4.8 Data Retrieve/Write

4.8.1   Retrieve ADAPS Data in RDB Format (rdb_out)
by Addis M. Miller, III

The RDB_OUT program allows the user to retrieve rating tables, daily-values, unit-values, measurements, shifts, data corrections, and peak flow information from ADAPS in RDB format, which then can be used in other programs such as plotting routines. RDB is a simple format of arranging tabular data. The RDB tables consist of two parts: the NWIS comment lines which describe the NWIS record retrieved and the actual data retrieved including the data column headers. For a description of the RDB format and complete descriptions of the RDB tables available from NWIS with examples, refer to ***Section 6.4 RDB Format***.

To access RDB_OUT, choose the RT sub-menu and the option "Retrieve ADAPS data in RDB Format." The user startup screen at this point only presents the user File Path and the Database which may be changed. A <CR> at the startup screen then presents a request to the user to type in a file name for the RDB table that will be retrieved.

 As each RDB table is created using the different options as explained below, the user is sent back to the RT sub-menu so that the sequence of choosing the Retrieval to RDB format, approving the user File Path and Database screen, and naming an RDB file must be done. After the RDB file is named, the following menu then appears:

RDB retrieval options

1 - NWRT2RDB - Retrieval of ratings
2 - NWRT2RDB - Retrieval of expanded ratings
3 - NWTS2RDB - Retrieval of UVs, DVs, measurements,
         peak flows, corrections, or shifts
4 - NWTS2RDB - Retrieval of UVs, DVs, measurements, peak flows,
         corrections, or shifts with the -c option enabled

Select the desired option:

Option 1, NWRT2RDB - Retrieval of ratings

This option provides an RDB table of the rating table points stored in NWIS. Selection of this option produces another user startup screen where the station and data descriptor, DD, can be selected. The DD selected must be the output DD such as discharge in a stage/discharge rating as ratings are tied to the output DD. Next appears a rating selection list of the available stored ratings with the rating currently in use marked with an asterisk. After the rating is chosen, the RDB table is written and the user is sent back

---

to the RT sub-menu screen. The user must go to the path name location that had been designated to obtain the RDB table under the file name given earlier. An example of an RDB retrieval for a stage/discharge rating is shown below:

```
# //FILE TYPE="NWIS RATING"
# //DATABASE NUMBER=   DESCRIPTION=""
# //STATION AGENCY="USGS " NUMBER="01010000      "
TIME_ZONE="EST" DST_FLAG=Y
# //STATION NAME="St. John River at Ninemile Bridge, Maine"
# //DD NUMBER="   1" LABEL="DISCHARGE (well-DCP), in CFS"
# //PARAMETER CODE=""
# //RATING ID=" 5.0" TYPE="STGQ" NAME="stage-discharge"
# //RATING REMARKS="New low end and refinement of high end of rating 4"
# //RATING EXPANSION="logarithmic"
# //RATING_INDEP ROUNDING="0223456782" PARAMETER="GAGE
HEIGHT in (FEET)"
# //RATING_DEP ROUNDING="0222233332" PARAMETER="DISCHARGE in
CFS"
# //RATING_DATETIME BEGIN=19931001010000 BZONE=EDT
END=23821230190000 EZONE=EST
INDEP   DEP    STOR
16N    16N    1S
0.50   80     *
0.62   110    *
0.76   150    *
0.82   170    *
0.92   205    *
0.98   230    *
1.20   330     *
1.35   410     *
1.65   616     *
1.90   824     *
2.09   1000   *
2.55   1550    *
3.20   2550    *
3.60   3300    *
4.40   5200    *
4.90   6650    *
5.60   8960    *
6.00   10400   *
```

Option 2, NWRT2RDB - Retrieval of expanded ratings

This option provides an RDB table of the rating table in expanded form, for every hundredth foot of stage in the case of a stage/discharge rating. Each point stored in NWIS is identified with an asterisk.

Option 3, NWTS2RDB - Retrieval of UVs, DVs, measurements, peak flows, corrections, or shifts

This option is used to produce RDB tables of time-series data from the NWIS database. Selecting this option displays the following menu:

```
Valid data types are:
   DV – Daily-Values
   UV – Unit-Values
   MS - Discharge Measurements
   PK - Peak Flows
   DC - Data Corrections
   SV - Variable Shift
Enter desired data type:
```

Daily Values

Choosing the DV – Daily-Values option presents a user startup screen that allows the user to choose the station, DD, statistic code, and dates for retrieval. A <CR> produces an RDB table at the pathname designated and the user is put back to the RT sub-menu. The RDB table contains the NWIS comments which document what data is retrieved, the header for the data table which includes the names of the data columns in the first line and the data definitions (column width and a letter designation as to whether the data is a date, number, or other string of variables) in the second line. The data starts in the third line and will contain the date, the data value, precision (number of significant places), possibly a remarks code, type of data (computed or final), and a quality assurance code as to whether the data is labeled "working," "in review," or "approved."

Unit Values

Choosing the UV– Unit-Values option brings up a choice of unit-values type:

> **Unit-values type (M, N, E, R, S, or C):**
>   **The choices are: M= measured**
>   **N= raw measured**
>   **E= edited**
>   **R= data corrections**
>   **S= shifts**
>   **C= computed**

After the unit-values type is selected, the user startup screen appears which allows the user to select station, DD, and dates or even to change file path, database, or agency if desired. After the information is correct on the user startup menu, a <CR> may produce a screen that shows a list to choose from of the stored unit-values for the type selected or may indicate that the program found only one available UV data set for the DD and type selected as shown below:

> **GAGE HEIGHT (well-DCP), in (FEET)**
> **From 01/01/2001 to 01/10/2001**
>
> **1. Measured Unit-Values: transport = UNS, sensor = unspecified**
>
> **Only Available Measured UV type has been selected.**

A <CR> here immediately creates the RDB table at the file path and file name designated and the user is sent back to the RT sub-menu. The user must be aware that all unit-values types are not available for each DD. For instance, measured unit-values would not be available for a discharge DD at a station where only gage height is recorded at the site and unit-values of shifts would only be available for a discharge DD. The program alerts the user if no unit-values are found as indicated:

** No Measured Unit-Values data found **

Discharge measurements

If the <u>MS − Discharge Measurements</u> option is picked, the first screen gives the user the following choices:

> **Measurement file retrieval type −**
>   **Crest Stage Gage measurements (C),**
>   **Discharge Measurements (M),**
>   **Gage Inspections (G), or**
>   **Both Measurements and Inspections (B) -**
>   **Please enter C, M, G, or B:**

Once the choice of measurement file type is made, an RDB table is written and the user is sent back to the RT sub-menu. The RDB table produced from this retrieval contains the NWIS comment information at the beginning of the table defining what the table contains, such as the station number and name, and the time period requested. The data portion of the table contains all the information stored in the NWIS measurement file for the time period selected and is similar to a measurement summary that would be retrieved from ADAPS using the Display Measurements function.

Peak flows

If the PK- Peak flows option is chosen, the user first has to choose the type of peaks from the following menu:

> **Peak flow file retrieval type -**
> **Full peaks only (F),**
> **Partial peaks only (P),**
> **Both Full and Partial peaks (B) -**
> **Please enter F, P, or B:**

After the choice of peak type is made, the startup menu appears where the user selects the station and time period. When the record is correct, a <CR> creates the RDB table at the file path and file name provided and the user is sent back to the RT sub-menu.

The RDB table contains the NWIS comments defining the record such as station name and number and the time period selected. The data portion of the table contains information stored in the peak flow file. This information includes peak discharge date and time, peak discharge, peak discharge qualification codes, gage height of peak discharge and qualification codes, maximum gage height and date if different than the gage height of the peak discharge with gage height qualification codes. If the recorded peak is the highest since a known year prior to the period of gage record, that year is listed.

Data corrections

If the DC- Data Corrections option is chosen, the user startup screen appears where the user can select a station, DD, and the time period for retrieval of data corrections. The data corrections must be retrieved using the input DD in NWIS, such as gage height. After the user startup menu is correct, a <CR> creates the RDB table of data corrections at the file path and file name provided by the user and the user is sent back to the RT sub-menu.

The RDB table contains the NWIS comments at the beginning of the table defining the record retrieved. The data portion of the table includes the starting date, time, and time

zone code of corrections, the ending date, time, and time zone code if available, the input DD value and corresponding data correction. It is possible in ADAPS to use from one to three data correction values in a variable-correction diagram for each of three different types of data corrections, as explained in other sections of this document. The RDB table may contain up to three types of corrections (gage height corrections, datum corrections from levels, and other corrections), which would be designated as sets 1 through 3. Each set could have up to three pairs of input parameter and corrections, which would be identified as sequence numbers 1 through 3. Each data correction will be on a separate line identified by set and sequence number.

Variable shift

If the SV – Variable shift option is selected, a user startup menu appears allowing the user to select the station, DD, and time period to retrieve shifts. The output DD, discharge, must be selected because shifts are tied to individual ratings and ratings are tied to the output DD, discharge in this instance. Shifts are only used with stage-discharge ratings and are applied to the stage. When the user startup menu is correct, a <CR> will create the RDB table and send the user back to the RT sub-menu.

The RDB table contains the NWIS comments at the beginning of the table defining the record retrieved. The label of the DD selected will show "discharge," but the parameter identified as the independent variable to which the shift is applied is "gage height." The data portion of the table includes three lines of data for each shift diagram retrieved from the database, which are the three points of the variable-shift diagram. Each line contains the rating-type code which is stage-discharge (STGQ), the rating number, sequence number (1 through 3 for the three points), begin date with time and time zone code, end date with time and time zone code, if used, and the gage-height/shift pair constituting each point of the variable-shift diagram.

Option 4 - NWTS2RDB - Retrieval of UVs, DVs, measurements, peak flows, corrections, or shifts with the -c option enabled

This option creates the same RDB tables as described for Option 3 except when using the –c option and daily-values are being output, only computed daily-values will be retrieved. If unit-values are being output, date and time are combined into a single datetime column. This option is ignored if the datatype is not "dv" or "uv."

4.8.2 Retrieve/Write Daily-Values Data (RETR_DV)
by David L. Kresch

The RETR_DV program allows the user to retrieve and write daily-values data as machine-readable output in the following formats:

- 80-column Types 2 and 3-card formats
- 80-column Types Z, H, N, 2, and 3-card formats

To access the RETR_DV program, select the RT sub-menu from the main ADAPS menu, and then select the "Retrieve/Write Daily-Values Data" option.

Introduction

This program retrieves daily-values data and variables from the respective ADAPS Daily-Values, Site, Data Descriptor, Parameter Code, and Statistic Code files, and subsequently uses this information to create machine-readable records in an output file.

The machine-readable records that are created are primarily for use by "application" or postprocessor programs, which the user must develop or already have available.

Program Operation and Options

Program RETR_DV initially calls the ADAPS startup program in which the user specifies the station, data descriptor, and year(s) to be retrieved. The type of year and period of record shown on the startup menu can be modified by entering YR. The type of year can be either a water year or a user-defined year defined by entering a starting month. The period of record to be retrieved is indicated by entering starting and ending years. A period-of-record retrieval is specified by entering a <CR> for both the starting and ending years.

Next, the program queries the user for the output file name as shown below:

```
Enter output file name (<CR> = DV.RETR.020424.145901):
```

If no file name is given, a default name is supplied by the program by entering a <CR>. The default name is of the form:

```
DV.RETR.yymmdd.hhmmss
where
yymmdd = year, month, day, and
hhmmss = hour, minute, second.
```

This output file will be written into the user's ADAPS origin directory after the desired data have been retrieved.

After the output file name is entered, the program then displays the following menu from which the user selects the desired output file format:

```
Available output formats:

 D - DV Card output - Type 2 and 3 cards only
 N - DV/Header Card output - Type Z, H, N, 2, and 3 cards


 Enter your choice (D or N [CR]=D:
```

The output file formats are described below:

1. **<u>DV Card output</u>**. This option outputs 80-column Types 2 and 3-cards. All data are in a character format. The Type-2 card contains site/data identification information, and the Type-3 cards contain year/month/sequence information, along with the daily values.
2. **<u>DV/Header Card output</u>**. This option, which is the same as the DV Card output option except that it also includes header cards, outputs 80-column Types Z, H, N, 2, and 3-cards. All data are in a character format. The Type-Z card contains the Agency Code for the station, and the H and N-cards contain selected Site File information.

The record layouts for these formats are discussed in the next section. The RETR_DV program output file records are created as formatted character records.

The program continues by querying for a statistic code. All other needed retrieval information was specified via the initial startup operation in the RETR_DV program. It is the responsibility of the user to know what statistic code(s) are applicable to stored Daily-Values File data. Statistic Code 3 (mean) is the most common one used. Others commonly used are 1 (maximum), 2 (minimum), 6 (sum), and 30000 plus the hour (in military time), e.g., 32400 to designate a midnight reading. Users may specify up to 10 statistic codes to be used.

Finally, the program queries whether the user wants to retrieve only records flagged as FINAL data. If not (the default), both FINAL and PROVISIONAL data are retrieved and output.

The program then continues by displaying file processing messages, creating temporary control files, which are later deleted, and retrieving the selected records. The output file is created in the user's ADAPS origin directory. Additional retrievals can be generated before exiting the RETR_DV program. Each additional retrieval creates a separate and independent output file. Created files may be empty if no data were retrieved.

<u>Descriptions of Output Daily-Values Records</u>

Descriptions for each type of output record created from retrieved daily-values records are given in table 1. In the table, TYPE refers to the data type (method of representation in the computer) of the variables. "C5" means that the variable is stored as a character variable that is five characters (bytes) long, and SUM (the end-column number) is the running total of bytes or characters in the record. For character variables in the records, a field is usually left blank if no data are available. Descriptions of selected fields are footnoted in the following tables:

Table 1: Retrieved 80-column daily-values records

- **TYPE Z**

VARIABLE	TYPE	SUM
Record Type Z	C1	1
Reserved	C31	32
Agency Code	C5	37
Reserved	C43	80

- **TYPE H**

VARIABLE	TYPE	SUM
Record Type H	C1	1
Station Identifier	C15	16
Latitude	C6	22
Longitude	C7	29
Sequence No.	C2	31
State Code	C2	33
District Code	C2	35
County Code	C3	38
Site Code	C2	40
Hydrologic Unit Code	C8	48
Total Drainage Area	C7	55
Contributing Drainage Area	C7	62
Gage Datum (elevation)	C8	70
Well Depth	C9	79
Reserved	C1	80

- **TYPE N**

VARIABLE	TYPE	SUM
Record Type N	C1	1
Station Identifier	C15	16
Station Name	C48	64
Geologic Unit Code	C8	72
Aquifer Type	C1	73
Reserved	C7	80

- **TYPE 2**

VARIABLE	TYPE	SUM
Record Type 2	C1	1
Station Identifier	C15	16
Cross Section Location	C6	22
Depth Locator	C6	28
Parameter Code	C5	33
Statistic Code	C5	38
Reserved	C16	54
Always ENT	C3	57
Reserved	C23	80

- **TYPE 3**

VARIABLE	TYPE	SUM
Record Type 3	C1	1
Station Identifier	C15	16
Calendar Year Date	C4	20
Month Designation **(a)**	C2	22
Card Sequence Number **(b)**	C2	24
Daily Values **(c)**	C56	80

_____

(a) Month designation. Use 01 thru 12 to represent January thru December.
(b) Card sequence number. Two-digit code representing the portion of the month that
the daily values represent.

Code	Days represented
01	1-8
02	9-16
03	7-24
04	25-31

(c) Daily-values. Eight 7-column fields that contain the daily-values data for the days in
the portion of the month indicated by the card sequence number two-digit code. Blank
fields indicate no data are available for that day.

4.8.3 General Retrieval of Time-Series Data (OUTWAT)

The OUTWAT program allows the user to retrieve time-series and measurement file
data. To access the OUTWAT program, select the RT sub-menu from the main ADAPS
menu, and then select the "Retrieve DV/UV/Measurement/Shift/Rating/Site Data" option.

Introduction

The OUTWAT program provides the ability to retrieve time-series data and other data
from ADAPS. The OUTWAT program is menu-based, similar to the PLOTWAT
program (*Section 4.7.4*), which allows the user to set up retrieval parameters for a large
number of stations or time-series, and to retrieve the data in a variety of formats. By
default, up to 256 stations or time-series can be specified in one retrieval.

Program Capabilities

The OUTWAT program can be used to retrieve the following:

- Time-series data (which include Unit-/Daily Values and Measurement/Inspection
  data),
- Measurement records from database (complete data for each station),
- Site File records,
- Shift records
- Rating data

Data can be retrieved and output in the following formats:

- Type-2 and B-cards (time-series data only),
- P-STAT system files (P-STAT, Incorporated, 1986),
- 20/20 data import files (Access Technology, Inc., 1985),

_____

- Data Interchange Format (DIF) files (Software Arts, Inc.,1980), for use with proprietary software such as Lotus 1-2-3, and DBase, and
- Flat (simple, free-format) files.
- RDB files

For time-series data, the OUTWAT program provides options for the suppression of missing-value data and for compressing repeated cases.

The OUTWAT program uses a number of subprograms (BOUTWAT, BOUTMS, BOUTRATE, BOUTSITE, and BOUTSV) to retrieve ADAPS data. These programs can also be used by user-written UNIX shell-scripts. P-STAT macros are available for using these subprograms to access ADAPS data from within P-STAT.

Program Operation

The OUTWAT program initially displays the following main retrieval options menu:

```
****************************************
*  OUTWAT Main Retrieval Options Menu  *
****************************************

  R) Specify or modify time-series retrieval parameters,
  L) Load previously saved OUTWAT or PLOTWAT control file,
  C) Clear current parameters (reset database),
  Q) Quit OUTWAT.

Enter your selection:
```

The user should select option R to either create a new file of time-series parameters to retrieve or to modify an existing parameter file. The user should select option L to use the parameters saved in a previously created file.

If option R is selected, the ADAPS multiple retrieval menu is displayed. The user should begin by selecting option A)dd, which displays a menu from which the user selects the type of data (daily-value, unit-value, or measurement/CSG) that is desired to retrieve. Once the type of data has been selected, the ADAPS Startup menu is displayed to identify the station (ST) for which data values are to be retrieved. The user may also select the desired data descriptor (DD) and statistic code (SC) from this menu for daily-value retrievals and the desired data descriptor for unit-value retrievals. The third and final menu displayed for each type of data selected is used to select desired retrieval options.

The following retrieval options menu is displayed for daily values retrievals:

```
Daily-Value Retrieval Options:

  S) Daily-value statistic code: 00003
  F) Retrieve data or data flag: all data
```

The user can enter a daily-values statistic code by selecting S and can limit the retrieval to data that is flagged a certain way by selecting F, which displays the following choices:

```
Select the data or data flag preference:

  A) all data                 N) non-flagged data
  W) write-protected data     F) flag: 1=W,2=E,3=<,4=>
  E) estimated data           P) provisional data flag
  <) less than data           R) rounding code
  >) greater than data

Enter selection:
```

The following retrieval options menu is displayed for unit-values retrievals:

```
Unit-Value Retrieval Options:

  T) Type of unit-value: computed
  M) Method of detecting missing data: none

  F) Retrieve data or data flag: all data
```

The user can select (T) to toggle between edited and computed unit-values. Option (M) allows the user to select a method for detecting missing data. The choices displayed are:

```
Select the method for detecting missing values:

                 N) none
                 D) time change
                 P) pattern
```

The user can limit unit-value retrievals to data that is flagged a certain way by selecting retrieval option (F), which displays the following choices:

```
Select the data or data flag preference:

  A) all data                 F) flag: 1=W,2=E,3=<,4=>
  W) write-protected data     P) provisional data flag
  E) estimated data           R) rounding code
  <) less than data           1) screening code
  >) greater than data        2) source code
  N) non-flagged data
```

After the desired retrieval options are selected, the variable to be retrieved is given a default name or a name supplied by the user. The user is then returned to the multiple retrieval menu from which he may either add more time-series parameters or quit.

The following expanded main retrieval options menu is displayed after the user exits the multiple retrieval menu:

```
*****************************************
*   OUTWAT Main Retrieval Options Menu  *
*****************************************

  R) Specify or modify time-series retrieval parameters,
  L) Load previously saved OUTWAT or PLOTWAT control file,
  I) Type of retrieval: Time-series (UV,DV,MS,ST) data
  T) The time step is daily.
  D) Dates retrieved are: 00-00-0000 to 00-00-0000
  M) If any data is missing: Retain ALL observations
  K) Do not compress repeated cases
  F) Output file type: FLAT
  N) Output file name:
  S) Create an OUTWAT control file,
  P) Put out data,
  J) Submit a batch job to put out data,
  C) Clear current parameters (reset database),
  Q) Quit OUTWAT.


Enter your selection:
```

When retrieving unit-values data, the user must remember to set the time step (option T) equal to the time interval at which the data was collected to ensure that all of the recorded unit-values will be retrieved. After the user selects his or her desired options and enters a name (option N) for the output file, option P is used to retrieve the data and place it into the output file. Having specified retrieval information during an OUTWAT session, the user can use option S to save this information to an outwat.control.file for later retrievals.

The following menu lists the types of output files available:

```
Available file types:

   PS) P-STAT SYSTEM FILE
   DI) DIF FILE
   DV) DIF FILE WITH "LABEL" HEAD ITEMS
   FL) FLAT FILE
   SC) S2020 FILE
   RD) RDB FILE
   BC) BCARDS, WATSTORE UNIT VALUE "B" CARDS

Select a file type (default is FLAT):
```

Description of BCARDS (Type-B) Output of Unit-Values Records

Extensive use is made of BCARD output files created from retrieved unit-values. One Type-2 card and a series of Type-B cards are created for each time-series retrieved. The contents and format of Type-2 cards are described in ***Section 4.8.2***. The contents and format of Type-B cards (80 bytes each) are described in table 5.

Table 5: Retrieved 80-column unit-values records

```
-------------------------------------------------------------
   TYPE-B
        Variable                                Type   Sum
        Record Type B                           C1     1
        Station Identifier                      C15    16
        Date:
           Calendar Year                        C4     20
           Month Number                         C2     22
           Day Number                           C2     24
        Time of First Reading:
           Hour (24-hour clock)                 C2     26
           Minutes                              C2     28
           Seconds                              C2     30
        Number of Readings per Day (e.g., 288,  C5     35
        96)
        Reserved                                C3     38
        Unit Values(a)                          C42    80
-------------------------------------------------------------
```

(a) Unit-values. Six seven-column fields that contain the unit-values for successive time increments for the designated date and time. Blank fields indicate no data are available for that day and time.

Unit-values are sometimes stored in ADAPS at unequal time intervals due to time corrections or missing data. The number of readings per day (fixed time interval) to output data is specified by the user in the OUTWAT program; therefore the user must be aware that at times unit-values may be interpolated (estimated) values. These data are not flagged in any way as being interpolated. The OUTWAT program provides the option of retrieving data using the variable time step actually stored in the file. If this option is used, then B-cards will have only one unit-value per card.

4.8.4 Interpolate Unit-Values at Specified Times
by James F. Cornwall

The UV_INTERP program is used to produce interpolated unit-values at user-specified times. The program uses the standard ADAPS startup screens to obtain user information such as agency, station number, and DD number. It queries the user for date, time, and interpolation type (linear or log), and then interpolates a unit-value (of type "Computed") at the specified date/time. This program was originally written to support a sediment program that required an interpolated discharge at the time a sediment sample was taken.

Program Operation

The program first uses the standard ADAPS startup menu to select the database, agency, station, and DD. After selecting these parameters, the user enters <CR> to continue. The program then queries the user for a date and time. An interpolated unit-value is then calculated by the program from the unit-values before and after the specified time, and the following screen is displayed:
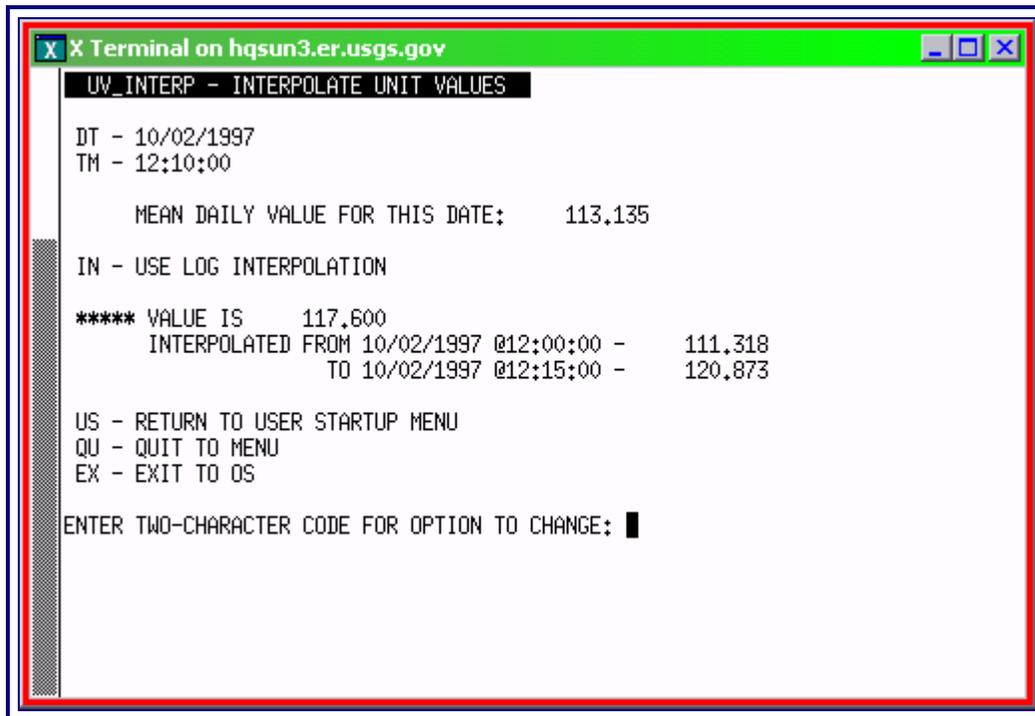
```
 X Terminal on hqsun3.er.usgs.gov                              _ □ X

   UV_INTERP - INTERPOLATE UNIT VALUES

 DT - 10/02/1997
 TM - 12:10:00

       MEAN DAILY VALUE FOR THIS DATE:     113.135

 IN - USE LOG INTERPOLATION

 ***** VALUE IS    117.600
         INTERPOLATED FROM 10/02/1997 @12:00:00 -    111.318
                        TO 10/02/1997 @12:15:00 -    120.873

 US - RETURN TO USER STARTUP MENU
 QU - QUIT TO MENU
 EX - EXIT TO OS

 ENTER TWO-CHARACTER CODE FOR OPTION TO CHANGE: █
```

The following are the actions taken by the various menu options:

DT - Change the date. The user is also prompted for a new time.

TM - Change the time.

IN - Flip the interpolation type from log to linear and back. The initial interpolation type is log for discharge, linear for other parameters.

US - Return to the standard ADAPS startup menu to change database, agency, station, DD, and so forth.

QU and **EX** - Standard ADAPS actions.

4.8.5 Retrieve Data Quality-Assurance Summary Report

The DATA_QA_SUMMARY program generates a report which lists information on the Unit-Values ("Computed" type) which have exceeded the UV screening thresholds specified for the selected DD(s). The program uses the standard ADAPS startup screens to obtain user information such as agency, station and DD number (or ADAPS Group), and a date range. It then scans the data to determine the number of exceptions in the specified period where the UV screening threshold values (as defined for each DD in the THRESHOLD_EDIT program) have been exceeded and displays the report to the screen or a file. The program is accessible to ADAPS users with database access levels of "USER" or higher.

Program Operation

The program first uses the standard ADAPS startup menu to select the output parameters, database, agency, station, DD, date range, and mode of operation. After selecting these parameters, the user enters <CR> to continue. The date range specified must be no greater than 365 days. Mode of operation may be either Interactive or Batch. An ADAPS Group file may be specified for the Station.
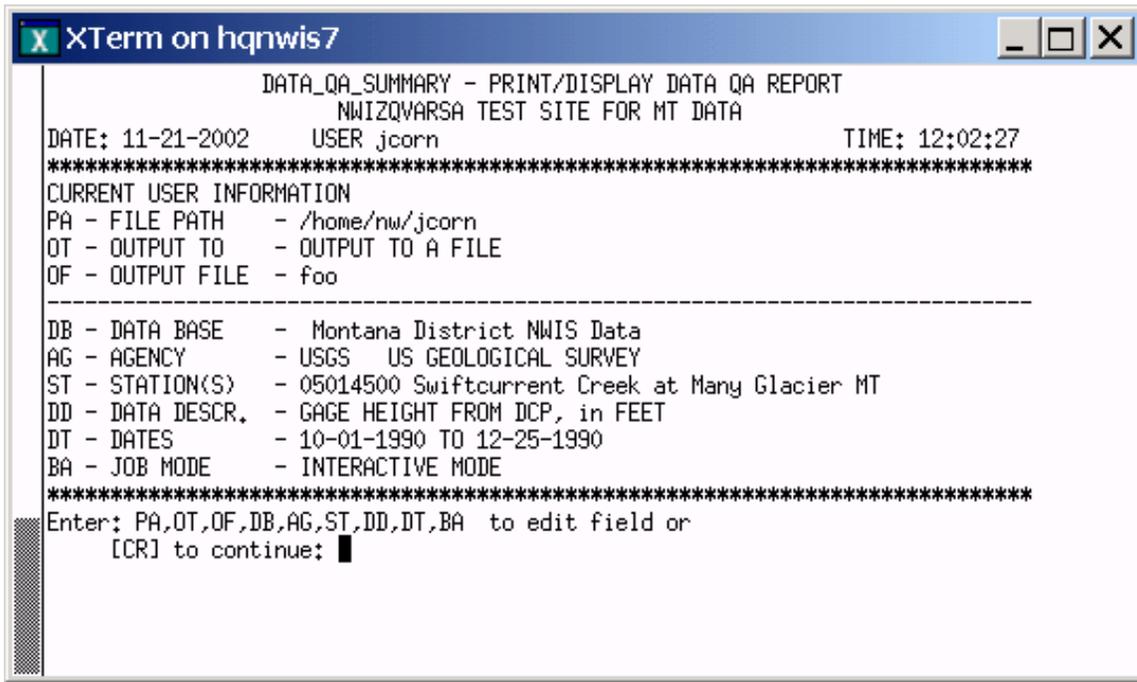
```
X XTerm on hqnwis7                                            _ □ ×
          DATA_QA_SUMMARY - PRINT/DISPLAY DATA QA REPORT
                 NWIZQVARSA TEST SITE FOR MT DATA
DATE: 11-21-2002     USER jcorn                      TIME: 12:02:27
*******************************************************************
CURRENT USER INFORMATION
PA - FILE PATH     - /home/nw/jcorn
OT - OUTPUT TO     - OUTPUT TO A FILE
OF - OUTPUT FILE   - foo
-------------------------------------------------------------------
DB - DATA BASE     -  Montana District NWIS Data
AG - AGENCY        - USGS    US GEOLOGICAL SURVEY
ST - STATION(S)    - 05014500 Swiftcurrent Creek at Many Glacier MT
DD - DATA DESCR.   - GAGE HEIGHT FROM DCP, in FEET
DT - DATES         - 10-01-1990 TO 12-25-1990
BA - JOB MODE      - INTERACTIVE MODE
*******************************************************************
Enter: PA,OT,OF,DB,AG,ST,DD,DT,BA  to edit field or
      [CR] to continue: █
```

The program then scans the database and generates a report as shown below, which lists the number of database records found for the specified station/DD combination(s) in the specified date range which have the flags set to indicate that they have exceeded the thresholds.

The columns under the "Number of Data Points" heading indicate the actual number of unit-values with the flags set for each condition. In this example, 3 Computed UVs have been flagged as exceeding the "Very High" threshold, 5 as exceeding the "High," and 2 as exceeding the "Low" threshold. The columns under the "Number of Minutes" heading indicate an estimate of time instead.

The "Missing data" column is the number of minutes during the specified time period when no unit-values could be found. This is estimated by comparing the times between each pair of subsequent values. Whenever the time between values exceeds the DVABORT limit, the time span is added to this number for display. This number should be considered only an estimate, as any missing unit-values will not be detected if the gap left does not exceed the DVABORT limit.

The "Same data" column is computed very much like the "Missing data." For this check, the actual rounded unit-values are compared rather than the time difference between subsequent UVs. When a rounded value is identical to the previous value, the time between them is added to this number for display. It too should be considered an estimate. If the values remain the same for a period of time, then fluctuate, the counter will be saved until the next time two consecutive values match. If more consecutive values are found to match, the greater length of time will be saved. The result of this scheme is that **the number displayed will be the length of the longest "flat" period within the user's specified date range, not of the total "flat" periods**. Users should view this number as an indicator that the unit-values need to be inspected in greater detail using the UV tabling or editing programs. After generating this report, the program gives the user the option to create more reports with different parameters selected.