

NASA EQUIPMENT MANAGEMENT SYSTEM CENTRAL DATABASE (NEMS-CDB) OPERATIONS GUIDE

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George C. Marshall Space Flight Center
Huntsville, AL 35812

**USER'S GUIDE FOR NEMS CENTRAL SCREENING
RELEASE 5.0**

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**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER
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1. GENERAL OVERVIEW

The NEMS CENTRAL DATABASE (CDB) system is an agency wide database that is maintained at a Central site. The current site is the NASA ADP Consolidated Center (NACC). The NEMS-CDB is a concatenation of each NASA Installation's database. There are three subsystems existing within NEMS-CDB: the Adhoc inquiry subsystem which is run on-line, the Transaction Updates subsystem which is run in batch, and the Report subsystem which is also run in batch.

The daily transactions processed at each installation are transmitted to the central site and applied to NEMS-CDB on a nightly basis. The transmitted data is then used to update the CDB Equipment, History and Transfer files to reflect Installation activity.

The Adhoc inquiry subsystem allows each Installation to query NEMS-CDB for the purpose of screening equipment for redistribution and accessing supplies, thus maximizing the visibility of equipment available for reutilization.

1.1 DATABASE AND FILE ORGANIZATION

NEMS-CDB is managed by ADABAS, a database management system (DBMS) provided by Software A.G. The programs that comprise the CDB are written in Natural, the ADABAS on-line interactive processing language. Approximately 230 programs currently support this system. Since NEMS-CDB is organized and processed under the ADABAS DBMS, ADABAS files are maintained for the system.

1.1.1 ADABAS FILES

The ADABAS Files that comprise NEMS-CDB Central database are:

NEMS-CENT-EQUIP (Equipment File)

The Equipment File is the base for the CDB and contains detailed information records pertaining to each item of NASA controlled equipment. The Equipment file is updated (add, change, or delete transactions) through batch processing during the night using the daily transactions that are processed at each Installation and copied to NACC. The unique key for each record on the file is a combination of NASA's Equipment Control Number (ECN) plus the Installation Number. The same item may appear on the Equipment file for two different Installations depending on the timing of the transactions received from the Installations. For example, an add transaction is received from the receiving

Installation before the corresponding delete transaction is received from the sending Installation.

The following table shows a recent (31 August 1994) breakdown by Installation of the records in the equipment file:

Installation	Equipment Records
01 LARC	61221
02 ARC	52802
02 DFRC	13789
03 LERC	59208
05 GSFC	109742
07 JPL	103879
08 MSFC	8888
09 JSC	121215
10 KSC	122104
11 HQ	15620
13 SSC	17348
TOTAL	685816

Figure 1-1

NEMS-CENT-HISTORY (History File)

The NEMS-CDB History file contains information on records that have been deleted from the Equipment file. The records are written to the History file as a result of delete transactions. Delete transactions are transactions that delete records from the Equipment file and add them to the History file. History file records can be used to identify prior activity. A record on the History file is an exact duplicate of the record as it was when it was deleted from the Equipment file. Due to transfers of equipment between NASA Installations, an item can be added to and deleted from an Installation's Equipment file more than once. Therefore, there may be more than one record on the History File for a particular item of equipment. The unique key for each record is NASA's Equipment Control Number plus a system-generated sequence number. Periodically, the oldest records on the History file are copied to tape and then purged from the History file. The History file is currently (31 August 1994) about 700,000 records, distributed according to the following table:

Installation	History Records
01 LARC	67157
02 ARC	50604
02DFRC	14099
03 LERC	60137
05 GSFC	148625
07 JPL**	21700
08 MSFC	113922
09 JSC	195834
10 KSC	120368
11 HQ	32938
13 SSC	16468
TOTAL	841853

Figure 1.2

**Note that JPL does not keep History records in their system and does not send any to NEMS-CDB when doing periodic reloads of the Central Database. Hence, the only History records for JPL are those created while processing delete transactions since the last reload.

a. NEMS-CENT-TABLE (Table File)

The Table file contains information for editing and interpreting the field codes used on the Equipment file. There is one table for each coded field in the equipment data (with the exception of Manufacturer's Code field- see NEMS-MFG-CODE) and each valid possible code value of a field is represented by a separate record in the Table file. The set of code records for a specific field constitutes a "table" within the Table file; each such table is identified by the Table-ID field in the Table file record. A specific table record for a specific code value of an Equipment file field can be retrieved by reading the Table file while providing the Table-ID and the field code value (Table-Key).

b. NEMS-MFG-CODE (Manufacturer's Code Table File)

The manufacturer's codes are kept on a separate file from the Table file. The unique key for each record is the Manufacturer's Code.

c. NEMS-CENT-TRANSFER (Transfer File)

The Transfer file contains information pertaining to each item of equipment that is transferred from one Installation to another. The Transfer file is updated as part of the NEMS-CDB evening update process. A record is added to the Transfer file when an item of equipment has been transferred out of an Installation (Transactions 65,67, or 68). All transfer items are added to the Transfer file with the exception of items going to a contractor (Transaction 67) that have cost less than \$1000. When receipt of the item has been acknowledged by the receiving Installation (by sending a Transaction 04, 06, or 07 to NEMS-CDB), the Transfer record is flagged (modified) to account for the receipt. Periodically, old flagged records are purged from the Transfer file. Because an item of equipment may be transferred between installations more than once, and because Transfer records are only flagged, not deleted, when an item is received, there may be more than one record on the Transfer file for a particular item of equipment. Because transfers sometimes go awry (for instance, an item may be stolen or damaged in transit, or the receiving installation may decide that they do not want the item), unflagged records may sit in the Transfer file for extended periods. Some of the On-line and Batch reports are designed to help NEMS-CDB and HQ personnel highlight such problem transfers.

d. NEMS-CENT-SUMMARY (Daily Transfer Summary File)

The Transfer Summary file contains daily transfer summary information (total counts of receiving and sending items in transit) for each Installation. This file is updated every day and is used in the Adhoc inquiry subsystem to display the Transfer Summary screen. The unique key for each record is the Summary Date.

e. NEMS-CENT-CONTROL (JCL file)

This file is no longer used in NEMSCENT processing.

Note: One program, TRN000P2, does not access this file, but the function has been transferred to stand-alone JCL (Job NEMSCENT4) The control file is only required until TRN000P2 can be modified to delete this reference.

f. NEMS-CENT-REPORTS

This file is no longer used in NEMSCENT processing.

g. NEMS-MFG-XCODE (Manufacturer's Code Table File)

This file is no longer used in NEMSCENT processing.

h. NEMS-MFG-STD

This file is no longer used in NEMSCENT processing.

1.1.2 WORK FILES

In addition to ADABAS files, several sequential work files are used for transaction update batch processing. Some of these files contain transaction data and some contain copies of reports used for managing the process.

1.1.2.1 **Work Files Containing Transaction Data**

LA MOV.NEMCP.XXXX where XXXX is the Installation Acronym

AR MOV

LE MOV

GS MOV

MS MOV

JS MOV

KS MOV

DF MOV

SS MOV

- a. AGAOH.NEMCP.JPL(GDG, where XXXX is the Installation Acronym)

The Installations create these data sets when they copy their transactions. One generation data group (GDG) data set exists for each Installation. The members of this GDG contain the transmitted data from the Installations. The first member (G0001V00) contains a single blank record. Each transmission from the installation is written to a subsequent member (normally only one, the G0002V00 member). Job NEMCENT1 moves this data to GDG AGAOH.NEMCP.XXX.HOLD for subsequent use.

- b. AGAOH.NEMCP.XXX.HOLD (GDG, XXXX=Installation)

These datasets are created by job NEMCENT1 and used for update processing. One GDG exists for each Installation. The first member (G0001V00) contains a single blank record. NEMCENT1 copies any AGAOH.NEMCP.XXX data to a new member (normally, the G0002V00 member).

These data sets are used as input to job NEMCENT2, which produces two reports that summarize the transmissions and check for duplicate records. Based on this and other information, the NEMSCENT analyst can use ISPF to rename datasets and thereby move a data set manually between the three GDG's (HOLD, HOLDOUT, and the plain GDG). In the evening, after any manual adjustments by the NEMSCENT analyst, these data sets are used as input to update process (jobs NEMCENT3 and NEMCENT4). During the update process, this data is moved to the AGAOH.NEMCP.CENTRAL.DATA GDG and erased from this GDG.

The HOLD GDG is used to ensure that no data is sent from the Installations directly to the update process without first passing through the NEMCENT2 data checks.

c. AGAOH.NEMCP.XXX.HOLDOUT (GDG, XXXX=Installation)

These GDGs are a place to safely "park" data while questions about its use are resolved. These GDGs are used as input to NEMCENT2, which displays a summary report on all "held" data. One GDG exists for each Installation. The first member (G0001V00) contains a single blank record. When required, the NEMSCENT analyst can use ISPF rename functions to move data from the HOLD GDG into the HOLDOUT GDG, or vice versa.

Normally, data is moved if the analyst determines that a "gap" exists, based on NEMCENT2 reports, or discussions with Installation NEMS personnel. Data is moved back into the HOLD GDG once the gap has been filled or explained.

Generally speaking, the analyst will ask operations to re-run NEMCENT1 and NEMCENT2 after moving any data between these GDGs, as a check on the revised inputs into the evening update.

d. AGAOH.NEMCP.CENTRAL.DATA (GDG)

Job NEMCENT3 combines all transaction data in the HOLD files from all the installations into a single file, a member of this GDG. NEMCENT3 checks for and deletes duplicate records and sorts the records by Entry Reference Number. The HOLD files are then deleted. The combined file is then copied to

AGAOH.NEMCP.CENTRAL.DATA.TEMP for use in the update step. There are enough generations in the GDG to hold data for seven work days.

If there are problems with the previous update run (Job NEMCENT4), NEMCENT3 will not process the current HOLD data and will not create a new combined file.

e. AGAOH.NEMCP.CENTRAL.DATA.TEMP

Job NEMCENT3 copies the latest version of AGAOH.NEMCP.CENTRAL.DATA into this temporary data set which is used as input to the update process in NEMCENT 4. Normally, a new copy of this dataset is created each evening. However, if there were problems with the previous evening's update run this data set will be carried over and resubmitted. Sometimes it is necessary to manually edit this file prior to resubmission.

After a successful update, program CDBSTEP1 uses the file to create a Bad Transaction File (GDG AGAOH.NEMCP.CENTRAL.BADTrans) and to produce an error summary report (GDG AGAOH.NEMCP.NDMDAILY.ERROR.SUMMARY) and an error list. (GDG AGAOH.NEMCP.NDMDAILY.ERROR.LIST).

f. AGAOH.NEMCP.CENTERRS.DATA

AGAOH.NEMCP.TRNSERRS.DATA

These temporary data sets contain the information on each transaction that was marked as an error or warning. CENTERRS have those transactions that caused errors/warnings when updating the Equipment file or History file. TRNSERRS has those transactions that caused errors/warnings when updating the Transfer file. These files are output from the transaction update step of Job NEMCENT4 (program TRN000p1). Ordinarily, they are blanked at the end of job NEMCENT 4. However, if the update process fails, the files maintain their partial contents until the interrupted update is finished, so as to provide the information needed for a complete error analysis.

Within Job NEMCENT4, Programs TRNERRP1 and TRNERRP2 read these two files to produce the Equipment File Error Report and the Transfer File Error Report, respectively, both of which are written to GDG AGAOH.NEMCP.NDMDAILY.ERROR.DETAILS.

g. AGAOH.NEMCP.CENT30.TRANSFER

This temporary file is used within Job NEMCENT4 to hold copies of all new transfer records that represent inter-installation transfers (usually, 065 or 165 Delete transactions). Created by program TRN000P1, this file is passed to program TRN000p2 to prepare the XXMOV.NEMCP.PROCESS.XXXX files.

Ordinarily, the CENT30.TRANSFER file is blanked at the end of job NEMCENT4. However, if the update process fails, the file maintains its partial contents until the interrupted update is finished, so as to provide the information needed for a complete transmission to the installations.

- h. XXMOV.NEMCP.PROCESS.XXXX (where XXXX is the Installation acronym)

If there was a successful update of the CDB, Job NEMCENT4 (program TRN000P2) prepares a file of new inter-installation transfer records for each installation (except JPL, which cannot use this format for its inventory system). Each file contains the new transfer records whose intended recipient is that installation.

Later in Job NEMCENT4, these ten files are copied (as one file) to a member of the GDG AGAOH.NEMCP.NDMDAILY.TRANSOUT.RECS.

- i. NEMS.CENT.NDMDAILY.TRANSOUT.RECS (GDG)

Each member of this GDG is a copy of all the transfer records transmitted on that day. The primary purpose of this file is to provide a source for retransmitting the data if there was a remote site problem that was not immediately detected.

- j. AGAOH.NEMCP.CENT30.TRANSFER.DATA

These files are no longer used.

1.1.2.2 Work Files for Process Management

Because the daily update jobs (NEMCENT1-4) do not print any output (none is needed), the following files are used to retain information about recent activity and support daily management.

- a. AGAOH.NEMCP.NDMDAILY.TRANSMIT.SUM (GDG)

This is a report produced by the morning job NEMCENT2, running program MSD012P1 twice. First it summarizes the transactions that are awaiting input into the evening update process, located in the AGAOH.NEMCP.XXXX.HOLD

files. Then MSD012P1 reads the HOLDOUT files to summarize those transactions whose processing has been delayed.

If the NEMSCENT analyst holds or releases data or edits an incoming file, then NEMCENT1 and NEMCENT2 are normally rerun. This results in the creation of another report, and another GDG member, for that day.

b. AGAOH.NEMCP.NDMDAILY.TRANSAC.SUM (GDG)

This is a report produced by job NEMCENT2, using program CDBSTEP4. The HOLD data is read by programs MSD008P1-4, which reformats the data and eliminates duplicate records, before feeding it to CDBSTEP4. The CDBSTEP4 report checks for some data errors that are not caught by MSD012P1.

These same programs are run again in Job NEMCENT3, to consolidate the HOLD data and create the update input file files NEMS.PROD.CENTRAL.DATA and NEMS.PROD.CENTRAL.DATA.TEMP.

c. NEMS.CENT.NDMDAILY.TRANSOUT.SUM (GDG)

This is a small report produced by Job NEMCENT4 (program TRN000P2) that summarizes the number of inter-installation transfer records transmitted to each installation that day.

d. AGAOH.NEMCP.NDMDAILY.ERROR.DETAILS (GDG)

This is a formatted report on each error and warning from the daily update. The daily Equipment File Error Report and the Transfer Error Report, are written to a member of this GDG, which is kept for thirty work days.

The reports are produced by programs TRNERRP1 and TRNERRP2 in Job NEMCENT4 after the update process is completed. They are based on the CENTERRS and TRNSERRS files produced by the update program (TRN000P1).

The concept of "error" in these files is different than that of the other error reports and files (ERROR.SUMMARY, ERROR.LIST, AND BADTRANS). Records are displayed for both errors (where the CDB files cannot be properly updated) and for warnings (where a work-around existed that allowed the CDB files to be updated). Warning records are far more common than errors.

e. AGAOH.NEMCP.CENTRAL.BADTRANS (GDG)

These files contain copies of those original transaction records which failed to update the CDB. To obtain BADTRANS, program CDBSTEP1 in Job NEMCENT4, rereads the original input file (AGAOH.NEMCP.CENTRAL.DATA.TEMP) and checks to see that the Entry Reference Number (ERN) of each transaction now appears in a newly-updated Equipment or History record. BADTRANS contains all change or delete transactions that fail this test, and all add transactions that fail except 015, 019, I15, and I19 transactions.

The format of the data in BADTRANS is the same as AGAOH.NEMCP.CENTRAL.DATA.TEMP, so rejected records can be manually placed back in the input stream, if resubmission is necessary. Ninety generations of this GDG are kept, which allows about four months to resolve any particular problem.

The transactions listed differ from those listed in the ERROR.DETAILS report, in that warnings, transfer file errors and erroneous 015, 019, I15 and I19 transactions are not included in BADTRANS. The method used to obtain BADTRANS differs from that used for ERROR.DETAILS: The records in the ERROR.DETAILS file were flagged during the update process by the individual transaction update programs, rather than a comparison process after the update. Generally, the information in BADTRANS and the ERROR.LIST GDG (see below) is more accurate and relevant than the data in the ERROR.DETAILS GDG.

f. AGAOH.NEMCP.NDMDAILY.ERROR.LIST (GDG)

This is a compact easy-to-use one-line-list report on all the error transactions in BADTRANS, except that it includes all the 015, 019, I15, and I19 errors. It is produced by CDBSTEP1 at the same time as the BADTRANS file.

g. AGAOH.NEMCP.NDMDAILY.ERROR.SUMMARY (GDG)

This is a small summary report produced by program CDBSTEP1 giving transaction totals from the update process, such as the number of transactions input, number of errors (see the discussion of files BADTRANS and ERROR.LIST, above), number of I34 warnings and number of Global transactions.

h. AGAOH.NEMCP.CURRENT.ERROR.SUMMARY
AGAOH.NEMCP.CURRENT.TRANSMIT
AGAOH.NEMCP.CURRENT.TRANSAC
AGAOH.NEMCP.CURRENT.ERROR.LIST
AGAOH.NEMCP.CURRENT.TRANSOUT
AGAOH.NEMCP.CURRENT.ERROR.DETAILS

These are the copies of the latest NDMDAILY report files of the same name. The ERROR.SUMMARY, TRANSMIT, and TRANSACT files contain concatenated copies of the latest eight NDMDAILY files, to support quick checks by the analyst and to facilitate production of the Weekly NEMSCENT Status Report.

AGAOH.NEMCP.BLANK
AGAOH.NEMCP.REXX

These temporary files are created and destroyed during the NEMSCENT daily update process:

1.1.3 LIBRARY FILES

Several partitioned data sets are used to hold JCL and other files used to develop and operate the CDB.

- a. AGAOH.NEMCP.JCLCNTL
AGAOH.NPPSPP.SCHED.MASTER.CA7 is the load library for CA7.

This is a JCL library of jobs that are used for production. Copies of all the Zeke based jobs are here (including the daily jobs and all the report jobs). The NEMSCENT Web list is also located in this library.

2. TRANSACTION UPDATE SUBSYSTEM

2.1 OVERVIEW OF TRANSACTION SUBSYSTEM

An NHCC process updates NEMS-CDB each business day. The process updates the NEMS-CDB Equipment and History files with data sent from the Installations. The update transactions are copies of the transactions that take place at each of the NEMS Installations. Every evening, each Installation extracts the transaction data for that day and transmits it to NHCC, via NDM. On the evening of the following business day, the transactions are applied to the CDB. In this way, the process keeps the CDB equipment and history file synchronized with the installations' NEMS files.

2.1.1 TRANSACTION UPDATE FUNCTIONS

This process has several functions:

1. The flow of data is isolated from the NDM and modem transmissions process so that only data that has been pre-processed and reviewed by an analyst is allowed to enter into the update process. (Job NEMCENT1)
2. Since the data inflows must be applied in sequence, the incoming data is summarized in a report that helps the analyst to identify any missing inflows. (Job NEMCENT2)
3. The data is checked during pre-processing for certain problems that can halt the update process. Note: most fields, by necessity, cannot be checked; the NEMS-CDB update must assume that the data coming from the local NEMS system is correct. However, certain key fields (INST-NO and ERN) are sometimes manipulated by local NEMS ADP personnel in support of special tasks, and must be checked. (Job NEMCENT2)
4. The analyst must take any actions (such as renaming datasets, requesting retransmissions, or editing files) needed to ensure complete and accurate updates. (manual, using TSO ISPF)

Note: A log file is maintained with notes about any manual actions. Once a week, the log data and other statistics is entered into a weekly report that is sent to the NASA Logistics Management Office (Code JLG).

5. The incoming transactions are applied to the CDB, updating the Equipment and History files. The NEMS-CENT-TRANSFER suspense file

is also updated, to aid management and supervision of the equipment transfers process. (Jobs NEMCENT3 and NEMCENT4)

6. Critical input and status files used during the update process are kept in a form that allows graceful restart of an update interrupted by a NATURAL error, hardware error or system fault. To facilitate the restart, information is kept that identifies the last good transaction. (Jobs NEMCENT3 and NEMCENT4)
7. After every successful update process, copies of new inter-installation transfer records are sent to the local NEMS Transfer file of the intended receiving installation. This is done to simplify NEMS data entry of equipment transfers at the receiving installation. It also helps the receiving installation better manage their transfer activity. (Job NEMCENT4)
8. Update errors are identified by error reports. (Job NEMCENT4)
9. Copies of transaction and Transfer records are kept for a period of time (a few weeks) to allow the process to gracefully recover from various problems. (Job NEMCENT4)

2.1.2 DAILY PROCESS CHRONOLOGY

The daily update cycle takes place over a four-day period, as shown by the following table. Please note that this is the normal process; exceptions exist for many steps.

Step	Day/Time	Event
1	1/daytime	JPL enters transactions into their system (not a NEMS system)
2	1/night	JPL creates transaction file in NEMS format Note: ALL JPL ERNs are machine generated by this process. Normally the ERN date is Day 1, but is can be Day 2 if the file is generated after midnight (p.s.t.). Because of the potential for confusion, JPL tries to avoid this.

3	2/daytime	JPL transmits Day 1 transaction data to NACC (via modem)
4	2/daytime	NEMS installations enter transactions. ERNS on transactions have Day 2 dates

Figure 2-1

Step	Day/Time	Event
5	2/night	NEMS installations run their evening updates and transmit Day 2 data to NACC via TSP
6	3/0930	Analyst rolls in FTP file to production area for JPL
7	3/1030	Job NEMCENT1 moves Day 2 TSP data (step 5) to "hold"
8	3/1035	Zeke Job NEMCENT2 – preprocesses reports from "hold" data are generated and written to disk files. .
9	3/morning	Analyst reviews reports to identify required actions. Takes manual actions, if needed.
10	3/before by 1500	Notify CA7 scheduler if NEMCENT3 - 4 are not to run
11	3/1500	Job NEMCENT3 – consolidates "hold" data
12	3/1505	Job NEMCENT4 - updates the CDB with consolidated data - uses TSP to send new transfer records to NEMS installations - generates error reports on disk
13	4/morning	Analyst reviews error reports from the Day 3 CDB update. Errors may

		require resubmission, data corrections, or retransmission of data via TSP.
--	--	--

Figure 2-2

2.1.3 DAILY MANUAL TASKS FOR THE NEMS CDB ANALYST

There are tasks that need to be done each day. In general, the first task is to check on the previous night's update run (NEMCENT3 and 4) and take whatever actions are required to finish or correct that process. The second task is to examine the available unprocessed transaction data (most of which came into the system the previous day) and take whatever actions are needed to set up for the update run to use some or all of that data.

Under normal circumstances, both of these tasks are done as part of one quick process (known informally as the "6-minute drill"). When there are problems, the process can take hours or days.

2.2 DAILY UPDATE PROCEDURES – THE 6-MINUTE DRILL

All of the NEMSCENT reports needed for managing the daily update process are written to a set of datasets whose names begin with AGAOH.NEMCP, as described in Section 1.1.2, Work Files. Files that begin with AGAOH.NEMCP.CURRENT are the latest reports from the most recent execution on NEMCENT2 and NEMCENT4, along with certain past information. A convenient way to see this set and execute the 6-minute drill is to log onto TSO and use ISPF function 3.4 (Dataset List) to list all datasets with names beginning with NEMS.CENT.C*

```
DSLISL - DATA SETS BEGINNING WITH AGAOH.NEMCP
COMMAND = = = >
COMMAND          NAME          MESSAGE
-----
AGAOH.NEMCP.CNTL
AGAOH.NEMCP.CNTL.TEST
AGAOH.NEMCP.CNTL.TEXT
AGAOH.NEMCP.CNTL.UTILITY
AGAOH.NEMCP.CSAMPLE.ETDATA
AGAOH.NEMCP.CURRENT.ERROR.DETAILS
AGAOH.NEMCP.CURRENT.ERROR.LIST
AGAOH.NEMCP.CURRENT.ERROR.SUMMARY
AGAOH.NEMCP.CURRENT.TRANSAC
AGAOH.NEMCP.CURRENT.TRANSMIT
AGAOH.NEMCP.CURRENT.TRANSMIT.NOTES
AGAOH.NEMCP.CURRENT.TRANSOUT
*****END OF DATA SET LIST*****
```

Figure 2-3

In most cases, all the information the analyst needs is in the files listed here.

2.2.1 STEP 1: WARNINGS ON THE OUTFLOW OF TRANSFER DATA VIA NDM

As part of Job NEMCENT4, nine transfer files are created. The jobs use TSP to transmit nine files to the installations.

2.2.2 STEP 2: CHECKING ON THE PREVIOUS UPDATE RUN

The update run from the previous evening may have completed normally or ended abnormally.

The System Scheduler (CA7) will detect and notify Operations staff of any failure in any step of the evening update jobs. The Operations staff will notify the on-call support personnel, either systems or NEMSCENT applications, in the evening or the next morning. It is conceivable, though highly unlikely, that an abnormal termination might not be noticed by Operations. The analyst will notice that the error reports available are all from the evening two days before.

If the update jobs fail, the procedures in the next two sections, which examine the error reports from the completed update, will not be relevant. Instead see Section 2.3 Exception Processing Procedure, which discusses procedures in such cases.

2.2.2.1 Step 2a:

Browse the file AGAOH.NEMCP.CURRENT.ERROR.SUMMARY to see the Error Summary report for the previous night. This file contains the current and past seven Error Summary reports, with the current one at the top of the file.

```
4/09/01@                22:05:16
                        Page      1
                        GENERATION: 001
TOTAL RECORDS:                4,255
TOTAL GOOD                    4,194
TOTAL NMIS                    0
TOTAL 134:                    42
TOTAL 62:                     9
TOTAL BAD:                    10
TOTAL ADDS:                   218
GOOD ADDS:                    216
BAD ADDS:                     2
TOTAL CHANGES:               2,767
GOOD CHANGES:               2,761
BAD CHANGES:                 6
TOTAL DELETES:               1,219
GOOD DELETES:               1,217
BAD DELETES:                 2
4/08/31 @                17:54:29
                        Page      1
                        GENERATION: 001
TOTAL RECORDS:                3,783
```

Figure 2-4

The focus here is on “Total Bad”: the number of transactions that did not result in a corresponding change to the CDB.

The Error Summary report is produced by program CDBSTEP1 in Job NEMCENT4 after the update is complete (see the discussion of files BADTRANS and ERROR SUMMARY in Section 1.1.2, Work Files).

2.2.2.2 Step 2b:

Browse the file AGAOH.NEMCP.CURRENT.ERROR.LIST to see a list of the rejected (bad) transactions.

4/09/01 @		22:05:15					
Page							
G003352 0707	15	0742420023	ADD	BAD	451		
0113803 0707	15	0742420024	ADD	BAD	452		
1059520 0707	26	0742420161	CHANGE	BAD	589		
0347316 0707	74	0742430421	DELETE	BAD	1798		
G003352 0707	26	0742430496	CHANGE	BAD	1873		
G003352 0707	60	0742430533	CHANGE	BAD	1910		
0748894 1018	60	1842434001	CHANGE	BAD	4036		
0748894 1018	30	1842434002	CHANGE	BAD	4037		
0748894 1018	60	1842434024	CHANGE	BAD	4059		
0286006 0881	80	8142434111	DELETE	BAD	4197		
	ECN	Inst		Tran	ERN		Rec
	No	No					#

Figure 2-5

The important information here is in the Installation Number and Transaction Number. The ECN and ERN are useful when determining the cause of the rejection and deciding if resubmission is needed. The Record No is the relative record number of this rejected number in the update input file (AGAOH.NEMCP.CENTRAL.DATA.TEMP)

2.2.2.3 Step 2c:

Determining Error Causes and Making Corrections

If there are rejected records, the analyst must determine if any action is required. Section 2.3.5, Determining the Cause of Transaction Rejection, describes this process.

Section 2.3.6, Resubmitting Selected Transactions, describes the procedures necessary to construct and submit a supplementary update to reprocess past transactions.

2.2.3 STEP 3: CHECKING FOR MISSING DATA AND GAPS

The NEMCENT analyst uses the report files prepared by job NEMCENT2 to check for missing transmissions from Installations.

2.2.3.1 The Report File AGAOH.NEMCP.CURRENT.TRANSMIT

The report AGAOH.NEMCP.CURRENT.TRANSMIT is created by Job NEMCENT2; it has the following features:

- The top of the file lists the contents of the log file, AGAOH.NEMCP.CURRENT.TRANSMIT.NOTES, as a reminder of any current or recent problems.
- Following that is a table created by program MSD012P1, summarizing all of the HOLD data.
- Following that is a table created by rerunning MSD012P1, but looking at all the HOLDOUT data. If there is no data in the HOLDOUT (or HOLD) files, the message “no data found” is displayed.
- Following that are the HOLD and HOLDOUT tables from the seven previous runs of NEMCENT2.

```

***** Error and Problem Log (Start) *****
jsc 09 8/11 duplicate transmission (testing new system)
***** Error and Problem Log (End) *****

MSD012P1                NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  PAGE:  1
                        NASA EQUIPMENT MANAGEMENT SYSTEM           DATE: 08/18/94
                        CENTRAL DATA BASE                          TIME: 07:02:19
                        CHECK OF TRANSMITTED DATA
INST  TRANSMIT  TRANSAC  VERSION  TRANS  RECORD  GLOB  SUB-INSTALLATIONS
*****
01    08/17/94  08/17/1994  3.3.2    102    104      01
02    08/17/94  08/17/1994  3.2.1     72     74      02
03    08/17/94  08/17/1994  3.2.1    312    314      03
05    08/17/94  08/17/1994  3.3.2    192    194      05
08    08/17/94  08/17/1994  3.3.2    474    476      18 08,81
09    08/17/94  08/17/1994  3.3.2    307    309      09,92
10    08/17/94  08/17/1994  3.2.1    348    350      4 16,10,18,19,15
11    08/17/94  08/17/1994  3.2.1    215    217      11
13    08/17/94  08/17/1994  3.2.1     59     61      1 13
07    08/17/94  08/17/1994  3.0      601    5,411    07
10    08/17/94  08/17/1994  3.2.1    348    350      4 16,10,18,19,15
11    08/17/94  08/17/1994  3.2.1    215    217      11
13    08/17/94  08/17/1994  3.2.1     59     61      1 13
07    08/17/94  08/17/1994  3.0      601    5,411    07
  
```

Figure 2-6

The above is a typical normal display. At the top is the programmer’s note about a problem with data from JSC (Inst = 09) on August 11. Following that, a table shows the inflows of data from the 10 installations. Because of the JCL for NEMCENT2, if a center does not transmit for that day, NEMCENT2 simply reads and discards the blank record in the “dummy” hold file for that installation. The installations that are present will always be displayed in the same order.

The columns of the table have the following information:

1. Date and time of the MSD012P1 run. This is important when comparing output from different runs of NEMCENT2.
2. INST – Installation number
3. TRANSMIT DATE – the date the NEMS evening batch process was run to create the incoming transaction file. Usually, it is also the date when the file is sent to NHCC, since the transaction process is an automatic part of the standard evening NEMS jobs. In the case of JPL, this date is usually the day before the file reaches NACC. The transmit date is taken from the header record transmitted with each set of transactions. Refer to the description of the file format in Appendix E.

Unlike the TRANSACTION date, the TRANSMIT date is usually irrelevant. The TRANSMIT date can be confusing since installations sometimes run NEMS after midnight, which makes the TRANSMIT date fall the day after the transaction date. The Transmit date is useful when calling the installation personnel on the phone and for indicating the presence of a null file.

4. TRANSAC DATE – Transaction date. The date that the transactions were executed within NEMS, taken from the Entry Reference Number (ERNS) on the transactions. Usually, this is the same day as the TRANSMIT DATE, though sometimes the evening NEMS update at the installation is delayed past midnight. In the case of JPL, TRANSAC DATE is meaningless – it is always the same as TRANSMIT DATE.

If the file coming from the installation has records created over more than one day, such as when transactions done on Saturday are transmitted on Monday evening, or when transactions are done in the evening after Batch NEMS has run, the table will show all transaction dates. For instance, if LARC ran on Saturday Sept 18, the first few lines of the Tuesday morning report (reporting on Monday's transactions) might look like this:

INST	TRANSMIT DATE	TRANSAC DATE(S)	VERSION	TRANS COUNT	RECORD COUNT	GLOB ALS	SUB- INSTALLATIONS

01	09/20/94	09/20/1994 09/18/1994	3.3.2	102	104	2	01
02	09/20/94	09/24/1994	3.2.1	72	74		02

Figure 2-7

The report does not indicate how many transactions came from each day, but it does indicate that transactions were created on the 18th and the 20th. In this case, the 18th was a Saturday, so this is a perfectly normal transmission. If the 18th and 20th had been in the middle of the week, however, the presences of the 18th data would be very suspicious and should provoke further investigation.

VERSION: The current version of NEMS at the installation. Meaningless for JPL.

TRANS COUNT: The number of valid transactions sent.

RECORD COUNT: The number of physical records sent. For all installations except JPL, this will be 2 more than the Transaction Count (the header and trailer records). For JPL, at the current time, each transaction is spread over nine physical records, so the record count will be nine times the Transaction, plus 2.

Null files are files with header and trailer records but no transaction records; they are produced automatically by NEMS if the installation does not execute any NEMS transactions. These files will have a record count of 2, but the transaction count will be blank.

GLOBALS: The number of global transactions within the submitted file. Current experience suggests that each global transaction adds, on average, about 1 minute to the processing time for the evening NEMCENT4 job. The operators should probably be notified if there are very large numbers of global transactions (greater than 100) so they will not become concerned about a lengthy run time.

SUB-INSTALLATIONS: This section lists, in no particular order, all of the sub-installations within that installation that submitted transactions in that file. Ordinarily this is useless information. However, there have been occasions on which it has been necessary to examine, change, or delete the records from an installation AFTER THE TRANSACTIONS HAVE BEEN MERGED INTO THE

“TEMP” FILE for update. The TEMP file is sorted by ERN, i.e. by Sub-Installation. Having a list of all the Sub-Installations to look for can be very useful in that situation.

2.2.3.2 Step 3a:

Checking for Gaps

A “gap” is a situation where an installation misses a transmission for a day (or more) and then sends transactions after the missing period without “filling in” the missing period. It is very important that gaps be recognized and handled correctly to avoid processing transactions out of order. There are actually two types of gaps: “Real gaps”, where data is created but not sent to NEMSCENT, and “null file gaps”, where no transactions took place but a null file was not sent (perhaps because NEMS was not run that day).

Because of the design of the local NEMS process, “real gaps” are extremely rare from the nine NEMS sites (about once every six months). They are less rare, but still quite unusual, from JPL, which has a manual step in its modem transmission process and is subject to error. “Null file gaps” occur more often, perhaps once a month.

The NOTES file is a short-term record of recent abnormal events in NEMSCENT. Its most important function is as a reminder to the analyst that there is, or appears to be, an outstanding missing transmission from an installation. This information can help the analyst recognize and eliminate gaps.

The analyst should browse the copy of the NOTES file displayed at the top of AGAOH.NEMCP.CURRENT.TRANSMIT, and identify any currently missing transmissions. Then check the transaction dates of the data listed in the report to see if data has arrived from that installation for any date following the missing date. For instance, suppose on Wednesday, July 2nd, the analyst notes, in the NOTES file, that the transmission from LARC for Tuesday, July 1st is missing. On Thursday, July 3rd, as shown in the figure below, the analyst sees the note and finds that there is a transmission from LARC for July 2nd, but no makeup file of missing July 1st data. That is a gap, which may be “real” or “null file”.

```

***** Error and Problem Log (Start) *****
LARC 01 7/2   No transmission for 7/1 transactions
***** Error and Problem Log (End) *****

MSD012P1          NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  PAGE:  1
                   NASA EQUIPMENT MANAGEMENT SYSTEM             DATE: 08/18/94
                   CENTRAL DATA BASE                           TIME: 07:02:19
                   CHECK OF TRANSMITTED DATA

INST   TRANSMIT   TRANSAC   TRANS   RECORD   GLOB   SUB-INSTALLATIONS
      DATE      DATE(S)  VERSION COUNT   COUNT  ALS
*****
01     07/02/94  07/02/1994  3.3.2   324     326    1      01
02     07/02/94  07/02/1994  3.2.1    45      47     0      02
  
```

Figure 2-8

If a gap appears, and there is no other problem, the analyst should follow the procedures in Section 2.3.11, Holding Data Because of a Transmission Gap.

If the NOTES file indicates that a GAP was found, and data continues to flow in from the installation without the gap being filled or explained, continue holding (renaming) the incoming data from that center until the gap is filled or explained.

Once the missing data arrives, the held data should be released; see Section 2.3.1.2, Releasing Data when a Transmission Gap is Filled.

2.2.3.3 Step 3b:

Checking to see if any installations are missing.

The normal pattern to look for is ten transmissions, one from each center, with nine having the same TRANSACTION date and the JPL data lagging one day behind.

If a center does not have a transmission but there is no entry in the NOTES file indicating other missing transmissions, make a note in the NOTES files. In the vast majority of cases, the Installation will send the missing file the next day.

If this is the second day that a center does not have a transmission (the NOTES indicate that the previous transmission(s) is missing also), contact the Installation and see what is going on. Then update the NOTES file.

In some cases installations have sent “null” files that are labeled with the wrong installation number. However, the files are listed in the display in the correct order, and is easy to detect what installation they came from. This can be confirmed by using ISPF to browse the HOLD files from that installation. In these cases, an entry should be made in the NOTES file and the installation should be contacted to change their NEMS installation number. See Section 2.3.10, Misabeled “Null” Files.

Because of the way the NEMSCENT batch jobs are organized, the installation can send the missing files at any time, without regard to the processing stage of the batch process. If the files arrive without creating a gap, no intervention is required; the newly arrived data will be passed to the update process automatically.

2.2.4 STEP 4: CHECKING FOR DUPLICATE INCOMING TRANSACTIONS

2.2.4.1 Step 4: Old Transaction Dates

The key evidence that duplicate records may have been sent is in the presence of an OLD transaction date on the report.

Suppose on July 3rd the report looked like one of the following two figures:

Figure A

INST	TRANSMIT DATE	TRANSAC DATE(S)	VERSION	TRANS COUNT	RECORD COUNT	GLOB ALS	SUB-INSTALLATIONS
01	07/02/94	07/02/1994	3.3.2	324	326	1	01
		07/01/1994					
02	07/02/94	07/02/1994	3.2.1	45	47		02

Figure 2-9

Figure B

INST	TRANSMIT DATE	TRANSAC DATE(S)	VERSION	TRANS COUNT	RECORD COUNT	GLOB ALS	SUB- INSTALLATIONS

01	07/02/94	07/02/1994	3.3.2	324	326	1	01
01	07/01/94	07/01/1994	3.3.2	156	158	2	01
02	07/02/94	07/02/1994	3.2.1	45	47		02

Figure 2-9

Note: Because Job NEMCENT1 merges daily transmissions into a single HOLD file, data will not usually appear as in Figure 2-9, though it can.

The data from July 1st stands out in this display because its transaction date is earlier than the other transmissions. There are some legitimate explanations that would not require any action by the analyst:

If the data from July 1st was missing, as should be shown in the NOTES, this could be the makeup transmission. No action required.

If the data was being held because of a perceived gap, this data could be the makeup data needed to fill the gap. Section 2.3.1.2 discusses the actions required in this case.

If July 2nd was a Monday, perhaps the July 1st data was from transactions done on an unusual Sunday session. No action required.

These could be evening transactions executed after the evening NEMS run on July 1st. The next section discusses this possibility further.

On the other hand, this could be a duplicate transmission. If so, the analyst can scroll down the report file to check the reports from the previous days. Duplicate files almost always have exactly the same dates and numbers of records.

Duplicate files cannot be created by the installation's NEMS when operated in a normal manner. Duplicate transmissions result from manual intervention, such as when an installation is trying to recover from a hardware failure or do something special with their NEMS system, or in the case of JPL, make a mistake in a modem transmission.

If a duplicate is found, see Exception Processing section 1.2.3.14, Duplicate Transactions.

2.2.4.2 Step 4b: Evening Transactions

It is not always obvious that an evening transaction run is not a duplicate transmission. Generally speaking, when an installation continues operations into the evening, resulting in two sets of transactions with the same date, the number of transactions from the evening run will not be the same as the daytime run. Unfortunately, there is no report that is guaranteed to show these transaction counts; the day transactions will be reported separately on the AGAOH.NEMCP.CURRENT.TRANSMIT file, but the evening transactions will usually be lumped in with the count for the next day.

An expedient is to call the NEMS-Central office or the NEMS ADP support person at the installation and ask if they ran transactions in the evening. Unfortunately, that may not be simple to do in the case of installations with many sub installations. (see Step 1 below, for a method to determine the sub-installation in a multi-installation site).

However, there is a trick that will always work.

Step 1: Browse the AGAOH.NEMCP.xxxx.HOLD.GvvvvV000 file (where xxxx = the installation number and vvvv = the generation data group), the input data file that (presumably) has the evening transactions. Use the FIND command to search for the 3-digit Julian date of the evening in columns 444-446. The FIND will stop on the first record in that set. Note the ERN (including sub-installation), and scroll back to the beginning of the record to note the ECN.

Step 2: Browse the AGAOH.NEMCP.CENTRAL.DATA.GxxxxV00 file created during the previous day's NEMCENT3 run. Use the FIND command to search for the ERN from Step 1. When the record is found, scroll back to the beginning of the record and compare the ECN with that found in Step 1. If they are different, then the two sets of records are not duplicated and no further action is required.

If a duplicate is found, see Exception Processing section 1.2.3.14, Duplicate Transactions.

2.2.5 STEP 5: CHECKING FOR TRANSMISSION OR EDIT ERRORS

The transaction data from the NEMS installations is usually very clean. That is fortunate, since our tools for detecting error prior to the update are quite rudimentary.

Basically there are two checks. Program MSD012P1 will stop if the ERN is non-numeric. It will print an unusual value for sub-installation if the ERN points to a non-existent sub-installation. Program CDBSTEP4 will print a “??” on its report (File AGAOH.NEMCP.CURRENT.TRANSAC) if the ERN points to a non-existent sub-installation.

File AGAOH.NEMCP.CURRENT.TRANSAC should be browsed prior to releasing the update.

2.2.6 STEP 6: UPDATING THE NOTES FILE

Any exceptional event should be logged in the file

AGAOH.NEMCP.CURRENT.TRANSMIT.NOTES.

Specifically, make or modify log entries under the following circumstances:

- When any missing data is noticed
- When the missing data comes in
- When a gap or other problem requires data be held out
- When held out data is released for update
- When Duplicate data is deleted or held
- When the update process fails and the circumstances
- When transaction records are resubmitted
- When incoming transaction files have to be edited or corrected or manipulated to avoid gaps or duplication or other errors.

These log records are valuable while doing the daily processing and help when preparing the weekly report for Code JLG.

2.3 EXCEPTION PROCESSING PROCEDURES

2.3.1 RESTARTING THE UPDATE JOBS

On occasion the Transaction Update jobs (NEMCENT3 and NEMCENT4) fails. There are three cases where failures may occur:

1. The UPDATE step in NEMCENT4 fails because of a problem with one more of the transaction records, which must be corrected or removed before attempting to restart the update process.
2. The update step fails because of some transient problem with the computer, operating system, or Natural.
3. There is a problem in some other step within NEMCENT3 or NEMCENT4. These other steps can fail if a mistake is made in changing the JCL or if an external dataset is advertently deleted or renamed. In principle, there can be failure due to system or ADABAS problems, but those are very rare.

Because the CA7 scheduler is monitoring these jobs, CA7 will notify Operations Personnel if there is a problem. CA7 will stop the job immediately if a step ends with an unexpected Condition Code, as it will if there is an abend. The operators will contact the NEMSCENT on-call person (immediately or in the morning) to manage the restart process.

2.3.2 CASE 1 – BAD INPUT DATA TO THE UPDATE STEP

The following process is used to restart when the input TEMP file contains some bad records.

Step 1 – Examine the NEMCENT4 job output with SDSF

If the stoppage was caused by a Natural or ADABAS problem, messages will identify the Natural error that caused the update to stop. From this it can usually be determined if the problem is bad data, a program error, or some other problem.

The Message Log may add additional information.

If step ETDATA executes, it will display the contents of the ET (End Transaction) data buffer for the update step.

Step 2 – Use ET data to Identify the Record that failed

The ET data buffer contains information needed to restart the update run. In particular it contains the ERN and ECN (or Unique Equipment Number, if contractor equipment) of the last good record that was applied to the database. When examining the TEMP file for the source of an error, please note that because ET data is only recorded after successful transactions, the ET record may not be immediately in front of the record that caused the stoppage. There

could be one or more rejected records between the ET record and the record that stopped the job. Files AGAOH.NEMCP.CENTERRS and NEMS.PROD.TRNSERRS may be browsed to identify rejected records.

The following figure shows how the ET data will be displayed.

```
NEXT ETDATA
NEXT FIN
NAT9995 NATURAL SESSION TERMINATED NORMALLY
Page      1
                                     #TRANSACTION -DATA
-----
124968505410941980505      000539000539      000158000325000056      0000400000
^  ecn      ^ern      ^ins^uen      ^read^good^errs^adds ^adds^chgs ^dels ^Sx ^tread^tgo
```

Figure 2-10

Step 3 – Edit the TEMP file using the FILE-AID editor.

The programmer should be careful when editing the ‘TEMP’ file. The restart logic depends on finding the ERN of “the last good record”. Update processing starts with the next record after that. The programmer can delete the earlier records but there is no performance advantage in doing so; TRN000P1 just skips over them.

NOTE:---> If the TEMP file is edited, The programmer must NOT delete the last good record, or TRN000P1 will skip all the records in the “TEMP” file, incorrectly rejecting all the remaining transaction records.

Step 4 – Ask Production Control to schedule job NEMCENT4. Normally this update will be scheduled to run during the day, but that depends on issues of system load.

Step 5 – If the outcome of this restart is OK, ask Production Control to schedule jobs NEMSCENT3 and 4 to run at their normal time. (Step 5 can also be put off to the next evening, if desired.)

2.3.3 CASE 2 – OTHER UPDATE STEP FAILURES

The procedures described above assume that something is wrong with the AGAOH.NEMCP.CENTRAL.DATA.TEMP file. Sometimes that is not the case. If no changes are required to the input file, run NEMCZRST to set the startup flag to RESTARTONLY. Then ask Production Control to rerun NEMCENT3 and NEMCENT4.

2.3.4 CASE 3 – OTHER FAILURES IN NEMCENT3 OR NEMCENT4

If NEMCENT3 fails or some step in NEMCENT4 fails other than the UPDATE step, it is first necessary to identify the problem cause and correct it, if necessary. Such problems are exceedingly rare; other than a system or ADABAS problem, about the only possible cause is the accidental deletion/renaming of one of the many disk files used by the update process.

The NEMCENT4 job is designed to be restarted from the beginning if there is a failure in the UPDATE step of NEMCENT4. They were also designed to be automatically restartable by Zeke and ZEBB Rerun Manager software. However, restart of these jobs under ZEBB has not been tested, and is currently turned off within Zeke. If there are stoppages in either of these jobs (other than Update failure) the analyst must edit and submit a copy of the JCL to allow the jobs to restart from an appropriate intermediate step. Suggested restart points are given in the Job Descriptions in Section 2.4.

Copies of the production JCL are in the library AGAOH.NEMCP.JCL.CNTL. If the analyst has reason to fear that those copies have been corrupted, production control personnel can copy the JCL from the OPNS production library into AGAOH.NPPSPP.SCHED.MASTER.CA7, where the analyst can edit and submit it.

2.3.5 DETERMINING THE CAUSE OF TRANSACTION REJECTION

In principle, the number of Total Bad should be zero. If the NEMSCENT software exactly matches the NEMS software and if all prior transactions for an ECN have been recorded in the CDB, there should be no reason for rejection. Except for a very few fields (such as the ERN) the CDB software does not “edit” the incoming transactions records, in the sense of validating their content, so it does not reject them for having the “wrong” values.

The Error List gives no explicit information on the cause of the rejection, since this report is produced after the update process. However, in most cases the IMMEDIATE cause is clear:

- Adds are usually rejected because the record is already present in the installation's portion of the CDB Equipment File. In some cases, such as restoration from history, the Add may fail because there is no History record for that ECN at that installation.
- Deletes and Changes are usually rejected because the record is NOT present in the CDB Equipment File for that Installation.

The NEMSCENT Ad-Hoc menu, as described in the NEMSCENT User's Guide, can be used to display the current status and transaction history of the ECN whose transaction was rejected.

In addition, there are cases in which rejections are traceable to software incompatibilities between the NEMS (or JPL) transactions and NEMSCENT. Such discrepancies can cause rejections even when there is no conflict.

Examination of this evidence may or may not reveal the ultimate cause of rejection. That is, it may not be clear Why the record is already present for an add or why it was not present for a change or delete. Since the transaction was processed at the originating NEMS site, such rejections usually indicate that the records in the CDB do not match the installation's files. Such discrepancies usually indicate, in turn, that some prior transaction was omitted or rejected.

The most likely reasons for that earlier omission or rejection are:

- (1) failure to transmit/receive/process the earlier transaction
- (2) processing transactions in the wrong order

With some effort, perhaps aided by calls to the installation, it is often possible to determine the missing or mishandled transaction. Depending on the nature of the transaction (especially Adds and Deletes), it may be worth reprocessing transactions or asking the installation to retransmit missing or miscoded transactions. The sooner such action is taken, the better.

EXAMPLE: A pair of transactions, an Add and then a Delete, are presented out of order on two separate days, the Delete on the first day and the Add on the second. The Delete is rejected and the Add is accepted. By resubmitting the earlier rejected Delete transaction, the proper state of the item will be restored (i.e., deleted).

If the ERN date on the Delete is after the Add, as would normally be the case, this sequence of events can only happen if the local NEMS has a problem and

transmits the data out of order and transmits the data out of order and NEMCENT analyst makes a corresponding mistake and allows the transactions to be processed out of order. The analyst can use the NEMCENT2 reports to avoid this, which clearly show all transaction dates.

Other rejects may trace to earlier rejections. If the rejected DELETE is not resubmitted, the CDB will continue to show the item to be present at the installation, not deleted. Future transactions, such as restores from History, could be rejected.

At certain times, the NEMSCENT software may be unable to handle certain transactions. For example, a transaction may be changed in NEMS without a correct corresponding change in NEMSCENT. In the case of JPL, this is more likely, since JPL's system can change independently of NEMS. In a recent example, the Global Delete transactions were not handled correctly, resulting in deletes in NEMS but no deletes in NEMSCENT. As a result, certain transactions to Add those items back were rejected by NEMSCENT (since they were still in the CDB Equipment file). In such cases, the NASA Logistics Management Office should be advised of the situation. The office may choose to have the software changed immediately or it may be willing to allow some inaccuracy in the database, pending completion of the required programming changes.

2.3.6 RESUBMITTING SELECTED PAST TRANSACTIONS

If it is decided, after reviewing error reports, that selected past transactions need to be resubmitted, the following process should be followed:

- Step 1: Allocate a new "(+1)" member of the GDG
 AGAOH.NEMCP.CENTRAL.DATA.
- Step 2: Use ISPF 3.3 to copy to this new file the
 AGAOH.NEMCP.CENTRAL.DATA member (or members) that
 contain the selected transactions. Or, copy in selected members of
 the GDG AGAOH.NEMCP.CENTRAL.BADTRANS (which have the
 same record format as the DATA files).
- Step 3: Use the File-Aid editor to edit the combined file, deleting the
 unneeded transactions.
- Step 4: From within the editor, use the SORT command to sort the selected
 transactions by ERN, located in columns 431-440, i.e.:

Sort 431 440

After that, the new file is in the same format as all the other
AGAOH.NEMCP.CENTRAL.DATA members.

- Step 5: Save the file, and copy AGAOH.NEMCP.CENTRAL.DATA.TEMP (using DISP=OLD).
- Step 6: Ask Production Control to run NEMCENT4 immediately (overriding the normal time-of-day prerequisite).
- Step 7: After the jobs are finished, check the results of the job in the normal manner.
- Step 8: Ask Production Control to reschedule NEMCENT3 and NEMCENT4 for their normal evening run.

2.3.7 MISSING DATA & MISSING DATA SUPPLIED WITHOUT A GAP

If an installation fails to send a transmission, make an entry in the AGAOH.NEMCP.CURRENT.TRANSMIT.NOTES file. Otherwise, no immediate action is required.

If the installation fails to transmit for a second day, it is best to call the installation NEMS personnel to inquire about their status. Usually the NEMS staff is aware of the situation, but sometimes not. This can be more of a problem for JPL, which uses a less reliable method (modem) for data transmission.

When the installation sends the missing data (as separate files or as a merged file; it does not matter which), use the NOTES file (listed at the top of the AGAOH.NEMCP.CURRENT.TRANSMIT report file) to check to see that there is no gap. If there is no gap, make an entry in the NOTES file to indicate that all the data arrived. No other action is required; the data will be used automatically by the evening update process.

2.3.8 MISLABELED "NULL" FILES

Sometimes installations send "null" files, indicating that there were no transactions that day, with the wrong installation number in their Header and Trailer records. When this happens they are usually coded as '1111', the HQ installation. Examination of the NEMS.CENT.CURRENT.TRANSMIT file will show the statistics for the file, but in the wrong place for Headquarters. The installation NEMS support personnel should be called to ask that the situation be corrected, and a note should be added to the NOTES file. The mislabeled file itself does not need to be corrected, as there are no transactions in it and thus has no impact on the evening update process.

2.3.8.1 Holding Data because of a Transmission Gap

If it is determined that a gap exists or may exist, where a transmission has been sent without including a missing date, follow the following procedure:

Step 1: Hold out the data files that have come in after the gap.

Data is held out by manually renaming it:

From AGAOH.NEMCP.NDM.xxxx.HOLD.xxxxxx

To AGAOH.NEMCP.NDM.xxxx.HOLDOUTxxxxxx

Where xxxx = the installation number and xxxxxx = the generation data group.

Data that is in the HOLD files will be used by the evening update process. Any data that is in files named HOLDOUT will be skipped by the evening update process.

Step 2: Update the NOTES file to indicate that data is being held out.

Step 3: Call the installation and determine if there truly is a gap.

Step 4: In most cases it will turn out that the installation executed no NEMS transactions on that day and not run evening NEMS production, so no 'null' file is created. As a result, the gap is not real and the held files can be renamed from HOLDOUT back to HOLD, along with updating the NOTES file.

Step 5: If the gap is real ask the installation to retransmit the missing transactions.

Step 6: If the gap is real or an answer cannot be immediately obtained, treat the gap as real. Ask the operator to rerun NEMCENT1 and 2 so the reports stored in the GDG will reflect the data that was actually submitted to update and what was held out.

Step 7: Assuming there is no other problem, submit NEMCZOK to allow evening update to execute normally.

2.3.8.2 Releasing Data When a Transmission Gap Is Filled

If a file comes in with the transactions needed to fill a gap:

- Step 1: Release the held data by renaming them from HOLDOUT to HOLD
- Step 2: Rerun NEMCENT1 and 2 so the report files will reflect the processing of the released data.

2.3.8.3 Correcting for Transmission or Edit Errors

Sometimes transmissions will arrive that have file format or data content errors. Typically, these errors do not result from normal NEMS operation, but rather from special operations undertaken by the installation's local information systems staff. A limited number of these errors can be detected by the reports in NEMCENT2. In particular, the reports will detect if the installation number is not a valid installation, or if the ERN is non-numeric.

In general, if this happens it is best to ask the installation to retransmit the file, holding out the defective file and any subsequent files until the replacement arrives. In some cases it may be simpler to edit the existing HOLD file than to ask for a retransmission. An entry should be made in the NOTES file and NEMCENT1 and 2 should be rerun.

Once the replacement file arrives, any held out data can be released, the NOTES file updated and NEMCENT1 and 2 rerun.

2.3.8.4 Duplicate Transmissions

True duplicate transmissions are very rare. Most apparent duplicate transmissions are simply a result of NEMS being operated in the evening. The number of transactions in the evening will usually be less than the number from earlier in that day.

Nevertheless, duplicate transmissions are easy to miss if they are transmitted on separate days. The analyst must be sensitive to any deviation from the usual date pattern (nine NEMS transmissions with the same Transaction Date, and one transmission from JPL dated the previous day) especially if there are multiple dates transmitted on the same day from a center.

If duplicates are transmitted on the same day, the consolidation process in NEMCENT3 will delete the duplicate transactions.

If duplicate files are transmitted on separate days, the update process will attempt to apply the transactions twice. To avoid this the duplicate files should be

removed from the input flow. In some cases this can be done by renaming or deleting the duplicate files. Usually that will not be possible if multiple dates have been merged by job NEMCENT1 into one HOLD file (see Appendix E-1 on the File Formats).

In that case the FILE-AID editor will have to be used to find the group of duplicate records (Header, data records and Trailer) and delete them.

2.4 DAILY UPDATE JOBS

2.4.1 NEMCENT

ZEKE runs NEMCENT1 each morning to move incoming data from nine centers (all except JPL) into holding areas, where they will be available for NEMSRPT2 and the evening update jobs. This job sets a ZEKE variable to a value that starts NEMCENT2. The NEMSCENT analyst can rerun if he or she changes the incoming data, such as holding out or releasing data. NEMCENT1 & 2 can be rerun by calling Operations and requesting a run.

This job is one of 5 daily jobs that support the NEMSCENT system.

NEMCJPL (evening) copies incoming JPL data to a holding area

NEMCENT1 (morning) copies other incoming center data to a holding area.

NEMCENT2 (morning) reads held data and highlights data problems.

If the NEMSCENT analyst determines that it is all right to update NEMSCENT with the incoming data, a ZEKE variable will be set to start the NEMCENT3 job.

NEMCENT3 (evening) collects data into a single file.

NEMCENT4 (evening) updates the NEMSCENT data base and sends transfer information between NASA centers.

2.4.1.1 PREREQUISITE INFORMATION

NEMSCENT's ADABAS region (CENT) must be up.

2.4.1.2 XEROX PRINT INSTRUCTIONS

There is no printed output from this job.

2.4.1.3 Zeke Variable Usage

VARIABLE	USE/CONTENTS
\$nemcentedit	'OK' Set by this program to start job NEMCENT2

2.4.2 NEMCENT2

ZEKE runs NEMCENT2 each morning to read the incoming NEMSCENT data from the 10 centers (including JPL). The data is read from holding datasets created by NEMCENT1. NEMCENT1 sets a ZEKE variable to start NEMCENT2.

If the analyst changes the incoming data, such as holding out or releasing data, NEMCENT1 and NEMCENT2 can be rerun by requesting a run from operations.

Prerequisite Information

1. NEMSCENT's ADABAS region (CENT) must be up.
2. ZEKE variable \$NEMCENTEDIT must = 'OK'

NOTE: the ZEKE variable will be set within job NEMCENT1. It could be set manually by the analyst after holding out data or releasing previously held-out data. However, it is best to run both NEMCENT1 and NEMCENT2 in sequence, rather than only NEMCENT2.

XEROX Print Instructions

There is no printed output from this job.

ZEKE Variable Usage

VARIABLE	USE	CONTENTS
\$nemcentedit	'OK'	Set by job NEMCENT1 to start this job.
	'NOTOK'	Set by this job to indicate this job has started.

2.4.3 NEMCENT3

This job merges the NEMSCENT input files into a single file and passes that merged data to job NEMCENT4, to be used to update the NEMSCENT files.

This job also creates files to support verification and debugging.

PREREQUISITE INFORMATION

1. ZEKE variable \$NEMCENTSTARTUP must = 'OK' or 'RESTARTONLY'.
2. NEMSCENT's ADABAS region (CENT) must be up.

XEROX PRINT INSTRUCTIONS

This job creates no printed output.

ZEKE VARIABLE USAGE

VARIABLE	USE	CONTENTS
\$nemcentstartup (input)	'OK'	Set by NEMS analyst to indicate that it is OK to run job
NEMCENT3, GDG files		using new input data in the NEMS.PROD.NDM.xxxx.HOLD.
	RESTARTONLY'	
NEMSCENT analyst.		Optional value set by
from the last		Process ONLY processed data
NOT use		NEMSCENT update run. Do
value will		any new input data. This
set		cause the job to immediately
"UPDATE"		\$NEMCENTSTARTUP to

and skip all remaining steps

in the job.

NEMCENT4 starts

immediately

afterward.

'HOLD' Optical value set by NEMSCENT

analyst.

Causes NEMCENT3 and

NEMCENT4 not

to execute the evening

update.

(output) UPDATE' Set within the job if there is no

abnormal

end to indicate to ZEKE that

it is OK to

start the NEMCENT4 job.

2.4.4 NEMCENT4

This job updates the NEMS-CDB with the merged transaction file NEMS.PROD.CENTRAL.DATA.TEMP created by job NEMCENT3.

This job also creates reports to support verification and debugging.

PREREQUISITE INFORMATION

1. ZEKE variable \$NEMCENTSTARTUP must = 'UPDATE'.
2. NEMSCENT's ADABAS region (CENT) must be up.

XEROX PRINT INSTRUCTIONS

This job creates no printed output.

ZEKE VARIABLE USAGE

VARIABLE	USE	CONTENTS
\$nemcentstartup	(input)	'UPDATE'

indicate to Zeke Set by job NEMCENT3 to

NEMCENT4 that it is OK to run job

(output) 'NOTOK'

NEMCENT4 Default value set by

2.4.5 **NEMCJPL**

NEMCJPL copies NEMS Central data transmitted from JPL into a "hold" file, to simplify the scheduling of other NEMSCENT batch update jobs.

NEMCJPL copies all data in the GDG NEMS.TEST.JPL to a member of the GDG NEMS.TEST.JPL.HOLD. Deletes the original data and writes a blank initial member to the NEMS.TEST.JPL.GDG.

NEMCJPL should run every workday morning at 0700.

PREREQUISITE INFORMATION

none

3. REPORT SUBSYSTEM

CDB reports are categorized in the following manner:

<u>Report Number</u>	<u>Type of Report</u>
000 thru 999	Transaction Update Reports
100 thru 199	Manufacturer's Code Reports
200 thru 299	Not in Use
300 thru 399	Performance Measure Reports
400 thru 499	Financial Reconciliation Reports
500 thru 599	ECN Reports
600 thru 699	Microfiche Reports
700 thru 799	Redistribution Reports
800 thru 899	Not in Use
900 thru 999	Equipment Reports

A list of CDB reports and their functions follow:

<u>Report</u>	<u>Function</u>
RPT090P1	Fiscal Year End Cumulative Transaction Report
RPT095P1	Cumulative Transaction Report by Month
RPT110P1	Manufacturer's Code XXXXX Suspense Report
RPT115P1	Manufacturer's Code ZZZZZ Suspense Report
RPT401P1	Records That Will Not Show Up On Report 400
RPT411P1	Records That Will Not Show Up On Report 410
RPT535P1	ECN Distribution Report
RPT538P1	Goddard Alpha ECNs
RPT541P1	Equipment File Bad ECN Report
RPT542P1	History File Bad ECN Report
RPT641P1	Microfiche Report
RPT642P1	Microfiche Report
RPT710P1-3	Redistribution Summary by Sending Installation
RPT711P1-3	Redistribution Summary by Receiving Installation
RPT720P1-2	Semi-annual Redistribution Report by Date Shipped
RPT740P1	Purchase Transaction Listing
RPT900P1	Equipment Cost Summary – 6 Cost Ranges
RPT901P1	Equipment Cost Summary – 9 Cost Ranges
RPT905P1	Status Code Summary of Equipment with Cost GT \$500
RPT930P1	ADP Equipment at GSFC and KSC (for IG)
RPT940P1	Extract Program for Reports 941, 942, 943
RPT941P1	Summary of Equipment Type Account

RPT942P1	Summary of Equipment by Installation
RPT943P1	Summary of Equipment by Installation (CNTR Held)
RPT971P1	Average Age of Equipment (by FSG, INST)
RPT972P1	Average Age of Equipment (by INST)
RPT973P1	Average Age of Equipment (by INST, FSG 59 & 66)
RPT975P1	Equipment Manufactured Before 1980
RPT984P1	Extract Program for Reports 985, 986, 987
RPT985P1	Installation Federal Supply Group Matrix
RPT986P1	Installation Federal Supply Group Matrix (FSG 1 3 4)
RPT987P1	Federal Supply Group Year Acquired Matrix

The Job Control Language (JCL) used to submit each of the above reports is located in the standard NHCC system control library (OPNS.JOBSCHED.CNTL). This library is controlled by the system operators and used by them to submit these jobs when scheduled. Copies of these jobs are also located in the TSO library 'NEMS.CENT.CNTL'.

To ensure that these jobs will be executed in a timely manner, they have been added to the Amdahl's batch job scheduling system (known by the name "ZEKE"). The scheduling system initiates the daily, monthly, quarterly and annual jobs when needed. Because these jobs are executed automatically, each job sends E-mail messages to the NEMSCENT programmer and the NASA sponsor (currently, a staff member in Code JGL) notifying them that the job has been run.

The following lists other CDB reports which are available on request:

Report	Function
RPT110P1	Manufacturer's Code XXXXX Suspense Report
RPT115P1	Manufacturer's Code ZZZZZ Suspense Report
RPT401P1	Records That Will Not Show Up On Report 400
RPT411P1	Records That Will Not Show Up On Report 410
RPT535P1	ECN Distribution Report
RPT538P1	Goddard Alpha ECNs
RPT541P1	Equipment File Bad ECN Report
RPT542P1	History File Bad ECN Report
RPT720P1-2	Semi-annual Redistribution Report by Date Shipped
RPT740P1	Purchase Transaction Listing
RPT905P1	Status Code Summary of Equipment with Cost GT \$500
RPT930P1	ADP Equipment at GSFC and KSC (for IG)
RPT972P1	Average Age of Equipment (by inst)
RPT973P1	Average Age of Equipment (by inst, FSG 59 & 66)
RPT986P1	Installation Federal Supply Group Matrix (FSG 1 3 4)

The Job Control Language (JCL) used to submit each of the above reports is located in the TSO library 'NEMS.CENT.CNTL.UTILITY'.

3.1 MAINTAINING THE NEMSCENT BATCH JOBS UNDER ZEKE

Those scheduled jobs that are run under Zeke control have to be tested twice, once to see that they run in a stand-alone manner, and a second time to see that they run properly under Zeke. The second test verifies both that the job works properly under Zeke control, and that the operations staff has correctly modified the Zeke setup information. As a result, jobs are maintained in the following manner.

1. JCL for the job is copied or created as a member of the library NEMS.CENT.CNTL.TEST.

NEMSCENT jobnames and member names begin with the letters "NEMC". In the case of reports, the next three characters are a report number.

The existing JCL, if any, is found in the library NEMS.CENT.CNTL. It is also available from the NHCC operations staff, who can copy it from OPNS.JOBSCHED.CNTL (which is where Zeke executes it.)

The JCL is modified and tested from within the TEST library. In general, there may be certain aspects of the job that cannot be tested without the assistance of the ZEKE scheduling services. If necessary, test versions of the NATURAL programs and ADABAS files are used, and/or test versions of supporting files. In some cases, the existing JCL in the TEST library may be used since it is already setup for test execution.

2. If necessary, the operator instructions can be modified. To do this, the ZEKE text file, containing operator instruction for the job, is copied to or created as a member of the library USER.JOBSCHED.TEXT. The existing text file, if any, is found in the library NEMS.CENT.TEXT. It can also be created from the copy stored in the Zeke database (with operator assistance).
3. At the end of initial testing, the JCL is copied to the ZEKE test library, USER.JOBSCHED.CNTL. The operations staff is notified and they read the TEXT file, modify the Zeke schedule entry for the job and direct Zeke to use the copy of the JCL that is in USER.JOBSCHED.CNTL. Tests are conducted to ensure that the job executes properly under Zeke control.

If the tests of the new version must take place over a period that overlaps the execution of the existing job, a copy of the test JCL and

Text can be prepared and tested using a different Jobname (Zeke maintains its setup and JCL data by Jobname).

4. At the end of testing, and necessary CCB approval, final production modifications are made and backup copies of the revised JCL and Text are copied to NEMS.CENT.CNTL and NEMS.CENT.TEXT, respectively. The operations staff is instructed to "place the job in production". To do that, they move the JCL to OPNS.JOBSCHED.CNTL and continue operations with that new copy of the JCL.

3.2 MONTHLY REPORTS

The System Administrator runs the NEMC641 report on a monthly basis, on the eighth working day of each month.

3.2.1 NEMC641 AND 641A

NEMC641 reads the distribution list used to send fiche copies of the NEMS Central Data Base Reutilization Report to all centers and contractors, prints mailing labels and a checkoff sheet, and submits (via ZEKE) Job NEMC641A, which runs the report and creates the fiche.

Using a distribution list file (see "Maintaining the NEMCENT FICHE Distribution List, in Section 4), NEMC641 counts the number of microfiche copies needed, determines the appropriate FICHE setup command to use (based on the number of copies needed), and sets a ZEKE variable (\$NEMC641SETUP) to that value. It also sets the ZEKE variable \$NEMC641STATUS to "OK". That permits ZEKE to start job NEMC641A.

Then job NEMC641 prints mailing labels on standard form 3535, and prints a mailing list check-off sheet to guide the Operators when they are preparing the mailing.

Because the fiche setups must be preloaded into the fiche machine, there is a chance that too many or not enough fiche copies will be made by this job. If that happens, a warning message will be printed on the distribution list, and will be E-mailed to the NEMSCENT programmer. If not enough copies are printed, the operators will have to make extra copies.

These jobs also write a copy of the reports to a cartridge tape, which is retained for 15 days, so extra copies of the fiche can be printed if necessary.

The distribution list file is NEMS.DEVL.LIB.CNTL(NEMSFMST). Its contents are maintained by the NEMS development staff, in response to information provided by NASA.

3.2.1.1 Prerequisite Information

This job is run when all the following conditions are met.

1. Job NEMCENT4 completed normally the previous day.
2. Job NEMCENT is not currently running.
3. The ADABAS data bases are up and available.
4. It is the eighth workday of the month.

3.2.1.2 XEROX Print Instructions

This job has one XEROX sysout, containing one report:

Report 641/642 Fiche Distribution List (1 copy)
Deliver to NEMSCENT bin (Bin 23) after the mailing is completed.

The Operators use this printed list to guide the preparation of copies to send. Check off the mailing envelopes against this list. The list shows those sites which receive multiple copies.

3.2.1.3 Maintaining the NEMSCENT Fiche Distribution List

Jobs NEMC641 and NEMC641A prepare the monthly 641/642 reports, which are printed on fiche and mailed by the operators in accordance with a distribution list. This distribution list is found in the TSO dataset: NEMS.CENT.CNTL(NEMSFMST).

From time to time, changes must be made to this distribution list. The distribution list is organized in the following manner.

```
Col 71-72  
ARC 011 AMES RESEARCH CENTER (NASA) 03  
ARC 012 ATTN: W. HENDERSON  
ARC 013 MAIL CODE: 255-2  
ARC 014 MOFFETT FIELD, CA 94035  
ARC 015  
...  
ZZZZ 991 END OF FILE  
ZZZZ 991 20 APR 94 - MJF - CHANGED JPL REP TO O. COWHERD  
ZZZZ 991 08 AUG 94 - MJF - CHANGED ROCKETDYNE REP TO ANDERSON
```

There are five address lines (records) per address. All five lines must be used. Columns 1-4 indicate the NASA installation. Columns 6-7 indicate an address within the installation. Column 8 is a line counter. Columns 10-70 are used for the address. On the first line of the address, Columns 71-72 contain a count of the number of fiche copies to be sent to that address; blank is treated as '01'.

If Columns 6-8 have '991', the line is treated as a comment.

3.2.1.4 ZEKE Variable Usage

VARIABLE	USE	CONTENTS
\$NEMC641START	OK	Value set by job NEMC641, to permit this job (NEMC641A) to start.
	NOTOR	Value set at beginning of this job, to Prevent this job from accidentally starting
\$NEMC641SETUP	variable	Fiche setup values: 4-character Strings such as "V045", which tell the fiche Machine how many copies to make. These setup names must have been preloaded onto the Fiche, or the setup value will not be recognized.

3.3 QUARTERLY REPORTS

The System Administrator runs the following reports on a quarterly basis, on the first working day of each quarter.

The following jobs have XEROX sysouts. The sysouts contain one or a number of reports, which varies according to the job number.

3.3.1 NEMC540

NEMC540 prints one quarterly report from the NEMS Central data base:

Report 540 Duplicate ECNs in the CDB Equipment File Report (1 copy), delivered to the NEMCENT bin (Bin 23). If requested, deliver to NASA Logistics Management Office Code JLG.

NEMC540 also sends E-Mail messages to users, telling them that if they do not get a copy of the printout, they should inform the Operator.

3.3.1.1 Prerequisite Information

1. For the first quarter (October) only, Job NEMC540 must be run on or after the first work day of the month. For other quarters, NEMC540 should be run during the first two weeks of the first month of the quarter.
2. For the first quarter (October) only, the NEMSCENT coordinator must confirm that all NEMSCENT transactions from the previous fiscal year have been processed (other quarters can be run without asking). This is done by setting the ZEKE variable \$NEMSCANNUAL to "OK".
3. Job NEMSCENT from the previous evening must have completed normally.
4. Job NEMSCENT is not currently running.
5. ADABAS region CENT must be operating.

3.4 ANNUAL REPORTS

The System Administrator runs the following reports on an annual basis, on the second working day after the new fiscal year.

3.4.1 NEMC090

NEMC090 prints two annual reports for the NEMS Central data base:

Report 090	End of Fiscal Year Cumulative Transaction Report
Report 095	Cumulative Transaction Report

NEMC090 also sends E-Mail messages to users; telling them that if they do not get a copy of the printout, they should inform the operator.

3.4.1.1 Prerequisite Information

1. Before this job is run, the NEMSCENT Coordinator must confirm that all NEMSCENT transactions from the previous fiscal year have been processed. This is done by setting the ZEKE variable \$NEMSANNUAL to "OK".

2. Job NEMSCENT from the previous evening must have completed normally.
3. Job NEMSCENT is not currently running.
4. ADABAS region CENT must be operating.

3.4.1.2 XEROX Print Instructions

This job has one XEROX sysout that contains five copies of the two reports.

3.4.2 NEMC564

NEMSC564 prints two annual reports for the NEMS Central data base:

- Report 564 Count of records under \$5000 report
- Report 565 Count of records over \$5000 report

NEMSC564 also sends E-Mail messages to users, telling the users that if they do not get a copy of the printout, they should inform the Operator.

3.4.2.1 Prerequisite Information

This job must run under the following conditions:

1. On or after the second work day of the fiscal year.
2. All NEMSCENT transactions from the previous fiscal year have been processed. This is done by setting the ZEKE variable \$NEMSCANNUAL to "OK".
3. Job NEMSCENT from the previous evening must have completed normally.
4. ADABAS region CENT must be operating.

3.4.2.2 XEROX Print Instructions

This job has one XEROX sysout that contains the two reports.

3.4.3 **NEMC566**

NEMSC566 prints two annual reports for the NEMS Central data base:

Report 564 Count of records under \$5000 report
Report 565 Count of records over \$5000 report

NEMSC566 also sends E-Mail messages to users, telling the users that if they do not get a copy of the printout, they should inform the Operator.

3.4.3.1 **Prerequisite Information**

This job must be run under the following conditions:

1. On or after the second work day of the fiscal year.
2. All NEMSCENT transactions from the previous fiscal year have been processed. This is done by setting the ZEKE variable \$NEMSANNUAL to "OK".
3. Job NEMSCENT from the previous evening must have completed normally.
4. ADABAS region CENT must be operating.

3.4.3.2 **XEROX Print Instructions**

This job has one XEROX sysout that contains the two reports.

3.4.4 **NEMC710**

NEMSC710 prints two annual reports for the NEMS Central data base:

Report 710 Redistribution Summary by Sending Installation
Report 711 Redistribution Summary by Receiving Installation

NEMSC710 also sends E-Mail messages to users, telling the users that if they do not get a copy of the printout, they should inform the Operator.

3.4.4.1 Prerequisite Information

This job must be run under the following conditions:

1. On or after the second work day of the fiscal year.
2. All NEMSCENT transactions from the previous fiscal year have been processed. This is done by setting the ZEKE variable \$NEMSCANNUAL to "OK".
3. Job NEMSCENT from the previous evening must have completed normally.
4. ADABAS region CENT must be operating.

3.4.4.2 XEROX Print Instructions

This job has one XEROX sysout that contains the two reports.

3.4.5 NEMC900

NEMC900 prints two annual reports for the NEMS Central data base:

Report 900 CDB Cost Summary Report
Report 901 Equipment Cost Summary Report

NEMC900 also sends E-Mail messages to users, telling them that if they do not get a copy of the printout, they should inform the Operator.

3.4.5.1 Prerequisite Information

1. On or after the second working day of the fiscal year.
2. The NEMSCENT coordinator must confirm that all NEMSCENT transactions from the previous fiscal year have been processed.
3. Job NEMSCENT from the previous evening must have completed normally.
4. Job NEMSCENT is not currently running.
5. ADABAS region CENT must be operating.

3.4.5.2 XEROX Print Instructions

This job has one XEROX sysout, containing one copy of the two reports.

3.4.6 NEMC941

NEMC941 prints three annual reports for the NEMS Central data base:

- Report 941 – Summary of Equipment Type Account Report
- Report 942 – Summary of Equipment by Installation Report
- Report 943 – Summary of Equipment by Installation (contractor held)

NEMC941 also sends E-Mail messages to users, telling them that if they do not get a copy of the printout, they should inform the operator.

3.4.6.1 Prerequisite Information

1. On or after the second work day of the fiscal year.
2. The NEMSCENT coordinator must confirm that all NEMSCENT transactions from the previous fiscal year have been processed. This is done by setting the ZEKE variable \$NEMCANNUAL to "OK".
3. Job NEMSCENT from previous evening must have completed normally.
4. ADABAS region CENT must be operating.

3.4.6.2 XEROX Print Instructions

This job has one XEROX sysout, containing one copy of the three reports.

3.4.7 NEMC971

NEMC971 prints two annual reports for the NEMS Central data base:

- Report 971 Average Age of Equipment Report
- Report 975 Equipment Manufactured Before 1982 Report.

NEMC971 also sends E-Mail messages to users, telling them that if they do not get a copy of the printout, they should inform the Operator.

3.4.7.1 Prerequisite Information

1. NEMD971 must be run on or after the second work day of the fiscal year.
2. The NEMSCENT coordinator must confirm that all NEMSCENT transactions from the previous fiscal year have been processed. This is done by setting the ZEKE variable \$NEMCANNUAL to "OK".
3. Job NEMSCENT from previous evening must have completed normally.
4. Job NEMSCENT is not currently running.
5. ADABAS region CENT must be operating.

3.4.7.2 XEROX Print Instructions

This job has one XEROX sysout, containing one copy of the two reports.

3.4.8 NEMC985

NEMC985 prints two annual reports for the NEMS Central data base:

Report 985 – Installation Federal Supply Group Matrix Report
Report 987 – Federal Supply Group Matrix Report.

NEMC985 also send E-Mail messages to users, telling that if they do not get a copy of the printout, they should inform the Operator.

3.4.8.1 Prerequisite Information

1. This report is produced on or after the second workday of the fiscal year.
2. The NEMSCENT coordinator must confirm that all NEMSCENT transactions from the previous fiscal year have been processed. This is done by setting the ZEKE variable \$NEMCANNUAL to "OK".
3. Job NEMSCENT from the previous evening must have completed normally.
4. Job NEMSCENT is not currently running.
5. ADABAS region CENT must be operating.

3.4.8.2 XEROX Print Instructions

This job has one XEROX sysout, containing one copy of the two reports.

4. DATA BASE RELOAD PROCEDURES

a. Each Unloaded Files from Installations

Each Installation must send Headquarters a copy (snapshot) of their NEMS-EQUIPMENT and NEMS-HISTORY files. The files may be unloaded in either compressed or decompressed format; however, they all must be unloaded on the same date after the NEMS overnight cycle has run. If decompressed format is sent, then Step b may be bypassed.

All transactions received from the Installations after the unload date must be held until after the reload has occurred, at which time they will be processed against the database.

b. Decompress Installations Data

An ADABAS utility is used for this step; JCL is located in NEMS.CENT.CNTL(FILEDECM).

c. The following NATURAL programs (test library NEMSUTIL) are run against the data to delete all NMIS data and other fields not used by CDB:

CONVEQIP – Converts Equipment file data (except JPL)
CONVHIST – Converts History file data (except JPL)
CONVJPL – Converts JPL Equipment file data (there is no JPL History data).

d. Compress Data

An ADABAS utility is used for the step; JCL is located in NEMS.CENT.CNTL(FILECOMP); the ADAWAN cards needed for this job are located in NEMS.ADAWAN.CARDS.

Please note that separate ADAWANS are used for JPL.

e. Delete CDB Equipment, History and Transfer files:

NEMS-CENT-EQUIP
NEMS-CENT-HISTORY
NEMS-CENT-TRANSFER

f. Load data onto CDB

Schedule with DBA; Users should be notified that the system will not be available for their use during the load. Please note that the NEMS-CENT-TRANSFER file should be loaded empty. REUSISN should be turned on for all three files.

g. Update the CDB with Held Transactions

Once the NEMS-CENT-EQUIP and NEMS-CENT-HISTORY files have been reloaded with the Installation's data, the transactions that were held for each Installation can be processed against the newly loaded database.

5. APPENDICES

5.1 APPENDIX A – LIST OF ACRONYMS AND ABBREVIATIONS

AIM	Automated Information Management
ARC	Ames Research Center
CENT	Central (Data Element)
CNTR	Center (Data Element)
CDB	Central Data Base
DBMS	Data Base Management System
ECN	Equipment Control Number
ERN	Entry Reference Number
ET	End Transaction
EQUIP	NEMS-CENT-EQUIPMENT
FSG	Federal Supply Group (Data Element)
GDG	Generation Data Group
GSFC	Goddard Space Flight Center
GT	Greater (Data Element)
HIST	NEMS-CENT0HISTORY
HQ	NASA Headquarters
HQ/JLG	Supply and Equipment Management Office
HQ/JTS	AIM Program Division
IG	Inspector General (Data Element)
INST	Installation (Data Element)
JCL	Job Control Language
JPL	Jet Propulsion Lab
KSC	Kennedy Space Center
LARC	Langley Research Center
MFG	Manufacturer (Data Element) and NEMS-MFG-CODE
NASA	National Aeronautics and Space Administration
NDM	Network Data Mover
NEMS	NASA Equipment Management System
NHCC	NASA Headquarters Computer Center
NPDMS	NASA Property Disposal Management System
SUB	Submit
SUM	NEMS-CENT-SUMMARY
TABLE	NEMS-CENT-TABLE
TRANS	NEMS-CENT-TRANSFER
UOG	User Operations Guide

5.2 APPENDIX B – APPLICABLE DOCUMENTS

The manuals listed below contain additional information relative to NEMS Central Database Application. For further information, please refer to these documents.

NEMS-CDB Design Specification (NEMS-CDB-DS-08)

NEMS-CDB User Guide (NEMS-CDB-UG-10)

NEMS-CDB As-Built Design Specification (NEMS-CDB-ABDS-08)

5.3 APPENDIX C – NEMS CDB PROGRAM LIST

5.3.1 C.1 ON-LINE ADHOC PROGRAMS

<u>Program</u>	<u>Input</u>	<u>Output</u>	<u>Function</u>
ADHOCENT			Driver Adhoc Program/Welcome Screen
ADHOCMSG			Display Messages to the User
ADHOCNAV			Menu Navigation Program
ADHOCUPD			Update the Summary File with Transfer Counts
ADHOC001			Central Adhoc Main Menu
ADHOC002			Central Equipment File Main Menu
ADHOC003			Central Transfer file main Menu
ADHOC004	TRANS TABLE	DISPLAY	Display Items in Transit by Receiving INST
ADHOC005	TRANS TABLE	DISPLAY	Display Items in Transit by Sending INST
ADHOC006	TRANS TABLE	DISPLAY	Display Items in Transit by ECN
ADHOC007			Prompt for Receiving INST (HQ only)
ADHOC008			Prompt for Sending INST (HQ only)
ADHOC009	TRANS TABLE	DISPLAY	Display Items in Transit by Receiving INST (HQ only)
ADHOC010	TRANS TABLE	DISPLAY	Display Items in Transit by Sending INST (HQ Only)
ADHOC012	SUM	DISPLAY	Display Summary of all Items in Transit
ADHOC20A	HIST TABLE MFG	DISPLAY	Display History Data Selected by ECN
ADHOC20B	HIST TABLE MFG	DISPLAY	Display History Data Selected by Old Tag No.
ADHOC20C	HIST ECN	DISPLAY	Display History Data Selected by Previous
ADHOC20D	HIST TABLE MFG	DISPLAY	Display History Data Selected by Contractor Tag No.
ADHOC200			Selection Menu by Single Data Element
ADHOC201	EQUIP TABLE MFG	DISPLAY	Display Equipment Data Selected by ECN

ADHOC202	EQUIP TABLE MFG	DISPLAY	Display Equipment Data Selected by Old Tag No.
ADHOC203	EQUIP TABLE MFG	DISPLAY	Display Equipment Data Selected by Previous ECN
ADHOC204	EQUIP TABLE MFG	DISPLAY	Display Equipment Data Selected by Contractor Tag No.
ADHOC21A			Selection by multiple data element
ADHOC21C	EQUIP	DISPLAY	Dynamic ADHOC Record Count
ADHOC21E			Select Sort Sequence for Dynamic Adhoc
ADHOC21F			Select display Fields for Dynamic Adhoc
ADHOC21G	EQUIP	DISPLAY	Dynamic Adhoc Record Display- No Sorts
ADHOC211	EQUIP	DISPLAY	Dynamic Adhoc Record Display- One Sort
ADHOC21K	EQUIP	DISPLAY	Dynamic Adhoc Record Display- Two Sorts
ADHOC220	EQUIP TABLE	DISPLAY	Select by MFG-CODE and Multiple Model No.'s and Display Data
ADHOC221	EQUIP TABLE	DISPLAY	Select by MFG-CODE and Multiple Item Names and display Data
ADHOC222	EQUIP TABLE	DISPLAY	Select by Multiple Model No.'s and Display Data
ADHOC230	EQUIP TABLE	DISPLAY	Select by Multiple Item names and Display Data

5.3.2 C.2 TRANSACTION EXTRACT PROGRAMS

<u>Program</u>	<u>Input</u>	<u>Function</u>
MSD008P0	Transmitted Data from Installations	Checks Transmitted Data for Current Version and Adjusts the Data Accordingly
MSD008P1	Installations Daily TRANS File	Transaction Extract Program (executed at the Installations)
MSD008P2	Transmitted Data from Installations	Recompiles the Transmitted Data
MSD008P3	Transmitted Data from Installations	Sorts the Recompiled Data
MSD008P4	Transmitted Data from Installations	Checks the Data for Duplicate Records
MSD008P5	Installations Monthly TRANS File	Monthly Transaction Extract Program (executed at the Installations)
MSD008P6	Installations Monthly TAPE File	Monthly Transaction Extract from tape Program (executed at the Installations)

5.3.3 C.3 REPORT PROGRAMS

<u>Program</u>	<u>Input</u>	<u>Function</u>
RPT110P1	EQUIP	Manufacturer's Code XXXXX Suspense Report
RPT115P1	EQUIP	Manufacturer's Code ZZZZZ Suspense Report
RPT401P1	EQUIP	Records That Will Not Show Up on Report 400
RPT411P1	EQUIP	Records That Will Not Show Up on Report 410
RPT535P1	EQUIP	ECN Distribution Report
RPT538P1	EQUIP	Goddard Alpha ECN's
RPT541P1	EQUIP	Equipment File Bad ECN Report
RPT542P1	HIST	History File Bad ECN Report
RPT710P1- 3	TRANS	Redistribution Summary by Sending Installation
RPT711P1- 3	TRANS	Redistribution Summary by Receiving Installation
RPT720P1	TRANS	Redistribution Listing by Date Shipped
RPT740P1	DAILY EQUIP	Purchase Transaction Listing
RPT900P1	EQUIP	Cost Summary of Equipment (6 cost ranges)
RPT901P1	EQUIP	Cost Summary of Equipment (9 cost ranges)
RPT905P1	EQUIP	Status Code Summary of Equipment (Cost GT\$500)
RPT930P1	EQUIP	GSFC and KSC ADP Equipment (for IG)
RPT940P1	EQUIP	Extract Program for Reports 941, 942, 943
RPT941P1	EQUIP	Summary by Equipment Type Equipment
RPT942P1	EQUIP	Summary of Equipment by Installation
RPT943P1	EQUIP	Summary of Equipment by Installation (CNTR Held)
RPT971P1	EQUIP	Average Age of Equipment (by FSG, INST)
RPT972P1	EQUIP	Average Age of Equipment (by INST)
RPT973P1	EQUIP	Average Age of Equipment (by INST FSG 59 & 66)
RPT975P1	EQUIP	Equipment Manufactured before 1980
RPT984P1	EQUIP	Extract Program for Reports 985, 986, 987
RPT985P1	EQUIP	INST Federal Supply Group Matrix
RPT986P1	EQUIP	INST Federal Supply Group Matrix (FSG 1, 3, 4)
RPT987P1	EQUIP	Federal Supply Group Year Acquired Matrix Trans

5.3.4 C.4 TRANSACTION UPDATE PROGRAMS

<u>Program</u>	<u>Input</u>	<u>Output</u>	<u>Type</u>	<u>Function</u>
TRNCERP1	DAILY			Clears Error Report Files
TRNERRP1	DAILY			Error Report for Central Equipment File
TRNERRP2	DAILY			Error Report for Central Transfer File
TRNX00P1	DAILY	HIST	DEL	Final Disposition of Equipment by NPDMS
TRN000P0	DAILY			Passes Blank Variables to Driver Program
TRN000P1	DAILY			Central Update Driver Program
TRN000P2	DAILY			Delete Transaction Extract
TRN001P1	DAILY	EQUIP	ADD	Receipt by Purchase – NASA Funded
TRN002P1	DAILY	EQUIP	ADD	Receipt by Purchase – OGA Funded
TRN003P1	DAILY	EQUIP	ADD	Receipt by Purchase – Reported by Contractor
TRN004P1	DAILY TRANS	EQUIP	ADD	Receipt by Transfer – from NASA Installation
TRN005P1	DAILY	EQUIP	ADD	Receipt by Transfer – from OGA
TRN006P1	DAILY	EQUIP	ADD	Receipt by Transfer – from Contractor
TRN007P1	DAILY TRANS	EQUIP	ADD	Receipt by Transfer – Reported by Contractor
TRN008P1	DAILY	EQUIP	ADD	Receipt from Lease in
TRN009P1	DAILY	EQUIP	ADD	Receipt from Loan in
TRN010P1	DAILY	EQUIP	ADD	Receipt from Fabrication
TRN011P1	DAILY	EQUIP	ADD	Receipt from Assembly/Disassembly
TRN012P1	DAILY	EQUIP	ADD TRANS	Receipt from Found on Station
TRN013P1	DAILY	EQUIP	ADD	Receipt from Excess
TRN014P1	DAILY	EQUIP	ADD	Receipt from Retagging
TRN015P1	DAILY	EQUIP	ADD	Return of Record from History File
TRNX15P1	DAILY	EQUIP	ADD	Return of Record from History File
TRN016P1	DAILY	EQUIP	ADD	Transfer of Real to Personal

TRN017P1	DAILY	EQUIP	ADD	Property Receipt from Non-Government Source
TRN018P1	DAILY	EQUIP	ADD	Receipt from Not Previously Meeting Criteria for Retag
TRN019P1	DAILY	EQUIP	ADD	Reinstating Items Previously Surveyed
TRN020P1	DAILY	EQUIP	ADD	Receipt from Borrow in
TRN025P1	DAILY	EQUIP	CHG	Cost Change
TRN026P1	DAILY	EQUIP	CHG	Custodian Account Number Change
TRN027P1	DAILY	EQUIP	CHG	Date Available Change
TRN028P1	DAILY	EQUIP	CHG	Date/Loan/Lease/Borrow Out Due Change
TRN029P1	DAILY	EQUIP	CHG	Equipment Location Change
TRN030P1	DAILY	EQUIP	CHG	Status Code Change
TRN031P1	DAILY	EQUIP	CHG	User Number Change
TRN032P1	DAILY	EQUIP	CHG	Inventory Change
TRN033P1	DAILY	EQUIP	CHG	Inventory Change
			TRANS	
TRN034P1	DAILY	EQUIP	CHG	Inventory Change
TRN035P1	DAILY	EQUIP	CHG	KSC Financial Reconciliation
TRN038P1	DAILY	EQUIP	CHG	Borrowed Out
TRN039P1	DAILY	EQUIP	CHG	Borrowed Out Returned
TRN040P1	DAILY	EQUIP	CHG	Loan/Lease Out
TRN041P1	DAILY	EQUIP	CHG	Loan/Lease Out Returned
TRN042P1	DAILY	EQUIP	CHG	Loan Pool Out
TRN043P1	DAILY	EQUIP	CHG	Loan Pool Out Returned
TRN044P1	DAILY	EQUIP	CHG	Storage In
TRN045P1	DAILY	EQUIP	CHG	Storage In Returned
TRN046P1	DAILY	EQUIP	CHG	Cap/Sens Code and NSN Change
TRN050P1	DAILY	EQUIP	CHG	Freeze Number Assignment
TRN051P1	DAILY	EQUIP	CHG	Freeze Number Removal
TRN052P1	DAILY	EQUIP	CHG	Excess Equipment Turn In by Custodian
TRN053P1	DAILY	EQUIP	CHG	Excess Equipment Turn In by Contractor
TRN054P1	DAILY	EQUIP	CHG	Calibration Update
TRN055P1	DAILY	EQUIP	CHG	Inventory Update
TRN056P1	DAILY	EQUIP	CHG	Repair Update
TRN057P1	DAILY	EQUIP	CHG	Repair-In Update
			TRANS	
TRN060P1	DAILY	EQUIP	CHG	NASA Held Equipment Record Data Change
TRNX60P1	DAILY	EQUIP	CHG	Record Date Change by NPDMS

TRN061P1	DAILY	EQUIP	CHG	CONTR Held Equipment Record Data Change
TRN062P1	DAILY	EQUIP	CHG	Global Transaction Update 1
TRN062P2	DAILY	EQUIP	CHG	Global Transaction Update 2
TRN062P3	DAILY	EQUIP	CHG	Global Transaction Update 3
TRN063P1	DAILY	EQUIP	CHG	Reverse Add
TRN065P1	DAILY	HIST TRANS	DEL	Transfer to Another NASA Installation
TRNX65P1	DAILY	EQUIP	DEL	Transfer to Another NASA Installation
TRN066P1	DAILY	HIST	DEL	Transfer to Another Government Agency by NPDs
TRN067P1	DAILY	HIST TRANS	DEL	Transfer of GFE to Contractor
TRN068P1	DAILY	HIST TRANS	DEL	Transfer of GFE by Contractor
TRN069P1	DAILY	HIST	DEL	Lease In Returned
TRN070P1	DAILY	HIST	DEL	Loan In Returned
TRN071P1	DAILY	HIST	DEL	Survey (Missing Equipment)
TRN072P1	DAILY	HIST	DEL	Decontrol (Removal of Tag)
TRN073P1	DAILY	HIST	DEL	Delete Resulting from Assembly/Disassembly
TRN074P1	DAILY	HIST	DEL	Lost Tag
TRN075P1	DAILY	HIST	DEL	Borrow In – Returned
TRN080P1	DAILY	HIST	DEL	Disposal of NASA Held Equip by Custodian
TRN081P1	DAILY	HIST	DEL	Disposal of NASA Held Equipment by EVS Coordinator
TRN082P1	DAILY	HIST	DEL	Disposal of CONTR Held Equip
TRN083P1	DAILY	HIST	DEL	Disposal of CONTR Held Equip by EVS Coordinator
TRN084P1	DAILY	HIST	DEL	Removal of Equipment from EVS Reported by CONTR
TRN085P1	DAILY	HIST	DEL	Delete Resulting from Trade-In
TRN086P1	DAILY	HIST	DEL	Transfer to Real Property
TRNX90P1	DAILY	EQUIP	CHG	Equipment Accessed from NEMS to NPDMS

5.3.5 C.5 ADHOC PROGRAMS FOR HEADQUARTERS ONLY

<u>Program</u>	<u>Input</u>	<u>Output</u>	<u>Function</u>
ADHOCENT	EQUIP		Central driver Adhoc program/Welcome Screen
ADH920P1	EQUIP	DISPLAY	Display Equipment file by ECN
ADH930P1	EQUIP		Display Equipment file by Field/Find Selection
ADH930P2	EQUIP		Display Equipment file by Field/Where Selection
ADH930P3	EQUIP		Display Equipment file by Field/Sort Selection
ADH930P4	EQUIP		Display Equipment file by Field/Display Selection
ADH940P1	HIST	DISPLAY	Display History File by ECN
ADH950P1	HIST		Display History File by Field/Find Selection
ADH950P2	HIST		Display History File by Field/Where Selection
ADH950P3	HIST		Display History File by Field/Sort Selection
ADH950P4	HIST		Display History File by Field/Display Selection
ADH960P1	TRANS	DISPLAY	Display Transfer File by ECN
ADH970P1	TRANS		Display Transfer File by Field/Find Selection
ADH970P2	TRANS		Display Transfer File by Field/Where Selection
ADH970P3	TRANS		Display Transfer File by Field/Sort Selection
ADH970P4			Display Transfer File by Field/Display Selection
ADH990P1	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, No Sort
ADH991P1	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, Download to PC
ADH992P1	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, Record Count - *Number
ADH992P2	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, Record Count - *Counter

ADH993P1	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, One Sort
ADH993P2	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, One Sort-Summary Only
ADH994P1	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, Two Sorts
ADH994P2	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, Two Sorts- Summary Only
ADH995P1	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, Three Sorts
ADH995P2	EQUIP HIST TRANS	DISPLAY	Dynamic Adhoc, Three Sorts- Summary Only

5.4 APPENDIX D. TRANSACTION EXTRACT PROGRAMS

5.4.1 D.1 FAULTY END TRANSACTION LOGIN IN PROGRAM TRN000P1

There is a flaw in the End Transaction logic in program TRN000P1: ET data is only written after a good record. If the update process fails on the first record, or before any good records are found, then no ET data will be written. This flaw is not a problem for TRN000P1 itself, which simply starts updating from the beginning of the data file, which is correct. Rather, it is a potential problem for the external ETDATA step in job NEMCENT3 which reads the ET data to determine processing status. Ordinarily, NEMCENT3 finds that ET data is blank and then throws away last evening's TEMP data file and consolidated new data to create a new TEMP data file. If ET is blank because the previous run bombed on the first record, the net result of the rerun would be to throw away the first TEMP data file before it had been updated with a new set of data out of order.

The readily available expedient is to have the analyst always execute restarts of the update step by using job NEMCZRST to set the ZEKE variable to "RESTARTONLY" which forces NEMCENT3 to skip the consolidation.

To avoid this reliance on a manual procedure, TRN000P1 should be changed to write out a flag value prior to its read loop. TRN000P1 and program ETDATA should be changed to check for this flag value (along with any normal value) when retrieving the ET data.

5.4.2 D.2 RECOMMENDED CHANGE IN THE WAY NEMS ASSIGNS ERNS

The method used NEMS for restarting the ERN counter creates the confusion for NEMS and NEMSCENT when transactions are entered after the evening update (something that happens only rarely, but it does happen, and might happen far more often if we changed the ERN calculation method). The current process resets the ERN counter when the batch process finishes (typically, early in the evening). If any transactions are entered after the batch process, they will have the same ERNs as the first transactions of the morning. This is a big headache to the NEMS-Control personnel, who use the ERN as an index into their paper and fiche records.

We should change the ERN in the following way:

1. The batch job would not reset the ERN counter.

2. The ERN routine, that assigns ERNs to transactions would use the current system date, the ERN counter and a new file field LAST-ERN-DATE (THE DATE OF THE LAST ERN).
 - a. If current date is same as LAST-ERN-DATE, the routine would increment the ERN counter and return it to the calling routine.
 - b. ELSE, if current date is not the same as LAST-ERN-DATE, the routine would store the current date in LAST-ERN-DATE, set the ERN counter to '001' and return it to the calling routine.

This would have the effect of causing the ERN to start at))! For the first transaction of the day (even if it is done one second after midnight). If transactions were done in the evening after the NEMS batch process, the ERN numbers would simply pick up where they had left off prior to the batch job.

5.4.3 D.3 HELPFUL MODIFICATION TO PROGRAM MSD012P1

Though program modification MSD012P1 was modified extensively, it could use some more changes.

1. The program currently shows a list of all the transaction dates found in a single input file. This is very helpful, but even more helpful would be to show how many transactions were from that date. This would not be a trivial change.
2. Currently, the program is run twice, once for the HOLD data and once for the HOLDOUT data. The same headings are printed twice for the output of each run. It would minimize confusion if there were distinct titles for each run.

5.4.4 D.4 USE OF ZEBB FOR JOB FAILURES IN NEMCENT3 OR NEMCENT4

If some portion of NEMCENT3 or NEMCENT4 fails, other than a failure in the Update step, which can be handled simply by resubmitting the two jobs, it is currently necessary for the analyst to hand message the JCL and resubmit it.

This is a very rare problem but this solution is unacceptable. First, the jobs are complicated and difficult to edit on the fly. Especially complicated are the extensive use of Zeke control variables and Generation Date groups. Second, NASA wants to move to a state where certain jobs are only run from Zeke, not directly by analysts.

The NEMCENT3 and NEMCENT4 jobs were designed to be restarted from the beginning if there is a failure in the UPDATE step of NEMCENT4. They are also designed to be automatically restartable at many immediate steps by Zeke and the ZEBB Rerun Manager software. However, the use of NEMCENT under ZEBB has not been tested, and is currently turned off within Zeke.

Because the Zeke scheduler is monitoring these jobs, Zeke will notify Operations Personnel if there is a problem. Zeke will stop the job immediately if a step ends with an unexpected Condition Code, as it will if it were an abend. Information about valid condition codes is given in the Zeke documentation for each job. Zeke will maintain status information about the job for a period of time and, if the failure were activated, the operators could use the ZEBB rerun manager to restart the job if the problem is fixed promptly (i.e. that evening or the next morning). The existing Zeke operational instructions for these jobs specify circumstances where operators can correct and restart the jobs themselves (when use of ZEBB is approved).

It will be best to have the restarts controlled by the Zeke/ZEBB scheduler, since the aspects that make manual JCL editing so complicated are very straightforward for ZEBB. In fact, NEMCENT4 could be restarted by Zeke/ZEBB after an UPDATE step failure, except that such errors are usually not resolved until a day or two.

5.4.5 D.5 INVALID REFERENCE TO NEMS-TABLE FILE FROM NEMCENT

In NEMCENT the file local NEMS file NEMS-TABLE is referred to by NEMCENT program CDBSTEP4. This is an error, and should be replaced by an identical reference to the NEMCENT file NEMS-CENT_TABLE, which would allow the NEMS-TABLE file link to be eliminated from NEMCENT.

5.4.6 D.6 BUG IN NDM MONITOR PROCESS

There is a bug in the automatic process that monitors NDM processes and send e-mail and TSO messages to NEMCENT applications support staff about any process that fails. The bug can sometimes cause a message to be sent even though the transfer was successful, namely:

“NDM statistics for process NEMS???, number ##### are not available. Please correct the error and retry.”

No action is required for NDM transfers with the “NDM Statistics...” message.

This message is different from the text of messages about legitimate problems. Legitimate error messages vary with the problem, but include text such as "Copy Process Failed/"

5.4.7 D.7 OBSOLETE R740SEMO

The R740 report used to be used by the Logistics Management Office to check on the degree to which installations were taking advantage of available equipment to substitute for new purchases. The reports check each new purchase against a available items in the CDB and print a list of available items, if any.

At the current time, however, this report is not being used. In fact, it has not been printed in about a year, though we keep about 30 days of output in a GDG. Code JLG has indicated that we should remove this GDG and remove execution of this report from the overnight CDB update job (NEMCENT4). A new test version of this job, using test file names, is USER.JOBSCHED.CNTL(NEMCENT4), with this report commented out.

5.4.8 D.8 ELIMINATION OF PREALLOCATION OF NEMS.PROD.CENTRAL.DATA.TEMP

A problem was discovered during June, when the pre-allocated TEMP file ran out of space allocation after using all its secondary extents (under very unusual circumstances). It was decided to rewrite the JCL to eliminate the need for this allocation. The last two steps of NEMCENT4 were eliminated and the next-to-last step in NEMCENT3 was modified. The modifications are in USER.JOBSCHED.CNTL(NEMCENT3 and NEMCENT4). They have not been tested.

5.4.9 D.9 PROBLEMS HANDLING GLOBAL TRANSACTIONS

A change request was approved, but not yet implemented, to redo the program TRNP062P2 by adding a GET statement to improve the way it holds records during global updates. The current program holds all records read and only releases them when a record is found to update. This can, under certain circumstances, cause the global updated program to fail with a Natural error, causing the NEMCENT3 and NEMCENT4 UPDATE job to fail. In such a case, the NEMCENT3 and NEMCENT4 jobs can be immediately rerun, since the problem will probably not reoccur on the restart.

This problem can also cause NEMCENT4 to run for a very long time. However, since NEMCENT database was moved to its own disk drive, execution times have been fairly reasonable.

5.4.10 D.10 USE A ZEKE VARIABLE TO CONTROL EXECUTION OF ANNUAL REPORTS

A new Zeke prerequisites should be added for all of the NEMSCENT annual reports. A new Zeke variable, \$NEMCANNUAL, should have the value 'OK'. The variable would be manually set to 'OK' by the operator (or the NEMSCENT analyst) once the analyst has determined that all the previous year's transactions had been processed against the NEMS central data base. This requirement would replace a similar general requirement (that the operator consult the NEMSCENT analyst prior to execution) currently a part of the prerequisites for all these jobs; using a Zeke variable would be a simpler way of implementing the requirement. This proposal was discussed with the Production Scheduling staff, but the suggestion was not accepted at implementation.

5.5 APPENDIX E -- FORMAT OF INCOMING TRANSACTION FILES

The Pre-Process reports analyze the content of "HOLD" transaction files to ensure that the records are being processed in order. These reports display information from the transaction data files. These files can have several formats.

5.5.1 E.1 TYPES OF RECORDS

There are four kinds of records in a transaction file: header records, two kinds of Transaction records and Trailer records.

- A header record is the first record in a group and has the transmit date, the installation number and a 'H' in column 80.
- Individual transaction records have an ECN and an ERN, along with most of the fields of the Equipment (or History) record as they are after the transaction was executed at the installation.
- Global transaction records have an ERN, but no ERN, along with logical fields and change valued needed to implement the Global on the CDB copy of that installation's records.
- A Trailer record is the last record in a group and has the transmit date, installation number, a count of the number of records (including header and trainer) in the group of records, and a 'T' in column 80.

The transaction records are formatted as a set of nine 80 column records. In the case of JPL, these records are actually sent as nine separate records. For the other installations, each transaction is sent as a single long record (the nine images are concatenated).

5.5.2 E.2 TRANSACTION FILE – NORMAL FORMAT

The transaction data files usually have the following format:

Header record with Transmit Date Transaction records for a single date (ERN date) ... trailer record

Figure E-1 Transaction File - -Normal

This format represents the usual case where the local NEMS installation executes a number of transactions during the day and the NEMS update process executed in the evening to create a single transaction file with a header record, that day's transaction records and a trailer record.

The "transmit date in the header record represents the date when the extract was made. Usually the ERN date on the transactions is the same as the transmit date. However, if the file was generated after midnight (local time), the transmit date may be one day after the dates on the transaction records.

5.5.3 E.3 TRANSACTION FILES WITH MULTIPLE TRANSACTION DATES

In some cases, the transaction data from an installation can have several days of transactions in a single file, and look like the following:

Header record with Transmit Date
Transaction records with Transaction Date = Transmit date
...
Transaction records with Transaction Date = Transmit date - 1
...
Transaction records with Transaction Date = Transmit date - 2
...
trailer record

Figure E-2 Transaction File – Multiple Transaction Dates

This can happen when:

- a. Transactions were entered over a weekend and not transmitted to the NEMS-CDB until Monday evening. This occurs almost every weekend, especially at the end of the Fiscal Year.
- b. If the local installation has processing problems that delays NEMS-CDB batch processing but allows on-line data entry. This happens fairly often, about once a month, especially in conjunction with new releases of NEMS or system support software.
- c. Additional transactions are entered in the evening, after the NEMS batch processing, so that the next day's transmission include that days transactions plus the transactions from the previous evening. This is a rare occurrence, but when it happens it can be confusing, since the

ERNs of the evening records are duplicates of the first records ERNs. The duplications result from the fact that the ERN sequence number is reset to 1 whenever the installation's NEMS batch process runs in the evening. So transactions entered in the evening have the same set of ERNs as the first transactions entered earlier in the day.

Cases 'a' and 'b' pose no processing problems because the update process sorts the records into the correct order. Case 'c' poses a slight risk. The update process only duplicates records that have the same ERN and the same Equipment Control Number (ECN). It is plausible, although very unlikely, that a legitimate transaction record could be deleted because the evening record had the same ERN/ECN as a transaction created in the morning. To avoid such a possibility, it is best to do the CDB update with the morning and evening records on separate days. Of course, that is what would normally happen, unless there was some other problem that delayed the first day's input into the NEMS-CDB.

5.5.4 E.4 TRANSACTION FILES WITH MULTIPLE DATES

Header records with Transmit Date 1 Transaction records with Transaction date = Transmit date ... trailer record header record with Transmit Date 2 Transaction records with Transaction date = Transmit date ... trailer record ...
--

Figure E-3 Transaction File-Multiple Transmit Dates

Such a file would not be created as a result of normal NEMS processing. It generally happens only as a result of manipulation by local NEMS support staff dealing with unusual circumstances such as a processing problem that prevented successful transmission of their NEMS transactions. In addition, JPL's current process has a manual step in it that can sometimes lead to merged files.

While data rarely comes this way directly from the installations, it sometimes happens as a result of processing problems, an installation will send several separate files. The NEMCENT1 and NEMCJPL jobs will merge these files into a single file formatted as Figure E-3.

For instance, if JSC transmitted two files, there would be the following files in the system prior to running NEMCENT1:

NEMS.PROD.NDN.JSC	GDG root "file"
NEMS.PROD.NDM.JSC.G0001V00	Dummy file with one blank
NEMS.PROD.NDM.JSC.G0002V00	1 st file transmitted from JSC
NEMS.PROD.NDM.JSC.G0003V00	2 nd file transmitted from JSC
NEMS.PROD.NDM.JSC.HOLD	GDG root "file"
NEMS.PROD.NDM.JSC.HOLD.G0001V00	Dummy file with one blank
NEMS.PROD.NDM.JSC.HOLDOUT	GDG root "file"

After running NEMCENT1 the two JSC files (G0002V00 and G0003V00) would be merged into a single HOLD.G0002V00 file:

NEMS.PROD.NDN.JSC	GDG root "file"
NEMS.PROD.NDM.JSC.G0001V00	Dummy file with one blank
NEMS.PROD.NDM.JSC.HOLD	GDG root "file"
NEMS.PROD.NDM.JSC.HOLD.G0001V00	Dummy file with one blank
NEMS.PROD.NDM.JSC.HOLD.G000V200	Merged data ready for processing
NEMS.PROD.NDM.JSC.HOLDOUT	GDG root "file"

Since all the data in a particular HOLD GDG is read together for update processing, this set of data can be located in one file or spread over several files (G0001V00, G0002V00, G0003V00, ETC.) without affecting the process.

The Dummy files are present to allow the jobs to work properly even when there is no data available from the installation.

In the normal case, there is only one physical file (G0002V00 and only one header record/Trailer record pair). In some cases there will be several sets of data.

5.5.5 E.5 TRANSACTION FILES WITH MULTIPLE TRANSMIT AND TRANSACTION DATES

Combination files are possible with multiple transmit dates and multiple transactions dates within some of the sets of records, looking like the following:

Header record with Transmit Date 1
Transaction records with Transaction Date = Transmit date
...
Transaction records with Transaction Date = Transmit date - 1
...
trailer record

Header record with Transmit Date 2
Transaction records
...
trailer record
...

Figure E-4 Transaction file – Multiple Transmit & Transaction Dates