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Assessment of Effectiveness of
Geologic Isolation Systems

CIRMIS Data System

Volume 3. Generator Routines

D. R. Friedrichs
R. S. Argo

January 1980

Prepared for the
Office of Nuclear Waste Isolation
under its Contract with the
U.S. Department of Energy

Pacific Northwest Laboratory
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DOE-Richland, WA

FOREWORD

The Assessment of Effectiveness of Geologic Isolation Systems (AEGIS) Program is developing and applying the methodology for assessing the far-field, long-term post-closure safety of deep geologic nuclear waste repositories. AEGIS is being performed by Pacific Northwest Laboratory (PNL) under contract with the Office of Nuclear Waste Isolation (OWNI) for the Department of Energy (DOE). One task within AEGIS is the development of methodology for analysis of the consequences (water pathway) from loss of repository containment as defined by various release scenarios.

Analysis of the long-term, far-field consequences of release scenarios requires the application of numerical codes which simulate the hydrologic systems, model the transport of released radionuclides through the hydrologic systems to the biosphere, and, where applicable, assess the radiological dose to humans.

Essentially three modeling technologies are involved in assessing the water pathway release consequence. These models are: 1) hydrologic models that define the groundwater flow field and provide water flow paths and travel times, 2) transport models that describe the movement and concentrations of the radionuclides in the flow field, and 3) dose models that determine the resultant dose burdens to individuals and/or populations. Figure i is a schematic flow diagram for the release consequence analysis.

The various input parameters required in the analysis are compiled in data systems. The data are organized and prepared by various input subroutines for utilization by the hydraulic and transport codes. The hydrologic models simulate the groundwater flow systems and provide water flow directions, rates, and velocities as inputs to the transport models. Outputs from the transport models are basically graphs of radionuclide concentration in the groundwater plotted against time. After dilution in the receiving surface-water body (e.g., lake, river, bay), these data are the input source terms for the dose models, if dose assessments are required. The dose models calculate radiation dose to individuals and populations.

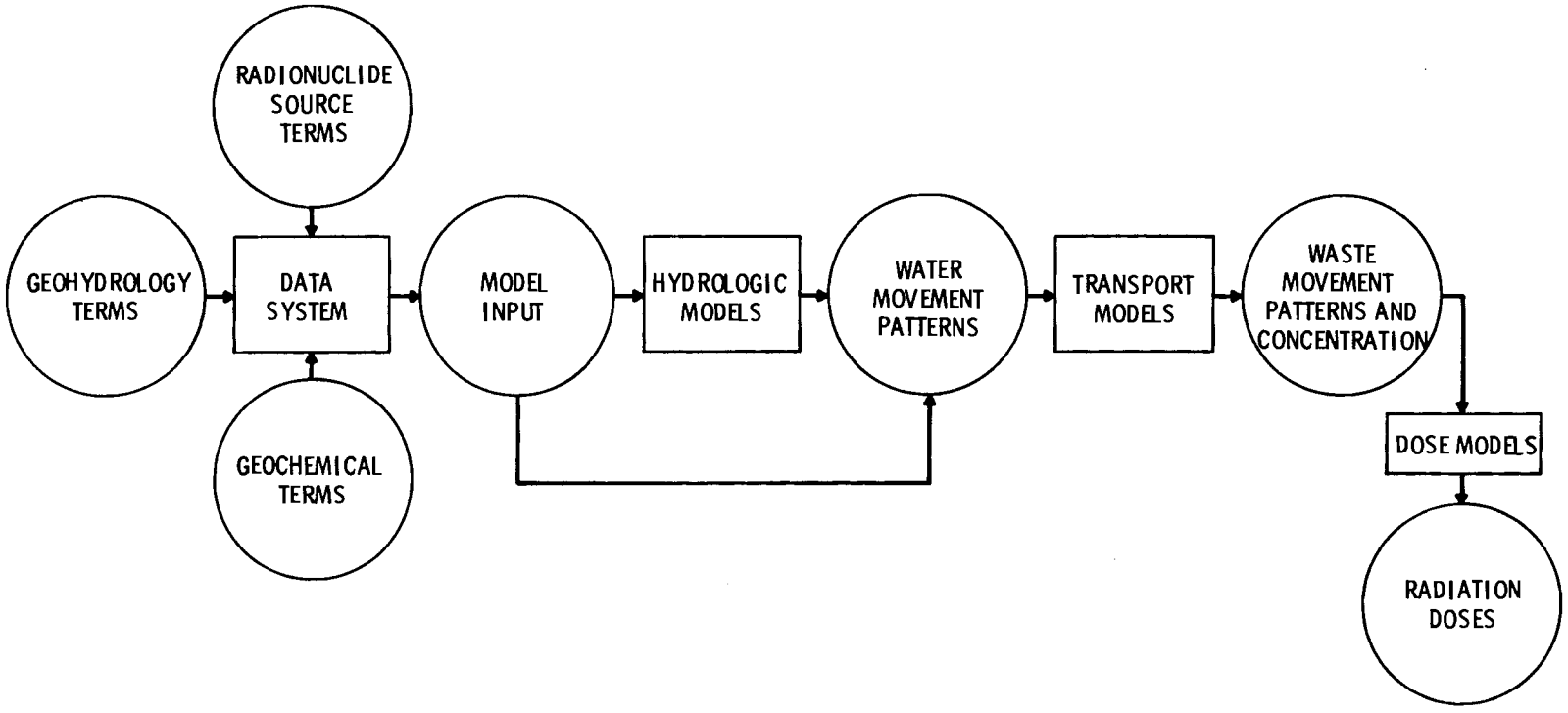

FIGURE i. Schematic Diagram of Consequence Analysis

Hydrologic and transport models are available at several levels of complexity or sophistication. Model selection and use are determined by the quantity and quality of input data. Model development under AEGIS and related programs provides three levels of hydrologic models, two levels of transport models, and one level of dose models (with several separate models). The models and data systems are documented as follows:

- HYDROLOGIC MODELS:

  PNL-3162 PATHS Groundwater Hydrologic Model - first level (simplest) idealized hybrid analytical/numerical model for two-dimensional, saturated groundwater flow and single component transport; homogeneous geology.

  PNL-3160 VTT (Variable Thickness Transient) Groundwater Hydrologic Model - second level (intermediate complexity) two-dimensional saturated groundwater flow, Boussinesq approximation, finite difference approach; two-dimensional (quasi three-dimensional) multiaquifer capability; heterogeneous geology.

  PNL-2939 FE3DGW (Finite Element, Three-Dimensional Groundwater) Hydrologic Model - third level (high complexity) three-dimensional, finite element approach (Galerkin formulation) for saturated groundwater flow; heterogeneous geology.

- TRANSPORT MODELS:

  PNL-2970 GETOUT Transport Model - first level one-dimensional analytical solution considering radioactive chain decay with capability for only simple release and hydrologic functions; single speciation, constant flow rate, dispersion and sorption, three-member straight decay chains.

  PNL-3179 MMT (Multicomponent Mass Transport) Model - second level, one-dimensional numerical, discrete parcel random walk (DPRW) algorithm; chain decay, single speciation, equilibrium sorption, time-variant leach rate and dispersion, n-membered straight or branched decay chains.

- DOSE MODELS:

PNL-3180	ARRRG - drinking water, external exposure to aquatic food, water and shorelines, and FOOD - terrestrial food.
PNL-3209	PABLM - Combination of ARRRG and FOOD with additional features related to chronic releases.
BNWL-B-264	KRONIC - chronic external dose from air pathways.
BNWL-B-351	SUBDOSA - acute external dose from air pathways.
BNWL-B-389	DACRIN - chronic or acute inhalation dose from air pathways.

- DATA SYSTEMS:

PNL-3139	SIRS (Sorption Information Retrieval System) - storage and retrieval system for experimental data on sorption/desorption analyses for a wide variety of radionuclides, groundwater compositions, and rocks and minerals.
PNL-3161	CIRMIS (Comprehensive Information Retrieval and Model Input Sequence) Data System - storage and retrieval system for model input and output data, including graphical interpretation and display.

This is the third of four volumes of the description of the CIRMIS Data System.

Return of the form on the last page of this report is required in order to remain on the distribution list for future revisions of the model.

ACKNOWLEDGMENT

This research was supported by the Waste Isolation Safety Assessment Program (WISAP) conducted by Pacific Northwest Laboratory. The program was sponsored by the Office of Nuclear Waste Isolation, managed by Battelle Memorial Institute for the Department of Energy under Contract EY-76-C-06-1830. On 1 October 1979, WISAP became the Assessment of Effectiveness of Geologic Isolation Systems (AEGIS) program and the Waste/Rock Interactions Technology (WRIT) program. This report was issued by AEGIS.

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GENERATOR ROUTINES

The well header generator routine WHDRGEN generates files that contain well names, their associated addresses, and the addresses of their associated data types. The first file that is generated is WELLNAM. This file contains each well's name and its address in the file WELLHDR.

ThE WELLHDR file is a directory of the available data for each well. It summarizes the types and addresses of four major data types: well structures, well logs, hydrograph data, and temperature data. WELLHDR also indicates whether the fifth major data type, contaminant data, is available. If it is, the well header lists the CTMHDR address for that data.

The CTMHDR file was developed because the WELLHDR file was not large enough to store all available addresses for contaminant data. The CTMHDR file summarizes the type and address of 32 different contaminants. CTMHDR also indicates the well designation of the data.

Two types of well data files, well structures and well logs, are structured such that they cannot be edited. If data must be changed in these files, the files have to be completely regenerated. The files for well structure and their regeneration procedures are described in the report section, "Well Structures." The well log data files are described in Volume 2 of this series of reports, "Data System - Driller's Logs, Stratigraphic Cross Section and Utility Routines."

Three data types (hydrograph, temperature, and contaminants) are updated several times each year. Therefore, the program (CRMSED-CIRMIS EDIT) which is used to initially generate these three data base files, is also used to edit these data files (insert new data, delete or change old data). CRMSED and its associated generator routines are described in the report section, "CIRMIS Editing Procedures."

WELL STRUCTURE GENERATOR

Well structure data consist of five types of information for each well. Each data type is variable length. The five types are: 1) casing size, 2) perforation type and location, 3) screen size and location, 4) comments, and 5) piezometer information.

These data are keypunched and entered into the computer using the file name WSTDCU.FOR. The well structures generation program WSTGEN is run, which reads and interprets data from WSTDCU.FOR, packs data for each well into a buffer (256 integer words), and when the buffer is full, writes it to the random access disc file FRMTWST. The disc address, the position in the buffer of the starting word, and the number of words for this well are written to the file WELLHDR, when all data for a well have been read. A buffer (or block) may contain data for more than one well, or the data for one well may be continued across buffer (or block) boundaries.

WSTGEN input format is:

Card 1 - (I1, 1X, 12A1, 8F7.2)
CARD NO., WELL LOCATION, DIAMETER, CASING ADDED.

Card 2 - (I1, 1X, 12A1, 2F8.0, 3F10.0)
CARD NO., WELL LOCATION, CASING PERFORATION (FROM, TO, TYPE)

Card 3 - (I1, 1X, 12A1, 2F8.0, F4.2, F3.0)
CARD NO., WELL LOCATION, SCREEN

Card 4 - (I1, 1X, 12A1, 16A4)
CARD NO., WELL LOCATION, COMMENTS

Card 5 - (I1, 1X, 12A1, A1, 3F5.0)
CARD NO., WELL LOCATION, PIEZOMETERS

CIRMIS EDITING ROUTINE (CRMSED)

CRMSED was written to provide generating/updating capabilities to the CIRMIS data base random access files for well hydrograph, contamination, or temperature data. These programs provide the rapid entering of new data, deleting of old data, and modifying of selected data points. The code was written in a modular form to facilitate the addition of new data types. Because of the overlay structure, the routines share the same memory, and currently, the program requires less than 100K of memory to execute. CRMSED initially generates the data base. After the data base has been generated three generation programs (HYDGEN, TMPGEN, and CTMGEN) are used to restore the data base if that becomes necessary.

The files used by CRMSED are:

Name	Type	Access
File Q--WELLNAM	Random	Read
File Q--WELLHDR	Random	Read/Write
File Q--UPDATEHDR	Random	Read/Write
File Q--FRMTHYD (Hydrograph data file)	Random	Read/Write
File Q--FRMTTMP (Temperature data file)	Random	Read/Write
File Q--FRMTCTM (Contaminant data file)	Random	Read/Write
File Q--CTMHDR (Contaminant header file)	Random	Read/Write
EDIT.CON	Formatted	Read
EDIT.LST	Formatted	Write

The file UPDATEHDR stores the addresses of the next available free sectors of the hydrograph, temperature, contaminant, and well log file.* Free sector addresses are stored so that additional data can be added to these data files. A directory of UPDATEHDR is contained in the appendix section "File-Q Header Descriptions."

* New wells can be added to the well log data file, but new data cannot be added to existing well data. Well logs cannot be edited, they must be regenerated instead.

CRMSED OPERATION

Before running CRMSED, the operator must make a file, EDIT.CON, which holds the data for CRMSED to enter into the data base. This file is made by spooling data cards from the card reader using the following CREATE card:

```
CREATE [220,3]EDIT.CON/NV
```

The general form of this file is a control card, the data, and an END control card. The control card describes the data type and whether it is new data or whether data are to be modified or deleted. As a rule, whenever one of the three parameters in the control card changes, a new data set must be formed. For example, changing from hydrograph data to contaminant data, or from INSERT to DELETE, would require a new control card and end card. Any number of data sets may follow one another.

After the operator has created the EDIT.CON file, the next step is to initiate execution by logging in under current UIC and typing the MCR command:

```
MCR > RUN CRMSED (CR)
ENTER FILE-Q DISC (i.e., DP2, DP1, or DB0) DB0
```

CRMSED will announce its completion and cause a diagnostic output file (EDIT.LST) to be printed. This listing should be checked for any error messages and the offending records should be identified. Those records will then have to be corrected and re-run.

EDIT.CON INPUT FORMAT SPECIFICATIONS

Data format specifications for EDIT.CON depend upon the type of data and the parameters in the control card. The control card options are explained and are followed by the descriptions of the well contaminant, hydrograph, and temperature data cards.

Control Card Description - Format (A6, 1X, I1, 1X, I1 1X, F6.0)

Col	Contents	Explanation
1-6	EDITCD	There are four types of control cards: =CHANGE: data that follow describe an existing datum point and a new value for that point. =DELETE: data points that follow are to be deleted from their respective file. =INSERT: new data follow and will be inserted or appended to EXISTING data files. =END: end of the data set. This card will be followed by a new control card or an end-of-file.
7	blank	
8	IDTYP	This parameter tells which data type will be input. There are currently three types of data: =0: well hydrograph data =1: contamination and piezometer data =2: temperature data
9	blank	
10	IOTYP	Used with contaminant and temperature data only =0; well designation and isotope number will be input using the CIRMIS (well name) notation.
12-17	EDDATE	Current Date (YR, MO, DAY)

Contaminant Data Card for Edit Functions Change and Delete Format (12A1, 1X, I2, F6.0, 2I2, 2E10.3, A1)

COL	CONTENTS	EXPLANATION
1-12	WELLNM	Well designation by location of the well to be edited.
13	blank	
14-15	NCTM	Isotope number using the CIRMIS codes that are 1-32.
16-21	UPDATE	Date of the existing datum point that is to be CHANGED or DELETED. The form is YRMODA such as 750215 for February 5, 1975.
22-25	HR,MIN	Time of the data reading. This time is entered using the 24-hour notation. An example would be 1615 for 4:15 PM. Those old values that do not have a time associated with them have a time of 0000 in the file.
26-35	CTMVL1	This is the existing value on the file.
36-45	CTMVL2	This is needed only for the CHANGE function and is the new contamination value.

Contaminant Data Card for Edit Function Insert - Format (12A1, 1X, I2, F6.0, 2I2 E10.2, A1)

COL	CONTENTS	EXPLANATION
1-12	WELLNM	Well designation by location of the well to be edited.
13	blank	
14-15	NCTM	
16-21	DPDATE	Date of the new contaminant reading.
22-25	HR,MIN	Time of the new contaminant reading.
26-35	CTMVL1	New contaminant reading.
36	LT	Less than indicator =BLANK; not less than ≠BLANK; less than.

Hydrograph Data Cards - Format (12A1, 1X, F6.0, 2F10.0)

COL	CONTENTS	EXPLANATION
1-12	WELLNM	Well designation by location of the well to be edited.
13	blank	
14-19	DPDATE	Date of an existing datum point that is to be CHANGED or DELETED or the date of a new hydrograph value. The form of this data is YRMODA such as 760127 for January 27, 1976.
20-29	HYDVL1	For the edit functions of CHANGE and DELETE, this is the existing height on the file corresponding to DPDATE. But for the INSERT function, this is the height to be added to the file.
30-39	HYDVL2	Used only with edit function CHANGE. When the hydrograph datum point described by UPDATE and HYDVL1 is located, it will be given the new value of HYDVL2.

Temperature Data Cards - CIRMIS - Format (12A1, 1X, F6.0, 2F10.0)

COL	CONTENTS	EXPLANATION
1-12	WELLNM	Well designation by location of the well to be edited.
13	blank	
14-19	DPDATE	Date of an existing datum point that is to be CHANGED or DELETED or the date of a new temperature value. The form of this data is YRMODA such as 760127 for January 27, 1976.
20-29	TMPVL1	For the Edit Functions of CHANGE and DELETE, this is the existing temperature on the file corresponding to DPDATE. But for the INSERT function, this is the temperature to be added to the file.
30-39	TMPVL2	Used only with edit function CHANGE. When the temperature datum point described by DPDATE and TMPVL1 is located, it will then be given the new value of TMPVL2.

CIRMIS FORMATTED OUTPUT PROGRAM - CRMFOR

After CRMSED is run, the CRMFOR program is run, but only for the data type that was edited. CRMFOR creates formatted files from the CIRMIS random access files that can be used by the regeneration programs HYDGEN, TMPGEN and CTMGEN to regenerate the data base, if necessary. But, primarily, CRMFOR provides a copy of the data for quick reference.

The files used by CRMFOR are:

Name	Type	Access
WELHDRNEW.SEQ	FORMATTED	READ
FILE-Q WELLHDR	RANDOM	READ
FILE-Q FRMTHYD (Formatted hydrograph)	RANDOM	READ
FILE-Q FRMTTMP (Formatted temperature)	RANDOM	READ
FILE-Q CTMHDR (Contaminant header)	RANDOM	READ
FILE-Q FRMTCTM (Formatted contaminant)	RANDOM	READ
*HYDRO.FOR	FORMATTED	WRITE
*TEMPER.FOR	FORMATTED	WRITE
**XXMMDDYY.FOR	FORMATTED	WRITE

*HYDRO.FOR AND TEMPER.FOR are renamed (by the user after generation) HYDMMDDYY.FOR and TMPMMDDYY.FOR where MMDDYY is the current date.

**XX = contaminant abbreviation (i.e., TA for total alpha) MMDDYY = current date. There can be as many of these files as there are contaminants.

CRMFOR Operating Instruments

- HYDROGRAPH DATA

  MCR > RUN CRMFOR (ALT)

1. Enter FILE-Q DISC UNIT (I.E., DP2, DP1, or DBO) DBO
2. Enter disc unit to hold "*.FOR' files DP1:
3. Enter "?.SEQ" file containing well names and addresses WELHDRNEW.SEQ
4. Enter data type, I.E., 1 = HYD, 2 = TMP, 3 = CTM (I1)>1
5. Your output file is DP1:HYDRO.FOR
6. ****CRMFOR FINISHED****

- TEMPERATURE run is similar to HYDROGRAPH run.
- CONTAMINANT DATA

  MCR > RUN CRMFOR (ALT)

1. same as above
2. same as above
3. same as above
4. same as above except data type is 3
5. ENTER DATE (MMDDYY) 030179
6. Enter START & END CONTAMINANT NOS. (2I2) 0132
7. CONTAMINANT FORMATTED FILE GENERATION, SPECIES 1
8. YOUR OUTPUT FILE IS DP1:TA030179.FOR

Numbers 7 and 8 are repeated for all 32 contaminants. When CRMSED is run for contaminants, a "PIP" file is created to list the output files - CONFORLST.CMD

MCR>PIP

PIP>@CONFORLST

REGENERATING PROGRAMS

CTMGEN, HYDGEN, and TMPGEN are regeneration programs that read the formatted output files of CRMFOR to regenerate the data base, if necessary. A description of each program is given below:

Contaminant Regenerating Program - CTMGEN

CTMGEN will read formatted contaminant output files from CRMFOR and regenerate contaminant data. CTMGEN is used to remove empty sectors from the disc that may be caused by a large number of contaminant data deletions or to restore the data base if tape and disc backups fail or a need arises to restore the data base from some prior date.

The files used by CTMGEN are:

Name	Type	Access
FILE-Q WELLNAM	RANDOM	READ
FILE-Q WELLHDR	RANDOM	READ
FILE-Q UPDATEHDR	RANDOM	READ/WRITE
FILE-Q CTMDDR	RANDOM	READ/WRITE
FILE-Q FRMTCTM	RANDOM	WRITE
*XXMMDDYY.FOR	FORMATTED	READ

* XX = the 2-letter abbreviation of the contaminant (i.e., TA = total alpha)

INSTRUCTIONS FOR OPERATING CTMGEN.

. MCR>RUN CTMGEN (alt)
  ENTER FILE-Q DISC NUMBER (A2,I1) DB0:
  1. ENTER CONTAMINANT FILE NAME TA031979.FOR
  2. ENTER CONTAMINANT CODE 1
  3. DO YOU WANT ANOTHER SPECIES (Y or N) Y

Repeat 1-3 until all contaminant files are finished.

Hydrograph Regenerating Program - HYDGEN

HYDGEN will read HYDRO.FOR (formatted output file from CRMFOR) and regenerate hydrograph data. HYDGEN is used to remove empty sectors from the disc that may be caused by a large number of hydrograph data deletions, or to restore the data base if tape and disc backups fail or a need arises to restore the data base from some prior date.

The files used by HYDGEN are:

Name	Type	Access
FILE-Q WELLNAM	RANDOM	READ
FILE-Q WELLHDR	RANDOM	READ/WRITE
FILE-Q UPDATEHDR	RANDOM	READ/WRITE
FILE-Q FRMTHYD	RANDOM	WRITE
HYDRO.FOR	FORMATTED	READ

INSTRUCTIONS FOR OPERATING HYDGEN

Copy the HYDMMDDYY.FOR file for the date wanted to DPO: -example-

. MCR>PIP HYDRO.FOR=DP1:HYDO31979.FOR

. MCR>RUN HYDGEN (alt)

ENTER FILE-Q DISC UNIT NUMBER (A2,I1) DBO:

Temperature Regenerating Program - TMPGEN

TMPGEN will read TEMPER.FOR (formatted output file from CRMFOR) and regenerate temperature data. TMPGEN is used to remove empty sectors from the disc that may be caused by a large number of temperature data deletions, or to restore the data base if tape and disc backups fail or a need arises to restore the data base from some prior date.

The files used by TMPGEN are:

Name	Type	Access
FILE-Q WELLNAM	RANDOM	READ
FILE-Q WELLHDR	RANDOM	READ/WRITE
FILE-Q UPDATEHDR	RANDOM	READ/WRITE
FILE-Q FRMTTMP	RANDOM	WRITE
TEMPER.FOR	FORMATTED	READ

INSTRUCTIONS FOR OPERATING TMPGEN

Copy the TMPMMDDYY.FOR file for the date wanted to DP : -example-

. MCR>PIP TEMPER.FOR=DP1:TMPO3179.FOR

. MCR>RUN TMPGEN (alt)

ENTER FILE-Q DISC UNIT NUMBER (A2,I1) DBO

APPENDIX A

PROGRAM LISTINGS

CONTENTS

WHDRGEN (Well Header Generator) A-1

WSTGEN (Well Structures Generator) A-11

CRMSED (CIRMIS edit) A-21

CRMSED - MAIN PROGRAM - CIRMIS EDITOR

EDICTM - CONTAMINANT DRIVER ROUTINE

CTMCHG - CONTAMINANT CHANGE ROUTINE

CTMDEL - CONTAMINANT DELETE ROUTINE

CTMINS - CONTAMINANT INSERT ROUTINE

EDIHYD - HYDROGRAPH DRIVER ROUTINE

HYDCHG - HYDROGRAPH CHANGE ROUTINE

HYDDEL - HYDROGRAPH DELETE ROUTINE

HYDINS - HYDROGRAPH INSERT ROUTINE

EDITMP - TEMPERATURE DRIVER ROUTINE

TMPCHG - TEMPERATURE CHANGE ROUTINE

TMPDEL - TEMPERATURE DELETE ROUTINE

TMPINS - TEMPERATURE INSERT ROUTINE

BSRCH - BINARY SEARCH ROUTINE

CONCHK - CONTAMINANT CHECK ROUTINE

DATACHK - DATE CHECK ROUTINE

RTVHDR - RETRIEVAL WELL HEADER ROUTINE

CRMFOR (CIRMIS FORMAT Routine) A-93

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FILE-Q HEADER DESCRIPTIONS . . . . . .

WELLHDR FILE-Q A-127

UPDATEHDR FILE-Q A-130

CTMHDR FILE-Q A-131

WHDRGEN

```
WHDRGEN.CMD - TASK BUILD COMMAND

DP1:WHDRGEN,LP:/SH=DP1:WHDRGEN,DP:[1,1]BNWLIB/LB
/
UNITS=7
ACTFIL=7
ASG=TI:5
ASG=DP0:2
/

(FLECS VERSION 22.46)      11-SEP-79   06:07:16  PAGE  00001

          ----------------------------------------

C********************* [220,3]WHDRGEN.FLX *********************
C
C  PROGRAM TO SET UP WELL LOOKUP FILE AND WELL HEADER FILE
C  FOR CIRMIS USING RTVHDO.
C
C
C      MCR>TKB @[220,3]WHDRGEN
C      MCR>RUN WHDRGEN
C
C
C      BATTELLE-NORTHWEST
C      RICHLAND, WASHINGTON 99301
C
C      AUTHOR(S): R. S. ARGO
C
C        DATE:              INITIAL VERSION  NOVEMBER  1978
C                           CURRENT VERSION  MARCH     1979
C
       BYTE WLDES(12), EAST, NORTH, RICH, C(4), D, WLNAM, WLDOLD(12),
      1 TODAY(9), NOW(8), BUFF(512), AA(2), CTMNAM(12), WHOLD(12)
C
       INTEGER WELLS
C
       INTEGER*4 KUP(128)
C
       REAL NS, MAXMAP
C
       DIMENSION IBUF(256), NTOT(7), KBUF(256), IUP(256)
C
       COMMON /HDR/ WLNAM(12),D(4),YH2,XH2,XC,YC,CS2,IDBIT,
      1 ICBIT(2),IDUM(234),IWN,IWHDR
C
       EQUIVALENCE (IBUF(1),BUFF(1)), (IUP(1),KUP(1))
      1 ,(KBUF(247),CTMNAM(1)), (IDUM(193),WHOLD(1))
C
       DATA EAST,NORTH,RICH /'E','N','R'/
C
C
C
C
       CALL DATE (TODAY)
       CALL TIME (NOW)
C
       NS = 69000.
       EW = 109000.
       NBLOCK = 101
C
C
       WRITE(5,5000)
 5000  FORMAT('$ENTER FILE-Q DISC UNIT (I.E. DP2 OR DP1 ) >')
       READ(5,5001) IDISC,IUNIT
 5001  FORMAT(A2,I1)
C
```

```
00054          CALL ASNLUN(3,IDISC,IUNIT)
00055    C
00056          CALL DPFILE (3,'WELLHDR',6000.,IWHD2)
00057          CALL DPFILE (3,'WELLNAM',101.,IWNAM2)
00058          CALL DPFILE (3,'UPDATEHDR',1.,IUHDR2)
00059          CALL DPFILE (3,'CTMHDR',6000.,ICHDR2)
00060    C
00061    C
00062          WRITE(5,99)
00063    99    FORMAT('$ENTER DISC UNIT TO HOLD "*.FOR" FILES >')
00064          READ(5,5001) IDISC2,IUNIT2
00065    C
00066          CALL ASNLUN(4,IDISC2,IUNIT2)
00067          CALL ASNLUN(7,IDISC2,IUNIT2)
00068    C
00069          OPEN (UNIT=2,NAME='Y220,200]WELHDR.FOR',TYPE='OLD',READONLY)
00070          OPEN (UNIT=4,NAME='WELHDRNEW.SEQ',TYPE='NEW')
00071          OPEN (UNIT=7,NAME='WELHDRUPD.FOR',TYPE='NEW')
00072    C
00073    C
00074          DO (I=1,NBLOCK)
00075          .  QAD = I - 1
00076          .  DO (J=1,12)
00077          .  .  BUFF(J) = 'Z'
00078          .  ...FIN
00079          .  CALL DPW (IWNAM2,QAD,IBUF,256.)
00080          ...FIN
00081    C
00082          WRITE (4,9) TODAY,NOW
00083    9     FORMAT (' "WELHDR.SEQ". NEW CIRMIS USING SEQ. SEARCH. ',
00084         1 9A1,3X,8A1)
00085    C
00086    C
00087          NWLAST = 0
00088    C
00089    C *** READ HEADER ***
00090    C
00091          READ (2,210)
00092    C
00093    C *** START PROCESSING ***
00094    C
00095    10    READ (2,210,END=90) WLDES,C(1),C(2),YH,C(3),XH,CASE,WLDOLD
00096         1 ,WHOLD
00097    210   FORMAT (1X,12A1,1X,2A1,F8.0,A1,F7.0,F8.2,5X,12A1,5X,12A1,F11.0)
00098    C
00099          CONDITIONAL
00100          .  (WLDES(1) .EQ. ' ' .AND. WLDES(2) .EQ. '1')
00101          .  .  ISTRT = 0
00102          .  .  NW = 1
00103          .  ...FIN
00104          .  (WLDES(2) .EQ. 'E')
00105          .  .  ISTRT = 5
00106          .  .  NW = 2
00107          .  ...FIN
00108          .  (WLDES(2) .EQ. 'W')
00109          .  .  ISTRT = 30
```

```
00110          .  .  NW = 3
00111          .  ...FIN
00112          .  (WLDES(2) .EQ. '3')
00113          .  .  ISTRT = 60
00114          .  .  NW = 4
00115          .  ...FIN
00116          .  (WLDES(2) .EQ. '6')
00117          .  .  ISTRT = 65
00118          .  .  NW = 5
00119          .  ...FIN
00120          .  (WLDES(1) .EQ. '1' .AND.WLDES(2) .EQ.'1')
00121          .  .  ISTRT = 95
00122          .  .  NW = 6
00123          .  ...FIN
00124          .  (WLDES(1) .EQ. '3')
00125          .  .  ISTRT = 100
00126          .  .  NW = 7
00127          .  ...FIN
00128   C      .
00129          .  (OTHERWISE) ISTRT = -1
00130          ...FIN
00131   C
00132          IF (ISTRT .EQ. -1)
00133          .  WRITE (5,510) WLDES,NW,NTOT(NW)
00134   510    .  FORMAT (' INVALID WELL NAME. ',12A1,2I5)
00135   C      .
00136          .  STOP
00137          ...FIN
00138   C
00139          IF (NW .NE. NWLAST)
00140          .  IF (NWLAST .NE. 0) CALL DPW (IWNAM2,ADR,IBUF,256.)
00141          .  NTOT(NW) = 0
00142          .  NWELL = 0
00143          .  NWLAST = NW
00144          .  ADR = ISTRT
00145          ...FIN
00146   C
00147          CONVERT-TO-MAP-COORDINATES
00148   C
00149          STORE-NAME-IN-BUFFER
00150   C
00151   C
00152          WRITE (7,210) WLDES,C(1),C(2),YH,C(3),XH,CASE,WLDOLD
00153         1 ,WHOLD,FQADR
00154   C
00155          GO TO 10
00156   C
00157   C
00158   90     CLOSE (UNIT=2)
00159   C
00160          CALL DPW (IWNAM2,ADR,IBUF,256.)
00161   C
00162   C *** WRITE 9'S IN LAST WELL NAME ***
00163   C
00164          DO (J=1,7)
00165          .  SELECT (J)
```

```
00166          .  .  (1) ADR = 0.
00167          .  .  (2) ADR = 5.
00168          .  .  (3) ADR = 30.
00169          .  .  (4) ADR = 60.
00170          .  .  (5) ADR = 65.
00171          .  .  (6) ADR = 95.
00172          .  .  (7) ADR = 100.
00173          .  ...FIN
00174    C     .
00175          .  NNN = NTOT(J) + 1
00176          .  ADR = NNN/42 + ADR
00177    C     .
00178    C****WELLNAM IS READ FROM THE UPDATED FILE-Q DISC AT THIS POINT.
00179    C     .
00180          .  CALL DPR (IWNAM2,ADR,IBUF,256.)
00181          .  III = NNN - (NNN/42) * 42
00182          .  III = (III-1) * 12
00183          .  DO (I=1,12) BUFF(III+I) = '9'
00184          .  CALL DPW (IWNAM2,ADR,IBUF,256.)
00185          ...FIN
00186    C
00187          CALL DPW (IUHDR2,0.,IUP,256.)
00188    C
00189          WRITE (5,590) NTOT
00190    590   FORMAT (' TOTAL NUMBER OF WELLS:'//'   199  = ',I4/
00191         1 '   299E = ',I4/ '  299W = ',I4/ '   399  = ',I4/
00192         2 '   699  = ',I4/ ' 1199  = ',I4/ ' 3099  = ',I4)
00193    C
00194          STOP
00195    C
00196    C
         ----------------------------------------

00197          TO CONVERT-TO-MAP-COORDINATES
00198          .  X = XH
00199          .  Y = YH
00200    C     .
00201          .  WHEN (C(1) .EQ. RICH)
00202          .  .  PLANTY = -79556.87 + .9999299*Y + .01184092*X
00203          .  ...FIN
00204    C     .
00205          .  ELSE
00206          .  .  IF (C(2) .NE. NORTH) YY = -Y
00207          .  .  PLANTY = Y
00208          .  ...FIN
00209          .  YC = NS + PLANTY
00210    C     .
00211          .  WHEN (C(1) .EQ. RICH)
00212          .  .  PLANTX = 892.88 + .01184092*Y - .9999299*X
00213          .  .  PLANTX = -PLANTX
00214          .  ...FIN
00215    C     .
00216          .  ELSE
00217          .  .  IF (C(3) .NE. EAST) X = -X
00218          .  .  PLANTX = X
```

```
00219          .  ...FIN
00220          .  XC = EW + PLANTX
00221    C     .
00222          .  IF (XH .EQ. 0. .AND. YH .EQ. 0)
00223          .  .  XC = 0.
00224          .  .  YC = 0.
00225          .  ...FIN
00226    C     .
00227          ...FIN
00228    C
00229    C

         ----------------------------------------

00230          TO STORE-NAME-IN-BUFFER
00231          .  NTOT(NW) = NTOT(NW) + 1
00232          .  ADR1 = ADR*42 + NWELL
00233          .  IWN = IWNAM
00234          .  IWHDR = IWHDR1
00235          .  NAME = 1
00236    C     .
00237    C     .
00238          .  DO (J=1,256) KBUF(J) = 0
00239          .  DO (J=1,12)
00240          .  .  CTMNAM(J) = WLDES(J)
00241          .  .  WLNAM (J) = WLDES(J)
00242          .  ...FIN
00243    C     .
00244          .  IDBIT = 0
00245          .  ICBIT(1) = 0
00246          .  ICBIT(2) = 0
00247          .  DO (J=1,234) IDUM(J) = 0
00248    C     .
00249    C     .
00250    C     .
00251          .  DO (J=1,12) WLNAM(J) = WLDES(J)
00252    C     .
00253          .  DO (J=1,4) D(J) = C(J)
00254    C     .
00255          .  YH2 = YH
00256          .  XH2 = XH
00257          .  XC2 = XC
00258          .  YC2 = YC
00259          .  CS2 = CASE
00260    C     .
00261          .  IF (WLDOLD(2) .NE. ' ')
00262          .  .  DO (J=1,12)
00263          .  .  .  WHOLD(J) = WLDOLD(J)
00264          .  .  .  WLDOLD(J) = ' '
00265          .  .  ...FIN
00266          .  ...FIN
00267    C     .
00268          .  IDUM(40) = ADR1 + 0.05
00269          .  CTMADR = ADR1
00270          .  FQADR = ADR1
00271    C     .
```

```
00272          .  CALL DPW (IWHD2,ADR1,WLNAM,256.)
00273          .  CALL DPW (ICHDR2,CTMADR,KBUF,256.)
00274    C
00275          .  WRITE (4,579) WLNAM,ADR1
00276    579   .  FORMAT (1X,12A1,F10.0)
00277    C     .
00278          .  NWELL = NWELL + 1
00279    C     .
00280          .  IF (NWELL .GT. 42)
00281    C     .  .
00282    C *** WRITE LAST BUFFER ***
00283    C     .  .
00284          .  .  CALL DPW (IWNAM2,ADR,IBUF,256.)
00285    C     .  .
00286          .  .  NWELL = 1
00287          .  .  ADR = ADR + 1.
00288          .  ...FIN
00289    C     .
00290          .  III = (NWELL-1) * 12 + 1
00291    C     .
00292          .  DO (J=1,12)
00293          .  .  BUFF(III) = WLDES(J)
00294          .  .  III = III + 1
00295          .  ...FIN
00296          ...FIN
00297    C
00298          END
```

PROCEDURE CROSS-REFERENCE TABLE

```
00197 CONVERT-TO-MAP-COORDINATES
      00147

00230 STORE-NAME-IN-BUFFER
      00149
```

(FLECS VERSION 22.46)

```
00299    C ****************  [220,200]RTVHDO.FLX  ******************
00300    C
00301    C    SUBROUTINE TO RETRIEVE A WELL HEADER BLOCK FROM THE
00302    C  "CIRMIS" FILE-Q DISC FILE "WELLHDR".  WELL NAME IS
00303    C  SUPPLIED BY THE USER AND IS THE FIRST PARAMETER IN
00304    C  SUBROUTINE CALL, THE SECOND PARAMETER IS RETURNED BY THE
00305    C  SUBROUTINE AND CONTAINS THE FILE-Q DISC ADDRESS OF THE
00306    C  WELL HEADER OR A -1. IF NOT FOUND.
00307    C    THE USER ALSO SUPPLIES THE POINTER NAMES OF THE FILE-Q
00308    C  DISC FILES "WELLNAM" AND "WELLHDR" IN WORDS 256 & 257
00309    C  RESPECTIVELY OF THE COMMON BLOCK.
00310    C    THE WELL HEADER INFO IS RETURNED IN "COMMON/HDR" A
00311    C  257 WORD BLOCK.
```

```
C
C
C  DATA FILES:
C
C          NAME                LUN          TYPE          ACCESS
C          ----                ---          ----          ------
C
C          WELLHDR(FILE-Q)      1           RAN             R
C          WELLNAM(FILE-Q)      1           RAN             R
C
C  D.R. FRIEDRICHS
C
C  DATE:    9-OCTOBER-1978
C
      SUBROUTINE RTVHDO (WLNAM,FQADR)
C
      BYTE BUF(512),WLNAM(12),WLDES
      INTEGER IBUF(256),JBUF(256)
C
      INTEGER*4 UPHDR
C
      COMMON/HDR/ WLDES(12),IDUM(249),IWNAM,IWHDR
C
      EQUIVALENCE (BUF(1),JBUF(1)),(IBUF(1),WLDES(1))
C
C
C
      FQADR = -1.
      IWN = IWNAM
C
      CONDITIONAL
      .  (WLNAM(1).EQ.' '. AND .WLNAM(2).EQ.'1') ISTRT = 0
      .  (WLNAM(2).EQ.'E') ISTRT = 5
      .  (WLNAM(2).EQ.'W') ISTRT = 30
      .  (WLNAM(2).EQ.'3') ISTRT = 60
      .  (WLNAM(2).EQ.'6') ISTRT = 65
      .  (WLNAM(1).EQ.'1'. AND .WLNAM(2).EQ.'1') ISTRT = 95
      .  (WLNAM(1).EQ.'3') ISTRT = 100
      .  (OTHERWISE) ISTRT = -1
      ...FIN
      IF (ISTRT.EQ.-1) GO TO 30
      ADR = ISTRT
10    CONTINUE
C     CALL DPR (IWN,ADR,JBUF,256.)
      DO (J=1,42)
      .  III = (J-1)*12
      .  DO (I=1,12)
      .  .  IF (BUF(III+1).EQ.'9') GO TO 30
      .  .  IF (BUF(III+I).NE.WLNAM(I)) GO TO 20
      .  ...FIN
      .  GO TO 40
20    .  CONTINUE
      ...FIN
      ADR = ADR+1
      GO TO 10
30    IWNAM = IWN
```

```
00368          RETURN
00369    C
00370    C *** SUCCESSFUL ACCESS
00371    40    FQADR = ADR*42 + J - 1
00372    C     CALL DPR (IWHDR,FQADR,IBUF,256,)
00373          IWNAM = IWN
00374          DO (J=1,12)
00375          .  IF (WLNAM(J).NE.WLDES(J)) GO TO 45
00376          ...FIN
00377          RETURN
00378    45    FQADR = -1,
00379          WRITE(5,545) WLDES,WLNAM
00380    545   FORMAT(' DISC NAME ',12A1,' DOES NOT MATCH INPUT NAME ',
00381         112A1)
00382          RETURN
00383          END
```

(FLECS VERSION 22.46)

```
"WELHDR.FOR"  TIME= 07:39:52     DATE= 18-AUG-78
1   B3    1    PN 71800.  W 79830.   439.79
1   B3    2    PN 71752.  W 78818.   442.59
1   B3    2P   PN 71752.  W 78818.   443.38
1   B3    2Q   PN 71752.  W 78818.   442.81
1   B4    1    PN 70000.  W 80650.   461.80
1   B4    2    PN 69933.  W 80672.   461.99
1   B4    3    PN 69933.  W 80636.   461.75
1   B4    4    PN 68978.  W 80367.   472.14
1   B5    1    PN 69930.  W 82000.   455.56
1   B8    1    PN 67375.  W 80490.   494.59
1   B8    2    PN 67400.  W 80800.   495.59
1   B8    3    PN 67455.  W 81110.   488.59
1   B8    4    PN 67510.  W 81420.   488.59
1   B8    5    PN 67565.  W 81730.   486.59
1   B9    1    PN 67500.  W 79961.   478.87
1   D2    1    PN 90910.  W 54135.   465.57
1   D2    2    PN 90660.  W 54135.   464.57
1   D2    3    PN 90810.  W 54940.   467.57
1   D2    4    PN 90910.  W 53565.   464.57
1   D2    5    PN 90783.  W 52638.   460.87
1   D3    1    PN 89550.  W 56250.   465.57
1   D5    1    PN 91170.  W 54135.   466.57
1   D5    2    PN 91065.  W 53740.   465.57
1   D5    3    PN 93520.  W 51790.   453.57
1   D5    4    PN 93520.  W 52690.   467.57
1   D5    5    PN 93520.  W 52290.   467.57
1   D5    6    PN 93420.  W 52240.   468.57
1   D5    7    PN 93520.  W 52140.   465.57
1   D5    8    PN 93520.  W 52090.   465.57
1   D5    9    PN 93520.  W 51990.   462.57
1   D5   10          0.        0.   464.57
1   D5   11          0.        0.   464.57
1   D5   12    PN 92125.  W 52546.   469.67
1   D7    1          0.        0.   420.00
1   D7    2          0.        0.   420.00
1   D8    1    PN 95230.  W 53140.   400.00
1   D8    2    PN 94725.  W 53018.   444.61
1   D8    3    PN 94720.  W 52205.   449.06
1   F1    1          0.        0.   394.38
1   F2    1    PN 82085.  W 30906.   403.71
1   F2    2    PN 82029.  W 30827.   401.87
1   F2    3    PN 82034.  W 30730.   399.25
1   F2    4          0.        0.   409.11
1   F2    5          0.        0.   407.05
1   F5    1    PN 79531.  W 28255.   406.56
1   F5    2    PN 79738.  W 28828.   413.02
1   F5    3    PN 79588.  W 28496.   408.62
1   F5    4    PN 79069.  W 30650.   412.12
1   F5    5    PN 80185.  W 29174.   412.51
1   F5    6    PN 80537.  W 29402.   412.95
1   F5    7    PN 79300.  W 31100.   412.76
1   F7    1    PN 77199.  W 33394.   389.74
1   F8    1    PN 78536.  W 31265.   405.86
1   F8    2    PN 78661.  W 31138.   410.74
```

WSTGEN

```
WSTGEN.CMD - TASK BUILD COMMAND

DP1:WSTGEN=DP1:WSTGEN,RTVHDO,DP0:[1,1]SNWLIB,OLB/LB,
/
MAXBUF=1024
UNITS=8
ASG=DP1:1:2,DP6:7,TI:5:8
ACTFIL=10
/
FORTRAN IV-PLUS V02-51D          07:16:01     11-SEP-79            PAGE 1
WSTGEN.FTN       /TR:BLOCKS/WR

        C ***************  [220,3]WSTGEN.FTN  ***************
        C
        C
        C  PROGRAM ID: GEN-11-WEL-2
        C
        C  PROGRAM DESCRIPTION:  THIS PROGRAM STORES PERFORATION SCREEN,CASING
        C                        AND PIEZOMETER IMFORMATION INTO A DATA BASE
        C                        FILE AND MAKES NECESSARY ENTRIES IN BITMAP
        C                        AND MASTER INDEX FILE
        C
        C  DATA FILES:
        C       NAME                        LUN              TYPE             ACCESS
        C       FILE Q  FRMTWST             1                RAN              W
        C       FILE Q --WELLHDR            2                RAN              W
        C       [220,101]WSTDCU.FOR         7                FOR              R
        C       [220,101]WSTGEN.LST         5                FOR              W
        C
        C
        C  LOADING SEQUENCE:     MCR>TKB
        C                        TKB>*[220,101]WSTGEN
        C                        MCR>RUN [220,101]WSTGEN

        C
        C
        C  BATTELLE MEMORIAL INSTITUTE
        C  PACIFIC NORTHWEST LABORATORIES
        C  WATER & LAND RESOURCES DEPT.
        C
        C  AUTHOR(S):      DD HOSTETLER
        C                  DR FRIEDRICHS
        C                  RS ARGO
        C
        C  DATE:         INITIAL VERSION   AUGUST  1974
        C                CURRENT VERSION   OCTOBER 1978
        C
        C
        C
0001            BYTE WLDES,W,WLD,NEWNAM(12),OLDNAM(12)
        C
0002            INTEGER BUFF,BUF1,BUF2,BUF3,BUF4,BUF5
        C
0003            LOGICAL FOUND,ENDF
        C
0004            DIMENSION BUF1(19),BUF2(11),BUF3(9),BUF4(33),BUF5(9)
0005            DIMENSION CAS(8),WLD(12),PF(5),S(4),CM(16),PZ(4)
0006            DIMENSION ALIST(17),BUFF(256),IBUF(256),W(12)
        C
0007            COMMON/TYP1/L1,DIAM,CAS
0008            COMMON/TYP2/L2,PF
0009            COMMON/TYP3/L3,S
0010            COMMON/TYP4/L4,CM
0011            COMMON/TYP5/L5,PZ
0012            COMMON/HDR/WLDES(12),IDM1(12),IDBIT,IDM2(236),IWNAM,IWH
        C
0013            EQUIVALENCE(IBUF(1),WLDES(1))
0014            EQUIVALENCE (BUF1(1),L1)
```

```
0015            EQUIVALENCE(BUF2(1),L2),(BUF3(1),L3)
0016            EQUIVALENCE(BUF4(1),L4),(BUF5(1),L5)
      C
0017            DATA BLANKS/4H    /
      C
      C
0018            WRITE(5,500)
0019    500     FORMAT(1X,'WELL PERFORATION SCHEDULE RANDOM ACCESS FILE
                1  GENERATION'//5X,'NDKNT  NSTART   NWORD   IDBIT     WELL'/)
      C
0020            WRITE(5,501)
0021    501     FORMAT('$ENTER FILE-Q DISC UNIT (I.E. DP2, DP1 OR DB0) >')
      C
0022            READ(5,502) IDISC,IUNIT
0023    502     FORMAT(A2,I1)
      C
0024            CALL ASNLUN(1,IDISC,IUNIT)
      C
0025            CALL DPFILE(1,'FRMTWST',1000.,IPNT1)
0026            CALL DPFILE(1,'WELLHDR',6000.,IWHDR)
0027            CALL DPFILE(1,'WELLNAM',101.,IWN)
      C
0028            IWNAM = IWN
0029            IWH = IWHDR
      C
0030            OPEN (UNIT=3,NAME='RENAMED.WEL',TYPE='OLD',READONLY)
0031            OPEN(UNIT=6,NAME='DP1:WSTGEN.LST',TYPE='NEW')
0032            OPEN(UNIT=7,NAME='DP1:WSTDCU.FOR',TYPE='OLD',READONLY)
      C
      C
      C  ZERO BITMAP
      C
0033            HS=-1.
      C
0034            DO 6 I=1,6000
0035            HS=HS+1.
0036            CALL DPR(IWHDR,HS,IBUF,256.)
0037            IF (WLDES(2) .EQ. ' ') GO TO 6
0038            CALL SFLD(2,1,0,IDBIT)
0039            CALL DPW(IWHDR,HS,IBUF,256.)
0040    6       CONTINUE
      C
0041            WRITE(6,500)
0042            KNT=1
0043            NDKNT=0
0044            IDKNT=0
0045            NSTART=1
0046            ITHRU=0
0047            ENDF=.FALSE.
      C
      C***READ PERFORATION SCHEDULE DATA FROM BASE***
      C
0048    1       READ(7,700,END=90)I1,I2,W,ALIST
0049    700     FORMAT(2I1,12A1,16A4,A2)
      C
0050            ICHECK=0
```

```
        C
        C---CHECK WELL DESIGNATION
        C
0051            DO 7 I=1,12
0052            IF(WLD(I).NE.W(I))ICHECK=1
0053    7       CONTINUE
        C
0054            IF(ITHRU.EQ.0)GO TO 1900
0055            IF(ICHECK.NE.1)GO TO 19
        C
        C----ZERO IDBIT----
        C
0056            CALL SFLD(2,1,0,IDBIT)
        C
0057            WRITE(6,608)NDKNT,NSTART,NWORD,IDBIT,WLDES
0058    608     FORMAT(1X,3I8,O8,5X,12A1)
        C
        C----MAKE PERFORATION SCHEDULE ENTRY IN "WELLHDR" FILE FOR LAST WELL
        C
0059    18      IF(.NOT.FOUND) GO TO 1900
        C
0060            IBUF(35)=NDKNT
0061            IBUF(36)=NSTART
0062            IBUF(37)=NWORD
        C
0063            NSTART=KNT
0064            NDKNT=IDKNT
        C
        C----MAKE PERFORATION SCHEDULE ENTRY IN BITMAP
        C
0065            CALL SFLD(2,1,1,IDBIT)
0066            CALL DPW(IWHDR,FQADR,IBUF,256.)
        C
        C********  RETRIEVE WELL INFO FROM "WELLHDR" FILE  ********
        C
0067    1900    IF(ENDF) GO TO 97
0068            ND=IND
        C
0069            DO 17 I=1,12
0070    17      WLD(I)=W(I)
        C
0071            ITHRU=1
0072            NWORD=0
0073            FOUND=.TRUE.
        C
0074            IWNAM = IWN
0075            IWH = IWHDR
0076            CALL RTVHDO(W,FQADR)
        C
0077            IF(FQADR.GE.0.)GO TO 19
        C
        C*** CHECK FOR RENAMED FILES
        C
0078            REWIND 3
0079    305     READ (3,304,END=306) NEWNAM,OLDNAM
0080    304     FORMAT (1X,12A1,5X,12A1)
```

```
0081            KADR = 1
      C
0082            DO 1123 NAME=1,12
0083            IF (W(NAME) .NE. OLDNAM(NAME)) KADR = 0
0084    1123    CONTINUE
      C
0085            IF (KADR .EQ. 0) GO TO 305
      C
0086            DO 1124 NAME=1,12
0087            W(NAME) = NEWNAM(NAME)
0088    1124    CONTINUE
      C
0089            IWNAM = IWN
0090            IWH = IWHDR
      C
0091            CALL RTVHDO (W,FQADR)
      C
0092    305     CONTINUE
0093            IF (FQADR .GE. 0.0) GO TO 19
      C
      C
      C
      C *** HEADER DATA NOT FOUND FOR THIS WELL
      C
0094            WRITE(6,617) W
0095    617     FORMAT(' THIS WELL NOT FOUND IN HEADER FILE-',12A1)
      C
0096            FOUND=.FALSE.
0097            GO TO 1
0098    19      IF(I1.EQ.0)GO TO 97
0099            IF(.NOT.FOUND) GO TO 1
      C
0100            GO TO (10,20,30,40,50),I1
      C
      C----READ 1 CARDS-- CASING, DIA, ADDED AND TOTAL
      C
0101    10      L1=I1
      C
0102            DECODE(60,810,ALIST)DIAM,(CAS(K),K=1,8)
0103    810     FORMAT(F4.2,8F7.2)
      C
0104            DO 11 I=1,19
0105            NWORD=NWORD+1
0106            BUFF(KNT)=BUF1(I)
0107            IF(KNT.GE.256)CALL WRITER(BUFF,IDKNT,KNT,IPNT1)
0108    11      KNT=KNT+1
      C
0109            GO TO 1
      C
      C----READ 2 CARDS-- CASING PERFORATION (FROM, TO ,TYPE)
      C
0110    20      L2=I1
0111            DECODE(19,820,ALIST)PF
0112    820     FORMAT(2F8.0,3F1.0)
      C
0113            DO 21 I=1,11
```

```
0114                NWORD=NWORD+1
0115                BUFF(KNT)=BUF2(I)
0116                IF(KNT.GE.256)CALL WRITER(BUFF,IDKNT,KNT,IPNT1)
0117        21      KNT=KNT+1
            C
0118                GO TO 1
            C
            C----READ 3 CARDS-- SCREEN
            C
0119        30      L3=I1
0120                DECODE(23,830,ALIST)S
0121        830     FORMAT(2F8.0,F4.2,F3.0)
            C
0122                DO 31 I=1,9
0123                NWORD=NWORD+1
0124                BUFF(KNT)=BUF3(I)
0125                IF(KNT.GE.256)CALL WRITER(BUFF,IDKNT,KNT,IPNT1)
0126        31      KNT=KNT+1
            C
0127                GO TO 1
            C
            C----READ 4 CARDS-- COMMENTS
            C
0128        40      L4=I1
0129                DECODE(66,840,ALIST)CM
0130        840     FORMAT(16A4)
            C
0131                DO 41 I=1,33
0132                NWORD=NWORD+1
0133                BUFF(KNT)=BUF4(I)
0134                IF(KNT.GE.256)CALL WRITER(BUFF,IDKNT,KNT,IPNT1)
0135        41      KNT=KNT+1
            C
0136                GO TO 1
            C
            C----READ 5 CARDS-- PIEZOMETERS
            C
0137        50      L5=I1
0138                DECODE(16,850,ALIST)PZ
0139        850     FORMAT(A1,3F5.0)
            C
0140                DO 51 I=1,9
0141                NWORD=NWORD+1
0142                BUFF(KNT)=BUF5(I)
0143                IF(KNT.GE.256)CALL WRITER(BUFF,IDKNT,KNT,IPNT1)
0144        51      KNT=KNT+1
            C
0145                GO TO 1
            C
0146        90      ENDF=.TRUE.
0147                GO TO 18
            C
0148        97      WRITE(6,610)IDKNT
0149        610     FORMAT(1X,'TOTAL SECTORS=',I8)
            C
0150                CLOSE(UNIT=5)
```

```
        C
0151            STOP
0152            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	002736	751	RW,I,CON,LCL
$PDATA	000154	54	RW,D,CON,LCL
$IDATA	001014	262	RW,D,CON,LCL
$VARS	001254	342	RW,D,CON,LCL
TYP1	000046	19	RW,D,OVR,GBL
TYP2	000026	11	RW,D,OVR,GBL
TYP3	000022	9	RW,D,OVR,GBL
TYP4	000102	33	RW,D,OVR,GBL
TYP5	000022	9	RW,D,OVR,GBL
HDR	001002	257	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 006646 1747


```
0001            SUBROUTINE WRITER(BUFF,IDKNT,KNT,IPNT1)
        C
0002            INTEGER BUFF
        C
0003            DIMENSION BUFF(256)
        C
0004            STRT=IDKNT
        C
0005            CALL DPW(IPNT1,STRT,BUFF,256,)
        C
0006            IDKNT=IDKNT+1
0007            KNT=0
        C
        C*****ZERO BUFFER********
        C
0008            DO 91 I=1,256
0009    91      BUFF(I)=0
        C
0010            RETURN
0011            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	000160	56	RW,I,CON,LCL
$PDATA	000004	2	RW,D,CON,LCL
$IDATA	000024	10	RW,D,CON,LCL
$VARS	000006	3	RW,D,CON,LCL

TOTAL SPACE ALLOCATED = 000216 71

```
,LP:=DP1:WSTGEN
```

Sample WSTGEN Input File

(WSTDCU.FOR)

W8TDCU.FOR -- INPUT TO W8TGEN

```
11 1  B3   1       22.     22.     7.58    29.58   7.      36.58   7.08    43.67
12 1  B3   1       7.      50.67   7.      57.67   7.      64.67
21 1  B3   1  20.      35.      330
22 1  B3   1  35.      60.      150
11 1  B3   2  .67 22.     22.     7.25    29.25   7.      36.25   7.      43.25
12 1  B3   2  .67 7.      50.25   7.      57.25   6.83    64.08   7.      71.08
12 1  B3   2  .67 7.      78.08   7.      85.08   6.83    91.92   7.      98.92
12 1  B3   2  .67 8.      106.92  7.      113.92  6.25    120.17  8.      128.17
12 1  B3   2  .67 6.92    135.08  7.      142.08  6.92    149.    6.92    155.92
12 1  B3   2  .67 8.08    164.    7.25    171.25  7.      178.25  10.50   188.75
12 1  B3   2  .67 7.42    196.17  10.67   206.83  6.92    213.75  7.      220.75
12 1  B3   2  .67 7.      227.75  6.67    234.42  7.42    241.83  7.      248.83
12 1  B3   2  .67 7.83    256.67  6.92    263.58  7.      270.58  6.92    277.50
12 1  B3   2  .67 7.      284.50  7.      291.50  7.50    299.    7.      306.
12 1  B3   2  .67 7.83    313.83  5.58    319.42  6.83    326.25  7.      333.25
12 1  B3   2  .67 6.67    339.92  6.50    346.42  7.      353.42  7.92    361.33
12 1  B3   2  .67 7.      368.33  7.58    375.92  5.75    381.67  7.25    388.92
12 1  B3   2  .67 7.      395.92  7.      402.92  6.92    409.83  6.98    416.75
12 1  B3   2  .67 7.08    423.83  6.92    430.75  7.92    438.67  6.92    445.58
12 1  B3   2  .67 7.      452.58  7.      459.58  7.75    467.33  6.83    474.
12 1  B3   2  .67 7.83    481.83  7.      488.83  7.      495.83  6.92    502.75
12 1  B3   2  .67 5.50    508.25  7.33    515.58  7.33    522.92  7.25    530.17
12 1  B3   2  .67 7.      537.17  7.50    544.67  7.      551.67  6.92    558.58
12 1  B3   2  .67 7.      565.58  6.92    572.50  7.50    580.    7.17    587.17
12 1  B3   2  .67 7.      594.17  6.92    601.08  7.33    608.42  7.33    615.75
12 1  B3   2  .67 7.      622.75  7.42    630.17  7.17    637.33  7.17    644.50
12 1  B3   2  .67 7.      651.50
21 1  B3   2  635.     645.     410
41 1  B3   2  TOTAL CASING 651.50' OF PIPE WITH 8" FLANGE-3/4/70 INSTALLED
42 1  B3   2  SCREEN AND 1.50" PEZOMETER PIPE
51 1  B3   2  P778. 758. 778.
52 1  B3   2  Q642. 632. 642.
11 1  B4   1       15.25   15.25   7.      22.25   9.17    31.42   6.25    37.67
12 1  B4   1       6.33    44.     5.33    49.33   4.92    54.25   -.17    54.08
12 1  B4   1       5.      59.08   7.      66.08   6.      72.08   5.50    77.58
12 1  B4   1       7.50    85.08   6.      91.08
21 1  B4   1  62.      70.
22 1  B4   1  70.      90.      510
11 1  B4   2       16.25   16.25   6.75    23.     7.50    30.50   7.50    38.
12 1  B4   2       6.92    44.92   7.      51.92   7.50    59.42   6.83    65.25
12 1  B4   2       7.50    72.75   4.42    77.17   7.42    84.67   6.75    91.33
21 1  B4   2  62.      70.
22 1  B4   2  70.      88.      510
41 1  B4   2  USED 6" STARTER CASING
11 1  B4   3       15.17   15.17   7.      22.17   7.      29.17   6.08    35.25
12 1  B4   3       5.58    40.83   9.58    50.42   6.      56.42   6.      62.42
12 1  B4   3       5.58    68.     7.50    75.50   6.      81.50   6.      87.50
12 1  B4   3       5.      92.50
21 1  B4   3  70.      90.      510
11 1  B4   4       8.42    8.42    8.      16.42   7.17    23.58   7.67    31.42
12 1  B4   4       7.17    38.58   6.58    45.33   7.25    52.58   7.58    60.33
12 1  B4   4       7.50    68.     7.      75.     7.25    82.25   7.      89.25
12 1  B4   4       8.08    97.33   7.75    105.25  2.      107.25
21 1  B4   4  49.      80.      410
22 1  B4   4  80.9     90.      112
22 1  B4   4  90.      102.     410
```

Sample WSTGEN Output Listing

(WSTGEN.LST)

WSTGEN.LST -- OUTPUT FROM WSTGEN

WELL	PERFORATION	SCHEDULE	RANDOM	ACCESS	FILE	GENERATION
0	1	60	2003	1	B3	1
0	61	532	2013	1	B3	2
2	81	98	2003	1	B4	1
2	179	112	2	1	B4	2
3	35	87	3	1	B4	3
3	122	109	2003	1	B4	4
3	231	136	13	1	B5	1
4	111	76	0	1	B8	1
4	187	19	0	1	B8	2
4	206	52	0	1	B8	3
5	2	19	0	1	B8	4
5	21	19	0	1	B8	5
5	40	68	2003	1	B9	1

CRMSED

CRMSED.CMD - TASK BUILD COMMAND

```
DP2:CRMSED=DP2:CRMSED/MP
MAXBUF=1024
ACTFIL=7
ASG=DP:2:6
ASG=DP1:1
ASG=TI:4
/
```

CRMSED.ODL - OVERLAY FILE

```
A:      .FCTR   CRMSED-BSRCH-RTVHDC-DATCHK-B
B:      .FCTR   #1,1]BNWLIB,OLB/LB
C:      .FCTR   EDICTM-EMASRH-F-(CTMCHG-B,CTMDEL-B,CTMINS-B)
D:      .FCTR   EDIHYD-(HYDCHG-B,HYDDEL-B,HYDINS-B)
E:      .FCTR   EDITMP-EMASRH-(TMPCHG-B,TMPDEL-B,TMPINS-B)
F:      .FCTR   CONCHK
        .ROOT   A-*(C,D,E)
        .END
```

CRMSED.COM - "INCLUDE" FILE.

```
PARAMETER LIMCON=32
DIMENSION UPHDR(128)
COMMON/EDCOM/IDTYP,IOTYP,IWHDR,TODAY(9),EDITCD,NOW(8),IHYD,
1            IHHDR(256),ICTM,IUNIT,IEMA,IUHDR,ITMP,EDDATE,
1            ICHDR,EMACDN(32)
COMMON/HDR/WTEST(12),IDM(12),IDBIT,ICBIT(2),IDUM(234),IWNAM
C
EQUIVALENCE (UPHDR(1),IHHDR(1))
```

```
      C ********************** [220,100]CRMSED.FTN ******************************
      C
      C  PROGRAM ID:  EDI-11-WEL
      C
      C  PROGRAM DESCRIPTION:
      C       THIS IS THE MAIN PROGRAM TO THE SET OF PROGRAMS ALLOWING
      C       THE CIRMIS USER TO EDIT AND UPDATE THE CIRMIS RANDOM
      C       ACCESS DATA BASE. IT CALLS THE PROPER EDITING ROUTINE BASED
      C       ON THE DATA TYPE READ FROM THE CONTROL FILE.
      C
      C
      C
      C  DATA FILES:
      C       NAME                        LUN     TYPE    ACCESS
      C       FILE Q--WELLHDR             1       RAN     R
      C       FILE Q--WELLNAM             1       RAN     R
      C       FILE Q--UPDATEHDR           1       RAN     R
      C       FILE Q--EMACODE             1       RAN     R
      C       FILE Q--FRMTHYD             1       RAN     R
      C       FILE Q--FRMTTMP             1       RAN     R
      C       FILE Q--FRMTCTM             1       RAN     R
      C       FILE Q--CTMHDR              1       RAN     R
      C       [220,100]EDIT.CON           2       FOR     R
      C       [220,100]EDIT.LST           6       FOR     W
      C
      C  LOADING SEQUENCE:
      C
      C       MCR>TKB @CRMSED.CMD
      C       MCR>RUN CRMSED
      C
      C  BATTELLE MEMORIAL INSTITUTE
      C  PACIFIC NORTHWEST LABORATORIES
      C  WATER & LAND RESOURCES DEPT.
      C
      C  AUTHOR(S):  S.E. WISE
      C              D.R. FRIEDRICHS
      C              D.W. DAMSCHEN
      C              R.S. ARGO
      C
      C  DATE:  INITIAL VERSION - JANUARY   1976
      C         CURRENT VERSION - NOVEMBER  1978
      C
0001          BYTE EDITCD,TODAY,NOW,WTEST
      C
0002          INTEGER*4 UPHDR
      C
0003          INCLUDE 'CRMSED.COM/LIST'
0004 *        PARAMETER LIMCON=32
0005 *        DIMENSION UPHDR(128)
0006 *        COMMON/EDCOM/IOTYP,IUTYP,IWHDR,TODAY(9),EDITCD,NOW(8),IHYD,
     *        1            IHHDR(256),ICTM,IUNIT,IEMA,IUHDR,ITMP,EDDATE,
     *        1            ICHDR,EMACON(32)
0007 *        COMMON/HDR/WTEST(12),IDM(12),IDBIT,ICBIT(2),IDUM(234),IWNAM
     *  C
0008 *        EQUIVALENCE (UPHDR(1),IHHDR(1))
      C
```

```
0009            WRITE(4,400)
0010    400     FORMAT('$ENTER FILE-Q DISC (I,E, DP1, DP2 OR DB0) >')
0011            READ(4,401) IDISC,IUNIT
0012    401     FORMAT(A2,I1)
        C
0013            CALL ASNLUN(1,IDISC,IUNIT)
        C
        C***OPEN THE UPDATE HEADER FILE
0014            CALL DPFILE(1,'UPDATEHDR',1.,IUHDR)
        C***OPEN THE EMMA CROSS REFERENCE FILE
0015            CALL DPFILE(1,'EMACODE',32.,IEMA)
        C***OPEN THE HYDROGRAPH DATA FILE
0016            CALL DPFILE(1,'FRMTHYD',4000.,IHYD)
        C***OPEN THE TEMPERATURE DATA FILE
0017            CALL DPFILE(1,'FRMTTMP',4000.,ITMP)
        C***OPEN THE CONTAMINANT HEADER FILE
0018            CALL DPFILE (1,'CTMHDR',6000.,ICHDR)
        C***OPEN THE CONTAMINATE DATA FILE
0019            CALL DPFILE(1,'FRMTCTM',37000.,ICTM)
        C***OPEN THE WELL NAME FILE
0020            CALL DPFILE(1,'WELLNAM',101.,IWNAM)
        C***OPEN THE WELL HEADER FILE
0021            CALL DPFILE(1,'WELLHDR',6000.,IWHDR)
        C***OPEN THE EDIT CONTROL FILE
0022            OPEN(UNIT=2,NAME='EDIT.CON',TYPE='OLD',READONLY)
        C***OPEN THE PRINT FILE
0023            OPEN (UNIT=6,NAME='EDIT.LST',TYPE='NEW')
        C***GET THE DATE AND TIME OF THIS EDIT RUN
0024            CALL DATE(TODAY)
0025            CALL TIME(NOW)
        C***TITLE THE OUTPUT
0026            WRITE(6,600) TODAY,NOW
0027     600    FORMAT('1'/,20X,'CIRMIS EDIT RUN OF ',9A1,1X,8A1)
        C
        C
0028     10     CONTINUE
        C***READ AN EDITING CONTROL CARD
0029            READ(2,210,END=500) EDITCD,IDTYP,IDTYP,EDDATE
0030     210    FORMAT(A1,6X,I1,1X,I1,1X,F6.0)
        C***INCREMENT THE DATA TYPE CODE BY ONE SO IT CAN BE USED IN THE
        C   COMPUTED GO TO. THE MAXIMUM IDTYP WILL HAVE TO BE CHANGED AND THE
        C   COMPUTED GO TO EXPANDED AS MORE DATA TYPES ARE ADDED.
0031            IDTYP=IDTYP+1
0032            IF(IDTYP .LE. 3) GO TO 15
0033            IDTYP=IDTYP-1
0034            WRITE(6,610) IDTYP
0035     610    FORMAT('0IDTYP OUT OF RANGE', I5)
0036            GO TO 500
0037     15     CONTINUE
0038            GO TO (20,30,40), IDTYP
0039     20     CONTINUE
        C***HYDROGRAPH DATA TO BE EDITED/UPDATED
0040            CALL EDIHYD
0041            GO TO 10
0042     30     CONTINUE
        C***CONTAMINANT DATA TO BE EDITED/UPDATED
```

```
0043              CALL EDICTM
0044              GO TO 10
0045       40     CONTINUE
         C***TEMPERATURE DATA TO BE EDITED/UPDATED
0046              CALL EDITMP
0047              GO TO 10
0048      500     CONTINUE
         C
         C***RUN IS COMPLETE
         C
0049              WRITE (6,501)
0050     501      FORMAT (1H1,'UPDATED CTMS ARE : ='/)
         C
         C
0051              CLOSE (UNIT=2,DISPOSE='SAVE')
0052              CLOSE (UNIT=6,DISPOSE='SAVE')
0053              WRITE(4,4500)
0054      4500    FORMAT('0          ********** CRMSED FINISHED **********')
0055              STOP
0056              END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	000662	217	RW,I,CON,LCL
$PDATA	000172	61	RW,D,CON,LCL
$IDATA	000556	183	RW,D,CON,LCL
$VARS	000002	1	RW,D,CON,LCL
EDCOM	001252	341	RW,D,OVR,GBL
HDR	001000	256	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 004106 1059

NO FPP INSTRUCTIONS GENERATED

,LP:=DP1:CRMSED

```
C ******************** EDICTM.FTN ********************
C
C  PROGRAM ID: EDI-11-WEL-1
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM CONTROLS THE EDITING AND UPDATING OF THE
C       WELL CONTAMINATE DATA. THREE SUBROUTINES ARE USED TO
C       KEEP DOWN THE AMOUNT OF CORE STORAGE. THERE IS ONE
C       SUBROUTINE FOR EACH OF THE 3 EDITING FUNCTIONS:
C               CHANGE (CTMCHG)
C               DELETE (CTMDEL) AND
C               INSERT (CTMINS).
C
C
C
C       LISTED BELOW ARE THE 32 CONTAMINATES WITH THE EMMA
C       CONTAMINANT CODE IN PARENTHESIS:
C               1 -- TOTAL ALPHA                (112)
C               2 -- TOTAL BETA                 (111)
C               3 -- TRITIUM                    (108)
C               4 -- NITRATE                    (115)
C               5 -- STRONTIUM-90               (121)
C               6 -- CESIUM-137                 (24)
C               7 -- COBALT-60                  (10)
C               8 -- URANIUM-238                (104)
C               9 -- PLUTONIUM-239              (103)
C              10--RUTHENIUM-106                (34)
C              11--CHROMIUM                     (114)
C              12--FLUORIDE                     (26)
C              13--MAGNESIUM                    (54)
C              14--IRON                         (55)
C              15--PHOSPHATE                    (56)
C              16--CHLORIDE                     (57)
C              17--COPPER                       (58)
C              18--HARDNESS                     (62)
C              19--SOLIDS                       (63)
C              20--MANGANESE                    (64)
C              21--TOTAL ORGANIC CARBON         (198)
C              22--PH                           (199)
C              23--SULFATE                      (200)
C              24--SODIUM                       (201)
C              25--CALCIUM                      (202)
C              26--TOTAL GAMMA                  (998)
C              27--BICARBONATE ION              (188)
C              28--CARBONATE ION                (189)
C              29--TOTAL POTASSIUM              (190)
C              30--SPECIFIC CONDUCTIVITY        (191)
C              31--BORON                        (192)
C              32--LOW ALPHA                    (212)
C
C
C
C  DATA FILES:
C       NAME                    LUN     TYPE    ACCESS
C       FILE Q -- WELLHDR       1       RAN     R/W
C       FILE Q -- FRMTCTM       1       RAN     R/W
```

```
        C       [220,100]EDIT.CON       2       FOR     R
        C       [220,100]EDIT.LST       6       FOR     W
        C
        C
        C  BATTELLE MEMORIAL INSTITUTE
        C  PACIFIC NORTHWEST LABORATORIES
        C  WATER & LAND RESOURCES DEPT.
        C
        C  AUTHOR(S):   SE WISE
        C               DW DAMSCHEN
        C               RS ARGO
        C
        C  DATE:        INITIAL VERSION FEBRUARY 1976
        C               CURRENT VERSION NOVEMBER 1978
        C
        C
0001            SUBROUTINE EDICTM
        C
0002            BYTE EDITCD,CODES(4),TODAY,NOW,WTEST
        C
0003            INTEGER EMACON
0004            INTEGER*4 UPHDR
0005            DIMENSION IUP(256)
        C
0006            INCLUDE 'CRMSED.COM/LIST'
0007 *          PARAMETER LIMCON=32
0008 *          DIMENSION UPHDR(128)
0009 *          COMMON/EDCOM/IDTYP,IOTYP,IWHDR,TODAY(9),EDITCD,NOW(8),IHYD,
     *          1             IHHDR(256),ICTM,IUNIT,IEMA,IUHDR,ITMP,EDDATE,
     *          1             ICHDR,EMACON(32)
0010 *          COMMON/HDR/WTEST(12),IDM(12),IDBIT,ICBIT(2),IDUM(234),IWNAM
     *  C
0011 *          EQUIVALENCE (UPHDR(1),IHHDR(1))
        C
0012            EQUIVALENCE (IUP(1),UPHDR(1))
        C
0013            DATA CODES /'C', 'D', 'I', 'E'/
        C
0014            DATA EMACON / 112, 111, 108, 115, 121,  24,  10, 104, 103,
                1              34, 114,  26,  54,  55,  56,  57,  58,  62,
                2              63,  64, 198, 199, 200, 201, 202, 998, 188,
                3             189, 190, 191, 192, 212/
        C
        C***READ ADDRESS OF NEXT AVAILABLE FREE DISC SECTOR FROM UPDATE HEADER
        C   FILE
        C
0015            CALL DPR(IUHDR,0.,IUP,256.)
        C
        C***THE MAIN PROGRAM HAS READ THE EDIT CONTROL CARD,
        C   DECODE IT AND CALL THE PROPER SUBROUTINE
0016            IED=0
0017            DO 10 I=1,4
0018            IF(EDITCD .EQ. CODES(I)) IED=I
0019     10     CONTINUE
0020            IF(IED .NE. 0) GO TO 20
        C***INVALID EDIT CODE
```

```
0021              WRITE(6,610) EDITCD,IDTYP,IDTYP
0022       610    FORMAT(//' THE FOLLOWING IS AN INVALID EDIT CONTROL CARD'/
                  1 1X,A1,1X,I1,1X,I1,/T50,'*** EXECUTION TERMINATED ***')
0023              STOP
0024       20     CONTINUE
0025              GO TO (30,40,50,80), IED
0026       30     CONTINUE
          C*** 'CHANGE' COMMAND
0027              CALL CTMCHG
0028              GO TO 80
0029       40     CONTINUE
          C*** 'DELETE' COMMAND
0030              CALL CTMDEL
0031              GO TO 80
0032       50     CONTINUE
          C*** 'INSERT' COMMAND
0033              CALL CTMINS
0034              GO TO 80
0035       80     CONTINUE
          C
          C***UPDATE THE UPDATE HEADER FILE
0036              CALL DPW(IUHDR,0.,IUP,256.)
0037              RETURN
0038              END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	000304	98	RW,I,CON,LCL
$PDATA	000022	9	RW,D,CON,LCL
$IDATA	000152	53	RW,D,CON,LCL
$VARS	000010	4	RW,D,CON,LCL
EDCOM	001152	309	RW,D,OVR,GBL
HDR	001000	256	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 002662 729

NO FPP INSTRUCTIONS GENERATED

,LP:=DP1:EDICTM

```
      C ********************** CTMCHG.FTN ******************************
      C
      C  PROGRAM ID: EDI-11-WEL-1-1
      C
      C  PROGRAM DESCRIPTION:
      C        PROGRAM READS THE CHANGE CARDS, LOCATES THE DATA
      C        AND MAKES THE CHANGE
      C
      C  DATA FILES:
      C        NAME                                LUN     TYPE    ACCESS
      C        FILE Q -- WELLHDR                   1       RAN     R
      C        FILE Q -- FRMTCTM                   1       RAN     R/W
      C        [220,100]EDIT.CON                   2       FOR     R
      C        [220,100]EDIT.LST                   6       FOR     W
      C
      C
      C  BATTELLE MEMORIAL INSTITUTE
      C  PACIFIC NORTHWEST LABORATORIES
      C  WATER & LAND RESOURCES DEPT.
      C
      C  AUTHOR(S):    BE WISE
      C                DW DAMSCHEN
      C                RS ARGO
      C
      C  DATE:         INITIAL VERSION FEBRUARY 1976
      C                CURRENT VERSION  AUGUST  1979
      C
      C
0001          SUBROUTINE CTMCHG
      C
0002          BYTE EDITCD,ECODE,TODAY,NOW,CARD(80),WTEST,WELLNM(12)
      C
0003          INTEGER EMACON,EMALOC,HR,TMIN
0004          INTEGER*4 UPHDR,CTIADR(36),CTXADR(36),INDKS
      C
0005          DIMENSION C(512),T(512),IBUF(256),MINT(512),KBUF(256)
      C
0006          INCLUDE 'CRMSED.COM/NOLIST'
      C
0012          EQUIVALENCE(IBUF(1),WTEST(1)), (CTIADR(1),KBUF(1)),
              1 (CTXADR(1),KBUF(73))
      C
0013          DATA ECODE /'E'/
      C
0014          ISOCNV = 1999
0015          IWN = IWNAM
      C
0016          WRITE(6,600)
0017     600  FORMAT('0THE FOLLOWING ARE CONTAMINANT DATA CHANGE CARDS'//
              1 T30,'OLD VALUE',T45,'NEW VALUE')
      C
0018      10  CONTINUE
      C***READ THE NEXT RECORD AND DETERMINE IF IT CONTAINS AN 'END' COMMAND
0019          READ(2,210) CARD
0020     210  FORMAT(80A1)
0021          IF(CARD(1) .EQ. ECODE) GO TO 50
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      C***READ THE DATA CARD WITH THE PROPER FORMAT
0022          IF(IOTYP .EQ. 0) GO TO 25
      C***IOTYP=1, DATA IS BEING INPUT USING EMA CODES
0023          DECODE(44,211,CARD) EMALOC,NEMA,DPDATE,HR,MIN,OLDC,CTMVAL
0024   211    FORMAT(7X,I4,1X,I4,F6.0,2I2,2E9.3)
      C***CONVERT APPROPRIATE CTMVAL FROM (PCI/L) TO (PCI/ML)
0025          IF(NEMA .EQ. 112) CTMVAL=CTMVAL/1000.
0026          IF(NEMA .EQ. 111) CTMVAL=CTMVAL/1000.
0027          IF(NEMA .EQ. 108) CTMVAL=CTMVAL/1000.
0028          IF(NEMA .EQ. 121) CTMVAL=CTMVAL/1000.
0029          IF(NEMA .EQ.  24) CTMVAL=CTMVAL/1000.
0030          IF(NEMA .EQ.  10) CTMVAL=CTMVAL/1000.
0031          IF(NEMA .EQ. 103) CTMVAL=CTMVAL/1000.
0032          IF(NEMA .EQ. 104) CTMVAL=CTMVAL/1000.
0033          IF(NEMA .EQ.  34) CTMVAL=CTMVAL/1000.
0034          IF(NEMA .EQ. 998) CTMVAL=CTMVAL/1000.
      C***CONVERT APPROPRIATE OLDC FROM (PCI/L) TO (PCI/ML)
0035          IF(NEMA .EQ. 112) OLDC=OLDC/1000.
0036          IF(NEMA .EQ. 111) OLDC=OLDC/1000.
0037          IF(NEMA .EQ. 108) OLDC=OLDC/1000.
0038          IF(NEMA .EQ. 121) OLDC=OLDC/1000.
0039          IF(NEMA .EQ.  24) OLDC=OLDC/1000.
0040          IF(NEMA .EQ.  10) OLDC=OLDC/1000.
0041          IF(NEMA .EQ. 103) OLDC=OLDC/1000.
0042          IF(NEMA .EQ. 104) OLDC=OLDC/1000.
0043          IF(NEMA .EQ.  34) OLDC=OLDC/1000.
0044          IF(NEMA .EQ. 998) OLDC=OLDC/1000.
      C***CONVERT EMA LOCATION CODE
0045          CALL EMASRH(EMALOC,WELLNM,ISTAT)
0046          IF(ISTAT .EQ. 1) GO TO 20
      C***UNSUCCESSFUL SEARCH
0047          WRITE(6,610)EMALOC,NEMA,DPDATE,HR,MIN,OLDC,CTMVAL
0048   610    FORMAT(T20,'INVALID EMA CODE',2I5,F8.0,1X,2I2,1P2E12.3)
0049          GO TO 10
0050   20     CONTINUE
      C***CONVERT CONTAMINANT CODE
      C   CIRMIS CODES ARE 1000 + EMA CODES, EMA CODES ARE .LT. 1000
0051          IF (NEMA .LT. 1000) GO TO 21
0052          IF (NEMA .EQ. 1000 .OR. NEMA .GT. ISOCNV) GO TO 2555
0053          KKCTM = NEMA-1000
0054          IF (KKCTM .GT. LIMCON) GO TO 21
0055          GO TO 30
0056   21     CONTINUE
0057          NCTM=0
0058          DO 22 I=1,LIMCON
0059          IF(KKCTM .EQ. EMACON(I)) NCTM=I
0060   22     CONTINUE
0061          IF(NCTM .NE. 0) GO TO 30
      C***NO MATCH
0062   2555   WRITE(6,622) EMALOC,NEMA,DPDATE,HR,MIN,OLDC,CTMVAL
0063   622    FORMAT(T20,'INVALID CONTAMINANT CODE',2I5,F8.0,1X,2I2,1P2E12.3)
0064          GO TO 10
0065   25     CONTINUE
      C***IOTYP=0
0066          DECODE(46,225,CARD) WELLNM,NCTM,DPDATE,HR,MIN,OLDC,CTMVAL
0067   225    FORMAT(12A1,1X,I2,F6.0,2I2,2E10.3)
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0068     30      CONTINUE
0069             IF (DPDATE .LE. EDDATE) GO TO 232
0070             WRITE (6,231) WELLNM,NCTM,DPDATE,HR,MIN,OLDC,CTMVAL
0071    231      FORMAT (T50,'ERROR IN DATE ',12A1,I5,F8.0,1X,2I2,1P2E12.3)
0072             GO TO 10
0073    232      CONTINUE
        C***CHECK DATE
0074             CALL DATCHK (WELLNM,DPDATE,IERR)
0075             IF (IERR .GT. 0) GO TO 10
        C***COMPUTE TOTAL MINUTES
0076             TMIN=HR*60+MIN
        C***HASH OUT LOCATION OF WELL IN THE HEADER FILE
0077             IWNAM = IWN
0078             CALL RTVHDC(WELLNM,FQADR)
0079             IWNAM = IWN
0080             IF(FQADR .GE. 0.) GO TO 35
        C***WELL NOT FOUND
0081             WRITE(6,630)WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL
0082     630     FORMAT(T20,'NO HEADER INFORMATION FOUND FOR THIS WELL',
                 1 1X,12A1,I5,F8.0,1X,2I2,1P2E12.3)
0083             GO TO 10
0084     35      CONTINUE
        C
0085             CTADR = IBUF(61)
        C
0086             CALL DPR (ICHDR,CTADR,KBUF,256.)
        C
        C***DOES THIS WELL PRESENTLY CONTAIN CONTAMINATION DATA?
0087             NDBIT=IFLD(1,1,IDBIT)
0088             IF(NDBIT .EQ. 0) GO TO 39
        C***DOES THIS CONTAMINATE EXIST
0089             IF(NCTM-1 .GT. 15) GO TO 36
0090             NCBIT=IFLD(NCTM-1,1,ICBIT(1))
0091             IF(NCBIT .EQ. 0) GO TO 39
0092             GO TO 37
0093    36       NCBIT=IFLD(NCTM-17,1,ICBIT(2))
0094             IF(NCBIT .EQ. 0) GO TO 39
        C***DATA EXISTS--SET UP POINTERS TO THE DATA
0095    37       IOFF=(NCTM-1)*3
0096             NPTS = KBUF(145+IOFF)
0097             INDKS = CTIADR(NCTM)
0098             GO TO 40
0099     39      CONTINUE
        C***NO CONTAMINATION DATA
0100             WRITE(6,635) WELLNM,NCTM,DPDATE,HR,MIN,OLDC,CTMVAL
0101     635     FORMAT(T20,'NO CONTAMINANT DATA',1X,12A1,I5,F8.0,1X,2I2,1P2E12.3)
0102             GO TO 10
0103     40      CONTINUE
0104             INALOC = KBUF(147+IOFF)
0105             DKSEX = CTXADR(NCTM)
0106             NPSEX = KBUF(146+IOFF)
        C***READ THE INITIAL ALLOCATION
0107             CADSI=INDKS
0108             TADSI=CADSI+INALOC
0109             ADRMI=TADSI+INALOC
0110             WRDI=NPTS*2.
```

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0111            WT  = INALOC*256.
0112            CALL DPR(ICTM,CADSI,C,WRDI)
0113            CALL DPR(ICTM,TADSI,T,WRDI)
0114            CALL DPR(ICTM,ADRMI,MINT,WI)
        C***READ THE EXTENDED ALLOCATION (IF ANY)
0115            IF(NPSEX .EQ. 0) GO TO 43
        C***FIVE SECTORS ARE ALLOCATED IN THE EXTENSION, TWO EACH FOR
        C   C AND T, AND ONE FOR MINT
0116            CADSE=DKSEX
0117            TADSE=CADSE+2.
0118            ADRME=TADSE+2.
0119            WRDE=NPSEX*2
0120            NPX=NPTS+1
0121            CALL DPR(ICTM,CADSE,C(NPX),WRDE)
0122            CALL DPR(ICTM,TADSE,T(NPX),WRDE)
0123            CALL DPR(ICTM,ADRME,MINT(NPX),256.)
0124     43     CONTINUE
        C***DETERMINE THE INDEX OF THE ENTRY CORRESPONDING TO DPDATE
0125            NTOT=NPTS+NPSEX
0126            CALL BSRCH(T,NTOT,DPDATE,INDX,ISTAT)
0127            ISAV=INDX
0128            IF(ISTAT .EQ. 1) GO TO 45
        C***DATE NOT LOCATED
0129            WRITE(6,640) WELLNM,NCTM,DPDATE,HR,MIN,OLDC,CTMVAL
0130     640    FORMAT(T20,'INVALID DATE',1X,12A1,I5,F8.0,1X,2I2,1P2E12.3)
0131            GO TO 10
0132     45     CONTINUE
        C***DO THE TOTAL MINUTES MATCH
0133            IF(TMIN .EQ. MINT(INDX)) GO TO 48
        C***SINCE THERE CAN BE MORE THAN ONE SAMPLE IN A DAY, EXAMINE
        C   THE SURROUNDING POINTS FOR OTHER SAMPLES
0134            INDX=INDX-1
0135            IF(INDX .LT. 1) GO TO 47
0136            ZERO = DPDATE*0.00001
0137            IF(DPDATE-T(INDX) .LT. ZERO) GO TO 45
0138            INDX=ISAV
        C***EXAMINE THE POINTS BEYOND THE ORIGINAL INDX
0139     46     CONTINUE
0140            INDX=INDX+1
0141            IF(INDX .GT. NTOT) GO TO 47
0142            IF(DPDATE .NE. T(INDX)) GO TO 47
0143            IF(TMIN .NE. MINT(INDX)) GO TO 46
        C***DATA POINT FINALLY LOCATED
0144            GO TO 48
0145     47     CONTINUE
        C***SEARCH UNSUCCESSFUL
0146            WRITE(6,647) WELLNM,NCTM,DPDATE,HR,MIN,OLDC,CTMVAL
0147     647    FORMAT(T20,'DATA NOT FOUND ',12A1,I2,F8.0,1X,2I2,1P2E12.3)
0148            GO TO 10
0149     48     CONTINUE
        C***NOW THAT THE PROPER DATA POINT HAS BEEN FOUND, DO THE
        C   CONTAMINATION VALUES MATCH
0150            ZERO = OLDC*0.00001
0151            IF(OLDC-ABS(C(INDX)) .LT. ZERO) GO TO 49
        C***VALUES DIFFER
0152            WRITE(6,648) WELLNM,NCTM,DPDATE,HR,MIN,OLDC,C(INDX),CTMVAL
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0153      648     FORMAT(T20,'VALUES DIFFER ',12A1,I2,F8.0,1X,2I2,1P3E12.3)
0154              GO TO 10
0155      49      CONTINUE
        C***SEARCH SUCCESSFUL - PRINT OLD AND NEW VALUES
0156              IF(IOTYP .EQ. 0) WRITE(6,649)WELLNM,NCTM,DPDATE,HR,MIN,
                  1 C(INDX),CTMVAL
0157      649     FORMAT(1X,12A1,I2,F8.0,1X,2I2,T30,1PE12.3,T45,1PE12.3)
0158              IF(IOTYP .EQ. 1) WRITE(6,6491)EMALOC,NEMA,DPDATE,HR,MIN,
                  1 C(INDX),CTMVAL
0159      6491    FORMAT(1X,I5,7X,I5,F8.0,1X,2I2,T30,1PE12.3,T45,1PE12.3)
        C
0160              CALL CONCHK(C,CARD,INDX)
        C
        C***CHANGE THE CONTAMINATION VALUE
0161              C(INDX)=CTMVAL
        C***WRITE UPDATED CONTAMINATE VALUE
0162              CALL DPW(ICTM,CADSI,C,WRDI)
        C***WRITE UPDATED CONTAMINATE VALUE TO EXTENDED AREA (IF ANY)
0163              IF(NPSEX .GT. 0) CALL DPW(ICTM,CADSE,C(NPX),WRDE)
        C***READ A NEW DATA CARD
0164              GO TO 10
0165      50      CONTINUE
        C***FINISHED WITH THIS SET
0166              WRITE(6,650)
0167      650     FORMAT(' END OF SET')
0168              RETURN
0169              END


PROGRAM SECTIONS

 NAME        SIZE                    ATTRIBUTES

$CODE1   004572  1213                RW,I,CON,LCL
$PDATA   000014     6                RW,D,CON,LCL
$IDATA   001260   344                RW,D,CON,LCL
$VARS    013316  2919                RW,D,CON,LCL
$TEMPS   000002     1                RW,D,CON,LCL
EDCOM    001152   309                RW,D,OVR,GBL
HDR      001000   256                RW,D,OVR,GBL


TOTAL SPACE ALLOCATED = 023560  5048

,LP:=DP1:CTMCHG
```

```
C ******************** CTMDEL.FTN ****************************
C
C  PROGRAM ID: EDI-11-WEL-1-2
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM READS THE DELETE DATA CARDS AND IF IT
C       FINDS AN EXACT MATCH, DELETES THE DATA POINT FROM
C       THE CONTAMINATION DATA.
C
C  DATA FILES:
C       NAME                        LUN     TYPE    ACCESS
C       FILE 0 -- WELLHDR           1       RAN     R/W
C       FILE U  -- FRMTCTM          1       RAN     R/W
C       [220,100]EDIT.CON           2       FOR     R
C       [220,100]EDIT.LST           6       FOR     W
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C               DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION FEBRUARY 1976
C               CURRENT VERSION  AUGUST  1979
C
C
0001            SUBROUTINE CTMDEL
C
0002            BYTE EDITCD,ECODE,TODAY,NOW,CARD(80),WTEST,WELLNM(12)
C
0003            INTEGER EMACON,EMALOC,HR,TMIN
0004            INTEGER*4 UPHDR,CTIADR(36),CTXADR(36), INDKS
C
0005            DIMENSION C(512),T(512),IBUF(256),MINT(512),KBUF(256)
C
0006            INCLUDE 'CRMSED.COM/NOLIST'
C
0012            EQUIVALENCE(IBUF(1),WTEST(1)), (CTIADR(1),KBUF(1)),
                1 (CTXADR(1),KBUF(73))
C
0013            DATA ECODE /'E'/
C
0014            ISOCNV = 1999
0015            IWN = IWNAM
C
0016            WRITE(6,600)
0017     600    FORMAT('0THE FOLLOWING ARE CONTAMINATION DATA DELETION CARDS')
C
0018      10    CONTINUE
0019            READ(2,210) CARD
0020     210    FORMAT(80A1)
0021            IF(CARD(1) .EQ. ECODE) GO TO 70
0022            IF(IOTYP .EQ. 0) GO TO 30
```

```
        C***IOTYPE=1, DATA BEING INPUT USING EMA CODES
0023            DECODE(35,211,CARD) EMALOC,NEMA,DPDATE,HR,MIN,CTMVAL
0024     211    FORMAT(7X,I4,1X,I4,F6.0,2I2,E9.3)
        C***CONVERT APPROPRIATE CTMVAL FROM (PCI/L) TO (PCI/ML)
0025            IF(NEMA .EQ. 112) CTMVAL=CTMVAL/1000.
0026            IF(NEMA .EQ. 111) CTMVAL=CTMVAL/1000.
0027            IF(NEMA .EQ. 108) CTMVAL=CTMVAL/1000.
0028            IF(NEMA .EQ. 121) CTMVAL=CTMVAL/1000.
0029            IF(NEMA .EQ.  24) CTMVAL=CTMVAL/1000.
0030            IF(NEMA .EQ.  10) CTMVAL=CTMVAL/1000.
0031            IF(NEMA .EQ. 103) CTMVAL=CTMVAL/1000.
0032            IF(NEMA .EQ. 104) CTMVAL=CTMVAL/1000.
0033            IF(NEMA .EQ.  34) CTMVAL=CTMVAL/1000.
0034            IF(NEMA .EQ. 998) CTMVAL=CTMVAL/1000.
        C***CONVERT EMA WELL NUMBER
0035            CALL EMASRH(EMALOC,WELLNM,ISTAT)
0036            IF(ISTAT .EQ. 1) GO TO 15
        C***UNSUCCESSFUL SEARCH
0037            WRITE(6,610) EMALOC,NEMA,DPDATE,HR,MIN,CTMVAL
0038     610    FORMAT(T20,'INVALID EMA CODE',2I5,F8.0,1X,2I2,1PE12.3)
0039            GO TO 10
0040     15     CONTINUE
        C***CONVERT CONTAMINANT CODE IF NECESSARY
        C   CIRMIS CODES RUN 1000 + EMA CODES, EMA CODES ARE .LT. 1000
0041            IF (NEMA .LT. 1000) GO TO 20
0042            IF (NEMA .EQ. 1000 .OR. NEMA .GT. ISOCNV) GO TO 2555
        C***CIRMIS CODE WAS INPUT
0043            KKCTM = NEMA-1000
0044            IF (KKCTM .GT. LIMCOM) GO TO 20
0045            GO TO 35
0046     20     CONTINUE
        C***EMA CODE WAS INPUT
0047            NCTM=0
0048            DO 25 I=1,LIMCON
0049            IF(KKCTM .EQ. EMACON(I)) NCTM=I
0050     25     CONTINUE
0051            IF(NCTM .NE. 0) GO TO 35
        C***INVALID CODE
0052    2555    WRITE(6,625) EMALOC,NEMA,DPDATE,HR,MIN,CTMVAL
0053     625    FORMAT(T20,'INVALID CONTAMINANT CODE',2I5,F8.0,1X,2I2,1PE12.3)
0054            GO TO 10
0055     30     CONTINUE
        C***IOTYP=0
0056            DECODE(36,230,CARD) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL
0057     230    FORMAT(12A1,1X,I2,F6.0,2I2,E10.3)
0058     35     CONTINUE
        C***COMPUTE THE TOTAL MINUTES
0059            TMIN=HR*60+MIN
        C***DETERMINE WELL'S LOCATION IN THE HEADER FILE
0060            IWNAM = IWN
0061            CALL RTVHDC(WELLNM,FQADR)
0062            IWNAM = IWN
0063            IF(FQADR .GE. 0.) GO TO 40
        C***NO HEADER INFORMATION
0064            WRITE(6,635) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL
0065     635    FORMAT(T20,'NO HEADER INFORMATION FOUND FOR THIS WELL',
```

```
                1 1X,12A1,I5,F8.0,1X,2I2,1PE12.3)
0066            GO TO 10
0067     40     CONTINUE
         C
0068            CTADR = IBUF(61)
         C
0069            CALL DPR (ICHDR,CTADR,KBUF,256.)
         C
         C***DOES THIS WELL PRESENTLY CONTAIN CONTAMINATION DATA?
0070            NDBIT=IFLD(1,1,IDBIT)
0071            IF(NDBIT .EQ. 0) GO TO 44
         C***DOES THIS CONTAMINATE EXIST?
0072            IF(NCTM-1 .GT. 15) GO TO 41
0073            NCBIT=IFLD(NCTM-1,1,ICBIT(1))
0074            IF(NCBIT .EQ. 0) GO TO 44
0075            GO TO 42
0076     41     NCBIT=IFLD(NCTM-17,1,ICBIT(2))
0077            IF(NCBIT .EQ. 0) GO TO 44
         C***DATA EXISTS--SET UP POINTERS TO THE DATA
0078     42     IOFF=(NCTM-1)*3
0079            NPTS = KBUF(145+IOFF)
0080            INDKS = CTIADR(NCTM)
0081            GO TO 45
0082     44     CONTINUE
         C***NO CONTAMINATION DATA
0083            WRITE(6,640) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL
0084     640    FORMAT(T20,'NO CONTAMINANT DATA',1X,12A1,I5,F8.0,1X,2I2,1PE12.3)
0085            GO TO 10
0086     45     CONTINUE
0087            DKSEX = CTXADR(NCTM)
0088            NPSEX = KBUF(146+IOFF)
0089            INALOC = KBUF(147+IOFF)
         C***READ THE INITIAL ALLOCATION DATA
0090            CADSI=INDKS
0091            TADSI=CADSI+INALOC
0092            ADRMI=TADSI+INALOC
0093            WRDI=NPTS*2.
0094            WI  = INALOC*256.
0095            CALL DPR(ICTM,CADSI,C,WRDI)
0096            CALL DPR(ICTM,TADSI,T,WRDI)
0097            CALL DPR(ICTM,ADRMI,MINT,WI)
         C***READ THE EXTENSION (IF ANY)
0098            IF(NPSEX .EQ. 0) GO TO 48
0099            CADSE=DKSEX
0100            TADSE=CADSE+2.
0101            ADRME=TADSE+2.
0102            WRDE=NPSEX*2.
0103            NPX=NPTS+1
0104            CALL DPR(ICTM,CADSE,C(NPX),WRDE)
0105            CALL DPR(ICTM,TADSE,T(NPX),WRDE)
0106            CALL DPR(ICTM,ADRME,MINT(NPX),256.)
0107     48     CONTINUE
         C***DETERMINE THE INDEX CORRESPONDING TO DPDATE
0108            NTOT=NPTS+NPSEX
         C***LOCATE THE DATA POINT
0109            CALL BSRCH(T,NTOT,DPDATE,INDX,ISTAT)
```

```
0110            ISAV=INDX
0111            IF(ISTAT .EQ. 1) GO TO 50
        C***DATE NOT FOUND
0112            WRITE(6,648) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL
0113     648    FORMAT(T20,'INVALID DATE',1X,12A1,I5,F8.0,1X,2I2,1PE12.3)
0114            GO TO 10
0115     50     CONTINUE
        C***DO THE MINUTES MATCH
0116            IF(TMIN .EQ. MINT(INDX)) GO TO 55
        C***THERE CAN BE MORE THAN ONE SAMPLE PER DAY, EXAMINE THE DATES
        C    ON EACH SIDE OF T(INDX) FOR MORE SAMPLES ON THIS DAY THAT
        C    MIGHT MATCH
0117            INDX=INDX-1
0118            IF(INDX .LT. 1) GO TO 53
0119            ZERO = DPDATE*0.00001
0120            IF(DPDATE-T(INDX) .LT. ZERO) GO TO 50
        C***EXAMINE THE DATES BEYOND THE ORIGINAL T(INDX)
0121            INDX=ISAV
0122     52     CONTINUE
0123            INDX=INDX+1
0124            IF(INDX .GT. NTOT) GO TO 53
0125            IF(DPDATE .NE. T(INDX)) GO TO 53
0126            IF(TMIN .EQ. MINT(INDX)) GO TO 55
0127            GO TO 52
0128     53     CONTINUE
        C***SEARCH UNSUCCESSFUL
0129            WRITE(6,653)WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL
0130     653    FORMAT(T20,'DATE NOT FOUND',1X,12A1,I5,F8.0,1X,2I2,1PE12.3)
0131            GO TO 10
0132     55     CONTINUE
        C***THE CONTAMINATION VALUES MUST MATCH OR THE DATA POINT
        C    WILL NOT BE DELETED
0133            ZERO = CTMVAL*0.00001
0134            IF((CTMVAL-ABS(C(INDX))) .LT. ZERO) GO TO 57
        C***VALUES DIFFER
0135            WRITE(6,655) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL,C(INDX)
0136     655    FORMAT(T20,'VALUES DIFFER ',12A1,I5,F8.0,1X,2I2,1P2E12.3)
0137            GO TO 10
0138     57     CONTINUE
        C***SEARCH SUCCESSFUL--REMOVE C(INDX),MINT(INDX) AND T(INDX)
        C
        C***IF AN EXTENSION HAS BEEN MADE FOR THIS CONTAMINATE, THE NUMBER
        C    OF WORDS IN THE INITIAL ALLOCATION DOES NOT CHANGE
0139            IF(NPSEX .EQ. 0) NPTS=NPTS-1
0140            IF(NPSEX .NE. 0) NPSEX=NPSEX-1
0141            M=NTOT-1
        C***MAY HAVE REMOVED THE ONLY DATA POINT
0142            IF(M .EQ. 0) GO TO 65
        C***REMOVE THE DATA POINT BY COMPRESSING THE ARRAYS
0143            DO 60 I=INDX,NPTS
0144            C(I)=C(I+1)
0145            T(I)=T(I+1)
0146            MINT(I)=MINT(I+1)
0147     60     CONTINUE
        C***RETURN THE INITIAL ALLOCATION TO THE DISC
0148            IF(NPTS .EQ. 0) GO TO 65
```

```
0149            WRDI=NPTS*2.
0150            WI  = INALOC*256.
0151            CALL DPW(ICTM,CADSI,C,WRDI)
0152            CALL DPW(ICTM,TADSI,T,WRDI)
0153            CALL DPW(ICTM,ADRMI,MINT,WI)
        C***RETURN THE EXTENDED AREA (IF ANY)
0154            IF(NPSEX .EQ. 0) GO TO 65
0155            WRDE=NPSEX*2.
0156            CALL DPW(ICTM,CADSE,C(NPX),WRDE)
0157            CALL DPW(ICTM,TADSE,T(NPX),WRDE)
0158            CALL DPW(ICTM,ADRME,MINT(NPX),256.)
        C***ADJUST THE NUMBER OF DATA POINTS IN THE INITIAL AND EXTENDED
        C   ALLOCATIONS
0159     65     CONTINUE
        C***ADJUST THE POINTS IN THE HEADER FILE
0160            KBUF(145+IOFF)=NPTS
        C***IF THE ONLY DATA POINT HAS BEEN DELETED, SET THE
        C   CONTAMINANT'S ICBIT TO ZERO
0161            IF(NCTM-1 .GT. 15) GO TO 66
0162            IF(NPTS .EQ. 0) CALL SFLD(NCTM-1,1,0,ICBIT(1))
0163            GO TO 67
0164     66     IF(NPTS .EQ. 0) CALL SFLD(NCTM-17,1,0,ICBIT(2))
        C***IF ICBIT IS NOW ZERO, THIS WELL HAS NO CONTAMINATION DATA AT ALL
        C   SET TDBIT TO ZERO
0165     67     IF(ICBIT(1) + ICBIT(2) .EQ. 0) CALL SFLD(1,1,0,IBUF(19))
        C***RETURN THE HEADER INFORMATION
0166            KBUF(146+IOFF) = NPSEX
0167            CALL DPW(IWHDR,FQADR,IBUF,256.)
0168            CALL DPW (ICHDR,CTADR,KBUF,256.)
        C***ECHO THE INPUT TO THE LIST FILE
0169            IF(IOTYP .EQ. 0) WRITE(6,665)WELLNM,NCTM,OPDATE,HR,MIN,CTMVAL
0170     665    FORMAT(1X,12A1,I5,F8.0,1X,2I2,1PE12.3)
0171            IF(IOTYP .EQ. 1) WRITE(6,666)EMALOC,NEMA,OPDATE,HR,MIN,CTMVAL
0172     666    FORMAT(1X,I5,7X,I5,F8.0,1X,2I2,1PE12.3)
        C***READ NEXT DATA CARD
0173            GO TO 10
0174     70     CONTINUE
        C***FINSIHED WITH THIS SET
0175            WRITE(6,670)
0176     670    FORMAT(' END OF SET')
0177            RETURN
0178            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	004376	1151	RW,I,CON,LCL
$PDATA	000020	8	RW,D,CON,LCL
$IDATA	001156	311	RW,D,CON,LCL
$VARS	013314	2918	RW,D,CON,LCL
$TEMPS	000002	1	RW,D,CON,LCL
EDCOM	001152	309	RW,D,OVR,GBL
HDR	001000	256	RW,D,OVR,GBL

```
FORTRAN IV-PLUS V02-51D          06100125     11-SEP-79            PAGE 6
CTMODEL.FTN       /TRIBLOCKS/WR

TOTAL SPACE ALLOCATED = 023264  4954

,LP1=DP11CTMODEL
```

```
C ************************ CTMINS.FTN ******************************
C
C  PROGRAM ID: EDI-11-WEL-1-3
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM READS THE NEW DATA AND EITHER INSERTS OR APPENDS
C       IT TO THE PROPER CONTAMINATION FILE
C
C  DATA FILES:
C       NAME                                LUN     TYPE    ACCESS
C       FILE G -- WELLHDR                   1       RAN     R/W
C       FILE G -- UPDATEHDR                 1       RAN     R/W
C       FILE G -- FRMTCTM                   1       RAN     R/W
C       [220,100]EDIT.CON                   2       FOR     R
C       [220,100]EDIT.LST                   6       FOR     W
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C               DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION FEBRUARY 1976
C               CURRENT VERSION  AUGUST  1979
C
C
      SUBROUTINE CTMINS
C
      BYTE EDITCD,ECODE,TODAY,NOW,BLANK,LT,CARD(80),WTEST,WELLNM(12)
C
      DOUBLE PRECISION DPA,DPB,DPC
C
      INTEGER EMACON,EMAISO,EMALUC,HR,TMIN
      INTEGER*4 UPHDR,FRESC(36),CTIADR(36),CTXADR(36),INDKS
C
      DIMENSION C(512),T(512),IBUF(256),MINT(512),KBUF(256)
C
      INCLUDE 'CRMSED.COM/NOLIST'
C
      EQUIVALENCE(IBUF(1),WTEST(1)),(FRESC(1),UPHDR(11)),
     1 (CTIADR(1),KBUF(1)), (CTXADR(1),KBUF(73))
C
      DATA BLANK /' '/
      DATA ECODE /'E'/
C
      ISOCNV = 1999
      IWN = IWNAM
C
      WRITE(6,600)
  600 FORMAT('0THE FOLLOWING ARE NEW CONTAMINATION DATA')
C
C***BEGIN LOOP TO READ INPUT DATA.
C
```

```
0020     10     CONTINUE
0021            READ(2,210) CARD
0022     210    FORMAT(80A1)
0023            IF(CARD(1) .EQ. ECODE) GO TO 2000
        C
0024            IF(IOTYP .EQ. 0) GO TO 30
        C
        C***ORIGINAL EMA CARDS-----TYPE '55' CARDS
        C
0025            DECODE(36,211,CARD) EMALOC,EMAISO,DPDATE,HR,MIN,CTMVAL,LT
0026     211    FORMAT(7X,I4,1X,I4,F6.0,2I2,E9.2,A1)
        C
        C***CONVERT APPROPRIATE CTMVAL FROM (PCI/L) TO (PCI/ML)
        C
0027            IF(EMAISO .EQ. 112) CTMVAL=CTMVAL/1000.
0028            IF(EMAISO .EQ. 111) CTMVAL=CTMVAL/1000.
0029            IF(EMAISO .EQ. 108) CTMVAL=CTMVAL/1000.
0030            IF(EMAISO .EQ. 121) CTMVAL=CTMVAL/1000.
0031            IF(EMAISO .EQ.  24) CTMVAL=CTMVAL/1000.
0032            IF(EMAISO .EQ.  10) CTMVAL=CTMVAL/1000.
0033            IF(EMAISO .EQ. 103) CTMVAL=CTMVAL/1000.
0034            IF(EMAISO .EQ. 104) CTMVAL=CTMVAL/1000.
0035            IF(EMAISO .EQ.  34) CTMVAL=CTMVAL/1000.
0036            IF(EMAISO .EQ. 998) CTMVAL=CTMVAL/1000.
        C
        C***CONVERT EMA WELL NUMBER TO WELL DESIGNATION BY LOCATION
        C
0037            CALL EMASRH(EMALOC,WELLNM,ISTAT)
0038            IF(ISTAT .EQ. 1) GO TO 20
        C
        C***UNSUCCESSFUL SEARCH
        C
0039            WRITE(6,610) EMALOC,EMAISO,DPDATE,HR,MIN,CTMVAL,LT
0040     610    FORMAT(T20,'INVALID EMA CODE ',2I5,F8.0,1X,2I2,1PE12.3,A1)
0041            GO TO 10
        C
0042     20     CONTINUE
        C
        C***CONVERT CONTAMINANT CODE IF NECESSARY (EMAISO .GT. 1000)
        C
0043            IF (EMAISO .LT. 1000) GO TO 22
        C
0044            IF (EMAISO .EQ.1000 .OR. EMAISO .GT. ISOCNV) GO TO 2555
        C
        C***NOT NECESSARY
        C
0045            KKCTM = EMAISO-1000
0046            IF (KKCTM .GT. LIMCON) GO TO 22
0047            GO TO 40
        C
0048     22     CONTINUE
        C
        C***MUST BE CONVERTED
        C
0049            NCTM = 0
0050            DO 25 I=1,LIMCON
```

```
0051            IF (KKCTM .EQ. EMACON(I)) NCTM=I
0052     25     CONTINUE
0053            IF(NCTM .NE. 0) GO TO 40
        C
        C***NO MATCH - INVALID CONTAMINANT CODE
        C
0054    2555    WRITE(6,625) EMALOC,EMAISO,DPDATE,HR,MIN,CTMVAL,LT
0055     625    FORMAT(T20,'INVALID CONTAMINANT CODE ',2I5,F8.0,1X,2I2,1PE12.3,A1)
0056            GO TO 10
        C
0057     30     CONTINUE
        C
        C***IOTYP=0, WELL DESIGNATION IS BY LOCATION
        C
0058            DECODE(37,230,CARD) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL,LT
0059     230    FORMAT(12A1,1X,I2,F6.0,2I2,E10.2,A1)
0060     40     CONTINUE
0061            IF (DPDATE .LE. EDDATE) GO TO 232
        C
0062            WRITE (6,231) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL
0063    231     FORMAT (T50,'ERROR IN DATE ',12A1,I5,F8.0,1X,2I2,1P2E12.3)
0064            GO TO 10
        C
0065    232     CONTINUE
        C
        C***CHECK DATE FOR MONTH = 1 TO 12, DAY = 1 TO 31
        C
0066            CALL DATCHK (WELLNM,DPDATE,IERR)
0067            IF (IERR .GT. 0) GO TO 10
        C
        C***'LESS THAN' DATA IS STORED AS A NEGATIVE NUMBER
        C
0068            IF(LT .NE. BLANK) CTMVAL=CTMVAL*(-1.)
        C
        C***COMPUTE THE TOTAL MINUTES
        C
0069            TMIN=HR*60+MIN
        C
        C***HASH OUT LOCATION OF THIS WELL IN THE HEADER FILE
        C
0070            IWNAM = IWN
0071            CALL RTVHDC(WELLNM,FQADR)
0072            IWNAM = IWN
0073            IF(FQADR .GE. 0) GO TO 50
        C
        C***WELL NOT FOUND
        C
0074            WRITE(6,640) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL,LT
0075     640    FORMAT(T20,'NO HEADER INFORMATION FOUND FOR THIS WELL ',
               1 12A1,I5,F8.0,1X,2I2,1PE12.3,A1)
0076            GO TO 10
        C
0077     50     CONTINUE
0078            CTADR = IBUF(61)
        C
0079            CALL DPR (ICHDR,CTADR,KBUF,256.)
```

```
        C
0080            IOFF=(NCTM-1)*3
        C
        C***DOES THIS WELL PRESENTLY HAVE ANY CONTAMINATE DATA?
        C
0081            NOBIT=IFLD(1,1,IBUF(19))
0082            IF(NOBIT .EQ. 0) GO TO 53
        C
        C***DOES THIS CONTAMINATE EXIST?
        C
0083            IF(NCTM-1 .LE. 15) NCBIT = IFLD(NCTM-1,1,IBUF(20))
        C
0084            IF(NCTM-1 .GT. 15) NCBIT=IFLD(NCTM-17,1,IBUF(21))
        C
0085            IF(NCBIT .EQ. 0) GO TO 53
        C
        C***THE DATA EXISTS--SET UP POINTERS TO THE DATA
        C
0086            NPTS = KBUF(145+IOFF)
0087            INDKS = CTIADR(NCTM)
0088            GO TO 55
        C
        C***CURRENTLY THIS CONTAMINATE DOES NOT EXIST FOR THIS WELL
        C
0089     53     CONTINUE
0090            IBUF(60) = IBUF(60) + 1
0091            NEWNDX  = 1
0092            C(1)=CTMVAL
0093            T(1)=DPDATE
0094            MINT(1)=TMIN
0095            NPTS=1
0096            NPSEX=0
0097            CTIADR(NCTM) = FRESC(NCTM)
0098            FRESC(NCTM)=FRESC(NCTM)+3
0099            CADSI = CTIADR(NCTM)
0100            TADSI=CADSI+1,
0101            ADRMI=TADSI+1,
0102            WRDI =2,
0103            WI   =256,
        C
        C***CHANGE HEADER FILE TO INCLUDE NEW CONTAMINATE
        C
0104            KBUF(147+IOFF) = 1
0105            CALL SFLD(1,1,1,IBUF(19))
        C
0106            IF(NCTM-1 .LE. 15) CALL SFLD(NCTM-1,1,1,IBUF(20))
        C
0107            IF(NCTM-1 .GT. 15) CALL SFLD(NCTM-17,1,1,IBUF(21))
0108            GO TO 160
        C
0109     55     CONTINUE
0110            DKSEX = CTXADR(NCTM)
0111            NPSEX = KBUF(146+IOFF)
0112            INALOC = KBUF(147+IOFF)
        C
        C***READ THE INITIAL ALLOCATION
```

```
        C
0113            CADSI=INDKS
0114            TADSI=CADSI+INALOC
0115            ADRMI=TADSI+INALOC
0116            WRDI=2.*NPTS
0117            WI  =INALOC*256.
0118            CALL DPR(ICTM,CADSI,C,WRDI)
0119            CALL DPR(ICTM,TADSI,T,WRDI)
0120            CALL DPR(ICTM,ADRMI,MINT,WI)
        C
        C***READ THE EXTENDED ALLOCATION (IF ANY)
        C
0121            IF(NPSEX .EQ. 0) GO TO 60
        C
0122            CADSE=DKSEX
0123            TADSE=CADSE+2.
0124            ADRME=TADSE+2.
0125            WRDE=NPSEX*2.
0126            NPX=NPTS+1
0127            CALL DPR(ICTM,CADSE,C(NPX),WRDE)
0128            CALL DPR(ICTM,TADSE,T(NPX),WRDE)
0129            CALL DPR(ICTM,ADRME,MINT(NPX),256.)
0130     60     CONTINUE
        C
        C***THE NEW DATA POINT CAN BE EITHER INSERTED OR APPENDED
        C
0131            LAST=NPTS+NPSEX
0132            NLST=LAST+1
0133            IF(NLST .LT. 513) GO TO 65
        C
        C***NO ROOM AT THE INN
        C
0134            WRITE(6,660)WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL,LT
0135     660    FORMAT(T20,'THE ADDITION OF THIS DATA POINT WOULD HAVE EXCEEDED'/
                1 T20,'THE MAXIMUM OF 512 POINTS'/
                2 1H+,T55,12A1,I5,F8.0,1X,2I2,1PE12.3,A1)
0136            GO TO 10
        C
0137     65     CONTINUE
        C
        C***IS THIS DATA POINT TO BE APPENDED ?
        C
0138            IF(DPDATE .LT. T(LAST)) GO TO 70
        C
0139            IF(DPDATE .EQ. T(LAST) .AND. TMIN .LE. MINT(LAST)) GO TO 90
        C
        C***YES
        C
0140            NEWNDX  = NLST
0141            C(NLST)=CTMVAL
0142            T(NLST)=DPDATE
0143            MINT(NLST)=TMIN
0144            GO TO 110
        C
0145     70     CONTINUE
        C
```

```
        C***NO, IT MUST BE INSERTED
        C
0146            CALL BSRCH(T,LAST,DPDATE,INDX,ISTAT)
0147            IF(ISTAT) 75,82,90
        C
0148     75     CONTINUE
        C
        C***TO GET TO THIS POINT, MORE THAN LIKELY DPDATE IS LESS THAN T(1)
        C
0149            IF(DPDATE .LT. T(1)) GO TO 80
        C
0150            WRITE(6,1000)
0151    1000    FORMAT(1H1,' ***PROBLEM HAS BEEN ENCOUNTERED AT 75 CONTINUE '//)
        C
0152            WRITE(6,670) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL,LT
0153     670    FORMAT(T20,'UNABLE TO INSERT ',12A1,I5,F8.0,1X,2I2,1PE12.3,A1)
0154            GO TO 10
        C
0155     80     CONTINUE
0156            INDX=0
        C
        C***INSERT THE NEW VALUE AT THE BEGINNING OR BETWEEN INDX AND INDX+1
        C
0157     82     CONTINUE
0158            N=LAST-INDX
0159            J=NLST
0160            DO 85 I=1,N
0161            C(J)=C(J-1)
0162            T(J)=T(J-1)
0163            MINT(J)=MINT(J-1)
0164            J=J-1
0165     85     CONTINUE
0166            NEWNDX  = INDX + 1
0167            C(INDX+1)=CTMVAL
0168            T(INDX+1)=DPDATE
0169            MINT(INDX+1)=TMIN
0170            GO TO 110
        C
0171     90     CONTINUE
        C
        C***THERE WAS A MATCH ON THE DATES NECESSITATING ENTERING THE DATA
        C   CHRONOLOGICALLY WITHIN THE DAY (DPDATE .EQ. T(INDX))
        C
        C***CONVERT THE TOTAL MINUTES TO A FRACTION OF DAY AND APPEND IT
        C   TO THE DATE TO FORM A DOUBLE PRECISION NUMBER THAT WILL BE
        C   USED IN DETERMINING WHERE TO INSERT THE NEW DATA. SINGLE
        C   PRECISION DOES NOT GIVE ENOUGH ACCURACY.
        C
        C***IF DATES AND HOUR,MINUTES BOTH MATCH---DATA ALREADY EXISTS
        C
0172            DO 91 IID=1,LAST
0173            IF(DPDATE .EQ. T(IID) .AND. TMIN .EQ. MINT(IID)) GO TO 96
0174     91     CONTINUE
        C
0175            DPB=DPDATE
0176            DPB=DPB + TMIN/1440.
```

```
0177            J=NLST
        C
0178            DO 95 I=1,LAST
0179            C(J)=C(J-1)
0180            T(J)=T(J-1)
0181            MINT(J)=MINT(J-1)
        C
        C***TIME LESS THAN 1ST TIME IN ARRAY--INSERT AT BEGINNING OF DAY
        C
0182            IF(J .EQ. 2) GO TO 100
        C
        C***SHOULD THE NEW DATA BE INSERTED BETWEEN J-2 AND J
        C
0183            DPA=T(J-2)
0184            DPA=DPA + MINT(J-2)/1440.
0185            DPC=T(J)
0186            DPC=DPC + MINT(J)/1440.
0187            IF(DPB .GT. DPA .AND. DPB .LT. DPC) GO TO 100
        C
0188            J=J-1
0189     95     CONTINUE
        C
        C   POSSIBLE DUPLICATE ENTRY
        C
0190    96      WRITE(6,675) WELLNM,NCTM,DPDATE,HR,MIN,CTMVAL,LT
0191    675     FORMAT(T20,'ENTRY ALREADY EXISTS ',12A1,I5,F8.0,1X,2I2,1PE12.3,A1)
0192            GO TO 10
        C
0193    100     CONTINUE
0194            NEWNDX  = J - 1
0195            C(J-1)=CTMVAL
0196            T(J-1)=DPDATE
0197            MINT(J-1)=TMIN
0198    110     CONTINUE
        C
        C***RETURN UPDATED DATA TO DISC
        C
0199            IF(NPSEX .NE. 0) GO TO 120
        C
0200            IF(NLST .GT. INALOC*128) GO TO 130
        C
        C***THE SPACE INITIALLY ALLOCATED FOR THIS CONTAMINATE HAS NOT
        C   BEEN EXCEEDED---INCREMENT IT'S POINTERS
        C
0201            NPTS=NPTS+1
0202            WRDI=WRDI+2.
0203            WI  =INALOC*256.
0204            GO TO 160
        C
0205    120     CONTINUE
        C
        C***INCREMENT THE EXTENSION POINTERS
        C
0206            NPSEX=NPSEX+1
0207            WRDE=WRDE+2.
0208            GO TO 150
```

```
        C
0209     130    CONTINUE
        C
        C***THE WELL NOW REQUIRES AN EXTENSION FOR THIS CONTAMINATE,  THERE
        C    MAY EXIST AN EXTENSION WITHOUT ANY DATA
        C
0210            IF(CTXADR(NCTM) .NE. 0) GO TO 140
        C
0211            CTXADR(NCTM) = FRESC(NCTM)
0212            FRESC(NCTM)=FRESC(NCTM)+5
0213     140    CONTINUE
        C
        C***CREATE POINTERS FOR THE EXTENSION
        C
0214            CADSE = CTXADR(NCTM)
0215            TADSE=CADSE+2.
0216            ADRME=TADSE+2.
0217            NPSEX=1
0218            NPX=NPTS+1
0219            WRDE=2.
0220     150    CONTINUE
        C
        C***WRITE THE EXTENSION
        C
0221            CALL DPW(ICTM,CADSE,C(NPX),WRDE)
0222            CALL DPW(ICTM,TADSE,T(NPX),WRDE)
0223            CALL DPW(ICTM,ADRME,MINT(NPX),256.)
0224     160    CONTINUE
        C
        C***WRITE THE INITIAL ALLOCATION
        C
0225            CALL DPW(ICTM,CADSI,C,WRDI)
0226            CALL DPW(ICTM,TADSI,T,WRDI)
0227            CALL DPW(ICTM,ADRMI,MINT,WI)
        C
        C***WRITE THE INPUT RECORD TO THE LIST FILE
        C
0228            IF(IOTYP .EQ. 0) WRITE(6,6110) WELLNM,NCTM,DPDATE,HR,
                1 MIN,CTMVAL,LT
0229     6110   FORMAT(1X,12A1,I5,F8.0,1X,2I2,1PE12.3,A1)
        C
0230            IF(IOTYP .EQ. 1) WRITE(6,6111) EMALOC,EMAISO,DPDATE,HR,
                1 MIN,CTMVAL,LT
0231     6111   FORMAT(1X,I4,I5,F8.0,1X,2I2,1PE12.3,A1)
        C
0232            CALL CONCHK (C,CARD,NEWNDX)
        C
        C
        C***UPDATE THE WELL HEADER FILE
        C
0233            KBUF(145+IOFF) = NPTS
0234            KBUF(146+IOFF) = NPSEX
0235            CALL DPW (IWHDR,FQADR,IBUF,256.)
0236            CALL DPW (ICHDR,CTADR,KBUF,256.)
        C
        C***READ NEXT DATA CARD
```

```
        C
0237            GO TO 10
        C
0238    2000    CONTINUE
        C***END OF SET
0239            WRITE (6,6120)
0240    6120    FORMAT (' END OF SET')
0241            RETURN
0242            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	005700	1504	RW,I,CON,LCL
$PDATA	000010	4	RW,D,CON,LCL
$IDATA	001414	390	RW,D,CON,LCL
$VARS	013350	2932	RW,D,CON,LCL
$TEMPS	000002	1	RW,D,CON,LCL
EDCOM	001152	309	RW,D,OVR,GBL
HDR	001000	256	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 025050 5396

,LP:=DP1:CTMINS

```
C ******************* EDIHYD.FTN *******************
C
C  PROGRAM ID: EDI-11-WEL-0
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM CONTROLS THE EDITING AND UPDATING OF THE
C       WELL HYDROGRAPH DATA. THREE SUBROUTINES ARE USED TO
C       KEEP DOWN THE AMOUNT OF CORE STORAGE. THERE IS ONE
C       SUBROUTINE FOR EACH OF THE 3 EDITING FUNCTIONS:
C               CHANGE (HYDCHG)
C               DELETE (HYDDEL)  AND
C               INSERT (HYDINS).
C
C
C  DATA FILES:
C       NAME                    LUN     TYPE    ACCESS
C       FILE Q--WELLHDR         1       RAN     R/W
C       FILE Q--UPDATEHDR       1       RAN     R/W
C       FILE Q--FRMTHYD         1       RAN     R/W
C       [220,100]EDIT.CON       2       FOR     R
C       [220,100]EDIT.LST       6       FOR     W
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C  UPDATE BY:   DR FRIEDRICHS
C               DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION FEBRUARY 1976
C               CURRENT VERSION NOVEMBER 1978
C
C
0001            SUBROUTINE EDIHYD
C
0002            BYTE EDITCD,CODES(4),TODAY,NOW,WTEST
C
0003            INTEGER*4 UPHDR,FRESEC
C
0004            DIMENSION IUP(256)
C
0005            INCLUDE 'CRMSED.COM/NOLIST'
C
0011            EQUIVALENCE (UPHDR(1),FRESEC), (IUP(1),UPHDR(1))
C
0012            DATA CODES /'C', 'D', 'I', 'E'/
C
0013            CALL DPR(IUHDR,0.,IUP,256.)
C***THE MAIN PROGRAM HAS READ THE EDIT CONTROL CARD,
C   DECODE IT AND CALL THE PROPER SUBROUTINE.
0014            IED=0
0015            DO 20 I=1,4
0016            IF(EDITCD .EQ. CODES(I)) IED=I
```

```
0017      20      CONTINUE
0018              IF(IED .NE. 0) GO TO 35
        C***BAD EDIT CODE
0019              WRITE(6,620) EDITCD,IDTYP,IOTYP
0020     620      FORMAT(//' THE FOLLOWING IS AN INVALID EDIT CONTROL CARD'/
                  1 1X,A1,6X,I1,1X,I1,/T50,' *** EXECUTION TERMINATED ***')
0021              STOP
0022      35      CONTINUE
0023              GO TO (40,50,60,80), IED
0024      40      CONTINUE
        C*** 'CHANGE' COMMAND
0025              CALL HYDCHG
0026              GO TO 80
0027      50      CONTINUE
        C*** 'DELETE' COMMAND
0028              CALL HYDDEL
0029              GO TO 80
0030      60      CONTINUE
        C*** 'INSERT' COMMAND
0031              CALL HYDINS
0032      80      CONTINUE
        C***WRITE THE UPDATED HEADER FILE TO DISC
0033              CALL DPW(IUHDR,0,,IUP,256,)
        C***RETURN TO THE MAIN PROGRAM TO READ THE NEXT EDIT COMMAND CARD
0034              RETURN
0035              END


PROGRAM SECTIONS

 NAME        SIZE                    ATTRIBUTES

$CODE1   000304     98               RW,I,CON,LCL
$PDATA   000022      9               RW,D,CON,LCL
$IDATA   000154     54               RW,D,CON,LCL
$VARS    000010      4               RW,D,CON,LCL
EDCOM    001252    341               RW,D,OVR,GBL
HDR      001000    256               RW,D,OVR,GBL


TOTAL SPACE ALLOCATED = 002764   762

NO FPP INSTRUCTIONS GENERATED

,LP:=DP1:EDIHYD
```

```
C ******************** HYDCHG.FTN *********************
C
C  PROGRAM ID: EDI-11-WEL-0-1
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM READS THE CHANGE CARDS, LOCATES THE DATA
C       POINT TO BE CHANGED AND MAKES THE CHANGE.
C
C  DATA FILES:
C       NAME                        LUN     TYPE    ACCESS
C       FILE Q--UPDATEHDR           1       RAN     R/W
C       FILE Q--FRMTHYD             1       RAN     R/W
C       FILE Q--WELLHDR             1       RAN     R
C       [220,100]EDIT.CON           2       FOR     R
C       [220,100]EDIT.LST           6       FOR     W
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   BE WISE
C  UPDATE BY:   DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION FEBRUARY 1976
C               CURRENT VERSION NOVEMBER 1978
C
C
0001            SUBROUTINE HYDCHG
C
0002            BYTE EDITCD,ECODE,TODAY,NOW,CARD(80),WTEST,WELLNM(12)
C
0003            INTEGER*4 UPHDR
C
0004            DIMENSION H(512),T(512),IBUF(256)
C
0005            INCLUDE 'CRMSED.COM/NOLIST'
C
0011            EQUIVALENCE(IBUF(1),WTEST(1))
C
C
0012            DATA ECODE /'E'/
C
0013            IWN = IWNAM
C
0014            WRITE(6,600)
0015     600    FORMAT('0THE FOLLOWING ARE HYDROGRAPH DATA CHANGE CARDS'//
                1 T25,'OLD DATA',T40,'NEW DATA')
C
0016      10    CONTINUE
C***THE RECORD MUST FIRST BE READ TO DETERMINE IF IT IS AN 'END'
C   COMMAND
0017            READ(2,210) CARD
0018     210    FORMAT(80A1)
0019            IF(CARD(1) .EQ. ECODE) GO TO 50
```

```
        C***THE RECORD DOES NOT CONTAIN AN 'END' COMMAND, BACKSPACE
        C   THE FILE AND REREAD
0020            DECODE(39,211,CARD) WELLNM,DPDATE,OLDH,HYDVAL
0021     211    FORMAT(12A1,1X,F6.0,2F10.0)
0022            IF (DPDATE .LE. EDDATE) GO TO 214
0023            WRITE (6,212) WELLNM,DPDATE,OLDH,HYDVAL
0024    212     FORMAT (T50,'ERROR IN DATE ',12A1,1X,F7.0,2F11.2)
0025            GO TO 10
0026    214     CONTINUE
        C***CHECK DATE
0027            CALL DATCHK (WELLNM,DPDATE,IERR)
0028            IF (IERR .GT. 0) GO TO 10
        C***HASH OUT THE LOCATION OF THIS WELL IN THE WELL HEADER FILE
0029            IWNAM = IWN
0030            CALL RTVHDC(WELLNM,FQADR)
0031            IWNAM = IWN
0032            IWNAM = IWN
0033            IF(FQADR .GE. 0) GO TO 20
        C***WELL NOT LOCATED
0034            WRITE(6,610) WELLNM,DPDATE,OLDH,HYDVAL
0035     610    FORMAT(T50,' NO HEADER INFORMATION FOUND FOR THIS WELL',
                1 1X,12A1,F8.0,2F11.2)
0036            GO TO 10
0037     20     CONTINUE
        C***DOES THIS WELL PRESENTLY CONTAIN HYDROGRAPH DATA?
0038            NHBIT=IFLD(0,1,IDBIT)
0039            IF(NHBIT.NE.0) GO TO 25
        C***NO HYDROGRAPH DATA
0040            WRITE(6,620) WELLNM,DPDATE,OLDH,HYDVAL
0041     620    FORMAT(T50,'NO HYDROGRAPH DATA ',12A1,F8.0,2F11.2)
0042            GO TO 10
0043     25     CONTINUE
        C***IDKIN AND NPTSIN ARE THE DISK ADDRESS AND NUMBER OF DATA POINTS
        C   IN THE INITIAL ALLOCATION
0044            IDKIN=IBUF(30)
0045            NPTSIN=IBUF(31)
        C***INALOC IS THE NUMBER OF SECTORS IN THE INITAIL ALLOCATION
0046            INALOC=IBUF(34)
        C***IDKEX AND NPTSEX ARE THE DISK ADDRESS AND NUMBER OF DATA
        C   POINTS IN THE EXTENDED ALLOCATION (IF ANY)
0047            IDKEX=IBUF(32)
0048            NPTSEX=IBUF(33)
        C***READ THE INITIAL ALLOCATION DATA
0049            HADSI=IDKIN
0050            WRDI=NPTSIN*2.
0051            TADSI=HADSI + INALOC
0052            CALL DPR(IHYD,HADSI,H,WRDI)
0053            CALL DPR(IHYD,TADSI,T,WRDI)
        C***READ THE EXTENDED ALLOCATION DATA (IF ANY)
0054            IF(NPTSEX .EQ. 0) GO TO 30
        C***FOUR SECTORS ARE ALLOCATED IN THE EXTENSION, TWO EACH FOR
        C   HEIGHT AND TIME
0055            HADSE=IDKEX
0056            WRDE=NPTSEX*2.
0057            TADSE=HADSE+2.
0058            NDX=NPTSIN+1
```

```
0059            CALL DPR(IHYD,HADSE,H(NDX),WRDE)
0060            CALL DPR(IHYD,TADSE,T(NDX),WRDE)
0061      30    CONTINUE
        C***DETERMINE THE INDEX OF THE TIME CORRESPONDING TO DPDATE
0062            NPTS=NPTSIN+NPTSEX
0063            CALL BSRCH(T,NPTS,DPDATE,INDX,ISTAT)
        C***IF ISTAT IS RETURNED AS A 0, THE DATE WAS NOT LOCATED
0064            IF(ISTAT .EQ. 1) GO TO 40
0065            WRITE(6,630) WELLNM,DPDATE,OLDH,HYDVAL
0066     630    FORMAT(T50,'THIS DATA POINT WAS NOT FOUND',1X,12A1,F8.0,2F11.2)
0067            GO TO 10
0068      40    CONTINUE
        C***THE OLD HEIGHTS MUST MATCH
0069            ZERO = OLDH*0.00001
0070            IF(OLDH-H(INDX) .LT. ZERO) GO TO 45
        C***THE HEIGHTS DIFFER
0071            WRITE(6,635) WELLNM,DPDATE,OLDH,H(INDX),HYDVAL
0072     635    FORMAT(T50,'HEIGHTS DIFFER',1X,12A1,F8.0,3F11.2)
0073            GO TO 10
0074      45    CONTINUE
        C***PRINT THE OLD AND NEW VALUES
0075            WRITE(6,640) WELLNM,DPDATE,H(INDX),HYDVAL
0076     640    FORMAT(1X,12A1,1X,F7.0,T25,F10.2,T40,F10.2)
        C***CHANGE THE HEIGHT AND RETURN IT TO DISK
0077            H(INDX)=HYDVAL
0078            CALL DPW(IHYD,HADBI,H,WRDI)
0079            IF(NPTSEX .GT. 0) CALL DPW(IHYD,HADSE,H(NDX),WRDE)
        C***GO BACK TO READ NEXT DATA RECORD
0080            GO TO 10
0081      50    CONTINUE
        C***FINISHED WITH THIS SET
0082            WRITE(6,650)
0083     650    FORMAT(' END OF SET')
0084            RETURN
0085            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	001560	440	RW,I,CON,LCL
$PDATA	000014	6	RW,D,CON,LCL
$IDATA	000636	207	RW,D,CON,LCL
$VARS	010242	2129	RW,D,CON,LCL
$TEMPS	000002	1	RW,D,CON,LCL
EDCOM	001252	341	RW,D,OVR,GBL
HDR	001000	256	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 015150 3380

,LP:=DP1:HYDCHG

```
C******************** HYDDEL.FTN ********************
C
C  PROGRAM ID: EDI-11-WEL-0-2
C
C  PROGRAM DESCRIPTION:
C        THIS PROGRAM READS THE DELETE DATA CARDS AND IF
C        THERE IS AN EXACT MATCH, DELETES THE DATA FROM
C        THE HYDROGRAPH DATA FILE
C
C  DATA FILES:
C        NAME                        LUN      TYPE     ACCESS
C        FILE Q --WELLHDR            1        RAN      R/W
C        FILE Q --UPDATEHDR          1        RAN      R/W
C        FILE Q --FRMTHYD            1        RAN      R/W
C        [220,100]EDIT.CON           2        FOR      R
C        [220,100]EDIT.LST           6        FOR      W
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):    SE WISE
C                DW DAMSCHEN
C                RS ARGO
C
C  DATE:         INITIAL VERSION FEBRUARY 1976
C                CURRENT VERSION NOVEMBER 1978
C
C
0001            SUBROUTINE HYDDEL
C
0002            BYTE EDITCD,ECODE,TODAY,NOW,CARD(80),WTEST,WELLNM(12)
C
0003            INTEGER*4 UPHDR,FRESEC
C
0004            DIMENSION H(512),T(512),IBUF(256)
C
0005            INCLUDE 'CRMSED.COM/NOLIST'
C
0011            EQUIVALENCE (UPHDR(1),FRESEC),(IBUF(19),IDBIT)
0012            EQUIVALENCE (IBUF(1),WTEST(1))
C
0013            DATA ECODE /'E'/
0014            IWN = IWNAM
C
0015            WRITE(6,600)
0016     600    FORMAT('0THE FOLLOWING ARE HYDROGRAPH DATA DELETION CARDS')
C
C***EXAMINE THE RECORD FOR AN 'END' COMMAND
0017      10    CONTINUE
0018            READ(2,210) CARD
0019     210    FORMAT(80A1)
0020            IF(CARD(1) .EQ. ECODE) GO TO 80
C***NO 'END' COMMAND - DECODE THE CARD AND PROCEED
0021            DECODE(29,211,CARD) WELLNM,DPDATE,HYDVAL
```

```
0022     211    FORMAT(12A1,1X,F6.0,F10.0)
         C***LOCATE THE WELL IN THE HEADER FILE
0023            IWNAM = IWN
0024            CALL RTVHDC(WELLNM,FQADR)
0025            IWNAM = IWN
0026            IF(FQADR .GE. 0.) GO TO 20
         C***WELL NOT FOUND
0027            WRITE(6,610) WELLNM,DPDATE,HYDVAL
0028     610    FORMAT(T50,' NO HEADER INFORMATION FOUND FOR THIS WELL',
                1 1X,12A1,F8.0,F11.2)
0029            GO TO 10
0030     20     CONTINUE
         C***DOES THIS WELL PRESENTLY CONTAIN HYDROGRAPH DATA?
0031            NHBIT=IFLD(0,1,IDBIT)
0032            IF(NHBIT.NE.0) GO TO 25
         C***NO HYDROGRAPH DATA
0033            WRITE(6,620) WELLNM,DPDATE,OLDH,HYDVAL
0034     620    FORMAT(T50,'NO HYDROGRAPH DATA ',12A1,F8.0,2F11.2)
0035            GO TO 10
0036     25     CONTINUE
         C***DETERMINE THE POINTERS TO THE DATA. FOR A COMPLETE DESCRIPTION
         C    OF THESE POINTERS, SEE SUBROUTINE HYDCHG.
0037            IDKIN=IBUF(30)
0038            NPTSIN=IBUF(31)
0039            IDKEX=IBUF(32)
0040            NPTSEX=IBUF(33)
0041            INALOC=IBUF(34)
         C***READ THE INITIAL ALLOCATION DATA
0042            HADSI=IDKIN
0043            TADSI=HADSI+INALOC
0044            WRDI=NPTSIN*2.
0045            CALL DPR(IHYD,HADSI,H,WRDI)
0046            CALL DPR(IHYD,TADSI,T,WRDI)
0047            IF(NPTSEX .EQ. 0) GO TO 30
         C***READ THE EXTENDED ALLOCATION (IF ANY)
0048            HADSE=IDKEX
0049            TADSE=HADSE+2.
0050            WRDE=NPTSEX*2.
0051            NDX = NPTSIN + 1
0052            CALL DPR(IHYD,HADSE,H(NDX),WRDE)
0053            CALL DPR(IHYD,TADSE,T(NDX),WRDE)
0054     30     CONTINUE
         C***DETERMINE THE INDEX CORRESPONDING TO DPDATE
0055            NPTS=NPTSIN+NPTSEX
0056            CALL BSRCH(T,NPTS,DPDATE,INDX,ISTAT)
0057            IF(ISTAT .EQ. 1) GO TO 40
         C***DATA POINT NOT FOUND
0058            WRITE(6,630) WELLNM,DPDATE,HYDVAL
0059     630    FORMAT(T50,' THIS DATA POINT WAS NOT FOUND',1X,12A1,F8.0,F11.2)
0060            GO TO 10
0061     40     CONTINUE
         C***THERE MUST BE AN EXACT MATCH OF HEIGHTS BEFORE THE DATA POINT
         C    CAN BE DELETED
0062            ZERO = HYDVAL*0.00001
0063            IF(HYDVAL-H(INDX) .LT. ZERO) GO TO 50
         C***THE DATA POINTS DO NOT MATCH
```

```
0064            WRITE(6,640) WELLNM,DPDATE,HYDVAL,H(INDX)
0065     640    FORMAT(T50,' HEIGHTS DIFFER',1X,12A1,F8.0,2F11.2)
0066            GO TO 10
0067     50     CONTINUE
        C***DELETE H(INDX) AND T(INDX) FROM THE HYDROGRAPH DATA FILE
        C
        C***IF AN EXTENSION HAS BEEN MADE FOR THIS WELL, THE NUMBER OF
        C    WORDS IN THE INITIAL ALLOCATION DOES NOT CHANGE
0068            IF(NPTSEX .EQ. 0) NPTSIN=NPTSIN-1
0069            IF(NPTSEX .NE. 0) NPTSEX=NPTSEX-1
0070            M=NPTS-1
        C***MAY BE DELETING THE ONLY DATA POINT
0071            IF(M .EQ. 0) GO TO 70
0072            DO 60 I=INDX,M
0073            H(I)=H(I+1)
0074            T(I)=T(I+1)
0075     60     CONTINUE
        C***RETURN THE INITIAL ALLOCATION TO DISC
0076            IF(NPTSIN .EQ. 0) GO TO 70
0077            WRDI=NPTSIN*2
0078            CALL DPW(IHYD,HADSI,H,WRDI)
0079            CALL DPW(IHYD,TADSI,T,WRDI)
0080            IF(NPTSEX .EQ. 0) GO TO 70
        C***RETURN THE EXTENDED ALLOCATION TO DISC (IF ANY)
0081            WRDE=2*NPTSEX
0082            CALL DPW(IHYD,HADSE,H(NDX),WRDE)
0083            CALL DPW(IHYD,TADSE,T(NDX),WRDE)
0084     70     CONTINUE
        C***ADJUST THE NUMBER OF DATA POINTS IN THE INITIAL AND EXTENDED
        C    ALLOCATIONS
0085            IBUF(31)=NPTSIN
0086            IF(NPTSIN .EQ. 0) CALL SFLD(0,1,0,IDBIT)
0087            IBUF(33)=NPTSEX
0088            CALL DPW(IWHDR,FQADR,IBUF,256,)
        C***ECHO THE INPUT RECORD TO THE PRINT FILE
0089            WRITE(6,670) WELLNM,DPDATE,HYDVAL
0090     670    FORMAT(1X,12A1,F8.0,F11.2)
        C***GO BACK TO READ THE NEXT DATA CARD
0091            GO TO 10
0092     80     CONTINUE
        C***FINISHED WITH THIS SET
0093            WRITE(6,680)
0094     680    FORMAT(1X,'********** END OF SET **********')
0095            RETURN
0096            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	001616	455	RW,I,CON,LCL
$PDATA	000020	8	RW,D,CON,LCL
$IDATA	000604	194	RW,D,CON,LCL
$VARS	010244	2130	RW,D,CON,LCL
$TEMPS	000002	1	RW,D,CON,LCL

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HYDDEL.FTN       /TR:BLOCKS/WR

EDCOM    001252    341            RW,D,OVR,GBL
HDR      001000    256            RW,D,OVR,GBL


TOTAL SPACE ALLOCATED = 015162  3385

,LP:=DP1:HYDDEL
```

```
        C ************************ HYDINS.FTN ******************************
        C
        C  PROGRAM ID: EDI-11-WEL-0-3
        C
        C  PROGRAM DESCRIPTION
        C       THIS PROGRAM READS THE NEW DATA TO BE INSERTED AND EITHER
        C       INSERTS OR APPENDS IT TO THE PROPER HYDROGRAPH DATA FILE
        C
        C  DATA FILES:
        C       NAME                        LUN     TYPE    ACCESS
        C       FILE Q--FRMTHYD             1       RAN     R/W
        C       FILE Q--WELLHDR             1       RAN     R/W
        C       [220,100]EDIT.CON           2       FOR     R
        C       [220,100]EDIT.LST           6       FOR     W
        C
        C
        C  BATTELLE MEMORIAL INSTITUTE
        C  PACIFIC NORTHWEST LABORATORIES
        C  WATER & LAND RESOURCES DEPT.
        C
        C  AUTHOR(S):   SE WISE
        C  UPDATE BY:   DW DAMSCHEN
        C               RS ARGO
        C
        C  DATE:        INITIAL VERSION FEBRUARY 1976
        C               CURRENT VERSION NOVEMBER 1978
        C
        C
0001            SUBROUTINE HYDINS
        C
0002            BYTE EDITCD,ECODE,TODAY,NOW,CARD(80),WTEST,WELLNM(12)
        C
0003            INTEGER*4 UPHDR,FRESEC
        C
0004            DIMENSION H(512),T(512),IBUF(256)
        C
0005            INCLUDE 'CRMSED.COM/NOLIST'
        C
0011            EQUIVALENCE (UPHDR(1),FRESEC),(IBUF(19),IDBIT)
0012            EQUIVALENCE (IBUF(1),WTEST(1))
        C
0013            DATA ECODE/'E'/
0014            TWN = IWNAM
        C
0015            WRITE(6,600)
0016     600    FORMAT('0THE FOLLOWING ARE NEW HYDROGRAPH DATA')
        C
0017      10    CONTINUE
        C***READ AND EXAMINE THE DATA CARD FOR AN 'END' COMMAND
0018            READ(2,210) CARD
0019     210    FORMAT(80A1)
0020            IF(CARD(1) .EQ. ECODE) GO TO 120
        C***NO 'END' COMMAND - BACKSPACE AND REREAD
0021            DECODE(29,211,CARD) WELLNM,DPDATE,HYDVAL
0022     211    FORMAT(12A1,1X,F6.0,F10.0)
0023            IF (DPDATE .LE. EDDATE) GO TO 214
```

```
0024            WRITE (6,212) WELLNM,DPDATE,HYDVAL
0025    212     FORMAT (T50,'ERROR IN DATE ',12A1,1X,F7.0,2F11.2)
0026            GO TO 10
0027    214     CONTINUE
        C***CHECK DATE
0028            CALL DATCHK (WELLNM,DPDATE,IERR)
0029            IF (IERR .GT. 0) GO TO 10
        C***LOCATE THE WELL IN THE WELL HEADER FILE
0030            IWNAM = IWN
0031            CALL RTVHDC(WELLNM,FGADR)
0032            IWNAM = IWN
0033            IF(FGADR .GE. 0.) GO TO 20
        C***NOT FOUND
0034            WRITE(6,610) WELLNM,DPDATE,HYDVAL
0035     610    FORMAT(T50,' NO HEADER INFORMATION FOUND FOR THIS WELL',
                1 1X,12A1,F8.0,F11.2)
0036            GO TO 10
0037     20     CONTINUE
        C***DOES THIS WELL PRESENTLY CONTAIN HYDROGRAPH DATA?
0038            NHBIT=IFLD(0,1,IDBIT)
0039            IF(NHBIT.EQ.0) GO TO 21
        C***DATA EXISTS--EXTRACT THE POINTERS TO THE DATA
        C   FOR A COMPLETE DESCRIPTION OF THESE POINTERS, SEE SUBR. HYDCHG
0040            IDKIN=IBUF(30)
0041            NPTSIN=IBUF(31)
0042            GO TO 25
0043     21     CONTINUE
        C***CURRENTLY NO HYDROGRAPH DATA
0044            H(1)=HYDVAL
0045            T(1)=DPDATE
0046            NPTSIN=1
0047            NPTSEX=0
0048            IBUF(30)=FRESEC
0049            FRESEC=FRESEC+2
0050            HADSI=IBUF(30)
0051            WRDI=2.
0052            TADSI=HADSI+1.
0053            IBUF(34)=1
0054            CALL SFLD(0,1,1,IDBIT)
0055            GO TO 110
0056     25     CONTINUE
        C***DATA EXISTS--SET UP DISC POINTERS
0057            IDKEX=IBUF(32)
0058            NPTSEX=IBUF(33)
0059            INALOC=IBUF(34)
        C***READ THE INITIAL ALLOCATION
0060            HADSI=IDKIN
0061            TADSI=HADSI + INALOC
0062            WRDI=NPTSIN*2.
0063            CALL DPR(IHYD,HADSI,H,WRDI)
0064            CALL DPR(IHYD,TADSI,T,WRDI)
        C***READ THE EXTENDED ALLOCATION (IF ANY)
0065            IF(NPTSEX .EQ. 0) GO TO 30
0066            HADSE=IDKEX
0067            TADSE=HADSE+2.
0068            WRDE=NPTSEX*2.
```

```
0069            NDX=NPTSIN+1
0070            CALL DPR(IHYD,HADSE,H(NDX),WRDE)
0071            CALL DPR(IHYD,TADSE,T(NDX),WRDE)
0072     30     CONTINUE
       C***THE NEW DATA POINT CAN BE EITHER INSERTED OR APPENDED
0073            LAST=NPTSIN+NPTSEX
0074            NLAST=LAST+1
0075            IF(NLAST .LT. 513) GO TO 34
0076            WRITE(6,630) WELLNM,DPDATE,HYDVAL
0077     630    FORMAT(T50,'ADDITION OF THIS DATA EXCEEDS THE MAXIMUM'/
                1 T50,'OF 512 DATA POINTS',1X,12A1,F8.0,F11.2)
0078            GO TO 10
0079     34     CONTINUE
0080            IF(T(LAST) .GT. DPDATE) GO TO 35
       C***APPEND THE DATA
0081            IF (T(LAST).EQ.DPDATE .AND. H(LAST).EQ.HYDVAL) GO TO 3555
0082            IF (T(LAST).EQ.DPDATE) GO TO 3556
0083            H(NLAST)=HYDVAL
0084            T(NLAST)=DPDATE
0085            GO TO 60
0086    3555    WRITE (6,6355) WELLNM,DPDATE,HYDVAL
0087    6355    FORMAT (T50,'DUPLICATE DATA ',12A1,F8.0,F11.2)
0088            GO TO 10
0089    3556    WRITE (6,6356) WELLNM,DPDATE,HYDVAL
0090    6356    FORMAT (T50,'THIS DATE ALREADY EXISTS',12A1,F8.0,F11.2)
0091            GO TO 10
0092     35     CONTINUE
       C***DETERMINE THE BRACKETING INDICIES
0093            CALL BSRCH(T,LAST,DPDATE,INDX,ISTAT)
0094            IF(ISTAT .EQ. 0) GO TO 40
       C***IF ISTAT IS -1, IT IS POSSIBLE FOR DPDATE TO BE .LT. T(1)
0095            IF(ISTAT .EQ. -1 .AND. DPDATE .LT. T(1)) GO TO 39
       C***INVALID DATE
0096            WRITE(6,635) WELLNM,DPDATE,HYDVAL,ISTAT
0097     635    FORMAT(T50,'UNABLE TO INSERT',1X,12A1,F8.0,F11.2,I5)
0098            GO TO 10
0099     39     CONTINUE
       C***INSERT THE NEW DATE AT THE BEGINNING
0100            INDX=0
0101     40     CONTINUE
       C***INSERT THE DATA BETWEEN POINTS INDX AND INDX+1
0102            IF (INDX .LE. 0) GO TO 41
0103            IF (T(INDX).EQ.DPDATE .AND. H(INDX).EQ.HYDVAL) GO TO 3555
0104            IF (T(INDX).EQ.DPDATE) GO TO 3556
0105    41      CONTINUE
0106            IF (T(INDX+1).EQ.DPDATE .AND. H(INDX+1).EQ.HYDVAL) GO TO 3555
0107            IF (T(INDX+1).EQ.DPDATE) GO TO 3556
0108            N=LAST-INDX
0109            J=NLAST
0110            DO 50 I=1,N
0111            H(J)=H(J-1)
0112            T(J)=T(J-1)
0113            J=J-1
0114     50     CONTINUE
0115            H(INDX+1)=HYDVAL
0116            T(INDX+1)=DPDATE
```

```
0117      60      CONTINUE
        C***RETURN THE UPDATED ARRAYS TO DISC
0118              IF(NPTSEX .NE. 0) GO TO 70
0119              IF(NLAST .GT. INALOC*128) GO TO 80
        C***THE SPACE INITIALLY ALLOCATED HAS NOT BEEN EXCEEDED
        C   INCREMENT ITS POINTERS
0120              WRDI=WRDI+2.
0121              NPTSIN=NPTSIN+1
0122              GO TO 110
0123      70      CONTINUE
        C***INCREMENT THE EXTENSION POINTERS
0124              NPTSEX=NPTSEX+1
0125              WRDE=WRDE+2.
0126              GO TO 100
0127      80      CONTINUE
        C***THE WELL NOW REQUIRES AN EXTENSION. THERE MAY EXIST AN
        C   EXTENSION WITHOUT DATA
0128              IF(IBUF(32) .NE. 0) GO TO 90
0129              IBUF(32)=FRESEC
0130              FRESEC=FRESEC+4
0131      90      CONTINUE
        C***CREATE THE POINTERS FOR THE EXTENSION
0132              HADSE=IBUF(32)
0133              TADSE=HADSE+2.
0134              NPTSEX=1
0135              NDX=NPTSIN+1
0136              WRDE=2.
0137      100     CONTINUE
        C***WRITE THE EXTENSION
0138              CALL DPW(IHYD,HADSE,H(NDX),WRDE)
0139              CALL DPW(IHYD,TADSE,T(NDX),WRDE)
0140      110     CONTINUE
        C***WRITE THE INITIAL ALLOCATION
0141              CALL DPW(IHYD,HADSI,H,WRDI)
0142              CALL DPW(IHYD,TADSI,T,WRDI)
        C***UPDATE THE HEADER FILE
0143              IBUF(31)=NPTSIN
0144              IBUF(33)=NPTSEX
0145              CALL DPW(IWHDR,FQADR,IBUF,256.)
        C***WRITE THE INPUT RECORD TO THE LIST FILE
0146              WRITE(6,6110) WELLNM,DPDATE,HYDVAL
0147      6110    FORMAT(1X,12A1,F8.0,F11.2)
        C***GO BACK TO GET NEXT DATA CARD
0148              GO TO 10
0149      120     CONTINUE
        C***FINISHED WITH THIS SET
0150              WRITE(6,6120)
0151      6120    FORMAT(' END OF SET')
0152              RETURN
0153              END
```

PROGRAM SECTIONS

NAME	SIZE	ATTRIBUTES

```
FORTRAN IV-PLUS V02-510          06102130     11-SEP-79          PAGE 5
HYDINS.FTN       /TR:BLOCKS/WR

$CODE1   002614    710            RW,I,CON,LCL
$PDATA   000014      6            RW,D,CON,LCL
$IDATA   000720    232            RW,D,CON,LCL
$VARS    010242   2129            RW,D,CON,LCL
$TEMPS   000002      1            RW,D,CON,LCL
EDCOM    001252    341            RW,D,OVR,GBL
HDR      001000    256            RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 016266  3675

,LP:=DP1:HYDINS
```

```
C ******************** EDITMP.FTN ********************
C
C  PROGRAM ID: EDI-11-WEL-6
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM CONTROLS THE EDITING AND UPDATING OF THE
C       WELL TEMPERATURE DATA. THREE SUBROUTINES ARE USED TO
C       KEEP DOWN THE AMOUNT OF CORE STORAGE. THERE IS ONE
C       SUBROUTINE FOR EACH OF THE 3 EDITING FUNCTIONS:
C               CHANGE (TMPCHG)
C               DELETE (TMPDEL)  AND
C               INSERT (TMPINS).
C
C
C  DATA FILES:
C       NAME                        LUN     TYPE    ACCESS
C       FILE Q--WELLHDR             1       RAN     R/W
C       FILE Q--UPDATEHDR           1       RAN     R/W
C       FILE Q--FRMTTMP             1       RAN     R/W
C       [220,100]EDIT.CDN           2       FOR     R
C       [220,100]EDIT.LST           6       FOR     W
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C               DR FRIEDRICHS
C               DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION SEPTEMBER 1976
C               CURRENT VERSION NOVEMBER  1978
C
C
0001            SUBROUTINE EDITMP
C
0002            BYTE EDITCD,CODES(4),TODAY,NOW,WTEST
C
0003            INTEGER*4 UPHDR,FRESCT
C
0004            DIMENSION IUP(256)
C
0005            INCLUDE 'CRMSED.COM/NOLIST'
C
0011            EQUIVALENCE (UPHDR(100),FRESCT), (IUP(1),UPHDR(1))
C
0012            DATA CODES /'C', 'D', 'I', 'E'/
C
0013            CALL DPR(IUHDR,0.,IUP,256.)
C***THE MAIN PROGRAM HAS READ THE EDIT CONTROL CARD,
C   DECODE IT AND CALL THE PROPER SUBROUTINE.
0014            IED=0
0015            DO 20 I=1,4
0016            IF(EDITCD .EQ. CODES(I)) IED=I
```

```
0017      20      CONTINUE
0018              IF(IED .NE. 0) GO TO 35
        C***BAD EDIT CODE
0019              WRITE(6,620) EDITCD,IDTYP,IOTYP
0020     620      FORMAT(//' THE FOLLOWING IS AN INVALID EDIT CONTROL CARD'/
                  1 1X,A1,6X,I1,1X,I1,/T50,' *** EXECUTION TERMINATED ***')
0021              STOP
0022      35      CONTINUE
0023              GO TO (40,50,60,80), IED
0024      40      CONTINUE
        C*** 'CHANGE' COMMAND
0025              CALL TMPCHG
0026              GO TO 80
0027      50      CONTINUE
        C*** 'DELETE' COMMAND
0028              CALL TMPDEL
0029              GO TO 80
0030      60      CONTINUE
        C*** 'INSERT' COMMAND
0031              CALL TMPINS
0032      80      CONTINUE
        C***WRITE THE UPDATED HEADER FILE TO DISC
0033              CALL DPW(IUHDR,0.,IUP,256.)
        C***RETURN TO THE MAIN PROGRAM TO READ THE NEXT EDIT COMMAND CARD
0034              RETURN
0035              END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	000304	98	RW,I,CON,LCL
$PDATA	000022	9	RW,D,CON,LCL
$IDATA	000154	54	RW,D,CON,LCL
$VARS	000010	4	RW,D,CON,LCL
EDCOM	001252	341	RW,D,OVR,GBL
HDR	001000	256	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 002764 762

NO FPP INSTRUCTIONS GENERATED

,LP1=DP11EDITMP

```
C ******************** TMPCHG.FTN *********************
C
C  PROGRAM ID: EDI-11-WEL-6-1
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM READS THE CHANGE CARDS, LOCATES THE DATA
C       POINT TO BE CHANGED AND MAKES THE CHANGE.
C
C  DATA FILES:
C       NAME                        LUN     TYPE    ACCESS
C       FILE Q--UPDATEHDR           1       RAN     R/W
C       FILE Q--FRMTTMP             1       RAN     R/W
C       FILE Q--WELLHDR             1       RAN     R
C       [220,100]EDIT.CON           2       FOR     R
C       [220,100]EDIT.LST           6       FOR     W
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C               DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION  SEPTEMBER 1976
C               CURRENT VERSION  NOVEMBER  1978
C
C
0001            SUBROUTINE TMPCHG
C
0002            BYTE EDITCD,ECODE,TODAY,NOW,CARD(80),WTEST,WELLNM(12)
C
0003            INTEGER EMALOC
C
0004            INTEGER*4 UPHDR
C
0005            DIMENSION T(512),D(512),IBUF(256)
C
0006            INCLUDE 'CRMSED.COM/NOLIST'
C
0012            EQUIVALENCE(IBUF(1),WTEST(1))
C
0013            DATA ECODE /'E'/
0014            IWN = IWNAM
C
0015            WRITE(6,600)
0016     600    FORMAT('0THE FOLLOWING ARE TEMPERATURE DATA CHANGE CARDS'//
                1 T25,'OLD DATA',T40,'NEW DATA')
C
0017      10    CONTINUE
C***THE RECORD MUST FIRST BE READ TO DETERMINE IF IT IS AN 'END'
C   COMMAND
0018            READ(2,210) CARD
0019     210    FORMAT(80A1)
0020            IF(CARD(1) .EQ. ECODE) GO TO 50
```

```
        C***THE RECORD DOES NOT CONTAIN AN 'END' COMMAND, DECODE
        C   THE RECORD IN THE PROPER FORMAT AND PROCEED
0021            IF(IOTYP .EQ. 0) GO TO 15
        C***WELL DESIGNATION IS BY EMA CODE
0022            DECODE(22,211,CARD) EMALOC,DPDATE,OLDT,TMPVAL
0023     211    FORMAT(I5,1X,F6.0,2F10.0)
        C***CHECK DATE
0024            CALL DATCHK (WELLNM,DPDATE,IERR)
0025            IF (IERR .GT. 0) GO TO 10
        C***CONVRT EMA CODE TO CIRMIS WELL DESIGNATION
0026            CALL EMASRH(EMALOC,WELLNM,ISTAT)
0027            IF(ISTAT .EQ. 1) GO TO 20
        C***UNSUCCESSFUL SEARCH
0028            WRITE(6,605) EMALOC,DPDATE,TMPVAL
0029     605    FORMAT(T20,'INVALID EMA CODE ',I5,F8.0,F6.1)
0030            GO TO 10
0031     15     CONTINUE
        C***WELL DEGIGNATION IS BY CIRMIS NOTATION
0032            DECODE(39,212,CARD) WELLNM,DPDATE,OLDT,TMPVAL
0033     212    FORMAT(12A1,1X,F6.0,2F10.0)
0034    20      CONTINUE
        C***HASH OUT THE LOCATION OF THIS WELL IN THE WELL HEADER FILE
0035            IWNAM = IWN
0036            CALL RTVHDC(WELLNM,FQADR)
0037            IWNAM = IWN
0038            IF(FQADR .GE. 0) GO TO 2020
        C***WELL NOT LOCATED
0039            WRITE(6,610) WELLNM,DPDATE,OLDT,TMPVAL
0040     610    FORMAT(T50,' NO HEADER INFORMATION FOUND FOR THIS WELL',
                1 1X,12A1,F8.0,2F11.2)
0041            GO TO 10
0042     2020   CONTINUE
0043            IF (DPDATE .LE. EDDATE) GO TO 613
0044            WRITE (6,612) WELLNM,DPDATE,OLDT,TMPVAL
0045    612     FORMAT (T50,'ERROR IN DATE ',12A1,1X,F7.0,2F11.2)
0046            GO TO 10
0047    613     CONTINUE
        C***DOES THIS WELL PRESENTLY CONTAIN TEMPERATURE DATA?
0048            NTBIT=IFLD(10,1,IDBIT)
0049            IF(NTBIT .NE. 0) GO TO 25
        C***NO TEMPERATURE DATA
0050            WRITE(6,620) WELLNM,DPDATE,OLDT,TMPVAL
0051     620    FORMAT(T50,'NO TEMPERATURE DATA ',12A1,F8.0,2F11.2)
0052            GO TO 10
0053     25     CONTINUE
        C***IDKIN AND NPTSIN ARE THE DISK ADDRESS AND NUMBER OF DATA POINTS
        C   IN THE INITIAL ALLOCATION
0054            IDKIN=IBUF(50)
0055            NPTSIN=IBUF(51)
        C***INALOC IS THE NUMBER OF SECTORS IN THE INITAIL ALLOCATION
0056            INALOC=IBUF(54)
        C***IDKEX AND NPTSEX ARE THE DISK ADDRESS AND NUMBER OF DATA
        C   POINTS IN THE EXTENDED ALLOCATION (IF ANY)
0057            IDKEX=IBUF(52)
0058            NPTSEX=IBUF(53)
        C***READ THE INITIAL ALLOCATION DATA
```

```
0059            TADSI=IDKIN
0060            WRDI=NPTSIN*2.
0061            DADSI=TADSI + INALOC
0062            CALL DPR(ITMP,TADSI,T,WRDI)
0063            CALL DPR(ITMP,DADSI,D,WRDI)
        C***READ THE EXTENDED ALLOCATION DATA (IF ANY)
0064            IF(NPTSEX .EQ. 0) GO TO 30
        C***FOUR SECTORS ARE ALLOCATED IN THE EXTENSION, TWO EACH FOR
        C   TEMPERATURE AND TIME
0065            TADSE=IDKEX
0066            WRDE=NPTSEX*2.
0067            DADSE=TADSE+2.
0068            NDX=NPTSIN+1
0069            CALL DPR(ITMP,TADSE,T(NDX),WRDE)
0070            CALL DPR(ITMP,DADSE,D(NDX),WRDE)
0071     30     CONTINUE
        C***DETERMINE THE INDEX OF THE TIME CORRESPONDING TO DPDATE
0072            NPTS=NPTSIN+NPTSEX
0073            CALL BSRCH(D,NPTS,DPDATE,INDX,ISTAT)
        C***IF ISTAT IS RETURNED AS A 0, THE DATE WAS NOT LOCATED
0074            IF(ISTAT .EQ. 1) GO TO 40
0075            WRITE(6,630) WELLNM,DPDATE,OLDT,TMPVAL
0076     630    FORMAT(T50,'THIS DATA POINT WAS NOT FOUND',1X,12A1,F8.0,2F11.2)
0077            GO TO 10
0078     40     CONTINUE
        C***THE OLD TEMPERATURE MUST MATCH THE NEW TEMPERATURE
0079            ZERO = OLDT*0.00001
0080            IF(OLDT-T(INDX) .LT. ZERO) GO TO 45
        C***TEMPERATURES DIFFER
0081            WRITE(6,635) WELLNM,DPDATE,OLDT,TMPVAL,T(INDX)
0082     635    FORMAT(T50,'TEMPERATURES DIFFER',1X,12A1,F8.0,3F11.2)
0083            GO TO 10
0084     45     CONTINUE
        C***PRINT THE OLD AND NEW VALUES
0085            WRITE(6,640) WELLNM,DPDATE,T(INDX),TMPVAL
0086     640    FORMAT(1X,12A1,1X,F7.0,T25,F10.2,T40,F10.2)
        C***CHANGE THE TEMPERATURE AND RETURN IT TO DISK
0087            T(INDX)=TMPVAL
0088            CALL DPW(ITMP,TADSI,T,WRDI)
0089            IF(NPTSEX .GT. 0) CALL DPW(ITMP,TADSE,T(NDX),WRDE)
        C***GO BACK TO READ NEXT DATA RECORD
0090            GO TO 10
0091     50     CONTINUE
        C***FINISHED WITH THIS SET
0092            WRITE(6,650)
0093     650    FORMAT(' ********** END OF SET **********')
0094            RETURN
0095            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	001754	502	RW,I,CON,LCL
$PDATA	000014	6	RW,D,CON,LCL

```
$IDATA   000760   248          RW,D,CON,LCL
$VARS    010244  2130          RW,D,CON,LCL
$TEMPS   000002     1          RW,D,CON,LCL
EDCOM    001252   341          RW,D,OVR,GBL
HDR      001000   256          RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 015470  3484

,LP:=DP1:TMPCHG
```

```
C ********************** TMPDEL.FTN ******************************
C
C  PROGRAM ID: EDI-11-WEL-6-2
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM READS THE DELETE DATA CARDS AND IF THERE
C       IS AN EXACT MATCH, DELETES THE DATA POINT FROM THE
C       TEMPERATURE DATA FILE
C
C  DATA FILES:
C       NAME                        LUN     TYPE    ACCESS
C       FILE Q--FRMTTMP             1       RAN     R/W
C       FILE Q--WELLHDR             1       RAN     R/W
C       FILE Q--UPDATEHDR           1       RAN     R/W
C       [220,100]EDIT.CON           2       FOR     R
C       [220,100]EDIT.LST           6       FOR     W
C
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C               DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION  SEPTEMBER 1976
C               CURRENT VERSION  NOVEMBER  1978
C
C
      SUBROUTINE TMPDEL
C
      BYTE EDITCD,ECODE,TODAY,NOW,CARD(80),WTEST,WELLNM(12)
C
      INTEGER EMALOC
C
      INTEGER*4 UPHDR,FRESCT
C
      DIMENSION T(512),D(512),IBUF(256)
C
      INCLUDE 'CRMSED.COM/NOLIST'
C
      EQUIVALENCE (UPHDR(100),FRESCT),(IBUF(19),IDRIT)
      EQUIVALENCE (IBUF(1),WTEST(1))
C
      DATA ECODE /'E'/
      IWN = IWNAM
C
      WRITE(6,600)
  600 FORMAT('0THE FOLLOWING ARE TEMPERATURE DATA DELETION CARDS')
C
C***EXAMINE THE RECORD FOR AN 'END' COMMAND
   10 CONTINUE
      READ(2,210) CARD
  210 FORMAT(80A1)
```

```
0021            IF(CARD(1) .EQ. ECODE) GO TO 80
0022            IF(IOTYP .EQ. 0) GO TO 15
        C***WELL DESIGNATION IS BY EMA CODE
0023            DECODE(22,211,CARD) EMALOC,DPDATE,TMPVAL
0024     211    FORMAT(I5,1X,F6.0,F10.0)
        C***CONVRT EMA CODE TO CIRMIS WELL DESIGNATION
0025            CALL EMASRH(EMALOC,WELLNM,ISTAT)
0026            IF(ISTAT .EQ. 1) GO TO 20
        C***UNSUCCESSFUL SEARCH
0027            WRITE(6,605) EMALOC,DPDATE,TMPVAL
0028     605    FORMAT(T20,'INVALID EMA CODE ',I5,F8.0,F6.1)
0029            GO TO 10
0030     15     CONTINUE
        C***WELL DEGIGNATION IS BY CIRMIS NOTATION
0031            DECODE(29,212,CARD) WELLNM,DPDATE,TMPVAL
0032     212    FORMAT(12A1,1X,F6.0,F10.0)
0033     20     CONTINUE
        C***LOCATE THE WELL IN THE WELL HEADER FILE
0034            IWNAM = IWN
0035            CALL RTVHDC(WELLNM,FQADR)
0036            IWNAM = IWN
0037            IF(FQADR .GE. 0.) GO TO 2020
        C***NOT FOUND
0038            WRITE(6,610) WELLNM,DPDATE,TMPVAL
0039     610    FORMAT(T50,' NO HEADER INFORMATION FOUND FOR THIS WELL',
               1 1X,12A1,F8.0,F11.2)
0040            GO TO 10
0041     2020   CONTINUE
        C***DOES THIS WELL PRESENTLY CONTAIN TEMPERATURE DATA?
0042            NTBIT=IFLD(10,1,IDBIT)
0043            IF(NTBIT .NE. 0) GO TO 25
        C***NO TEMPERATURE DATA
0044            WRITE(6,620) WELLNM,DPDATE,TMPVAL
0045     620    FORMAT(T50,'NO TEMPERATURE DATA',1X,12A1,F8.0,F11.2)
0046            GO TO 10
0047     25     CONTINUE
        C***DETERMINE THE POINTERS TO THE DATA. FOR A COMPLETE DESCRIPTION
        C   OF THESE POINTERS, SEE SUBROUTINE TMPCHG.
0048            IDKIN=IBUF(50)
0049            NPTSIN=IBUF(51)
0050            IDKEX=IBUF(52)
0051            NPTSEX=IBUF(53)
0052            INALOC=IBUF(54)
        C***READ THE INITIAL ALLOCATION DATA
0053            TADSI=IDKIN
0054            DADSI=TADSI + INALOC
0055            WRDI=NPTSIN*2.
0056            CALL DPR(ITMP,TADSI,T,WRDI)
0057            CALL DPR(ITMP,DADSI,D,WRDI)
        C***READ THE EXTENDED ALLOCATION DATA (IF ANY)
0058            IF(NPTSEX .EQ. 0) GO TO 30
0059            TADSE=IDKEX
0060            DADSE=TADSE+2.
0061            WRDE=NPTSEX*2.
0062            NDX=NPTSIN+1
0063            CALL DPR(ITMP,TADSE,T(NDX),WRDE)
```

```
0064            CALL DPR(ITMP,DADSE,D(NDX),WRDE)
0065     30     CONTINUE
         C***DETERMINE THE INDEX CORRESSPONDING TO DPDATE
0066            NPTS=NPTSIN + NPTSEX
0067            CALL BSRCH(D,NPTS,DPDATE,INDX,ISTAT)
0068            IF(ISTAT .EQ. 1) GO TO 40
         C***DATA POINT NOT FOUND
0069            WRITE(6,630) WELLNM,DPDATE,TMPVAL
0070     630    FORMAT(T50,'THIS DATA POINT WAS NOT FOUND',1X,12A1,F8.0,F11.2)
0071            GO TO 10
0072     40     CONTINUE
         C***THERE MUST BE A MATCH OF TEMPERATURES BEFORE THE DATA POINT
         C   CAN BE DELETED
0073            ZERO = TMPVAL*0.00001
0074            IF(TMPVAL-T(INDX) .LT. ZERO) GO TO 50
         C***NO MATCH--TEMPERATURES DIFFER
0075            WRITE(6,631) WELLNM,DPDATE,TMPVAL,T(INDX)
0076     631    FORMAT(T50,'TEMPERATURES DIFFER',1X,12A1,F8.0,2F11.2)
0077            GO TO 10
0078     50     CONTINUE
         C***REMOVE T(INDX) AND D(INDX)
         C
         C***IF AN EXTENSION HAS BEEN MADE FOR THIS FILE, THE NUMBER OF WORDS
         C   IN THE INITIAL ALLOCATION DOES NOT CHANGE
0079            IF(NPTSEX .EQ. 0) NPTSIN=NPTSIN-1
0080            IF(NPTSEX .NE. 0) NPTSEX=NPTSEX-1
0081            M=NPTS-1
         C***MAY HAVE REMOVED THE ONLY DATA POINT
0082            IF(M .EQ. 0) GO TO 70
0083            DO 60 I=INDX,M
0084            T(I)=T(I+1)
0085            D(I)=D(I+1)
0086     60     CONTINUE
         C***RETURN THE INITIAL ALLOCATION TO DISC
0087            IF(NPTSIN .EQ. 0) GO TO 70
0088            WRDI=NPTSIN*2.
0089            CALL DPW(ITMP,TADSI,T,WRDI)
0090            CALL DPW(ITMP,DADSI,D,WRDI)
         C***RETURN THE EXTENDED ALLOCATION (IF ANY)
0091            IF(NPTSEX .EQ. 0) GO TO 70
0092            WRDE=NPTSEX*2.
0093            CALL DPW(ITMP,TADSE,T(NDX),WRDE)
0094            CALL DPW(ITMP,DADSE,D(NDX),WRDE)
         C***ADJUST THE NUMBER OF DATA POINTS IN THE INITIAL AND EXTENDED
         C   ALLOCATION
0095     70     CONTINUE
0096            IBUF(51)=NPTSIN
0097            IF(NPTSIN .EQ. 0) CALL SFLD(10,1,0,IDBIT)
0098            IBUF(53)=NPTSEX
0099            CALL DPW(IWHDR,FQADR,IBUF,256.)
         C***ECHO THE INPUT RECORD TO THE LIST FILE
0100            WRITE(6,670) WELLNM,DPDATE,TMPVAL
0101     670    FORMAT(1X,12A1,F8.0,F11.2)
         C***GO BACK TO READ NEXT DATA CARD
0102            GO TO 10
0103     80     CONTINUE
```

```
        C***FINISHED WITH THIS SET
0104            WRITE(6,680)
0105     680    FORMAT(' **********END OF SET**********')
0106            RETURN
0107            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	001776	511	RW,I,CON,LCL
$PDATA	000024	10	RW,D,CON,LCL
$IDATA	000666	219	RW,D,CON,LCL
$VARS	010242	2129	RW,D,CON,LCL
$TEMPS	000002	1	RW,D,CON,LCL
EDCOM	001252	341	RW,D,OVR,GBL
HDR	001000	256	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 015426 3467

,LP:=DP1:TMPDEL

```
C ************************ TMPINS.FTN ******************************
C
C  PROGRAM ID: EDI-11-WEL-6-3
C
C  PROGRAM DESCRIPTION
C       THIS PROGRAM READS THE NEW DATA TO BE INSERTED AND EITHER
C       INSERTS OR APPENDS IT TO THE PROPER TEMPERATURE DATA FILE
C
C  DATA FILES:
C       NAME                        LUN     TYPE    ACCESS
C       FILE Q--FRMTTMP             1       RAN     R/W
C       FILE Q--WELLHDR             1       RAN     R/W
C       [220,100]EDIT.CON           2       FOR     R
C       [220,100]EDIT.LST           6       FOR     W
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C               DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION  SEPTEMBER 1976
C               CURRENT VERSION  NOVEMBER  1978
C
C
0001            SUBROUTINE TMPINS
C
0002            BYTE EDITCD,ECODE,TODAY,NOW,CARD(80),WTEST,WELLNM(12)
C
0003            INTEGER EMALOC
C
0004            INTEGER*4 UPHDR,FRESCT
C
0005            DIMENSION T(512),D(512),IBUF(256)
C
0006            INCLUDE 'CRMSED.COM/NOLIST'
C
0012            EQUIVALENCE (UPHDR(100),FRESCT),(IBUF(19),IDBIT)
0013            EQUIVALENCE (IBUF(1),WTEST(1))
C
0014            DATA ECODE/'E'/
0015            IWN = IWNAM
C
0016            WRITE(6,600)
0017     600    FORMAT('0THE FOLLOWING ARE NEW TEMPERATURE DATA')
C
0018      10    CONTINUE
C***READ AND EXAMINE THE DATA CARD FOR AN 'END' COMMAND
0019            READ(2,210) CARD
0020     210    FORMAT(80A1)
0021            IF(CARD(1) .EQ. ECODE) GO TO 120
C***NO 'END' COMMAND - DECODE CARD BY PROPER FORMAT AND PROCEED
0022            IF(IDTYP .EQ. 0) GO TO 15
```

```
        C***WELL DESIGNATION IS BY EMA CODE
0023            DECODE(22,211,CARD) EMALOC,DPDATE,TMPVAL
0024     211    FORMAT(I5,1X,F6.0,F10.0)
        C***CONVRT EMA CODE TO CIRMIS WELL DESIGNATION
0025            CALL EMASRH(EMALOC,WELLNM,ISTAT)
0026            IF(ISTAT .EQ. 1) GO TO 16
        C***UNSUCCESSFUL SEARCH
0027            WRITE(6,605) EMALOC,DPDATE,TMPVAL
0028     605    FORMAT(T20,'INVALID EMA CODE ',I5,F8.0,F6.1)
0029            GO TO 10
0030     15     CONTINUE
        C***WELL DEGIGNATION IS BY CIRMIS NOTATION
0031            DECODE(29,212,CARD) WELLNM,DPDATE,TMPVAL
0032     212    FORMAT(12A1,1X,F6.0,F10.0)
0033    16      CONTINUE
0034    20      CONTINUE
        C***LOCATE THE WELL IN THE WELL HEADER FILE
0035            IWNAM = IWN
0036            CALL RTVHDC(WELLNM,FQADR)
0037            IWNAM = IWN
0038            IF(FQADR .GE. 0.) GO TO 2020
        C***NOT FOUND
0039            WRITE(6,610) WELLNM,DPDATE,TMPVAL
0040     610    FORMAT(T50,' NO HEADER INFORMATION FOUND FOR THIS WELL',
                1 1X,12A1,F8.0,F11.2)
0041            GO TO 10
0042    2020    CONTINUE
0043            IF (DPDATE .LE. EDDATE) GO TO 613
0044            WRITE (6,612) WELLNM,DPDATE,TMPVAL
0045    612     FORMAT (T50,'ERROR IN DATE ',12A1,1X,F7.0,2F11.2)
0046            GO TO 10
0047    613     CONTINUE
        C***CHECK DATE
0048            CALL DATCHK (WELLNM,DPDATE,IERR)
0049            IF (IERR .GT. 0) GO TO 10
        C***DOES THIS WELL PRESENTLY CONTAIN TEMPERATURE DATA?
0050            NTBIT=IFLD(10,1,IDBIT)
0051            IF(NTBIT .EQ. 0) GO TO 21
        C***DATA EXISTS---EXTRACT THE POINTERS TO THE DATA
        C   FOR A COMPLETE DESCRIPTION OF THESE POINTERS, SEE SUBR. TMPCHG
0052            IDKIN=IBUF(50)
0053            NPTSIN=IBUF(51)
0054            GO TO 25
0055    21      CONTINUE
        C***CURRENTLY NO TEMPERATURE DATA
0056            T(1)=TMPVAL
0057            D(1)=DPDATE
0058            NPTSIN=1
0059            NPTSEX=0
0060            IBUF(50)=FRESCT
0061            FRESCT=FRESCT+2
0062            TADSI=IBUF(50)
0063            WRDI=2.
0064            DADSI=TADSI+1.
0065            IBUF(54)=1
0066            CALL SFLD(10,1,1,IDBIT)
```

```
0067            GO TO 110
0068     25     CONTINUE
       C***DATA EXISTS--SET UP DISC POINTERS
0069            IDKEX=IBUF(52)
0070            NPTSEX=IBUF(53)
0071            INALOC=IBUF(54)
       C***READ THE INITIAL ALLOCATION
0072            TADSI=IDKIN
0073            DADSI=TADSI + INALOC
0074            WRDI=NPTSIN*2.
0075            CALL DPR(ITMP,TADSI,T,WRDI)
0076            CALL DPR(ITMP,DADSI,D,WRDI)
       C***READ THE EXTENDED ALLOCATION (IF ANY)
0077            IF(NPTSEX .EQ. 0) GO TO 30
0078            TADSE=IDKEX
0079            DADSE=TADSE+2.
0080            WRDE=NPTSEX*2.
0081            NDX=NPTSIN+1
0082            CALL DPR(ITMP,TADSE,T(NDX),WRDE)
0083            CALL DPR(ITMP,DADSE,D(NDX),WRDE)
0084     30     CONTINUE
       C***THE NEW DATA POINT CAN BE EITHER INSERTED OR APPENDED
0085            LAST=NPTSIN+NPTSEX
0086            NLAST=LAST+1
0087            IF(NLAST .LT. 513) GO TO 34
       C***TOO MANY POINTS---REGENERATE DATA BASE
0088            WRITE(6,630) WELLNM,DPDATE,TMPVAL
0089     630    FORMAT(T50,'ADDITION OF THIS DATA EXCEEDS THE MAXIMUM'/
                1 T50,'OF 512 DATA POINTS',1X,12A1,F8.0,F11.2)
0090            GO TO 10
0091     34     CONTINUE
0092            IF(D(LAST) .GT. DPDATE) GO TO 35
       C***APPEND THE DATA
0093            IF (D(LAST).EQ.DPDATE .AND. T(LAST).EQ.TMPVAL) GO TO 3555
0094            T(NLAST)=TMPVAL
0095            D(NLAST)=DPDATE
0096            GO TO 60
0097     3555   WRITE (6,6355) WELLNM,DPDATE,TMPVAL
0098     6355   FORMAT (T50,'DUPLICATE DATA ',12A1,F8.0,F11.2)
0099            GO TO 10
0100     35     CONTINUE
       C***DETERMINE THE BRACKETING INDICIES
0101            CALL BSRCH(D,LAST,DPDATE,INDX,ISTAT)
0102            IF(ISTAT .EQ. 0) GO TO 40
       C***IF ISTAT IS -1, IT IS POSSIBLE FOR DPDATE TO BE .LT. D(1)
0103            IF(ISTAT .EQ. -1 .AND. DPDATE .LT. D(1)) GO TO 39
       C***INVALID DATE
0104            WRITE(6,635) WELLNM,DPDATE,TMPVAL,ISTAT
0105     635    FORMAT(T50,'UNABLE TO INSERT',1X,12A1,F8.0,F11.2,I5)
0106            GO TO 10
0107     39     CONTINUE
       C***INSERT THE NEW DATE AT THE BEGINNING
0108            INDX=0
0109     40     CONTINUE
0110            IF (D(INDX).EQ.DPDATE .AND. T(INDX).EQ.TMPVAL) GO TO 3555
0111            IF (D(INDX+1).EQ.DPDATE .AND. T(INDX+1).EQ.TMPVAL) GO TO 3555
```

```
        C***INSERT THE DATA BETWEEN POINTS INDX AND INDX+1
0112            N=LAST-INDX
0113            J=NLAST
0114            DO 50 I=1,N
0115            T(J)=T(J-1)
0116            D(J)=D(J-1)
0117            J=J-1
0118     50     CONTINUE
0119            T(INDX+1)=TMPVAL
0120            D(INDX+1)=DPDATE
0121     60     CONTINUE
        C***RETURN THE UPDATED ARRAYS TO DISC
0122            IF(NPTSEX .NE. 0) GO TO 70
0123            IF(NLAST .GT. INALOC*128) GO TO 80
        C***THE SPACE INITIALLY ALLOCATED HAS NOT BEEN EXCEEDED
        C   INCREMENT ITS POINTERS
0124            WRDI=WRDI+2.
0125            NPTSIN=NPTSIN+1
0126            GO TO 110
0127     70     CONTINUE
        C***INCREMENT THE EXTENSION POINTERS
0128            NPTSEX=NPTSEX+1
0129            WRDE=WRDE+2.
0130            GO TO 100
0131     80     CONTINUE
        C***THE WELL NOW REQUIRES AN EXTENSION. THERE MAY EXIST AN
        C   EXTENSION WITHOUT DATA
0132            IF(IBUF(52) .NE. 0) GO TO 90
0133            IBUF(52)=FRESCT
0134            FRESCT=FRESCT+4
0135     90     CONTINUE
        C***CREATE THE POINTERS FOR THE EXTENSION
0136            TADSE=IBUF(52)
0137            DADSE=TADSE+2.
0138            NPTSEX=1
0139            NDX=NPTSIN+1
0140            WRDE=2.
0141     100    CONTINUE
        C***WRITE THE EXTENSION
0142            CALL DPW(ITMP,TADSE,T(NDX),WRDE)
0143            CALL DPW(ITMP,DADSE,D(NDX),WRDE)
0144     110    CONTINUE
        C***WRITE THE INITIAL ALLOCATION
0145            CALL DPW(ITMP,TADSI,T,WRDI)
0146            CALL DPW(ITMP,DADSI,D,WRDI)
        C***UPDATE THE HEADER FILE
0147            IBUF(51)=NPTSIN
0148            IBUF(53)=NPTSEX
0149            CALL DPW(IWHDR,FQADR,IBUF,256.)
        C***WRITE THE INPUT RECORD TO THE LIST FILE
0150            WRITE(6,6110) WELLNM,DPDATE,TMPVAL
0151     6110   FORMAT(1X,12A1,F8.0,F11.2)
        C***GO BACK TO GET NEXT DATA CARD
0152            GO TO 10
0153     120    CONTINUE
        C***FINISHED WITH THIS SET
```

```
0154              WRITE(6,6120)
0155      6120    FORMAT(' **********END OF SET***********')
0156              RETURN
0157              END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	002642	721	RW,I,CON,LCL
$PDATA	000014	6	RW,D,CON,LCL
$IDATA	000756	247	RW,D,CON,LCL
$VARS	010244	2130	RW,D,CON,LCL
$TEMPS	000002	1	RW,D,CON,LCL
EDCOM	001252	341	RW,D,OVR,GBL
HDR	001000	256	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 016354 3702

,LP:=DP1:TMPINS

```
C ************************ BSRCH.FTN ****************************
C
C  PROGRAM ID: EDI-11-WEL-SSR-1
C
C  PROGRAM DESCRIPTION:
C       PROGRAM PERFORMS A BISECTION SEARCH OF THE DATA ARRAY
C       LOOKING FOR THE REQUESTED VALUE
C
C  DESCRIPTION OF INPUT/OUTPUT PARAMETERS
C       ARY     ARRAY TO BE SEARCHED
C       N       NUMBER OF VALUES IN ARY
C       FIND    VALUE TO BE SEARCHED FOR IN ARY
C       INDX    INDEX RETURNED
C       ISTAT   COMPLETION STATUS WORD
C               =-1: SEARCH FAILED
C               =0 : FIND .GT. ARY(INDX) .AND. .LT. ARY(INDX+1)
C               =1 : FIND .EQ. ARY(INDX)
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C  UPDATE BY:   DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION  FEBRUARY  1976
C               CURRENT VERSION  NOVEMBER  1978
C
C
0001            SUBROUTINE BSRCH(ARY,N,FIND,INDX,ISTAT)
C
0002            INTEGER HI
C
0003            DIMENSION ARY(512)
C
C***MAXSRH IS THE MAXIMUM NUMBER OF SEARCHES TO BE MADE
C    N=2**MAXSRH
C
0004    90      FORMAT(1X,5F10.0)
C
0005            MAXSRH=ALOG(FLOAT(N))/ALOG(2.0) + 1
0006            LOW=1
0007            HI=N+1
0008            DO 10 I=1,MAXSRH
0009            MID=LOW + (HI-LOW)/2
C
0010            IF(FIND-ARY(MID)) 5,20,6
0011     5      CONTINUE
C
C***FIND .LT. ARY(MID)
C
0012            HI=MID
0013            GO TO 10
0014     6      CONTINUE
```

```
        C
        C***FIND .GT. ARY(MID)
        C
0015            IF(FIND .LT. ARY(MID+1)) GO TO 30
0016            LOW=MID
0017     10     CONTINUE
        C
        C***NO MATCH FOUND IN MAXSRH SEARCHES
        C
0018            ISTAT=-1
0019            INDX=0
0020            RETURN
0021     20     CONTINUE
        C
        C***MATCH
        C
0022            ISTAT=1
0023            INDX=MID
0024            RETURN
0025     30     CONTINUE
        C
        C***NO MATCH BUT FIND BRACKETED
        C
0026            ISTAT=0
0027            INDX=MID
0028            RETURN
0029            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	000406	131	RW,I,CON,LCL
$IDATA	000012	5	RW,D,CON,LCL
$VARS	000012	5	RW,D,CON,LCL
$TEMPS	000002	1	RW,D,CON,LCL

TOTAL SPACE ALLOCATED = 000434 142

,LP1=DP1:BSRCH

```
C ******************** EMASRH.FTN ******************************
C
C  PROGRAM ID: EDI-11-WEL-SSR-2
C
C  PROGRAM DESCRIPTION:
C       THIS PROGRAM IS RESPONSIBLE FOR MATCHING THE EMMA
C       CODES AND EXTRACTING THE CORRESPONDING WELL DESIGNATION
C       CODE. TWO BINARY SEARCHES ARE USED. THE FIRST LOCATES
C       THE BLOCK CONTAINING THE CODE AND THE SECOND LOCATES THE CODE
C       WITHIN THE BLOCK.
C
C  DATA FILES:
C       NAME                                LUN     TYPE    ACCESS
C       FILE 0 -- EMACODE                   1       RAN     R
C
C  INPUT/OUTPUT PARAMETERS:
C       EMA     THE EMA CODE TO BE SEARCHED FOR (INTEGER)
C       WELLNM  THE CORRESPONDING WELL DESIGNATION
C       ISTAT   SEARCH COMPLETION STATUS
C               =0: UNSUCCESSFUL
C               =1: SUCCESSFUL
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):   SE WISE
C               DR FRIEDRICHS
C               DW DAMSCHEN
C               RS ARGO
C
C  DATE:        INITIAL VERSION FEBRUARY 1976
C               CURRENT VERSION NOVEMBER 1978
C
C
0001            SUBROUTINE EMASRH(EMMA,WELLNM,ISTAT)
C
0002            BYTE EDITCD,TODAY,NOW,WTEST,NAME(12),WELLNM(12)
C
0003            INTEGER WLNAM(6),EMMA,EMMACD(8,32),HI
C
0004            INTEGER*4 UPHDR
C
0005            INCLUDE 'CRMSED.COM/NOLIST'
C
0011            COMMON/EMA/WLNAM
C
0012            EQUIVALENCE(NAME(1),WLNAM(1))
C
C***MAXSRH IS THE MAXIMUM NUMBER OF SEARCHES TO MAKE
C       32=2**MAXSRH
0013            MAXSRH=6
C***BEGIN THE MAJOR SEARCH
0014            LOW=1
0015            HI=31
```

```
0016            DO 10 I=1,MAXSRH
0017            MID=LOW + (HI-LOW)/2
0018            FMID=MID-1
0019            IF(FMID .LT. 0.) FMID=0.
        D       WRITE(4,1)LOW,MID,HI,FMID
        D1      FORMAT(1X,3I5,F5.0)
0020            CALL DPR(IEMA,FMID,EMMACD,256.)
        C***IS THIS THE RIGHT BLOCK
        D       WRITE(4,2) EMMA,EMMACD(7,1),EMMACD(7,32)
        D2      FORMAT(25X,3I5)
0021            IF(EMMA .GE. EMMACD(7,1) .AND. EMMA .LE. EMMACD(7,32))GOTO 20
        C***NO - ADJUST POINTERS
0022            IF(EMMA .LT. EMMACD(7,1)) HI=MID
0023            IF(EMMA .GT. EMMACD(7,32)) LOW=MID
0024     10     CONTINUE
        C***NOT FOUND
0025            ISTAT=0
0026            RETURN
0027     20     CONTINUE
        C***BEGIN MINOR SEARCH (WITHIN THE BLOCK)
        D       WRITE(4,3)
        D3      FORMAT(' FOUND BLOCK')
0028            LOW=1
0029            HI=33
0030            DO 30 I=1,MAXSRH
0031            MID=LOW + (HI-LOW)/2
0032            IF(EMMA-EMMACD(7,MID)) 25,40,26
0033     25     CONTINUE
        C***EMMA .LT. EMMACD(7,MID)
0034            HI=MID
0035            GO TO 30
0036     26     CONTINUE
        C***EMMA .GT. EMMACD(7,MID)
0037            LOW=MID
0038     30     CONTINUE
        C***NOT FOUND
0039            ISTAT=0
0040            RETURN
0041     40     CONTINUE
        C***MATCH
0042            DO 45 I=1,6
0043            WLNAM(I)=EMMACD(I,MID)
0044     45     CONTINUE
0045            DO 46 I=1,12
0046            WELLNM(I)=NAME(I)
0047    46      CONTINUE
0048            ISTAT=1
        0       WRITE(4,400) EMMA,WELLNM
        D400    FORMAT(//1X,I6,5X,12A1)
        0       IF(ISTAT .EQ. 1) STOP
0049            RETURN
0050            END
```

PROGRAM SECTIONS

```
 NAME        SIZE                    ATTRIBUTES

$CODE1   000576    191               RW,I,CON,LCL
$PDATA   000004      2               RW,D,CON,LCL
$IDATA   000024     10               RW,D,CON,LCL
$VARS    001016    263               RW,D,CON,LCL
$TEMPS   000002      1               RW,D,CON,LCL
EDCOM    001252    341               RW,D,OVR,GBL
HDR      001000    256               RW,D,OVR,GBL
EMA      000014      6               RW,D,OVR,GBL


TOTAL SPACE ALLOCATED = 004134  1070

,LP:=DP1:EMASRH
```

```
        C ***************  [220,100]CONCHK.FTN  ***************
        C
        C
        C
        C  PROGRAM DESCRIPTION:
        C
        C
        C  CHECKS CONTAMINATION VALUE .
        C
        C
        C  BATTELLE MEMORIAL INSTITUTE
        C  PACIFIC NORTHWEST LABORATORIES
        C  WATER & LAND RESOURCES DEPT.
        C
        C  AUTHOR(S):   RS ARGO
        C
        C  DATE:        INITIAL VERSION NOVEMBER 1977
        C               CURRENT VERSION NOVEMBER 1978
        C
        C
0001            SUBROUTINE CONCHK (H,CARD,INDEX)
        C
0002            BYTE WDES,CARD(80)
0003            DIMENSION H(512)
        C
0004            COMMON/HDR/WDES(12),XX(6),IDBIT,ICBIT(2),NDUM(235)
        C
        C
0005          DATA FACT/5.0/
        C
        C
        C
        C
0006            IF(INDEX.LE.1) GO TO 140
        C
0007            J       = INDEX
        C
0008            IF (H(J) .EQ. 0.0) GO TO 50
        C
0009            YMAX=ABS(H(J-1))*FACT
0010            YMIN=ABS(H(J-1))/FACT
0011            IF(ABS(H(J)).LT.YMIN) GO TO 50
0012            IF(ABS(H(J)).GT.YMAX) GO TO 50
0013            GO TO 140
        C
        C  ****  ERROR  ******
0014    50      CONTINUE
0015            OLD     = ABS(H(J-1))
0016            XNEW    = ABS(H(J))
0017            PCT     = FACT * 100.
0018            WRITE(6,650) WDES,CARD,OLD,XNEW,PCT
0019    650     FORMAT(T20,'POSSIBLE ERROR IN CONTAMINATION VALUE FOR WELL ',
                1 12A1/ T20,80A1/T20,'PREVIOUS VALUE =',1PE12.5,
                1 ' , NEW VALUE =',1PE12.5,' , % DIFF. ALLOWED ='F7.2)
0020    140     RETURN
        C
```

```
0021            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	000346	115	RW,I,CON,LCL
$IDATA	000242	81	RW,D,CON,LCL
$VARS	000032	13	RW,D,CON,LCL
HDR	001000	256	RW,D,OVR,GBL

TOTAL SPACE ALLOCATED = 001642 465

,LP:=DP1:CONCHK

```
0001            SUBROUTINE DATCHK (WELLNM,DPDATE,IERR)
        C
        C***SUBROUTINE TO CHECK CIRMIS DATES
        C
        C  AUTHOR(S):   RS ARGO
        C
        C  DATE:        INITIAL VERSION NOVEMBER 1977
        C               CURRENT VERSION NOVEMBER 1978
        C
        C
0002            BYTE WELLNM(12)
0003            INTEGER*4 IYR,IMO,IDAY,IDATE
        C
        C
        C
0004            IDATE = DPDATE
0005            IYR = IDATE/10000
0006            IMO = IDATE/100 - IYR*100
0007            IDAY = IDATE - (IDATE/100) * 100
0008            IERR = 0
0009            IF (IMO .LT. 1 .OR. IMO .GT. 12) IERR = 1
0010            IF (IDAY .LT. 1 .OR. IDAY .GT. 31) IERR = 1
0011            IF (IERR .GT. 0) WRITE (6,90) WELLNM,DPDATE
0012    90      FORMAT (T50,'BAD DATE',12A1,1X,F7.0)
0013    100     CONTINUE
0014            RETURN
0015            END
```

PROGRAM SECTIONS

NAME	SIZE		ATTRIBUTES
$CODE1	000442	145	RW,I,CON,LCL
$PDATA	000010	4	RW,D,CON,LCL
$IDATA	000036	15	RW,D,CON,LCL
$VARS	000020	8	RW,D,CON,LCL
$TEMPS	000004	2	RW,D,CON,LCL

TOTAL SPACE ALLOCATED = 000534 174

,LP:=DP1:DATCHK

```
C ****************  [220,3]RTVHDC.FLX  ******************
C
C     SUBROUTINE TO RETRIEVE A WELL HEADER BLOCK FROM THE
C   "CIRMIS" FILE-Q DISC FILE "WELLHDR".  WELL NAME IS
C   SUPPLIED BY THE USER AND IS THE FIRST PARAMETER IN
C   SUBROUTINE CALL, THE SECOND PARAMETER IS RETURNED BY THE
C   SUBROUTINE AND CONTAINS THE FILE-Q DISC ADDRESS OF THE
C   WELL HEADER OR A -1. IF NOT FOUND.
C     THE USER ALSO SUPPLIES THE POINTER NAMES OF THE FILE-Q
C   DISC FILES "WELLNAM" AND "WELLHDR" IN WORDS 256 & 257
C   RESPECTIVELY OF THE COMMON BLOCK.
C     THE WELL HEADER INFO IS RETURNED IN "COMMON/HDR" A
C   257 WORD BLOCK.
C
C
C   DATA FILES:
C
C           NAME                LUN          TYPE          ACCESS
C           ----                ---          ----          ------
C
C           WELLHDR(FILE-Q)      1           RAN             R
C           WELLNAM(FILE-Q)      1           RAN             R
C
C
C   AUTHOR(S):    D.R. FRIEDRICHS
C                 R.S. ARGO
C
C   DATE:         INITIAL VERSION OCTOBER  1978
C                 CURRENT VERSION NOVEMBER 1978
C
C
      SUBROUTINE RTVHDC (WLNAM,FQADR)
C
      BYTE BUF(512),WLNAM(12),WTEST,EDITCD,TODAY,NOW
      INTEGER IBUF(256),EMACON,JBUF(256)
C
      INTEGER*4 UPHDR
C
      INCLUDE 'CRMSED.COM/LIST'
C
      EQUIVALENCE (BUF(1),IBUF(1)),(JBUF(1),WTEST(1))
C
C
C
      FQADR = -1.
      IWN = IWNAM
C
      CONDITIONAL
      .  (WLNAM(1).EQ.' '. AND .WLNAM(2).EQ.'1') ISTRT = 0
      .  (WLNAM(2).EQ.'E') ISTRT = 5
      .  (WLNAM(2).EQ.'W') ISTRT = 30
      .  (WLNAM(2).EQ.'3') ISTRT = 60
      .  (WLNAM(2).EQ.'6') ISTRT = 65
```

```
00054          .  (WLNAM(1).EQ.'1'. AND .WLNAM(2).EQ.'1') ISTRT = 95
00055          .  (WLNAM(1).EQ.'3') ISTRT = 100
00056          .  (OTHERWISE) ISTRT = -1
00057          ...FIN
00058          IF (ISTRT.EQ.-1) GO TO 30
00059          ADR = ISTRT
00060    10    CALL DPR (IWN,ADR,IBUF,256.)
00061          DO (J=1,42)
00062          .  ITI = (J-1)*12
00063          .  DO (I=1,12)
00064          .  .  IF (BUF(III+1).EQ.'9') GO TO 30
00065          .  .  IF (BUF(III+I).NE.WLNAM(I)) GO TO 20
00066          .  ...FIN
00067          .  GO TO 40
00068    20    .  CONTINUE
00069          ...FIN
00070          ADR = ADR+1
00071          GO TO 10
00072    30    IWNAM = IWN
00073          WRITE(5,510) WLNAM
00074    510   FORMAT(' WELL NOT FOUND. ',12A1)
00075          RETURN
00076    C
00077    C *** SUCCESSFUL ACCESS
00078    40    FQADR = ADR*42 + J - 1
00079          CALL DPR (IWHDR,FQADR,JBUF,256.)
00080          IWNAM = IWN
00081          DO (J=1,12)
00082          .  IF (WLNAM(J).NE.WTEST(J)) GO TO 45
00083          ...FIN
00084          RETURN
00085    45    FQADR = -1.
00086          WRITE(5,545) WTEST,WLNAM
00087    545   FORMAT(' DISC NAME ',12A1,' DOES NOT MATCH INPUT NAME ',
00088         112A1)
00089          RETURN
00090          END
```

(FLECS VERSION 22.46)

Sample CRMSED Input Files

(EDIT.CON)

SAMPLE TEMPERATURE CARD INPUT TO CIRMIS EDITTING PROGRAM.

```
DELETE 2 0 761220
 6 S30E15A   761216      15.70
 6 S29 E12   761216      16.60
 6 S19 E13   761216      16.40
 6 S11E12A   761216      16.20
 6  S6E14A   761216      16.10
 6  S6 E4C   761216      20.60
 6  S6 E4D   761216      17.10
 6  S3 E12   761216      16.30
 6   9  E2   761216      17.40
 6  15 15B   761216      18.70
 6 S27 E14   761216      16.30
 6 S18  E2   761216      17.10
 6 S12   3   761216      16.70
 6 S19  11   761216      17.20
 6 S14  20   761216      17.60
 6  S8  19   761216      17.40
 6  S3  25   761216      17.90
 6   1  18   761216      18.10
 6   8  17   761216      17.90
 6  26  15   761216      16.80
 6  40   1   761216      16.90
 6  42  12   761216      16.60
 6  35   9   761216      16.90
 6  24  1P   761216      17.00
 6  24  1T   761216      17.00
 6  20 E5T   761216      17.30
 6  20 E5P   761216      17.10
 6  45  42   761216      18.00
 6  46  21   761216      16.70
 6  47 35A   761216      15.70
 6  47  46   761216      17.00
 6  49  28   761216      17.60
 6  49  48   761216      16.60
 6  50 28A   761216      18.00
 6  50  30   761216      17.70
 6  50  42   761216      16.10
 6  17   5   761216      15.60
 6  27   8   761216      15.90
 6  14 E6T   761216      17.20
 6  14 E6P   761216      17.00
 6  50  53   761216      17.40
 6  32  42   761216      19.40
 6  32  43   761216      19.50
 6  33  42   761216      19.10
 6  34 39A   761216      20.80
 6  34  41   761216      20.50
 6  34  42   761216      19.80
 6  31  31   761216      19.50
 6  37  43   761216      20.10
END
```

SAMPLE HYDROGRAPH CARD INPUT TO CIRMIS EDITTING PROGRAM.

```
DELETE 0
2E   27    1    590649     400.59
2E   28    2    571257     398.75
 6   S8   19    580257     382.10
 6   S8   19    580458     382.11
 6    2    3    651265     378.64
 6   20  E12    651100     353.95
 6   20   39    730160     402.78
 6   41   23    500667     381.21
 6   47   60    540354     394.75
 6   49   79    662807     451.41
 6   55   76    612211     432.02
 6   62  43A    510851     392.30
 6   65   50    651065     403.77
 6   67   77    571303     397.60
 6   90   47    540954     387.02
 6   92   49    671506     388.72
 6   93   50    670567     402.20
 6  HAN   27    521152     359.66
END
INSERT 0
2E   27    1    590629     400.59
2E   28    2    571231     398.75
 6   S8   19    580227     382.10
 6   S8   19    580428     382.11
 6    2    3    651227     378.64
 6   20  E12    651102     353.95
 6   20   39    730816     402.78
 6   41   23    500627     381.21
 6   47   60    540324     394.75
 6   49   79    661228     451.41
 6   55   76    611211     432.02
 6   62  43A    510815     392.30
 6   65   50    651020     403.77
 6   67   77    570313     397.60
 6   90   47    540915     387.02
 6   92   49    670615     388.72
 6   93   50    670605     402.20
 6  HAN   27    521122     359.66
END
```

SAMPLE CONTAMINANT CARD INPUT TO CIRMIS EDITTING PROGRAM.

```
CHANGE 1 0 760101
 6 S11E12A     37503010000  7.20E-01 -7.00E-01
 6   20  10    47501030000  5.60E-01 -5.00E-01
 6   32  62    37512310000  7.00E-01 -7.80E-01
 6   32  51    37503310000  5.00E-01 -5.00E-01
 6   55 53C    47504280000  5.00E-01 -5.00E-01
 6   65  59    47507020000  5.00E-01 -5.00E-01
 6   87 35A    37501280000  8.10E-01 -8.10E-01
 6   47 35Z    47508280000  0.00E-01  1.20E-00
 6   47 35Z    47512020000  0.00E-01  3.50E-00
END
INSERT 1 0 770331
 6   20 E12P   3770329       1.2E+00*
 6   20 E12P   4770329       0.5E+00*
 6 S11E12AP    3770328       1.5E+00*
 6 S11E12AP    4770328       0.5E+00*
 6   18 E12P   3770329       1.1E+00*
 6   18 E12P   4770329       0.2E+00*
 6 S10E12AP    3770328       1.6E+00*
 6 S10E12AP    4770328       0.6E+00*
 6   23 E12P   3770329       1.3E+00*
 6   23 E12P   4770329       0.4E+00*
 6 S14E12AP    3770328       1.1E+00*
 6 S14E12AP    4770328       0.2E+00*
 6   19 E12P   3770329       1.4E+00*
 6   19 E12P   4770329       0.6E+00*
 6 S16E12AP    3770328       1.3E+00*
 6 S16E12AP    4770328       0.2E+00*
END
```

Sample CRMSED Output Listings

(EDIT.LST)

Sample CRMSED Output Listings

(EDIT.LST)

```
                    CIRMIS EDIT RUN OF 13-NOV-78 08:11:18

THE FOLLOWING ARE CONTAMINATION DATA DELETION CARDS
 4482          112 780807.  0 0   2.000E-02
 4482          111 780807.  0 0   7.500E-02
 4482          115 780807.  0 0   5.100E+00
END OF SET

THE FOLLOWING ARE NEW CONTAMINATION DATA
3033  112 780914.  0 0   2.000E-02
3034  112 780914.  0 0  -1.700E-02*
4401  112 780912.  0 0   2.000E-02
4568  112 780914.  0 0  -1.700E-02*
4626  112 780914.  0 0   5.000E-02
4627  112 780914.  0 0   8.200E-02
4629  112 780914.  0 0   2.100E-02
4482   26 780327.  0 0   7.500E-01
3031   26 780330.  0 0   2.000E-01
4786   26 780405.  0 0   6.800E-01
                  INVALID EMA CODE  4781   26 780424.  0 0   2.900E-01
3033   26 780426.  0 0   2.600E-01
3034   26 780426.  0 0   4.500E-01
4401   26 780426.  0 0   1.800E+00
4410   26 780426.  0 0   3.000E-01
4413   26 780426.  0 0   3.100E-01
4568   26 780426.  0 0   5.000E-01
4626   26 780426.  0 0   6.000E-01
                  POSSIBLE ERROR IN CONTAMINATION VALUE FOR WELL  3   3   9
                  55  1 4462600026780426 0000 0.60E+00
                  PREVIOUS VALUE = 1.10000E-01 , NEW VALUE = 6.00000E-01 , % DIFF. ALLOWED =5000.00
4627   26 780426.  0 0   5.000E-01
4628   26 780426.  0 0   5.500E-01
4629   26 780426.  0 0   5.000E-01
4630   26 780426.  0 0   5.500E-01
4786   26 780426.  0 0   6.000E-01
4806   26 780426.  0 0   3.000E-01
4803   26 780621.  0 0   2.800E-01
4804   26 780621.  0 0   1.400E-01
1877   26 780623.  0 0   8.500E-01
                  INVALID EMA CODE  4781   26 780623.  0 0   4.500E-01
3033   26 780711.  0 0   3.600E-01
3034   26 780711.  0 0   3.900E-01
4401   26 780711.  0 0   5.500E-01
END OF SET
```

CRMFOR

```
CRMFOR.CMD - TASK BUILD COMMAND

DP1:CRMFOR=DP1:CRMFOR,DP:[1,1]BNWLIB.OLB/LB
/
MAXBUF=1024
ACTFIL=6
UNITS=6
ASG=DP:3,4,5,DP1:1,2,TI:6
/
(FLECS VERSION 22.46)     11-SEP-79   06:11:37  PAGE  00001

          ----------------------------------------

C ************************  [220,3]CRMFOR.FLX  ************************
C
C  PROGRAM DESCRIPTION:
C
C     THIS PROGRAM SET UP FOR NEW CIRMIS SYSTEM (OCT. 1 1978)
C
C     THIS PROGRAM IS DESIGNED TO READ FILE-Q HYDROGRAPH,TEMPERATURE,
C     AND CONTAMINANT DATA FROM
C       THE CIRMIS FILE-Q DISC AND OUTPUT FORMATTED FILES FOR REQUESTED
C       CONTAMINANT TYPES ONTO UIC [220,3].
C
C     CRMFOR REPLACES HYDFOR, TMPFOR, AND CONFOR.
C
C*** NOTE *** COMPILE WITH CO:32.  (DECIMAL 32.)
C
C     THE CONTAMINANT CODES ARE AS FOLLOWS:
C
C     EMA   CIRMIS
C    ---   ------
C       112       1----TOTAL ALPHA                (PCI/ML)
C       111       2----TOTAL BETA                 (PCI/ML)
C       108       3----TRITIUM                    (PCI/ML)
C       115       4----NITRATE                    (MG/L)
C       121       5----STRONTIUM-90               (PCI/ML)
C        24       6----CESIUM-137                 (PCI/ML)
C        10       7----COBALT-60                  (PCI/ML)
C       104       8----URANIUM                    (PCI/ML)
C       103       9----PLUTONIUM-239              (PCI/ML)
C        34       10---RUTHENIUM-106              (PCI/ML)
C       114       11---CHROMIUM                   (MG/L)
C        26       12---FLUORIDE                   (MG/L)
C        54       13---MAGNESIUM                  (MG/L)
C        55       14---IRON                       (MG/L)
C        56       15---PHOSPHATE                  (MG/L)
C        57       16---CHLORIDE                   (MG/L)
C        58       17---COPPER                     (MG/L)
C        62       18---HARDNESS                   (MG/L)
C        63       19---SOLIDS                     (MG/L)
C        64       20---MANGANESE                  (MG/L)
C       198       21---TOTAL ORGANIC CARBON       (MG/L)
C       199       22---PH
C       200       23---SULFATE                    (MG/L)
C       201       24---SODIUM                     (MG/L)
C       202       25---CALCIUM                    (MG/L)
C       998       26---TOTAL GAMMA                (PCI/ML)
C       188       27---BICARBONATE ION            (PPM)
C       189       28---CARBONATE ION              (PPM)
C       190       29---TOTAL POTAASSIUM           (PPM)
C       191       30---SPECIFIC CONDUCTIVITY      (PPM)
C       192       31---BORON                      (PPM)
C       212       32---LOW ALPHA                  (PPM)
C
C  INPUT DATA FILES:
```

```
C        NAME                          LUN              TYPE            ACCESS
C        FILE Q--FRMTHYD                 1               RAN              R
C        FILE Q--FRMTTMP                 1               RAN              R
C        FILE Q--FRMTCTM                 1               RAN              R
C        FILE Q--WELLHDR                 1               RAN              R
C        FILE Q--CTMHDR                  1               RAN              R
C        FILE Q--UPDATEHDR               1               RAN              R
C        WELHDRNEW.SEQ                   3               FOR              R
C
C  OUTPUT FILES (220,3):
C        HYDRO.FOR                       3               FOR              W
C        TEMPER.FOR                      3               FOR              W
C
C     (MMDDYY = MONTH,DAY,YEAR)
C        TAMMDDYY.FOR                    2               FOR              W
C        TBMMDDYY.FOR                    2               FOR              W
C        TRMMDDYY.FOR                    2               FOR              W
C        NIMMDDYY.FOR                    2               FOR              W
C        STMMDDYY.FOR                    2               FOR              W
C        CEMMDDYY.FOR                    2               FOR              W
C        COMMDDYY.FOR                    2               FOR              W
C        URMMDDYY.FOR                    2               FOR              W
C        PLMMDDYY.FOR                    2               FOR              W
C        RUMMDDYY.FOR                    2               FOR              W
C        CRMMDDYY.FOR                    2               FOR              W
C        FLMMDDYY.FOR                    2               FOR              W
C        MAMMDDYY.FOR                    2               FOR              W
C        IRMMDDYY.FOR                    2               FOR              W
C        PSMMDDYY.FOR                    2               FOR              W
C        CLMMDDYY.FOR                    2               FOR              W
C        CPMMDDYY.FOR                    2               FOR              W
C        HDMMDDYY.FOR                    2               FOR              W
C        SOMMDDYY.FOR                    2               FOR              W
C        MNMMDDYY.FOR                    2               FOR              W
C        TCMMDDYY.FOR                    2               FOR              W
C        PHMMDDYY.FOR                    2               FOR              W
C        SUMMDDYY.FOR                    2               FOR              W
C        SDMMDDYY.FOR                    2               FOR              W
C        CAMMDDYY.FOR                    2               FOR              W
C        TGMMDDYY.FOR                    2               FOR              W
C        BIMMDDYY.FOR                    2               FOR              W
C        CIMMDDYY.FOR                    2               FOR              W
C        TPMMDDYY.FOR                    2               FOR              W
C        SCMMDDYY.FOR                    2               FOR              W
C        BNMMDDYY.FOR                    2               FOR              W
C        LAMMDDYY.FOR                    2               FOR              W
C
C
C  LOADING SEQUENCE:
C
C     MCR>TKB
C     TKB>@CRMFOR
C     MCR>RUN CRMFOR
C
C
C  BATTELLE MEMORIAL INSTITUTE
```

```
00110   C  PACIFIC NORTHWEST LABORATORIES
00111   C  WATER & LAND RESOURCES DEPT.
00112   C
00113   C  AUTHOR(S):   DR FRIEDRICHS
00114   C                DW DAMSCHEN
00115   C
00116   C  DATE:         INITIAL VERSION AUGUST   1976
00117   C                CURRENT VERSION OCTOBER  1978
00118   C
00119          LOGICAL EOF
00120   C
00121          BYTE TITLE(80),WTEST,WNAME(12),DAYTE(9),FILE(30)
00122          BYTE BYT1(32),BYT2(32),CFILE(30)
00123   C
00124          INTEGER*4 CTIADR(36),CTXADR(36),JUP(128),IDAYT(512),IVALUE(512)
00125   C
00126   C
00127          DIMENSION VALUE(512),DAYT(512),MINT(512),IBUF(256),KBUF(256)
00128          DIMENSION IUP(256),CONNAM(4,32)
00129   C
00130          PARAMETER LIMCON=32
00131          COMMON/EDCOM/IDTYP,IOTYP,IWHDR,TODAY(9),EDITCD,NOW(8),IHYD,
00132         1             UPHDR(256),ICTM,IUNIT,IEMA,IUHDR,ITMP,EDDATE,
00133         1             ICHDR,EMACON(32)
00134          COMMON/HDR/WTEST(12),IDM(12),IDBIT,ICBIT(2),IDUM(234),IWNAM
00135   C
00136   C
00137          EQUIVALENCE(IBUF(1),WTEST(1)),(CTIADR(1),KBUF(1)),
00138         1 (CTXADR(1),KBUF(73)),(JUP(1),IUP(1))
00139   C
00140          DATA BYT1/'T','T','T','N','S','C','C','U','P','R','C',
00141         1 'F','M','I','P','C','C','H','S','M','T','P','S','S',
00142         2 'C','T','B','C','T','S','B','L'/
00143   C
00144          DATA BYT2/'A','B','R','I','T','E','O','R','L','U','R',
00145         1 'L','A','R','S','L','P','D','O','N','C','H','U','D',
00146         2 'A','G','I','I','P','C','N','A'/
00147   C
00148          DATA CONNAM/4HTOTA ,4HL AL ,4HPHA  ,4H     ,
00149         1            4HTOTA ,4HL BE ,4HTA   ,4H     ,
00150         2            4HTRIT ,4HIUM  ,4H     ,4H     ,
00151         3            4HNITR ,4HATE  ,4H     ,4H     ,
00152         5            4HSTRO ,4HNTIU ,4HM-90 ,4H     ,
00153         6            4HCESI ,4HUM-1 ,4H37   ,4H     ,
00154         7            4HCOBA ,4HLT-6 ,4H0    ,4H     ,
00155         8            4HURAN ,4HIUM  ,4H     ,4H     ,
00156         9            4HPLUT ,4HONIU ,4HM-23 ,4H9    ,
00157         1            4HRUTH ,4HENIU ,4HM-10 ,4H6    ,
00158         1            4HCHRO ,4HMIUM ,4H     ,4H     ,
00159         2            4HFLUO ,4HRIDE ,4H     ,4H     ,
00160         3            4HMAGN ,4HESIU ,4HM    ,4H     ,
00161         4            4HIRON ,4H     ,4H     ,4H     ,
00162         5            4HPHOS ,4HPHAT ,4HE    ,4H     ,
00163         6            4HCHLO ,4HRIDE ,4H     ,4H     ,
00164         7            4HCOPP ,4HER   ,4H     ,4H     ,
00165         8            4HHARD ,4HNESS ,4H     ,4H     ,
```

```
      9          4HSOLI ,4HDS   ,4H     ,4H     ,
      1          4HMANG ,4HANES ,4HE    ,4H     ,
      1          4HTOT. ,4H ORG ,4H. CA ,4HRBON,
      2          4HPH   ,4H     ,4H     ,4H     ,
      3          4HSULF ,4HATE  ,4H     ,4H     ,
      4          4HSODI ,4HUM   ,4H     ,4H     ,
      5          4HCALC ,4HIUM  ,4H     ,4H     ,
      6          4HTOTA ,4HL GA ,4HMMA  ,4H     ,
      7          4HBICA ,4HRBON ,4HATE  ,4HION  ,
      8          4HCARB ,4HONAT ,4HE IO ,4HN    ,
      9          4HTOTA ,4HL PO ,4HTASS ,4HIUM  ,
      1          4HSPC. ,4H CON ,4HDUCT ,4HIVTY ,
      1          4HBORO ,4HN    ,4H     ,4H     ,
      2          4HLOW  ,4HALPH ,4HA    ,4H     /
C
      DATA YES /'Y'/
C
      CALL DATE (DAYTE)
C
      WRITE(6,100)
100   FORMAT('$ENTER FILE-Q DISC UNIT (I.E. DP2, DP1 OR DB0) >')
      READ(6,101) IDISC,IUNIT
101   FORMAT(A2,I1)
C
      WRITE(6,99)
99    FORMAT('$ENTER DISC UNIT TO HOLD "*.FOR" FILES >')
      READ(6,101) IDISC2,IUNIT2
C
      CALL ASNLUN(1,IDISC,IUNIT)
      CALL ASNLUN(2,IDISC2,IUNIT2)
C
      CALL DPFILE(1,'FRMTHYD',4000.,IHYD)
      CALL DPFILE(1,'FRMTTMP',4000.,ITMP)
      CALL DPFILE(1,'FRMTCTM',37000.,IPC)
      CALL DPFILE(1,'WELLHDR',6000.,IWHDR)
      CALL DPFILE(1,'CTMHDR',6000.,ICHDR)
      CALL DPFILE(1,'UPDATEHDR',1.,IPU)
C
C*** REQUEST FILE CONTAINING WELL NAMES AND DISC ADDRESSES.
C
      WRITE (6,1001)
1001  FORMAT (' ENTER "*.SEQ" FILE CONTAINING WELL NAMES AND',
     1 ' ADDRESSES >')
C
      READ (6,1002) CFILE
1002  FORMAT (30A1)
C
C
      N = ICHR(CFILE)
      OPEN(UNIT=3,NAME=CFILE,TYPE='OLD',READONLY)
C
      WRITE (6,1003)
1003  FORMAT ('$ENTER DATA TYPE, I.E. 1=HYD, 2=TMP, 3=CTM (I1)>')
      READ (6,1004) IDTYPE
1004  FORMAT (I1)
C
```

```
00222          EOF = .FALSE.
00223    C
00224          SELECT (IDTYPE)
00225    C     .
00226          .  (1)
00227          .  .  OUTPUT-HYD-DATA
00228          .  ...FIN
00229    C     .
00230          .  (2)
00231          .  .  OUTPUT-TMP-DATA
00232          .  ...FIN
00233    C     .
00234          .  (3)
00235          .  .  OUTPUT-CTM-DATA
00236          .  ...FIN
00237    C     .
00238          ...FIN
00239    C
00240    C
00241          WRITE (6,660)
00242    660   FORMAT (//' ********** CRMFOR FINISHED **********')
00243    C
00244          STOP
00245    C
```

```
00246          TO READ-DOT-SEQ-TITLE
00247    C     .
00248    C***  READ TIME AND DATE OF WELHDR.SEQ FILE
00249          .  READ(3,602) TITLE
00250    602   .  FORMAT(80A1)
00251    C     .
00252          ...FIN
00253    C
```

```
00254          TO WRITE-CTM-TITLE
00255    C     .
00256    C*** WRITE HEADING FOR PRINT FILES.
00257    C     .
00258          .  WRITE(2,299) (TITLE(NTI),NTI=1,60),(CONNAM(NCO,LCODE),NCO=1,4),
00259        1.   (FILE(NFN),NFN=1,12),DAYTE
00260    C     .
00261    299   .  FORMAT(1H1,//' CONFOR RUN USING',60A1,' CONTAMINANT '
00262        1.   ,4A4,1X,1H,,12A1,2X,9A1//)
00263    C     .
00264          ...FIN
```

```
00265          TO READ-WELL-NAME-FQADR-AND-READ-WELLHDR
00266    C     .
00267    C*** READ WELL NAME AND FILE-Q DISC ADDRESS FROM [220,3]WELHDRNEW.SEQ
00268    C     .
```

```
00269   20      .  READ(3,300,END=50) WNAME,FQADR
00270   300     .  FORMAT(1X,12A1,F10.0)
00271   C       .
00272   C*** READ WELL HEADER DATA FROM CIRMIS FILE-Q DISC
00273   C       .
00274           .  CALL DPR(IWHDR,FQADR,IBUF,256.)
00275           .  GO TO 51
00276   C       .
00277   50      .  EOF = .TRUE.
00278   C       .
00279   51      .  CONTINUE
00280   C       .
00281           ...FIN

        ----------------------------------------

00282           TO OUTPUT-HYD-DATA
00283   C       .
00284           .  OPEN(UNIT=2,NAME='HYDRO.FOR',TYPE='NEW')
00285   C       .
00286   C       .  READ TIME AND DATE ENTRIES IN
00287   C       .  THE WELHDR.SEQ DATA FILE
00288   C       .
00289           .  READ-DOT-SEQ-TITLE
00290   C       .
00291           .  WRITE(2,633) (TITLE(I),I=1,60),TODAY,NOW
00292   633     .  FORMAT(1H1,//' FORMATTED HYDROGRAPH DATA USING ',60A1,
00293         2.   T100,'DATE ',9A1,' TIME ',8A1//)
00294   C       .
00295           .  EOF = .FALSE.
00296   C       .
00297           .  REPEAT UNTIL (EOF)
00298   C       . .
00299   C    READ A WELL DESIGNATION RECORD AND FILE-Q DISC ADDRESS
00300   C       . .
00301           . .  READ-WELL-NAME-FQADR-AND-READ-WELLHDR
00302   C       . .
00303           . .  IF (.NOT.(EOF))
00304   C       . . .
00305           . . .  IF(MOD(IBUF(19),2).EQ.1)
00306   C       . . . .
00307   C*** READ HYDROGRAPH DATA FROM FILE-Q DISC
00308   C       . . . .
00309           . . . .  ADSI = IBUF(30)
00310           . . . .  NPTSI = IBUF(31)
00311           . . . .  ADSEX = IBUF(32)
00312           . . . .  NPTSEX = IBUF(33)
00313           . . . .  ALOC = IBUF(34)
00314           . . . .  ADST = ADSI+ALOC
00315           . . . .  WRDS = NPTSI*2
00316   C       . . . .
00317           . . . .  CALL DPR(IHYD,ADSI,VALUE,WRDS)
00318           . . . .  CALL DPR(IHYD,ADST,DAYT,WRDS)
00319   C       . . . .
00320   C*** READ DATA FROM EXTENDED AREAS, IF ANY
00321   C       . . . .
```

```
00322          .  .  .  .  IF(NPTSEX.NE.0)
00323   C      .  .  .  .  .
00324          .  .  .  .  .  ADST = ADSEX+2.
00325          .  .  .  .  .  WRDS = NPTSEX*2.
00326          .  .  .  .  .  INDX = NPTSI+1
00327   C      .  .  .  .  .
00328          .  .  .  .  .  CALL DPR(IHYD,ADSEX,VALUE(INDX),WRDS)
00329          .  .  .  .  .  CALL DPR(IHYD,ADST,DAYT(INDX),WRDS)
00330   C      .  .  .  .  .
00331          .  .  .  .  ...FIN
00332   C      .  .  .  .
00333   C*** FILE-Q DATA HAS BEEN READ--
00334   C   NOW WRITE IT TO OUTPUT FILE.
00335   C      .  .  .  .
00336          .  .  .  .  NTOT = NPTSI+NPTSEX
00337          .  .  .  .  WRITE(2,612) NTOT,WNAME,ADSI,NPTSI,ADSEX,NPTSEX
00338   612    .  .  .  .  FORMAT(I5,5X,12A1,15X,'***STARTING ADDRESS=',F7.0,' ***',I5,
00339        1.  .  .  .         ' PTS',5X,'***EXTENDED ADDRESS=',F7.0,' ***',I5,' PTS')
00340   C      .  .  .  .
00341          .  .  .  .  DO (I=1,NTOT)
00342          .  .  .  .  .  IVALUE(I) = VALUE(I)*100.
00343          .  .  .  .  .  IDAYT(I) = DAYT(I)
00344          .  .  .  .  ...FIN
00345   C      .  .  .  .
00346          .  .  .  .  WRITE(2,632) (IVALUE(I),I=1,NTOT)
00347   632    .  .  .  .  FORMAT(12I7)
00348          .  .  .  .  WRITE(2,632) (IDAYT(I),I=1,NTOT)
00349          .  .  .  ...FIN
00350          .  .  ...FIN
00351          .  ...FIN
00352   C      .
00353          .  CALL DPR(IPU,0.,IUP,256.)
00354          .  WRITE(2,652) JUP(1)
00355   652    .  FORMAT(//'NEXT FREE ADDRESS = ',I7)
00356   C      .
00357   C*** END OF WELL LIST--TERMINATE RUN
00358   C      .
00359          .  WRITE (6,1653) IDISC2,IUNIT2
00360   1653   .  FORMAT (' YOUR OUTPUT FILE IS ',A2,I1,':HYDRO.FOR')
00361          .  CLOSE(UNIT=2)
00362   C      .
00363          ...FIN
```

```
00364          TO OUTPUT-TMP-DATA
00365   C      .
00366          .  OPEN(UNIT=2,NAME='TEMPER.FOR',TYPE='NEW')
00367   C      .
00368   C      .  READ TIME AND DATE ENTRIES IN THE WELHDR.SEQ FILE
00369   C      .
00370          .  READ-DOT-SEQ-TITLE
00371          .  WRITE(2,601) (TITLE(I),I=1,60),TODAY,NOW
00372   601    .  FORMAT(//' FORMATTED TEMPERATURE FILE USING ',60A1,
00373        1.    T100,'DATE ',9A1,' TIME ',8A1//)
00374   C      .
```

```
00375          .  REPEAT UNTIL (EOF)
00376   C      .  .
00377          .  .  READ-WELL-NAME-FQADR-AND-READ-WELLHDR
00378   C      .  .
00379          .  .  IF (.NOT.(EOF))
00380   C      .  .  .
00381   C*** TEMPERATURE DATA AVAILABLE?
00382   C      .  .  .
00383          .  .  .  ITBIT = IFLD(10,1,IBUF(19))
00384          .  .  .  IF (ITBIT.NE.0)
00385   C      .  .  .  .
00386   C*** READ TEMPERATURE DATA FROM FILE-Q DISC
00387   C      .  .  .  .
00388          .  .  .  .  ADSI=IBUF(50)
00389          .  .  .  .  NPTSI=IBUF(51)
00390          .  .  .  .  ADSEX=IBUF(52)
00391          .  .  .  .  NPTSEX=IBUF(53)
00392          .  .  .  .  ALOC=IBUF(54)
00393          .  .  .  .  ADST=ADSI+ALOC
00394          .  .  .  .  WRDS=NPTSI*2
00395   C      .  .  .  .
00396          .  .  .  .  CALL DPR(ITMP,ADSI,VALUE,WRDS)
00397          .  .  .  .  CALL DPR(ITMP,ADST,DAYT,WRDS)
00398   C      .  .  .  .
00399   C*** READ DATA FROM EXTENDED AREAS, IF ANY
00400   C      .  .  .  .
00401          .  .  .  .  IF(NPTSEX.NE.0)
00402   C      .  .  .  .  .
00403          .  .  .  .  .  ADST=ADSEX+2.
00404          .  .  .  .  .  WRDS=NPTSEX*2.
00405          .  .  .  .  .  INDX=NPTSI+1
00406   C      .  .  .  .  .
00407          .  .  .  .  .  CALL DPR(ITMP,ADSEX,VALUE(INDX),WRDS)
00408          .  .  .  .  .  CALL DPR(ITMP,ADST,DAYT(INDX),WRDS)
00409   C      .  .  .  .  .
00410          .  .  .  .  ...FIN
00411   C      .  .  .  .
00412   C*** FILE-Q DATA HAS BEEN READ--
00413   C    NOW WRITE IT TO OUTPUT FILE.
00414   C      .  .  .  .
00415          .  .  .  .  NTOT=NPTSI+NPTSEX
00416          .  .  .  .  WRITE(2,611) NTOT,WNAME,ADSI,NPTSI,ADSEX,NPTSEX
00417   611    .  .  .  .  FORMAT(I5,5X,12A1,15X,'***STARTING ADDRESS=',F7.0,' ***',I5,
00418        1 .  .  .  .        ' PTS',5X,'***EXTENDED ADDRESS=',F7.0,' ***',I5,' PTS')
00419   C      .  .  .  .
00420          .  .  .  .  DO (I=1,NTOT)
00421          .  .  .  .  .  IVALUE(I)=VALUE(I)*10.
00422          .  .  .  .  .  IDAYT(I)=DAYT(I)
00423          .  .  .  .  ...FIN
00424   C      .  .  .  .
00425          .  .  .  .  WRITE(2,621) (IVALUE(I),I=1,NTOT)
00426   621    .  .  .  .  FORMAT(12I7)
00427          .  .  .  .  WRITE(2,621) (IDAYT(I),I=1,NTOT)
00428          .  .  .  ...FIN
00429          .  .  ...FIN
00430          .  ...FIN
```

```
00431   C       .
00432           .  CALL DPR(IPU,0.,IUP,256.)
00433           .  WRITE(2,651) JUP(100)
00434   651     .  FORMAT(//' NEXT FREE ADDRESS = ',I7)
00435   C       .
00436   C*** END OF WELL LIST--TERMINATE RUN
00437   C       .
00438           .  WRITE (6,1654) IDISC2,IUNIT2
00439   1654    .  FORMAT (' YOUR OUTPUT FILE IS ',A2,I1,'ITEMPER.FOR')
00440           .  CLOSE(UNIT=2)
00441           ...FIN
00442   C

        ----------------------------------------

00443           TO OUTPUT-CTM-DATA
00444   C       .
00445   C*** OPEN 'PIP' INDIRECT COMMAND FILE.
00446   C       .
00447           .  OPEN(UNIT=4,NAME='CONFORLST.CMD',TYPE='NEW')
00448   C       .
00449   C*** REQUEST DATE AND SET UP CHAR. 3-8 OF OUTPUT FILE NAME.
00450   C       .
00451           .  WRITE (6,6001)
00452   6001    .  FORMA ('$ ENTER DATE (MMDDYY) >')
00453           .  READ (6,6002) (FILE(I),I=3,8)
00454   6002    .  FORMAT (6A1)
00455   C       .
00456   C*** SET UP CHAR. 9-12 OF OUTPUT FILE NAME.
00457   C       .
00458           .  FILE(9)  = '.'
00459           .  FILE(10) = 'F'
00460           .  FILE(11) = 'O'
00461           .  FILE(12) = 'R'
00462   C       .
00463           .  LCODE = 0
00464           .  NUMCTM = 32
00465   C       .
00466   102     .  CONTINUE
00467   C       .
00468   C*** REQUEST CONTAMINANT CODE.
00469   C       .
00470           .  WRITE (6,603)
00471   603     .  FORMAT ('$ENTER START & END CONTAMINATE NOS. (2I2) >')
00472           .  READ (6,604) ISTRT,IEND
00473   604     .  FORMAT (2I2)
00474   C       .
00475           .  LCODE = ISTRT - 1
00476   C       .
00477           .  REPEAT UNTIL (LCODE .GE. IEND)
00478   C       .  .
00479   15      .  .  REWIND 3
00480   C       .  .
00481           .  .  READ-DOT-SEQ-TITLE
00482   C       .  .
00483   6041    .  .  CONTINUE
```

```
C       . .
6060    . .  CONTINUE
C       . .
        . .  LCODE = LCODE + 1
C       . .
        . .  IF (LCODE .LE. IEND)
C       . . .
C       . . .
C*** SET UP CHAR. 1-2 OF OUTPUT FILE NAME.
C       . . .
6070    . . .  CONTINUE
        . . .  FILE(1) = BYT1(LCODE)
        . . .  FILE(2) = BYT2(LCODE)
        . . .  N = ICHR(FILE)
C       . . .
        . . .  WRITE (4,6040) (FILE(I),I=1,N)
6040    . . .  FORMAT ('LP:=',28A1)
C       . . .
        . . .  OPEN(UNIT=2,NAME=FILE,TYPE='NEW')
C       . . .
        . . .  WRITE(6,607) LCODE
607     . . .  FORMAT(' CONTAMINANT FORMATTED FILE GENERATION, SPECIES',I3)
C       . . .
        . . .  WRITE-CTM-TITLE
C       . . .
        . . .  NCODE = LCODE - 1
C       . . .
C       . . .
        . . .  REPEAT UNTIL (EOF)
C       . . . .
        . . . .  READ-WELL-NAME-FQADR-AND-READ-WELLHDR
C       . . . .
        . . . .  IF (.NOT.(EOF))
C       . . . . .
        . . . . .  IBIT = IFLD(1,1,IDBIT)
C*** CONTAMINATE DATA AVAILABLE?
        . . . . .  IF (IBIT.NE.0)
C*** YES
C*** SPECIES AVAILABLE?
        . . . . . .  WHEN (NCODE.LE.15)
        . . . . . . .  IFL = IFLD(NCODE,1,ICBIT(1))
        . . . . . .  ...FIN
C       . . . . . .
        . . . . . .  ELSE
25      . . . . . . .  IFL = IFLD(NCODE-16,1,ICBIT(2))
        . . . . . .  ...FIN
C       . . . . . .
26      . . . . . .  IF (IFL.NE.0)
C*** YES
C       . . . . . . .
        . . . . . . .  QADR = IBUF(61)
        . . . . . . .  CALL DPR (ICHDR,QADR,KBUF,256.)
C       . . . . . . .
        . . . . . . .  IOFF = NCODE*3
        . . . . . . .  NPTS = KBUF(145+IOFF)
        . . . . . . .  DKSAV= CTIADR(LCODE)
```

```
00540          .  .  .  .  .  .  .  DKSEX= CTXADR(LCODE)
00541          .  .  .  .  .  .  .  NPSEX= KBUF(146+IOFF)
00542          .  .  .  .  .  .  .  INALOC=KBUF(147+IOFF)
00543   C      .  .  .  .  .  .  .
00544   C*** READ CONTAMINATE DATA FROM FILE-Q RANDOM ACCESS FILE
00545   C      .  .  .  .  .  .  .
00546          .  .  .  .  .  .  .  WRDI = 2*NPTS
00547          .  .  .  .  .  .  .  WI   = INALOC*256.
00548          .  .  .  .  .  .  .  DKT  = DKSAV+INALOC
00549          .  .  .  .  .  .  .  DKM  = DKT+INALOC
00550   C      .  .  .  .  .  .  .
00551          .  .  .  .  .  .  .  CALL DPR(IPC,DKSAV,VALUE,WRDI)
00552          .  .  .  .  .  .  .  CALL DPR(IPC,DKT,DAYT,WRDI)
00553          .  .  .  .  .  .  .  CALL DPR(IPC,DKM,MINT,WI)
00554   C      .  .  .  .  .  .  .
00555          .  .  .  .  .  .  .  IF (NPSEX.NE.0)
00556   C      .  .  .  .  .  .  .  .
00557   C *** READ EXTENDED AREA (IF ANY)
00558   C      .  .  .  .  .  .  .  .
00559          .  .  .  .  .  .  .  .  WRDE = 2*NPSEX
00560          .  .  .  .  .  .  .  .  DKTE = DKSEX+2.
00561          .  .  .  .  .  .  .  .  DKME = DKTE+2.
00562          .  .  .  .  .  .  .  .  NPX  = NPTS+1
00563   C      .  .  .  .  .  .  .  .
00564          .  .  .  .  .  .  .  .  CALL DPR(IPC,DKSEX,VALUE(NPX),WRDE)
00565          .  .  .  .  .  .  .  .  CALL DPR(IPC,DKTE,DAYT(NPX),WRDE)
00566          .  .  .  .  .  .  .  .  CALL DPR(IPC,DKME,MINT(NPX),256.)
00567          .  .  .  .  .  .  .  ...FIN
00568   C      .  .  .  .  .  .  .
00569   C *** WRITE FORMATTED CONTAMINANT DATA TO SAVE FILE ***
00570   C      .  .  .  .  .  .  .
00571   40     .  .  .  .  .  .  .  NTOT = NPTS+NPSEX
00572          .  .  .  .  .  .  .  WRITE(2,200) NTOT,WNAME,DKSAV,NPTS,DKSEX,NPSEX
00573   200    .  .  .  .  .  .  .  FORMAT(' ***',I5,' >>> ',12A1,' <<<',7X,'***STARTING ADDRESS=',
00574        1.  .  .  .  .  .  .   F7.0,' ***',I5,
00575        2.  .  .  .  .  .  .        ' PTS',5X,'***EXTENDED ADDRESS=',F7.0,' ***',I5,' PTS')
00576          .  .  .  .  .  .  .  WRITE(2,201) (VALUE(K),K=1,NTOT)
00577   201    .  .  .  .  .  .  .  FORMAT(1X,12E10.2)
00578          .  .  .  .  .  .  .  WRITE(2,202) (DAYT(K),K=1,NTOT)
00579   202    .  .  .  .  .  .  .  FORMAT(1X,12F10.0)
00580          .  .  .  .  .  .  .  WRITE(2,203) (MINT(K),K=1,NTOT)
00581   203    .  .  .  .  .  .  .  FORMAT(1X,12I10)
00582   C      .  .  .  .  .  .  .
00583          .  .  .  .  .  .  ...FIN
00584          .  .  .  .  .  ...FIN
00585          .  .  .  .  ...FIN
00586          .  .  .  ...FIN
00587          .  .  ...FIN
00588   C      .  .
00589          .  .  CALL DPR(IPU,0.,IUP,256.)
00590          .  .  WRITE(2,210) JUP(LCODE+10)
00591   210    .  .  FORMAT(//' NEXT FREE ADDRESS = ',I7)
00592          .  .  CLOSE(UNIT=2)
00593   C      .  .
00594          .  .  WRITE (6,1656) IDISC2,IUNIT2,(FILE(I),I=1,12)
00595   1656   .  .  FORMAT (' YOUR OUTPUT FILE IS ',A2,I1,':',12A1/)
```

```
00596   C       .  .
00597           .  .  EOF = .FALSE.
00598           .  ...FIN
00599           .  CLOSE (UNIT=3)
00600           ...FIN
00601           END
```

PROCEDURE CROSS-REFERENCE TABLE

```
00443 OUTPUT-CTM-DATA
      00235

00282 OUTPUT-HYD-DATA
      00227

00364 OUTPUT-TMP-DATA
      00231

00246 READ-DOT-SEQ-TITLE
      00289  00370  00481

00265 READ-WELL-NAME-FQADR-AND-READ-WELLHDR
      00301  00377  00514

00254 WRITE-CTM-TITLE
      00507
```

(FLECS VERSION 22.46)

Sample CRMFOR Output Listings

(HYDRO.FOR)

(TEMPER.FOR)

```
FORMATTED HYDROGRAPH DATA USING  "WELHDR,SEQ", NEW CIRMIS USING SEQ, SEARCH, 04-OCT-78   02:      DATE  TIME

 107      1  83   1                  ***STARTING ADDRESS=      0, ***  107 PTS     ***EXTENDED ADDRESS=      0, ***    0 PTS
 40741  39819  39849  41029  39829  40609  40993  41207  40899  40914  40904  40924
 40912  40458  40424  40685  40733  40242  40939  40937  40849  40992  40964  41174
 40962  40954  40937  41579  41839  40939  41801  41021  41851  41875  41774  41856
 41795  41727  41865  41312  41549  41888  41805  41321  41782  41835  41812  41825
 41822  41819  41154  41894  41382  41630  41247  41208  41046  41138  41165  41141
 41232  41299  41326  41300  40871  41896  41892  41611  40896  41684  40942  41031
 41103  41077  40773  41107  41048  41026  41010  41143  40994  40950  40989  40770
 41117  41172  41234  40966  39637  39462  39651  39472  40223  39458  39281  39429
 39249  39326  39363  39839  39839  39864  39864  39368  39368  39356  39488
590526 621105 621227 630719 631206 640721 641229 650713 650716 650818 650921 651019
651027 660303 660413 660518 660727 661229 670328 670922 670927 671012 671019 671027
671030 671108 671109 671115 671117 671122 671129 671204 671211 671212 671218 671222
671229 680104 680108 680115 680122 680129 680205 680213 680219 680226 680304 680311
680318 680325 680401 680408 680415 680422 680429 680506 680513 680520 680527 680603
680610 680617 680624 680701 680802 680813 680819 680826 680916 681021 681028 681104
681111 681118 681125 681202 681209 681216 681223 681230 690106 690113 690120 690127
690203 690217 690310 690423 691112 700506 710910 720310 720711 721002 730104 730411
730706 730815 740117 740426 740506 740722 740723 741015 741018 750108 750414
  55      1  83   2                  ***STARTING ADDRESS=      2, ***   55 PTS     ***EXTENDED ADDRESS=      0, ***    0 PTS
 40109  40360  40344  40238  40341  40349  40620  40706  40641  40633  40404  40483
 40249  40212  40382  40382  40381  40271  40371  40747  40573  40675  40643  40953
 41041  40612  40699  40707  40842  41611  42013  42207  41120  41083  40277  40285
 40244  39968  40242  42403  42159  40434  41965  41823  41704  41625  41585  41569
 41545  41526  41514  41389  41301  41255  41147
590526 621105 630719 631206 640714 641229 650713 650716 650818 650921 651019 651227
660303 660413 660518 660727 661020 661229 670328 670922 670927 671012 671019 671027
671103 671109 671120 671127 671204 671211 680311 680318 681108 690423 691112 700310
700401 700408 700519 710910 720310 720711 721002 730104 730411 730706 730815 730827
730912 730928 731011 740506 740723 741018 750108
  40      1  83   2P                 ***STARTING ADDRESS=   1100, ***   40 PTS     ***EXTENDED ADDRESS=      0, ***    0 PTS
 40189  40440  40424  40318  40420  40428  40699  40785  40720  40712  40483  40562
 40328  40291  40408  40461  40460  40350  40450  40826  40754  41120  42292  42286
 41162  40356  40094  40062  40270  40104  40483  40336  40241  40269  40140  40138
 40267  40191  40078  40164
590526 621105 630719 631206 640714 641229 650713 650716 650818 650921 651019 651227
660303 660413 660518 660727 661020 661229 670328 670922 671012 671103 680311 680318
690423 691112 700506 700519 700910 720310 720711 721002 730104 730411 730706 740117
740426 741015 750108 750414
  32      1  84   1                  ***STARTING ADDRESS=      4, ***   32 PTS     ***EXTENDED ADDRESS=      0, ***    0 PTS
 40978  40958  40879  40786  40705  40670  40481  40426  40463  40653  40557  40423
 40508  40697  40679  39751  39841  39821  39760  39741  39731  39956  40176  39965
 39850  39876  40130  39802  40020  39886  39701  39641
650713 650716 650818 650921 651018 651227 660303 660413 660518 660727 661020 661229
670328 670920 671012 730706 730815 730827 730912 730928 731011 740506 740723 741018
750108 750414 750707 751203 760615 761208 770701 771207
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FORMATTED TEMPERATURE FILE USING  "WELHOR,SEQ", NEW CIRMIS USING SEQ, SEARCH, 04-OCT-78   02:     DATE  TIME


  27      3   1   1                 ***STARTING ADDRESS=   534, ***   27 PTS     ***EXTENDED ADDRESS=     0, ***    0 PTS
   180    180    177    181    174    174    174    177    176    180    180    176
   173    173    173    167    172    166    165    169    166    170    175    169
   169    166    168
770131 770202 770209 770216 770223 770301 770308 770317 770325 770330 770406 770413
770420 770429 770504 770512 770520 770527 770601 770609 770617 770623 770701 770707
770715 770721 770727
  27      3   1   2                 ***STARTING ADDRESS=   536, ***   27 PTS     ***EXTENDED ADDRESS=     0, ***    0 PTS
   181    181    182    179    170    168    173    171    170    168    168    166
   164    169    169    163    168    163    165    167    164    168    170    170
   165    166    168
770131 770202 770209 770216 770223 770301 770308 770317 770325 770330 770406 770413
770420 770429 770504 770512 770520 770527 770601 770609 770617 770623 770701 770707
770715 770721 770727
  27      3   1   3                 ***STARTING ADDRESS=   538, ***   27 PTS     ***EXTENDED ADDRESS=     0, ***    0 PTS
   196    189    187    184    176    172    174    170    168    166    162    160
   159    157    159    159    162    161    161    163    166    172    180    180
   178    178    184
770131 770202 770209 770216 770223 770301 770308 770317 770325 770330 770406 770413
770420 770429 770504 770512 770520 770527 770601 770609 770617 770623 770701 770707
770715 770721 770727
  27      3   1   4                 ***STARTING ADDRESS=   540, ***   27 PTS     ***EXTENDED ADDRESS=     0, ***    0 PTS
   154    158    149    151    144    140    144    145    142    141    144    145
   149    151    151    157    167    166    169    170    175    179    194    200
   208    212    219
770131 770202 770209 770216 770223 770301 770308 770317 770325 770330 770406 770413
770420 770429 770504 770512 770520 770527 770601 770609 770617 770623 770701 770707
770715 770721 770727
  27      3   1   5                 ***STARTING ADDRESS=   542, ***   27 PTS     ***EXTENDED ADDRESS=     0, ***    0 PTS
   150    147    141    139    134    134    134    136    137    139    144    170
   172    171    169    183    183    180    185    187    205    215    226    234
   237    239    244
770131 770202 770209 770216 770223 770301 770308 770317 770325 770330 770406 770413
770420 770429 770504 770512 770520 770527 770601 770609 770617 770623 770701 770707
770715 770721 770727
  27      3   1   6                 ***STARTING ADDRESS=   544, ***   27 PTS     ***EXTENDED ADDRESS=     0, ***    0 PTS
   168    167    163    163    150    146    146    146    145    144    140    135
   149    161    168    169    171    166    169    173    181    204    215    224
   207    220    220
770131 770202 770209 770216 770223 770301 770308 770317 770325 770330 770406 770413
770420 770429 770504 770512 770520 770527 770601 770609 770617 770623 770701 770707
770715 770721 770727
  28      3   2   1                 ***STARTING ADDRESS=   496, ***   28 PTS     ***EXTENDED ADDRESS=     0, ***    0 PTS
   176    181    176    176    177    172    170    172    173    174    176    174
   171    170    174    174    179    178    175    175    175    176    183    185
   187    188    183    188
761216 770131 770202 770209 770216 770223 770301 770308 770317 770325 770330 770406
770413 770420 770429 770504 770512 770520 770527 770601 770609 770617 770623 770701
770707 770715 770721 770727
```

CTMGEN

```
CTMGEN.CMD - TASK BUILD COMMAND

DP1:CTMGEN=DP1:CTMGEN,RTVHDO,DP:[1,1]BNWLIB.OLB/LB
/
UNITS=7
ACTFIL=7
ASG=DP1:1,TI:5
ASG=DP:2:3:4:7
/

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          ----------------------------------------

C ***************  DP1:[220,3]CTMGEN.FLX  ***************
C
C
C  PROGRAM ID: GEN-11-WEL-1
C
C  PROGRAM DESCRIPTION:
C     THIS PROGRAM IS DESIGNED TO READ DATA FROM THE RAW WELL CONTAMINANT
C     DATA FILES AND FORMAT THIS DATA IN A "FILE Q"
C     FORMAT SO THAT IT CAN BE ACCESSED BY THE CIRIMS ROUTINES.  THE
C     FILE CREATED IS CALLED "FRMTCTM".
C     APPROPRIATE ENTRIES ARE ALSO MADE IN THE "CTMHDR" AND "UPDATEHDR"
C     FILES.
C
C     THE CONTAMINANT CODES ARE AS FOLLOWS:
C
C     EMA   CIRMIS
C    ---   ------
C       112        1----TOTAL ALPHA                  (PCI/ML)
C       111        2----TOTAL BETA                   (PCI/ML)
C       108        3----TRITIUM                      (PCI/ML)
C       115        4----NITRATE                      (MG/L)
C       121        5----STRONTIUM-90                 (PCI/ML)
C        24        6----CESIUM-137                   (PCI/ML)
C        10        7----COBALT-60                    (PCI/ML)
C       104        8----URANIUM                      (NG/ML)
C       103        9----PLUTONIUM-239                (PCI/ML)
C        34        10---RUTHENIUM-106                (PCI/ML)
C       114        11---CHROMIUM                     (MG/L)
C        26        12---FLUORIDE                     (MG/L)
C        54        13---MAGNESIUM                    (MG/L)
C        55        14---IRON                         (MG/L)
C        56        15---PHOSPHATE                    (MG/L)
C        57        16---CHLORIDE                     (MG/L)
C        58        17---COPPER                       (MG/L)
C        62        18---HARDNESS                     (MG/L)
C        63        19---SOLIDS                       (MG/L)
C        64        20---MANGANESE                    (MG/L)
C       198        21---TOTAL ORGANIC CARBON         (MG/L)
C       199        22---PH
C       200        23---SULFATE                      (MG/L)
C       201        24---SODIUM                       (MG/L)
C       202        25---CALCIUM                      (MG/L)
C       998        26---TOTAL GAMMA                  (PCI/ML)
C       188        27---BICARBONATE ION              (PPM)
C       189        28---CARBONATE ION                (PPM)
C       190        29---TOTAL POTAASSIUM             (PPM)
C       191        30---SPECIFIC CONDUCTIVITY        (PPM)
C       192        31---BORON                        (PPM)
C       212        32---LOW ALPHA                    (PPM)
C
C   DATA FILES:
C       NAME                        LUN              TYPE            ACCESS
C       FILE Q--FRMTCTM              1               RAN               W
```

```
C        FILE Q--CTMHDR              1              RAN              W
C        FILE Q--UPDATEHDR           1              RAN              W
C        FILE Q--WELLHDR             1              RAN              R/W
C        FILE Q--WELLNAM             1              RAN              R/W
C   INPUT CONTAMINANT FILES:
C      (MMDDYY=MONTH YEAR)
C     EX:[220,101]TAMMDDYY.FOR       3              FOR              R
C
C
C   LOADING SEQUENCE:
C
C      MCR>TKB @DP1:[220,3]CTMGEN
C      MCR>RUN DP1:[220,3]CTMGEN
C
C
C   BATTELLE MEMORIAL INSTITUTE
C   PACIFIC NORTHWEST LABORATORIES
C   WATER & LAND RESOURCES DEPT.
C
C   AUTHOR(S):    SW AHLSTROM
C                 DR FRIEDRICHS
C                 SE WISE
C                 DW DAMSCHEN
C                 RS ARGO
C
C   DATE:         INITIAL VERSION  AUGUST  1974
C                 CURRENT VERSION NOVEMBER 1978
C
C
      BYTE ANS,YES,TIM(8),DAT(9),WNAME(12),PREWEL(12),BYT1(32),
     1 BYT2(32),FILE(30),FILEO(30),NEWNAM(12),OLDNAM(12)
     2 ,BYT3(2),COMAND,CTMNAM(12),WLDES
C
      LOGICAL EOF
C
      INTEGER*4 CTIADR(36),CTXADR(36),JUP(128)
C
      DIMENSION H(512),T(512),MINT(512),CADR(32),IUP(256)
      DIMENSION KBUF(256),IBUF(256)
C
      EQUIVALENCE (CTIADR(1),KBUF(1)),(CTXADR(1),KBUF(73)),
     1 (JUP(1),IUP(1)), (PREWEL(1),IBUF(214)),(KBUF(247),CTMNAM(1))
     2 , (IBUF(1),WLDES(1))
C
      COMMON/HDR/WLDES(12),IDUM(249),IWN,IWH
C
C
      DATA BYT1/'T','T','T','N','S','C','C','U','P','R','C',
     1 'F','M','I','P','C','C','H','S','M','T','P','S','S',
     2 'C','T','B','C','T','S','B','L'/
C
      DATA BYT2/'A','B','R','I','T','E','D','R','L','U','R',
     1 'L','A','R','S','L','P','D','O','N','C','H','U','D',
     2 'A','G','I','I','P','C','N','A'/
C
      DATA YES/'Y'/
```

```
C
      DATA CADR/ 0.,1000.,4000.,6000.,9000.,10000.,11000.,12000.,
     1          13000.,14000.,15000.,16000.,17000.,18000.,19000.,
     2          20000.,21000.,22000.,23000.,24000.,25000.,26000.,
     3          27000.,28000.,29000.,30000.,31000.,32000.,33000.,
     3          34000.,35000.,36000./
C
C **** TOTAL WORD CAPACITY PRESENTLY DIMENSIONED FOR DATA
C     NTWRD=512
C
      NTWRD=512
C
      WRITE(5,500)
500   FORMAT('$ENTER FILE Q DISC UNIT (I.E. DP2, DP1 OR DB0) > ')
      READ(5,505) IDISC, IUNIT
505   FORMAT (A2,I1)
C
      CALL ASNLUN(1,IDISC,IUNIT)
C
      CALL DPFILE(1,'FRMTCTM',37000.,ICTM)
      CALL DPFILE(1,'WELLHDR',6000.,IWHDR)
      CALL DPFILE(1,'WELLNAM',101.,IWNAM)
      CALL DPFILE(1,'CTMHDR',6000.,ICHDR)
      CALL DPFILE(1,'UPDATEHDR',1.,IUHDR)
C
      OPEN(UNIT=7,NAME='RENAMED.WEL',TYPE='OLD',READONLY)
C
      FILEO(14) = 'E'
      FILEO(15) = 'R'
      FILEO(16) = 'R'
C
      HS = -1
      DO (I=1,6000)
      .  HS = HS + 1
      .  CALL DPR (IWHDR,HS,IBUF,256.)
      .  CALL SFLD (1,1,8,IBUF(19))
      .  IBUF(20) = 0
      .  IBUF(21) = 0
      .  XADR = IBUF(61)
      .  CALL DPW (ICHDR,XADR,KBUF,256.)
C     .
      .  DO (J=145,240) KBUF(J) = 0
C     .
      .  CALL DPW (IWHDR,HS,IBUF,256.)
      .  CALL DPW (ICHDR,XADR,KBUF,256.)
      ...FIN
C
      CALL DPR (IUHDR,0,IUP,256.)
      DO (I=11,42) JUP(I) = CADR(I-10)
      CALL DPW (IUHDR,0,IUP,256.)
C
      WRITE (5,5005)
5005  FORMAT ('$WILL YOU USE A CONTROL FILE? (Y OR N)>')
C
      READ (5,5006) COMAND
5006  FORMAT (A1)
```

```
C
      IF (CUMAND .EQ. 'Y')
      . WRITE (5,5007)
5007  . FORMAT ('$ENTER CONTROL FILE NAME >')
C     .
      . READ (5,5008) FILE
5008  . FORMAT (30A1)
C     .
      . NNN=ICHR(FILE)
      . OPEN (UNIT=2,NAME=FILE,TYPE='OLD',READONLY)
C     .
      . DO (I=1,30) FILE(I) = ' '
      ...FIN
C
5     CONTINUE
C
      EOF = .FALSE.
C
      WHEN (COMAND .EQ. 'N')
C     .
      . WRITE(5,501)
501   . FORMAT('$ENTER THE CONTAMINANT FILE NAME>')
      . READ(5,502) FILE
502   . FORMAT(30A1)
C     .
      . NNN=ICHR(FILE)
C     .
      . WRITE(5,503)
503   . FORMAT('$ENTER CONTAMINATE CODE>')
      . READ(5,504) LCODE
504   . FORMAT(2I2)
      ...FIN
C
      ELSE
      . READ (2,5009,END=560) BYT3,FILE
5009  . FORMAT (2A1,1X,30A1)
C     .
      . WRITE (5,299) FILE
299   . FORMAT(30A1)
C     .
      . NNN=ICHR(FILE)
C     .
      . LCODE = 0
      . DO (J=1,32)
      . . IF (BYT3(1).EQ.BYT1(J) .AND. BYT3(2).EQ.BYT2(J)) LCODE = J
      . ...FIN
C     .
      . IF (LCODE .LE. 0)
      . . WRITE (5,5010) FILE
5010  . . FORMAT (' LCODE ERROR ',30A1)
      . . STOP
      . ...FIN
      ...FIN
C
C
      DO (I=1,4) FILEO(I) = FILE(I)
```

```
00222          FILEO(5) = BYT1(LCODE)
00223          FILEO(6) = BYT2(LCODE)
00224          DO (I=7,13) FILEO(I) = FILE(I)
00225    C
00226    200   FORMAT(1H1,' CONTAMINANT RANDOM ACCESS FILE GENERATION, SPECIES',
00227         1   I2/53(1H-)//)
00228    C
00229          CALL DATE(DAT)
00230          CALL TIME(TIM)
00231    C
00232    2004  FORMAT(10X,'TIME= ',8A1,'    DATE= ',9A1,///)
00233    C
00234          IHWLS=0
00235          DKSAV = CADR(LCODE)
00236    C
00237          OPEN(UNIT=3,NAME=FILE,TYPE='OLD',READONLY)
00238    C
00239    C
00240          DO (I=1,5) READ (3,300)
00241    C
00242          REPEAT UNTIL (EOF)
00243    C     .
00244    C *** READ CONTAMINANT DATA FROM THE BASE FILE ***
00245    C     .
00246    10    .  CONTINUE
00247    C     .
00248          .  IF (.NOT.(EOF))
00249    C     .  .
00250          .  .  READ(3,300,END=50) NPTS,WNAME
00251    300   .  .  FORMAT(4X,I5,5X,12A1)
00252    C     .  .
00253    C     .  .
00254          .  .  IF(NPTS.NE.0)
00255    C     .  .  .
00256          .  .  .  IF(NPTS.GT.NTWRD)
00257    C     .  .  .  .
00258          .  .  .  .  WRITE(5,510) NPTS,NTWRD
00259    510   .  .  .  .  FORMAT(' *** FATAL ERROR IN "CTMGEN" ***'/
00260         1.  .  .  .  ' NUMBER OF DATA POINTS EXCEEDS DIMENSIONAL ARRAYS'/
00261         2.  .  .  .  ' NPTS = ',I5,5X,'NTWRD = ',I5)
00262    C     .  .  .  .
00263          .  .  .  .  STOP
00264          .  .  .  ...FIN
00265    C     .  .  .
00266    11    .  .  .  READ(3,301) (H(K),K=1,NPTS)
00267    301   .  .  .  FORMAT(1X,12E10.2)
00268    C     .  .  .
00269    C     .  .  .
00270          .  .  .  READ(3,302) (T(K),K=1,NPTS)
00271    302   .  .  .  FORMAT(1X,12F10.0)
00272    C     .  .  .
00273    C     .  .  .
00274          .  .  .  READ(3,303) (MINT(K),K=1,NPTS)
00275     303  .  .  .  FORMAT (1X,12I10)
00276    C     .  .  .
00277    C     .  .  .
```

```
00278          .  .  .  IWN = IWNAM
00279          .  .  .  IWH = IWHDR
00280    C     .  .  .
00281          .  .  .  CALL RTVHDO(WNAME,DKADR)
00282    C     .  .  .
00283          .  .  .  IF(DKADR.LT.0.0)
00284    C     .  .  .  .
00285          .  .  .  .  REWIND 7
00286    305   .  .  .  .  READ (7,304,END=306) NEWNAM,OLDNAM
00287    304   .  .  .  .  FORMAT (1X,12A1,5X,12A1)
00288          .  .  .  .  KADR = 1
00289    C     .  .  .  .
00290          .  .  .  .  DO (NAME=1,12)
00291          .  .  .  .  .  IF (WNAME(NAME) .NE. OLDNAM(NAME)) KADR = 0
00292          .  .  .  .  ...FIN
00293    C     .  .  .  .
00294          .  .  .  .  IF (KADR .EQ. 0) GO TO 305
00295    C     .  .  .  .
00296          .  .  .  .  DO (NAME=1,12)
00297          .  .  .  .  .  WNAME(NAME) = NEWNAM(NAME)
00298          .  .  .  .  ...FIN
00299    C     .  .  .  .
00300          .  .  .  .  IWN = IWNAM
00301          .  .  .  .  IWH = IWHDR
00302    C     .  .  .  .
00303          .  .  .  .  CALL RTVHDO (WNAME,DKADR)
00304    C     .  .  .  .
00305          .  .  .  .  IF (DKADR .GE. 0.0) GO TO 307
00306    C     .  .  .  .
00307    306   .  .  .  .  CONTINUE
00308    C     .  .  .  .
00309    C---HEADER DATA NOT FOUND
00310    C     .  .  .  .
00311          .  .  .  .  WRITE (5,201) WNAME
00312    201   .  .  .  .  FORMAT(' THIS WELL NAME NOT FOUND IN HEADER FILE = ',12A1)
00313    C     .  .  .  .
00314          .  .  .  ...FIN
00315    C     .  .  .
00316    307   .  .  .  CONTINUE
00317    C     .  .  .
00318          .  .  .  IF (DKADR .GE. 0)
00319    C---HEADER DATA FOUND
00320    C     .  .  .  .
00321    13    .  .  .  .  IHWLS=IHWLS+1
00322    C     .  .  .  .
00323    C----MAKE CONTAMINANT ENTRY IN BITMAP FILE
00324    C     .  .  .  .
00325          .  .  .  .  CALL SFLD(1,1,1,IBUF(19))
00326          .  .  .  .  IF (LCODE.LE.16) CALL SFLD(LCODE-1,1,1,IBUF(20))
00327          .  .  .  .  IF (LCODE.GT.16) CALL SFLD(LCODE-17,1,1,IBUF(21))
00328    C     .  .  .  .
00329    C----MAKE CONTAMINANT ENTRY IN HEADER FILE
00330    C     .  .  .  .
00331          .  .  .  .  CALL OPR(ICHDR,DKADR,KBUF,256.)
00332    C     .  .  .  .
00333          .  .  .  .  DO (INAM=1,12) CTMNAM(INAM) = WNAME(INAM)
```

```
00334          .  .  .  .  IOFF=(LCODE-1) * 3
00335    C     .  .  .  .
00336          .  .  .  .  KBUF(145+IOFF)=NPTS
00337          .  .  .  .  CTIADR(LCODE)=DKSAV
00338          .  .  .  .  CTXADR(LCODE)=0
00339          .  .  .  .  KBUF(146+IOFF)=0
00340          .  .  .  .  NSECT=(NPTS+127)/128
00341          .  .  .  .  KBUF(147+IOFF)=NSECT
00342    C     .  .  .  .
00343          .  .  .  .  IBUF(61) = DKADR
00344          .  .  .  .  CALL DPW(IWHDR,DKADR,IBUF,256,)
00345          .  .  .  .  CALL DPW(ICHDR,DKADR,KBUF,256,)
00346    C     .  .  .  .
00347    C     .  .  .  .
00348    C----ENTER DATA IN FILE-Q RETRIEVE FILE
00349    C     .  .  .  .
00350    49    .  .  .  .  ANUM=2*NPTS
00351          .  .  .  .  DKC=DKSAV
00352          .  .  .  .  DKT=DKC+NSECT
00353          .  .  .  .  DKM=DKT+NSECT
00354          .  .  .  .  ANUM2=NSECT*256
00355    C     .  .  .  .
00356          .  .  .  .  CALL DPW (ICTM,DKC,M,ANUM)
00357          .  .  .  .  CALL DPW (ICTM,DKT,T,ANUM)
00358          .  .  .  .  CALL DPW (ICTM,DKM,MINT,ANUM2)
00359    C     .  .  .  .
00360          .  .  .  .  AINC=(NSECT+1)/2
00361          .  .  .  .  DKSAV=DKM+AINC
00362    C     .  .  .  .
00363          .  .  .  ...FIN
00364          .  .  ...FIN
00365          .  .  IF (NPTS .EQ. 0) GO TO 50
00366          .  ...FIN
00367          .  GO TO 51
00368    C     .
00369    50    .  EOF = .TRUE.
00370    C     .
00371    51    .  CONTINUE
00372    C     .
00373          ...FIN
00374    C
00375          CLOSE(UNIT=3)
00376          CLOSE(UNIT=4)
00377    C
00378    C----WRITE THE ADDRESS OF THE NEXT AVAILABLE SECTOR TO THE UPDATE
00379    C     FILE Q HEADER FILE 'UPDATEHDR'
00380    C
00381          CALL DPR (IUHDR,0,IUP,256,)
00382    C
00383          JUP(LCODE+10)=DKSAV
00384          CALL DPW (IUHDR,0,IUP,256,)
00385    C
00386          IF (COMAND .EQ. 'Y') GO TO 5
00387    C
00388          WRITE(5,550)
00389    550   FORMAT('$DO YOU WANT TO DO ANOTHER SPECIES? (Y OR N) >')
```

```
00390          READ(5,551) ANS
00391    551   FORMAT(A1)
00392    C
00393          IF(ANS.EQ.YES) GO TO 5
00394    C
00395    560   CONTINUE
00396    C
00397          STOP
00398          END
```

(FLECS VERSION 22.46)

HYDGEN

```
HYDGEN.CMD - TASK BUILD COMMAND

DP1:HYDGEN=DP1:HYDGEN,DP:[1,1]BNWLIB.OLB/LB
/
MAXBUF=1024
ACTFIL=6
UNITS=7
ASG=DP:7,DP1:1,TI:6,DP:5
/

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C ***************  DP1:[220,3]HYDGEN.FLX  ***************
C
C
C  PROGRAM ID: GEN-11-WEL-0
C
C  PROGRAM DESCRIPTION:
C     THIS PROGRAM IS DESIGNED TO READ DATA FROM THE RAW WELL HYDROGRAPH
C     DATA FILE HYDRO.FOR AND PACK THE DATA IN A RANDOM ACCESS
C     FILE SO THAT IT CAN BE ACCESSED BY THE CIRIMS ROUTINES. THE RANDOM
C     ACCESS FORMAT FILE CREATED IS CALLED  "FRMTHYD" .
C     APPROPRIATE ENTRIES ARE ALSO MADE IN THE "WELLHDR"  AND "UPDATEHDR"
C     FILES.
C
C  DATA FILES:
C       NAME                        LUN              TYPE             ACCESS
C       FILE Q---WELLHDR             1               RAN                R/W
C       FILE Q---WELLNAM             1               RAN                R
C       FILE Q---FRMTHYD             1               RAN                R/W
C       FILE Q---UPDATEHDR           1               RAN                R/W
C                HYDRO.FOR           7               FOR                R
C
C
C  LOADING SEQUENCE:
C
C     MCR>TKB #DP1:HYDGEN
C     MCR>INS DP1:HYDGEN
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):    SW AHLSTROM
C                DR FRIEDRICHS
C                SE WISE
C                DW DAMSCHEN
C                RS ARGO
C
C  DATE:         INITIAL VERSION MAY      1974
C                CURRENT VERSION MAY      1979
C
C
      BYTE TIM(8),DAT(9),WLDES,WNAME(12),NEWNAM(12),OLDNAM(12)
C
      LOGICAL EDF
C
      INTEGER*4 JUP(128)
C
      DIMENSION H(512),T(512),IBUF(256),IUP(256)
C
      COMMON/HDR/WLDES(12),IOUM1(12),IDBIT,ICBIT(2),IDUM(234),
     1 IWN,IWH
C
```

```
00054          EQUIVALENCE (IBUF(1),WLDES(1)), (IUP(1),JUP(1))
00055    C
00056          WRITE(6,600)
00057    600   FORMAT('$ENTER FILE Q DISC UNIT NUMBER (A2,I1) >')
00058          READ(6,601) IDISC,IUNIT
00059    601   FORMAT(A2,I1)
00060    C
00061          CALL ASNLUN(1,IDISC,IUNIT)
00062    C
00063          CALL DPFILE (1,'WELLHDR',6000.,IWHDR)
00064          CALL DPFILE (1,'WELLNAM',101.,IWNAM)
00065          CALL DPFILE (1,'FRMTHYD',4000.,IHYD)
00066          CALL DPFILE (1,'UPDATEHDR',1.,IUHDR)
00067    C
00068          OPEN(UNIT=3,NAME='RENAMED.WEL',TYPE='OLD',READONLY)
00069          OPEN(UNIT=7,NAME='HYDRO.FOR',TYPE='OLD',READONLY)
00070    C
00071    C  ZERO BITMAP
00072    C
00073          HS=-1.
00074          DO (I=1,6000)
00075          .  HS=HS+1.
00076          .  CALL DPR(IWHDR,HS,IBUF,256.)
00077          .  CALL BFLD(0,1,0,IDBIT)
00078          .  CALL DPW(IWHDR,HS,IBUF,256.)
00079          ...FIN
00080    C
00081    C
00082          WRITE(5,500)
00083    500   FORMAT(1H1,' WELL HYDROGRAPH RANDOM ACCESS FILE GENERATION'//)
00084    C
00085          CALL DATE(DAT)
00086          CALL TIME(TIM)
00087    C
00088          WRITE(5,5000) TIM,DAT
00089    5000  FORMAT(6X,'TIME= ',8A1,'     DATE= ',9A1,///)
00090    C
00091          WRITE(5,5001)
00092    5001  FORMAT('  WELL NXT FRE START  NUMBER INIT',8X,'WELL',8X,
00093         1'CASING   IDBIT'/'  NUMB  SECTOR ADRESS POINTS ALLOC',7X,
00094         2'NAME',7X,'ELEVATION'/68(1H-))
00095    C
00096          IHWLS=0
00097          IOK=0
00098          EOF = .FALSE.
00099    C
00100          DO (I=1,5) READ (7,700)
00101    C
00102          REPEAT UNTIL (EOF)
00103    C     .
00104    C *** READ HYDROGRAPH DATA FROM THE BASE FILE ***
00105    C     .
00106    11    .  CONTINUE
00107    C     .
00108          .  IF (.NOT.(EOF))
00109          .  .  READ(7,700,END=50,ERR=50) NPTS,WNAME
```

```
00110   700     FORMAT(I5,5X,12A1)
00111   C
00112           IF (NPTS .NE. 0)
00113   C
00114           .  IWN = IWNAM
00115           .  IWH = IWHDR
00116   C
00117           .  CALL RTVHDO(WNAME,FQADR)
00118   C
00119   C
00120           .  READ(7,701,ERR=50) (H(K),K=1,NPTS)
00121   701     .  FORMAT(12F7.2)
00122   C
00123           .  READ(7,702) (T(K),K=1,NPTS)
00124   702     .  FORMAT(12F7.0)
00125   C
00126    12     .  CONTINUE
00127   C
00128           .  IF(FQADR.LT.0.)
00129   C
00130   C
00131           .  .  REWIND 3
00132   305     .  .  READ (3,304,END=306) NEWNAM,OLDNAM
00133   304     .  .  FORMAT (1X,12A1,5X,12A1)
00134           .  .  KADR = 1
00135   C
00136           .  .  DO (NAME=1,12)
00137           .  .  .  IF (WNAME(NAME) .NE. OLDNAM(NAME)) KADR = 0
00138           .  .  ...FIN
00139   C
00140           .  .  IF (KADR .EQ. 0) GO TO 305
00141   C
00142           .  .  DO (NAME=1,12)
00143           .  .  .  WNAME(NAME) = NEWNAM(NAME)
00144           .  .  ...FIN
00145   C
00146           .  .  IWN = IWNAM
00147           .  .  IWH = IWHDR
00148   C
00149           .  .  CALL RTVHDO (WNAME,FQADR)
00150   C
00151           .  .  IF (FQADR .LT. 0.0)
00152   C
00153   306     .  .  .  CONTINUE
00154   C
00155   C---HEADER DATA NOT FOUND
00156   C
00157           .  .  .  WRITE(5,501) WNAME
00158   501     .  .  .  FORMAT(' THIS WELL NAME NOT FOUND IN HEADER FILE = ',12A1)
00159   C
00160           .  .  ...FIN
00161           .  .  ...FIN
00162   C
00163           .  .  IF (FQADR .GE. 0)
00164   C
00165   C---HEADER DATA FOUND
```

```
C
18        IHWLS=IHWLS+1
C
C----MAKE HYDROGRAPH ENTRY IN MASTER INDEX FILE
C
          IBUF(30)=IDK
          IBUF(31)=NPTS
C
C***DETERMINE THE INITIAL SECTOR ALLOCATION
C
          INALOC=(NPTS+127)/128
C
          IF(INALOC .EQ. 0) INALOC=1
C
          IBUF(34)=INALOC
          IBUF(32)=0
          IBUF(33)=0
C
C----MAKE HYDROGRAPH ENTRY IN BITMAP FILE
C
          IF(NPTS .GT. 0) CALL SFLD(0,1,1,IDBIT)
C
          CALL DPW(IWHDR,FQADR,IBUF,256,)
C
C
          IDKT=IDK
          IDK=IDK+INALOC*2
C
          WRITE(5,502) IHWLS,IDK,IDKT,NPTS,INALOC,WNAME,CASLEV,IDBIT
502       FORMAT(5I7,2X,12A1,2X,F10.2,O6)
C
C----WRITE THE DATA IN RANDOM ACCESS FORMAT
C
          IF(NPTS .NE. 0)
C
            STRT=IDKT
            WRDS=NPTS*2
C
            CALL DPW(IHYD,STRT,H,WRDS)
C
            STRT=STRT+INALOC
C
            CALL DPW(IHYD,STRT,T,WRDS)
C
          ...FIN
          ...FIN
          ...FIN
          ...FIN
C
          GO TO 51
C
50        EOF = .TRUE.
C
51        CONTINUE
C
          ...FIN
```

```
00222   C
00223   C
00224   C***WRITE THE ADDRESS OF THE NEXT AVAILABLE SECTOR
00225   C   TO THE UPDATE HEADER FILE
00226   C
00227         CALL DPR(IUHDR,0.,IUP,256.)
00228         JUP(1)=IOK
00229         CALL DPW(IUHDR,0.,IUP,256.)
00230   C
00231         STOP
00232         END
```

(FLECS VERSION 22.46)

```
00233   C ****************  [220,200]RTVHDO.FLX  ******************
00234   C
00235   C    SUBROUTINE TO RETRIEVE A WELL HEADER BLOCK FROM THE
00236   C  "CIRMIS" FILE-Q DISC FILE "WELLHDR".  WELL NAME IS
00237   C  SUPPLIED BY THE USER AND IS THE FIRST PARAMETER IN
00238   C  SUBROUTINE CALL, THE SECOND PARAMETER IS RETURNED BY THE
00239   C  SUBROUTINE AND CONTAINS THE FILE-Q DISC ADDRESS OF THE
00240   C  WELL HEADER OR A -1. IF NOT FOUND.
00241   C    THE USER ALSO SUPPLIES THE POINTER NAMES OF THE FILE-Q
00242   C  DISC FILES "WELLNAM" AND "WELLHDR" IN WORDS 256 & 257
00243   C  RESPECTIVELY OF THE COMMON BLOCK.
00244   C    THE WELL HEADER INFO IS RETURNED IN "COMMON/HDR" A
00245   C  257 WORD BLOCK.
00246   C
00247   C
00248   C  DATA FILES:
00249   C
00250   C          NAME                LUN          TYPE          ACCESS
00251   C          ----                ---          ----          ------
00252   C
00253   C          WELLHDR(FILE-Q)      1           RAN             R
00254   C          WELLNAM(FILE-Q)      1           RAN             R
00255   C
00256   C  D.R. FRIEDRICHS
00257   C
00258   C  DATE:    9-OCTOBER-1978
00259   C
00260         SUBROUTINE RTVHDO (WLNAM,FQADR)
00261   C
00262         BYTE BUF(512),WLNAM(12),WLDES
00263         INTEGER IBUF(256),JBUF(256)
00264   C
00265         INTEGER*4 UPHDR
00266   C
00267         COMMON/HDR/ WLDES(12),IDUM(249),IWNAM,IWHDR
00268   C
00269         EQUIVALENCE (BUF(1),JBUF(1)),(IBUF(1),WLDES(1))
00270   C
00271   C
00272   C
```

```
      FQADR = -1.
      IWN = IWNAM
C
      CONDITIONAL
      .  (WLNAM(1).EQ.' '. AND .WLNAM(2).EQ.'1') ISTRT = 0
      .  (WLNAM(2).EQ.'E') ISTRT = 5
      .  (WLNAM(2).EQ.'W') ISTRT = 30
      .  (WLNAM(2).EQ.'3') ISTRT = 60
      .  (WLNAM(2).EQ.'6') ISTRT = 65
      .  (WLNAM(1).EQ.'1'. AND .WLNAM(2).EQ.'1') ISTRT = 95
      .  (WLNAM(1).EQ.'3') ISTRT = 100
      .  (OTHERWISE) ISTRT = -1
      ...FIN
      IF (ISTRT.EQ.-1) GO TO 30
      ADR = ISTRT
10    CALL DPR (IWN,ADR,JBUF,256.)
      DO (J=1,42)
      .  III = (J-1)*12
      .  DO (I=1,12)
      .  .  IF (BUF(III+1).EQ.'9') GO TO 30
      .  .  IF (BUF(III+I).NE.WLNAM(I)) GO TO 20
      .  ...FIN
      .  GO TO 40
20    .  CONTINUE
      ...FIN
      ADR = ADR+1
      GO TO 10
30    IWNAM = IWN
      RETURN
C
C *** SUCCESSFUL ACCESS
40    FQADR = ADR*42 + J - 1
      CALL DPR (IWHDR,FQADR,IBUF,256.)
      IWNAM = IWN
      DO (J=1,12)
      .  IF (WLNAM(J).NE.WLDES(J)) GO TO 45
      ...FIN
      RETURN
45    FQADR = -1.
      WRITE(5,545) WLDES,WLNAM
545   FORMAT(' DISC NAME ',12A1,' DOES NOT MATCH INPUT NAME ',
     112A1)
      RETURN
      END
```

(FLECS VERSION 22.46)

TMPGEN

```
TMPGEN.CMD - TASK BUILD COMMAND

DP1:TMPGEN=DP1:TMPGEN,DP1:[1,1]BNWLIB.OLB/LB
/
MAXBUF=1024
ACTFIL=6
UNITS=7
ASG=DP:7,DP1:1,TI:6,LP:5
/

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          ----------------------------------------

C ***************  DP1:[220,3]TMPGEN.FLX  ***************
C
C
C  PROGRAM ID: GEN-11-WEL-0
C
C  PROGRAM DESCRIPTION:
C     THIS PROGRAM IS DESIGNED TO READ DATA FROM THE RAW WELL TEMPERATURE
C     DATA FILE TEMPER.FOR AND PACK THE DATA IN A RANDOM ACCESS
C     FILE SO THAT IT CAN BE ACCESSED BY THE CIRIMS ROUTINES. THE RANDOM
C     ACCESS FORMAT FILE CREATED IS CALLED  "FRMTTMP" .
C     APPROPRIATE ENTRIES ARE ALSO MADE IN THE "WELLHDR"  FILE.
C
C  DATA FILES:
C       NAME                        LUN              TYPE            ACCESS
C
C       FILE Q---WELLHDR             1               RAN              R/W
C       FILE Q---WELLNAM             1               RAN              R
C       FILE Q---FRMTTMP             1               RAN              R/W
C       FILE Q---UPDATEHDR           1               RAN              R/W
C                TEMPER.FOR          7               FOR              R
C
C
C  LOADING SEQUENCE:
C
C     MCR>TKB @DP1:TMPGEN
C     MCR>INS DP1:TMPGEN
C
C
C  BATTELLE MEMORIAL INSTITUTE
C  PACIFIC NORTHWEST LABORATORIES
C  WATER & LAND RESOURCES DEPT.
C
C  AUTHOR(S):    SW AHLSTROM
C                DR FRIEDRICHS
C                SE WISE
C                DW DAMSCHEN
C                RS ARGO
C
C  DATE:         INITIAL VERSION MAY      1974
C                CURRENT VERSION MAY      1979
C
C
      BYTE TIM(8),DAT(9),WLDES,WNAME(12),NEWNAM(12),OLDNAM(12)
C
      LOGICAL EOF
C
      INTEGER*4 JUP(128)
C
      DIMENSION H(512),T(512),IBUF(256),IUP(256)
C
      COMMON/HDR/WLDES(12),IDUM1(12),IDBIT,ICBIT(2),IDUM(234),
     1 IWN,IWH
C
```

```
00054          EQUIVALENCE (IBUF(1),WLDES(1)), (IUP(1),JUP(1))
00055    C
00056          WRITE(6,600)
00057    600   FORMAT('$ENTER FILE Q DISC UNIT NUMBER (A2,I1) >')
00058          READ(6,601) IDISC,IUNIT
00059    601   FORMAT(A2,I1)
00060    C
00061          CALL ASNLUN(1,IDISC,IUNIT)
00062    C
00063          CALL DPFILE (1,'WELLHDR',6000.,IWHDR)
00064          CALL DPFILE (1,'WELLNAM',101.,IWNAM)
00065          CALL DPFILE (1,'FRMTTMP',4000.,ITMP)
00066          CALL DPFILE (1,'UPDATEHDR',1.,IUHDR)
00067    C
00068          OPEN(UNIT=3,NAME='RENAMED.FOR',TYPE='OLD',READONLY)
00069          OPEN(UNIT=7,NAME='TEMPER.FOR',TYPE='OLD',READONLY)
00070    C
00071    C  ZERO BITMAP
00072    C
00073          HS=-1.
00074          DO (I=1,6000)
00075          .  HS=HS+1.
00076          .  CALL DPR(IWHDR,HS,IBUF,256.)
00077          .  CALL SFLD(10,1,0,IDBIT)
00078          .  CALL DPW(IWHDR,HS,IBUF,256.)
00079          ...FIN
00080    C
00081    C
00082          WRITE(5,500)
00083    500   FORMAT(1H1,' WELL TEMPERATURE RANDOM ACCESS FILE GENERATION'//)
00084    C
00085          CALL DATE(DAT)
00086          CALL TIME(TIM)
00087    C
00088          WRITE(5,5000) TIM,DAT
00089    5000  FORMAT(6X,'TIME= ',8A1,'    DATE= ',9A1,///)
00090    C
00091          WRITE(5,5001)
00092    5001  FORMAT('  WELL NXT FRE START  NUMBER INIT',8X,'WELL',8X,
00093         1'CASING   IDBIT'/'  NUMB  SECTOR ADRESS POINTS ALLOC',7X,
00094         2'NAME',7X,'ELEVATION'/68(1H-))
00095    C
00096          IHWLS=0
00097          IOK=0
00098          EOF = .FALSE.
00099    C
00100          DO (I=1,5) READ (7,700)
00101    C
00102          REPEAT UNTIL (EOF)
00103    C     .
00104    C *** READ TEMPERATURE DATA FROM THE BASE FILE ***
00105    C     .
00106    11    .  CONTINUE
00107    C     .
00108          .  IF (.NOT.(EOF))
00109          .  .  READ(7,700,END=50,ERR=50) NPTS,WNAME
```

```
00110   700     .  .  FORMAT(I5,5X,12A1)
00111   C       .  .
00112           .  .  IF (NPTS .NE. 0)
00113   C       .  .  .
00114           .  .  .  IWN = IWNAM
00115           .  .  .  IWH = IWHDR
00116   C       .  .  .
00117           .  .  .  CALL RTVHDO(WNAME,FQADR)
00118   C       .  .  .
00119   C       .  .  .
00120           .  .  .  READ(7,701,ERR=50) (H(K),K=1,NPTS)
00121   701     .  .  .  FORMAT(12F7.1)
00122   C       .  .  .
00123           .  .  .  READ(7,702) (T(K),K=1,NPTS)
00124   702     .  .  .  FORMAT(12F7.0)
00125   C       .  .  .
00126   C       .  .  .
00127    12     .  .  .  CONTINUE
00128   C       .  .  .
00129   C       .  .  .
00130           .  .  .  IF(FQADR.LT.0.0)
00131   C       .  .  .  .
00132           .  .  .  .  REWIND 3
00133   305     .  .  .  .  READ (3,304,END=306) NEWNAM,OLDNAM
00134   304     .  .  .  .  FORMAT (1X,12A1,5X,12A1)
00135           .  .  .  .  KADR = 1
00136   C       .  .  .  .
00137           .  .  .  .  DO (NAME=1,12)
00138           .  .  .  .  .  IF (WNAME(NAME) .NE. OLDNAM(NAME)) KADR = 0
00139           .  .  .  .  ...FIN
00140   C       .  .  .  .
00141           .  .  .  .  IF (KADR .EQ. 0) GO TO 305
00142   C       .  .  .  .
00143           .  .  .  .  DO (NAME=1,12)
00144           .  .  .  .  .  WNAME(NAME) = NEWNAM(NAME)
00145           .  .  .  .  ...FIN
00146   C       .  .  .  .
00147           .  .  .  .  IWN = IWNAM
00148           .  .  .  .  IWH = IWHDR
00149   C       .  .  .  .
00150           .  .  .  .  CALL RTVHDO (WNAME,FQADR)
00151   C       .  .  .  .
00152   306     .  .  .  .  CONTINUE
00153           .  .  .  .  IF (FQADR .LT. 0.0)
00154   C       .  .  .  .  .
00155   C       .  .  .  .  .
00156   C---HEADER DATA NOT FOUND
00157   C       .  .  .  .  .
00158           .  .  .  .  .  WRITE(5,501) WNAME
00159   501     .  .  .  .  .  FORMAT(' THIS WELL NAME NOT FOUND IN HEADER FILE = ',12A1)
00160   C       .  .  .  .  .
00161           .  .  .  .  ...FIN
00162           .  .  .  ...FIN
00163   C       .  .  .
00164           .  .  .  IF (FQADR .GE. 0)
00165   C       .  .  .  .
```

```
C---HEADER DATA FOUND
C
18          IHWLS=IHWLS+1
C
C----MAKE TEMPERATURE ENTRY IN MASTER INDEX FILE
C
            IBUF(50)=IDK
            IBUF(51)=NPTS
C
C***DETERMINE THE INITIAL SECTOR ALLOCATION
C
            INALOC=(NPTS+127)/128
C
            IF(INALOC .EQ. 0) INALOC=1
C
            IBUF(54)=INALOC
            IBUF(52)=0
            IBUF(53)=0
C
C----MAKE TEMPERATURE ENTRY IN BITMAP FILE
C
            IF(NPTS .GT. 0) CALL SFLD(10,1,1,IDBIT)
C
            CALL DPW(IWHDR,FQADR,IBUF,256,)
C
C
            IDKT=IDK
            IDK=IDK+INALOC*2
C
            WRITE(5,502) IHWLS,IDK,IDKT,NPTS,INALOC,WNAME,CASLEV,IDBIT
502         FORMAT(5I7,2X,12A1,2X,F10.2,O6)
C
C----WRITE THE DATA IN RANDOM ACCESS FORMAT
C
            IF(NPTS .NE. 0)
C
                STRT=IDKT
                WRDS=NPTS*2
C
                CALL DPW(ITMP,STRT,H,WRDS)
C
                STRT=STRT+INALOC
C
                CALL DPW(ITMP,STRT,T,WRDS)
C
            ...FIN
        ...FIN
    ...FIN
C
    ...FIN
C
    GO TO 51
C
50  EOF = .TRUE.
C
51  CONTINUE
```

```
          ...FIN
C
C
C***WRITE THE ADDRESS OF THE NEXT AVAILABLE SECTOR
C   TO THE UPDATE HEADER FILE
C
          CALL DPR(IUHDR,0.,IUP,256.)
          JUP(100)=IDK
          CALL DPW(IUHDR,0.,IUP,256.)
C
          STOP
          END
```

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```
C ****************  [220,200]RTVHDO.FLX  ******************
C
C     SUBROUTINE TO RETRIEVE A WELL HEADER BLOCK FROM THE
C  "CIRMIS" FILE-Q DISC FILE "WELLHDR".  WELL NAME IS
C  SUPPLIED BY THE USER AND IS THE FIRST PARAMETER IN
C  SUBROUTINE CALL, THE SECOND PARAMETER IS RETURNED BY THE
C  SUBROUTINE AND CONTAINS THE FILE-Q DISC ADDRESS OF THE
C  WELL HEADER OR A -1. IF NOT FOUND.
C     THE USER ALSO SUPPLIES THE POINTER NAMES OF THE FILE-Q
C  DISC FILES "WELLNAM" AND "WELLHDR" IN WORDS 256 & 257
C  RESPECTIVELY OF THE COMMON BLOCK.
C     THE WELL HEADER INFO IS RETURNED IN "COMMON/HDR" A
C  257 WORD BLOCK.
C
C
C  DATA FILES:
C
C          NAME                LUN          TYPE          ACCESS
C          ----                ---          ----          ------
C
C          WELLHDR(FILE-Q)      1           RAN             R
C          WELLNAM(FILE-Q)      1           RAN             R
C
C  D.R. FRIEDRICHS
C
C  DATE:    9-OCTOBER-1978
C
          SUBROUTINE RTVHDO (WLNAM,FQADR)
C
          BYTE BUF(512),WLNAM(12),WLDES
          INTEGER IBUF(256),JBUF(256)
C
          INTEGER*4 UPHDR
C
          COMMON/HDR/ WLDES(12),IDUM(249),IWNAM,IWHDR
C
          EQUIVALENCE (BUF(1),JBUF(1)),(IBUF(1),WLDES(1))
C
C
```

```
C
      FQADR = -1.
      IWN = IWNAM
C
      CONDITIONAL
      .  (WLNAM(1).EQ.' '. AND .WLNAM(2).EQ.'1') ISTRT = 0
      .  (WLNAM(2).EQ.'E') ISTRT = 5
      .  (WLNAM(2).EQ.'W') ISTRT = 30
      .  (WLNAM(2).EQ.'3') ISTRT = 60
      .  (WLNAM(2).EQ.'6') ISTRT = 65
      .  (WLNAM(1).EQ.'1'. AND .WLNAM(2).EQ.'1') ISTRT = 95
      .  (WLNAM(1).EQ.'3') ISTRT = 100
      .  (OTHERWISE) ISTRT = -1
      ...FIN
      IF (ISTRT.EQ.-1) GO TO 30
      ADR = ISTRT
10    CALL DPR (IWN,ADR,JBUF,256.)
      DO (J=1,42)
      .  III = (J-1)*12
      .  DO (I=1,12)
      .  .  IF (BUF(III+1).EQ.'9') GO TO 30
      .  .  IF (BUF(III+I).NE.WLNAM(I)) GO TO 20
      .  ...FIN
      .  GO TO 40
20    .  CONTINUE
      ...FIN
      ADR = ADR+1
      GO TO 10
30    IWNAM = IWN
      RETURN
C
C *** SUCCESSFUL ACCESS
40    FQADR = ADR*42 + J - 1
      CALL DPR (IWHDR,FQADR,IBUF,256.)
      IWNAM = IWN
      DO (J=1,12)
      .  IF (WLNAM(J).NE.WLDES(J)) GO TO 45
      ...FIN
      RETURN
45    FQADR = -1.
      WRITE(5,545) WLDES,WLNAM
545   FORMAT(' DISC NAME ',12A1,' DOES NOT MATCH INPUT NAME ',
     112A1)
      RETURN
      END
```

(FLECS VERSION 22.46)

FILE-Q HEADER DESCRIPTIONS

"WELLHDR" FILE Q

THIS IS A DIRECTORY LISTING OF THE ENTRIES CONTAINED IN THE MASTER INDEX FILE HEADER BLOCK FOR EACH INDIVIDUAL WELL CONTAINED IN THE CIRMIS DATA BASE.

LOCATION	NAME	DESCRIPTION	RECORD TYPE
IBUF(1)			
" (2)			
" (3)	WELDES(12)	WELL DESIGNATION.	
" (4)			
" (5)			
" (6)			
IBUF(7)			
	C(4)		
" (8)			
" (9)			
	YH	REAL COORDINATES.	
" (10)			
" (11)			GENERAL INFORMATION
	XH		
" (12)			
IBUF(13)			
	XCOORD		
" (14)		MODEL COORDINATES REFERENCED FROM BOTTOM - LEFT CORNER	
" (15)			
	YCOORD		
" (16)			
IBUF(17)			
	CASEL	CASING ELEVATION.	
" (18)			
IBUF(19)	IDBIT	BIT MAP OF ALL AVAILABLE DATA.	
" (20)	ICBIT(1)	BIT MAP OF CONTAMINANT 1-16 DATA.	
" (21)	ICBIT(2)	BIT MAP OF CONTAMINANT 17-32 DATA.	
IBUF(22)			
.			
.	FREE		
.			
" (29)			
********			
IBUF(30)	IDK	FILE Q DISC ADDRESS OF INITIAL ALLOCATION.	
" (31)	NPTS	NO. OF DATA ENTRIES IN INITIAL ALLOCATION.	
" (32)	IDKEX	FILE Q DISC ADDRESS OF EXTENDED ALLOCATION.	HISTORICAL WELL HYDROGRAPH RECORDS

LOCATION	NAME	DESCRIPTION	RECORD TYPE
" (33)	NPTEX	NO. OF DATA ENTRIES IN EXTENDED ALLOCATION.	
" (34)	INIDK	NO. OF DISC SECTORS IN INITIAL ALLOCATION.	
*********			
IBUF(35)	IDKNT	FILE Q DISC ADDRESS.	
" (36)	NSTRT	STARTING WORD.	
" (37)	NWORD	NO. OF WORDS.	WELL STRUCTURES
" (38)	FREE		
" (39)	"		
*********			
IBUF(40)	IBLK	FILE Q DISC ADDRESS.	
" (41)	NSTRT	STARTING WORD.	WELL LOG RECORDS
" (42)	NWRD	NO. OF WORDS.	
" (43)	FREE		
" (44)	"		
IBUF(45)	IDKNT	FILE Q DISC ADDRESS.	PHYSICAL PROPERTY RECORDS
" (46)	NCOUNT	NO. OF WORDS.	
" (47)	FREE		
" (48)	"		
" (49)	"		
*********			
IBUF(50)	IDKNT	FILE Q DISC ADDRESS OF INITIAL ALLOCATION.	
" (51)	NPTSIN	NO. OF DATA ENTRIES IN INITIAL ALLOCATION.	
" (52)	IDKEX	FILE Q DISC ADDRESS EXTENDED ALLOCATION.	HISTORICAL TEMPERATURE RECORDS
" (53)	NPTSEX	NO. OF DATA ENTRIES IN EXTENDED ALLOCATION.	
"(54)	INALOC	NO. OF DISC SECTORS IN INITIAL ALLOCATION.	
*********			

LOCATION	NAME	DESCRIPTION	RECORD TYPE
IBUF(55)	IDK	FILE Q DISC ADDRESS.	VTT SIMULATION DATA
" (56)	NPTS	NO. OF DATA ENTRIES.	
" (57)	FREE		
" (58)	"		
" (59)	"		
IBUF(61)	CTADR	FILE Q DISC ADDRESS OF CTMHDR	HISTORICAL CONTAMINATION RECORDS
*********			
IBUF(62)			
.	FREE		
.			
.			
" (213)			
IBUF(214)			
" (215)			
" (216)	PREWEL(12)	FORMER WELL DESIGNATION.	
" (217)			
" (218)			
" (219)			
IBUF(220)			
.	FORM(6)	FORMANS NAME.	
" (231)			
IBUF(232)			
.	DRLR(6)	DRILLERS NAME.	
" (243)			
IBUF(244)			
.	FREE		
.			
.			
" (250)			

IBUF(251)	IDISC	DISC NAME (I.E. DB OR DP)	USED BY MONITORS TO TRANSFER DEVICE AND DISC ADDRESSES TO SERVICE ROUTINES
IBUF(252)	IUNIT	DISC UNIT (I.E. 0,1 OR 2)	
IBUF(253)	FREE		.
IBUF(254)	FREE		.
IBUF(255)	IWNAM	"WELLNAM" POINTER	.
IBUF(256)	IWHDR	"WELLHDR" POINTER	.

"UPDATEHDR" FILE Q

THIS IS A DIRECTORY LISTING OF THE ENTRIES ENTERED INTO THE MASTER UPDATEHDR FILE FOR THE HANFORD WELLS DATA.

** NOTE ** IUP IS INTEGER*4.

IUP	NAME	FUNCTION	PROGRAM
(1)	FRESEC	ADDRESS OF NEXT FREE HYDROGRAPH SECTOR	WELL HYDROGRAPH
(2-9)	FREE		
********	******	**********	**********
(10)	FRECTM	ADDRESS OF NEXT FREE SECTOR-CTMHDR	
(11)	FRESC(1)	ADDRESS OF NEXT FREE SECTOR-CONTAMINANT #1	
.		.	CONTAMINATION RECORDS
.		.	
.		.	
(42)	FRESC(32)	ADDRESS OF NEXT FREE SECTOR-CONTAMINANT #32	
(43-46)	FRESC(33-36)	RESERVED FOR 4 MORE CONTAMINANTS.	
********	******	**********	**********
(47-99)	FREE		
********	******	**********	**********
(100)	FRESCT	ADDRESS OF NEXT FREE TEMPERATURE SECTOR	TEMPERATURE RECORDS
********	******	**********	**********
(101)	FRESCP	ADDRESS OF NEXT FREE WELL LOG SECTOR	WELL LOG RECORDS
********	******	**********	**********
(102-128)	FREE		

"CTMHDR" FILE Q

THIS IS A DIRECTORY LISTING OF THE ENTRIES ENTERED INTO THE CONTAMINANT INDEX FILE FOR THE HANFORD WELLS DATA.
** NOTE ** CTIADR AND CTXADR ARE INTEGER*4 ARRAYS.

LOCATION	NAME	DESCRIPTION
KBUF(1-2)	CTIADR(1)	FILE Q DISC ADDRESS OF INITIAL ALPHA ALLOCATION;
.		.
.		.
.		.
" (63-64)	CTIADR(32)	FILE Q DISC ADDRESS OF INITIAL LOW ALPHA ALLOCATION.
" (65-72)	CTIADR(33-36)	RESERVED FOR FILE Q DISC ADDRESS OF 4 MORE CONTAMINANTS.

****

KBUF(73-74)	CTXADR(1)	FILE Q DISC ADDRESS OF EXTENDED ALPHA ALLOCATION.
.		.
.		.
.		.
" (135-136)	CTXADR(32)	FILE Q DISC ADDRESS OF EXTENDED LOW ALPHA ALLOCATION.
" (137-144)	CTXADR(33-36)	RESERVED FOR FILE Q DISC ADDRESS OF 4 MORE CONTAMINANTS.

****

KBUF(145)	NPTS(1)	NO. OF TOTAL ALPHA ENTRIES.
" (146)	NPSEX(1)	NO. OF TOTAL ALPHA ENTRIES IN EXTENDED ALLOCATION.
" (147)	INDKA(1)	NO. OF DISC SECTORS IN EXTENDED ALLOCATION.
.		.
.		.
KBUF(238)	NPTS(32)	NO. OF TOTAL LOW ALPHA ENTRIES.
" (239)	NPSEX(32)	NO. OF TOTAL ALPHA ENTRIES IN EXTENDED ALLOCATION.
" (240)	INDKA(32)	NO. OF DISC SECTORS IN EXTENDED ALLOCATION.
KBUF(247-252)		WELL DESIGNATION

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