H292T Print File Transfer (PFX™)

for Bull GCOS8 Systems

Release 3.0.2

Software Reference Manual

Revision Record

Revision	Description
01 (02/1989)	Manual released to correspond with H292T release 1.0.
02 (03/1991)	Manual updated. JCLMODE and RMAXL added to PFX control parameters. Installation procedure expanded. BFX820 error codes supplemented. Other minor editorial and technical changes were also made.
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Preface

This manual describes the user interface to Network Executive Software's (NetEx Software) H292T Print File Transfer (PFX™) utility. PFX is an extension of NetEx Software's Bulk File Transfer (BFX™) utility.

BFX and PFX are used in conjunction with NetEx Software's NETwork Executive (NETEX®) family of products.

This document contains the following sections:

- "Introduction" on page 1 describes PFX and currently supported configurations.

- "Initiating PFX" on page 3 introduces the control statements and parameters that are used on the transmitting host.

- "Installation" on page 9 describes the installation of PFX and the configuration file which must be built on the transmitting Bull host running GCOS8.

- "Operator Interface" on page 17 describes the operator interface for PFX.

- "Internal Operation" on page 23 describes the internal operation of PFX. Understanding this section helps in understanding the logical process of PFX but is not required for proper operation.

- "Technical Data" on page 27 describes the protocol used in framing PFX data images.

- "Appendix A, PFX Messages" on page 31 lists Bull GCOS8 PFX Error Messages.

- "Appendix B, Abort and Error Codes" on page 43 list abort and error codes.

Reference Material

The following manuals contain related information.

Number	Title and Description
man-cnet-conf-mgr	*"C" Configuration Manager and NetEx Alternate Path Retry (APR) User Guide*
460280	*NCT Loader Software Reference Manual*
460580	*NETEX Application Programmer's Interface Software Reference Manual*

Other vendor's manuals are listed below.

From Bull:

Number	Title and Description
DH26	System Output Reference Manual

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The diagnostic tools and programs described in this manual are **not** part of the products described.

Notice to the Customer

The installation information supplied in this document is intended for use by experienced System Programmers.

Document Conventions

The following notational conventions are used in this document.

Format	Description
`displayed information`	Information displayed on a terminal (or printed) is shown in `this font`.
`user entry`	*`This font`* is used to indicate the information to be entered by the user.
UPPERCASE	The exact form of a keyword that is not case-sensitive or is issued in uppercase.
MIXedcase	The exact form of a keyword that is not case-sensitive or is issued in uppercase, with the minimum spelling shown in uppercase.
bold	The exact form of a keyword that is case-sensitive and all or part of it must be issued in lowercase.
lowercase	A user-supplied name or string.
value	Underlined parameters or options are defaults.
<label>	The label of a key appearing on a keyboard. If "label" is in uppercase, it matches the label on the key (for example: <ENTER>). If "label" is in lowercase, it describes the label on the key (for example: <up-arrow>).
<key1><key2>	Two keys to be pressed simultaneously.
No delimiter	Required keyword/parameter.

Glossary

ASCII: Acronym for American National Standard Code for Information Interchange.

buffer: A contiguous block of memory allocated for temporary storage of information in performing I/O operations. Data is saved in a predetermined format. Data may be written into or read from the buffers.

Configuration Manager: A utility that parses a text NCT file into a PAM file.

header: A collection of control information transmitted at the beginning of a message, segment, datagram, packet, or block of data.

host: A data processing system that is connected to the network and with which devices on the network communicate. In the context of Internet Protocol (IP), a host is any addressable node on the network; an IP router has more than one host address.

Internet Protocol (IP): A protocol suite operating within the Internet as defined by the *Requests For Comment* (RFC). This may also refer to the network layer (level 3) of this protocol stack (the layer concerned with routing datagrams from network to network).

ISO: Acronym for International Standards Organization.

Network Configuration Table (NCT): An internal data structure that is used by the NETEX configuration manager program to store all the information describing the network.

NETwork EXecutive (NetEx): A family of software designed to enable two or more application programs on heterogeneous host systems to communicate. NetEx is tailored to each supported operating system, but can communicate with any other supported NetEx, regardless of operating system. NetEx resides on the host.

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Open Systems Interconnection (OSI): A seven-layer protocol stack defining a model for communications among components (computers, devices, people, and et cetera) of a distributed network. OSI was defined by the ISO.

path: A route that can reach a specific host or group of devices.

TCP/IP: An acronym for Transmission Control Protocol/Internet Protocol. These communication protocols provide the mechanism for inter-network communications, especially on the Internet. The protocols are hardware-independent. They are described and updated through *Requests For Comment* (RFC). IP corresponds to the OSI network layer 3, TCP to layers 4 and 5.

Contents

Introduction

General

The NetEx Software's Print File Transfer (PFX™) is a utility software package that allows users of NetEx Software's NETwork EXecutive (NETEX®) communications software to transfer print files between similar and dissimilar types of processors on supported networks. PFX contains the facilities to select the transfer files and to make the file format conversions necessary for proper printing on the receiving host. Once introduced to the system, PFX operates completely independent of any user.

PFX allows print transfers between mainframe operating systems from different manufacturers. NETEX software handles all communication considerations between different mainframes.

The PFX utility is actually made up of two separate units: the transfer utility (identified as Hxx2T) and the receiver utility (identified as Hxx2R). This manual describes the Bull GCOS8 H292T PFX Transfer Utility.

PFX Advantages

PFX provides the following advantages for its host network:

Improved Printer Utilization: PFX allows printers to be concentrated on one host. In this way, multiple hosts have direct access to a group of printers. This results in higher printer utilization rates and may decrease the number of printers needed.

High-Cost Printer Justification: PFX may justify the cost a very high speed printer (for example, a laser printer) when it serves more than one host. Multiple hosts ensure sufficient printing is available to keep the device busy.

Specialty Printer Justification: A printer with special capabilities can be shared by multiple hosts. PFX removes special operational problems in getting a print file from the point of origin to a host that can do the printing.

Low Operations Costs: PFX allows many printers to be concentrated in one area, so the operator's time can be used more efficiently.

Increased Network Accessibility   Print files can be directed to any destination that can be reached by the secondary host. This makes the entire network of the receiving host available to the originating host.

Print Load Balancing   PFX can be used to balance the printing load. An operator can redirect output files for transmission to other hosts when an excessive load develops.

Printer Resource Backup   A printer on one host can serve as a backup resource for a printer on another host. If problems develop with a printer, the operator can move the print to the backup device.

Description of Operation

PFX uses a transfer utility and a receiver utility to accomplish print file transfers. Under GCOS8, the transfer utility obtains output files from specified SYSOUT station-ids in the transfer machine, formats the files, and transfers them to the receiving host. Any print files to be transferred by PFX must be directed to one of the station-ids defined to a program. The receiver utility takes in the formatted files and places them on the receiving host's print spool.

An operator can communicate with PFX to determine the status of the file transfers, to stop PFX after any or all files have been transmitted, or to request transmission of files for a particular station-ids. Communication with PFX is done through the host where the transfer utility resides. Operator commands affect only those station-ids that are currently being serviced by the transfer utility.

A one-to-one correspondence must exist between copies of PFX transfer and receiver utilities. For example, if two separate PFX transfer utilities send their print files to a single spool class, then two copies of the PFX receiver utility must exist on the receiving host for proper PFX operation. This matching principle allows the control of one transfer receiver combination to operate totally independent of any other file transfers.

In most situations one copy of the transfer program is adequate for the GCOS8 systems. Multiple copies of the PFX transfer program are needed in the following cases:

- When transfers are needed for multiple hosts.

- When volume is too high for a single copy of to provide the desired throughput.

- When a new version of PFX is being tested, or to provide faster service for a particular class of output.

Initiating PFX

When the PFX transmitter (PFXTI) is started, it optionally sends the PFX receiver job to the remote host. Figure 1 and Figure 2 are sample jobs; explanations follow the figures. This example is for a Bull GCOS8 system sending print to a host running the IBM z/OS operating system. The images that are placed into local and remote job files and the configuration file depend on the GCOS8 and IBM z/OS configurations. The configuration file is described in "Step 3. Group Configuration File" on page 11. The remote job is described in the MVS PFX receiver manual.

PFX Job Examples

The examples use automatic job submission, which assumes that BFXJS is running on the remote system. The local NETEX host name in this example is GCOS8; the remote host name is MVSSYS.

Note: The following directive indicates that the job file (JF) is to be sent to the NETEX host MVSSYS, and that the print transfer process is to be known by the NETEX offer name PFX.

```
$$SELECT(/ident) <accounting information>
$       SELECT  BFX/PFX3.x/JCL/PFX.BCD
$       PRMFL   JF,R,S,BFX/PFX3.x/JCL/JF-H212R
$       PRMFL   CF,Q,S,BFX/PFX3.x/JCL/CF-H212R
$       NOTE    IN THE FOLLOWING DIRECTIVE, REPLACE
$       NOTE    THE NAME "MVSSSYS" WITH THE HOST NAME OF THE REMOTE SYSTEM
$       NOTE    AND THE NAME "PFX" WITH THE DESIRED OFFER NAME.
SEND TO MVSSSYS ID = PFX
```

Note: The SELECT file PFX.BCD contains the following media-2 text (BCD card image) records.

```
$       program pfxti
$       privity
$       limits  999,70k
$       prmfl   **,r,r,bfx/pfx3.x/run/hstar
$       prmfl   pm,w/c,r,bfx/pfx3.x/run/pfxti.ab
```

The file JF-H212R in this example contains the following IBM MVS JCL records. When started, this job will connect to host GCOS8 with the connect name PFX.

```
//jobname JOB (account),'PFXRCV',CLASS=J,MSGCLASS=X
//JOBPARM LINECT=099
//RESPOND EXEC PGM=PFXTR,
// PARM='RECEIVE FROM=GCOS8, ID=PFX, TIME'
//STEPLIB  DD DSN=PFX.PROC.PFXLOAD,DISP=SHR
//SYSPRINT DD SYSOUT=X
//
```

Note: The file CF-H212R in this example contains the following records.

```
STATION = DE
02ONEDD
//ONEDD DD SYSOUT=Z,DCB=(RECFM=FBA,LRECL=133,BLKSIZ=2660),
//          OUTPUT=LINEPTR
STATION = DF
02TWODD
//TWODD DD SYSOUT=(X,$SNB$),DCB=(RECFM=FBA,LRECL=133,
//          BLKSIZE=2660),FCB=HYPR
```

The following description applies to Figure 1 on page 3:

- Local JCL defines the JCL file to be submitted on the GCOS8 system to initiate PFXTI. This JCL can be placed in a file under OPNSUTIL and invoked by issuing the SPAWN command from the system console, or it can be placed in a user's file to be initiated via a time sharing JRN command.

- Remote job file (file code JF) specifies a card image input file that contains a complete job to be run on the remote CPU. It is the site's responsibility to ensure that this data set contains all the valid JCL, JOB statements, passwords, and so on, to run on the remote CPU. When the PFXTI program is invoked and the automatic job submission is being used, this job data set is sent to the internal reader of the remote CPU.

- File Code CF specifies the group configuration file containing the definitions for the SYSOUT station-ids, print group names, and open-data images for PFX. This file is described in the installation section.

- A sample run is included on the release media on file BFX/PFX1.n/JCL/PFXTI.

Figure 2 on page 5 shows an example using a transfer between two GCOS8 systems. The local system host name is GCOSSYS1; the remote host name is GCSSYS. Assume that BFXJS is executing on the remote system.

Note: The SELECT file PFX.BCD is the same as that shown in Figure 1 on page 3.

```
$$SELECT(/ident)    <accounting information>
$       SELECT   BFX/PFX3.x/JCL/PFX.BCD
$       PRMFL    JF,R,S,BFX/PFX3.x/JCL/JF-H292R
$       PRMFL    CF,Q,S,BFX/PFX3.x/JCL/CF-H292R
$       NOTE     IN THE FOLLOWING DIRECTIVE, REPLACE
$       NOTE     THE NAME "GCSSYS" WITH THE HOST NAME OF THE REMOTE SYSTEM
$       NOTE     AND THE NAME "PFX2GCS" WITH THE DESIRED OFFER NAME
SEND TO GCSSYS ID = PFX2GCS
```

The file JF-H292R in this example contains the following records. When started, this job will connect to host GCOSSYS1, using the connect name PFX2GCS. Other parameters are as described in the H292R Print File Receiver reference manual

```
$       DUMMY    GENEW
$       IDENT
$       PROGRAM  PFXTR
$       LIMIT    999,45K
$       PRMFL    **,R,R,BFX/PFR1.0/RUN/HSTAR
$       PRMFL    PM,W,R,BFX/PFR1.PFR
RECEIVE FROM GCOSSYS1 ID=pfx2gcs -
   SPAWNJCL bfx/pfr_spwn -
   PATH = sys_prt/default
```

Note: The file CF-H292R in this example contains the following records:

```
*
* The first set consists of just a station identifier and the
* replacement of the $SNB$ string with the "snumb" of the job.
*
*
STATION = AA
00$SNB$
*
* The second set (station BB) sends data to "backdoor" sysout on the
* receiving system.
*
station = BB
01$SNB$
backdoor
```

Control Statements and Parameters

The file transfer is handled by a modified BFXTI module called PFXTI. When the transfer is initiated, PFXTI is called with its specified control parameters. (For more detail about BFXTI, refer to the *H291 Bulk File Transfer (BFX) for GCOS8 Software Reference Manual*.)

The PFXTI module uses the same control statements as BFXTI with a few exceptions. Several parameters should not be used because they do not apply to transporting print files. Note that PFX, as with BFX™, translates all input parameters to upper case. The use of uppercase in the table merely defines the minimum spelling of the keyword. Table 2 on page 6 lists the parameters for the H292T PFX transmitter. The paragraphs following the figure describe all the parameters in detail.

Table 2. Summary of PFX Control Parameters (Transfer)	
Parameters	**Description**
SEnd	Send a file.
BLock xxxxx	Size of block to send.
Id xxx	PFX application name.
JBlock xxx	Size of block during remote job transfer.
JCLMode	Character set for job submission.
JId xxx	Offered name of BFXJS job.
JOBFile xxx	Name of remote job input file to send.
MSglvl xxx	Severity of messages to be logged.
NOSUbmit	Manual submission of receiver job on remote host.
RMAxl	Maximum record length.
TO xxx	Destination host.
TIMEOFfer	Seconds to wait for a response to an soffer.
TIMEStamp/NOTimestamp	Print timestamp on messages.

Control Parameters

SEND (SE)   PFXTI always sends files; this statement may be included for readability.

BLOCK (BL)   This optional parameter specifies the maximum size (in words) of the buffers of data to be sent to the remote host. Normally this parameter will be specified as a fairly large value. The default is the NETEX default block size.

ID   This required parameter specifies a unique identifier (maximum 8 characters) for the connection between PFXTI and the destination receiver. PFXTI uses this string for the NETEX offer name; the destination job must use an identical string for its connect name.

JBLOCK (JB)   Use the default value. This optional parameter specifies the block size to use in exchanging the job file with the remote host. The default is 1024 words.

JCLMODE (JCLM)   This optional parameter specifies the character set for the job file to be sent to the remote host. The default value is BCD. The value ASCII indicates that the job file is stored as a media code 6 ASCII file (standard format).

JID (JI) Use the default value BFXJS. This optional parameter specifies the offer id of the BFXJS component on the remote host.

JOBFILE (JOBF)   This optional parameter is not used if NOSUBMIT is specified. Refer to the Job Submission section for more information.

MSGLVL (MS)This optional parameter specifies the level of messages. Use the default value "4" for file start/end messages. To see all messages, use a value of "0".

NOSUBMIT (NOSU)   The setting of this optional parameter depends on how the receiver job is to be started on the destination system. See "Job Submission" for an explanation.

RMAXL (RMA)   This optional parameter specifies the maximum record length in characters to be used for the transfer. The default for PFXTI is 168. Since most PFX receivers require that open-data images be 80 characters plus a flag character, the record length should not be set to a value less than 81.

TO   This parameter refers to the destination host name as defined in the NETEX network configuration. It is required if a job file is to be submitted to the remote host.

TIMEOFFER (TIMEOF)   This optional parameter specifies the maximum amount of time (in seconds) that PFXTI will wait for the PFX receiver job to be initiated on the remote host. If not specified, the default is 240 seconds.

TIMESTAMP/NOTIMESTAMP (TIMES/NOT)This optional parameter selects the printing of a timestamp on the PFX messages. The timestamp gives the time of day that the message was sent to the print file. The default is TIMESTAMP.

Example: GCOS8 Parameters

The following is an example of the parameters for the GCOS8 host.

```
SEND TO IBM01 ID PFX BLOCK 12000 MSGLVL 0
```

This parameter set instructs PFX to print all messages about each file transferred, and send to host IBM01, with a block size of 12000 bytes, offered as PFX.

Job Submission

There are two methods by which the PFX receiver job may be initiated on the host to receive the print files from the GCOS8·host: automatic job submission and manual job submission.

Automatic job submission is illustrated in the examples in Figure 1 on page 3 and Figure 2 on page 5. The PFX receiver job is prepared as a file on the transmitting host and sent as JOBFILE to the remote host's BFXJS program. (BFXJS is a component of BFX and has to be executing on the receiver host.) BFXJS receives the JOBFILE and submits it for scheduling on the remote host's operating system. When the started job initiates the PFX receiver, it connects to PFXTI and print transfer begins.

The manual submission method requires that the receiving job on the remote host be started manually, after PFXTI is started locally. PFXTI needs the additional parameter NOSUBMIT. No JOBFILE needs to be created.

For a more detailed description of job submission, see the *H291 BFX for GCOS8 Software Reference Manual*. For PFX, the program PFXTI is substituted for the BFXTI program and functions in the same manner.

Installation

This section describes the installation and maintenance of PFX. The following topics are discussed:

- Prerequisites
- Installation Overview
- Installation Procedures
- Updating PFX

This procedure assumes that the installation is being performed by a Bull systems administrator or programmer familiar with the Bull file system, JCL, and software necessary for installation.

Read all of this section before proceeding with the actual installation.

Prerequisites

The following are prerequisites to successful operation of H292T PFX:

- A Bull host processor running GCOS8 SR5.2.
- A current release of H297IP
- At least one other host with appropriate sets of NETEX and PFX software.
- If PFX is to be modified, PASCAL release PCS1.2 (from Bull).

Installation Overview

There are four separate tasks to be performed to make PFX usable on the Bull system.

1. Install the PFX receiver on the host to which the Bull PFX will send output.
2. Install the PFX transmitter H292T on the Bull system. Optionally install the transliteration structure.
3. Prepare the configuration file to be used by the transmitter to control output dispersal. Though the file resides on the Bull system, its contents are determined by the needs of the receiver system.
4. Start the PFX transfer job.

Installation Procedures

PFX is distributed in user save format. The base release contains an executable image of the PFX program, and various command procedures for building and running PFX.

All delivered files are subordinate to the catalog BFX/PFX3.x. That is, for release 3.0 they are in BFX/PFX3.0, for release 3.1 they are in BFX/PFX3.l, and so on.

Step 1. Install the PFX Receiver

Refer to the appropriate manual for the corresponding product.

Step 2. Install the PFX Transmitter

This step describes how to install the PFX transmitter. Start by downloading the product file into the file BFX/PFX3RELEASE file.

Step 2a. Restore the tape

A sample FILSYS JCL for restoring the tape is shown below:

```
$       IDENT accounting info.
$       FILSYS
$       PRIVITY
$       PRMFL   PR,R,S,BFX/PFX3RELEASE
USERID BFX
RESTORE BFX/PFX3.x
$       ENDJOB
```

Step 3. Group Configuration

The group configuration file contains a set of records for each station-id. It is allocated to PFX with the file code CF. The file format may be TSS ASCII or BCD. If BCD is used, it is translated by the Pascal library routines to lowercase ASCII. Note that the IBM MVS receiver (H212R) requires uppercase ASCII; in that case, the file must be created in the correct format. The data records should be in the following pattern.

```
* Begin first set of images:
STATION = xx
mmclassid
(record 1)
     .
     .
(record mm)
* END first set of images.
* Begin second set of images:
STATION = yy [ XLIT = aaaaaa ]
nnclassid
(record 1)
     .
     .
(record nn)
* End second set of images.
     .
     .
     .
```

xx and yy   These are GCOS8 station-ids. They may be any two non-blank characters except "00".

XLIT = aaaaaa   This statement defines data transliteration. See the "H292T PFX Implementation Notes" on page 26 section for details.

mm and nn   This a two-digit count of the number of open-data images associated with this print-group; the number of records to follow.

classid This is the print-class identifier used by the remote system.

(...)   This is a record (open-data image) to be passed to the remote system with each file.

Comment records begin with a "*" and may be interspersed anywhere. Since they are not processed in any way, they are not added to the count of the open-data images. Open-data image records may begin with anything but a "*" and must be less than 81 characters long.

In H292T, the string SNB has a particular meaning. When this string is found in an open or open-data image, it is replaced with the snumb of the job being transferred. The following examples shows that the snumb can be used as a job identifier on the receiving side. For IBM MVS (H212R), and possibly others, there are restrictions on the field length and allowable characters. To avoid conflict with these restrictions, all non-alphanumeric characters found in the snumb field (including any trailing blanks) are replaced with the character 0 (zero). Note that the SNB parameter must be in upper case ASCII.

The classid and open-data images are requirements set by the remote system where the actual printing is to occur. For information on what these should contain, refer to the PFX Receiver Utility manuals. The following are two examples of configuration files.

The first example (see Figure 3) shows sample parameters for the H292R PFX Receiver for GCOS8 system. This sample file is on the delivery media in file BFX/PFX3.x/JCL/CF-H292R.

```
*
* The first set consists of just a station identifier and the
* replacement of the $SNB$ string with the snumb of the job.
*
STATION = AA
00$SNB$
*
* The second set (station BB) sends data to "backdoor" sysout
* on the receiving system.
*
STATION = BB
01$SNB$
backdoor
```

Figure 3. Configuration File: Example 1

The second example (see Figure 4) shows parameters that might be used with an IBM MVS Receiver (H212R). This sample file is on the delivery tape in file BFX/PFX3.x/JCL/CF-H212R. Note that all of the open images are in upper case.

```
STATION = DE
020NEDD
//ONEDD DD SYSOUT=Z,DCB=(RECFM=FBA,LRECL=133,BLKSIZ=2660),
//        OUTPUT=LINEPTR
*
* output destined for station OF uses the II$SNB$II parameter
* to enable easier identification of output
*
STATION = DF
02TWODD
//TWODD DD SYSOUT=(X,$SNB$),DCB=(RECFM=FBA,LRECL=133,
//        BLKSIZE=2660),FCB=HYPR
```

Figure 4. Configuration File: Example 2

Note that these sample files are simply examples. The receiving system dictates the parameters and formats necessary for successful processing. The site must set up its own configuration file and the JCL (for example, $ PRMFL   CF,...) to process the desired configuration.

Step 4. Build PFX Spawn file

PFX is normally spawned from the system operator console. A sample JCL file is delivered in BFX/PFX33.x/JCL/PFXTI. This TSS ASCII file must be updated to include a $ PRMFL reference to the site's group configuration file, then copied to the OPNSUTIL userid, as explained in the following step. If the transliteration option is used (see "Step 5. Start PFX"), add a $ PRMFL statement for the file containing the transliteration tables, for example,

```
$ PRMFL    XT,r/c,r,BFX/XLIT/XLIT.H
```

Logon to a userid that has modify or create access to OPNSUTIL. To establish the GCOS8 spawn file, enter the following TSS Command:

```
CONV BFX/PFX3.x/JCL/PFXTI=OPNSUTIL/PFXTI:CARD,INCLUDE
```

Step 5. Start PFX

If the file OPNSUTIL/PFXTI was established in Step 2b, enter SPAWN PFXTI at the operator console. As PFX is a privileged job, an operator GRANT of Privity may be required.

If the file OPNSUTIL/PFXTI was not established, do a JRN of your own file containing PFXTI JCL.

To test PFX, direct output to the GCOS8 station code defined in the configuration file. PFX should then transfer output to the PFX Receiver.

On completion of "Step 5. Start PFX," all normal installation procedures are complete.

Note: If there are special transliteration considerations, go to "Step 6. Installation and Update of the Transliteration Option (Optional)." This step, if needed, should be done before running the PFXTI job.

Step 6. Installation and Update of the Transliteration Option (Optional)

Note: Only sites that have requirements for transliteration beyond those normally provided by NETEX need perform this step. For example, this would apply to sites that need different ASCII to EBCDIC transliteration tables for different print applications.

H292T PFX provides the capability to transliterate data before transmission via NETEX. Usage of this option is explained in "H292T PFX Implementation Notes" on page 26.

To begin the installation of this option, execute the CRUN:

```
BFX/PFX3.x/INSTALL/XLIT
```

If the directory does not exist, it is created, and files in the BFX/PFX3.x/XLIT directory are copied to the new directory. If the directory BFX/XLIT exists, the CRUN terminates with no further action and the installer should review files in the BFX/PFX3.x/XLIT directory versus those in the existing BFX/XLIT directory and make any needed updates.

Key files included in this directory are:

XLIT.H   The H* file containing the transliteration tables to be loaded by PFX (and BFX).

XLITSKEL   A sample GMAP skeleton to aid in defining new transliteration table source files.

UPDATE   A TSS CRUN file to ASM a transliteration source file and update the XLIT.H file.

The following are examples of various transliteration tables in use at customer sites.

ASCEBC   Source - ASCII to EBCDIC. This source file includes the character definitions for non-ASCII characters greater than 177 octal as defined by the GCOS8 U.ATOE table.

ATOFEB   Source - ASCII to "French EBCDIC".

ATOFILE   Source - ASCII to "French UPPERCASE EBCDIC"

Adding or Changing Transliteration Tables: To execute the BFX/XLIT/UPDATE CRUN, or to modify the source files, log into a time-sharing userid which has modify or create/write permissions to the BFX structure.

The UPDATE file contains the imbedded FMS path name BFX/XLIT for the structure containing the transliteration table H* file and all of the transliteration table source files. The H* file containing the tables is named XLIT.H.

Note: The same files and procedures are used by both H291 BFX and H292T PFX if the transliteration option is used for that product. (Exception: PFX does not use any 6-bit to 8-bit tables). Allocating the H* file with "write concurrent" access allows new tables to be added while a copy of PFXTI is in execution, but must be used with caution if copies of BFX are in execution, since the transliteration table is reloaded by BFX for each file to be transmitted (PFX loads the tables once during initialization).

The UPDATE crun is used to add transliteration table elements to the H* file. After updating a new or existing source file (see notes below), invoking the crun file (the file name is a required parameter) will do the following: first, the H* file is allocated using the time-sharing "get" command, requesting FMS "write concurrent" access. The source (GMAP) file is then assembled using the "asm" command, including options to generate a temporary single element H* file. This H* is then included in the production H* using the "LODL" command; the "LODL" command line includes a "+ List" option which results in a display of information about all of the elements in the file (including element size); then, the updated H* file is deallocated. Since the command line input parameter is used to identify the source file name and as the H* element name, this name is limited to 6 characters. Also, unless the crun file is changed, the source files must be included in the BFX/XLIT directory. As an example, the command string:

```
bfx/xlit/update ascebc
```

would assemble filee BFX/XLIT/ASCEBC, and add (or replace) the H* element named "ascebc" in the BFX/XLIT/XLIT.H file.

Notes on Transliteration Format: The source files may be modified using any text editor to change various characters or to create additional tables. As noted above, new file names are limited to 6 characters since the file name becomes the H* element name. The size of the element is also restricted, 8-bit to 8-bit tables must be either 64 or 128 words in length. To avoid problems, the delivered source files contain code to eliminate the two assembler generated "erlk" words; this code should be included in all new transliteration table source files. The file BFX/PFX3.x/XLIT/XLITSKEL shows the code that is included in the other source files.

Operator Interface

The operator interface is available after establishing a connection with the interface allows the operator to control PFX from a remote terminal. The operator commands may be issued by logging on to the DAC connect name PFXTI and entering the requests. The commands are detailed in this section.

To invoke the PFX operator interface, log on to PFXTI or other SNUMB being used to operate PFX. This may be done via a TSS command "JDAC PFXTI" or via a connect sequence such as "CN PFXTI." The exact procedure for a DNS connect sequence is site-dependent. If no connection is established, one of the following is true:

- PFX is not running.

- PFX has started but has not established a connection with the receiver.

- The operator interface for PFX is in use by another person.

- The operator interface for PFX has been disabled.

The connect will be answered by a message such as "welcome to pfx3.[x]," where x is the current version of H292T PFX. The normal output of the operator interface is dependent on the current PFX activity. Any messages that are generated by as described in "Appendix A, Messages" on page 31, will be displayed. This display continues until interrupted and resumes after processing of an input command.

To input a command, the operator must transmit a < break> or < interrupt>. The method of doing this is somewhat dependent on the type of terminal in use. The prompt returned in response to the interrupt is three question marks (???) and a < bell> or < beep>. Once PFX returns with a prompt, commands may be entered. Response to commands may take several seconds. PFX checks for outstanding operator messages infrequently so as not to interfere with normal PFX operation. Any of the commands, DONE, EXIT, LOGOFF, LOGOUT, or QUIT may be used to leave the operator interface.

HELP Command

The HELP command displays a list of the PFX operator commands and a brief description of their functions.

The HELP command has the format:

Command	Parameters
HELP ?	

HELP or ?   Either HELP or ? may be used for the command verb.

There are no parameters for the command.

HELP Command Results

If the operator responds to the PFX console request with HELP or ?, the following information is displayed.

```
        THE FOLLOWING COMMANDS ARE SUPPORTED BY PFX:

        DISPLAY OR D:        - DISPLAY CURRENT STATUS OF ALL STATION ID'S
        DISPLAY OR D <ID>:   - DISPLAY CURRENT STATUS OF SPECIFIED STATION ID
        DRAIN:               - STOP PFX WHEN ALL FILES TRANSFERRED
        DRAIN FILE:          - STOP AFTER CURRENT FILE TRANSFER
        EXIT OR DONE:        - LOG OFF OF OPERATOR INTERFACE
        HALT:                - DISABLE ALL STATION ID'S
        HALT <ID>:           - DISABLE SPECIFIED STATION 10
        KILL:                - ABORT PFX IMMEDIATELY
        KILL MEMORY:         - ABORT PFX IMMEDIATELY WITH A MEMORY DUMP
        START:               - ENABLE ALL STATION ID'S
        START <ID>:          - ENABLE SPECIFIED STATION ID
```

Figure 5. HELP Display

Note: The colons (:) and brackets ([ ]) in the display are separators; they are not part of the input command.

DISPLAY Command

The DISPLAY command displays the current status of PFX and of each station-id configured for PFX.

The DISPLAY command has the format:

Command	Parameters
DISPLAY D	[station-id]

DISPLAY or D   Either DISPLAY or D may be used for the command verb.

station-id   This optional parameter indicates the GCOS8 station-id to be displayed. If this parameter is omitted, all station-ids are displayed.

DISPLAY Command Results

The header displayed by this command indicates the status of PFX. The general format for the header lines and results is shown in Figure 6.

```
    Header line #1

    Header line #2 (optional)

ID          STATUS
----------  ------------------------------------------------
station-id  NORMAL
station-id  ACTIVE TRANSFERRING PRINT FILES FOR SNUMB sssss
station-id  HALTED BY THE OPERATOR
station-id  HALTED WHILE OBTAINING A RECORD
```

Figure 6. PFX DISPLAY Command

Header line #1 will be either:

```
    PFX IS CURRENTLY TRANSFERRING FILES
```

or,

```
    PFX IS WAITING FOR FILES TO TRANSFER
```

The first line listed above indicates that the print files are being transferred to the receiving host. The second line indicates that there are no print files queued to any active station-id. If a station-id has been HALTed, it is not active.

Header line #2 appears if is being DRAINED. This line is either:

```
    WILL STOP AT THE END OF ALL FILES
```

or,

```
    PFX WILL STOP THE END OF THE CURRENT FILE
```

The first of these lines indicates that terminates when the current file has been sent to the destination host. The second line indicates that PFX terminates when all of files queued to all of the active (non-HALTed) station-ids have been sent.

In the status field, NORMAL indicates transfer of print files for this station-id when it is its turn in the round-robin selection and print files are available. This status does not indicate if print is available. (The GCOS8 SYSOUT console operator commands or can be used to see if print is available.)

The status of ACTIVE TRANSFERRING PRINT FILES indicates that print is currently being transferred to the destination host for this station-id.

The status of HALTED BY THE OPERATOR indicates that print will not be transferred for this station-id because the operator requested it via a HALT 'station-id' request. To restart transferring this station-id, the START 'station-id' request should be entered.

The status of HALTED WHILE OBTAINING A RECORD indicates that print will not be transferred for this group because an error was encountered in the middle of a file. This is normally a fatal error. The print output for this job should be examined to find out why the error occurred. If the error occurred because of the print file itself, as opposed to a major problem in PFX or the operating system, the print file can be redirected to another station-id, purged, or redirected online and the remaining files sent on to their destination. To restart transfers for this station-id, the START 'station-id' request should be entered.

The standard output of a DISPLAY command might be:

```
      PFX IS CURRENTLY TRANSFERRING FILES


      ID              STATUS
      ----------      ----------------------------
      PF              NORMAL
      P2              ACTIVE TRANSFERRING PRINT FILES
      XA              HALTED BY THE OPERATOR
```

Figure 7. Standard Output of DISPLAY Command

DRAIN Command

The DRAIN command tells PFX to terminate the connection with the destination host and terminate the current run when all files queued for processing by PFX have been sent. Files queued to HALTed station-ids are not counted when deciding to terminate.

The DRAIN FILE command tells PFX to terminate the connection with the destination host and to terminate the current run when the current file is completed. If no file is currently being sent, PFX terminates almost immediately. The connection to the operator interface is disconnected when PFX terminates if it is active.

The DRAIN command has the format:

Command	Parameters
DRAIN	[FILE]

DRAIN   This is the command verb.

FILE   This optional parameter specifies a drain after the current file prints.

HALT Command

The HALT command without a station-id stops sending files to the destination host at the end of the current file. The connection to the host remains active, and the transfer restarts when a START command is entered.

The HALT station-id command stops sending files for the named station-id at the end of the current file. The transfers for this station-id restart when a START station-id command is issued.

The HALT command has the format:

Command	Parameters
HALT	[station-id]

HALT   This is the command verb.

station-id   This optional parameter indicates the station-id to be HALTed.

KILL Command

The KILL command aborts PFX immediately with a 'KL' abort code. This is for emergency or debug use only.

The KILL command has the format:

Command	Parameters
KILL	[MEMORY]

KILL   This is the command verb.

MEMORY   This optional parameter indicates that a memory dump of PFX is to be obtained on termination.

START Command

The START command allows PFX to resume transferring files after a HALT command is issued.

The START command has the format:

Command	Parameters
START	[station-id]

START   This is the command verb.

station-id   This optional parameter indicates the station-id to be STARTed. If station-id is not specified, all station-ids are started.

GCOS8 Commands to Monitor and Control PFX Activity

Various system control console and time-sharing commands provide detailed information on the status of jobs in SYSOUT. These are described in manuals available from Bull.

Internal Operation

Introduction

When the PFX sending module starts on the Bull host the following sequence of events occurs:

- The parameter file (1*) is read and processed.
- The configuration file (CF) is read and processed.
- The operator interface is started.
- The job file (if present) is sent across to the destination host and the spawned job connects back to the initiator on the Bull host.
- A print file is selected.
- Open processing occurs.
- The print images are sent.
- Close processing occurs.
- PFX either terminates or loops waiting for more transport candidates.

Each of these events are discussed in the following sections. Limitations specific to GCOS8 are also described.

Parameter Processing

The first task for PFX is to parse and validate input parameters. Processing is done in the same fashion as for BFX.

Configuration File Processing

The configuration file specifies the station-ids to be selected by PFX. One or more station-ids may be grouped together. Following each station-id in the configuration file are the destination specific images to be sent as open-data when a report is selected for the destination.

During initialization, the configuration file is opened, the open-data images are read and saved in memory. Processing done at this time includes calculation of the number of open-data images associated with each group, transliteration of BCD to ASCII, and gross error checking.

The Operator Interface

After the configuration has been processed, the operator interface is enabled.

Job Transfer

The job file, if present (NOSUBMIT was not specified), is sent to the receiving host.

Sending Print Files

When the record module is called for the first record of a new file, it calls the SYSOUT interface module. This module checks the system job output table (JOT) for a candidate for file transfer, a job that specifies a station-id included in the configuration file.

In the GCOS8 context, a candidate is a type and destination combination, where the type is either BCD print, or ASCII print; and the destination is the two character station-id.

If a candidate is found and the output is available (not in JOUT, NOPRO or purge in effect, station has not been halted by the operator, etcetera), the job is marked 'JOUT BUSY', and open processing begins.

Open Processing

The records initially returned by the record module are the open image and any associated open-data images. This processing includes the replacement of the optional SNB parameter with the job's snumb as described in "Step 3. Group Configuration File" on page 11. When the processing is complete, the record module interfaces with the banner module to generate beginning job banners.

For normal SYSOUT reports, the job banners and the one-line report banners are essentially the same as those generated by the GCOS8 GEOT process.

For backdoor files, there are some differences. The first banner, the snumb, is basically the same; it is generated from the snumb field of the JOT entry as built by the SYOT interface. The second, or ident banner, is generated as follows. If the first record of the data file is an optional IDENT record, the second variable field of that record is used to generate the banner. If the ident record is not present, information from the backdoor segment (DP.BDI) is scanned. If the information is a standard ident image (placed there from the user process Slave Program Prefix), the second variable field is again used. If the entry is flagged as a TSS interface, the USERID placed in the entry by SYOT is used to generate the banner. No report banners are generated for backdoor files, but a slew is generated to ensure that the report will start at the top of a page.

When the banner processing is complete, processing of the report starts.

Print Image Processing

The basic flow of print processing is very simple. Each time the record module is called, a new image is obtained. The record is reformatted to be compatible with the destination print processor. This may include translation from BCD to ASCII, expansion of tab characters to strings of blank spaces, converting the ASCII 013/014 post-slew controls to an ANSI pre-slew prefixing the print line, etcetera.

There are some subtle differences in the processing of backdoor files, just as there are when GEOT processes the data. SYOT controls the collection of normal sysout, while backdoor files are controlled by the user process. The data records on the file are processed only once; report codes are ignored, so there is essentially one report per file. Except for the IDENT record described in "Open Processing" on page 24, only media code 3 (BCD print) and 7 (ASCII print) are processed. Any other records are discarded. If any errors are found in the processing of block length or record length, or if an I/O error occurs, the rest of the file will not be processed.

When EOF is reached, the results differ for normal sysout and backdoor. For normal sysout, the process is repeated until all the reports for this candidate have been processed. For backdoor, the candidate is considered to be completed.

When all of the candidate reports have been processed, close processing starts.

Close Processing

When the EOF is encountered, a record with an image '/EOF' and a BUFLEV of 13 is returned and is accompanied by a message with the number of lines sent. The message sends the last buffer of data (including the EOF) to the other side. PFX then waits for the message BFX201 or BFX202 to be received from the receiver indicating that the transmission was successful. When this is received, the 'JOUT BUSY' flag in the JOT entry is set off, and the report is marked both 'STARTED' and 'FINISHED.'

When the close is caused by a DRAIN or DRAIN FILE command, the EOF message is followed by a termination sequence. The termination sequence has a BUFLEV of 15 and a BUFLEN of 0.

If a report is not correctly transmitted, or if PFXTI is aborted while a report is being terminated, the JOT entry is updated as follows for normal sysout.

- The started and finished flags are set OFF.

- The JOUT BUSY flag is set OFF.

- The JOUT WANTED flag is set ON.

This prevents the SYSOUT BLINK space from being released before the problem cause can be determined.

For backdoor files, the output is marked complete.

When No Print is Available

When no candidate is present for any station-id, PFX waits until either an operator command is issued, or another candidate is found. PFX checks the SD.JOT table every 30 seconds for print files available to send.

H292T PFX Implementation Notes

- PFX does not attempt to process $ REPORT, REPTL, or REPTR entries or send any data regarding forms to the receiving system. Rather, it is suggested that a specific set of station codes be defined and coordinated with operations on the receiving system, so that appropriate forms alignment can be done.

- Punch output is ignored by PFX.

- One copy of PFXTI supports a maximum of 99 station-ids. This number can be increased by changing the Pascal MAXSTATION and the GMAP MAXSTA constants, then rebuilding PFX. It can also be increased by running multiple copies of PFXTI, each handling up to 99 station-ids.

- Maximum record length must allow for open-data images. (See "Control Parameters" on page 6 for more information on the RMAXL parameter.)

- Available memory limits the number of open-data images to a few thousand.

- H292T does not follow the GCOS8 procedure of changing characters < 040 (octal) to an asterisk "*" (as described in the *System Output Reference Manual*). Because some customers use these special characters, the only special handling by H292T is on the various slew and tab characters.

- Optional Data Transliteration

  Besides the standard transliteration tables provided by NETEX, H292T PFX provides the capability to transliterate print data before it is transmitted across the NETEX network.

A maximum of eight (8) transliteration tables can be specified for one copy of PFX. The type of transliteration done is controlled by station-ids. The transliteration set to be used for a station is invoked by the optional parameter "XLIT" in the STATION image, for example:

```
STATION = xx [[,] XLIT = aaaaaa]
```

The comma character (,), equal character (=), and space character ( ) are optional, but at least one of these delimiters must be used to separate each keyword or parameter.

During initial processing, the name is saved in an array. A maximum of six (6) characters of each name will be transliterated to BCD and used in a MME GERSTR calling sequence to load the element from the H* file. The tables will be loaded during PFX initialization. Any error return from the GCOS8 GERSTR processor will result in a PFX abort, preceded by the message:

```
BFX880F Error ccc processing XLIT Option, line nnn
```

ccc   This is the code returned by the system.

nnn   This is the record number within the configuration file that resulted in the error.

The default transliteration file name is *BFX/XLIT/XLIT.H*, a multi-element H* file. The file must be allocated using a $ PRMFL JCL statement, using the file code "XT".

Technical Data

Overview

The protocol used by PFX is based on BFX protocol. The BUFFER LEVEL (BUFLEV) associated with the BFX header is used to determine the meaning of the associated images. The associated images fall into four classes: open, open-data, print-data, and close.

Each image is a flag or control character followed by data. Each of the image classes, except print-data, has a unique flag character used only for debugging. The print images have an ANSI printer control as the first character.

The basic flow for each file to be printed is to send an open image, send open-data images (if present), send the print-data images, and send a close image. Each of these images is discussed below. Note that in this context, file refers to a SYSOUT type or destination combination, which may contain one or more reports. See *Bull System Output Reference Guide*.

The Open Image

The first image sent from the sending PFX to the destination PFX is an open image. It is also sent to open a new file after the previous file is closed. The image format is a dollar sign flag character ($) followed by two fields. The first field of two characters is a count of the open-data images to follow. This is followed by the group or data set name.

BUF LEV	BUF LEN	IMAGE 1..... 81
14	81	$NNdataname

Column 1　　　　　　　This is the flag character of dollar sign ($).

Columns 2 and 3　　　　These columns hold the count of open-data images to follow. This is a right-justified zero-filled numeric value. The value '00' indicates no open-data images follow this image. The value is often limited by the destination host to a fairly small number, about five.

Columns 4 to 11　　　　This is the dataname. The dataname is an eight character parameter passed to the destination host. This is the only field currently defined for this record.

Open-Data Images

Zero or more open-data images are passed after the open image. The content of these images is unspecified past the flag character. The meaning of these images depends on the host that processes them.

BUF LEV	BUF LEN	IMAGE 1..... 81
12	81	%OPEN-DATA

Column 1   This is the flag character of percent sign (%).

Columns 2 to 81   These are defined by the receiving host. Refer to the PFX manual for the receiving host for details.

Print Images

The real data to be passed are the print-images. The print-images are in ANSI format. Column 1 has the print control character and the rest of the columns contain the print image. The total image may be from one to the maximum length print line (normally 128, 132, or 160 plus one for the control character).

BUF LEV	BUF LEN	IMAGE 1..... 81
1	NN	CPRINT-DATA

Column 1   This is the print control character (C). It comes from the ANSI-DEFINED set of ' ', '0', '-', '+', and '1'.

Columns 2 to NN   These columns contain the print image itself. The buffer length indicates how long the image is. A buffer length of one indicates there is only a control character and no image. This often occurs on a page eject ('1').

Close Image

The close image indicates the end of a print file. This image should initiate the close and perhaps the free process for the print file.

BUF LEV	BUF LEN	IMAGE 1..... 81
13	NN	/EOF

Column 1   This is the flag character of slash (/).

Columns 2 to 4   These columns contain 'EOF'. This character string is passed more for documentation than anything else. It serves no real function.

Columns 5 to 81   These columns are currently undefined and will be set to blanks.

Termination Sequence

When a close is caused by a DRAIN or DRAIN FILE command, the close image is followed by a termination sequence. This sequence has a BUFLEV of 15 and a BUFLEN of 0.

BUF LEV	BUF LEN	IMAGE 1..... 81
15	0	

The image is null.

Use of Flag Characters

The flag characters on the open, open-data, and close images are defined to aid in testing. These special characters are normally ignored by PFX.

The Total PFX Data Stream

An example of a total PFX transfer follows:

BUF LEV	BUF LEN	IMAGE 1..... 81
14	81	$02RMTPRT
12	45	%RMTPRT DD SYSOUT=A, DC(RECFM=FBA,LRECL=133,
12	15	% BLKSIZE=2660)
1	nn	1<optional> banner lines
		.
		.
		.
1	52	1This is the first image of the report to be printed
1	nn	\
1	nn	/
1	nn	\
1	37	This is the last image to be printed
1	nn	1Banner for next report (if any)
1	nn	1Next report for this SYSOUT type/destination
		.
		.
		.
13	81	/EOF
		.
		.
		.
		(Repeat this until all transfers are done.)

Appendix A. PFX Messages

PFX generates a variety of messages during execution. Shown below is a list of PFX specific messages with the suggested response for each. Also shown is the severity of the message, as compared with the MSGLEVEL parameter to determine if the message should be logged.

```
BFXnnns message text
```

Where:

BFX   Indicates that this is a BFX/PFX message.

nnn   Message number. The messages are listed in this order.

s   Message severity. The following codes are used:

        I   Informational

        E   Error

        S   Severe error

        F   Fatal error

message text   The message text.

The following are the messages issued by modules which are unique to PFX.

BFX001F JOB SUBMISSION FAILED.

Severity: 15 (Fatal error)

Explanation: Transfer Initiate was unable to submit a job to the remote host. If SOE was specified, the BFX program will terminate.

User Response: The reason for job submission failure will be indicated in a previous message. Take the corrective action indicated by the previous message's description.

BFX006S "xxxxxxxx" NOT RECOGNIZED IN CONTROL STATEMENT.

Severity: 15 (Fatal error)

Explanation: An input statement to the BFX program contains a string that is not a recognized parameter. BFX will not transfer any files after encountering this error, but will continue to read the input file.

User Response: Correct the syntax error and resubmit the job.

BFX011F ID= BFX IDENTIFIER OMITTED.

Severity: 15 (Fatal error)

Explanation: The ID parameter which uniquely identifies the BFX job on the initiating machine was not supplied. There is no default for this parameter.

User Response: Supply the ID parameter and rerun the job.

BFX014F ERRORS PREVIOUSLY FOUND. EXECUTION OF TRANSFER BYPASSED.

Severity:	13 (Severe error)
Explanation:	Errors were encountered parsing preceding input statements. The syntax of the input statements for following transfers will be checked, but the transfers will not occur.
User Response:	Correct the errors indicated by the preceding error messages and resubmit the job.

BFX020F NRBSTAT= ssss, NRBIND = iii NETEX COMMUNICATIONS SUBSYSTEM IS NOT RUNNING.

Severity:	15 (Fatal error)
Explanation:	When the BFX program attempted to establish communications, it found that the NETEX subsystem was not currently running on the local host. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type. Processing is terminated, as data transfer is not possible without NETEX.
User Response:	Consult with operations to determine whether NETEX should have been active. Resubmit the job when NETEX is active.

BFX022F NRBSTAT= ssss, NRBIND= iii, NETEX SYSTEMWIDE CAPACITY EXCEEDED.

Severity:	15 (Fatal error)
Explanation:	During the process of establishing communications, NETEX returned an indication that it cannot handle a new connection because a limiting number of NETEX connections are already in use. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type. Processing is terminated, as it is uncertain when the condition will clear up.
User Response:	Inform operations or the NETEX system programmer of the problem. If the problem occurs frequently, NETEX will have to be given more resources to handle extra connections.

BFX023F NRBSTAT= ssss, NRBIND = iii, REMOTE BFX PROGRAM DID NOT START.

Severity:	15 (Fatal error)
Explanation:	The corresponding BFX program was not present when required. If a BFXTI program issued this message, then it waited for the TIMEOUT= interval without being connected to by the BFXTR program. If a BFXTR program issued the message, then the originating BFXTI program is no longer present to be connected to. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type.
User Response:	This is the error that will commonly occur if errors are made in the BFX setup. The most frequent causes of this error are:

- Job Control Language errors in the BFXTR job prevented successful execution of the BFXTR program.

- The TIMEOUT= value of the BFXTI job did not allow sufficient time·for the BFXTR job to progress through the execution queue and connect to the originating program.

- The ID = fields of the two jobs did not agree with one another.

BFX024F NRBSTAT= ssss, NRBIND = iii, HOST CEASED COMMUNICATING.

Severity:	15 (Fatal error)
Explanation:	During the transfer of a file or a job, the BFX program received an indication from NETEX that all communications with the other host have ceased. This is generally caused by a system crash on the remote host, abrupt failure or operator cancellation of NETEX on the remote host, or a hardware failure in the physical connection between the two hosts. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type. Processing is terminated, as no further data transfer is possible.
User Response:	Consult with operations to determine the cause of the failure. Resubmit the job when the connection is once again active. File cleanup procedures may be needed if a file transfer was in progress at the time of the failure.

BFX025F NRBSTAT= ssss, NRBIND=iii, REMOTE BFX ABORTED EXECUTION.

Severity:	15 (Fatal error)
Explanation:	The remote BFX aborted after connection was established. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type.
User Response:	Determine the cause of the remote abort; correct and resubmit.

BFX026F NRBSTAT=ssss, NRBIND=iii, REMOTE HOST NETEX NOT PRESENT.

Severity:	15 (Fatal error)
Explanation:	When an attempt was made to connect to the remote BFX program, the NETEX on the local machine reported that no NETEX subsystem was present on the remote host. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type. Processing is terminated, as data transfer is not possible without NETEX.
User Response:	Consult with operations to determine whether NETEX should have been present on the remote host. Resubmit the job when NETEX. is available on both hosts.

BFX027F SPECIFIED HOST IS NOT ON THE NETWORK.

Severity:	15 (Fatal error)
Explanation:	When BFXTI was attempting to connect to BFXJS, or when BFXTR was attempting to connect back to the initiating BFXTI, the local NETEX subsystem returned an indication that the host name specified is not on the network specified in the Network Configuration Table. Processing is terminated, as data transfer is not possible.
User Response:	The probable cause of this error is an erroneous HOST parameter. A second possibility is that the installation has changed the host names used by NETEX. Correct the error and resubmit the job.

BFX028F NRBSTAT=ssss, NRBIND=iii, ACCESS TO SPECIFIED HOST DENIED.

Severity: 15 (Fatal error)

Explanation: When BFXTI was attempting to connect to BFXJS, or when BFXTR was attempting to connect back to the initiating BFXTI, NETEX informed the program that access to the specified host has been denied by the local computer operator. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type. Processing is terminated, as communications between the two hosts cannot take place.

User Response: Computer operations is using a feature of NETEX that can temporarily prohibit access to a host that is undergoing maintenance, performing classified or confidential work, etcetera. Consult with operations to determine when communications with the remote host will once again be permitted. Resubmit the job at that time.

BFX029F NRBSTAT=ssss, NRBIND=iii, ACCESS TO LOCAL NETEX DENIED.

Severity: 15 (Fatal error)

Explanation: When the BFX program was attempting to establish communications, NETEX informed the program that access to the local host has been denied by the local computer operator. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type. Processing is terminated, as communications cannot take place.

User Response: Computer operations is using a feature of NETEX that can temporarily prohibit access to a host that is undergoing maintenance, performing classified or confidential work, etcetera. Consult with operations to determine when communications with the remote local will once again be permitted. Resubmit the job at that time.

BFX030S NRBSTAT=ssss, NRBIND=iii, NETEX ERROR.

Severity: 12 (Severe error)

Explanation: NETEX has reported an error to the BFX program that is not an intercepted condition. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type. Processing is terminated, as the actual severity of the error is not known by the BFX program.

User Response: Refer to NETEX documentation to determine the cause of the error. Frequently this error will be caused by earlier, more comprehensible errors. If other BFX error messages precede this one, take the corrective action suggested by those messages.

BFX031S NRBSTAT= ssss, NRBIND = iii, SPECIFIED ID IS BUSY.

Severity: 12 (Severe error)

Explanation: When BFXTI was attempting to connect to BFXJS, or when BFXTR was attempting to connect back to the initiating BFXTI, NETEX informed the program that the OFFERed application was currently in use by some other network application. The connection attempt was retried a number of times (until the DELAYTIME time period elapsed), but the application remained in use. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type.

User Response: If the remote application was not expected to be busy, consult with operations. Otherwise, it may be necessary to specify a higher value for DELAYTIME and resubmit the job.

BFX032S NRBSTAT=ssss, NRBIND=iii, SPECIFIED ID IS NOT OFFERED ON SPECIFIED HOST.

Severity: 12 (Severe error)

Explanation: When BFXTI was attempting to connect to BFXJS, or when BFXTR was attempting to connect back to the initiating BFXTI, NETEX informed the program that the OFFERed application was not currently available. The connection attempt was retried a number of times (until the DELAYNOFR time period elapsed), but the connection was never completed. Either BFXJS (first case above) or the initiating BFXTI (second case) failed before OFFERing itself, or response times on the remote machine are very slow. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type.

User Response: Examine the output from the remote job to determine whether the job failed before OFFERing itself. If so, correct the error that caused the failure and resubmit the job. If this situation is caused by slow response times on the remote host, it may be necessary to specify a higher value for TIMEOFFER and resubmit the job.

BFX034S NRBSTAT=ssss, NRBIND=iii, READ OR OFFER TIMEOUT.

Severity: 12 (Severe error)

Explanation: The timeout specified on an SREAD or SOFFR request has expired before the request was satisfied. For SOFFR, the probably cause is that the remote job did not start in time. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type.

User Response: If nothing unusual is reported on the other side of the transfer, try setting TIMEOUT and/or TIMEOFFER to higher values.

BFX040F   NRBSTAT=ssss,   NRBIND=iii,   NETEX   COMMUNICATIONS   SUBSYSTEM TERMINATED.

Severity: 15 (Fatal error)

Explanation: During the connection process or in the middle of a job or file transfer, the BFX program received an indication that NETEX is abruptly terminating. This can be caused by operator cancellation of NETEX or by internal NETEX software problems. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type. Processing is terminated, as no further data transfer will be possible until NETEX is restarted.

User Response: Consult with operations to determine the cause of the NETEX shutdown. Resubmit the job when NETEX is once again active. File cleanup procedures may be needed if a file transfer was in progress at the time of the failure.

BFX042F NRBSTAT=ssss, NRBIND=iii, BFX PROGRAM TIME OUT TO NETEX.

Severity: 15 (Fatal error)

Explanation: The BFX program suspended execution for a sufficiently long time that NETEX terminated the connection between the two BFX programs. The current transfer is aborted, but the remaining transfers will be attempted. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type.

User Response: This is generally because of difficulties in system tuning, or exceptionally long delays in such activities as tape mounting. If the problem was not caused be operational errors, the NETEX system programmer may have to raise the NETEX READTO parameter to compensate for the long delay.

BFX042F NRBSTAT=ssss, NRBIND=iii, BFX PROGRAM TIME OUT TO NETEX.

Severity:	15 (Fatal error)
Explanation:	The BFX program suspended execution for a sufficiently long time that NETEX terminated the connection between the two BFX programs. The current transfer is aborted, but the remaining transfers will be attempted. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type.
User Response:	This is generally because of difficulties in system tuning, or exceptionally long delays in such activities as tape mounting. If the problem was not caused be operational errors, the NETEX system programmer may have to raise the NETEX READTO parameter to compensate for the long delay.

BFX043F BFX PROTOCOL ERROR – PREMATURE DISCONNECT.

Severity:	15 (Fatal error) BFXSND in BFXTI and BFXTR.
Explanation:	The remote BFX program terminated the connection at a time when termination was not anticipated by the local BFX program.
User Response:	This is an internal BFX error. It should be brought to the attention of installation BFX support personnel.

BFX044F NRBSTAT=ssss, NRBIND=iii, REMOTE BFX PROGRAM TIMED OUT.

Severity:	15 (Fatal error)
Explanation:	The remote BFX program suspended execution for a sufficiently long time that the remote NETEX terminated the connection between the two BFX programs. The current transfer is aborted, but the remaining transfers will be attempted. "ssss" is the four digit status code returned by NETEX; "iii" is the data or event indication type.
User Response:	This is generally because of difficulties in system tuning, or exceptionally long delays in such activities as tape mounting. If the problem was not caused be operational errors, the NETEX system programmer for the remote host may have to raise the NETEX READTO parameter to compensate for the long delay.

BFX045F BFX PROTOCOL ERROR – PREMATURE END MESSAGE.

Severity:	15 (Fatal error) BFXRCV in BFXJS, BFXTI, and BFXTR.
Explanation:	The remote BFX program sent an End-of-File message before the End-of-File record was received.
User Response:	This is generally caused by user-written block and/or record modules. Recode the user module to send the last record of the file with an EOF record level, then send the End-of-File message.

BFX046F BFX PROTOCOL ERROR – DATA AFTER EOF.

Severity:	15 (Fatal error)
Explanation:	The remote BFX program sent data after sending a record with an EOF record level.
User Response:	This is generally caused by user-written block and/or record modules. Recode the user module to send only the last record of the file with an EOF record level.

BFX070I aaaa=bbbb; PARAMETER VALUE MISSING, INVALID, OR OUT OF RANGE.

Severity:	12 (Severe error)
Explanation:	The parameter "aaaa" is either missing a value or has an incorrect value specified.
User Response:	Correct the error and resubmit the job.

BFX082I FILE ffffffffffff SENT.

Severity:	6 (Informational)
Explanation:	The file "ffffffffffff" was sent. This message is generated if the sending record module does not return a message on EOF.
User Response:	None.

BFX083I FILE ffffffffffff ABORT PROCESSED.

Severity:	12 (Severe error)
Explanation:	A record module has requested an abort.
User Response:	This is generally caused by user-written record modules. Determine the cause of the requested abort by the record module.

BFX084S BFX PROTOCOL ERROR – DATA RECEIVED WHEN SENDING.

Severity:	13 (Severe error)
Explanation:	Unexpected data is received by BFX.
User Response:	Either the remote application is also trying to send, or an internal BFX problem exists.

BFX085F MESSAGE IN DATA BLOCK.

Severity:	15 (Fatal error)
Explanation:	A message record was found inside a data block. Messages must appear in their own blocks, one to a block.
User Response:	This is generally caused by user-written block modules. Correct the block module and resubmit the job.

BFX088I OFFER OF hhhhhhhh FAILED.

Severity:	12 (Severe error)
Explanation:	Typically the remote BFX application has not issued its connect or has timed out.
User Response:	Verify the remote application status and retry.

BFX089I CONNECT TO hhhhhhhh FAILED.

Severity:	12 (Severe error)
Explanation:	Typically the remote BFX application has not issued its offer or also its offer has timed out.
User Response:	Verify the remote application status and retry.

BFX101I FILE ffffffff DONE; nnnn RECORDS SENT.

Severity:	6 (Informational)
Explanation:	The Network Systems standard Sending Record Module has detected normal end of file on the input file specified by "ffffffff". The total number of logical records sent for this particular file is "nnnn." At the time the message was issued, the last record of the file will already have been sent to the receiving BFX. H292T generates an artificial file name using the snumb combined with the activity number or file code.
User Response:	None.

BFX102S FILE ffffffff PERMANENT I/O ERROR – RC=rrrr.

Severity:	12 (Severe error) BFXRRM in BFXTI, BFXTR, BFXJS.
Explanation:	The access method reported a permanent I/O error reading or writing a file during transfer of the job or transfer of the file. The file is indicated by "ffffffff." Transfer of this file is aborted. If batched transfer of files is being performed, BFX will attempt to transfer the rest of the files.
User Response:	Determine the cause of the I/O error. If the error can be corrected, rerun the BFX jobs.

BFX104S STOP ON ERROR SET, ERRORS ENCOUNTERED.

Severity:	15 (Fatal error)
Explanation:	A previous error was detected and the SOE parameter was declared to stop on errors.
User Response:	Locate the previous error and correct it.

BFX111S RECORD MODULE INITIALIZATION FAILED.

Severity:	12 (Severe error) BFXRBM in BFXJS, BFXTI and BFXTR.
Explanation:	A user-written Record Module returned an Abort code (Buflev = 16) when called for initialization. The module did not supply a message with the abort code, so this default message is printed. The current transfer is aborted, but the remaining transfers will be attempted.
User Response:	Correct the condition that caused the user module to return the Abort code and resubmit the job. It is good form for user modules to supply a message under these circumstances.

BFX113S SENDING RECORD MODULE ABORTED TRANSFER.

Severity:	12 (Severe error)
Explanation:	A user-written Sending Record Module returned an Abort code (Buflev = 16) during the transfer of a file. The user module did not supply a message with the abort code, so this default message is printed. The current transfer is aborted, but the remaining transfers will be attempted.
User Response:	Correct the condition that caused the user module to return the Abort code and resubmit the job. It is good form for user modules to supply a message under these circumstances.

BFX115S SENDING BLOCK MODULE ABORTED TRANSFER.

Severity:	12 (Severe error)
Explanation:	A user-written Sending Block Module returned an Abort code (Buflev = 16) during the transfer of a file. The user module did not supply a message with the abort code, so this default message is printed. The current transfer is aborted, but the remaining transfers will be attempted.
User Response:	Correct the condition that caused the user module to return the Abort code and re-submit the job. It is good form for user modules to supply a message under these circumstances.

BFX121S MAXIMUM RECORD LENGTH EXCEEDS NEGOTIATED SIZE.

Severity:	12 (Severe error)
Explanation:	When the two BFX programs established a connection, the negotiated block size as determined by the user-specified parameters was insufficient to hold the largest logical record in the file to be sent. The current transfer is aborted, but the remaining transfers will be attempted.
User Response:	Adjust the BLOCK parameter in one of the two BFX programs so it is sufficient to transfer the file. Note that a header of 6 bytes (bit mode) or 8 bytes (character mode) is prefixed to each record transferred.

BFX123F FILE TRANSFER PROTOCOL SEQUENCE ERROR.

Severity:	15 (Fatal error)
Explanation:	The file transfer information sent to the receiving BFX was found to be incorrect. A record numbering check indicated that records are missing, duplicated, or out of sequence. This may be because of an internal BFX or NETEX error, or to a user-written Block Module that is incorrectly sending data to the standard Network Systems Receiving Block Module. The current transfer is aborted, but the remaining transfers will be attempted.
User Response:	If the error was caused by a user-written Block Module, correct the coding error that caused incorrect data to be sent. If only Network Systems BFX code was used, bring the error to the immediate attention of Network Systems personnel.

BFX124S MODE= PARAMETERS INCONSISTENT FOR BOTH BFX JOBS.

Severity:	12 (Severe error)
Explanation:	In a BFX program pair, one side had MODE = BIT specified and the other had MODE = CHAR, MODE = BCD, or MODE = ASCII. The current transfer is aborted, but the remaining transfers will be attempted.
User Response:	Correct the erroneous specification and transfer the files that were not sent.

BFX125S MAXIMUM RECORD LENGTH EXCEEDS BUFFER SIZE.

Severity:	12 (Severe error)
Explanation:	The length of the longest record in the file to be sent (or the physical block size of a sequential-only device) exceeds the length of the BFX buffers. The size of the buffers is determined by the default NETEX block size or a BFX BLOCK command. The current transfer is aborted, but the remaining transfers will be attempted.
User Response:	Increase the BFX block size using the BLOCK command.

BFX201I FILE ffffffffff DONE; nnnnnnRECORDS RECEIVED.

Severity:	6 (Informational)
Explanation:	This message is issued when the receiving BFX processes the last record of the file. When issued, it indicates that the last record was received and that the output file was successfully closed. "ffffffffff" is the logical name of the file used for output; "nnnnnn" is the number of records that were written to the output file.
User Response:	None

BFX205W FILE ffffffffff DONE; nnnnnnRECORDS RECEIVED. yyyy TRUNCATED.

Severity:	9 (Error)
Explanation:	The file was successfully sent, but (yyyy) records were truncated.
User Response:	Check the data file on the receiving side, and if all desired data did not get sent, re-submit the job with a larger RMAXL parameter.

BFX206E FILE ffffffffff TRANSFER ABORTED; nnnnnn RECORDS SENT.

Severity:	10 (Error)
Explanation:	This message is issued by the sending BFX when the file transfer process is aborted either because of the loss of NETEX communication or because of some other error detected by the BFX program. "ffffffffff" is the logical name of the file used for input; "nnnnnn" is the number of records that were read from the input file before the abort caused the transfer to stop. The current transfer is aborted, but the remaining transfers will be attempted. The original error will be reported by other BFX messages.
User Response:	Correct the error that caused the abort. Transfer the file again.

BFX210S CANNOT OPEN INPUT FILE ffffffffff. RC = cccccccc.

Severity:	12 (Severe error)
Explanation:	The sending BFX program was unable to open the input file whose logical name is specified by "ffffffffff". The return code "cccccccc" is in decimal. The return code "cccccccc" may be a return code from either UFAS or FMS. Detailed descriptions of these codes may be found in the Bull UFAS and FMS manuals.
	A value of 1 for the return code indicates that the data mode is not supported. A value of 6 indicates that the record size is larger than BFX is prepared to handle. A value of 9999 indicated an error detected by the ATTACH routine that is neither a UFAS or an FMS error. This can be caused by using the wrong allocation mode for a transfer. The execution report often contains messages produced by UFAS or FMS describing the error in more detail.
User Response:	Correct the reason for the open failure. Transfer the file again.

BFX212S FILE ffffffffff PERMANENT I/O ERROR, RC = cccccccc.

Severity: 12 (Severe error) BFXRRM in BFXJS, BFXTI, and BFXTR.

Explanation: During the process of reading or writing the file whose logical name is "ffffffffff", a permanent I/O error occurred. The return code "cccccccc" is in decimal. The return code "cccccccc" is the return code from UFAS for character transfers. The execution report will have the message associated with the error.

For bit transfers, the return code is usually the value of bits 0-11 of the status return word returned when trying to read or write a file. A return code of 5 shows the file could be expanded. The execution report will generally have any additional information about the error.

User Response: Determine the cause of the I/O error. If the error can be corrected, do so and transfer the file again.

BFX220I SENDING FILE ffffffffffff AT hh:mm:ss.sss.

Severity: 4 (Informational).

Explanation: The sending BFX has successfully opened the input file and is ready to begin transfer of data. Transmission will begin when this message is issued. "ffffffffffff" is the logical name of the input file, followed by the sending local time of day in standard format.

User Response: None.

BFX221I RECEIVING FILE ffffffffffff AT hh:mm:ss.sss.

Severity: 4 (Informational).

Explanation: The receiving BFX has successfully opened the output file and is ready to receive file data. "ffffffffffff" is the logical name of the output file, followed by the receiver's local time of day in standard format.

User Response: None.

BFX301I OFFERING sssssss; BLOCK IN SIZE bbbbb.

Severity: 2 (Diagnostic)

Explanation: The BFX program has issued a NETEX SOFFR to wait for the responding BFX program to connect to it. The name offered is "sssssss," which is the JID or ID parameter specified in an input statement. The block size that the offering program would like to use is "bbbbb."

User Response: None.

BFX302I CONNECTING TO sssssss ON HOST hhhhhhhh; BLOCK IN SIZE nnnn.

Severity: 2 (Diagnostic)

Explanation: When BFXTR is connecting back to its starting BFXTI, it has issued a NETEX SCONNECT to establish communications. "sssssss" is the name to connect to as specified in the ID= or JID= user parameters; "hhhhhhhh" is the host name specified in the TO = or FROM= parameters. The direction of file transfer will cause this program to receive the file; the Block size that is program is prepared to receive is nnnn.

User Response: None.

BFX304I CONNECTING COMPLETE.

Severity: 2 (Diagnostic)

Explanation: A previously issued NETEX SCONNECT has completed successfully.

User Response: None.

BFX307I OFFER COMPLETED FROM HOST hhhhhhhh.

Severity: 2 (Diagnostic)

Explanation: A previous NETEX SOFFER has completed successfully. "hhhhhhhh" is the host name.

User Response: None.

BFX308I CONFIRM ISSUED.

Severity: 2 (Diagnostic)

Explanation: A NETEX SCONFIRM is being issued in response to a previously completed SOFFER.

User Response: None.

BFX309I CONFIRM COMPLETE.

Severity: 2 (Diagnostic)

Explanation: A previously issued NETEX SCONFIRM has completed successfully.

User Response: None.

BFX310I CONNNECT CONFIRM READ ISSUED.

Severity: 2 (Diagnostic)

Explanation: Following a successful SCONNECT request, the BFX program has issued an SREAD to obtain the SCONFIRM response from the other program.

User Response: None.

BFX311I CONNNECT CONFIRM COMPLETE.

Severity: 2 (Diagnostic)

Explanation: The SREAD issued to accept an SCONFIRM message from the remote BFX program has completed successfully. The NETEX session establishment process is now complete.

User Response: None.

BFX312I BLOCK SIZE bbbbb, DATA MODE dddd, LCM lll.

Severity: 2 (Diagnostic)

Explanation: This message is issued by the BFX program when the session negotiation process is complete. "bbbbb" is the NETEX block size that will be used during file transfer. "dddd" gives the NETEX DATAMODE to be used based on the requirements of the two BFX programs. "lll" is the Least Common Multiple size negotiated.

User Response: None.

BFX402S VALUE MUST BE SPECIFIED FOR THIS PARAMETER – NO DEFAULT.

Severity:	12 (Severe error)
Explanation:	No value was specified in an input statement to be assigned to a parameter that does not have a default value (such as ID). BFX will not transfer any flies after encountering this error, but will continue to read the input file.
User Response:	Supply a value for the parameter and resubmit the job.

BFX403S MODE MUST BE BIT OR A VALID CHARACTER SET.

Severity:	12 (Severe error)
Explanation:	A string (or abbreviation) other than "BIT", "BCD", "ASCII", or "CHARACTER" was specified in a MODE= input statement. BFX will not transfer any files after encountering this error, but will continue to read the input file.
User Response:	Correct the incorrect string and resubmit the job.

BFX407E PARAMETER VALUE TOO LONG; TRUNCATED. MAXIMUM:

Severity:	9 (Error)
Explanation:	A string value specified in an input statement to be assigned to a parameter was longer than the parameter field itself. The string is truncated to fit in the field. The maximum length of the field in question is printed following the message. Processing will continue normally.
User Response:	Unexpected results may occur because of the truncation. If so, supply a valid length string and resubmit the job.

BFX408I ALL FILE TRANSFERS HAVE BEEN PROCESSED.

Severity:	4 (Detailed informational)
Explanation:	BFX actions have completed.
User Response:	None.

BFX409S NUMERIC VALUE REQUIRED FOR xxxx, yyyy GIVEN.

Severity:	12 (Severe error)
Explanation:	An input token requiring a numeric parameter was not given one.
User Response:	Fix the input stream and re-submit.

BFX410S VALUE xxxx OUT OF RANGE ON yyyy COMMAND.

Severity:	12 (Severe error)
Explanation:	An input token has a value not allowed for the yyyy command.
User Response:	Fix the input stream and re-submit.

BFX809I NO REPORTS TO PROCESS AT hh:mm:ss:sss.

Severity:	1 (Informational).
Explanation:	The message is sent from PFXTI to the receiver every 30 seconds while there are no print reports available in the Job Output Table for processing. It is intended to keep the connection active, and the low message level would normally prevent it from being displayed. The message includes time of day in the standard format.
User Response:	None.

BFX810I WAITING FOR SERVER RESPONSE AT hh:mm:ss:sss.

Severity:	1 (Informational).
Explanation:	PFXTI is waiting for the BFX201 or BFX202 message from the receiver. This may indicate a hang on the receiver side.
User Response:	None.

BFX811I DRAIN COMPLETED AT hh:mm:ss:sss.

Severity:	1 (Informational).
Explanation:	A DRAIN or DRAIN FILE command entered by the operator has completed. PFXTI will terminate.
User Response:	None.

BFX820E SYSOUT INTERFACE ERROR, MAJOR = xxx, MINOR = yyy.

Severity:	15 (Fatal error).
Explanation:	An unrecoverable error has occurred in the routines that process SYSOUT file space. This could be caused by an I/O error or a formatting problem.
User Response:	It is probably necessary to obtain assistance from site or Bull personnel to aid in solving the problem. Also see information on abort processing in the "Internal Operation" on page 23 and "Appending B. Abort and Error Codes" on page 43 for abort and error codes.

BFX842E END-OF-FILE READING CONFIGURATION FILE.

Severity:	12 (Error).
Explanation:	An unexpected end of file occurred while processing the configuration file, probably caused by incorrect formatting of open or open-data images.
User Response:	Correct the configuration images and restart PFX.

BFX851F INVALID OR UNSPECIFIED STATION ID AT LINE nnn.

Severity:	15 (Fatal error).
Explanation:	The two-character station-id was either omitted or invalid. "nnn" is the configuration file line number where the error occurred (please note that comment lines are counted).
User Response:	Correct the error and restart the PFX utility.

BFX852F RECORD COUNT SPECIFIED INCORRECTLY AT LINE nnn.

Severity: 15 (Fatal error).

Explanation: The number of open-data images was specified incorrectly. "nnn" is the configuration file line number where the error occurred (comment lines are counted). The first two characters (only two) of the "open image" must indicate the number of open-data images to follow for this station-id.

User Response: Correct the error and restart the PFX Utility. Be certain that the open image is the first record following the station-id specification (excepting comment lines, which are not processed).

BFX853F RECORD EXCEEDS MAXIMUM LENGTH AT LINE nnn.

Severity: 15 (Fatal error).

Explanation: A record has been encountered which exceeds 80 characters in length. "nnn" is the configuration file line number where the error occurred (comment lines are counted).

User Response: Correct the error and restart the PFX Utility.

BFX854F NUMBER OF STATIONS EXCEEDS MAXIMUM AT LINE nnn.

Severity: 15 (Fatal error).

Explanation: This message is issued when an attempt is made to specify more than 99 station-ids. "nnn" is the configuration file line number where the error was encountered (comment lines are counted).

User Response: If more than 99 stations are required, the parameters "maxstation" (in *BFX/PFX1.n/DECLARE/PFXREC*) and "maxsta" (in *BFX/PFX3.x/GMAP/COMVAR*) may be increased and PFX recompiled and relinked. The PFX Utility may then be restarted.

BFX856F KEYWORD "STATION" EXPECTED AT LINE nnn.

Severity: 15 (Fatal error).

Explanation: A record was encountered which should contain a station-id specification, yet the string "STATION" was not found in the first seven columns. "nnn" is the configuration file line number where the error occurred (comment lines are counted).

User Response: Correct the error and restart the PFX Utility. Consult documentation regarding the arrangement of the configuration file.

BFX857F GENERAL SYNTAX ERROR AT LINE nnn.

Severity: 15 (Fatal error).

Explanation: A station-id specification record has been encountered which contains erroneous material.

User Response: Correct the error and restart the PFX Utility.

BFX859F CONFIGURATION FILE ERROR xxx AT LINE nnn.

Severity: 15 (Fatal error).

Explanation: An undefined error has been detected within the configuration file at line "nnn" (comment lines are counted). "xxx" denotes the actual error type that was generated.

User Response: Correct the error and restart the PFX Utility.

BFX880F ERROR ccc PROCESSING XLIT OPTION, LINE nnn.

Severity:	15 (Fatal error).
Explanation:	An error was encountered trying to use the transliteration option, where ccc is the code returned by the system, and nnn is the line number within the configuration file that resulted in the error.
User Response:	Correct the error and restart the PFX.

Appendix B. Abort and Error Codes

Besides those described in the H291 manual, the following aborts may occur:

FF   Immediate abort, the subroutines required for PFX are missing. H* file needs to be correctly built.

KL   Immediate abort because of operator KILL command.

BL   No match on BLINK table entry.

BD   Scan failure on the system backdoor segment (DP.BDI).

PT   Not enough room in program/s PAT segment.

Error Codes Displayed in the BFX820 Message

The major code indicates the GMAP module returning the error; the minor indicates the error that occurred.

Major	Minor
2 JOTUPD	2 SYSOUT trademark mismatch
4 NXTRPT	4 Record size error
8 NXTREC	8 Block (SYSOUT link) size error
10 RDSYOT	10 Could not update JOT entry
16 BACKDOOR	20 Bad record control word or backdoor block size
18 NXTBKDR	40 Bad SYSOUT link number
	80 Read error on SYSOUT link or backdoor file
	129 Mismatch on backdoor identifier
	130 Backdoor PAT too large