

Chapter 4

DATA TRANSFER AND RETRIEVAL

Methods of Data Transfer

This chapter discusses the principal data transfer methods districts use to send data files (reporting formats) to NWRDC and to retrieve edit reports and error files. The chapter is divided into the following major topics:

- TYMNET/RJE Data Transfer
- NWRDC Resident Files
- Data Transfer Test for each District

TYMNET/RJE Data Transfer

This data transfer and retrieval methodology makes use of a FIRN communication tool called Network Job Entry/Remote Job Entry (NJE/RJE). This facility allows a batch job to enter the network and be routed to the NWRDC. Essentially, RJE transmission districts make a copy of their data, build a batch job around the copy (by inserting job control statements in front of the copy, and behind it), and submit the job to the network. The batch job then executes to create the desired disk file at NWRDC.

The job control language statements (JCL) inserted in front of the data directs the batch job to execute at NWRDC, create a disk file, and copy the data to the file. The actual control statements used will depend on the local computer. The specific JCL that should be attached to the data will be found in Appendix F for the following 3 types of sites:

PNET nodes (DOS/VSE with POWER version 2) and RJE emulation sites connected to Lee or to the Northeast Florida Education Consortium (NEFEC),

RJE emulation for sites that are not connected to Lee or NEFEC, and

JES2 nodes (Dade, Orange, etc.).

Transmission of files to NWRDC using RJE is a six step process. This process is used to transmit both original data files and batch update correction files to NWRDC. Apply the following steps to each file transmitted:

1. **Segment large files into multiple transmission units.** Two hours has been found to be an acceptable amount of time to have a transfer active on an RJE initiator as well as an acceptable amount of time to have data retransmitted if some type of failure should occur.

Should the transfer time needed to transmit your file exceed two hours, consideration must be given to segmenting the file into smaller files and transferring the smaller files in different jobs. For example, if the Student Course Schedule file is larger than 50,000 records, segment the file into transmission units of no more than 50,000 records. This is vital to prevent the loss of very large quantities of data should the transfer job abnormally terminate.

2. **Preprocess formats that are larger than 80 bytes into 80 byte records.** Batch jobs can be transmitted through the network only as 80 byte records. However, some of the records are 160 characters long. Before a file with 160 byte records can be transmitted, the file should be run through a utility (FIRNU001) that will transform it into multiple 80 byte records. The source code for FIRNU001 is stored at NWRDC on data set DPS.DISTRICT.SOURCE.Yyyyy (yyyy = current reporting year). It may be obtained in the same way as the edit programs (see Chapter 3). (See Appendix I for an explanation of the use of FIRNU001.) First compile and execute FIRNU001 against the records, then save the output file produced. (If a file has to be segmented as discussed in step 1, each segment will need to be preprocessed separately.) It is the output of FIRNU001 that is transmitted.

NOTE: Another utility program, FIRNU002, will then be used to reformat the file to its original length and blocking once it arrives at NWRDC. This reconstruction has been automated, provided the RJE160RL procedure discussed in step 3 is used.

3. **Submit one of the following procedures for execution at NWRDC** using the JCL and JES2 example in Appendix F that is appropriate for the district:

RJE160RL - for the reporting formats larger than 80 bytes, or

RJEXMIT - for any of the other reporting formats.

Files may only be transmitted one at a time. One of the above procedures needs to execute for each file to be transmitted. If the file was segmented into multiple transmission units in step 1, submit one execution of RJE160RL, or RJEXMIT for each transmission unit. A special naming convention is used in transmitting segmented files, as explained in Appendix F.

4. **Verify that the transmission was successful.** This can be done by checking the print output that will be routed back to the district. Successful file transfer is indicated by zero condition codes and a statement in system messages that the data set has been catalogued. An example of the print output is provided in Appendix F.
5. **Run a procedure at NWRDC to merge the transmission units into a single file** (after they are resident at NWRDC) if the file was segmented into multiple transmission units in step 1. Appendix F explains how this is done.

6. **Execute a procedure at NWRDC named XMITFINI** after a file has been transmitted successfully, or after all transmission units of a file have been transmitted and the merging of these units has been successful. This creates the indicator file used to notify EDS that a given file has been transmitted completely and is ready for processing. Appendix H explains how to execute XMITFINI.

Edit Report/File Retrieval

To retrieve edit reports and error files from NWRDC, the procedures discussed on the previous pages is followed in reverse (once for each file and report to be retrieved), as follows:

1. **Retrieve error record files.** Using the JCL and JES2 example in Appendix F that is appropriate for the district, execute one of the following procedures at NWRDC:

NWRRJE80 - for retrieving error record files larger than 80 bytes, or

NWRRJE - for retrieving all other error record files and all edit report files.

Upon the successful execution of these procedures, the edit reports will be available for printing in the local computer's PRINT queue.

2. **Transfer error record files.** The above procedures will transmit the error record files to the local computer's PUNCH queue. If these files are to be used for additional processing (i.e., correcting errors for retransmission to NWRDC as batch updates), they must be transferred from the PUNCH queue to disk.
3. **Reassemble error files into original record length.** If the larger than 80 byte error files are to be used for additional processing, FIRNU002 must be used to reassemble them in their original record lengths. See Appendix I for instructions on the use of FIRNU002. FIRNU002 can be obtained from data set DPS.DISTRICT.SOURCE.Yyyyy (yyyy = current reporting year) at NWRDC.

Common RJE Errors and Resolution

The following are typical errors encountered when executing a transmission using RJE and guidelines for resolving them.

1. "No ports available."
 - a. Wait a few minutes.
 - b. Resubmit the job.
 - c. Notify NWRDC if still unavailable.

2. Unable to initiate session with NWR JES2 or failed logon.
 - a. Be certain that both sites are active.
 - b. Verify that the line(s) are active.
 - c. Try again.

TSO/E Interactive Data Transmission Facility

The TRANSMIT/RECEIVE commands in TSO allow data to be transmitted during an interactive session and received on another system through an interactive session.

The TRANSMIT command will transmit sequential or partitioned data sets (residing on direct access storage) of F, FB, FBS, V, VB, VBS or U format. It does not support data sets with keys, i.e., ISAM or VSAM. Transmission of a PDS as a sequential data set can be forced by using the SEQUENTIAL operand. This method however, does not preserve the directory information. If directory information is to be maintained, unload the PDS with IEBCOPY, transmit the data set, and have the receiver reload with IEBCOPY.

The RECEIVE command is used to retrieve transmitted files and restore them to their original format. Generally, RECEIVE cannot reformat data sets. The record format of the file received must be the same as that transmitted. The record length must be equal to that transmitted for fixed length records and greater than or equal to that transmitted for variable length records. The blocksize may be any valid blocksize. You can choose to accept the default data set name and space parameters or to override any of the above.

Transmission of data files (reporting formats) to NWRDC using TSO/E is a three step process. Each step must be performed for each file transferred as follows:

1. **Execute TSO/E Commands** using statements similar to those in Appendix G.
2. **Verify that the transmission was successful** as described in Appendix G.
3. **Execute a procedure at NWRDC named XMITFINI** after a file has been successfully transmitted. This creates the indicator file used to notify the System and EDS that a given file has been completely transmitted and is ready for edit processing. Appendix H explains how to execute XMITFINI.

The procedure described above is used to transmit both original data files and batch update correction files to NWRDC.

To retrieve edit reports and error files from NWRDC, this procedure is followed in reverse (once for each file and report to be retrieved), by using the same commands but by being signed on to NWRDC for transmission instead of the local computer.

NWRDC Resident Files

For those districts whose data reside at NWRDC, preparing data for the State edit programs requires a two-step process. Each step must be performed for each file transferred as follows:

1. **Prepare district's data.** Copy data to a data set with the appropriate characteristics. Use the reporting format information in Appendix M. Use the following:

```
DSN=DPSTT.GG.FFFFFFF.YNNNNS,  
DISP=(NEW,CATLG,DELETE),  
DCB=(FORMAT=FB,LRECL=1recl,BLKSIZE=blksize),  
UNIT=SYSDA,  
SPACE=(TRK,(X,5),RLSE)
```

where TT is your district number prefixed by "DPS"
GG is = GQ for Student = GU for Staff or is = JU for WDIS reporting formats
FFFFFF,lrecl,blksize are defined in Appendix M
YNNNN is the Fiscal or School Year prefixed by "Y", and
S is the number of the Survey Period being submitted.

In SPACE = '(TRK,(X,5),RLSE)', X is the number of records submitted divided by the number of records per track (see Appendix M). Round the final result up to the next whole number.

2. **Execute a procedure at NWRDC named XMITFINI** after a file has been transmitted successfully. This creates the indicator file used to notify the system and EDS that a given file has been completely transmitted and is ready for edit processing. Appendix H explains how to execute XMITFINI.

The procedure described above is used to prepare both original data files and batch update correction files for NWRDC.

Edit reports and error files from NWRDC may be accessed directly or may be renamed according to local standards.

Data Transfer Test for each District

This is a discussion of the actions to be taken by districts in order to test their network connection prior to the data submission date. It is important that every district submitting data participate in this test. Approximately five weeks prior to due date for a survey, each district should do the following:

1. **Prepare a test file** having a record length of 160 characters and containing 100 records. RJE districts should remember that the file must be preprocessed using FIRNU001.

2. **Transmit the data** following the instructions in this chapter to transmit Student Demographic data that are pertinent to your district.
*** Omit the step in which XMITFINI is executed. ***
3. **Contact the EDS Contact Person** to verify that it is catalogued at NWRDC and complete.
4. **Retrieve the transmitted file** using the instructions in this chapter for retrieving error files. RJE districts will need to reconstruct the 80 character images into 160 character format.
5. **Verify** that the file you received is identical to the file you originally transmitted.