TELECOM
SOLUTIONS
a division of SymmetriCom, Inc.

DIGITAL CLOCK DISTRIBUTOR

500 SERIES

OPERATIONS

(Release 5.01.xx)

1. GENERAL

1.01 This practice provides procedures for operating Telecom Solutions' Digital Clock Distributor (DCD) 500 System. The language used in this practice is Transaction Language 1 (TL1). To use the commands in this practice, an MIS card (part number 090-45018-25) is required.

1.02 Whenever this practice is reissued, the reason for reissue will be given in this paragraph.

1.03 The following abbreviations are used in this document:

GPS	Global Positioning System
GTI	GPS Timing Interface
GTR	GPS Timing Antenna/Receiver
LTI	LORAN-C Timing Interface
MIS	Maintenance Interface, System
MRC	Multi-Reference Controller
PSM	Precision Synchronization Monitor
TO	Timing Output

2. TASKS

2.01 Table A lists the tasks required to operate the DCD-500 System and the charts that show how to perform the tasks.

Table A. Tasks

CHART	TASK
	LOGON/LOGOFF
1	• Logon • Logoff
	ALARM & STATUS INFORMATION
2	• Silence alarms • Display all current alarms • Display current alarms in specified equipment • Display current conditions in all equipment • Display current conditions in specified equipment • Display current port alarms in specified equipment • Display message log • Clear message log
	SECURITY INFORMATION
3	• Display access level of a single user • Display access level of all users • Assign user • Change password • Change user name, password, & access level • Reassign lost name or password of system administrator • Delete user
	COMMUNICATION PORT CONFIGURATION
4	• Display communication parameters • Change communication parameters • Drop DTR signal for 5 seconds
	SYSTEM CONFIGURATION
5	• Display date and time • Change date and time • Reset system • Display system name • Change system name
	ENTER CARD IN DATABASE
6	• Enter clock card • Enter GTI card • Enter LTI card • Enter MRC card • Enter PSM card • Enter timing output card

Table A. Tasks (Contd)

CHART	TASK
	PUT CARD IN SERVICE
7	• Restore clock card • Restore GTI card • Restore LTI card • Restore MRC card • Restore PSM card • Restore timing output card
	TAKE CARD OUT OF SERVICE
8	• Remove clock card • Remove GTI card • Remove LTI card • Remove MRC card • Remove PSM card • Remove timing output card
	DELETE CARD FROM DATABASE
9	• Delete clock card • Delete GTI card • Delete LTI card • Delete MRC card • Delete PSM card • Delete timing output card
	CARD CONFIGURATION
10	• Display parameters for GTI and timing output cards • Display GTI card parameters • Change GTI card parameters • Display timing output card parameters • Change timing output card parameters
	REFERENCE INPUT PORTS
11	• Enter port • Restore port • Display performance monitoring data • Clear performance monitoring data • Display framing, priority, reference type, & signal type • Change framing, priority, reference type, & signal type • Display threshold • Change threshold • Display alarm severity • Change alarm severity • Remove port • Delete port

Table A. Tasks (Contd)

CHART	TASK
MONITOR INPUT PORTS	
12	• Enter port • Restore port • Display performance monitoring data • Clear performance monitoring data • Display framing & signal type • Display threshold • Change threshold • Display alarm severity • Change alarm severity • Remove port • Delete port
TIMING OUTPUT PORTS	
13	• Enter port • Restore port • Display signal type • Change signal type • Remove port • Delete port
OUTPUT SYNCHRONIZATION SOURCE	
14	• Display source mode for timing output cards • Change source mode for timing output cards • Select source for timing output cards • Release source for timing output cards
GPS INFORMATION	
15	• Display GPS statistics

3. COMMAND CONVENTIONS

3.01 For a more complete description of the TL1 language syntax and language structure, refer to the User's Guide section of this manual.

3.02 The following symbols are used in the input and response messages:

[ ]   encloses an optional parameter

{ }   encloses a group of parameters, at least one of which must be entered

| separates alternative parameters

–   separates Command Code fields

&   means "and" as a&b (a and b)

&&   means "through" as a&&d (a through d)

:   separates parameter blocks

,   separates parameters within a block

;   terminates a command and causes execution

" "   encloses text formatted for a machine

/* */   encloses an explanation of the message

        indicates a space in a response

< >   encloses a parameter

...   indicates a line of parameters may be repeated as necessary in a response

4.   SHELF ADDRESSING

4.01 A particular shelf in a particular system is addressed through the tid. All commands are directed to the master shelf of the system unless an expansion or remote shelf identifier is added to the tid. When seen in a response, the sid identifies the shelf that is reporting the condition.

4.02 The shelf types are identified as follows:

Master: The shelf that is the communications interface for the system and contains the highest-quality clocks in the system.

Expansion: A shelf that has no input cards, no clock cards, and is timed from the master shelf via a ribbon cable (generally collocated with the master shelf).

Remote: A shelf that contains timing input cards and uses timing signals from the master or an expansion shelf (generally located distant from the master shelf).

4.03 When directing a command to a shelf in a system without remote shelves (which can have up to three expansion shelves), modify the tid (if necessary) as follows:

<tid>	= Master shelf or LPR shelf
<tid>E1	= Expansion shelf #1
<tid>E2	= Expansion shelf #2
<tid>E3	= Expansion shelf #3

4.04 If the system includes a remote shelf, a maximum of two expansion shelves can be collocated with the master shelf, and no expansion shelves can be timed from the remote shelf. Therefore, modify the tid (if necessary) as follows:

<tid>	= Master shelf or LPR shelf
<tid>E1	= Expansion shelf #1
<tid>E2	= Expansion shelf #2
<tid>E3	= Remote shelf

Note: In a system with a remote shelf, E3 is used to identify the remote shelf even if there are no expansion shelves.

Note: To allow the master and remote shelf to communicate (transfer commands and responses), the COM3 port on the master shelf must be connected to the COM3 port on the remote shelf.

4.05 The tid can be omitted if the system is being addressed locally or if there is only one system that can be accessed. Otherwise, the tid must be included to ensure that the correct shelf is addressed.

5.   STANDARD VS. NONSTANDARD CARDS

5.01 Standard cards are those cards which contain a database where card configuration information is stored. Also, standard cards can communicate with the MIS card. Nonstandard cards do not contain a database and cannot communicate with the MIS card. Table B lists the standard cards; all other cards are nonstandard.

Table B. Standard Cards

CARD	PART NUMBER
Version 5 MRC-EA	090-45010-56
Version 5 MRC-T	090-45010-53
Version 5 PSM-T	090-45025-53
Version 5 TO-EA	090-45029-51
Version 5 TOTA-5	090-45012-52

5.02 Standard cards are shipped with factory settings for those parameters which can be set. These settings are stored in the card database. When the standard card is entered (ENT-EQPT command), the card information (factory settings, serial number, CLEI code, etc.) is copied to the MIS card which stores a complete shelf database about all cards.

5.03 Nonstandard cards are not entered into the database, cannot communicate with the MIS card, and show as unequipped if queried.

5.04 Standard cards and ports must go through the sequence listed below. Failure to follow the listed sequence will result in a deny message.

Card installed: when the card is first installed, all outputs are enabled and the card and ports perform their prescribed function. In this state, the card cannot communicate with the MIS card; therefore, card information and alarm reporting is not sent to the MIS card.

Card entered: after the card is entered via the ENT-EQPT command, the card information and entered card configuration is copied to the system database in the MIS card and stored in nonvolatile memory; outputs are squelched and alarms are not reported.

Port entered: (applies only to input cards, monitor cards, and timing output cards) after the port is entered via the ENT-PORT command, the entered port configuration is copied to the system database in the MIS card and stored in nonvolatile memory; outputs are squelched and alarms are not reported.

Card restored: after the card is restored via the RST-EQPT command, the card performs all its prescribed functions (except that the inputs and outputs of input cards, monitor cards, and timing output cards are disabled); outputs are enabled and alarms are reported.

Port restored: (applies only to input cards, monitor cards, and timing output cards) after the port is restored via the RST-PORT command, the card is in the same state as card restored above.

Port removed: (applies only to input cards, monitor cards, and timing output cards) after the port is removed via the RMV-PORT command, the card performs all its prescribed functions except that the removed port is squelched; alarms are reported.

Card removed: after the card is removed via the RMV-EQPT command, the card no longer performs its prescribed functions; outputs are squelched and alarms are not reported.

Port deleted: (applies only to input cards, monitor cards, and timing output cards) after the port is deleted via the DLT-PORT command, the card performs all its prescribed functions except that the deleted port is removed from the system database; outputs are squelched and alarms are reported.

Card deleted: after the card is deleted via the DLT-EQPT command, the card is erased from the system database; outputs are squelched and alarms are not reported.

5.05 Nonstandard cards are fully functional (all inputs and outputs enabled) when plugged into the shelf.

6. PROVISIONING SEQUENCE

6.01 Use the steps in Table C to put a system in service.

Caution: Using an EDIT command on an in-service input or output card will cause a service interruption. The interruption will occur because the transmission circuits will be reinitialized.

Table C. Steps to Put a System in Service

STEP	ACTION	COMMAND TO USE
1	Insert cards into shelf	N/A
2	Log on	ACT-USER
3	Set communication parameters (Note 1)	ED-COM
4	Enter current date and time (or local hour if connected to a GTI card) (Note 2)	ED-DAT
5	Enter system/shelf identification	SET-SID
6	Assign users	ENT-USER-SECU
7	Enter cards into sytem database	ENT-EQPT
8	Enter ports into system database	ENT-PORT
9	Set source mode for timing output cards	SET-ATTR-CONT
10	Set output protection type for timing output cards	SET-ATTR-CONT
11	Set notification codes for port events	SET-ATTR-PORT
12	Set threshold level for monitored parameters	SET-TH-PORT
13	Put cards in service	RST-EQPT
14	Put ports in service	RST-PORT

Notes:
1. If any communication parameters are changed which causes loss of communication, set the terminal parameters to match the set parameters, then restart the terminal.
2. Failure to use the ED-DAT command to set the current date and time on initial power-up will result in erroneous time stamps on alarms and events reported by the MIS card.
3. For standard cards (Table B), use all the steps above; for nonstandard cards, use Steps 1 through 6 only.

7. SECURITY

7.01 Security is controlled by a combination of a switch on the MIS card and by assigning users with passwords and particular access levels. To enable security, both the switch setting must be correct and all users must have non-null passwords. Once security is enabled, access to commands is controlled by assigning levels to users.

A. Switch Setting

7.02 To enable security, section 4 of SW1 on the MIS card must be set to the ON position. From the factory, the switch is set for no security (section 4 is in the OFF position). While in this configuration, all commands can be accessed without logging onto the system. For all the switch settings on the MIS card, refer to the Card Information section of this manual.

B. Command Levels

7.03 Security consists of restricting access to commands. Restriction is accomplished by requiring a particular access level for each command. The access level is listed with each command in the applicable chart. The access levels are from 1 (lowest) to 5 (highest). Each user is assigned an access level allowing access to all commands at that level and below. One user (the system administrator) with level 5 can access all commands.

7.04 As shipped from the factory, one user is assigned with a user name of "super", a password of "sparky", and an access level of 5. Additional users can be assigned up to a maximum of 16.

8. DATABASE DOWNLOAD

8.01 Database downloading is the process of copying card configuration information from the nonvolatile memory in the MIS card to the standard cards. Database downloading is used to automatically configure standard cards, which do not have nonvolatile memory, following a power cycle of the card or the shelf.

8.02 Section 5 of switch SW1 on the MIS card controls whether the card database configuration is downloaded from the MIS card to the standard cards. To enable downloading, section 5 must be set to ON. When enabled, the database download will occur when a standard card is power cycled (does not require a craft terminal).

8.03 If section 5 of SW1 is set to OFF, the switch settings on the card will control the card configuration. In this case, if a card is replaced, a message indicating a database mismatch will occur and the card must be provisioned by commands (requires a craft terminal).

9. FACTORY SETTINGS

9.01 For a list of factory settings, refer to the Card Information section of this manual.

Chart 1. Logon/Logoff

TASK	PROCEDURE
	This chart provides the steps for logging on and logging off the System. The user name and password must have been assigned using the ENT-USER-SECU command unless the factory-supplied user name (super) and password (sparky) are being used. Note: The user name and password are case (uppercase/lowercase) sensitive and must be entered exactly as assigned.

Logon	Access level 1 is required to use this command. Enter:
	
	     `ACT-USER:[<tid>]:<username>:<ctag>::<password>;`
	
	Response:
	
	     `<source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Logoff	Access level 1 is required to use this command. Enter:
	
	     `CANC-USER:[<tid>]:<username>:<ctag>;`
	
	Response:
	
	     `<source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Chart 2. Alarm & Status Information

TASK	PROCEDURE
	This chart provides the steps for silencing audible alarms, and for displaying alarms, conditions, and messages.

Silence Alarms	Access level 1 is required to use this command. Enter:
	
	    `OPR-ACO-ALL:[<tid>]::<ctag>;`
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Display All Current Alarms	Access level 1 is required to use this command. Enter:
	
	    `RTRV-ALM-ALL:[<tid>]:ALL:<ctag>;`
	
	Response:
	
	    If there are no alarms, the format is:
	
	    `<source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	
	    If there is at least one alarm to report, the format is:
	
	    `<source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	`<aid>:<ntfcncde>,<condtype>,<service effecting>,`
	`                 <date>,<time>,,:<conddescr>," ...`

Within the Display All Current Alarms row:

```
aid              = see Table E
ntfcncde         = notification code:
                   CR          = critical alarm
                   MJ          = major alarm
                   MN          = minor alarm
                   NA          = not alarmed
                   NR          = not reported
condtype         = see Table E
service effecting = the effect on service:
                   SA          = service effecting
                   NSA         = not service effecting
date             = date of the alarm
time             = time of the alarm
conddescr        = see Table E
```

Chart 2. Alarm & Status Information (Contd)

TASK	PROCEDURE

Display Current Alarms in Specified Equipment	Access level 1 is required to use this command. Enter:
	
	`RTRV-ALM-EQPT:[<tid>]:<card>:<ctag>;`
	
	card = card:
	          CLK-a = clock card (a = 1–2)
	          SHELF = shelf
	          GTI-a = GTI card (a = 1–2)
	          LTI-a = LIT card (a = 1–2)
	          MRC-a = MRC card (a = 1–2)
	          PSM-a = PSM card (a = 1–11)
	          TO-a = TO card (a = 1–10)
	
	Response:
	
	If there are no alarms in the specified card, the format is:
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	
	If there is at least one alarm to report in the specified card, the format is:
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	`    <aid>:<ntfcncde>,<condtype>,<service effecting>,`
	`                    <date>,<time>,,:<conddescr>," ...`
	
	aid = see Table E
	ntfcncde = notification code:
	          CR = critical alarm
	          MJ = major alarm
	          MN = minor alarm
	          NA = not alarmed
	          NR = not reported
	condtype = see Table E
	service effecting = the effect on service:
	          SA = service effecting
	          NSA = not service effecting
	date = date of the alarm
	time = time of the alarm
	conddescr = see Table E

Chart 2. Alarm & Status Information (Contd)

TASK	PROCEDURE

Display Current Conditions in All Equipment	Access level 1 is required to use this command. Enter:
	
	    `RTRV-COND-EQPT:[<tid>]:ALL:<ctag>;`
	
	Response:
	
	```\n <source identifier> <date> <time>\nM <ctag> COMPLD\n <aid>:<ntfcncde>,<typerep>,<service effecting>,\n <conddescr>," ...\n```
	
	    aid = see Table E
	    ntfcncde = notification code:
	        CR = critical alarm
	        MJ = major alarm
	        MN = minor alarm
	        NA = not alarmed
	        NR = not reported
	    typerep = see Table A in the Input/Output Reference Guide section of this manual, and also see condtype in Table E in this section
	    service effecting = the effect on service:
	        SA = service effecting
	        NSA = not service effecting
	    conddescr = see Table E

Chart 2. Alarm & Status Information (Contd)

TASK	PROCEDURE

Display Current Conditions in Specified Equipment	Access level 1 is required to use this command. Enter:
	
	    `RTRV-COND-EQPT:[<tid>]:<card>:<ctag>;`
	
	       card = card:
	                CLK-a = clock card (a = 1–2)
	                FUSE-a = fuse (a = 1–2)
	                GTI-a = GTI card (a = 1–2)
	                LTI-a = LIT card (a = 1–2)
	                MRC-a = MRC card (a = 1–2)
	                PSM-a = PSM card (a = 1–11)
	                TO-a = TO card (a = 1–10)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	    `<aid>:<ntfcncde>,<typerep>,<service effecting>,`
	                               `<conddescr>," ...`
	
	     aid = see Table E
	     ntfcncde = notification code:
	              CR = critical alarm
	              MJ = major alarm
	               MN = minor alarm
	               NA = not alarmed
	               NR = not reported
	     typerep = see Table A in the Input/Output Reference Guide section
	                     of this manual, and also see condtype in Table E
	     service effecting = the effect on service:
	              SA = service effecting
	               NSA = not service effecting
	     conddescr = see Table E

Chart 2. Alarm & Status Information (Contd)

TASK	PROCEDURE

Display Current Port Alarms in Specified Equipment	Access level 1 is required to use this command. Enter:
	
	    `RTRV-ALM-PORT:[<tid>]:<port>:<ctag>;`
	
	        port = port:
	            MRC-a-b = MRC card (a = 1–2) and port
	                        (b = 1–4 or ALL)
	            PSM-a-b = PSM card (a = 1–11) and port
	                        (b = 1–4 or ALL)
	            TO-a-b = TO card (a = 1–10) and port
	                        (b = 1–10 or ALL)
	
	Response:
	
	    If there are no port alarms on the specified card, the format is:
	
	        `<source identifier> <date> <time>`
	  `M` `<ctag> COMPLD`
	
	    If there is at least one port alarm on the specified card, the format is:
	
	        `<source identifier> <date> <time>`
	  `M` `<ctag> COMPLD`
	        `<aid>:<ntfcncde>,<condtype>,<service effecting>,`
	                          `<date>,<time>,,:<conddescr>," ...`
	
	        aid = see Table E
	        ntfcncde = notification code:
	            CR = critical alarm
	            MJ = major alarm
	            MN = minor alarm
	            NA = not alarmed
	            NR = not reported
	        condtype = see Table E
	        service effecting = the effect on service:
	            SA = service effecting
	            NSA = not service effecting
	        date = date of the alarm
	        time = time of the alarm
	        conddescr = see Table E

Chart 2. Alarm & Status Information (Contd)

TASK	PROCEDURE

Display Message Log	Access level 1 is required to use this command. Enter:
	
	      `RTRV-LOG:[<tid>]:<card>:<ctag>::LOG;`
	
	Response:
	
	     `<source identifier> <date> <time>`
	`M  <ctag> COMPLD`
	   `"SYSTEM"`
	`/*`
	   `"<message>" ...`
	   `*/`

Clear Message Log	Access level 3 is required to use this command. Enter:
	
	      `INIT-LOG:[<tid>]:<card>:<ctag>::LOG;`
	
	Response:
	
	     `<source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Chart 3. Security Information

TASK	PROCEDURE
	This chart provides the steps for displaying and changing security parameters. As shipped from the factory, there is one user named "super" with a password of "sparky" and an access level of 5. For password protection to be enabled, section 4 of switch SW1 on the MIS card must be set to the ON position. Note: The user name and password are case (uppercase/lowercase) sensitive and must be entered exactly as assigned.

Display Access Level of a Single User	Access level 5 is required to use this command. Enter:
	
	`RTRV-USER-SECU:[<tid>]:<username>:<ctag>;`
	
	Response:
	
	`        <source identifier> <date> <time>`
	`    M   <ctag> COMLPD`
	`        <username>:,<access level>`

Display Access Level of All Users	Access level 5 is required to use this command. Enter:
	
	`RTRV-USER-SECU:[<tid>]:ALL:<ctag>;`
	
	Response:
	
	`        <source identifier> <date> <time>`
	`    M   <ctag> COMLPD`
	`        <username>:,<access level> ...`

Assign User	Access level 5 is required to use this command. This command enters a new user into the system. A maximum of 16 users can be assigned. Enter:
	
	`ENT-USER-SECU:[<tid>]:<username>:<ctag>::<password>,,`
	`                                <access level>;`
	
	 username = name of new user (up to 10 alpha-numeric characters)
	 password = password for new user (see note below)
	 access level = access level of new user (1–4 with 4 the highest [5 is reserved for system administrator])
	
	Note: The password can have a minimum of 1 character and a maximum of 10 characters. At least one alpha character must be used. Alpha characters can be uppercase, lowercase, or a mixture of both. Any printable character can be used except: comma (,), colon (:), semicolon (;), null (), space ( ), ampersand (&), and equal sign (=).
	
	Response:
	
	`        <source identifier> <date> <time>`
	`    M   <ctag> COMPLD`

Chart 3. Security Information (Contd)

TASK	PROCEDURE

Change Password	Access level 1 is required to use this command. This command enters a new user into the system. Up to eight users are allowed. Enter:
	
	`ED-PID:[<tid>]:<username>:<ctag>::<old password>,`
	`                                        <new password>;`
	
	username = name of user whose password is being changed
	old password = existing password
	new password = new password (see note below)
	
	Note: The password can have a minimum of 1 character and a maximum of 10 characters. At least one alpha character must be used. Alpha characters can be uppercase, lowercase, or a mixture of both. Any printable character can be used except: comma (,), colon (:), semicolon (;), null (), space ( ), ampersand (&), and equal sign (=).
	
	Response:
	
	`    <source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Change User Name, Password, & Access Level	Access level 5 is required to use this command. Enter:
	
	`ED-USER-SECU:[<tid>]:<old username>:<ctag>::`
	`    <new username>,<new password>,,<new access level>;`
	
	old username = name of user whose name, password, and/or access level is being changed
	new username = new user name (up to 10 alpha-numeric characters)
	new password = new password (see note below)
	new access level = new access level (1–4 with 4 the highest [5 is reserved for the system administrator])
	
	Note: The password can have a minimum of 1 character and a maximum of 10 characters. At least one alpha character must be used. Alpha characters can be uppercase, lowercase, or a mixture of both. Any printable character can be used except: comma (,), colon (:), semicolon (;), null (), space ( ), ampersand (&), and equal sign (=).
	
	Response:
	
	`    <source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Chart 3. Security Information (Contd)

TASK	PROCEDURE

Reassign Lost Name or Password Of System Administrator	If the name or password of the system administrator has been lost, proceed as follows:
	
	1. Remove the MIS card and set section 4 of switch SW1 to OFF to disable password protection (allows any user access to all commands).
	2. Replace the MIS card and wait approximately 60 seconds.
	3. If the system adminstrator's name has been lost, use the RTRV-USER-SECU command to determine the name of the level 5 user (system administrator) as follows:
	
	    `RTRV-USER-SECU:[<tid>]:<username>:<ctag>;`
	
	Response:
	
	    `<source identifier> <date> <time>`
	  `M   <ctag>  COMLPD`
	    `<username>:,<access level>`
	
	4. Use the ED-USER-SECU to change the name or password as follows:
	
	    `ED-USER-SECU:[<tid>]:<old username>:<ctag>::`
	               `<new username>,<new password>,,5;`
	
	    old username = name of user whose name, password, and/or access level is being changed
	    new username = new user name (up to 10 alpha-numeric characters)
	    new password = new password (see note below)
	    new access level = new access level (with 4 the highest [5 is reserved for the system administrator])
	
	Note: The password can have a minimum of 1 character and a maximum of 10 characters. At least one alpha character must be used. Alpha characters can be uppercase, lowercase, or a mixture of both. Any printable character can be used except: comma (,), colon (:), semicolon (;), null (), space ( ), ampersand (&), and equal sign (=).
	
	Response:
	
	    `<source identifier> <date> <time>`
	  `M   <ctag>  COMPLD`
	
	5. Remove the MIS card and set section 4 of switch SW1 to ON to enable password protection.
	6. Replace the MIS card and wait approximately 60 seconds.

Chart 3. Security Information (Contd)

TASK	PROCEDURE

Delete User	Access level 5 is required to use this command. Enter:
	
	`DLT-USER-SECU:[<tid>]:<username>:<ctag>;`
	
	    username = name of user being deleted (the system administrator cannot be deleted)
	
	Response:
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 4. Communication Port Configuration

TASK	PROCEDURE
This chart provides the steps for displaying and changing the communication parameters.	

Display Communi- cation Parameters	Access level 1 is required to use this command. Enter:
	
	    `RTRV-COM:[<tid>]:COM-a:ctag;`
	
	      a = communication port number (1–3 or ALL)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	    `"COM-a" ...`
	    `/*<baud>,<monitor>,<keepalive>,<comtype>,`
	                  `<endoftext>,<echo>,<alarmmessage>,`
	                    `<hwcontrol>,<swcontrol>...*/`
	
	<table><tr><td>baud</td><td>= data rate (baud rate) for this communication port:</td></tr><tr><td></td><td>9600 = 9600 baud
	1200 = 1200 baud</td></tr><tr><td>monitor</td><td>= specifies whether this communication port is allowed to view communication messages associated with other ports:
	ALW = allowed
	INH = inhibited</td></tr><tr><td>keepalive</td><td>= specifies whether this communication port is allowed to autonomously output a COMPL messages every 15 to 20 minutes:
	ALW = allowed
	INH = inhibited</td></tr><tr><td>comtype</td><td>= communication type for this communication port:
	X25 = PAD
	MODEM = modem
	TERM = dumb terminal
	REMOTE = remote shelf</td></tr><tr><td>endoftext</td><td>= specifies an additional end-of-text character for this communication port:
	0 = no additional end-of-text character
	x = the additional end-of-text character which is a hexadecimal number</td></tr><tr><td>echo</td><td>= specifies whether this communication port allows local echo:
	ALW = allowed
	INH = inhibited</td></tr><tr><td>alarmmessage</td><td>= specifies whether alarm and event messages are allowed to be transmitted from this communication port:
	ALW = allowed
	INH = inhibited</td></tr></table>

Chart 4. Communication Port Configuration (Contd)

TASK	PROCEDURE
Display Communication Parameters (Contd)	hwcontrol = specifies whether external equipment is allowed to stop the DCD system from sending messages by setting the clear to send (CTS) lead low, or continue messages by setting the CTS lead high on this communication port: ALW = allowed INH = inhibited swcontrol = specifies whether user is allowed to use a Control-s key combination to stop the DCD system from sending messages or use a Control-q key combination to cause the DCD system to continue sending messages via this communication port: ALW = allowed INH = inhibited

Change Communication Parameters	Access level 3 is required to use this command. Enter:
	
	ED-COM:[<tid>]:COM-a:ctag::[<baud>],[<monitor>],
	    [<keepalive>],[<comtype>],[<endoftext>],[<echo>],
	       [<alarmmessage>],[<hwcontrol>],[<swcontrol>];
	
	a = communication port number (1–3)
	baud = data rate (baud rate) for this communication port (baud rate for port 2 can only be changed by a switch on the MIS card):
	9600 = 9600 baud
	1200 = 1200 baud
	(null) = no change
	monitor = specifies whether this communication port is allowed to view communication messages associated with other ports:
	ALW = allowed
	INH = inhibited
	(null) = no change
	keepalive = specifies whether this communication port is allowed to autonomously output a COMPL messages every 15 to 20 minutes:
	ALW = allowed
	INH = inhibited
	(null) = no change
	comtype = specifies the communication type for this communication port:
	X25 = PAD
	MODEM = modem
	TERM = dumb terminal
	REMOTE = remote shelf
	(null) = no change

Chart 4. Communication Port Configuration (Contd)

TASK	PROCEDURE
Change Communi-cation Parameters (Contd)	endoftext = specifies an additional end-of-text character for this com-munication port: 0 = no additional end-of-text character x = the additional end-of-text character which is a hexadecimal number (1-9F) (refer to an ASCII table for the hexadecimal code for a particular character) (null) = no change echo = specifies whether this communication port allows local echo: ALW = allowed INH = inhibited (null) = no change alarmmessage = specifies whether alarm and event messages are allowed to be transmitted from this communication port: ALW = allowed INH = inhibited (null) = no change hwcontrol = specifies whether external equipment is allowed to stop the DCD system from sending messages by setting the clear to send (CTS) lead low, or cause the DCD system to continue sending messages by setting the CTS lead high on this communication port: ALW = allowed INH = inhibited (null) = no change swcontrol = specifies whether user is allowed to use a Control-s key combination to stop the DCD system from sending mes-sages, or use a Control-q key combination to cause the DCD system to continue sending messages via this communica-tion port: ALW = allowed INH = inhibited (null) = no change Response: `<source identifier> <date> <time>` M `<ctag> COMPLD`

Drop DTR Signal for 5 Seconds	Access level 3 is required to use this command. Enter:
	
	    `INIT-COM:[<tid>]:COM-a:ctag;`
	
	    a = communication port number (1–3) or ALL
	
	Response:
	
	    `<source identifier> <date> <time>`
	M `<ctag> COMPLD`

Chart 5. System Configuration

TASK	PROCEDURE
	This chart provides the steps for displaying the date & time and changing the date & time. Steps are included for displaying and changing the system name, and how to reset the system database. Also included is a step for displaying the MIS card software revision. The system name is set at the factory to TELECOM. The system name is entered (optional) as the target identifier (tid) and is included with every response from the system as the source identifier (sid). Refer to Part 4, Shelf Addressing, for expansion or remote shelf addressing details.

Display Date & Time	Access level 1 is required to use this command. Enter:
	
	 `RTRV-HDR:[<tid>]::<ctag>;`
	
	 Response:
	
	 `     <source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Change Date & Time	Access level 4 is required to use this command. If connected to a GTI card, the system will adjust the minutes and seconds to coincide with UTC time. The current hour (entered with <time>) will be used so that local time is displayed. Enter:
	
	 `ED-DAT:[<tid>]::<ctag>::{<date>,<time>};`
	
	 date = date in the format yyyy-mm-dd:
	 yyyy = year (1997–2096)
	 mm = month (01–12)
	 dd = day (01–31)
	 time = time in the format hh-mm-ss:
	 hh = hour (00–23)
	 mm = minute (00–59)
	 ss = second (00–59)
	 current hour = current local hour (00–23)
	
	 Response:
	
	 `     <source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Chart 5. System Configuration (Contd)

TASK	PROCEDURE

Reset System	Access level 4 is required to use this command. Enter:
	
	`INIT-SYS:[<tid>]:MIS:<ctag>::<reset>;`
	
	reset = type of reset:
	9 = resets all security information and the source ID (SID) to the factory settings (there will be only one user named "super" with a password of "sparky", and the DCD system SID will be TELECOM); also all card information will be deleted (no cards will be entered in the data-base); also all communication parameters will be reset to factory settings
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Display System Name	Access level 1 is required to use this command. Enter:
	
	`RTRV-HDR:[<tid>]::<ctag>;`
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Change System Name	Access level 4 is required to use this command. This command changes the source identifier for a system. Enter:
	
	`SET-SID:<old name>::<ctag>::<new name>;`
	
	old name = old source identifier of the system
	new name = new source identifier of the system (20 characters max using letters, numbers, and hyphens; the source identifier must begin with a letter; the target's CLLI code [if available] is recommended as the source identifier, or the office name can be used)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 6. Enter Card in Database

TASK	PROCEDURE
	This chart provides the steps for entering cards into the system database with the card parameters.

Enter Clock Card	Access level 4 is required to use this command. Enter:
	
	`ENT-EQPT:[<tid>]:CLK-a:<ctag>::,,,,,;`
	
	    a = clock card slot (1 or 2)
	
	Response:
	
	`     <source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Enter GTI Card	Access level 4 is required to use this command. Enter:
	
	`ENT-EQPT:[<tid>]:GTI-a:<ctag>::<framing>,`
	`             <troublecode>,,<osc1>,<osc2>,<integration>;`
	
	  a = GTI card slot (1 or 2)
	  framing = framing type:
	        CAS = channel assigned signaling
	        CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	        CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	        D4 = D4 framing format
	        ESF = ESF framing format
	        FAS = frame alignment sequence framing
	  troublecode = output signals when card has major alarm:
	        ALW = AIS is sent on all outputs
	        INH = all outputs are squelched
	  osc1 = clock type on oscillator 1 (OSC A) input:
	        RB = rubidium
	        QTZ = quartz
	  osc2 = clock type on oscillator 2 (OSC B) input:
	        RB = rubidium
	        QTZ = quartz
	  integration = integration time until an alarm is declared:
	        1 = see Table D
	        2 = see Table D
	        3 = see Table D
	        4 = see Table D
	
	Response:
	
	`     <source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 6. Enter Card in Database (Contd)

TASK	PROCEDURE
Enter LTI Card	Access level 4 is required to use this command. Enter: 　　　ENT-EQPT:[<tid>]:LTI-a:<ctag>::,,,,,; 　　　　　a　　　　　　　　= LTI card slot (1 or 2) Response: 　　　<source identifier> <date> <time> M　<ctag> COMPLD
Enter MRC Card	Access level 4 is required to use this command. Enter: 　　　ENT-EQPT:[<tid>]:MRC-a:<ctag>::,,,,,; 　　　　　a　　　　　　　　= MRC card slot (1 or 2) Response: 　　　<source identifier> <date> <time> M　<ctag> COMPLD
Enter PSM Card	Access level 4 is required to use this command. Enter: 　　　ENT-EQPT:[<tid>]:PSM-a:<ctag>::,,,,,; 　　　　　a　　　　　　　　= PSM card slot (1–11) Response: 　　　<source identifier> <date> <time> M　<ctag> COMPLD

Chart 6. Enter Card in Database (Contd)

TASK	PROCEDURE

Enter Timing Output Card	Access level 4 is required to use this command. Enter:
	
	`ENT-EQPT:[<tid>]:TO-a:<ctag>::<framing>,<troublecode>,`
	`                                  <portseverity>,,,;`
	
	a = TO card slot (1–10)
	framing = framing type:
	  CAS = channel assigned signaling
	  CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	  CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	  D4 = D4 framing format
	  ESF = ESF framing format
	  FAS = frame alignment sequence framing
	troublecode = output signals when card fails:
	  ALW = AIS is sent on all outputs
	  INH = all outputs are squelched
	portseverity = alarm type caused by port failure:
	  MJ = major
	  MN = minor
	
	Response:
	
	`      <source identifier> <date> <time>`
	`   M  <ctag> COMPLD`

Table D. GTI Card Alarm Integration Times

INTEGRATION PARAMETER SETTING	GTI CARD TYPE	ALARM INTEGRATION TIME (SIGNAL DEFECT ONLY)	
		MINOR ALARM	**MAJOR ALARM**
1	GTI -13	4 hours	24 hours
	GTI -15	Rubidium ref: 4 hours	Rubidium ref: 24 hours
		Quartz ref: 3/4 hour	Quartz ref: 6 hours
2	GTI -13	3 hours	18 hours
	GTI -15	Rubidium ref: 8 hours	Rubidium ref: 48 hours
		Quartz ref: no minor alarm	Quartz ref: 6 hours
3	GTI -13	1 hour	6 hours
	GTI -15	Rubidium ref: no minor alarm	Rubidium ref: 24 hours
		Quartz ref: no minor alarm	Quartz ref: 1 hour
4	GTI -13	10 minutes	1 hour
	GTI -15	Rubidium ref: 1/2 hour	Rubidium ref: 1 hour
		Quartz ref: 1/2 hour	Quartz ref: 1 hour
Note: The GTI types are -13 (part # 090-42140-13) and -15 (part # 090-42140-15). The times listed are the times from when a SIGNAL DEFECT occurs until a minor or major alarm is declared.			

Chart 7. Put Card In Service

TASK	PROCEDURE
This chart provides the steps for putting cards into service. Once in service, cards can report alarm and conditions.	
Restore Clock Card	Access level 4 is required to use this command. Enter: 　　　　RST-EQPT:[<tid>]:CLK-a:<ctag>; 　　　　　a　　　　　　　= clock card slot (1 or 2) Response: 　　　　<source identifier> <date> <time> 　M　<ctag> COMPLD
Restore GTI Card	Access level 4 is required to use this command. Enter: 　　　　RST-EQPT:[<tid>]:GTI-a:<ctag>; 　　　　　a　　　　　　　= GTI card slot (1 or 2) Response: 　　　　<source identifier> <date> <time> 　M　<ctag> COMPLD
Restore LTI Card	Access level 4 is required to use this command. Enter: 　　　　RST-EQPT:[<tid>]:LTI-a:<ctag>; 　　　　　a　　　　　　　= LTI card slot (1 or 2) Response: 　　　　<source identifier> <date> <time> 　M　<ctag> COMPLD
Restore MRC Card	Access level 4 is required to use this command. Enter: 　　　　RST-EQPT:[<tid>]:MRC-a:<ctag>; 　　　　　a　　　　　　　= MRC card slot (1 or 2) Response: 　　　　<source identifier> <date> <time> 　M　<ctag> COMPLD

Chart 7. Put Card In Service (Contd)

TASK	PROCEDURE

Restore PSM Card	Access level 4 is required to use this command. Enter:
	
	      `RST–EQPT:[<tid>]:PSM–a:<ctag>;`
	
	       a = PSM card slot (1–11)
	
	Response:
	
	      `<source identifier> <date> <time>`
	  `M   <ctag> COMPLD`

Restore Timing Output Card	Access level 4 is required to use this command. When a timing output card is restored (put in service), its outputs are enabled. Enter:
	
	      `RST–EQPT:[<tid>]:TO–a:<ctag>;`
	
	       a = TO card slot (1–10)
	
	Response:
	
	      `<source identifier> <date> <time>`
	  `M   <ctag> COMPLD`

Chart 8. Take Card Out of Service

TASK	PROCEDURE
This chart provides the steps for taking cards out of service. When out of service, cards can no longer report alarms and conditions.	
Remove Clock Card	Access level 4 is required to use this command. Enter: RMV-EQPT:[<tid>]:CLK-a:<ctag>; a = clock card slot (1 or 2) Response: <source identifier> <date> <time> M <ctag> COMPLD
Remove GTI Card	Access level 4 is required to use this command. Enter: RMV-EQPT:[<tid>]:GTI-a:<ctag>; a = GTI card slot (1 or 2) Response: <source identifier> <date> <time> M <ctag> COMPLD
Remove LTI Card	Access level 4 is required to use this command. Enter: RMV-EQPT:[<tid>]:LTI-a:<ctag>; a = LTI card slot (1 or 2) Response: <source identifier> <date> <time> M <ctag> COMPLD
Remove MRC Card	Access level 4 is required to use this command. Enter: RMV-EQPT:[<tid>]:MRC-a:<ctag>; a = MRC card slot (1 or 2) Response: <source identifier> <date> <time> M <ctag> COMPLD

Chart 8. Take Card Out of Service (Contd)

TASK	PROCEDURE

Remove PSM Card	Access level 4 is required to use this command. Enter:
	
	　　　`RMV-EQPT:[<tid>]:PSM-a:<ctag>;`
	
	　　　　a　　　　　　　　　= PSM card slot (1–11)
	
	Response:
	
	　　　`<source identifier> <date> <time>`
	　`M   <ctag> COMPLD`

Remove Timing Output Card	Access level 4 is required to use this command. When a timing output card is removed (taken out of service), its outputs are disabled. Enter:
	
	　　　`RMV-EQPT:[<tid>]:TO-a:<ctag>;`
	
	　　　　a　　　　　　　　　= TO card slot (1–10)
	
	Response:
	
	　　　`<source identifier> <date> <time>`
	　`M   <ctag> COMPLD`

Chart 9. Delete Card from Database

TASK	PROCEDURE
	This chart provides the steps for deleting cards from the system database.

Delete Clock Card	Access level 4 is required to use this command. Enter:
	
	`DLT-EQPT:[<tid>]:CLK-a:<ctag>;`
	
	a = clock card slot (1 or 2)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Delete GTI Card	Access level 4 is required to use this command. Enter:
	
	`DLT-EQPT:[<tid>]:GTI-a:<ctag>;`
	
	a = GTI card slot (1 or 2)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Delete LTI Card	Access level 4 is required to use this command. Enter:
	
	`DLT-EQPT:[<tid>]:LTI-a:<ctag>;`
	
	a = LTI card slot (1 or 2)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Delete MRC Card	Access level 4 is required to use this command. Enter:
	
	`DLT-EQPT:[<tid>]:MRC-a:<ctag>;`
	
	a = MRC card slot (1 or 2)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 9. Delete Card from Database (Contd)

TASK	PROCEDURE

Delete PSM Card	Access level 4 is required to use this command. Enter:
	
	`DLT-EQPT:[<tid>]:PSM-a:<ctag>;`
	
	a = PSM card slot (1–11)
	
	Response:
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Delete Timing Output Card	Access level 4 is required to use this command. Enter:
	
	`DLT-EQPT:[<tid>]:TO-a:<ctag>;`
	
	a = TO card slot (1–10)
	
	Response:
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 10. Card Configuration

TASK	PROCEDURE
	This chart provides the steps for displaying and changing parameters on the GTI and Timing Output cards. ***Note:*** No information is returned for clock cards, LTI cards, MRC cards, or PSM cards, therefore, individual commands for these cards have not been included in this chart.
Display Parameters for GTI and Timing Output Cards	Access level 2 is required to use this command. Enter: `        RTRV-EQPT:[<tid>]:ALL:<ctag>;` Response:

```
        <source identifier> <date> <time>
    M   <ctag> COMPLD
        "<aid>:[<framing>],[<troublecode>],
                        [<portseverity>],[<osc1>],[<osc2>],
                                    [<integration>]" ...
```

framing	= framing type:	
	CAS	= channel assigned signaling
	CAS4	= channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	CRC4	= frame alignment sequence framing with cyclic redundancy check 4
	D4	= D4 framing format
	ESF	= ESF framing format
	FAS	= frame alignment sequence framing
troublecode	= output signals when card has major alarm:	
	ALW	= AIS is sent on all outputs
	INH	= all outputs are squelched
osc1	= clock type on oscillator 1 (OSC A) input:	
	RB	= rubidium
	QTZ	= quartz
osc2	= clock type on oscillator 2 (OSC B) input:	
	RB	= rubidium
	QTZ	= quartz
integration	= integration time until an alarm is declared:	
	1	= see Table D
	2	= see Table D
	3	= see Table D
	4	= see Table D

Chart 10. Card Configuration (Contd)

TASK	PROCEDURE

Display GTI Card Parameters	Access level 2 is required to use this command. Enter:
	
	    `RTRV-EQPT:[<tid>]:GTI-a:<ctag>;`
	
	        a = GTI card slot (1–2)
	
	Response:
	
	      `<source identifier> <date> <time>`
	`M` `<ctag> COMPLD`
	     `"GTI-a:<framing>,<troublecode>,,<osc1>,<osc2>`
	                           `,<integration>" ...`
	
	    framing = framing type:
	            CAS = channel assigned signaling
	            CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	            CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	            D4 = D4 framing format
	            ESF = ESF framing format
	            FAS = frame alignment sequence framing
	    troublecode = output signals when card has major alarm:
	            ALW = AIS is sent on all outputs
	            INH = all outputs are squelched
	    osc1 = clock type on oscillator 1 (OSC A) input:
	            RB = rubidium
	            QTZ = quartz
	    osc2 = clock type on oscillator 2 (OSC B) input:
	            RB = rubidium
	             QTZ = quartz
	    integration = integration time until an alarm is declared:
	            1 = see Table D
	            2 = see Table D
	            3 = see Table D
	            4 = see Table D

Chart 10. Card Configuration (Contd)

TASK	PROCEDURE

Change GTI Card Parameters	Access level 3 is required to use this command. Enter:
	
	`ED-EQPT:[<tid>]:GTI-a:<ctag>::<framing>,<troublecode>,,`
	`                              <osc1>,<osc2>,<integration>;`
	
	    a = GTI card slot (1 or 2)
	    framing = framing type:
	        CAS = channel assigned signaling
	        CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	        CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	        D4 = D4 framing format
	        ESF = ESF framing format
	        FAS = frame alignment sequence framing
	    troublecode = output signals when card has major alarm:
	        ALW = AIS is sent on all outputs
	        INH = all outputs are squelched
	    osc1 = clock type on oscillator 1 (OSC A) input:
	        RB = rubidium
	        QTZ = quartz
	    osc2 = clock type on oscillator 2 (OSC B) input:
	        RB = rubidium
	        QTZ = quartz
	    integration = integration time until an alarm is declared:
	        1 = see Table D
	        2 = see Table D
	        3 = see Table D
	        4 = see Table D
	
	Response:
	
	     `<source identifier> <date> <time>`
	  M `<ctag> COMPLD`

Chart 10. Card Configuration (Contd)

TASK	PROCEDURE

Display Timing Output Card Parameters	Access level 2 is required to use this command. Enter:
	
	    `RTRV-EQPT:[<tid>]:TO-a:<ctag>`
	
	       a = TO card slot (1–10)
	
	Response:
	
	    `<source identifier> <date> <time`
	`M` `<ctag> COMPLD`
	    `"GTI-a:<framing>,<troublecode>,<portseverity>" ...`
	
	        framing = framing type:
	                 CAS = channel assigned signaling
	                 CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	                 CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	                 D4 = D4 framing format
	                 ESF = ESF framing format
	                 FAS = frame alignment sequence framing
	        troublecode = output signals when card fails:
	                 ALW = AIS is sent on all outputs
	                 INH = all outputs are squelched
	        portseverity = alarm type caused by port failure:
	                 MJ = major
	                 MN = minor

Chart 10. Card Configuration (Contd)

TASK	PROCEDURE

Change Timing Output Card Parameters	Access level 3 is required to use this command. Enter:
	
	`ED-EQPT:[<tid>]:TO-a:<ctag>::<framing>,<troublecode>,`
	`                           <portseverity>,,,,;`
	
	a = TO card slot (1–10)
	framing = framing type:
	    CAS = channel assigned signaling
	    CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	    CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	    D4 = D4 framing format
	    ESF = ESF framing format
	    FAS = frame alignment sequence framing
	troublecode = output signals when card fails:
	    ALW = AIS is sent on all outputs
	    INH = all outputs are squelched
	portseverity = alarm type caused by port failure:
	    MJ = major
	    MN = minor
	
	Response:
	
	`      <source identifier> <date> <time>`
	`   M  <ctag> COMPLD`

Chart 11. Reference Input Ports

TASK	PROCEDURE
	This chart provides the steps for controlling reference input ports including: entering ports into the system database, putting ports into service, displaying port parameters, changing port parameters, taking ports out of service, and deleting ports from the system database.
Enter Port	Access level 4 is required to use this command. Enter:

```
ENT-PORT:[<tid>]:MRC-a-b[&&-c]:<ctag>::<framing>,
             <priority>,<reference type>,<signal type>;
```

a	= MRC card slot (1–2)
b	= MRC card port (1–4 or ALL)
c	= ending MRC card port (2–4 with c > b)
framing	= type of framing:
	CAS = channel assigned signaling
	CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	D4 = D4 framing format
	ESF = ESF framing format
	FAS = frame alignment sequence framing
priority	= priority of the reference on this port (1–4 with 1 the highest)
reference type	= type of reference:
	GPS = global positioning system
	LORAN = LORAN
	CESIUM = cesium
	NETWORK = network
signal type	= type of signal:
	ANALOG = analog
	DIGITAL = digital

Note: If all the reference ports of an MRC card are configured for the same priority, the references will be selected based on the numerical order of the ports. The same numerical order will be listed if the settings are retrieved.

Response:

```
     <source identifier> <date> <time>
M  <ctag> COMPLD
```

Chart 11. Reference Input Ports (Contd)

TASK	PROCEDURE

Restore Port	Access level 3 is required to use this command. Enter:
	
	    `RST-PORT:[<tid>]:MRC-a-b:<ctag>;`
	
	      a = MRC card slot (1–2)
	      b = MRC card port (1–4 or ALL)
	
	Response:
	
	    `<source identifier> <date> <time>`
	 `M   <ctag> COMPLD`

Display Performance Monitoring Data	Access level 2 is required to use this command. Enter:
	
	    `RTRV-PM-PORT:[<tid>]:MRC-a-b:<ctag>::`
	                                  `<monitor type>,,,,,,;`
	
	      a = MRC card slot (1–2)
	      b = MRC card port (1–4 or ALL)
	      monitor type = the monitored parameter:
	           ALL = all monitor types
	           BPV = bipolar violations
	           CRC = cyclic redundancy check
	
	Response:
	
	    `<source identifier> <date> <time>`
	 `M   <ctag> COMPLD`
	    `"MRC-a-b:<monitor type>,<monitor value>,,,,`
	                         `<monitor date>,<monitor time>" ...`
	
	    monitor value = value retrieved for the monitor type
	    monitor date = current date
	    monitor time = current time

Clear Performance Monitoring Data	Access level 3 is required to use this command. Enter:
	
	    `INIT-REG:[<tid>]:MRC-a-b:<ctag>::<monitor type>;`
	
	      a = MRC card slot (1–2)
	      b = MRC card port (1–4)
	      monitor type = the monitored parameter:
	           ALL = all monitor register types
	           BPV = bipolar violations register
	           CRC = cyclic redundancy check register
	
	Response:
	
	    `<source identifier> <date> <time>`
	 `M   <ctag> COMPLD`

Chart 11. Reference Input Ports (Contd)

TASK	PROCEDURE

Display Framing, Priority, Reference Type, & Signal Type	Access level 1 is required to use this command. Enter:
	
	`RTRV-PORT:[<tid>]:MRC-a-b[&&-c]:<ctag>;`
	
	a = MRC card slot (1–2)
	b = MRC card port (1–4)
	c = ending MRC card port (2–4 with c > b)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M  <ctag> COMPLD`
	`"MRC-a-b:<ctag>::<framing>,<priority>,`
	`          <reference type>,<signal type>," ...`
	
	framing = type of framing:
	  CAS = channel assigned signaling
	  CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	  CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	  D4 = D4 framing format
	  ESF = ESF framing format
	  FAS = frame alignment sequence framing
	priority = priority of the reference on this port (1–4 with 1 the highest)
	reference type = type of reference:
	  GPS = global positioning system
	  LORAN = LORAN
	  CESIUM = cesium
	  NETWORK = network
	signal type = type of signal:
	  ANALOG = analog
	  DIGITAL = digital

Chart 11. Reference Input Ports (Contd)

TASK	PROCEDURE
Change Framing, Priority, Reference Type, & Signal Type	Access level 3 is required to use this command. Enter:

```
ED-PORT:[<tid>]:MRC-a-b[&&-c]:<ctag>::<framing>,
            <priority>,<reference type>,<signal type>;
```

a	= MRC card slot (1–2)
b	= MRC card port (1–4 or ALL)
c	= ending MRC card port (2–4 with c > b)
framing	= type of framing:

CAS = channel assigned signaling
CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
CRC4 = frame alignment sequence framing with cyclic redundancy check 4
D4   = D4 framing format
ESF = ESF framing format
FAS = frame alignment sequence framing

priority = priority of the reference on this port (1–4 with 1 the highest)

reference type = type of reference:
GPS   = global positioning system
LORAN   = LORAN
CESIUM   = cesium
NETWORK   = network

signal type = type of signal:
ANALOG   = analog
DIGITAL   = digital

Response:

```
        <source identifier> <date> <time>
    M   <ctag> COMPLD
```

Chart 11. Reference Input Ports (Contd)

TASK	PROCEDURE

Display Threshold	Access level 1 is required to use this command. Enter:
	
	`RTRV-TH-PORT:[<tid>]:MRC-a-b[&&-c]:<ctag>::`
	                                                    `<monitor type>;`
	
	a = MRC card slot (1–2)
	b = MRC card port (1–4 or ALL)
	c = ending MRC card port (2–4 with c > b)
	monitor type = the monitored parameter:
	    ALL = all monitored parameters
	    BPV = bipolar violations
	    CRC = cyclic redundancy check
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	    `"MRC-a-b:<monitor type>,,,<threshold>" ...`
	
	    threshold = threshold level in decimal numerals
	
	Note for monitor type of BPV: Only in-service (restored) ports are sampled; therefore, the BPV counts displayed correspond to a particular error rate depending on the number of in-service ports. Find the BPV count in the table below that is closest to the displayed BPV count and in the column which represents the number of ports in service, then follow across to the corresponding error rate. Because the ports are sampled in turn, there is some amount of settling time for the framing circuit. This settling time causes an error of ±4% in the specified error rate. The observation interval is 15 minutes.
	
	<table><tr><td colspan="4">BPV count</td><td></td></tr><tr><td>1 port in service</td><td>2 ports in service</td><td>3 ports in service</td><td>4 ports in service</td><td>Error Rate</td></tr><tr><td>14</td><td>7</td><td>5</td><td>4</td><td>1×10^{-8}</td></tr><tr><td>139</td><td>70</td><td>46</td><td>35</td><td>1×10^{-7}</td></tr><tr><td>1390</td><td>695</td><td>464</td><td>348</td><td>1×10^{-6}</td></tr><tr><td>13896</td><td>6948</td><td>4632</td><td>3474</td><td>1×10^{-5}</td></tr><tr><td>32767</td><td>16348</td><td>10922</td><td>8192</td><td>2.35×10^{-5}</td></tr></table>

Chart 11. Reference Input Ports (Contd)

TASK	PROCEDURE

Change Threshold	Access level 3 is required to use this command. Enter:
	
	`SET-TH-PORT:[<tid>]:MRC-a-b:<ctag>::<monitor type>,`
	`                                       <threshold>;`
	
	a = MRC card slot (1–2)
	b = MRC card port (1–4 or ALL)
	monitor type = the monitored parameter:
	      BPV = bipolar violations
	      CRC = cyclic redundancy check
	threshold = 0–32767
	
	Note for BPVs: Only in-service (restored) ports are sampled; therefore, the BPV counts entered to obtain a desired error rate depends on the number of in-service ports. Enter a BPV count from the table below based on the desired error rate and the number of ports in service as the <thlev> parameter in the command.

	BPV count			
Error Rate	1 port in service	2 ports in service	3 ports in service	4 ports in service
1×10^{-8}	14	7	5	4
1×10^{-7}	139	70	46	35
1×10^{-6}	1390	695	464	348
1×10^{-5}	13896	6948	4632	3474
2.35×10^{-5}	32767	16348	10922	8192

Because the ports are sampled in turn, there is some amount of settling time for the framing circuit. This settling time causes an error of ±4% in the specified error rate. The observation interval is 15 minutes.

Note: If an MRC or PSM card has only one port active, no sampling occurs, and events are accumulated in real time.

Response:

```
      <source identifier> <date> <time>
   M  <ctag> COMPLD
```

Chart 11. Reference Input Ports (Contd)

TASK	PROCEDURE

Display Alarm Severity	Access level 1 is required to use this command. Enter:
	
	 `RTRV-ATTR-PORT:[<tid>]:MRC-a-b[&&-c]:<ctag>;`
	
	 a = MRC card slot (1–2)
	 b = MRC card port (1–4 or ALL)
	 c = ending MRC card port (2–4 with c > b)
	
	 Response:
	
	 `<source identifier> <date> <time>`
	 `M  <ctag> COMPLD`
	 `"MRC-a-b:<severity>,<condition>" ...`
	
	 severity = severity set for the condition:
	     CR = critical alarm
	     MJ = major alarm
	     MN = minor alarm
	     NA = not alarmed
	     NR = not reported
	     CL = cleared
	 condition = port condition:
	     AIS = alarm indication signal
	     ALL = all monitor types
	     BPV = bipolar violations
	     CRC = cyclic redundancy check
	     FFREQ = fractional frequency
	     LOS = loss of signal
	     OOF = out-of-fame errors

Chart 11. Reference Input Ports (Contd)

TASK	PROCEDURE

Change Alarm Severity	Access level 4 is required to use this command. Enter:
	
	`SET-ATTR-PORT:[<tid>]:MRC-a-b:<ctag>::<severity>,`
	`                                <condition>;`
	
	     a = MRC card slot (1–2)
	     b = MRC card port (1–4 or ALL)
	
	Response:
	
	`     <source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	`     "MRC-a-b:<severity>,<condition>" ...`
	
	   severity = severity set for the condition:
	            CR = critical alarm
	            MJ = major alarm
	            MN = minor alarm
	            NA = not alarmed
	            NR = not reported
	   condition = port condition:
	            AIS = alarm indication signal
	            ALL = all monitor types
	            BPV = bipolar violations
	            CRC = cyclic redundancy check
	            FFREQ = fractional frequency
	            LOS = loss of signal
	             OOF = out-of-fame errors

Remove Port	Access level 3 is required to use this command. Enter:
	
	`RMV-PORT:[<tid>]:MRC-a-b[&&-c]:<ctag>;`
	
	     a = MRC card slot (1–2)
	     b = MRC card port (1–4 or ALL)
	     c = ending MRC card port (2–4 with c > b)
	
	Response:
	
	`     <source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 11. Reference Input Ports (Contd)

TASK	PROCEDURE

Delete Port	Access level 4 is required to use this command. Enter:
	
	`DLT-PORT:[<tid>]:MRC-a-b:<ctag>;`
	
	    a = MRC card slot (1–2)
	    b = MRC card port (1–4 or ALL)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Chart 12. Monitor Input Ports

TASK	PROCEDURE
	This chart provides the steps for controlling monitor input ports including: entering ports into the system database, putting ports into service, displaying port parameters, changing port parameters, taking ports out of service, and deleting ports from the system database.

Enter Port	Access level 4 is required to use this command. Enter:
	
	`ENT-PORT:[<tid>]:PSM-a-b[&&-c]:<ctag>::<framing>,,,;`
	
	a = PSM card slot (1–11)
	b = PSM card port (1–4 or ALL)
	c = ending PSM card port (2–4 with c > b)
	framing = type of framing:
	CAS = channel assigned signaling
	CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	D4 = D4 framing format
	ESF = ESF framing format
	FAS = frame alignment sequence framing
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Restore Port	Access level 3 is required to use this command. Enter:
	
	`RST-PORT:[<tid>]:PSM-a-b:<ctag>;`
	
	a = PSM card slot (1–11)
	b = PSM card port (1–4 or ALL)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE

Display Performance Monitoring Data	Access level 2 is required to use this command. Enter:
	
	 `RTRV-PM-PORT:[<tid>]:PSM-a-b:<ctag>::<monitor type>`
	 `,,,,,[<monitor date>],`
	 `[<monitor time 1>|<monitor time 2>];`
	
	 a = PSM card slot (1–11)
	 b = PSM card port (1–4 or ALL)
	 monitor type = the monitored parameter:
	    SLIPS = number of slips since the previous midnight (used with monitor date)
	    BPV = bipolar violations since the previous 15-min reset (used with monitor time 2)
	    CRC = cyclic redundancy check errors since the previous 15-min reset (used with monitor time 2)
	    MTIE = if today's date is entered, the 1-second MTIE accumulated between now and the previous 24 hours; if any previous date is entered, the 1-second MTIE accumulated between midnight on that date and the previous midnight
	    TDEV = if today's date is entered, the 1000-second TDEV accumulated between now and the previous 24 hours; if any previous date is entered, the 1000-second TDEV accumulated between midnight on that date and the previous midnight
	    PHASE1M = 1-minute raw phase accumulated between monitor time 2 and 1 hour after monitor time 2
	    PHASE1S = 1-second raw phase accumulated between monitor time 2 and 1 hour after monitor time 2
	 monitor date = date:
	    mm-dd = mm = month, dd = day
	    (null) = current day
	 monitor time 1 = current time (null)
	 monitor time 2 = time the accumulation period ends:
	    hh-00 = hour of the day (hh = 00–23)
	    hh-15 = 15 minutes past hour hh
	    hh-30 = 30 minutes past hour hh
	    hh-45 = 45 minutes past hour hh

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE

Display Performance Monitoring Data (Contd)	Response:
	
	For BPV (CRC, SLIPS, MTIE, TDEV, and PHASE1M will appear similarly):
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	`    "MRC-a-b:<monitor type>,<monitor value>,<validity>`
	`                 ,,,,<monitor date>,<monitor time>" ...`
	
	monitor value = value retrieved for the monitor type
	validity = complete (null) or not available (NA)
	monitor date = current date
	monitor time = current time
	
	Note: The \<monval\> units of measure for MTIE and TDEV are nanoseconds. The \<monval\> units of measure for PHASE1M are nanoseconds and 60 lines will be displayed.

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE
Display Performance Monitoring Data (Contd)	Response (contd): For PHASE1S: ``` <source identifier> <date> <time> M <ctag> COMPLD "<aid>:<monitor type>,<monitor value>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <validity>,,,,[<mondat>][,<montm>]" "<aid>:<monitor type>,<monitor value>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <validity> . . . . . . "<aid>:<monitor type>,<monitor value>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>,<Δ>, <validity> ``` *Note:* The units of measure for <monval> for PHASE1S are nanoseconds. *Note:* For <monitor value> there will be 100 numbers separated by comas; the first number is the absolute phase value of the <monitor type> requested. Each of the following 99 numbers is the difference (Δ) from the preceding number.

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE

Clear Performance Monitoring Data	Access level 3 is required to use this command. Enter:
	
	    `INIT–REG:[<tid>]:PSM–a–b:<ctag>::<monitor type>;`
	
	        a = PSM card slot (1–11)
	        b = PSM card port (1–4 or ALL)
	        monitor type = the monitored parameter:
	                ALL = all register types
	                BPV = bipolar violations register
	                CRC = cyclic redundancy check register
	                FFREQ = fractional frequency register
	                MTIE = MTIE register
	                OOF = out-of-fame errors register
	                PHASE1M = phase 1-minute register
	                PHASE1S = phase 1-second register
	                SLIPS = slips register
	                TDEV = TDEV register
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Display Framing & Signal Type	Access level 1 is required to use this command. Enter:
	
	    `RTRV–PORT:[<tid>]:PSM–a–b[&&–c]:<ctag>;`
	
	        a = PSM card slot (1–11)
	        b = PSM card port (1–4)
	        c = ending PSM card port (2–4 with c > b)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M  <ctag> COMPLD`
	    `"PSM–a–b:<ctag>::<framing>,,,<signal type>" ...`
	
	    framing = type of framing:
	            CAS = channel assigned signaling
	            CAS4 = channel assigned signaling with frame aligned sequence with cyclic redundancy check 4
	            CRC4 = frame alignment sequence framing with cyclic redundancy check 4
	            D4 = D4 framing format
	            ESF = ESF framing format
	            FAS = frame alignment sequence framing
	    signal type = digital signal (DIGITAL)

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE

Display Threshold	Access level 1 is required to use this command. Enter:
	
	`RTRV-TH-PORT:[<tid>]:PSM-a-b[&&-c]:<ctag>::`
	             `<monitor type>;`
	
	 a = PSM card slot (1–11)
	 b = PSM card port (1–4 or ALL)
	 c = ending PSM card port (2–4 with c > b)
	 monitor type = the monitored parameter:
	   ALL = all monitor types
	   BPV = bipolar violations
	   CRC = cyclic redundancy check
	   MTIEx = MTIE x-second threshold (x = 1, 2, 4, 10, 16, 20, 40, 64, 100, 128, 200, 400, 512, 900, 1000, 2000, 4000, 10000, 20000, 40000, or 86400)
	   TDEVx = TDEV x-second threshold (x = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 16, 20, 30, 40, 50, 60, 64, 70, 80, 90, 100, 128, 200, 300, 400, 500, 600, 700, 800, 900, or 1000)

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE

Display Threshold (Contd)	Response:
	
	      `<source identifier> <date> <time>`
	  `M   <ctag> COMPLD`
	      `"PSM-a-b:<monitor type>,,,<threshold>" ...`
	
	     threshold = threshold level in decimal numerals
	
	Note for monitor type of BPV: Only in-service (restored) ports are sampled; therefore, the BPV counts displayed correspond to a particular error rate depending on the number of in-service ports. Find the BPV count in the table below that is closest to the displayed BPV count and in the column which represents the number of ports in service, then follow across to the corresponding error rate. Because the ports are sampled in turn, there is some amount of settling time for the framing circuit. This settling time causes an error of ±4% in the specified error rate. The observation interval is 15 minutes.

BPV count				
1 port in service	2 ports in service	3 ports in service	4 ports in service	Error Rate
14	7	5	4	1×10^{-8}
139	70	46	35	1×10^{-7}
1390	695	464	348	1×10^{-6}
13896	6948	4632	3474	1×10^{-5}
32767	16348	10922	8192	2.35×10^{-5}

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE
Change Threshold	Access level 3 is required to use this command. Enter:

```
SET–TH–PORT:[<tid>]:PSM–a–b:<ctag>::<monitor type>,
                                          <threshold>;
```

a	= PSM card slot (1–11)
b	= PSM card port (1–4 or ALL)
monitor type	= the monitored parameter:

BPV	= bipolar violations
CRC	= cyclic redundancy check
MTIEx	= MTIE x-second threshold (x = 1, 2, 4, 10, 16, 20, 40, 64, 100, 128, 200, 400, 512, 900, 1000, 2000, 4000, 10000, 20000, 40000, or 86400)
TDEVx	= TDEV x-second threshold (x = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 16, 20, 30, 40, 50, 60, 64, 70, 80, 90, 100, 128, 200, 300, 400, 500, 600, 700, 800, 900, or 1000)
threshold	= 0–32767

Note for BPVs: Only in-service (restored) ports are sampled; therefore, the BPV counts entered to obtain a desired error rate depends on the number of in-service ports. Enter a BPV count from the table below based on the desired error rate and the number of ports in service as the <thlev> parameter in the command.

	BPV count			
Error Rate	1 port in service	2 ports in service	3 ports in service	4 ports in service
1×10^{-8}	14	7	5	4
1×10^{-7}	139	70	46	35
1×10^{-6}	1390	695	464	348
1×10^{-5}	13896	6948	4632	3474
2.35×10^{-5}	32767	16348	10922	8192

Because the ports are sampled in turn, there is some amount of settling time for the framing circuit. This settling time causes an error of ±4% in the specified error rate. The observation interval is 15 minutes. If an MRC or PSM card has only one port active, no sampling occurs, and events are accumulated in real time.

Response:

```
        <source identifier> <date> <time>
    M   <ctag> COMPLD
```

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE

Display Alarm Severity	Access level 1 is required to use this command. Enter:
	
	    `RTRV–ATTR–PORT::PSM–a–b[&&–c]:<ctag>;`
	
	        a = PSM card slot (1–11)
	        b = PSM card port (1–4 or ALL)
	        c = ending PSM card port (2–4 with c > b)
	
	Response:
	
	      `<source identifier> <date> <time>`
	  `M   <ctag> COMPLD`
	      `"PSM–a–b:<severity>,<condition>" ...`
	
	    severity = severity set for the condition:
	            CR = critical alarm
	            MJ = major alarm
	            MN = minor alarm
	            NA = not alarmed
	            NR = not reported
	    condition = port condition:
	            ALL = all monitor types
	            BPV = bipolar violations
	            CRC = cyclic redundancy check
	            OOF = out-of-fame errors
	            MTIEx = MTIE x-second threshold (x = 1, 2, 4, 10, 16, 20, 40, 64, 100, 128, 200, 400, 512, 900, 1000, 2000, 4000, 10000, 20000, 40000, or 86400)
	            TDEVx = TDEV x-second threshold (x = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 16, 20, 30, 40, 50, 60, 64, 70, 80, 90, 100, 128, 200, 300, 400, 500, 600, 700, 800, 900, or 1000)

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE

Change Alarm Severity	Access level 4 is required to use this command. Enter:
	
	    `SET-ATTR-PORT:[<tid>]:PSM-a-b:<ctag>::<severity>,`
	                                        `<condition>;`
	
	        a = PSM card slot (1–11)
	        b = PSM card port (1–4 or ALL)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M` `<ctag> COMPLD`
	    `"PSM-a-b:<severity>,<condition>" ...`
	
	    severity = severity set for the condition:
	           CR = critical alarm
	           MJ = major alarm
	           MN = minor alarm
	           NA = not alarmed
	           NR = not reported
	    condition = port condition:
	           ALL = all monitor types
	           BPV = bipolar violations
	           CRC = cyclic redundancy check
	           OOF = out-of-fame errors
	           MTIEx = MTIE x-second threshold (x = 1, 2, 4, 10, 16, 20, 40, 64, 100, 128, 200, 400, 512, 900, 1000, 2000, 4000, 10000, 20000, 40000, or 86400)
	           TDEVx = TDEV x-second threshold (x = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 16, 20, 30, 40, 50, 60, 64, 70, 80, 90, 100, 128, 200, 300, 400, 500, 600, 700, 800, 900, or 1000)

Remove Port	Access level 3 is required to use this command. Enter:
	
	    `RMV-PORT:[<tid>]:PSM-a-b[&&-c]:<ctag>;`
	
	        a = PSM card slot (1–11)
	        b = PSM card port (1–4 or ALL)
	        c = ending PSM card port (2–4 with c > b)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M` `<ctag> COMPLD`

Chart 12. Monitor Input Ports (Contd)

TASK	PROCEDURE

Delete Port	Access level 4 is required to use this command. Enter:
	
	`DLT-PORT:[<tid>]:PSM-a-b:<ctag>;`
	
	a = PSM card slot (1–11)
	b = PSM card port (1–4 or ALL)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 13. Timing Output Ports

TASK	PROCEDURE
	This chart provides the steps for controlling timing output ports including: entering ports into the system database, putting ports into service, displaying port parameters, changing port parameters, taking ports out of service, and deleting ports from the system database.

Enter Port	Access level 4 is required to use this command. Enter:
	
	`ENT-PORT:[<tid>]:TO-a-b[&&-c]:<ctag>::,,,<signal type>;`
	
	a = TO card slot (1–10)
	b = TO card port (1–10 or ALL)
	c = ending TO card port (2–10 with c > b)
	signal type = type of signal:
	ANALOG = analog
	DIGITAL = digital
	
	Response:
	
	`<source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Restore Port	Access level 3 is required to use this command. Enter:
	
	`RST-PORT:[<tid>]:TO-a-b:<ctag>;`
	
	a = TO card slot (1–10)
	b = TO card port (1–10 or ALL)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M  <ctag> COMPLD`

Display Signal Type	Access level 1 is required to use this command. Enter:
	
	`RTRV-PORT:[<tid>]:TO-a-b[&&-c]:<ctag>;`
	
	a = TO card slot (1–10)
	b = TO card port (1–10)
	c = ending TO card port (2–10 with c > b)
	
	Response:
	
	`<source identifier> <date> <time>`
	`M  <ctag> COMPLD`
	`"TO-a-b:<ctag>::,,<signal type>," ...`
	
	signal type = type of signal:
	ANALOG = analog
	DIGITAL = digital

Chart 13. Timing Output Ports (Contd)

TASK	PROCEDURE

Change Signal Type	Access level 3 is required to use this command. Enter:
	
	`ED-PORT:[<tid>]:TO-a-b[&&-c]:<ctag>::,,,<signal type>;`
	
	a = TO card slot (1–10)
	b = TO card port (1–10)
	c = ending TO card port (2–10 with c > b)
	signal type = type of signal:
	    ANALOG = analog
	    DIGITAL = digital
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M  <ctag>  COMPLD`

Remove Port	Access level 3 is required to use this command. Enter:
	
	`RMV-PORT:[<tid>]:TO-a-b[&&-c]:<ctag>;`
	
	a = TO card slot (1–10)
	b = TO card port (1–10 or ALL)
	c = ending TO card port (2–10 with c > b)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M  <ctag>  COMPLD`

Delete Port	Access level 4 is required to use this command. Enter:
	
	`DLT-PORT:[<tid>]:TO-a-b:<ctag>;`
	
	a = TO card slot (1–10)
	b = TO card port (1–10 or ALL)
	
	Response:
	
	    `<source identifier> <date> <time>`
	`M  <ctag>  COMPLD`

Chart 14. Output Synchronization Source

TASK	PROCEDURE
	This chart provides the steps for displaying and changing the synchronization source mode for the timing output cards, and for selecting and releasing a specific synchronization source for the timing output cards.

Display Source Mode for Timing Output Cards	Access level 2 is required to use this command. Enter:
	
	`RTRV-ATTR-CONT:[<tid>]:SHELF:<ctag>;`
	
	Response:
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`
	`    "SHELF:<source mode>" ...`
	
	    source mode = source mode for timing output cards:
	              RVRT = revertive
	              NRVRT = nonrevertive

Change Source Mode for Timing Output Cards	Access level 3 is required to use this command. Enter:
	
	`SET-ATTR-CONT:[<tid>]:SHELF:<ctag>::<source mode>;`
	
	    source mode = source mode for timing output cards:
	              RVRT = revertive
	              NRVRT = nonrevertive
	
	Response:
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Select Source for Timing Output Cards	Access level 3 is required to use this command. Enter:
	
	`OPR-SYNCHNSW:[<tid>]:TO-ALL:<ctag>::<source>;`
	
	    source = internal source for timing output cards:
	              CLK1 = clock card 1
	              CLK2 = clock card 2
	              IN1 = system input card 1
	              IN2 = system input card 2
	
	Response:
	
	`    <source identifier> <date> <time>`
	`M   <ctag> COMPLD`

Chart 14. Output Synchronization Source (Contd)

TASK	PROCEDURE

Release Source for Timing Output Cards	Access level 3 is required to use this command. This command cancels the OPR-SYNCNSW command. Enter:
	
	    `RLS-SYNCHNSW:[<tid>]:TO-ALL:<ctag>;`
	
	Response:
	
	      `<source identifier> <date> <time>`
	  `M   <ctag> COMPLD`

Chart 15. GPS Information

TASK	PROCEDURE
This chart provides the steps for displaying the GPS operating statistics.	

Display GPS Statistics	Access level 2 is required to use this command. Enter:
	
	      `RTRV-GPS-STAT:[<tid>]:GTI-a:<ctag>;`
	
	        a = GTI card slot (1–2)
	
	Response:
	
	<pre> <source identifier> <date> <time>
	M <ctag> COMPLD
	     "GTI-a"
	     /*
	     UTC-TIME=b,
	     LOCATION=c,
	     SAT-IN-VIEW=d,
	     [SAT-e=f], ...
	     GTIMDEV=g,
	     OSC1FFREQ=h,
	     OSC2FFREQ=i
	     */</pre> b = universal coordinated time (hours:minutes:seconds)
	      c = format is ddmm.mmm-x-dddmm.mmm-y-aa
	          ddmm.mmm-x = latitude:
	            dd = degrees
	            mm.mmm = minutes
	            x = north (N) or south (S)
	          dddmm.mmm-y = longitude:
	            ddd = degrees
	            mm.mmm = minutes
	            x = east (E) or west (W)
	          aa = altitude in meters
	      d = number of satellites in view
	      e = satellite number
	      f = format is d1-d2-sn:
	          d1 = satellite azimuth (degrees relative to true north)
	          d2 = satellite elevation (degrees relative from horizontal)
	          sn = signal-to-noise ratio (dB)
	      g = modified Allen deviation of the GTI card
	      h = oscillator 1 fractional frequency
	      i = oscillator 2 fractional frequency

Table E. Alarm/Event Summary

aid	condtype	conddescr
CLK-x	ACTIVE	CLOCK IS SUPPLYING SIGNAL TO OUTPUT CARDS
	DRIFT	INPUT IS DRIFTING
	FREERUN	CLOCK IN FREERUN
	HOLDOVER	CLOCK IN HOLDOVER
	INACTIVE	CLOCK IS NOT SUPPLYING SIGNAL TO OUTPUT CARD
	INPUT-FAIL-a	TIMING SIGNAL FROM INPUT CARD LOSS
	LOCKED	CLOCK LOCKED TO INPUT SIGNAL
	MATCH	CARD INFORMATION DOES NOT MATCH DATABASE
	NOT-LOCKED	CLOCK NOT CONVERGED ON REFERENCE INPUT
	TOLERANCE	SYSTEM INPUT TO CLOCK OUT OF TOLERANCE
	UNEQUIPPED	CARD IS MISSING
GTI-x	ACQUIRE	GTI ACQUIRED
	COMM-LOSS	COMMUNICATION LOSS
	CONVERGING	TIMING SIGNAL NOT YET STABLE (SKY PROBLEM)
	FAIL	CARD FAULT:REFERENCE PLL OUT OF LOCK
	FAIL	CARD FAIL:PRIMARY REFERENCE PLL OUT OF LOCK
	FAIL	CARD FAIL:OSCILLATOR PLL OUT OF LOCK
	FREQ-TOL	GPS FREQUENCY OUT OF TOLERANCE
	FUSE-x	LPR FUSE HAS BLOWN OR POWER FAIL
	GTI-LOCK	GTI IS LOCKED
	GTR-COMM-LOS	GTR COMMUNICATIONS FAIL
	GTR-FAIL	GTR FAIL:ANTENNA CURRENT FAIL
	GTR-FAIL	GTR FAIL:GTR PLL OUT OF LOCK
	GTR-FAIL	GTR FAIL:NOT LOCKED TO UTC TIME
	GTR-FAIL	GTR FAIL:FLASH MEMORY FAIL
	GTR-FAIL	GTR FAIL:RAM MEMORY FAIL
	GTR-LOCK	GTR IS LOCKED
	GTR-NOT-LOCKED	GTR UNLOCK
	GTR-PWR-FLT	GTR POWER FAULT
	GTR-SIG-LOS	SIGNAL FROM THE GTR HAS BEEN LOST
	LOS	OUTPUT FROM THE GTR HAS BEEN LOST
	MATCH	CARD INFORMATION DOES NOT MATCH DATABASE
	NO-INPUTS	ALL INPUTS TO THE GTI HAVE BEEN LOST
	OSC-x-LOS	LOCAL OSCILLATOR SIGNAL LOSS
	OSC-x-TOL	OSCILLATOR OUT OF FREQUENCY TOLERANCE

Table E. Alarm/Event Summary (Contd)

aid	condtype	conddescr
GTI-x (Contd)	SATELLITE	INSUFFICIENT SATELLITES
	SEARCH	GTI IN SEARCH MODE
	SIGNAL-DEFECT	GTR LOCATION, SKY PROBLEM OR GND/OSCILLATOR NOISE
	TRACK	GTI TRACKING
	UNEQUIPPED	CARD IS MISSING
LTI-x	ANTENNA	CURRENT TO ANTENNA IS OUT OF TOLERANCE
	FAIL	LTI FAIL:TRANSFER OSC PLL OUT OF LOCK
	FAIL	LTI FAIL:SYNTHESIZER PLL OUT OF LOCK
	FAIL	LTI FAIL:PRIMARY REFERENCE PLL OUT OF LOCK
	FAIL	LTI FAIL:LOSS OF COMM TO DSP OR DSP FAIL
	FAIL	LTI FAIL:LOSS OF SIGNAL TO DSP OR DSP FAIL
	FUSE-x	LPR FUSE HAS BLOWN OR POWER FAIL
	LOS	OUTPUT FROM THE LTI HAS BEEN LOST
	MATCH	CARD INFORMATION DOES NOT MATCH DATABASE
	NO-INPUTS	ALL INPUTS TO THE LTI HAVE BEEN LOST
	OSC-x-LOS	LOSS OF LOCAL OSCILLATOR SIGNAL
	OSC-LOS	LOSS OF BOTH LOCAL OSCILLATOR SIGNALS
	SEARCH	LTI IS IN SEARCH MODE
	UNEQUIPPED	CARD IS MISSING
MIS	RESET	MIS HAS RESET
MRC-x	ACTIVE	CARD IS SUPPLYING A SIGNAL TO THE CLOCK(S)
	ALL-REF	LOSS OF ALL EXTERNAL INPUT REFERENCES
	CLOCK-z	LOSS OF INPUT FROM THE CLOCK
	FAIL	CARD FAILED
	FAIL	CARD FAIL:CLOCK SYNTHESIZER FAILURE
	FAIL	CARD FAIL: FRAMER FAILURE
	FFREQ-z	CLOCK DISQUALIFIED:FREQ THRESHOLD EXCEEDED
	INACTIVE	CARD IS NOT SUPPLYING A SIGNAL TO THE CLOCK(S)
	MATCH	CARD INFORMATION DOES NOT MATCH DATABASE
	UNEQUIPPED	CARD IS MISSING

Table E. Alarm/Event Summary (Contd)

aid	condtype	conddescr
MRC-x-y	AIS	ALARM INDICATION SIGNAL RECEIVED
	BPV	BPV DETECTED
	CRC	CRC DETECTED
	FFREQ	REF INPUT FRACTIONAL FREQ THRESHOLD EXCEEDED
	LOS	REFERENCE INPUT SIGNAL HAS BEEN LOST
	OOF	OOF DETECTED
	SWITCH	INPUT TIMING SIGNAL SWITCHED
PSM-x	CLOCK-z	LOSS OF INPUT FROM THE CLOCK
	FAIL	CARD FAILED
	FAIL	CARD FAIL: FRAMER FAILURE
	MATCH	CARD INFORMATION DOES NOT MATCH DATABASE
	UNEQUIPPED	CARD IS MISSING
PSM-x-y	AIS	ALARM INDICATION SIGNAL RECEIVED
	BPV	BPV DETECTED
	CRC	CRC DETECTED
	LOS	REFERENCE INPUT SIGNAL HAS BEEN LOST
	MTIEx	x SECOND THRESHOLD EXCEEDED
	OOF	OOF DETECTED
	TDEVx	x SECOND THRESHOLD EXCEEDED
SHELF	FUSE-x	FUSE BLOWN OR POWER FAIL
	GP	SHELF INPUT ALARM
	GP	SHELF MAJOR
	GP	SHELF MINOR
	GP	EXPANSION MINOR
	GP	EXPANSION MAJOR
	OVERRIDE	TIMING OUTPUT SOURCE SELECTED BY COMMAND

Table E. Alarm/Event Summary (Contd)

aid	condtype	conddescr
TO-x	CLOCK-y	TIMING SIGNAL FROM CLOCK CARD DISQUALIFIED
	FAIL	CARD FAIL:A/D FAILURE
	FAIL	CARD FAIL:INTERNAL FAILURE
	FAIL	CARD FAIL:REFERENCE VOLTAGE FAILURE
	FAIL	CARD FAIL:PLL OUT OF LOCK
	INPUT-x	TIMING SIGNAL FROM INPUT CARD DISQUALIFIED
	MATCH	PROTECTION CARD CONFIGURATION MISMATCH OR PAIRED CARD MISSING
	MATCH	CARD INFORMATION DOES NOT MATCH DATABASE
	SOURCE-CLKx	OUTPUT CARD IS USING CLK x
	SOURCE-INPUTx	OUTPUT CARD IS USING INPUT x
	SWITCH	INPUT SWITCHED
	SWITCH	FAILURE TO SWITCH TO CLK x
	SWITCH	FAILURE TO SWITCH TO INPUT x
	SWITCH	OUTPUT CARD PROTECTION SWITCH
	UNEQUIPPED	CARD IS MISSING
TO-x-y	PORT	OUTPUT PORT HAS FAILED