DIMENSION® 600/2000 PBX
MESSAGE WAITING TEST
(PROC 533)

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 533.

1.2 The attachment provides test procedures for message waiting lamps and circuits.

ATTACHMENT

PROC 533 (9 pages)

Reason for Issue:
New Section

Manager, Denver PBX PECC

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PROCEDURE 533 - MESSAGE WAITING TEST

A. DESCRIPTION

Procedure 533 should be used when the NETWORK OTHER-515 and MINOR alarm indicators on the Alarm Panel are turned on.

Procedure 533 is used to:

- Display message waiting failures.
- Test message waiting indicators and LC41B/LC41C signal distribution circuit packs.

CAUTION

If the tip to ring leakage in the line is too great, Procedure 533 cannot detect a failing or missing message waiting indicator. Thus a failing indicator would always pass Tests 2 and 3.

Without an energy communications signal unit (ECSU) on the line, the minimum tolerable resistive tip to ring leakage is 150 kilohms. With an ECSU, the minimum tolerable leakage is 200 kilohms.

TEST 1:	TEST 2:	TEST 3:	FAILURE CODES (FIELD 9):	NOTES:
DISPLAYS FAILURE HISTORY. USE 'NXT CKT' TO DISPLAY NEXT FAILED CIRCUIT. USE 'CLR DATA', 'EXECUTE' TO CLEAR FAILURE HISTORY.	TESTS ALL MESSAGE WAITING LAMPS STARTING FROM DISPLAYED LOCATION. USE 'NEXT CKT' TO DISPLAY RECORDED FAILURES. USE 'CLR DATA', 'EXECUTE' TO CLEAR THE FAILURES DETECTED BY THIS PROCEDURE.	TESTS A PARTICULAR MESSAGE WAITING LAMP CONTINUOUSLY. USE 'NEXT CKT' TO DISPLAY NEXT MESSAGE WAITING LINE. USE 'NEXT UNIT' TO DISPLAY THE FIRST MSG WAITING LINE IN THE NEXT CARRIER. TO EXECUTE THE TESTS FROM A STATION, DIAL ITS EXTENSION NUMBER AND THEN HANG UP.	0=PASS 1=ALL LAMPS FOR CARRIER FAILED 2=MESSAGE WAITING LAMP FAILED 3=CARRIER STUCK ACTIVATED 7=LINE CIRCUIT HIGH AND WET 8=LINE CIRCUIT IN USE 9=NETWORK ORDER INCOMPLETE	1. AFTER EXECUTION OF TEST 2, FIELD 9 CONTAINS TOTAL CIRCUITS TESTED. 2. AFTER COMPLETION OF TEST 2, FIELD 10 ALTERNATES DISPLAY OF TOTAL FAILURES RECORDED AND TOTAL ACTUAL FAILURES (FAILURE CODES 7 & 8 EXCLUDED). CAUTION: DURING TESTS 2 AND 3, MSG WTG LAMPS ARE TRND OFF FOR UP TO 10 SECONDS.

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TEST NO	TEST 3 EQUIPMENT LOCATION TEST 2 MODULE	CAB	CARR	SLOT	CKT	TEST 3 EXTENSION NUMBER	FAILURE CODE	TOTAL CIRCUITS IN SYSTEM OR NUMBER OF CIRCUITS TESTED (SEE NOTE 1)	TOTAL FAILURES RECORDED (SEE NOTE 2)	FAILING CIRCUIT INDEX	FAILURE HISTORY FAILURES PER HOUR	FAILURES BEGAN (HOURS AGO)	PROC 533
1	2	3	4	5	6	7	8	9	10	11	12	13	

3.	1	2.	0.	0.	1	1.	1.	1	1	1	1.	2.	1	0	0	0.		6.		5.	1	2.	1	4.		533
FIELD	1		2		3	4	5		6	7				8	9			10		11	12		13			

A. **DESCRIPTION** (Contd)

- Retire the message waiting alarm when all circuits pass Test 2 or 3.

Three tests are available:

- Test 1 - Failure history
- Test 2 - Tests all message waiting indicators and LC41Bs/LC41Cs.
- Test 3 - Tests an individual message waiting indicator continuously or tests for about 8 seconds an indicator activated from the station line.

B. **FIELD DEFINITIONS AND CODES**

Field	Code	Definition
1	1,2,3	Test number
2	0-24	Module number. See Table 2-3 for encode range.
3	0-4	Cabinet number
4	0-4	Carrier number
5 (Tests 2 and 3 only)	0-28	Slot number
6 (Tests 2 and 3 only)	0-3	Circuit associated with test
7 (Test 3 only)	1-9999	Extension number associated with line circuit
8		Failure code:
	1	All indicators on carrier failed
	2	Message waiting indicator failed (Tests 2 and 3 only)
	3	Current detected on idle carrier (Test 2 only)
	7	Line high and wet (Tests 2 and 3 only)
	8	Line in use (Tests 2 and 3 only)
	9	Network order incomplete
9	0-9999	Test 1: Total message waiting circuits (indicators and associated LC41B/LC41C) in system. Test 2: While the test is running, this field is updated to indicate the number of circuits tested.

B. FIELD DEFINITIONS AND CODES (Contd)

Field	Code	Definition
10	1-6	Test 1: Number of failures recorded by on-line maintenance software
	0-99	Test 2: Number of failures in the local failure table alternated with number of failures which are not failure codes 7 and 8.
11		Test 1:
	0	Failure summary
	1-6	Individual failures
	0-99	Test 2: Index into failure table
12 (Test 1 Only)	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 circuit being displayed
13 (Test 1 Only)	0-17	Failure Summary: Number of hours since the oldest individual failure started (to the nearest hour). Individual History: Number of hours since failures started in the displayed circuit (to the nearest hour).

C. TEST PROCEDURES

A list of message waiting tests, what each one does, and how each is run follows:

Call in Procedure 533:

PROC NO.; 533; ENTER

Test 1 is automatically selected. On-line maintenance is turned off. Depress the NEXT TEST key repeatedly advances the procedure to the desired test.

Test 1:

Test 1 displays a failure history of message waiting failures. The failure history is recorded by the on-line message waiting (software) tests.

C. TEST PROCEDURES (Contd)

To start the test, select Test 1 and depress the EXECUTE key. If one or more failures have occurred, the following is displayed on the MAAP:

Field	Contents
10	Total number of circuits that failed
11	0, indicating failure summary
12,13	Failure Summary

The failure summary displays all the message waiting failures that have occurred.

Depress NEXT CIRCUIT to display the first failing circuit (shown below):

Field	Contents
2-4	Equipment location of the failing carrier.
8	Failure code associated with the failure.
10	Number of circuits that failed.
11	Incremented by 1.
12,13	Failure history.

After the first failing circuit is displayed, depressing NEXT CIRCUIT repeatedly displays the failure histories of the remaining failing circuits. Depressing NEXT CIRCUIT after all failure histories have been displayed, dashes all fields except field 1. Depressing NEXT CIRCUIT again causes Test 1 to be executed again.

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

Test 2:

Test 2 tests all message waiting indicators and associated LC41B/LC41C circuit packs in the system.

When Test 2 is selected, dashes appear in field 2, indicating an optional entry field. A starting location can be entered as follows:

(Module); ENTER; (Cabinet); ENTER; (Carrier); ENTER

Depressing the EXECUTE key after the location is entered starts the test. Or the test can be run starting with the first carrier in the system by depressing EXECUTE after the test has been selected.

When EXECUTE is depressed, the WAIT indicator on the MAAP turns on and Test 2 is executed starting from the first line circuit in the specified carrier. The MAAP display includes the following:

Field	Contents
2-4	Equipment location of carrier under test. As the test progresses to the next carrier, these fields are updated.

C. TEST PROCEDURES (Contd)

Field	Contents
9	Total circuits tested. As the test progresses to the next carrier, these fields are updated.
10	Number of failures (entries in local failure table). As the test progresses to the next carrier, these fields are updated.

During test execution, a local failure table is maintained. Failures are inserted and successes are deleted. When the table reaches 99 entries or the end of the system is reached, the test is stopped. However, if there are any failures, the IN USE lamp is turned on and these failures are retested. This effort is continued until all failures pass or the STOP key is used. When the test stops the WAIT and IN USE indicators turn off and the following is displayed on the MAAP:

Field	Contents
2-4	Equipment location of the last tested carrier or dashes, if the end of the system was reached.
9	Total circuits tested.
10	Number of entries in the local failure table alternated with number of failures that are not failure code 8.

When the test is stopped using the STOP key, the point at which it was stopped is displayed in fields 2 through 7. A summary of failures to that point is displayed in fields 9 and 10, as described previously.

The NEXT CIRCUIT key can be used anytime the WAIT indicator is off to access the local failure table. When NEXT CIRCUIT is depressed, the following is displayed:

Field	Contents
2-4	Equipment location of carrier failure.
	or
2-7	Equipment location and extension number of circuit failure.
8	failure code.
10	Number of entries in the local failure table.
11	Index into the local failure table.

Depressing NEXT CIRCUIT repeatedly sequences through the failure table. Depressing NEXT CIRCUIT after all failures have been displayed (field 10 equals field 11) causes the following to be displayed:

Field	Contents
2-8	Dashed.
10	Total failures in the local failure table.
11	0, indicating failure summary.

C. TEST PROCEDURES (Contd)

The MINOR alarm and NETWORK OTHER-515 indicators can be turned on by message waiting failures in two ways:

- By on-line maintenance routines.
- By off-line maintenance Procedure 533 on detection of other than an in-use failure (failure code 7 or 8).

A message waiting alarm can be retired only when the failure table is cleared of all failures other than in-use failures. Clearing the failure table can be accomplished in any of the following ways:

- Failures originating from on-line or off-line routines can be cleared only by passing Test 2 of Procedure 533.

Off-line failures can also be cleared by using CLEAR DATA; EXECUTE (refer to Section 4, paragraph 2C). This sequence does not clear failures in the local failure table that originated in the MIDS table. However, the failure table generated by Test 2 is cleared, resulting in a display of the following:

Field	Contents
2-4	Dashed
10	Failures remaining in the failure table

Retiring the message waiting alarm does not necessarily turn off the alarm indicators. The MINOR alarm and NETWORK OTHER-515 indicators are turned off only when all other associated alarm sources are cleared in addition to the waiting alarms.

Test 3:

Test 3 is used to continuously test any message waiting circuit suspected of having intermittent failures or to help trace wiring problems.

Test 3 can be initialized in two ways:

1. If no failures have occurred (no default circuit exists) field 2 contains a flashing dash. To run Test 3, an equipment location or extension number must be entered as follows:

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

   The extension number is automatically displayed when the test is started.

   If field 7 has a flashing dash, the extension number can be input using the change field sequence; eg:

   CHANGE FIELD; 7; ENTER; (Extension Number); ENTER

C. TEST PROCEDURES (Contd)

The equipment location is automatically displayed when the test is started.

Depressing the NEXT CIRCUIT key causes the equipment location and extension number of the first line circuit in the first carrier in the system to be displayed.

2. If a failure has occurred, a default circuit is displayed. The display consists of the equipment location of the last displayed failure, the associated extension number and failure code.

Either the default circuit can be tested or another circuit can be selected. Circuit selection can be accomplished as described in both methods or the NEXT CIRCUIT and NEXT UNIT keys can be used. NEXT CIRCUIT can be used to sequence through all the circuits in a carrier. NEXT UNIT can be used to sequence through all the carriers in the system. When a carrier is selected, the first line circuit is automatically displayed.

To start the test, depress EXECUTE. A flashing 0 in field 8 indicates the test is running. During this time the WAIT indicator is turned off. If a failure occurs, the failure code for the first failure detected is locked into field 8 and flashed. The flashing display indicates the test is being run continuously.

If a line is high and wet or off-hook, a failure code 7 or 8 is brought up without flashing and the in-use lamp is turned on until the station can be tested.

NOTE

Correcting a fault does not clear the failure code. To clear the failure code, Test 3 must be rerun; eg:

STOP; EXECUTE

During test execution, all message waiting indicators associated with the displayed carriers are removed from and returned to service at approximately 8-second intervals.

When it is desired to test another circuit, stop the test, select the new circuit, and restart the test; eg:

STOP; (Select new circuit); EXECUTE

Alarms are handled in Test 3 as described for Test 2.

C. TEST PROCEDURES (Contd)

A remote test in Test 3 allows a message waiting circuit to be activated remotely from a station line and tested for approximately 8 seconds.

To start the remote test:

- First, go off-hook at the station to be tested.
- Next, dial the number of that station.
- Last, go on-hook.

The station is tested as though EXECUTE had been depressed. Testing is stoped after approximately eight seconds.

D. REPAIR GUIDE

When a message waiting fault is indicated, the following steps should be performed in the order shown to isolate and repair the faulty unit.

Step	Isolation Procedure
1.	Execute Test 1 and record the results.
2.	Execute Test 2. Wait until the WAIT lamp goes off. When the IN USE lamp comes on, depress STOP. Record extension number and displayed equipment location failures.
3.	Based on test results, take the corrective action indicated, in the order listed, in Table 533-1.
4.	If intermittent failures or wiring problems are suspected, use Test 3 to continuously test suspect circuits.

Table 533-1. Message Waiting Indicator Test Repair Procedure

Failure Code	Corrective Action
1,3	All indicators in the specified carrier failed, an idle LC41B/LC41C supplied current, or carrier stuck active. a. Replace the LC41B/LC41C. b. Replace the LC101. c. Check the wiring on the back of the carrier. d. Check the cables. e. Replace one or more LC03s. f. Replace one or more message waiting indicators.

D. REPAIR GUIDE (Contd)

Table 533-1. Message Waiting Indicator
Test Repair Procedure (Contd)

Failure Code	Corrective Action
2	A message waiting indicator failed. a. Replace the message waiting indicator, and execute Test 3 remotely from the station. b. Replace the associated LC03. c. Check the cables and wiring. **NOTE** While executing Test 3, a rapid off-hook/on-hook on the line might cause a failure code 2. Test 3 can be rerun to verify the condition of the message waiting indicator.
7	The station is high and wet. Run Test 3 to confirm the condition (test time is 2 seconds if it is still high and wet). If confirmed, perform the following steps until the problem is cleared: a. Replace LC03 and retest. b. Check if station is off-hook. c. Replace the message waiting indicator. d. Check the wiring on the back of the carrier.
8	This failure code indicates that the station associated with the message waiting indicator is in use, preventing testing.
9	Test the circuit using Test 3. If the failure code recurs, use Procedure 506 to check for a scanner/distributor failure.