

DIMENSION® 600/2000 PBX
TRUNK FAILURE DISPLAY AND
TRUNK ACTIVITY MONITORING
(PROC 513)

*patient screening
trunk are used
only / way out as
third party billing
only the patient dial
dial access
code 90 + their number the
T.S.P. operator sees a code
93 which
is third party
bill only.*

1. GENERAL

- 1.1 This section is issued in order to make available the information contained in the Administration and Maintenance Manual, 500-497, PROC 513 (versions 1 and 2).
- 1.2 The attachment provides test and troubleshooting procedures in diagnosing suspected trunk failures.

ATTACHMENT

PROC 513 (33 pages)

Reason for Issue:
Update.

Manager, Denver PBX PECC

PRIVATE

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Printed in U.S.A.

PROCEDURE 513, VERSION 1 - TRUNK FAILURES, VERSION 1

PROC 513, VER 1

A. DESCRIPTION

A single test is available. This test displays the failure history.

Procedure 513, Version 1 is called in when the NETWORK TRK-513 and MINOR alarm indicators are turned on.

Procedure 513, Version 1 is used to display the trunk failures detected during call processing. This procedure does not perform any trunk tests.

DISPLAYS FAILURE HISTORY. USE 'NEXT CIRCUIT' TO DISPLAY FAILURE HISTORY. USE 'CLEAR DATA', 'EXECUTE' TO CLEAR FAILURE HISTORY AND ALARMS. USE 'BUSY OUT' OR 'RELEASE BUSY OUT' TO CHANGE THE MAINTENANCE BUSY STATUS.	FAILURE CODES: 1=SOLID FAILURE 2=TRANSIENT FAILURE 3=CAUSED ALARM, NOT IN QUARANTINE (T-LIMBO)
FLIPCHART ISSUE 5 ○ ○ PROC 513, VER 1 ○ ○	

FLIPCHART ISSUE 5 ○ ○ TRUNK FAILURES, VER 1 ○ ○					PROC 513											
EQUIPMENT LOCATION						TRUNK DIAL ACCESS CODE		M A I N T B U S S	FAILURE HISTORY							
M O D U L E	C A B I N E T	C A R R I E R	S L O T	C I R C U I T		F I R S T D I G I T	S E C O N D D I G I T		T H I R D D I G I T	F A I L C O D E	F A I L U R E S P E R H O U R	F A I L U R E S B E G A N - H O U R S A G O	M O S T R E C E N T F A I L U R E			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	H O U R S A G O	M I N U T E S A G O	

0.	1.	0.	8.	0.	9.	-	-	0.	1.	4.	1.	6.	1.	0.	0.	-	513
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FIELD

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

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513-1

B. FIELD DEFINITIONS AND CODES

Field	Code	Definition
1	0-24	Module number.
2	0-4	Cabinet number.
3	0	Module and trunk port carrier number.
	1-4	Trunk port carrier or tie trunk carrier number.
4	6, 7, 8, 10, 12, 15-25 (odd)	Slot for LC07, LC08, or LC09 in a module control and trunk port carrier.
	2-9, 11-18	Slot for LC07, LC08, or LC09 in a trunk port carrier or tie trunk carrier.
	6,7,8, 10,12,15, 17,19	Slot for LC11 or LC13 in a module control and trunk port carrier.
	2-9	Slot for LC11 or LC13 in a trunk port carrier or a tie trunk carrier
5	0,1	Number of circuit assigned to trunk.
6	1-9, 11 12	First digit of dial access code
		1-9
		* #
7	0-9	Second digit of dial access code.

Field	Code	Definition
8	0-9	Third digit of dial access code.
9	0 1	Maintenance busy status:
		Not busied out.
		Busied out.
10	1 2 3	Failure Code:
		Solid.
		Transient.
		Caused alarm, not in quarantine (T_LIMBO).
11	1-6	Number of failures.
12	0 1-6	Failure index:
		Failure summary.
		Individual failures.
13	0-99	Failure Summary: Sum of approximate number of failures per hour for all failing circuits.
		Failure History: Approximate number of failures per hour for circuits being displayed.

B. FIELD DEFINITIONS AND CODES (Contd)

Field	Code	Definition
14	0-17	<p>Failure Summary: Number of hours since the oldest individual failure started (to the nearest hour).</p> <p>Individual Failure History: Number of hours since failures started in the displayed circuit (to the nearest hour).</p>
<p>Number of hours plus minutes since:</p> <p>Failure Summary: Most-recent failure of any circuit.</p> <p>Failure History: Most-recent failure of the displayed circuit.</p>		
15 (Test 1 only)	0-136	Hours.
16 (Test 1 only)	0-59	Minutes.

C. TEST PROCEDURES

A description of the trunk failure test, what it does, and how it is run follows:

Call in Procedure 513, Version 1:

PROC NO; 513; ENTER

The trunk failure test is automatically selected.

Trunk Failure Test:

The trunk failure test displays the failure history of the trunk failures detected during call processing.

To start the test depress the EXECUTE key. EXECUTE takes a "snapshot" of the failure summary and displays it on the MAAP. If one or more failures have occurred, the following is displayed:

Field	Contents
11	Number of failures occurred.
12	0, indicating failure summary.
13-16	Failure history.

The failure summary displays all the trunk failures that have occurred.

Depressing the NEXT CIRCUIT key displays the first failing circuit in the failure history.

The display includes the following:

Field	Contents
1-5	Equipment location of last failure of the circuit.
6-8	Dial access code of the first failing circuit.
9	Busy out status.
10	Type of failure.
11	Number of failures.
12	Incremented by 1.
13-16	Failure history information.

Depressing the NEXT CIRCUIT key repeatedly displays the failure histories of the remaining failing circuits. Depressing NEXT CIRCUIT after all failure histories have been displayed dashes the display. Depressing the NEXT CIRCUIT key again causes the trunk failure test to be executed, starting the sequence over with an updated failure summary.

NOTE

If an error code 73 is displayed, and the equipment location fields are dashed, the display is indicating there is either no physical equipment (ie, pseudo-trunk; intercom; switched loop aborted) or there is a software problem.

Also, if error code 73 appears and the MAAP is locked up, this indicates the procedure caused a system initialization (INIT-A displayed by Procedure 520).

CAUTION

Busying out a trunk when the trunk is in use disrupts service.

Once a trunk location is displayed, the BUSY OUT and RLS BUSY OUT keys can be used to change the maintenance busy status of the trunk.

The BUSY OUT indicator on the MAAP turns on, when BUSY OUT is depressed, indicating the trunk displayed is busied out.

C. TEST PROCEDURES (Contd)

On concluding the test, all trunks busied out should be released from the busied out condition using the RLS BUSY OUT key.

NOTE

The BUSY OUT indicator on the MAAP turns off only when all circuits interfacing with the MAAP are no longer busied out.

Therefore, use field 9 to determine whether the trunks being tested have been released from busy out.

Refer to paragraph 2C in the introduction of Section 4 for information on clearing the failure history.

D. REPAIR GUIDE

A. Special cases

1. If more than one trunk fails in a carrier, replace LC49 in that carrier. Record failure history. Operate CLEAR DATA, EXECUTE to clear failure history. Make test calls on each failed trunk.
2. If an invalid trunk equipment location is loaded in the trunk failure records, the equipment location will be dashed and error code 73 will be displayed when NEXT CIRCUIT is depressed to display the location.

B. Description of Trunks in Quarantine (T_LIMBO)

Most trunk failures are trunks that are locked in a non-idle state (T_LIMBO) by invalid conditions on the tip and ring. (One example is a ground on the tip of a ground start (LC08) trunk.) When this failure exists, the PBX quarantines the trunk from use by call processing by placing it in the T_LIMBO state.

However, periodic attempts are made to order the T_LIMBO trunk back to its idle state. The T_LIMBO state of a displayed failed trunk is checked each time EXECUTE is operated, or when NEXT CIRCUIT displays the first failed trunk.

When a trunk has been in T_LIMBO for more than 15 consecutive minutes, failure code 1 is displayed.

Failure Code	Trunk Status
1	Trunk failure turned on trunk fault indicator and trunk is in T_LIMBO.
2	Trunk in T_LIMBO, but not long enough to set trunk fault indicator.
3	Trunk was in non-idle state for more than 15 consecutive minutes, but became idle and is now in service for call processing.

D. REPAIR GUIDE (Contd)***C. Trunk is Now in Quarantine (T_LIMBO)***

1. Record the failure history - especially the circuit location and failure code.
2. Open tip and ring leads. Operate CLEAR DATA, EXECUTE.
3. After a minute, use NEXT CIRCUIT to look for this same trunk circuit continuing to fail. If still failing, replace the circuit pack.
4. Reconnect the tip and ring. Operate CLEAR DATA, EXECUTE and wait a minute. Step through the failure history to see if this circuit is still failing. If no longer failing, verify trunk operation with test calls.
5. If the trunk circuit does not reappear in the failure history after opening the tip and ring and clearing the failure history with CLEAR DATA, EXECUTE, then suspect a problem external to the PBX toward or at the distant end.

6. Reconnect the tip and ring, clear the failure history with CLEAR DATA, EXECUTE, wait a minute, and search the failure history for this trunk failing again. If it does not reappear, removing and reconnecting the tip and ring may have caused either end to release the trunk. Make test calls on this trunk. If good, consider this a transient trunk problem that should be recorded. Future occurrences suggest more extensive troubleshooting to determine the cause of trunk being locked into the non-idle state.

D. Trunk Not in Quarantine (T_LIMBO)

1. Record the failure history.
2. Operate CLEAR DATA, EXECUTE sequence to clear the failure history table to see if further testing stimulates a new failure.

D. REPAIR GUIDE (Contd)

E. Test Calls

The following general trunk signaling sequences should be used (where valid) to ensure complete testing of a trunk when using test calls.

1. Outgoing seize.
2. Incoming seize.
3. Distant end disconnect.
4. Local answer.
5. Local disconnect.
6. Special sequences like mutilated dialing.

Procedure 551 can be used to make outgoing test calls, but other methods must be used to check the trunk for incoming calls.

Use Trunk Verification feature to help select this trunk from the possibly many in the trunk group. Make calls to exercise as many trunk sequences for this trunk as possible.

Procedure 177 can be used to relate the trunk number used by Trunk Verification to the trunk equipment location.

A. DESCRIPTION

Procedure 513, Version 2 is called in when the NETWORK TRK-513 and MINOR alarm indicators are turned on.

Procedure 513, Version 2 is used to display the trunk failures detected during call processing. This procedure does not perform any trunk tests.

Procedure 513, Version 2 is also used to monitor trunk activity, but the data displayed requires extensive call processing documentation for interpretation.

Two tests are available:

- Test 1 - Displays failure history.
- Test 2 - Monitors trunk activity.

TEST 1: DISPLAYS FAILURE HISTORY. USE 'NEXT CIRCUIT' TO DISPLAY NEXT FAILED CKT. USE 'NEXT UNIT' TO DISPLAY NEXT FAILURE CODE. USE 'CLEAR DATA', 'EXECUTE' SEQUENCE TO CLEAR FAILURE HISTORY FOR DISPLAYED CIRCUIT. WHEN THIS SEQUENCE CLEARS THE LAST ALARMED CIRCUIT THE TRUNK ALARM IS CLEARED.	TEST 2: (SEE NOTE) MONITORS TRUNK DATA. USE 'EXECUTE' TO DISPLAY DYNAMIC TRK DATA CODE (FLD 18). USE 'STOP' TO FREEZE DYNAMIC TRUNK DATA. USE 'NEXT UNIT' TO DISPLAY PRIOR TRUNK DATA CODES FOR DATA TYPE 4.	FAILURE CODES (FLD 11): 1-SIGNAL SEQUENCE 2-CALL PROCESSING 3-QUEUE AUDIT 4-TRUNK FALSELY ACTIVE 5-QUARANTINE (T_LIMBO) 6-CAUSED ALARM 7-SEQUENCE INITIALIZATION	OTHER CODES: FIELD 10: 0=NOT BUSY 1=BUSY FIELD 14: 1=SIGNALLING SEQUENCE (TEST 1) 2=DATA WHEN FAILURE OCCURRED (TEST 1) 3=DYNAMIC DATA (TEST 2) 4=FROZEN DATA (TEST 2) FIELD 15: 0-6=TRUNK TABLE INDEX 7=SCAN STATUS 8=FAILING STIMULUS (TST 1), 10 MS COUNTER (TST 2) FIELD 16: SEE MAINT. DOCUMENTATION FIELD 17: 0-9=PRIOR CODE INDEX FOR FROZEN DATA (TYPE 4). NOTE: TRUNK DATA CODES REQUIRE EXTENSIVE CALL PROCESSING DOCUMENTATION.
USE 'BUSY OUT' OR 'RELEASE BUSY OUT' TO CHANGE MAINTENANCE BUSY STATUS. CAUTION: 'BUSY OUT' MAY DROP A CUSTOMER CALL.		USE 'NEXT DATA' TO ADVANCE TRUNK DATA IN FIELDS 15 AND 16.	
ISSUE 6 FLIPCHART		PROC 513, VER 2	

FLIPCHART ISSUE 6		TRUNK FAILURES, VER 2											PROC 513				
TEST NO	TEST 2 EQUIPMENT LOCATION					TRUNK DIAL ACCESS CODE		M A I N T E N A N C E B U S Y	F A I L U R E C O D E	F A I L U R E N O	F A I L U R E O F F S	TRUNK DATA				P R I O R C O D E I N D E X	
	R O O M / L I N E	C A B I N E T	C A R R I E R	S L O T	C I R C U I T	F I R S T D I G I T	S E C O N D D I G I T					T H I R D D I G I T	T Y P E	I N D E X	C O D E		
1																	

1. 0. 1. 0. 1 6. 1. 9. - - 0. 2. 3. 1. - - - - - - - - - - 513

B. FIELD DEFINITIONS AND CODES

Field	Code	Definition
1	1, 2	Test number.
2	0-24	Module number.
3	0-4	Cabinet number.
4	0	Module and trunk port carrier number.
	1-4	Trunk port carrier or tie trunk carrier number.
5	6, 7, 8, 10, 12, 15-25 (odd)	Slot for LC07, LC08, or LC09 in a module control and trunk port carrier.
	2-9, 11-18	Slot for LC07, LC08, or LC09 in a trunk port carrier or tie trunk carrier.
	6, 7, 8, 10, 12, 15, 17, 19	Slot for LC11 or LC13 in a module control and trunk port carrier.
	2-9	Slot for LC11 or LC13 in a trunk port carrier or a tie trunk carrier.
6	0, 1	Number of circuit assigned to trunk.

Field	Code	Definition
7		First digit of dial access code:
	1-9	1-9
	11 12	* #
8	0-9	Second digit of dial access code.
9	0-9	Third digit of dial access code.
10		Maintenance busy status:
	0 1	Not busied out. Busied out.
11		Failure code:
	1	Trunk signaling sequence failure.
	2	Call processing failure.
	3	Queue audit failure.
	4	Trunk falsely active failure.
	5	Trunk now in quarantine (T_LIMBO).
	6	Failure caused alarm.
7	Sequence initialization.	

B. FIELD DEFINITIONS AND CODES (Contd)

Field	Code	Definition
12	0-6	Number of failures.
13	1-6	Failure index for individual failures.
Fields 14-17: Trunk data.		
14		Trunk data type:
	1	Trunk signaling sequence failure (Test 1).
	2	Data when failure occurred (Test 1).
	3	Dynamic trunk data (Test 2).
15	4	Frozen (dynamic) trunk data (Test 2).
	0-7	Trunk data index (used for trunk data types 2-4).
16	8	Failing stimulus (Test 1, type 2). 10-MS counter (Test 2).
	0-177777	Trunk data code.
		Data type 1.
	When trunk data type is a 1, the trunk data code is the trunk signaling sequence and sequence step (the low 2 octal	

Field	Code	Definition								
16 (Contd)		characters are the sequence step and the next octal characters are the sequence number) when the failure occurred. This code is used to find a description of the trunk failure in Table 513-1 of the Repair Guide.								
		Data type 2-4, index 0-6								
		When trunk data types 2-4 are selected, this trunk data code corresponds to the layout of one word of trunk table 0-6, selected by the index displayed in field 15.								
		Data type 2-4, index 7								
		When trunk data index 7 is selected the trunk data code corresponds to the following scan status encodes (counting digit positions from left to right in field 16):								
		<table border="0"> <thead> <tr> <th>Digit Position</th> <th>Contents</th> </tr> </thead> <tbody> <tr> <td>1, 2</td> <td>Dial mask (0-17)*</td> </tr> <tr> <td>3, 4</td> <td>Last look (0-17)*</td> </tr> <tr> <td>5, 6</td> <td>Demand scan (0-17)*</td> </tr> </tbody> </table>	Digit Position	Contents	1, 2	Dial mask (0-17)*	3, 4	Last look (0-17)*	5, 6	Demand scan (0-17)*
Digit Position	Contents									
1, 2	Dial mask (0-17)*									
3, 4	Last look (0-17)*									
5, 6	Demand scan (0-17)*									
		* 0-3 for most trunks.								

B. FIELD DEFINITIONS AND CODES (Contd)

Field	Code	Definition
16 (Contd)		Data type 2-4, index 8.
		The stimulus from call processing at the time the failure was detected by a trunk signaling sequence, or a call processing routine. The trunk data for index 8 will be 0 for isolated failure codes 3 or 4 (corresponding to audit failures).
17	0-9	<p>Prior code index.</p> <p>Used only for trunk data type 4. When STOP is operated to freeze dynamic data (going from data type 3 to data type 4), 0 is displayed. The newest trunk data is displayed in field 16 when the prior code index is 0. Larger prior code indexes correspond to older data.</p>

C. TEST PROCEDURES

A description of the trunk failure test, what it does, and how it is run follows:

Call in Procedure 513:

PROC NO.; 513; ENTER

Test 1 is automatically selected. Depressing the NEXT TEST key repeatedly advances the procedure to the desired test.

Test 1:

Test 1 displays and/or clears the failure history recorded by the on-line maintenance software.

To start the test, select Test 1 and depress the EXECUTE key. EXECUTE freezes the failures and displays the lowest failed trunk equipment location number. Dashes are displayed, except for a 0 in field 12, if no failures have occurred. If any failures have occurred, the following is displayed:

Field	Contents
2-6	Equipment location of failed trunk
7-9	Trunk dial access code
10	Maintenance busy status
11	Lowest failure code
12	Number of failures
13	Failure index
14	Trunk data type (1 or dashed)
15	Trunk data index (if 1 in field 14, or dashed if otherwise)
16	Trunk data code (if 1 in field 14, or dashed if otherwise)
17	Dashed

C. TEST PROCEDURES (Contd)

Depressing the NEXT UNIT allows displaying more than one failure code (field 11) associated with the displayed equipment location. A dash is displayed in field 11 after displaying the last failure code. Depressing NEXT UNIT again displays the lowest failure code.

Depressing the NEXT DATA key advances through trunk table data and scan status that were recorded when the trunk circuit failed. The trunk data displayed in field 16 when trunk data type 2 is displayed in field 14 requires extensive call processing documentation for interpretation. When type 2 is displayed in field 14, indices displayed in field 15 ranging from 0 to 6 correspond to octally encoded trunk table data from TRKTBL0 through TRKTBL6. An index of 7 corresponds to scan status for the trunk at time of failure counting digit positions from left to right in field 16:

Digit Position	Contents
1,2	Dial mask (0-17)*
3,4	Last look (0-17)*
5,6	Demand scan (0-17)*

* 0-3 for most trunks.

The stimulus from call processing at the time the failure was detected by a trunk signaling sequence or a call processing routine corresponds to an index of 8. The trunk data for index 8 will be 0 for isolated failure codes 3 or 4 (corresponding to audits failures).

Operating the CLEAR DATA; EXECUTE sequence will clear the failure history for the displayed trunk only. The MAAP display for this trunk will be dashes except for the total number of failures (field 12) and failure index (field 13). The display in these two fields remains unchanged after operating the CLEAR DATA; EXECUTE sequence (to keep the relative order of the cleared frozen trunk failure history from changing) unless this was the last failed trunk.

Operating the CLEAR DATA; EXECUTE sequence for the last failed trunk will clear the trunk fault indicator, dash fields 2-17, and display 0 as the number of failures in field 12.

If the CLEAR DATA; EXECUTE sequence was operated for fewer than all of the failed trunks, perform the following steps. Operate EXECUTE or the equivalent NEXT CIRCUIT to freeze the failure history again and display the first failed trunk. Note that the total number of failures will be reduced by the number of CLEAR DATA; EXECUTE sequences successfully applied to the last frozen group of failed trunks.

C. TEST PROCEDURES (Contd)

Unsuccessful clearing of a failed trunk circuit usually indicates that the trunk is still in quarantine (T_LIMBO) and failing to go idle.

Depressing the NEXT CIRCUIT key repeatedly displays the failure histories of the remaining failed circuits. Depressing NEXT CIRCUIT after all failure histories have been displayed dashes the display. Depressing the NEXT CIRCUIT key again causes the trunk failure test to be executed, starting the sequence over with an updated failure summary.

CAUTION

Busying out a trunk when the trunk is in use disrupts service.

Once a trunk location is displayed, the BUSY OUT and RLS BUSY OUT keys can be used to change the maintenance busy status of the trunk.

The BUSY OUT indicator on the MAAP turns on, when BUSY OUT is depressed, indicating the trunk displayed is busied out.

On concluding the test, all trunks busied out should be released from the busied out condition using the RLS BUSY OUT key.

NOTE

The BUSY OUT indicator on the MAAP turns off only when all circuits interfacing with the MAAP are no longer busied out.

Therefore, use field 10 to determine whether the trunks being tested have been released from busy out.

Test 2:

Test 2 monitors trunk data for a selected trunk circuit equipment location.

Select Test 2. The following is displayed:

Field	Contents
2-6	Dashes or default equipment location of trunk last displayed in Test 1.
7-17	Dashes.

If the trunk equipment location given is not the one desired, another equipment location can be selected by the following steps:

(Module); ENTER; (Cabinet); ENTER;
(Carrier); ENTER; (Slot); ENTER; (Circuit);
ENTER

Operate EXECUTE to start Test 2.

The following is displayed with the new trunk equipment location:

Field	Contents
7-9	Trunk dial access code
10	Maintenance busy status
11-13	Dashes
14	Trunk data type (initial value = 3)

C. TEST PROCEDURES (Contd)

Field	Contents
15	Trunk data index (initial value = 0)
16	Trunk data code (charging)
17	Prior code index

Prior code data is only saved when Test 2 is executing in the dynamic type 3 display mode. When the trunk data selected for display changes, all related trunk data are recorded for later display. The maximum recording rate is approximately one sample per 30 ms. The dynamic type 3 display of the selected trunk data code is updated at a much slower rate, so frozen changes may hold information which was never displayed.

Depressing STOP causes the trunk data type 3 (dynamic) in field 16 to change to a 4 (frozen data). All trunk data when STOP is operated are recorded and frozen.

Depressing NEXT DATA advances the trunk data index (field 15) for either dynamic data type 3 or frozen data type 4 (both in field 14). Depressing NEXT DATA continuously advances the trunk data index from 0 through 8 and back to 0.

Depressing NEXT UNIT controls the display of the prior data index in field 17, and is restricted to the display of frozen data type 4 (field 14). If NEXT UNIT is depressed once, and at least one change in the dynamic data was recorded, 1 will be displayed in field 17. This indicates that the trunk data code in field 16 corresponds to the

contents of the dynamically displayed field just before it changed to the value displayed when STOP was depressed. Depressing NEXT UNIT continuously increments the prior code index in field 17 and shows correspondingly older trunk data codes in field 16. Depressing NEXT UNIT after the oldest prior data is displayed dashes fields 16 and 17. Depressing NEXT UNIT again will display the newest frozen data.

When type 4 frozen data is displayed, NEXT UNIT is operated to display older trunk data as indicated by a prior index being displayed in field 17. Other data items that were recorded while in the dynamic data mode (type 3), can be displayed by repeatedly depressing NEXT DATA. The displayed data corresponds to the description under field definitions and codes.

The relative timing between two prior data code indexes can be obtained from the two values of the 10-ms octal counter displayed (when trunk data index, field 15, is 8). Convert this octal difference to decimal and multiply by 10 to obtain the difference in milliseconds.

When in the dynamic mode (type 3), all trunk data is recorded when the selected data changes. This procedure checks for a change about every 30 ms. Therefore, time difference accuracy is about 30 ms. A change in less than 30 ms may not be detected. Heavy traffic can further degrade the accuracy of these time differences.

C. TEST PROCEDURES (Contd)

NEXT DATA can be used to display related frozen trunk data that was recorded at the same time the monitored trunk data change was recorded.

CAUTION

Busying out a trunk when the trunk is in use disrupts service.

Once a trunk location is displayed, the BUSY OUT and RLS BUSY OUT keys can be used to change the maintenance busy status of the trunk.

The BUSY OUT indicator on the MAAP turns on when BUSY OUT is depressed. This indicates that the trunk displayed is busied out.

On concluding the test, all trunks busied out should be released from the busied out condition using the RLS BUSY OUT key.

NOTE

The BUSY OUT indicator on the MAAP turns off only when all circuits interfacing with the MAAP are no longer busied out.

Therefore, use field 10 to determine whether the trunks being tested have been released from busy out.

D. REPAIR GUIDE

A. General

- (1) This repair procedure is divided into two general cases:
 - (a) Trunks in quarantine (T_LIMBO) - failure code 5 (field 11).
 - (b) Trunks not in T_LIMBO - no failure code 5.
- (2) Use Test 1 to display all of the failed trunks.
- (3) If more than one trunk fails in a carrier, replace LC49 in that carrier. Record failure history. Operate CLEAR DATA; EXECUTE for each failed trunk in that carrier. Make test calls on each failed trunk.
- (4) Use NEXT UNIT to display all of the failure codes for the first failed trunk selected for repair.
- (5) If the dial access codes in fields 7-9 is dashed, use Procedure 100 to determine restrictions on the trunk for making test calls.
- (6) The dial access code displayed in fields 7 and 9 may be an attendant access code that cannot be dialed from a station.

D. REPAIR GUIDE (Contd)

B. Description of Trunks in Quarantine (T_LIMBO)

Most trunk failures are trunks that are locked in a non-idle state (T_LIMBO) by invalid conditions on the tip and ring. (One example is a ground on the tip of a ground start (LC08) trunk.) When this failure exists, the PBX quarantines the trunk from use by call processing by placing it in the T_LIMBO state.

However, periodic attempts are made to order the T_LIMBO trunk back to its idle state. The T_LIMBO state (Failure code 5, field 11) of a displayed failed trunk in Test 1 is checked each time EXECUTE is operated, or when NEXT CIRCUIT displays the first failed trunk.

When a trunk has been in T_LIMBO for more than 15 consecutive minutes, failure code 6 is displayed.

Failure Code	Trunk Status
5 and 6	Trunk failure turned on trunk fault indicator and trunk is in T_LIMBO.
5 and not 6	Trunk is in T_LIMBO, but not long enough to set trunk fault indicator.
6 and not 5	Trunk was in T_LIMBO for more than 15 consecutive minutes to turn on trunk fault indicator, but became idle and is now in service for call processing.

C. Failure Code 5 - Trunk is now in Quarantine (T_LIMBO)

(1) Use NEXT DATA in Test 1 to record the scan data displayed by data type 2 (field 14) and data index 7 (field 15) in field 16.

Trunk Type	Scan Data	Indication
LC07	1	Normal loop current
	2	Ground on tip or ring
	3	Reverse battery loop current
LC08	1	Loop current
	2	Ground on tip or ring
	3	Reverse battery loop current
LC09	1	Distant end off-hook, PBX idle
	2	Distant end idle, PBX off-hook
	3	Distant end off-hook, PBX off-hook
LC11	1	Distant end off-hook, PBX idle
	2	Distant end idle, PBX off-hook
	3	Distant end off-hook, PBX off-hook

D. REPAIR GUIDE (Contd)

Trunk Type	Scan Data	Indication
LC13	1	Reverse loop current (ground on ring) or ground on CO lead
	2	Ground on AL1. Also, ground on S with SSL switch closed and Ground Sleeve Lead (GSL) relay idle.
	3	Both of the above

NOTES

1. The idle state is 0 for all of the above circuit packs.
2. An idle state is not expected for a trunk in T_LIMBO.
3. Off-hook for LC09 and LC11 is either seizure to initiate a call or answer to indicate a call is established.

- (2) Operate NEXT TEST to select Test 2 (the failed location last displayed by Test 1 will be carried over as a default).
- (3) Operate EXECUTE and then NEXT DATA to display data index 7 in field 15 so you are observing current SCAN data sampled every 30 ms.
- (4) Open the signaling leads*. If the scan goes to 0 in the low 2 characters of field 16, the problem is most likely on the signaling leads* external to the circuit pack toward the distant end.

- (5) In the step above, if the scan does not change, replace the circuit pack. (The SCAN should be 0 when the circuit pack is removed.)
- (6) If opening the signaling leads* at PBX removed the problem, reconnecting the signaling leads* at the PBX and removing the signaling leads* at the distant end may further isolate the problem between distant end switching and the wiring between locations.

* The tip and ring are signaling leads for the LC07, LC08, LC09, and LC11 DX trunks. E & M leads on LC11 E & M trunks, and sleeves on LC13s, are used for signaling.

D. No Failure Code 5 - Trunk not in Quarantine (T_LIMBO)

- (1) Record failure history using Test 1 for the displayed trunk circuit only. Record all failure codes using NEXT UNIT and all trunk data using NEXT DATA. The most useful data is provided in field 16 when a trunk signaling sequence failed. This encode is displayed as a default if a sequence failure was detected, indicated by data type 1.
- (2) Operate CLEAR DATA; EXECUTE sequence to remove this failed circuit from the failure history table to see if further testing stimulates a new failure.

D. REPAIR GUIDE (Contd)

- (3) Select Test 2 using NEXT TEST. The trunk last displayed in Test 1 will appear as a default. Operate EXECUTE and NEXT DATA (until 2 displayed in field 15) so TRKTBL2 changes can be observed in field 16. Trunk Table 2 contains trunk signaling sequence control information including the sequence number and sequence step.
- (4) Make test calls as described in paragraph M.
- (5) The data displayed in field 16 from TRKTBL2 (selected by 2 in field 15) can be used to look up the sequence name in Table 513-1. The position of this sequence in the related group of sequences (for example, GSINSZ is the second sequence in the GSTKS group) indicates the type of trunk signaling. The following listing shows the positions of sequence in related groups of sequences:

Sequence Position	Type of Signaling (at PBX)
1	Outseize (includes distant answer).
2	Inseize.
3	Distant disconnect.
4	Answer.
5	Local disconnect.
6	Special sequences for DID mutilated dialing disconnect, TIE distant answer, and flash signaling (DIDMDD, TIEDAN, RLTFHL, and IRLFLH).

Sequence Position	Type of Signaling (at PBX)
7	Special sequences for abandon call search, TIE mutilated dialing disconnect, and RLT outgoing seize from a CAS branch PBX (ABDNCL, TIEMDD, RLTOGR).
8	Special RLT flash sequence (RLTFHL).
9	Special main-satellite flash sequence.

- (6) After the sequence has been indentified, the sequence steps recorded by Test 2 can be displayed (operate STOP to freeze the data) by using NEXT UNIT to observe up to nine prior changes in the selected data. By using NEXT DATA to select scan data (7 in field 15), the combined DIAL MASK, LAST LOOK, and DEMAND SCAN data corresponding to each change in TRKTBL2 (trunk table 2) can be displayed. Furthermore, the relative time between changes can be computed by recording the corresponding 10-ms counter data (selected with 8 in field 15). Table 513-2 provides an example of data recorded for the GSINSZ sequence.

D. REPAIR GUIDE (Contd)

- (7) Compare the data recorded (as in the example of Table 513-2) with the detailed trunk signaling sequence descriptions, found in the software manual, to determine if a malfunction was detected.
- (8) If the failure corresponds to a specific sequence number and step in Table 513-1, the failure cause may be determined by the information given under "Suspected Failures".

E. Failure Code 1

Failure code 1 (field 11) provides the most specific information because it identifies the trunk signaling sequence and sequence step that failed. When making test calls to verify this failure, you can focus on the specific sequence. For example, ANSGST is the Answer Ground Start Sequence (the fourth sequence in the Ground Start trunks family of sequences), so if this sequence failed, testing should focus on answering an incoming call.

F. Failure Code 2

Failure code 2 indicates that a trunk was not idle and not involved in an active call when the failure occurred. For example, if the tip of a ground start trunk that is 1-way outgoing is grounded, this invalid incoming seize is detected by call processing and failure code 2 is generated. Furthermore, this trunk is put in T_LIMBO as long as the invalid ground is present to also generate failure code 5.

G. Failure Code 3

Failure code 3 occurs when a trunk is not correctly placed in an idle queue. This failure generally points to a software problem or a translation table inconsistency.

H. Failure Code 4

Failure code 4 indicates that status memory audits have detected this trunk as being falsely active. This audit runs every 20 minutes or slower as traffic increases, so if a trunk with this failure is cleared from the failure history table, it can take up to 20 minutes or longer for this failure to reoccur. An example of this failure is a grounded tip (TP 1) for an LC11 tie trunk.

I. Failure Code 5

Failure code 5 indicates that the trunk is presently in T_LIMBO and is not available for call processing. Repair guides for this condition were described above.

J. Failure Code 6

Failure code 6 means this trunk was in T_LIMBO long enough to set the TRUNK fault indicator. Repair guides for this condition were described above.

K. Failure Code 7

Failure code 7 indicates that a trunk signaling sequence could not be started for this trunk. Software or translation problems would generally cause this failure.

D. REPAIR GUIDE (Contd)

L. Trunk Signaling Sequence Failure Table (Table 513-1)

This table is used with Trunk Failures Procedure 513 to decode the failure data displayed by Test 1.

The table is organized by increasing sequence number shown in octal in column 2.

If a trunk signaling sequence failure exit exists, this failure exit step is listed. If the sequence has no failure exit, no step is listed.

The data in MAAP field 16 displayed for a trunk signaling sequence failure is used to match the octal encode in column 1 of the table. This line in the table defines the failure, or refers to another line that defines the failure. A trunk signaling sequence failure is specified by the following Procedure 513 MAAP display:

Test number,	field 1	1
Trunk data type,	field 14	1
Trunk data code,	field 16	Sequence failure number, step used to find entry in Table 513-1

The range of octal encodes that appear in trunk table 2 (TRKTBL2) for this sequence number are shown in column 4. The highest character (when set to 1) specifies that a trunk signaling sequence is active. The low 4 octal characters contain the packed sequence number and step.

The name of the sequence that was controlling signaling for the trunk at the time of failure

appears in column 5. The full descriptive title for this name appears in Table 513-3.

The trunk sequence diagrams for these signaling sequences appear in Section 7 of the "Software Information for Maintenance Applications" manual.

M. Test Calls

Test calls for this procedure are defined as any way you can make the call to exercise the trunk signaling sequences for the trunk under test.

Use Procedure 100, and other trunk administration procedures, to determine any trunk restrictions that may interfere with making test calls.

All of the trunk signaling sequences for a trunk type (see Repair Guide, Section D(5)) should be exercised (where valid) to ensure complete testing of a trunk when using test calls.

Procedure 551 can be used to make outgoing test calls, but other methods must be used to check the trunk for incoming calls. When Procedure 551 is being used, Procedure 513 cannot monitor the call, but can only be used later to display a possible failure stimulated by Procedure 551.

Use Trunk Verification feature to help select this specific trunk from many in the trunk group. Make calls to exercise as many trunk sequences for trunk as possible.

Procedure 177 can be used to relate the trunk equipment location to the trunk number used by Trunk Verification.

Table 513-1. Trunk Signaling Sequence Failures

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous failure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
(1) GSTKS - Ground Start Trunk (LC08)									
107	1	7	100021-100030	SZGST1	4-second time-out before loop current.	101, 103	2	17	CO or LC08 if scan = 0 LC08 if scan = 2
	2		100041-100043	GSINSZ		202, 0			
304	3	4	100061-100065	GSTONH	100 ms time-out before loop current.	0	17	2	LC08 if scan = 1 or 3 CO if scan = 2
403	4	3	100101-100104	ANSGST	2-second time-out before loop current.	101, 103	2	17	Ground on tip if scan = 2 LC08 if scan = 1 or 3
507	5	7	100121-100133	DISGST	256-second time-out before idle.	0	0	17	Ground on tip if scan = 2 LC08 if scan = 1 or 3
	6					101, 103, 100			
	7		100161-100167	ABDNCL					
	10								
(2) GSTKP - Ground Start Trunk with Party Test (LC08)									
1105	11	5	100221-100237	SZGSP1	4-second time-out before any scan change.	101	1	17	CO or LC08 if scan = 0
1114	11	14	100221-100237	SZGSP1	125 ms time-out before loop current.	101	1	17	CO if scan = 0 LC08 if scan = 2

Table 513-1. Trunk Signaling Sequence Failures (Contd)

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous fail- ure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
	12		100241-100243	GSINSZ					
1304	13	4	100261-100265	GSTONH	Same as 3.				
1403	14	3	100301-100304	ANSGST	Same as 4.				
1507	15	7	100321-100333	DISGST	Same as 5.				
	16								
	17		100361-100367	ABDNCL	Same as 7.				
	20								
(3) DITKS - Direct Inward Dialing (DID) Trunk (LC09)									
	21								
2204	22	4	100441-100451	DIDWSS	1-second time-out before DID incoming seize.	303	2	17	CO if scan = 2 LC09 if scan = 0 or 1
	23		100461-100465	DIDCOD		0			LC09 if scan = 2 or 3
2403	24	3	100501-100504	DIDANS	1-second time-out before DIP talk state.	303	2	17	CO if scan = 2 LC09 if scan = 0 or 1
2504	25	4	100521-100530	DIDPDX	126-second time-out before idle.	0	1	17	CO if scan = 2 LC09 if scan = 0 or 1
	26		100541-100547	DIDMDD		0			LC09 if scan =1 or 3
	27								
	30								
(4) TITKS - Tie Trunk (LC11)									

Table 513-1. Trunk Signaling Sequence Failures (Contd)

PROC 513, VER 2

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous fail- ure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
3102	31	2	100621-100623	TIEOGS	1-second time-out before PBX off-hook.	202	2	17	Far end if scan = 3 LC11 if scan = 0 or 1
3202	32	2	100641-100643	TIEINC	300 ms time-out before distant end off-hook.	101	1	17	Far end if scan = 0 LC11 if scan = 2 or 3
	33		100661-100665	TIEDOH					
	34		100701-100707	TIEANS	1-second time-out before PBX off-hook.	202	2	17	Far end if scan = 3 LC11 if scan = 0 or 1
3503	35	3	100721-100724	TIELDS	30-second time-out before PBX on-hook.	0	3	17	LC11 if scan = 2 or 3 Far end if scan = 1
	36		100741-100743	TIEDAN		202, 303			
	37		100761-100766	TIEMDD		0			
	40								
(5) CCSATK - CCSA Incoming Wink Start Trunk (LC11)									
4102	41	2	101021-101023	TIEOGS	Same as 31.				
4204	42	4	101041-101051	CCSAIN	300 ms time-out before both ends off-hook.	303	2	17	Far end if scan = 2 LC11 if scan = 0 or 1
	43		101061-101065	TIEDOH	Same as 33.				
4406	44	6	101101-101107	TIEANS	Same as 34.				
4503	45	3	101121-101124	TIELDS	Same as 35.				

Table 513-1. Trunk Signaling Sequence Failures (Contd)

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous fail- ure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
	46		101141-101143	TIEDAN	Same as 36.				
	47		101161-101166	TIEMDD	Same as 37.				
	50								
(6) ANICT - Automatic Number Identification (ANI) Trunk (LC32)									
5106	51	6	101221-101227	ANI_CO	175 ms time-out before idle.	0	0	17	Central office LC32
5206	52	6	101241-101247	ANI_CS	175 ms time-out before idle.	0	0	17	CCSA office LC32
	53		101261-101262	ANI2DY		101-CO, 202-CCSA			
	54								
	55								
	56								
	57								
	60								
Sequence numbers 61-70 are the same as 51-60.									
(7) SPGTK - Auxiliary Trunk (LC13)									
7102	71	2	101621-101623	RLSGSL	4-second time-out before sleeve grounds detected.	202	2	17	Far end L13
7202	72	2	101641-101643	SZAUXT	4-second time-out before sleeve grounds detected.	202	2	17	Far end L13

Table 513-1. Trunk Signaling Sequence Failures (Contd)

.Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous fail- ure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
	73								
	74								
	75		101721-101723	RLSAUX		0			
	76								
	77								
	100								
(8) CCSATKD - CCSA Trunk (LC11)									
10102	101	2	102021-102023	TIEOGS	Same as 31.				
10202	102	2	102041-102043	TIEINC	Same as 32.				
	103		102061-102065	TIEDOH	Same as 33.				
10406	104	6	102101-102107	TIEANS	Same as 34.				
10503	105	3	102121-102124	TIELDS	Same as 35.				
	106		102141-102143	TIEDAN	Same as 36.				
	107		102161-102166	TIEMDD	Same as 37.				
	110								
(9) CCSASH - CCSA Delay Dial Outgoing Trunk (LC11)									
11102	111	2	102221-102227	CCSDDO	1-second time-out before any scan change (especially PBX off-hook).	20X X=don't care	ANY	17	LC11
11202	112	2	102241-102243	TIEINC	Same as 32.				

Table 513-1. Trunk Signaling Sequence Failures (Contd)

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous failure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
	113		102261-102265	TIEDOH	Same as 33.				
11406	114	6	102301-102307	TIEANS	Same as 34.				
11503	115	3	102321-102324	TIELDS	Same as 35.				
	116		102341-102343	TIEDAN	Same as 36.				
	117		102361-102366	TIEMDD	Same as 37.				
	120								
(10) MSCQ - Main Satellite (Unused Sequence Group) (LC11)									
Sequence numbers 121-130 are unused.									
(11) CCSADO2 - CCSA Delay Dial Outgoing, Incoming Wink Start Trunk (LC11)									
13102	131	2	102621-102627	CCSDDO	Same as 111.				
13204	132	4	102641-102651	CCSAIN	Same as 42.				
	133		102661-102665	TIEDOH	Same as 33.				
13406	134	6	102701-102707	TIEANS	Same as 34.				
13503	135	3	102721-102724	TIELDS	Same as 35.				
	136		102741-102743	TIEDAN	Same as 36.				
	137		102761-102766	TIEMDD	Same as 37.				
	140								

Table 513-1. Trunk Signaling Sequence Failures (Contd)

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous fail- ure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
(12) TIEDDWW - Tie Wink or Delay Dial Outgoing, Delay Dial Incoming Trunk (LC11).									
14102	141	2	103021-103027	TIEWDO	1-second time-out before any scan change (especially PBX off-hook).	20X X=don't care	ANY	17	LC11
14106	141	6	103021-103027	TIEWDO	1-second time-out before distant end on-hook.	202	0	17	Far end if scan = 3 LC11 if scan = 0 or 1
14204	142	4	103041-103051	CCSAIN	Same as 42.				
	143		103061-103065	TIEDOH	Same as 33.				
14406	144	6	103101-103107	TIEANS	Same as 34.				
14503	145	3	103121-103124	TIELDS	Same as 35.				
	146		103141-103143	TIEDAN	Same as 36.				
	147		103161-103167	TIEMDD	Same as 37.				
	150								
(13) TIETTM - Tie Wink or Delay Dial Outgoing Trunk (LC11)									
15102	151	2	103221-103227	TIEWDO	Same as 141, Step 2.				
15106	151	6	103221-103227	TIEWDO	Same as 141, Step 6.				
15202	152	2	103241-103243	TIEINC	Same as 32.				
	153		103261-103265	TIEDOH	Same as 33.				
15406	154	6	103301-103307	TIEANS	Same as 34.				
15503	155	3	103321-103324	TIELDS	Same as 35.				

Table 513-1. Trunk Signaling Sequence Failures (Contd)

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous failure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
	156		103341-103343	TIEDAN	Same as 36.				
	157		103361-103367	TIEMDD	Same as 37.				
	160								
(14) DLTNDT - Dial Tone Detector (LC12)									
Sequence numbers 161-170 are unused.									
(15) RLTSODR - Release Link Trunk (LC11)									
17102	171	2	103621-103627	RLTOGS	1-second time-out before PBX off-hook.	202	0	17	LC11 if scan = 0 or 1 Far end if scan = 3
	172		103641-103654	RLTOG2		3			
17302	173	2	103661-103667	RLTDOH	1-second time-out before PBX on-hook.	0	3	17	LC11 if scan = 2 or 3 Far end if scan = 1
17306	173	6	103661-103667	RLTDOH	1-second time-out before distant end on-hook.	0	3	17	Far end if scan = 1 LC11 if scan = 2 or 3
	174								
17504	175	4	103721-103730	RLTDSC	30-second time-out before both ends on-hook.	0	3	17	Far end if scan = 1 LC11 if scan = 2 or 3
	176		103741-103743	RLTFLH		202, 203			
17702	177	2	103761-103770	RLTOGR	1-second time-out before PBX off-hook.	202	0	17	LC11 if scan = 0 or 1 Far end if scan = 3
	200								

Table 513-1. Trunk Signaling Sequence Failures (Contd)

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous fail- ure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
(16) INCRLTSQ - Incoming Release Link Trunk (LC11)									
	201								
20202	202	2	104041-104043	TIEINC	Same as 32.				
	203		104061-104065	TIEDOH	Same as 33.				
20406	204	6	104101-104107	TIEANS	Same as 34.				
20503	205	3	104121-104124	TIELDS	Same as 35.				
	206		104141-104147	IRLFLH		303			
	207								
	210								
(17) MSIS - Main Satellite Outgoing Trunk (LC11)									
21102	211	2	104221-104223	TIEOGS	Same as 31.				
	212								
	213		104261-104277	MSFLSH		0			
21406	214	6	104301-104307	TIEANS	Same as 34.				
21504	215	4	104321-104330	RLTDSC	Same as 175.				
	216		104341-104343	TIEDAN	Same as 36.				
	217		104361-104366	TIEMDD	Same as 37.				
	220		104401-104403	RLTFLH	Same as 176.				
	221		104421-104432	MSGFLH		303			

Table 513-1. Trunk Signaling Sequence Failures (Contd)

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous failure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
Sequence numbers 222-230 are unused.									
(18) MSWS - Main Satellite Wink Start Outgoing and Incoming Trunk (LC11)									
23102	231	2	104621-104627	MSWSOT		202			
23204	232	4	104641-104651	CCSAIN	Same as 42.				
	233		104661-104677	MSFLSH	Same as 213.				
23406	234	6	104701-104707	TIEANS	Same as 34.				
23504	235	4	104721-104730	RLTDSC	Same as 175.				
	236		104741-104743	TIEDAN	Same as 36.				
	237		104761-104766	TIEMDD	Same as 37.				
	240		105001-105003	RLTFLH	Same as 176.				
	241		105021-105032	MSGFLH	Same as 221.				
Sequence numbers 242-250 are unused.									
(19) MSDD - Main Satellite Delay Dial Outgoing Trunk (LC11)									
25102	251	2	105221-105227	CCSDDO	Same as 111.				
25202	252	2	105241-105243	TIEINC	Same as 32.				
	253		105261-105277	MSFLSH	Same as 213.				
25406	254	6	105301-105307	TIEANS	Same as 34.				
25504	255	4	105321-105330	RLTDSC	Same as 175.				
	256		105341-105343	TIEDAN	Same as 36.				

Table 513-1. Trunk Signaling Sequence Failures (Contd)

Test 1 Octal Encode	Octal Sequence		Trunk Table 2 Octal Range	Name (See Table 513-3)	Type of Failure (When referencing to a previous fail- ure, see the octal sequence number)	Success Scan Data	Stimulus		Suspected Failure
	Number	Step					OK	Fail	
	257		105361-105366	TIEMDD	Same as 37.				
	260		105401-105403	RLTFLH	Same as 176.				
	261		105421-105432	MSGFLH	Same as 221.				
Sequence numbers 262-310 are unused.									

Table 513-2. Example of Data Recorded in Test 2 by Monitoring TRKTBL2
for an SZGSTI Sequence Calling via No. 5 ESS CO

Prior Code Index (Field 17)	Data From Field 16				Computed Time		
	"2" in Field 15 TRKTBL 2	"7" in Field 5			"8" in Field 15		
		Dial Mask	Last Look	Scan	10 ms Octal	Counter Octal Difference	Millisecond Difference
5 (oldest)	0	-	-	0	51473	-	-
4	100022	-	-	0	55621	4126	23,340 (1)
3	100023	-	-	0	55627	6	60 (2)
2	25	-	2	02	55650	21	170 (3)
1	100027	-	2	02	55653	3	30 (4)
0 (newest)	0	-	1	01	55661	6	60 (5)

- (1) Time between test EXECUTE and start of sequence.
- (2) Waited for 50-ms time-out after PBX ground start.
- (3) CO responded with ground on tip.
- (4) PBX enabled loop current detector and waited 25 ms.
- (5) Loop current detected; sequence is done.

Table 513-3. Trunk Signaling Sequences

Number	Abbreviation	Definition
1	ABDNCL	Abandon Call Search
2	ANI_CO	ANI for CO
3	ANI_CS	ANI for CCSA
4	ANI2DY	ANI Second Dial Tone Relay
5	ANSGST	Answer Ground Start
6	CCSAIN	CCSA Wink Start Inseize
7	CCSDDO	CCSA Delay Dial Outseize
8	DIDANS	DID Call Answer
9	DIDCOD	DID CO Disconnect
10	DIDMDD	DID Multilated Dialing Disconnect
11	DIDPDX	DID Local Disconnect
12	DIDWSS	DID Wink Start Inseize
13	DISGST	Disconnect Local Ground Start
14	GSINSZ	Ground Start Inseize
15	GSTONH	Ground Start CO Disconnect
16	IRLFLH	Incoming Release Link Trunk Flash
17	MSFLSH	Main-Satellite Flash
18	MSGFLH	Main-Satellite Local Flash
19	MSWSOT	Main-Satellite Wink Start Outgoing
20	RLSAUX	Release Auxiliary Trunk

Number	Abbreviation	Definition
21	RLSGSL	Seize Auxiliary Trunk Without Grounding Sleeve
22	RLTDOH	RLT Distant On-Hook
23	RLTDSC	RLT Local Disconnect
24	RLTFLH	RLT Initial Flash Timing
25	RLTOGR	RLT Outseize With Ring Control
26	RLTOGS	RLT Outseize
27	RLTOG2	RLT Outseize With Ring Control, Wink
28	SZAUXT	Seize Auxiliary Trunk
29	SZGSP1	Seize Ground Start Outgoing With Party Test
30	SZGST1	Seize Ground Start Outgoing
31	TIEANS	CCSA or Tie Local Answer, Delay Dial
32	TIEDAN	CCSA or Tie Distant Answer Timing
33	TIEDOH	CCSA or Tie Distant Disconnect
34	TIEINC	CCSA or Tie Incoming Seize, Delay Dial
35	TIELDS	CCSA or Tie Local Disconnect
36	TIEMDD	CCSA or Tie Mutilated Dial Disconnect
37	TIEOGS	CCSA or Tie Outgoing Seize
38	TIEWDO	CCSA or Tie Outgoing Seize, Delay Dial, Wink