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CENTRAL DATA PROCESSING SYSTEM (CDPS) USERS MANUAL - SOLAR HEATING AND COOLING PROGRAM

Prepared by

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16. ABSTRACT

The Central Data Processing System (CDPS) provides the software and data base management system required to assess the performance of solar heating and cooling systems installed at multiple remote sites. The instrumentation data associated with these systems is collected, processed, and presented in a form which supports continuity of performance evaluation across all applications. The CDPS consists of three major elements: communication interface computer, central data processing computer, and performance evaluation data base.

The CDPS Users Manual identifies users of the performance data base, procedures for operation, and guidelines for software maintenance. The manual also defines the output capabilities of the CDPS in support of external users of the system.

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1.0 SCOPE

The purpose of this document is to:

(1) Identify users of the CDPS Performance Data Base.

(2) Define procedures for operation of the CDPS.

(3) Provide guidelines to be followed in maintenance of the CDPS software.

(4) Define the output capabilities of the CDPS in support of external users of the system.

2.0 APPLICABLE DOCUMENTS

In understanding this CDPS and its capabilities, the following documents are required:

(1) CDPS Software Performance Specification Document (IBM No. 76W-0060).

(2) CDPS Hardware Performance Specification Document (7933190).

(3) MSFC Data Systems Plan.

(4) Solar Heating and Cooling Instrumentation Installation Plan.

(5) CDPS Development Plan.

Documents applicable to each specific user group are referenced in subsequent sections of this document.

3.0 ROLE OF CDPS IN SOLAR HEATING AND COOLING PROGRAM

The CDPS, located at IBM's FSD facility in Huntsville, Alabama, provides the resources required to assess the performance of solar heating and cooling systems installed at 60 remote sites. These remote sites consist of residential, commercial, government, and educational types of buildings, and the solar heating and cooling systems can be hot-water, space heating, cooling, and combinations thereof. The instrumentation data associated with these systems will vary according to the application and must be collected, processed, and presented in a form which supports continuity of performance evaluation across all applications. In addition, data must be maintained for historical purposes and for detailed analysis.

In supporting the overall program objectives, the CDPS satisfies the following functional requirements:

Data Collection - The CDPS daily collects instrumentation data from all remote sites via standard voice-grade 1200 Baud telephone lines. In addition, non-instrumentation data available from MSFC, ERDA, HUD, etc., which is needed in performing overall system evaluation, is collected via manual means.

Data Processing - The CDPS accepts raw data, as collected by the data collection function, and performs the data processing functions required to transform the raw data into processed information for use in system evaluation/analysis activities. The CDPS also provides the resources to maintain a performance evaluation data base, containing both raw data and processed information, for use in support of performance analysts.

Data Archiving - To provide capability for detailed analyses of system performance and to maintain data for historical purposes, the CDPS provides the capabilities to archive data collected and processed during the program. Both raw data and processed data is retained on magnetic tape, and formal reports are archived in a library.

Data Distribution - In addition to collection, processing, and archiving of data, the CDPS provides the essential function of distributing the data to the appropriate organizations. Distribution is in the form of printed reports, data plots, and magnetic tapes.

Systems Analysis Simulation - An essential capability in assessing the performance of solar heating and cooling systems is the ability to predict performance for correlation with operational performance. The CDPS provides the resources needed in support of this simulation activity and provides capabilities for automated correlation of predicted and actual performance.

As shown in figure 3-1, the CDPS consists of three major elements - communication interface computer, central data processing computer, and performance evaluation data base. These three elements provide the capabilities required to satisfy the functions mentioned above.

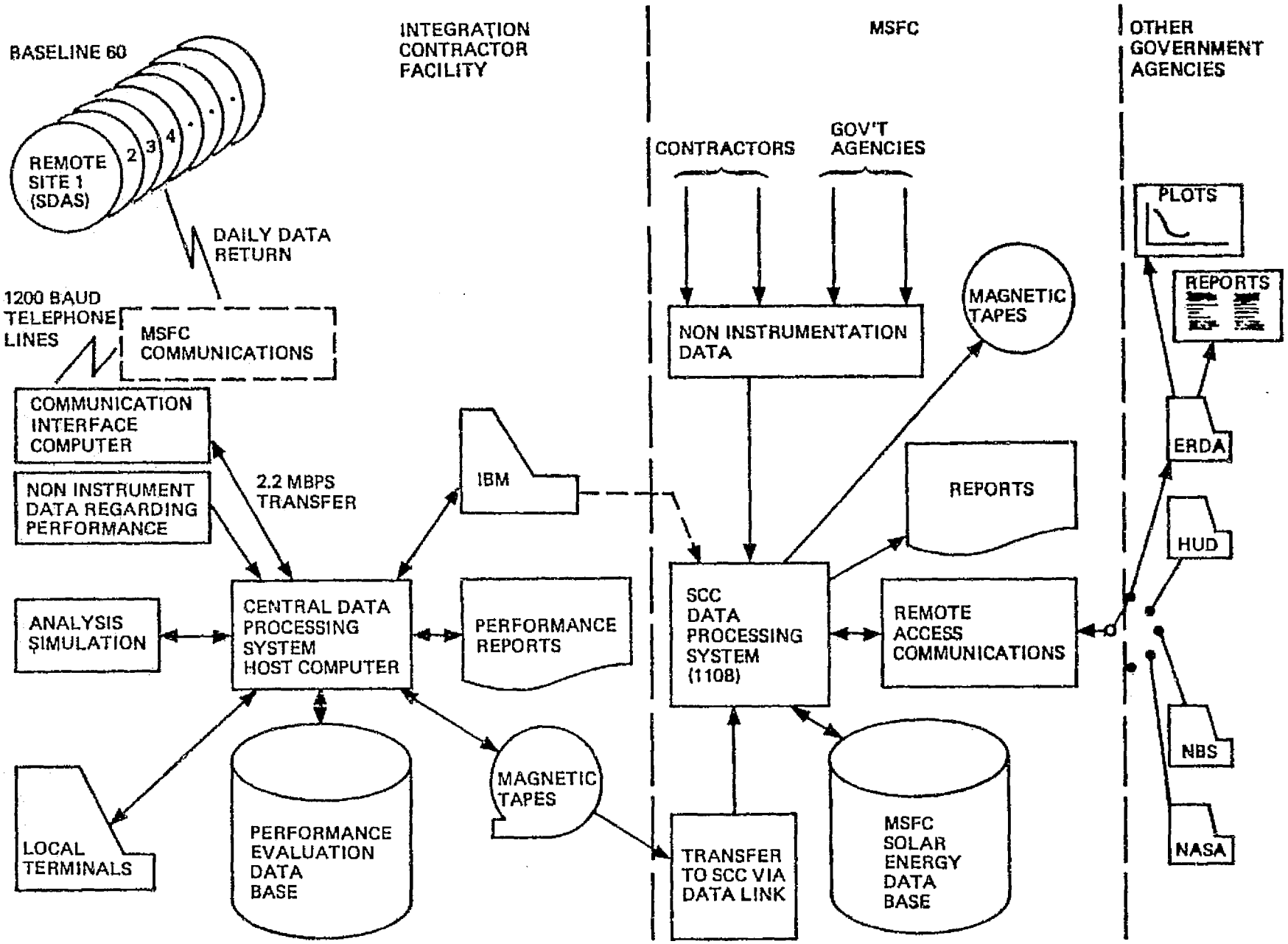


Figure 3-1. Role of Central Data Processing System

4.0 CDPS OPERATIONAL ENVIRONMENT

The CDPS must satisfy the processing and user support requirements resulting from daily data collection from all remote sites. To provide data to analysts by the beginning of first shift each day, an operations procedure has been established and is discussed in the following paragraphs. A pictorial representation of the operations flow is shown in Figure 4-1.

4.1 DATA COLLECTION

SDAS data collection will occur during the evening hours (beginning at 2000). The collecting will continue until approximately 2330 (60 sites require approximately 3.5 hours) and upon completion, will be transferred via data link to the S/370-145 (requires 30 seconds). Computer operator intervention will be performed at the start of data collection time period to initiate the System 7 software. During the data collection time period, the communication interface computer console will be monitored for indications of telecommunications progress in contacting and receiving data from the SDAS equipment. In the event of communications difficulties, effort will be undertaken to resolve the problem during the hours dedicated to data collection. The communication operations personnel will be guided in the problem resolution by directions from the S/7 software analyst. The operator will, as required, interface with the MSFC Telecommunications Systems Status Center (TSSC) for resolution of communications difficulties.

4.2 DATA PROCESSING

Data processing on the host computer will occur between the hours of midnight and 0700 each day in order to provide error reports and summary reports and performance reports for SIMS analysts at the beginning of first shift (0800). The Input Processing portion of the CDPS software system will be executed, upon completion of data communication and retrieval by the Communication Interface computer, and will process the forwarded data from the System/7. All processed data containing no errors will be converted into engineering units, performance calculations performed, and data made ready for insertion into the performance evaluation data bank. Errors encountered during processing will be flagged such that erroneous data will not be entered into the data base, and error messages/reports will be provided for analysts.

4.3 DATA BASE PROCESSING

Upon completion of the Input Processing phase, the Data Base/User Support software will be executed in a batch environment under control of computer operations personnel. This processing will be accomplished in a manner to satisfy data availability requirements and output distribution.

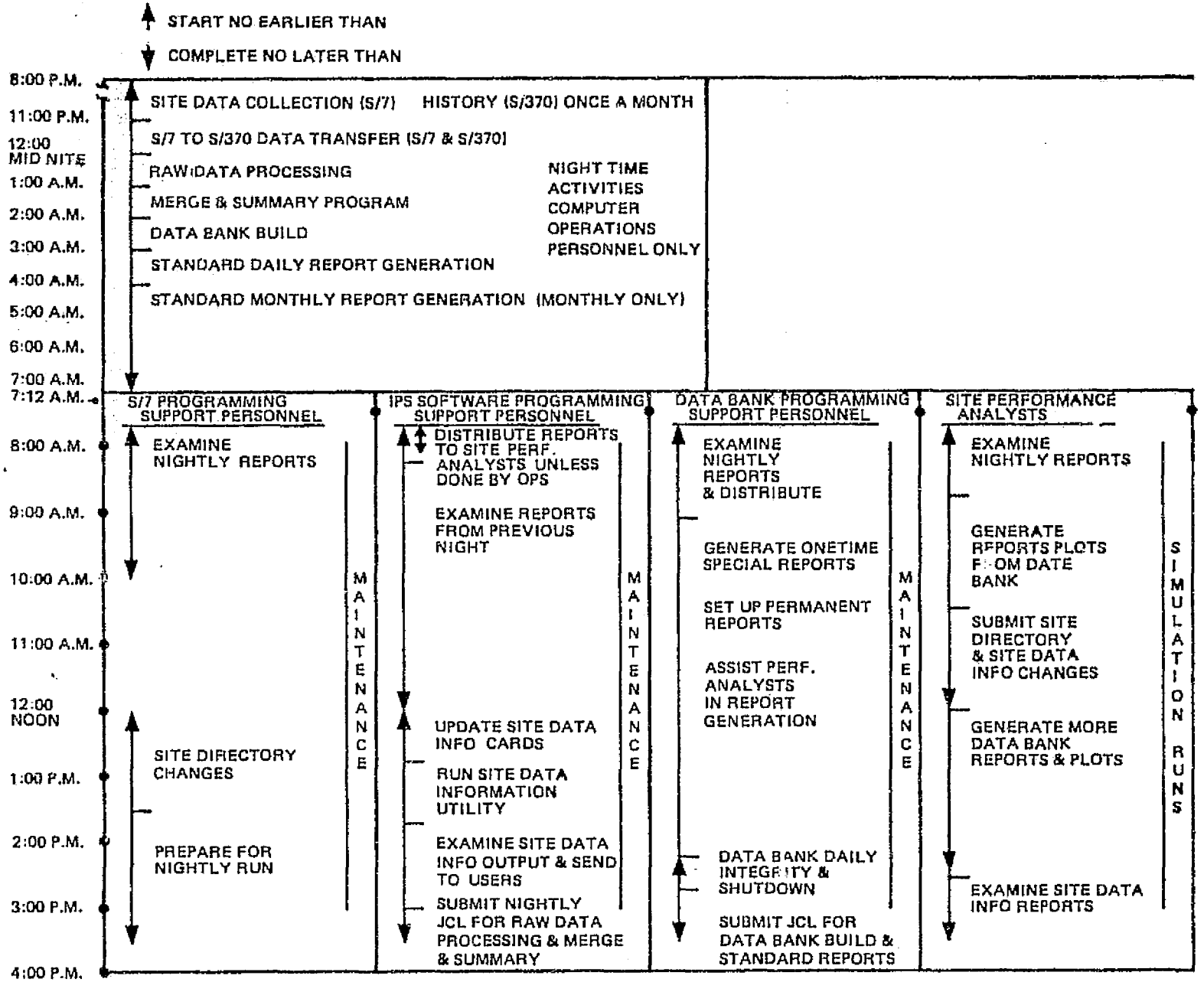


Figure 4-1. Summary Chart of CDPS Daily Operations

To ensure timely completion, a high priority will be assigned to the processing of input data and will be monitored by operations personnel. If conflicts occur, the processing will be assigned the highest priority and will override any other processing.

Archiving of data will be provided through the use of software within the host computer. Raw data, processed data, and performance reports will be maintained within the computing facility and will be distributed as required for analysis/ storage.

4.4 USER SUPPORT

User support will require that the data base management software allow ready access to the data base contents via local terminals and support batch job access to data for special analysis activities. When the IBM performance analyst requires a terminal capability to access the performance evaluation data base the computer operations personnel will, upon request, initiate the terminal processing capability of the NIPS software.

4.5 DATA BASE MAINTENANCE

In addition to the daily scheduled updating of the Performance Evaluation Data Base with input from the Input Processing Software there will be the capability to perform selected maintenance on an as required basis.

4.5.1 Error Correction

Error conditions on data fields within the data base corrected during first shift will be entered into the data base via local terminals (for small data volume) or via batch job submission. Upon completion of error correction, the performance evaluation data within the data base will be formatted and written to magnetic tape for transfer to the MSFC Solar Energy Data Base.

4.5.2 Non-Instrumentation Data Handling

Data elements to be added to the data base which are not gathered by the SDAS and processed in the CDPS, such as site location, site equipment availability, weather data, etc., will be entered into the data base via terminal or batch mode using the NIPS File Maintenance capability. This will allow for text type data to become part of the data base and available for reporting purposes.

5.0 DEFINITION OF CDPS USERS

This section provides a brief description of CDPS users and their functions. Detailed information about user functions can be found in subsequent sections of this document.

CDPS Software Support Personnel - Responsible for maintenance of CDPS Software and for continual evaluation of software performance during daily operations. Includes the following support personnel:

(1) Communication Interface Programmer(s)/Analyst

(2) Input Processing Programmer(s)/Analyst

(3) Data Base Maintenance Programmer(s)/Analyst

Computer Operations Support Personnel - Responsible for:

(1) Operation of the CDPS configurations during daily data collection and processing

(2) Maintenance of archived/backup data on magnetic tape

(3) Production of daily/monthly/seasonal/annual reports as requested by Report Distribution Personnel.

Site Performance Analysts - Responsible for:

(1) Providing site descriptive data for establishing data base entry for site.

(2) Review/analyze daily reports produced from operational data.

(3) Provide calibration/conversion data for processing of operational data.

Data Request Coordinators - Responsible for:

(1) Interface with internal/external CDPS users

(2) Coordinate activities required to satisfy user requests

(3) Coordinate changes to CDPS hardware/software to ensure that requested capabilities are achieved

6.0 CDPS SOFTWARE USER GUIDELINES

As was stated in Section 5, the CDPS software users will consist of a Communication Interface Programmer(s)/Analyst, and Input Processing Programmer(s)/Analyst, and a Data Base Maintenance Programmer(s)/Analyst. This section of the user's manual addresses the user information required in accomplishing those Programmer/Analyst functions.

6.1 COMMUNICATION INTERFACE PROGRAMMER(s)/ANALYST USER GUIDELINES

User guidelines for the Communication Interface Programmer(s)/Analyst have been structured to address each area of responsibility. These areas are:

(1) Software maintenance

(2) Generation of S/7 load library

(3) Communication error analysis

(4) Remote site troubleshooting

(5) Site directory maintenance

(6) System/7 - S/370-145 Interface

The procedures/guidelines to be used in performing these tasks are discussed in the following paragraphs.

6.1.1 Applicable Documents

Document Name

IBM System/7 Teleprocessing Multiplexer (GA34-1510-1)

IBM System/7 Functional Characteristics (GA34-0003-6)

IBM System/7 Sensor Based Control Adapter (SBCA) General Information Manual (GA34-1512-0)

IBM System/7 7431 Serial Printer (SY34-0520-1)

Data Auxiliary Set 801 (Automatic Calling Unit) Interface Specification (Western Electric)

Data Set 202C - Type Reference Guide (Western Electric)

APG/7 Question Forms and Messages (SH2D-9535)

IBM System/7 Operator's Guide (GA34-0007-4)

A Guide to Host APG/7 Operations (SH20-9503-2)

The APG/7 Encyclopedia (SH20-9510-1)

MTMT Operation Manual

6.1.2 Software Maintenance

The Communication Interface Software Source Statements, written in APG/7 language are resident on disk on the S/370-145 Computer. The disk data set containing the operational program is named FHVLG31A. SIMS and is accessible via MTMT within the IBM Huntsville Facility. The APG/7 compiler is resident within the S/370-145. The procedures to be used in maintaining the communication interface software are described below.

The overall software structure is shown in figure 6-1 and is comprised of a nucleus and application program.

6.1.2.1 Application Program Source Statement Maintenance

The Source Statements for the communication interface software must be retained on Disk Data Set SYSL.SYS7.MACLIB. This data set must be written to a temporary file for dating and testing prior to release for operational use. Source statements and update transactions for previous released versions must be written to magnetic tape and retained for record purposes and/or recovery in the event of loss of the operational program statements on disk. Upon completion of testing of changes, the new source statements must be written to the operational Disk Data Set and a date of replacement applied to the Data Set for reference purposes. This procedure is pictorially shown in figure 6-2.

6.1.2.2 Nucleus Generation

The Nucleus Program is comprised of System Programs provided by the APG/7 compiler and is created on the S/370-145 through a compilation/link edit activity. The communication interface software package utilizes several separate nucleus programs:

Function	Name
Operational Site Data Collection	W75DCC
Support of Site Data Collection	W7 EXEC
Manual Testing of Sites	W7 TEST
Support of Data Transfer to S/370-145	LAB/7

Procedures for generation of a System/7 nucleus are shown in figure 6-3. The capabilities to be provided by the nucleus can be selected via input parameters.

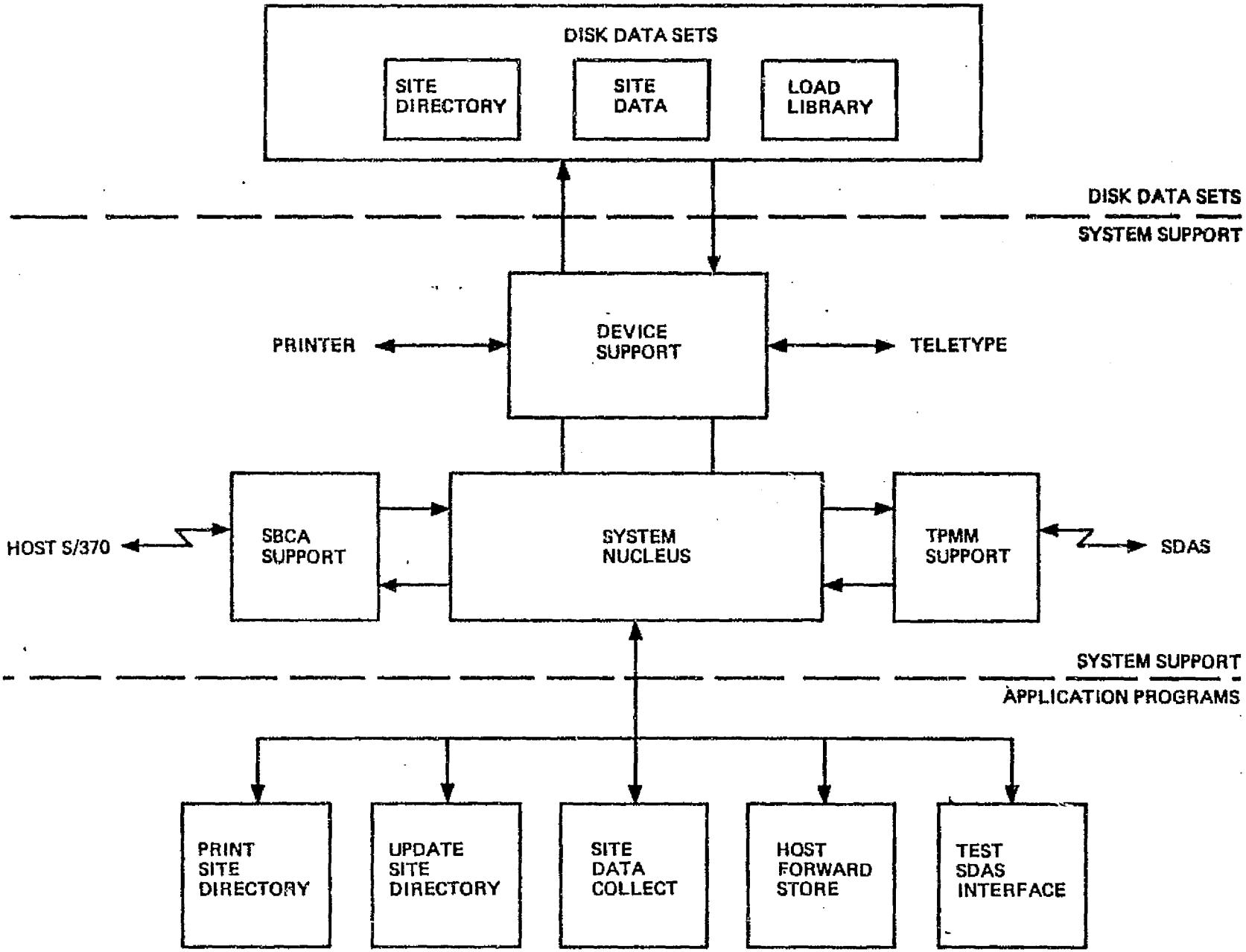


Figure 6-1. Communications Interface Software Design

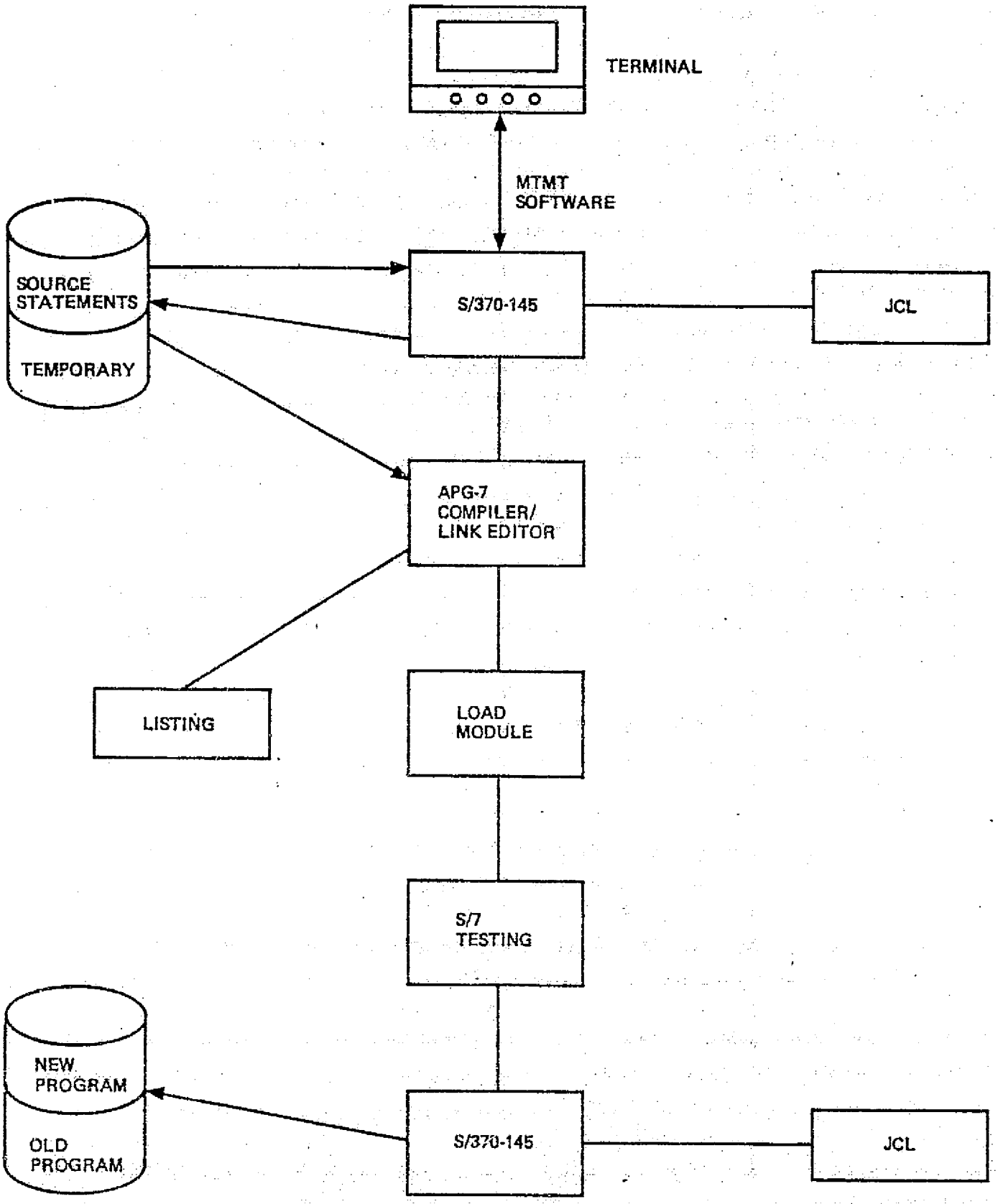


Figure 6-2. Application Program Maintenance

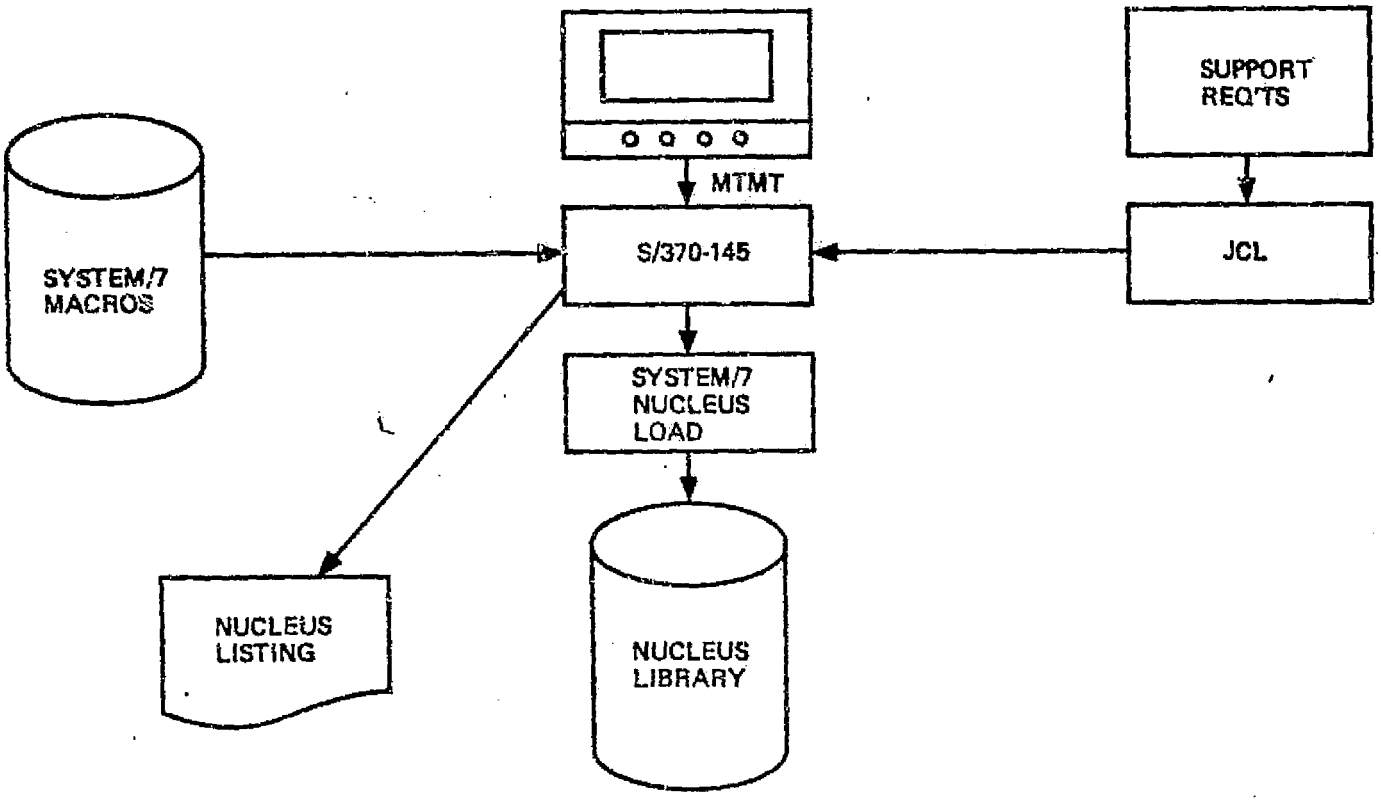


Figure 6-3. Nucleus Generation Procedure

6.1.2.3 Application Programs Compilation

Application Program Compilation is performed on the S/370-145 utilizing the APG/7 compiler. Input to the compiler consists of the source statements resident on the S/370-145 disk. Output of the compiler is a program listing and a load module for the System/7 computer. Input and output parameters are specified via Job Control Language (JCL) Statements. A representative JCL setup for compiling an application procedure is found in "A Guide to Host APG/7 Operations."

6.1.2.4 Nucleus Compilation

Nucleus capabilities are selected via control cards enclosed within the JCL Statements. Information regarding nucleus generation is found in IBM documents "APG/7 Question Forms and Messages" and "A Guide to Host APG/7 Operations."

6.1.2.5 System/7 Load Module Creation

System/7 Load Modules are created on the S/370-145 through use of the APG/7 link editor. Input to the link editor consists of the nucleus program load module and the application programs load modules. Output of the link editor is a load module which contains all programs required to execute on the System/7 with all program linkages resolved. Details of the module creation procedure are given in "A Guide to Host APG/7 Operations."

6.1.3 System/7 Load Library Generation

The System/7 load library will be resident on the System/7 disk and will be comprised of the System/7 load modules generated on the S/370-145. To generate the library, the load modules must be transferred from the S/370-145 to the System/7 via the Sensor Based Control Adapter (SBCA), catalogued on the System/7, and written to System/7 disk.

The procedures to be followed in generation of the load library are given below:

S/370-145 Action		System/7 Action
EXECUTE Program 'SBCUPROG'		IPL S/7 to Fixed Disk (F4)
		LOAD Program 'PGMLOAD'
	VIA	REPLY '$$SYS7ID'
	5028	REPLY '.SIM'
		REPLY '[PROGRAM NAME DESIRED], R4'
STOP 'SBCUPRDG'		

6.1.4 Communication Error Analysis

The "Communication Log Report" provides the basic information, used in troubleshooting of communication problems. A summary of the error conditions, detected by the software is created whenever communication is attempted with a remote site by the S/7 operational program. Table 6.0 contains a description of these communication errors.

6.1.5 Remote Site Troubleshooting

The "Test SDAS Interface" software within the System/7 exists within the load library as member "W7TEST". If the Site Performance Analyst determines that manual troubleshooting of a remote site is required, the "Test SDAS Interface" software must be loaded from the load library. The procedure to be followed in exercising the software is described below:

(1) Via 5028 Enter 'L W7TEST'

(2) After reply printed indicating program loaded, enter present time as

YY,DDD,HH,MM,SS

where: YY = Year
DDD = Numeric day of year
HH = Hour (24 hour clock)
MM = Minute
SS = Second

Enter 'TSA'

(3) Respond to printed command options as desired.

COMMAND		DESIGNATION
'OPEN'	-	Open command to TPMM
'CLOS'	-	Close command to TPMM
'DIAL'	-	Dial command to TPMM
'REDF'	-	Read configuration and End of File to Site
'DISC'	-	Disconnect to site
'REWD'	-	Rewind tape to site
'RDCN'	-	Read configuration to site
'DRWD'	-	Disconnect and Rewind to site
'REIN'	-	Reinitialize to site
'RSST'	-	Read storage table to site
'CALL'	-	Call over local line to site
'CALT'	-	Call over tie line to site
'CALS'	-	Call using site direction
'EXIT'	-	Exit test execution

Note: CALL, CALT, and CALS performs the CLOS, OPEN and DIAL functions automatically.

(4) Analyze errors (see Table 6.0) encountered during communications.

(5) Print received data for detailed analysis.

Table 6.0

TPMM ERROR CODES	DESCRIPTION OF ERROR
* 2	I/O Parameter list busy
* 3	Invalid control word
4	Data set check o Loss of Data Set Ready during a read o Loss of Carrier Detect during a read o Loss of Clear to Send during a write o ACU not ready during a dial
* 5	Line closed
* 6	Invalid line number
7	Data overrun o Character interrupt occurred before previous character serviced
8	System/7 XIO error
9	Timeout between characters
15	Timeout (no reply)
16	BCH error in command frame
*17	I/O area overrun
*32	Invalid buffer count
34	Data set not ready
40	BCH errors detected in data

*Software Error - Program Stop

System/7 SDAS Communication Error Definitions

6.1.6 Site Directory Maintenance

The System/7 Site Directory contains the information needed to automatically perform data collection functions and to transmit data to the S/370-145 for subsequent processing. Maintenance of the Site Directory consists of addition and/or deletion of entries as remote sites are brought on-line or terminated. In addition, the capability to print the contents of the Site Directory is provided. The software to support these maintenance functions are the Site Directory update program and the Site Directory print program. These programs and associated nucleus are contained within the load library and are executed as described below:

(1) Via 5028 Enter 'L W7EXEC'

(2) After reply printed indicating program loaded enter present time.

(3) Print Site Directory:

Enter 'DSD'

Reply 'Y' if all sites are desired to be printed. Reply 'N' is only selected sites are to be printed.

Reply 'd' where d is site number of site to be printed.

(4) Update Site Directory

Enter 'UPD"

Reply 'm' where m is desired site number to be updated.

Note: If a new site is to be added to the directory, the site number must be the next number past the last site number entry.

Reply 'y' if the telephone number is to be updated.

Reply 'nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn'

Where n is the formatted 32 digit telephone number. Information regarding the correct format for dial digits can be found in "IBM System/7 Teleprocessing Multiplexer"

6.1.7 System/7 - S/370-145 Interface

The software utilized within the Systm/7 to communicate with the S/370-145 consists of several different programs dependent upon the type of transfer. Table 6-1 contains a correlation of data transfer requirements and corresponding System/7 software.

Table 6.1 -

Data Transfer Requirements	System/7 Software
System/7 Load Modules	PGM Load
Remote Site Operational Data	Host Forward Store

System/7 load module transfer is used in creation of the System/7 Load Library. Procedures for operation are discussed in paragraph 6.1.3.

The "Host Forward Store" software is contained within the load library and provides the capabilities to format data collected from remote sites and transfer the data to the S/370-145 for processing. Procedures for execution of this software and error conditions/corrective actions are described below:

(1) Insure that 'SBCU PROG' has been initiated in Host

(2) Via 5028 IPL from System/7 fixed disk

(3) After System/7 prints >, enter $L!

(4) After System/7 prints 'PGM (NAME, IODA):', enter 'HFS'

(5) After System/7 prints 'SCCU PROG STARTED ON HOST?', enter 'Y'

(6) Upon completion of transfer of data, System/7 will print 'HFS ENDED 'DATE/TIME'

6.2 INPUT PROCESSING PROGRAMMER/ANALYST USER GUIDELINES

The Input Processing Programmer/Analyst will have the following areas of responsibility:

(1) Source Statement Maintenance

(2) Input Processing Report Analysis

(3) Job Control Language (JCL) Statements

(4) Maintenance of the Site Data Description File

The user guidelines associated with the above areas of responsibility are discussed in subsequent paragraphs.

6.2.1 Applicable Documents

The following documents are required in order to perform the functions of the Input Processing Programmer/Analyst.

Document Name	Number
CDPS Software Performance Specification	IBM No. 7933251
CDPS Software Design Document	
PL/I Reference Manual	IBM GC28-8201
PL/I Programmer's Guide	IBM GC28-6594
JCL Manual	IBM GC28-6539
OS Utilities Manual	IBM GC28-6586

6.2.2 Software Maintenance

As shown in figure 6.2-1, the Input Processing Software consists of five major elements (site data description utility, site data acceptance, raw data processing, merge and summary, and history). The source statements, (except for the Site Data Acceptance Module) written in PL/I language, reside on disk within the S/370-145 in partitioned data set "SIMSIPS.SOURCE." The compiler utilized in creation of load modules for the Input Processing Software is the resident PL/I compiler within the S/370-145.

The load modules for the input processing software will be maintained on disk for use in processing of incoming data. Backup versions of the load modules will be saved on magnetic tape for backup in the event of loss of data on disk.

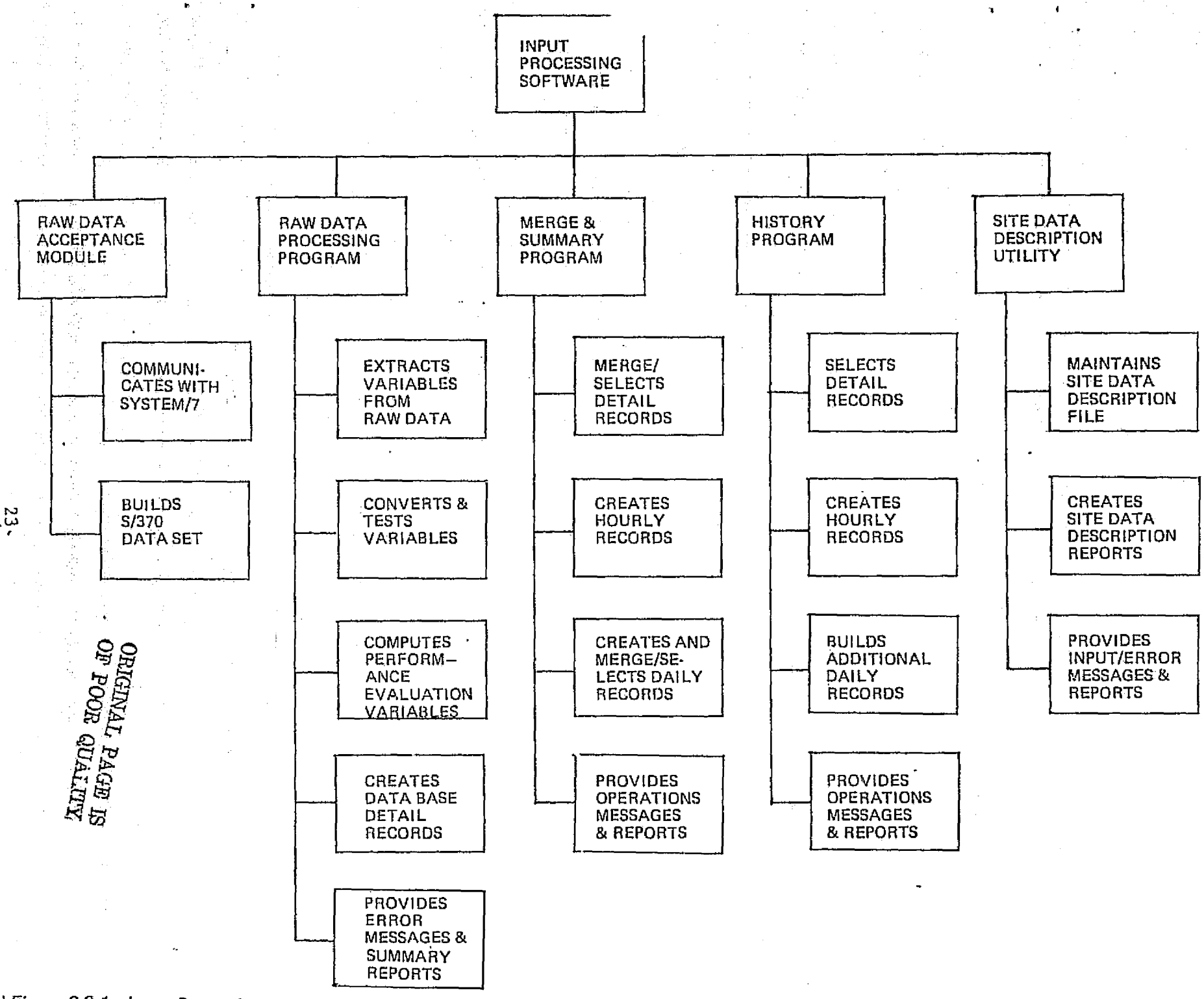


Figure 6.2-1. Input Processing Software System Design

Updating of the Source Statements and creation of new operational load modules will be controlled by procedures as specified in the CDPS Development Plan. Changes to source must be approved prior to implementation, and utilization of new operational load modules will occur only after testing of changes has been completed. Previous versions of both source and load modules, with identification of changes, will be maintained.

Source update can be accomplished through either the MTMT update capability or the use of the IEBUPDATE capability. All transactions made to create a new input processing load module must be recorded and maintained.

The compilation of input processing software will be controlled via Job Control Language (JCL) statements. Set-ups for compilation and link edit of the input processing software are shown in figure 6.2-2.

A significant portion of Input Processing Software maintenance will be the implementation of performance evaluation equations supplied by performance analysts. The equations will be site dependent.

6.2.3 Input Processing Report Analysis

The input processing software produces the following reports during its operational utilization:

- Raw Data Processing Reports
- Merge and Summary Reports
- History Reports

Description of these reports and actions required of the programmer/analyst are discussed below:

6.2.3.1 Raw Data Processing Analyses

Raw Data Processing provides the following:

- Varying levels of site raw data processing summaries (see figure 6.2-3).
- An overall raw data processing summary (see figure 6.2-4).
- Detail record prints (see figure 6.2-5).
- Possibly, error messages for sites for which site raw data processing summaries were not requested. These will be interspersed with the site summary reports.

The detail included within these reports is under control of the Performance Analyst through input to the software.

A list of error messages and possible causes or corrective actions is provided in table 6.2-1.

Raw Data Processing Program

```
//  EXEC PL1FC,
//     PARM.PL1='STMT,XREF,ATR,NEST,MACRO,SORMGIN=(2,72,1),LINECNT=060'
//PL1.SYSLIB DD DSN=SIMSIPS.SOURCE,DISP=SHR
//PL1.SYSIN DD DISP=SHR,DSN=SIMSIPS.SOURCE(IPSRAW)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(STREAM)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(SCANSEP)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(CNVTEST)
//  EXEC USERLIB,COND.IEWL=(8,LT)
//IEWL.SYSLMOD DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.RESERVE DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.SYSIN DD *
  NAME SIMSRDPP(R)
/*
```

Merge and Summary Program

```
//  EXEC PL1FC,
//     PARM.PL1='STMT,XREF,ATR,NEST,MACRO,SORMGIN=(2,72,1),LINECNT=060'
//PL1.SYSLIB DD DSN=SIMSIPS.SOURCE,DISP=SHR
//PL1.SYSIN DD DISP=SHR,DSN=SIMSIPS.SOURCE(MERGSJM)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(MERGSEL)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(GENHRLY)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(GENDALY)
//  EXEC USERLIB,COND.IEWL=(8,LT)
//IEWL.SYSLMOD DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.RESERVE DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.SYSIN DD *
  NAME SIMSMRGS(R)
/*
```

History Program

```
//  EXEC PL1FC,
//     PARM.PL1='STMT,XREF,ATR,NEST,MACRO,SORMGIN=(2,72,1),LINECNT=060'
//PL1.SYSLIB DD DSN=SIMSIPS.SOURCE,DISP=SHR
//PL1.SYSIN DD DISP=SHR,DSN=SIMSIPS.SOURCE(HISTORY)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(HSELECT)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(HGNHRLY)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(PROCCARD)
//           DD DISP=SHR,DSN=SIMSIPS.SOURCE(HGNDALY)
//  EXEC USERLIB,COND.IEWL=(8,LT)
//IEWL.SYSLMOD DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.RESERVE DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.SYSIN DD *
  NAME SIMSHIST(R)
/*
```

Figure 6.2-2. Setups to Compile and Link Input Processing Software (Page 1 of 2)

Site Data Description Utility

```
//  EXEC PL1FC,
//     PARM.PL1='STMT,XREF,ATR,NEST,MACRO,SORMGIN=(2,72,1),LINECNT=060
//PL1.SYSLIB DD DSN=SIMSIPS.SOURCE,DISP=SHR
//PL1.SYSIN DD DISP=SHR,DSN=SIMSIPS.SOURCE(IPSIDUP)
//  EXEC USERLIB,COND.IEWL=(8,LT)
//IEWL.SYSLMOD DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.RESERVE DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.SYSIN DD *
  NAME SIMSSDDU(R)
/*
```

Save Utilities

```
//  EXEC PL1FC,
//     PARM.PL1='STMT,XREF,ATR,NEST,MACRO,SORMGIN=(2,72,1),LINECNT=060
//PL1.SYSLIB DD DSN=SIMSIPS.SOURCE,DISP=SHR
//PL1.SYSIN DD DISP=SHR,DSN=SIMSIPS.SOURCE(SAVE1)
//  EXEC USERLIB,COND.IEWL=(8,LT)
//IEWL.SYSLMOD DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.RESERVE DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.SYSIN DD *
  NAME SIMSSAV1(R)
/*
//  EXEC PL1FC,
//     PARM.PL1='STMT,XREF,ATR,NEST,MACRO,SORMGIN=(2,72,1),LINECNT=060
//PL1.SYSLIB DD DSN=SIMSIPS.SOURCE,DISP=SHR
//PL1.SYSIN DD DISP=SHR,DSN=SIMSIPS.SOURCE(SAVE2)
//  EXEC USERLIB,COND.IEWL=(8,LT)
//IEWL.SYSLMOD DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.RESERVE DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.SYSIN DD *
  NAME SIMSSAV2(R)
/*
//  EXEC PL1FC,
//     PARM.PL1='STMT,XREF,ATR,NEST,MACRO,SORMGIN=(2,72,1),LINECNT=060
//PL1.SYSLIB DD DSN=SIMSIPS.SOURCE,DISP=SHR
//PL1.SYSIN DD DISP=SHR,DSN=SIMSIPS.SOURCE(SAVE3)
//  EXEC USERLIB,COND.IEWL=(8,LT)
//IEWL.SYSLMOD DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.RESERVE DD DSN=SIMSIPS.LOADLIB,DISP=(OLD,KEEP)
//IEWL.SYSIN DD *
  NAME SIMSSAV3(R)
/*
```

Figure 6.2-2. Setups to Compile and Link Input Processing Software (Page 2 of 2)

Table 6.2-1. Raw Data Processing Error Messages (Sheet 1 of 6)

Message:	NO SITE DATA DESCRIPTION RECORD FOR SITE _____ . DATA FOR THIS SITE BYPASSED.
Error Level:	12 Subroutine: IPSRAW (Main)
Explanation:	Raw data with a site id for which there is no record in the Site Data Description file. Either the raw data is wrong, or the Site Data Information for the site must be added to the Site Data Description file.
Message:	SITE _____ IS A SITE WITH NO PREVIOUS DATA.
Error Level:	None Subroutine: IPSRAW (Main)
Explanation:	No record for the site was found in the continuity file. This means that the current batch of raw data contains the first operational data collected from the site.
Message:	LOST IN RAW FILE. SITE ID RECORD HAS WRONG FILL PROCESSING STOPPED.
Error Level:	16 Subroutine: IPSRAW (Main)
Explanation:	Raw data has wrong format or some data is missing. Consult with System/7 programmers for possible problem explanation. (Site id record content is printed.)
Message:	PECULIAR VALUES IN TIME OF SITE ID. DATA PROCESSING FOR THE SITE WILL BE BYPASSED. PROCESSING FOR OTHER SITES WILL BE ATTEMPTED.
Error Level:	12 Subroutine: IPSRAW (Main)
Explanation:	Either System/7 put bad values in Site id record or this is not a site id record. If record also has bad fill data or bad counters it is probably not an id record. Consult with System/7 programmers for possible problem explanation. (Site id record content is printed.)
Message:	BAD VALUE(S) IN COUNTERS OF SITE ID RECORD. PROCESSING STOPPED.
Error Level:	16 Subroutine: IPSRAW (Main)
Explanation:	Either System/7 put bad value(s) in Site id record or this is not an id record. If record also has bad fill data or bad time values it is probably not an id record. Consult with System/7 programmers for possible error explanation. (Site id record content is printed.)

Table 6.2-1. Raw Data Processing Error Messages (Sheet 2 of 6)

Message: HIGHEST SEVERITY LEVEL _____ Error Level: Not applicable Subroutine: IPSRAW (Main) Explanation: If 16, terminal error encountered. If 12, processing failed for one or more sites. If 10, one or more data blocks rejected. If 8, one or more scans rejected. If 4, one or more individual variable readings rejected. If 0, no data rejected.
Message: UNEXPECTED END OF FILE OF RAW DATA WHILE SEPARATING RAW DATA OF SITE _____ INTO DATA AND FLAG STREAMS. Error Level: 16 Subroutine: STREAM Explanation: Site id record must have a bad value in its counters or some raw data has been lost. Consult with System/7 programmers for possible error explanation.
Message: SCANSEP: END OF FILE READING DATAFIL. PROCESSING STOPPED FOR SITE _____ Error Level: 12 Subroutine: SCANSEP Explanation: End-of-site indication not found in the data records for the site. If BCH error count for the site was not zero then probably a noise problem made an End-of-block or End-of-site unrecognizable.
Message: SCANSEP. END OF FILE READING FLAGFIL. PROCESSING STOPPED FOR SITE _____ Error Level: 12 Subroutine: SCANSEP Explanation: Normally accompanies an 'END OF FILE READING DATAFIL' message and is part of the same problem.
Message: SCANSEP. A COMMAND FRAME HAS ILLEGAL CODE AND NO BCH ERROR. PROCESSING STOPPED FOR SITE ID _____ Error Level: 12 Subroutine: SCANSEP Explanation: Either raw data has wrong format or the scan separation routine has gotten lost processing noisy data. Look at site BCH error count and consult with System/7 programmer for problem explanation.

Table 6.2-1. Raw Data Processing Error Messages (Sheet 3 of 6)

Message: SCANSEP: A SCAN WITH TIME _____ HAS BEEN DROPPED SINCE TIME < = TIME OF LAST SCAN. SITE ID = _____ Error Level: 8 Subroutine: SCANSEP Explanation: Error could be caused by rerunning same raw data and not re-storing to previous version of continuity file. Otherwise, time may be wrong or time of previous scan may be wrong.
Message: SCANSEP: A SCAN WITH TIME _____ HAS BEEN DROPPED SINCE TIME > = RUN TIME. SITE ID = _____ Error Level: 8 Subroutine: SCANSEP Explanation: Could be caused by a clock reset at the site. Also could be connected to a time overrun at the site.
Message: SCANSEP: BCH ERROR IN COMMAND FRAME WITH END-OF-SITE COMMAND FOR SITE ID _____ Error Level: 10 Subroutine: SCANSEP Explanation: Noisy data. Command is treated as End-of-site. If command should have been Block-Start then one or more data blocks were lost. Compare SCANSEP actual and expected raw data byte counts.
Message: SCANSEP: BCH ERROR IN COMMAND FRAME WITH BLOCK START COMMAND CODE. BLOCK OF DATA SKIPPED FOR SITE ID _____ Error Level: 10 Subroutine: SCANSEP Explanation: Noisy data. Command with BCH error treated as Block Start. Normally means a block of data is rejected. If should have been End-of-site then will probably end up rejecting all data for the site.
Message: SCANSEP: COMMAND WITH BCH ERROR AND ILLEGAL CODE ASSUMED TO BE BLOCK START. BLOCK WILL BE SKIPPED FOR SITE _____ Error Level: 10 Subroutine: SCANSEP Explanation: Similar to BCH error in Command frame with Block Start command code.

Table 6.2-1. Raw Data Processing Error Messages (Sheet 4 of 6)

Message:	SCANSEP: COMMAND WITH BCH ERROR AND ILLEGAL CODE ASSUMED TO BE END OF SITE. SITE ID = _____
Error Level:	10 Subroutine: SCANSEP
Explanation:	Similar to BCH error in command with End-of-site command code.
Message:	SCANSEP: BCH ERROR IN END OF BLOCK OR START OF SCAN. DECODED AS END OF BLOCK. SITE ID = _____
Error Level:	8 Subroutine: SCANSEP
Explanation:	Trying to correctly process noisy data. Six or more characters of 'FF' imply End-of-block. If wrong probably will get lost in the scan separation process.
Message:	SCANSEP: BCH ERROR IN END OF BLOCK OR START OF SCAN DECODED AS START OF SCAN AND SCAN DROPPED. SITE ID = _____
Error Level:	8 Subroutine: SCANSEP
Explanation:	Trying to process noisy data. If data does not contain at least 6 bytes of 'FF' as in End-of-Block it is treated as Start-of-Scan. The scan is dropped because of uncertain time.
Message:	CNVTEST: BAD SCAN POINTER FOR SITE _____. PROCESSING FOR SITE STOPPED.
Error Level:	12 Subroutine: CNVTEST
Explanation:	Bad information in the Site Data Description file. Change values on the Site Data Information form and/or change the Site Data Description Utility.
Message:	CNVTEST: BAD NIPS POINTER FOR SITE _____. PROCESSING FOR SITE STOPPED.
Error Level:	12 Subroutine: CNVTEST
Explanation:	Bad information in the Site Data Description file. Change values on the Site Data Information form and/or change the Site Data Description Utility.

Table 6.2-1. Raw Data Processing Error Messages (Sheet 5 of 6)

Message:	IN CNVTEST HAVE SITE ID MISMATCH. SITE-DATA-INFO. SITE-ID =_____ SCAN SITE-ID =_____ NIPS--INPUT. SITE-ID =_____ PROCESSING TERMINATED.
Error Level:	16 Subroutine: CNVTEST
Explanation:	Should never happen. Look for a software problem.
Message:	CNVTEST: ILLEGAL CONVERSION TYPE IN SITE DATA INFO. PROCESSING STOPPED FOR SITE ID _____
Error Level:	12 Subroutine: CNVTEST
Explanation:	Bad information in the Site Data Description file. Change values on the Site Data Information form and/or change the Site Data Description Utility.
Message:	VARIABLE _____ OUT OF LIMITS AT TIME _____ MINIMUM =_____ MAXIMUM = _____ VALUE =_____
Error Level:	None Subroutine: CNVTEST
Explanation:	Engineering units value of variable is outside of performance analyst specified limits.
Message:	VARIABLE _____ HAS BCH ERROR AT TIME _____
Error Level:	None Subroutine: CNVTEST
Explanation:	A BCH flag error affects the portion of the raw data from which the variables data was extracted. The value could be wrong.
Message:	VARIABLE _____ CHANGED TOO FAST AT TIME _____
Error Level:	None Subroutine: CNVTEST
Explanation:	Change between successive values of a variable exceeds performance analyst specified limits.
Message:	VARIABLE_____REJECTED AT TIME_____
Error Level:	4 Subroutine: CNVTEST
Explanation:	Variable failed two or more tests (out-of-limits, BCH error, or changing-too-fast) and value was rejected.

Table 6.2-1. Raw Data Processing Error Messages (Sheet 6 of 6)

Message:	CNVTEST: BAD OP CODE IN ENGINEER EQUATIONS. PROCESSING STOPPED FOR SITE _____
Error Level:	12 Subroutine: CNVTEST
Explanation:	Bad computed variable equation in Site Data Description file. Change data on Site Data Information form and/or change the Site Data Description Utility.
Message:	VARIABLE _____ HAS CONSTANT VALUE _____
Error Level:	None Subroutine: CNVTEST
Explanation:	A variable which performance analyst has specified must change had a constant value throughout one batch of raw input. Indicates a possible problem in the site data collection hardware.

Table 6.2-2. Merge and Summary Error Messages (Sheet 1 of 2)

Message: SORT COMPLETION CODE _____ Subroutine: MERGSUM (Main) prints message to indicate return code from sort routine. Explanation: Completion code 0 means successful. Any other code means not successful. Examine sort messages for problem indication.
Message: MERGE SELECT COMPLETION CODE _____ Subroutine: MERGSUM (Main) prints message to indicate return code from Merge Select routine. Explanation: Completion code 0 means successful. Any other code means not successful. A previous message should indicate reason for failure.
Message: GENERATE HOURLY COMPLETION CODE _____ Subroutine: MERGSUM (Main) prints message to indicate return code from Generate Hourly Records routine. Explanation: Completion code 0 means successful. Any other code means not successful. A previous message should indicate reason for failure.
Message: GENERATE DAILY COMPLETION CODE _____ Subroutine: MERGSUM (Main) prints message to indicate return code from Generate Daily Records routine. Explanation: Completion code 0 means successful. Any other code means not Successful. A previous message should indicate reason for failure.
Message: TOTAL MERGE & SUMMARY COMPLETION CODE _____ Subroutine: MERGSUM (Main) Explanation: Completion code zero means successful. Any other code means not successful. A previous message should indicate reason for failure.
Message: FOR SITE _____ A RECORD IN ADDED DETAIL RECS HAS TIME<= THE TIME OF THE LAST OLD DETAIL RECORD FOR THE SITE. Subroutine: MERGSEL Explanation: Incorrect job setup.

Table 6.2-2. Merge and Summary Error Messages (Sheet 2 of 2)

Message: FOR SITE _____ A HISTORICAL DAILY RECORD HAS TIME _____ GREATER THAN HISTORY TIME _____ Subroutine: GENDALY Explanation: Incorrect job setup.
Message: OLD DETAIL RECORD FILE HAS WRONG LEVEL. PROCESSING STOPPED. Subroutine: MERGSEL Explanation: Incorrect job setup. Old detail record file is wrong.
Message: ADDED DETAIL RECORD FILE HAS WRONG LEVEL. PROCESSING STOPPED. Subroutine: MERGSEL Explanation: Incorrect job setup. Added detail record file is wrong. (SORTIN)
Message: SELECTED DETAIL RECORDS USED TO GENERATE HOURLY RECORDS HAVE WRONG LEVEL. PROCESSING STOPPED. Subroutine: GENHRLY Explanation: Either incorrect job setup or a software problem in MERGSEL or GENHRLY.
Message: HOURLY RECORDS USED TO GENERATE DAILY RECORDS HAVE WRONG LEVEL. PROCESSING STOPPED. Subroutine: GENDALY Explanation: Either incorrect job setup or a software problem in GENHRLY or GENDALY.
Message: HISTORICAL DAILY RECORDS HAVE WRONG LEVEL. PROCESSING STOPPED. Subroutine: GENDALY Explanation: Incorrect job setup. Also could be caused by a software problem in the History Program Generate Daily Records Routine.

```
INPUT PROCESSING SYSTEM. CONVERSION OF RAW INPUT TO DETAIL RECORDS BEGUN FOR SDAS 029              RUN TIME 77/11/15 23.40
SDAS CLOCK BASE TIME       77/09/01 11.20.17
PREV SDAS CLOCK BASE TIME 77/09/01 11.20.32
   #RAW_DATA_RECORDS    80        #RAW_DATA_BYTES   16376        #BCH_ERRORS      0
STREAM PROCESSING COMPLETED WITH ERROR CODE  0
SCANSEP
    DATA BLOCKS    TOT:    22     OUTPUT:    22     REJECTED:     0
    SCANS          TOT:   242     OUTPUT:   242     REJECTED:     0
    #RAW_DATA_BYTES      EXPECTED: 16376       ACTUAL: 16376
SCANSEP PROCESSING COMPLETED WITH ERROR CODE  0
CNVTEST
    TIME OF PREV LAST SCAN 77/11/14 01.56.00
    TIME OF FIRST SCAN     77/11/14 02.01.05
VARIABLE CH21   HAS CONSTANT VALUE          0.000
VARIABLE CH24   HAS CONSTANT VALUE          0.000
    TIME OF LAST SCAN      77/11/14 23.36.01
    #_OF_SCANS_OUTPUT    242
    ANALYSIS BY VARIABLES
    VARNAME   #OUT_OF_LIMITS   #BCH_ERRORS   #CHNG_TOO_FAST #REJECTED   MIN_VALUE  MIN_VALUE_TIME        MAX_VALUE  MAX_VALUE_TIME
     CH01              0              0              0          0          0.000 77/11/14 02.01.05          0.004 77/11/14 08.18.41
     CH15              0              0              0          0         12.317 77/11/14 05.33.21        331.455 77/11/14 23.25.21
     CH25              0              0              0          0          0.000 77/11/14 02.06.25          3.132 77/11/14 09.38.41
     CH13              0              0              0          0          0.000 77/11/14 02.06.25          3.484 77/11/14 07.46.41
     CH17              0              0              0          0         14.819 77/11/14 23.58.41         15.445 77/11/14 02.01.05
     CH19              0              0              0          0          0.000 77/11/14 02.01.05          4.686 77/11/14 12.08.01
     CH21              0              0              0          0          0.000 77/11/14 02.01.05          0.000 77/11/14 02.01.05
     CH07              0              0              0          0          0.000 77/11/14 02.01.05        253.714 77/11/14 10.58.41
     CH27              0              0              0          0          0.000 77/11/14 02.01.05          2.000 77/11/14 02.37.13
     CH31              0              0              0          0          0.000 77/11/14 02.06.25          2.000 77/11/14 03.09.21
     CH14              0              0              0          0          0.000 77/11/14 09.22.41          8.593 77/11/14 11.20.01
     CH18              0              0              0          0          6.696 77/11/14 13.06.41         50.000 77/11/14 02.01.05
     CH02              0              0              0          0          4.106 77/11/14 15.52.01         48.583 77/11/14 08.13.21
     CH04              0              0              0          0          0.000 77/11/14 02.01.05         22.483 77/11/14 07.52.01
     CH06              0              0              0          0          0.000 77/11/14 05.44.01         48.485 77/11/14 22.32.01
     CH22              0              0              0          0          2.880 77/11/14 08.02.41         39.541 77/11/14 09.22.41
     CH24              0              0              0          0          0.000 77/11/14 02.01.05          0.000 77/11/14 02.01.05
     CH16              0              0              0          0         49.384 77/11/14 05.44.01         80.039 77/11/14 12.12.01
     CH12              0              0              0          0         65.973 77/11/14 06.58.41        133.812 77/11/14 11.04.01
     CH23              0              0              0          0         91.584 77/11/14 23.30.41        130.880 77/11/14 11.04.01
     CH09              0              0              0          0         85.044 77/11/14 06.00.01        185.601 77/11/14 09.17.21
     CH20              0              0              0          0        124.819 77/11/14 23.04.01        154.731 77/11/14 02.01.05
     CH26              0              0              0          0         87.282 77/11/14 23.20.01        139.482 77/11/14 08.34.41
     CH28              0              0              0          0         71.251 77/11/14 22.48.01        153.167 77/11/14 07.52.01
     CH08              0              0              0          0         92.757 77/11/14 08.13.21        135.161 77/11/14 02.01.05
     CH32              0              0              0          0        188.201 77/11/14 05.33.21        203.802 77/11/14 07.41.21
     CH30              0              0              0          0         62.425 77/11/14 05.22.41         85.623 77/11/14 11.14.41
     CH10              0              0              0          0         56.002 77/11/14 06.37.21        105.855 77/11/14 14.05.21
     CH29              0              0              0          0          0.000 77/11/14 02.42.41          6.452 77/11/14 11.04.01
     CH11              0              0              0          0          0.000 77/11/14 02.01.05        105.100 77/11/14 10.42.41
     CH03              0              0              0          0          0.000 77/11/14 02.01.05        114.439 77/11/14 08.18.41
     CH05              0              0              0          0          0.000 77/11/14 02.01.05        255.274 77/11/14 08.02.41
CNVTEST PROCESSING COMPLETED WITH ERROR CODE  0

DATA FOR SDAS 029 PROCESSED WITH HIGHEST ERROR CODE  0
```


Figure 6.2-3. Sample Raw Data Processing Site Summary Report

RAW DATA PROCESSING SUMMARY RUN TIME 77/10/31 11.57

EXPLANATION OF ERROR CODES
16 = TERMINAL ERROR
12 = SDAS REJECTED
10 = 1 BLOCK OF DATA REJECTED
8 = 1 SCAN REJECTED
4 = DATA VALUE REJECTED

SDAS_ID	ERROR_CODE	FIRST_SCAN_TIME	LAST_SCAN_TIME	#SCANS_OUTPUT
013	8	77/10/27 22.33.26	77/10/31 19.39.06	776
019	9	77/10/27 23.12.27	77/10/31 20.32.29	775
020	8	77/10/27 21.48.27	77/10/31 11.09.27	771
015	0	77/10/28 01.37.37	77/10/31 11.28.20	799
016	8	77/10/28 01.27.34	77/10/31 11.23.36	761
022	10	77/10/28 00.14.04	77/10/31 12.38.04	141
024	9	77/10/28 00.39.53	77/10/31 23.46.54	775
028	0	77/10/28 05.01.35	77/10/31 12.08.33	812
030	3	77/10/28 00.31.17	77/10/31 11.29.17	812
031	4	77/10/28 01.23.41	77/10/31 11.09.34	819
034	12	77/10/28 01.51.24	77/10/31 23.35.54	150
010	8	77/10/28 01.21.38	77/10/31 15.35.01	271
010	8	00/00/00 00.00.00	00/00/00 00.00.00	0
011	8	77/10/28 12.12.13	77/10/31 10.51.09	184
040	9	77/10/28 03.44.51	77/10/31 04.37.12	315
041	3	77/10/28 12.12.27	77/10/31 15.12.11	243
042	8	77/10/28 15.17.31	77/10/31 15.40.32	182
044	9	77/10/28 03.56.25	77/10/31 05.17.29	813
045	0	77/10/28 07.25.49	77/10/31 11.14.00	763
046	12	77/10/28 02.41.23	77/10/31 10.32.59	141
050	4	77/10/25 03.59.59	77/10/31 06.30.13	840
048	9	77/10/28 03.05.53	77/10/31 04.59.25	932
049	0	77/10/25 00.31.43	77/10/31 05.56.12	791
053	4	77/10/28 04.53.50	77/10/31 07.27.15	840

TOTAL #SCANS_OUTPUT 14134

TOTAL NUMBER OF SDASS PROCESSED 24
NUMBER OF SDASS PROCESSED SUCCESSFULLY 22
NUMBER OF SDASS FOR WHICH PROCESSING FAILED 2

HIGHEST ERROR CODE 12

Figure 6.2-4. Sample Raw Data Processing Overall Summary Report

6.2.3.2 Merge and Summary Reports

The merge and summary process generates the following reports:

- A summary of completion codes for the various merge and summary phases (see figure 6.2-6)
- A detail record report (see figure 6.2-7)
- An hourly record report (see figure 6.2-8)
- A daily record report (see figure 6.2-9)

Definition of error messages and possible causes or corrective actions is shown in table 6.2-2.

6.2.3.3 History Processing Reports

History processing generates the following reports:

- A page of completion codes for history program phases (see figure 6.2-10)
- A detail record report (see figure 6.2-11)
- An hourly record report (see figure 6.2-12)
- A daily record report (see figure 6.2-13)

Definition of completion codes/error messages and explanations is given in table 6.2-3.

6.2.4 Job Control Language (JCL) Statements

The Input Processing Programmer/Analyst must provide the Job Control Language statements (JCL) required for correct execution of the software in the operational environment. Figures 6.2-14 through 6.2-16 provide representative JCL procedures (PROCS) for execution of each of the regularly scheduled input processing software production jobs.

6.2.4.1 Nightly IPS Production Run

This run, which is executed every night, includes Raw Data Processing, Merge and Summary, and saving several disk files on tape.

DETAIL RECORD PRINT FOR SDAS 013 SITE 022 SUBTYPE 1 — RUN TIME 77/10/27 11.00 — PAGE 2

YR/MO/DA HR.MN.SC	CH01	CH02	CH03	CH04	CH05	CH06	CH07	CH08	CH09	CH10
	CH11	CH12	CH13	CH14	CH15	CH16	CH17	CH18	CH19	CH20
	CH21	CH22	CH23	CH24	CH25	CH26	CH27	CH28	CH29	CH30
	CH31	CH32	CH33	CH34	CH35	CH36	CH37	CH38	CH39	CH40
	CH41	CH42	CH43	CH44	CH45	CH46	CH47	CH48		
77/10/25 23.33.56	0.000	41.016	0.000	18.164	0.937	52.051	0.000	360.352	137.422	13.232
	1.787	10.742	1.553	18.843	1810.764	9.424	0.000	3.760	0.000	6.738
	0.000	13.428	0.000	14.355	0.000	8.301	69.375	62.988	12.654	84.297
	74.687	72.910	0.000	0.000	0.000	89.961	11.892	196.211	10.099	195.039
	10.252	194.648	162.031	139.766	206.172	198.750	83.193	81.289		
77/10/25 23.39.16	0.000	42.920	0.000	17.273	0.918	51.660	0.000	375.977	136.836	13.184
	1.799	10.498	0.674	18.343	73.543	5.957	0.000	0.000	0.000	6.396
	0.000	4.297	0.000	15.918	0.000	8.008	70.195	62.441	0.000	83.516
	73.926	75.068	0.000	0.000	0.000	89.570	12.062	196.016	0.000	194.844
	10.252	195.039	159.983	138.964	209.583	202.852	84.590	81.797		
77/10/25 23.44.36	0.000	46.246	0.000	16.895	0.918	51.367	0.000	386.719	135.664	13.086
	1.828	10.303	0.654	16.652	58.790	5.957	0.000	0.000	0.000	8.691
	0.000	0.000	0.000	15.331	0.000	4.590	69.375	63.125	0.000	83.320
	74.180	77.100	0.000	0.000	0.000	89.766	12.006	195.625	0.000	194.648
	10.386	195.430	158.516	139.160	210.273	203.438	85.859	79.766		
77/10/25 23.49.56	0.000	46.387	0.000	16.113	0.879	51.074	0.000	394.531	135.273	12.793
	1.787	10.254	0.645	15.824	55.024	5.225	0.000	0.000	0.000	5.322
	0.000	0.000	0.000	16.016	0.000	2.246	67.734	60.527	0.000	83.125
	73.799	77.734	0.000	0.000	0.000	89.180	11.949	195.430	0.000	194.648
	10.319	195.039	156.953	138.964	209.297	202.070	86.621	81.289		
77/10/25 23.55.16	0.000	46.777	0.000	15.488	0.879	50.781	0.000	405.273	134.688	12.842
	1.775	10.359	0.674	18.457	55.577	6.543	0.000	0.000	0.000	8.496
	0.000	0.000	0.000	15.527	0.000	0.098	68.145	60.391	0.000	82.539
	73.926	77.988	0.000	0.000	0.000	88.984	12.062	195.625	0.000	194.453
	10.184	195.234	154.805	138.868	210.859	203.828	86.875	81.543		
77/10/26 00.00.36	0.000	47.168	0.000	14.551	0.879	50.488	0.000	414.063	134.492	12.451
	1.793	9.814	0.674	18.506	27.150	5.615	0.000	0.000	0.000	8.057
	0.000	0.000	0.000	15.283	0.000	0.000	67.324	61.211	0.000	81.953
	73.926	76.973	0.000	0.000	0.000	88.789	12.118	195.625	0.000	194.648
	10.386	195.234	153.047	138.203	210.078	202.070	87.383	82.305		
77/10/26 00.05.56	0.000	47.021	0.000	13.379	0.625	50.098	0.000	423.828	133.711	12.158
	0.023	9.766	0.000	18.408	13.298	4.834	0.000	0.000	0.000	4.395
	0.000	0.000	0.000	15.283	0.000	0.000	67.324	60.254	0.000	81.758
	73.926	77.227	0.000	0.000	0.000	88.594	1.649	195.430	0.000	194.648
	0.000	195.039	151.680	137.813	205.586	196.211	87.764	82.686		

Figure 6.2-5. Sample Data Processing Detail Record Print

```
REPORT ON MONTHLY PERF EVAL RECORDS     RUN TIME 78/03/13 19.48
                                                        PAGE   1

          MONTH SELECTED 78/02
          # DAYS IN MONTH 28

   SITE   SUBTYPE     -----DAILY-RECORDS-USED-----
                      FIRST DAY   LAST DAY   COUNT

    022       1       78/02/01    78/02/28      24

TOTAL # MONTHLY PERF EVAL RECORDS =    1
TIME KEY ON MONTHLY RECORDS = 78/02/28 23.59.59
```

Figure 6.2-6. Sample Merge and Summary Completion Codes Report

```
                    REPORT ON DETAIL MEASUREMENT RECORDS          RUN TIME 78/03/13 19.35
                                                                          PAGE   1

SITE SUBTYPE  ORIGIN:     FIRST TIME          LAST TIME          COUNT  DEST:     FIRST TIME          LAST TIME          COUNT

 022     1    PREVIOUS  00/00/00 00.00.00  00/00/00 00.00.00      0   ACTIVE  78/02/01 07.11.10  78/03/01 23.55.21   6568
              ADDED     78/02/01 07.11.10  78/03/01 23.55.21   6568   HISTORY 00/00/00 00.00.00  00/00/00 00.00.00      0

   TOTALS     PREVIOUS                                         0   ACTIVE                                             6568
              ADDED                                         6568   HISTORY                                               0

SIMS DETAIL MEAS RECORDS PROCESSING SUCCESSFUL
```

Figure 6.2-7. Sample Merge and Summary Detail Records Reports

```
                    REPORT ON HOURLY PERF EVAL RECORDS             RUN TIME 78/03/13 19.44
                                                                          PAGE   1

SITE SUBTYPE  ORIGIN:     FIRST TIME          LAST TIME          COUNT  DEST:     FIRST TIME          LAST TIME          COUNT

 022     1    PREVIOUS  00/00/00 00.00.00  00/00/00 00.00.00      0   ACTIVE  78/02/01 07.59.59  78/03/01 22.59.59    589
              GENERATED 78/02/01 07.59.59  78/03/01 22.59.59    589   HISTORY 00/00/00 00.00.00  00/00/00 00.00.00      0

   TOTALS     PREVIOUS                                         0   ACTIVE                                              589
              GENERATED                                      589   HISTORY                                               0

SIMS HOURLY PERF EVAL RECORDS PROCESSING SUCCESSFUL.
```

Figure 6.2-8. Sample Merge and Summary Hourly Records Report

```
                    REPORT ON DAILY PERF EVAL RECORDS              RUN TIME 78/03/13 19.47
                                                                          PAGE   1

SITE SUBTYPE  ORIGIN:     FIRSTTIME           LAST TIME          COUNT  DEST:     FIRST_TIME          LAST TIME          COUNT

 022     1    PREVIOUS  00/00/00 00.00.00  00/00/00 00.00.00      0   ACTIVE  78/02/01 23.59.59  78/02/28 23.59.59     24
              GENERATED 78/02/01 23.59.59  78/02/28 23.59.59     24   HISTORY 00/00/00 00.00.00  00/00/00 00.00.00      0

   TOTALS     PREVIOUS                                         0   ACTIVE                                               24
              GENERATED                                       24   HISTORY                                               0

SIMS DAILY PERF EVAL PROCESSING SUCCESSFUL.
```

Figure 6.2-9. Sample Merge and Summary Daily Records Report

Table 6.2-3. History Program Error Message (Sheet 1 of 3)

Message: DETAIL RECORD SELECT COMPLETION CODE_____ Subroutine: HISTORY (Main) prints message to indicate return code from routine HSELECT. Explanation: Completion code 0 means successful. Any other code means not successful, in which case a previous message should indicate a reason for the failure.
Message: GENERATE HOURLY RECORDS COMPLETION CODE_____ Subroutine: HISTORY (Main) prints message to indicate return code from routine GENHRLY. Explanation: Completion code 0 means successful. Any other code means not successful, in which case a previous message should indicate a reason for the failure.
Message: GENERATE DAILY RECORDS COMPLETION CODE_____ Subroutine: HISTORY (Main) prints message to indicate return code from routine GENDALY. Explanation: Completion code 0 means successful. Any other code means not successful, in which case a previous message should indicate a reason for the failure.
Message: TOTAL HISTORY PROGRAM COMPLETION CODE _____ Subroutine: HISTORY (Main) Explanation: Completion code 0 means successful. Any other code means not successful and a previous message should indicate a reason for the failure.
Message: CONVERSION ERROR Subroutine: HISTORY (Main) Explanation: Most probable cause is faulty data or no data in the execution parameter. Make sure execution parameter begins with six numeric characters.

Table 6.2-3. History Program Error Message (Sheet 2 of 3)

Message: PARM CONTAINS IMPOSSIBLE HISTORY DATE Subroutine: HISTORY (Main) Explanation: Parameter must start with six characters specifying Year, Month, and Last Day in Month of the month being historied. Correct PARM and rerun.
Message: PARM INPUT FOR NEW HISTORY TIME IS NOT > OLD HISTORY TIME. OLD HISTORY TIME IS _____ Subroutine: HISTORY (Main) Explanation: Trying to run without advancing the history date. Either PARM is wrong or the wrong data is in the History Date file.
Message: PARM INPUT FOR NEW HISTORY TIME _____ IS NOT < RUN TIME _____ Subroutine: HISTORY (Main) Explanation: Bad execution parameter (PARM) or a bad system clock time.
Message: INPUT DETAIL RECORDS HAVE WRONG LEVEL. PROCESSING STOPPED. Subroutine: HSELECT Explanation: Incorrect job setup. Using wrong data in old detail record file.
Message: SELECTED DETAIL RECORDS USED TO GENERATE HOURLY RECORDS HAVE WRONG LEVEL. PROCESSING STOPPED. Subroutine: GENHRLY Explanation: Either incorrect job setup or a software problem in HISTORY or HSELECT.
Message: OLD HISTORICAL DAILY RECORDS HAVE WRONG LEVEL. PROCESSING STOPPED. Subroutine: GENDALY Explanation: Incorrect job setup. Using wrong data for old historical daily file (HSTDALY).

Table 6.2-3. History Program Error Message (Sheet 3 of 3)

Message: HOURLY RECORDS USED TO GENERATE DAILY RECORDS HAVE WRONG LEVEL. PROCESSING STOPPED. **Subroutine:** GENDALY **Explanation:** Incorrect job setup or a software error in HISTORY or GENHRLY.
Message: FOR SITE_____ AN OLD HISTORY DAILY RECORD HAS TIME _____> THE OLD HISTORY TIME. **Subroutine:** GENDALY **Explanation:** Incorrect job setup. The old history records (in file HSTDALY) and the old history time do not agree. Perhaps a run was aborted and data sets not restored correctly.
Message: AN ADDED DAILY RECORD HAS TIME_____OUTSIDE THE CORRECT RANGE. **Subroutine:** GENDALY **Explanation:** A software problem in record selection criteria, storing time in generated records, or in the test itself.

```
//RAWPROC EXEC PGM=SIMSRDPP,REGION=200K,TIME=10
//STEPLIB DD DSN=SIMSIPS.LOADLIB,DISP=SHR
//RAWFILE DD DSN=SIMSIPS.RAWDATA,DISP=(OLD,KEEP)
//SITDESC DD DSN=SIMSIPS.SITEINFO.FILE,DISP=(OLD,KEEP),DCB=DSORG=IS
//CONTFIL DD DSN=SIMSIPS.CONTFIL,DISP=(OLD,KEEP),DCB=DSORG=IS
//REJSCAN DD DSN=SIMSIPS.REJSCAN,DISP=MOD
//REJVARF DD DSN=SIMSIPS.REJVARS,DISP=MOD
//NIPSFIL DD DSN=SIMSIPS.ADDDETL,DISP=(NEW,CATLG),UNIT=3330,
//    VOL=SER=333004,SPACE=(TRK,40),
//    DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//DATAFIL DD UNIT=SYSDA,SPACE=(TRK,(25,10)),
//    DCB=(RECFM=FB,LRECL=1024,BLKSIZE=2048)
//FLAGFIL DD UNIT=SYSDA,SPACE=(TRK,(25,10)),
//    DCB=(RECFM=FB,LRECL=1024,BLKSIZE=2048)
//SCANFIL DD UNIT=SYSDA,SPACE=(TRK,(25,10)),
//    DCB=(RECFM=FB,LRECL=215,BLKSIZE=2150)
//SYSPRINT DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(352C,(90,10)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//REPZFIL DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(10,5)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//DETPRNT DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(100,20)),
//    DCB=(RECFM=FB,LRECL=137,BLKSIZE=3520)
//MERGSUM EXEC PGM=SIMSMRGS,REGION=130K,TIME=05,COND=(10,LT,RAWPROC)
//STEPLIB DD DSN=SIMSIPS.LOADLIB,DISP=SHR
//SORTIN DD DSN=SIMSIPS.ADDDETL,DISP=(OLD,KEEP)
//SORTOUT DD UNIT=SYSDA,SPACE=(TRK,40),
//    DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//SYSOUT DD SYSOUT=A
//SORTWK01 DD UNIT=SYSDA,SPACE=(TRK,(200,100),,CONTIG)
//SORTWK02 DD UNIT=SYSDA,SPACE=(TRK,(200,100),,CONTIG)
//SORTWK03 DD UNIT=SYSDA,SPACE=(TRK,(200,100),,CONTIG)
//SORTWK04 DD UNIT=SYSDA,SPACE=(TRK,(200,100),,CONTIG)
//SORTWK05 DD UNIT=SYSDA,SPACE=(TRK,(200,100),,CONTIG)
//SORTWK06 DD UNIT=SYSDA,SPACE=(TRK,(200,100),,CONTIG)
//SORTLIB DD DSN=SYS1.SORTLIB,DISP=SHR
//HISTFIL DD DSN=SIMSIPS.HISTDATE,DISP=(OLD,KEEP)
//OLDDETL DD DSN=SIMSIPS.DETAIL.CURRENT.&OLDDATE,DISP=(OLD,KEEP)
//HSTDALY DD DSN=SIMSIPS.DAILY.HISTORY,DISP=(OLD,KEEP)
//DETLOUT DD DSN=SIMSIPS.DETAIL.CURRENT.&DATE,UNIT=TAPE9,
//    DISP=(NEW,CATLG),VOL=(,,,5),DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//HRLYOUT DD DSN=SIMSIPS.HOURLY.CURRENT,DISP=(NEW,CATLG),UNIT=3330,
//    VOL=SER=333004,SPACE=(TRK,40),
//    DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//DALYOUT DD DSN=SIMSIPS.DAILY.CURRENT,DISP=(NEW,CATLG),UNIT=3330,
//    VOL=SER=333004,SPACE=(TRK,5),
//    DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//REPTFIL DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(10,5)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//SYSPRINT DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(10,5)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//NITESAV EXEC PGM=SIMSSAV1,REGION=130K,TIME=02,
//    COND=((10,LT,RAWPROC),(0,LT,MERGSUM))
//STEPLIB DD DSN=SIMSIPS.LOADLIB,DISP=SHR
//IN1 DD DSN=SIMSIPS.SITEINFO.FILE,DISP=(OLD,KEEP),DCB=DSORG=IS
//IN2 DD DSN=SIMSIPS.RAWDATA,DISP=(OLD,KEEP)
//IN3 DD DSN=SIMSIPS.ADDDETL,DISP=(OLD,KEEP)
//IN4 DD DSN=SIMSIPS.CONTFIL,DISP=(OLD,KEEP),DCB=DSORG=IS
//IN5 DD DSN=SIMSIPS.REJSCAN,DISP=(OLD,KEEP)
//IN6 DD DSN=SIMSIPS.REJVARS,DISP=(OLD,KEEP)
//OUT1 DD DSN=SIMSIPS.SITEINFO.FILE.&DATE,DISP=(NEW,KEEP),UNIT=TAPE9,
//    LABEL=(1,SL,RETPD=75),DCB=(RECFM=FB,LRECL=2218,BLKSIZE=6654)
//OUT2 DD DSN=SIMSIPS.RAWDATA.&DATE,DISP=(NEW,KEEP),UNIT=TAPE9,
//    VOL=REF=*.OUT1,LABEL=(2,SL,RETPD=75),
//    DCB=(RECFM=FB,LRECL=256,BLKSIZE=4096)
//OUT3 DD DSN=SIMSIPS.ADDDETL.&DATE,DISP=(NEW,KEEP),UNIT=TAPE9,
//    LABEL=(1,SL,RETPD=15),DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//OUT4 DD DSN=SIMSIPS.CONTFIL.&DATE,DISP=(NEW,KEEP),UNIT=TAPE9,
//    VOL=REF=*.OUT3,LABEL=(2,SL,RETPD=15),
//    DCB=(RECFM=FB,LRECL=377,BLKSIZE=3770)
//OUT5 DD DSN=SIMSIPS.REJSCAN.&DATE,DISP=(NEW,KEEP),UNIT=TAPE9,
//    VOL=REF=*.OUT3,LABEL=(3,SL,RETPD=15),
//    DCB=(RECFM=FB,LRECL=248,BLKSIZE=2480)
//OUT6 DD DSN=SIMSIPS.REJVARS.&DATE,DISP=(NEW,KEEP),UNIT=TAPE9,
//    VOL=REF=*.OUT3,LABEL=(4,SL,RETPD=15),
//    DCB=(RECFM=FB,LRECL=41,BLKSIZE=4100)
//SYSPRINT DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(10,5)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
```

Figure 6.2-14. JCL Procedure for Nightly IPS Production Run

```
//HISTORY EXEC PGM=SIMSHIST,REGION=130K,TIME=10
//STEPLIB DD DSN=SIMSIPS.LOADLIB,DISP=SHR
//HISTFIL DD DSN=SIMSIPS.HISTDATE,DISP=(OLD,KEEP)
//OLDDETL DD DSN=SIMSIPS.DETAIL.CURRENT.&OLDDATE,DISP=(OLD,KEEP)
//HSTDALY DD DSN=SIMSIPS.DAILY.OLDHIST,DISP=(OLD,KEEP)
//DETLOUT DD DSN=SIMSIPS.DETAIL.HISTORY.&MONTH,UNIT=TAPE9,VOL=(,,,5),
//    DISP=(NEW,CATLG),LABEL=(1,SL,EXPDT=85365),
//    DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//HRLYOUT DD DSN=SIMSIPS.HOURLY.HISTORY.&MONTH,UNIT=TAPE9,
//    DISP=(NEW,CATLG),LABEL=(1,SL,EXPDT=85365),
//    DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//DAILYOUT DD DSN=SIMSIPS.DAILY.HISTORY,DISP=(NEW,CATLG),UNIT=3330,
//    VOL=SER=333004,SPACE=(TRK,5),
//    DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//SYSPRINT DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(10,5)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//REPTFIL DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(10,5)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//HISTSAV EXEC PGM=SIMSSAV2,REGION=130K,TIME=5,COND=(0,LT,HISTORY)
//STEPLIB DD DSN=SIMSIPS.LOADLIB,DISP=SHR
//IN1 DD DSN=SIMSIPS.HISTDATE,DISP=SHR
//IN2 DD DSN=SIMSIPS.DAILY.HISTORY,DISP=SHR
//OUT1 DD DSN=SIMSIPS.HISTDATE.&MONTH,UNIT=TAPE9,DISP=(NEW,KEEP),
//    LABEL=(1,SL,EXPDT=85365),DCB=(RECFM=FB,LRECL=25,BLKSIZE=250)
//OUT2 DD DSN=SIMSIPS.DAILY.HISTORY.&MONTH,UNIT=TAPE9,DISP=(NEW,KEEP),
//    VOL=REF=*.OUT1,LABEL=(2,SL,EXPDT=85365),
//    DCB=(RECFM=FB,LRECL=355,BLKSIZE=6390)
//SYSPRINT DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(10,5)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//DELT DD DSN=SIMSIPS.DAILY.OLDHIST,DISP=(OLD,DELETE)
```

Figure 6.2-15. JCL Procedure for IPS History Production Run

```
//TAPECOPY EXEC PGM=TAPECOPY,REGION=124K,TIME=5
//SYSPRINT DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(5,5))
//SYSABEND DD SYSOUT=A,SPACE=(1632,(4,300)),UNIT=(SYSOUT,2)
//INPUT DD DSNAME=INCOPY,DISP=(OLD,KEEP),UNIT=(TAPE9,,DEFER),
//    LABEL=(,SL),VOL=SER=XXXX1
//OUTPUT DD DSNAME=OUTCOPY,DISP=(NEW,KEEP),UNIT=(TAPE9,,DEFER),
//    LABEL=(,SL,EXPDT=85365)
//COPYREJS EXEC PGM=SIMSSAV3,REGION=130K,TIME=3
//STEPLIB DD DSN=SIMSIPS.LOADLIB,DISP=SHR
//SYSPRINT DD SYSOUT=A,UNIT=(SYSOUT,2),SPACE=(3520,(10,5)),
//    DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//IN1 DD DSN=SIMSIPS.REJSCAN,DISP=(OLD,KEEP)
//IN2 DD DSN=SIMSIPS.REJVARS,DISP=(OLD,KEEP)
//OUT1 DD DSN=SIMSIPS.REJSCAN.&MONTH,UNIT=TAPE9,DISP=(NEW,KEEP),
//    LABEL=(1,SL,EXPDT=85365),DCB=(RECFM=FB,LRECL=248,BLKSIZE=4960)
//OUT2 DD DSN=SIMSIPS.REJVARS.&MONTH,UNIT=TAPE9,DISP=(NEW,KEEP),
//    LABEL=(2,SL,EXPDT=85365),DCB=(RECFM=FB,LRECL=41,BLKSIZE=4100),
//    VOL=REF=*.OUT1
//DELTREJS EXEC PGM=IEHPROGM,REGION=60K,TIME=(,5),COND=(0,LT,COPYREJS)
//SYSPRINT DD SYSOUT=A
//DELT1 DD DSN=SIMSIPS.REJSCAN,DISP=(OLD,DELETE)
//DELT2 DD DSN=SIMSIPS.REJVARS,DISP=(OLD,DELETE)
//SYSIN DD DUMMY,DCB=(BLKSIZE=80)
//ALLOCREJ EXEC PGM=IEHPROGM,REGION=60K,TIME=(,5),
//    COND=((0,LT,COPYREJS),(0,LT,DELTREJS))
//SYSPRINT DD SYSOUT=A
//ALLOC1 DD DSN=SIMSIPS.REJSCAN,DISP=(NEW,CATLG),UNIT=3330,
//    VOL=SER=333004,SPACE=(TRK,20),
//    DCB=(RECFM=FB,LRECL=248,BLKSIZE=4960)
//ALLOC2 DD DSN=SIMSIPS.REJVARS,DISP=(NEW,CATLG),UNIT=3330,
//    VOL=SER=333004,SPACE=(TRK,30),
//    DCB=(RECFM=FB,LRECL=41,BLKSIZE=4100)
//SYSIN DD DUMMY,DCB=(BLKSIZE=80)
```

Figure 6.2-16. JCL Procedure for Run to Group Raw Data and Save Rejected Data

```
//PSIMSTAP JOB (ACCT INFO),MSGLEVEL=1,CLASS=B
//    EXEC SIMSTAPP,MONTH=JAN77
//TAPECOPY.SYSIN DD *
FILES=1,REEL=XXXX01                                                    X
DSNAME=SIMSIPS.SITEINFO.FILE.D770101
FILES=1                                                                X
DSNAME=SIMSIPS.RAWDATA.D770101
RUN=YES,FILES=1,REEL=XXXX02                                            X
DSNAME=SIMSIPS.SITEINFO.FILE.D770102
FILES=1                                                                X
DSNAME=SIMSIPS.RAWDATA.D770102
RUN=YES,FILES=1,REEL=XXXX03                                            X
DSNAME=SIMSIPS.SITEINFO.FILE.D770103
FILES=1                                                                X
DSNAME=SIMSIPS.RAWDATA.D770103
    .
    .
    .
RUN=YES,FILES=1,REEL=XXXX31                                            X
DSNAME=SIMSIPS.SITEINFO.FILE.D770131
FILES=1                                                                X
DSNAME=SIMSIPS.RAWDATA.D770131
/*
```

Figure 6.2-17. Sample Setup for Run to Group Raw Data and Save Rejected Data

Figure 6.2-14 contains a representative JCL procedure for the nightly IPS production run. A sample deck setup for the nightly IPS run follows:

```
//PSIMSIPS Job (acct.), CLASS=C
//  EXEC SIMSIPNP, DATE=D760704, OLDDATE=D760703
//
```

DATE specifies the day (year, month, and day in month) on which the run is submitted. OLDDATE specifies the day of the previous run. The sample setup above would be correct for the run submitted July 4, 1976 for execution on the night of July 4 - July 5, 1976.

NOTE: In support of S/7 to S/370 data transfer and nightly IPS execution the following data sets should be deleted each afternoon:

SIMSIPS.RAWDATA

SIMSIPS.HOURLY.CURRENT

SIMSIPS.DAILY.CURRENT

SIMSIPS.ADDDETL

SIMSIPS.RAWDATA should be preallocated after being deleted.

6.2.4.2 History Production Run

The history production run is executed on a monthly basis after all data for all sites for the month has been processed and merged into the data base. (If all sites are called daily then the January run might be made the night of February 2 - February 3). The history production run includes executing the history program.

Figure 6.2-15 contains a representative JCL procedure for the history production run. A sample deck setup for the run follows:

```
//PSIMSHST Job (acct.), CLASS=B
//  EXEC SIMSHSTP, PARM='770131JANUARY␣1977␣␣␣',
//    MONTH=JAN77, OLDDATA=D770201
```

The sample setup above would be correct for a history run for the month of January 1977 run the night of February 2 - February 3. PARM should contain the year, month, last day in the month of the history month plus a spelled out name of the history month. MONTH should contain a semi-spelled-out version of the history month 'JAN77', 'FEB77', etc. OLDDATA should contain character D plus yesterdays year, month, and day in month.

NOTE: As preparation for the history production run, data set SIMSIPS.DAILY.HISTORY should be renamed SIMSIPS.DAILY.OLDHIST.

6.2.4.3 Run to Group Raw Data and Save Rejected Data

This run groups many tapes of raw data and site data description files onto one tape. It also saves the contents of the rejected scan and rejected variable files on a permanent tape and reinitializes the rejected files.

The job is run once a month. It is normally submitted on the first day of a month and run during the night between the 1st and 2nd days in the month.

Figure 6.2-16 contains a representative JCL procedure (PROC) for this run. Figure 6.2-17 contains a sample deck setup for the run.

The sample setup is for the January 1977 run which would be submitted the afternoon of February 1. Symbolic parameter MONTH should specify the just completed month e.g. 'JAN77', 'FEB77', etc. The tapecopy Sysin cards should specify the copying of all the site information/raw data tapes for the month. Tape reel numbers and DSnames must be supplied.

6.2.5 Site Description File Maintenance

Maintenance of the Site Data Description file includes:

- Making changes to the site data information card file in accordance with input received from site performance analysts.
- Running the Site Data Description utility to update the Site Data Description file.
- Examining printout from the Site Data Description Utility.
- Maintaining current listing of file contents.

Changing the Site Data Information Card File

The Site Data Information Card file is a PDS (DSNAME is SIMSIPS.SITEINFO.CARDS) with one member for each active site. The member for site XXXXX is named SITxxxxx. The member for a site contains one general information card (A-card) for the site and one card (B-card) for each measurement (i.e., parameter recorded) at the site. Add, replace, or delete subcodes 'A', 'R', or 'D' must be placed in column 7 of the A-cards. The order must be A-card, then B-cards. Formats of cards are shown in figure 6.2-18. Instructions on completion of cards are contained in Section 8.2 of this document.

Either MTMT or IEBUPDTE may be used for UPDATE; however, a record of all changes must be maintained.

PAGE 1 = GENERAL INFORMATION
DATE:_____
NEW, CHANGE, OR DELETE (CIRCLE)
SIGNATURE:_____

SITE DATA INFORMATION

TO CHANGE ANY INFORMATION ON THIS PAGE, COMPLETE ALL ITEMS EXCEPT CARD CODE. TO DELETE A SITE, FILL IN SITE ID AND DATE, CIRCLE 'DELETE' AND COMPLETE SIGNATURE.

1 — — — 5 SITE ID (EXAMPLE 00043)

A
6 7 CARD CODES (RESERVED FOR FILE MAINTENANCE TECHNICIAN USE)

8 9 SYSTEM TYPE ('HC' = HEATING & COOLING, 'H' = HEATING, OR 'HW' = HOT WATER)

10 11 PRINT LEVEL ('12' = MOST DETAILED LEVEL INCLUDES PRINT OF DETAIL RECORDS,
'08' = NORMAL LEVEL, '04' = LESS DETAIL THAN NORMAL,
'00' = NO PRINTING)

12 13 SCAN LEVEL (NO. OF BYTES OF DATA IN ONE SCAN. DO NOT INCLUDE TIME BYTES).

14 TIME ZONE ('E' = EASTERN, 'C' = CENTRAL, 'M' = MOUNTAIN', 'P' = PACIFIC)

15 — — — 19 COLLECTOR AREA (SQUARE FEET, RIGHT JUSTIFY)

Figure 6.2-18. Site Data Information Forms (Page 1 of 3)

SITE CARD CODE B

SITE DATA INFORMAT'

IF NEW COMPLETE ALL INFO ABOUT ALL . .ASUREMENTS AND
LINE THROUGH NON-EXISTENT MEASUREMENTS.
IF CHANGE COMPLETE ALL INFO ABOUT A NEW OR CHANGED MEASUREMENT
LINE THROUGH TO DELETE A MEASUREMENT.

PG 2 PART 1 OF MEASUREMENT I
DATE: _____
NEW OR CHANGE (CIRCLE)
RESP SIG _____

MEASUREMENT DESCRIPTIVE NAME	MEAS CODED NAME	BYTE POS IN SCAN 1 = 1st BYTE TIME	LENGTH IN SCAN 1 OR 2	CONVERSION INFORMATION						TESTING INFORMATION			
				TYPE	TYPE MAY BE L = LINEAR, Q = QUADRATIC, T = THIRD ORDER OR D = DISCRETE. IF I IS RAW BIT VALUE SEE FORMULAS BELOW TO COMPLETE CONVERTED VALUE CV				UNIT OF CONVERTED VALUE	UNITS OF COMPUTED VALUE			*TO TEST FOR FROZEN STATE
					A	B	C	D		MIN VALUE	MAX VALUE	MAXIMUM CHANGE BETWEEN READINGS	
WIND DIRECTION	D001								0 FROM N				
COLLECTOR CIRC PUMP POWER	EP101								KW				
HW ELEC AUX POWER	EP300								KW				
HW CIRC PUMP POWER	EP301								KW				
HTG ELEC AUX POWER	EP400								KW				
HTG LOOP CIRC PUMP POWER	EP401								KW				
BLDG FAN POWER	EP402								KW				
HEAT PUMP COMPRESS POWER	EP403								KW				
ABSORP CHILLER OPEN POWER	EP501								KW				
HW AUX FUEL FLOW	F300								FT3/MIN				
HTG AUX FUEL FLOW	F400								FT3/MIN				
COOLING AUX FUEL FLOW	F500								FT3/MIN				
TOTAL RADIATION	I001								KGTU/HR				
DIFFUSE RADIATION	I002								KGTU/HR				
OUTDOOR DB TEMPERATURE	T001								°F				
COLLECTOR INLET TEMPERATURE	T100								°F				
STORAGE INLET TEMPERATURE	T101								°F				
COLLECTOR ABSORBER TEMP	T102								°F				
STORAGE MEDIA AVG TEMP	T200								°F				
STORAGE AMBIENT TEMP	T201								°F				
MAKEUP WATER TEMP	T300								°F				
HX INLET TEMP	T301								°F				
LOAD RETURN TEMP	T400								°F				
LOAD HX INLET TEMP	T500								°F				
COOLING TOWER INLET TEMP	T501								°F				
BLDG RETURN AIR DB TEMP	T600								°F				
BLDG RETURN AIR WB TEMP	T601								°F				
BLDG SUPPLY AIR WB TEMP	T602								°F				

KEYPUNCH SITE ID + CARD CODE OR ALL CARDS

TYPE
L: $CV = A + BI$
Q: $CV = A + BI + CI^2$
T: $CV = A + BI + CI^2 + DI^3$

TYPE
D: $CV = \begin{cases} 1, \text{ IF } A \leq I \leq B \\ 0 \text{ OTHERWISE} \end{cases}$

Figure 6.2-18. Site Data Information Forms (Page 2 of 3)

SITE DATA INFORMA

PG 3 PART 2 OF MEASUREMENT LIST

SIT CARD CODE B

IF NEW COMPLETE ALL INFO ABOUT A[illegible] EASUREMENTS AND LINE THROUGH NON EXISTENT MEASUREMENTS.
IF CHANGE COMPLETE ALL INFO ABOUT A NEW OR CHANGED MEASUREMENT
LINE THROUGH TO DELETE A MEASUREMENT

DATE: _____

NEW OR CHANGE (CIRCLE)

RESP SIG _____

MEASUREMENT DESCRIPTIVE NAME	MEAS CODE/ NAME	BYTE POS IN SCAN 1 = 1st BYTE TIME	LENGTH IN SCAN 1 OR 2	CONVERSION INFORMATION						TESTING INFORMATION			
				TYPE	TYPE MAY BE L = LINEAR, Q = QUADRATIC, T = THIRD ORDER OR D = DISCRETE. IF I IS RAW BIT VALUE SEE FORMULAS BELOW TO COMPLETE CONVERTED VALUE CV				UNITS OF CONVERTED VALUE	UNITS OF COMPUTED VALUE			*TO TEST FOR FROZEN STATE
					A	B	C	D		MIN VALUE	MAX VALUE	MAXIMUM CHANGE BETWEEN READINGS	
COLLECTOR TEMP DIFF	TD100								°F				
STORAGE TEMP DIFF (C&TS)	TD101								°F				
STORAGE TEMP DIFF (HWS)	TD300								°F				
HX TEMP DIFF	TD301								°F				
LOAD HX TEMP DIFF	TD302								°F				
STORAGE TEMP DIFF (HTS)	TD400								°F				
AUXILIARY TEMP DIFF	TD401								°F				
LOAD HX TEMP DIFF (HTS)	TD402								°F				
LOAD HX TEMP DIFF (SCS)	TD500								°F				
COOLING TOWER TEMP DIFF	TD501								°F				
SUPPLY/RETURN AIR TEMP DIFF	TD600								°F				
WIND VELOCITY	W100								MPH				
COLLECTOR FLOW RATE	W100								GAL/MIN				
CIRCULATION FLOW RATE (HWS)	W300								GAL/MIN				
LOAD FLOW RATE	W301								GAL/MIN				
CIRCULATION FLOW RATE (HTS)	W400								GAL/MIN				
LOAD HX FLOW RATE	W500								GAL/MIN				
COOLING TOWER FLOW RATE	W501								GAL/MIN				
BLDG AIR FLOW RATE	W600								FT3/MIN				
CONDENSATE FLOW	W601								FT3/MIN				
SPARE	SP01								-				
SPARE	SP02								-				
SPARE	SP03												
SPARE	SP04								-				
SPARE	SP05								-				
SPARE	SP06								-				
SPARE	SP07								-				
SPARE	SP08								-				
SPARE	SP09								-				
SPARE	SP10								-				

KEYPUNCH SITE ID + CARD CODE OR ALL CARDS

TYPE
L: CV = A + BI
Q: CV = A + BI + CI^2
T: CV = A + BI + CI2 + DI^3

TYPE
D: CV = $\begin{cases} 1, \text{IF } A \leq I \leq B \\ 0 \text{ OTHERWISE} \end{cases}$

Running the Site Data Description Utility

Figure 6.2-19 contains the JCL procedure for executing the Site Data Description utility. Figure 6.2-20 contains a sample deck setup for executing the procedure. The date parameter is used to specify the year, month, and day of the run. 'OPTION=OLD' means this is a normal run updating the Site Data Description File. 'OPTION=NEW' would be used for a run creating a new Site Data Description File. "OPTION=PRINT' specifies a run to print the contents of the file. 'OPTION=OLD' is a default parameter. SYSIN should include, concatenated together, the members of the site data information card file for all sites whose information is to be added, changed, or deleted.

Examining Printout from the Site Data Description Utility

Site Data Description Utility printout includes:

- An overall summary page (see figure 6.2-21)
- A print of card images and errors detected in the cards for each site for which information was added or changed. (see figure 6.2-22)
- Printouts of new or replacement site data description records which were placed in the site data description file (see figure 6.2-23)
  NOTE: The Site Data Description Utility can be run in a print only mode in which all records in the Site Data Description file are printed.
- Possible messages about sites being deleted or cards out of place.

Error condition/messages and corrective actions are shown in table 6.2-4.

Maintain Current Listing of File Content

A Site Description File Maintenance Notebook must be maintained which contains the current contents of each entry in the file. A history of all changes must be included in the notebook. Upon completion of each update cycle, the resulting listing must be added to the notebook.

Copies of current contents listing must be provided to Performance Analysts.

```
//  PROC  OPTION=OLD,DAYS=0360,DATE=DATE
//SAVE EXEC  PGM=PDSAD690,REGION=78K,TIME=2
//SYSPRINT  DD  SYSOUT=A
//SYSUT1A  DD  DSN=SIMSIPS.SITEINFO.CARDS,DISP=SHR
//SYSUT2A  DD  DSN=SIMSIPS.SITEINFO.CARDS.&DATE,DISP=(NEW,KEEP),
//     UNIT=TAPE9,LABEL=(1,SL,RETPD=&DAYS),
//     DCB=(RECFM=FB,LRECL=80,BLKSIZE=3200)
//SYSIN  DD  UNIT=SYSDA,SPACE=(TRK,10)
//SDDU  EXEC  PGM=SIMSSDDU,REGION=130K,TIME=5,PARM='&OPTION'
//STEPLIB  DD  DSN=SIMSIPS.LOADLIB,DISP=SHR
//SITEID  DD  DSN=SIMSIPS.SITEINFO.FILE,DISP=(OLD,KEEP),DCB=DSORG=IS
//RPTPRNT   DD  SYSOUT=A,DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//TOTRPT    DD  SYSOUT=A,DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
//SYSPRINT  DD  SYSOUT=A,DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3520)
```

Figure 6.2-19. JCL Procedure for Site Data Description Utility

```
//   JOB  (ACCT  INFO),CLASS=B
//     EXEC  SIMSSDDU,DATE=D760930,OPTION=OLD
//SDDU.SYSIN  DD  DSN=SIMSIPS.SITEINFO.CARDS(SIT00003)
//              DD  DSN=SIMSIPS.SITEINFO.CARDS(SIT00007)
//              DD  DSN=SIMSIPS.SITEINFO.CARDS(SIT00010)
//
```

Figure 6.2-20. Sample Setup for Site Data Description Utility

ORIGINAL PAGE IS
OF POOR QUALITY

SDAS DATA INFORMATION FILE UTILITY PROGRAM
TOTALS REPORT FOR ALL SDASS

PAGE 1
DATE : 12/12/77
TIME : 0850

SDAS ID	RUN PURPOSE	#ERRORS	STATUS
047	REPLACING A SDAS	0	** SUCCESSFUL **

1 TOTAL SDASS PROCESSED

1 TOTAL GOOD SDASS

0 TOTAL BAD SDASS

********** PROCESSING COMPLETE **********

Figure C.2-21. Sample File Data Description Utility Error Totals Report

***** CARD IMAGES AND ERROR MESSAGES *****

0328CH48	952L0.0	1.0	C.0	0.0	0.0	1023.	1023.	SP031
0328CH04	072L0	+04882E1E-07	0.	0.	0	50	+50.000	*TD100
0328CH06	112L0	+0976562E-07	0.	0.	0	100	+100.00	*TD101
0328CH34	672L0	+0976562E-07	0.	0.	0	100	+100.00	*TD300
0328CH10	192L-20	+1367187E-07	C.	0.	-20	120	+140.00	*T001
0328CH02	032L30	+1953125E-07	0.	0.	30	230	+200.00	*T100
0328CH12	232L30	+1953125E-07	0.	0.	30	230	+200.00	*T101
0328CH20	392L30	+4101562E-07	C.	C.	30	450	+420.00	*T102
0328CH14	272L30	+1953125E-07	0.	0.	30	230	+200.00	*T200
0328CH16	312L30	+1953125E-07	C.	0.	30	230	+200.00	*T201
0328CH18	352L30	+1953125E-07	0.	0.	30	230	+200.00	*T202
0328CH08	152L30	+1269531E-07	C.	0.	30	160	+130.00	*T300
0328CH15	292L+0000000E-07	+1000000E-06	0.	0.	0	10	+10.000	*W100
0328CH05	092R0.	+9561013E-07	0.	0.	0	10.1	+10.100	*W301

TOTAL M-CARDS PROCESSED = 48

END OF SDAS INFORMATION FILE UPDATE FOR SDAS #032

Figure 6.2-22. Sample SDAS Card Image Data Error Report

SDAS DATA INFORMATION FILE UTILITY PROGRAM
UTILITY RUN FOR PURPOSE OF ** ADDING A SDAS **
SDAS ID 063

DATE : 12/16/77
TIME : 1354

GENERAL INFORMATION REPORT

SDAS_ID	063
PRINT_LEVEL	12
SCAN_LENGTH	192
TIME_ZONE	C
TIME_ZONE_OFFSET	0
SITE_ID	025
SUB_TYPE	5
REV_LEVEL	-
REV_TIME	77/12/16 13.54
SITE_NAME	RANDOLPH AFB
ANALYST_NAME	UNKNOWN
ENGINEER_NAME	UNKNOWN

CODED MEASUREMENTS REPORT

MEASUREMENT		SCAN POS	LEN	NIPS POS	CONV TYPE	CONV #1	CONV #2	CONV #3	CONV #4	MINIMUM VALUE	MAXIMUM VALUE	MAXIMUM CHANGE	MUST CHNG?
CH01	CALIB	1	2	1	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH64	D001	127	2	64	L	0.000000	0.351906	0.0000000	0.00000E+00	0.00000	468.00000	468.000000	YES
CH65	EP101	129	2	65	L	0.000000	0.039101	0.0000000	0.00000E+00	0.00000	52.00000	52.000000	YES
CH71	EP311	141	2	71	L	0.000000	0.003910	0.0000000	0.00000E+00	0.00000	5.20000	5.200000	YES
CH66	EP312	131	2	66	L	0.000000	0.003910	0.0000000	0.00000E+00	0.00000	5.20000	5.200000	YES
CH72	EP313	143	2	72	L	0.000000	0.003910	0.0000000	0.00000E+00	0.00000	5.20000	5.200000	YES
CH67	EP401	133	2	67	L	0.000000	0.039101	0.0000000	0.00000E+00	0.00000	52.00000	52.000000	YES
CH81	EP404	161	2	81	L	0.000000	0.156403	0.0000000	0.00000E+00	0.00000	208.00000	208.000000	YES
CH82	EP405	163	2	82	L	0.000000	0.156403	0.0000000	0.00000E+00	0.00000	208.00000	208.000000	YES
CH73	EP412	145	2	73	L	0.000000	0.039101	0.0000000	0.00000E+00	0.00000	52.00000	52.000000	YES
CH80	EP413	159	2	80	L	0.000000	0.000976	0.0000000	0.00000E+00	0.00000	0.65000	0.650000	YES
CH89	EP414	177	2	89	L	0.000000	0.002930	0.0000000	0.00000E+00	0.00000	1.94990	1.949900	YES
CH91	EP415	181	2	91	L	0.000000	0.011730	0.0000000	0.00000E+00	0.00000	15.60000	15.599999	YES
CH92	EP416	183	2	92	L	0.000000	0.011730	0.0000000	0.00000E+00	0.00000	15.60000	15.599999	YES
CH84	EP501	167	2	84	L	0.000000	0.007820	0.0000000	0.00000E+00	0.00000	10.40000	10.400000	YES
CH90	EP503	179	2	90	L	0.000000	0.039101	0.0000000	0.00000E+00	0.00000	52.00000	52.000000	YES
CH83	EP504	165	2	83	L	0.000000	0.011730	0.0000000	0.00000E+00	0.00000	15.60000	15.599999	YES
CH27	F300	53	2	27	L	0.000000	0.782014	0.0000000	0.00000E+00	0.00000	1040.00000	1040.000000	YES
CH49	I001	97	2	49	L	0.000000	2.867822	0.0000000	0.00000E+00	0.00000	458.10986	458.109863	YES
CH09	SP001	17	2	9	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH42	SP002	83	2	42	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH46	SP003	91	2	46	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH47	SP004	93	2	47	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH53	SP005	105	2	53	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES

Figure 6.2-23. Sample Site Data Description Record Contents Report

Table 6.2-4. Site Data Description Utility Messages (Sheet 1 of 6)

Message:	'CONVERSION ERROR IN FIELD' 'NNNNN' 'REPLACED BY 0'. **ERROR**
Reason:	An invalid numeric character has been detected in field 'NNNNN' and replaced with zero so that further editing may continue.
Action:	The invalid numeric field must be replaced with a valid numeric field and the program rerun. If a number other than zero is desired.
Routine:	Main PGM
Message:	'RECORD NOT FOUND FOR SITE ID NUMBER NNNNN **ERROR**
Reason:	An attempt was made to delete or replace a site ID not on the Site Data Description file. 'NNNNN' is the ID Number.
Action:	Change the Site ID to a valid number that exists on the file and rerun the program.
Routine:	Main Program
Message:	'RECORD ALREADY EXISTS FOR SITE ID NUMBER' NNNNN **ERROR**
Reason:	An attempt was made to add a duplicate site to the Site Data Description file. 'NNNNN' is the Site ID.
Action:	Change the Site ID Number to one that is not on the file and rerun the program.
Routine:	Main Program
Message:	'INVALID KEY FOR SITE ID NUMBER' NNNNN **ERROR**
Reason:	A conversion error was detected when the Site ID was used as key in reading or writing the file. 'NNNNN' is the invalid number.
Action:	Correct the Site ID Number and rerun the program
Routine:	Main Program
Message:	'PRINT OPTION COMPLETE'
Reason:	The last record on the file has been printed using the 'print' option.
Action:	None
Routine:	Main (print option processing section)

Table 6.2-4. Site Data Description Utility Messages (Sheet 2 of 6)

Message:	'SITE ID' NNNNN 'DELETED FROM THE SITE DATA DESCRIPTION FILE'
Reason:	Site ID Number 'NNNNN' has been deleted.
Action:	None
Routine:	Main Program ('Delete' processing section)
Message:	'A-CARD--COLUMN 7--IS NOT EQUAL TO A, R, OR D' **ERROR**
Reason:	A valid code has not been entered into Column 7 of the A-Card. Valid codes are: A = ADD, R = REPLACE, or D = DELETE.
Action:	Correct and rerun
Routine:	Main Program
Message:	'ERROR IN PROCESSING A-CARD-TYPE FIELD = '_____' **ERROR**
Reason:	Column 6 of the A-Card does not contain an 'A'.
Action:	Correct and rerun.
Routine:	Main Program (A-Card section)
Message:	'TOTAL B-CARDS PROCESSED = 'NN'
Reason:	To print total number of B-Cards processed for one site. 'NN' is the total.
Action:	None
Routine:	Main Program (B-Card processing section)
Message:	'END OF SITE INFORMATION FIELD UPDATE FOR SITE' NNNNN
Reason:	Successful end of utility for site 'NNNNN'
Action:	None
Routine:	Main Program

Table 6.2-4. Site Data Description Utility Messages (Sheet 3 of 6)

Message:	'SITE DATA DESCRIPTION FILE NOT UPDATED FOR SITE' NNNNN.
Reason:	Unsuccessful end of a site. For site 'NNNNN'.
Action:	Correct errors and rerun.
Routine:	Main Program
Message:	'SITE ID INVALID' **ERROR**
Reason:	Site ID value entered is less than 1 or greater than 99998.
Action:	Correct and rerun.
Routine:	A-Card-Edit.
Message:	'VV' IS NOT VALID FOR SYSTEM TYPE **ERROR**
Reason:	Value 'VV' entered is not equal to 'HC, 'H', or 'HW'. 'AA' is the value entered.
Action:	Correct and rerun.
Routine:	A-Card-Edit
Message:	VV 'IS INVALID FOR SCAN-LENGTh' **ERROR**
Reason:	Value 'VV' entered is less than '8' or greater than '92'.
Action:	Correct and rerun.
Routine:	A-Card-Edit
Message:	VV 'IS INVALID FOR PRINT LEVEL' **ERROR**
Reason:	Value 'VV' entered is not equal to 0, 4, 8, or 12.
Action:	Correct and rerun
Routine:	A-Card-Edit

Table 6.2-4. Site Data Description Utility Messages (Sheet 4 of 6)

Message:	'V' IS INVALID FOR TIME ZONE' **ERROR**
Reason:	Value 'V' entered for time zone is not equal to 'E', 'C', 'M', or 'P'.
Action:	Correct and rerun
Routine:	A-Card-Edit
Message:	NN 'FIELDS ON THE A-CARD ARE INVALID'
Reason:	To print total errors found in the A-Card. 'NN' is total.
Action:	Correct errors and rerun.
Routine:	A-Card-Edit
Message:	AAAAAA 'HAS ALREADY BEEN USED AS A VARIABLE NAME IN A PREVIOUS B-CARD' **ERROR**
Reason:	The variable name 'AAAAAA' has already been used in a previous B-Card.
Action:	Correct and rerun.
Routine:	B-Card-Edit
Message:	AAAAAA 'NOT FOUND IN VARIABLE NAME TABLE' **ERROR**
Reason:	The variable entered was not found in the variable name table.
Action:	Correct and rerun.
Routine:	B-Card-Edit
Message:	LL 'IS INVALID VALUE FOR INPUT LENGTH' **ERROR**
Reason:	Input length 'LL' entered is not equal to 1 or 2.
Action:	Correct and rerun.
Routine:	B-Card-Edit.

Table 6.2-4. Site Data Description Utility Messages (Sheet 5 of 6)

Message:	'NN' 'INVALID FOR POSITION IN INPUT' **ERROR**
Reason:	'NN' entered for position in input is less than zero or greater than the scan length.
Action:	Correct and rerun.
Routine:	B-Card-Edit
Message:	'V' 'INVALID FOR CONVERSION TYPE' **ERROR**
Reason:	'V' entered for conversion type is not equal to 'L', 'Q', 'D', 'T' or 'R'.
Action:	Correct and rerun.
Routine:	B-Card-Edit
Message:	'CONVERSION PARMS INVALID FOR CONVERSION TYPE. ONLY FIRST TWO PARMS USED. **ERROR**
Reason:	Conversion Type is 'L', 'D' or 'R' and conversion 3 or conversion 4 is not equal to zero.
Action:	Correct and rerun.
Routine:	B-Card-Edit
Message:	'CONVERSION PARMS INVALID FOR CONVERSION TYPE. SECOND PARM CANNOT BE LESS THAN FIRST PARM. *ERROR**
Reason:	Conversion type is 'D' and first and second parms must specify a range.
Action:	Correct and rerun.
Routine:	B-Card-Edit

Table 6.2-4. Site Data Description Utility Messages (Sheet 6 of 6)

Message:	'CONVERSION PARMS INVALID FOR CONVERSION TYPE. ONLY FIRST THREE PARMS USED. **ERROR**
Reason:	Conversion type is equal to 'Q' and CONV4 is not equal to zero.
Action:	Correct and rerun.
Routine:	B-Card-Edit
Message:	NNNNNNNN 'IS INVALID FOR MAXIMUM VALUE BECAUSE IT IS LESS THAN THE MINIMUM' **ERROR**
Reason:	Value 'NNNNNNNN' is invalid for reason stated.
Action:	Correct and rerun.
Routine:	B-Card-Edit
Message:	NNNNNNNN 'IS INVALID VALUD FOR MAXIMUM CHANGE' **ERROR**
Reason:	Maximum change (NNNNNNNN) is greater than maximum value minus minimum value.
Action:	Correct and rerun.
Routine:	B-Card-Edit

6.3 DATA BASE MANAGEMENT PROGRAMMER/ANALYST USER GUIDELINES

The Data Base Management Programmer/Analyst must support the following capabilities within the CDPS:

- Maintenance of Data Base Software
- File Maintenance
- Terminal Processing
- Information retrieval
- Output Processing
- Plots of instrumentation data

The user guidelines to follow in providing these services are contained in subsequent paragraphs.

6.3.1 Applicable Documents

The following documents are required in order to support the use of the DATA BASE:

Document Name	Number
NIPS Users Manual Error Codes	CSM-UM-15-74
NIPS Users Manual Job Preparation Manual	CSM-UM-15-74
NIPS Users Manual Retrieval and Send Processor	CSM-UM-15-74
NIPS Users Manual File Structuring	CSM-UM-15-74
NIPS Users Manual Introduction to File Concepts	CSM-UM-15-74
NIPS Users Manual Output Processor	CSM-UM-15-74
NIPS Users Manual Utility Support	CSM-UM-15-74
NIPS Users Manual Terminal Processing	CSM-UM-15-74
Installation of NIPS 360 FFS	CSM-UM-15-74
NIPS Processing Handbook	TR-80-72
NIPS General Description	CSM-UM-15-74

6.3.2 Maintenance of Data Base Software

The Data Base Software consists of the National Military Command and Control Information Processing System (NIPS). This system is operational within the Host Computer and is maintained through changes generated by IBM FSD Gaithersburg personnel. Any changes made are distributed to the Data Base Programmer/Analyst for evaluation of applicability to SIMS utilization of the system. If considered essential to SIMS use, modification will be made to the data base software.

The Source Statements for NIPS are maintained in Washington, D.C. and are in S/360 Assembling Language form. Only the load modules are distributed for installation at outside facilities. Installation procedures are contained in "Installation of NIPS 360 FFS" manual.

The Data Base Software Load Modules are stored on disk within the S/370-145 and are named "FFSLIB." A backup image of the system is maintained on magnetic tape.

If changes are required to NIPS to support SIMS, formal requests will be made to IBM personnel in Gaithersburg to implement our unique requirements.

6.3.3 NIPS File Maintenance

File maintenance accepts the data bank update information generated during the input processing phase as well as inputs from system analysts, integration personnel and test personnel. It provides the capabilities required to enter/delete/archive data within the data bank.

The capabilities of file definition, file maintenance, and file revision provide the user with a broad and flexible capability for generating and maintaining data files. The user may add, delete, or change file records. Also, he may modify or change file fields and may change (increase or decrease) the volume of data associated with any file record. In addition to maintenance (or generation) of a data file, the user may create auxiliary output files simultaneously with the maintenance process.

A generative code technique is used in the actual data manipulation. To avoid wasteful regeneration, the system provides a complete, automatic library maintenance function for user logic statements. Maintenance execution, therefore, may consist of executing prestored logic statements, compiling logic statements and library updating, or a combination of these functions.

Other component functions provide for the creation of summaries, run logs, and/or audit trails during file processing.

Job Control Language (JCL) Statements to be used in file maintenance are found in "NIPS Users Manual - Job Preparation Manual."

File Structuring/Definition - The user submits, as input to the file structure component, a deck of statements defining the format for his file using the standard File Structuring Language detailed in the NIPS user manual Vol. II. An example of a Remote Site Operational data file structuring is shown in figure 6.3-1 with comments indicating the input card fields and their use. The NIPS file layout listing resulting from a computer generation of the File Structure module of NIPS is shown in figure 6.3-2.

File Revision - This routine of NIPS provides for the restructuring of an existing data file allowing for the deletion, addition and relocation of fields within the data file as well as changes to their storage mode, size and name. A user structures a File Format Table (FFT) describing the file in its revised format. The NIPS procedure 'XF' is then executed to provide the automatic generation of data sets and File Structuring control language to accept the desired data from the old file format and generate a new file with the desired changes incorporated. Figure 6.3-3 is a listing of the resulting output of a File Revision run of the NIPS system where File SOLSTAT was being revised and called File SOLSTAA.

File Maintenance - The File Maintenance routine provides the tool for generating and maintaining the structured data files. It will accept fixed or variable length, blocked or unblocked, or undefined transaction records from tape, disk, or card files. On any given File Maintenance run, file updating can be performed with a variety of transaction record formats. The user supplies the record update logic to be used in File Maintenance by writing logic statements in the File Maintenance Language. The File Maintenance Language commands are described in detail in the Users Manual on File Maintenance (Vol. III). A sample of File Maintenance Logic Statements is shown in figure 6.3-4. This series of commands was used to update a file named SOLSIT from a transaction tape containing parameteric data which would be obtained from the sensors at a remote location.

6.3.4 Terminal Processing

Terminal processing provides the user with the capability to access data within the data bank via an on-line terminal. It provides the interface to support both local and remote terminal devices and provides the user an on-line data retrieval capability and a display language for outputting data. In addition, it performs the translation of data base interrogation statements, performs sorting of data to be outputted, if requested, and qualifies the records for output dependent upon them meeting the criteria set by selected relational operations (such as equal to, greater than, less than, etc.) in the inquiry being processed.

The output portion makes available to the user operators for (1) placing information at the top and bottom of every page of output, (2) repositioning the display page number and/or system date, and (3) controlling the number of lines shown on each display page.

```
STRUCTURE SOLDATA.

FIELD  RQSID     2   C    ALPHA     'SYSTEM SITE ID'.
FIELD  RSYID     2   C    ALPHA     'SYSTEM TYPE'.
FIELD  RDATE     5   C    ALPHA     'DATE OF RECORD'.
FIELD  RTMINT    1   C    ALPHA     'CODE'.

GROUP  SYSGRP  RQSID RSYID RDATE RTMINT.

FIELD  RTCD      2   C1   NUMER     'CODE'.

FIELD  XCOLID    2   X    ALPHA     'COLLECTOR ID'.
FIELD  XCMBR     2   X    ALPHA     'MANUFACTURER CODE'.
FIELD  XCMAT     2   X    ALPHA     'MATERIAL CODE'.
FIELD  XCTYPE    2   X    ALPHA     'COLLECTOR TYPE'.
FIELD  XCOST     2   X    ALPHA     'COST CATEGORY'.
FIELD  XEFF      2   X    ALPHA     'EFFICIENCY RATING'.
FIELD  XSTOID    2   X    ALPHA     'STORAGE ID'.
FIELD  COMID     2   X    ALPHA     'COMMERCIAL ID'.
FIELD  XCOID     2   X    ALPHA     'COOLING SYSTEM ID'.
FIELD  XCOMAID   2   X    ALPHA     'COOLING MATERIAL ID'.
FIELD  XHEATID   2   X    ALPHA     'HEATING ID'.
FIELD  XHMAT     2   X    ALPHA     'HEATING MATERIAL'.
FIELD  XCONT     2   X    ALPHA     'CONTROL SYSTEM'.
FIELD  XHOTID    2   X    ALPHA     'HOT WATER ID'.
FIELD  XHOTTYP   2   X    ALPHA     'HOT WATER TYPE'.
FIELD  XTRAN     2   X    ALPHA     'TRANSPORT TYPE'.

FIELD  RTARM     4   1    NUMER     'HOUR/MINUTE OF READING'.
FIELD  RP1L      4   1    NUMER     'STORAGE TANK  ULLAGE-ABSOLUTE PRESS'.
FIELD  RP1A      4   1    NUMER     'STORAGE TANK ULLAGE-ALTERNATE'.
FIELD  RP2L      4   1    NUMER     'COLLECTOR PUMP OUTLET'.
FIELD  RP2A      4   1    NUMER     'COLLECTOR FAN OUTLET'.
FIELD  RP3L      4   1    NUMER     'LOAD HEAT EXCHANGER PUMP OUTLET'.
FIELD  RP3A      4   1    NUMER     'LOAD HEAT EXCHANGER FAN OUTLET'.
FIELD  RDP1L     4   1    NUMER     'COLLECTOR PUMP DIFF PRESS'.
FIELD  RDP1A     4   1    NUMER     'COLLECTOR FAN'.
FIELD  RDP2L     4   1    NUMER     'LOAD HEAT EXCHANGER PUMP'.
FIELD  RDP2A     4   1    NUMER     'LOAD HEAT EXCHANGER FAN'.
FIELD  RT1       4   1    NUMER     'OUTDOOR DRY BULB TEMP'.
FIELD  RT2       4   1    NUMER     'COLLECTOR INLET'.
FIELD  RT3       4   1    NUMER     'COLLECTOR OUTLET'.
FIELD  RT4       4   1    NUMER     'COLLECTOR SURFACE'.
FIELD  RT5       4   1    NUMER     'DOMESTIC SERVICE WATER'.
FIELD  RT6       4   1    NUMER     'DOMESTIC PREHEATED OUTLET'.
FIELD  RT7       4   1    NUMER     'DOMESTIC HOT WATER SUPPLY'.
FIELD  RT8       4   1    NUMER     'STORAGE TANK'.
FIELD  RT9       4   1    NUMER     'DWELLING DRY BULB AIR'.
FIELD  RDT1      4   1    NUMER     'PREHEATER INPUT DIFF TEMP'.
FIELD  RDT2      4   1    NUMER     'DOMESTIC HOT WATER/SERVICE'.
FIELD  RDT3      4   1    NUMER     'LOAD HEAT EXCHANGER'.
FIELD  RDT4      4   1    NUMER     'COOLING TOWER'.
FIELD  RDT5      4   1    NUMER     'ABSORBTION CHILLER EVAPORATOR'.
FIELD  RF1       4   1    NUMER     'COLLECTOR FLOW RATE'.
FIELD  RF2       4   1    NUMER     'DOMESTIC HOT WATER'.
FIELD  RF3       4   1    NUMER     'PREHEATER HEAT EXCHANGE'.
FIELD  RF4       4   1    NUMER     'LOAD HEAT EXCHANGER'.
FIELD  RQ1       4   1    NUMER     'COLLECTOR INCIDENCE SOLAR RAD'.
FIELD  RW1       4   1    NUMER     'COLLECTOR PUMP/FAN POWER'.
FIELD  RW2       4   1    NUMER     'DOMESTIC HOT WATER AUX'.
FIELD  RW3       4   1    NUMER     'PREHEATER PUMP/FAN'.
FIELD  RW5       4   1    NUMER     'COOLING TOWER POWER'.
FIELD  RI1       4   1    NUMER     'LOAD HEAT EXCHNGR PUMP ON/OFF'.
FIELD  RI2       4   1    NUMER     'COOLING TOWER PUMP ON/OFF'.
FIELD  RRH1      4   1    NUMER     'DWELLING RELATIVE HUMIDITY'.
FIELD  RSP1      4   1    NUMER     'SPARE'.
FIELD  RSP2      4   1    NUMER     'SPARE'.
FIELD  RSP3      4   1    NUMER     'SPARE'.
FIELD  RSP4      4   1    NUMER     'SPARE'.
FIELD  RSP5      4   1    NUMER     'SPARE'.
END.
```

Figure 6.3-1. File Structure Statements

FIGURE 6.3-1 EXPLANATION

1. Structure - This operator must occur first in the input. It is used to establish the name of the file to be structured.

2. File Name - The name of the file to be structured. It must conform to the name conventions described in Vol. I, Introduced to File Concepts.

3. FIELD - The field operator must be the first word on the statement defining the characteristics of each data element in the data file record.

4. Field Name - A unique name (for the file) that follows the general system name rules.

5. Field Length - The EBDIC length of the data field. The entry is coded as a numeric integer, not to exceed three characters in length.

6. Set Function Identifier - This example shows the fields to be Record Control fields.

7. Field Mode Identifier - This shows that the data field content is alphameric. All control fields must be alpha mode.

8. Output Title/Lable - The title or label which will be used in designating the field on output reports.

9. GROUP - This operator is used to redefine a sequence of adjacent fields/groups with a single new name which is to be used as a data reference.

10. Group Name - The user supplied name for the group of control fields being referenced.

11. Group Fields - The names of the fields being grouped together to form the group name.

12. Function Identifier - This indicates that this particular field is a control field for Set 1.

13. Set Identifier - The 'X' is an indication that the fields shown are data elements (fields) of the fixed set.

14. Set Identifier - The '1' shows that the fields being described are data elements within the first set of the fixed set for the file being structured.

FILE NAME- SOLDATA DATE- 76062

** SOURCE STATEMENT LIST **

FLD/GRP NAME	STATEMENT OPERATOR	FIELD SIZE	SPEC USE	SET NO.	RET. LOGIC	MODE	INPUT SUBRT	OUTPUT SUBRT	EDIT NAME	FIELD/GROUP/VAR.SET LABEL (CHARS 1-60)	THE FLAG ** MARKS NOTE STATEMENTS
RDSID	FIELD	002	CTL	000	-	ALPHA	---	---	---	'SYSTEM SITE ID'	
RSYID	FIELD	002	CTL	000	-	ALPHA	---	---	---	'SYSTEM TYPE'	
RDATE	FIELD	005	CTL	000	-	ALPHA	---	---	---	'DATE OF RECORD'	
RTMINT	FIELD	001	CTL	000	-	ALPHA	---	---	---	'CODE'	
SYSGRP	GROUP	*	---	---	-	ALPHA	---	---	---		
		* FIELDS- RDSID RSYID RDATE RTMINT									
XCOLID	FIELD	002	---	000	-	ALPHA	---	---	---	'COLLECTOR ID'	
XCMFR	FIELD	002	---	000	-	ALPHA	---	---	---	'MANUFACTURER CODE'	
XCMAT	FIELD	002	---	000	-	ALPHA	---	---	---	'MATERIAL CODE'	
XCTYPE	FIELD	002	---	000	-	ALPHA	---	---	---	'COLLECTOR TYPE'	
XCOST	FIELD	002	---	000	-	ALPHA	---	---	---	'COST CATEGORY'	
XEFF	FIELD	002	---	000	-	ALPHA	---	---	---	'EFFICIENCY RATING'	
XSTOID	FIELD	002	---	000	-	ALPHA	---	---	---	'STORAGE ID'	
COMID	FIELD	002	---	000	-	ALPHA	---	---	---	'COMMERCIAL ID'	
XCOID	FIELD	002	---	000	-	ALPHA	---	---	---	'COOLING SYSTEM ID'	
XCMAID	FIELD	002	---	000	-	ALPHA	---	---	---	'COOLING MATERIAL ID'	
XHEATID	FIELD	002	---	000	-	ALPHA	---	---	---	'HEATING ID'	
XHMAT	FIELD	002	---	000	-	ALPHA	---	---	---	'HEATING MATERIAL'	
XCONT	FIELD	002	---	000	-	ALPHA	---	---	---	'CONTROL SYSTEM'	
XHOTID	FIELD	002	---	000	-	ALPHA	---	---	---	'HOT WATER ID'	

Figure 6.3-2. File Layout (Sheet 1 of 4)

FILE NAME- SOLDATA DATE- 76062

** SOURCE STATEMENT LIST **

FLD/GRP NAME	STATEMENT OPERATOR	FIELD SIZE	SPEC USE	SET NO.	RET. LOGIC	MODE	INPUT SUBRT	OUTPUT SUBRT	EDIT NAME	FIELD/GROUP/VAR. SET LABEL (CHARS 1-60) THE FLAG ** MARKS NOTE STATEMENTS
XHOTTYP	FIELD	002	---	000	-	ALPHA	---	---	---	*HOT WATER TYPE*
XTRAN	FIELD	002	---	000	-	ALPHA	---	---	---	*TRANSPORT TYPE*
RTCD	FIELD	002	CTL	001	-	ALPHA	---	---	---	*CODE*
RTARM	FIELD	004	---	001	-	NUMER	---	---	---	*HOUR/MINUTE OF READING*
RP1L	FIELD	004	---	001	-	NUMER	---	---	---	*STORAGE TANK ULLAGE-ABSOLUTE PRESS*
RP1A	FIELD	004	---	001	-	NUMER	---	---	---	*STORAGE TANK ULLAGE-ALTERNATE*
RP2L	FIELD	004	---	001	-	NUMER	---	---	---	*COLLECTOR PUMP OUTLET*
RP2A	FIELD	004	---	001	-	NUMER	---	---	---	*COLLECTOR FAN OUTLET*
RP3L	FIELD	004	---	001	-	NUMER	---	---	---	*LOAD HEAT EXCHANGER PUMP OUTLET*
RP3A	FIELD	004	---	001	-	NUMER	---	---	---	*LOAD HEAT EXCHANGER FAN OUTLET*
RDP1L	FIELD	004	---	001	-	NUMER	---	---	---	*COLLECTOR PUMP DIFF PRESS*
RDP1A	FIELD	004	---	001	-	NUMER	---	---	---	*COLLECTOR FAN*
RDP2L	FIELD	004	---	001	-	NUMER	---	---	---	*LOAD HEAT EXCHANGER PUMP*
RDP2A	FIELD	004	---	001	-	NUMER	---	---	---	*LOAD HEAT EXCHANGER FAN*
RT1	FIELD	004	---	001	-	NUMER	---	---	---	*OUTDOOR DRY BULB TEMP*
RT2	FIELD	004	---	001	-	NUMER	---	---	---	*COLLECTOR INLET*
RT3	FIELD	004	---	001	-	NUMER	---	---	---	*COLLECTOR OUTLET*
RT4	FIELD	004	---	001	-	NUMER	---	---	---	*COLLECTOR SURFACE*
RT5	FIELD	004	---	001	-	NUMER	---	---	---	*DOMESTIC SERVICE WATER*
RT6	FIELD	004	---	001	-	NUMER	---	---	---	*DOMESTIC PREHEATED OUTLET*

Figure 6.3-2. File Layout (Sheet 2 of 4)

FILE NAME- SOLDATA DATE- 76062

** SOURCE STATEMENT LIST **

FLD/GRP NAME	STATEMENT OPERATOR	FIELD SIZE	SPEC USE	SET NO.	RET. LOGIC	MODE	INPUT SUBRT	OUTPUT SUBRT	EDIT NAME	FIELD/GROUP/VAR.SET LABEL (CHARS 1-60)	THE FLAG ** MARKS NOTE STATEMENTS
RT7	FIELD	004	---	001	-	NUMER	---	---	---	'DOMESTIC HOT WATER SUPPLY'	
RT8	FIELD	004	---	001	-	NUMER	---	---	---	'STORAGE TANK'	
RT9	FIELD	004	---	001	-	NUMER	---	---	---	'DWELLING DRY BULB AIR'	
RDT1	FIELD	004	---	001	-	NUMER	---	---	---	'PREHEATER INPUT DIFF TEMP'	
RDT2	FIELD	004	---	001	-	NUMER	---	---	---	'DOMESTIC HOT WATER/SERVICE'	
RDT3	FIELD	004	---	001	-	NUMER	---	---	---	'LOAD HEAT EXCHANGER'	
RDT4	FIELD	004	---	001	-	NUMER	---	---	---	'COOLING TOWER'	
RDT5	FIELD	004	---	001	-	NUMER	---	---	---	'ABSORBTION CHILLER EVAPORATOR'	
RF1	FIELD	004	---	001	-	NUMER	---	---	---	'COLLECTOR FLOW RATE'	
RF2	FIELD	004	---	001	-	NUMER	---	---	---	'DOMESTIC HOT WATER'	
RF3	FIELD	004	---	001	-	NUMER	---	---	---	'PREHEATER HEAT EXCHANGE'	
RF4	FIELD	004	---	001	-	NUMER	---	---	---	'LOAD HEAT EXCHANGER'	
RQ1	FIELD	004	---	001	-	NUMER	---	---	---	'COLLECTOR INCIDENCE SOLAR RAD'	
RW1	FIELD	004	---	001	-	NUMER	---	---	---	'COLLECTOR PUMP/FAN POWER'	
RW2	FIELD	004	---	001	-	NUMER	---	---	---	'DOMESTIC HOT WATER AUX'	
RW3	FIELD	004	---	001	-	NUMER	---	---	---	'PREHEATER PUMP/FAN'	
RW5	FIELD	004	---	001	-	NUMER	---	---	---	'COOLING TOWER POWER'	
RI1	FIELD	004	---	001	-	NUMER	---	---	---	'LOAD HEAT EXCHNGR PUMP ON/OFF'	
RI2	FIELD	004	---	001	-	NUMER	---	---	---	'COOLING TOWER PUMP ON/OFF'	
RRH1	FIELD	004	---	001	-	NUMER	---	---	---	'DWELLING RELATIVE HUMIDITY'	

Figure 6.3-2. File Layout (Sheet 3 of 4)

FILE NAME- SOLDATA DATE- 76062

** SOURCE STATEMENT LIST **

FLD/GRP NAME	STATEMENT OPERATOR	FIELD SIZE	SPEC USE	SET NO.	RET. LOGIC	MODE	INPUT SUBRT	OUTPUT SUBRT	EDIT NAME	FIELD/GROUP/VAR.SET LABEL (CHARS 1-60)	THE FLAG ** MARKS NOTE STATEMENTS
RSP1	FIELD	004	---	001	-	NUMER	---	---	---	*SPARE*	
RSP2	FIELD	004	---	001	-	NUMER	---	---	---	*SPARE*	
RSP3	FIELD	004	---	001	-	NUMER	---	---	---	*SPARE*	
RSP4	FIELD	004	---	001	-	NUMER	---	---	---	*SPARE*	
RSP5	FIELD	004	---	001	-	NUMER	---	---	---	*SPARE*	
	ENDFS										

*** ADVISORY MESSAGE- FILE STRUCTURE PERFORMED WITH NO CLASSIFICATION

Figure 6.3-2. File Layout (Sheet 4 of 4)

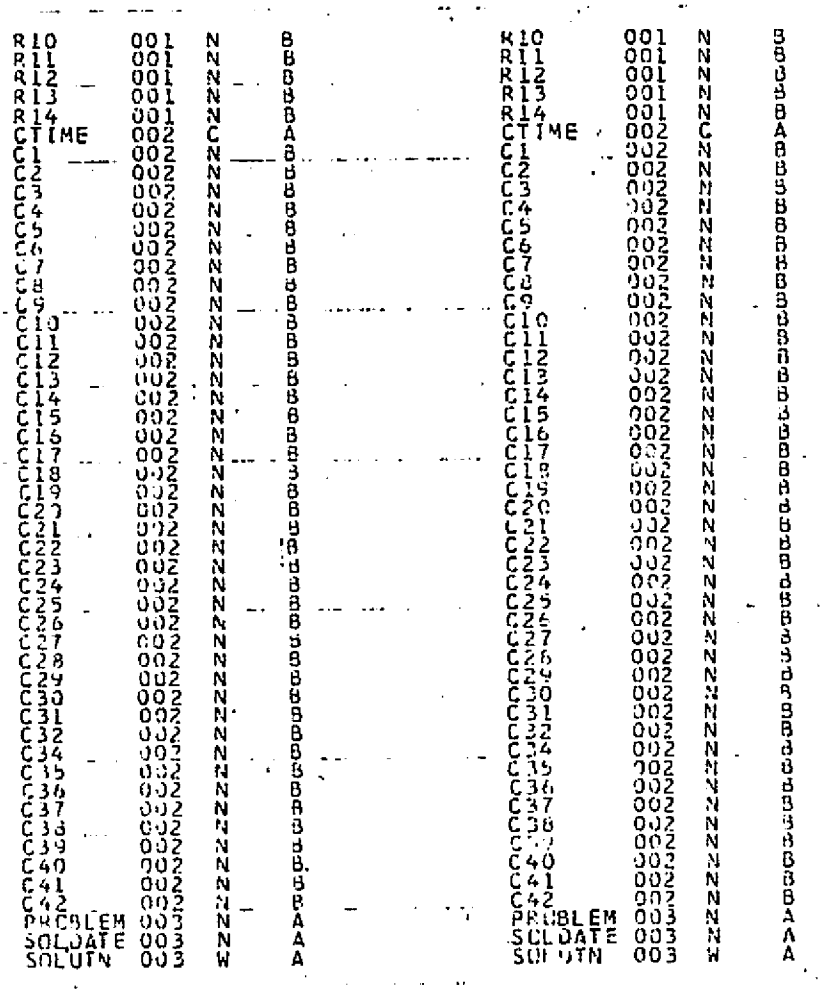
```
                                                    ** FILE REVISION CONTROL CARDS **

FILE = SOLSTAT.
NEWFILE = SOLSTAA.
PRINT = ALL.
** NO ERRORS DETECTED IN INPUT CARDS **
```

Figure 6.3-3. File Revision (Sheet 1 of 18)

*** ANALYSIS OF FILE REVISION ***

OLD FIELD				NEW FIELD				-CHANGES-			
NAME	SET	TYPE	MODE	NAME	SET	TYPE	MODE	NAME	SET	TYPE	MODE
SITEID	000	C	A	SITEID	000	C	A				
SYSID	000	C	A	SYSID	000	C	A				
DATE	000	C	A	DATE	000	C	A				
THERMAL	000	N	B	THERMAL	000	N	B				
TTPUA	000	N	B	TTPUA	000	N	B				
SPUAA	000	N	B	SPUAA	000	N	B				
SOLCEL	000	N	B	SOLCEL	000	N	B				
USFNRGY	000	N	B	USFNRGY	000	N	B				
CUMTEMP	000	N	B	CUMTEMP	000	N	B				
ABSEFF	000	N	B	ABSEFF	000	N	B				
P8	000	N	B	P8	000	N	B				
P9	000	N	B	P9	000	N	B				
P10	000	N	B	P10	000	N	B				
P11	000	N	B	P11	000	N	B				
P12	000	N	B	P12	000	N	B				
P13	000	N	B	P13	000	N	B				
P14	000	N	B	P14	000	N	B				
P15	000	N	B	P15	000	N	B				
P16	000	N	B	P16	000	N	B				
P17	000	N	B	P17	000	N	B				
P18	000	N	B	P18	000	N	B				
P19	000	N	B	P19	000	N	B				
P20	000	N	B	P20	000	N	B				
P21	000	N	B	P21	000	N	B				
P22	000	N	B	P22	000	N	B				
P23	000	N	B	P23	000	N	B				
P24	000	N	B	P24	000	N	B				
P25	000	N	B	P25	000	N	B				
P26	000	N	B	P26	000	N	B				
P27	000	N	B	P27	000	N	B				
P28	000	N	B	P28	000	N	B				
P29	000	N	B	P29	000	N	B				
P30	000	N	B	P30	000	N	B				
P31	000	N	B	P31	000	N	B				
P32	000	N	B	P32	000	N	B				
P33	000	N	B	P33	000	N	B				
P34	000	N	B	P34	000	N	B				
P35	000	N	B	P35	000	N	B				
P36	000	N	B	P36	000	N	B				
P37	000	N	B	P37	000	N	B				
P38	000	N	B	P38	000	N	B				
P39	000	N	B	P39	000	N	B				
P40	000	N	B	P40	000	N	B				
P41	000	N	B	P41	000	N	B				
P42	000	N	B	P42	000	N	B				
RTIME	001	C	A	RTIME	001	C	A				
R1	001	N	B	R1	001	N	B				
R2	001	N	B	R2	001	N	B				
R3	001	N	B	R3	001	N	B				
R4	001	N	B	R4	001	N	B				
R5	001	N	B	R5	001	N	B				
R6	001	N	B	R6	001	N	B				
R7	001	N	B	R7	001	N	B				
R8	001	N	B	R8	001	N	B				
R9	001	N	B	R9	001	N	B				

Figure 6.3-3. File Revision (Sheet 2 of 18)



R10	001	N	B		R10	001	N	B
R11	001	N	B		R11	001	N	B
R12	001	N	B		R12	001	N	B
R13	001	N	B		R13	001	N	B
R14	001	N	B		R14	001	N	B
CTIME	002	C	A		CTIME	002	C	A
C1	002	N	B		C1	002	N	B
C2	002	N	B		C2	002	N	B
C3	002	N	B		C3	002	N	B
C4	002	N	B		C4	002	N	B
C5	002	N	B		C5	002	N	B
C6	002	N	B		C6	002	N	B
C7	002	N	B		C7	002	N	B
C8	002	N	B		C8	002	N	B
C9	002	N	B		C9	002	N	B
C10	002	N	B		C10	002	N	B
C11	002	N	B		C11	002	N	B
C12	002	N	B		C12	002	N	B
C13	002	N	B		C13	002	N	B
C14	002	N	B		C14	002	N	B
C15	002	N	B		C15	002	N	B
C16	002	N	B		C16	002	N	B
C17	002	N	B		C17	002	N	B
C18	002	N	B		C18	002	N	B
C19	002	N	B		C19	002	N	B
C20	002	N	B		C20	002	N	B
C21	002	N	B		C21	002	N	B
C22	002	N	B		C22	002	N	B
C23	002	N	B		C23	002	N	B
C24	002	N	B		C24	002	N	B
C25	002	N	B		C25	002	N	B
C26	002	N	B		C26	002	N	B
C27	002	N	B		C27	002	N	B
C28	002	N	B		C28	002	N	B
C29	002	N	B		C29	002	N	B
C30	002	N	B		C30	002	N	B
C31	002	N	B		C31	002	N	B
C32	002	N	B		C32	002	N	B
C34	002	N	B		C34	002	N	B
C35	002	N	B		C35	002	N	B
C36	002	N	B		C36	002	N	B
C37	002	N	B		C37	002	N	B
C38	002	N	B		C38	002	N	B
C39	002	N	B		C39	002	N	B
C40	002	N	B		C40	002	N	B
C41	002	N	B		C41	002	N	B
C42	002	N	B		C42	002	N	B
PROBLEM	003	N	A		PROBLEM	003	N	A
SOLDATE	003	N	A		SOLDATE	003	N	A
SOLUTN	003	W	A		SOLUTN	003	W	A

Figure 6.3-3. File Revision (Sheet 3 of 18)

*** FR GENERATED LOGIC STATEMENTS ***

```
$FMS/L18,SOLSTAA.
SAR,FR,6,017
```

Figure 6.3-3. File Revision (Sheet 4 of 18)

ORIGINAL PAGE IS
OF POOR QUALITY

```
                                                    ***NIPS FILE MAINTENANCE*** PAGE    1

COMMUNICATION RECORDS
   1      FMS/LIB   SOLSTAA.                DISK.  TRANSACTION SOURCE IS CARDS

NO ERRORS DETECTED IN THE COMMUNICATION RECORDS
```

Figure 6.3-3. File Revision (Sheet 5 of 18)

```
                                                    ***NIPS FILE MAINTENANCE***      PAGE    2

LIBRARY ACTION CARDS
   1                  START          FR          AR    0002 0006 0001 0017 0001

NO ERRORS DETECTED IN THIS CONTROL DECK
```

Figure 6.3-3. File Revision (Sheet 6 of 18)

```
                                                    ***NIPS FILE MAINTENANCE***   PAGE    3

LIBRARY ACTION-ADD A PERMANENT STATEMENT
   1      T0196 0197 START          FR          R          ASP

TRANSACTION DESCRIPTOR DECK
   2      SITEID     FIELD 0007     0002     A          $ SITEID
   3      SYSID      FIELD 0009     0002     A          $ SYSID
   4      DATE       FIELD 0011     0006     A          $ DATE
   5      THERMAL    FIELD 0029     0004     B          N
   6      TTPUA      FIELD 0033     0004     B          N
   7      SPUAA      FIELD 0037     0004     B          N
   8      SOLCEL     FIELD 0041     0004     B          N
   9      USENRGY    FIELD 0045     0004     B          N
  10      COMTEMP    FIELD 0049     0004     B          N
  11      AUSEFF     FIELD 0053     0004     B          N
  12      P8         FIELD 0057     0004     B          N
  13      P9         FIELD 0061     0004     B          N
  14      P10        FIELD 0065     0004     B          N
  15      P11        FIELD 0069     0004     B          N
  16      P12        FIELD 0073     0004     B          N
  17      P13        FIELD 0077     0004     B          N
  18      P14        FIELD 0081     0004     B          N
  19      P15        FIELD 0085     0004     B          N
  20      P16        FIELD 0089     0004     B          N
  21      P17        FIELD 0093     0004     B          N
  22      P18        FIELD 0097     0004     B          N
  23      P19        FIELD 0101     0004     B          N
  24      P20        FIELD 0105     0004     B          N
  25      P21        FIELD 0109     0004     B          N
  26      P22        FIELD 0113     0004     B          N
  27      P23        FIELD 0117     0004     B          N
  28      P24        FIELD 0121     0004     B          N
  29      P25        FIELD 0125     0004     B          N
  30      P26        FIELD 0129     0004     B          N
  31      P27        FIELD 0133     0004     B          N
  32      P28        FIELD 0137     0004     B          N
  33      P29        FIELD 0141     0004     B          N
  34      P30        FIELD 0145     0004     B          N
  35      P31        FIELD 0149     0004     B          N
  36      P32        FIELD 0153     0004     B          N
  37      P33        FIELD 0157     0004     B          N
  38      P34        FIELD 0161     0004     B          N
  39      P35        FIELD 0165     0004     B          N
  40      P36        FIELD 0169     0004     B          N
  41      P37        FIELD 0173     0004     B          N
  42      P38        FIELD 0177     0004     B          N
```

Figure 6.3-3. File Revision (Sheet 7 of 18)

TRANSACTION DESCRIPTOR DECK

```
 43      P39       FIELD 0181      0004    B          N
 44      P40       FIELD 0185      0004    B          NNN
 45      P41       FIELD 0189      0004    B          NNN
 46      P42       FIELD 0193      0004    B          N
```

```
SEQ PGLN LABEL     OPER OPERANDS                                   FLAGS
 47                POOL
 48                MNU  $THERMAL,THERMAL
 49                MNU  $TTPUA,TTPUA
 50                MNU  $SPUAA,SPUAA
 51                MNU  $SOLCEL,SOLCEL
 52                MNU  $USENRGY,USENRGY
 53                MNU  $COMTEMP,COMTEMP
 54                MNU  $ABSEFF,ABSEFF
 55                MNU  $P8,P8
 56                MNU  $P9,P9
 57                MNU  $P10,P10
 58                MNU  $P11,P11
 59                MNU  $P12,P12
 60                MNU  $P13,P13
 61                MNU  $P14,P14
 62                MNU  $P15,P15
 63                MNU  $P16,P16
 64                MNU  $P17,P17
 65                MNU  $P18,P18
 66                MNU  $P19,P19
 67                MNU  $P20,P20
 68                MNU  $P21,P21
 69                MNU  $P22,P22
 70                MNU  $P23,P23
 71                MNU  $P24,P24
 72                MNU  $P25,P25
 73                MNU  $P26,P26
 74                MNU  $P27,P27
 75                MNU  $P28,P28
 76                MNU  $P29,P29
 77                MNU  $P30,P30
 78                MNU  $P31,P31
 79                MNU  $P32,P32
 80                MNU  $P33,P33
 81                MNU  $P34,P34
 82                MNU  $P35,P35
 83                MNU  $P36,P36
 84                MNU  $P37,P37
```


Figure 6.3-3. File Revision (Sheet 8 of 18)

```
SEQ PGLN LABEL     OPER OPERANDS                                    FLAGS
 85                MNU  *$P38,P38
 86                MNU   $P39,P39
 87                MNU   $P40,P40
 88                MNU   $P41,P41
 89                MNU   $P42,P42
 90                HLT
 91                END

NO ERRORS DETECTED IN THIS LOGIC STATEMENT
```


Figure 6.3-3. File Revision (Sheet 9 of 18)

LIBRARY ACTION-ADD A PERMANENT STATEMENT

```
  1       T0084 0085 START          FR        RA        ASP

TRANSACTION DESCRIPTOR DECK

  2       SITEID     FIELD 0007     0002      A              S SITEID
  3       SYSID      FIELD 0009     0002      A              S SYSID
  4       DATE       FIELD 0011     0006      A              S DATE
  5       RTIME      FIELD 0018     0004      A              N
  6       R1         FIELD 0029     0004      B              N
  7       R2         FIELD 0033     0004      B              N
  8       R3         FIELD 0037     0004      B              N
  9       R4         FIELD 0041     0004      B              N
 10       R5         FIELD 0045     0004      B              N
 11       R6         FIELD 0049     0004      B              N
 12       R7         FIELD 0053     0004      B              N
 13       R8         FIELD 0057     0004      B              N
 14       R9         FIELD 0061     0004      B              N
 15       R10        FIELD 0065     0004      B              N
 16       R11        FIELD 0069     0004      B              N
 17       R12        FIELD 0073     0004      B              N
 18       R13        FIELD 0077     0004      B              N
 19       R14        FIELD 0081     0004      B              N

SEQ PGLN LABEL      OPER  OPERANDS                                  FLAGS
 20                 POOL
 21                 POS   RTIME,A001
 22       B001      SIP   RTIME,B001
 23       A001      BSS   RTIME
 24                 MCS   $RTIME,RTIME
 25                 MNU   $R1,R1
 26                 MNU   $R2,R2
 27                 MNU   $R3,R3
 28                 MNU   $R4,R4
 29                 MNU   $R5,R5
 30                 MNU   $R6,R6
 31                 MNU   $R7,R7
 32                 MNU   $R8,R8
 33                 MNU   $R9,R9
 34                 MNU   $R10,R10
 35                 MNU   $R11,R11
 36                 MNU   $R12,R12
 37                 MNU   $R13,R13
 38                 MNU   $R14,R14
 39                 HLT
```

Figure 6.3-3. File Revision (Sheet 10 of 18)

```
LIBRARY ACTION-ADD A PERMANENT STATEMENT
  1      T0084 0085 START          FR        RA        ASP

TRANSACTION DESCRIPTOR DECK

  2       SITEID     FIELD 0007      0002     A              S SITEID
  3       SYSID      FIELD 0009      0002     A              S SYSID
  4       DATE       FIELD 0011      0006     A              S DATE
  5       RTIME      FIELD 0018      0004     A              N
  6       R1         FIELD 0029      0004     B              N
  7       R2         FIELD 0033      0004     B              N
  8       R3         FIELD 0037      0004     B              N
  9       R4         FIELD 0041      0004     B              N
 10       R5         FIELD 0045      0004     B              N
 11       R6         FIELD 0049      0004     B              N
 12       R7         FIELD 0053      0004     B              N
 13       R8         FIELD 0057      0004     B              N
 14       R9         FIELD 0061      0004     B              N
 15       R10        FIELD 0065      0004     B              N
 16       R11        FIELD 0069      0004     B              N
 17       R12        FIELD 0073      0004     B              N
 18       R13        FIELD 0077      0004     B              N
 19       R14        FIELD 0081      0004     B              N

SEQ PGLN LABEL     OPER OPERANDS                                    FLAGS
 20                POOL
 21                POS  RTIME,A001
 22       B001     SIP  RTIME,B001
 23       A001     BSS  RTIME
 24                MCS  $RTIME,RTIME
 25                MNU  $R1,R1
 26                MNU  $R2,R2
 27                MNU  $R3,R3
 28                MNU  $R4,R4
 29                MNU  $R5,R5
 30                MNU  $R6,R6
 31                MNU  $R7,R7
 32                MNU  $R8,R8
 33                MNU  $R9,R9
 34                MNU  $R10,R10
 35                MNU  $R11,R11
 36                MNU  $R12,R12
 37                MNU  $R13,R13
 38                MNU  $R14,R14
 39                HLT
```

Figure 6.3-3. File Revision (Sheet 10 of 18)

```
 40                    END
NO ERRORS DETECTED IN THIS LOGIC STATEMENT
```

Figure 6.3-3. File Revision (Sheet 11 of 18)


```
LIBRARY ACTION-ADD A PERMANENT STATEMENT
  1      T0192 0193 START          FR         RB        ASP

TRANSACTION DESCRIPTOR DECK
  2      SITEID     FIELD 0007     0002       A         S  SITEID
  3      SYSID      FIELD 0009     0002       A         S  SYSID
  4      DATE       FIELD 0011     0006       A         S  DATE
  5      CTIME      FIELD 0018     0004       A         N
  6      C1         FIELD 0029     0003       B         N
  7      C2         FIELD 0033     0003       B         N
  8      C3         FIELD 0037     0003       B         N
  9      C4         FIELD 0041     0003       B         N
 10      C5         FIELD 0045     0003       B         N
 11      C6         FIELD 0049     0003       B         N
 12      C7         FIELD 0053     0008       B         N
 13      C8         FIELD 0057     0003       B         N
 14      C9         FIELD 0061     0003       B         N
 15      C10        FIELD 0065     0003       B         N
 16      C11        FIELD 0069     0006       B         N
 17      C12        FIELD 0073     0003       B         N
 18      C13        FIELD 0077     0003       B         N
 19      C14        FIELD 0081     0003       B         N
 20      C15        FIELD 0085     0003       B         N
 21      C16        FIELD 0089     0003       B         N
 22      C17        FIELD 0093     0004       3         N
 23      C18        FIELD 0097     0004       B         N
 24      C19        FIELD 0101     0004       B         N
 25      C20        FIELD 0105     0004       B         N
 26      C21        FIELD 0109     0004       B         N
 27      C22        FIELD 0113     0004       B         N
 28      C23        FIELD 0117     0004       B         N
 29      C24        FIELD 0121     0003       B         N
 30      C25        FIELD 0125     0003       B         N
 31      C26        FIELD 0129     0003       B         N
 32      C27        FIELD 0133     0003       B         N
 33      C28        FIELD 0137     0008       B         N
 34      C29        FIELD 0141     0003       B         N
 35      C30        FIELD 0145     0004       B         N
 36      C31        FIELD 0149     0004       B         N
 37      C32        FIELD 0153     0004       B         N
 38      C34        FIELD 0157     0004       B         N
 39      C35        FIELD 0161     0004       B         N
 40      C36        FIELD 0165     0004       B         N
 41      C37        FIELD 0169     0004       B         N
 42      C38        FIELD 0173     0004       B         N
```


Figure 6.3-3. File Revision (Sheet 12 of 18)

```
TRANSACTION DESCRIPTOR DECK
 43       C39        FIELD 0177      0004    B          N
 44       C40        FIELD 0181      0004    B          N
 45       C41        FIELD 0185      0004    B          N
 46       C42        FIELD 0189      0004    B          N

SEQ PGLN LABEL      OPCR OPERANDS                                    FLAGS
 47                  POOL
 48                  PUS   CTIME,A002
 49       B002       STP   CTIME,B002
 50       A002       BSS   CTIME
 51                  MCS   $CTIME,CTIME
 52                  MNU   $C1,C1
 53                  MNU   $C2,C2
 54                  MNU   $C3,C3
 55                  MNU   $C4,C4
 56                  MNU   $C5,C5
 57                  MNU   $C6,C6
 58                  MNU   $C7,C7
 59                  MNU   $C8,C8
 60                  MNU   $C9,C9
 61                  MNU   $C10,C10
 62                  MNU   $C11,C11
 63                  MNU   $C12,C12
 64                  MNU   $C13,C13
 65                  MNU   $C14,C14
 66                  MNU   $C15,C15
 67                  MNU   $C16,C16
 68                  MNU   $C17,C17
 69                  MNU   $C18,C18
 70                  MNU   $C19,C19
 71                  MNU   $C20,C20
 72                  MNU   $C21,C21
 73                  MNU   $C22,C22
 74                  MNU   $C23,C23
 75                  MNU   $C24,C24
 76                  MNU   $C25,C25
 77                  MNU   $C26,C26
 78                  MNU   $C27,C27
 79                  MNU   $C28,C28
 80                  MNU   $C29,C29
 81                  MNU   $C30,C30
 82                  MNU   $C31,C31
 83                  MNU   $C32,C32
 84                  MNU   $C34,C34
```

Figure 6.3-3. File Revision (Sheet 13 of 18)

```
SEQ PGLN LABEL      OPER  OPERANDS                                  FLAGS
 85                 MNU   $C35,C35
 86                 MNU   $C36,C36
 87                 MNU   $C37,C37
 88                 MNU   $C38,C38
 89                 MNU   $C39,C39
 90                 MNU   $C40,C40
 91                 MNU   $C41,C41
 92                 MNU   $C42,C42
 93                 HLT
 94                 END

NO ERRORS DETECTED IN THIS LOGIC STATEMENT
```


Figure 6.3-3. File Revision (Sheet 14 of 18)

```
LIBRARY ACTION-ADD A PERMANENT STATEMENT
  1       T0052 0053 START          FR        RC        ASP

TRANSACTION DESCRIPTOR DECK

 *2       SITEID     FIELD 0007     0002     A          S SITEID
  3       SYS10      FIELD 0009     0002     A          S SYS10
  4       DATE       FIELD 0011     0006     A          S DATE
  5       PROBLEM    FIELD 0029     0018     A          N
  6       SOLDATE    FIELD 0047     0006     A          N
  7       SOLUTN     FIELD 0053              D          N

SEQ PGLN LABEL      OPER OPERANDS                                    FLAGS

  8                 PDDL
  9                 POS   PROBLEM,A003
 10       B003       SIP   PROBLEM,B003
 11       A003       BSS   PROBLEM
 12                  MAL   $PPROBLEM,PROBLEM
 13                  MAL   $SOLDATE,SOLDATE
 14                  MVF   $SOLUTN,SOLUTN
 15                  HLT
 16                  END
 17                  STOP

NO ERRORS DETECTED IN THIS LOGIC STATEMENT
```

Figure 6.3-3. File Revision (Sheet 15 of 18)

```
LOGIC STATEMENT - R      - FOR REPORT - FR      - HAS BEEN ADDED TO FILE - SOLSTAA.-
THE TOTAL LENGTH OF THIS LOGIC STATEMENT IS 1048 BYTES

LOGIC STATEMENT - RA     - FOR REPORT - FR      - HAS BEEN ADDED TO FILE - SOLSTAA.-
THE TOTAL LENGTH OF THIS LOGIC STATEMENT IS 1216 BYTES

LOGIC STATEMENT - RB     - FOR REPORT - FR      - HAS BEEN ADDED TO FILE - SOLSTAA.-
THE TOTAL LENGTH OF THIS LOGIC STATEMENT IS 1928 BYTES

LOGIC STATEMENT - RC     - FOR REPORT - FR      - HAS BEEN ADDED TO FILE - SOLSTAA.-
THE TOTAL LENGTH OF THIS LOGIC STATEMENT IS 1096 BYTES
```


Figure 6.3-3. File Revision (Sheet 16 of 18)

```
START UPDATE RECORD GENERATION
UPDATE RECORD GENERATION COMPLETED
UPDATE RECORD COUNT IS ..............1090

NUMBER OF TRACKS WRITTEN TO THE SORTIN DATASET.........000027
```

Figure 6.3-3. File Revision (Sheet 17 of 18)

```
**FM PROCESSING BLOCK SIZE FOR THIS RUN WILL BE THE DEFAULT SIZE OF 16000 BYTES.  THE FM PB SIZE CAN BE ENTERED ON THE EXEC CARD,
E.G., PARM='PBSIZE=20K' OR PARM='LIST,PB=3K'. LIMITS ARE 1K TO 99K. AS THE PB SIZE IS INCREASED ABOVE 16 K, REGION SIZE SHOULD BE
INCREASED CORRESPONDINGLY.

SOLSTAA.  =     S                          NOT CATALOGED-EXISTS ON FOLLOWING VOL-SER-NO 000304

******FILE GEN/UPD COMPLETED******
```


Figure 6.3-3. File Revision (Sheet 18 of 18)

```
*****************************************************************
$FMS/DPD,SCLSIT,SCLSIT1,LS,DISK,TAPE
$DR,SCLSIT1
$AR,SCLSIT1,1
$ASP,SCLSIT1,2,88
$RDSID,1,2,C1
$RSTYP,2,3,C2
$RDATE,1,5,C3
$RTMINT,5,6,C4
$RTCD,87,88,C5
$HOUR,4,5
$MIN,7,8
$DSE,9,12
$TSET,13,16
$RV,17,20
$UETA,21,24
$TAOT,25,28
$TSCOV,29,32
$TSCOC,33,36
$ATSE,37,40
$USNTA,41,44
$NTAOT,45,48
$NTSCOV,49,52
$NTSCOC,53,56
$AAT,57,60
$ECT,61,64
$TEHAA,65,68
$LIHAA,69,72
$TEDA,73,76
$LIDA,77,80
$DCS,81,84
$NU,85,88
        POOL
        MCT   $RDSID,RDSID
        MCT   $RSTYP,RSYID
        MCT   $RDATE,RDATE
        MCT   $RTMINT,RTMINT
        PGS   RTCD,A002
B002    STP   RTCD,B002
A002    BSS   RTCD
        MCS   $RTCD,RTCD
        MNU   $HOUR,#1/2
        MNU   $MIN,#3/4
        MNU   #1/4,RTARM
        MNU   $DSE,RP1L
        MNU   $TSET,RP1A
        MNU   $RV,RP2L
        MNU   $UETA,RP2A
        MNU   $TAOT,RP3L
        MNU   $TSCOV,RP3A
        MNU   $TSCOC,RDP1L
        MNU   $ATSE,RDP1A
        MNU   $USNTA,RDP2L
        MNU   $NTAOT,RDP2A
        MNU   $NTSCOV,RT1
        MNU   $NTSCOC,RT2
        MNU   $AAT,RT3
        MNU   $ECT,RT4
        MNU   $TEHAA,RT5
        MNU   $LIHAA,RT6
        MNU   $TEDA,RT7
        MNU   $LIDA,RT8
        MNU   $DCS,RT9
        MNU   $NU,PDT1
        HLT
        END
        STOP
        /*
        //
```

Figure 6.3-4

Output Report Generation - Terminal

The applicable terminal application component for use in SIMS is the Quick Inquiry Processor (QUIP), designed to give a powerful data retrieval and display capability.

The Terminal Processing Users Manual (NIPS Vol. VI) contains detailed procedures for invoking this terminal application program. An example of a terminal session (on a 2260 terminal) is shown in figure 6.3-5.

File Maintenance - Terminal

The terminal application program, which provides a means of performing maintenance on an existing file, is called Source Data Automation (SODA). It interacts with the terminal and the File Maintenance capability, as previously described, to allow for the inputting of raw data to a file or the changing of existing data fields within a file. An example of the use of SODA to update two fields of a file is shown in figure 6.3-6, along with the previously generated and library stored File Maintenance Logic Statements (figure 6.3-7).

Development Activity - Terminal

The EDIT application program provides the user programmer/analyst with a means of entering, managing and editing of NIPS source language statements for development and debugging. It also provides the user the capability of submitting jobs into the input job stream of the Operating System for processing.

Utility Functions - Terminal

The NIPS system provides the ability to send messages and data between terminals and performing the rudimentary utility functions which are provided by the System/370 Operating System.

6.3.5 Information Retrieval

To support the requirements for both scheduled and non-scheduled inquiries of the data base, the Reference and Sort Processor (RASP) of NIPS will be utilized. This capability of NIPS provides the following:

- Batched retrievals against a single file
- Merged file retrieval
- Data record qualification on fixed/periodic/variable information
- Error diagnostic printout
- Multiple IF Statements within each retrieval

AN EXAMPLE OF THE TERMINAL SESSION TO ACCESS FIVE FIELDS OF A FILE CALLED SOLSTAA IS AS FOLLOWS. THE SYMBOL ▶ INDICATES 'START MANUAL INPUT', ⊡ INDICATES 'ENTRY MANUAL INPUT' AND ⊙ INDICATES THE REPLY TO THE QUIP REQUEST.

▶ FILE SOLSTAA. ⊡

▶ LIST ALL SITEID CTIME THERMAL SOLCEL USENRGY. ⊡

▶ → Q ⊡

⊙ TERMINAL DISPLAY

SITE ID	CTIME	THERMAL	SOLCEL	USENRGY
01	0100	765	859	658
	0200	709	856	657
	0300	711	858	659
	0800	707	859	653
	2400	705	836	647
02	0100	907	914	645
	0200	909	934	650

Figure 6.3-5. Use of QUIP

AN EXAMPLE OF A TERMINAL SESSION TO EXERCISE THE ON-LINE FILE MAINTENANCE FUNCTION IS AS FOLLOWS WITH THE SYMBOL ▶ MEANING 'START MANUAL INPUT', [•] MEANING 'ENTER MANUAL INPUT' AND (•) INDICATING THE REPLY PRESENTED ON THE TERMINAL SCREEN BY THE SYSTEM

▶ LOGON (AE6111, TEST) ⟶ R[•]

(•) LOGON ACCEPTED, PROCEED

▶ FILE SOLSTAA REPORT TRY1 [•] (NEW LINE)

▶ R2000 44443333 ⟶ F [•]

(•) INPUT SCRATCHED READY FOR MORE

▶ R2200A7776666 ⟶ F [•]

(•) LLLL USENRGY NOT NUMERIC

▶ 1111=7777 ⟶ F [•]

(•) INPUT SCRATCHED READY FOR MORE

▶ R23006666A777 ⟶ F [•]

(•) 1111 ABSEFF NOT NUMERIC

▶ 1111=7777 ⟶ F [•]

(•) INPUT SCRATCHED READY FOR MORE

▶ R2400666655551010760201 ⟶ F [•]

(•) 1111111111 MUST WORK WITH SITE 09

▶ 11=09 ⟶ F [•]

(•) INPUT SCRATCHED READY FOR MORE

▶ UPDATE ⟶ F [•]

(•) ALL UPDATED RECORDS WRITTEN ON FILE SOLSTAA

Figure 6.3-6 Use of SODA Capability

```
LIBRARY ACTION-ADD A PERMANENT STATEMENT
  1      TOOBO      START          TRY       A        ASP

TRANSACTION DESCRIPTOR DECK
  2      RECID      FIELD 0002     0010 01 D          M
  3      CTIME      FIELD 0012     0004 02 D          M
  4      THERMAL    FIELD 0016     0004    D          N
  5      TTPUA      FIELD 0020     0004    D          N

SEQ PGLN LABEL     OPER OPERANDS                                    FLAGS
  6                 PUDL
  7                 BNR  BADKY
  8                 MNU  $THERMAL,W1/4
  9                 COA  $THERMAL,W1/4
 10                 REQ  AD
 11                 ERR  $THERMAL,'NOT NUMERIC'
 12                 BRA  NOAD
 13      AD         ADD  W1/3,THERMAL,THERMAL
 14                 HLT
 15      NOAD       MNU  $TTPUA,W1/4
 16                 COA  $TTPUA,W1/4
 17                 REQ  AD1
 18                 ERR  $TTPUA,'NOT NUMERIC'
 19                 HLT
 20      AD1        ADD  W1/3,TTPUA,TTPUA
 21                 HLT
 22      BADKY      ERR  $RECID,'RECORD NOT ON FILE'
 23                 UDR
 24                 HLT
 25                 HLT
 26                 END
 27                 STOP

NO ERRORS DETECTED IN THIS LOGIC STATEMENT
```

06

Figure 6.3-7

- Insertion of literals in sort keys
- Answer record ordering
- Multiple answer sets from each retrieval
- Storage of retrievals for later execution
- Ability to use user - written subroutines to qualify data
- Ability to pass information for output formatting
- Ability to change operands at execution time
- Ability to change sort field designations to execution time.

Detailed user instructions are contained in "NIPS Users Manual - Retrieval and Sort Processor."

6.3.6 Output Processing

In support of the report generation and magnetic tape generation requirements, the output processing capability of NIPS will be utilized. This function provides the capability for formatting complex and lengthy reports and provides the capability to generate graphic output formats. It initializes basic communication files and prepares the output data file(s) which are to be processed. The inquiry being processed is examined and any logical conditioning requested to be performed on the output is done. Output page formatting statements are processed and made ready for compilation and link editing. The final phase of this module is the execution of the assembled and linked code against the output data file.

Formal Report Generation - Hard Copy

The NIPS System provides the user with a report generator which can be driven by a master data file or by the result of a retrieval process. A flexible, free form user language is provided. A generative code technique produces a Report Instruction Table (RIT). This module includes an automatic library capability for speed and convenience in producing non-terminal output. Output may be in the form of print, cards, disk or on magnetic tape. An example of the structuring of a RIT and the resultant output are shown in figure 6.3-8.

Detailed user instructions are contained in "NIPS Users Manual - Output Processor."

6.3.7 Plot Capability

A capability to plot instrumentation data has been added to the NIPS Data Base System. Data will be presented on a Tektronix 4015 display and hardcopy provided on a Tektronix 4631 unit. The procedure to be utilized in generation of plots is as follows:

```
                    ** NIPS 360 FFS OUTPUT PROCESSOR **                    DATE 76 051
                    ***** REPORT SPECIFICATION CARDS *****          ***  PAGE 001  ***

CREATE RITID=REPORT STORE=TEMP                                              0001S
FILE SOLSTAA                                                                0002S
FORMAT PRINT LINES 8                                                        0003S
HEADER1 83 'SOLAR ENERGY RECORDING SYSTEM DATA'                             0004S
HEADER1 104 'DATE:'                                                         0005S
HEADER1 115 OPDATE                                                          0006S
HEADER1 124 'PAGE:'                                                         0007S
HEADER1 130 PAGENO                                                          0008S
SPACE 2                                                                     0009S
HEADER2 20 'STATION NUMBER: 1329'                                           0010S
HEADER2 74 'EQUIPMENT LIST:'                                                0011S
HEADER2 138 'SERIAL'                                                        0012S
HEADER2 131 'SENSITIVITIES'                                                 0013S
HEADER3 17  'RECORDING PERIOD:'                                             0014S
HEADER3 109 'NUMBERS'                                                       0015S
HEADER3 130 'MV/CAL/SCM/MIN'                                                0016S
HEADER4 46  'STATION LOCATION: MARSHAL SPACE FLIGHT CENTER'                 0017S
HEADER4 96  '1. TRACKING PYRHELIOMETER (REFERENCE)'                         0018S
HEADER4 108 '810432'                                                        0019S
HEADER4 125 '5.35'                                                          0020S
HEADER5 31  'BUILDING 4200'                                                 0021S
HEADER5 96  '2. TRACKING PYRHELIOMETER (CONCENTRATOR)'                      0022S
HEADER5 108 '810433'                                                        0023S
```

Figure 6.3-8. (Sheet 1 of 9)

```
** NIPS 360  FFS OUTPUT PROCESSOR **                                    DATE  76 051

***** REPORT  SPECIFICATION CARDS *****                           ***  PAGE  002  ***

HEADER5 125 '6.21'                                                       0024S
HEADER6 40 'HUNTSVILLE,AL. 35812'                                        0025S
HEADER6 82 '3. TRACKING PYRANOMETER'                                     0026S
HEADER6 108 '1384001'                                                    0027S
HEADER6 125 '5.12'                                                       0028S
HEADER7 41 'STATION LATITUDE:    34.716 DEGREES NORTH'                   0029S
HEADER7 86 '4. NON TRACKING PYRANOMETER'                                 0030S
HEADER7 102 '1384002'                                                    0031S
HEADER7 125 '4.97'                                                       0032S
HEADER8 40 'STATION LONGITUDE:   86.604 DEGREES WEST'                    0033S
HEADER9 34 'HEIGHT ABOVE SEA LEVEL: 221 METERS'                          0034S
SPACE 1                                                                  0035S
HEADER10 23 'INTER PERIOD'                                               0036S
HEADER10 38 'DIRECT RAD'                                                 0037S
HEADER10 63 'TOTAL RADIATION-TRACK'                                      0038S
HEADER10 87 'EFFICIENCIES - TRACK'                                       0039S
HEADER10 113 'TOTAL RADIATION NONTRK'                                    0040S
HEADER10 121 'EFFCS'                                                     0041S
HEADER10 132 'NONTRK'                                                    0042S
HEADER11 7 'DATE'                                                        0043S
HEADER11 22 'START  STOP'                                                0044S
HEADER11 66 'IVAL    US-CON  US-SAR'                                     0045S
HEADER11 72 'CONCN'                                                      0046S
```

Figure 6.3-8. (Sheet 2 of 9)

```
** NIPS 360 FFS OUTPUT PROCESSOR **                    DATE 76 051
***** REPORT SPECIFICATION CARDS *****                 ***  PAGE 003  ***

HEADER11 80 'ABSOR'                                              0047S
HEADER11 89 'ARRAY'                                              0048S
HEADER11 96 'AVAL'                                               0049S
HEADER11 105 'US-ABR'                                            0050S
HEADER11 114 'US-SAR'                                            0051S
HEADER11 121 'ABSOR'                                             0052S
HEADER11 131 'ARRAY'                                             0053S
HEADER12 16 'HR:MN'                                              0054S
HEADER12 23 'HR:MN'                                              0055S
HEADER12 32 'CAL/SCM'                                            0056S
HEADER12 40 'CAL/SCM'                                            0057S
HEADER12 49 'CAL/SCM'                                            0058S
HEADER12 57 'CAL/SCM'                                            0059S
HEADER12 66 'CAL/SCM'                                            0060S
HEADER12 70 '%'                                                  0061S
HEADER12 76 '%'                                                  0062S
HEADER12 87 '%'                                                  0063S
HEADER12 97 'CAL/SCM'                                            0064S
HEADER12 106 'CAL/SCM'                                           0065S
HEADER12 114 'CAL/SCM'                                           0066S
HEADER12 120 '%'                                                 0067S
HEADER12 126 '%'                                                 0068S
LINE1 74 P8                                                      0069S
```

Figure 6.3-8. (Sheet 3 of 9)

```
LINE1 82 P9                                                    0070S
LINE1 90 P10                                                   0071S
LINE1 98 P11                                                   0072S
LINE1 106 P12                                                  0073S
LINE1 114 P13                                                  0074S
LINE1 123 P14                                                  0075S
LINE1 132 P15                                                  0076S
END                                                            0077S
```


Figure 6.3-8. (Sheet 4 of 9)

```
F4A-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED MAP,LIST,LET,NCAL,DC
        DEFAULT OPTION(S) USED -   SIZE=(122880,45056)
IEW2C00          INCLUDE LOADR
IEW2C00          NAME  REPORT#T


                                    MODULE MAP

  CONTROL SECTION                          ENTRY
    NAME     ORIGIN  LENGTH                 NAME   LOCATION     NAME   LOCATION     NAME   LOCATION     NAME   LOCATION
  AACATA        00     434
  ADMRS        438     616
  ACSAVE       A50     222
  ADPPT        C78     2EA

  ENTRY ADDRESS        00
  TOTAL LENGTH        F68
***REPORT#T  NOW ADDED TO DATA SET
```

Figure 6.3-8. (Sheet 5 of 9)

```
SOURCE DIRECT                                                    INPUT CTL RECORD
PUBLISH SPECIAL=REPORT                                           INPUT CTL RECORD
```

Figure 6.3-8. (Sheet 6 of 9)

SOLAR ENERGY RECORDING SYSTEM DATA DATE:20 FEB 1976 PAGE:

STATION NUMBER: 1329
RECORDING PERIOD:
STATION LOCATION: MARSHAL SPACE FLIGHT CENTER
BUILDING 4200
HUNTSVILLE,AL. 35812
STATION LATITUDE: 34.716 DEGREES NORTH
STATION LONGITUDE: 86.664 DEGREES WEST
HEIGHT ABOVE SEA LEVEL: 221 METERS

EQUIPMENT LIST:

	SERIAL NUMBERS	SENSITIV MV/CAL/SCM
1. TRACKING PYRHELIOMETER (REFERENCE)	810432	5.35
2. TRACKING PYRHELIOMETER (CONCENTRATOR)	810433	6.21
3. TRACKING PYRANOMETER	1384001	5.12
4. NON TRACKING PYRANOMETER	1384002	4.97

DATE	INTER PERIOD START HR:MN	STOP HR:MN	DIRECT RAD CAL/SCM	TOTAL RADIATION-TRACK IVAL CAL/SCM	US-CON CAL/SCM	US-SAR CAL/SCM	EFFICIENCIES - TRACK CONCN %	ABSOR %	ARRAY %	TOTAL RADIATION NONTRK AVAL CAL/SCM	US-ABR CAL/SCM	US-SAR CAL/SCM	EFFCS ABSOR %
											763	763	
									763		763	100	
8	1	9	1	10					763	11	763	12 763	13 100
									763		763		100

Figure 6.3-8. (Sheet 7 of 9)

SOLAR ENERGY RECORDING SYSTEM DATA DATE:20 FEB 1976 PAGE: 2

STATION NUMBER: 1329
RECORDING PERIOD:
STATION LOCATION: MARSHAL SPACE FLIGHT CENTER
BUILDING 4200
HUNTSVILLE,AL. 35812
STATION LATITUDE: 34.716 DEGREES NORTH
STATION LENGITUDE: 86.664 DEGREES WEST
HEIGHT ABOVE SEA LEVEL: 221 METERS

EQUIPMENT LIST:

	SERIAL NUMBERS	SENSITIVITIES MV/CAL/SCM/MIN
1. TRACKING PYRHELIOMETER (REFERENCE)	810432	5.35
2. TRACKING PYRHELIOMETER (CONCENTRATOR)	810433	6.21
3. TRACKING PYRANOMETER	1384001	5.12
4. NON TRACKING PYRANOMETER	1384002	4.97

DATE	INTER PERIOD START HR:MN	STOP HR:MN	DIRECT RAD CAL/SCM	TOTAL RADIATION-TRACK AVAL CAL/SCM	US-CON CAL/SCM	US-SAR CAL/SCM	EFFICIENCIES - TRACK CONCN %	ABSOR %	ARRAY %	TOTAL RADIATION NONTRK AVAL CAL/SCM	US-ARR CAL/SCM	US-SAR CAL/SCM	EFFCS ABSOR %	NONTR ARRAY %
										5		5	138	
													325	2616
													389	514
													307	119

66

ORIGINAL PAGE IS
OF POOR QUALITY

Figure 6.3-8. (Sheet 8 of 9)

SOLAR ENERGY RECORDING SYSTEM DATA DATE:20 FEB 1976 PAGE:

STATION NUMBER: 1329
RECORDING PERIOD:
STATION LOCATION: MARSHAL SPACE FLIGHT CENTER
BUILDING 4200
HUNTSVILLE,AL. 35812
STATION LATITUDE: 34.716 DEGREES NORTH
STATION LONGITUDE: 86.664 DEGREES WEST
HEIGHT ABOVE SEA LEVEL: 221 METERS

EQUIPMENT LIST:

	SERIAL NUMBERS	SENSIT MV/CAL/SC
1. TRACKING PYRHELIOMETER (REFERENCE)	810432	5.3
2. TRACKING PYRHELIOMETER (CONCENTRATOR)	810433	6.2
3. TRACKING PYRANOMETER	13R4001	5.1
4. NON TRACKING PYRANOMETER	1384C02	4.9

DATE	INTER START HR:MN	PERIOD STOP HR:MN	DIRECT RAD CAL/SCM	TOTAL RADIATION-TRACK AVAL CAL/SCM	US-CON CAL/SCM	US-SAR CAL/SCM	EFFICIENCIES - TRACK CONCN %	ABSOR %	ARRAY %	TOTAL RADIATION NONTRK AVAL CAL/SCM	US-ARR CAL/SCM	US-SAR CAL/SCM	EFFCS ABSOR %
													133
						219		219				100	
											510.	510	

100

Figure 6.3-8. (Sheet 9 of 9)

- An information retrieval query is made using NIPS and the NIPS terminal processor (TP) through which selected parameters are abstracted from the data base for subsequent recall.

- Using the NIPS TP, a job is submitted from the terminal to the host computer which, through the execution of a Data Base Processor, will:

- Access the retrieved parameters and reformat the data

- Allow the selection of plot identifiers

- Pass the plot information to a display interface module which will generate the plot on a display terminal.

Although remote job entry has been mentioned throughout the section concerning plot capability batch processing can be used if needed or desired.

The plot capability is pictorially shown in figure 6.3-9.

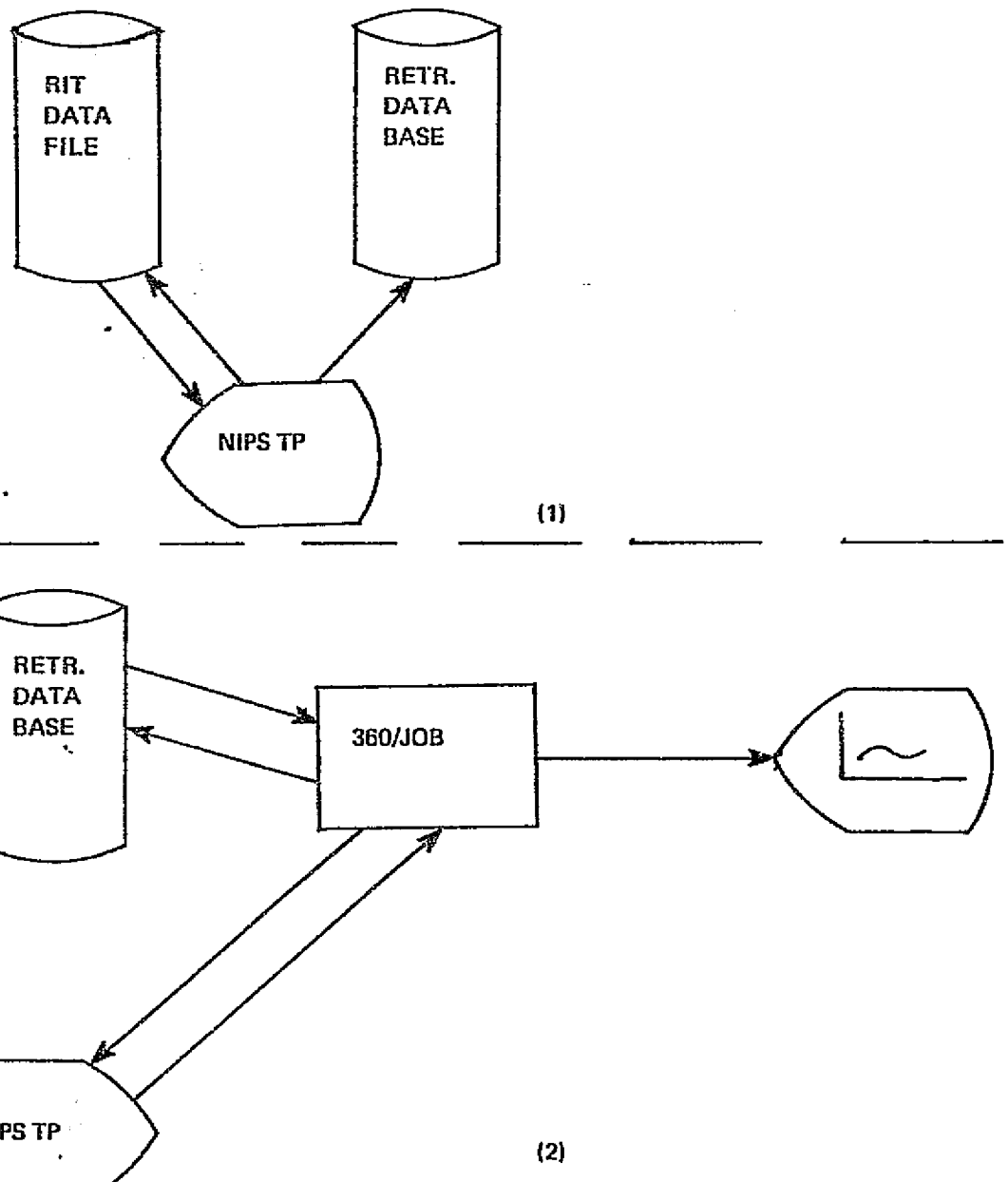


Figure 6.3-9. Plot Capability

7.0 COMPUTER OPERATIONS GUIDELINES

The daily processing of instrumentation data from remote sites involves computer operations on both the System/7 computer (data collection) and S/370-145 computer (data processing/data base update/user support). In addition, non-scheduled processing requests must be supported on a continuing basis throughout the contractual period. Because the majority of daily processing is performed during second and third shifts, this section is oriented primarily toward the daily operations required in collection and processing of instrumentation data. Other processing requirements will be handled in a normal terminal or batch processing environment with no unique operator requirements.

7.1 SYSTEM/7 DATA COLLECTION OPERATIONS

At approximately 2000 each night, the data collection process must be initiated by the operator. Data collection will process automatically thereafter unless error conditions occur which terminate data collection. The following paragraphs describe operator actions required in support of System/7 data collection.

7.1.1 Initiation of Site Collection

To initiate the Data Collection from Remote Sites, the following procedures must be followed:

(1) Mount Disk 'SIMS SYS7OP' onto mountable disk unit of System/7

(2) IPL System/7 from mountable disk

(3) Upon System Printing 'OP1", enter 'SDC'

(4) Automatic Data Collection will begin. "Communication Log Report" will be printed during collection

(5) Report of error conditions will be printed during collection. For errors causing termination of collection, System/7 programmer must be notified

(6) Upon completion of Site Data Collection, MESSAGE 'SITE DATA COLLECT COMPLETE' will be printed.

(7) Upon completion of data collection, transfer of data to S/370-145 must be performed. See Paragraph 7.2 for operation instructions.

(8) 'Communication Log Report' must be delivered to computer center for inclusion with other data processing reports

(9) Dismount disk from mountable disk unit and store.

7.1.2 Monitor of Data Collection

The "Communication Log Report," which is printed on the Teletype Printer, contains a sequential history of communication activity. Error conditions will be logged for communications analysis.

The operator should review this log periodically, and, if an error message occurs, he should notify the System/7 Programmer/Analyst for troubleshooting.

If data collection completes in a normal manner, a message indicating successful completion will be printed.

7.2 TRANSFER OF DATA TO S/370-145

To transmit data to the S/370-145 for processing and data base update, the following operational procedures must be followed:

(1) Insure that the Host Computer operator has invoked the System Program 'SBCUPROG'

(2) IPL from the fixed disk of the System/7

(3) After System/7 Prints '>', enter '$L!'

(4) After System/7 prints 'PGM (NAME,IODA):', enter 'HFS'

(5) After System/7 prints 'SBCUPROG STARTED ON HOST?', enter 'Y'

(6) Upon completion of data transfer, System/7 will pring 'HFS ENDED 'DATE/TIME'

(7) Notify Host operator that transfer is complete.

7.3 REPORT COLLECTION

Upon successful completion of data transfer, the "Communication Log Report," Data Transfer Message, and other Teletype Messages must be removed from the Teletype Printer and returned to the Facility Computer Room for distribution. The data should be placed into the output distribution bin for the System/7 Programmer/Analyst's review the next day.

7.4 SYSTEM/7 RECONFIGURATION

Since the System/7 computer is shared by other users, the operator must reconfigure the system to a known state. To perform this reconfiguration, the operator must:

(1) Dismount 'SIMSSYS70P' disk from mountable disk unit of System/7

(2) Remote and store teletype output

(3) Store disk into storage cabinet.

7.5 S/370-145 DATA TRANSFER FROM SYSTEM/7

(1) Upon notification by System/7 operator, invoke system program 'SBCUPROG'

(2) Upon notification by System/7 operator, terminate 'SBCUPROG'

If error conditions occur to inhibit successful data transfer, the operator must notify the Computer Operations Manager for assistance in troubleshooting the problem.

7.6 INITIATION OF INPUT PROCESSING ACTIVITY

Upon completion of data transfer, the S/370 operator will begin the input processing phase by initiating production job "PSIMSIPS" via the console terminal.

During execution of input processing, the operator will be requested via the console to mount tapes and will be notified of error conditions which cause termination of processing. Error messages, in addition to system error messages, are:

"SIMS RAW DATA PROCESSING FAILED.CALL INPUT PROCESSING PROG/ANALYST"
"SIMS MERGE & SUMMARY FAILED.CALL INPUT PROCESSING PROG/ANALYST"

Successful completion of the Input Processing activity will provide the following messages to the operator via the console:

"SIMS RAW DATA PROCESSING COMPLETED SUCCESSFULLY"
"SIMS MERGE AND SUMMARY COMPLETED SUCCESSFULLY"
"SIMS NIGHTLY IPS SAVES COMPLETED SUCCESSFULLY"

7.7 DATA BASE MAINTENANCE ACTIVITY

Upon successful completion, the Data Base Maintenance Activity will be initiated automatically by the S/370 operator. If errors occur which cause termination of Data Base Maintenance Activity, the following message will be printed on the Console:

"Data Base Maintenance Terminated. Call Data Base Programmer/ Analyst"

In the event of failure, the operator must dismount SIMS magnetic tapes prior to initiation of other jobs to be processed.

Successful completion of the Data Base Maintenance Activity will provide the following message to the operator:

"Data Base Maintenance Successfully Completed. Beginning User Support Activity"

7.8 USER SUPPORT ACTIVITY

User Support Activity will be invoked by the S/370 operator and will provide daily reports for analysis purposes and magnetic tapes for delivery to MSFC. Tape mount messages will be provided via the console.

Unsuccessful completion will be noted through the following console message:

"User Support Terminated Unsuccessfully. Call Data Base Programmer/Analyst"

Successful completion will be noted by the following console message:

"User Support Successfully Completed"

7.9 REPORT/MAGNETIC TAPE DISTRIBUTION

Upon completion of User Support Activities, reports and magnetic tapes created, should be placed in output bins for pickup and distribution.

7.10 TAPE LIBRARIAN

All input and output magnetic tapes used and created during processing must be placed in the Tape Library for cataloging.

7.11 HISTORY PROCESSING

The IPS History program will be run once a month concurrent with S/7 data collection operations. The history job must be completed prior to initiation of input processing activity (job PSIMSIPS).

To run SIMS History the operator shall initiate job "PSIMSHST".

During History execution, the operator will be requested via the console to mount tapes and will be notified of error conditions which cause termination of processing. The error message, in addition to system error messages, is:

"SIMS HISTORY PROGRAM FAILED CALL INPUT PROCESSING PROG/ANALYST"

Successful completion of SIMS History processing will provide the following messages to the operator via the console:

"SIMS HISTORY PROGRAM COMPLETED SUCCESSFULLY"
"SIMS HISTORY SAVES COMPLETED SUCCESSFULLY"

8.0 PERFORMANCE ANALYST GUIDELINES

The performance Analyst is a primary user of the CDPS in that he is dependent on the CDPS to provide him the data needed to analyze the performance of solar heating and cooling systems. The Performance Analyst supports the following functions within the CDPS:

(1) Provides Site Description/Site Directory information

(2) Maintains Site Description notebook

(3) Examines reports generated during processing of raw input data

(4) Performance evaluation

The following paragraphs address the role of the Performance Analyst as a user of the CDPS.

8.1 APPLICABLE DOCUMENTS

The following CDPS documents are required in order to utilize the CDPS:

(1) CDPS Software Performance Specification Document

(2) CDPS Software Design Document

8.2 SITE DESCRIPTION/SITE DIRECTORY INFORMATION

The Performance Analyst must provide the CDPS with remote site information under the following circumstances:

(1) Initially

(2) Changing of sensor calibration coefficients

(3) Deleting a site

8.2.1 Site Initiation

In order for the CDPS to automatically collect data, process data, and maintain a data base entry, the Performance Analyst must ensure that the CDPS is initialized for the site. This initialization is provided through the completion of the site data information form (figure 8-1). The form consists of three separate sheets and should be completed as described in the form. The Performance Analyst must also specify performance evaluation equations. The completed form and the equations should be taken to the request coordinator who will ensure that the CDPS is properly initialized prior to site activation.

8.2.2 Remote Site Description Changes

The following procedures define the actions to be taken by the Performance Analyst to:

(1) Change the general site information

(2) Update measurement definitions (calibration)

All forms must be given to request coordinator for implementation.

General Site Information

Page 1 of the site data information form contains site general information. To correct or update this information, page 1 must be recorded and given to the request coordinator for implementation.

Measurement Definition Update

Measurement definition is contained in page 2 and page 3 of the Site Data Information Form. To add/change/delete information previously entered into the system, the lines on the form corresponding to the measurements requiring change must be completed as described below:

Action	Procedure
Addition of measurement	Complete line corresponding to location of measurement in the raw input data stream
Change of measurement characteristics	Enter new data into line corresponding to measurement
Deletion of measurement	Draw a line through the location of the measurement

PAGE 1 = GENERAL INFORMATION
DATE:_____
NEW, CHANGE, OR DELETE (CIRCLE)
SIGNATURE:_____

SITE DATA INFORMATION

TO CHANGE ANY INFORMATION ON THIS PAGE, COMPLETE ALL ITEMS EXCEPT CARD CODE. TO DELETE A SITE, FILL IN SITE ID AND DATE, CIRCLE 'DELETE' AND COMPLETE SIGNATURE.

__ __ __ __ __ SITE ID (EXAMPLE 00043)
1 5

A __ CARD CODES (RESERVED FOR FILE MAINTENANCE TECHNICIAN USE)
6 7

__ __ SYSTEM TYPE ('HC' = HEATING & COOLING, 'HØ' = HEATING, OR 'HW' = HOT WATER)
8 9

__ __ PRINT LEVEL ('12' = MOST DETAILED LEVEL INCLUDES PRINT OF DETAIL RECORDS,
10 11 '08' = NORMAL LEVEL. '04' = LESS DETAIL THAN NORMAL,
'00' = NO PRINTING)

__ __ SCAN LEVEL (NO. OF BYTES OF DATA IN ONE SCAN. DO NOT INCLUDE TIME BYTES).
12 13

__ TIME ZONE ('E' = EASTERN, 'C' = CENTRAL, 'M' = MOUNTAIN', 'P' = PACIFIC)
14

__ __ __ __ __ COLLECTOR AREA (SQUARE FEET, RIGHT JUSTIFY)
15 19

Figure 8-1. Site Data Information Forms (Page 1 of 3)

SIT CARD CODE B

SITE DATA INFORMA

IF NEW COMPLETE ALL INFO ABOUT ALL MEASUREMENTS AND LINE THROUGH NON-EXISTENT MEASUREMENTS.
IF CHANGE COMPLETE ALL INFO ABOUT A NEW OR CHANGED MEASUREMENT LINE THROUGH TO DELETE A MEASUREMENT.

PG 2 PART 1 OF MEASUREMENT T

DATE: _____

NEW OR CHANGE (CIRCLE)

RESP SIG _____

MEASUREMENT DESCRIPTIVE NAME	MEAS CODED NAME	BYTE POS IN SCAN 1 = 1st BYTE TIME	LENGTH IN SCAN 1 OR 2	CONVERSION INFORMATION						TESTING INFORMATION			
				TYPE	TYPE MAY BE L = LINEAR, Q = QUADRATIC, T = THIRD ORDER OR D = DISCRETE. IF I IS RAW BIT VALUE SEE FORMULAS BELOW TO COMPLETE CONVERTED VALUE CV				UNIT OF CONVERTED VALUE	UNITS OF COMPUTED VALUE			*TO TEST FOR FROZEN STATE
					A	B	C	D		MIN VALUE	MAX VALUE	MAXIMUM CHANGE BETWEEN READINGS	
WIND DIRECTION	D001								0 FROM N				
COLLECTOR CIRC PUMP POWER	EP101								KW				
HW ELEC AUX POWER	EP300								KW				
HW CIRC PUMP POWER	EP301								KW				
HTG ELEC AUX POWER	EP400								KW				
HTG LOOP CIRC PUMP POWER	EP401								KW				
BLDG FAN POWER	EP402								KW				
HEAT PUMP COMPRESS POWER	EP403								KW				
ABSORP CHILLER OPEN POWER	EP501								KW				
HW AUX FUEL FLOW	F300								FT3/MIN				
HTG AUX FUEL FLOW	F400								FT3/MIN				
COOLING AUX FUEL FLOW	F500								FT3/MIN				
TOTAL RADIATION	I001								KGTU/HR				
DIFFUSE RADIATION	I002								KGTU/HR				
OUTDOOR DB TEMPERATURE	T001								oF				
COLLECTOR INLET TEMPERATURE	T100								oF				
STORAGE INLET TEMPERATURE	T101								oF				
COLLECTOR ABSORBER TEMP	T102								oF				
STORAGE MEDIA AVG TEMP	T200								oF				
STORAGE AMBIENT TEMP	T201								oF				
MAKEUP WATER TEMP	T300								oF				
HX INLET TEMP	T301								oF				
LOAD RETURN TEMP	T400								oF				
LOAD HX INLET TEMP	T500								oF				
COOLING TOWER INLET TEMP	T501								oF				
BLDG RETURN AIR DB TEMP	T600								oF				
BLDG RETURN AIR WB TEMP	T601								oF				
BLDG SUPPLY AIR WB TEMP	T602								oF				

KEYPUNCH SITE ID + CARD CODE OR ALL CARDS

TYPE
L: $CV = A + BI$
Q: $CV = A + BI + CI^2$
T: $CV = A + BI + CI^2 + DI^3$

TYPE
D: $CV = \begin{cases} 1, \text{ IF } A \leq I \leq B \\ 0 \text{ OTHERWISE} \end{cases}$

Figure 8-1. Site Data Information Forms (Page 2 of 3)

SITE DATA INFORMATION

( ) CARD CODE B

IF NEW COMPLETE ALL INFO ABOUT MEASUREMENTS AND
LINE THROUGH NON EXISTENT MEASUREMENTS.
IF CHANGE COMPLETE ALL INFO ABOUT A NEW OR CHANGED MEASUREMENT
LINE THROUGH TO DELETE A MEASUREMENT.

DATE: _____

NEW OR CHANGE (CIRCLE)

RESP SIG _____

MEASUREMENT DESCRIPTIVE NAME	MEAS CODED NAME	BYTE POS IN SCAN 1 = 1st BYTE TIME	LENGTH IN SCAN 1 OR 2	CONVERSION INFORMATION						TESTING INFORMATION			
				TYPE	TYPE MAY BE L = LINEAR, Q = QUADRATIC, T = THIRD ORDER OR D = DISCRETE. IF I IS RAW BIT VALUE SEE FORMULAS BELOW TO COMPLETE CONVERTED VALUE CV				UNITS OF CONVERTED VALUE	UNITS OF COMPUTED VALUE			*TO TEST FOR FROZEN STATE
					A	B	C	D		MIN VALUE	MAX VALUE	MAXIMUM CHANGE BETWEEN READINGS	
COLLECTOR TEMP DIFF	TD100								°F				
STORAGE TEMP DIFF (C&TS)	TD101								°F				
STORAGE TEMP DIFF (HWS)	TD300								°F				
HX TEMP DIFF	TD301								°F				
LOAD HX TEMP DIFF	TD302								°F				
STORAGE TEMP DIFF (HTS)	TD400								°F				
AUXILIARY TEMP DIFF	TD401								°F				
LOAD HX TEMP DIFF (HTS)	TD402								°F				
LOAD HX TEMP DIFF (SCS)	TD500								°F				
COOLING TOWER TEMP DIFF	TD501								°F				
SUPPLY/RETURN AIR TEMP DIFF	TD600								°F				
WIND VELOCITY	W100								MPH				
COLLECTOR FLOW RATE	W100								GAL/MIN				
CIRCULATION FLOW RATE (HWS)	W300								GAL/MIN				
LOAD FLOW RATE	W301								GAL/MIN				
CIRCULATION FLOW RATE (HTS)	W400								GAL/MIN				
LOAD HX FLOW RATE	W500								GAL/MIN				
COOLING TOWER FLOW RATE	W501								GAL/MIN				
BLDG AIR FLOW RATE	W600								FT3/MIN				
CONDENSATE FLOW	W601								FT3/MIN				
SPARE	SP01								-				
SPARE	SP02												
SPARE	SP03								-				
SPARE	SP04								-				
SPARE	SP05								-				
SPARE	SP06								-				
SPARE	SP07								-				
SPARE	SP08								-				
SPARE	SP09								-				
SPARE	SP10								-				

KEYPUNCH SITE ID I
CARD CODE OR ALL CARDS

TYPE
L: $CV = A + BI$
Q: $CV = A + BI + CI^2$
T: $CV = A + BI + CI2 + DI^3$

TYPE
D: $CV = \begin{cases} 1, \text{IF } A \leq I \leq B \\ 0 \text{ OTHERWISE} \end{cases}$

Figure 6-6. Site Data Information Forms (Page 2 of 3)

8.2.3 Site Deletion

To delete a remote site from the CDPS processing activity, page 1 of the Site Data Information Form must be completed as described below:

Field	Current
Date:	Date of deletion
Status:	Circle Delete
Site ID:	Identification of site to be deleted
Responsible Signature:	Signature of authorized person to add/ delete sites

8.3 MAINTAIN SITE DESCRIPTION NOTEBOOK

The Performance Analyst must maintain a remote site notebook which contains a history of all transactions made to the CDPS relative to the site. The history will be provided through listings provided as a result of each remote site description file transaction. These listings provide:

(1) A listing of the composite results of all Site Data Description Transactions made to date along with possible error messages (see figure 8-2). Table 6.2-4 contains explanations of error messages

(2) A Site Data Description Report which indicates the present contents of the CDPS file (see figure 8-3)

Through maintenance of previous contents reports and transactions listing, traceability can be maintained from initiation to termination of a site.

8.4 RAW DATA PROCESSING ANALYSIS

The Performance Analyst can control the level of detail of print during raw input processing. This control is achieved through completion of the "Print Level" field on the Site Data Information Form (figure 8-1). The results to be expected from each selected print level are shown in table 8-1.

```
                                         SDAS DATA INFORMATION FILE UTILITY PROGRAM                  PAGE  5
                                         UTILITY RUN FOR PURPOSE OF ** ADDING A SDAS **
                                         SDAS ID  071                                                DATE : 12/16/77
***** CARD IMAGES AND ERROR MESSAGES *****                                                           TIME : 1358
  071BCH74  01472L30           +1270772E-07   0.              0.             30      +208.00 +178.00 *T246

 071BCH75  01492L-20          +1368523E-07   0.              0.            -20      +156.00 +176.00 *T247

 071BCH72  01432L-20          +1368523E-07   0.              0.            -20      +156.00 +176.00 *T600

 071BCH76  01512L-20          +1368523E-07   0.              0.            -20      +156.00 +176.00 *T601

 071BCH77  01532L-20          +1368523E-07   0.              0.            -20      +156.00 +176.00 *T602

 071BCH78  01552L-20          +1368523E-07   0.              0.            -20      +156.00 +176.00 *T603

 071BCH79  01572L-20          +1368523E-07   0.              0.            -20      +156.00 +176.00 *T604

 071BCH33  00652L0            +0977516E-07   0.              0.            0        +130.00 +130.00 *V001

 071BCH07  00132T0.           +1376641E-07   +0004189E-07    +0000008E-07  0        +1807.0 +1807.0 *W100

 071BCH08  00152T0.           +1376641E-07   +0004189E-07    +0000008E-07  0        +1807.0 +1807.0 *W101

TOTAL E-CARDS PROCESSED =  80

END OF SDAS INFORMATION FILE UPDATE FOR SDAS #071
```

Figure 6-2. Sample Site Data Description Utility Card Images/Error Message Report

SDAS DATA INFORMATION FILE UTILITY PROGRAM — PAGE 1
UTILITY RUN FOR PURPOSE OF ** ADDING A SDAS **
SDAS ID C71
DATE : 12/16/77
TIME : 1358

GENERAL INFORMATION REPORT

SDAS_ID	071
PRINT_LEVEL	12
SCAN_LENGTH	160
TIME_ZONE	M
TIME_ZONE_OFFSET	-3600
SITE_ID	148
SUB_TYPE	S
REV_LEVEL	-
REV_TIME	77/12/16 13.58
SITE_NAME	HULLCO CONSTRUCTION CO.
ANALYST_NAME	UNKNOWN
ENGINEER_NAME	UNKNOWN

CODED MEASUREMENTS REPORT

MEASUREMENT		SCAN POS	LEN	NIPS POS	CONV TYPE	CONV #1	CONV #2	CONV #3	CONV #4	MINIMUM VALUE	MAXIMUM VALUE	MAXIMUM CHANGE	MUST CHNG?
CH01	CALIB	1	2	1	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH17	C001	33	2	17	L	0.000000	0.351936	0.0000000	0.00000E+00	0.00000	468.00000	468.000000	YES
CH04	EP100	7	2	4	L	0.000000	0.000976	0.0000000	0.00000E+00	0.00000	0.65000	0.650000	YES
CH05	EP101	9	2	5	L	0.000000	0.000976	0.0000000	0.00000E+00	0.00000	0.65000	0.650000	YES
CH19	EP400	37	2	19	L	0.000000	0.003906	0.0000000	0.00000E+00	0.00000	2.60000	2.599999	YES
CH20	EP401	39	2	20	L	0.000000	0.003906	0.0000000	0.00000E+00	0.00000	2.60000	2.599999	YES
CH18	EP402	35	2	18	L	0.000000	0.003906	0.0000000	0.00000E+00	0.00000	2.60000	2.599999	YES
CH34	EP403	67	2	34	L	0.000000	0.003906	0.0000000	0.00000E+00	0.00000	2.60000	2.599999	YES
CH02	I001	3	2	2	L	0.000000	2.946953	0.0000000	0.00000E+00	0.00000	470.75000	470.750000	YES
CH09	RH600	17	2	9	L	0.000000	0.097752	0.0000000	0.00000E+00	0.00000	130.00000	130.000000	YES
CH10	RH601	19	2	10	L	0.000000	0.097752	0.0000000	0.00000E+00	0.00000	130.00000	130.000000	YES
CH16	SP001	31	2	16	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH28	SP002	49	2	25	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH26	SP003	51	2	26	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH27	SP004	53	2	27	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH35	SP005	69	2	35	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH36	SP006	71	2	36	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH43	SP007	85	2	43	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH44	SP008	87	2	44	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH45	SP009	89	2	45	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH49	SP010	97	2	49	L	0.000000	1.000000	0.0000000	0.00000E+00	0.00000	1024.00000	1023.000000	YES
CH03	T001	5	2	3	L	-20.000000	0.136652	0.0000000	0.00000E+00	-20.00000	156.00000	176.000000	YES
CH06	T100	11	2	6	L	30.000000	0.127077	0.0000000	0.00000E+00	30.00000	208.00000	178.000000	YES
CH11	T101	21	2	11	L	30.000000	0.127077	0.0000000	0.00000E+00	30.00000	208.00000	178.000000	YES

Figure 8-3. Sample Site Data Description Record Contents Report

Table 8-1.

Print Level Selected	Description of Results
0	No site summary report. No detail record prints. No messages unless major errors occur.
4	Site summary report is printed. No messages about individual variable errors (BCH, out of limits, or changing too fast.) No detail record prints.
8	Site summary report with all detailed error messages printed. No detail record reports.
12	Site summary report with all detailed error messages printed. Detail record prints created also.

The normal output of the CDPS raw data input processing will be the Site Raw Data Processing Report (figure 8-4). Error messages and possible causes/corrective actions are shown in table 8-2.

To obtain a listing of all detailed records processed by the CDPS, print level 12 should be selected. The resulting report will have the format shown in figure 8-5.

8.5 SITE PERFORMANCE EVALUATION

In support of Site Performance Evaluation, the CDPS provides the Performance Analyst with daily evaluation reports as shown in figure 8-6. If, upon analysis, the Analyst desires further detailed information, the information retrieval capability of the Data Base System can be utilized to provide either hardcopy reports or plots (examples in figure 8-7). The request coordinator will provide the interface through which the Analyst can request additional information from the CDPS.

8.6 SITE DESCRIPTION FILE GENERATION/MAINTENANCE

The Data Base File containing the non-instrumented data pertinent to each of the sixty remote sites is required to provide data for report generation. The performance analyst will complete the Remote Site Description Data Input form (figure 8-8) using instructions as detailed in table 8.3. The completed forms will be keypunched as detailed in table 8.4, and the resultant cards will be input to a batch computer job which will perform the necessary file maintenance activity using the NIPS File Maintenance (FM) capability. This file maintenance will be performed on an as required basis as site information is added/deleted/changed.

8.7 SUBSYSTEM EVALUATION FILE GENERATION/MAINTENANCE

The Subsystem Evaluation File is a manually maintained file containing characteristics of the subsystems being evaluated. The performance analyst will complete the 'Subsystem Evaluation Input Sheet' (figure 8-9) per instructions detailed in table 8.5. The completed forms will be keypunched per the keypunch instructions of table 8.6. The generated catds will be input to a NIPS/360 File Maintenance (FM) process on an as required basis (TBD).

8.8 SYSTEM INTEGRATION DATA FILE GENERATION/MAINTENANCE

TBD

8.9 SIMULATION/WEATHER DATA FILE GENERATION/MAINTENANCE

TBD

```
INPUT PROCESSING SYSTEM. CONVERSION OF RAW INPUT TO DETAIL RECORDS BEGUN FOR SDAS 041          RUN TIME 77/11/15 23.40
SDAS CLOCK BASE TIME        77/09/27 17.58.25
PREV SDAS CLOCK BASE TIME 77/09/27 17.59.10
   #RAW_DATA_RECORDS    66        #RAW_DATA_BYTES   13400        #BCH_ERRORS      0
STREAM PROCESSING COMPLETED WITH ERROR CODE  0
SCANSEP
    DATA BLOCKS    TOT:    18     OUTPUT:    18      REJECTED:     0
    SCANS          TOT:   198     OUTPUT:   198      REJECTED:     0
    #RAW_DATA_BYTES      EXPECTED: 13400          ACTUAL: 13400
SCANSEP PROCESSING COMPLETED WITH ERROR CODE  0
CNVTEST
    TIME OF PREV LAST SCAN 77/11/14 07.28.30
    TIME OF FIRST SCAN     77/11/14 07.38.25
VARIABLE CH01   HAS CONSTANT VALUE          0.000
VARIABLE CH05   HAS CONSTANT VALUE          0.000
VARIABLE CH06   HAS CONSTANT VALUE          0.000
    TIME OF LAST SCAN        77/11/15 01.47.29
    #_OF_SCANS_OUTPUT    198
    ANALYSIS BY VARIABLES
    VARNAME   #OUT_OF_LIMITS   #BCH_ERRORS   #CHNG_TOO_FAST #REJECTED   MIN_VALUE  MIN_VALUE_TIME        MAX_VALUE  MAX_VALUE_TIME
     CH01              0              0              0          0          0.000 77/11/14 07.38.25          0.000 77/11/14 07.38.25
     CH03              0              0              0          0          0.000 77/11/14 09.35.45          0.096 77/11/14 11.01.05
     CH05              0              0              0          0          0.000 77/11/14 07.38.25          0.000 77/11/14 07.38.25
     CH07              0              0              0          0          0.000 77/11/14 07.38.25        288.847 77/11/14 13.09.05
     CH09              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 08.42.25
     CH11              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 11.01.05
     CH13              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 07.43.45
     CH15              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 09.57.05
     CH17              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 10.07.45
     CH19              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 16.42.25
     CH20              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 13.57.05
     CH21              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 08.37.05
     CH22              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 11.17.05
     CH23              0              0              0          0          0.000 77/11/14 07.43.45          2.000 77/11/14 12.37.05
     CH24              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 12.21.05
     CH25              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 09.30.25
     CH26              0              0              0          0          0.000 77/11/14 07.43.45          2.000 77/11/14 08.53.05
     CH27              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 09.41.05
     CH28              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 08.37.05
     CH29              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 08.31.41
     CH30              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 09.57.05
     CH31              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 07.57.45
     CH32              0              0              0          0          0.000 77/11/14 07.38.25          2.000 77/11/14 10.39.45
     CH02              0              0              0          0          0.000 77/11/14 10.23.45         23.705 77/11/14 13.19.45
     CH10              0              0              0          0          0.000 77/11/14 18.14.09         34.857 77/11/14 08.37.05
     CH04              0              0              0          0         15.347 77/11/14 14.23.45         43.988 77/11/14 23.55.29
     CH12              0              0              0          0         68.543 77/11/15 00.16.49         75.660 77/11/14 16.05.05
     CH14              0              0              0          0         71.554 77/11/15 00.59.29        125.181 77/11/14 16.10.25
     CH16              0              0              0          0         93.734 77/11/14 11.11.45        126.970 77/11/14 16.10.25
     CH18              0              0              0          0         68.680 77/11/14 23.50.09         85.513 77/11/14 16.15.45
     CH06              0              0              0          0          0.000 77/11/14 07.38.25          0.000 77/11/14 07.38.25
     CH08              0              0              0          0          0.000 77/11/14 07.38.25          2.358 77/11/15 00.22.09
CNVTEST PROCESSING COMPLETED WITH ERROR CODE  0

DATA FOR SDAS 041 PROCESSED WITH HIGHEST ERROR CODE  0
```


Figure 8-4. Sample Raw Data Processing Site Summary Report

DETAIL RECORD PRINT FOR SDAS C13 SITE 022 SUBTYPE 1 RUN TIME 77/10/27 11.00
PAGE 3

YR/MO/DA	HR.MN.SC	CH01 / CH11 / CH21 / CH31 / CH41	CH02 / CH12 / CH22 / CH32 / CH42	CH03 / CH13 / CH23 / CH33 / CH43	CH04 / CH14 / CH24 / CH34 / CH44	CH05 / CH15 / CH25 / CH35 / CH45	CH06 / CH16 / CH26 / CH36 / CH46	CH07 / CH17 / CH27 / CH37 / CH47	CH08 / CH18 / CH28 / CH38 / CH48	CH09 / CH19 / CH29 / CH39	CH10 / CH20 / CH30 / CH40
77/10/26	00.11.16	0.000	44.043	0.000	25.293	0.156	50.879	0.000	426.758	142.305	11.9
		0.000	9.375	0.000	18.511	18.367	4.053	0.000	0.000	0.000	1.3
		0.000	1.367	0.000	14.453	0.000	0.000	66.504	58.750	0.000	81.5
		75.830	77.607	0.000	[illegible]	6.403	88.789	1.166	195.625	0.000	194.4
		0.000	193.867	175.508	141.196	196.406	188.789	88.271	84.082		
77/10/26	00.16.36	0.000	38.574	0.000	24.414	0.000	53.711	0.000	426.758	141.133	11.8
		0.000	9.131	0.000	18.359	9.176	2.295	0.000	0.000	0.000	2.1
		0.000	2.100	0.000	14.352	0.000	0.000	66.914	59.844	0.000	80.9
		76.973	77.480	0.000	0.000	6.000	88.594	1.649	195.430	0.000	194.2
		0.000	193.867	173.359	140.947	190.352	185.273	88.906	89.922		
77/10/26	00.21.56	0.000	36.963	0.000	23.242	0.000	53.936	0.000	427.734	140.156	11.4
		0.000	9.082	0.000	18.262	9.534	0.586	0.000	0.000	0.000	3.4
		0.000	1.904	0.000	6.243	0.000	0.781	66.094	59.160	0.000	80.7
		77.100	77.490	0.000	0.000	0.000	88.038	1.166	195.625	0.000	193.8
		0.000	194.063	171.602	140.547	184.102	181.563	88.652	93.350		
77/10/26	00.27.16	0.000	36.133	0.000	22.070	0.000	54.004	0.000	427.734	139.375	11.0
		0.000	8.789	0.000	17.969	9.942	0.000	0.000	0.000	0.000	4.0
		0.000	1.953	0.000	5.127	0.000	0.488	64.863	62.031	0.000	80.5
		78.242	77.637	0.000	0.000	0.000	88.203	1.649	194.648	0.000	193.8
		0.000	194.043	169.453	140.742	179.023	178.242	89.160	93.984		
77/10/26	00.32.36	0.000	35.449	0.000	21.777	0.000	54.004	0.000	427.734	138.398	10.7
		0.000	8.594	0.000	17.773	9.547	0.000	0.000	0.000	0.000	3.9
		0.000	2.246	0.000	4.053	0.000	0.781	64.043	61.211	0.000	80.0
		77.861	77.607	0.000	0.000	0.000	88.398	0.000	195.234	0.000	194.0
		0.000	193.867	167.305	140.918	175.508	174.531	89.287	93.984		
77/10/26	00.37.56	0.000	33.789	0.000	20.996	0.000	53.906	0.000	427.734	138.008	10.5
		0.000	8.301	0.000	17.676	7.551	0.000	0.000	0.000	0.000	2.7
		0.000	2.441	0.000	3.662	0.000	0.488	64.453	60.117	0.000	79.8
		77.734	77.588	0.000	0.000	0.000	89.203	0.000	195.039	0.000	194.0
		0.000	194.453	165.547	139.961	172.148	169.648	89.922	93.350		
77/10/26	00.43.16	0.000	32.178	0.000	20.215	0.000	53.809	0.000	427.734	137.422	10.4
		0.000	8.203	0.000	17.578	8.362	0.000	0.000	0.000	0.000	1.9
		0.000	2.734	0.000	3.369	0.000	0.293	65.684	58.340	0.000	79.0
		77.734	78.115	0.000	0.000	0.000	89.203	0.000	194.648	0.000	193.8
		0.000	194.453	163.398	140.156	168.086	165.742	89.922	93.096		

Figure 8-5. Sample Raw Data Processing Detail Record Print

Table 8.2. Raw Data Processing Error Messages (Sheet 1 of 6)

Message:	NO SITE DATA DESCRIPTION RECORD FOR SITE _____ . DATA FOR THIS SITE BYPASSED.
Error Level:	12
Subroutine:	IPSRAW (Main)
Explanation:	Raw data with a site id for which there is no record in the Site Data Description file. Either the raw data is wrong, or the Site Data Information for the site must be added to the Site Data Description file.

Message:	SITE _____ IS A SITE WITH NO PREVIOUS DATA.
Error Level:	None
Subroutine:	IPSRAW (Main)
Explanation:	No record for the site was found in the continuity file. This means that the current batch of raw data contains the first operational data collected from the site.

Message:	LOST IN RAW FILE. SITE ID RECORD HAS WRONG FILL PROCESSING STOPPED.
Error Level:	16
Subroutine:	IPSRAW (Main)
Explanation:	Raw data has wrong format or some data is missing. Consult with System/7 programmers for possible problem explanation. (Site id record content is printed.)

Message:	PECULIAR VALUES IN TIME OF SITE ID. DATA PROCESSING FOR THE SITE WILL BE BYPASSED. PROCESSING FOR OTHER SITES WILL BE ATTEMPTED.
Error Level:	12
Subroutine:	IPSRAW (Main)
Explanation:	Either System/7 put bad values in Site id record or this is not a site id record. If record also has bad fill data or bad counters it is probably not an id record. Consult with System/7 programmers for possible problem explanation. (Site id record content is printed.)

Message:	BAD VALUE(S) IN COUNTERS OF SITE ID RECORD. PROCESSING STOPPED.
Error Level:	16
Subroutine:	IPSRAW (Main)
Explanation:	Either System/7 put bad value(s) in Site id record or this is not an id record. If record also has bad fill data or bad time values it is probably not an id record. Consult with System/7 programmers for possible error explanation. (Site id record content is printed.)

Table 8.2. Raw Data Processing Error Messages (Sheet 2 of 6)

Message: HIGHEST SEVERITY LEVEL _____

Error Level: Not applicable Subroutine: IPSRAW (Main)

Explanation: If 16, terminal error encountered. If 12, processing failed for one or more sites. If 10, one or more data blocks rejected. If 8, one or more scans rejected. If 4, one or more individual variable readings rejected. If 0, no data rejected.

Message: UNEXPECTED END OF FILE OF RAW DATA WHILE SEPARATING RAW DATA OF SITE _____ INTO DATA AND FLAG STREAMS.

Error Level: 16 Subroutine: STREAM

Explanation: Site id record must have a bad value in its counters or some raw data has been lost. Consult with System/7 programmers for possible error explanation.

Message: SCANSEP: END OF FILE READING DATAFIL. PROCESSING STOPPED FOR SITE _____

Error Level: 12 Subroutine: SCANSEP

Explanation: End-of-site indication not found in the data records for the site. If BCH error count for the site was not zero then probably a noise problem made an End-of-block or End-of-site unrecognizable.

Message: SCANSEP. END OF FILE READING FLAGFIL. PROCESSING STOPPED FOR SITE _____

Error Level: 12 Subroutine: SCANSEP

Explanation: Normally accompanies an 'END OF FILE READING DATAFIL' message and is part of the same problem.

Message: SCANSEP. A COMMAND FRAME HAS ILLEGAL CODE AND NO BCH ERROR. PROCESSING STOPPED FOR SITE ID _____

Error Level: 12 Subroutine: SCANSEP

Explanation: Either raw data has wrong format or the scan separation routine has gotten lost processing noisy data. Look at site BCH error count and consult with System/7 programmer for problem explanation.

Table 8.2. Raw Data Processing Error Messages (Sheet 3 of 6)

Message:	SCANSEP: A SCAN WITH TIME _____ HAS BEEN DROPPED SINCE TIME < = TIME OF LAST SCAN. SITE ID = _____
Error Level:	8 Subroutine: SCANSEP
Explanation:	Error could be caused by rerunning same raw data and not restoring to previous version of continuity file. Otherwise, time may be wrong or time of previous scan may be wrong.
Message:	SCANSEP: A SCAN WITH TIME _____ HAS BEEN DROPPED SINCE TIME > = RUN TIME. SITE ID = _____
Error Level:	8 Subroutine: SCANSEP
Explanation:	Could be caused by a clock reset at the site. Also could be connected to a time overrun at the site.
Message:	SCANSEP: BCH ERROR IN COMMAND FRAME WITH END-OF-SITE COMMAND FOR SITE ID _____
Error Level:	10 Subroutine: SCANSEP
Explanation:	Noisy data. Command is treated as End-of-site. If command should have been Block-Start then one or more data blocks were lost. Compare SCANSEP actual and expected raw data byte counts.
Message:	SCANSEP: BCH ERROR IN COMMAND FRAME WITH BLOCK START COMMAND CODE. BLOCK OF DATA SKIPPED FOR SITE ID _____
Error Level:	10 Subroutine: SCANSEP
Explanation:	Noisy data. Command with BCH error treated as Block Start. Normally means a block of data is rejected. If should have been End-of-site then will probably end up rejecting all data for the site.
Message:	SCANSEP: COMMAND WITH BCH ERROR AND ILLEGAL CODE ASSUMED TO BE BLOCK START. BLOCK WILL BE SKIPPED FOR SITE _____
Error Level:	10 Subroutine: SCANSEP
Explanation:	Similar to BCH error in command frame with Block Start command code.

Table 8.2. Raw Data Processing Error Messages (Sheet 4 of 6)

Message:	SCANSEP: COMMAND WITH BCH ERROR AND ILLEGAL CODE ASSUMED TO BE END OF SITE. SITE ID = _____
Error Level:	10 Subroutine: SCANSEP
Explanation:	Similar to BCH error in command with End-of-site command code.
Message:	SCANSEP: BCH ERROR IN END OF BLOCK OR START OF SCAN. DECODED AS END OF BLOCK. SITE ID = _____
Error Level:	8 Subroutine: SCANSEP
Explanation:	Trying to correctly process noisy data. Six or more characters of 'FF' imply End-of-block. If wrong probably will get lost in the scan separation process.
Message:	SCANSEP: BCH ERROR IN END OF BLOCK OR START OF SCAN DECODED AS START OF SCAN AND SCAN DROPPED. SITE ID = _____
Error Level:	8 Subroutine: SCANSEP
Explanation:	Trying to process noisy data. If data does not contain at least 6 bytes of 'FF' as in End-of-Block it is treated as Start-of-Scan. The scan is dropped because of uncertain time.
Message:	CNVTEST: BAD SCAN POINTER FOR SITE _____. PROCESSING FOR SITE STOPPED.
Error Level:	12 Subroutine: CNVTEST
Explanation:	Bad information in the Site Data Description file. Change values on the Site Data Information form and/or change the Site Data Description Utility.
Message:	CNVTEST: BAD NIPS POINTER FOR SITE _____. PROCESSING FOR SITE STOPPED.
Error Level:	12 Subroutine: CNVTEST
Explanation:	Bad information in the Site Data Description file. Change values on the Site Data Information form and/or change the Site Data Description Utility.

Table 8.2. Raw Data Processing Error Messages (Sheet 5 of 6)

Message:	IN CNVTEST HAVE SITE ID MISMATCH. SITE-DATA-INFO. SITE-ID =_____ SCAN SITE-ID = _____ NIPS-INPUT. SITE-ID = _____ PROCESSING TERMINATED.
Error Level:	16 Subroutine: CNVTEST
Explanation:	Should never happen. Look for a software problem.
Message:	CNVTEST: ILLEGAL CONVERSION TYPE IN SITE DATA INFO. PROCESSING STOPPED FOR SITE ID _____
Error Level:	12 Subroutine: CNVTEST
Explanation:	Bad information in the Site Data Description file. Change values on the Site Data Information form and/or change the Site Data Description Utility.
Message:	VARIABLE _____ OUT OF LIMITS AT TIME _____. MINIMUM = _____ MAXIMUM = _____ VALUE = _____
Error Level:	None Subroutine: CNVTEST
Explanation:	Engineering units value of variable is outside of performance analyst specified limits.
Message:	VARIABLE _____ HAS BCH ERROR AT TIME _____
Error Level:	None Subroutine: CNVTEST
Explanation:	A BCH flag error affects the portion of the raw data from which the variables data was extracted. The value could be wrong.
Message:	VARIABLE _____ CHANGED TOO FAST AT TIME _____
Error Level:	None Subroutine: CNVTEST
Explanation:	Change between successive values of a variable exceeds performance analyst specified limits.
Message:	VARIABLE_____REJECTED AT TIME _____
Error Level:	4 Subroutine: CNVTEST
Explanation:	Variable failed two or more tests (out-of-limits, BCH error, or changing-too-fast) and value was rejected.

Table 8.2. Raw Data Processing Error Messages (Sheet 6 of 6)

Message:	CNVTEST: BAD OP CODE IN ENGINEER EQUATIONS. PROCESSING STOPPED FOR SITE _____
Error Level:	12 Subroutine: CNVTEST
Explanation:	Bad computed variable equation in Site Data Description file. Change data on Site Data Information form and/or change the Site Data Description Utility.
Message:	VARIABLE _____ HAS CONSTANT VALUE _____
Error Level:	None Subroutine: CNVTEST
Explanation:	A variable which performance analyst has specified must change had a constant value throughout one batch of raw input. Indicates a possible problem in the site data collection hardware.

SOLAR HEATING AND COOLING PROGRAM

ERDA 1-0037

12/16/76 DAILY SYSTEM PERFORMANCE SUMMARY

PROCESSING DATE: JANUARY 4, 1976

SITE NUMBER: 0037
SITE LOCATION: 1915 WAXLEAF GREEN, HUNTSVILLE, ALABAMA 35803
SITE NAME:
OPERATION START DATE: OCTOBER 17, 1976
LATITUDE: 34.7°N
LONGITUDE: 86.6°N

COLLECTOR SIZE: 65 SQUARE METERS
COLLECTOR TYPE: REVERE COPPER
STORAGE SIZE: 1200 GALLONS
STORAGE MEDIA: 100% WATER
SYSTEM TYPE: HOT WATER,HEATING & COOLING

DATE OF DATA: DECEMBER 16, 1975

HOUR	HOT WATER		HEATING		COOLING		DHW	TOTAL SOLAR				SYSTEM	TOTAL	PER	CONVEN	COMF	DHW
OF DAY	SOLAR KWH	AUX KWH	SOLAR KWH	AUX KWH	SOLAR KWH	AUX KWH	LOSS WH	AVAIL KWH	COLLECT KWH	UTILIZE KWH	CONV %	OPER POWER	AUX KWH	CENT SOLAR %	ENERGY SAVED	INDEX %	AVA %
0-1	0.01	0.00	10.13	0.00	0.00	0.00	20	0.00	0.00	10.14	0.0	0.23	0.00	97.1	9.91	100.0	100
1-2	0.00	0.00	11.01	0.00	0.00	0.00	0	0.00	0.00	11.01	0.0	0.25	0.00	96.7	10.76	100.0	100
2-3	0.02	0.00	14.93	0.00	0.00	0.00	32	0.00	0.00	14.95	0.0	0.24	0.00		14.71	98.1	100
3-4	0.01	0.00	15.72	0.00	0.00	0.00	16	0.00	0.00	15.73	0.0	0.26	0.00		15.47	96.3	100
4-6	0.00	0.00	17.41	0.00	0.00	0.00	0	0.00	0.00	17.41	0.0	0.27	0.00		17.14	97.7	100

Figure 8-6. Daily System Performance Summary

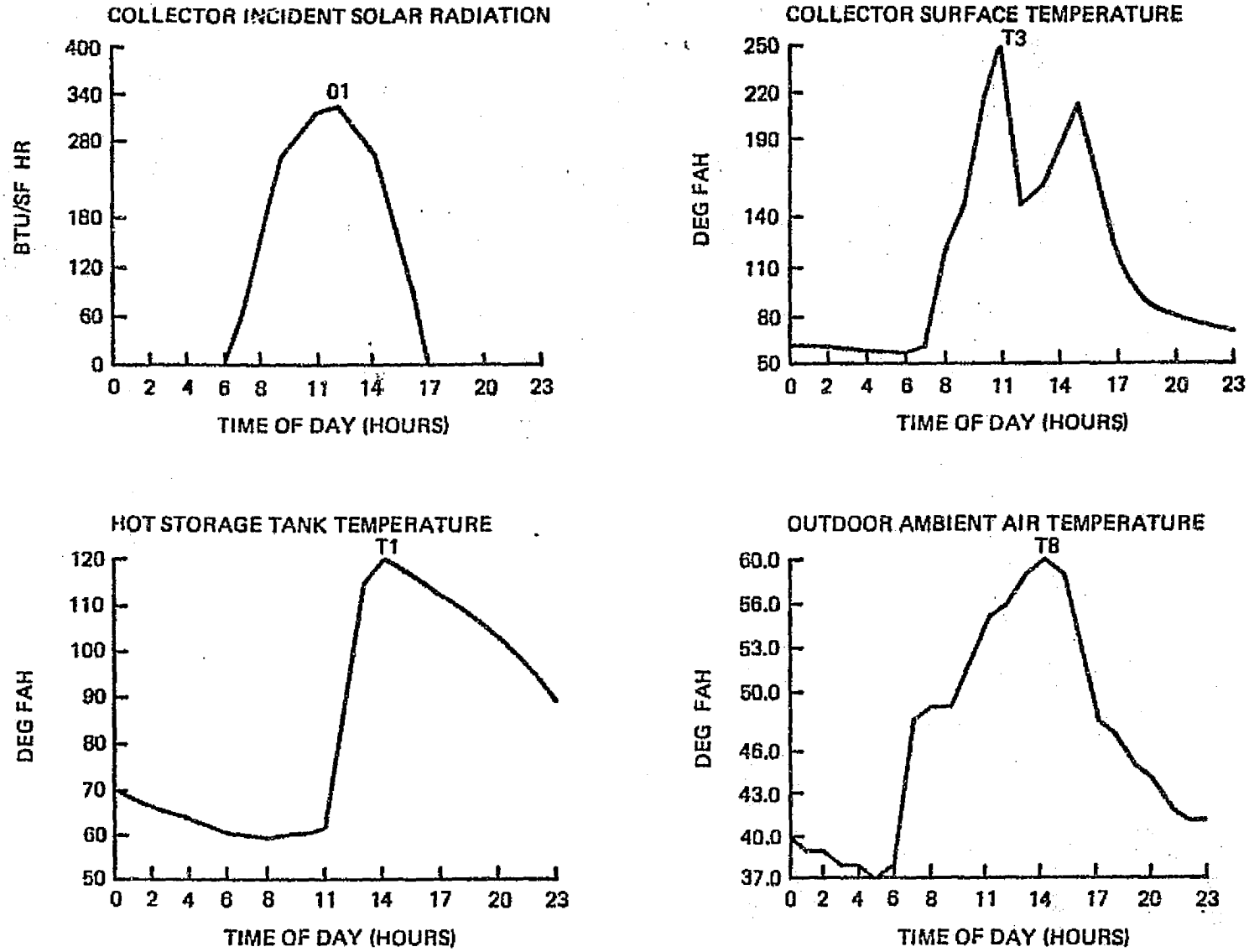


Figure 8-7. User Output Samples

Figure 8-8. REMOTE SITE DESCRIPTION DATA INPUT SHEET PAGE 1 o

SDAS PARAMETER DATA	FIELD NAME	SIZE	SET NUMBER	MODE	CONVERSION ROUTINE - INPUT	CONVERSION ROUTINE - OUTPUT
EDIT MASK	LABEL			GROUP (Y/N)	DUMMY (D)	SYSTEM ID CODE
SDAS PARAMETER DATA	FIELD NAME	SIZE	SET NUMBER	MODE	CONVERSION ROUTINE - INPUT	CONVERSION ROUTINE - OUTPUT
EDIT MASK	LABEL			GROUP (Y/N)	DUMMY (D)	SYSTEM ID CODE
SDAS PARAMETER DATA	FIELD NAME	SIZE	SET NUMBER	MODE	CONVERSION ROUTINE - INPUT	CONVERSION ROUTINE - OUTPUT
EDIT MASK	LABEL			GROUP (Y/N)	DUMMY (D)	SYSTEM ID CODE
SDAS PARAMETER DATA	FIELD NAME	SIZE	SET NUMBER	MODE	CONVERSION ROUTINE - INPUT	CONVERSION ROUTINE - OUTPUT
EDIT MASK	LABEL			GROUP (Y/N)	DUMMY (D)	SYSTEM ID CODE
SDAS PARAMETER DATA	FIELD NAME	SIZE	SET NUMBER	MODE	CONVERSION ROUTINE - INPUT	CONVERSION ROUTINE - OUTPUT
EDIT MASK	LABEL			GROUP (Y/N)	DUMMY (D)	SYSTEM ID CODE
SDAS PARAMETER DATA	FIELD NAME	SIZE	SET NUMBER	MODE	CONVERSION ROUTINE - INPUT	CONVERSION ROUTINE - OUTPUT
EDIT MASK	LABEL			GROUP (Y/N)	DUMMY (D)	SYSTEM ID CODE
SDAS PARAMETER DATA	FIELD NAME	SIZE	SET NUMBER	MODE	CONVERSION ROUTINE - INPUT	CONVERSION ROUTINE - OUTPUT
EDIT MASK	LABEL			GROUP (Y/N)	DUMMY (D)	SYSTEM ID CODE
SDAS PARAMETER DATA	FIELD NAME	SIZE	SET NUMBER	MODE	CONVERSION ROUTINE - INPUT	CONVERSION ROUTINE - OUTPUT
EDIT MASK	LABEL			GROUP (Y/N)	DUMMY (D)	SYSTEM ID CODE

Figure 8-8. (Continued)

REMOTE SITE DESCRIPTIONAL DATA INPUT SHEET

PAGE

COMMENTARY TEXT

Figure 8-8 (Continued) REMOTE SITE DESCRIPTIONAL DATA INPUT SHEET

Page 3 of.

SITEID | SYSID | NAME

STREET ADDRESS

CITY, STATE, ZIP CODE

TITUDE | LONGITUDE | ROOF PITCH | ORIENTATION | DESIGN LOADS | POWER COST | AUXILARY SYSTEM

COLLECTOR SUBSYSTEM

IFICATION | MFG. CODE | MATERIAL CODE | TYPE (LI/AI) | TYPE CO | SYSTEM TYPE (SF-ME-CO) | COST CATEGORY (EC-MR-UN) | EFFICIENCY CODE (VH-HI-AV-LO-VL)

UFACTURER NAME | ABSORBER MATERIAL | ABSORBER CONFIGURATION | ABSORBER COATING

OF COVERS | COVER MATERIAL | POWER SIZE | STATUS (AS-LP) | CERTIFY CODE | OPERATING LIFE | RATED ENERGY | INLET TEMP

RT TEMP | FLOW RATE | RECORDING FORMAT | NO OF PARAMETERS | DATA SET NAME

SDAS DATA →

	ID	TYPE	COMMERCIAL ID	DIMENSION	THERMAL CAP.	RATED TEMP.	RATED PRESSURE	BURST PRESSURE	PRESSURE (CAL)
AGE SUBSYSTEM →									
	ID	MATERIAL ID	FLUID ID	SAFETY CODE	PERFORMANCE DATA				
NG SUBSYSTEM →									
	ID	MATERIAL ID	TYPE	COMM. ID	SAFETY CODE	PERFORMANCE DATA			
NG SUBSYSTEM →									
	ID	LOGIC ID	PARAMETERS						
REL SUBSYSTEM →									
	SENSOR TYPES	OPERATING MODES							

	ID	TYPE	COMMERCIAL ID	FLUID INTERFACE SEPARATIONS	TOXICITY POTENTIAL	SAFETY STANDARDS
WATER SUBSYSTEM →						
	ID	COMMERCIAL ID	DESCRIPTION (PH, TDS, DENSITY, VISCOSITY, ETC.)			
PORT SUBSYSTEM →						

ORIGINAL PAGE IS OF POOR QUALITY

Figure 8-9. SUBSYSTEM EVALUATION INPUT SHEET

DATE	HOUR	NO. OF SAMPLE	DATA SOURCE						
	IDENTIFICATION	MFG. CODE	MATERIAL CODE	TYPE	TY	SYSTEM TYPE	COST CATEGORY	EFFICIENCY CODE	
COLLECTOR SUBSYSTEM					C				
MANUFACTURER NAME		ABSORBER MATERIAL			ABSORBER CONFIGURATION			ABSORBER COUNTING	
NO. OF LEVELS	COVER MATERIAL	PANEL SIZE	SEALS	CERTIFY CODE	SAFETY CODE	OPERATING LIFE	RATED ENERGY	INLET TEMP.	OUTLET TEMP.	FLOW
	ID	TYPE	COMMERCIAL ID	DAILY SCH	THERMAL CAP.	RATED TEMP.	RATED PRESSURE	GUEST PRESSURE	PRESSO
STORAGE SUBSYSTEM									

PERFORMANCE DATA

	ID	MATERIAL ID	FLUID ID	SAFETY CODE	PERFORMANCE DATA
COOLING SUBSYSTEM					
	ID	MATERIAL ID	TYPE	CONN ID	SAFETY CODE	PERFORMANCE DATA
HEATING SUBSYSTEM						
	ID	LOGIC ID	PARAMETERS	
CONTROL SUBSYSTEM				

SENSOR TYPES

OPERATING MODES

	ID	TYPE	COMMERCIAL ID	FLUID INTERFACE SEPARATION	TOXICITY POTENTIAL	SAFETY STANDARDS
HOT WATER SUBSYSTEM						

Table 8.3. Remote Site Description Data Input Sheet(s)

Page 1 Instructions

Complete page 1 of the remote site description data input sheet using the following instructions for each information block on the form.

General Information

BLOCK HEADING	Instruction
SITEID	2 character Site Identification Number
SYSID	2 Character System Identification Number
SITE NAME	Up to 50 Character Site Name
STREET ADDRESS	Up to 50 Character Street Address of the Site
CITY, STATE, UP CODE	Up to 50 characters for City, State, and Zip Code
LATITUDE	Up to 10 character of Latitude Information
LONGITUDE	Up to 10 characters of Longitude Information
ROOF PITCH	Up to 2 characters showing pitch of roof
ORIENTATION	Up to 2 characters indicating building orientation
DESIGN LOAD	Up to 12 characters of design load information
POWER COST	Up to 10 characters of cost of power
AUXILIARY SYSTEM	Up to 20 characters indicating auxiliary system used

Collector Subsystem

BLOCK HEADING	Instruction
IDENTIFICATION	2 characters of Collector Subsystem Identifier
MFG. CODE	2 character manufacturers code
MATERIAL CODE	2 character code for material
TYPE (LI/AI)	LI for Liquid or AI for Air
SYSTEM TYPE	SF-single family or MF-Multiple Family or CO-commercial

Instructions (Cont'd)

BLOCK HEADING	
COST CATEGORY	EC-Economic or MR-Marginal or UN-Uneconomical
MANUFACTURERS NAME	Up to 20 characters for name of Collector System manufacturer
ABSORBER MATERIAL	Up to 20 characters describing the absorber material
ABSORBER CONFIGURATION	Up to 20 characters describing the configuration of the absorber
ABSORBER COATING	Up to 10 characters describing absorber coating
NO. OF COVERS	2 characters indicating the number of covers
COVER MATERIAL	Up to 10 characters describing cover material
POWER SIZE	Up to 10 characters showing standard power size
STATUS (AS-LP)	Operational status, AS-available off shelf or LP-limited production
CERTIFY CODE	2 character independent agency certification code
OPERATING LIFE	2 character operating life code
RATED ENERGY	2 characters indicating Energy Collection (Rated)
INLET TEMP.	Up to 4 characters of collector inlet temperature
OUTLET TEMP.	Up to 4 characters of collector outlet temperature
FLOW RATE	Up to 4 characters indicating collector flow rate

Table 8.3. Remote Site Description Data Input Sheet(s) (Continued)
Page 3

SDAS DATA

BLOCK HEADING	Instruction
RECORDING FORMAT	1 character showing format of SDAS recording
NO. OF PARAMETERS	Up to 4 characters indicating number of parameters
DATA SET NAME	Up to 8 characters showing the remote operational data set name

STORAGE SUBSYSTEM

BLOCK HEADING	Instruction
ID	2 character storage subsystem identification
TYPE	2 character storage type
COMMERCIAL ID	2 character storage commercial identification
DIMENSION	10 characters showing storage dimension
THERMAL CAP	2 characters of rated thermal capacity
RATED TEMP	Up to 4 characters of rated temperature
RATED PRESSURE	Up to 4 characters showing rated pressure
BURST PRESSURE	Up to 4 characters showing burst pressure
PRESSURE RANGE	Up to 10 characters indicating pressure range

COOLING SUBSYSTEM

BLOCK HEADING	Instruction
ID	2 character cooling subsystem identification
MATERIAL ID	2 character identification of material
FLUID ID	2 character identification of fluid
SAFETY CODE	2 character safety code

Table 8.3. Remote Site Description Data Input Sheet(s) (Continued)
Page 4

COOLING SUBSYSTEM (Cont'd)

BLOCK HEADING	Instruction
PERFORMANCE DATA	Up to 80 characters of performance data

HEATING SUBSYSTEM

BLOCK HEADING	Instruction
ID	2 character identification of the heating subsystem
MATERIAL ID	2 character identification of material
TYPE	2 character heating type indicator
COMM. ID	2 characters of commercial identification
SAFETY CODE	2 character safety code
PERFORMANCE DATA	Up to 80 characters of performance data

CONTROL SUBSYSTEM

BLOCK HEADING	Instruction
ID	2 character identification of the control subsystem
LOGIC ID	2 character identification of logic
PARAMETERS	Up to 80 characters of parameter data
SENSOR TYPES	Up to 80 characters showing sensor types
OPERATING MODES	Up to 80 characters indicating operating modes

HOT WATER SUBSYSTEM

BLOCK HEADING	Instruction
ID	2 character identification of this hot water subsystem
TYPE	2 character indicating type of subsystem

Table 8.3. Remote Site Description Data Input Sheet(s) (Continued)
Page 5

HOT WATER SUBSYSTEM (Cont'd)

BLOCK HEADING	Instruction
COMMERCIAL ID	2 characters of commercial identification
FLUID INTERFACE SEPARATION	2 characters of fluid separation
TOXICITY POTENTIAL	2 character codes showing toxicity
SAFETY STANDARD	2 character code indicating safety standard

TRANSPORT SUBSYSTEM

BLOCK HEADING	Instruction
ID	2 character identification of the transport subsystem
COMMERCIAL ID	2 characters of commercial identification
DESCRIPTION	Up to 200 characters of descriptive data

Page 2 Instructions

Page 2 can contain up to 1000 characters commentary text such as:

- Failure history
  - Problem/Date
  - Problem/solution date
- Pointers to off line documents/data
  - System description
  - System definition
  - System specification
  - Design procedures
  - Ceritification data

Table 8.3. Remote Site Description Data Input Sheet(s) (Continued)
Page 7

Page(s) 3 and above instructions

Complete a two line entry for each parameter being received from the SDAS. Use as many pages as required.

SDAS PARAMETER DATA

BLOCK HEADING	Instruction
FIELD NAME	Up to 7 characters of a unique field name
SIZE	2 characters showing size of the parameter in bytes
SET NUMBER	2 characters indicating set in remote data file
MODE	5 characters indicating made-either ALPHA or NUMBER
CONVERSION ROUTINE-INPUT	Up to 7 characters giving name of input routine
CONVERSION ROUTINE-OUTPUT	Up to 7 characters giving name of output routine
EDIT MASK	Up to 7 characters showing name of edit mask used
LABEL	Up to 69 characters labeling the parameter
GROUP (Y/N)	Group indication either Yes (Y) or No (N)
DUMMY (D)	Dummy record indicator - D
SYSTEM ID CODE	Subsystem identification character

JOB NUMBER:

EFFECTIVE DATE.

3 NAME: Remote Site Description Data Input Sheet 1

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
1	1	Transaction	Always 'D'
2	2	Card Code	Always '01'
4	5	Site ID	AN, RJZF if less than 2 positions
9	2	System ID	AN, RJZF if less than 2 positions
11	69	Site Name	AN, LJ, punch as shown
		Card 2	
1	1	Transaction	Always 'D'
2	2	Card Code	Always '02'
4	5	Site ID	Dupe from Card 1
9	2	System ID	Dupe from Card 1
11	69	Street Address	AN, LJ, punch as shown
		Card 3	
1	1	Transaction	Always 'D'
2	2	Card Code	Always '03'
4	5	Site ID	Dupe from Card 2
9	2	System ID	Dupe from Card 2
11	69	City, State, Zip Code	AN, LJ, punch as shown
		Card 4	
1	1	Transaction	Always 'D'
2	2	Card Code	Always '04'
4	5	Site ID	Dupe from Card 3
9	2	System ID	Dupe from Card 3
11	10	Latitude	A/N, LJ, punch as shown

JOB NUMBER: EFFECTIVE DATE:

3 NAME: Remote Site Description Data Input Sheet 1

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 4 (Continued)	
21	10	Longitude	AN, LJ, punch as shown
31	2	Roof Pitch	A/N, RJ, reject greater than 2
33	2	Orientation	AM, RJ, reject greater than 2
35	12	Design Loads	AN, RJ, punch as shown
47	10	Power Cost	AN, RJ punch as shown
57	23	Auxilary System	AN, RJ punch as shown
		Card 5	
1	1	Transaction	Always 'D'
2	2	Card Code	Always '05'
4	5	Site ID	Dupe from Card 4
9	2	System ID	Dupe from Card 4
11	2	Identification	AN, RJZF
13	2	Mfg. Code	A/N, RJZF
15	2	Material Code	A/N, RJZF
17	2	Type (LI/AI)	A/N, RJZF
19	1	Type (C)	A/N-Always 'C'
20	1	System Type	A/N, Skip of blank
21	1	Cost Category	N, skip if blank
22	2	Efficiency Code	A/N, skip if blank
24	20	Manufacturer's Name	A/N, LJ, punch as shown
44	20	Absorber material	A/N, LJ, punch as shown
64	16	Absorber configuration	A/N, LJ, punch as shown

JOB NUMBER:

EFFECTIVE DATE:

3 NAME:

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 6	
1	2	Transaction Code	Always 'D'
2	2	Card Code	Always 06
4	5	Site ID	Dupe from Card 5
9	2	System ID	Dupe from Card 5
11	10	Absorber Counting	AN, LJ, punch as shown
21	2	No. of Covers	AN, RJZF
23	10	Cover Material	AN, LJ, punch as shown
33	10	Power Size	AN, LJ, punch as shown
43	2	Status (AS-LP)	AN, punch as shown
45	2	Certify Code	AN, LJ, punch as shown
47	2	Operating Life	AN, LJ, punch as shown
49	2	Rated Energy	AN, LJ, punch as shown
51	4	Inlet temp	AN, RJZF, skip if blank
55	4	Outlet temp	AN, RJZF, skip if blank
59	4	Flaco Rate	AN, RJZF, skip if blank
63	1	Recording Format	AN, skip if blank
64	4	No. of Parameters	AN, RJZF, skip if blank
68	8	Data Set Name	AN, LJ, punch as shown
		Card 7 (Storage Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '07'
4	5	Site ID	Dupe from Card 6

JOB NUMBER:

EFFECTIVE DATE:

JOB NAME:

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		(Card 7 Cont'd)	
9	2	System ID	Dupe from Card 6
11	2	ID	AN, LJ skip if blank
13	2	Type	AN, LJ skip if blank
15	2	Commercial ID	AN, LK skip if blank
17	10	Dimension	AN, LJ skip if blank
27	2	Thermal Cap	AN, LJ skip if blank
29	4	Rated Temp	AN, LJ skip if blank
33	4	Rated Pressure	AN, LJ skip if blank
37	4	Burst Pressure	AN, LJ skip if blank
41	10	Rated Range	AN, LJ skip if blank
		Card 8 (Cooling Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '08'
4	5	Site ID	Dupe from Card 7
9	2	System ID	Dupe from Card 7
11	2	ID	AN, skip if blank
13	2	Material ID	AN, skip if blank
15	2	Fluid ID	AN skip if blank
17	2	Safety Code	AN, skip if blank
19	61	Performance Data	AN, LJ, skip if blank

JOB NUMBER: EFFECTIVE DATE:

NAME.

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 9 (Heating Subsystem)	
1	1	Transactron Code	Always D
2	2	Card Code	Always '09'
4	5	Site ID	Dupe from Card 8
9	2	System ID	Dupe from Card 8
11	2	ID	AN, Skip if blank
13	2	Material ID	AN, skip if blank
15	2	Type	AN, skip if blank
17	2	Comm. ID	AN, skip if blank
19	2	Safety Code	AN, skip if blank
21	59	Performance data	AN, LJ, skip if blank
		Card 10 (Control Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '10'
4	5	Site ID	Dupe from Card 9
9	2	System ID	Dupe from Card 9
11	2	ID	AN, skip if blank
13	2	Logic ID	AN, skip if blank
15	65	Parameters	AN, LJ skip if blank
		Card 11 (Control Subsystem Cont'd	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '11'

JOB NUMBER:

NAME:

EFFECTIVE DATE:

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 11 (Control Subsystem Cont'd)	
4	5	Site ID	Dupe from Card 10
9	2	System ID	Dupe from Card 10
11	69	Sensor Types	AN, LJ punch as shown
		Card 12 (Control Subsystem Cont'd)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '12'
4	5	Site ID	Dupe from Card 11
9	2	System ID	Dupe from Card 11
11	69	Operating modes	AN, LJ, punch as shown
		Card 13 (Hot Water Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '13'
4	5	Site ID	Dupe from Card 12
9	2	System ID	Dupe from Card 12
11	2	ID	AN, skip if blank
13	2	Type	AN, skip if blank
15	2	Commercial ID	AN, skip if blank
17	2	Fluid Interface Separation	AN, skip if blank
19	2	Toxicity Potential	AN, skip if blank
21	2	Safety Standards	AN, skip if blank

JOB NUMBER.
NAME.

EFFECTIVE DATE

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 14 (Transport Subsystem)	
1	2	Transaction Code	Always 'D'
2	2	Card Code	Always '14'
4	5	Site ID	Dupe from Card 13
9	2	System ID	Dupe from Card 13
11	2	ID	AN, skip if blank
13	2	Commercial ID	AN, skip if blank
15	65	Description	AN, LJ, punch as shown
		Card 15 (Transport Subsystem, Cont)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '15'
4	5	Site ID	Dupe from Card 14
9	2	System ID	Dupe from Card 14
11	69	Description Cont.	AN, LJ, punch as shown

Table 8.5. (Sheet 1 of 3)

Subsystem Evaluation Input Sheet

Complete the subsystem evaluation input sheet using the following instructions for each information block on the form.

General Information

BLOCK HEADING	Instruction
DATE	Month, Day, Year of Input
HOUR	2 character hour of evaluation data
NO. OF SAMPLE	2 characters indicating number of samples
DATA SOURCE	1 character denoting source of data
SUBSYSTEM	4 character subsystem identification

Collector Subsystem

BLOCK HEADING	Instruction
IDENTIFICATION	2 characters of Collector Subsystem Identifier
MFG. CODE	2 character manufacturers code
MATERIAL CODE	2 character code for material
TYPE	LI for Liquid or AI for Air
SYSTEM TYPE	SF-Single Family, MF-Multiple Family or CO-Commercial
COST CATEGORY	EC-Economic, MR-Marginal or UN-Uneconomical
MANUFACTURERS NAME	Up to 20 characters for name of Collector Subsystem manufacturer
ABSORBER MATERIAL	Up to 20 characters describing the absorber material
ABSORBER CONFIGURATION	Up to 20 characters describing the configuration of the absorber
ABSORBER COATING	Up to 10 characters describing absorber coating
NO. OF COVERS	2 characters indicating the number of covers
COVER MATERIAL	Up to 10 characters describing cover material
PANEL SIZE	Up to 10 characters showing standard panel size
STATUS	Operation Status, AS-available off shelf or LP-limited production

Collector Subsystem (Cont'd)

BLOCK HEADING	Instruction
CERTIFY CODE	2 character independent agency certification code
OPERATING LIFE	2 character operating life code
RATED ENERGY	2 characters indicating Energy Collection (Rated)
INLET TEMP.	Up to 4 characters of collector inlet temp.
OUTLET TEMP.	Up to 4 characters of collector outlet temp.
FLOW RATE	Up to 4 characters indicating Collector Flow Rates

Storage Subsystem

BLOCK HEADING	Instruction
ID	2 character Storage Subsystem identification
TYPE	2 character storage type
COMMERCIAL ID	2 character commercial identification
DIMENSION	10 characters showing storage dimension
THERMAL CAP	2 characters of rated thermal capacity
RATED TEMP.	Up to 4 characters of rated temperature
RATED PRESSURE	Up to 4 characters showing rated pressure
BURST PRESSURE	Up to 4 characters showing burst pressure
PRESSURE RANGE	Up to 10 characters indicating pressure range
PERFORMANCE DATA	Up to 80 characters of performance data

Cooling Subsystem

BLOCK HEADING	Instruction
ID	2 character Cooling Subsystem identification
MATERIAL ID	2 character identification of material
FLUID ID	2 character identification of fluid
SAFETY CODE	2 character safety code
PERFORMANCE DATA	Up to 80 characters of performance data

Table 8.5. (Sheet 3 of 3)

Heating Subsystem

BLOCK HEADING	Instruction
ID	2 character identification of the Heating Subsystem
MATERIAL ID	2 character identification of material
TYPE	2 character heating type indicator
COMM ID	2 characters of commercial identification
SAFETY CODE	2 character safety code
PERFORMANCE DATA	Up to 80 characters of performance data

Control Subsystem

BLOCK HEADING	Instruction
ID	2 character identification of Control Subsystem
LOGIC ID	2 character identification of logic
PARAMETERS	Up to 80 characters of sensor types
OPERATING MODES	Up to 80 characters indicating operating modes

Hot Water Subsystem

BLOCK HEADING	Instruction
ID	2 character identification of Hot Water Subsystem
TYPE	2 characters indicating type of system
COMMERCIAL ID	2 characters of commercial identification
FLUID INTERFACE SEPARATION	2 characters of fluid separation
TOXICITY POTENTIAL	2 character code showing toxicity
SAFETY STANDARD	2 character code indicating safety standard

JOB NUMBER

EFFECTIVE DATE

NAME: Subsystem Evaluation Input Sheet

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 1	
1	1	Transaction	Always 'D'
2	2	Card Code	Always '01'
4	6	Date	A/N
10	2	Hour	A/N
12	2	Number of Sample	A/N
14	1	Data Source	A/N
15	4	Subsystem	A/N
		Card 2 (Co.lector Subsystem)	
1	1	Transaction	Always 'D'
2	2	Card Code	Always '02'
4	4	Subsystem	From cols. 15-18 of card 1
8	12	Identification	A/N, RJZF
20	2	Manufacturer's Code	A/N, skip if blank
22	2	Material Code	A/N, skip if blank
24	2	Type	A/N, skip if blank
26	1	TY (always 'C')	Always 'C'
27	1	System Type	A/N, skip if blank
28	2	Cost Category	A/N, skip if blank
30	2	Efficiency Code	A/N, skip if blank
32	20	Manufacturer's Name	A/N, LJ, punch as shown
52	20	Absorber Material	A/N, LJ, punch as shown

JOB NUMBER:

EFFECTIVE DATE.

NAME: Subsystem Evaluation Input Sheet

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 3 (Collector Subsystem Continued)	
1	1	Transaction	Always 'D'
2	2	Card Code	Always '03'
4	4	Subsystem	From cols. 15-18 of card 1
8	20	Absorber Configuration	A/N, LJ, punch as shown
28	10	Absorber Coating	A/N, LJ, punch as shown
38	2	Number of Covers	A/N, RJZF
40	10	Cover Material	A/N, LJ, punch as shown
50	10	Panel Size	A/N, LJ, punch as shown
60	2	Status	A/N, skip if blank
62	2	Certify Code	A/N, skip if blank
64	2	Operating Life	A/N, skip if blank
66	4	Rated Energy	A/N, skip if blank
70	3	Inlet Temperature	A/N, skip if blank
73	3	Outlet Temperature	A/N, skip if blank
76	4	Flow Rate	A/N, skip if blank
		Card 4 (Storage Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '04'
4	4	Subsystem	From cols. 15-18 of card 1
8	2	ID	A/N, LJ, skip if blank
10	2	Type	A/N, LJ, skip if blank
12	2	Commercial ID	A/N, LJ, skip if blank
14	10	Dimension	A/N, LJ, skip if blank

JOB NUMBER. EFFECTIVE DATE.

NAME: Subsystem Evaluation Input Sheet

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 4 (Storage Subsystem Continued)	
24	2	Thermal Cap	A/N, LJ, skip if blank
26	4	Rated Temperature	A/N, LJ, skip if blank
30	4	Rated Pressure	A/N, LJ, skip if blank
34	4	Burst Pressure	A/N, LJ, skip if blank
42	4	Rated Range	A/N, LJ, skip if blank
46	34	Performance Data	A/N, LJ, punch as shown
		Card 5 (Cooling Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '05'
4	4	Subsystem	From cols. 15-18 of card 1
8	2	ID	A/N, LJ, skip if blank
10	2	Material ID	A/N, LJ, skip if blank
12	2	Fluid ID	A/N, LJ, skip if blank
14	2	Safety Code	A/N, LJ, skip if blank
16	64	Performance Data	A/N, LJ, punch as shown
		Card 6 (Heating Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '06'
4	4	Subsystem	From cols. 15-18 of card 1
8	2	ID	A/N, LJ, skip if blank
10	2	Material ID	A/N, LJ, skip if blank
12	2	Type	A/N, LJ, skip if blank
14	2	Commercial ID	A/N, LJ, skip if blank

JOB NUMBER.

EFFECTIVE DATE:

JOB NAME: Subsystem Evaluation Input Sheet

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 6 (Heating Subsystem Continued)	
16	2	Safety Code	A/N, LJ, skip ib blank
18	62	Performance Data	A/N, LJ, punch as shown
		Card 7 (Control Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '07'
4	4	Subsystem	From cols. 15-18 of card 1
8	2	ID	A/N, LJ, skip if blank
10	2	Logic ID	A/N, LJ, skip if blank
12	68	Parameters	A/N, LJ, punch as shown
		Card 8 (Control Subsystem Continued)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '08'
4	4	Subsystem	From cols. 15-18 of card 1
8	72	Sensor Types	A/N, LJ, punch as shown
		Card 9 (Control Subsystem Continued)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '09'
4	4	Subsystem	From cols. 15-18 of card 1
8	72	Operating Modes	A/N, LJ, punch as shown

JOB NUMBER.

EFFECTIVE DATE:

JOB NAME: Subsystem Evaluation Input Sheet

CARD COL.	NO. OF COL'S	FIELD DESCRIPTION	SPECIAL INSTRUCTIONS
		Card 10 (Hot Water Subsystem)	
1	1	Transaction Code	Always 'D'
2	2	Card Code	Always '10'
4	4	Subsystem	From cols. 15-18 of card 1
8	2	ID	A/N, LJ, skip if blank
10	2	Type	A/N, LJ, skip if blank
12	2	Commercial ID	A/N, LJ, skip if blank
14	2	Fluid Interface Separation	A/N, LJ, skip if blank
16	2	Toxicity Potential	A/N, LJ, skip if blank
18	2	Safety Standards	A/N, LJ, skip if blank

9.0 CDPS REQUEST COORDINATOR GUIDELINES

The CDPS Request Coordinator is the focal point for the processing of requests for CDPS services. He provides the following:

(1) External User Interface

(2) Performance Analyst Interface

(3) CDPS Software Change Coordination

(4) Data Base Contents and Security

9.1 APPLICABLE DOCUMENTS

The following documents are considered pertinent to the request coordinator's functions:

(1) CDPS Software Performance Specification Document

(2) CDPS Software Design Document

(3) MSFC Data System Plan

(4) Solar Heating and Cooling Instrumentation and Installation Guidelines

(5) SDAS Performance Specification

(6) NIPS User Manuals

9.2 EXTERNAL USER INTERFACE

The External User (outside IBM and MSFC) will request CDPS services via the appropriate government agency for which he is performing tasks to ERDA. These requests will be forwarded to MSFC for evaluation and action by IBM. The request coordinator will handle all interface for CDPS services and will provide resulting data to MSFC for transmittal to the user requesting the data.

9.3 PERFORMANCE ANALYST INTERFACES

Performance Analyst input requests for remote site initiation, site description changes, site deletion, and special processing will be coordinated and accomplished through the request coordinator. The coordinator will ensure that proper authority exists for all changes to the remote site definition and will review all results of CDPS processing to ensure that requests have been fully satisfied.

9.4 CDPS SOFTWARE CHANGES

All changes to the CDPS software resulting from either new requirements or correction of software deficiencies will be formally controlled. The coordinator will provide the interface through which changes are requested and implemented.

9.5 DATA BASE CONTENTS AND SECURITY

The request coordinator will control access to the performance evaluation data base and will provide training to personnel authorized to access the data base. In addition, all data entered into the data base (other than instrumentation data) will be coordinated through the request coordinator.

APPENDIX A

USER'S MANUAL FOR PLOT CAPABILITY

1.0 INTRODUCTION

This manual is intended to assist the user in exercising the steps necessary to generate plots on a Tektronix display terminal using the NIPS software package. The user must be familiar with the NIPS Terminal Processing (TP) capability.

The hardware components which are used in conjunction with NIPS are:

(1) The IBM 3277 Display Unit
(2) The Tektronix 4015-1 Display Unit

The IBM 3277 will be used for NIPS software application and the Tektronix for graphics.

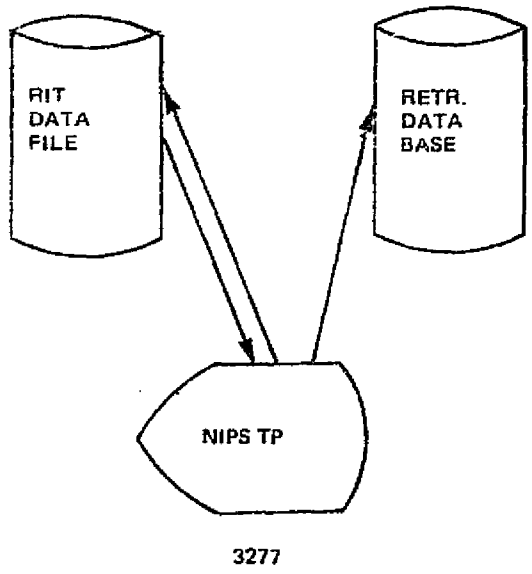
In order to present the user with an overview of the complete process involved in generating plots, a functional flow illustrated in Figure A will be discussed.

(1) Using NIPS and the NIPS TP, an information retrievable query is made by addressing and updating a RIT data file. This causes selected parameters based on a particular site and date to be abstracted from a NIPS data base. These parameters are then stored (RETR DATA BASE) for subsequent recall to be plotted. A detailed description and use of the RIT data file is contained in Section 2.1.

(2) Finally, using the NIPS TP, a joo is submitted from the 3277 terminal to the host computer which will:

- Address the RETR data base and reformat the DATA.
- Pass the plot information to a Tektronix display for plot generation.

A detailed description of the steps necessary to submit a job using NIPS TP and the 3277 terminal is contained in Section 3.0.



(1)

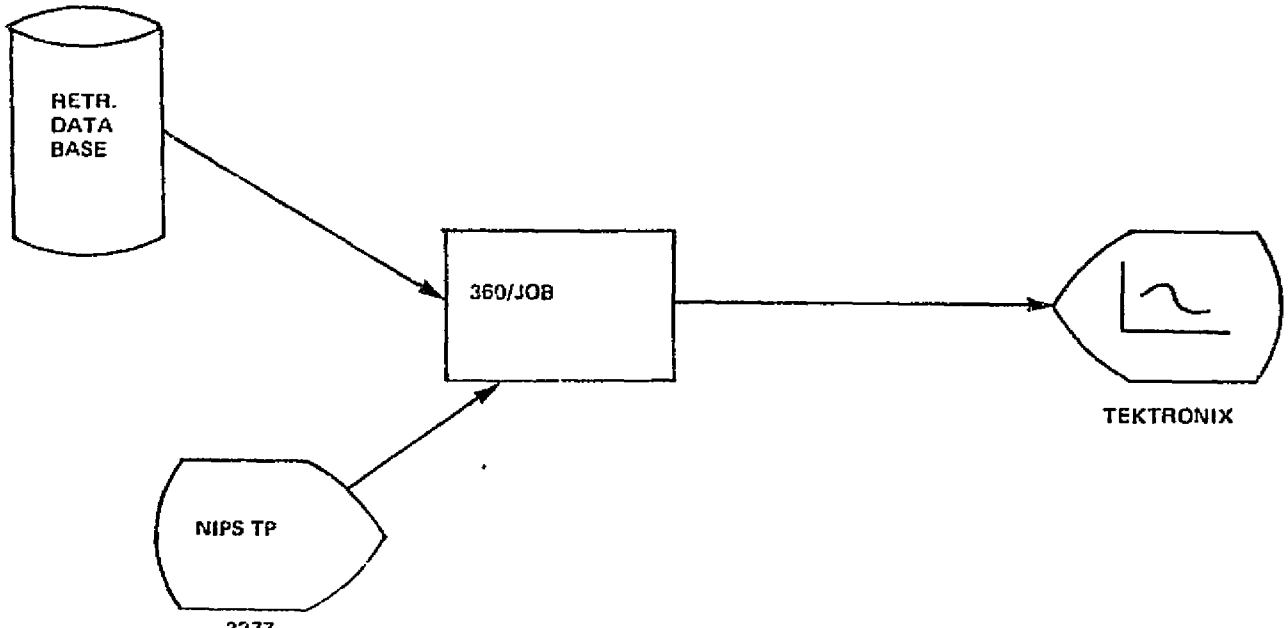


Figure A.

(2)

2.0 FILE FORMAT

2.1 RIT DATA FILES

There is basically one file format that the user must be familiar with, i.e., the RIT data file. The purpose of this data file is to give the user flexibility in specifying:

- o The site from which the variable/variables are to be selected
- o The recording date for the variable/variables.

To accommodate all the predefined variables to be plotted, each variable or variables (in the case of multiple plots) will have assigned to it a unique RIT data file. This permits the user to select beforehand the variables to be plotted.

The format of this file is illustrated in Figure B and defined as follows:

Line	Function/Remarks
1-10	Defines the control information necessary to retrieve selected data. The user under normal operation will not modify these lines because they will be unique for a given parameter to be retrieved from the NIPS data base.
11	Defines the site (AAAAA) and the recording period (BBBBBB) specified by the user for the variables to be plotted.

From the preceding definition and referring again to Figure B we see that, if the user requested Site 3 and a recording date of September 1, 1976, line 11 would be modified as follows:

```
PUBLISH SPECIAL = PLOT01  PARAM=100003760901
```

```
(1)  CREATE RITID=PLOT01  STORE=TEMP
(2)  FILE HOURLY
(3)  FORMAT TAPE NAME PLOT01
(4)  RECORD1 IF RDATE EQ PARAM 7/12 AND ROSID EQ PARAM 2/6
(5)  RECORD1 12 PARAM 1/12
(6)  RECORD2 IF RDATE EQ PARAM 7/12 AND ROSID EQ PARAM 2/6
(7)  RECORD2 7 N111
(8)  RECORD 2 2 '01'
(9)  END
(10) SOURCE DIRECT
(11) PUBLISH SPECIAL=PLOT01  PARAM='1AAAAABBBBBB'
```

Figure B. RIT Data File Format

2.2 UNIQUE RIT DATA FILES

As discussed in Section 2.1, each variable to be plotted will have its own RIT data file. The user need only know the variable required and its RIT data file identification to attain the requested plot.

Each RIT data file will be stored with its associated identifier for immediate recall. At the present time no standard plots have been defined, but for purposes of illustration, the following could be an example,

IDENTIFIER	VARIABLE	TITLE
PLOT1	N111	'ECSS CON EFF'
PLOT2	N113	'AVG AMB DB T'
	.	.
	.	.
	.	.
PLOT26	Q604	'TOT E ENRG SAV'

NOTE: The ordinate for the predefined plots is designated by the column entitled 'TITLE' and the abscissa defaults to 'TIME IN HRS' in 24 hourly increments. The implementation of this predefined table will be discussed in Section 3.0.

3.0 NIPS TERMINAL PROCESSOR (TP) REMOTE JOB EXECUTION

Through the NIPS TP, certain commands must be exercised in order to update a RIT data file and/or submit a job remotely for execution on the host computer. The following paragraphs will discuss these commands and their resultant actions.

Note:	Symbol	Meaning
	▶	Start Key, Terminal Input
	⊡	Entry Key, End of Terminal Input
	⊙	Response from NIPS TP

(1) ▶LOGON AQUILA 7R⊡

(2) ▶/G MEM=PLOT1 LIB=NIPPLOT 7E⊡

⊙EOM RECEIVED

EDIT PROCES' COMP'.ETED. START CONVERSATION.

(3) ▶S⊡

⊙OUTPUT QUEUE SCRATCHED. CONVERSATION TERMINATED.

(4) ▶7S⊡

⊙QUERY DELETED.

(5) ▶/C 110/1AAAAABBBBBB/100004760102/

⊙EOM RECEIVED.

⊙EDIT PROCESS COMPLETED. START CONVERSATION.

(6) ▶S⊡

⊙OUTPUT QUEUE SCRATCHED. CONVERSATION TERMINATED.

(7) ▶7S⊡

⊙QUERY DELETED.

The preceding terminal inputs to update the RIT data file are explained as follows.

Line	Function/Remarks
1	This NIPS TP Command initiates the terminal session.
2	This NIPS TP Command brings into the NIPS TP work file the PDS member PLOT1. This member contains the RIT data file and the necessary job control language for the plot generation of Variable N111. (See Section 2.2).
3-4	These NIPS TP Commands must be entered before another NIPS TP Command is issued.
5	This NIPS TP Command updates the RIT data file (Section 2.1). This changes the line with sequence number 110 (Figure B) in the NIPS TP work file such that PARAM='1AAAAABBBBBB' becomes PARAM='100004760102'. This will cause parameter N111 recorded on January 2, 1976 from Site 4 to be retrieved and stored for plotting.
6-7	These NIPS TP Commands terminate the previous NIPS TP Command.

4.0 EXAMPLES

The following terminal session was used to generate a single plot on the 4015-1 Tektronix terminal.

Note:	Symbol	Meaning
	▶	Start Key, Start of Terminal Input
	⊡	Entry Key, End of Terminal Input
	⊙	Response from NIPS TP

(1) ▶ LOGON AQUILA 7R⊡

(2) ▶ /G MEM=PLOT1 LIB=NIPPLOT 7E⊡

⊙ EOM RECEIVED

⊙ EDIT PROCESS COMPLETED. START CONVERSATION.

(3) ▶ S⊡

⊙ OUTPUT QUEUE SCRATCHED. CONVERSATION TERMINATED.

(4) ▶ 7S⊡

⊙ QUERY DELETED.

(5) ▶ /C 110/1AAAAABBBBBB/100003760901/

⊙ EOM RECEIVED.

⊙ EDIT PROCESS COMPLETED. CONVERSATION TERMINATED.

(6) ▶ S⊡

⊙ OUTPUT QUEUE SCRATCHED. CONVERSATION TERMINATED.

(7) ▶ 7S⊡

⊙ QUERY DELETED.

(8) ▶ /SUBMIT 7E⊡

⊙ EOM RECEIVED

⊙ EDIT PROCESS COMPLETED. CONVERSATION TERMINATED.

(9) ▶ LOGOFF 7R⊡

Line	Function/Results
1	This NIPS TP Command initiates the terminal session.
2	This NIPS TP Command brings into the TP work file the PDS member PLOT1. This member contains the RIT data file and the necessary job control language for the plot generation of Variable N111 (see Section 2.2).
3-4	These NIPS TP Commands must be entered before another NIPS TP Command is issued.
5	This NIPS TP Command updates the RIT data file (Section 2.1). This changes the line with Sequence Number 116 (Figure B) in the NIPS TP work file such that PARAM='1AAAAABBBBBB' becomes PARAM='100003760901'. This will cause parameter N111 recorded on September 1, 1976 from Site 3 to be retrieved and stored for plotting.
6-7	These NIPS TP Commands must be entered before another NIPS TP Command is issued.
8	This NIPS TP Command submits the contents of the NIPS work file for execution by the host computer.
9	This NIPS TP Command terminates the terminal session.

The output from this terminal session is illustrated in Figures C and D.

NIPS DATA BASE PLOT Ø9/14/76 Ø9:39:Ø2

FIGURE C

FIGURE D

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