

SYSTEM CENTURY® DIGITAL TRUNK INTERFACE

MAINTENANCE

CONTENTS		
Par.		Page
1.	Introduction	1
2.	Related Information	1
2.01	General	1
2.02	Related Sections	1
2.03	Related Drawings	2
3.	General	2
4.	Repair Procedures	2
5.	DTI Equipment Numbers	3
6.	Fault Descriptions	3
7.	Error Messages	3
8.	LED Indicators	3
9.	Utility Commands	3
10.	DTI Status Report	6
11.	Diagnostic Tests	6
11.01	Test Commands	6
11.02	Data Test	6
11.03	Loop-Back Test	6
11.04	Frame Sync Test	7
11.05	Diagnostic Messages	7
12.	End-to-End System Faults	8

ILLUSTRATIONS		
Fig.		Page
1.	DTI Cell, LED Indicators	5
2.	DTI Status Report	7

TABLES		
No.		Page
1.	Fault Descriptions	4
2.	Error Messages	5
3.	LED Indications	6
4.	Utility Commands	8
5.	Diagnostic Test Commands	8
6.	Diagnostic Messages	9
7.	Control Port PSA Word 1, Bit Layout	12
8.	End-to-End System Faults	12

1.	INTRODUCTION	
1.01	This section provides maintenance and troubleshooting information for the SYSTEM CENTURY® Digital Trunk Interface (DTI). The various fault conditions, audio and visual alarm indications, troubleshooting instructions, and repair procedures are described, along with a summary of the applicable input/output messages.	
1.02	This section is reissued to incorporate information provided in addendum 1 of issue 3.	
2.	RELATED INFORMATION	
2.01	General.	
	A Sales and Instructional Literature Index of latest available publications can be obtained from your Stromberg-Carlson sales representative or from Publications Services, Stromberg-Carlson Corporation, P.O. Box 1698, Sanford, Florida 32771.	
2.02	Related Sections.	
	The following sections are recommended for use with this document. To determine the actual section numbers of sections marked with an asterisk (*), refer to the <i>DCO Index of Related Sections</i> provided with your set of Stromberg-Carlson Practices (SCPs).	
	02-001-10	Product Support Procedures
	*23-YYY-97	System Operators Manual
	*23-YYY-99	Message Dictionary
	23-223-51	Equipment Removal and Replacement Procedures
	24-015-25	DTI Precutover Test Procedures

2.03 Related Drawings.

The schematic diagram and description of each circuit listed below is recommended for use with this document. Each circuit is identified by a six-digit base number. A schematic or circuit description is identified by prefixing a base number with S- or DS- respectively.

<u>BASE NUMBER</u>	<u>NAME</u>
814503	DTI Interface
814504	DTI Receiver
814505	DTI Transmitter
814506	DTI Diagnostics
814536	DTI Interface CUA Complex
*814581	DTI Interface CUA Complex

3. GENERAL

3.01 System fault conditions that require maintenance actions are reported by alarm indications at the DCO basic maintenance panel and by error message printouts at the input/output (I/O) console. Certain malfunctions are also indicated with light-emitting diodes (LEDs) located at the front edge of printed wiring boards contained in the DTI cell. The various fault indications provide information necessary to troubleshoot problems and repair faults within the Digital Trunk Interface.

3.02 Second-level diagnostic tests, done at the DCO I/O console, are used to isolate system faults. The available tests provide a comprehensive evaluation of DTI operation. If a system fault condition remains after local diagnostic testing indicates that the DTI is functioning properly, then the proper operation of the T-1 span line equipment and distant terminal should be verified before further local repair actions are initiated.

3.03 Loop-back facilities are normally provided with the T-1 span equipment to aid in isolating faults to a particular span section or office terminal location. Refer to the maintenance information supplied by the manufacturer of the span line equipment for necessary performance tests and fault-locating procedures.

*Porchless Backplane

3.04 When a bridging error detector (such as Northeast Electronics Model 7005A T1 Bridging Error Detector) is used to test the T-1 transmit pair, a false "oscillations" indication can occur when all DTI channels are idle. This condition occurs because the PCM value for idle channels is all logical "ones". An erroneous indication of oscillations can be avoided by transmitting a test tone on any DTI channel to ensure that at least one channel is active. Also, the DTI must not be in the loop-back mode while using a bridging error detector, since this will transmit an all "ones" pattern regardless of channel activity.

4. REPAIR PROCEDURES

4.01 Maintenance and repair actions must be coordinated with the distant central office. Operating ports associated with the DTI must be removed from service at both offices before replacing circuit boards, doing loop-back tests, or initiating other actions that interrupt normal system operation. Procedures for removing ports from service are described in the section titled *System Operators Manual*, referenced in paragraph 2.02.

4.02 The DTI logic circuitry is contained on four plug-in printed wiring board assemblies (PWBA's). The general repair procedure is to replace the PWBA suspected of being faulty with a known good one. If the replacement circuit board does not correct the problem, reinstall the original board, then replace the unit next most likely to be defective. Circuit board replacement procedures are explained in the section titled *Equipment Removal and Replacement Procedures*, referenced in paragraph 2.02.

4.03 If the equipment is under warranty, do not attempt to repair a defective PWBA. Unauthorized repair actions may void the factory warranty. Return the circuit board to Stromberg-Carlson Corporation as instructed in the section titled *Product Support Procedures*, referenced in paragraph 2.02.

4.04 The Stromberg-Carlson Assistance Team (SCATSM) is a customer service organization established to supply technical assistance to customers when needed. If a problem cannot be resolved, call the Stromberg-Carlson Assistance Team in Sanford, Florida: (305) 849-3000. A Customer Service Engineer will provide assistance in helping to correct the problem.

5. DTI EQUIPMENT NUMBERS

5.01 DTI equipment numbers are included with output messages and input commands to identify individual DTI terminals. Equipment numbers consist of five octal digits that define the common controller, matrix switch, port group, and port number associated with a particular DTI. The DTI equipment number is always directed to port 30.

5.02 The octal equipment number (EN) is derived from 13 bits that are used to address the DTI. The following example shows the translation of common controller No. 0, matrix switch No. 1, port group No. 5, port No. 30 to DTI EN 00676:

	Common Controller (00 = 0)					Port Group (101 = 5)					Port Always Port 30 (11110 = 30)		
	Not Relevant TO EN					Matrix Switch (001 = 1)							
Bit Value:	X	X	X	0	0	0	0	1	1	0	1	1	1
Bit Number:	15	14	13	12	11	10	9	8	7	6	5	4	3
Octal EN:	0					0					6		

NOTE: Release 8A uses five digit decimal FR-CELL-PT equipment number.

6. FAULT DESCRIPTIONS

6.01 Fault conditions that degrade or interrupt normal operation of the DTI are reported both in the form of audio and visual alarm indications at the DCO basic maintenance panel and in the form of specific error message printouts at the I/O console. A description of system fault conditions is provided in table 1, along with automatic software actions, diagnostic message printouts, and alarm indications associated with each fault.

7. ERROR MESSAGES

7.01 Error message printouts generated by the DTI error handler report spontaneous fault conditions detected during normal operation of the DTI. Each error message is preceded by three asterisks (***), and the time (HH:MM:SS) in hours, minutes, and seconds. The time is followed by a mnemonic code that identifies the DTI error handler as the source of the message (DTERHD), and an octal equipment number used to

identify a specific DTI terminal (XXXXX). A complete error message format is provided by the example that follows:

```
***HH:MM:SS DTERHD DTI XXXXX MAINTENANCE LIMIT MIS-FRAMES
***HH:MM:SS DTERHD MAINTENANCE REQUIRED
MIS-FRAME LIMIT
DTI # XXXXX
```

7.02 The DTI error messages are listed in table 2 along with the type of DCO alarm generated with each message and the corrective action required for each error condition.

8. LED INDICATORS

8.01 Light-emitting diodes (LEDs) are located along the front edge of certain printed wiring board assemblies (PWBAs) contained within the DTI cell. These LEDs provide visual indications for a number of system operating functions. The LED locations are shown in figure 1. The significance of these indications is explained in table 3, along with the corrective actions required for abnormal indications.

9. UTILITY COMMANDS

9.01 Utility commands are used to remove a DTI from service, to restore a DTI to service, and to list the DTI status report. The utility command sequence, input at the I/O console, is shown in table 4. Each command entry must be followed by a carriage return.

9.02 The DTIREM/REY command is used to remove a DTI from service. When the command is executed, new calls are denied access to the ports associated with the DTI, all calls in progress are lost, and the DTI goes into loopback.

9.03 The DTIRES/RES command resets alarm conditions and restores a DTI to normal operation. The command is used to restore a DTI that has been manually removed from service or to restore a DTI that has been automatically removed from service due to an error condition.

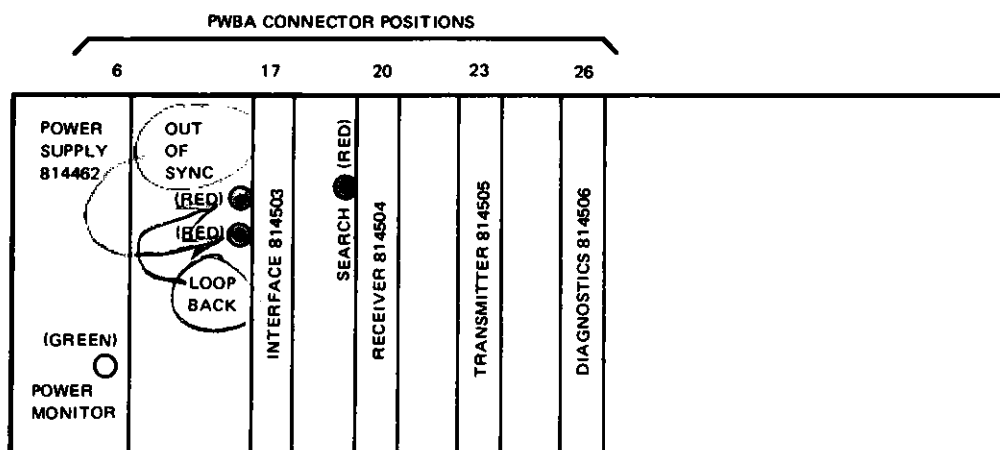
9.04 The DTIRPT/REP command is used to display the DTI status report at the I/O console. The status of a particular DTI, or all DTIs, is displayed as directed by the input commands shown in table 4.

Table 1. Fault Descriptions

ERROR CONDITION	FAULT DESCRIPTION	ALARM TYPE	SOFTWARE ACTION
Misframe	Misframe. Loss of frame sync for less than 2.5 seconds.	None	Freeze current call states until synchronization is regained.
	Framing loss. Synchronization not regained within 2.5 seconds.	Non-emergency	Generate local carrier group alarm. (See local CGA software action.)
	Misframe maintenance limit reached (17 in 24 hours).	Non-emergency	Output error message: MAINTENANCE LIMIT MIS-FRAMES/ MAINTENANCE REQUIRED MIS-FRAME LIMIT
	Misframe out-of-service limit reached (511 in 24 hours).	Group Emergency	Remove DTI from service. Output error message: OUT OF SERVICE LIMIT MIS-FRAMES/ OUT OF SERVICE MIS-FRAME LIMIT
Carrier Group Alarm (CGA)	Remote CGA. (CGA indication from distant office.)	Non-emergency	Remove DTI from service. Output message: OUT OF SERVICE CGA-REMOTE. Monitor alarm; when CGA clears, restore DTI to service. Output message: RESTORED TO SERVICE.
	Local CGA. (Preceded by framing loss.)	Non-emergency	Remove DTI from service, generate remote CGA to distant office. Output message: OUT OF SERVICE CGA LOCAL. When frame synchronization is regained, clear alarm and restore DTI to service. Output message: RESTORED TO SERVICE.
Slipped Frame	Single occurrence, frame realignment.	None	None
	Slipped frame maintenance limit reached (4 in 24 hours).	Non-emergency	Output error message: MAINTENANCE LIMIT SLIPPED FRAMES/ MAINTENANCE REQUIRED SLIPPED FRAME LIMIT
	Slipped frame out-of-service limit reached (255 in 24 hours).	Group Emergency	Remove DTI from service. Output error message: OUT OF SERVICE LIMIT SLIPPED FRAMES/ OUT OF SERVICE SLIPPED FRAME LIMIT
Bit Error Rate	Bit Error Rate A. (Maintenance limit)	None	Report BER A maintenance limit on hourly DTI status report.
	Bit Error Rate B. (Out-of-service limit)	Group Emergency	Remove DTI from service. Output error message: OUT OF SERVICE LIMIT BER-B/ OUT OF SERVICE BIT ERROR RATE B
Test Alarm Error	Test alarm out-of-service limit reached (125 in one hour).	Group Emergency	Remove DTI from service. Output error message: OUT OF SERVICE LIMIT EXCESSIVE TEST ALARMS/ OUT OF SERVICE EXCESSIVE TEST ALARMS
Common Equipment Alarm Error	Common equipment alarm out-of-service limit reached (125 in one hour).	Group Emergency	Remove DTI from service. Output error message: OUT OF SERVICE EXCESSIVE COMMON EQUIP. ALARMS.
MP – CP Link Error	Maintenance processor not responding to call processor request.	None	Output error message: RECEIVED NOT ACCOMPLISHED – MP to CP MESSAGE.

Table 2. Error Messages

ALARM	ERROR MESSAGE	CORRECTIVE ACTION REQUIRED
None	RESTORED TO SERVICE	None. Message indicates that DTI has been automatically restored to service after CGA has cleared, or been manually restored to service with an input command.
	OUT-OF-SERVICE MANUAL REQUEST	Message indicates that DTI has been manually removed from service with an input command.
	INVALID EN	DTI equipment number entered with input command is not valid. Retype command, followed by correct octal number.
	RECEIVED NOT ACCOMPLISHED MP TO CP MESSAGE	Reset call processors using \$CPREST command described in section titled <i>Message Dictionary</i> . Reload maintenance processor using MP startup procedure described in section titled <i>System Operators Manual</i> .
Nonemergency	MAINTENANCE LIMIT MIS FRAMES/ MAINTENANCE REQUIRED MIS FRAME LIMIT	Run frame sync test (par. 11). Verify proper operation of span line equipment and distant terminal. Run loop-back test (par. 11).
	MAINTENANCE LIMIT SLIPPED FRAMES/ MAINTENANCE REQUIRED SLIPPED FRAME LIMIT	Verify proper operation of span line and distant terminal. Run loop-back test (par. 11).
	OUT OF SERVICE CGA REMOTE	Check LED indicators at DTI cell (par. 8). Verify proper operation of span line equipment and distant terminal. Run loop-back test (par. 11).
	OUT OF SERVICE CGA LOCAL	Run frame sync test (par. 11). Run loop-back test (par. 11). Verify proper operation of span line equipment and distant terminal.
Group Emergency	OUT OF SERVICE LIMIT MIS FRAMES/ OUT OF SERVICE MIS FRAME LIMIT	Run loop-back test (par. 11). Run frame sync test (par. 11). Verify proper operation of span line equipment and distant terminal.
	OUT OF SERVICE LIMIT SLIPPED FRAMES/ OUT OF SERVICE SLIPPED FRAME LIMIT	Run frame sync test (par. 11). Run loop-back test (par. 11). Verify proper operation of span line equipment and distant terminal.
	OUT OF SERVICE LIMIT BER - B/ OUT OF SERVICE LIMIT ERROR RATE - B	Verify proper operation of span line equipment and distant terminal. Replace interface or diagnostics PWBA.
	OUT OF SERVICE EXCESSIVE TEST ALARMS	Run the diagnostic tests (par. 11). Replace diagnostics or interface PWBA.
	OUT OF SERVICE EXCESSIVE COMMON EQUIP. ALARMS	Run the diagnostic tests (par. 11). Replace diagnostics or interface PWBA.



CP 7673

Figure 1. DTI Cell, LED Indicators

Table 3. LED Indications

<i>LED DESIGNATION</i>	<i>COLOR/ LOCATION</i>	<i>NORMAL INDICATION</i>	<i>PURPOSE</i>	<i>CORRECTIVE ACTION</i>
Power Monitor	Green/Cell Power Supply	Illuminated	Monitors cell power supply. Lights when voltage is within tolerance.	If dark, check fuses on front of power supply. If none have blown, replace power supply.
Out of Sync	Red/Interface PWBA	Dark	Lights when out-going T-1 clock signal is not synchronous with PGH data clock.	If steadily illuminated or constantly flashing, replace interface PWBA.
Loop-Back	Red/Interface PWBA	Dark	Lights when DTI is in loop-back mode.	If illuminated when DTI is in normal operation (loop-back test not running), replace interface or diagnostics PWBA.
Search	Red/Receiver PWBA	Dark	Lights when frame synchronizer is in search mode. Indicates that DTI has lost synchronization with incoming bit stream.	If illuminated when DTI is in loop-back mode, replace receiver or interface PWBA. If illuminated only when DTI is in normal operation, this indicates fault with span line or distant terminal.

10. DTI STATUS REPORT

10.01 The DTI status report lists the current status of critical DTI functions. The status report is displayed at the I/O console by using the DTIRPT command, and is also automatically displayed every hour. The DTI status report format and interpretation is shown in figure 2.

11. DIAGNOSTIC TESTS

11.01 Test Commands.

The individual diagnostic tests are done from the I/O console by using the command sequence shown in table 5. Each command entry must be followed by a carriage return. When a test is completed, an appropriate message is transmitted to the I/O console. Faulty ports detected by diagnostic testing must be manually removed from service until the problem is corrected. To remove a port from service, use the manual port control commands described in the section titled *System Operators Manual*, referenced in paragraph 2.02.

11.02 Data Test.

- a. The data test is used to verify the proper operation of each individual channel associated with the DTI port group. Both the transmit and receive data paths for each channel are tested in turn. Faulty ports are

listed on the diagnostic printout at the conclusion of testing.

- b. Individual channels are tested only if they are in the on-hook condition. If a busy port is encountered during the test, it will be passed over and marked as not tested on the summary report. Therefore, running the data test will not interrupt normal operation of the DTI.

11.03 Loop-Back Test.

- a. The DTI must be put out of service using "DTIREM/~~REM~~" command, before running test.
- b. The loop-back test loops the DTI line-side output to the line-side input and then test the signaling bits for each channel with both "zero" and "one" bit values. Individual ports that fail the loop-back test are listed on the diagnostic printout at the conclusion of testing.
- c. The operation of the loop-back test causes the DTI to be disconnected from the T-1 span line. Running the loop-back test will interrupt normal operation of all 24 channels associated with the DTI port group. Therefore, *all operating ports associated with the DTI under test must be removed from service before running the loop-back test.*

11.04 Frame Sync Test.

- a. The frame sync test is used to verify that the DTI is able to detect a loss of frame synchronization and is then able to regain synchronization. A diagnostic message is output at the conclusion of testing to indicate whether the DTI has passed or failed the frame sync test.
- b. Operation of the frame sync test causes the DTI to lose synchronization for approximately four milliseconds. Because the sync loss period is relatively short, running the test for one pass will not interrupt normal system operation.

11.05 Diagnostic Messages.

The diagnostic messages that are output by the DTI diagnostic tests are described in table 6 along with the corrective actions required. Diagnostic messages report the results of second-level diagnostic test routines and are identified by the mnemonic code DIAG2. Output messages are preceded with three asterisks (***) and the time (HH:MM:SS) in hours, minutes, and seconds. A complete diagnostic message format is provided by the example that follows:

*** HH:MM:SS DIAG2 DTLPBK EV = 00000 VX = 0 FC = 000 000
 *** HH:MM:SS DIAG2 DTLPBK SELECT PASS

***HH:MM:SS DTI STATUS REPORT

DTI NO.	SERVICE (IN/OUT)	SLP FRMS	MIS FRMS	STATUS				ALARMS						
				LPB	TE	AR	RTS	BEB	BEA	CGA	SLP	MIS	TST	CEQ
1	2	3	4	5	6									

Information is displayed under appropriate heading as follows:

1. DTI equipment number
2. DTI service status.
 - IN - in service
 - OUT-SLP - out of service, frame-slips
 - OUT-MIS - out of service, misframes
 - OUT-BEB - out of service, bit-error-rate B
 - OUT-CGR - out of service, carrier group alarm, remote
 - OUT-CGL - out of service, carrier group alarm, local
 - OUT-LPB - out of service, loop-back set
 - OUT-MAN - out of service, manual command
3. Total number of frame-slips. The total resets to zero every 24 hours at midnight.
4. Total number of misframes. The total resets to zero every 24 hours at midnight.
5. Status of DTI control bits. "X" indicates that a bit is active, "." indicates that a bit is clear.
 - LPB - loop-back
 - TE - test enable
 - AR - alarm reset
 - RTS - return-to-search
6. Status of DTI alarm bits. "X" indicates that a bit is active, "." indicates that a bit is clear.
 - BEB - bit-error-rate B
 - BEA - bit-error-rate A
 - CGA - carrier group alarm
 - SLP - frame-slip
 - MIS - misframe
 - TST - test alarm
 - CEQ - common equipment alarm

Figure 2. DTI Status Report

12. END-TO-END SYSTEM FAULTS

12.01 End-to-end analog transmission problems and carrier group alarm (CGA) malfunctions are caused by faults in the DTI, the distant terminal, or the span line. If both directions of transmission are affected, repair actions should be concentrated on equipment common to both the receive and transmit paths. If only

one direction of transmission is affected, repair actions should begin with equipment associated with the particular transmission path involved. Table 8 provides a guide to aid in isolating end-to-end system performance faults. End-to-end test procedures are provided in the section titled *DTI, Precutover Test Procedures*, referenced in paragraph 2.02.

Table 4. Utility Commands

COMMAND FORMAT	APPLICATION
\$DTIUTL Prompt: FUNCTION Response: DTIREM/ REM DTIRES/ RES DTIRPT/ RPT	Select DTI utility function. Requests function desired. (Enter only one function). Remove DTI from service. Restore DTI to service. Report DTI status.
Prompt: DTI NO: Response: XXXXX (or ALL is status report for all DTIs is desired)	Requests DTI equipment number. Maximum of five octal digits (leading zeros not required)/ five decimal digits (leading zeros not required)
<i>NOTE. Systems with release 6 software do not use the \$DTIUTL command. On release 6 systems, the following command is used to restore a DTI to service: \$RESDTI XXXX.</i>	

Table 5. Diagnostic Test Commands

COMMAND FORMAT	APPLICATION
\$DIAG2 DT SELECT Prompt: ENTER TASK Response: DTDATA DTLPBK DTFRSY	Select DTI diagnostic test. Requests task desired. (Enter only one task.) DTI data test. DTI loop-back test. DTI frame sync test.
Prompt: ENTER DTI EN# Response: XXXXX	Requests DTI equipment number. Maximum of five octal digits (leading zeros not required).
Prompt: ENTER MODE Response: RETURN (key) RPT RUF	Requests test mode desired. Run test for one pass only. Repeat test until \$STOP is input. Repeat test until a failure is detected or \$STOP is input.

Table 6. Diagnostic Messages

TEST	TYPICAL DIAGNOSTIC MESSAGE	CORRECTIVE ACTION
Data Test	DTDATA FAULTY PORTS SUMMARY: DTI #0676 00000000001111111112222 012345678901234567890123 FAILING PORTS UNTESTED PORTS DTDATA EV = 000000 VX = 0 FC = 000000 SELECT PASS DTDATA FAULTY PORTS SUMMARY: DTI #0676 00000000001111111112222 012345678901234567890123 FAILING PORTS * * * * UNTESTED PORTS * * * DTDATA EV = 000001 VX = 0 FC = 000676 SELECT FAIL DTDATA TEST NOT RUN ERROR IN CONTROL PORT WORD 1 = 176441 DTDATA FAULTY PORTS SUMMARY: DTI #0676 00000000001111111112222 012345678901234567890123 FAILING PORTS UNTESTED PORTS DTDATA EV = 000001 VX = 0 FC = 000676 SELECT FAIL DTDATA LINK ERROR = XXXXX TEST PORT = XXXX DTDATA FAULTY PORTS SUMMARY: DTI #0676 00000000001111111112222 012345678901234567890123 FAILING PORTS UNTESTED PORTS DTDATA EV = 000001 VX = 0 FC = 000676 SELECT FAIL	None required. Data test completed with no errors detected. Remove faulty ports from service until problem is corrected. Replace receiver or transmitter PWBA as indicated by test data. Rerun data test to verify that the repair cleared the faults. Faulty ports (0-23) are indicated by an asterisk in the upper row. The bottom row of asterisks indicate ports that were not tested. Data test was not run due to CGA and common equipment alarms in the control port. Rerun test after alarms are cleared. <i>NOTE. Decode octal control port word using Table 7.</i> Link error occurred during DTDATA test. Rerun test. If failure persists, call SCAT.

Table 6. Diagnostic Messages (Cont)

TEST	TYPICAL DIAGNOSTIC MESSAGE	CORRECTIVE ACTION
Data Test (Cont)	DTDATA DTI WILL NOT REPORT TEST ALARM DTDATA EV = 000001 VX = 0 FC = 000676 SELECT FAIL	Hardware did not report an alarm when an error was forced. Replace diagnostic card and rerun test.
Loop Back Test	DTLPBK EV = 000000 VX = 0 FC = 000000 DTLPBK SELECT PASS DTI # PORT FAILING EXPECTED DATA ACTUAL DATA 00676 00 377 000 00676 23 000 010 00676 23 377 367 DTLPBK EV = 000001 VX = 0 FC = 000676 DTLPBK SELECT FAIL DTI NOT OUT OF SERVICE DTLPBK EV = 000000 VX = 0 FC = 000000 SELECT FAIL DTLPBK LINK ERROR = XXXXX PTLPBK EV = 000001 VX = 0 FC = 000676 DTLPBK SELECT FAIL DTLPBK TEST NOT RUN ERROR IN CONTROL PORT WORD 1 = 176441 PTLPBK EV = 000001 VX = 0 FC = 000676 DTLPBK SELECT FAIL	None required. Loop-back test completed with no errors detected. Remove faulty ports from service until problem is corrected. Replace PWBAs in the following order: receiver, transmitter, interface, diagnostics. Rerun loop-back test to verify that the repair cleared the faults. Loop-back test not run because DTI was not placed out of service using "DTIREM/███" command. Link error occurred during DTLPBK test. Rerun test. If failure persists, call SCAT. Loop-back test not run due to CGA and common equipment alarms in the control port. Rerun test after alarms are cleared. NOTE. Decode octal control port word using Table 7.

Table 6. Diagnostic Messages (Cont)

TEST	TYPICAL DIAGNOSTIC MESSAGES	CORRECTIVE ACTION
Frame Sync Test	DTFRSY EV = 000000 VX = 0 FC = 000000 DTFRSY SELECT PASS DTFRSY TEST NOT RUN ERROR IN CONTROL PORT WORD 1 = 176441 DTFRSY EV = 000001 VX = 0 FC = 000676 DTFRSY SELECT FAIL DTFRSY LINK ERROR = XXXXXX DTFRSY EV = 000001 VX = 0 FC = 000676 DTFRSY SELECT FAIL DTFRSY DTI DID NOT UNSYNC WORD 1 = XXXXXX DTFRSY EV = 000001 VX = 0 FC = 000676 DTFRSY SELECT FAIL DTFRSY DTI DID NOT RESYNC DTFRSY EV = 000001 VX = 0 FC = 000676 DTFRSY SELECT FAIL	None required. Frame sync test completed with no errors detected. Frame sync test not run due to CGA and common equipment alarms in the control port. Rerun test after alarms are cleared. <i>NOTE. Decode octal control port word using Table 7.</i> Link bit error occurred during DTFRSY test. Rerun test. If failure persists, call SCAT. DTI did not lose frame sync when return to search bit was set in control port word 1. Rerun test. If failure repeats, change diagnostic card. <i>NOTE. Decode octal control port word using Table 7.</i> DTI did not resync after frame sync test. Rerun test. If failure repeats, change diagnostic card.

Table 7. Control Port PSA Word 1 Bit Layout

<i>BIT NO.</i>	<i>COLUMN 1</i>	<i>COLUMN 0</i>
15	N/A	N/A
14	N/A	N/A
13	Read Select (Note)	Read Select (Note)
12	Test Enable	N/A
11	Span Select	N/A
10	LPBK Test	N/A
09	Alarm Reset	N/A
08	Return To Search	N/A
07	Bit Error Rate B*	N/A
06	Bit Error Rate A*	LPBK Test
05	CGA	Test Enable
04	Slipped Frame	Span Select
03	Sync Loss	Sync Loss
02	Test Alarm	Alarm Reset
01	A/B Select **	Return To Search
00	Common Equip. Alm	Common Equip. Alm

NOTE: If bit 13 is set to 1, decode octal printout using column 1. If set to 0, use column 0.

* <u>BIT ERROR RATE</u>		<u>ERROR RATE</u>
<u>B</u>	<u>A</u>	
0	0	< 10 To ..6
0	1	> 10 To ..6
1	1	> 10 To ..3

**A Side On-line = 0

B Side On-line = 1

Table 8. End-to-End System Faults

<i>FAULT DESCRIPTION</i>	<i>CORRECTIVE ACTION</i>
Unacceptable analog transmission levels; excessive noise, crosstalk, or distortion. (One or more DTI channels.)	Run data test (par. 11). Verify proper operation of span line and distant terminal. Replace receiver, transmitter, or interface PWBA.
Carrier group alarm (CGA) restoral or alarm functions do not operate simultaneously at both terminals.	Verify proper operation of span line and distant terminal. Replace diagnostics PWBA.