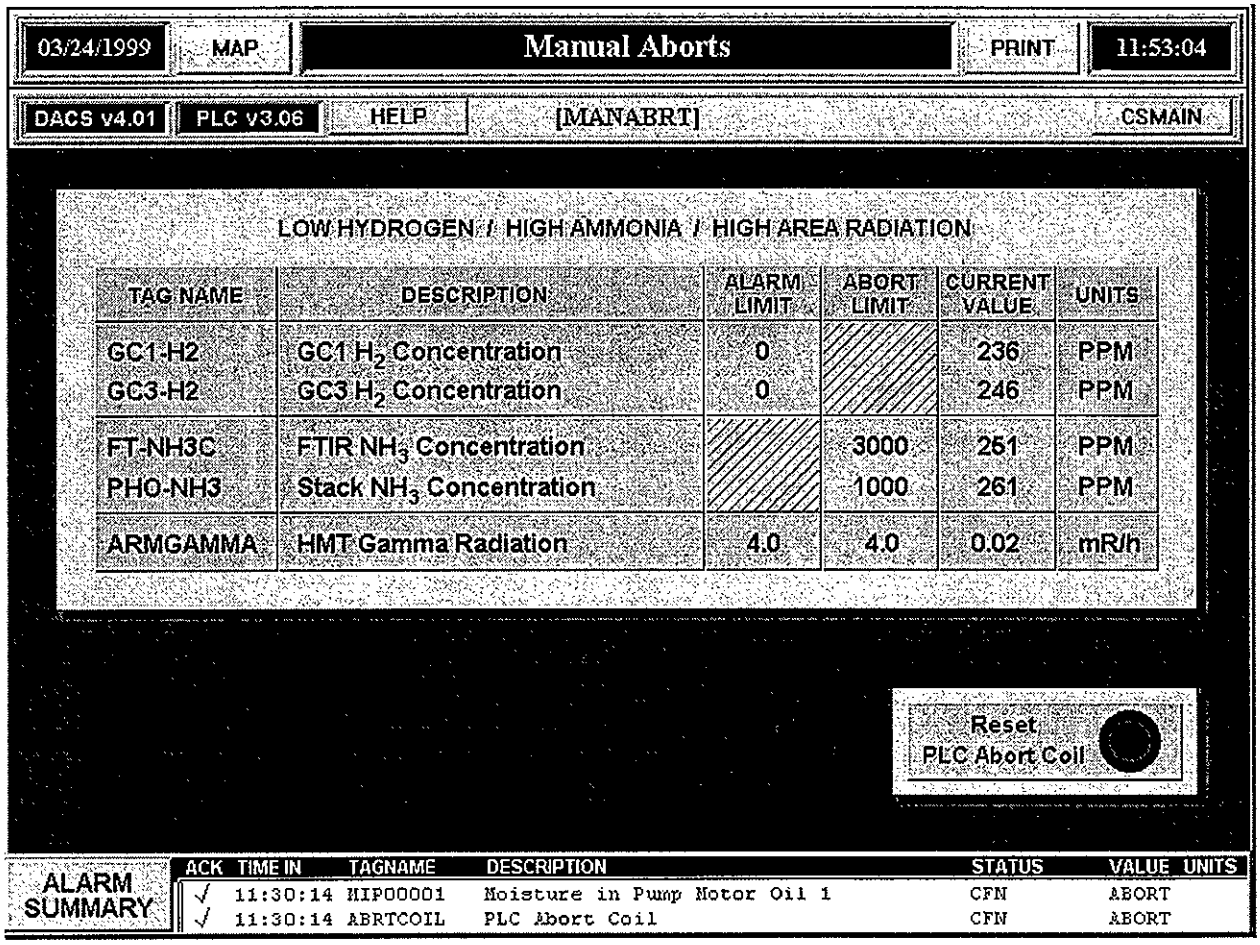
```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC MININ
```

[IOSTATUS] Screen Dynamics:

Drop / Rack / Slot	Module Hardware Data Link: TAGNAME.A_CV: Open: "BAD" Close: "OK" TAGNAME.F_CV: 0: Red; 1: Green	TC Module Halt Error Yellow "E" Visibility: 1: Visible	Drop / Rack / Slot	Module Hardware Data Link: TAGNAME.A_CV: Open: "BAD" Close: "OK" TAGNAME.F_CV: 0: Red; 1: Green	TC Module Halt Error Yellow "E" Visibility: 1: Visible
2 / 1 / 4	D2R1S4STAT	---	9 / 1 / 5	D9R1S5STAT	---
2 / 1 / 5	D2R1S5STAT	---	9 / 1 / 6	D9R1S6STAT	---
2 / 1 / 6	D2R1S6STAT	---	9 / 1 / 7	D9R1S7STAT	---
2 / 2 / 3	D2R2S3STAT	---	13 / 1 / 4	D13R1S4STAT	TCMOD4ERR
2 / 2 / 4	D2R2S4STAT	---	13 / 1 / 5	D13R1S5STAT	TCMOD5ERR
4 / 1 / 4	D4R1S4STAT	---	13 / 1 / 6	D13R1S6STAT	TCMOD6ERR
4 / 1 / 5	D4R1S5STAT	---	13 / 1 / 7	D13R1S7STAT	---
4 / 1 / 6	D4R1S6STAT	---	13 / 1 / 8	D13R1S8STAT	---
4 / 1 / 7	D4R1S7STAT	TCMOD7ERR	14 / 1 / 4	D14R1S4STAT	---
4 / 2 / 3	D4R2S3STAT	TCMOD8ERR	14 / 1 / 5	D14R1S5STAT	---
4 / 2 / 4	D4R2S4STAT	TCMOD1ERR	14 / 1 / 6	D14R1S6STAT	---
4 / 2 / 5	D4R2S5STAT	TCMOD2ERR	14 / 2 / 3	D14R2S3STAT	---
4 / 2 / 6	D4R2S6STAT	TCMOD3ERR	14 / 2 / 4	D14R2S4STAT	---
4 / 2 / 7	D4R2S7STAT	TCMOD9ERR	14 / 2 / 5	D14R2S5STAT	---
6 / 1 / 4	D6R1S4STAT	---	14 / 2 / 6	D14R2S6STAT	---
6 / 1 / 5	D6R1S5STAT	---	14 / 2 / 7	D14R2S7STAT	---
6 / 1 / 6	D6R1S6STAT	---	15 / 1 / 4	D15R1S4STAT	---
6 / 1 / 7	D6R1S7STAT	---	15 / 1 / 5	D15R1S5STAT	---
8 / 1 / 4	D8R1S4STAT	---	15 / 1 / 6	D15R1S6STAT	---
8 / 1 / 5	D8R1S5STAT	---	15 / 1 / 7	D15R1S7STAT	---
8 / 1 / 6	D8R1S6STAT	---	16 / 1 / 4	D16R1S4STAT	---
8 / 1 / 7	D8R1S7STAT	---	16 / 1 / 5	D16R1S5STAT	---
8 / 2 / 3	D8R2S3STAT	---	16 / 1 / 6	D16R1S6STAT	---
8 / 2 / 4	D8R2S4STAT	---	16 / 1 / 7	D16R1S7STAT	---
8 / 2 / 5	D8R2S5STAT	---	16 / 1 / 8	D16R1S8STAT	---
9 / 1 / 4	D9R1S4STAT	---	---	---	---

Screen Filename: MANABRT.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "MANABRT"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "MANABRT"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_MANABT
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<CSMAIN>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC CSMAIN
```

[MANABRT] Screen Dynamics:

Description	Current Value Data Link Tagname	Description, Current Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
GC1 H_2 Concentration	GC1-H2	GC1-H2_CA
GC3 H_2 Concentration	GC3-H2	GC3-H2_CA
FTIR NH_3 Concentration	FT-NH3C	FT-NH3C_CA
Stack NH_3 Concentration	PHO-NH3	PHO-NH3_CA
HMT Gamma Radiation	ARMGAMMA	ARMGAMMA_CA

Description	Alarm Limit		Abort Limit	
	Data Link Tagname	Dynamic Coloring: OK: Black or Blue ALARM: Red	Data Link Tagname	Dynamic Coloring: OK: Black or Blue HIGH: Flashing Red
GC1 H_2 Concentration	GC1-H2.F_LO	GC1-H2	---	---
GC3 H_2 Concentration	GC3-H2.F_LO	GC3-H2	---	---
FTIR NH_3 Concentration	---	---	FT-NH3C.F_HI	FT-NH3C
Stack NH_3 Concentration	---	---	PHO-NH3.F_HI	PHO-NH3
HMT Gamma Radiation	"4.0"	ARMALM	"4.0"	ARMABORT

RESET PLC ABORT COIL Button:

Top Larger Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Visibility #ABORT_BUTTON_STAT {0: Visible}

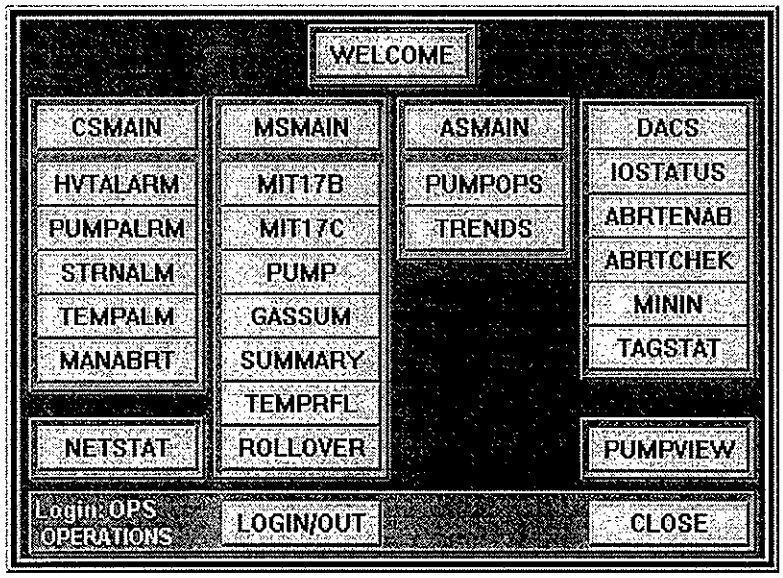
"On Down":

```
IF #RSS == 1
  IF #ABORTWRN_OPEN == 0
    OPENPIC ABORTWRN
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ELSE
  IF #SECURITY_LEVEL >= 2.5
    #ABORT_BUTTON_STAT = 1
    CLOSEDIG STATION5:RSTCOIL.F_CV
    ONSCAN STATION5:PULSECOIL
  ELSE
    IF #ABORTWRN_OPEN == 0
      OPENPIC ABORTWRN
    ELSE
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    ENDIF
  ENDIF
ENDIF
```

"On Up": #ABORT_BUTTON_STAT = 0

Bottom Smaller Round Button: Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Screen Filename: MAP.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 4.350" w x 3.160" h
Screen Refresh Rate: 0.5 sec



Script "On Opening":

```
CLOSEPIC LOGCHOIC
#NEXT_PIC = "NONE"
#MAP_OPEN = 1
STRTOK #GS_LOGIN_NAME 0 7 #CURRENT_LOGIN
STRTOK #GS_GROUP 0 13 #CURRENT_LOGIN_GROUP
&CheckForPumpRunVis
IF #GS_NODE == "STATION5"
  IF STATION5:ST5_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION6"
  IF STATION5:ST6_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION7"
  IF STATION5:ST7_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION8"
  IF STATION5:ST8_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
PAUSE 2
GOTO CheckForPumpRunVis
```

Script "On Closing":

```
IF #NEXT_PIC != "NONE"
  REPLACEPIC ACTIVEPIC #NEXT_PIC
ENDIF
PAUSE 1
```

#MAP_OPEN = 0

Popup Buttons & Dynamics:

General Button Scripts:

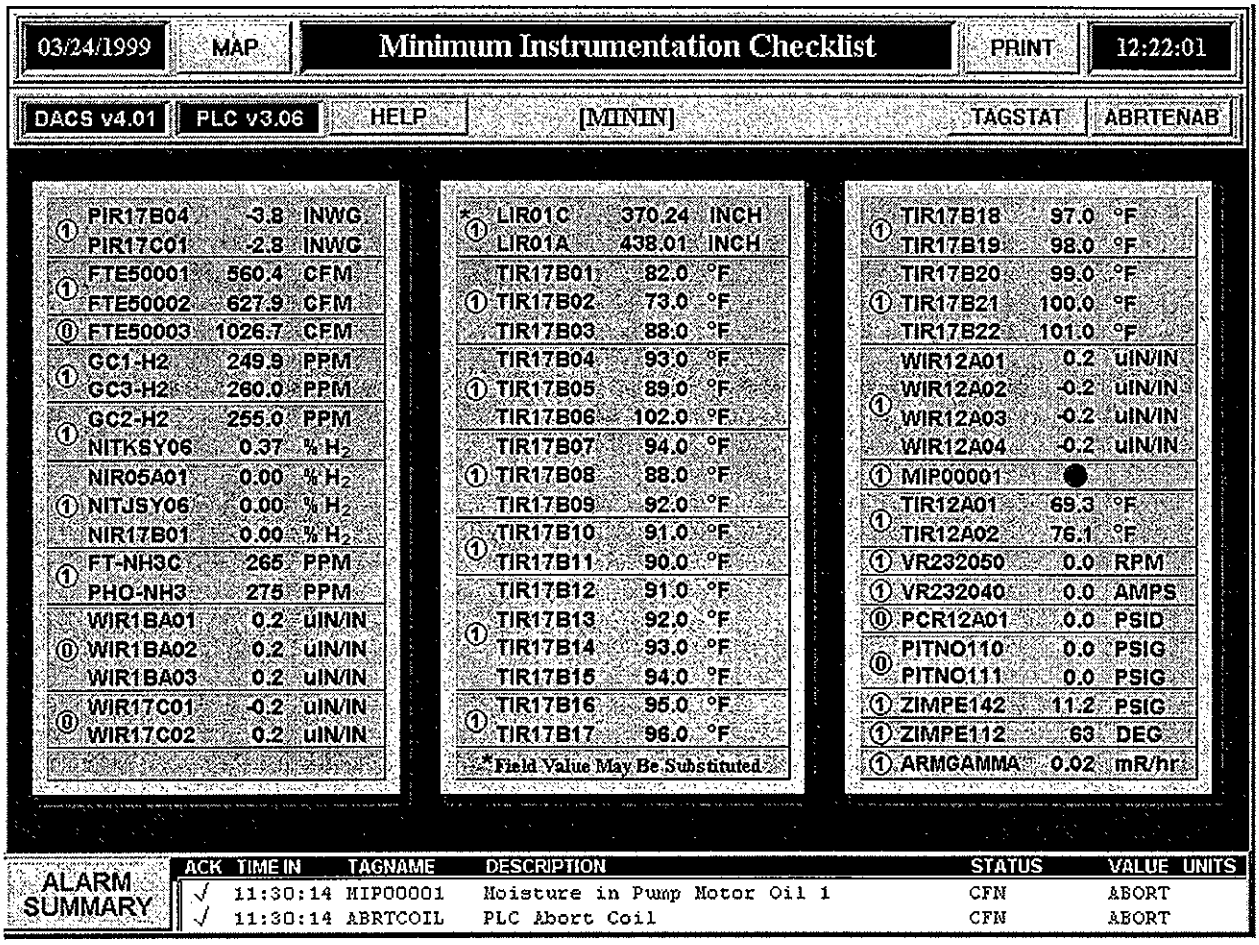
Button	Button Script	Button	Button Script
<CSMAIN>	#NEXT_PIC = "CSMAIN" CLOSEPIC MAP	<TEMPRFL>	#NEXT_PIC = "TEMPRFL" CLOSEPIC MAP
<HVTALARM>	#NEXT_PIC = "HVTALARM" CLOSEPIC MAP	<ROLLOVER>	#NEXT_PIC = "ROLLOVER" CLOSEPIC MAP
<PUMPALRM>	#NEXT_PIC = "PUMPALRM" CLOSEPIC MAP	<ASMAIN>	#NEXT_PIC = "ASMAIN" CLOSEPIC MAP
<STRNALM>	#NEXT_PIC = "STRNALM" CLOSEPIC MAP	<PUMPOPS>	#NEXT_PIC = "PUMPOPS" CLOSEPIC MAP
<TEMPALM>	#NEXT_PIC = "TEMPALM" CLOSEPIC MAP	<TRENDS>	#NEXT_PIC = "TRENDS" CLOSEPIC MAP
<MANABRT>	#NEXT_PIC = "MANABRT" CLOSEPIC MAP	<DACS>	#NEXT_PIC = "DACS" CLOSEPIC MAP
<MSMAIN>	#NEXT_PIC = "MSMAIN" CLOSEPIC MAP	<IOSTATUS>	#NEXT_PIC = "IOSTATUS" CLOSEPIC MAP
<MIT17B>	#NEXT_PIC = "MIT17B" CLOSEPIC MAP	<ABRTENAB>	#NEXT_PIC = "ABRTENAB" CLOSEPIC MAP
<MIT17C>	#NEXT_PIC = "MIT17C" CLOSEPIC MAP	<ABRTCHEK>	#NEXT_PIC = "ABRTCHEK" CLOSEPIC MAP
<PUMP>	#NEXT_PIC = "PUMP" CLOSEPIC MAP	<MININ>	#NEXT_PIC = "MININ" CLOSEPIC MAP
<GASSUM>	#NEXT_PIC = "GASSUM" CLOSEPIC MAP	<TAGSTAT>	#NEXT_PIC = "MININ" CLOSEPIC MAP
<SUMMARY>	#NEXT_PIC = "SUMMARY" CLOSEPIC MAP	<NETSTAT>	#NEXT_PIC = "NETSTAT" CLOSEPIC MAP

[MAP] Specific Dynamics & Scripts:

<PUMPRUN>	Visibility:	#PUMPOPS_VISIBLE = {1: Visible}
<PUMPRUN>	Script:	#NEXT_PIC = "PUMPRUN" CLOSEPIC MAP
<PUMPVIEW>	Visibility:	#PUMPOPS_VISIBLE = {0: Visible}
<PUMPVIEW>	Script:	#NEXT_PIC = "PUMPVIEW" CLOSEPIC MAP
Login "Name" Data Link:		#CURRENT_LOGIN
Login "Group" Data Link:		#CURRENT_LOGIN_GROUP
<LOGIN/OUT>	Script:	OPENPIC LOGCHOIC CLOSEPIC MAP
<CLOSE>	Script:	CLOSEPIC MAP

Screen Filename: MININ.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "MININ"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "MININ"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_MININ
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<TAGSTAT>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TAGSTAT
```

<ABRTENAB>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC ABRTENAB
```

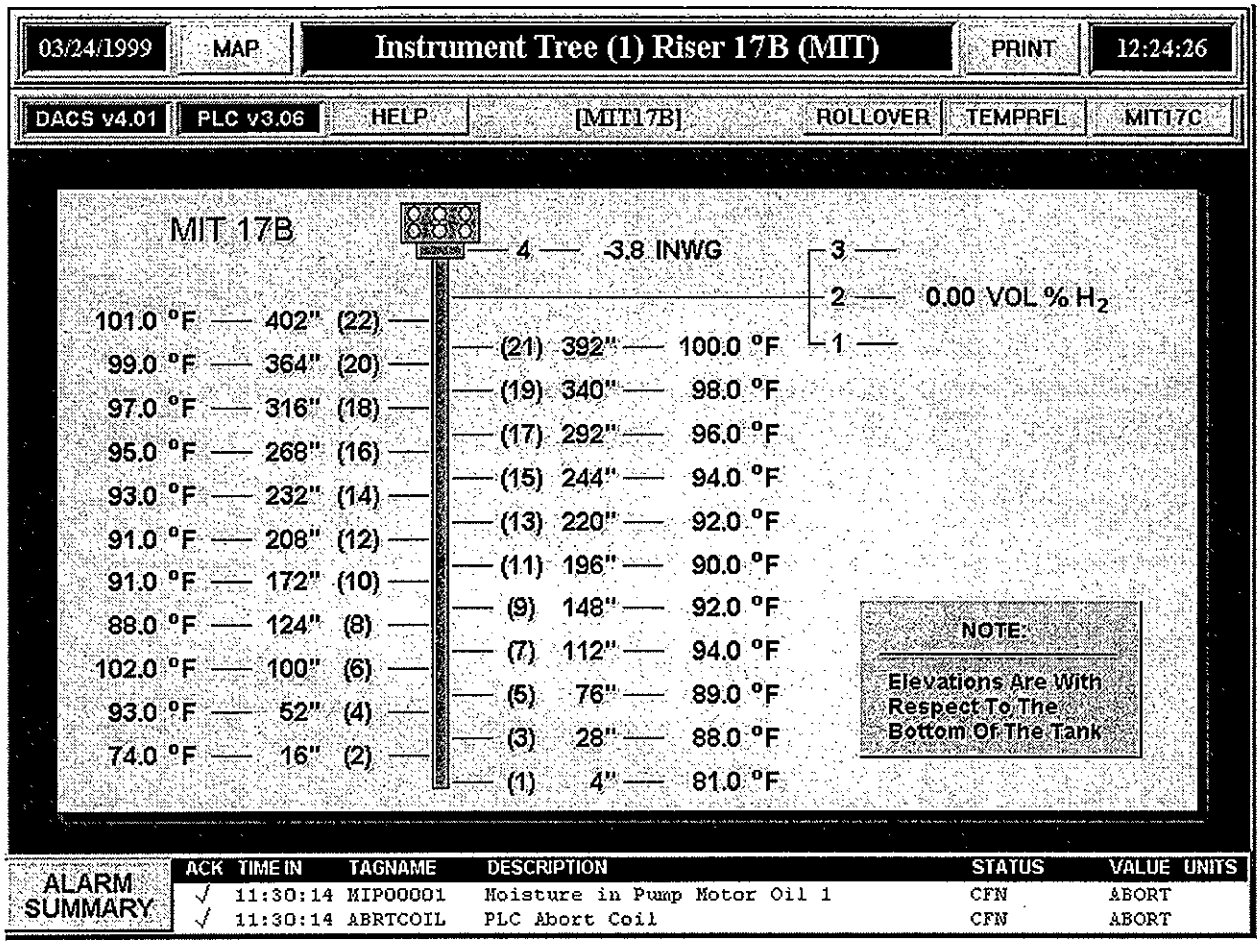
[MININ] Screen Dynamics:

Data Link Tagname	Description, Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow	Data Link Tagname	Description, Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
PIR17B04	PIR17B04_CA	TIR17B01	TIR17B01_CA
PIR17C01	PIR17C01_CA	TIR17B02	TIR17B02_CA
FTE50001	FTE50001_CA	↓	↓
FTE50002	FTE50002_CA	TIR17B21	TIR17B21_CA
FTE50003	FTE50003_CA	TIR17B22	TIR17B22_CA
GC1-H2	GC1-H2_CA	WIR12A01	WIR12A01_CA
GC3-H2	GC3-H2_CA	WIR12A02	WIR12A02_CA
GC2-H2	GC2-H2_CA	WIR12A03	WIR12A03_CA
NITKSY06	NITKSY06_CA	WIR12A04	WIR12A04_CA
NIR05A01	NIR05A01_CA	MIP00001*	MIP00001**
NITJSY06	NITJSY06_CA	TIR12A01	TIR12A01_CA
NIR17B01	NIR17B01_CA	TIR12A02	TIR12A02_CA
FT-NH3C	FT-NH3C_CA	VR232050	VR232050_CA
PHO-NH3	PHO-NH3_CA	VR232040	VR232040_CA
WIR1BA01	WIR1BA01_CA	PCR12A01	PIR12A01_CA
WIR1BA02	WIR1BA02_CA	PITNO110	PITNO110_CA
WIR1BA03	WIR1BA03_CA	PITNO111	PITNO111_CA
WIR17C01	WIR17C01_CA	ZIMPE142	ZIMPE142_CA
WIR17C02	WIR17C02_CA	ZIMPE112	ZIMPE112***
LIR01C	LIR01C_CA	ARMGAMMA	ARMGAMMA_CA
LIR01A	LIR01A_CA	---	---

* Digital Indicator Light - 0: Green; 1: Flashing Red
** Exception: 0: Black; 1: Flashing Red
*** Exception: OK: Black or Blue; Low or High Alarms: Red

Screen Filename: MIT17B.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "MIT17B"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR 547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "MIT17B"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_MIT17B
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<ROLLOVER>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC ROLLOVER
```

<TEMPRFL>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TEMPRFL
```

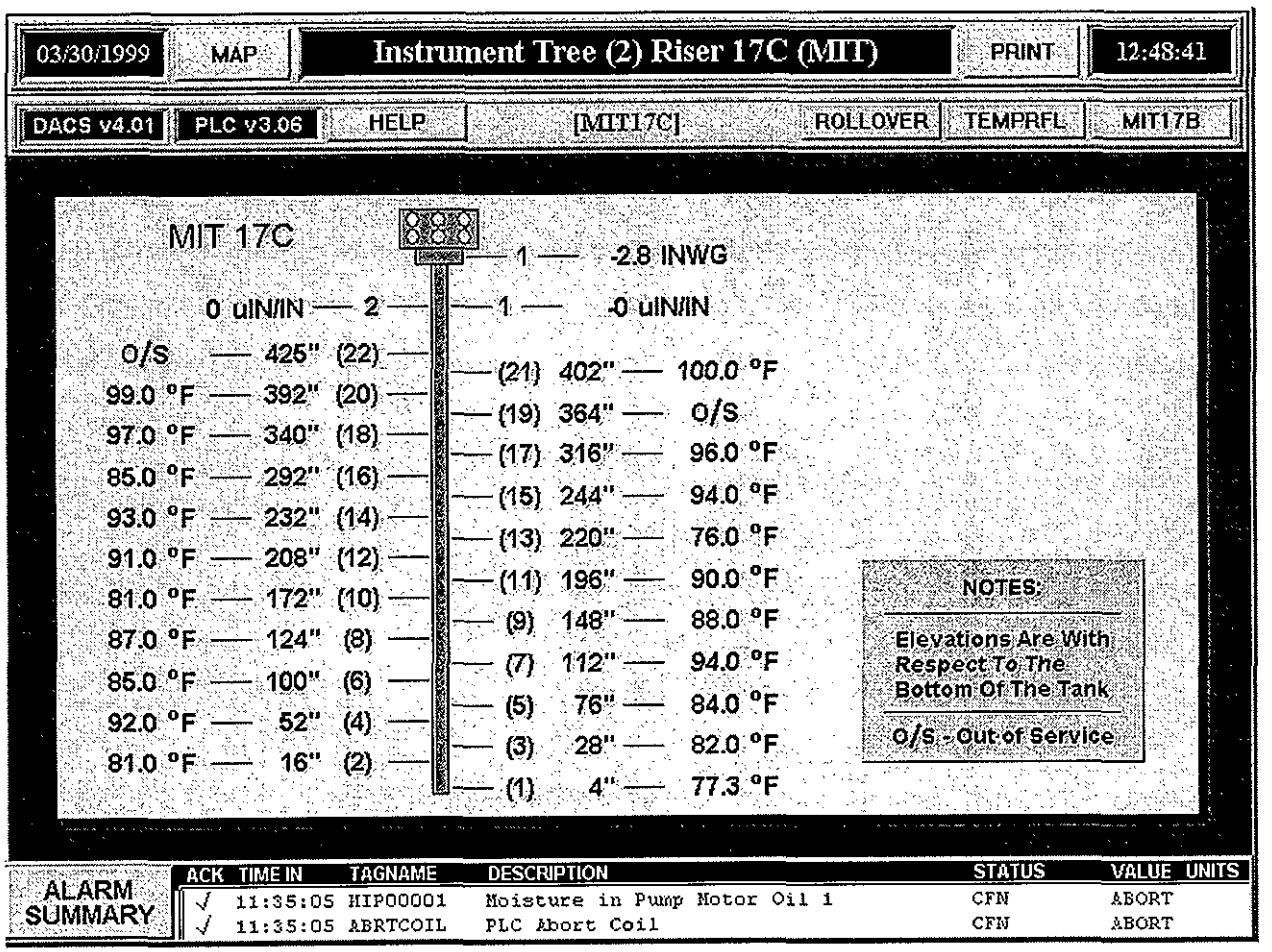
<MIT17C> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC MIT17C

[MIT17B] Screen Dynamics:

Description	Data Link Tagname	Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
(1) 4"	TIR17B01	TIR17B01_CA
(2) 16"	TIR17B02	TIR17B02_CA
(3) 28"	TIR17B03	TIR17B03_CA
(4) 52"	TIR17B04	TIR17B04_CA
(5) 76"	TIR17B05	TIR17B05_CA
(6) 100"	TIR17B06	TIR17B06_CA
(7) 112"	TIR17B07	TIR17B07_CA
(8) 124"	TIR17B08	TIR17B08_CA
(9) 148"	TIR17B09	TIR17B09_CA
(10) 172"	TIR17B10	TIR17B10_CA
(11) 196"	TIR17B11	TIR17B11_CA
(12) 208"	TIR17B12	TIR17B12_CA
(13) 220"	TIR17B13	TIR17B13_CA
(14) 232"	TIR17B14	TIR17B14_CA
(15) 244"	TIR17B15	TIR17B15_CA
(16) 268"	TIR17B16	TIR17B16_CA
(17) 292"	TIR17B17	TIR17B17_CA
(18) 316"	TIR17B18	TIR17B18_CA
(19) 340"	TIR17B19	TIR17B19_CA
(20) 364"	TIR17B20	TIR17B20_CA
(21) 392"	TIR17B21	TIR17B21_CA
(22) 402"	TIR17B22	TIR17B22_CA
4 - ###.# INWG	PIR17B04	PIR17B04_CA
1 - ###.## VOL % H_2	NIR17B01	NIR17B01_CA

Screen Filename: MIT17C.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "MIT17C"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "MIT17C"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_MIT17C
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<ROLLOVER>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC ROLLOVER
```

<TEMPRFL>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TEMPRFL
```

<MIT17B> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC MIT17B

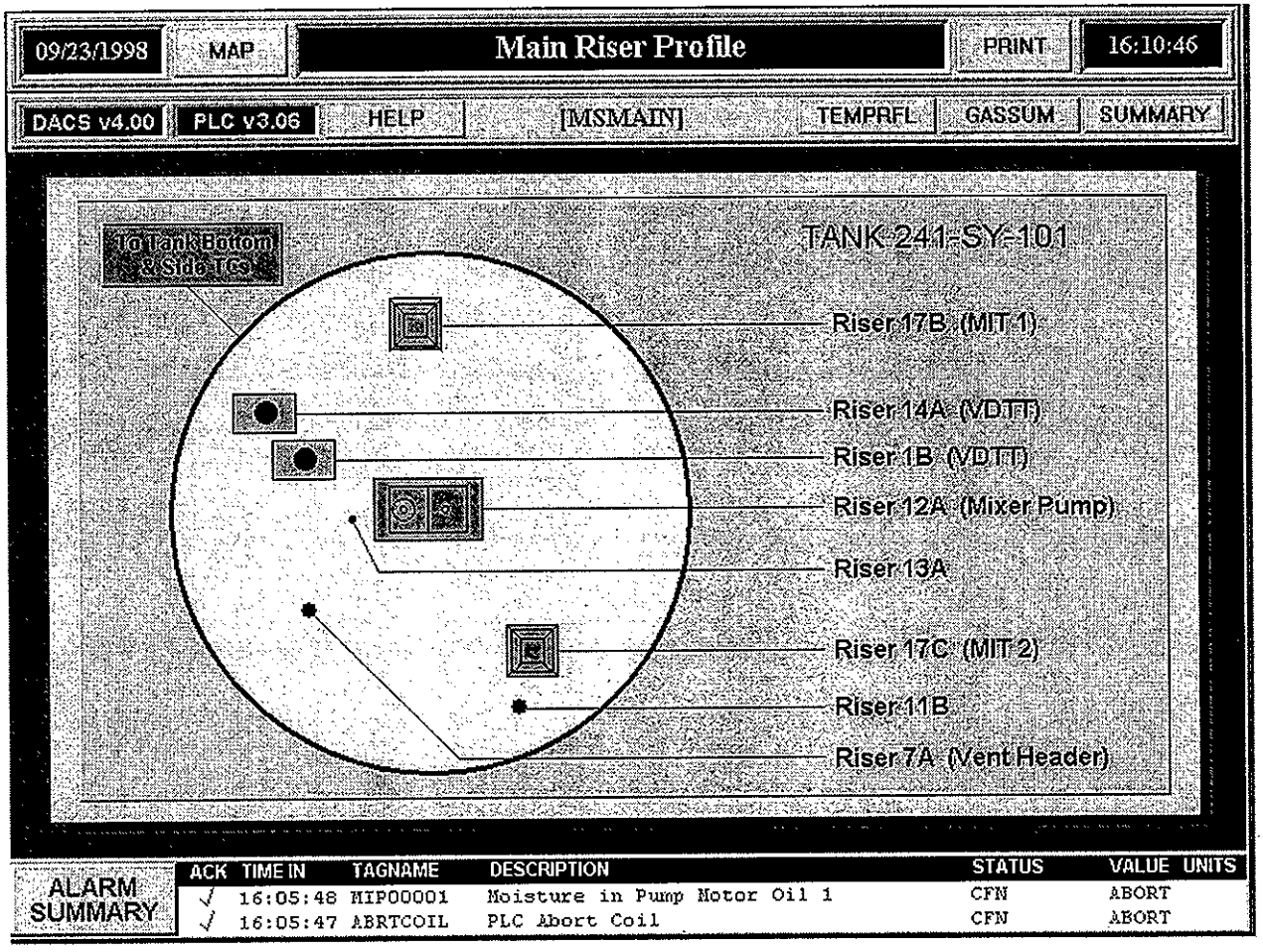
[MIT17C] Screen Dynamics:

Description	Data Link Tagname	Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
(1) 4"	TIR17C01	TIR17C01_CA
(2) 16"	TIR17C02	TIR17C02_CA
(3) 28"	TIR17C03	TIR17C03_CA
(4) 52"	TIR17C04	TIR17C04_CA
(5) 76"	TIR17C05	TIR17C05_CA
(6) 100"	TIR17C06	TIR17C06_CA
(7) 112"	TIR17C07	TIR17C07_CA
(8) 124"	TIR17C08	TIR17C08_CA
(9) 148"	TIR17C09	TIR17C09_CA
(10) 172"	TIR17C10	TIR17C10_CA
(11) 196"	TIR17C11	TIR17C11_CA
(12) 208"	TIR17C12	TIR17C12_CA
(13) 220"	TIR17C13	TIR17C13_CA
(14) 232"	TIR17C14	TIR17C14_CA
(15) 244"	TIR17C15	TIR17C15_CA
(16) 292"	TIR17C16	TIR17C16_CA
(17) 316"	TIR17C17	TIR17C17_CA
(18) 340"	TIR17C18	TIR17C18_CA
(19) 364"	*	*
(20) 392"	TIR17C20	TIR17C20_CA
(21) 402"	TIR17C21	TIR17C21_CA
(22) 425"	*	*
1 - ###.# INWG	PIR17C01	PIR17C01_CA
1 - #### uIN/IN	WIR17C01	WIR17C01_CA
2 - #### uIN/IN	WIR17C02	WIR17C02_CA

* No dynamic links or coloring; thermocouples Out of Service (O/S)

Screen Filename: MSMAIN.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "MSMAIN"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "MSMAIN"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_MSMAIN
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<TEMPRFL>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TEMPRFL
```

<GASSUM>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC GASSUM
```

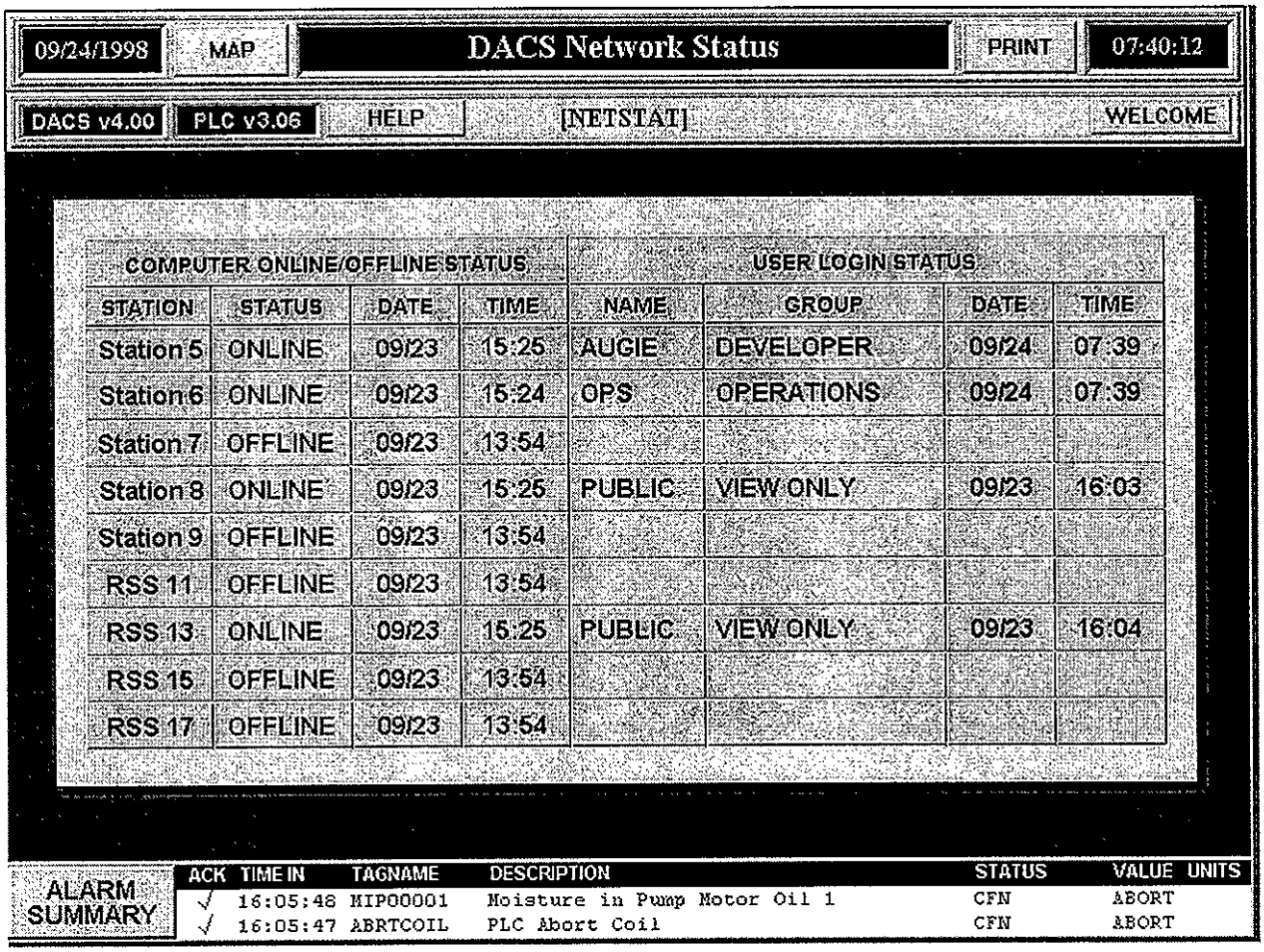
<SUMMARY> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC SUMMARY

[MSMAIN] Screen Dynamics:

Description of Grouped Block	Grouped Block "On Up" Script
To Tank Bottom & Side TCs	CLOSEPIC MAP REPLACEPIC ACTIVEPIC TBSTC
Riser 17B (MIT 1)	CLOSEPIC MAP REPLACEPIC ACTIVEPIC MIT17B
Riser 12A (Mixer Pump)	CLOSEPIC MAP REPLACEPIC ACTIVEPIC PUMP
Riser 17C (MIT 2)	CLOSEPIC MAP REPLACEPIC ACTIVEPIC MIT17C

Screen Filename: NETSTAT.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.5 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "NETSTAT"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "NETSTAT"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_NETSTA
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<WELCOME>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC WELCOME
```

[NETSTAT] Screen Dynamics:

COMPUTER ONLINE/OFFLINE STATUS:

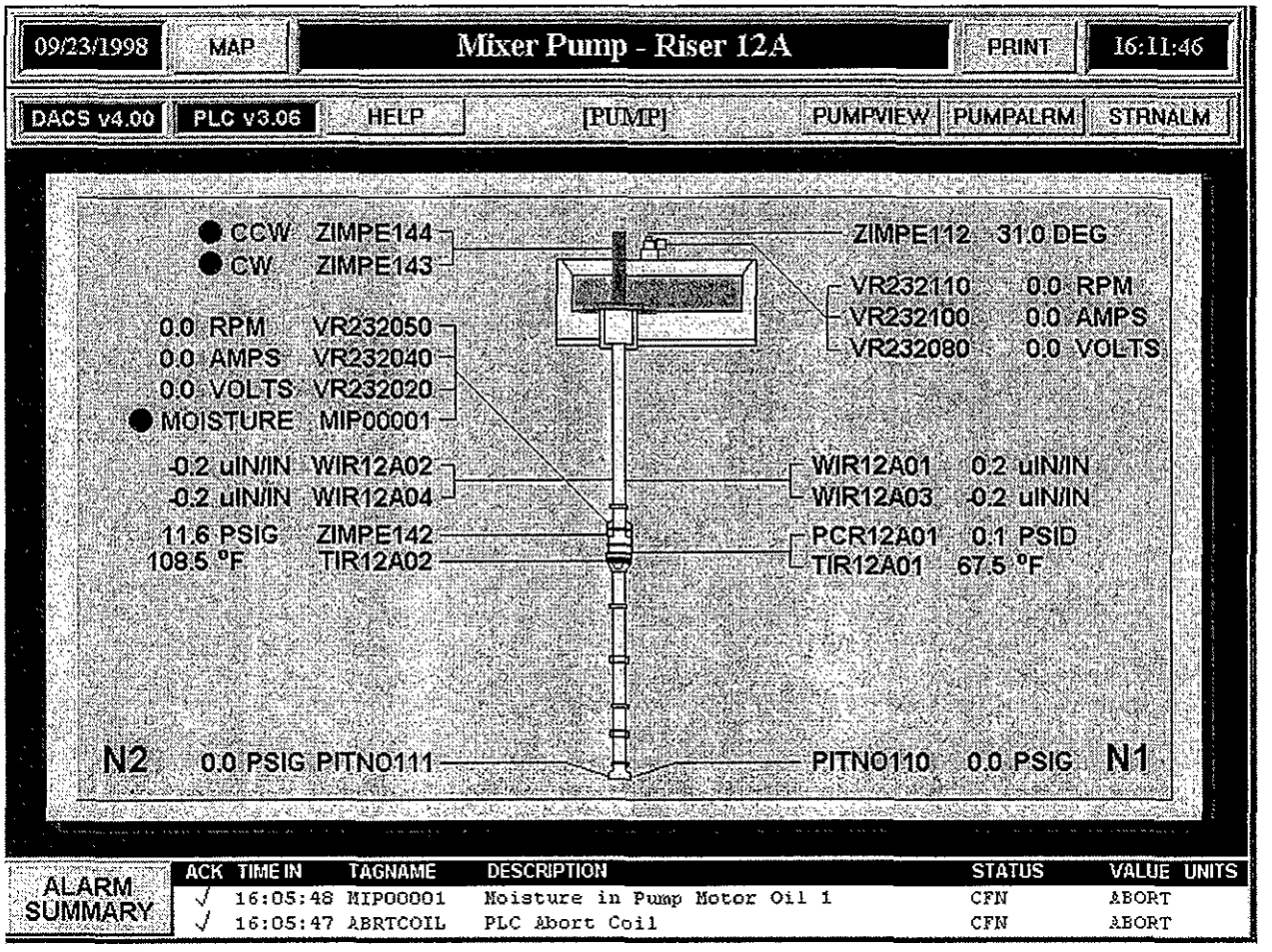
STATION	STATUS Data Link Tagname: Open: OFFLINE Close: ONLINE	DATE Data Link Tagname:	TIME Data Link Tagname	STATUS, DATE & TIME Coloring: 0: Red; 1: Green
Station 5	ST5-ONLINE.A_CV	ST5-ONLINE-DATE.A_DESC	ST5-ONLINE-TIME.A_DESC	ST5-ONLINE
Station 6	ST6-ONLINE.A_CV	ST6-ONLINE-DATE.A_DESC	ST6-ONLINE-TIME.A_DESC	ST6-ONLINE
Station 7	ST7-ONLINE.A_CV	ST7-ONLINE-DATE.A_DESC	ST7-ONLINE-TIME.A_DESC	ST7-ONLINE
Station 8	ST8-ONLINE.A_CV	ST8-ONLINE-DATE.A_DESC	ST8-ONLINE-TIME.A_DESC	ST8-ONLINE
Station 9	ST9-ONLINE.A_CV	ST9-ONLINE-DATE.A_DESC	ST9-ONLINE-TIME.A_DESC	ST9-ONLINE
RSS 11	ST11-ONLINE.A_CV	ST11-ONLINE-DATE.A_DESC	ST11-ONLINE-TIME.A_DESC	ST11-ONLINE
RSS 13	ST13-ONLINE.A_CV	ST13-ONLINE-DATE.A_DESC	ST13-ONLINE-TIME.A_DESC	ST13-ONLINE
RSS 15	ST15-ONLINE.A_CV	ST15-ONLINE-DATE.A_DESC	ST15-ONLINE-TIME.A_DESC	ST15-ONLINE
RSS 17	ST17-ONLINE.A_CV	ST17-ONLINE-DATE.A_DESC	ST17-ONLINE-TIME.A_DESC	ST17-ONLINE

USER LOGIN STATUS:

STATION	NAME Data Link Tagname:	GROUP Data Link Tagname:	DATE Data Link Tagname:	TIME Data Link Tagname:
Station 5	ST5-LOGIN.A_DESC	ST5-LOGIN-GROUP.A_DESC	ST5-LOGIN-DATE.A_DESC	ST5-LOGIN-TIME.A_DESC
Station 6	ST6-LOGIN.A_DESC	ST6-LOGIN-GROUP.A_DESC	ST6-LOGIN-DATE.A_DESC	ST6-LOGIN-TIME.A_DESC
Station 7	ST7-LOGIN.A_DESC	ST7-LOGIN-GROUP.A_DESC	ST7-LOGIN-DATE.A_DESC	ST7-LOGIN-TIME.A_DESC
Station 8	ST8-LOGIN.A_DESC	ST8-LOGIN-GROUP.A_DESC	ST8-LOGIN-DATE.A_DESC	ST8-LOGIN-TIME.A_DESC
Station 9	ST9-LOGIN.A_DESC	ST9-LOGIN-GROUP.A_DESC	ST9-LOGIN-DATE.A_DESC	ST9-LOGIN-TIME.A_DESC
RSS 11	ST11-LOGIN.A_DESC	ST11-LOGIN-GROUP.A_DESC	ST11-LOGIN-DATE.A_DESC	ST11-LOGIN-TIME.A_DESC
RSS 13	ST13-LOGIN.A_DESC	ST13-LOGIN-GROUP.A_DESC	ST13-LOGIN-DATE.A_DESC	ST13-LOGIN-TIME.A_DESC
RSS 15	ST15-LOGIN.A_DESC	ST15-LOGIN-GROUP.A_DESC	ST15-LOGIN-DATE.A_DESC	ST15-LOGIN-TIME.A_DESC
RSS 17	ST17-LOGIN.A_DESC	ST17-LOGIN-GROUP.A_DESC	ST17-LOGIN-DATE.A_DESC	ST17-LOGIN-TIME.A_DESC

Screen Filename: PUMP.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "PUMP"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR 547,0,794,50
ENDIF
&CheckForPumpRunVis
IF #GS_NODE == "STATION5"
  IF STATION5:ST5_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION6"
  IF STATION5:ST6_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION7"
  IF STATION5:ST7_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
```

```
ENDIF
IF #GS_NODE == "STATION8"
  IF STATION5:ST8_PUMPRUN_VIS.F_CV == 0
   #PUMPOPS_VISIBLE = 0
  ELSE
   #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
PAUSE 2
GOTO CheckForPumpRunVis
```

Script "On Closing":

```
#PREV_PIC = "PUMP"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

```
<HELP>          IF #HELP_OPEN == 0
                  #HELP_OPEN = 1
                OPENPIC H_PUMP
                ELSE
                  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                ENDIF

<PUMPRUN>       #PUMPOPS_VISIBLE = {1: Visible}
    <PUMPRUN>       CLOSEPIC MAP
                    REPLACEPIC ACTIVEPIC PUMPRUN

<PUMPVIEW>      #PUMPOPS_VISIBLE = {0: Visible}
    <PUMPVIEW>      CLOSEPIC MAP
                    REPLACEPIC ACTIVEPIC PUMPVIEW

<PUMPALRM>      CLOSEPIC MAP
                REPLACEPIC ACTIVEPIC PUMPALRM

<STRNALM>       CLOSEPIC MAP
                REPLACEPIC ACTIVEPIC STRNALM
```

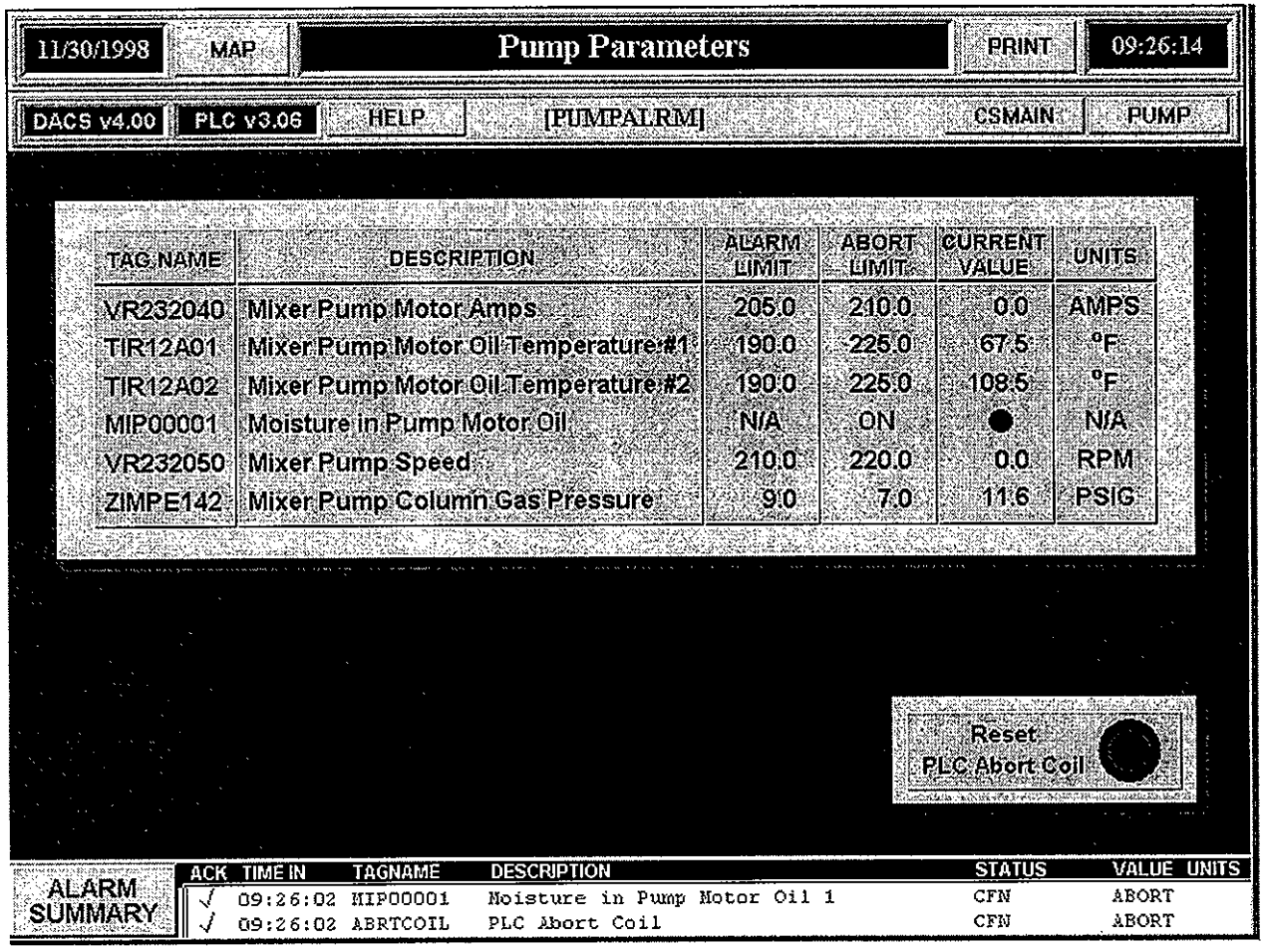
[PUMP] Screen Dynamics:

Description	Data Link Tagname	Description, Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
PITNO110	PITNO110	PITNO110_CA
PITNO111	PITNO111	PITNO111_CA
TIR12A01	TIR12A01	TIR12A01_CA
TIR12A02	TIR12A02	TIR12A02_CA
PCR12A01	PCR12A01	PIR12A01_CA
ZIMPE142	ZIMPE142	ZIMPE142_CA
WIR12A01	WIR12A01	WIR12A01_CA
WIR12A02	WIR12A02	WIR12A02_CA
WIR12A03	WIR12A03	WIR12A03_CA
WIR12A04	WIR12A04	WIR12A04_CA
MIP00001	MIP00001*	MIP00001**
VR232020	VR232020	---
VR232040	VR232040	VR232040_CA
VR232050	VR232050	VR232050_CA
VR232080	VR232080	---
VR232100	VR232100	---
VR232110	VR232110	---
ZIMPE143	ZIMPE143*	ZIMPE143**
ZIMPE144	ZIMPE144*	ZIMPE144**
ZIMPE112	ZIMPE112	ZIMPE112***

* Digital Indicator Light - 0: Green; 1: Flashing Red
** Exception: 0: Black; 1: Flashing Red
*** Exception: OK: Black or Blue; Low or High Alarms: Red

Screen Filename: PUMPALRM.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "PUMPALRM"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "PUMPALRM"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_PUMPAL
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<CSMAIN>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC CSMAIN
```

<PUMP>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMP
```

[PUMPALRM] Screen Dynamics:

Description	Current Value Data Link Tagname	Description, Current Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
Mixer Pump Motor Amps	VR232040	VR232040_CA
Mixer Pump Motor Oil Temperature #1	TIR12A01	TIR12A01_CA
Mixer Pump Motor Oil Temperature #2	TIR12A02	TIR12A02_CA
Moisture in Pump Motor Oil	MIP00001*	MIP00001**
Mixer Pump Speed	VR232050	VR232050_CA
Mixer Pump Column Gas Pressure	ZIMPE142	ZIMPE142_CA

* Digital Indicator Light - 0: Green; 1: Flashing Red
** Exception: 0: Black; 1: Flashing Red

Description	Alarm Limit		Abort Limit	
	Data Link Tagname	Dynamic Coloring: 0 or OK: Blue 1 or LO or HIGH: Red	Data Link Tagname	Dynamic Coloring: 0: Blue 1: Flashing Red
Mixer Pump Motor Amps	PLCPMCAL	PMCALARM	PLCPMCAB	VC232040
Mixer Pump Motor Oil Temperature #1	TIR12A01.F_HI	TIR12A01	HPMOTLIM	TCR12A01
Mixer Pump Motor Oil Temperature #2	TIR12A02.F_HI	TIR12A02	HPMOTLIM	TCR12A02
Moisture in Pump Motor Oil	---	---	---	MIP00001*
Mixer Pump Speed	PLCSPDAL	PSPALARM	PLCPSLIM	VC232050
Mixer Pump Column Gas Pressure	ZIMPE142	ZIMPE142	LPCGPLIM	ZLMPE142

RESET PLC ABORT COIL Button:

Top Larger Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Visibility: #ABORT_BUTTON_STAT {0: Visible}

"On Down":

```
IF #RSS == 1
  IF #ABORTWRN_OPEN == 0
    OPENPIC ABORTWRN
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ELSE
  IF #SECURITY_LEVEL >= 2.5
    #ABORT_BUTTON_STAT = 1
    CLOSEDIG STATION5:RSTCOIL.F_CV
    ONSCAN STATION5:PULSECOIL
  ELSE
    IF #ABORTWRN_OPEN == 0
      OPENPIC ABORTWRN
    ELSE
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    ENDIF
  ENDIF
ENDIF
```

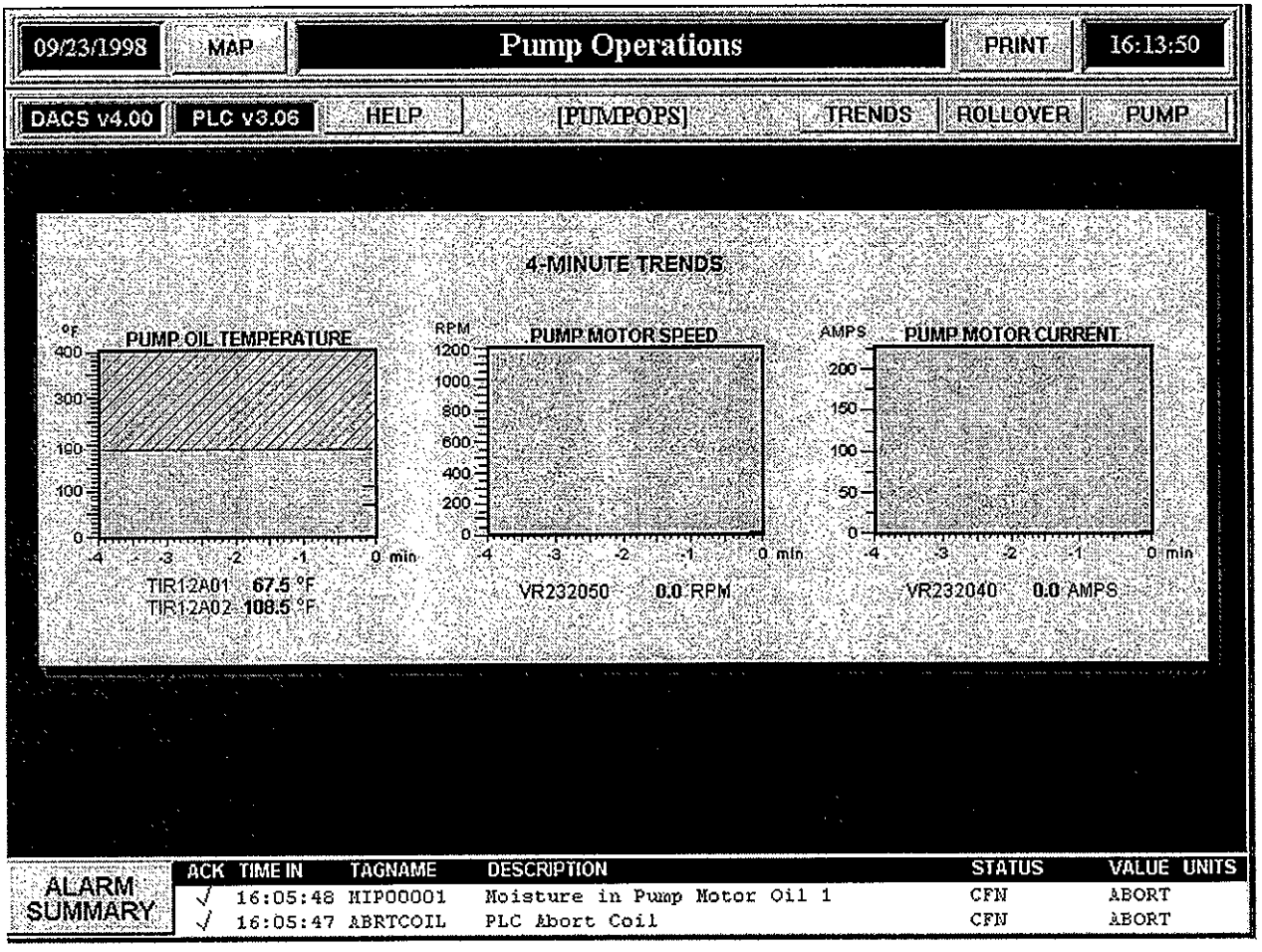
"On Up": #ABORT_BUTTON_STAT = 0

Bottom Smaller Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Screen Filename: PUMPOPS.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.4 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "PUMPOPS"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "PUMPOPS"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_PUMPOP
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<TRENDS>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TRENDS
```

<ROLLOVER>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC ROLLOVER
```

<PUMP> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMP

[PUMPOPS] Screen Dynamics:

4-MINUTE TRENDS Charts:

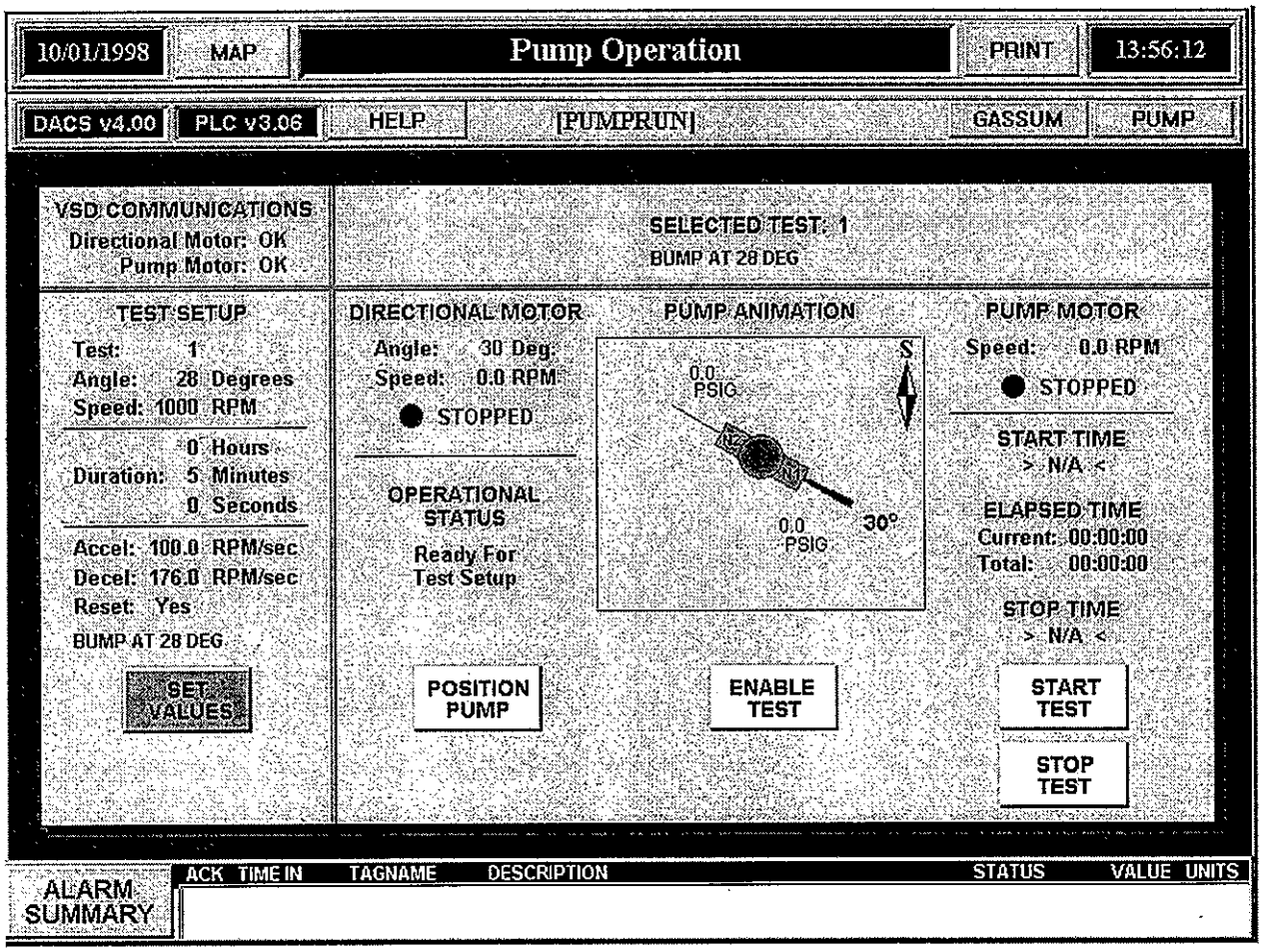
Chart Description	Chart Configuration	Pen Configuration			
	Common Parameters	Pen Tagname	Pen Color	Line Definition	Low / High Limits
Pump Oil Temperature	Color: Transparent Time Duration: 00:00:04:00	TIR12A01	Blue	Show Line	0.0 / 400.0
		TIR12A02	Pink		0.0 / 400.0
Pump Motor Speed		VR232050	Blue		0 / 1200
Pump Motor Current		VR232040	Blue		0.0 / 225.0

Values Below 4-MINUTE TRENDS Charts:

Description	Value Data Link Tagname	Value Coloring: 0: Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
TIR12A01	TIR12A01	TIR12A01_CA
TIR12A02	TIR12A02	TIR12A02_CA
VR232050	VR232050	VR232050_CA
VR232040	VR232040	VR232040_CA

Screen Filename: PUMPRUN.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "PUMPRUN"
#PROMPT_BUSY = 0
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
IF STATION5:BUT-COL-POS_PUMP.F_CV == 2
  ONSCAN  STATION5:RESET_BUTTONS
ENDIF
&CheckForPumpRunVis
IF #GS_NODE == "STATION5"
  IF STATION5:ST5_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
    REPLACEPIC * PUMPVIEW
  ENDIF
ENDIF
IF #GS_NODE == "STATION6"
  IF STATION5:ST6_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
    REPLACEPIC * PUMPVIEW
  ENDIF
ENDIF
IF #GS_NODE == "STATION7"
  IF STATION5:ST7_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
    REPLACEPIC * PUMPVIEW
```

```
  ENDIF
ENDIF
IF #GS_NODE == "STATION8"
  IF STATION5:ST8_PUMPRUN_VIS.F_CV == 0
   #PUMPOPS_VISIBLE = 0
   REPLACEPIC * PUMPVIEW
  ENDIF
ENDIF
PAUSE 1
GOTO CheckForPumpRunVis
```

Script "On Closing":

```
IF #PUMPOPS_VISIBLE == 1
  #PREV_PIC = "PUMPRUN"
ENDIF
CLOSEPIC HELPSCREEN
IF STATION5:P_RUN.F_CV == 1
  SETVAL STATION5:BUT-COL-STOP_TEST.F_CV 1
  SETVAL STATION5:BUT_TEXT_STOP_TEST.F_CV 0
ELSE
  SETVAL STATION5:BUT_TEXT_STOP_TEST.F_CV 1
ENDIF
#PUMP-COUNTER = 0
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_PMPRUN
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<GASSUM>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC GASSUM
```

<PUMP>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMP
```

[PUMPRUN] Screen Dynamics:

VSD COMMUNICATIONS:

Directional Motor Status: Data Link: D_MOTOR_STAT.A_CV
Color: D_MOTOR_STAT.F_CV {(0: Green), (1: Red)}

Pump Motor Status: Data Link: P_MOTOR_STAT.A_CV
Color: P_MOTOR_STAT.F_CV {(0: Green), (1: Red)}

TEST SETUP:

Blue Setup Variables: Visibility: BUT_ACT_SET_VAL.F_CV {1: Visible}

Test Number:

```
"On Up":
  IF #PROMPT_BUSY == 1
    GOTO DoubleClick
  ENDIF
  #PROMPT_BUSY = 1
  CLOSEPIC MAP
  CLOSEPIC LOGCHOIC
  CLOSEPIC PRINT
  CLOSEPIC PRINTWRN
  CLOSEPIC HELPSCREEN
  IF #SECURITY_LEVEL < 3
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    IF #PUMPWARN_OPEN == 0
      OPENPIC PUMPWARN
    ENDIF
    #PROMPT_BUSY = 0
    GOTO DoubleClick
```

```
ENDIF
SETVAL STATION5:SETUP_BUSY.F_CV 1
DECLARE #TESTNUMBER NUMERIC SCRIPT
#TESTNUMBER = -1
&Begin
PROMPT  #TESTNUMBER  "Enter Desired Test Number (1-36)"  220,145
IF #TESTNUMBER == -1
  GOTO End
ENDIF
IF #TESTNUMBER < 1
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  #TESTNUMBER = -1
  GOTO Begin
ENDIF
IF #TESTNUMBER > 36
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  #TESTNUMBER = -1
  GOTO Begin
ENDIF
SETVAL STATION5:UTESTNO.F_CV #TESTNUMBER
IF #TESTNUMBER == 1
  SETVAL STATION5:UTESTNO.A_DESC "1"
  SETVAL STATION5:UANGLE.F_CV 28
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 5
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "BUMP AT 28 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 2
  SETVAL STATION5:UTESTNO.A_DESC "2"
  SETVAL STATION5:UANGLE.F_CV 65
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 5
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "BUMP AT 65 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 3
  SETVAL STATION5:UTESTNO.A_DESC "3"
  SETVAL STATION5:UANGLE.F_CV 97
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 5
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "BUMP AT 97 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 4
  SETVAL STATION5:UTESTNO.A_DESC "4"
  SETVAL STATION5:UANGLE.F_CV 125
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 5
```

```
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "BUMP AT 125 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 5
  SETVAL STATION5:UTESTNO.A_DESC "5"
  SETVAL STATION5:UANGLE.F_CV 155
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 5
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "BUMP AT 155 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 6
  SETVAL STATION5:UTESTNO.A_DESC "6"
  SETVAL STATION5:UANGLE.F_CV 185
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 5
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "BUMP AT 185 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 7
  SETVAL STATION5:UTESTNO.A_DESC "7"
  SETVAL STATION5:UANGLE.F_CV 28
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 1
  SETVAL STATION5:UMINS.F_CV 0
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "1 HR RUN AT 28 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 8
  SETVAL STATION5:UTESTNO.A_DESC "8"
  SETVAL STATION5:UANGLE.F_CV 65
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 1
  SETVAL STATION5:UMINS.F_CV 0
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "1 HR RUN AT 65 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 9
  SETVAL STATION5:UTESTNO.A_DESC "9"
  SETVAL STATION5:UANGLE.F_CV 97
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 1
  SETVAL STATION5:UMINS.F_CV 0
```

```
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "1 HR RUN AT 97 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 10
  SETVAL STATION5:UTESTNO.A_DESC "10"
  SETVAL STATION5:UANGLE.F_CV 125
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 1
  SETVAL STATION5:UMINS.F_CV 0
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "1 HR RUN AT 125 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 11
  SETVAL STATION5:UTESTNO.A_DESC "11"
  SETVAL STATION5:UANGLE.F_CV 155
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 1
  SETVAL STATION5:UMINS.F_CV 0
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "1 HR RUN AT 155 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 12
  SETVAL STATION5:UTESTNO.A_DESC "12"
  SETVAL STATION5:UANGLE.F_CV 185
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 1
  SETVAL STATION5:UMINS.F_CV 0
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "1 HR RUN AT 185 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 13
  SETVAL STATION5:UTESTNO.A_DESC "13"
  SETVAL STATION5:UANGLE.F_CV 28
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 30
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 6
  SETVAL STATION5:UDECEL.F_CV 360
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "TANK SWEEP AT 28 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 14
  SETVAL STATION5:UTESTNO.A_DESC "14"
  SETVAL STATION5:UANGLE.F_CV 65
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 30
```

```
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 6
  SETVAL STATION5:UDECEL.F_CV 360
  SETVAL STATION5:URESTIM.F_CV 0
  SETVAL STATION5:UDESC.A_DESC "TANK SWEEP AT 65 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 15
  SETVAL STATION5:UTESTNO.A_DESC "15"
  SETVAL STATION5:UANGLE.F_CV 97
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 30
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 6
  SETVAL STATION5:UDECEL.F_CV 360
  SETVAL STATION5:URESTIM.F_CV 0
  SETVAL STATION5:UDESC.A_DESC "TANK SWEEP AT 97 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 16
  SETVAL STATION5:UTESTNO.A_DESC "16"
  SETVAL STATION5:UANGLE.F_CV 125
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 30
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 6
  SETVAL STATION5:UDECEL.F_CV 360
  SETVAL STATION5:URESTIM.F_CV 0
  SETVAL STATION5:UDESC.A_DESC "TANK SWEEP AT 125 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 17
  SETVAL STATION5:UTESTNO.A_DESC "17"
  SETVAL STATION5:UANGLE.F_CV 155
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 30
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 6
  SETVAL STATION5:UDECEL.F_CV 360
  SETVAL STATION5:URESTIM.F_CV 0
  SETVAL STATION5:UDESC.A_DESC "TANK SWEEP AT 155 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 18
  SETVAL STATION5:UTESTNO.A_DESC "18"
  SETVAL STATION5:UANGLE.F_CV 185
  SETVAL STATION5:USPEED.F_CV 750
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 30
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 6
  SETVAL STATION5:UDECEL.F_CV 360
  SETVAL STATION5:URESTIM.F_CV 0
  SETVAL STATION5:UDESC.A_DESC "TANK SWEEP AT 185 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 19
  SETVAL STATION5:UTESTNO.A_DESC "19"
  SETVAL STATION5:UANGLE.F_CV 28
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
```

```
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 28 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 20
  SETVAL STATION5:UTESTNO.A_DESC "20"
  SETVAL STATION5:UANGLE.F_CV 65
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 65 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 21
  SETVAL STATION5:UTESTNO.A_DESC "21"
  SETVAL STATION5:UANGLE.F_CV 97
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 97 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 22
  SETVAL STATION5:UTESTNO.A_DESC "22"
  SETVAL STATION5:UANGLE.F_CV 125
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 125 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 23
  SETVAL STATION5:UTESTNO.A_DESC "23"
  SETVAL STATION5:UANGLE.F_CV 155
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 155 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 24
  SETVAL STATION5:UTESTNO.A_DESC "24"
  SETVAL STATION5:UANGLE.F_CV 185
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
```

```
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 185 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 25
  SETVAL STATION5:UTESTNO.A_DESC "25"
  SETVAL STATION5:UANGLE.F_CV 28
  SETVAL STATION5:USPEED.F_CV 920
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 40
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "40 MIN EXCAV, 28 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 26
  SETVAL STATION5:UTESTNO.A_DESC "26"
  SETVAL STATION5:UANGLE.F_CV 65
  SETVAL STATION5:USPEED.F_CV 920
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 40
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "40 MIN EXCAV, 65 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 27
  SETVAL STATION5:UTESTNO.A_DESC "27"
  SETVAL STATION5:UANGLE.F_CV 97
  SETVAL STATION5:USPEED.F_CV 920
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 40
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "40 MIN EXCAV, 97 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 28
  SETVAL STATION5:UTESTNO.A_DESC "28"
  SETVAL STATION5:UANGLE.F_CV 125
  SETVAL STATION5:USPEED.F_CV 920
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 40
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "40 MIN EXCAV, 125 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 29
  SETVAL STATION5:UTESTNO.A_DESC "29"
  SETVAL STATION5:UANGLE.F_CV 155
  SETVAL STATION5:USPEED.F_CV 920
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 40
```

```
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "40 MIN EXCAV, 155 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 30
  SETVAL STATION5:UTESTNO.A_DESC "30"
  SETVAL STATION5:UANGLE.F_CV 185
  SETVAL STATION5:USPEED.F_CV 920
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 40
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "40 MIN EXCAV, 185 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 31
  SETVAL STATION5:UTESTNO.A_DESC "31"
  SETVAL STATION5:UANGLE.F_CV 15
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 15 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 32
  SETVAL STATION5:UTESTNO.A_DESC "32"
  SETVAL STATION5:UANGLE.F_CV 50
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 50 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 33
  SETVAL STATION5:UTESTNO.A_DESC "33"
  SETVAL STATION5:UANGLE.F_CV 80
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
  SETVAL STATION5:USECS.F_CV 0
  SETVAL STATION5:UACCEL.F_CV 100
  SETVAL STATION5:UDECEL.F_CV 176
  SETVAL STATION5:URESTIM.F_CV 1
  SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 80 DEG"
  GOTO End
ENDIF
IF #TESTNUMBER == 34
  SETVAL STATION5:UTESTNO.A_DESC "34"
  SETVAL STATION5:UANGLE.F_CV 110
  SETVAL STATION5:USPEED.F_CV 1000
  SETVAL STATION5:UHRS.F_CV 0
  SETVAL STATION5:UMINS.F_CV 25
```

```
    SETVAL STATION5:USECS.F_CV 0
    SETVAL STATION5:UACCEL.F_CV 100
    SETVAL STATION5:UDECEL.F_CV 176
    SETVAL STATION5:URESTIM.F_CV 1
    SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 110 DEG"
    GOTO End
  ENDIF
  IF #TESTNUMBER == 35
    SETVAL STATION5:UTESTNO.A_DESC "35"
    SETVAL STATION5:UANGLE.F_CV 140
    SETVAL STATION5:USPEED.F_CV 1000
    SETVAL STATION5:UHRS.F_CV 0
    SETVAL STATION5:UMINS.F_CV 25
    SETVAL STATION5:USECS.F_CV 0
    SETVAL STATION5:UACCEL.F_CV 100
    SETVAL STATION5:UDECEL.F_CV 176
    SETVAL STATION5:URESTIM.F_CV 1
    SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 140 DEG"
    GOTO End
  ENDIF
  IF #TESTNUMBER == 36
    SETVAL STATION5:UTESTNO.A_DESC "36"
    SETVAL STATION5:UANGLE.F_CV 170
    SETVAL STATION5:USPEED.F_CV 1000
    SETVAL STATION5:UHRS.F_CV 0
    SETVAL STATION5:UMINS.F_CV 25
    SETVAL STATION5:USECS.F_CV 0
    SETVAL STATION5:UACCEL.F_CV 100
    SETVAL STATION5:UDECEL.F_CV 176
    SETVAL STATION5:URESTIM.F_CV 1
    SETVAL STATION5:UDESC.A_DESC "25 MIN EXCAV, 170 DEG"
    GOTO End
  ENDIF
  GOTO Begin
  &End
  SETVAL STATION5:SETUP_BUSY.F_CV 0
  #PROMPT_BUSY = 0
  &DoubleClick
```

Angle Value:

```
"On Up":
  IF #PROMPT_BUSY == 1
    GOTO DoubleClick
  ENDIF
  #PROMPT_BUSY = 1
  CLOSEPIC MAP
  CLOSEPIC LOGCHOIC
  CLOSEPIC PRINT
  CLOSEPIC PRINTWRN
  CLOSEPIC HELPSCREEN
  IF #SECURITY_LEVEL < 3
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    IF #PUMPWARN_OPEN == 0
      OPENPIC PUMPWARN
    ENDIF
    #PROMPT_BUSY = 0
    GOTO DoubleClick
  ENDIF
  SETVAL STATION5:SETUP_BUSY.F_CV 1
  DECLARE #ANGLE NUMERIC SCRIPT
  #ANGLE = -1
  &Begin
  PROMPT #ANGLE "Enter Desired Pump Angle (16-189 Deg)" 220,164
  ROUND #ANGLE DN
  IF #ANGLE == -1
    GOTO End
  ENDIF
```

```
                IF #ANGLE < 16
                  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                  #ANGLE = -1
                  GOTO Begin
                ENDIF
                IF #ANGLE > 189
                  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                  #ANGLE = -1
                  GOTO Begin
                ENDIF
                IF STATION5:UANGLE.F_CV == #ANGLE
                  GOTO End
                ENDIF
                SETVAL STATION5:UANGLE.F_CV #ANGLE
                SETVAL STATION5:UDESC.A_DESC "<<<    MANUAL    >>>"
                SETVAL STATION5:UTESTNO.A_DESC "N/A"
                &End
                SETVAL STATION5:SETUP_BUSY.F_CV 0
                #PROMPT_BUSY = 0
                &DoubleClick
Speed Value:    "On Up":
                IF #PROMPT_BUSY == 1
                  GOTO DoubleClick
                ENDIF
                #PROMPT_BUSY = 1
                CLOSEPIC MAP
                CLOSEPIC LOGCHOIC
                CLOSEPIC PRINT
                CLOSEPIC PRINTWRN
                CLOSEPIC HELPSCREEN
                IF #SECURITY_LEVEL < 3
                  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                  IF #PUMPWARN_OPEN == 0
                    OPENPIC PUMPWARN
                  ENDIF
                  #PROMPT_BUSY = 0
                  GOTO DoubleClick
                ENDIF
                SETVAL STATION5:SETUP_BUSY.F_CV 1
                DECLARE #SPEED NUMERIC SCRIPT
                #SPEED = -1
                &Begin
                PROMPT  #SPEED  "Enter Pump Speed (100-1020 RPM)"  220,182
                ROUND  #SPEED  DN
                IF #SPEED == -1
                  GOTO End
                ENDIF
                IF #SPEED < 100
                  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                  #SPEED = -1
                  GOTO Begin
                ENDIF
                IF #SPEED > 1020
                  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                  #SPEED = -1
                  GOTO Begin
                ENDIF
                IF STATION5:USPEED.F_CV == #SPEED
                  GOTO End
                ENDIF
                SETVAL STATION5:USPEED.F_CV #SPEED
                SETVAL STATION5:UDESC.A_DESC "<<<    MANUAL    >>>"
                SETVAL STATION5:UTESTNO.A_DESC "N/A"
                &End
                SETVAL STATION5:SETUP_BUSY.F_CV 0
```

```
                    #PROMPT_BUSY = 0
                    &DoubleClick
Duration Hours:     "On Up":
                    IF #PROMPT_BUSY == 1
                      GOTO DoubleClick
                    ENDIF
                    #PROMPT_BUSY = 1
                    CLOSEPIC MAP
                    CLOSEPIC LOGCHOIC
                    CLOSEPIC PRINT
                    CLOSEPIC PRINTWRN
                    CLOSEPIC HELPSCREEN
                    IF #SECURITY_LEVEL < 3
                      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                      IF #PUMPWARN_OPEN == 0
                        OPENPIC PUMPWARN
                      ENDIF
                      #PROMPT_BUSY = 0
                      GOTO DoubleClick
                    ENDIF
                    SETVAL STATION5:SETUP_BUSY.F_CV 1
                    DECLARE #HRS NUMERIC SCRIPT
                    #HRS = -1
                    &Begin
                    PROMPT  #HRS  "Enter Desired Pump Run Hours (0-17)"  220,208
                    ROUND  #HRS  DN
                    IF #HRS == -1
                      GOTO End
                    ENDIF
                    IF #HRS < 0
                      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                      #HRS = -1
                      GOTO Begin
                    ENDIF
                    IF #HRS > 17
                      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                      #HRS = -1
                      GOTO Begin
                    ENDIF
                    IF STATION5:UHRS.F_CV == #HRS
                      GOTO End
                    ENDIF
                    SETVAL STATION5:UHRS.F_CV #HRS
                    SETVAL STATION5:UDESC.A_DESC "<<<    MANUAL    >>>"
                    SETVAL STATION5:UTESTNO.A_DESC "N/A"
                    &End
                    SETVAL STATION5:SETUP_BUSY.F_CV 0
                    #PROMPT_BUSY = 0
                    &DoubleClick
Duration Minutes:   "On Up":
                    IF #PROMPT_BUSY == 1
                      GOTO DoubleClick
                    ENDIF
                    #PROMPT_BUSY = 1
                    CLOSEPIC MAP
                    CLOSEPIC LOGCHOIC
                    CLOSEPIC PRINT
                    CLOSEPIC PRINTWRN
                    CLOSEPIC HELPSCREEN
                    IF #SECURITY_LEVEL < 3
                      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                      IF #PUMPWARN_OPEN == 0
                        OPENPIC PUMPWARN
                      ENDIF
```

```
    #PROMPT_BUSY = 0
    GOTO DoubleClick
  ENDIF
  SETVAL STATION5:SETUP_BUSY.F_CV 1
  DECLARE #MINS NUMERIC SCRIPT
  #MINS = -1
  &Begin
  PROMPT  #MINS  "Enter Desired Pump Run Minutes (0-59)"  220,226
  ROUND  #MINS  DN
  IF #MINS == -1
    GOTO End
  ENDIF
  IF #MINS < 0
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    #MINS = -1
    GOTO Begin
  ENDIF
  IF #MINS > 59
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    #MINS = -1
    GOTO Begin
  ENDIF
  IF STATION5:UMINS.F_CV == #MINS
    GOTO End
  ENDIF
  SETVAL STATION5:UMINS.F_CV #MINS
  SETVAL STATION5:UDESC.A_DESC "<<<    MANUAL    >>>"
  SETVAL STATION5:UTESTNO.A_DESC "N/A"
  &End
  SETVAL STATION5:SETUP_BUSY.F_CV 0
  #PROMPT_BUSY = 0
  &DoubleClick
```

Duration Seconds:

```
"On Up":
  IF #PROMPT_BUSY == 1
    GOTO DoubleClick
  ENDIF
  #PROMPT_BUSY = 1
  CLOSEPIC MAP
  CLOSEPIC LOGCHOIC
  CLOSEPIC PRINT
  CLOSEPIC PRINTWRN
  CLOSEPIC HELPSCREEN
  IF #SECURITY_LEVEL < 3
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    IF #PUMPWARN_OPEN == 0
      OPENPIC PUMPWARN
    ENDIF
    #PROMPT_BUSY = 0
    GOTO DoubleClick
  ENDIF
  SETVAL STATION5:SETUP_BUSY.F_CV 1
  DECLARE #SECS NUMERIC SCRIPT
  #SECS = -1
  &Begin
  PROMPT  #SECS  "Enter Desired Pump Run Seconds (0-59)"  220,245
  ROUND  #SECS  DN
  IF #SECS == -1
    GOTO End
  ENDIF
  IF #SECS < 0
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    #SECS = -1
    GOTO Begin
  ENDIF
  IF #SECS > 59
```

```
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    #SECS = -1
    GOTO Begin
  ENDIF
  IF STATION5:USECS.F_CV == #SECS
    GOTO End
  ENDIF
  SETVAL STATION5:USECS.F_CV #SECS
  SETVAL STATION5:UDESC.A_DESC "<<<    MANUAL    >>>"
  SETVAL STATION5:UTESTNO.A_DESC "N/A"
  &End
  SETVAL STATION5:SETUP_BUSY.F_CV 0
  #PROMPT_BUSY = 0
  &DoubleClick
```

Accel Value:

```
"On Up":
  IF #PROMPT_BUSY == 1
    GOTO DoubleClick
  ENDIF
  #PROMPT_BUSY = 1
  CLOSEPIC MAP
  CLOSEPIC LOGCHOIC
  CLOSEPIC PRINT
  CLOSEPIC PRINTWRN
  CLOSEPIC HELPSCREEN
  IF #SECURITY_LEVEL < 3
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    IF #PUMPWARN_OPEN == 0
      OPENPIC PUMPWARN
    ENDIF
    #PROMPT_BUSY = 0
    GOTO DoubleClick
  ENDIF
  SETVAL STATION5:SETUP_BUSY.F_CV 1
  DECLARE #ACCEL NUMERIC SCRIPT
  #ACCEL = -1
  &Begin
  PROMPT  #ACCEL  "Enter Pump Acceleration (1-500)"  220,272
  IF #ACCEL == -1
    GOTO End
  ENDIF
  IF #ACCEL < 1
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    #ACCEL = -1
    GOTO Begin
  ENDIF
  IF #ACCEL > 500
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    #ACCEL = -1
    GOTO Begin
  ENDIF
  IF STATION5:UACCEL.F_CV == #ACCEL
    GOTO End
  ENDIF
  SETVAL STATION5:UACCEL.F_CV #ACCEL
  SETVAL STATION5:UDESC.A_DESC "<<<    MANUAL    >>>"
  SETVAL STATION5:UTESTNO.A_DESC "N/A"
  &End
  SETVAL STATION5:SETUP_BUSY.F_CV 0
  #PROMPT_BUSY = 0
  &DoubleClick
```

Decel Value:

```
"On Up":
  IF #PROMPT_BUSY == 1
    GOTO DoubleClick
  ENDIF
```

```
#PROMPT_BUSY = 1
CLOSEPIC MAP
CLOSEPIC LOGCHOIC
CLOSEPIC PRINT
CLOSEPIC PRINTWRN
CLOSEPIC HELPSCREEN
IF #SECURITY_LEVEL < 3
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PUMPWARN_OPEN == 0
    OPENPIC PUMPWARN
  ENDIF
  #PROMPT_BUSY = 0
  GOTO DoubleClick
ENDIF
SETVAL STATION5:SETUP_BUSY.F_CV 1
DECLARE #DECEL NUMERIC SCRIPT
#DECEL = -1
&Begin
PROMPT  #DECEL  "Enter Pump Acceleration (1-500)"  220,291
IF #DECEL == -1
  GOTO End
ENDIF
IF #DECEL < 1
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  #DECEL = -1
  GOTO Begin
ENDIF
IF #DECEL > 500
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  #DECEL = -1
  GOTO Begin
ENDIF
IF STATION5:UDECEL.F_CV == #DECEL
  GOTO End
ENDIF
SETVAL STATION5:UDECEL.F_CV #DECEL
SETVAL STATION5:UDESC.A_DESC "<<<    MANUAL    >>>"
SETVAL STATION5:UTESTNO.A_DESC "N/A"
&End
SETVAL STATION5:SETUP_BUSY.F_CV 0
#PROMPT_BUSY = 0
&DoubleClick
```

Reset Toggle:

```
"On Up":
IF #SECURITY_LEVEL < 3
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  IF #PUMPWARN_OPEN == 0
    OPENPIC PUMPWARN
  ENDIF
  GOTO End
ENDIF
SETVAL STATION5:SETUP_BUSY.F_CV 1
TOGGLEDIG  STATION5:URESTIM.F_CV
SETVAL STATION5:UDESC.A_DESC "<<<    MANUAL    >>>"
SETVAL STATION5:UTESTNO.A_DESC "N/A"
SETVAL STATION5:SETUP_BUSY.F_CV 0
&End
```

Black Setup Variables: Visibility: BUT_ACT_SET_VAL.F_CV {0: Visible}

Test Number:	Data Link:	UTESTNO.A_DESC
Angle Value:	Data Link:	UANGLE.F_CV
Speed Value:	Data Link:	USPEED.F_CV
Duration Hours:	Data Link:	UHRS.F_CV
Duration Minutes:	Data Link:	UMINS.F_CV
Duration Seconds:	Data Link:	USECS.F_CV
Accel Value:	Data Link:	UACCEL.F_CV

Decel Value: Data Link: UDECEL.F_CV
Reset Toggle: Data Link: URESTIM.A_CV
Green Test Description: Data Link: UDESC.A_DESC

LAST SELECTED TEST:
"LAST" Text: Visibility: BUT_ACT_SET_VAL.F_CV {1: Visible}
Test Number: Data Link: LAST-UTESTNO.A_DESC
Green Test Description: Data Link: LAST_UDESC.A_DESC

DIRECTIONAL MOTOR:
Angle Value: Data Link: ZIMPE112.F_CV
Color: D_IN-BAND.F_CV {(0: Yellow), (1: Green)}
Speed Value: Data Link: VR232110.F_CV
Indicator Light: Color: D_RUN_STAT.F_CV {(0: Green), (1: Red)}
"STOPPED/RUNNING": Data Link: D_RUN_STAT.A_CV
Color: D_RUN_STAT.F_CV {(0: Green), (1: Red)}

PUMP MOTOR:
"Speed:", "RPM": Color: VR232050_CA.F_CV {(0: Black), (>0 to 1: Red), (>1 to 3: Flashing Red) , (>3 to 7: Yellow)}
Speed Value: Data Link: VR232050.F_CV
Color: VR232050_CA.F_CV {(0: Black), (>0 to 1: Red), (>1 to 3: Flashing Red) , (>3 to 7: Yellow)}
Indicator Light: Color: P_RUN_STAT.F_CV {(0: Green), (1: Red)}
"STOPPED/RUNNING": Data Link: P_RUN_STAT.A_CV
Color: P_RUN_STAT.F_CV {(0: Green), (1: Red)}

START TIME:
Start Time Value: Data Link: START-TIME.A_DESC

ELAPSED TIME: Note: Times are grouped with a gray box covering the "dd:" (days) field
Current Time Value: Data Link: ELAPSED-TIME.A_CV
Total Time Value: Data Link: ELAPSED-TIME-TOTAL.A_CV

REMAINING TIME & Value: Visibility: PMPINRUN.F_CV {1: Visible}
Remaining Time Value: No Dynamics
Hours Value & Box: No Dynamics; grouped with a gray box covering the "hundreds" field
Hours Value: Data Link: COUNTDOWN-HRS_100.F_CV
Minutes Value & Box: No Dynamics; grouped with a gray box covering the "hundreds" field
Minutes Value: Data Link: COUNTDOWN-MINS_100.F_CV
Seconds Value & Box: No Dynamics; grouped with a gray box covering the "hundreds" field
Seconds Value: Data Link: COUNTDOWN-SECS_100.F_CV

STOP TIME & Value: Visibility: PMPINRUN.F_CV {0: Visible}
Stop Time Value: Data Link: STOP-TIME.A_DESC

OPERATIONAL STATUS:

Text Description	Text Visibility
Ready For Test Setup	BUT_ACT_SET_VAL.F_CV = 1
Verifying Test Setup	BUT-COL-POS_PUMP.F_CV = 2
Ready For Pump Rotation	BUT_ACT_POS_PUMP.F_CV = 1
Pump Rotating	D_RUN.F_CV = 1
Pump In Position	BUT_ACT_ENAB_TEST.F_CV = 1
Ready For Pump Start	BUT_ACT_START_TEST.F_CV = 1
Pump Running	BUT_TEXT_STOP_TEST.F_CV = 0
Ready For Pump Stop	BUT-COL-STOP_TEST.F_CV = 3

Top Yellow "Problem Detected" Text: Color: PUMP_PROB.F_CV {(0: Invisible), (1: Flashing Yellow)}
Bottom Black "Problem Detected" Text: Color: PUMP_PROB.F_CV {(0: Invisible), (1: Black)}

SET VALUES Button

Black Text Button: Visibility: PUMP_PROB.F_CV {0: Visible}

Top Button:

```
"On Down":
    IF STATION5:SETUP_BUSY.F_CV == 1
      GOTO End
    ENDIF
    SETVAL STATION5:BUT_ANIM_SET_VAL.F_CV 1
    IF #SECURITY_LEVEL < 3
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
      IF #PUMPWARN_OPEN == 0
        OPENPIC PUMPWARN
      ENDIF
    ELSE
      IF STATION5:BUT_ACT_SET_VAL.F_CV == 0
        PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
      ENDIF
    ENDIF
    &End
  "On Up":
    IF STATION5:SETUP_BUSY.F_CV == 1
      GOTO End
    ENDIF
    DECLARE #STRING_TEMP STRING SCRIPT
    DECLARE #NUM_TEMP NUMERIC SCRIPT
    SETVAL   STATION5:BUT_ANIM_SET_VAL.F_CV 0
    IF #SECURITY_LEVEL < 3
      GOTO End
    ENDIF
    IF STATION5:BUT_ACT_SET_VAL.F_CV == 1
      #PUMP-COUNTER = 0
      SETVAL   STATION5:BUT_ACT_SET_VAL.F_CV 0
      SETVAL   STATION5:BUT-COL-SET_VAL.F_CV  0
      SETVAL   STATION5:BUT-COL-POS_PUMP.F_CV  2
      GETVAL   STATION5:UTESTNO.A_DESC #STRING_TEMP
      SETVAL   STATION5:LAST-UTESTNO.A_DESC #STRING_TEMP
      GETVAL   STATION5:UDESC.A_DESC #STRING_TEMP
      SETVAL   STATION5:LAST_UDESC.A_DESC #STRING_TEMP
      GETVAL   STATION5:USPEED.F_CV #NUM_TEMP
      SETVAL   STATION5:VR232060.F_CV #NUM_TEMP
      #NUM_TEMP = #NUM_TEMP + 10
      SETVAL   STATION5:HPSPDAL.F_CV #NUM_TEMP
      #NUM_TEMP = #NUM_TEMP + 10
      SETVAL   STATION5:HPSPDLIM.F_CV #NUM_TEMP
      GETVAL   STATION5:UACCEL.F_CV #NUM_TEMP
      SETVAL   STATION5:P_ACCEL.F_CV #NUM_TEMP
      GETVAL   STATION5:UDECEL.F_CV #NUM_TEMP
      SETVAL   STATION5:P_DECEL.F_CV #NUM_TEMP
      SETVAL   STATION5:START-TIME.A_DESC "> N/A <"
      SETVAL   STATION5:STOP-TIME.A_DESC "> N/A <"
      ONSCAN  STATION5:ELAPSED-CLEAR-PG
      OFFSCAN STATION5:ENAB_TEST_TIMER
      OPENDIG STATION5:ENAB_TEST_TIMEOUT.F_CV
      IF STATION5:D_IN-BAND.F_CV == 1
        ONSCAN STATION5:POS_PUMP_DONE
      ELSE
        ONSCAN STATION5:SET_VAL_DONE
      ENDIF
    ENDIF
    IF STATION5:USER_SECONDS.F_CV < 5
      SETVAL STATION5:USECS.F_CV 5
    ENDIF
    PAUSE 1
    GETVAL  STATION5:USER_SECONDS.F_CV #NUM_TEMP
    SETVAL  STATION5:PBCALSEC.F_CV #NUM_TEMP
    &End
```

```
        Top Button Components:          Visibility:   BUT_ANIM_SET_VAL.F_CV {0: Visible}
        Top Button Rectangle Only:      Color:        BUT-COL-SET_VAL.F_CV {(0: Gray), (1: Green),
                                                        (2: Yellow), (3: Flashing Yellow)}
    Bottom Button:              No Dynamics
        Bottom Button Rectangle Only:   Color:        BUT-COL-SET_VAL.F_CV {(0: Gray), (1: Green),
                                                        (2: Yellow), (3: Flashing Yellow)}

Gray Text Button:               Visibility:   PUMP_PROB.F_CV {1: Visible}
    Top Button:                 "On Down":
                                    SETVAL  STATION5:BUT_ANIM_SET_VAL.F_CV 1
                                    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                                "On Up":
                                    SETVAL  STATION5:BUT_ANIM_SET_VAL.F_CV 0
        Top Button Components:          Visibility:   BUT_ANIM_SET_VAL.F_CV {0: Visible}
        Top Button Rectangle Only:      Color:        BUT-COL-SET_VAL.F_CV {(0: Gray), (1: Green),
                                                        (2: Yellow), (3: Flashing Yellow)}
    Bottom Button:              No Dynamics
        Bottom Button Rectangle Only:   Color:        BUT-COL-SET_VAL.F_CV {(0: Gray), (1: Green),
                                                        (2: Yellow), (3: Flashing Yellow)}

POSITION PUMP, ENABLE TEST & START TEST Buttons:    Visibility:   VSDS_BAD.F_CV {0: Visible}
    POSITION PUMP Button
        Top Button:             "On Down":
                                    SETVAL   STATION5:BUT_ANIM_POS_PUMP.F_CV  1
                                    IF #SECURITY_LEVEL < 3
                                      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                                      IF #PUMPWARN_OPEN == 0
                                        OPENPIC PUMPWARN
                                      ENDIF
                                    ELSE
                                      IF STATION5:BUT_ACT_POS_PUMP.F_CV == 0
                                        PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                                      ENDIF
                                    ENDIF
                                "On Up":
                                    SETVAL   STATION5:BUT_ANIM_POS_PUMP.F_CV  0
                                    IF #SECURITY_LEVEL < 3
                                      GOTO End
                                    ENDIF
                                    IF STATION5:BUT_ACT_POS_PUMP.F_CV == 1
                                      SETVAL STATION5:BUT_ACT_POS_PUMP.F_CV 0
                                      SETVAL   STATION5:D_RUN.F_CV 1
                                      SETVAL   STATION5:BUT-COL-POS_PUMP.F_CV  0
                                    ENDIF
                                    &End
        Top Button Components:          Visibility:   BUT_ANIM_POS_PUMP.F_CV {0: Visible}
        Top Button Rectangle Only:      Color:        BUT-COL-POS_PUMP.F_CV {(0: Gray), (1: Green),
                                                        (2: Yellow), (3: Flashing Yellow)}
    Bottom Button:              No Dynamics
        Bottom Button Rectangle Only:   Color:        BUT-COL-POS_PUMP.F_CV {(0: Gray), (1: Green),
                                                        (2: Yellow), (3: Flashing Yellow)}

    ENABLE TEST Button
        Top Button:             "On Down":
                                    SETVAL STATION5:BUT_ANIM_ENAB_TEST.F_CV 1
                                    IF #SECURITY_LEVEL < 3
                                      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                                      IF #PUMPWARN_OPEN == 0
                                        OPENPIC PUMPWARN
                                      ENDIF
                                    ELSE
                                      IF STATION5:BUT_ACT_ENAB_TEST.F_CV == 0
                                        PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
```

```
      ENDIF
    ENDIF
"On Up":
    SETVAL   STATION5:BUT_ANIM_ENAB_TEST.F_CV 0
    IF #SECURITY_LEVEL < 3
      GOTO End
    ENDIF
    IF STATION5:BUT_ACT_ENAB_TEST.F_CV == 1
      ONSCAN STATION5:ENAB_TEST_TIMER
    ENDIF
    &End
```

Top Button Components: Visibility: BUT_ANIM_ENAB_TEST.F_CV {0: Visible}
Top Button Rectangle Only: Color: BUT-COL-ENAB_TEST.F_CV {(0: Gray), (1: Green), (2: Yellow), (3: Flashing Yellow)}

Bottom Button: No Dynamics
Bottom Button Rectangle Only: Color: BUT-COL-ENAB_TEST.F_CV {(0: Gray), (1: Green), (2: Yellow), (3: Flashing Yellow)}

START TEST Button

Top Button:

```
"On Down":
    SETVAL STATION5:BUT_ANIM_START_TEST.F_CV 1
    IF #SECURITY_LEVEL < 3
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
      IF #PUMPWARN_OPEN == 0
        OPENPIC PUMPWARN
      ENDIF
    ELSE
      IF STATION5:BUT_ACT_START_TEST.F_CV == 0
        PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
      ENDIF
    ENDIF
"On Up":
    SETVAL   STATION5:BUT_ANIM_START_TEST.F_CV 0
    IF #SECURITY_LEVEL < 3
      GOTO End
    ENDIF
    IF STATION5:BUT_ACT_START_TEST.F_CV == 1
      OPENDIG STATION5:ENAB_TEST_TIMEOUT.F_CV
      SETVAL   STATION5:BUT_ACT_START_TEST.F_CV 0
      SETVAL   STATION5:P_RUN.F_CV 1
      ONSCAN STATION5:START_TEST_DONE
      OPENDIG STATION5:STOP-TIME.F_CV
      SETVAL   STATION5:ELAPSED-TIME-HOLD.F_CV 0
      PAUSE 1
      SETVAL   STATION5:START-TIME.A_DESC #GS_TIME
      MESSAGE ">>>>> Pump Started <<<<<"
      OPENPIC STOPTIME
      ONSCAN STATION5:30-SECOND-TIMEOUT
    ENDIF
    &End
```

Top Button Components: Visibility: BUT_ANIM_START_TEST.F_CV {0: Visible}
Top Button Rectangle Only: Color: BUT-COL-START_TEST.F_CV {(0: Gray), (1: Green), (2: Yellow), (3: Flashing Yellow)}

Bottom Button: No Dynamics
Bottom Button Rectangle Only: Color: BUT-COL-START_TEST.F_CV {(0: Gray), (1: Green), (2: Yellow), (3: Flashing Yellow)}

STOP TEST / ENABLE STOP Button:

Top Button: Visibility: #STOP_OK {1: Visible}

```
"On Down":
    CLOSEDIG STATION5:STOP-TIME.F_CV
    SETVAL   STATION5:ELAPSED-TIME-HOLD.F_CV 1
    ONSCAN  STATION5:RESET-PUMPRUN
```

```
                    #STOP_PRESSED = 1
                    #STOP_OK = 0
Top Button "STOP TEST":      Visibility:  BUT_TEXT_STOP_TEST.F_CV {1: Visible}
                                 Visibility:  BUT_ANIM_STOP_TEST.F_CV {0: Visible}
Top Button Line & Rectangle: Visibility:  BUT_ANIM_STOP_TEST.F_CV {0: Visible}

Middle Button:          Visibility:  #STOP_OK {0: Visible}
                        "On Down":
                            SETVAL  STATION5:BUT_ANIM_STOP_TEST.F_CV  1
                            IF #SECURITY_LEVEL < 3
                              PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                              IF #PUMPWARN_OPEN == 0
                                OPENPIC PUMPWARN
                              ENDIF
                            ELSE
                              IF STATION5:BUT_ACT_STOP_TEST.F_CV == 0
                                PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                              ENDIF
                            ENDIF
                        "On Up":
                            SETVAL  STATION5:BUT_ANIM_STOP_TEST.F_CV  0
                            IF #STOP_TEST_BUSY == 1
                              PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
                              GOTO END
                            ENDIF
                            IF #SECURITY_LEVEL < 3
                              GOTO End
                            ENDIF
                            #STOP_TEST_BUSY = 1
                            IF STATION5:P_RUN.F_CV == 1
                              SETVAL  STATION5:BUT_ANIM_STOP_TEST.F_CV  0
                              SETVAL  STATION5:BUT-COL-STOP_TEST.F_CV  2
                              PAUSE 2
                              SETVAL  STATION5:BUT-COL-STOP_TEST.F_CV  3
                              SETVAL  STATION5:BUT_TEXT_STOP_TEST.F_CV 1
                              #STOP_OK = 1
                              #STOP_PRESSED = 0
                              PAUSE 3
                              IF #STOP_PRESSED == 0
                                SETVAL  STATION5:BUT_TEXT_STOP_TEST.F_CV 0
                                SETVAL  STATION5:BUT-COL-STOP_TEST.F_CV  1
                              ENDIF
                              #STOP_OK = 0
                              #STOP_PRESSED = 0
                            ELSE
                              IF STATION5:BUT_ACT_STOP_TEST.F_CV == 1
                                OFFSCAN STATION5:ENAB_TEST_TIMER
                                OPENDIG STATION5:ENAB_TEST_TIMEOUT.F_CV
                                ONSCAN  STATION5:RESET-PUMPRUN
                              ENDIF
                            ENDIF
                            #STOP_TEST_BUSY = 0
                            &End
Middle Button "STOP TEST":      Visibility:  BUT_TEXT_STOP_TEST.F_CV {1: Visible}
                                    Visibility:  BUT_ANIM_STOP_TEST.F_CV {0: Visible}
Middle Button "ENABLE STOP":    Visibility:  BUT_TEXT_STOP_TEST.F_CV {0: Visible}
                                    Visibility:  BUT_ANIM_STOP_TEST.F_CV {0: Visible}
Middle Button Line & Rectangle: Visibility:  BUT_ANIM_STOP_TEST.F_CV {0: Visible}
Middle Button Rectangle Only:   Color:       BUT-COL-STOP_TEST.F_CV {(0: Gray), (1: Green),
                                                (2: Yellow), (3: Flashing Yellow)}

Bottom Button:                  No Dynamics
Bottom Button "STOP TEST":      Visibility:  BUT_TEXT_STOP_TEST.F_CV {1: Visible}
Bottom Button "ENABLE STOP":    Visibility:  BUT_TEXT_STOP_TEST.F_CV {0: Visible}
Bottom Button Rectangle Only:   Color:       BUT-COL-STOP_TEST.F_CV {(0: Gray), (1: Green),
```

(2: Yellow), (3: Flashing Yellow)}

Miscellaneous Screen Dynamics:

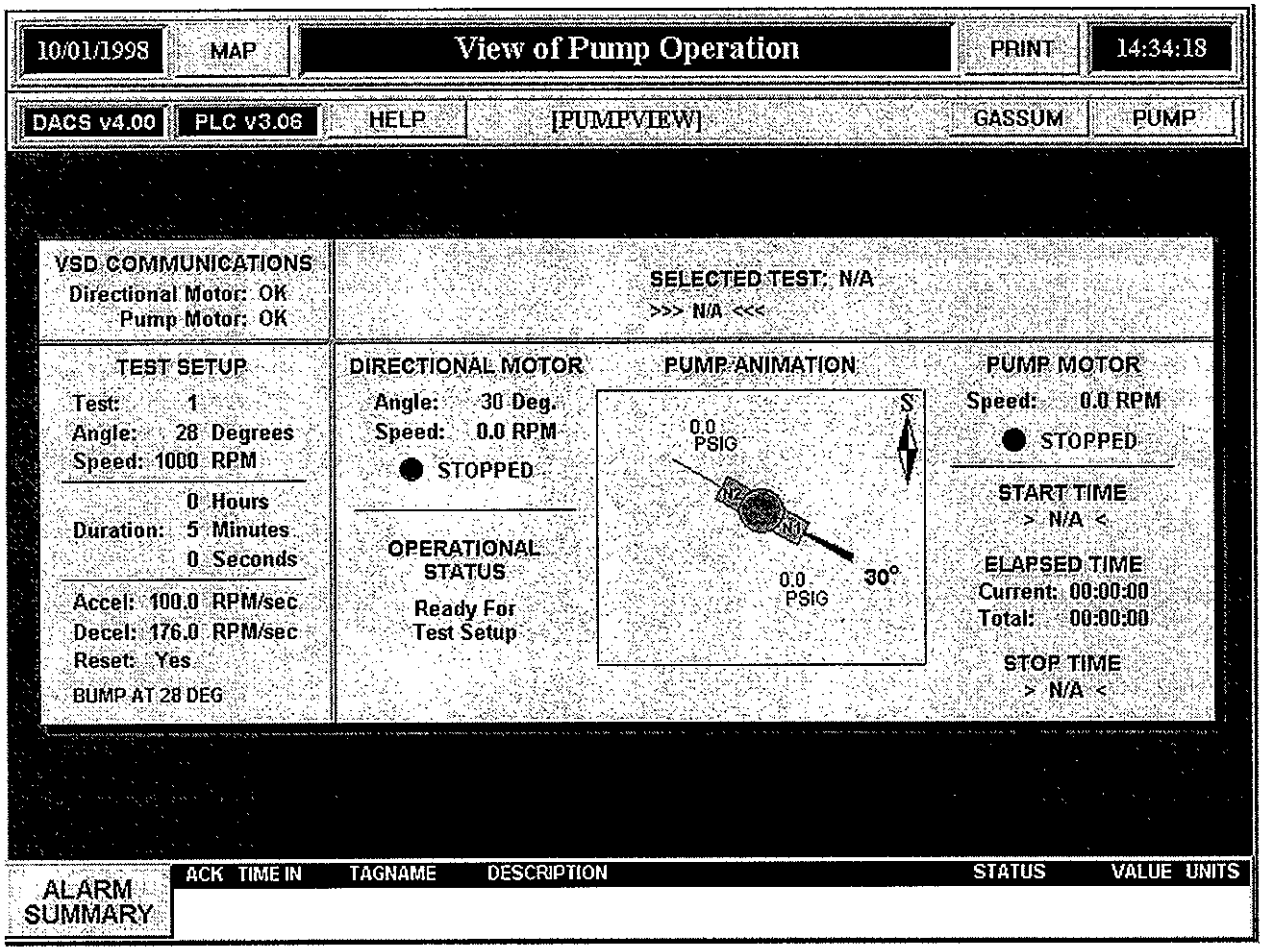
"NOTE" Box for Bad VSDs:	Visibility:	VSDS_BAD.F_CV {1: Visible}
Yellow "UNABLE TO PROCEED":	Color:	PUMP_PROB.F_CV {(0: Invis.), (1: Flashing Yellow)}
Black "UNABLE TO PROCEED":	Color:	PUMP_PROB.F_CV {(0: Invis.), (1: Black)}
Yellow "30 sec warn":	Color:	30SEC-WARN, Latched Alarm {(OK: Invisible), (Change from normal: Flashing Yellow)}
Black "30 sec warn ":	Color:	30SEC-WARN, Latched Alarm {(OK: Invisible), (Change from normal: Black)}

PUMP ANIMATION: Except as noted, Rotations based on: Tagname: ZIMPE112.F_CV
Low / High Limits: 0 / 360
Min / Max Angle: 0 / 360

Red Axis:	Rotation:	Center of Rotation Coordinates: X = 4.816, Y = 2.851
	Visibility:	P_RUN_STAT.F_CV {0: Visible}
+/- 2° Cone:	Rotation:	Tagname: UANGLE.F_CV Center of Rotation Coordinates: X = 4.815, Y = 2.848
	Visibility:	P_RUN_STAT.F_CV {0: Visible}
	Color:	D_IN-BAND.F_CV {(0: Yellow), (1: Green)}
Angle Value:	Rotation:	Center of Rotation Coordinates: X = 4.776, Y = 2.851
Angle Value:	Data Link:	ZIMPE112.F_CV
Degree (°) Symbol:	Rotation:	Center of Rotation Coordinates: X = 4.938, Y = 2.822
Nozzles (Turquoise Rectangle):	Rotation:	Center of Rotation Coordinates: X = 4.815, Y = 2.849
"N2 N1" Nozzle Indicators:	Rotation:	Center of Rotation Coordinates: X = 4.822, Y = 2.850
Pressure Values:	Rotation:	Center of Rotation Coordinates: X = 4.800, Y = 2.806
"N1" Pressure Value:	Data Link:	PITNO110.F_CV
"N2" Pressure Value:	Data Link:	PITNO111.F_CV
Pressure Magnitude Indicators:	Rotation:	Center of Rotation Coordinates: X = 4.815, Y = 2.851
Green "N1" Pressure Indicator:	Visibility:	PITNO110.F_CV {>30: Visible}
	Colors:	P_RUN_STAT.F_CV {(0: Green), (1: Flashing Green)}
Green "N2" Pressure Indicator:	Visibility:	PITNO111.F_CV {>30: Visible}
	Colors:	P_RUN_STAT.F_CV {(0: Green), (1: Flashing Green)}
Red "N1" Pressure Indicator:	Visibility:	P_RUN_CMD.F_CV {1: Visible}
	Colors:	P_RUN_STAT.F_CV {(0: Red), (1: Flashing Red)}
Red "N2" Pressure Indicator:	Visibility:	P_RUN_CMD.F_CV {1: Visible}
	Colors:	P_RUN_STAT.F_CV {(0: Red), (1: Flashing Red)}
"PSIG" Units:	Rotation:	Center of Rotation Coordinates: X = 4.815, Y = 2.917
Pump Body (Turquoise Circle):	Colors:	PUMP_PROB.F_CV {(0: Turquoise), (1: Flashing Yellow)}
Rotation Arrows:	No Dynamics	
Clockwise Arrow:	Visibility:	SHOW-ANGLE.F_CV {1: Visible}
	Colors:	D_REV_CMD.F_CV {(0: Black), (1: Invisible)}
Counterclockwise Arrow:	Visibility:	SHOW-ANGLE.F_CV {1: Visible}
	Colors:	D_REV_CMD.F_CV {(0: Invisible), (1: Black)}
"ZIMPE143 CW Limit Switch" text and Digital Indicator Light:	Visibility:	ZIMPE143.F_CV {1: Visible}
Digital Indicator Light:	Colors:	ZIMPE143.F_CV {(0: Green), (1: Flashing Red)}
"ZIMPE143 CW Limit Switch"	Colors:	ZIMPE143.F_CV {(0: Green), (1: Flashing Red)}
"ZIMPE144 CCW Limit Switch" text and Digital Indicator Light:	Visibility:	ZIMPE144.F_CV {1: Visible}
Digital Indicator Light:	Colors:	ZIMPE144.F_CV {(0: Green), (1: Flashing Red)}
"ZIMPE144 CCW Limit Switch"	Colors:	ZIMPE144.F_CV {(0: Green), (1: Flashing Red)}

Screen Filename: PUMPVIEW.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "PUMPVIEW"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "PUMPVIEW"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_PMPVEW
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<GASSUM>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC GASSUM
```

<PUMP>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMP
```

[PUMPVIEW] Screen Dynamics:

VSD COMMUNICATIONS:

Directional Motor Status:	Data Link:	D_MOTOR_STAT.A_CV
	Color:	D_MOTOR_STAT.F_CV {(0: Green), (1: Red)}
Pump Motor Status:	Data Link:	P_MOTOR_STAT.A_CV
	Color:	P_MOTOR_STAT.F_CV {(0: Green), (1: Red)}

TEST SETUP:

Black Setup Variables:

Test Number:	Data Link:	UTESTNO.A_DESC
Angle Value:	Data Link:	UANGLE.F_CV
Speed Value:	Data Link:	USPEED.F_CV
Duration Hours:	Data Link:	UHRS.F_CV
Duration Minutes:	Data Link:	UMINS.F_CV
Duration Seconds:	Data Link:	USECS.F_CV
Accel Value:	Data Link:	UACCEL.F_CV
Decel Value:	Data Link:	UDECEL.F_CV
Reset Toggle:	Data Link:	URESTIM.A_CV
Green Test Description:	Data Link:	UDESC.A_DESC

LAST SELECTED TEST:

"LAST" Text:	Visibility:	BUT_ACT_SET_VAL.F_CV {1: Visible}
Test Number:	Data Link:	LAST-UTESTNO.A_DESC
Green Test Description:	Data Link:	LAST_UDESC.A_DESC

DIRECTIONAL MOTOR:

Angle Value:	Data Link:	ZIMPE112.F_CV
	Color:	D_IN-BAND.F_CV {(0: Yellow), (1: Green)}
Speed Value:	Data Link:	VR232110.F_CV
Indicator Light:	Color:	D_RUN_STAT.F_CV {(0: Green), (1: Red)}
"STOPPED/RUNNING":	Data Link:	D_RUN_STAT.A_CV
	Color:	D_RUN_STAT.F_CV {(0: Green), (1: Red)}

PUMP MOTOR:

"Speed:", "RPM":	Color:	VR232050_CA.F_CV {(0: Black), (>0 to 1: Red), (>1 to 3: Flashing Red) , (>3 to 7: Yellow)}
Speed Value:	Data Link:	VR232050.F_CV
	Color:	VR232050_CA.F_CV {(0: Black), (>0 to 1: Red), (>1 to 3: Flashing Red) , (>3 to 7: Yellow)}
Indicator Light:	Color:	P_RUN_STAT.F_CV {(0: Green), (1: Red)}
"STOPPED/RUNNING":	Data Link:	P_RUN_STAT.A_CV
	Color:	P_RUN_STAT.F_CV {(0: Green), (1: Red)}

START TIME:

Start Time Value:	Data Link:	START-TIME.A_DESC

ELAPSED TIME: Note: Times are grouped with a gray box covering the "dd:" (days) field

Current Time Value:	Data Link:	ELAPSED-TIME.A_CV
Total Time Value:	Data Link:	ELAPSED-TIME-TOTAL.A_CV

REMAINING TIME & Value: Visibility: PMPINRUN.F_CV {1: Visible}

Remaining Time Value:	No Dynamics	
Hours Value & Box:	No Dynamics; grouped with a gray box covering the "hundreds" field	
Hours Value:	Data Link:	COUNTDOWN-HRS_100.F_CV
Minutes Value & Box:	No Dynamics; grouped with a gray box covering the "hundreds" field	
Minutes Value:	Data Link:	COUNTDOWN-MINS_100.F_CV
Seconds Value & Box:	No Dynamics; grouped with a gray box covering the "hundreds" field	
Seconds Value:	Data Link:	COUNTDOWN-SECS_100.F_CV

STOP TIME & Value: Visibility: PMPINRUN.F_CV {0: Visible}
Stop Time Value: Data Link: STOP-TIME.A_DESC

OPERATIONAL STATUS:

Text Description	Text Visibility
Ready For Test Setup	BUT_ACT_SET_VAL.F_CV = 1
Verifying Test Setup	BUT-COL-POS_PUMP.F_CV = 2
Ready For Pump Rotation	BUT_ACT_POS_PUMP.F_CV = 1
Pump Rotating	D_RUN.F_CV = 1
Pump In Position	BUT_ACT_ENAB_TEST.F_CV = 1
Ready For Pump Start	BUT_ACT_START_TEST.F_CV = 1
Pump Running	BUT_TEXT_STOP_TEST.F_CV = 0
Ready For Pump Stop	BUT-COL-STOP_TEST.F_CV = 3

Top Yellow "Problem Detected" Text: Color: PUMP_PROB.F_CV {(0: Invisible), (1: Flashing Yellow)}
Bottom Black "Problem Detected" Text: Color: PUMP_PROB.F_CV {(0: Invisible), (1: Black)}

PUMP ANIMATION: Except as noted, Rotations based on: Tagname: ZIMPE112.F_CV
Low / High Limits: 0 / 360
Min / Max Angle: 0 / 360

Red Axis:
Rotation: Center of Rotation Coordinates: X = 4.816, Y = 3.201
Visibility: P_RUN_STAT.F_CV {0: Visible}

+/- 2° Cone:
Rotation: Tagname: UANGLE.F_CV
Center of Rotation Coordinates: X = 4.815, Y = 3.198
Visibility: P_RUN_STAT.F_CV {0: Visible}
Color: D_IN-BAND.F_CV {(0: Yellow), (1: Green)}

Angle Value:
Rotation: Center of Rotation Coordinates: X = 4.776, Y = 3.201
Angle Value: Data Link: ZIMPE112.F_CV

Degree (°) Symbol:
Rotation: Center of Rotation Coordinates: X = 4.938, Y = 3.172

Nozzles (Turquoise Rectangle):
Rotation: Center of Rotation Coordinates: X = 4.815, Y = 3.199

"N2 N1" Nozzle Indicators:
Rotation: Center of Rotation Coordinates: X = 4.822, Y = 3.200

Pressure Values:
Rotation: Center of Rotation Coordinates: X = 4.800, Y = 3.156
"N1" Pressure Value: Data Link: PITNO110.F_CV
"N2" Pressure Value: Data Link: PITNO111.F_CV

Pressure Magnitude Indicators:
Rotation: Center of Rotation Coordinates: X = 4.815, Y = 3.201
Green "N1" Pressure Indicator: Visibility: PITNO110.F_CV {>30: Visible}
Colors: P_RUN_STAT.F_CV {(0: Green), (1: Flashing Green)}
Green "N2" Pressure Indicator: Visibility: PITNO111.F_CV {>30: Visible}
Colors: P_RUN_STAT.F_CV {(0: Green), (1: Flashing Green)}
Red "N1" Pressure Indicator: Visibility: P_RUN_CMD.F_CV {1: Visible}
Colors: P_RUN_STAT.F_CV {(0: Red), (1: Flashing Red)}
Red "N2" Pressure Indicator: Visibility: P_RUN_CMD.F_CV {1: Visible}
Colors: P_RUN_STAT.F_CV {(0: Red), (1: Flashing Red)}

"PSIG" Units:
Rotation: Center of Rotation Coordinates: X = 4.815, Y = 3.267

Pump Body (Turquoise Circle):
Colors: PUMP_PROB.F_CV {(0: Turquoise), (1: Flashing Yellow)}

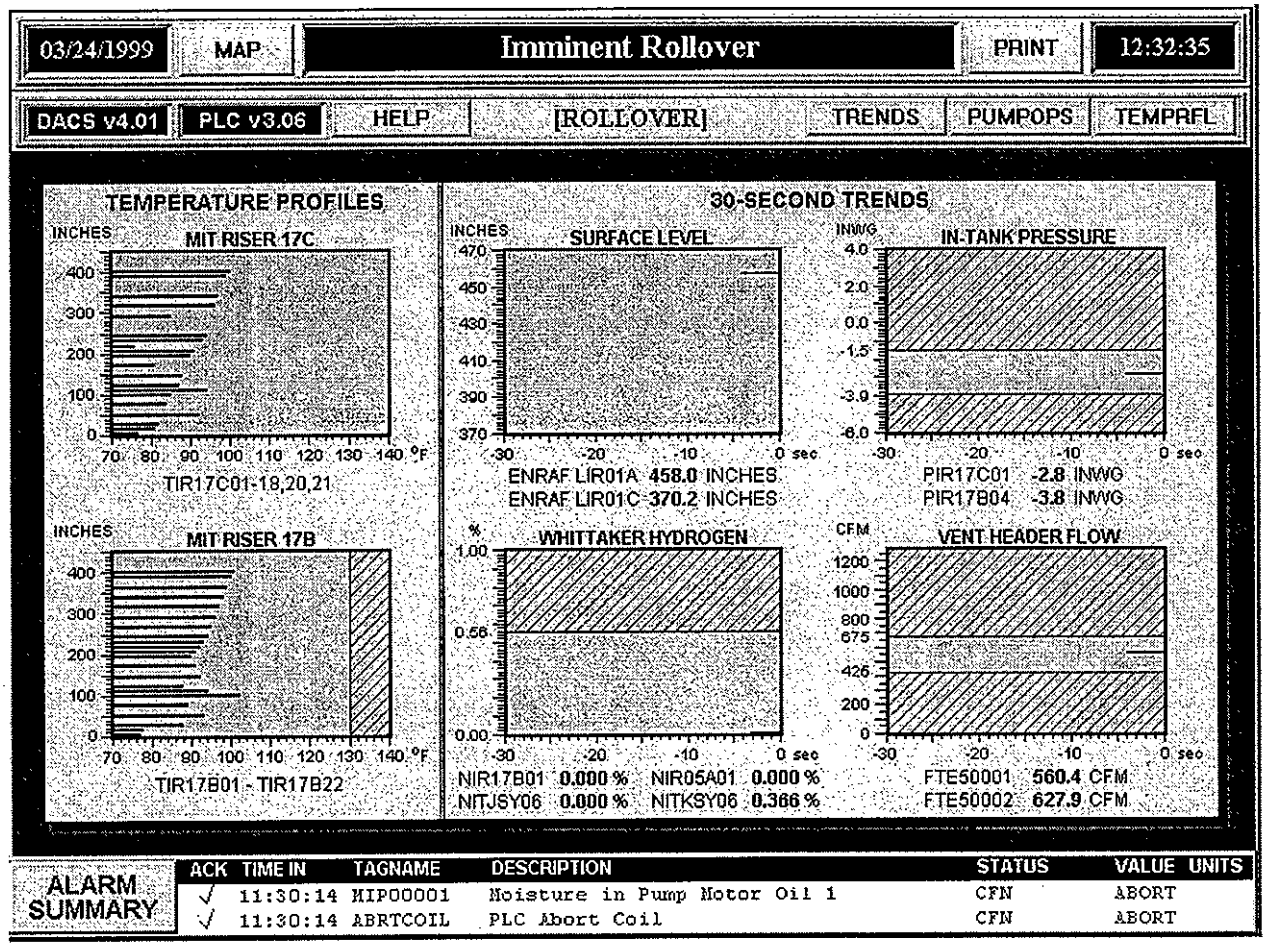
Rotation Arrows:
No Dynamics
Clockwise Arrow: Visibility: SHOW-ANGLE.F_CV {1: Visible}
Colors: D_REV_CMD.F_CV {(0: Black), (1: Invisible)}
Counterclockwise Arrow: Visibility: SHOW-ANGLE.F_CV {1: Visible}
Colors: D_REV_CMD.F_CV {(0: Invisible), (1: Black)}

"ZIMPE143 CW Limit Switch" text and Digital Indicator Light:
Visibility: ZIMPE143.F_CV {1: Visible}
Digital Indicator Light: Colors: ZIMPE143.F_CV {(0: Green), (1: Flashing Red)}
"ZIMPE143 CW Limit Switch" Colors: ZIMPE143.F_CV {(0: Green), (1: Flashing Red)}

"ZIMPE144 CCW Limit Switch" text and Digital Indicator Light:	Visibility:	ZIMPE144.F_CV {1: Visible}
Digital Indicator Light:	Colors:	ZIMPE144.F_CV {(0: Green), (1: Flashing Red)}
"ZIMPE144 CCW Limit Switch"	Colors:	ZIMPE144.F_CV {(0: Green), (1: Flashing Red)}

Screen Filename: ROLLOVER.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.4 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "ROLLOVER"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "ROLLOVER"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_ROLLOV
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<TRENDS>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TRENDS
```

<PUMPOPS>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMPOPS
```

<TEMPRFL> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TEMPRFL

[ROLLOVER] Screen Dynamics:

TEMPERATURE PROFILES Charts:

Chart Description	Bar Coloring: 0: Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow	Horizontal Fill	
		Bar Data Link Tagname	Common Parameters
MIT Riser 17C	TIR17C01_CA	TIR17C01	Fill Direction: RIGHT - Left to Right Low Limit: 70.0 High Limit: 140.0 Minimum Percentage: 0 Maximum Percentage: 100
	TIR17C02_CA	TIR17C02	
	↓	↓	
	TIR17C18_CA	TIR17C18	
	TIR17C20_CA	TIR17C20	
	TIR17C21_CA	TIR17C21	
MIT Riser 17B	TIR17B01_CA	TIR17B01	
	TIR17B02_CA	TIR17B02	
	↓	↓	
	TIR17B21_CA	TIR17B21	
	TIR17B22_CA	TIR17B22	

Note - Temperature Bar Elevations (Y-Axis) Based on [MIT17B] and [MIT17C] Screen Values

30 SECOND TRENDS Charts:

Chart Description	Chart Visibility	Chart Configuration	Pen Configuration		
		Common Parameters	Pen Tagname	Common Parameters	Low / High Limits
Surface Level	#LEVEL_PLOT_VIS = 0 #LEVEL_PLOT_VIS = 1	Color: Transparent Time Duration: 00:00:00:30	LIR01A LIR01C	Pen Color: Blue Line Definition: Show Line	370 / 470
In-Tank Pressure	#PRESSURE_PLOT_VIS = 0 #PRESSURE_PLOT_VIS = 1		PIR17C01 PIR17B04		-6.0 / 4.0
Whittaker Hydrogen	#HYDROGEN_PLOT_VIS = 0 #HYDROGEN_PLOT_VIS = 1 #HYDROGEN_PLOT_VIS = 2 #HYDROGEN_PLOT_VIS = 3		NIR17B01 NITJSY06 NIR05A01 NITKSY06		0.00 / 1.00
Vent Header Flow	#FLOW_PLOT_VIS = 0 #FLOW_PLOT_VIS = 1		FTE50001 FTE50002		0 / 1275

Values Below 30-SECOND TRENDS Charts:

Grouped Description Line	Grouped Description Line "On Up" Script	Description & Units Coloring, Based On "On Up" Variable	Value Data Link Tagname	Value Coloring: 0: Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
ENRAF LIR01A ###.# INCHES	#LEVEL_PLOT_VIS = 0	0: Blue; 1: Black	LIR01A	LIR01A_CA
ENRAF LIR01C ###.# INCHES	#LEVEL_PLOT_VIS = 1	0: Black; 1: Blue	LIR01C	LIR01C_CA
PIR17C01 ###.# INWG	#PRESSURE_PLOT_VIS = 0	0: Blue; 1: Black	PIR17C01	PIR17C01_CA
PIR17B04 ###.# INWG	#PRESSURE_PLOT_VIS = 1	0: Black; 1: Blue	PIR17B04	PIR17B04_CA
NIR17B01 ##.### %	#HYDROGEN_PLOT_VIS = 0	0: Blue; 1, 2 or 3: Black	NIR17B01	NIR17B01_CA
NITJSY06 ##.### %	#HYDROGEN_PLOT_VIS = 1	0, 2 or 3: Black; 1: Blue	NITJSY06	NITJSY06_CA
NIR05A01 ##.### %	#HYDROGEN_PLOT_VIS = 2	0, 1 or 3: Black; 2: Blue	NIR05A01	NIR05A01_CA
NITKSY06 ##.### %	#HYDROGEN_PLOT_VIS = 3	0, 1 or 2: Black; 3: Blue	NITKSY06	NITKSY06_CA
FTE50001 ####.# CFM	#FLOW_PLOT_VIS = 0	0: Blue; 1: Black	FTE50001	FTE50001_CA
FTE50002 ####.# CFM	#FLOW_PLOT_VIS = 1	0: Black; 1: Blue	FTE50002	FTE50002_CA

Screen Filename: STOPTIME.odf
Picture Type: Standard

Picture Dimensions: 7.920" w x 0.250" h
Screen Refresh Rate: 0.1 sec

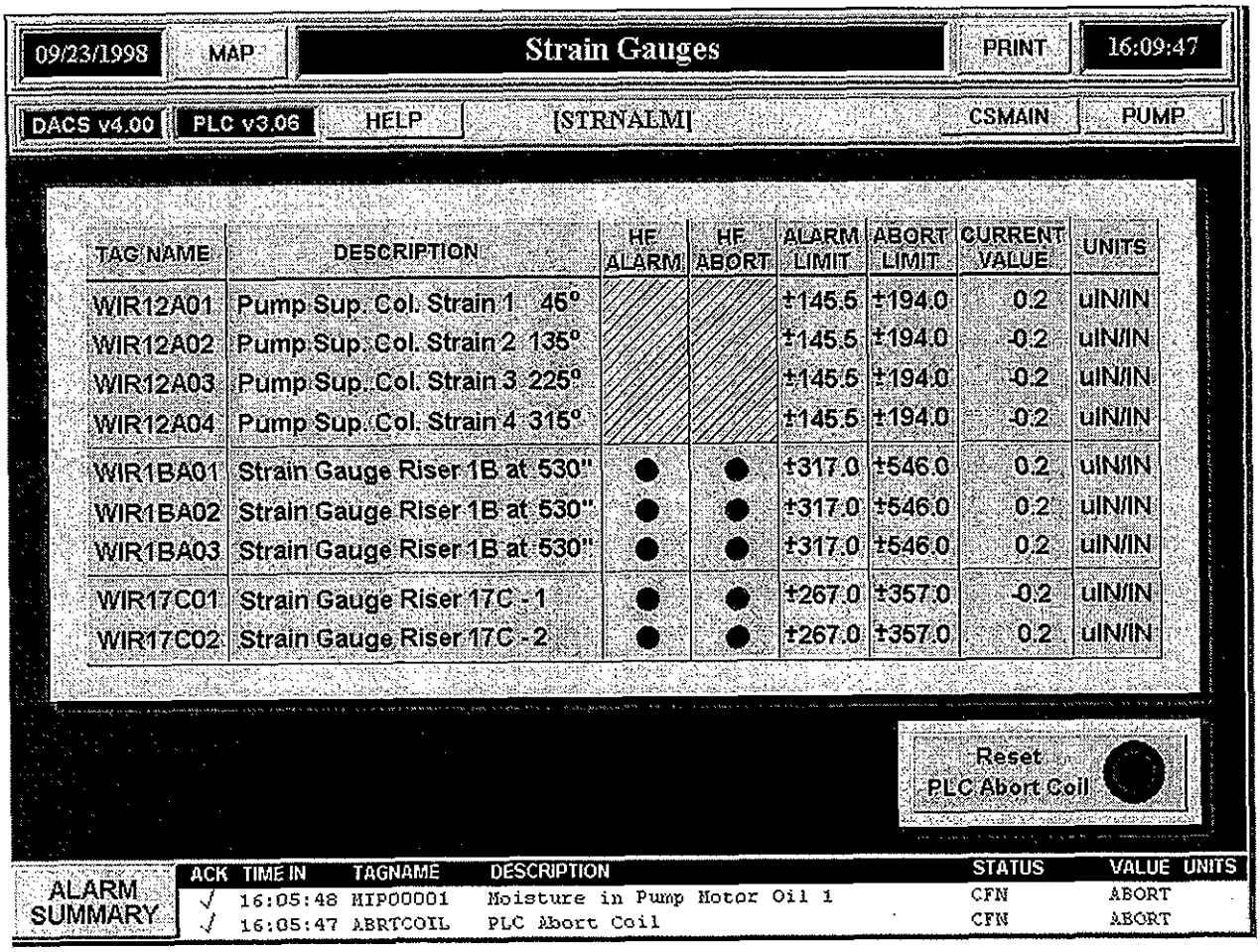
Note: [STOPTIME] is opened by selecting the <START TEST> button from the [PUMPRUN] screen. It appears at the bottom of the currently opened screen, but is hidden behind the screen. It is used to assign a Stop Time to the current Pump Run, and closes at the end of the Pump Run.

Script "On Opening":

```
&WaitForPumpStop
IF STATION5:STOP-TIME.F_CV == 1
  OPENDIG STATION5:STOP-TIME.F_CV
  SETVAL STATION5:STOP-TIME.A_DESC #GS_TIME
  MESSAGE ">>>>> Pump Stopped <<<<<"
  PAUSE 2
  CLOSEPIC STOPTIME
ENDIF
PAUSE 1
GOTO WaitForPumpStop
```

Screen Filename: STRNALM.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "STRNALM"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "STRNALM"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_STRNAL
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<CSMAIN>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC CSMAIN
```

<PUMP>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMP
```

[STRNALM] Screen Dynamics:

Description	Current Value Data Link Tagname	Description, Current Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow	HF Alarm Digital Indicator Light: 0: Green 1: Red	HF Alarm Digital Indicator Light: 0: Green 1: Flashing Red
Pump Sup. Col. Strain 1 45°	WIR12A01	WIR12A01_CA	---	---
Pump Sup. Col. Strain 2 135°	WIR12A02	WIR12A02_CA	---	---
Pump Sup. Col. Strain 3 225°	WIR12A03	WIR12A03_CA	---	---
Pump Sup. Col. Strain 4 315°	WIR12A04	WIR12A04_CA	---	---
Strain Gauge Riser 1B at 530"	WIR1BA01	WIR1BA01_CA	WHF1B1L	WHF1B1B
Strain Gauge Riser 1B at 530"	WIR1BA02	WIR1BA02_CA	WHF1B2L	WHF1B2B
Strain Gauge Riser 1B at 530"	WIR1BA03	WIR1BA03_CA	WHF1B3L	WHF1B3B
Strain Gauge Riser 17C - 1	WIR17C01	WIR17C01_CA	WHF17C1L	WHF17C1B
Strain Gauge Riser 17C - 2	WIR17C02	WIR17C02_CA	WHF17C2L	WHF17C2B

Description	Alarm Limit		Abort Limit	
	Data Link Tagname	"±" & Value Dynamic Coloring: 0: Blue 1: Red	Data Link Tagname	"±" & Value Dynamic Coloring: 0: Blue 1: Flashing Red
Pump Sup. Col. Strain 1 45°	WIR12A01.F_HI	WIR12A01_BL	HPCSLIM	WIR12A01_BLB
Pump Sup. Col. Strain 2 135°	WIR12A02.F_HI	WIR12A02_BL	HPCSLIM	WIR12A02_BLB
Pump Sup. Col. Strain 3 225°	WIR12A03.F_HI	WIR12A03_BL	HPCSLIM	WIR12A03_BLB
Pump Sup. Col. Strain 4 315°	WIR12A04.F_HI	WIR12A04_BL	HPCSLIM	WIR12A04_BLB
Strain Gauge Riser 1B at 530"	WIR1BA01.F_HI	WIR1BA01_BL	H1BCSLIM	WIR1BA01_BLB
Strain Gauge Riser 1B at 530"	WIR1BA02.F_HI	WIR1BA02_BL	H1BCSLIM	WIR1BA02_BLB
Strain Gauge Riser 1B at 530"	WIR1BA03.F_HI	WIR1BA03_BL	H1BCSLIM	WIR1BA03_BLB
Strain Gauge Riser 17C - 1	WIR17C01.F_HI	WIR17C01_BL	H17CSLIM	WIR17C01_BLB
Strain Gauge Riser 17C - 2	WIR17C02.F_HI	WIR17C02_BL	H17CSLIM	WIR17C02_BLB

RESET PLC ABORT COIL Button:

Top Larger Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Visibility #ABORT_BUTTON_STAT {0: Visible}

"On Down":

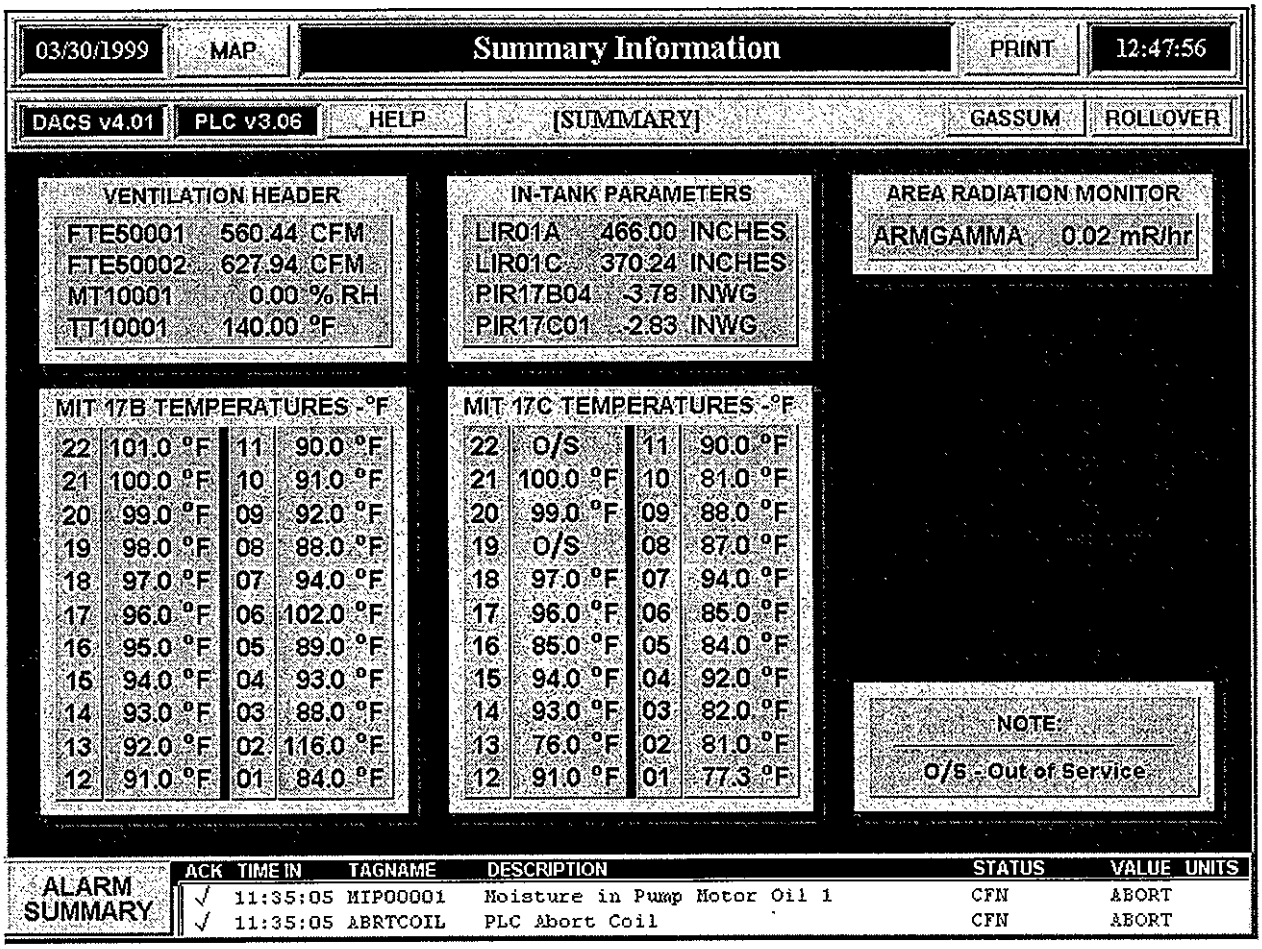
```
IF #RSS == 1
  IF #ABORTWRN_OPEN == 0
    OPENPIC ABORTWRN
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ELSE
  IF #SECURITY_LEVEL >= 2.5
    #ABORT_BUTTON_STAT = 1
    CLOSEDIG STATION5:RSTCOIL.F_CV
    ONSCAN STATION5:PULSECOIL
  ELSE
    IF #ABORTWRN_OPEN == 0
      OPENPIC ABORTWRN
    ELSE
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    ENDIF
  ENDIF
ENDIF
```

"On Up": #ABORT_BUTTON_STAT = 0

Bottom Smaller Round Button: Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Screen Filename: SUMMARY.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "SUMMARY"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "SUMMARY"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_SUMMRY
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<GASSUM>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC GASSUM
```

<ROLLOVER>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC ROLLOVER
```

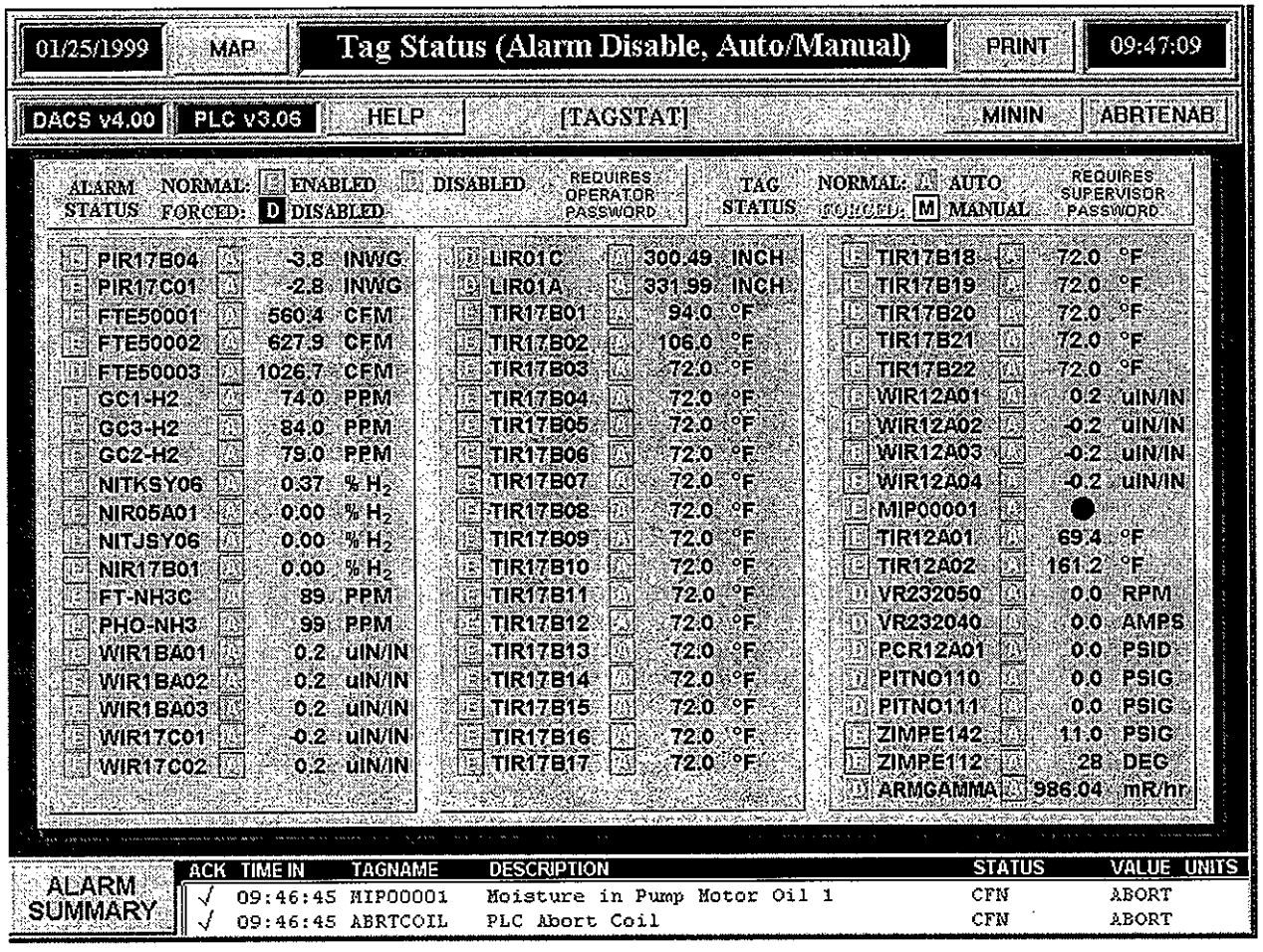
[SUMMARY] Screen Dynamics:

Collective Description	Individual Description	Data Link Tagname	Description, Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
Ventilation Header	FTE50001	FTE50001	FTE50001_CA
	FTE50002	FTE50002	FTE50002_CA
	MT10001	MT10001	---
	TT10001	TT10001	---
In-Tank Parameters	LIR01A	LIR01A	LIR01A_CA
	LIR01C	LIR01C	LIR01C_CA
	PIR17B04	PIR17B04	PIR17B04_CA
	PIR17C01	PIR17C01	PIR17C01_CA
Area Radiation Monitor	ARMGAMMA	ARMGAMMA	ARMGAMMA_CA
MIT 17B Temperatures	01	TIR17B01	TIR17B01_CA
	02	TIR17B02	TIR17B02_CA
	↓	↓	↓
	21	TIR17B21	TIR17B21_CA
	22	TIR17B22	TIR17B22_CA
MIT 17C Temperatures	01	TIR17C01	TIR17C01_CA
	02	TIR17C02	TIR17C02_CA
	↓	↓	↓
	18	TIR17C18	TIR17C18_CA
	19	*	*
	20	TIR17C20	TIR17C20_CA
	21	TIR17C21	TIR17C21_CA
	22	*	*

* No dynamic links or coloring; thermocouples Out of Service (O/S)

Screen Filename: TAGSTAT.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.5 sec



Script "On Opening":

```
DECLARE #ENTER_DATA NUMERIC PICTURE
IF #GS_GROUP == "TRAINING5"
  #ENTER_DATA = 1
ELSE
  #ENTER_DATA = 0
ENDIF
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "TAGSTAT"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "TAGSTAT"
CLOSEPIC HELPSCREEN
CLOSEPIC TOG-NOTE
CLOSEPIC TOG-NOTE
CLOSEPIC TOG-NOTE
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_MININ
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<MININ>

```
CLOSEPIC MAP
```

REPLACEPIC ACTIVEPIC MININ

<ABRTENAB> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC ABRTENAB

[TAGSTAT] Screen Dynamics:

Top Layer Of All Data Link Tagnames: Visibility: #ENTER_DATA {1: Visible}
Top Layer Individual Data Links: Data entry: "Allow data entry" checked
Dynamic Coloring: See Table Below

Bottom Layer Of All Data Link Tagnames: Visibility: #ENTER_DATA {0: Visible}
Bottom Layer Individual Data Links: Data entry: "Allow data entry" not checked
Dynamic Coloring: See Table Below

Data Link Tagname	Description, Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow	Data Link Tagname	Description, Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
PIR17B04	PIR17B04_CA	TIR17B01	TIR17B01_CA
PIR17C01	PIR17C01_CA	TIR17B02	TIR17B02_CA
FTE50001	FTE50001_CA	↓	↓
FTE50002	FTE50002_CA	TIR17B21	TIR17B21_CA
FTE50003	FTE50003_CA	TIR17B22	TIR17B22_CA
GC1-H2	GC1-H2_CA	WIR12A01	WIR12A01_CA
GC3-H2	GC3-H2_CA	WIR12A02	WIR12A02_CA
GC2-H2	GC2-H2_CA	WIR12A03	WIR12A03_CA
NITKSY06	NITKSY06_CA	WIR12A04	WIR12A04_CA
NIR05A01	NIR05A01_CA	MIP00001*	MIP00001**
NITJSY06	NITJSY06_CA	TIR12A01	TIR12A01_CA
NIR17B01	NIR17B01_CA	TIR12A02	TIR12A02_CA
FT-NH3C	FT-NH3C_CA	VR232050	VR232050_CA
PHO-NH3	PHO-NH3_CA	VR232040	VR232040_CA
WIR1BA01	WIR1BA01_CA	PCR12A01	PIR12A01_CA
WIR1BA02	WIR1BA02_CA	PITNO110	PITNO110_CA
WIR1BA03	WIR1BA03_CA	PITNO111	PITNO111_CA
WIR17C01	WIR17C01_CA	ZIMPE142	ZIMPE142_CA
WIR17C02	WIR17C02_CA	ZIMPE112	ZIMPE112***
LIR01C	LIR01C_CA	ARMGAMMA	ARMGAMMA_CA
LIR01A	LIR01A_CA	---	---

* Digital Indicator Light - 0: Green; 1: Flashing Red
** Exception: 0: Black; 1: Flashing Red
*** Exception: OK: Black or Blue; Low or High Alarms: Red

"Red D" Alarm Status (Enable/Disable) Box Example:

"D" Disable Box (On Top): Visibility: TAGNAME.F_ENAB {0: Visible}
White "D" & Red Box: No Dynamic Properties
"E" Enable Box (Middle): No Dynamic Properties
White "E" & Gray Box: No Dynamic Properties
Black Box (On Bottom): Visibility: #SECURITY_LEVEL {> 2.5: Visible}
Black Box: "On Up": TOGGLEALARM STATION5:TAGNAME

"Gray D" or "Gray E" Alarm Status (Enable/Disable) Box Example:

"D" or "E" Box (On Top): No Dynamic Properties
White "D" or "E" & Gray Box: No Dynamic Properties
Black Box (On Bottom): Visibility: #SECURITY_LEVEL {> 2.5: Visible}
Black Box: "On Up": PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
OPENPIC TOG-NOTE
PAUSE 3
CLOSEPIC TOG-NOTE

"Yellow M" Tag Status (Auto/Manual) Box Example:

"M" Manual Box (On Top): Visibility: TAGNAME.F_AUTO {0: Visible}
Black "M" & Yellow Box: No Dynamic Properties
"A" Auto Box (Middle): No Dynamic Properties
White "A" & Gray Box: No Dynamic Properties
Black Box (On Bottom): Visibility: #SECURITY_LEVEL {> 4.5: Visible}
Black Box: "On Up": TOGGLEMANL STATION5:TAGNAME

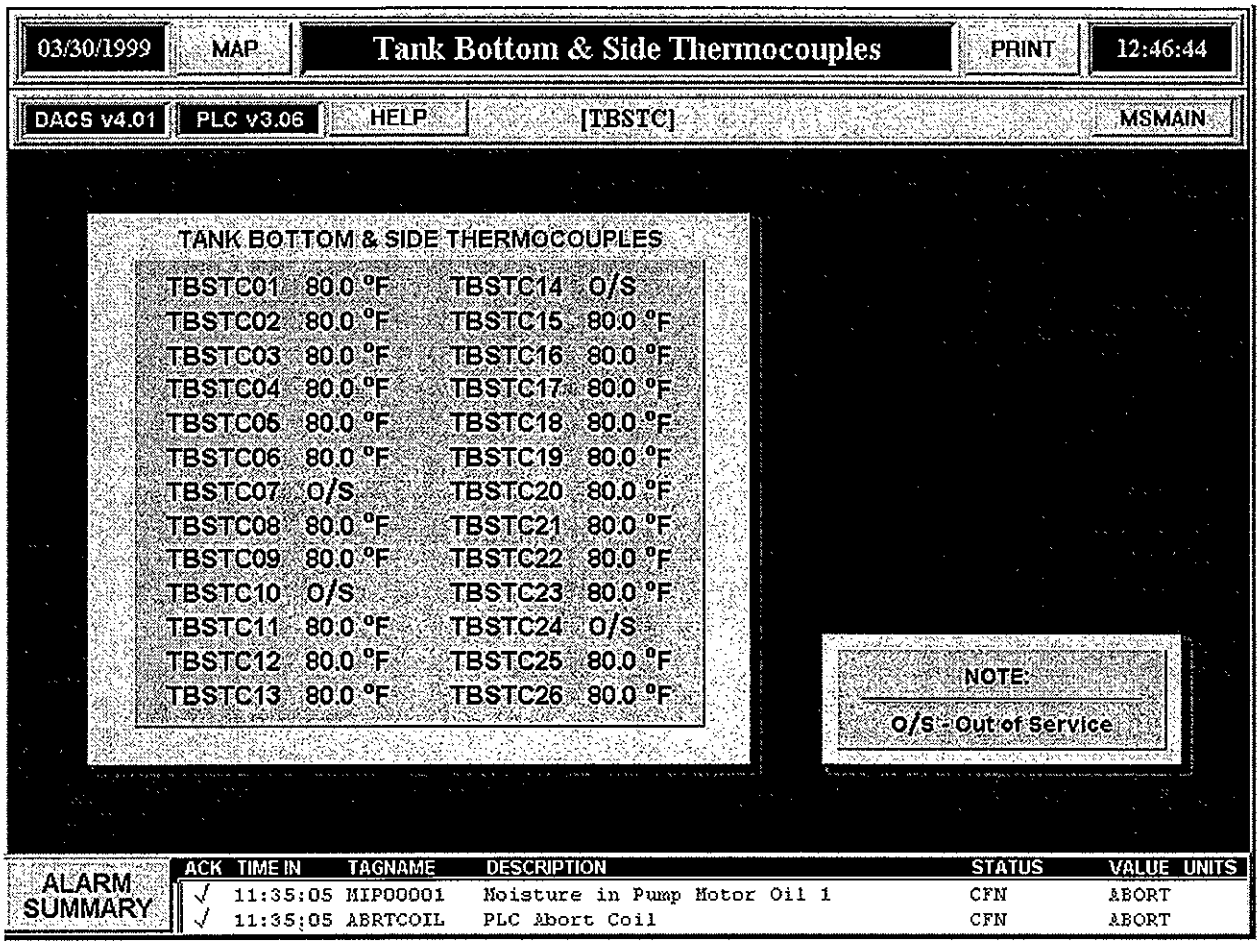
For the actual tags, use the following table to determine the screen dynamics:

Tagname Description	Replace "TAGNAME" With	Data Link Tagname	Replace "TAGNAME" With
PIR17B04	PIR17B04	TIR17B01	TIR17B01
PIR17C01	PIR17C01	TIR17B02	TIR17B02
FTE50001	FTE50001	↓	↓
FTE50002	FTE50002	TIR17B21	TIR17B21
FTE50003	FTE50003*	TIR17B22	TIR17B22
GC1-H2	GC1-H2	WIR12A01	WIR12A01
GC3-H2	GC3-H2	WIR12A02	WIR12A02
GC2-H2	GC2-H2	WIR12A03	WIR12A03
NITKSY06	NITKSY06	WIR12A04	WIR12A04
NIR05A01	NIR05A01	MIP00001	MIP00001**
NITJSY06	NITJSY06	TIR12A01	TIR12A01
NIR17B01	NIR17B01	TIR12A02	TIR12A02
FT-NH3C	FT-NH3C	VR232050	VR232050*
PHO-NH3	PHO-NH3	VR232040	VR232040*
WIR1BA01	WIR1BA01	PCR12A01	PCR12A01*
WIR1BA02	WIR1BA02	PITNO110	PITNO110*
WIR1BA03	WIR1BA03	PITNO111	PITNO111*
WIR17C01	WIR17C01	ZIMPE142	ZIMPE142
WIR17C02	WIR17C02	ZIMPE112	ZIMPE112*
LIR01C	LIR01C*	ARMGAMMA	ARMGAMMA*
LIR01A	LIR01A*	—	—

* N/A for Alarm Status (Enable Not Allowed)
** N/A for Alarm Status (Disable Not Allowed)

Screen Filename: TBSTC.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "TBSTC"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "TBSTC"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_TBSTC
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<MSMAIN>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC MSMAIN
```

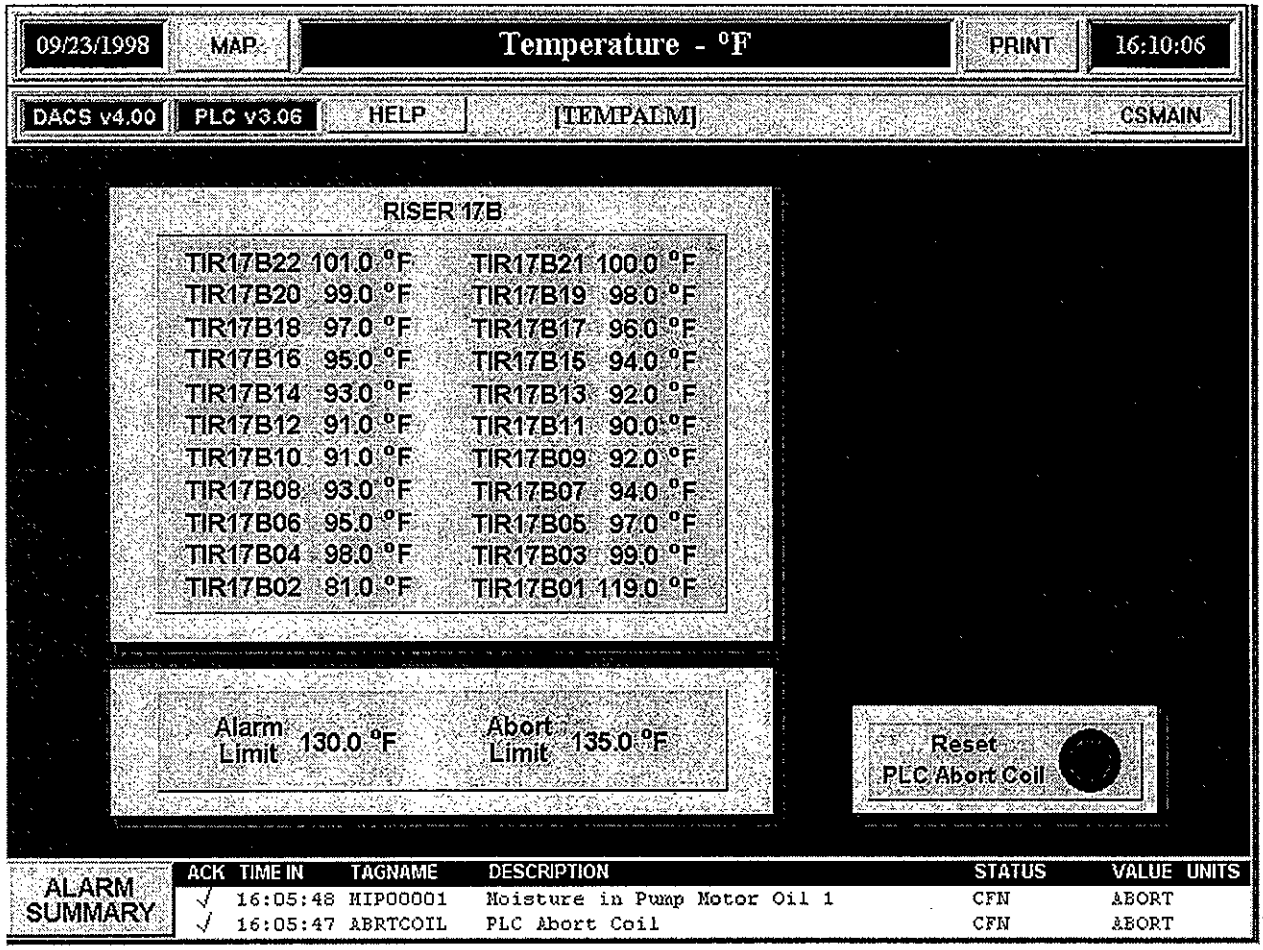
[TBSTC] Screen Dynamics:

Tagname Description	Data Link Tagname
TBSTC01	TBSTC01
TBSTC02	TBSTC02
TBSTC03	TBSTC03
TBSTC04	TBSTC04
TBSTC05	TBSTC05
TBSTC06	TBSTC06
TBSTC07	*
TBSTC08	TBSTC08
TBSTC09	TBSTC09
TBSTC10	*
TBSTC11	TBSTC11
TBSTC12	TBSTC12
TBSTC13	TBSTC13
TBSTC14	*
TBSTC15	TBSTC15
TBSTC16	TBSTC16
TBSTC17	TBSTC17
TBSTC18	TBSTC18
TBSTC19	TBSTC19
TBSTC20	TBSTC20
TBSTC21	TBSTC21
TBSTC22	TBSTC22
TBSTC23	TBSTC23
TBSTC24	*
TBSTC25	TBSTC25
TBSTC26	TBSTC26

* No dynamic links; thermocouples Out of Service (O/S)

Screen Filename: TEMPALM.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "TEMPALM"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "TEMPALM"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_TEMPAL
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<CSMAIN>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC CSMAIN
```

[TEMPALM] Screen Dynamics:

Description	Data Link Tagname	Description, Value & Units Coloring: 0: Black or Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow
TIR17B01	TIR17B01	TIR17B01_CA
TIR17B02	TIR17B02	TIR17B02_CA
↓	↓	↓
TIR17B21	TIR17B21	TIR17B21_CA
TIR17B22	TIR17B22	TIR17B22_CA
Alarm Limit*	TIR17B01.F_HI	TIR17B_BL3**
Abort Limit*	HTEMPLIM	TCR17B_BL3***

* No Dynamic Coloring
** Exception: 0: Black or Blue; 1: Red
*** Exception: 0: Black or Blue; 1: Flashing Red

RESET PLC ABORT COIL Button:

Top Larger Round Button:

Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}
Visibility #ABORT_BUTTON_STAT {0: Visible}
"On Down":

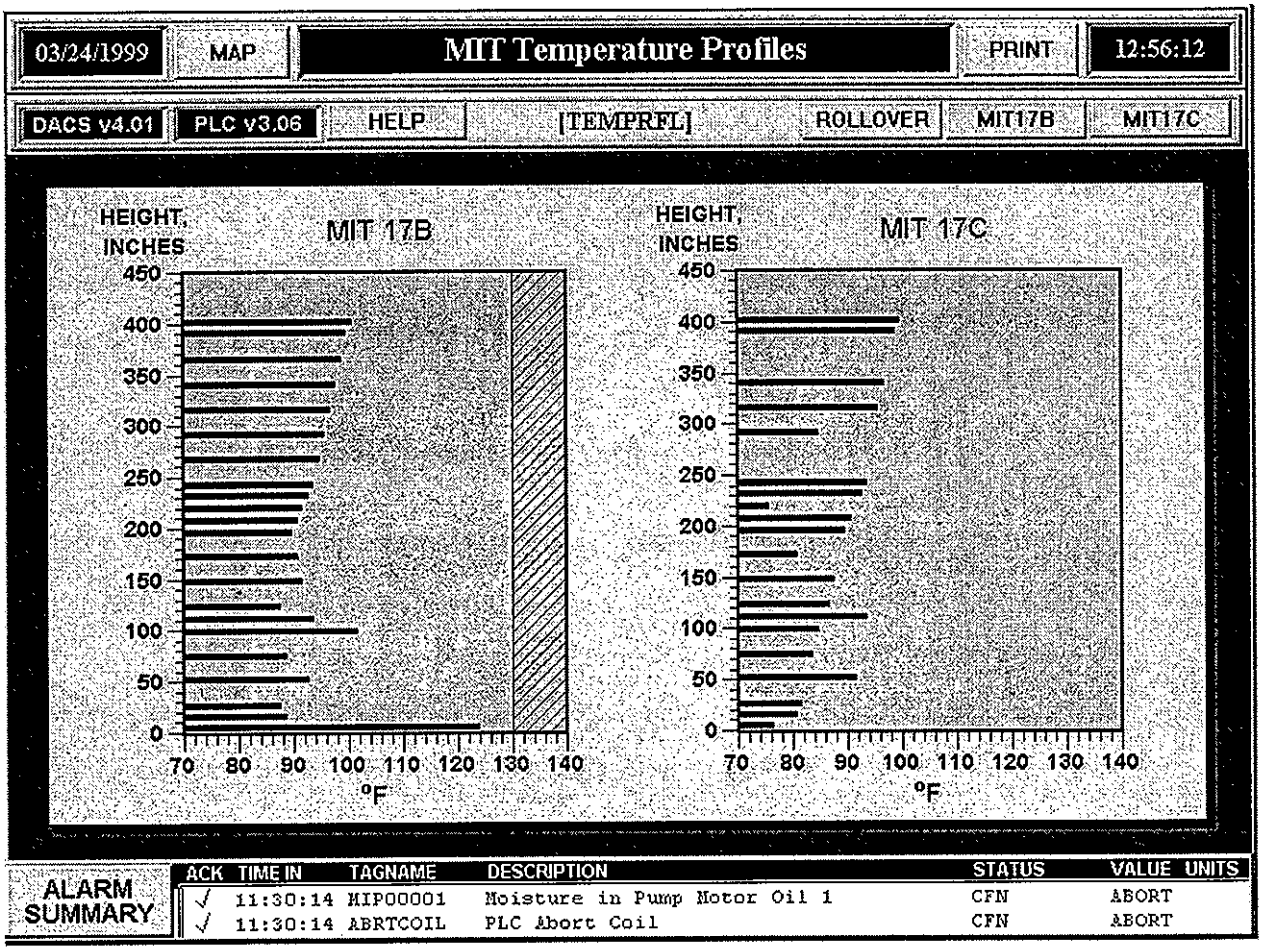
```
IF #RSS == 1
  IF #ABORTWRN_OPEN == 0
    OPENPIC ABORTWRN
  ELSE
    PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  ENDIF
ELSE
  IF #SECURITY_LEVEL >= 2.5
    #ABORT_BUTTON_STAT = 1
    CLOSEDIG STATION5:RSTCOIL.F_CV
    ONSCAN STATION5:PULSECOIL
  ELSE
    IF #ABORTWRN_OPEN == 0
      OPENPIC ABORTWRN
    ELSE
      PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
    ENDIF
  ENDIF
ENDIF
```

"On Up": #ABORT_BUTTON_STAT = 0

Bottom Smaller Round Button: Color: ABRTCOIL.F_CV {(0: Green), (1: Red)}

Screen Filename: TEMPRFL.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "TEMPRFL"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
```

Script "On Closing":

```
#PREV_PIC = "TEMPRFL"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_TMPRFL
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<ROLLOVER>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC ROLLOVER
```

<MIT17B>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC MIT17B
```

<MIT17C> CLOSEPIC MAP
REPLACEPIC ACTIVEPIC MIT17C

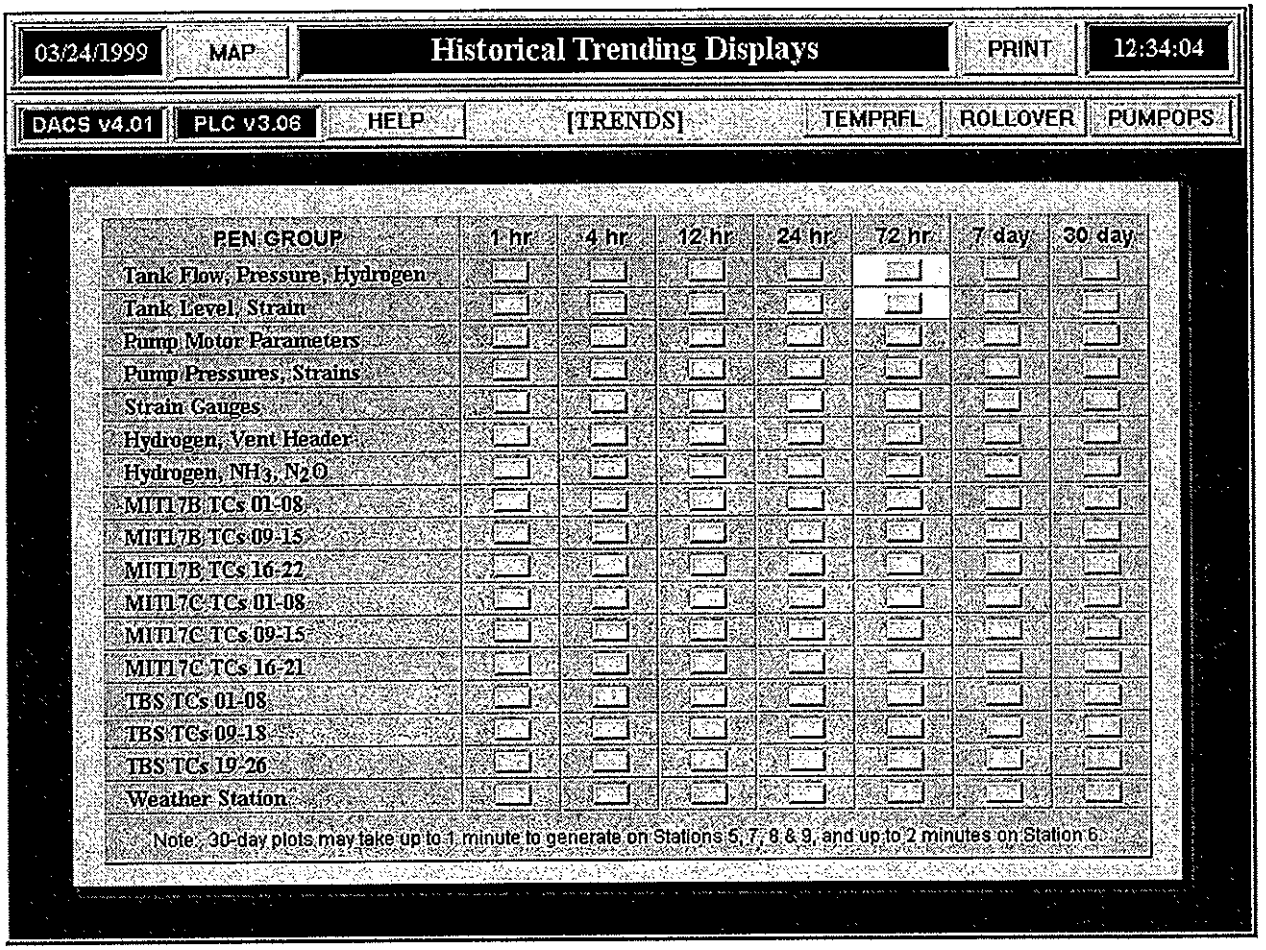
[TEMPRFL] Screen Dynamics:

Chart Description	Bar Coloring: 0: Blue >0 to 1: Red >1 to 3: Flashing Red >3 TO 7: Yellow	Horizontal Fill	
		Bar Data Link Tagname	Common Parameters
MIT 17B	TIR17B01_CA	TIR17B01	Fill Direction: RIGHT - Left to Right Low Limit: 70.0 High Limit: 140.0 Minimum Percentage: 0 Maximum Percentage: 100
	TIR17B02_CA	TIR17B02	
	↓	↓	
	TIR17B21_CA	TIR17B21	
	TIR17B22_CA	TIR17B22	
MIT 17C	TIR17C01_CA	TIR17C01	
	TIR17C02_CA	TIR17C02	
	↓	↓	
	TIR17C18_CA	TIR17C18	
	TIR17C20_CA	TIR17C20	
	TIR17C21_CA	TIR17C21	

Note - Temperature Bar Elevations (Y-Axis) Based on [MIT17B] and [MIT17C] Screen Values

Screen Filename: TRENDS.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "TRENDS"
#TRENDS_OPEN = 1
CLOSEPIC ALARMBAR
```

Script "On Closing":

```
#PREV_PIC = "TRENDS"
CLOSEPIC HELPSCREEN
#TRENDS_OPEN = 0
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_ALMSUM
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

<TEMPRFL>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC TEMPRFL
```

<ROLLOVER>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC ROLLOVER
```

<PUMPOPS>

```
CLOSEPIC MAP
REPLACEPIC ACTIVEPIC PUMPOPS
```

[TRENDS] Screen Dynamics:

"NOTE" Box: Visibility: #RSS {1: Visible}

All Matrixed Buttons: Visibility: #RSS {0: Visible}

Matrixed Button Scripts:

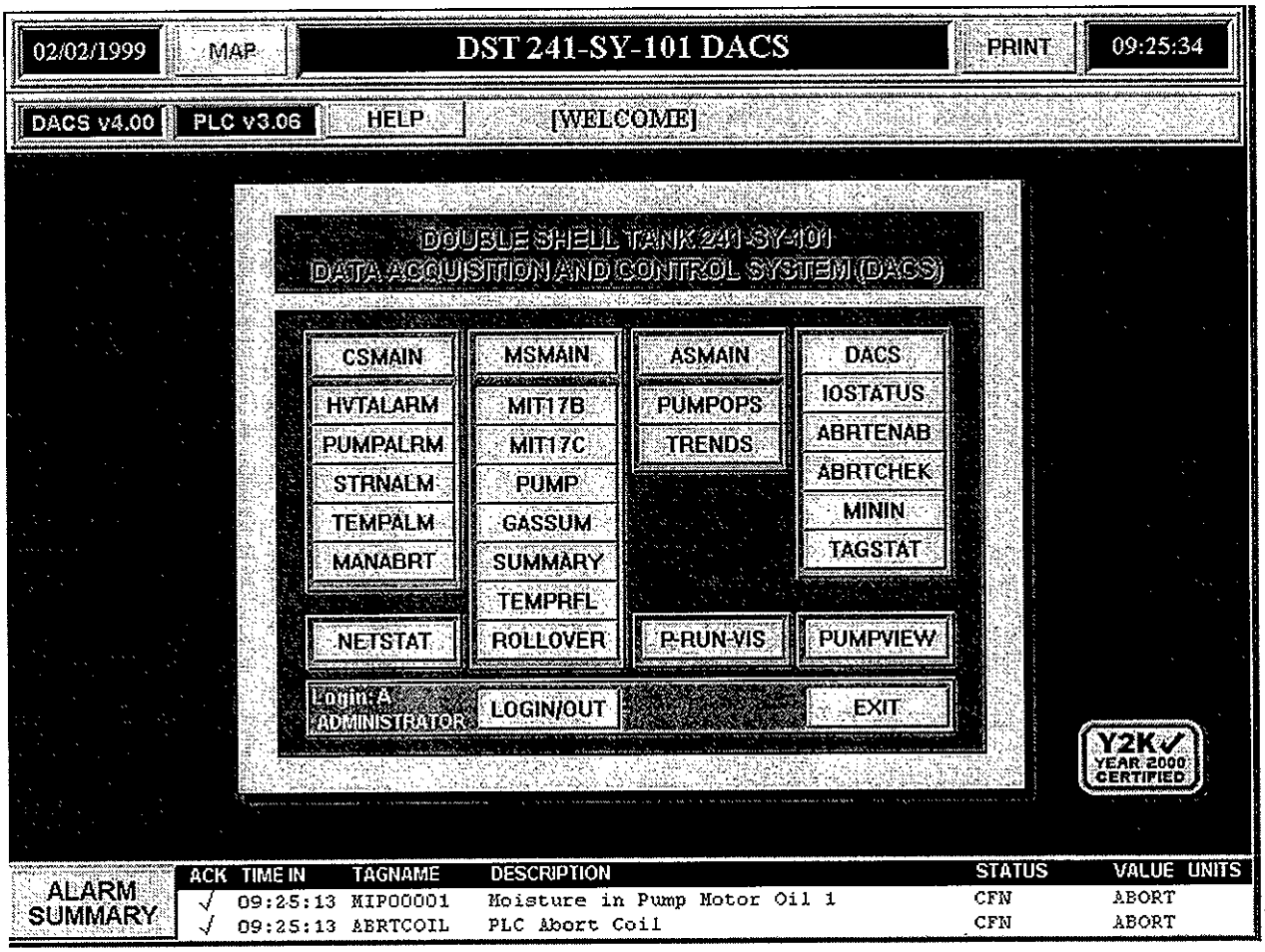
Pen Group Description	Button Script Note - Replace <Time Group> with the Following Time Groups to Define the Script for each Row of Buttons: 1 HOUR, 4 HOUR, 12 HOUR, 24 HOUR, 72 HOUR, 7 DAY and 30 DAY
Tank Flow, Pressure, Hydrogen	RUNTASK HTD "-CG '<Time Group> PLOT - TANK FLOW, PRESSURE, H2"'
Tank Level, Strain	RUNTASK HTD "-CG '<Time Group> PLOT - TANK LEVEL, STRAIN"'
Pump Motor Parameters	RUNTASK HTD "-CG '<Time Group> PLOT - PUMP MOTOR PARAMETERS"'
Pump Pressures, Strains	RUNTASK HTD "-CG '<Time Group> PLOT - PUMP PRESSURES, STRAINS"'
Strain Gauges	RUNTASK HTD "-CG '<Time Group> PLOT - STRAIN GAUGES"'
Hydrogen, Vent Header	RUNTASK HTD "-CG '<Time Group> PLOT - HYDROGEN, VENT HEADER"'
Hydrogen NH_3, N_2O	RUNTASK HTD "-CG '<Time Group> PLOT - HYDROGEN, NH3, N2O"'
MIT17B TCs 01-08	RUNTASK HTD "-CG '<Time Group> PLOT - MIT17B TCs 1-8"'
MIT17B TCs 09-15	RUNTASK HTD "-CG '<Time Group> PLOT - MIT17B TCs 9-15"'
MIT17B TCs 16-22	RUNTASK HTD "-CG '<Time Group> PLOT - MIT17B TCs 16-22"'
MIT17C TCs 01-08	RUNTASK HTD "-CG '<Time Group> PLOT - MIT17C TCs 1-8"'
MIT17C TCs 09-15	RUNTASK HTD "-CG '<Time Group> PLOT - MIT17C TCs 9-15"'
MIT17C TCs 16-21	RUNTASK HTD "-CG '<Time Group> PLOT - MIT17C TCs 16-21"'
TBS TCs 01-08	RUNTASK HTD "-CG '<Time Group> PLOT - TBS TCs 1-8"'
TBS TCs 09-18	RUNTASK HTD "-CG '<Time Group> PLOT - TBS TCs 9-18"'
TBS TCs 19-26	RUNTASK HTD "-CG '<Time Group> PLOT - TBS TCs 19-26"'
Weather Station	RUNTASK HTD "-CG '<Time Group> PLOT - WEATHER STATION"'

Text "On Up" Scripts:

Pen Group Description	"On Up" Script
Tank Flow, Pressure, Hydrogen	OPENPIC TR_TANK1
Tank Level, Strain	OPENPIC TR_TANK2
Pump Motor Parameters	OPENPIC TR_PUMP1
Pump Pressures, Strains	OPENPIC TR_PUMP2
Strain Gauges	OPENPIC TR_GAGES
Hydrogen, Vent Header	OPENPIC TR_H2-VH
Hydrogen NH_3, N_2O	OPENPIC TR_GAS
MIT17B TCs 01-08	OPENPIC TR_17B-1
MIT17B TCs 09-15	OPENPIC TR_17B-2
MIT17B TCs 16-22	OPENPIC TR_17B-3
MIT17C TCs 01-08	OPENPIC TR_17C-1
MIT17C TCs 09-15	OPENPIC TR_17C-2
MIT17C TCs 16-21	OPENPIC TR_17C-3
TBS TCs 01-08	OPENPIC TR_TBS-1
TBS TCs 09-18	OPENPIC TR_TBS-2
TBS TCs 19-26	OPENPIC TR_TBS-3
Weather Station	OPENPIC TR_WEATH

Screen Filename: WELCOME.odf
Picture Type: Standard

Picture Dimensions: 7.940" w x 5.940" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
SETNICKNAME "ACTIVEPIC"
#CURRENT_PIC = "WELCOME"
IF #ALARMBAR_OPEN == 0
  OPENPIC ALARMBAR  547,0,794,50
ENDIF
STRTOK #GS_LOGIN_NAME 0 7 #CURRENT_LOGIN
STRTOK #GS_GROUP 0 13 #CURRENT_LOGIN_GROUP
&CheckForPumpRunVis
IF #GS_NODE == "STATION5"
  IF STATION5:ST5_PUMPRUN_VIS.F_CV == 0
   #PUMPOPS_VISIBLE = 0
  ELSE
   #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION6"
  IF STATION5:ST6_PUMPRUN_VIS.F_CV == 0
   #PUMPOPS_VISIBLE = 0
  ELSE
   #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION7"
  IF STATION5:ST7_PUMPRUN_VIS.F_CV == 0
   #PUMPOPS_VISIBLE = 0
  ELSE
```

```
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
IF #GS_NODE == "STATION8"
  IF STATION5:ST8_PUMPRUN_VIS.F_CV == 0
    #PUMPOPS_VISIBLE = 0
  ELSE
    #PUMPOPS_VISIBLE = 1
  ENDIF
ENDIF
PAUSE 2
GOTO CheckForPumpRunVis
```

Script "On Closing":

```
#PREV_PIC = "WELCOME"
CLOSEPIC HELPSCREEN
```

Screen Buttons:

<HELP>

```
IF #HELP_OPEN == 0
  #HELP_OPEN = 1
OPENPIC H_WELCOM
ELSE
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
ENDIF
```

[WELCOME] Screen Buttons & Dynamics:

General Button Scripts:

Button	Button Script	Button	Button Script
<CSMAIN>	REPLACEPIC ACTIVEPIC CSMAIN	<TEMPRFL>	REPLACEPIC ACTIVEPIC TEMPRFL
<HVTALARM>	REPLACEPIC ACTIVEPIC HVTALARM	<ROLLOVER>	REPLACEPIC ACTIVEPIC ROLLOVER
<PUMPALRM>	REPLACEPIC ACTIVEPIC PUMPALRM	<ASMAIN>	REPLACEPIC ACTIVEPIC ASMAIN
<STRNALM>	REPLACEPIC ACTIVEPIC STRNALM	<PUMPOPS>	REPLACEPIC ACTIVEPIC PUMPOPS
<TEMPALM>	REPLACEPIC ACTIVEPIC TEMPALM	<TRENDS>	REPLACEPIC ACTIVEPIC TRENDS
<MANABRT>	REPLACEPIC ACTIVEPIC MANABRT	<DACS>	REPLACEPIC ACTIVEPIC DACS
<MSMAIN>	REPLACEPIC ACTIVEPIC MSMAIN	<IOSTATUS>	REPLACEPIC ACTIVEPIC IOSTATUS
<MIT17B>	REPLACEPIC ACTIVEPIC MIT17B	<ABRTENAB>	REPLACEPIC ACTIVEPIC ABRTENAB
<MIT17C>	REPLACEPIC ACTIVEPIC MIT17C	<ABRTCHEK>	REPLACEPIC ACTIVEPIC ABRTCHEK
<PUMP>	REPLACEPIC ACTIVEPIC PUMP	<MININ>	REPLACEPIC ACTIVEPIC MININ
<GASSUM>	REPLACEPIC ACTIVEPIC GASSUM	<TAGSTAT>	REPLACEPIC ACTIVEPIC TAGSTAT
<SUMMARY>	REPLACEPIC ACTIVEPIC SUMMARY	<NETSTAT>	REPLACEPIC ACTIVEPIC NETSTAT

Specific Dynamics & Scripts:

<P-RUN-VIS> and gray box — Visibility: #SECURITY_LEVEL {>3.5: Visible}

<P-RUN-VIS> — Script:
```
IF #PRUNVIS_OPEN == 0
  OPENPIC PRUNVIS
ENDIF
```

<PUMPRUN> — Visibility: #PUMPOPS_VISIBLE = {1: Visible}

<PUMPRUN> — Script: REPLACEPIC ACTIVEPIC PUMPRUN

<PUMPVIEW> — Visibility: #PUMPOPS_VISIBLE = {0: Visible}

<PUMPVIEW> — Script: REPLACEPIC ACTIVEPIC PUMPVIEW

Login "Name" Data Link: #CURRENT_LOGIN
Login "Group" Data Link: #CURRENT_LOGIN_GROUP

<LOGIN/OUT> — Script: OPENPIC LOGCHOIC

<EXIT> — Script:
```
IF #SECURITY_LEVEL >= 2.5
  OPENPIC  EXIT
ELSE
  OPENPIC EXITWARN
ENDIF
```

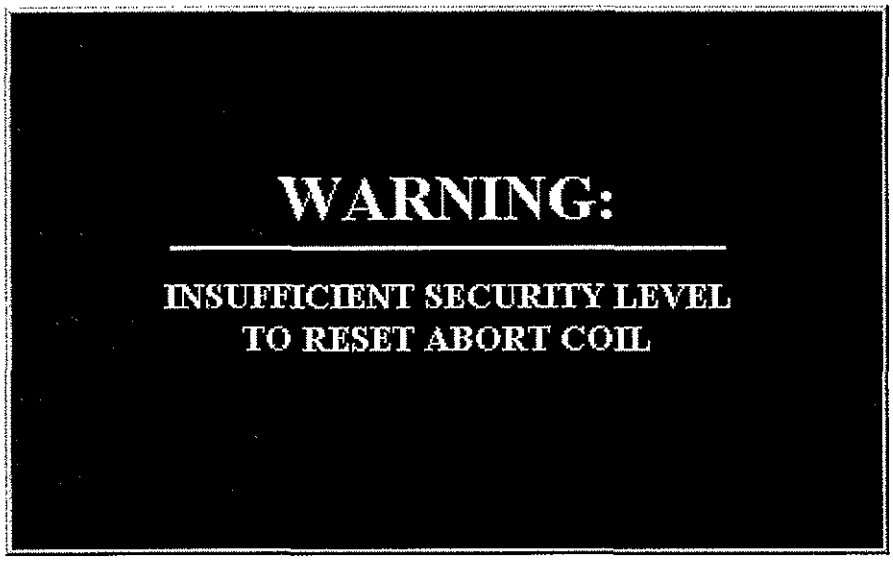
Table E-2. *Confirmation & Warning Popups*

Picture File Name	Dimensions		Refresh Rate	Picture Type	Window Properties	Script On Opening	Script On Closing	Page No.
	Width	Height						
ABORTWRN.odf	4.350"	2.670"	0.1 sec	Popup	On Top	Yes	Yes	E-113
ACKPGWRN.odf	4.350"	2.670"	0.1 sec	Popup	On Top	Yes	Yes	E-114
EXIT.odf	4.350"	2.670"	0.1 sec	Popup	On Top	---	Yes	E-115
EXITWARN.odf	4.350"	2.670"	0.1 sec	Popup	On Top	---	Yes	E-117
LOGCHOIC.odf	4.350"	2.670"	0.1 sec	Popup	On Top	---	Yes	E-118
LOGIN.odf	4.350"	2.670"	0.1 sec	Popup	On Top	---	Yes	E-119
LOGOUT.odf	4.350"	2.670"	0.1 sec	Popup	On Top	---	Yes	E-121
PRINT.odf	4.350"	2.670"	0.1 sec	Popup	On Top	Yes	Yes	E-123
PRINTWRN.odf	4.350"	2.670"	0.1 sec	Popup	On Top	Yes	Yes	E-124
PRUNVIS.odf	4.350"	2.670"	0.1 sec	Popup	On Top	Yes	Yes	E-125
TOG-NOTE.odf	3.000"	1.150"	0.5 sec	Popup	On Top	Yes	Yes	E-127

All Scripts are listed with their respective screens

Screen Filename: ABORTWRN.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



Script "On Opening": PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
#ABORTWRN_OPEN = 1
PAUSE 3
CLOSEPIC ABORTWRN

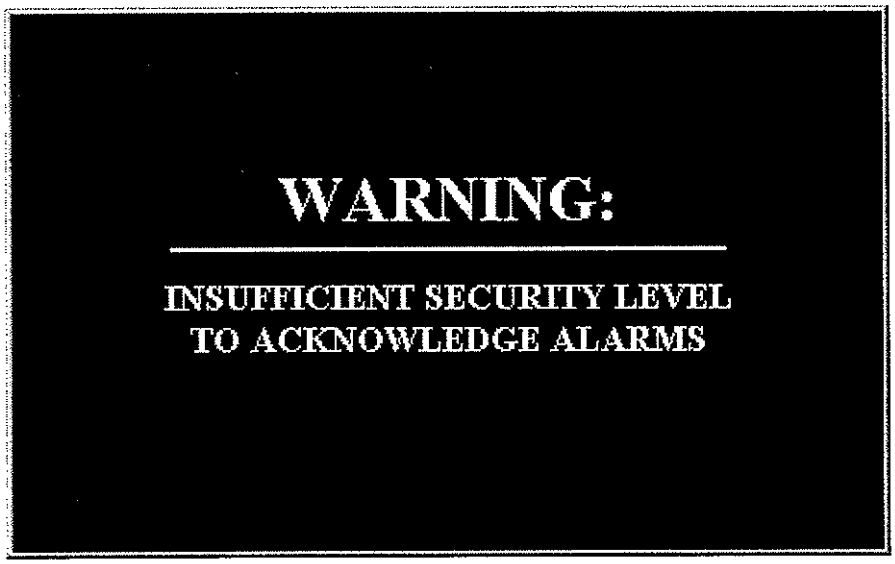
Script "On Closing": #ABORTWRN_OPEN = 0

Screen Dynamics:

Red Rectangular Background:	"On Up":	CLOSEPIC ABORTWRN
"INSUFFICIENT SUCURITY LEVEL TO RESET ABORT COIL" Text:	Visibility:	#RSS {0: Visible}
"RESET OF THE ABORT COIL IS NOT ALLOWED FROM AN RSS STATION" Text (not shown):	Visibility:	#RSS {1: Visible}

Screen Filename: ACKPGWRN.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



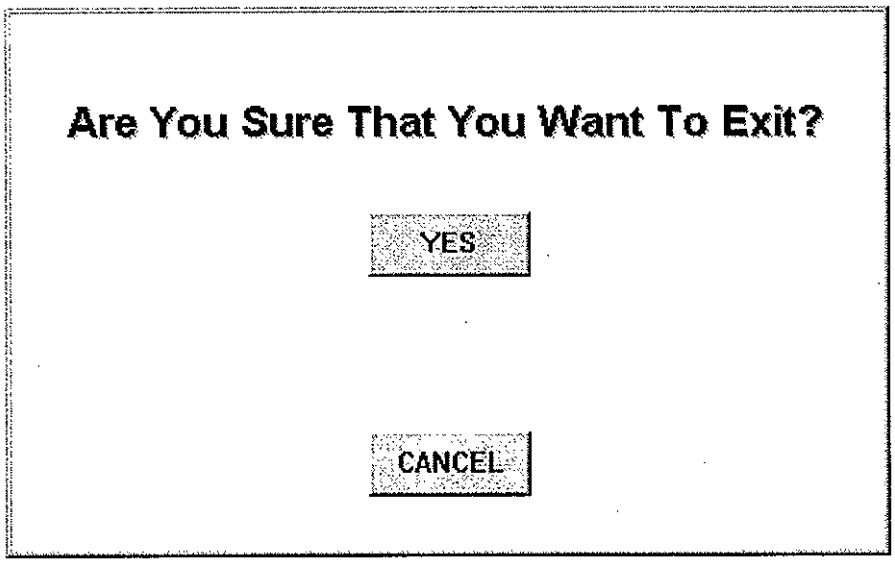
Script "On Opening": PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
#ACKPGWRN_OPEN = 1
PAUSE 3
CLOSEPIC ACKPGWRN

Script "On Closing": #ACKPGWRN_OPEN = 0

Screen Dynamics:

Red Rectangular Background: "On Up": CLOSEPIC ACKPGWRN

Screen Filename: EXIT.odf
Picture Type: Popup, Always on Top
Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



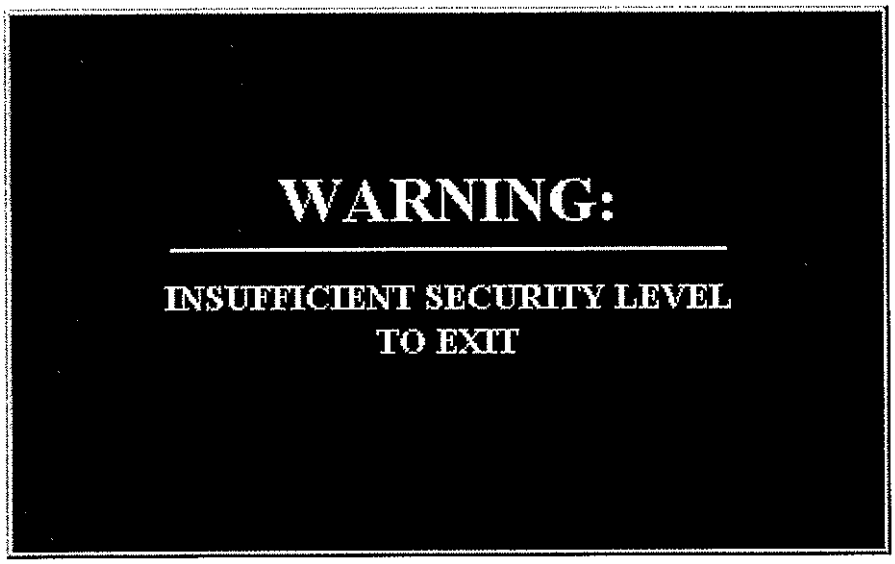
Script "On Opening":
```
PLAYSOUND C:\FIX32\SOUNDS\CHORD.WAV
PAUSE 15
CLOSEPIC EXIT
```

Screen Buttons:
```
<YES>          ; Used to Indicate Station OFFLINE Status
  STRTOK #GS_DATE 0 5 #ONLINE-DATE
  STRTOK #GS_TIME 0 5 #ONLINE-TIME
  IF #GS_NODE == "STATION5"
    OPENDIG STATION5:ST5-ONLINE.F_CV
    SETVAL STATION5:ST5-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST5-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
  IF #GS_NODE == "STATION6"
    SETVAL STATION5:ST6-WDT.F_CV 5
    OPENDIG STATION5:ST6-ONLINE.F_CV
    SETVAL STATION5:ST6-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST6-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
  IF #GS_NODE == "STATION7"
    SETVAL STATION5:ST7-WDT.F_CV 5
    OPENDIG STATION5:ST7-ONLINE.F_CV
    SETVAL STATION5:ST7-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST7-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
  IF #GS_NODE == "STATION8"
    SETVAL STATION5:ST8-WDT.F_CV 5
    OPENDIG STATION5:ST8-ONLINE.F_CV
    SETVAL STATION5:ST8-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST8-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
  IF #GS_NODE == "STATION9"
    SETVAL STATION5:ST9-WDT.F_CV 5
    OPENDIG STATION5:ST9-ONLINE.F_CV
    SETVAL STATION5:ST9-ONLINE-DATE.A_DESC #ONLINE-DATE
    SETVAL STATION5:ST9-ONLINE-TIME.A_DESC #ONLINE-TIME
  ENDIF
  IF #GS_NODE == "RSS11"
    SETVAL STATION5:ST11-WDT.F_CV 5
    OPENDIG STATION5:ST11-ONLINE.F_CV
    SETVAL STATION5:ST11-ONLINE-DATE.A_DESC #ONLINE-DATE
```

```
            SETVAL STATION5:ST11-ONLINE-TIME.A_DESC #ONLINE-TIME
          ENDIF
          IF #GS_NODE == "RSS13"
            SETVAL STATION5:ST13-WDT.F_CV 5
            OPENDIG STATION5:ST13-ONLINE.F_CV
            SETVAL STATION5:ST13-ONLINE-DATE.A_DESC #ONLINE-DATE
            SETVAL STATION5:ST13-ONLINE-TIME.A_DESC #ONLINE-TIME
          ENDIF
          IF #GS_NODE == "RSS15"
            SETVAL STATION5:ST15-WDT.F_CV 5
            OPENDIG STATION5:ST15-ONLINE.F_CV
            SETVAL STATION5:ST15-ONLINE-DATE.A_DESC #ONLINE-DATE
            SETVAL STATION5:ST15-ONLINE-TIME.A_DESC #ONLINE-TIME
          ENDIF
          IF #GS_NODE == "RSS17"
            SETVAL STATION5:ST17-WDT.F_CV 5
            OPENDIG STATION5:ST17-ONLINE.F_CV
            SETVAL STATION5:ST17-ONLINE-DATE.A_DESC #ONLINE-DATE
            SETVAL STATION5:ST17-ONLINE-TIME.A_DESC #ONLINE-TIME
          ENDIF
        EXIT
        CLOSEPIC *

<CANCEL>  CLOSEPIC *
```

Screen Filename: EXITWARN.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



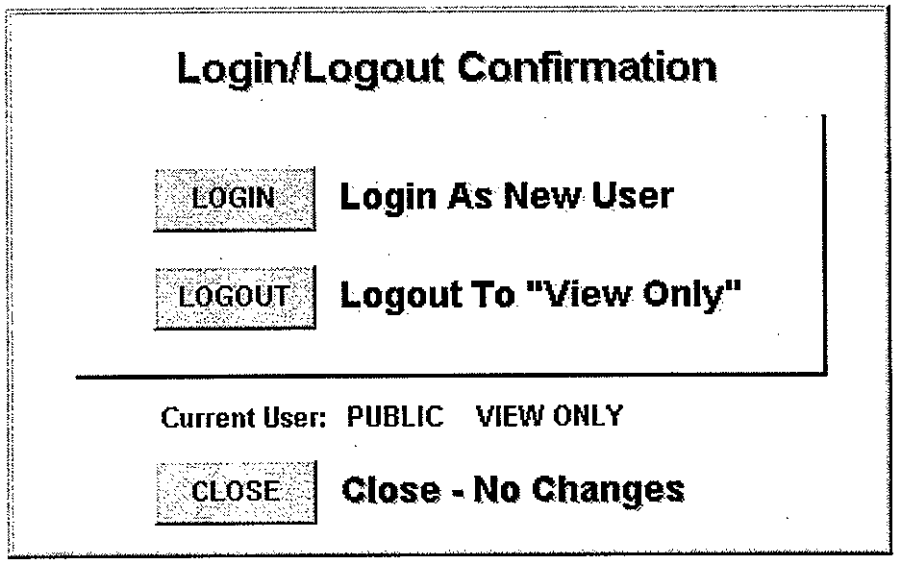
Script "On Opening": PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
PAUSE 3
CLOSEPIC EXITWARN

Screen Dynamics:

Red Rectangular Background: "On Up": CLOSEPIC EXITWARN

Screen Filename: LOGCHOIC.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



Script "On Opening": PLAYSOUND C:\FIX32\SOUNDS\CHORD.WAV

Screen Buttons:

<LOGIN>
```
#LOGIN_DONE = 0
IF #GS_LOGIN_NAME != "PUBLIC"
  LOGOUT
ENDIF
#SECURITY_LEVEL = 1
LOGIN
REPLACEPIC  LOGCHOIC LOGIN
```

<LOGOUT>
```
I F #GS_LOGIN_NAME == "PUBLIC"
  PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
  CLOSEPIC LOGCHOIC
ELSE
  REPLACEPIC  LOGCHOIC LOGOUT
ENDIF
```

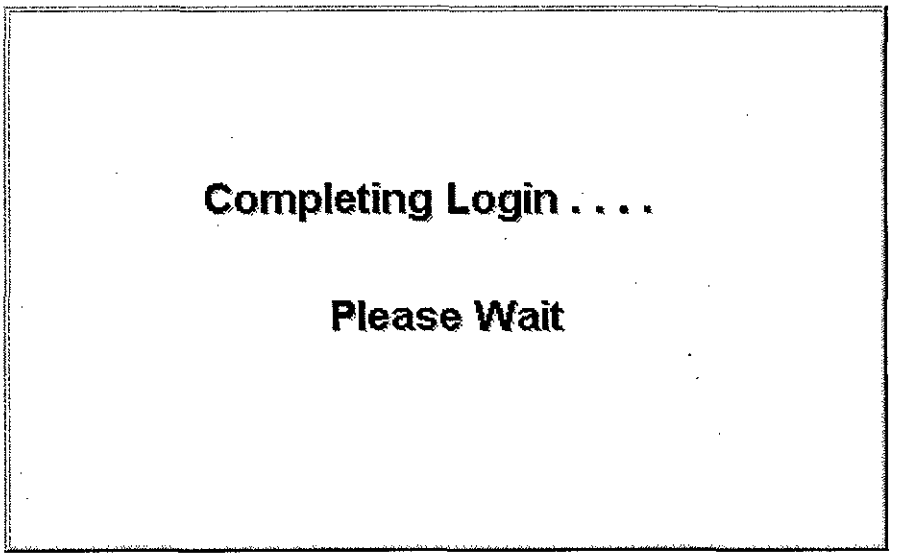
<CLOSE>
```
CLOSEPIC LOGCHOIC
```

Screen Dynamics:

Current User "Name" Data Link: #CURRENT_LOGIN
Current User "Group" Data Link: #CURRENT_LOGIN_GROUP

Screen Filename: LOGIN.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



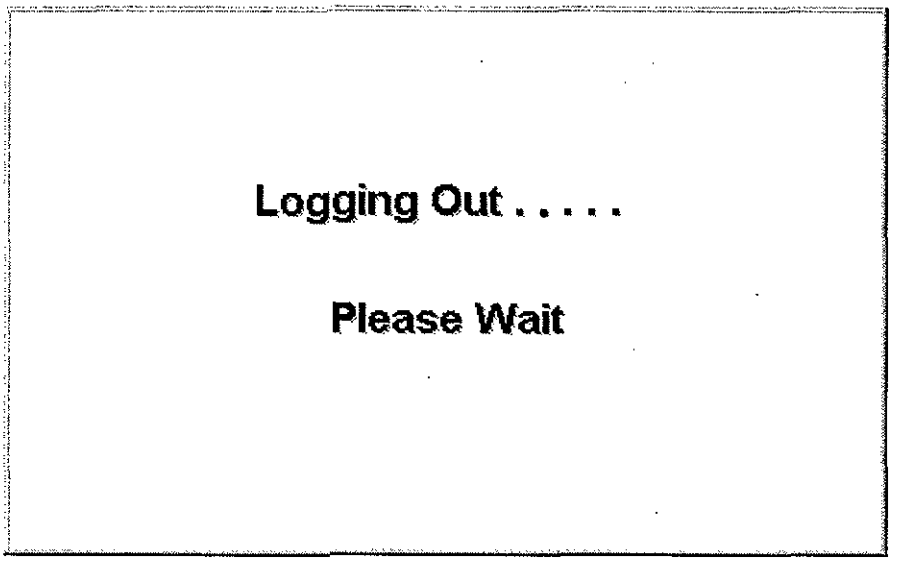
Script "On Opening":

```
PAUSE 1
STRTOK #GS_LOGIN_NAME 0 7 #CURRENT_LOGIN
STRTOK #GS_GROUP 0 13 #CURRENT_LOGIN_GROUP
CHECKRIGHTS "LEVEL2" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 2
ENDIF
CHECKRIGHTS "LEVEL3" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 3
ENDIF
CHECKRIGHTS "LEVEL4" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 4
ENDIF
CHECKRIGHTS "LEVEL5" #SEC_CHECK
IF  #SEC_CHECK == 1
  #SECURITY_LEVEL = 5
ENDIF

STRTOK #GS_DATE 0 5 #LOGIN-DATE
STRTOK #GS_TIME 0 5 #LOGIN-TIME

IF #GS_NODE == "STATION5"
  SETVAL STATION5:ST5-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST5-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST5-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST5-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "STATION6"
  SETVAL STATION5:ST6-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST6-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST6-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST6-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF
```

```
IF #GS_NODE == "STATION7"
  SETVAL STATION5:ST7-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST7-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST7-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST7-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "STATION8"
  SETVAL STATION5:ST8-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST8-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST8-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST8-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "STATION9"
  SETVAL STATION5:ST9-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST9-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST9-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST9-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "RSS11"
  SETVAL STATION5:ST11-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST11-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST11-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST11-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "RSS13"
  SETVAL STATION5:ST13-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST13-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST13-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST13-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "RSS15"
  SETVAL STATION5:ST15-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST15-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST15-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST15-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "RSS17"
  SETVAL STATION5:ST17-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST17-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST17-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST17-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF
#LOGIN_DONE = 1
CLOSEPIC LOGIN
```

Screen Filename: LOGOUT.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



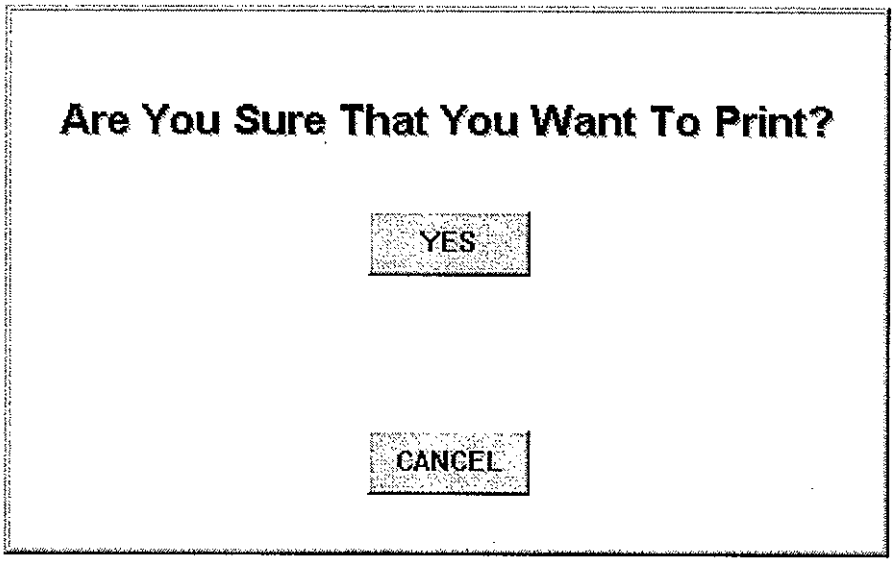
Script "On Opening":

```
#LOGIN_DONE = 0
LOGOUT
PAUSE 1

STRTOK #GS_LOGIN_NAME 0 7 #CURRENT_LOGIN
STRTOK #GS_GROUP 0 13 #CURRENT_LOGIN_GROUP
#SECURITY_LEVEL = 1

STRTOK #GS_DATE 0 5 #LOGIN-DATE
STRTOK #GS_TIME 0 5 #LOGIN-TIME

IF #GS_NODE == "STATION5"
  SETVAL STATION5:ST5-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST5-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST5-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST5-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "STATION6"
  SETVAL STATION5:ST6-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST6-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST6-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST6-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "STATION7"
  SETVAL STATION5:ST7-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST7-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST7-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST7-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "STATION8"
  SETVAL STATION5:ST8-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST8-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST8-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST8-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "STATION9"
```

```
  SETVAL STATION5:ST9-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST9-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST9-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST9-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "RSS11"
  SETVAL STATION5:ST11-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST11-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST11-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST11-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "RSS13"
  SETVAL STATION5:ST13-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST13-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST13-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST13-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "RSS15"
  SETVAL STATION5:ST15-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST15-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST15-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST15-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

IF #GS_NODE == "RSS17"
  SETVAL STATION5:ST17-LOGIN.A_DESC #CURRENT_LOGIN
  SETVAL STATION5:ST17-LOGIN-GROUP.A_DESC #CURRENT_LOGIN_GROUP
  SETVAL STATION5:ST17-LOGIN-DATE.A_DESC #LOGIN-DATE
  SETVAL STATION5:ST17-LOGIN-TIME.A_DESC #LOGIN-TIME
ENDIF

#LOGIN_DONE = 1
CLOSEPIC *
```

Screen Filename: PRINT.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
PLAYSOUND C:\FIX32\SOUNDS\CHORD.WAV
#PRINT_OPEN = 1
#PRINT_YES = 0
PAUSE 15
CLOSEPIC PRINT
```

Script "On Closing":

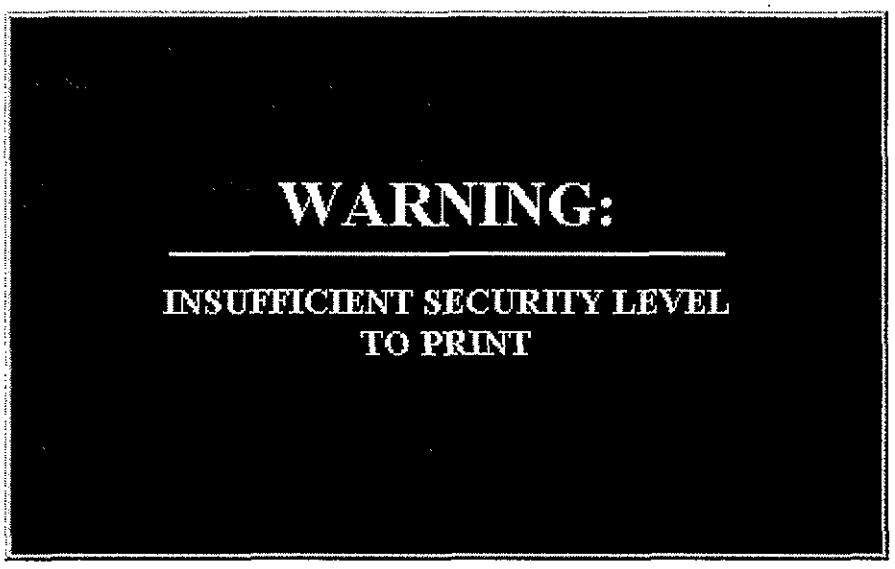
```
IF #PRINT_YES == 1
  MENU PRINT
ENDIF
#PRINT_OPEN = 0
```

Screen Buttons:

<YES>	#PRINT_YES = 1 CLOSEPIC PRINT
<CANCEL>	#PRINT_YES = 0 CLOSEPIC PRINT

Screen Filename: PRINTWRN.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



Script "On Opening": #PRINTWRN_OPEN = 1
PAUSE 3
CLOSEPIC PRINTWRN

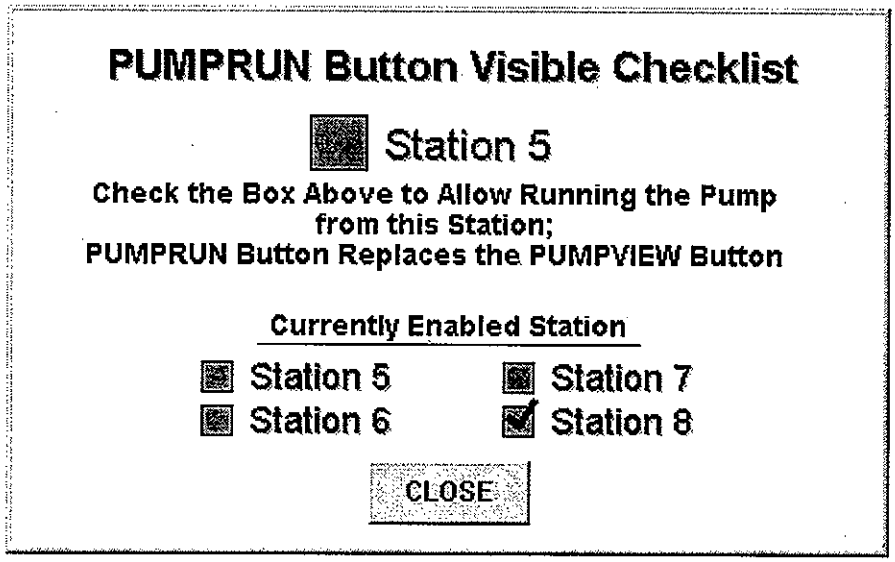
Script "On Opening": #PRINTWRN_OPEN = 0

Screen Dynamics:

Red Rectangular Background: "On Up": CLOSEPIC PRINTWRN

Screen Filename: PRUNVIS.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 4.350" w x 2.670" h
Screen Refresh Rate: 0.1 sec



Script "On Opening":

```
#PRUNVIS_OPEN = 1
PLAYSOUND C:\FIX32\SOUNDS\CHORD.WAV
DECLARE #STATION STRING PICTURE
DECLARE #LOCAL_STATION NUMERIC PICTURE
IF #GS_NODE == "STATION5"
 #STATION = "Station 5"
 #LOCAL_STATION = 1
ENDIF
IF #GS_NODE == "STATION6"
 #STATION = "Station 6"
 #LOCAL_STATION = 1
ENDIF
IF #GS_NODE == "STATION7"
 #STATION = "Station 7"
 #LOCAL_STATION = 1
ENDIF
IF #GS_NODE == "STATION8"
 #STATION = "Station 8"
 #LOCAL_STATION = 1
ENDIF
```

Script "On Closing": #PRUNVIS_OPEN = 0

Screen Button: <CLOSE> CLOSEPIC PRUNVIS

Screen Dynamics:

Large Station # & Checkbox: Visibility: #LOCAL_STATION {1: Visible}
- Top Black Station #: Data Link #STATION
- Bottom Turquoise Station #: Data Link #STATION
- Large Red Check Checkbox: Visibility: #PUMPOPS_VISIBLE {1: Visible}
  "On Up":

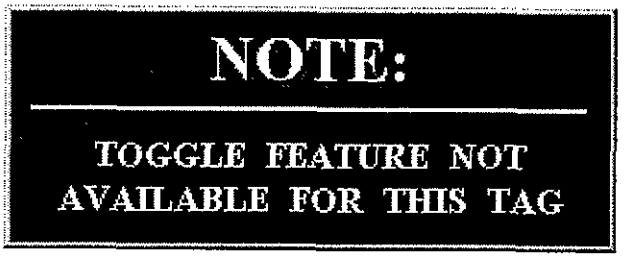
```
IF #GS_NODE == "STATION5"
 TOGGLEDIG STATION5:ST5_PUMPRUN_VIS.F_CV
 OPENDIG STATION5:ST6_PUMPRUN_VIS.F_CV
 OPENDIG STATION5:ST7_PUMPRUN_VIS.F_CV
 OPENDIG STATION5:ST8_PUMPRUN_VIS.F_CV
 IF STATION5:ST5_PUMPRUN_VIS.F_CV == 1
  #PUMPOPS_VISIBLE = 1
 ELSE
  #PUMPOPS_VISIBLE =0
 ENDIF
```

```
ENDIF
IF #GS_NODE == "STATION6"
  TOGGLEDIG STATION5:ST6_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST5_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST7_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST8_PUMPRUN_VIS.F_CV
  IF STATION5:ST6_PUMPRUN_VIS.F_CV == 1
   #PUMPOPS_VISIBLE = 1
  ELSE
   #PUMPOPS_VISIBLE =0
  ENDIF
ENDIF
IF #GS_NODE == "STATION7"
  TOGGLEDIG STATION5:ST7_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST5_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST6_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST8_PUMPRUN_VIS.F_CV
  IF STATION5:ST7_PUMPRUN_VIS.F_CV == 1
   #PUMPOPS_VISIBLE = 1
  ELSE
   #PUMPOPS_VISIBLE =0
  ENDIF
ENDIF
IF #GS_NODE == "STATION8"
  TOGGLEDIG STATION5:ST8_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST5_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST6_PUMPRUN_VIS.F_CV
  OPENDIG STATION5:ST7_PUMPRUN_VIS.F_CV
  IF STATION5:ST8_PUMPRUN_VIS.F_CV == 1
   #PUMPOPS_VISIBLE = 1
  ELSE
   #PUMPOPS_VISIBLE =0
  ENDIF
ENDIF
```

"Check the Box Above to Allow Running the Pump from this Station; PUMPRUN Button Replaces the PUMPVIEW Button":	Visibility:	#LOCAL_STATION {1: Visible}
"Note - Pump Can Only Be Run From DACS Trailer Stations 5, 6, 7 or 8":	Visibility:	#LOCAL_STATION {0: Visible}
Station 5 Small Red Check	Visibility:	ST5_PUMPRUN_VIS.F_CV {1: Visible}
Station 6 Small Red Check	Visibility:	ST6_PUMPRUN_VIS.F_CV {1: Visible}
Station 7 Small Red Check	Visibility:	ST7_PUMPRUN_VIS.F_CV {1: Visible}
Station 8 Small Red Check	Visibility:	ST8_PUMPRUN_VIS.F_CV {1: Visible}

Screen Filename: TOG-NOTE.odf
Picture Type: Popup, Always on Top

Picture Dimensions: 3.000" w x 1.150" h
Screen Refresh Rate: 0.5 sec



Script "On Opening":
```
IF #TOG_NOTE_OPEN == 1
 CLOSEPIC TOG-NOTE
ELSE
 #TOG_NOTE_OPEN = 1
ENDIF
```

Script "On Closing": #TOG_NOTE_OPEN = 0

Screen Dynamics:

Red Rectangular Background: "On Up": CLOSEPIC TOG-NOTE

Table E-3. *Help Pop-ups*

Picture File Name	Dimensions		Refresh Rate	Picture Type	Window Properties	Script On Opening	Script On Closing	Page No.
	Width	Height						
H_GENERL.odf	5.300"	1.250"	0.1 sec	Popup	On Top	---	Yes*	E-129
H_ABRTCH.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-130
H_ABRTEN.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-130
H_ALMSUM.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-131
H_ASMAIN.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-131
H_CSMAIN.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-132
H_DACS.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-132
H_GASSUM.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-133
H_HVTALM.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-133
H_IOSTAT.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-134
H_MANABT.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-134
H_MININ.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-135
H_MIT17B.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-135
H_MIT17C.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-136
H_MSMAIN.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-136
H_NETSTA.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-137
H_PMPRUN.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-137
H_PMPVEW.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-138
H_PUMP.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-138
H_PUMPAL.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-139
H_PUMPOP.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-139
H_ROLLOV.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-140
H_STRNAL.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-140
H_SUMMRY.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-141
H_TAGSTA.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-141
H_TBSTC.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-142
H_TEMPAL.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-142
H_TMPRFL.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-143
H_TRENDS.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-143
H_WELCOM.odf	5.300"	3.000"	0.1 sec	Popup	On Top	Yes**	Yes***	E-144

* The Script "On Closing" is:

```
IF #MODEM_SELECTED == 1
  RUNTASK C:\WINNT\SYSTEM32\RASPHONE.EXE  SINGLE
  #MODEM_SELECTED = 0
ENDIF
#HELP_OPEN = 0
```

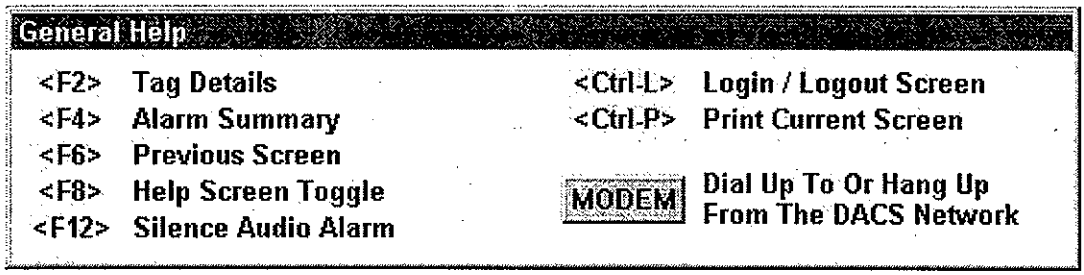
** The Script "On Opening" is:

```
OPENPIC H_GENERL
SETNICKNAME  "HELPSCREEN"
```

*** The Script "On Closing" is:

```
CLOSEPIC H_GENERL
```

Screen Filename: H_GENERL.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 1.250" h
Screen Refresh Rate: 0.1 sec



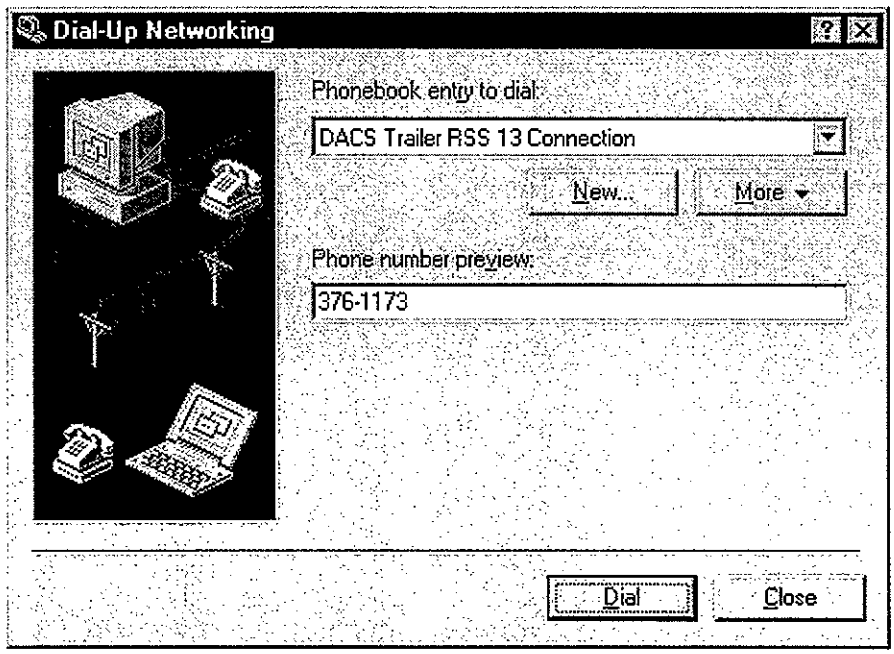
Script "On Closing":

```
IF #MODEM_SELECTED == 1
  RUNTASK C:\WINNT\SYSTEM32\RASPHONE.EXE  SINGLE
  #MODEM_SELECTED = 0
ENDIF
#HELP_OPEN = 0
```

Screen Dynamics:

<MODEM> & Text: <MODEM>	Visibility Script:	#RSS {1: Visible} #MODEM_SELECTED = 1 CLOSEPIC MAP CLOSEPIC HELPSCREEN

The "Dial-Up Networking" Popup below appears when <MODEM> from any RSS General Help Screen is selected. Select <Dial> to make the phone connection. If the connection is already made, then a <Hang up> button will appear instead. Select <Hang up> to disconnect.



Screen Filename: H_ABRTCH.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

ABRTCHEK Screen Help

Screen Tag Name Information:

HH2LIM	High Hydrogen Abort Limit
HTEMPLIM	High Temp Abort Limit
HPMOTLIM	High Motor Oil Temp Abort Limit
LVFLLIM	Low Vent Flow Abort Limit Low Range
HTDPLIM	High Tank Dome Pressure Abort Limit
HPCSLIM	High Pump Column Strain Abort Limit
PLCPMCAB	High Pump Motor Current Abort Limit
H17CSLIM	High 17C Column Strain Abort Limit
HPSPDLIM	High Pump Speed Abort Limit
HH2LIM2	High H2 Abort Limit for 0-30 Gauge
LVFLLIM2	Low Vent Flow Abort High Range
HTDPLIM2	High Tank Dome Pressure Abort Limit 2
H1BCSLIM	High 1B Column Strain Abort Limit
LPCSLIM	Low Pump Column Strain Abort Limit
L17CSLIM	Low 17C Column Strain Abort Limit
L1BCSLIM	Low 1B Column Strain Abort Limit
LPCGPLIM	Low Pump Column Gas Pressure Abort Limit
HVFLLIM1	High Vent Flow Abort Limit 1
HVFLLIM2	High Vent Flow Abort Limit 2

CLOSE

Screen Filename: H_ABRTEN.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

ABRTENAB Screen Help

Menu Bar Buttons:

- TAGSTAT button: To "Tag Status (Alarm Disable, Auto/Manual)" screen
- MININ button: Navigate to "Minimum Instrumentation Checklist" screen

Screen Selection Information:

- Click on the rectangle to Enable/Disable the tag abort coil - Requires Operator password
- RESET PLC ABORT COIL button: In Trailer - Requires Operator password; At RSSs - Feature not available

Screen Color Information:

- Under normal conditions, no red or yellow boxes are displayed
- "E" in green box: Tag abort coil Enabled; "D" in yellow box: Coil Disabled
- Black tagname and coil # on grey: Tag abort coil OK
- Flashing red tagname, and white coil # on flashing red: Tag abort coil tripped
- Green PLC Abort Coil: OK; Red PLC Abort Coil: Not cleared

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_ALMSUM.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

ALARMSUM Screen Help

Menu Bar Buttons:

- **EVENT SUMM button: Enbables selection and viewing of Alarm/Event Summary Files for up to the last 30 days; File names are YYMMDD**
- **PREV SCREEN button: Navigate to the previously selected screen**
- **ACK PAGE button: Acknowledges all alarms on the viewing page only; Use vertical scroll bar, if necessary, to view any additional alarms**

Screen Selections Info. (Also applicable to Alarms at bottoms of other screens):

- **Double-click on flashing alarm to acknowledge individual alarm; Alarm will stop flashing and a "√" will appear in the left ACK column**

Screen Color Information (Also applicable to Alarms at bottoms of other screens):

- **Unaknowledged Alarms exist: Flashing red/yellow header**
- **New Unacknowledged Alarms: Flashing red line of text & values**
- **Acknowledged Alarms still in Alarm Condition: Red line of text & values**
- **Acknowledged Alarms not in Alarm Condition: Briefly green, then disappears**

CLOSE

Screen Filename: H_ASMAIN.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

ASMAIN Screen Help

Screen Selections Information:

- **PUMPOPS button: Navigate to "Pump Operations" screen**
- **TRENDS button: Navigate to "Historical Trending Displays" screen**

CLOSE

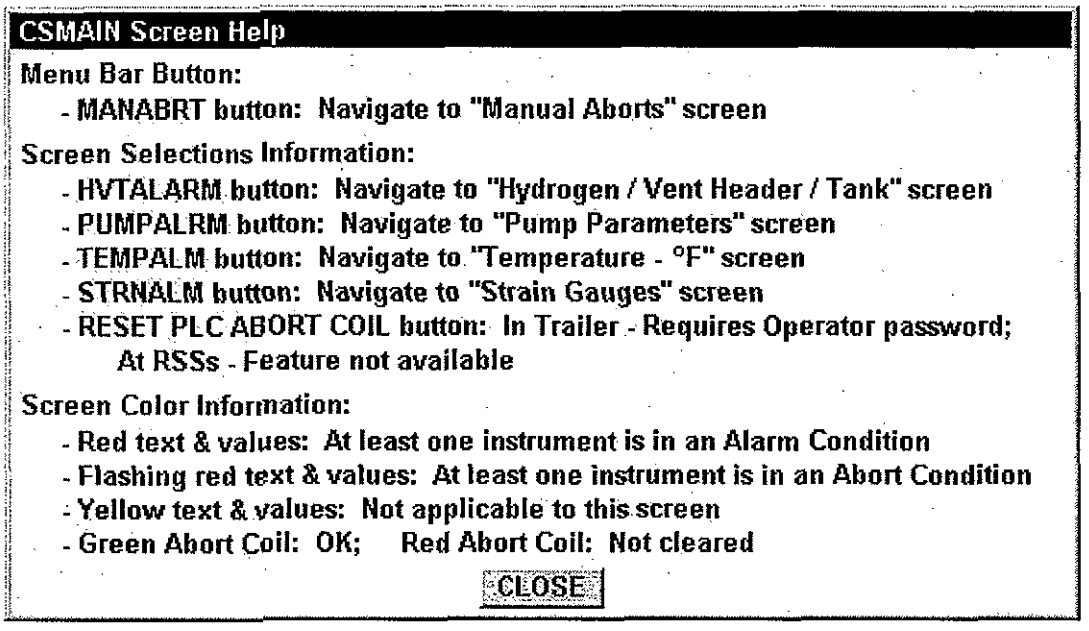
Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

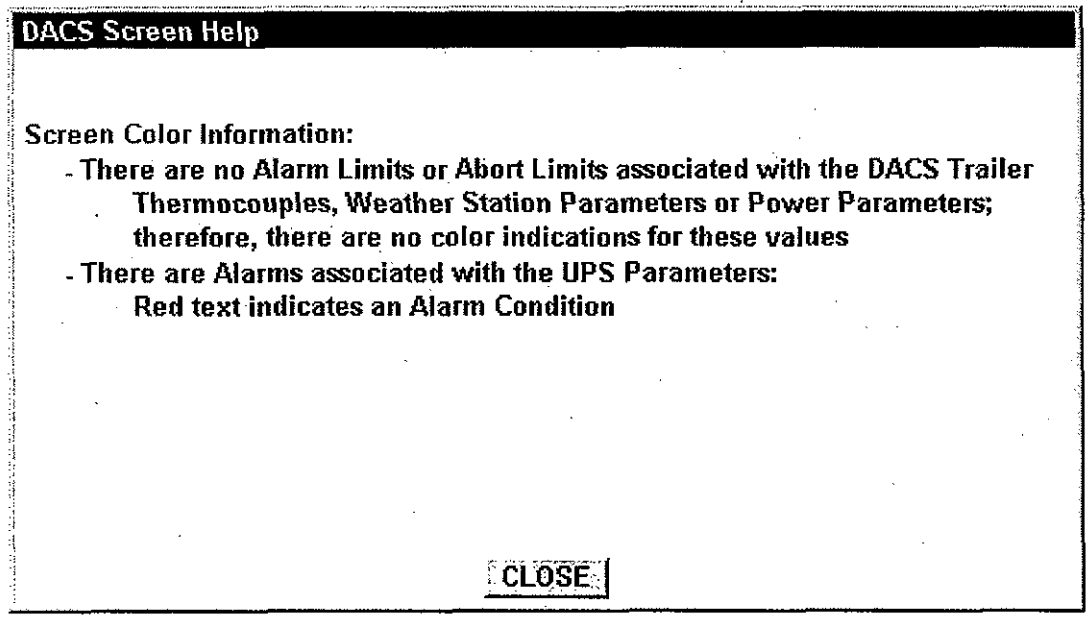
Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_CSMAIN.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec



Screen Filename: H_DACS.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec



Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_GASSUM.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

GASSUM Screen Help

Menu Bar Buttons:
- **SUMMARY button: Navigate to "Summary Information" screen**
- **ROLLOVER button: Navigate to "Imminent Rollover" screen**
- **PUMPRUN button: (If visible) Navigate to "Pump Operation" screen, or**
- **PUMPVIEW button: (If visible) Navigate to "View of Pump Operation" screen**

Screen "Last Update" Information:
- **Failure of an instrument to provide an update after a specified time results in an Instrument Problem Alarm; also, the date & time freeze**
- **The specific instrument timeouts are:**
  GC-1, GC-2, and GC-3 H_2: 7-1/2 minutes
  FTIR N_2O and FTIR NH_3: 20 minutes
  PHOTO NH_3: 15 minutes

Screen Color Information:
- **Red text & values: Instrument for that tag is in an Alarm Condition**
- **Flashing red text & values: Instrument for that tag is in an Abort Condition**
- **Yellow text & values: An Instrument Problem Alarm exists for that tag**

CLOSE

Screen Filename: H_HVTALM.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

HVTALARM Screen Help

Menu Bar Button:
- **CSMAIN button: Navigate to "Automatic Alarms and Aborts" screen**

Screen Selection Information:
- **RESET PLC ABORT COIL button: In Trailer - Requires Operator password; At RSSs - Feature not available**

Screen Color Information:
- **Red text & values: Instrument for that tag is in an Alarm Condition**
- **Flashing red text & values: Instrument for that tag is in an Abort Condition**
- **Yellow text & values: An Instrument Problem Alarm exists for that tag**
- **Green Abort Coil: OK; Red Abort Coil: Not cleared**

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_IOSTAT.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

IOSTATUS Screen Help

Menu Bar Buttons:

- **NETSTAT button: Navigate to "DACS Network Status"**
- **MININ button: Navigate to "Minimum Instrumentation Checklist" screen**

Screen Information:

- **Under normal circumstances, all modules should indicate "OK"**

Screen Color Information:

- **Green "OK" only: Module operating normally**
- **Red "BAD": Module hardware failed. Causes include improperly seated module, loss of power to the module, or failed module component**
- **Yellow "E" (can occur with green "OK"): Occurs only with B883 TC modules; Indicates that the module is working, but has "frozen" during the initialization process; Power to the rack needs to be reset. Click on the "E" and select <F2> for information on the TCs affected**

CLOSE

Screen Filename: H_MANABT.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

MANABRT Screen Help

Menu Bar Button:

- **CSMAIN button: Navigate to "Automatic Alarms and Aborts" screen**

Screen Selection Information:

- **RESET PLC ABORT COIL button: In Trailer - Requires Operator password; At RSSs - Feature not available**

Screen Color Information:

- **Red text & values: Instrument for that tag is in an Alarm Condition**
- **Flashing red text & values: Instrument for that tag is in an Abort Condition**
- **Yellow text & values: An Instrument Problem Alarm exists for that tag**
- **Green Abort Coil: OK; Red Abort Coil: Not cleared**

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_MININ.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

MININ Screen Help

Menu Bar Buttons:

- **TAGSTAT button: To "Tag Status (Alarm Disable, Auto/Manual)" screen**
- **ABRTENAB button: Navigate to "Abort Enable Checklist" screen**

Screen Information:

- **The numbers to the left of the tagnames indicate the minimum number of instruments required from that group for pump operation**
- **Click on the value or button and select <F2> for information on the tag**

Screen Color Information:

- **Red text & values: Instrument for that tag is in an Alarm Condition**
- **Flashing red text & values: Instrument for that tag is in an Abort Condition**
- **Indicator Light: Green: OK; Flashing Red: Instrument in an Abort Condition**
- **Yellow text & values: An Instrument Problem Alarm exists for that tag**

CLOSE

Screen Filename: H_MIT17B.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

MIT17B Screen Help

Menu Bar Buttons:

- **ROLLOVER button: Navigate to "Imminent Rollover" screen**
- **TEMPRFL button: Navigate to "MIT Temperature Profiles" screen**
- **MIT17C button: Navigate to "Instrument Tree (2) Riser 17C (MIT)" screen**

Screen Color Information:

- **Red values: Instrument is in an Alarm Condition**
- **Flashing red values: Instrument is in an Abort Condition**
- **Yellow values: An Instrument Problem Alarm exists**

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_MIT17C.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

MIT17C Screen Help

Menu Bar Buttons:

- **ROLLOVER button: Navigate to "Imminent Rollover" screen**
- **TEMPRFL button: Navigate to "MIT Temperature Profiles" screen**
- **MIT17B button: Navigate to "Instrument Tree (1) Riser 17B (MIT)" screen**

Screen Color Information:

- **Red values: Instrument is in an Alarm Condition**
- **Flashing red values: Instrument is in an Abort Condition**
- **Yellow values: An Instrument Problem Alarm exists**

CLOSE

Screen Filename: H_MSMAIN.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

MSMAIN Screen Help

Menu Bar Buttons:

- **TEMPRFL button: Navigate to "MIT Temperature Profiles" screen**
- **GASSUM button: Navigate to "Gas Summary" screen**
- **SUMMARY button: Navigate to "Summary Information" screen**

Screen Selections Information:

- **"To Tank Bottom & Side TCs" box:**
  Navigate to "Tank Bottom & Side Thermocouples" screen
- **"Riser 17B (MIT 1)" box:**
  Navigate to "Instrument Tree (1) Riser 17B (MIT)" screen
- **"Riser 12A (Mixer Pump)" box:**
  Navigate to "Mixer Pump - Riser 12A" screen
- **"Riser 17C (MIT 2)" box:**
  Navigate to "Instrument Tree (2) Riser 17C (MIT)" screen

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_NETSTA.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

NETSTAT Screen Help

Menu Bar Buttons:

- WELCOME button: Navigate to "DST 241-SY-101 DACS" screen

Screen Information and Selection:

- Displays the Network Computer Status, and the date and time that each computer station last went Online or Offline
- Displays the User Login Status, and the date and time that each user last logged in or out; "PUBLIC / VIEW ONLY" is the default at startup, and is also indicative of the date and time that a user last logged out; All login and logout actions are tracked in daily files, and can be viewed by using the EVENT SUMM button on the ALARMSUM screen
- "ONLINE" Computer stations status, dates and times are displayed in green
- "OFFLINE" Computer stations status, dates and times are displayed in red

[General Help] Popup Only:

- MODEM button (Visible at RSSs only) - Used to dial to or hang up from the DACS network; Loss of connection evident by "@@@@@" data fields

CLOSE

Screen Filename: H_PMPRUN.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

PUMPRUN Screen Help

Menu Bar Button:

- GASSUM button: Navigate to "Gas Summary" screen
- PUMP button: Navigate to "Mixer Pump - Riser 12A" screen

Screen Selection / Color Information:

- TEST SETUP: Click on a blue value to bring up the Prompt for entering test information ("Reset" toggles Yes/No); If SET VALUES has been selected, click on a black value and select <F2> for information on the tag
- SET VALUES, POSITION PUMP, ENABLE TEST, START TEST, and STOP TEST buttons: Grey = Disabled; Brief Yellow = Thinking; Green = Enabled;
- When PUMP MOTOR Stopped: STOP TEST button resets all to TEST SETUP mode with SET VALUES Enabled and all other buttons Disabled
- When PUMP MOTOR Running: Green ENABLE STOP button changes to a Flashing Yellow STOP TEST button for 5 sec; Select STOP TEST during the 5 sec interval to stop the pump and reset all to TEST SETUP mode
- PUMP ANIMATION ±2° Cone is either Green (In-Band) or Yellow (Out-of Band)

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_PMPVEW.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

PUMPVIEW Screen Help

Menu Bar Button:

- **GASSUM button: Navigate to "Gas Summary" screen**
- **PUMP button: Navigate to "Mixer Pump - Riser 12A" screen**

Screen Information:

- **VSD COMMUNICATIONS: Red "BAD" indicates no communication; Green "OK" indicates communication (both VSDs need to be "OK" to run pump)**
- **TEST SETUP: Click on a value and select <F2> for information on the tag**
- **SELECTED TEST: Displays Test # and Test Description of current pump run**
- **DIRECTIONAL & PUMP MOTORS: Displays pump speeds and color indications for motors - Green (STOPPED) or Red (RUNNING); Directional Motor Angle is either Green (In-Band) or Yellow (Out-of-Band)**
- **OPERATIONAL STATUS: Displays current status of the pump run sequence as controlled on the DACS Trailer [PUMPRUN] screen**
- **PUMP ANIMATION ±2° Cone is either Green (In-Band) or Yellow (Out-of Band)**

CLOSE

Screen Filename: H_PUMP.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

PUMP Screen Help

Menu Bar Buttons:

- **PUMPRUN button: Navigate to "Pump Operation" screen (available only on Station 8, the default, or Supervisor declared Stations 5, 6 or 7)**
- **PUMPVIEW button: Navigate to "View of Pump Operation" screen (available on all RSSs, Station 9 and other stations not allowing [PUMPRUN] screen)**
- **PUMPALRM button: Navigate to "Pump Parameters" screen**
- **STRNALM button: Navigate to "Strain Gauges" screen**

Screen Color Information:

- **Red text & values: Instrument for that tag is in an Alarm Condition**
- **Flashing red text & values: Instrument for that tag is in an Abort Condition**
- **Indicator Lights: Green: OK; Flashing Red: Instrument in an Abort Condition**
- **Yellow text & values: An Instrument Problem Alarm exists for that tag**

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_PUMPAL.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

PUMPALRM Screen Help

Menu Bar Buttons:
- **CSMAIN button: Navigate to "Automatic Alarms and Aborts" screen**
- **PUMP button: Navigate to "Mixer Pump - Riser 12A" screen**

Screen Selection Information:
- **RESET PLC ABORT COIL button: In Trailer - Requires Operator password; At RSSs - Feature not available**

Screen Color Information:
- **Red text & values: Instrument for that tag is in an Alarm Condition**
- **Flashing red text & values: Instrument for that tag is in an Abort Condition**
- **Indicator Light: Green: OK; Flashing Red: Instrument in an Abort Condition**
- **Yellow text & values: An Instrument Problem Alarm exists for that tag**
- **Green Abort Coil: OK; Red Abort Coil: Not cleared**

CLOSE

Screen Filename: H_PUMPOP.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

PUMPOPS Screen Help

Menu Bar Button:
- **TRENDS button: Navigate to "Historical Trending Displays" screen**
- **ROLLOVER button: Navigate to "Imminent Rollover" screen**
- **PUMP button: Navigate to "Mixer Pump - Riser 12A" screen**

Screen Color Information:
- **Red value: Instrument for that tag is in an Alarm Condition**
- **Flashing red value: Instrument for that tag is in an Abort Condition**
- **Yellow value: An Instrument Problem Alarm exists for that tag**
- **Brown temperature band: Indicates the Instrument Alarm (and Abort) Region**
- **The colored lines that are plotted correspond to the colored tag names**

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_ROLLOV.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

ROLLOVER Screen Help

Menu Bar Button:
- **TRENDS button: Navigate to "Historical Trending Displays" screen**
- **PUMPOPS button: Navigate to "Pump Operations" screen**
- **TEMPRFL button: Navigate to "MIT Temperature Profiles" screen**

Screen Selections Information:
- **Click on "30 SECOND TRENDS" tag name to view the plot for this tag**

Screen Color Information:
- **Red temperature bar / value: TC / Instrument is in an Alarm Condition**
- **Flashing red temperature bar / value: TC / Instrument is in an Abort Condition**
- **Yellow value: An Instrument Problem Alarm exists for that tag**
- **Brown temperature bands: Indicate Instrument Alarm (and Abort) Regions**
- **For "30 SECOND TRENDS", the blue line that is plotted corresponds to the selected blue tag name**

CLOSE

Screen Filename: H_STRNAL.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

STRNALM Screen Help

Menu Bar Buttons:
- **CSMAIN button: Navigate to "Automatic Alarms and Aborts" screen**
- **PUMP button: Navigate to "Mixer Pump - Riser 12A" screen**

Screen Selection Information:
- **RESET PLC ABORT COIL button: In Trailer - Requires Operator password; At RSSs - Feature not available**

Screen Color Information:
- **Red text & values: Instrument for that tag is in an Alarm Condition**
- **Flashing red text & values: Instrument for that tag is in an Abort Condition**
- **Indicator Lights: Green: OK; Red: Instrument in an Alarm Condition; Flashing Red: Instrument in an Abort Condition**
- **Yellow text & values: An Instrument Problem Alarm exists for that tag**
- **Green Abort Coil: OK; Red Abort Coil: Not cleared**

CLOSE

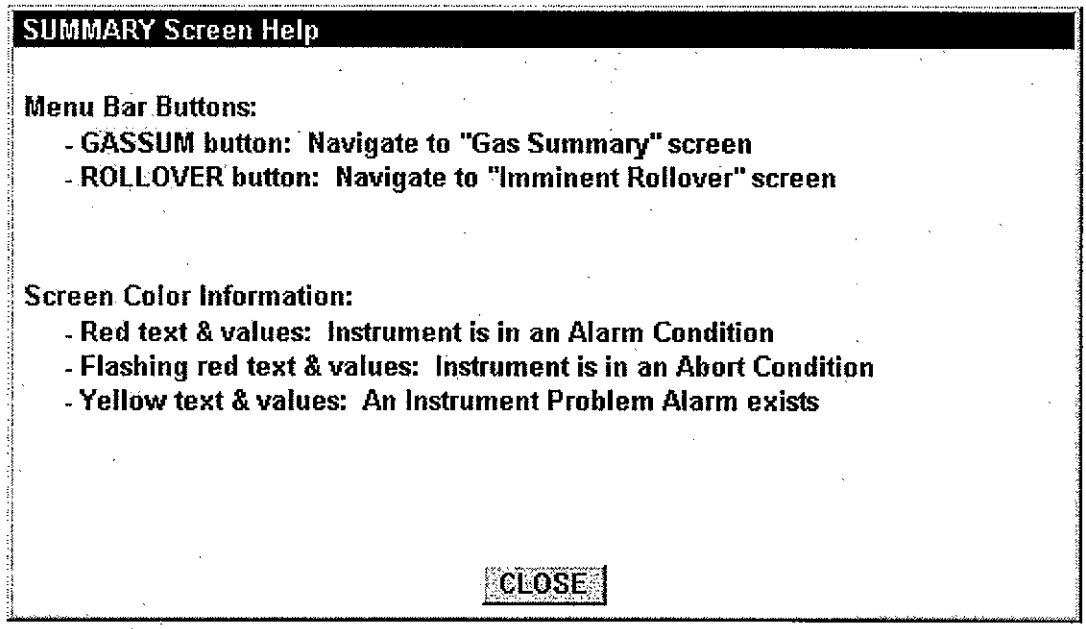
Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

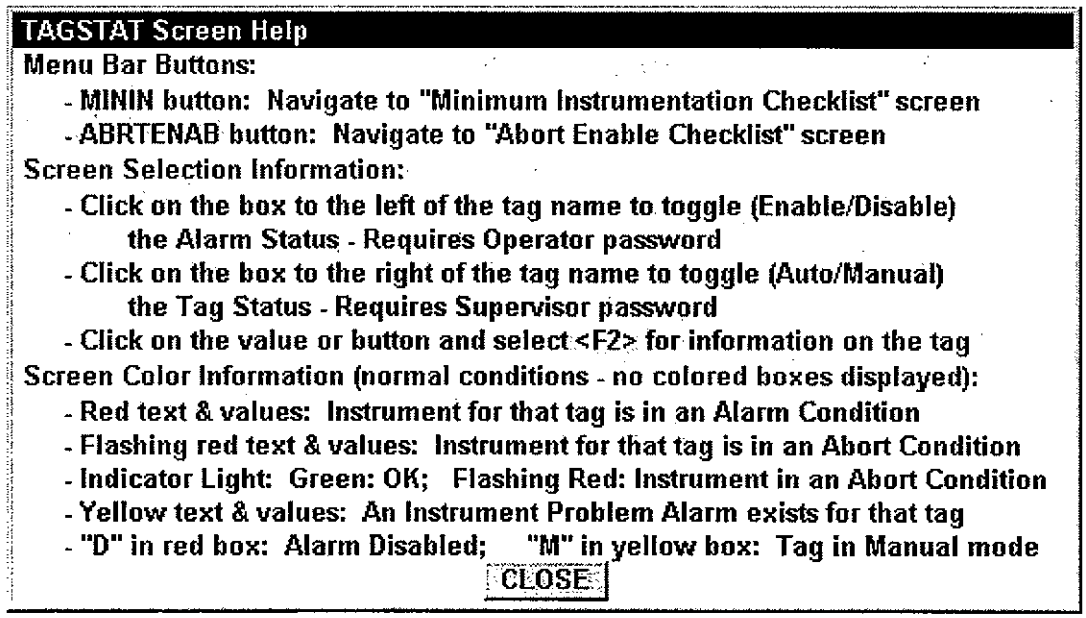
Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_SUMMRY.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec



Screen Filename: H_TAGSTA.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec



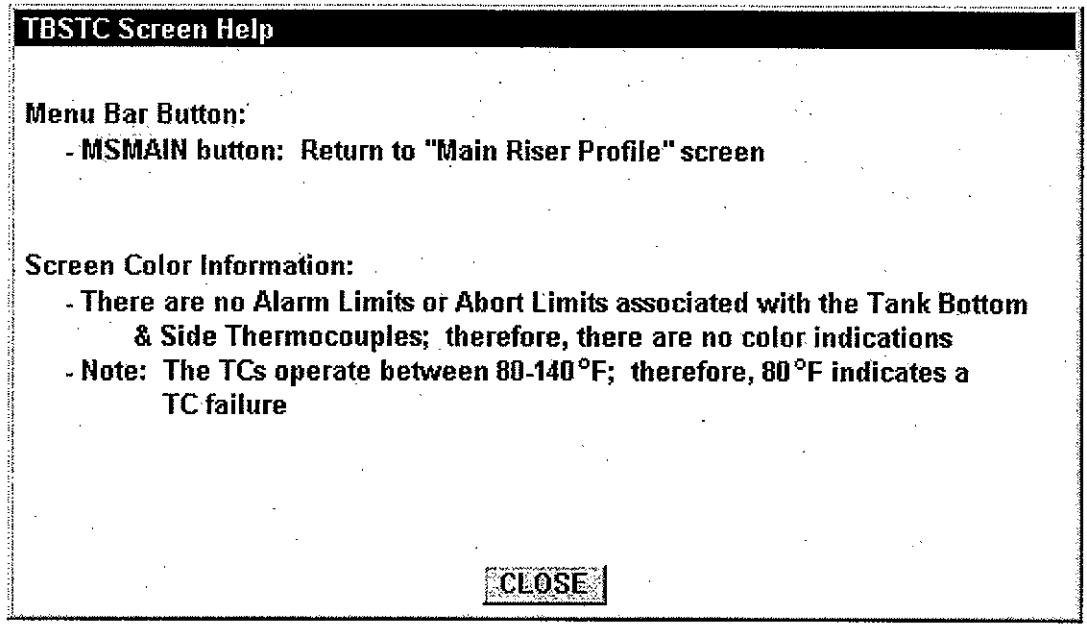
Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

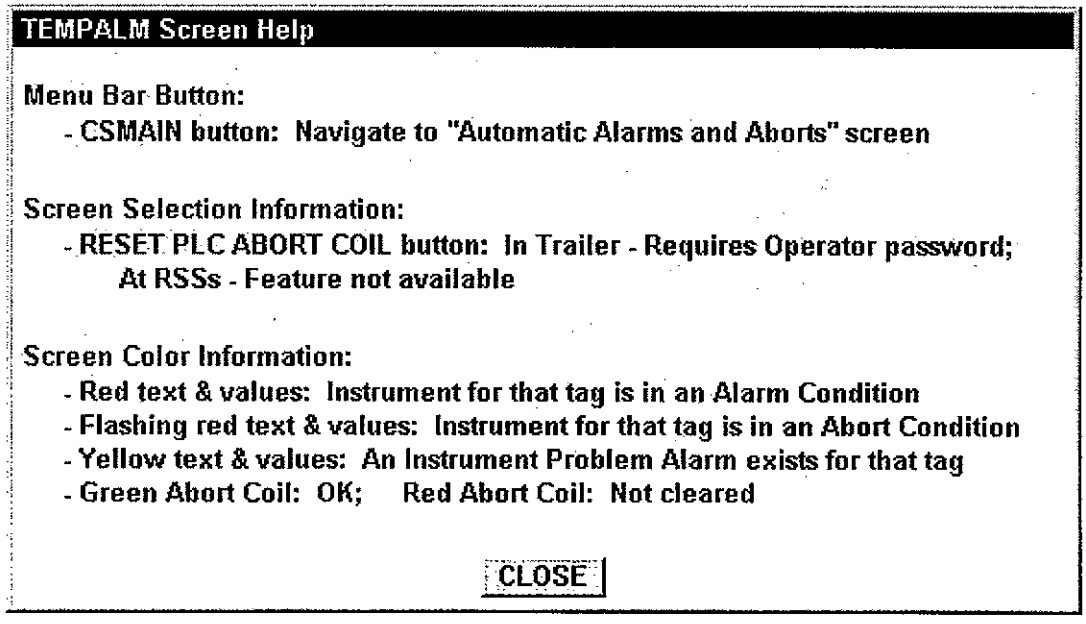
Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_TBSTC.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec



Screen Filename: H_TEMPAL.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec



Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_TMPRFL.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

TEMPRFL Screen Help

Menu Bar Button:

- **ROLLOVER button: Navigate to "Imminent Rollover" screen**
- **MIT17B button: Navigate to "Instrument Tree (1) Riser 17B (MIT)" screen**
- **MIT17C button: Navigate to "Instrument Tree (2) Riser 17C (MIT)" screen**

Screen Color Information:

- **Red temperature bar: Thermocouple (TC) is in an Alarm Condition**
- **Flashing red temperature bar: TC is in an Abort Condition**
- **Yellow temperature bar: An Instrument Problem Alarm exists for that TC**
- **Brown temperature band at 130-140°F: This is the Alarm/Abort band for the TCs; Alarm Limit is at 130°F and the Abort Limit is at 135°F**

CLOSE

Screen Filename: H_TRENDS.odf
Picture Type: Popup; Always On Top
Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

TRENDS Screen Help

Menu Bar Buttons:

- **TEMPRFL button: Navigate to "MIT Temperature Profiles" screen**
- **ROLLOVER button: Navigate to "Imminent Rollover" screen**
- **PUMPOPS button: Navigate to "Pump Operations" screen**

Screen Selections Information (Note - plots not available from RSSs):

- **Click on the PEN GROUP name to popup a list of the tags to be plotted**
- **Click on any button to bring up the corresponding Historical Display plot**

Historical Display Help (not available from Historical Display screen)

Menu Selections: Explore Menu items for available selections

Screen Selections Information:

- **Click on the Tag Name to bring up the corresponding Y-axis scale**
- **< or > Moves X-axis time scale Back or Forward 1/2 x current range**
- **<< or >> Moves X-axis time scale Back or Forward 1 x current range**
- **Click on plot, then right/left arrow Moves vertical time cursor to desired time**

CLOSE

Both Screens:

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Screen Filename: H_WELCOM.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 5.300" w x 3.000" h
Screen Refresh Rate: 0.1 sec

WELCOME Screen Help

[WELCOME] Screen (and [MAP] Popup) Selections:

- **Various buttons: Navigate to desired screen (e.g. CSMAIN, DACS, NETSTAT)**
- **LOGIN/OUT Brings up Login/Logout Confirmation Box**
- **P-RUN-VIS To select "PUMPRUN" Station (Supervisor level, [WELCOME] only)**
- **EXIT Exit out of the Intellution Program (Operator level, [WELCOME] only)**

		Office Ph.	Cell Ph.	Pager	Home Ph.
Operations and Engineering	Greg Gauck	373-1779	---	85-8802	946-1281
	Mark Brown	372-1611	---	85-7733	735-3008
	Doug Larsen	373-5995	521-5491	85-3608	943-1054
	Shift Office	373-3475	539-1539	---	---
	Rich Larson	373-9100	539-3279	85-3616	545-9719
Software	Augie Ermi	376-5099	531-4256	85-3937	586-9736
	Ross Truitt	376-2590	531-4774	85-7020	627-4581
Gas Team	Tom Schneider	376-9032	539-1740	85-7021	946-4317
	Daron Tate	373-7551	---	85-3613	943-4852
Facilities	306E DACS Lab.	373-6590	---	Fax:	376-4945

CLOSE

Script "On Opening": OPENPIC H_GENERL
SETNICKNAME "HELPSCREEN"

Script "On Closing": CLOSEPIC H_GENERL

Screen Button: <CLOSE> CLOSEPIC HELPSCREEN

Table E-4. *[TRENDS] Screen Pop-ups*

Picture File Name	Dimensions		Refresh Rate	Picture Type	Window Properties	Script On Opening	Script On Closing	Page No.
	Width	Height						
TR_17B-1.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-146
TR_17B-2.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-146
TR_17B-3.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-146
TR_17C-1.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-147
TR_17C-2.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-147
TR_17C-3.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-147
TR_GAGES.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-148
TR_GAS.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-148
TR_H2-VH.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-148
TR_PUMP1.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-149
TR_PUMP2.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-149
TR_TANK1.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-149
TR_TANK2.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-150
TR_TBS-1.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-150
TR_TBS-2.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-150
TR_TBS-3.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-151
TR_WEATH.odf	3.000"	1.600"	0.1 sec	Popup	On Top	Yes*	---	E-151

* The Script "On Opening" is: PAUSE 10
CLOSEPIC <Picture Name>

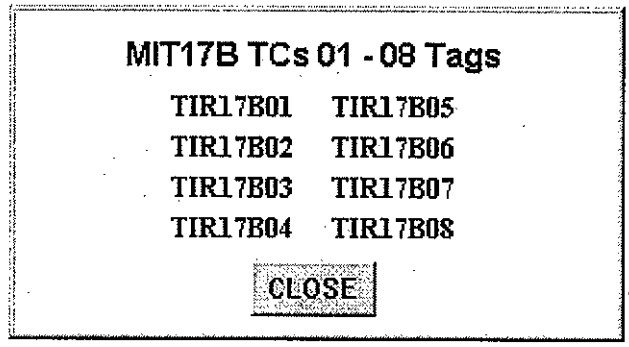
where <Picture Name> is the Picture File Name, minus the ".odf"

Screen Filename: TR_17B-1.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_17B-1

<CLOSE> Script: CLOSEPIC TR_17B-1

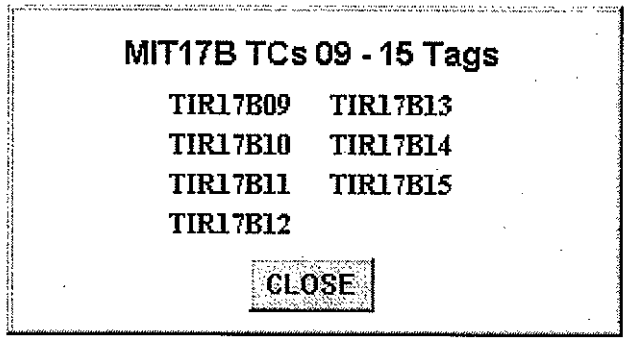


Screen Filename: TR_17B-2.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_17B-2

<CLOSE> Script: CLOSEPIC TR_17B-2

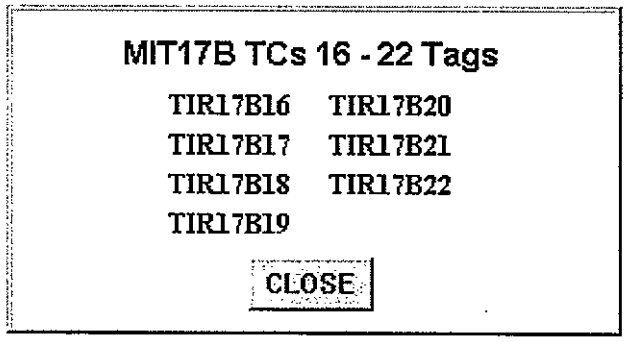


Screen Filename: TR_17B-3.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_17B-3

<CLOSE> Script: CLOSEPIC TR_17B-3

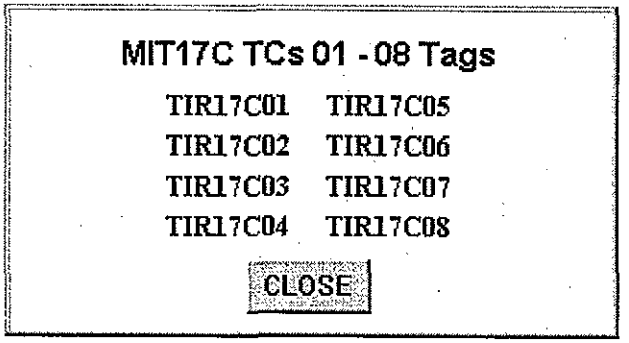


Screen Filename: TR_17C-1.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_17C-1

<CLOSE> Script: CLOSEPIC TR_17C-1

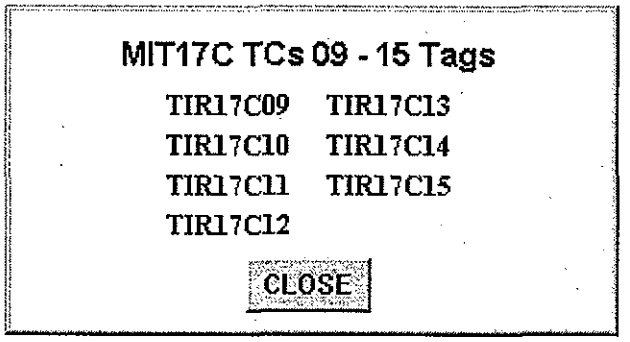


Screen Filename: TR_17C-2.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_17C-2

<CLOSE> Script: CLOSEPIC TR_17C-2

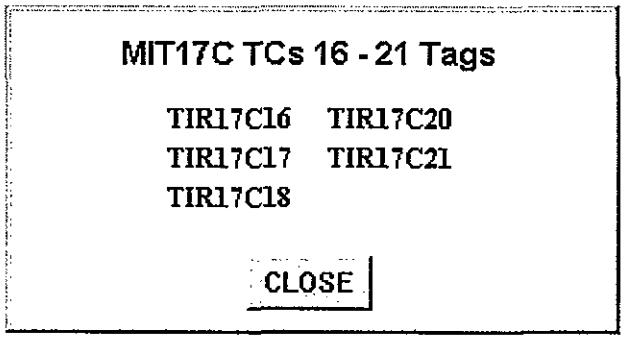


Screen Filename: TR_17C-3.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_17C-3

<CLOSE> Script: CLOSEPIC TR_17C-3

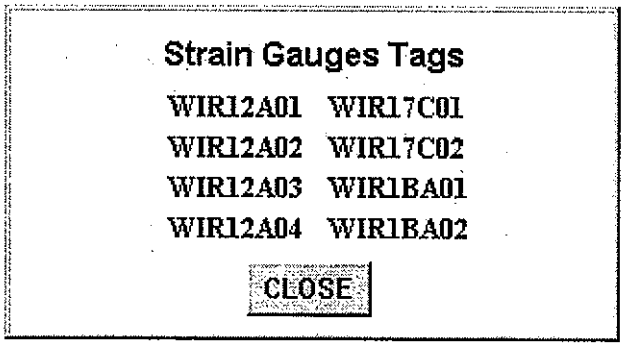


Screen Filename: TR_GAGES.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_GAGES

<CLOSE> Script: CLOSEPIC TR_GAGES

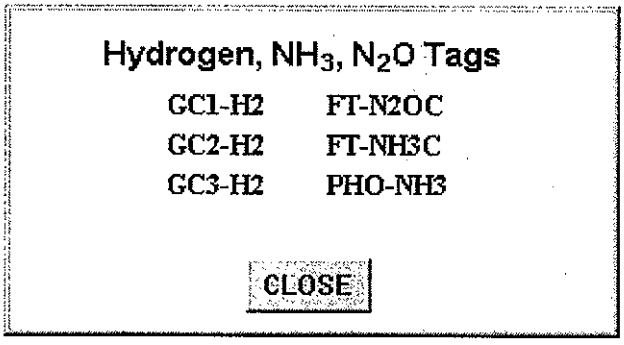


Screen Filename: TR_GAS.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_GAS

<CLOSE> Script: CLOSEPIC TR_GAS

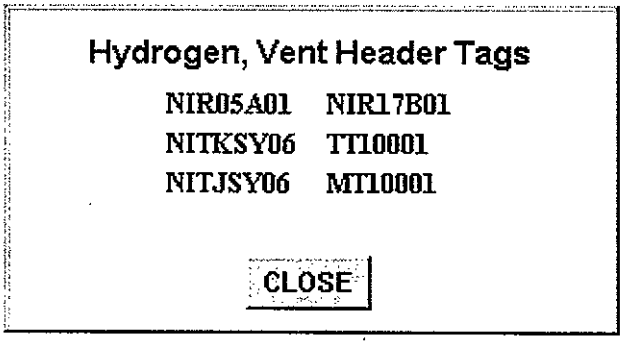


Screen Filename: TR_H2-VH.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_H2-VH

<CLOSE> Script: CLOSEPIC TR_H2-VH

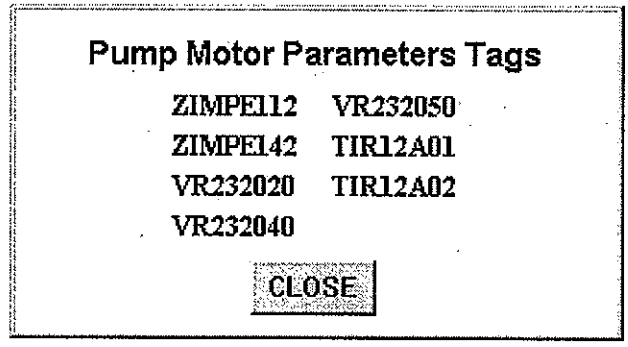


Screen Filename: TR_PUMP1.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_PUMP1

<CLOSE> Script: CLOSEPIC TR_PUMP1

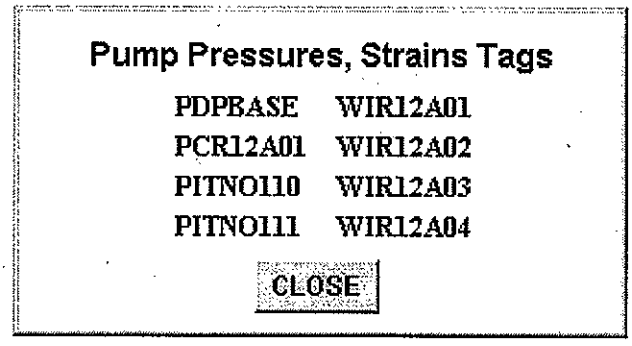


Screen Filename: TR_PUMP2.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_PUMP2

<CLOSE> Script: CLOSEPIC TR_PUMP2

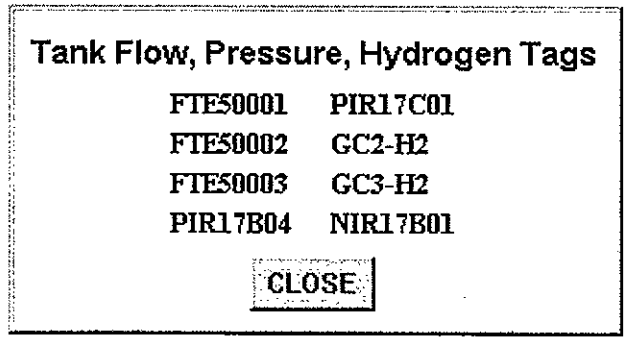


Screen Filename: TR_TANK1.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_TANK1

<CLOSE> Script: CLOSEPIC TR_TANK1

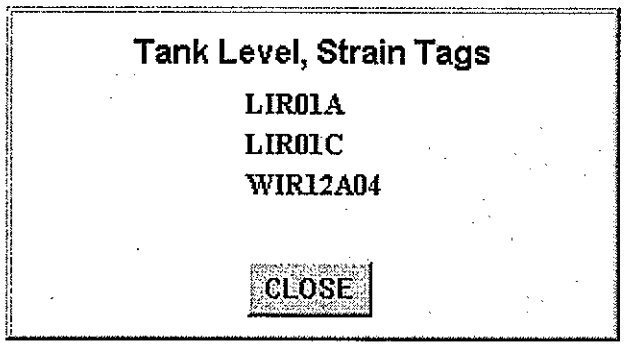


Screen Filename: TR_TANK2.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_TANK2

<CLOSE> Script: CLOSEPIC TR_TANK2

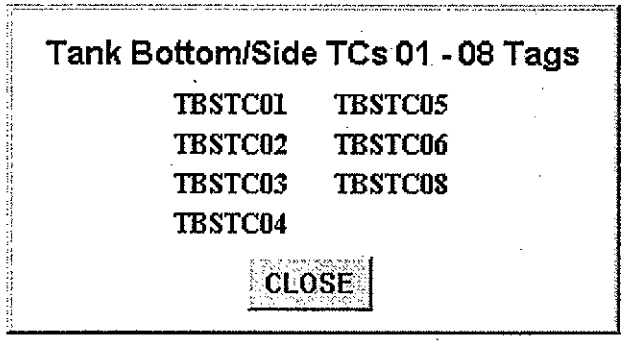


Screen Filename: TR_TBS-1.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_TBS-1

<CLOSE> Script: CLOSEPIC TR_TBS-1

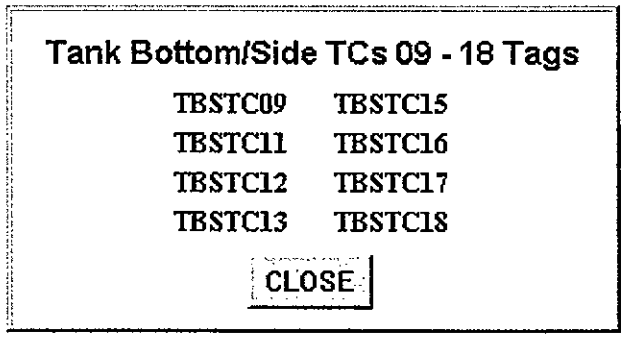


Screen Filename: TR_TBS-2.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_TBS-2

<CLOSE> Script: CLOSEPIC TR_TBS-2

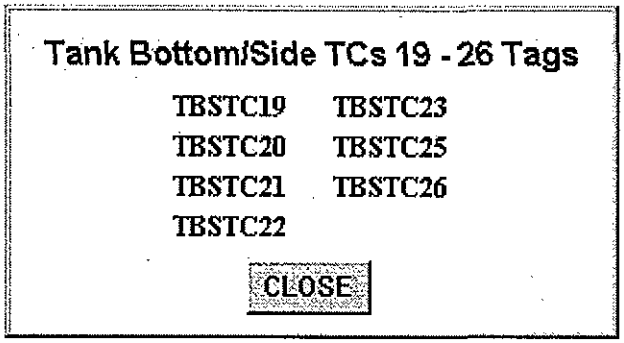


Screen Filename: TR_TBS-3.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_TBS-3

<CLOSE> Script: CLOSEPIC TR_TBS-3



Screen Filename: TR_WEATH.odf
Picture Type: Popup; Always On Top

Picture Dimensions: 3.000" w x 1.600" h
Screen Refresh Rate: 0.1 sec

Script "On Opening": PAUSE 10
CLOSEPIC TR_WEATH

<CLOSE> Script: CLOSEPIC TR_WEATH

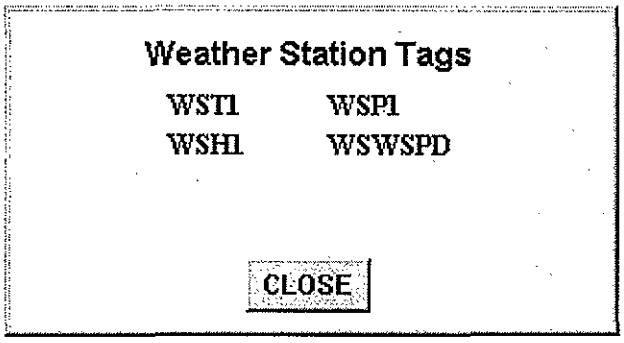


Table E-5. *Tag Details Screens*

Picture File Name	Dimensions		Refresh Rate	Picture Type	Window Properties	Script On Opening	Script On Closing	Page No.
	Width	Height						
AA.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-153
AI.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-154
AO.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-155
AR.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-156
BL.bdf	3.200"	4.250"	0.8 sec	Popup	Title Bar	---	---	E-157
CA.bdf	3.200"	4.250"	0.8 sec	Popup	Title Bar	---	---	E-158
DI.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-159
DO.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-160
DR.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-161
EV.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-162
PG.bdf	3.200"	4.250"	0.8 sec	Popup	Title Bar	---	---	E-163
TM.bdf	3.200"	3.900"	0.8 sec	Popup	Title Bar	---	---	E-164

Screen Filename: AA.bdf (Analog Alarm Block)
Picture Type: Popup; Title Bar

Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

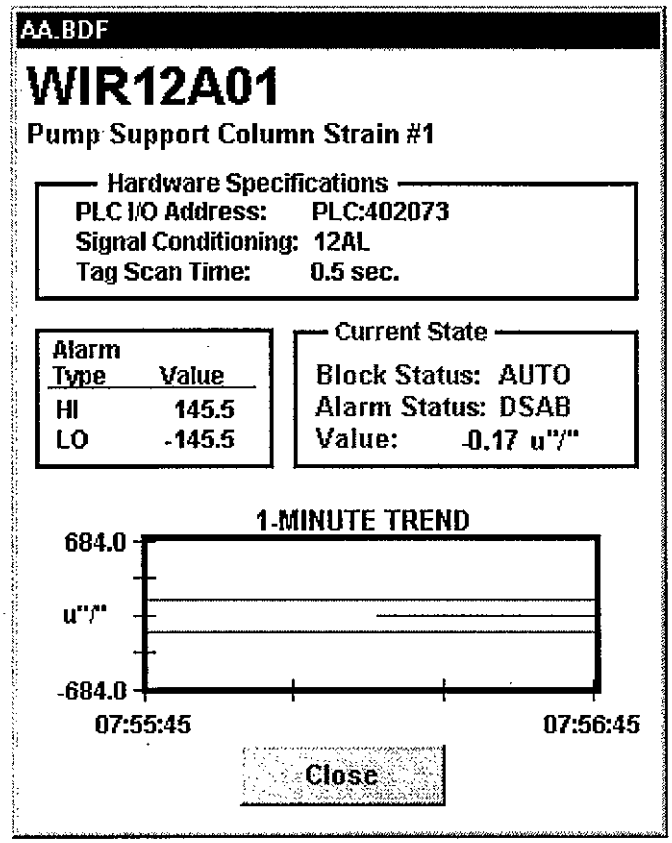
Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Hardware Specifications:
- PLC I/O Address: NODE:TAG.A_IOAD
- Signal Condition: NODE:TAG.A_IOSC
- Tag Scan Time: NODE:TAG.A_SCANT

Alarms:
- HI Alarm Value: NODE:TAG.A_HI
- Lo Alarm Value: NODE:TAG.A_LO

Current State:
- Block Status: NODE:TAG.A_AUTO
- Alarm Status: NODE:TAG.A_CUALM
  - Color: NODE:TAG {(OK: Green), (Low, High: Red)}
- Value: NODE:TAG.F_CV
  - Data Entry: ✓ Allow data entry
- Units: NODE:TAG.A_ETAG

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	5 Tick marks 0 Labels	NODE:TAG.F_HI	Red	Line Definition: Show Line Low / High Limits: 0 / 0	Top Label: NODE:TAG.A_EHI Units: NODE:TAG.A_ETAG Bottom Label: NODE:TAG.A_ELO
			NODE:TAG.F_CV	Blue		
			NODE:TAG.F_LO	Red		

Screen Filename: AI.bdf (Analog Input Block)
Picture Type: Popup; Title Bar

Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

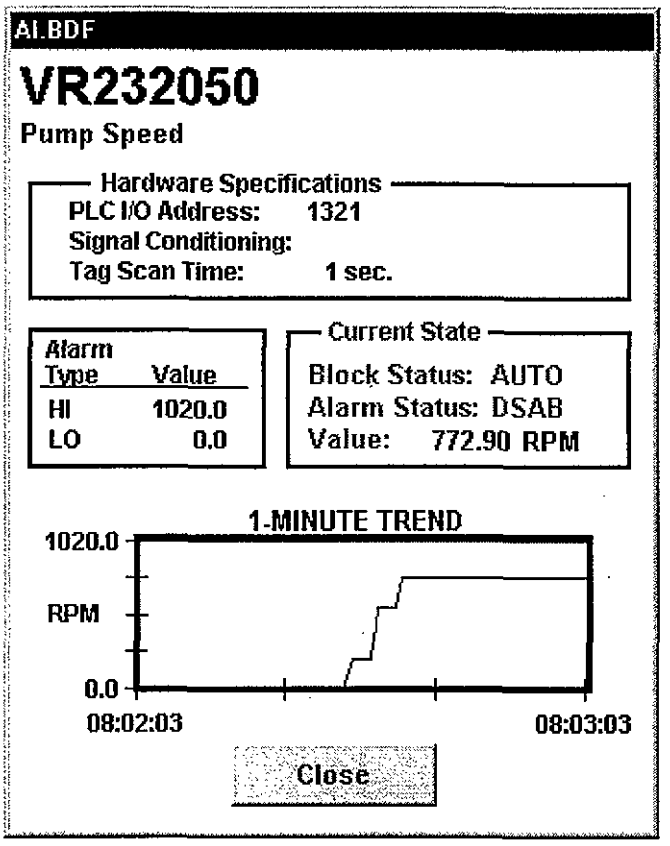
Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Hardware Specifications:
- PLC I/O Address: NODE:TAG.A_IOAD
- Signal Condition: NODE:TAG.A_IOSC
- Tag Scan Time: NODE:TAG.A_SCANT

Alarms:
- HI Alarm Value: NODE:TAG.A_HI
- Lo Alarm Value: NODE:TAG.A_LO

Current State:
- Block Status: NODE:TAG.A_AUTO
- Alarm Status: NODE:TAG.A_CUALM
  - Color: NODE:TAG {(OK: Green), (Low, High: Red)}
- Value: NODE:TAG.F_CV
  - Data Entry: ✓ Allow data entry
- Units: NODE:TAG.A_ETAG

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	5 Tick marks 0 Labels	NODE:TAG.F_HI	Red	Line Definition: Show Line Low / High Limits: 0 / 0	Top Label: NODE:TAG.A_EHI Units: NODE:TAG.A_ETAG Bottom Label: NODE:TAG.A_ELO
			NODE:TAG.F_CV	Blue		
			NODE:TAG.F_LO	Red		

Screen Filename: AO.bdf (Analog Output Block)
Picture Type: Popup; Title Bar

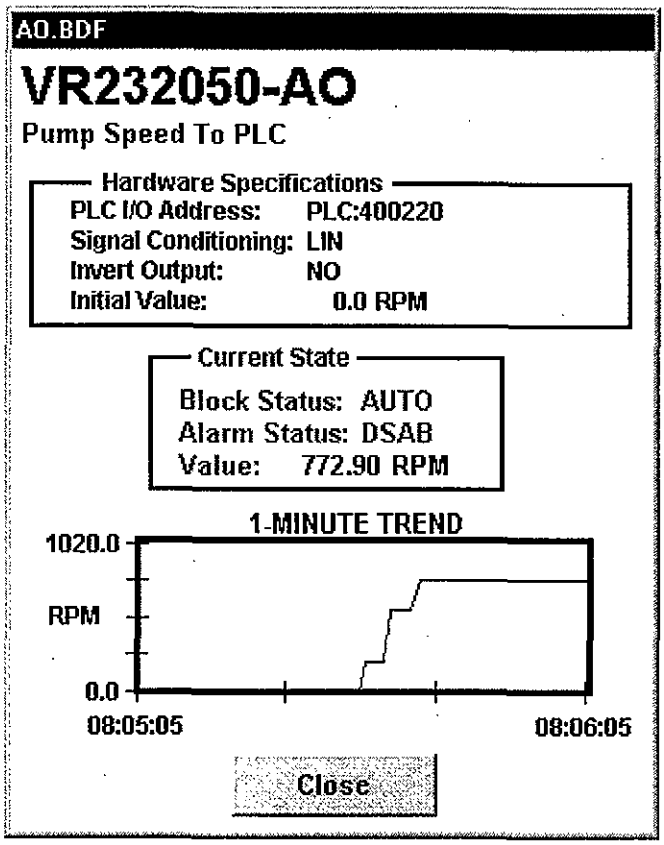
Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Hardware Specifications:
- PLC I/O Address: NODE:TAG.A_IOAD
- Signal Condition: NODE:TAG.A_IOSC
- Invert Output: NODE:TAG.A_ROUT
- Initial Value: NODE:TAG.A_COLD
- Units: NODE:TAG.A_ETAG

Current State:
- Block Status: NODE:TAG.A_AUTO
- Alarm Status: NODE:TAG.A_CUALM
- Value: NODE:TAG.F_CV
- Units: NODE:TAG.A_ETAG

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	5 Tick marks 0 Labels	NODE:TAG.F_CV	Blue	Line Definition: Show Line Low / High Limits: 0 / 0	Top Label: NODE:TAG.A_EHI Units: NODE:TAG.A_ETAG Bottom Label: NODE:TAG.A_ELO

Screen Filename: AR.bdf (Analog Register Block)
Picture Type: Popup; Title Bar

Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

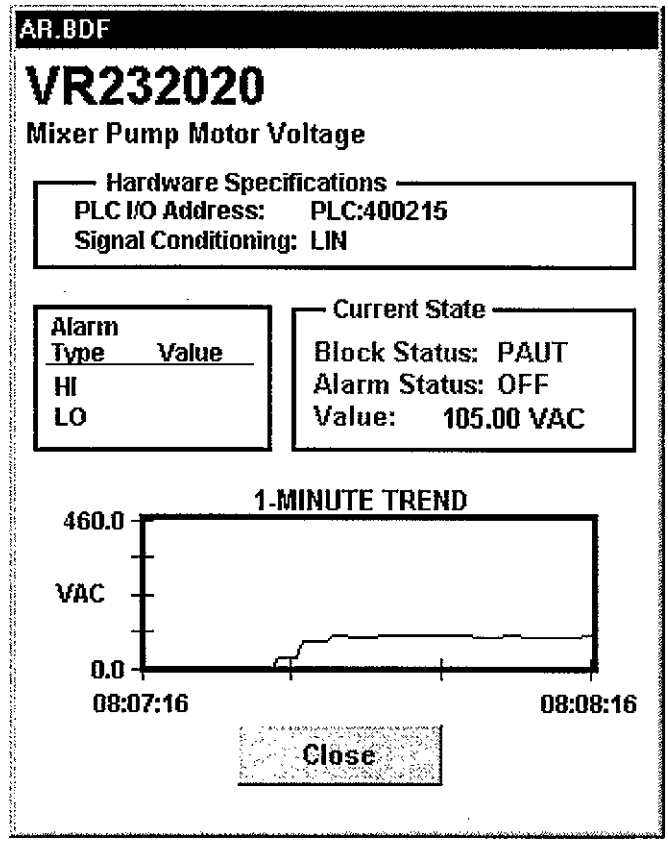
Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Hardware Specifications:
- PLC I/O Address: NODE:TAG.A_IOAD
- Signal Condition: NODE:TAG.A_IOSC

Alarms:
- HI Alarm Value: NODE:TAG.A_HI
- Lo Alarm Value: NODE:TAG.A_LO

Current State:
- Block Status: NODE:TAG.A_AUTO
- Alarm Status: NODE:TAG.A_CUALM
- Color: NODE:TAG {(OK: Green), (Low, High: Red)}
- Value: NODE:TAG.F_CV
- Units: NODE:TAG.A_ETAG

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	5 Tick marks 0 Labels	NODE:TAG.F_HI	Red	Line Definition: Show Line Low / High Limits: 0 / 0	Top Label: NODE:TAG.A_EHI Units: NODE:TAG.A_ETAG Bottom Label: NODE:TAG.A_ELO
			NODE:TAG.F_CV	Blue		
			NODE:TAG.F_LO	Red		

Screen Filename: BL.bdf (Boolean Block)
Picture Type: Popup; Title Bar

Picture Dimensions: 3.200" w x 4.250" h
Screen Refresh Rate: 0.8 sec

Titles:
Tagname: NODE:TAG.A_TAG
Description: NODE:TAG.A_DESC

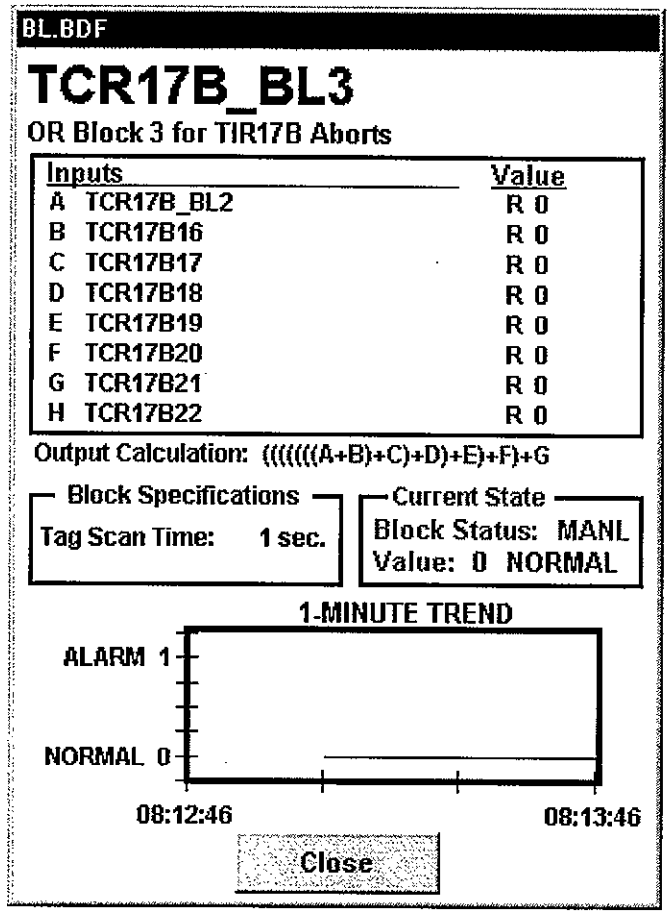
Inputs:		Values:
A	NODE:TAG.A_GETF1	NODE:TAG.A_TV1
B	NODE:TAG.A_GETF2	NODE:TAG.A_TV2
C	NODE:TAG.A_GETF3	NODE:TAG.A_TV3
D	NODE:TAG.A_GETF4	NODE:TAG.A_TV4
E	NODE:TAG.A_GETF5	NODE:TAG.A_TV5
F	NODE:TAG.A_GETF6	NODE:TAG.A_TV6
G	NODE:TAG.A_GETF7	NODE:TAG.A_TV7
H	NODE:TAG.A_GETF8	NODE:TAG.A_TV8

Output Calculation: NODE:TAG.A_EXP

Block Specifications:
Tag Scan Time: NODE:TAG.A_SCANT

Current State:
Block Status: NODE:TAG.A_AUTO
Value: NODE:TAG.F_CV
Label: NODE:TAG.A_CV

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	7 Tick marks 0 Labels	NODE:TAG.F_CV	Blue	Line Definition: Show Line Low / High Limits: -0.25 / 1.25	"1" Label: NODE:TAG.A_CLOSE "0" Label: NODE:TAG.A_OPEN

Screen Filename: CA.bdf (Calculation Block)
Picture Type: Popup; Title Bar

Picture Dimensions: 3.200" w x 4.250" h
Screen Refresh Rate: 0.8 sec

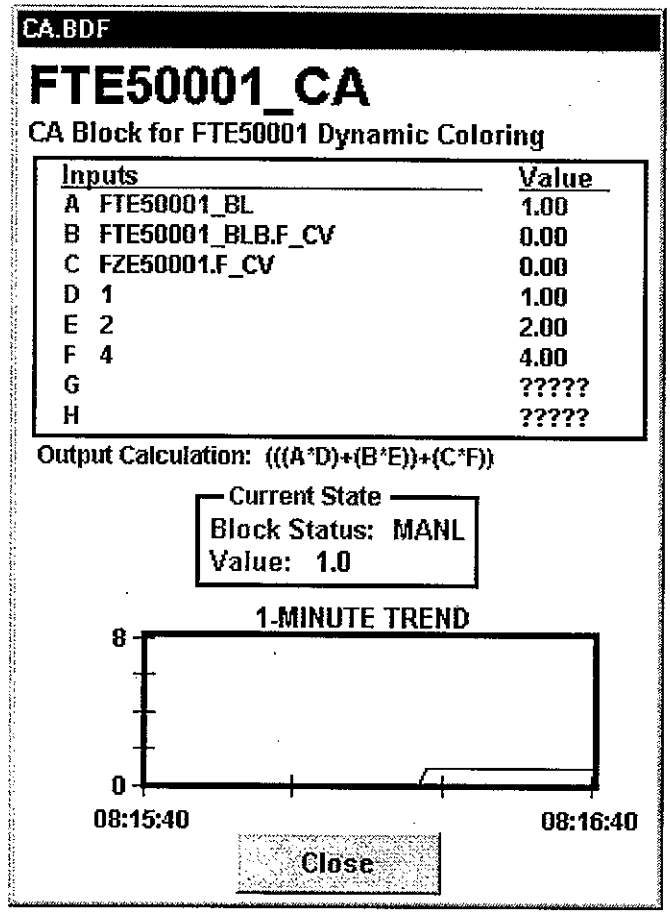
Titles:
Tagname: NODE:TAG.A_TAG
Description: NODE:TAG.A_DESC

Inputs:		Values:
A	NODE:TAG.A_PREV	NODE:TAG.A_GET1
B	NODE:TAG.A_GET2	NODE:TAG.F_TV1
C	NODE:TAG.A_GET3	NODE:TAG.F_TV2
D	NODE:TAG.A_GET4	NODE:TAG.F_TV3
E	NODE:TAG.A_GET5	NODE:TAG.F_TV4
F	NODE:TAG.A_GET6	NODE:TAG.F_TV5
G	NODE:TAG.A_GET7	NODE:TAG.F_TV6
H	NODE:TAG.A_GET8	NODE:TAG.F_TV7

Output Calculation: NODE:TAG.A_EXP

Current State:
Block Status: NODE:TAG.A_AUTO
Value: NODE:TAG.F_CV

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	5 Tick marks 0 Labels	NODE:TAG.F_CV	Blue	Line Definition: Show Line Low / High Limits: 0 / 0	Top Label: NODE:TAG.A_EHI Units: NODE:TAG.A_ETAG Bottom Label: NODE:TAG.A_ELO

Screen Filename: DI.bdf (Digital Input Block)
Picture Type: Popup; Title Bar

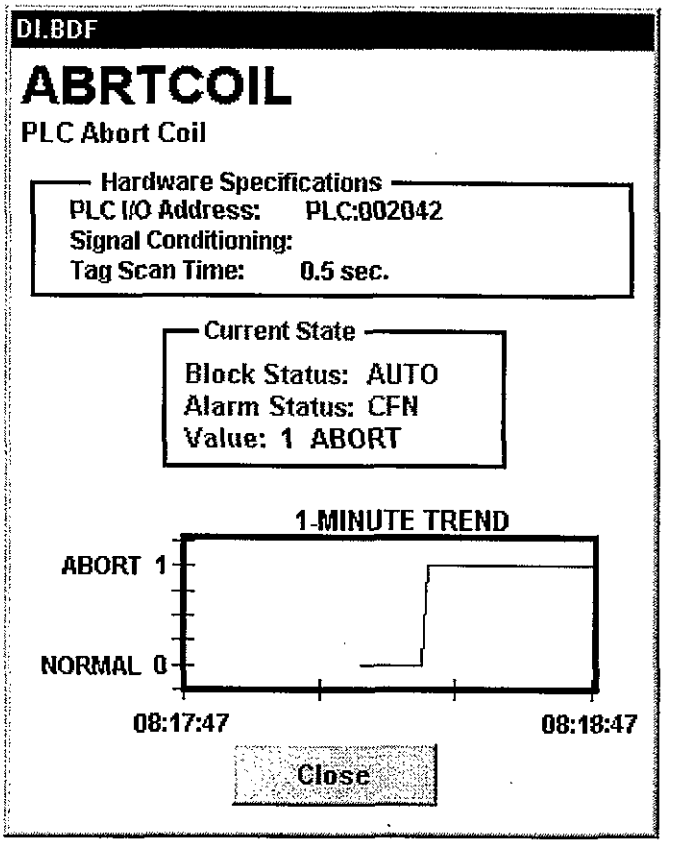
Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Hardware Specifications:
- PLC I/O Address: NODE:TAG.A_IOAD
- Signal Condition: NODE:TAG.A_IOSC
- Tag Scan Time: NODE:TAG.A_SCANT

Current State:
- Block Status: NODE:TAG.A_AUTO
- Alarm Status: NODE:TAG.A_CUALM
- Value: NODE:TAG.F_CV
- Label: NODE:TAG.A_CV

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	7 Tick marks 0 Labels	NODE:TAG.F_CV	Blue	Line Definition: Show Line Low / High Limits: -0.25 / 1.25	"1" Label: NODE:TAG.A_CLOSE "0" Label: NODE:TAG.A_OPEN

Screen Filename: DO.bdf (Digital Output Block)
Picture Type: Popup; Title Bar

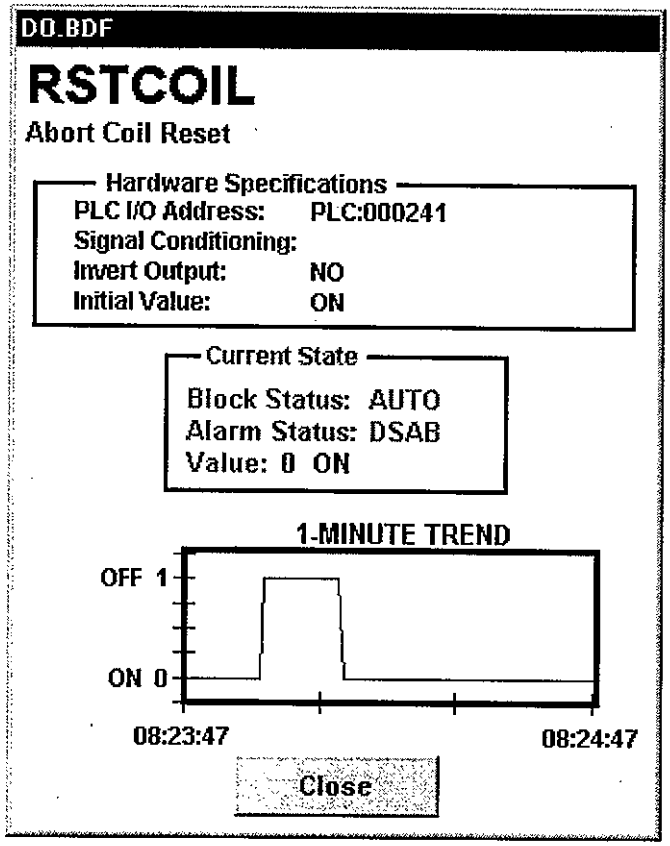
Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Hardware Specifications:
- PLC I/O Address: NODE:TAG.A_IOAD
- Signal Condition: NODE:TAG.A_IOSC
- Invert Output: NODE:TAG.A_INV
- Initial Value: NODE:TAG.A_COLD

Current State:
- Block Status: NODE:TAG.A_AUTO
- Alarm Status: NODE:TAG.A_CUALM
- Value: NODE:TAG.F_CV
- Label: NODE:TAG.A_CV

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	7 Tick marks 0 Labels	NODE:TAG.F_CV	Blue	Line Definition: Show Line Low / High Limits: -0.25 / 1.25	"1" Label: NODE:TAG.A_CLOSE "0" Label: NODE:TAG.A_OPEN

Screen Filename: DR.bdf (Digital Register Block)
Picture Type: Popup; Title Bar

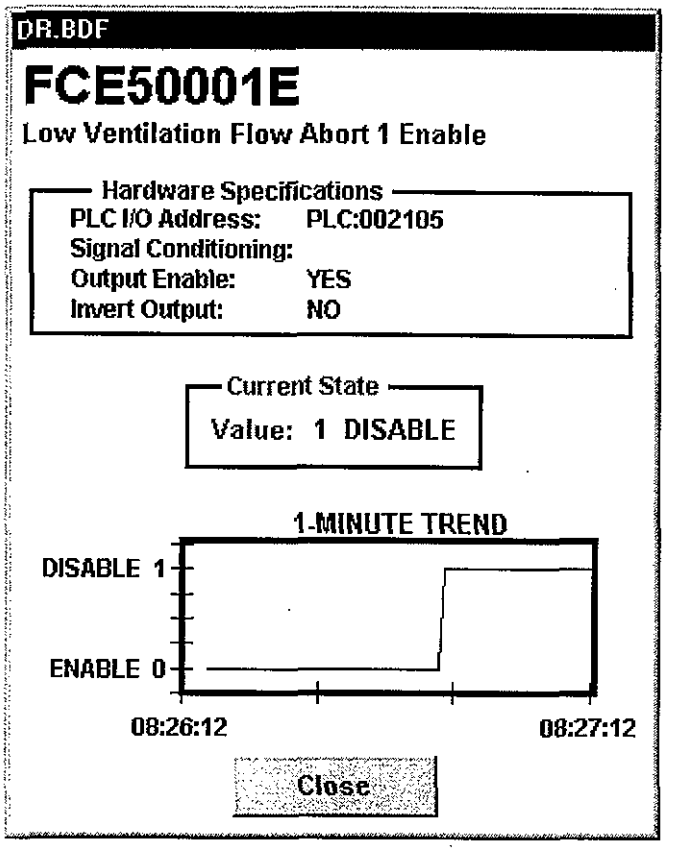
Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Hardware Specifications:
- PLC I/O Address: NODE:TAG.A_IOAD
- Signal Condition: NODE:TAG.A_IOSC
- Output Enable: NODE:TAG.A_OUT
- Invert Output: NODE:TAG.A_INV

Current State:
- Value: NODE:TAG.F_CV
- Label: NODE:TAG.A_CV

<Close> Button: CLOSEPIC



1-Minute Trend Plot:

Chart Configuration	Axes		Pen Configuration			Y Axis Forced Labels
Common Parameters	X Axis	Y Axis	Pen Tagname	Pen Color	Common Parameters	
Color: Foreground: Yellow Background: White Time Duration: 00:00:01:00	4 Tick marks 2 Labels	7 Tick marks 0 Labels	NODE:TAG.F_CV	Blue	Line Definition: Show Line Low / High Limits: -0.25 / 1.25	"1" Label: NODE:TAG.A_CLOSE "0" Label: NODE:TAG.A_OPEN

Screen Filename: EV.bdf (Event Action Block)
Picture Type: Popup; Title Bar

Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

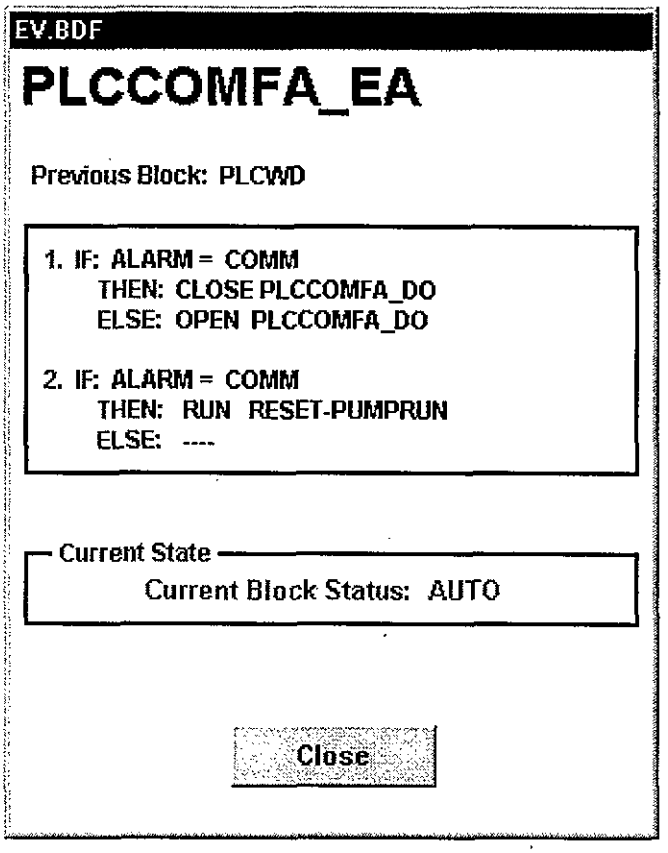
Title:
Tagname: NODE:TAG.A_TAG

Previous Block: NODE:TAG.A_PREV

Logic Statements:
1. IF: NODE:TAG.A_COND0
THEN: NODE:TAG.A_TRU0
ELSE: NODE:TAG.A_FAL0
2. IF: NODE:TAG.A_COND1
THEN: NODE:TAG.A_TRU1
ELSE: NODE:TAG.A_FAL1

Current State:
Block Status: NODE:TAG.A_AUTO

<Close> Button: CLOSEPIC



Screen Filename: PG.bdf (Program Block)
Picture Type: Popup; Title Bar

Picture Dimensions: 3.200" w x 4.250" h
Screen Refresh Rate: 0.8 sec

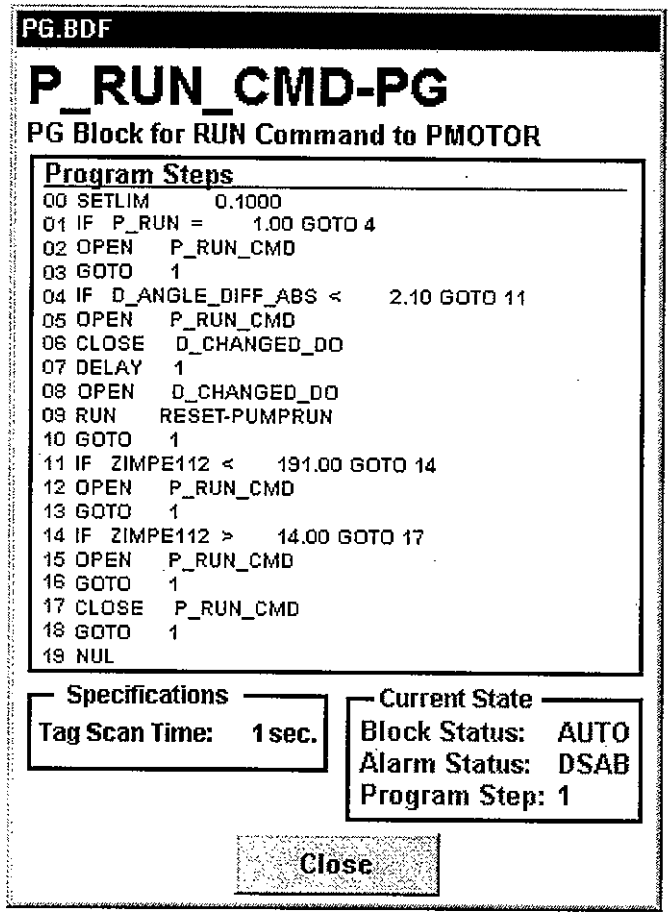
Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Program Steps:
- 00 NODE:TAG.A_STP0
- 01 NODE:TAG.A_STP1
- 02 NODE:TAG.A_STP2
- 03 NODE:TAG.A_STP3
- 04 NODE:TAG.A_STP4
- 05 NODE:TAG.A_STP5
- 06 NODE:TAG.A_STP6
- 07 NODE:TAG.A_STP7
- 08 NODE:TAG.A_STP8
- 09 NODE:TAG.A_STP9
- 10 NODE:TAG.A_STP10
- 11 NODE:TAG.A_STP11
- 12 NODE:TAG.A_STP12
- 13 NODE:TAG.A_STP13
- 14 NODE:TAG.A_STP14
- 15 NODE:TAG.A_STP15
- 16 NODE:TAG.A_STP16
- 17 NODE:TAG.A_STP17
- 18 NODE:TAG.A_STP18
- 19 NODE:TAG.A_STP19

Specifications:
- Tag Scan Time: NODE:TAG.A_SCANT

Current State:
- Block Status: NODE:TAG.A_AUTO
- Alarm Status: NODE:TAG.A_CUALM
- Program Step: NODE:TAG.A_TV1

<Close> Button: CLOSEPIC



Screen Filename: TM.bdf (Timer Block)
Picture Type: Popup; Title Bar

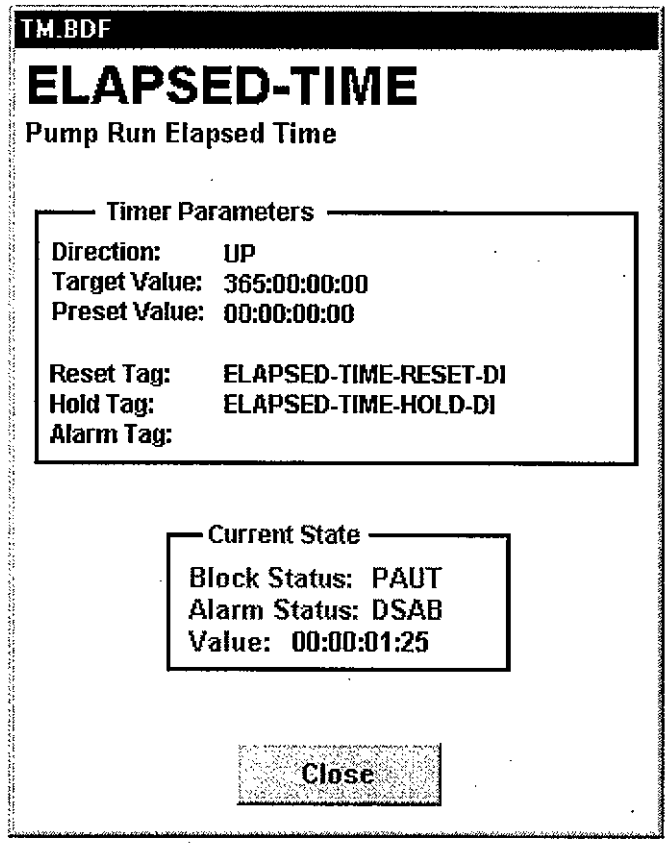
Picture Dimensions: 3.200" w x 3.900" h
Screen Refresh Rate: 0.8 sec

Titles:
- Tagname: NODE:TAG.A_TAG
- Description: NODE:TAG.A_DESC

Timer Parameters:
- Direction: NODE:TAG.A_DIRN
- Target Value: NODE:TAG.A_TV
- Preset Value: NODE:TAG.A_PV
- Reset tag: NODE:TAG.A_RESET
- Hold Tag: NODE:TAG.A_HOLD
- Alarm Tag: NODE:TAG.A_CCALM

Current State:
- Block Status: NODE:TAG.A_AUTO
- Alarm Status: NODE:TAG.A_CUALM
- Value: NODE:TAG.A_CV

<Close> Button: CLOSEPIC



Appendix F - FIX32 "View" Key Macros

Source File: FIX32\PIC\View.kmx

Function Key	Key Macro Description	Programming Statements

F2	Opens the Tag Status Box for Tag Details	IF #F-KEY_BUSY == 0
		#F-KEY_BUSY = 1
		IF #ALARM_SUM_OPEN == 0
		CLOSEPIC MAP
		CLOSEPIC ACTIVEPIC
		OPENPIC ALARMSUM
		ELSE
		#ALARM_SUM_REFRESH = 1
		CLOSEPIC ACTIVEPIC
		ENDIF
		#F-KEY_BUSY = 0
		ENDIF

F4	Opens the Alarm Summary Screen	IF #F-KEY_BUSY == 0
		#F-KEY_BUSY = 1
		IF #ALARM_SUM_OPEN == 0
		CLOSEPIC MAP
		CLOSEPIC ACTIVEPIC
		OPENPIC ALARMSUM
		ELSE
		#ALARM_SUM_REFRESH = 1
		CLOSEPIC ACTIVEPIC
		ENDIF
		#F-KEY_BUSY = 0
		ENDIF

F6	Opens the Previous Screen	IF #F-KEY_BUSY == 0
		#F-KEY_BUSY = 1
		CLOSEPIC MAP
		IF #ALARM_SUM_OPEN == 0
		REPLACEPIC ACTIVEPIC #PREV_PIC
		ELSE
		CLOSEPIC ACTIVEPIC
		ENDIF
		#F-KEY_BUSY = 0
		ENDIF

F8	Opens/Closes Specific Screen HELP Popup	IF #HELP_OPEN == 0 #HELP_OPEN = 1 IF #CURRENT_PIC == "WELCOME" OPENPIC H_WELCOM ENDIF IF #CURRENT_PIC == "ALARMSUM" OPENPIC H_ALMSUM ENDIF IF #CURRENT_PIC == "CSMAIN" OPENPIC H_CSMAIN ENDIF IF #CURRENT_PIC == "HVTALARM" OPENPIC H_HVTALM ENDIF IF #CURRENT_PIC == "PUMPALRM" OPENPIC H_PUMPAL ENDIF IF #CURRENT_PIC == "STRNALM" OPENPIC H_STRNAL ENDIF IF #CURRENT_PIC == "TEMPALM" OPENPIC H_TEMPAL ENDIF IF #CURRENT_PIC == "MANABRT" OPENPIC H_MANABT ENDIF IF #CURRENT_PIC == "MSMAIN" OPENPIC H_MSMAIN ENDIF IF #CURRENT_PIC == "TBSTC" OPENPIC H_TBSTC ENDIF IF #CURRENT_PIC == "MIT17B" OPENPIC H_MIT17B ENDIF IF #CURRENT_PIC == "MIT17C" OPENPIC H_MIT17C ENDIF

Function Key	Key Macro Description	Programming Statements

F8 (cont.)	Opens/Closes Specific Screen HELP Popup	IF #CURRENT_PIC == "PUMP"
		OPENPIC H_PUMP
		ENDIF
		IF #CURRENT_PIC == "GASSUM"
		OPENPIC H_GASSUM
		ENDIF
		IF #CURRENT_PIC == "SUMMARY"
		OPENPIC H_SUMMRY
		ENDIF
		IF #CURRENT_PIC == "TEMPRFL"
		OPENPIC H_TMPRFL
		ENDIF
		IF #CURRENT_PIC == "ROLLOVER"
		OPENPIC H_ROLLOV
		ENDIF
		IF #CURRENT_PIC == "ASMAIN"
		OPENPIC H_ASMAIN
		ENDIF
		IF #CURRENT_PIC == "PUMPOPS"
		OPENPIC H_PUMPOP
		ENDIF
		IF #CURRENT_PIC == "TRENDS"
		OPENPIC H_TRENDS
		ENDIF
		IF #CURRENT_PIC == "DACS"
		OPENPIC H_DACS
		ENDIF
		IF #CURRENT_PIC == "IOSTATUS"
		OPENPIC H_IOSTAT
		ENDIF
		IF #CURRENT_PIC == "ABRTENAB"
		OPENPIC H_ABRTEN
		ENDIF
		IF #CURRENT_PIC == "ABRTCHEK"
		OPENPIC H_ABRTCH
		ENDIF
		IF #CURRENT_PIC == "MININ"
		OPENPIC H_MININ
		ENDIF
		IF #CURRENT_PIC == "TAGSTAT"
		OPENPIC H_TAGSTA
		ENDIF
		IF #CURRENT_PIC == "NETSTAT"
		OPENPIC H_NETSTA
		ENDIF
		IF #CURRENT_PIC == "PUMPRUN"
		OPENPIC H_PMPRUN
		ENDIF
		IF #CURRENT_PIC == "PUMPVIEW"
		OPENPIC H_PMPVEW
		ENDIF
		ELSE
		CLOSEPIC HELPSCREEN
		ENDIF

F12	Silences the Audio Alarm	IF #RSS == 0 DECLARE #UAA_NOW NUMERIC SCRIPT #UAA_NOW = STATION5:ALARM.F_CV SETVAL STATION5:UAA_SILENCE_LEVEL.F_CV #UAA_NOW ENDIF
Ctrl-L	Opens the Login/Logout Choice Screen	IF #MAP_OPEN == 1 CLOSEPIC MAP ENDIF CLOSEPIC LOGCHOIC OPENPIC LOGCHOIC

Ctrl-P	Opens the Print Confirmation Screen	IF #SECURITY_LEVEL >= 1.5
		IF #PRINT_OPEN == 0
		OPENPIC PRINT
		ELSE
		PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
		ENDIF
		ELSE
		PLAYSOUND C:\FIX32\SOUNDS\DONK.WAV
		IF #PRINTWRN_OPEN == 0
		OPENPIC PRINTWRN
		ENDIF
		ENDIF

Appendix G – PLC Configuration

Table G-1. *PLC Configuration Overview*

CONFIGURATION OVERVIEW

PLC :		Size of Full Logic Area	46323
PLC Type	984 - 785E	No. of I/O Map Words	00444
Exec Pack	924	I/O : I/O Type	800-1K
Memory	48/32K	Number of Segments	32
Extended Memory	24K	IO Drops / Channel Pairs	16
Redundant	Y	I/O Modules	60
DCP Drop ID		Specials :	
		Battery Coil	010000
Ranges :		Timer Register	409992
0xxxx	000001 - 010000	Time of Day Clock	409993 - 410000
1xxxx	100001 - 101008		
3xxxx	300001 - 301000		
4xxxx	400001 - 410000	ASCII:	
4xxxx for SFC		Number of Messages	0
	410001 - 410001	Message Area Size	0
		Number of ASCII Ports	0
0xxxx for SFC		Simple ASCII Output	
	010001 - 010032	Simple ASCII Input	

DX Loadable Configuration

DX Memory Used:	840
Total Memory Avail:	46323

Name	Rev	Size	Opcode
HSBY	193	840	ff

Table G-2. *PLC I/O Map*

DROP	RACK	SLOT	MODULE TYPE	Input Reference Nos.	Output Reference Nos.	Data Type	Module Description
1	1	1	984	---	---	---	PLC-785E
		2	984	---	---	---	PLC-785E
		3	S908	---	---	---	REMOTE I/O PROCESSOR
		4	S911	---	---	---	HOT STANDBY PROCESSOR
	2	1	984	---	---	---	PLC-785E
		2	984	---	---	---	PLC-785E
		3	S908	---	---	---	REMOTE I/O PROCESSOR
		4	S911	---	---	---	HOT STANDBY PROCESSOR
2	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B875	300001-300008	---	BIN	ANALG 8 CH IN B875
		5	B875	300009-300016	---	BIN	ANALG 8 CH IN B875
		6	B875	300017-300024	---	BIN	ANALG 8 CH IN B875
	2	3	B827	100001-100032	---	---	32-IN TH B827
		4	B865	300281-300288	---	BCD	REG 8 CH IN B865
4	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B875	300033-300040	---	BIN	ANALG 8 CH IN B875
		5	B827	100161-100192	---	---	32-IN TH B827
		6	B875	300025-300032	---	BIN	ANALG 8 CH IN B875
		7	B883	300264-300266	400596-400598	BIN	BIDIR 3 REG B883
	2	3	B883	300267-300269	400599-400601	BIN	BIDIR 3 REG B883
		4	B883	300276-300278	400091-400093	BIN	BIDIR 3 REG B883
		5	B883	300311-300313	400094-400096	BIN	BIDIR 3 REG B883
		6	B883	300314-300316	400097-400099	BIN	BIDIR 3 REG B883
		7	B883	300326-300328	400602-400604	BIN	BIDIR 3 REG B883
6	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B875	300041-300048	---	BIN	ANALG 8 CH IN B875
		5	B875	300049-300056	---	BIN	ANALG 8 CH IN B875
		6	B875	300057-300064	---	BIN	ANALG 8 CH IN B875
		7	B827	100033-100064	---	---	32-IN TH B827
8	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B875	300065-300072	---	BIN	ANALG 8 CH IN B875
		5	B875	300073-300080	---	BIN	ANALG 8 CH IN B875
		6	B875	300081-300088	---	BIN	ANALG 8 CH IN B875
		7	B875	300089-300096	---	BIN	ANALG 8 CH IN B875
	2	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	B875	300097-300104	---	BIN	ANALG 8 CH IN B875
		4	B827	100065-100096	---	---	32-IN TH B827
		5	B824	---	000001-000016	---	16-OUT TH B824
9	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B875	300105-300112	---	BIN	ANALG 8 CH IN B875
		5	B875	300113-300120	---	BIN	ANALG 8 CH IN B875
		6	B875	300121-300128	---	BIN	ANALG 8 CH IN B875
		7	B875	300129-300136	---	BIN	ANALG 8 CH IN B875
13	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B883	300317-300319	400732-400734	BIN	BIDIR 3 REG B883
		5	B883	300320-300322	400735-400737	BIN	BIDIR 3 REG B883
		6	B883	300323-300325	400738-400740	BIN	BIDIR 3 REG B883
		7	B875	300225-300232	---	BIN	ANALG 8 CH IN B875
		8	B875	300233-300240	---	BIN	ANALG 8 CH IN B875

(cont.)

PLC I/O Map (cont.)

DROP	RACK	SLOT	MODULE TYPE	Input Reference Nos.	Output Reference Nos.	Data Type	Module Description
14	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B875	300161-300168	---	BIN	ANALG 8 CH IN B875
		5	B875	300169-300176	---	BIN	ANALG 8 CH IN B875
		6	B875	300177-300184	---	BIN	ANALG 8 CH IN B875
	2	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	B827	100097-100128	---	---	32-IN TH B827
		4	B824	---	000017-000032	---	16-OUT TH B824
		5	B875	300289-300296	---	BIN	ANALG 8 CH IN B875
		6	B875	300297-300304	---	BIN	ANALG 8 CH IN B875
		7	B885	300258-300263	400580-400585	BIN	BIDIR 6 REG B885
15	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B829	100193-100208	---	---	5V TTL 16-IN B829
		5	B829	100209-100224	---	---	5V TTL 16-IN B829
		6	B828	---	000033-000048	---	5V TTL 16-OUT B828
		7	B885	300305-300310	400187-400192	BIN	BIDIR 6 REG B885
16	1	1	P810	---	---	---	POWERSUPPLY
		2	P810	---	---	---	POWERSUPPLY
		3	J890	---	---	---	REMOTE I/O
		4	B875	300185-300192	---	BIN	ANALG 8 CH IN B875
		5	B875	300193-300200	---	BIN	ANALG 8 CH IN B875
		6	B875	300201-300208	---	BIN	ANALG 8 CH IN B875
		7	B875	300209-300216	---	BIN	ANALG 8 CH IN B875
		8	B875	300217-300224	---	BIN	ANALG 8 CH IN B875

Table G-3. *Symbol Table for DACS Ladder Logic Software, PLC v. 3.06*

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
000001		8.2.5.1	B824 OUTPUT
000002		8.2.5.2	
000003		8.2.5.3	
000004		8.2.5.4	
000005		8.2.5.5	UNUSED
000006		8.2.5.6	
000007		8.2.5.7	
000008		8.2.5.8	
000009		8.2.5.9	
000010		8.2.5.10	
000011		8.2.5.11	
000012		8.2.5.12	
000013		8.2.5.13	
000014		8.2.5.14	
000015		8.2.5.15	
000016		8.2.5.16	
000017	POWON1	14.2.4.1	TAPES POWER ON (B824) (unused)
000018	STREC1	14.2.4.2	TAPES START/RECORD (unused)
000019	STOP1	14.2.4.3	TAPES STOP (unused)
000020	WDTBAD	14.2.4.4	GENESIS-PLC COMMUNICATION FAIL
000021	ABRTCOILF	14.2.4.5	COIL FOR ABORT - NEGATIVE LOGIC
000022	ABORT_POSF	14.2.4.6	ABORT COIL - POSITIVE LOGIC
000023	NICTRIG	14.2.4.7	NICOLET STRAIN TRIGGER OUTPUT
000024	AMESABRT	14.2.4.8	AMES EQUIP SHUT-OFF NEG LOGIC
000025	ST8COMFAF	14.2.4.9	ST8-PLC COMMUNICATION FAIL
000026		14.2.4.10	
000027		14.2.4.11	
000028		14.2.4.12	
000029		14.2.4.13	
000030		14.2.4.14	
000031		14.2.4.15	
000032		14.2.4.16	
000033	STRNABRT	15.1.6.1	HIGH FREQ STRN ABORT-B828 5V TTL
000034		15.1.6.2	
000035		15.1.6.3	
000036		15.1.6.4	
000037		15.1.6.5	
000038		15.1.6.6	
000039		15.1.6.7	
000040		15.1.6.8	
000041		15.1.6.9	
000042		15.1.6.10	
000043		15.1.6.11	
000044		15.1.6.12	
000045		15.1.6.13	
000046		15.1.6.14	
000047		15.1.6.15	
000048		15.1.6.16	
000049			
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Register Number	Symbol	Drop.Rack. Slot.Chan	Description
000074			
000075			
000076			
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000093			
000094			
000095			
000096			
000097	SCANTOGGLE		COIL FOR MEASUREING SCAN TIME
000098	SCANENAB		COIL TO ENABLE SCAN TIME MEASUREMENT
000099	SCANSDONE		1000 SCANS COMPLETE
000100	SCANSEC		1 SECOND ELAPSED
000101			
000102			
000103			
000104			
000105			
000106			
000107	RG_OKSEND		
000108	RG_ABERROR		
000109	RG_NOTSTAT		
000110	RG_CUE		
000111	RG_ERROR		
000112	RG_PROG		
000113	RG_STAT1		PORT A INPUT BUSY
000114	RG_STAT2		PORT A OUTPUT BUSY
000115	RG_STAT3		PORT B INPUT BUSY
000116	RG_STAT4		PORT B OUTPUT BUSY
000117	RG_STAT5		ASCII/BASIC RUNNING (PC COMMAND)
000118	RG_STAT6		BASIC RUNNING (SCHED COMMAND)
000119	RG_STAT7		CUE/ERROR IN RUNNING ACTIVITY
000120	RG_STAT8		SCHEDULER PENDING
000121	RG_SND8		USER FLAG 8
000122	RG_SND7		USER FLAG 7
000123	RG_SND6		USER FLAG 6
000124	RG_SND5		USER FLAG 5
000125	RG_SND4		USER FLAG 4
000126	RG_SND3		USER FLAG 3
000127	RG_SND2		USER FLAG 2
000128	RG_SND1		USER FLAG 1
000129	RG_SEQ1		
000130	RG_SEQ2		
000131	RG_SEQ3		
000132	RG_SEQ4		
000133	RG_SEQ5		
000134	RG_SEQ6		
000135	RG_SEQ7		
000136	RG_SEQ8		
000137	RG_SEQ9		
000138	RG_SEQ10		
000139	RG_SEQ11		
000140	RG_SEQ12		
000141	RG_SEQ13		
000142	RG_SEQ14		
000143	RG_SEQ15		
000144	RG_SEQ16		
000145	RG_NSEQ1		
000146	RG_NSEQ2		
000147	RG_NSEQ3		
000148	RG_NSEQ4		
000149	RG_NSEQ5		
000150	RG_NSEQ6		
000151	RG_NSEQ7		
000152	RG_NSEQ8		

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
000153	RG_NSEQ9			
000154	RG_NSEQ10			
000155	RG_NSEQ11			
000156	RG_NSEQ12			
000157	RG_NSEQ13			
000158	RG_NSEQ14			
000159	RG_NSEQ15			
000160	RG_NSEQ16			
000161	RG_BASICRN			
000162	RG_IDLE			
000163	RG_NOTFRST			
000164	RG_TRESET			
000165				
000166	PLSDONE			
000167	HF_ALM			
000168	SIMOK		OK TO ENTER DMOTOR SIMULATION MODE (NO ZIMPE112)	
000169	FLOWABPOS		HI STRAIN FLOW METER CUT-OFF POS LOGIC	
000170	COPYENAB		ENABLE COPY OF CHS TO GENESIS I/O REGION	
000171	NOSIM		ENABLE DMOTOR SIMULATION MODE (0=ENABLED)	
000172	NEXTDEG		INCREMENT DMOTOR SIMULATION POSITION	
000173	STARTPUL		DMOTOR START PULSE	
000174	STOPPUL		DMOTOR STOP PULSE	
000175	TOOFAST		DMOTOR SIMULATOR SPEED > SETPOINT SPEED	
000176	INCSPD		INCREMENT SIMULATED SPEED	
000177	SPDZERO		SIMULATED SPEED IS ZERO	
000178	UP100		100 SECONDS ARE UP	
000179	ATSPEED		DMOTOR SIMULATOR SPEED = SETPOINT SPEED	
000180	TIMEOUT		100 SECOND TIMER TIMEOUT	
000181	REGTIMER		USE REGULAR TIMER	
000182	DATSPD		DMOTOR SIMULATOR AT SPEED	
000183	TOOSLOW		DMOTOR SIMULATOR SPEED < SETPOINT SPEED	
000184	ZIMPE143C		PUMP OSCIL MOTOR LIMIT SWITCH CW	
000185	ZIMPE144C		PUMP OSCIL MOTOR LIMIT SWITCH CCW	
000186	CLRPTR1		Clear TC pointers	
000187	CLRPTR2		Clear TC pointers	
000188	CLRPTR3		CLear TC pointers	
000189	CLRPTR4		Clear TC pointers	
000190	CLRPTR5		Clear TC pointers	
000191	CLRPTR6		Clear TC pointers	
000192	CLRPTR7		Clear TC pointers	
000193	PMCLIMSW			
000194	CLRPTR8		Clear TC pointers	
000195	CLRPTR9		Clear TC pointers	
000196	TC7ECHO_OK		TC7 COMMAND ECHO OK	G7C13.7
000197	TC7CFGDONE		TC7 CONFIGURATION DONE	G7C13.8
000198	TC7ENRL		TC7 ENABLE READ LOGIC	G7C13.9
000199	TC7RTERR		TC7 RUNTIME ERROR	G7C13.10
000200			UNUSED	
000201	TC7DRERR		TC7 DATA READ ERROR	G7C13.12
000202	TC7DOK		TC7 DATA OK	G7C13.13
000203	TC7CMDSENT		TC7 COMMAND SENT	G7C13.14
000204	TC8OK		TC8 MODULE OK	G7C13.15
000205	TC8ECHO_OK		TC8 COMMAND ECHO OK	G7C13.16
000206	TC8CFGDONE		TC8 CONFIGURATION DONE	G7C14.1
000207	TC8ENRL		TC8 ENABLE READ LOGIC	G7C14.2
000208	TC8RTERR		TC8 RUNTIME ERROR	G7C14.3
000209			UNUSED	
000210	WFF17C1L		L STR GAUGE 17C-1 HIGH FREQ ALARM	
000211	WFF14A3L		UNUSED	
000212	WFF1B1L		L STR GAUGE 1B-1 HIGH FREQ ALARM	
000213	WDTRESET		WATCH DOG TIMER FROM GENESIS	H1C0
000214	WFF1B3L		L STR GAUGE 1B-3 HIGH FREQ ALARM	H1C1
000215			UNUSED	H1C2
000216	PLCBENF		LATCHED BUMP ENABLE	H1C3
000217	NOZERO		Disallows test timout when time cleared	H1C4
000218	WFF17C2L		L STR GAUGE 17C-2 HIGH FREQ ALARM	H1C5
000219	WFF1B2L		L STR GAUGE 1B-2 HIGH FREQ ALARM	H1C6
000220	PLCWDF		PLC 1 SEC WATCHDOG TIMER RESET	G7C0.1
000221				G7C0.2
000222				G7C0.3
000223	T1OUT		PLC WD TIMER 1 OUTPUT	G7C0.4
000224	PLABORT		ABORT POSITIVE LOGIC	G7C0.5
000225	H2ABRT		HIGH H2 ABORT	G7C0.6
000226				G7C0.7
000227	HTEMPABRT		HIGH TEMPERATURE ABORT	G7C0.8
000228	PUMPABRT		PUMP PROBLEM ABORT	G7C0.9
000229	DOMEABRT		HIGH DOME PRESSURE ABORT	G7C0.10
000230				G7C0.11
000231	STRABRT		STRAIN ABORT	G7C0.12

Register Number	Symbol	Drop.Rack. Slot.Chan	Description		
000232	HTEMP2ABRT		HIGH TEMP ABORT 2		G7C0.13
000233	T2OUT		PLC WD TIMER 2 OUTPUT		G7C0.14
000234					G7C0.15
000235					G7C0.16
000236	TC7CFGERR		TC7 CONFIGURATION ERROR		G7C1.1
000237					G7C1.2
000238	THRES_RLY		COIL FOR THRESHOLD		G7C1.3
000239					G7C1.4
000240					G7C1.5
000241	RSTCOIL			G3C0	G7C1.6
000242	ST8WDRES		ST8 WATCHDOG TIMER RESET	G3C1	G7C1.7
000243	PBUMPTOUT		PUMP BUMP TIMEOUT ABORT	G3C2	G7C1.8
000244	REVERSE		DMOTOR IN REVERSE	G3C3	G7C1.9
000245			UNUSED	G3C4	G7C1.10
000246	WHF17C1BC		STR GAUGE 17C-1 HI FREQ ABORT	G3C5	G7C1.11
000247	WHF1B1BC		STR GAUGE 1B-1 HI FREQ ABORT	G3C6	G7C1.12
000248			UNUSED	G3C7	G7C1.13
000249	BUMPENAB		BUMP ENABLE	G3C8	G7C1.14
000250	COMABRT		PLC COMM FAILURE	G3C9	G7C1.15
000251	A5ABRT		AF5000 ABORT	G3C10	G7C1.16
000252	WHF17C2BC		STR GAUGE 17C-2 HI FREQ ABORT	G3C11	G7C2.1
000253	WHF1B2BC		STR GAUGE 1B-2 HI FREQ ABORT	G3C12	G7C2.2
000254	WHF1B3BC		STR GAUGE 1B-3 HI FREQ ABORT	G3C13	G7C2.3
000255	MIP00001C		MOISTURE IN PUMP MOTOR OIL 1	G3C14	G7C2.4
000256	WLR12A01		LOW 12A-1 STRAIN ABORT	G3C15	G7C2.5
000257	NCTKSY06		HIGH H2 - VENT HEADER ABORT		G7C2.6
000258	NCTJSY06		HIGH H2 - RISER 16A ABORT		G7C2.7
000259	NCR17B01		HIGH H2 - RISER 17B ABORT		G7C2.8
000260	NCR05A01		HIGH H2 ABORT - PUMP		G7C2.9
000261			UNUSED		G7C2.10
000262	WLR12A02		LOW 12A-2 STRAIN ABORT		G7C2.11
000263	WLR12A03		LOW 12A-3 STRAIN ABORT		G7C2.12
000264					G7C2.13
000265					G7C2.14
000266					G7C2.15
000267					G7C2.16
000268					G7C3.1
000269					G7C3.2
000270					G7C3.3
000271					G7C3.4
000272					G7C3.5
000273					G7C3.6
000274					G7C3.7
000275					G7C3.8
000276					G7C3.9
000277					G7C3.10
000278	TCR17B01		HIGH TEMP ABORT 17B01		G7C3.11
000279	TCR17B02		HIGH TEMP ABORT 17B02		G7C3.12
000280	TCR17B03		HIGH TEMP ABORT 17B03		G7C3.13
000281	TCR17B04		HIGH TEMP ABORT 17B04		G7C3.14
000282	TCR17B05		HIGH TEMP ABORT 17B05		G7C3.15
000283	TCR17B06		HIGH TEMP ABORT 17B06		G7C3.16
000284	TCR17B07		HIGH TEMP ABORT 17B07		G7C4.1
000285	TCR17B08		HIGH TEMP ABORT 17B08		G7C4.2
000286	TCR17B09		HIGH TEMP ABORT 17B09		G7C4.3
000287	TCR17B10		HIGH TEMP ABORT 17B10		G7C4.4
000288	TCR17B11		HIGH TEMP ABORT 17B11		G7C4.5
000289	TCR17B12		HIGH TEMP ABORT 17B12		G7C4.6
000290	TCR17B13		HIGH TEMP ABORT 17B13		G7C4.7
000291	TCR17B14		HIGH TEMP ABORT 17B14		G7C4.8
000292	TCR17B15		HIGH TEMP ABORT 17B15		G7C4.9
000293	TCR17B16		HIGH TEMP ABORT 17B16		G7C4.10
000294	TCR17B17		HIGH TEMP ABORT 17B17		G7C4.11
000295	TCR17B18		HIGH TEMP ABORT 17B18		G7C4.12
000296	TCR17B19		HIGH TEMP ABORT 17B19		G7C4.13
000297	TCR17B20		HIGH TEMP ABORT 17B20		G7C4.14
000298	TCR17B21		HIGH TEMP ABORT 17B21		G7C4.15
000299	TCR17B22		HIGH TEMP ABORT 17B22		G7C4.16
000300			UNUSED		G7C5.1
000301			UNUSED		G7C5.2
000302			UNUSED		G7C5.3
000303			UNUSED		G7C5.4
000304			UNUSED		G7C5.5
000305					G7C5.6
000306	TCR12A01		HIGH PUMP MOTOR OIL TEMP ABORT 1		G7C5.7
000307	TCR12A02		HIGH PUMP MOTOR OIL TEMP ABORT 2		G7C5.8
000308	FCE50001		LOW VENTILATION FLOW ABORT 1		G7C5.9
000309	FCE50002		LOW VENTILATION FLOW ABORT 2		G7C5.10
000310	PCR17C01		HIGH TANK DOME PRESSURE ABORT 1		G7C5.11

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
000311	PCR17B04		HIGH TANK DOME PRESSURE ABORT 2	G7C5.12
000312				G7C5.13
000313	WCR12A01		HIGH PUMP COLUMN STRAIN ABORT 1	G7C5.14
000314	WCR12A02		HIGH PUMP COLUMN STRAIN ABORT 2	G7C5.15
000315	WCR12A03		HIGH PUMP COLUMN STRAIN ABORT 3	G7C5.16
000316	WCR12A04		HIGH PUMP COLUMN STRAIN ABORT 4	G7C6.1
000317				G7C6.2
000318			UNUSED	G7C6.3
000319			UNUSED	G7C6.4
000320	WCR1BA01		HIGH VDTT COLUMN 1B STRAIN ABORT 1	G7C6.5
000321	WCR1BA03		HIGH VDTT COLUMN 1B STRAIN ABORT 2	G7C6.6
000322				G7C6.7
000323	WCR17C01		HIGH MIT 17C COLUMN STRAIN ABORT 1	G7C6.8
000324	WCR17C02		HIGH MIT 17C COLUMN STRAIN ABORT 2	G7C6.9
000325	VC232040		HIGH PUMP MOTOR CURRENT ABORT	G7C6.10
000326	VC232050		HIGH PUMP MOTOR SPEED ABORT	G7C6.11
000327				G7C6.12
000328				G7C6.13
000329				G7C6.14
000330				G7C6.15
000331	WLR12A04		LOW 12A-4 STRAIN ABORT	G7C6.16
000332			UNUSED	G7C7.1
000333			UNUSED	G7C7.2
000334	WLR1BA01		LOW 1B-1 STRAIN ABORT	G7C7.3
000335	WLR1BA02		LOW 1B-2 STRAIN ABORT	G7C7.4
000336	WLR1BA03		LOW 1B-3 STRAIN ABORT	G7C7.5
000337	WCR1BA02		HIGH 1B-2 STRAIN ABORT	G7C7.6
000338				G7C7.7
000339	WLR17C01		LOW 17C-1 STRAIN ABORT	G7C7.8
000340	WLR17C02		LOW 17C-2 STRAIN ABORT	G7C7.9
000341	ZLMPE142		LOW PUMP COLUMN GAS PRESSURE ABORT	G7C7.10
000342	FHE50001		HIGH VENT FLOW ABORT 1	G7C7.11
000343	FHE50002		HIGH VENT FLOW ABORT 2	G7C7.12
000344	PLC1ON			G7C7.13
000345	PLC2ON			G7C7.14
000346	PLCOKF		1-PLC OK; 0-PLC PROBLEM	G7C7.15
000347	ZRMPE142		INSTRUMENT PROBLEM - ZIMPE142	G7C7.16
000348				G7C8.1
000349				G7C8.2
000350				G7C8.3
000351				G7C8.4
000352				G7C8.5
000353				G7C8.6
000354				G7C8.7
000355				G7C8.8
000356				G7C8.9
000357				G7C8.10
000358				G7C8.11
000359				G7C8.12
000360				G7C8.13
000361				G7C8.14
000362				G7C8.15
000363				G7C8.16
000364				G7C9.1
000365				G7C9.2
000366				G7C9.3
000367				G7C9.4
000368				G7C9.5
000369				G7C9.6
000370				G7C9.7
000371				G7C9.8
000372	OUTOFRNG		OUT OF RANGE FOR 0-5V CHANNELS	G7C9.9
000373	ARMGRNGE		ARM GAMMA EXPONENT (ARMGEXP) OUT-OF-RNGE	G7C9.10
000374	GC3_OKSEND			G7C9.11
000375	GC3_BASERR			G7C9.12
000376	GC3_NOTSTA			G7C9.13
000377	GC3_CUE			G7C9.14
000378	GC3_ERROR			G7C9.15
000379	GC3_PROG			G7C9.16
000380	GC3_BASICR			G7C10.1
000381	GC3_IDLE			G7C10.2
000382	GC3_NOTFRS			G7C10.3
000383	GC3_TRESET			G7C10.4
000384	GC3_CHECK			G7C10.5
000385	GC3_NSEQ1			G7C10.6
000386	GC3_NSEQ2			G7C10.7
000387	GC3_NSEQ3			G7C10.8
000388	GC3_NSEQ4			G7C10.9
000389	GC3_NSEQ5			G7C10.10

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
000390	GC3_NSEQ6			G7C10.11
000391	GC3_NSEQ7			G7C10.12
000392	GC3_NSEQ8			G7C10.13
000393	GC3_NSEQ9			G7C10.14
000394	GC3_NSEQ10			G7C10.15
000395	GC3_NSEQ11			G7C10.16
000396	GC3_NSEQ12			G7C11.1
000397	GC3_NSEQ13			G7C11.2
000398	GC3_NSEQ14			G7C11.3
000399	GC3_NSEQ15			G7C11.4
000400	GC3_NSEQ16			G7C11.5
000401	GC3_SEQ1			G7C11.6
000402	GC3_SEQ2			G7C11.7
000403	GC3_SEQ3			G7C11.8
000404	GC3_SEQ4			G7C11.9
000405	GC3_SEQ5			G7C11.10
000406	GC3_SEQ6			G7C11.11
000407	GC3_SEQ7			G7C11.12
000408	GC3_SEQ8			G7C11.13
000409	GC3_SEQ9			G7C11.14
000410	GC3_SEQ10			G7C11.15
000411	GC3_SEQ11			G7C11.16
000412	GC3_SEQ12			G7C12.1
000413	GC3_SEQ13			G7C12.2
000414	GC3_SEQ14			G7C12.3
000415	GC3_SEQ15			G7C12.4
000416	GC3_SEQ16			G7C12.5
000417	GC3_STAT1			G7C12.6
000418	GC3_STAT2			G7C12.7
000419	GC3_STAT3			G7C12.8
000420	GC3_STAT4			G7C12.9
000421	GC3_STAT5			G7C12.10
000422	GC3_STAT6			G7C12.11
000423	GC3_STAT7			G7C12.12
000424	GC3_STAT8			G7C12.13
000425	GC3_SND8			G7C12.14
000426	GC3_SND7			G7C12.15
000427	GC3_SND6			G7C12.16
000428	GC3_SND5			G7C13.1
000429	GC3_SND4			G7C13.2
000430	GC3_SND3			G7C13.3
000431	GC3_SND2			G7C13.4
000432	GC3_SND1			G7C13.5
000433	PRR12A01		INSTRUMENT PROBLEM - PIR12A01	G7C13.6
000434	TC1ECHO_OK		TC1 COMMAND ECHO OK	G7C13.7
000435	TC1CFGDONE		TC1 CONFIGURATION DONE	G7C13.8
000436	TC1ENRL		TC1 ENABLE READ LOGIC	G7C13.9
000437	TC1RTERR		TC1 RUNTIME ERROR	G7C13.10
000438	TC1CFGERR		TC1 CONFIGURATION ERROR	G7C13.11
000439	TC1DRERR		TC1 DATA READ ERROR	G7C13.12
000440	TC1DOK		TC1 DATA OK	G7C13.13
000441	TC1CMDSENT		TC1 COMMAND SENT	G7C13.14
000442	TC2OK		TC2 MODULE OK	G7C13.15
000443	TC2ECHO_OK		TC2 COMMAND ECHO OK	G7C13.16
000444	TC2CFGDONE		TC2 CONFIGURATION DONE	G7C14.1
000445	TC2ENRL		TC2 ENABLE READ LOGIC	G7C14.2
000446	TC2RTERR		TC2 RUNTIME ERROR	G7C14.3
000447	TC2CFGERR		TC2 CONFIGURATION ERROR	G7C14.4
000448	TC2DRERR		TC2 DATA READ ERROR	G7C14.5
000449	TC2DOK		TC2 DATA OK	G7C14.6
000450	TC2CMDSENT		TC2 COMMAND SENT	G7C14.7
000451	TC3OK		TC3 MODULE OK	G7C14.8
000452	TC3ECHO_OK		TC3 COMMAND ECHO OK	G7C14.9
000453	TC3CFGDONE		TC3 CONFIGURATION DONE	G7C14.10
000454	TC3ENRL		TC3 ENABLE READ LOGIC	G7C14.11
000455	TC3RTERR		TC3 RUNTIME ERROR	G7C14.12
000456	TC3CFGERR		TC3 CONFIGURATION ERROR	G7C14.13
000457	TC3DRERR		TC3 DATA READ ERROR	G7C14.14
000458	TC3DOK		TC3 DATA OK	G7C14.15
000459	TC3CMDSENT		TC3 COMMAND SENT	G7C14.16
000460	TCSETUPDON		TC TABLE SETUP DONE	G7C15.1
000461	TC1OK		TC1 MODULE OK	G7C15.2
000462	TC4OK		TC4 MODULE OK	G7C15.3
000463	TC4ECHO_OK		TC4 COMMAND ECHO OK	G7C15.4
000464	TC4CFGDONE		TC4 CONFIGURATION DONE	G7C15.5
000465	TC4ENRL		TC4 ENABLE READ LOGIC	G7C15.6
000466	TC4RTERR		TC4 RUNTIME ERROR	G7C15.7
000467	TC4CFGERR		TC4 CONFIGURATION ERROR	G7C15.8
000468	TC4DRERR		TC4 DATA READ ERROR	G7C15.9

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
000469	TC4DOK		TC4 DATA OK	G7C15.10
000470	TC4CMDSENT		TC4 COMMAND SENT	G7C15.11
000471	TC5OK		TC5 MODULE OK	G7C15.12
000472	TC5ECHO_OK		TC5 COMMAND ECHO OK	G7C15.13
000473	TC5CFGDONE		TC5 CONFIGURATION DONE	G7C15.14
000474	TC5ENRL		TC5 ENABLE READ LOGIC	G7C15.15
000475	TC5RTERR		TC5 RUNTIME ERROR	G7C15.16
000476	TC5CFGERR		TC5 CONFIGURATION ERROR	G6C0.1
000477	TC5DRERR		TC5 DATA READ ERROR	G6C0.2
000478	TC5DOK		TC5 DATA OK	G6C0.3
000479	TC5CMDSENT		TC5 COMMAND SENT	G6C0.4
000480	TC6OK		TC6 MODULE OK	G6C0.5
000481	TC6ECHO_OK		TC6 COMMAND ECHO OK	G6C0.6
000482	TC6CFGDONE		TC6 CONFIGURATION DONE	G6C0.7
000483	TC6ENRL		TC6 ENABLE READ LOGIC	G6C0.8
000484	TC6RTERR		TC6 RUNTIME ERROR	G6C0.9
000485	TC6CFGERR		TC6 CONFIGURATION ERROR	G6C0.10
000486	TC6DRERR		TC6 DATA READ ERROR	G6C0.11
000487	TC6DOK		TC6 DATA OK	G6C0.12
000488	TC6CMDSENT		TC6 COMMAND SENT	G6C0.13
000489	TCSETUPDN2		TC GROUP 2 TABLE SETUP DONE	G6C0.14
000490	COMABRTEN		COM ABORT ANDED WITH TEST ENABLES	G6C0.15
000491	AF5ABRTEN		AF5000 PROBLM ABRT ANDED W/ TEST ENABLES	G6C0.16
000492	H1B1SAL		HIGH 1B-1 STRAIN ALARM	G6C1.1
000493	L1B1SAL		LOW 1B-1 STRAIN ALARM	G6C1.2
000494	H1B2SAL		HIGH 1B-2 STRAIN ALARM	G6C1.3
000495	L1B2SAL		LOW 1B-2 STRAIN ALARM	G6C1.4
000496	H1B3SAL		HIGH 1B-3 STRAIN ALARM	G6C1.5
000497	L1B3SAL		LOW 1B-3 STRAIN ALARM	G6C1.6
000498	H12A1SAL		HIGH 12A-1 STRAIN ALARM	G6C1.7
000499	L12A1SAL		LOW 12A-1 STRAIN ALARM	G6C1.8
000500	H12A2SAL		HIGH 12A-2 STRAIN ALARM	G6C1.9
000501	L12A2SAL		LOW 12A-2 STRAIN ALARM	G6C1.10
000502	H12A3SAL		HIGH 12A-3 STRAIN ALARM	G6C1.11
000503	L12A3SAL		LOW 12A-3 STRAIN ALARM	G6C1.12
000504	H12A4SAL		HIGH 12A-4 STRAIN ALARM	G6C1.13
000505	L12A4SAL		LOW 12A-4 STRAIN ALARM	G6C1.14
000506			UNUSED	G6C1.15
000507			UNUSED	G6C1.16
000508			UNUSED	G6C2.1
000509			UNUSED	G6C2.2
000510	H17C1SAL		HIGH 17C-1 STRAIN ALARM	G6C2.3
000511	L17C1SAL		LOW 17C-1 STRAIN ALARM	G6C2.4
000512	H17C2SAL		HIGH 17C-2 STRAIN ALARM	G6C2.5
000513	L17C2SAL		LOW 17C-2 STRAIN ALARM	G6C2.6
000514	LFSAL		LOW FREQUENCY STRAIN ALARM	G6C2.7
000515	NZR17B01		OUT OF RANGE BIT	G6C2.8
000516	NZTJSY06		OUT OF RANGE BIT	G6C2.9
000517	NZR05A01		OUT OF RANGE BIT	G6C2.10
000518	NZTKSY06		OUT OF RANGE BIT	G6C2.11
000519				G6C2.12
000520				G6C2.13
000521				G6C2.14
000522				G6C2.15
000523				G6C2.16
000524				G6C3.1
000525				G6C3.2
000526				G6C3.3
000527				G6C3.4
000528				G6C3.5
000529				G6C3.6
000530				G6C3.7
000531				G6C3.8
000532				G6C3.9
000533				G6C3.10
000534				G6C3.11
000535				G6C3.12
000536				G6C3.13
000537				G6C3.14
000538				G6C3.15
000539				G6C3.16
000540				G6C4.1
000541	TZPNO102		OUT OF RANGE BIT	G6C4.2
000542	TZPNO202		OUT OF RANGE BIT	G6C4.3
000543	TZPNO101		OUT OF RANGE BIT	G6C4.4
000544	TZPNO201		OUT OF RANGE BIT	G6C4.5
000545	TZR12A01		OUT OF RANGE BIT	G6C4.6
000546	PZR12A01		OUT OF RANGE BIT	G6C4.7
000547	TZR12A02		OUT OF RANGE BIT	G6C4.8

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
000548	PZR17B04		OUT OF RANGE BIT	G6C4.9
000549	WZR12A02		OUT OF RANGE BIT	G6C4.10
000550	FZE50001		OUT OF RANGE BIT	G6C4.11
000551	FZE50002		OUT OF RANGE BIT	G6C4.12
000552	PZR17C01		OUT OF RANGE BIT	G6C4.13
000553	WZR12A01		OUT OF RANGE BIT	G6C4.14
000554	WZR12A03		OUT OF RANGE BIT	G6C4.15
000555	FZE50003		OUT OF RANGE BIT	G6C4.16
000556	WZR12A04		OUT OF RANGE BIT	G6C5.1
000557	LZR01A		OUT OF RANGE BIT	G6C5.2
000558	WZR1BA01		OUT OF RANGE BIT	G6C5.3
000559	WZR17C02		OUT OF RANGE BIT	G6C5.4
000560	WZR1BA03		OUT OF RANGE BIT	G6C5.5
000561	WZR17C01		OUT OF RANGE BIT	G6C5.6
000562	WZR1BA02		OUT OF RANGE BIT	G6C5.7
000563	ZZMPE142		OUT OF RANGE BIT	G6C5.8
000564	LZR01C		OUT OF RANGE BIT	G6C5.9
000565	TC8CFGERR		TC8 CONFIGURATION ERROR	G7C14.4
000566	TC8DRERR		TC8 DATA READ ERROR	G7C14.5
000567	TC8DOK		TC8 DATA OK	G7C14.6
000568	TC8CMDSENT		TC8 COMMAND SENT	G7C14.7
000569	TC9OK		TC9 MODULE OK	G7C14.8
000570	TC9ECHO_OK		TC9 COMMAND ECHO OK	G7C14.9
000571	TC9CFGDONE		TC9 CONFIGURATION DONE	G7C14.10
000572	TC9ENRL		TC9 ENABLE READ LOGIC	G7C14.11
000573	TC9RTERR		TC9 RUNTIME ERROR	G7C14.12
000574	TC9CFGERR		TC9 CONFIGURATION ERROR	G7C14.13
000575	TC9DRERR		TC9 DATA READ ERROR	G7C14.14
000576	TC9DOK		TC9 DATA OK	G7C14.15
000577	TC9CMDSENT		TC9 COMMAND SENT	G7C14.16
000578	TCCSETUPDN		TC TABLE SETUP DONE	G7C15.1
000579	TC7OK		TC7 MODULE OK	G7C15.2
002001			UNUSED	G2C0.1
002002			UNUSED	G2C0.2
002003	WHF17C1U		STR GAUGE 17C-1 HIGH FREQ ALARM	G2C0.3
002004	WHF17C1B		STR GAUGE 17C-1 HIGH FREQ ABORT	G2C0.4
002005	WHF1B1U		STR GAUGE 1B-1 HIGH FREQ ALARM	G2C0.5
002006	WHF1B1B		STR GAUGE 1B-1 HIGH FREQ ABORT	G2C0.6
002007	WHF1B3U		STR GAUGE 1B-3 HIGH FREQ ALARM	G2C0.7
002008			UNUSED	G2C0.8
002009			UNUSED	G2C0.9
002010	WHF17C2U		STR GAUGE 17C-2 HIGH FREQ ALARM	G2C0.10
002011	WHF17C2B		STR GAUGE 17C-2 HIGH FREQ ABORT	G2C0.11
002012	WHF1B2U		STR GAUGE 1B-2 HIGH FREQ ALARM	G2C0.12
002013	WHF1B2B		STR GAUGE 1B-2 HIGH FREQ ABORT	G2C0.13
002014	WHF1B3B		STR GAUGE 1B-3 HIGH FREQ ABORT	G2C0.14
002015	ZIMPE144		PUMP OSCIL MOTOR LIMIT SWITCH CCW	G2C0.15
002016	ZIMPE143		PUMP OSCIL MOTOR LIMIT SWITCH CW	G2C0.16
002017	MIP00001		MOISTURE IN PUMP MOTOR OIL 1	G2C1.1
002018	UPSOT1		UPS OVER TEMP CLOSURE	G2C1.2
002019	UPSLV1		UPS LOW VOLTAGE	G2C1.3
002020	UPSBY1		UPS SYSTEM ON BYPASS ALARM	G2C1.4
002021	UPSFA1		UPS OUTPUT FAIL ALARM	G2C1.5
002022	PWYO1001		CAMERA POWER ON	G2C1.6
002023	PXO10001		LOSS OF CAMERA PURGE	G2C1.7
002024	UPSPI1		UPS AC POWER INPUT	G2C1.8
002025	ARMABORT		HMT ABORT GAMMA RADIATION	G2C1.9
002026	ARMALM		HMT ALARM GAMMA RADIATION	G2C1.10
002027	ARMFAIL		ARM INSTRUMENT FAILURE	G2C1.11
002028	FICABORT		FIC TANK LEVEL ALARM	G2C1.12
002029	BYJYSO18		CABINET TROUBLE RISER 16A SHMS 1	G2C1.13
002030	BYKSYO18		CABINET TROUBLE EXH HEADER #2	G2C1.14
002031	FSLMSY18		FTIR CLG WATER LOW FLOW SWITCH	G2C1.15
002032	TASLMSY2		SAMPLE TRACE HEAT ALARM LOW	G2C1.16
002033	PITMSY19		FTIR PURGE/AIR BEARING PRESSURE	G2C2.1
002034	PMPINRUN		PUMP MOTOR RUNNING INDICATOR	G2C2.2
002035			UNUSED	G2C2.3
002036	WHF17C1L		L STR GAUGE 17C-1 HIGH FREQ ALARM	G2C2.4
002037	WHF1B1L		L STR GAUGE 1B-1 HIGH FREQ ALARM	G2C2.5
002038	WHF1B3L		L STR GAUGE 1B-3 HIGH FREQ ALARM	G2C2.6
002039			UNUSED	G2C2.7
002040	WHF17C2L		L STR GAUGE 17C-2 HIGH FREQ ALARM	G2C2.8
002041	WHF1B2L		L STR GAUGE 1B-2 HIGH FREQ ALARM	G2C2.9
002042	ABRT_POS		COIL FOR ABORT - POSITIVE LOGIC	G2C2.10
002043	PLCBEN		LATCHED BUMP ENABLE	G2C2.11
002044	PLCWD		PLC 1 sec watchdog reset	G2C2.12
002045	ST8COMFA		STATION 8 COMMUNICATION FAILURE	G2C2.13
002046	PLCOK		1-PLC OK; 0-PLC PROBLEM	G2C2.14
002047	A5ABORT		AF5000 PROBLEM	G2C2.15

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
002048	ST5COMFA		STATION 5 COMMUNICATION FAILURE	G2C2.16
002049	PMCALARM		PUMP MOTOR CURRENT ALARM	G2C3.1
002050	PDPALARM		PUMP DISCHARGE PRESSURE ALARM	G2C3.2
002051	PSPDALARM		PUMP SPEED ALARM	G2C3.3
002052	PBUMPTOUTE		PUMP BUMP TIMEOUT ABORT ENABLE	G5C0.1
002053	WLR12A01E		LOW 12A-1 STRAIN ABORT ENABLE	G5C0.2
002054	NCTKSY06E		HIGH H2 - VENT HEADER ABORT ENABLE	G5C0.3
002055	NCTJSY06E		HIGH H2 - RISER 16A ABORT ENABLE	G5C0.4
002056	NCR17B01E		HIGH H2 - RISER 17B ABORT ENABLE	G5C0.5
002057	NCR05A01E		HIGH H2 ABORT - PUMP ENABLE	G5C0.6
002058			UNUSED	G5C0.7
002059	WLR12A02E		LOW 12A-2 STRAIN ABORT ENABLE	G5C0.8
002060	WLR12A03E		LOW 12A-3 STRAIN ABORT ENABLE	G5C0.9
002061			UNUSED	G5C0.10
002062	WHF17C1BE		STR GAUGE 17C-1 HI FREQ ABORT ENABLE	G5C0.11
002063	WHF1B1BE		STR GAUGE 1B-1 HI FREQ ABORT ENABLE	G5C0.12
002064			UNUSED	G5C0.13
002065	WHF17C2BE		STR GAUGE 17C-2 HI FREQ ABORT ENABLE	G5C0.14
002066	WHF1B2BE		STR GAUGE 1B-2 HI FREQ ABORT ENABLE	G5C0.15
002067	WHF1B3BE		STR GAUGE 1B-3 HI FREQ ABORT ENABLE	G5C0.16
002068	MIP00001E		MOISTURE IN PUMP MOTOR OIL ABORT ENABLE	G5C1.1
002069	ZIMPE143E		CW LIMIT SWITCH ABORT ENABLE	G5C1.2
002070	ZIMPE144E		CCW LIMIT SWITCH ABORT ENABLE	G5C1.3
002071				G5C1.4
002072				G5C1.5
002073				G5C1.6
002074				G5C1.7
002075	TCR17B01E		HIGH TEMP ABORT 17B01 ENABLE	G5C1.8
002076	TCR17B02E		HIGH TEMP ABORT 17B02 ENABLE	G5C1.9
002077	TCR17B03E		HIGH TEMP ABORT 17B03 ENABLE	G5C1.10
002078	TCR17B04E		HIGH TEMP ABORT 17B04 ENABLE	G5C1.11
002079	TCR17B05E		HIGH TEMP ABORT 17B05 ENABLE	G5C1.12
002080	TCR17B06E		HIGH TEMP ABORT 17B06 ENABLE	G5C1.13
002081	TCR17B07E		HIGH TEMP ABORT 17B07 ENABLE	G5C1.14
002082	TCR17B08E		HIGH TEMP ABORT 17B08 ENABLE	G5C1.15
002083	TCR17B09E		HIGH TEMP ABORT 17B09 ENABLE	G5C1.16
002084	TCR17B10E		HIGH TEMP ABORT 17B10 ENABLE	G5C2.1
002085	TCR17B11E		HIGH TEMP ABORT 17B11 ENABLE	G5C2.2
002086	TCR17B12E		HIGH TEMP ABORT 17B12 ENABLE	G5C2.3
002087	TCR17B13E		HIGH TEMP ABORT 17B13 ENABLE	G5C2.4
002088	TCR17B14E		HIGH TEMP ABORT 17B14 ENABLE	G5C2.5
002089	TCR17B15E		HIGH TEMP ABORT 17B15 ENABLE	G5C2.6
002090	TCR17B16E		HIGH TEMP ABORT 17B16 ENABLE	G5C2.7
002091	TCR17B17E		HIGH TEMP ABORT 17B17 ENABLE	G5C2.8
002092	TCR17B18E		HIGH TEMP ABORT 17B18 ENABLE	G5C2.9
002093	TCR17B19E		HIGH TEMP ABORT 17B19 ENABLE	G5C2.10
002094	TCR17B20E		HIGH TEMP ABORT 17B20 ENABLE	G5C2.11
002095	TCR17B21E		HIGH TEMP ABORT 17B21 ENABLE	G5C2.12
002096	TCR17B22E		HIGH TEMP ABORT 17B22 ENABLE	G5C2.13
002097			UNUSED	G5C2.14
002098			UNUSED	G5C2.15
002099			UNUSED	G5C2.16
002100			UNUSED	G5C3.1
002101			UNUSED	G5C3.2
002102				G5C3.3
002103	TCR12A01E		HIGH PUMP MOTOR OIL TEMP ABORT 1 ENABLE	G5C3.4
002104	TCR12A02E		HIGH PUMP MOTOR OIL TEMP ABORT 2 ENABLE	G5C3.5
002105	FCE50001E		LOW VENTILATION FLOW ABORT 1 ENABLE	G5C3.6
002106	FCE50002E		LOW VENTILATION FLOW ABORT 2 ENABLE	G5C3.7
002107	PCR17C01E		HIGH TANK DOME PRESSURE ABORT 1 ENABLE	G5C3.8
002108	PCR17B04E		HIGH TANK DOME PRESSURE ABORT 2 ENABLE	G5C3.9
002109				G5C3.10
002110	WCR12A01E		HIGH PUMP COLUMN STRAIN ABORT 1 ENABLE	G5C3.11
002111	WCR12A02E		HIGH PUMP COLUMN STRAIN ABORT 2 ENABLE	G5C3.12
002112	WCR12A03E		HIGH PUMP COLUMN STRAIN ABORT 3 ENABLE	G5C3.13
002113	WCR12A04E		HIGH PUMP COLUMN STRAIN ABORT 4 ENABLE	G5C3.14
002114				G5C3.15
002115			UNUSED	G5C3.16
002116			UNUSED	G5C4.1
002117	WCR1BA01E		HIGH VDTT COLUMN 1B STRAIN ABORT 1 ENAB	G5C4.2
002118	WCR1BA03E		HIGH VDTT COLUMN 1B STRAIN ABORT 2 ENAB	G5C4.3
002119				G5C4.4
002120	WCR17C01E		HIGH MIT 17C COLUMN STRAIN ABORT 1 ENAB	G5C4.5
002121	WCR17C02E		HIGH MIT 17C COLUMN STRAIN ABORT 2 ENAB	G5C4.6
002122	VC232040E		HIGH PUMP MOTOR CURRENT ABORT ENABLE	G5C4.7
002123	VC232050E		HIGH PUMP MOTOR SPEED ABORT ENABLE	G5C4.8
002124				G5C4.9
002125				G5C4.1
002126				G5C4.11

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
002127				G5C4.12
002128	WLR12A04E		LOW 12A-4 STRAIN ABORT ENABLE	G5C4.13
002129			UNUSED	G5C4.14
002130			UNUSED	G5C4.15
002131	WLR1BA01E		LOW 1B-1 STRAIN ABORT ENABLE	G5C4.16
002132	WLR1BA02E		LOW 1B-2 STRAIN ABORT ENABLE	G5C5.1
002133	WLR1BA03E		LOW 1B-3 STRAIN ABORT ENABLE	G5C5.2
002134	WCR1BA02E		HIGH 1B-2 STRAIN ABORT ENABLE	G5C5.3
002135				G5C5.4
002136	WLR17C01E		LOW 17C-1 STRAIN ABORT ENABLE	G5C5.5
002137	WLR17C02E		LOW 17C-2 STRAIN ABORT ENABLE	G5C5.6
002138	ZLMPE142E		LOW PUMP COLUMN GAS PRESSURE ABORT ENAB	G5C5.7
002139	FHE50001E		HIGH VENT FLOW ABORT 1 ENABLE	G5C5.8
002140	FHE50002E		HIGH VENT FLOW ABORT 2 ENABLE	G5C5.9
002141	PLC1ONE			G5C5.10
002142	PLC2ONE			G5C5.11
002143	PLCOKFE		1-PLC OK; 0-PLC PROBLEM ENABLE	G5C5.12
002144	ZRMPE142E		INSTRUMENT PROBLEM - ZIMPE142 ENABLE	G5C5.13
002145				G5C5.14
002146				G5C5.15
002147				G5C5.16
002150	RGA_ZERO		RGA-5 UPDATE ZERO CONTROL	G10C0.1
002151	GC3_ZERO		GC3-H2 UPDATE ZERO CONTROL	G10C0.2
002152	FT_ZERO		FTIR UPDATE ZERO CONTROL	G10C0.3
002153	PHO_ZERO		PHO-NH3 UPDATE ZERO CONTROL	G10C0.4
010000	BATCOIL			
100001	MIP00001F	2.2.3.1	MOISTURE IN PUMP MOTOR OIL 1	
100002		2.2.3.2		
100003	ZIMPE143F	2.2.3.3	PUMP OSCIL MOTOR LIMIT SWITCH CW	
100004	ZIMPE144F	2.2.3.4	PUMP OSCIL MOTOR LIMIT SWITCH CCW	
100005		2.2.3.5		
100006		2.2.3.6		
100007		2.2.3.7		
100008		2.2.3.8		
100009		2.2.3.9		
100010		2.2.3.10		
100011		2.2.3.11		
100012		2.2.3.12		
100013		2.2.3.13		
100014		2.2.3.14		
100015		2.2.3.15		
100016		2.2.3.16		
100017		2.2.3.17		
100018		2.2.3.18		
100019		2.2.3.19		
100020		2.2.3.20		
100021		2.2.3.21		
100022		2.2.3.22		
100023		2.2.3.23		
100024		2.2.3.24		
100025		2.2.3.25		
100026		2.2.3.26		
100027		2.2.3.27		
100028		2.2.3.28		
100029		2.2.3.29		
100030		2.2.3.30		
100031		2.2.3.31		
100032		2.2.3.32		
100033		6.1.7.1		
100034	BYJYSO18F	6.1.7.2	CABINET TROUBLE RISER 16A SHMS 1	
100035		6.1.7.3		
100036	BYKSYO18F	6.1.7.4	CABINET TROUBLE EXH HEADER #2	
100037	FILMSY18	6.1.7.5	FTIR CLG WATER LOW FLOW SWITCH	
100038	TYSLMSY2	6.1.7.6	SAMPLE TRACE HEAT ALARM LOW	
100039	PITMSY19F	6.1.7.7	FTIR PURGE/AIR BEARING PRESSURE	
100040		6.1.7.8		
100041		6.1.7.9		
100042		6.1.7.10		
100043		6.1.7.11		
100044		6.1.7.12		
100045		6.1.7.13		
100046		6.1.7.14		
100047		6.1.7.15		
100048		6.1.7.16		
100049		6.1.7.17		
100050		6.1.7.18		
100051		6.1.7.19		
100052		6.1.7.20		
100053		6.1.7.21		

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
100165		4.1.5.5	
100166		4.1.5.6	
100167		4.1.5.7	
100168		4.1.5.8	
100169		4.1.5.9	
100170		4.1.5.10	
100171		4.1.5.11	
100172		4.1.5.12	
100173		4.1.5.13	
100174		4.1.5.14	
100175		4.1.5.15	
100176		4.1.5.16	
100177		4.1.5.17	
100178		4.1.5.18	
100179		4.1.5.19	
100180		4.1.5.20	
100181		4.1.5.21	
100182		4.1.5.22	
100183		4.1.5.23	
100184		4.1.5.24	
100185		4.1.5.25	
100186		4.1.5.26	
100187		4.1.5.27	
100188		4.1.5.28	
100189		4.1.5.29	
100190		4.1.5.30	
100191		4.1.5.31	
100192		4.1.5.32	
100193		15.1.4.1	UNUSED
100194		15.1.4.2	UNUSED
100195	WHF17C1UF	15.1.4.3	STR GAUGE 17C-1 HIGH FREQ ALARM
100196	WHF17C1BF	15.1.4.4	STR GAUGE 17C-1 HIGH FREQ ABORT
100197		15.1.4.5	STR GAUGE 14A-3 HIGH FREQ ALARM
100198	WHF1B1UF	15.1.4.6	STR GAUGE 1B-1 HIGH FREQ ALARM
100199	WHF1B1BF	15.1.4.7	STR GAUGE 1B-1 HIGH FREQ ABORT
100200	WHF1B3UF	15.1.4.8	STR GAUGE 1B-3 HIGH FREQ ALARM
100201		15.1.4.9	
100202		15.1.4.10	
100203		15.1.4.11	
100204		15.1.4.12	
100205		15.1.4.13	
100206		15.1.4.14	
100207		15.1.4.15	
100208		15.1.4.16	
100209		15.1.4.17	UNUSED
100210		15.1.4.18	UNUSED
100211	WHF17C2UF	15.1.4.19	STR GAUGE 17C-2 HIGH FREQ ALARM
100212	WHF17C2BF	15.1.4.20	STR GAUGE 17C-2 HIGH FREQ ABORT
100213		15.1.4.21	
100214	WHF1B2UF	15.1.4.22	STR GAUGE 1B-2 HIGH FREQ ALARM
100215	WHF1B2BF	15.1.4.23	STR GAUGE 1B-2 HIGH FREQ ABORT
100216	WHF1B3BF	15.1.4.24	STR GAUGE 1B-3 HIGH FREQ ABORT
100217		15.1.4.25	
100218		15.1.4.26	
100219		15.1.4.27	
100220		15.1.4.28	
100221		15.1.4.29	
100222		15.1.4.30	
100223		15.1.4.31	
100224		15.1.4.32	
300001		2.1.4.1	UNUSED
300002		2.1.4.2	UNUSED
300003		2.1.4.3	UNUSED
300004		2.1.4.4	
300005		2.1.4.5	
300006	TIR12A01F	2.1.4.6	PUMP MOTOR OIL TEMPERATURE #1
300007		2.1.4.7	UNUSED
300008		2.1.4.8	UNUSED
300009		2.1.5.1	UNUSED
300010		2.1.5.2	UNUSED
300011		2.1.5.3	UNUSED
300012		2.1.5.4	
300013		2.1.5.5	
300014	TIR12A02F	2.1.5.6	PUMP MOTOR OIL TEMPERATURE #2
300015		2.1.5.7	UNUSED
300016		2.1.5.8	UNUSED
300017	ZIMPE142F	2.1.6.1	LOW PUMP COLUMN GAS PRESSURE
300018		2.1.6.2	
300019	PIR12A01F	2.1.6.3	PUMP PRESSURE

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
300020		2.1.6.4	UNUSED
300021		2.1.6.5	UNUSED
300022	PITNO111F	2.1.6.6	PUMP #2 NOZZLE TAP PRESSURE
300023	PITNO110F	2.1.6.7	PUMP #1 NOZZLE TAP PRESSURE
300024		2.1.6.8	
300025	PIO10001F	4.1.6.1	CAMERA ENCLOSURE PURGE PRESSURE
300026	PIO20002F	4.1.6.2	NITROGEN SUPPLY
300027		4.1.6.3	
300028		4.1.6.4	
300029		4.1.6.5	
300030		4.1.6.6	
300031	LIR01AF	4.1.6.7	ENRAF TANK WASTE LEVEL RISER 1A
300032	LIR01CF	4.1.6.8	ENRAF TANK WASTE LEVEL RISER 1C
300033	TT10001F	4.1.4.1	VENT HEADER TEMPERATURE
300034	NIR17B01F	4.1.4.2	SHNS #3 RISER 17B
300035		4.1.4.3	UNUSED
300036		4.1.4.4	UNUSED
300037	MT10001F	4.1.4.5	VENT HEADER RELATIVE HUMIDITY
300038	PIR17B04F	4.1.4.6	MIT TANK DOME PRESSURE RISER 17B
300039		4.1.4.7	
300041	NITJSY06F	6.1.4.1	0-10% H2 RISER 16A SHMS 1
300042		6.1.4.2	UNUSED
300043		6.1.4.3	UNUSED
300044		6.1.4.4	UNUSED
300045	PITMSY1F	6.1.4.5	GC-3 SAMPLE PRESSURE
300046	TITMSY15F	6.1.4.6	FTIR SAMPLE GAS TEMP
300047	PITMSY16F	6.1.4.7	FTIR SAMPLE PRESSURE
300048		6.1.4.8	
300049		6.1.5.1	
300050		6.1.5.2	UNUSED
300051	NITKSY06F	6.1.5.3	0-10% H2 VENT HDR SHMS 2
300052	FITMSY17F	6.1.5.4	FTIR SAMPLE FLOW
300053		6.1.5.5	UNUSED
300054	PITMSY07F	6.1.5.6	GC-1 SAMPLE PRESSURE
300055	TICMSY18F	6.1.5.7	FTIR COOLING WATER TEMP
300056	TITMSY25F	6.1.5.8	GMS II BUILDING
300057	RGA5TND1F	6.1.6.1	RGA-5 TREND OUTPUT 1 (0-10V)
300058	RGA5TND2F	6.1.6.2	RGA-5 TREND OUTPUT 2 (0-10V)
300059		6.1.6.3	RGA-5 TREND OUTPUT 3 (UNUSED)
300060		6.1.6.4	RGA-5 TREND OUTPUT 4 (UNUSED)
300061	PITMSY04F	6.1.6.5	SAMPLING INLET PRESSURE
300062	PITMSY10F	6.1.6.6	GC-2 SAMPLE PRESSURE
300063	PDTMSY12F	6.1.6.7	GC-3 DIFF PRESSURE
300064		6.1.6.8	
300065		8.1.4.1	
300066		8.1.4.2	
300067	FIR14A01F	8.1.4.3	FLUID VELOCITY RISER 14A AT LEVEL 24"
300068		8.1.4.4	
300069	ARMGEXPF	8.1.4.5	ARMGAMMA CALCULATION
300070		8.1.4.6	
300071		8.1.4.7	
300072		8.1.4.8	
300073		8.1.5.1	
300074		8.1.5.2	
300075	FIR14A02F	8.1.5.3	FLUID VELOCITY RISER 14A AT LEVEL 48"
300076		8.1.5.4	
300077		8.1.5.5	
300078		8.1.5.6	
300079		8.1.5.7	
300080		8.1.5.8	
300081		8.1.6.1	
300082		8.1.6.2	
300083		8.1.6.3	
300084		8.1.6.4	
300085		8.1.6.5	
300086		8.1.6.6	
300087		8.1.6.7	
300088		8.1.6.8	UNUSED
300089		8.1.7.1	
300090		8.1.7.2	
300091		8.1.7.3	
300092		8.1.7.4	
300093		8.1.7.5	
300094		8.1.7.6	
300095		8.1.7.7	
300096		8.1.7.8	
300097		8.2.3.1	
300098		8.2.3.2	
300099		8.2.3.3	

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
300100		8.2.3.4	
300101		8.2.3.5	
300102	FIR01B01F	8.2.3.6	FLUID VELOCITY RISER 1B AT LEVEL 24"
300103		8.2.3.7	
300104		8.2.3.8	
300105		9.1.4.1	
300106	FIR01B02F	9.1.4.2	FLUID VELOCITY RISER 1B AT LEVEL 48"
300107		9.1.4.3	
300108		9.1.4.4	
300109		9.1.4.5	
300110		9.1.4.6	
300111	NIR05A01F	9.1.4.7	SHMS MIXER PUMP/TEST CHAMBER
300112		9.1.4.8	
300113		9.1.5.1	
300114		9.1.5.2	
300115		9.1.5.3	
300116		9.1.5.4	
300117		9.1.5.5	
300118		9.1.5.6	
300119		9.1.5.7	UNUSED
300120		9.1.5.8	
300121		9.1.6.1	
300122		9.1.6.2	UNUSED
300123		9.1.6.3	
300124	TIVDTCABF	9.1.6.4	VDTT INST CABINET TEMP
300125	TII04CABF	9.1.6.5	I/O #4 CABINET TEMP
300126		9.1.6.6	
300127		9.1.6.7	UNUSED
300128		9.1.6.8	
300129		9.1.7.1	
300130		9.1.7.2	
300131		9.1.7.3	
300132		9.1.7.4	
300133		9.1.7.5	
300134		9.1.7.6	
300135		9.1.7.7	
300136		9.1.7.8	
300161	TRT1F	14.1.4.1	TRAILER TEMPERATURE REAR RACK 2
300162	TRT3F	14.1.4.2	TRAILER TEMPERATURE REAR RACK 6
300163	TRT5F	14.1.4.3	TRAILER TEMPERATURE FRONT RACK 1
300164	TRT7F	14.1.4.4	TRAILER TEMPERATURE FRONT RACK 5
300165	TRT9F	14.1.4.5	TRAILER TEMPERATURE FRONT RACK 8
300166	TRT10F	14.1.4.6	TRAILER TEMPERATURE AMBIENT
300167	UPST1F	14.1.4.7	UPS TEMPERATURE
300168	WST1F	14.1.4.8	DACS-1 WEATHER STATION TEMPERATURE
300169	TRT2F	14.1.5.1	TRAILER TEMPERATURE REAR RACK 4
300170	TRT4F	14.1.5.2	TRAILER TEMPERATURE REAR RACK 8
300171	TRT6F	14.1.5.3	TRAILER TEMPERATURE FRONT RACK 3
300172	TRT8F	14.1.5.4	TRAILER TEMPERATURE FRONT RACK 6
300173	WSWSPDF	14.1.5.5	DACS-1 WEATHER STATION WIND SPEED
300174		14.1.5.6	
300175	TRT11F	14.1.5.7	TRAILER TEMPERATURE REAR RACK 9
300176		14.1.5.8	
300177	TRA1AF	14.1.6.1	DACS-1 TRAILER CURRENT PHASE A
300178	TRA1BF	14.1.6.2	DACS-1 TRAILER CURRENT PHASE B
300179	TRA1CF	14.1.6.3	DACS-1 TRAILER CURRENT PHASE C
300180	TRV1F	14.1.6.4	DACS-1 TRAILER VOLTAGE
300181	WSH1F	14.1.6.5	DACS-1 WEATHER STATION HUMIDITY
300182	WSWDIRF	14.1.6.6	DACS-1 WEATHER STATION WIND DIRECTION
300183	WSP1F	14.1.6.7	DACS-1 W.S. BAROMETRIC PRESSURE
300184		14.1.6.8	SPARE
300185		16.1.4.1	SPARE
300186		16.1.4.2	SPARE
300187		16.1.4.3	SPARE
300188		16.1.4.4	SPARE
300189		16.1.4.5	SPARE
300190		16.1.4.6	SPARE
300191		16.1.4.7	SPARE
300192		16.1.4.8	SPARE
300193		16.1.5.1	SPARE
300194		16.1.5.2	SPARE
300195		16.1.5.3	SPARE
300196		16.1.5.4	SPARE
300197		16.1.5.5	SPARE
300198		16.1.5.6	SPARE
300199		16.1.5.7	SPARE
300200		16.1.5.8	SPARE
300201		16.1.6.1	SPARE
300202		16.1.6.2	SPARE

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
300203		16.1.6.3	SPARE
300204		16.1.6.4	SPARE
300205	NITHDR01F	16.1.6.5	0-10% H2 VENT HDR CHESSEL
300206	FTE50003F	16.1.6.6	SY TANK FARM EXHAUST FLOW
300207	FTE50001F	16.1.6.7	VENT HEADER FLOW LOW RANGE
300208	PIR17C01F	16.1.6.8	TANK DOME PRESSURE RISER 17C
300209		16.1.7.1	SPARE
300210		16.1.7.2	SPARE
300211		16.1.7.3	SPARE
300212		16.1.7.4	SPARE
300213		16.1.7.5	SPARE
300214		16.1.7.6	SPARE
300215		16.1.7.7	SPARE
300216		16.1.7.8	SPARE
300217		16.1.8.1	SPARE
300218		16.1.8.2	SPARE
300219		16.1.8.3	SPARE
300220		16.1.8.4	SPARE
300221		16.1.8.5	SPARE
300222		16.1.8.6	SPARE
300223		16.1.8.7	SPARE
300224		16.1.8.8	SPARE
300225		13.1.7.1	
300226		13.1.7.2	
300227		13.1.7.3	
300228		13.1.7.4	
300229		13.1.7.5	
300230		13.1.7.6	
300231		13.1.7.7	
300232		13.1.7.8	
300233		13.1.8.1	
300234		13.1.8.2	
300235		13.1.8.3	
300236		13.1.8.4	
300237	FTE50002F	13.1.8.5	VENT HEADER FLOW HIGH RANGE
300238		13.1.8.6	
300239		13.1.8.7	
300240		13.1.8.8	
300258	RG_DR1	14.2.7.1	ACSII/BASIC Data Register 1
300259	RG_DR2	14.2.7.2	ASCII/BASIC Data Register 2
300260	RG_DR3	14.2.7.3	ASCII/BASIC Data Register 3
300261	RG_DR4	14.2.7.4	ASCII/BASIC Data Register 4
300262	RG_DR5	14.2.7.5	ASCII/Basic Data Register 5
300263	RG_DR6	14.2.7.6	ASCII/Basic Data Register 6
300264	TC7_DR1	4.1.7.1	TC7 Data Interface Register 1
300265	TC7_DR2	4.1.7.2	TC7 Data Interface Register 2
300266	TC7_DR3	4.1.7.3	TC7 Data Interface Register 3
300267	TC8_DR1	4.2.3.1	TC8 Data Interface Register 1
300268	TC8_DR2	4.2.3.2	TC8 Data Interface Register 2
300269	TC8_DR3	4.2.3.3	TC8 Data Interface Register 3
300276	TC1_DR1	4.2.4.1	TC1 Data Interface Register 1
300277	TC1_DR2	4.2.4.2	TC1 Data Interface Register 2
300278	TC1_DR3	4.2.4.3	TC1 Data Interface Register 3
300281	ZIMPE112F	2.2.4.1	MIXER PUMP OSCILLATOR POSITION (B865)
300282		2.2.4.2	
300283		2.2.4.3	
300284		2.2.4.4	
300285		2.2.4.5	
300286		2.2.4.6	
300287		2.2.4.7	
300288		2.2.4.8	
300289		14.2.5.1	UNUSED
300290		14.2.5.2	UNUSED
300291	WIR17C01F	14.2.5.3	STRAIN GAUGE RISER 17C AT LEVEL
300292		14.2.5.4	UNUSED
300293	WIR12A01F	14.2.5.5	PUMP SUPPORT COLUMN STRAIN #1 45 DEG
300294	WIR12A03F	14.2.5.6	PUMP SUPPORT COLUMN STRAIN #3 225 DEG
300295		14.2.5.7	UNUSED
300296	WIR17C02F	14.2.5.8	STRAIN GAUGE RISER 17C AT LEVEL
300297		14.2.6.1	UNUSED
300298	WIR1BA01F	14.2.6.2	STRAIN GAUGE RISER 1B AT LEVEL 530"
300299	WIR1BA03F	14.2.6.3	STRAIN GAUGE RISER 1B AT LEVEL 530"
300300		14.2.6.4	UNUSED
300301	WIR12A02F	14.2.6.5	PUMP SUPPORT COLUMN STRAIN #2 135 DEG
300302	WIR12A04F	14.2.6.6	PUMP SUPPORT COLUMN STRAIN #4 315 DEG
300303	WIR1BA02F	14.2.6.7	STRAIN GAUGE RISER 1B AT LEVEL 530"
300304	XIR12AN1F	14.2.6.8	PUMP CASING VIBRATION
300305	GC3_DR1	15.1.7.1	ACSII/BASIC Data Register 1
300306	GC3_DR2	15.1.7.2	ASCII/BASIC Data Register 2

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
300307	GC3_DR3	15.1.7.3	ASCII/BASIC Data Register 3
300308	GC3_DR4	15.1.7.4	ASCII/BASIC Data Register 4
300309	GC3_DR5	15.1.7.5	ASCII/Basic Data Register 5
300310	GC3_DR6	15.1.7.6	ASCII/Basic Data Register 6
300311	TC2_DR1	4.2.5.1	TC2 Data Interface Register 1
300312	TC2_DR2	4.2.5.2	TC2 Data Interface Register 2
300313	TC2_DR3	4.2.5.3	TC2 Data Interface Register 3
300314	TC3_DR1	4.2.6.1	TC3 Data Interface Register 1
300315	TC3_DR2	4.2.6.2	TC3 Data Interface Register 2
300316	TC3_DR3	4.2.6.3	TC3 Data Interface Register 3
300317	TC4_DR1	13.1.4.1	TC4 Data Interface Register 1
300318	TC4_DR2	13.1.4.2	TC4 Data Interface Register 2
300319	TC4_DR3	13.1.4.3	TC4 Data Interface Register 3
300320	TC5_DR1	13.1.5.1	TC5 Data Interface Register 1
300321	TC5_DR2	13.1.5.2	TC5 Data Interface Register 2
300322	TC5_DR3	13.1.5.3	TC5 Data Interface Register 3
300323	TC6_DR1	13.1.6.1	TC6 Data Interface Register 1
300324	TC6_DR2	13.1.6.2	TC6 Data Interface Register 2
300325	TC6_DR3	13.1.6.3	TC6 Data Interface Register 3
300326	TC9_DR1	4.2.7.1	TC9 Data Interface Register 1
300327	TC9_DR2	4.2.7.2	TC9 Data Interface Register 2
300328	TC9_DR3	4.2.7.3	TC9 Data Interface Register 3
400001	HSTBYREG		PLC HOT STANDBY REGISTER
400002	TC2VTNDX		TC2 VALUE TABLE INDEX
400003	TC2TV1		TC2 TEMPERATURE VALUE 1 (TIR17C02)
400004	TC2TV2		TC2 TEMPERATURE VALUE 2 (TIR17C05)
400005	TC2TV3		TC2 TEMPERATURE VALUE 3 (TIR17C08)
400006	TC2TV4		TC2 TEMPERATURE VALUE 4 (TIR17C11)
400007	TC2TV5		TC2 TEMPERATURE VALUE 5 (TIR17C14)
400008	TC2TV6		TC2 TEMPERATURE VALUE 6 (TIR17C17)
400009	TC2TV7		TC2 TEMPERATURE VALUE 7 (TIR17C20)
400010	TC2TV8		TC2 TEMPERATURE VALUE 8 (UNUSED)
400011	TC2TV9		TC2 TEMPERATURE VALUE 9 (UNUSED)
400012	TC2TV10		TC2 TEMPERATURE VALUE 10 (UNUSED)
400013	TC2RCTNDX		TC2 READ COMMAND TABLE INDEX
400014	TC2RCTDEST		TC2 READ COMMAND TABLE TRANSFER DESTINATION
400015	TC2SUTNDX		TC2 SETUP TABLE INDEX
400016	TC2SUTDEST		TC2 SETUP TABLE TRANSFER DESTINATION
400017	TC3VTNDX		TC3 VALUE TABLE INDEX
400018	TC3TV1		TC3 TEMPERATURE VALUE 1 (TIR17C03)
400019	TC3TV2		TC3 TEMPERATURE VALUE 2 (TIR17C06)
400020	TC3TV3		TC3 TEMPERATURE VALUE 3 (TIR17C09)
400021	TC3TV4		TC3 TEMPERATURE VALUE 4 (TIR17C12)
400022	TC3TV5		TC3 TEMPERATURE VALUE 5 (TIR17C15)
400023	TC3TV6		TC3 TEMPERATURE VALUE 6 (TIR17C18)
400024	TC3TV7		TC3 TEMPERATURE VALUE 7 (TIR17C21)
400025	TC3TV8		TC3 TEMPERATURE VALUE 8 (UNUSED)
400026	TC3TV9		TC3 TEMPERATURE VALUE 9 (UNUSED)
400027	TC3TV10		TC3 TEMPERATURE VALUE 10 (UNUSED)
400028	TC3RCTNDX		TC3 READ COMMAND TABLE INDEX
400029	TC3RCTDEST		TC3 READ COMMAND TABLE TRANSFER DESTINATION
400030	TC3SUTNDX		TC3 SETUP TABLE INDEX
400031	TC3SUTDEST		TC3 SETUP TABLE TRANSFER DESTINATION
400032	TCSTOP		TC STOP COMMAND
400033	TCBLANK1		
400034	TCBLANK2		
400035	TCTOCONF		TC ENTER CONFIGURATION MODE COMMAND
400036	TCBLANK3		
400037	TCBLANK4		
400038	TCSETCH1		TC SET CHANNEL PARAMETERS COMMAND
400039	TCCH1		
400040	TCPARAM1		
400041	TCSETCH2		
400042	TCCH2		
400043	TCPARAM2		
400044	TCSETCH3		
400045	TCCH3		
400046	TCPARAM3		
400047	TCSETCH4		
400048	TCCH4		
400049	TCPARAM4		
400050	TCSETCH5		
400051	TCCH5		
400052	TCPARAM5		
400053	TCSETCH6		
400054	TCCH6		
400055	TCPARAM6		
400056	TCSETCH7		
400057	TCCH7		

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
400058	TCPARAM7			
400059	TCSETCH8			
400060	TCCH8			
400061	TCPARAM8			
400062	TCSETCH9			
400063	TCCH9			
400064	TCPARAM9			
400065	TCSETCH10			
400066	TCCH10			
400067	TCPARAM10			
400068	TCFROMCFG			
400069	TCBLANK5			
400070	TCBLANK6			
400071	TCSTART		TC START COMMAND	
400072	TCBLANK7			
400073	TCBLANK8			
400074	TCSCRTCH		SCRATCH	
400075	TIMER5		ST8 WATCHDOG TIMER REGISTER 1	
400076	TIMER6		ST8 WATCHDOG TIMER REGISTER 2	
400077	TIMER7			
400078	MULTREG2			
400079	PMCALMHI		PUMP MOTOR CURR ALARM LIM (205/225*65535)	
400080	MUL1		Multiplication Register	
400081	MUL2		Multiplication Register	
400082	MUL3		Multiplication Register	
400083	MUL4		Multiplication Register	
400084	SCANCNT		COUNT 1000 SCANS	
400085	TC4RCTINDX		TC4 READ COMMAND TABLE INDEX	
400086	TC4RCTDEST		TC4 READ COMMAND TABLE TRANSFER DESTINATION	
400087	TC4SUTNDX		TC4 SETUP TABLE INDEX	
400088	TC4SUTDEST		TC4 SETUP TABLE TRANSFER DESTINATION	
400089	TCMSBMSK		TC MSB MASK (7FFFH)	
400090	TC4MSKCMDE		TC4 MASKED COMMAND ECHO	
400091	TC1CREG1	4.2.4.1	TC1 COMMAND REGISTER 1	
400092	TC1CREG2	4.2.4.2	TC1 COMMAND REGISTER 2	
400093	TC1CREG3	4.2.4.3	TC1 COMMAND REGISTER 3	
400094	TC2CREG1	4.2.5.1	TC2 COMMAND REGISTER 1	
400095	TC2CREG2	4.2.5.2	TC2 COMMAND REGISTER 2	
400096	TC2CREG3	4.2.5.3	TC2 COMMAND REGISTER 3	
400097	TC3CREG1	4.2.6.1	TC3 COMMAND REGISTER 1	
400098	TC3CREG2	4.2.6.2	TC3 COMMAND REGISTER 2	
400099	TC3CREG3	4.2.6.3	TC3 COMMAND REGISTER 3	
400100	TIMER		TIMER COUNT	
400101	TIMER2		TIMER COUNT	
400102	TIMER3		TIMER COUNT	
400108	D2R1STAT		DROP 2 RACK 1 STATUS	H3C0
400109	D2R2STAT		DROP 2 RACK 2 STATUS	H3C1
400110	D4R1STAT		DROP 4 RACK 1 STATUS	H3C2
400111	D6R1STAT		DROP 6 RACK 1 STATUS	H3C3
400112	D7R1STAT		DROP 7 RACK 1 STATUS	H3C4
400113	D7R2STAT		DROP 7 RACK 2 STATUS	H3C5
400114	D9R1STAT		DROP 9 RACK 1 STATUS	H3C6
400115	D4R2STAT		DROP 4 RACK 2 STATUS	H3C7
400116	D14R1STAT		DROP 14 RACK 1 STATUS	H3C8
400117	D14R2STAT		DROP 14 RACK 2 STATUS	H3C9
400118	D15R1STAT		DROP 15 RACK 1 STATUS	H3C10
400119	D16R1STAT		DROP 16 RACK 1 STATUS	H3C11
400120	D13R1STAT		DROP 13 RACK 1 STATUS	H3C12
400121	D13R2STAT		DROP 13 RACK 2 STATUS	H3C13
400122				H3C14
400123				H3C15
400124				
400125				
400126				
400127				
400128				
400129				
400130				
400131				
400132				
400133				
400134				
400135				
400136				
400137				
400138				
400139	MUL5		Multiplication Register	
400140	MUL6		Multiplication Register	
400141	MUL7		Multiplication Register	

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
400142	MUL8		Multiplication Register	
400143	TC5MECHO		TC5 MASKED COMMAND ECHO	
400144	TC5SCR		SCRATCH	
400145	TC6MECHO		TC6 MASKED COMMAND ECHO	
400146	TC6SCR		SCRATCH	
400147	TCZERO2		ZERO	
400148	DEGTIMER		MIN/X REV * 60SEC/MIN * 13.09DEG/REV	
400149	ZERO		CONSTANT ZERO	
400150	TCRC1		TC READ CHANNEL 1 COMMAND	
400151	TCRC2		TC READ CHANNEL 2 COMMAND	
400152	TCRC3		TC READ CHANNEL 3 COMMAND	
400153	TCRC4		TC READ CHANNEL 4 COMMAND	
400154	TCRC5		TC READ CHANNEL 5 COMMAND	
400155	TCRC6		TC READ CHANNEL 6 COMMAND	
400156	TCRC7		TC READ CHANNEL 7 COMMAND	
400157	TCRC8		TC READ CHANNEL 8 COMMAND	
400158	TCRC9		TC READ CHANNEL 9 COMMAND	
400159	TCRC10		TC READ CHANNEL 10 COMMAND	
400160	TC1VTNDX		TC1 VALUE TABLE INDEX	
400161	TC1TV1		TC1 TEMPERATURE VALUE 1 (TIR17C01)	
400162	TC1TV2		TC1 TEMPERATURE VALUE 2 (TIR17C04)	
400163	TC1TV3		TC1 TEMPERATURE VALUE 3 (TIR17C07)	
400164	TC1TV4		TC1 TEMPERATURE VALUE 4 (TIR17C10)	
400165	TC1TV5		TC1 TEMPERATURE VALUE 5 (TIR17C13)	
400166	TC1TV6		TC1 TEMPERATURE VALUE 6 (TIR17C16)	
400167	TC1TV7		TC1 TEMPERATURE VALUE 7 (TIR17C19)	
400168	TC1TV8		TC1 TEMPERATURE VALUE 8 (TIR17C22)	
400169	TC1TV9		TC1 TEMPERATURE VALUE 9 (UNUSED)	
400170	TC1TV10		TC1 TEMPERATURE VALUE 10 (UNUSED)	
400171	TC1RCTNDX		TC1 READ COMMAND TABLE INDEX	
400172	TC1RCTDEST		TC1 READ COMMAND TABLE TRANSFER DESTINATION	
400173	TC1SUTNDX		TC1 SETUP TABLE INDEX	
400174	TC1SUTDEST		TC1 SETUP TABLE TRANSFER DESTINATION	
400175	TCMSBMASK		TC MSB MASK (7FFFH)	
400176	TC1MECHO		TC1 MASKED COMMAND ECHO	
400177	TC1SCR		SCRATCH	
400178	TC2MECHO		TC2 MASKED COMMAND ECHO	
400179	TC2SCR		SCRATCH	
400180	TC3MECHO		TC3 MASKED COMMAND ECHO	
400181	TC3SCR		SCRATCH	
400182	TCZERO			
400187	GC3_CMD1	15.1.7.1		
400188	GC3_CMD2	15.1.7.2		
400189	GC3_CMD3	15.1.7.3		
400190	GC3_CMD4	15.1.7.4		
400191	GC3_CMD5	15.1.7.5		
400192	GC3_CMD6	15.1.7.6		
400193	GC3_CECOPY			
400194	GC3_SCR1			
400195	GC3_SCR2			
400196	GC3_SCR3			
400197	GC3_TIMER			
400198	GC3_STATE			
400199	GC3_CURRST			
400200	HH2LIM		HIGH HYDROGEN CONC LIMIT	G4C0.1
400201	H1BSAL		HIGH 1B STRAIN ALARM LIMIT	G4C0.2
400202	L1BSAL		LOW 1B STRAIN ALARM LIMIT	G4C0.3
400203	HTEMPLIM		HIGH TEMPERATURE LIMIT	G4C0.4
400204	HTDPLIM		HIGH TANK DOME PRESSURE LIMIT	G4C0.5
400205	HILIM		SET TO 4095	
400206	HPMOTLIM		HIGH PUMP MOTOR OIL TEMP LIMIT	G4C0.7
400207	LVFLLIM		LOW VENTILATION FLOW LIMIT	G4C0.8
400208	HPMCLIMF		HIGH PUMP MOTOR CURRENT LIMIT	G4C1.1
400209	HPDPLIM		HIGH PUMP DIS.PRES.LIMIT (MOTOR)	I2C1.2
400210	PBTLIMF		PHASE B TIME LIMIT (MINUTES)	G4C1.3
400211	CURALRM		PUMP MOTOR CURRENT ALARM LIMIT	G4C1.4
400212	BUMPTLIMF		PUMP BUMP TIME LIMIT (SECS)	G4C1.5
400213	HPSPDLIM		HIGH PUMP SPEED LIMIT	G4C1.6
400214	HPSPDALM		HIGH PUMP SPEED ALARM LIMIT	G4C1.7
400215	VR232020F		MIXER PUMP MOTOR VOLTAGE	G4C1.8
400216	VR232080F		ROTATIONAL MOTOR VOLTAGE	G4C2.1
400217	VR232100F		ROTATIONAL MOTOR CURRENT	G4C2.2
400218	VR232110F		ROTATIONAL MOTOR SPEED	G4C2.3
400219	VR232040F		MIXER PUMP MOTOR CURRENT	G4C2.4
400220	VR232050F		MIXER PUMP SPEED (RPM)	G4C2.5
400221	DACCELF		ROTATIONAL MOTOR ACCEL RATE	G4C2.6
400222	VR232120F		PUMP MOTOR SETPOINT SPEED	G4C2.7
400223	HPDPALM		PUMP DISCH. PRESS. ALARM LIMIT	G4C2.8
400224	HPCSLIM		HIGH PUMP COLUMN STRAIN LIMIT	G4C3.1

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
400225	SCRATCH		SCRATCH	G4C3.2
400226			UNUSED	G4C3.3
400227	H12ASAL		HIGH 12A STRAIN ALARM LIMIT	G4C3.4
400228			PUMP MOTOR SETPOINT SPEED	G4C3.5
400229	L12ASAL		LOW 12A STRAIN ALARM LIMIT	G4C3.6
400230	H17BCSAL		HIGH 17B & 17C STRN ALARM LIMIT	G4C3.7
400231	L17BCSAL		LOW 17B & 17C STRN ALARM LIMITS	G4C3.8
400232	HH2LIM2		HIGH H2 LIMIT FOR 0-30 GAUGE	G4C4.1
400233	H17CSLIM		HIGH 17C COLUMN STRAIN LIMIT	G4C4.2
400234			UNUSED	G4C4.3
400235	LVFLLIM2		LOW VENT FLOW LIMIT 0-4000 GAUGE	G4C4.4
400236	HTDPLIM2		HIGH TANK DOME PRESS LIMIT 2	G4C4.5
400237	H1BCSLIM		HIGH COLUMN STRAIN LIMIT R1B	G4C4.6
400238	LPCSLIM		LOW PUMP COLUMN STRAIN LIMIT	G4C4.7
400239			UNUSED	G4C4.8
400240	L17CSLIM		LOW 17C COLUMN STRAIN LIMIT	G4C5.1
400241	L1BCSLIM		LOW VDTT 1B COLUMN STRAIN LIMIT	G4C5.2
400242	WHITIMER1		NIR17B01 ABORT TIMER	G4C5.3
400243	WHITIMER2		NITJSY06 ABORT TIMER	G4C5.4
400244	WHITIMER3		NIR05A01 ABORT TIMER	G4C5.5
400245	WHITIMER4			G4C5.6
400246				
400247				G4C5.8
400248				G4C6.1
400249				G4C6.2
400250				G4C6.3
400251				G4C6.4
400252	LPCGPLIM		LOW PUMP COLUMN GAS PRESS LIMIT	G4C6.5
400253	HVFLLIM1		HIGH VENT FLOW LIMIT 1	G4C6.6
400254	HVFLLIM2		HIGH VENTILATION FLOW LIMIT 2	G4C6.7
400255	MULTREG		MOTOR CURR LIMIT (210/225*65535)	G4C6.8
400256	PMCHILIM		MOTOR CURR LIMIT (210/225*65535)	G4C7.1
400257	CURLIMTIM		CUR LIM DELAY 1.2*x + 4 (x=comm delay)	G4C7.2
400258	TC4VTNDX		TC4 VALUE TABLE INDEX	G4C7.3
400259	TBSTC01F		TC4 TEMPERATURE VALUE 1	G4C7.4
400260	TBSTC04F		TC4 TEMPERATURE VALUE 2	G4C7.5
400261	TBSTC07F		TC4 TEMPERATURE VALUE 3	G4C7.6
400262	TBSTC10F		TC4 TEMPERATURE VALUE 4	G4C7.7
400263	TBSTC13F		TC4 TEMPERATURE VALUE 5	G4C7.8
400264	TBSTC16F		TC4 TEMPERATURE VALUE 6	G4C8.1
400265	TBSTC19F		TC4 TEMPERATURE VALUE 7	G4C8.2
400266	TBSTC22F		TC4 TEMPERATURE VALUE 8	G4C8.3
400267	TBSTC25F		TC4 TEMPERATURE VALUE 9	G4C8.4
400268	TC4TV10		TC4 TEMPERATURE VALUE 10	G4C8.5
400269	TC5VTNDX		TC5 VALUE TABLE INDEX	G4C8.6
400270	TBSTC02F		TC5 TEMPERATURE VALUE 1	G4C8.7
400271	TBSTC05F		TC5 TEMPERATURE VALUE 2	G4C8.8
400272	TBSTC08F		TC5 TEMPERATURE VALUE 3	G4C9.1
400273	TBSTC11F		TC5 TEMPERATURE VALUE 4	G4C9.2
400274	TBSTC14F		TC5 TEMPERATURE VALUE 5	G4C9.3
400275	TBSTC17F		TC5 TEMPERATURE VALUE 6	G4C9.4
400276	TBSTC20F		TC5 TEMPERATURE VALUE 7	G4C9.5
400277	TBSTC23F		TC5 TEMPERATURE VALUE 8	G4C9.6
400278	TBSTC26F		TC5 TEMPERATURE VALUE 9	G4C9.7
400279	TC5TV10		TC5 TEMPERATURE VALUE 10	G4C9.8
400280	TC6VTNDX		TC6 VALUE TABLE INDEX	G4C10.1
400281	TBSTC03F		TC6 TEMPERATURE VALUE 1	G4C10.2
400282	TBSTC06F		TC6 TEMPERATURE VALUE 2	G4C10.3
400283	TBSTC09F		TC6 TEMPERATURE VALUE 3	G4C10.4
400284	TBSTC12F		TC6 TEMPERATURE VALUE 4	G4C10.5
400285	TBSTC15F		TC6 TEMPERATURE VALUE 5	G4C10.6
400286	TBSTC18F		TC6 TEMPERATURE VALUE 6	G4C10.7
400287	TBSTC21F		TC6 TEMPERATURE VALUE 7	G4C10.8
400288	TBSTC24F		TC6 TEMPERATURE VALUE 8	G4C11.1
400289	TC6TV9		TC6 TEMPERATURE VALUE 9	G4C11.2
400290	TC6TV10		TC6 TEMPERATURE VALUE 10	G4C11.3
400291				G4C11.4
400292				G4C11.5
400293				G4C11.6
400294				G4C11.7
400295				G4C11.8
400296				G4C12.1
400297				G4C12.2
400298				G4C12.3
400299				G4C12.4
400300				G4C12.5
400301	CONTSTAT		Controller Status	G4C12.6
400302	HSTBYSTAT		Hot Standby Status	G4C12.7
400303	CNTRLSTAT2		Controller Status 2	G4C12.8

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
400304	RIOSTAT		Remote I/O Status	G4C13.1
400305	CTRLSTOPST		Controller Stop State	G4C13.2
400306	NUMSEGS		Number of Ladder logic segs	G4C13.3
400307	EOLPTRADD		End of logic ptr address	G4C13.4
400310	RUNDEBUG		Run load debug status	G4C13.7
400311	NOTUSED			G4C13.8
400312	SBD1R1		DROP 1 RACK 1 STATUS	G4C14.1
400313	SBD1R2		DROP 1 RACK 2 STATUS	G4C14.2
400314	SBD1R3		DROP 1 RACK 3 STATUS	G4C14.3
400315	SBD1R4		DROP 1 RACK 4 STATUS	G4C14.4
400316	SBD1R5		DROP 1 RACK 5 STATUS	G4C14.5
400317	SBD2R1		DROP 2 RACK 1 STATUS	G4C14.6
400318	SBD2R2		DROP 2 RACK 2 STATUS	G4C14.7
400319	SBD2R3		DROP 2 RACK 3 STATUS	G4C14.8
400320	SBD2R4		DROP 2 RACK 4 STATUS	G4C15.1
400321	SBD2R5		DROP 2 RACK 5 STATUS	G4C15.2
400322	SBD3R1		DROP 3 RACK 1 STATUS	G4C15.3
400323	SBD3R2		DROP 3 RACK 2 STATUS	G4C15.4
400324	SBD3R3		DROP 3 RACK 3 STATUS	G4C15.5
400325	SBD3R4		DROP 3 RACK 4 STATUS	G4C15.6
400326	SBD3R5		DROP 3 RACK 5 STATUS	G4C15.7
400327	SBD4R1		DROP 4 RACK 1 STATUS	G4C15.8
400328	SBD4R2		DROP 4 RACK 2 STATUS	
400329	SBD4R3		DROP 4 RACK 3 STATUS	
400330	SBD4R4		DROP 4 RACK 4 STATUS	
400331	SBD4R5		DROP 4 RACK 5 STATUS	
400332	SBD5R1		DROP 5 RACK 1 STATUS	
400333	SBD5R2		DROP 5 RACK 2 STATUS	
400334	SBD5R3		DROP 5 RACK 3 STATUS	
400335	SBD5R4		DROP 5 RACK 4 STATUS	
400336	SBD5R5		DROP 5 RACK 5 STATUS	
400337	SBD6R1		DROP 6 RACK 1 STATUS	
400338	SBD6R2		DROP 6 RACK 2 STATUS	
400339	SBD6R3		DROP 6 RACK 3 STATUS	
400340	SBD6R4		DROP 6 RACK 4 STATUS	
400341	SBD6R5		DROP 6 RACK 5 STATUS	
400342	SBD7R1		DROP 7 RACK 1 STATUS	
400343	SBD7R2		DROP 7 RACK 2 STATUS	
400344	SBD7R3		DROP 7 RACK 3 STATUS	
400345	SBD7R4		DROP 7 RACK 4 STATUS	
400346	SBD7R5		DROP 7 RACK 5 STATUS	
400347	SBD8R1		DROP 8 RACK 1 STATUS	
400348	SBD8R2		DROP 8 RACK 2 STATUS	
400349	SBD8R3		DROP 8 RACK 3 STATUS	
400350	SBD8R4		DROP 8 RACK 4 STATUS	
400351	SBD8R5		DROP 8 RACK 5 STATUS	
400352	SBD9R1		DROP 9 RACK 1 STATUS	
400353	SBD9R2		DROP 9 RACK 2 STATUS	
400354	SBD9R3		DROP 9 RACK 3 STATUS	
400355	SBD9R4		DROP 9 RACK 4 STATUS	
400356	SBD9R5		DROP 9 RACK 5 STATUS	
400357	SBD10R1		DROP 10 RACK 1 STATUS	
400358	SBD10R2		DROP 10 RACK 2 STATUS	
400359	SBD10R3		DROP 10 RACK 3 STATUS	
400360	SBD10R4		DROP 10 RACK 4 STATUS	
400361	SBD10R5		DROP 10 RACK 5 STATUS	
400362	SBD11R1		DROP 11 RACK 1 STATUS	
400363	SBD11R2		DROP 11 RACK 2 STATUS	
400364	SBD11R3		DROP 11 RACK 3 STATUS	
400365	SBD11R4		DROP 11 RACK 4 STATUS	
400366	SBD11R5		DROP 11 RACK 5 STATUS	
400367	SBD12R1		DROP 12 RACK 1 STATUS	
400368	SBD12R2		DROP 12 RACK 2 STATUS	
400369	SBD12R3		DROP 12 RACK 3 STATUS	
400370	SBD12R4		DROP 12 RACK 4 STATUS	
400371	SBD12R5		DROP 12 RACK 5 STATUS	
400372	SBD13R1		DROP 13 RACK 1 STATUS	
400373	SBD13R2		DROP 13 RACK 2 STATUS	
400374	SBD13R3		DROP 13 RACK 3 STATUS	
400375	SBD13R4		DROP 13 RACK 4 STATUS	
400376	SBD13R5		DROP 13 RACK 5 STATUS	
400377	SBD14R1		DROP 14 RACK 1 STATUS	
400378	SBD14R2		DROP 14 RACK 2 STATUS	
400379	SBD14R3		DROP 14 RACK 3 STATUS	
400380	SBD14R4		DROP 14 RACK 4 STATUS	
400381	SBD14R5		DROP 14 RACK 5 STATUS	
400382	SBD15R1		DROP 15 RACK 1 STATUS	
400383	SBD15R2		DROP 15 RACK 2 STATUS	
400384	SBD15R3		DROP 15 RACK 3 STATUS	

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
400385	SBD15R4		DROP 15 RACK 4 STATUS
400386	SBD15R5		DROP 15 RACK 5 STATUS
400387	SBD16R1		DROP 16 RACK 1 STATUS
400388	SBD16R2		DROP 16 RACK 2 STATUS
400389	SBD16R3		DROP 16 RACK 3 STATUS
400390	SBD16R4		DROP 16 RACK 4 STATUS
400391	SBD16R5		DROP 16 RACK 5 STATUS
400392	SBD17R1		DROP 17 RACK 1 STATUS
400393	SBD17R2		DROP 17 RACK 2 STATUS
400394	SBD17R3		DROP 17 RACK 3 STATUS
400395	SBD17R4		DROP 17 RACK 4 STATUS
400396	SBD17R5		DROP 17 RACK 5 STATUS
400397	SBD18R1		DROP 18 RACK 1 STATUS
400398	SBD18R2		DROP 18 RACK 2 STATUS
400399	SBD18R3		DROP 18 RACK 3 STATUS
400400	SBD18R4		DROP 18 RACK 4 STATUS
400401	SBD18R5		DROP 18 RACK 5 STATUS
400402	SBD19R1		DROP 19 RACK 1 STATUS
400403	SBD19R2		DROP 19 RACK 2 STATUS
400404	SBD19R3		DROP 19 RACK 3 STATUS
400405	SBD19R4		DROP 19 RACK 4 STATUS
400406	SBD19R5		DROP 19 RACK 5 STATUS
400407	SBD20R1		DROP 20 RACK 1 STATUS
400408	SBD20R2		DROP 20 RACK 2 STATUS
400409	SBD20R3		DROP 20 RACK 3 STATUS
400410	SBD20R4		DROP 20 RACK 4 STATUS
400411	SBD20R5		DROP 20 RACK 5 STATUS
400412	SBD21R1		DROP 21 RACK 1 STATUS
400413	SBD21R2		DROP 21 RACK 2 STATUS
400414	SBD21R3		DROP 21 RACK 3 STATUS
400415	SBD21R4		DROP 21 RACK 4 STATUS
400416	SBD21R5		DROP 21 RACK 5 STATUS
400417	SBD22R1		DROP 22 RACK 1 STATUS
400418	SBD22R2		DROP 22 RACK 2 STATUS
400419	SBD22R3		DROP 22 RACK 3 STATUS
400420	SBD22R4		DROP 22 RACK 4 STATUS
400421	SBD22R5		DROP 22 RACK 5 STATUS
400422	SBD23R1		DROP 23 RACK 1 STATUS
400423	SBD23R2		DROP 23 RACK 2 STATUS
400424	SBD23R3		DROP 23 RACK 3 STATUS
400425	SBD23R4		DROP 23 RACK 4 STATUS
400426	SBD23R5		DROP 23 RACK 5 STATUS
400427	SBD24R1		DROP 24 RACK 1 STATUS
400428	SBD24R2		DROP 24 RACK 2 STATUS
400429	SBD24R3		DROP 24 RACK 3 STATUS
400430	SBD24R4		DROP 24 RACK 4 STATUS
400431	SBD24R5		DROP 24 RACK 5 STATUS
400432	SBD25R1		DROP 25 RACK 1 STATUS
400433	SBD25R2		DROP 25 RACK 2 STATUS
400434	SBD25R3		DROP 25 RACK 3 STATUS
400435	SBD25R4		DROP 25 RACK 4 STATUS
400436	SBD25R5		DROP 25 RACK 5 STATUS
400437	SBD26R1		DROP 26 RACK 1 STATUS
400438	SBD26R2		DROP 26 RACK 2 STATUS
400439	SBD26R3		DROP 26 RACK 3 STATUS
400440	SBD26R4		DROP 26 RACK 4 STATUS
400441	SBD26R5		DROP 26 RACK 5 STATUS
400442	SBD27R1		DROP 27 RACK 1 STATUS
400443	SBD27R2		DROP 27 RACK 2 STATUS
400444	SBD27R3		DROP 27 RACK 3 STATUS
400445	SBD27R4		DROP 27 RACK 4 STATUS
400446	SBD27R5		DROP 27 RACK 5 STATUS
400447	SBD28R1		DROP 28 RACK 1 STATUS
400448	SBD28R2		DROP 28 RACK 2 STATUS
400449	SBD28R3		DROP 28 RACK 3 STATUS
400450	SBD28R4		DROP 28 RACK 4 STATUS
400451	SBD28R5		DROP 28 RACK 5 STATUS
400452	SBD29R1		DROP 29 RACK 1 STATUS
400453	SBD29R2		DROP 29 RACK 2 STATUS
400454	SBD29R3		DROP 29 RACK 3 STATUS
400455	SBD29R4		DROP 29 RACK 4 STATUS
400456	SBD29R5		DROP 29 RACK 5 STATUS
400457	SBD30R1		DROP 30 RACK 1 STATUS
400458	SBD30R2		DROP 30 RACK 2 STATUS
400459	SBD30R3		DROP 30 RACK 3 STATUS
400460	SBD30R4		DROP 30 RACK 4 STATUS
400461	SBD30R5		DROP 30 RACK 5 STATUS
400462	SBD31R1		DROP 31 RACK 1 STATUS
400463	SBD31R2		DROP 31 RACK 2 STATUS

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
400464	SBD31R3		DROP 31 RACK 3 STATUS
400465	SBD31R4		DROP 31 RACK 4 STATUS
400466	SBD31R5		DROP 31 RACK 5 STATUS
400467	SBD32R1		DROP 32 RACK 1 STATUS
400468	SBD32R2		DROP 32 RACK 2 STATUS
400469	SBD32R3		DROP 32 RACK 3 STATUS
400470	SBD32R4		DROP 32 RACK 4 STATUS
400471	SBD32R5		DROP 32 RACK 5 STATUS
400472	S908errcod		
400473	cableaerr1		
400474	SB174		
400475	SB175		
400476	cableberr1		
400477	SB177		
400478	SB178		
400479	globalcom1		
400480	SB180		
400481	SB181		
400482	dlerrcnt1		
400483	SB183		
400484	SB184		
400485	SB185		
400486	SB186		
400487	SB187		
400488	SB188		
400489	SB189		
400490	SB190		
400491	SB191		
400492	SB192		
400493	SB193		
400494	SB194		
400495	SB195		
400496	SB196		
400497	SB197		
400498	SB198		
400499	SB199		
400500	SB200		
400501	SB201		
400502	SB202		
400503	SB203		
400504	SB204		
400505	SB205		
400506	SB206		
400507	SB207		
400508	SB208		
400509	SB209		
400510	SB210		
400511	SB211		
400512	SB212		
400513	SB213		
400514	SB214		
400515	SB215		
400516	SB216		
400517	SB217		
400518	SB218		
400519	SB219		
400520	SB220		
400521	SB221		
400522	SB222		
400523	SB223		
400524	SB224		
400525	SB225		
400526	SB226		
400527	SB227		
400528	SB228		
400529	SB229		
400530	SB230		
400531	SB231		
400532	SB232		
400533	SB233		
400534	SB234		
400535	SB235		
400536	SB236		
400537	SB237		
400580	RG_CMD1	14.2.7.1	ASCII BASIC COMMAND INTERFACE
400581	RG_CMD2	14.2.7.2	ASCII/BASIC COMMAND INTERFACE
400582	RG_CMD3	14.2.7.3	ASCII/BASIC COMMAND INTERFACE
400583	RG_CMD4	14.2.7.4	ASCII/BASIC COMMAND INTERFACE
400584	RG_CMD5	14.2.7.5	ASCII/BASIC COMMAND INTERFACE

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
400585	RG_CMD6	14.2.7.6	ASCII/BASIC COMMAND INTERFACE
400586	SPEEDCOPY		DIRECTIONAL MOTOR SPEED (SIMULATED)
400587	SPEEDCOPYF		DIRECTIONAL MOTOR SPEED (SIMULATED) FRACTION
400588	SPDSET		DMOTOR SPEED SETPOINT DECIMAL
400589	SPDSETF		DMOTOR SPEED SETPOINT FRACTION
400590	EMTHSUB1		
400591	EMTHSUB2		
400592	EMTHSUB3		
400593	EMTHSUB4		
400594	MUL9		MULTIPLY REGISTER
400595	MUL10		MULTIPLY REGISTER
400596	TC7CREG1	4.1.7.1	TC7 COMMAND REGISTER 1
400597	TC7CREG2	4.1.7.2	TC7 COMMAND REGISTER 2
400598	TC7CREG3	4.1.7.3	TC7 COMMAND REGISTER 3
400599	TC8CREG1	4.2.3.1	TC8 COMMAND REGISTER 1
400600	TC8CREG2	4.2.3.2	TC8 COMMAND REGISTER 2
400601	TC8CREG3	4.2.3.3	TC8 COMMAND REGISTER 3
400602	TC9CREG1	4.2.7.1	TC9 COMMAND REGISTER 1
400603	TC9CREG2	4.2.7.2	TC9 COMMAND REGISTER 2
400604	TC9CREG3	4.2.7.3	TC9 COMMAND REGISTER 3
400605	RG_CECOPY		
400606	RG_SCR1		
400607	RG_SCR2		
400608	RG_SCR3		
400609	RG_TIMER		
400610	RG_STATE		
400611	RG_NSTATE		
400612	RG_RUNF		RGA-5 RUN NUMBER
400613	RG_STATF		RGA-5 STATUS 0=TANK,1=CAL,2=FLUSH,3=UNKNOWN
400614	RG_MINSF		RGA-5 MINUTES SINCE MIDNIGHT
400615	GC1_H2F		GC-1 H2 CONCENTRATION
400616	GC1_ARHIF		GC-1 AREA HI (AREA = ARAHI*32000+ARALO)
400617	GC1_ARLOF		GC-1 AREA LO (AREA = ARAHI*32000+ARALO)
400618	GC1_RTF		GC-1 RETENTION TIME
400619	GC2_H2F		GC-2 H2 CONCENTRATION
400620	GC2_ARHIF		GC-2 AREA HI (AREA = ARBHI*32000+ARBLO)
400621	GC2_ARLOF		GC-2 AREA LO (AREA = ARBHI*32000+ARBLO)
400622	GC2_RTF		GC-2 RETENTION TIME
400623	MUL11		MULTIPLY REGISTER
400624	MUL12		MULTIPLY REGISTER
400625	TC7RCTNDX		TC7 READ COMMAND TABLE INDEX
400626	TC7RCTDEST		TC7 READ COMMAND TABLE TRANSFER DESTINATION
400627	TC7SUTNDX		TC7 SETUP TABLE INDEX
400628	TC7SUTDEST		TC7 SETUP TABLE TRANSFER DESTINATION
400629	TCCMSBMASK		TC MSB MASK (7FFFH)
400630	TC7MECHO		TC7 MASKED COMMAND ECHO
400631	TC7SCR		SCRATCH
400632	TCCZERO		ZERO
400633	GC3_TIMEF		GC3 - TIME OF SAMPLE
400634	GC3_AREAF		
400635	GC3_RTF		GC3 - HYDROGEN RETENTION TIME
400636	GC3_H2F		GC3 - HYDROGEN CONCENTRATION
400637	GC3_FILEF		GC3 - FILE ID
400638	FT_TIMEF		FTIR - TIME OF SAMPLE
400639	TC8MECHO		TC8 MASKED COMMAND ECHO
400640	TC8SCR		SCRATCH
400641	TC9MECHO		TC8 MASKED COMMAND ECHO
400642	TC9SCR		SCRATCH
400643	TC8RCTNDX		TC8 READ COMMAND TABLE INDEX
400644	TC8RCTDEST		TC8 READ COMMAND TABLE TRANSFER DESTINATION
400645	TC8SUTNDX		TC8 SETUP TABLE INDEX
400646	TC8SUTDEST		TC8 SETUP TABLE TRANSFER DESTINATION
400647	TC9RCTNDX		TC9 READ COMMAND TABLE INDEX
400648	TC9RCTDEST		TC9 READ COMMAND TABLE TRANSFER DESTINATION
400649	FT_N2OAF		FTIR - N20 PEAK AREA
400650	FT_N2OCF		FTIR - N20 CONCENTRATION
400651	FT_NH3AF		FTIR - NH3 PEAK AREA
400652	FT_NH3CF		FTIR - NH3 CONCENTRATION
400653	FT_FILEF		FTIR - FILE ID
400654	PCR12A01F		PUMP DISCHARGE PRESSURE MINUS BASELINE
400655	TC9SUTNDX		TC9 SETUP TABLE INDEX
400656	TC9SUTDEST		TC9 SETUP TABLE TRANSFER DESTINATION
400657			
400658			
400659			
400660	TIR17C01F		TANK TEMP RISER 17C - 4"
400661	TIR17C02F		TANK TEMP RISER 17C - 16"
400662	TIR17C03F		TANK TEMP RISER 17C - 28"
400663	TIR17C04F		TANK TEMP RISER 17C - 52"

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
400664	TIR17C05F		TANK TEMP RISER 17C - 76"
400665	TIR17C06F		TANK TEMP RISER 17C - 100"
400666	TIR17C07F		TANK TEMP RISER 17C - 112"
400667	TIR17C08F		TANK TEMP RISER 17C - 124"
400668	TIR17C09F		TANK TEMP RISER 17C - 148"
400669	TIR17C10F		TANK TEMP RISER 17C - 172"
400670	TIR17C11F		TANK TEMP RISER 17C - 196"
400671	TIR17C12F		TANK TEMP RISER 17C - 208"
400672	TIR17C13F		TANK TEMP RISER 17C - 220"
400673	TIR17C14F		TANK TEMP RISER 17C - 232"
400674	TIR17C15F		TANK TEMP RISER 17C - 244"
400675	TIR17C16F		TANK TEMP RISER 17C - 268"
400676	TIR17C17F		TANK TEMP RISER 17C - 292"
400677	TIR17C18F		TANK TEMP RISER 17C - 340"
400678	TIR17C19F		TANK TEMP RISER 17C - 364"
400679	TIR17C20F		TANK TEMP RISER 17C - 392"
400680	TIR17C21F		TANK TEMP RISER 17C - 402"
400681	TIR17C22F		TANK TEMP RISER 17C - 425"
400682	SCRATCH1		SCRATCH REGISTER
400683	SCRATCH2		TIMER REGISTER
400684	SCRATCH3		TIMER REGISTER
400685	HF_ALTIM		
400686	PHO_TIMEF		PHOTO NH3 TIME OF SAMPLE
400687			
400688			
400689	PHO_MSBF		PHOTO NH3 CONCENTRATION - MSB
400690	PHO_LSBF		PHOTO NH3 CONCENTRATION - LSB
400691	PDPBASEF		PUMP DISCHARGE PRESSURE BASELINE
400692	GC2_FILEF		GC2 FILE ID NUMBER
400693	ACCELCOPYH		ALWAYS 0
400694	ACCELCOPYL		DIRECTIONAL MOTOR ACCEL
400695	CONST1		SET TO 0
400696	CONST2		SET TO 10
400697	SPDINCRHI		SPEED INCREMENT HI (SHOULD BE 0)
400698	SPDINCRLO		SPEED INCREMENT LO
400699	SPDINCRFR		SPEED INCREMENT FRACTION
400700	SPEEDL		DIRECTIONAL MOTOR SPEED (SIMULATED)
400701	SPEEDFRAC		DIRECTIONAL MOTOR SPEED FRACTION
400702	EMTHADD1		
400703	NEWSPEEDL		NEW DIRECTIONAL MOTOR SPEED (SIMULATED)
400704	NEWSPEEDFR		NEW DIRECTIONAL MOTOR SPEED FRACTION
400705	EMTHADD2		
400706	CONST3		SET TO 7
400707	CONST4		SET TO 8568
400708	CONST5		SET TO 0
400709	NEWSPEEDC		NEW SIMULATED DMOTOR SPEED COPY
400710	SECS_DEGH		SECONDS PER DEGREE TIMES 100 HI
400711	SECS_DEGL		SECONDS PER DEGREE TIMES 100 LO
400712	EMTHDIV1		
400713	EMTHDIV2		
400714			
400715	SPDSETL		DMOTOR SETPOINT SPEED LOW
400716	SPDSETFR		DMOTOR SETPOINT SPEED FRACTION
400717	SCAN_SECS		SCAN TIMER COUNTS SECONDS
400718	SCAN_MS		LOGIC SCAN TIME (ms)
400719			
400720			
400721	TIMERREG		
400722	TIMERREG2		
400723	TIMERREG3		
400724	TC5RCTNDX		TC5 READ COMMAND TABLE INDEX
400725	TC5RCTDEST		TC5 READ COMMAND TABLE TRANSFER DESTINATION
400726	TC5SUTNDX		TC5 SETUP TABLE INDEX
400727	TC5SUTDEST		TC5 SETUP TABLE TRANSFER DESTINATION
400728	TC6RCTNDX		TC6 READ COMMAND TABLE INDEX
400729	TC6RCTDEST		TC6 READ COMMAND TABLE TRANSFER DESTINATION
400730	TC6SUTNDX		TC6 SETUP TABLE INDEX
400731	TC6SUTDEST		TC6 SETUP TABLE TRANSFER DESTINATION
400732	TC4CREG1	13.1.4.1	TC4 COMMAND REGISTER 1
400733	TC4CREG2	13.1.4.2	TC4 COMMAND REGISTER 2
400734	TC4REG3	13.1.4.3	TC4 COMMAND REGISTER 3
400735	TC5REG1	13.1.5.1	TC5 COMMAND REGISTER 1
400736	TC5REG2	13.1.5.2	TC5 COMMAND REGISTER 2
400737	TC5REG3	13.1.5.3	TC5 COMMAND REGISTER 3
400738	TC6REG1	13.1.6.1	TC6 COMMAND REGISTER 1
400739	TC6REG2	13.1.6.2	TC6 COMMAND REGISTER 2
400740	TC6REG3	13.1.6.3	TC6 COMMAND REGISTER 3
400741	TCBSTOP		TC STOP COMMAND
400742	TCBBLANK1		

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
400743	TCBBLANK2		
400744	TCBTOCONF		TC ENTER CONFIGURATION MODE COMMAND
400745	TCBBLANK3		
400746	TCBBLANK4		
400747	TCBSETCH1		TC SET CHANNEL PARAMETERS COMMAND
400748	TCBCH1		
400749	TCBPARAM1		
400750	TCBSETCH2		
400751	TCBCH2		
400752	TCBPARAM2		
400753	TCBSETCH3		
400754	TCBCH3		
400755	TCBPARAM3		
400756	TCBSETCH4		
400757	TCBCH4		
400758	TCBPARAM4		
400759	TCBSETCH5		
400760	TCBCH5		
400761	TCBPARAM5		
400762	TCBSETCH6		
400763	TCBCH6		
400764	TCBPARAM6		
400765	TCBSETCH7		
400766	TCBCH7		
400767	TCBPARAM7		
400768	TCBSETCH8		
400769	TCBCH8		
400770	TCBPARAM8		
400771	TCBSETCH9		
400772	TCBCH9		
400773	TCBPARAM9		
400774	TCBSETCH10		
400775	TCBCH10		
400776	TCBPARAM10		
400777	TCBFROMCFG		
400778	TCBBLANK5		
400779	TCBBLANK6		
400780	TCBSTART		TC START COMMAND
400781	TCBBLANK7		
400782	TCBBLANK8		
400783	MUL13		MULTIPLY REGISTER
400784	MUL14		MULTIPLY REGISTER
400785	MUL15		MULTIPLY REGISTER
400786	MUL16		MULTIPLY REGISTER
400787	TC1VTFINDX		TC1 FRACTION VALUE TABLE INDEX
400788	TC1TV1FR		TC1 VALUE 1 (FRACTION)
400789	TC1VT2FR		TC1 VALUE 2 (FRACTION)
400790	TC1VT3FR		TC1 VALUE 3 (FRACTION)
400791	TC1VT4FR		TC1 VALUE 4 (FRACTION)
400792	TC1VT5FR		TC1 VALUE 5 (FRACTION)
400793	TC1VT6FR		TC1 VALUE 6 (FRACTION)
400794	TC1VT7FR		TC1 VALUE 7 (FRACTION)
400795	TC1VT8FR		TC1 VALUE 8 (FRACTION)
400796	TC1VT9FR		TC1 VALUE 9 (FRACTION)
400797	TC1VT10FR		TC1 VALUE 10 (FRACTION)
400798	TC2VTFINDX		TC2 FRACTION VALUE TABLE INDEX
400799	TC2VT1FR		TC2 VALUE 1 (FRACTION)
400800	TC2VT2FR		TC2 VALUE 2 (FRACTION)
400801	TC2VT3FR		TC2 VALUE 3 (FRACTION)
400802	TC2VT4FR		TC2 VALUE 4 (FRACTION)
400803	TC2VT5FR		TC2 VALUE 5 (FRACTION)
400804	TC2VT6FR		TC2 VALUE 6 (FRACTION)
400805	TC2VT7FR		TC2 VALUE 7 (FRACTION)
400806	TCTVT8FR		TC2 VALUE 8 (FRACTION)
400807	TC2VT9FR		TC2 VALUE 9 (FRACTION)
400808	TC2VT10FR		TC2 VALUE 10 (FRACTION)
400809	TC3VTINDX		TC3 FRACTION VALUE TABLE INDEX
400810	TC3VT1FR		TC3 VALUE 1 (FRACTION)
400811	TC3VT2FR		TC3 VALUE 2 (FRACTION)
400812	TC3VT3FR		TC3 VALUE 3 (FRACTION)
400813	TC3VT4FR		TC3 VALUE 4 (FRACTION)
400814	TC3VT5FR		TC3 VALUE 5 (FRACTION)
400815	TC3VT6FR		TC3 VALUE 6 (FRACTION)
400816	TC3VT7FR		TC3 VALUE 7 (FRACTION)
400817	TC3VT8FR		TC3 VALUE 8 (FRACTION)
400818	TC3VT9FR		TC3 VALUE 9 (FRACTION)
400819	TC3VT10FR		TC3 VALUE 10 (FRACTION)
400820	TC4VTINDX		TC4 FRACTION VALUE TABLE INDEX
400821	TC4VT1FR		TC4 VALUE 1 (FRACTION)

Register Number	Symbol	Drop.Rack. Slot.Chan	Description
400822	TC4VT2FR		TC4 VALUE 2 (FRACTION)
400823	TC4VT3FR		TC4 VALUE 3 (FRACTION)
400824	TC4VT4FR		TC4 VALUE 4 (FRACTION)
400825	TC4VT5FR		TC4 VALUE 5 (FRACTION)
400826	TC4VT6FR		TC4 VALUE 6 (FRACTION)
400827	TC4VT7FR		TC4 VALUE 7 (FRACTION)
400828	TC4VT8FR		TC4 VALUE 8 (FRACTION)
400829	TC4VT9FR		TC4 VALUE 9 (FRACTION)
400830	TC4VT10FR		TC4 VALUE 10 (FRACTION)
400831	TC5VTINDX		TC5 FRACTION VALUE TABLE INDEX
400832	TC5VT1FR		TC5 VALUE 1 (FRACTION)
400833	TC5VT2FR		TC5 VALUE 2 (FRACTION)
400834	TC5VT3FR		TC5 VALUE 3 (FRACTION)
400835	TC5VT4FR		TC5 VALUE 4 (FRACTION)
400836	TC5VT5FR		TC5 VALUE 5 (FRACTION)
400837	TC5VT6FR		TC5 VALUE 6 (FRACTION)
400838	TC5VT7FR		TC5 VALUE 7 (FRACTION)
400839	TC5VT8FR		TC5 VALUE 8 (FRACTION)
400840	TC5VT9FR		TC5 VALUE 9 (FRACTION)
400841	TC5VT10FR		TC5 VALUE 10 (FRACTION)
400842	TC6VTINDX		TC6 FRACTION VALUE TABLE INDEX
400843	TC6VT1FR		TC6 VALUE 1 (FRACTION)
400844	TC6VT2FR		TC6 VALUE 2 (FRACTION)
400845	TC6VT3FR		TC6 VALUE 3 (FRACTION)
400846	TC6VT4FR		TC6 VALUE 4 (FRACTION)
400847	TC6VT5FR		TC6 VALUE 5 (FRACTION)
400848	TC6VT6FR		TC6 VALUE 6 (FRACTION)
400849	TC6VT7FR		TC6 VALUE 7 (FRACTION)
400850	TC6VT8FR		TC6 VALUE 8 (FRACTION)
400851	TC6VT9FR		TC6 VALUE 9 (FRACTION)
400852	TC6VT10FR		TC6 VALUE 10 (FRACTION)
400853	TCCSTOP		TC STOP COMMAND
400854	TCCBLANK1		
400855	TCCBLANK2		
400856	TCCTOCONF		TC ENTER CONFIGURATION MODE COMMAND
400857	TCCBLANK3		
400858	TCCBLANK4		
400859	TCCSETCH1		TC SET CHANNEL PARAMETERS COMMAND
400860	TCCCH1		
400861	TCCPARAM1		
400862	TCCSETCH2		
400863	TCCCH2		
400864	TCCPARAM2		
400865	TCCSETCH3		
400866	TCCCH3		
400867	TCCPARAM3		
400868	TCCSETCH4		
400869	TCCCH4		
400870	TCCPARAM4		
400871	TCCSETCH5		
400872	TCCCH5		
400873	TCCPARAM5		
400874	TCCSETCH6		
400875	TCCCH6		
400876	TCCPARAM6		
400877	TCCSETCH7		
400878	TCCCH7		
400879	TCCPARAM7		
400880	TCCSETCH8		
400881	TCCCH8		
400882	TCCPARAM8		
400883	TCCSETCH9		
400884	TCCCH9		
400885	TCCPARAM9		
400886	TCCSETCH10		
400887	TCCCH10		
400888	TCCPARAM10		
400889	TCCFROMCFG		
400890	TCCBLANK5		
400891	TCCBLANK6		
400892	TCCSTART		TC START COMMAND
400893	TCCBLANK7		
400894	TCCBLANK8		
400895	TCCSCRATCH		SCRATCH
400896	TCCRC1		TC READ CHANNEL 1 COMMAND
400897	TCCRC2		TC READ CHANNEL 2 COMMAND
400898	TCCRC3		TC READ CHANNEL 3 COMMAND
400899	TCCRC4		TC READ CHANNEL 4 COMMAND
400900	TCCRC5		TC READ CHANNEL 5 COMMAND

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
400901	TCCRC6		TC READ CHANNEL 6 COMMAND	
400902	TCCRC7		TC READ CHANNEL 7 COMMAND	
400903	TCCRC8		TC READ CHANNEL 8 COMMAND	
400904	TCCRC9		TC READ CHANNEL 9 COMMAND	
400905	TCCRC10		TC READ CHANNEL 10 COMMAND	
400906	TC7VTNDX		TC7 VALUE TABLE INDEX	
400907	TC7TV1		TC7 TEMPERATURE VALUE 1 (TIR17B01)	
400908	TC7TV2		TC7 TEMPERATURE VALUE 2 (TIR17B04)	
400909	TC7TV3		TC7 TEMPERATURE VALUE 3 (TIR17B07)	
400910	TC7TV4		TC7 TEMPERATURE VALUE 4 (TIR17B10)	
400911	TC7TV5		TC7 TEMPERATURE VALUE 5 (TIR17B13)	
400912	TC7TV6		TC7 TEMPERATURE VALUE 6 (TIR17B16)	
400913	TC7TV7		TC7 TEMPERATURE VALUE 7 (TIR17B19)	
400914	TC7TV8		TC7 TEMPERATURE VALUE 8 (TIR17B22)	
400915	TC7TV9		TC7 TEMPERATURE VALUE 9 (UNUSED)	
400916	TC7TV10		TC7 TEMPERATURE VALUE 10 (UNUSED)	
400917	TC7VTFNSX		TC7 FRACTION VALUE TABLE INDEX	
400918	TC7TV1FR		TC7 VALUE 1 (FRACTION)	
400919	TC7TV2FR		TC7 VALUE 2 (FRACTION)	
400920	TC7TV3FR		TC7 VALUE 3 (FRACTION)	
400921	TC7TV4FR		TC7 VALUE 4 (FRACTION)	
400922	TC7TV5FR		TC7 VALUE 5 (FRACTION)	
400923	TC7TV6FR		TC7 VALUE 6 (FRACTION)	
400924	TC7TV7FR		TC7 VALUE 7 (FRACTION)	
400925	TC7TV8FR		TC7 VALUE 8 (FRACTION)	
400926	TC7TV9FR		TC7 VALUE 9 (FRACTION)	
400927	TC7TV10FR		TC7 VALUE 10 (FRACTION)	
400928	TC8VTNDX		TC8 VALUE TABLE INDEX	
400929	TC8TV1		TC8 TEMPERATURE VALUE 1 (TIR17B02)	
400930	TC8TV2		TC8 TEMPERATURE VALUE 2 (TIR17B05)	
400931	TC8TV3		TC8 TEMPERATURE VALUE 3 (TIR17B08)	
400932	TC8TV4		TC8 TEMPERATURE VALUE 4 (TIR17B11)	
400933	TC8TV5		TC8 TEMPERATURE VALUE 5 (TIR17B14)	
400934	TC8TV6		TC8 TEMPERATURE VALUE 6 (TIR17B17)	
400935	TC8TV7		TC8 TEMPERATURE VALUE 7 (TIR17B20)	
400936	TC8TV8		TC8 TEMPERATURE VALUE 8 (UNUSED)	
400937	TC8TV9		TC8 TEMPERATURE VALUE 9 (UNUSED)	
400938	TC8TV10		TC8 TEMPERATURE VALUE 10 (UNUSED)	
400939	TC8VTNDXFR		TC8 FRACTION VALUE TABLE INDEX	
400940	TC8TV1FR		TC8 VALUE 1 (FRACTION)	
400941	TC8TV2FR		TC8 VALUE 2 (FRACTION)	
400942	TC8TV3FR		TC8 VALUE 3 (FRACTION)	
400943	TC8TV4FR		TC8 VALUE 4 (FRACTION)	
400944	TC8TV5FR		TC8 VALUE 5 (FRACTION)	
400945	TC8TV6FR		TC8 VALUE 6 (FRACTION)	
400946	TC8TV7FR		TC8 VALUE 7 (FRACTION)	
400947	TC8TV8FR		TC8 VALUE 8 (FRACTION)	
400948	TC8TV9FR		TC8 VALUE 9 (FRACTION)	
400949	TC8TV10FR		TC8 VALUE 10 (FRACTION)	
400950	TC9VTNDX		TC9 VALUE TABLE INDEX	
400951	TC9TV1		TC9 TEMPERATURE VALUE 1 (TIR17B03)	
400952	TC9TV2		TC9 TEMPERATURE VALUE 2 (TIR17B06)	
400953	TC9TV3		TC9 TEMPERATURE VALUE 3 (TIR17B09)	
400954	TC9TV4		TC9 TEMPERATURE VALUE 4 (TIR17B12)	
400955	TC9TV5		TC9 TEMPERATURE VALUE 5 (TIR17B15)	
400956	TC9TV6		TC9 TEMPERATURE VALUE 6 (TIR17B18)	
400957	TC9TV7		TC9 TEMPERATURE VALUE 7 (TIR17B21)	
400958	TC9TV8		TC9 TEMPERATURE VALUE 8 (UNUSED)	
400959	TC9TV9		TC9 TEMPERATURE VALUE 9 (UNUSED)	
400960	TC9TV10		TC9 TEMPERATURE VALUE 10 (UNUSED)	
400961	TC9VTNDXFR		TC9 FRACTION VALUE TABLE INDEX	
400962	TC9TV1FR		TC9 VALUE 1 (FRACTION)	
400963	TC9TV2FR		TC9 VALUE 2 (FRACTION)	
400964	TC9TV3FR		TC9 VALUE 3 (FRACTION)	
400965	TC9TV4FR		TC9 VALUE 4 (FRACTION)	
400966	TC9TV5FR		TC9 VALUE 5 (FRACTION)	
400967	TC9TV6FR		TC9 VALUE 6 (FRACTION)	
400968	TC9TV7FR		TC9 VALUE 7 (FRACTION)	
400969	TC9TV8FR		TC9 VALUE 8 (FRACTION)	
400970	TC9TV9FR		TC9 VALUE 9 (FRACTION)	
400971	TC9TV10FR		TC9 VALUE 10 (FRACTION)	
402001			UNUSED	G1C0.1
402002			UNUSED	G1C0.2
402003	TIR12A02		PUMP MOTOR OIL TEMPERATURE #2	G1C0.3
402004	TIR12A01		PUMP MOTOR OIL TEMPERATURE #1	G1C0.4
402005			UNUSED	G1C0.5
402006	ZIMPE142		LOW PUMP COLUMN GAS PRESSURE	G1C0.6
402007	PIR12A01		PUMP PRESSURE	G1C0.7
402008			UNUSED	G1C0.8

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
402009			UNUSED	G1C1.1
402010			UNUSED	G1C1.2
402011			UNUSED	G1C1.3
402012			UNUSED	G1C1.4
402013			UNUSED	G1C1.5
402014			UNUSED	G1C1.6
402015			UNUSED	G1C1.7
402016			UNUSED	G1C1.8
402017	PITNO111		PUMP #2 NOZZLE TAP PRESSURE	G1C2.1
402018	PITNO110		PUMP #1 NOZZLE TAP PRESSURE	G1C2.2
402019	TT10001		VENT HEADER TEMPERATURE	G1C2.3
402020	PITMSY13		GC-3 SAMPLE PRESSURE	G1C2.4
402021	MT10001		VENT HEADER RELATIVE HUMIDITY	G1C2.5
402022	TITMSY15		FTIR SAMPLE GAS TEMP	G1C2.6
402023	FTE50002		VENT HEADER FLOW HIGH RANGE	G1C2.7
402024	LIR01A		ENRAF TANK WASTE LEVEL RISER 1A	G1C2.8
402025	PITMSY16		FTIR SAMPLE PRESSURE	G1C3.1
402026	FITMSY17		FTIR SAMPLE FLOW	G1C3.2
402027	LIR01C		ENRAF TANK WASTE LEVEL RISER 1C	G1C3.3
402028	PITMSY07		GC-1 SAMPLE PRESSURE	G1C3.4
402029	TICMSY18		FTIR COOLING WATER TEMP	G1C3.5
402030	TITMSY25		GMS II BUILDING	G1C3.6
402031	PDTMSY12		GC-3 DIFF PRESSURE	G1C3.7
402032	PITMSY04		SAMPLING INLET PRESSURE	G1C3.8
402033	PIR17B04		MIT TANK DOME PRESSURE RISER 17B	G1C4.1
402034	NITJSY06		0-10% H2 RISER 16A SHMS 1	G1C4.2
402035	NITKSY06		0-10% H2 VENT HDR SHMS 2	G1C4.3
402036	NIR17B01		SHNS #3 RISER 17B	G1C4.4
402037	NIR05A01		SHNS MIXER PUMP/TEST CHAMBER	G1C4.5
402038				G1C4.6
402039				G1C4.7
402040				G1C4.8
402041				G1C5.1
402042				G1C5.2
402043				G1C5.3
402044				G1C5.4
402045				G1C5.5
402046				G1C5.6
402047				G1C5.7
402048				G1C5.8
402049				G1C6.1
402050				G1C6.2
402051				G1C6.3
402052				G1C6.4
402053				G1C6.5
402054				G1C6.6
402055				G1C6.7
402056				G1C6.8
402057				G1C7.1
402058				G1C7.2
402059				G1C7.3
402060				G1C7.4
402061	FTE50001		VENT HEADER FLOW LOW RANGE	G1C7.5
402062	PIR17C01		TANK DOME PRESSURE RISER 17C	G1C7.6
402063	RGA5TND1		RGA-5 TREND OUTPUT 1	G1C7.7
402064	RGA5TND2		RGA-5 TREND OUTPUT 2	G1C7.8
402065	NITHDR01		0-10% H2 VENT HDR CHESSEL	G1C8.1
402066	TIVDTCAB		VDTT INST CABINET TEMP	G1C8.2
402067	TII04CAB		I/O #4 CABINET TEMP	G1C8.3
402068	PITMSY10		GC-2 SAMPLE PRESSURE	G1C8.4
402069	WIR1BA02		STRAIN GAUGE RISER 1B AT LEVEL 530"	G1C8.5
402070			UNUSED	G1C8.6
402071	WIR12A04		PUMP SUPPORT COLUMN STRAIN #4 315 DEG	G1C8.7
402072			UNUSED	G1C8.8
402073	WIR12A01		PUMP SUPPORT COLUMN STRAIN #1 45 DEG	G1C9.1
402074	WIR12A03		PUMP SUPPORT COLUMN STRAIN #3 225 DEG	G1C9.2
402075			UNUSED	G1C9.3
402076	WIR17C02		STRAIN GAUGE RISER 17C AT LEVEL	G1C9.4
402077	WIR1BA01		STRAIN GAUGE RISER 1B AT LEVEL 530"	G1C9.5
402078	WIR1BA03		STRAIN GAUGE RISER 1B AT LEVEL 530"	G1C9.6
402079			UNUSED	G1C9.7
402080	WIR12A02		PUMP SUPPORT COLUMN STRAIN #2 135 DEG	G1C9.8
402081	WIR17C01		STRAIN GAUGE RISER 17C AT LEVEL	G1C10.1
402082				G1C10.2
402083				G1C10.3
402084				G1C10.4
402085	WSH1		DACS-1 WEATHER STATION HUMIDITY	G1C10.5
402086	WSWDIR		DACS-1 WEATHER STATION WIND DIRECTION	G1C10.6
402087	WSP1		DACS-1 W.S. BAROMETRIC PRESSURE	G1C10.7

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
402088	FTE50003		SY TANK FARM EXHAUST FLOW	G1C10.8
402089	PIO10001		CAMERA ENCLOSURE PURGE PRESSURE	G1C11.1
402090	PIO20002		NITROGEN SUPPLY	G1C11.2
402091	WSWSPD		DACS-1 WEATHER STATION WIND SPEED	G1C11.3
402092	ARMGEXP		ARMGAMMA CALCULATION	G1C11.4
402093	TRA1A		DACS-1 TRAILER CURRENT PHASE A	G1C11.5
402094	TRA1B		DACS-1 TRAILER CURRENT PHASE B	G1C11.6
402095	TRA1C		DACS-1 TRAILER CURRENT PHASE C	G1C11.7
402096	TRV1		DACS-1 TRAILER VOLTAGE	G1C11.8
402097	TRT1		TRAILER TEMPERATURE REAR RACK 2	G1C12.1
402098	TRT3		TRAILER TEMPERATURE REAR RACK 6	G1C12.2
402099	TRT5		TRAILER TEMPERATURE FRONT RACK 1	G1C12.3
402100	TRT7		TRAILER TEMPERATURE FRONT RACK 5	G1C12.4
402101	TRT9		TRAILER TEMPERATURE FRONT RACK 8	G1C12.5
402102	TRT10		TRAILER TEMPERATURE AMBIENT	G1C12.6
402103	UPST1		UPS TEMPERATURE	G1C12.7
402104	WST1		DACS-1 WEATHER STATION TEMPERATURE	G1C12.8
402105	TRT2		TRAILER TEMPERATURE REAR RACK 4	G1C13.1
402106	TRT4		TRAILER TEMPERATURE REAR RACK 8	G1C13.2
402107	TRT6		TRAILER TEMPERATURE FRONT RACK 3	G1C13.3
402108	TRT8		TRAILER TEMPERATURE FRONT RACK 6	G1C13.4
402109	TRT11		TRAILER TEMPERATURE REAR RACK 9	G1C13.5
402110				G1C13.6
402111				G1C13.7
402112				G1C13.8
402113				G1C14.1
402114				G1C14.2
402115				G1C14.3
402116				G1C14.4
402117				G1C14.5
402118				G1C14.6
402119				G1C14.7
402120				G1C14.8
402121				G1C15.1
402122				G1C15.2
402123				G1C15.3
402124				G1C15.4
402125				G1C15.5
402126				G1C15.6
402127				G1C15.7
402128				G1C15.8
402129	PCR12A01		PUMP DISCHARGE PRESSURE MINUS BASELINE	H2C0.1
402130	PDPBASE		PUMP DISCHARGE PRESSURE BASELINE	H2C0.2
402131	ZIMPE112		MIXER PUMP OSCILLATOR POSITION (B865)	H2C0.3
402132	TIR17B01		TANK TEMP RISER 17B AT LEVEL 4"	H2C0.4
402133	TIR17B02		TANK TEMP RISER 17B AT LEVEL 16"	H2C0.5
402134	TIR17B03		TANK TEMP RISER 17B AT LEVEL 28"	H2C0.6
402135	TIR17B04		TANK TEMP RISER 17B AT LEVEL 52"	H2C0.7
402136	TIR17B05		TANK TEMP RISER 17B AT LEVEL 76"	H2C0.8
402137	RG_RUN		RGA-5 RUN NUMBER	H2C1.1
402138	RG_STAT		RGA-5 STATUS 0=TANK,1=CAL,2=FLUSH,3=UNK	H2C1.2
402139	RG_MINS		RGA-5 MINUTES SINCE MIDNIGHT	H2C1.3
402140	GC1_H2		GC-1 H2 CONCENTRATION	H2C1.4
402141	GC1_ARHI		GC-1 AREA HI (AREA=ARHI*32000+ARLO)	H2C1.5
402142	GC1_ARLO		GC-1 AREA LO (AREA=ARHI*32000+ARLO)	H2C1.6
402143	GC1_RT		GC-1 RETENTION TIME	H2C1.7
402144	GC2_H2		GC-2 H2 CONCENTRATION	H2C1.8
402145	GC2_ARHI		GC-2 AREA HI (AREA=ARHI*32000+ARLO)	H2C2.1
402146	GC2_ARLO		GC-2 AREA LO (AREA=ARHI*32000+ARLO)	H2C2.2
402147	GC2_RT		GC-2 RETENTION TIME	H2C2.3
402148	TBSTC04		TC4 TEMPERATURE VALUE 2	H2C2.4
402149	TBSTC07		TC4 TEMPERATURE VALUE 3	H2C2.5
402150	TIR17B06		TANK TEMP RISER 17B AT LEVEL 100"	H2C2.6
402151	TIR17B07		TANK TEMP RISER 17B AT LEVEL 112"	H2C2.7
402152	TIR17B08		TANK TEMP RISER 17B AT LEVEL 124"	H2C2.8
402153	TIR17B09		TANK TEMP RISER 17B AT LEVEL 148"	H2C3.1
402154	TIR17B10		TANK TEMP RISER 17B AT LEVEL 172"	H2C3.2
402155	PHO_MSB		PHOTO NH3 CONCENTRATION MS BYTE	H2C3.3
402156	PHO_LSB		PHOTO NH3 CONCENTRATION LS BYTE	H2C3.4
402157	TIR17B11		TANK TEMP RISER 17B AT LEVEL 196"	H2C3.5
402158	PHO_TIME		PHOTO NH3 TIME OF SAMPLE	H2C3.6
402159	TIR17C01		TANK TEMP RISER 17C - 4"	H2C3.7
402160	TIR17C02		TANK TEMP RISER 17C - 16"	H2C3.8
402161	TIR17C03		TANK TEMP RISER 17C - 28"	H2C4.1
402162	TIR17C04		TANK TEMP RISER 17C - 52"	H2C4.2
402163	TIR17C05		TANK TEMP RISER 17C - 76"	H2C4.3
402164	TIR17C06		TANK TEMP RISER 17C - 100"	H2C4.4
402165	TIR17C07		TANK TEMP RISER 17C - 112"	H2C4.5
402166	TIR17C08		TANK TEMP RISER 17C - 124"	H2C4.6

Register Number	Symbol	Drop.Rack. Slot.Chan	Description	
402167	TIR17C09		TANK TEMP RISER 17C - 148"	H2C4.7
402168	TIR17C10		TANK TEMP RISER 17C - 172"	H2C4.8
402169	TIR17C11		TANK TEMP RISER 17C - 196"	H2C5.1
402170	TIR17C12		TANK TEMP RISER 17C - 208"	H2C5.2
402171	TIR17C13		TANK TEMP RISER 17C - 220"	H2C5.3
402172	TIR17C14		TANK TEMP RISER 17C - 232"	H2C5.4
402173	TIR17C15		TANK TEMP RISER 17C - 244"	H2C5.5
402174	TIR17C16		TANK TEMP RISER 17C - 268"	H2C5.6
402175	TIR17C17		TANK TEMP RISER 17C - 292"	H2C5.7
402176	TIR17C18		TANK TEMP RISER 17C - 340"	H2C5.8
402177	TIR17C19		TANK TEMP RISER 17C - 364"	H2C6.1
402178	TIR17C20		TANK TEMP RISER 17C - 392"	H2C6.2
402179	TIR17C21		TANK TEMP RISER 17C - 402"	H2C6.3
402180	TIR17C22		TANK TEMP RISER 17C - 425"	H2C6.4
402181	GC3_RT		GC3 - HYDROGEN RETENTION TIME	H2C6.5
402182	GC3_FILE		GC3 - FILE ID	H2C6.6
402183	GC3_TIME		GC3 - TIME OF SAMPLE	H2C6.7
402184	GC3_H2		GC3 - HYDROGEN CONCENTRATION	H2C6.8
402185	FT_N2OA		FTIR - N20 PEAK AREA	H2C7.1
402186	FT_N2OC		FTIR - N20 CONCENTRATION	H2C7.2
402187	FT_NH3A		FTIR - NH3 PEAK AREA	H2C7.3
402188	FT_NH3C		FTIR - NH3 CONCENTRATION	H2C7.4
402189	FT_FILE		FTIR - FILE ID	H2C7.5
402190	FT_TIME		FTIR - TIME OF SAMPLE	H2C7.6
402191	TIR17B12		TANK TEMP RISER 17B AT LEVEL 208"	H2C7.7
402192	TIR17B13		TANK TEMP RISER 17B AT LEVEL 220"	H2C7.8
402193	TBSTC10		TC4 TEMPERATURE VALUE 4	H2C8.1
402194	TBSTC13		TC4 TEMPERATURE VALUE 5	H2C8.2
402195	TBSTC16		TC4 TEMPERATURE VALUE 6	H2C8.3
402196	TBSTC19		TC4 TEMPERATURE VALUE 7	H2C8.4
402197	TBSTC22		TC4 TEMPERATURE VALUE 8	H2C8.5
402198	TBSTC25		TC4 TEMPERATURE VALUE 9	H2C8.6
402199	TBSTC02		TC5 TEMPERATURE VALUE 1	H2C8.7
402200	TBSTC05		TC5 TEMPERATURE VALUE 2	H2C8.8
402201	TBSTC08		TC5 TEMPERATURE VALUE 3	H2C9.1
402202	TBSTC11		TC5 TEMPERATURE VALUE 4	H2C9.2
402203	TBSTC14		TC5 TEMPERATURE VALUE 5	H2C9.3
402204	TBSTC17		TC5 TEMPERATURE VALUE 6	H2C9.4
402205	TBSTC20		TC5 TEMPERATURE VALUE 7	H2C9.5
402206	TBSTC23		TC5 TEMPERATURE VALUE 8	H2C9.6
402207	TBSTC26		TC5 TEMPERATURE VALUE 9	H2C9.7
402208	TBSTC03		TC6 TEMPERATURE VALUE 1	H2C9.8
402209	TBSTC06		TC6 TEMPERATURE VALUE 2	H2C10.1
402210	TBSTC09		TC6 TEMPERATURE VALUE 3	H2C10.2
402211	TBSTC12		TC6 TEMPERATURE VALUE 4	H2C10.3
402212	TBSTC18		TC6 TEMPERATURE VALUE 6	H2C10.4
402213	TBSTC21		TC6 TEMPERATURE VALUE 7	H2C10.5
402214	TBSTC24		TC6 TEMPERATURE VALUE 8	H2C10.6
402215	TBSTC15		TC6 TEMPERATURE VALUE 5	H2C10.7
402216	TBSTC01		TC4 TEMPERATURE VALUE 1	H2C10.8
402217	HPMCALM		PUMP MOTOR CURRENT ALARM LIMIT	H2C11.1
402218	HPMCLIM		PUMP MOTOR CURRENT ABORT LIMIT	H2C11.2
402219	PLCPDPAL		PUMP DISCH. PRESS. ALARM LIMIT	H2C11.3
402220	PLCPDPAB		PUMP DISCH. PRESS. ABORT LIMIT	H2C11.4
402221	PLCPSLIM		PUMP SPEED ABORT LIMIT	H2C11.5
402222	PLCSPDAL		PUMP SPEED ALARM LIMIT	H2C11.6
402223	PBTLIM		PHASE B TEST TIME LIMIT	H2C11.7
402224	BUMPTLIM		PUMP BUMP TIME LIMIT	H2C11.8
402225	VR232050		PUMP SPEED	H2C12.1
402226	VR232080		ROTATIONAL MOTOR VOLTAGE	H2C12.2
402227	VR232100		ROTATIONAL MOTOR CURRENT	H2C12.3
402228	VR232110		ROTATIONAL MOTOR SPEED	H2C12.4
402229	VR232040		PUMP MOTOR CURRENT	H2C12.5
402230	VR232020		MIXER PUMP MOTOR VOLTAGE	H2C12.6
402231	PLCPMCAB		PLC PUMP MOTOR CURRENT LIMIT	H2C12.7
402232	PLCPMCAL		PLC PUMP MOTOR CURRENT ALARM LIMIT	H2C12.8
402233	TIR17B14		TANK TEMP RISER 17B AT LEVEL 232"	H2C13.1
402234	TIR17B15		TANK TEMP RISER 17B AT LEVEL 244"	H2C13.2
402235	TIR17B16		TANK TEMP RISER 17B AT LEVEL 268"	H2C13.3
402236	TIR17B17		TANK TEMP RISER 17B AT LEVEL 292"	H2C13.4
402237	TIR17B18		TANK TEMP RISER 17B AT LEVEL 326"	H2C13.5
402238	TIR17B19		TANK TEMP RISER 17B AT LEVEL 340"	H2C13.6
402239	TIR17B20		TANK TEMP RISER 17B AT LEVEL 364"	H2C13.7
402240	TIR17B21		TANK TEMP RISER 17B AT LEVEL 392"	H2C13.8
402241	TIR17B22		TANK TEMP RISER 17B AT LEVEL 402"	H2C14.1
402242				
409000	VERSION		PLC LADDER LOGIC VERSION NUMBER	

Note: The addresses that appear in the last column (e.g. "H2C14.1") refer to the old GENESIS HMI, and will be replaced with the new FIX32 HMI tag names when the PLC ladder logic is revised from PLC v.3.06 to v.4.00

Appendix H - ASCII/BASIC Listings

```
10 REM_____________________________________________________
15 REM  Filename:  GC3.BAS
20 REM
25 REM  Version:   2.0
30 REM
35 REM  Purpose:  GC3, GC2 and FTIR Data Collection
40 REM            Reads gas data and places it in registers for PLC access.
45 REM            Port 0 for terminal communication
50 REM            Port 1 for data from the gc3 computer
55 REM
60 REM  Modifications:
65 REM            V1.3 - GC2 H2 split into ms byte and ls byte
66 REM            V2.0 - Comments added
67 REM            V2.1 - GC2 removed, PHOTO NH3 added
70 REM_____________________________________________________
75 REM
100 PORT0
110 REM  SND(8) is read by the PLC.  Indicates that data is available.
120 REM
130 SND(8)=0
140 Z=-1
150 PRINT "GC-3 Data Collection"
160 PORT1
170 REM  Clear reg(30).  This register is set by the PLC when data
180 REM  has been captured.
190 REM
200 REG(30)=0
210 REM
220 REM Look for start of transmission (STX - ASCII 2)
230 DO
240 Q=GET
250 REM Strip off any parity bits.
260 REM
270 IF Q>127 THEN Q=Q-128
280 UNTIL Q=2
290 REM
300 REM  STX found.  Input 17 data values and place in registers 0-16.
310 FOR I=0 TO 13
320 PORT1
330 INPUT X
340 REG(I)=X
350 PORT0
360 PRINT REG(I)
370 NEXT I
380 REM Data is in registers.  Notify PLC by setting SND(8) to 1.
390 REM
400 SND(8)=1
410 REM Wait until PLC gets data, then exit.  PLC will automatically
420 REM Re-run program.
430 REM
440 IF(REG(30)=0)THEN 440
450 SND(8)=0
460 END
```

```
10 REM_____________________________________________________
15 REM   Filename: RGA5.BAS
20 REM   Author:   Jeff Martin
25 REM   Version:  1.0
30 REM
35 REM   Purpose:  RGA-5 Data Collection
40 REM             Extract Data from RGA-5 ASCII stream and send it to
45 REM             the PLC.
50 REM
55 REM   Notes:    Port 0 is for terminal communication,
60 REM             Port 1 receives the RGA-5 data stream.
65 REM
70 REM             The following ASCII formats are used by the program
75 REM             RMSG1: S0,D3
80 REM             RMSG2: S1,A1
85 REM             RMSG3: S2
```

```
90 REM              RMSG4: S2,D2,D2
95 REM              RMSG5: S4,F6.1
100 REM             RMSG6: S6,D1,D4,D4
105 REM             RMSG7: S9,D3
110 REM             RMSG8: S10
115 REM             RMSG9: S10,F6.1
120 REM             RMSG10:S12,D1,D4,D4
125 REM             RMSG11:S15,D3
130 REM             RMSG12:S16
135 REM
140 REM           These ASCII formats need to be loaded into the ASCII
145 REM           section of the ASCII/Basic module.
150 REM           In addition, the ASCII/Basic module must be set for no
155 REM           delimeter (DL# 0) and for a prefix string of "=" (PR# 3Dh).
160 REM           XON/XOFF should be enabled (XI# 1).  The communications
165 REM         parameters are 1200 baud, 8 bits, no parity, 1 stop bit.
170 REM
175 REM           The program should be loaded into RAM:2 of the Basic module.
180 REM
185 REM  Modifications:
190 REM
195 REM_____________________________________________________________________
280 ONERR 6000
285 PORT0
290 REM  SND(8) is sent when data has been collected.  PLC uses this
295 REM  to determine when to grab data.
300 REM
305 SND(8)=0
310 REM  "Z" is a constant used in Subroutine at line 1390
315 REM
320 Z=-1
325 PRINT "RGA-5 Data Collection"
330 REM  Search ASCII stream for the word "Run"
335 REM  Reg(30) is set to 1 by the PLC when it has read the data
340 REM
345 REG(30)=0
350 port1
355 DO
360 Q=GET
365 UNTIL Q=ASC("R")
370 REM  Keep reading characters until an "R" is found.
375 REM
380 GOSUB 1390
385 REM Subroutine 1390 will return the next character in Q
390 IF Q<>ASC("u")THEN 355
395 GOSUB 1390
400 IF Q<>ASC("n")THEN 355
405 PORT0
410 PRINT "Message detected"
415 PORT1
420 REM  Read data by issuing rmsg's to the ASCII processor
425 REM
430 FOR I = 1 TO 12
435   RMSG(I)
455 NEXT I
460 REM
465 REM Put data to be sent to PLC into registers 50-60.
470 REM Some data is just copied over, others are converted.
475 REM
480 REM Copy run number
485 REM
490 reg(50) = reg(0)
495 REM
500 REM
505 REM We are expecting stream to be "Tank", "Calibrate" or "Flush".
510 REM Check the first character, set status to 0 for tank, 1 for calibrate
515 REM 2 for flush and 3 for unknown.
520 REM
525 reg(51)=3
530 if reg(1) = asc("t") .OR. reg(1) = asc("T") then reg(51)=0
535 if reg(1) = asc("c") .OR. reg(1) = asc("C") then reg(51)=1
540 if reg(1) = asc("f") .OR. reg(1) = asc("F") then reg(51)=2
545 REM
550 REM
```

```
555 REM Store time as hhmm.
560 REM
565 reg(52)=reg(2)*100+reg(3)
570 REM
575 REM
580 REM Scale concentration to a 16 bit register
585 REM
590 reg(53) = int((reg(4)*1000.0 + reg(5)/10.0) * (65535.0/9999.9))
595 REM
600 REM Break the area down so that it fits into two registers.
605 REM To re-constitute: H2A Area = reg(54)*32000 + reg(55)
610 REM
615 A = (reg(6)*3125.0) + (reg(7)*0.3125) + (reg(8)/32000.0)
620 reg(54) = int(A)
625 reg(55) = int((A-int(A))*32000.0+0.5)
630 REM
635 REM
640 REM Copy H2A Retention time
645 REM
650 reg(56) = reg(9)
655 REM
660 REM
665 REM H2B Concentration scaled to a 16 bit register
670 REM
675 reg(57) = int((reg(10)*1000.0 + reg(11)/10.0) * (65535.0/9999.9))
680 REM
685 REM H2B Area
690 REM
695 A = (reg(12)*3125.0) + (reg(13)*0.3125) + (reg(14)/32000.0)
700 reg(58) = int(A)
705 reg(59) = int((A-int(A))*32000.0+0.5)
710 REM
715 REM H2B Retention Time
720 reg(60) = reg(15)
725 REM
730 REM  Print data to terminal
735 port0
740 print
745 print "Run =                    ",reg(50)
750 print "Status =                 ",reg(51)
755 print "Time =                   ",reg(52)
760 print
765 print "H2A Concentration =      ",(reg(53)/65535.0)*9999.9
770 print "H2A Area =               ",reg(54)*32000.0+reg(55)
775 print "H2A retention time =     ",reg(56)
780 print
785 print "H2B Concentration =      ",(reg(57)/65535.0)*9999.9
790 print "H2B Area =               ",reg(58)*32000.0+reg(59)
795 print "H2B retention time =     ",reg(60)
800 print
805 REM  Data is in the registers. Set SND(8) to notify PLC.
810 REM
815 SND(8)=1
820 REM Wait until PLC grabs data (it will set REG(30) to 1), then
825 REM exit.  PLC will automatically re-run the program.
830 REM
835 IF(REG(30)=0)THEN 835
840 SND(8)=0
845 END

1350 REM
1360 REM Subroutine for reading characters.  If no character is available,
1370 REM GET returns a -1.  This subroutine strips off these -1's until a
1380 REM character is available.
1390 DO : Q=GET : UNTIL Q<>Z
1400 RETURN

6000 port0
6005 print "Error ",ERRNO," Detected
6010 END
```