DIMENSION® 600/2000 PBX
AUTOMATIC WAKEUP CIRCUIT TEST
(PROC 536)

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 536.

1.2 The attachment provides test procedures for the LC13 (Audichron) and LC190 automatic wakeup circuits.

ATTACHMENT

PROC 536 (8 pages)

Reason for Issue:
New Section

Manager, Denver PBX PECC

PRIVATE

Printed in U.S.A.

PROCEDURE 536 - AUTOMATIC WAKEUP CIRCUIT TEST

A. DESCRIPTION

Procedure 536 should be used when the following conditions exist:

- The NETWORK OTHER-515 and MINOR alarm indicators on the Alarm Panel are turned on.
- Procedure 515 indicates Procedure 536 should be used to find the source of the alarm.

Procedure 536 is used to:

- Display the failure history for the equipment that generates the audio message for the automatic wakeup feature.
- Test the equipment for correct signal response
- Retire the alarm when all automatic wakeup circuits pass Test 2

Three tests are available:

- Test 1 - Failure history.
- Test 2 - Tests all circuits for correct control pulse response.
- Test 3 - Tests all circuits continuously for correct control pulse response.

TEST 1:	TEST 2:	TEST 3:	FAILURE CODES:		OTHER CODES:
DISPLAYS FAILURE HISTORY. USE 'CLEAR DATA', 'EXECUTE' TO CLEAR FAIL HISTORY.	TESTS ALL WAKE-UP CIRCUITS ONCE.	TESTS ALL WAKE-UP CIRCUITS CONTINUOUSLY.	0=PASS 1=CONTROL PULSE NOT DETECTED WHEN IT SHOULD BE 2=CONTROL PULSE STUCK ACTIVE 3=CONTROL PULSE TOO SHORT 4=CONTROL PULSE TOO LONG 5=WAKEUP MESSAGE NOT DETECTED	87=TEST LINE IN USE OR NOT ADMINISTERED 89=NETWORK ORDER INCOMPLETE 90=NO TIME SLOT	FIELDS 2-6: UPON ENTRY TO TEST 2 OR 3 THE TEST LINE IS DISPLAYED. FIELD 7: 1=LC13 2=LC180 3=TEST LINE FIELD 8: 0=NOT BUSIED 1=BUSIED OUT FIELD 10: 0=INACTIVE 1=CONTROL PULSE DETECTED 2=WAKEUP MSG DETECTED
USE 'NEXT CIRCUIT' TO DISPLAY NEXT FAILED CIRCUIT. USE 'BUSY OUT' OR 'RELEASE BUSY OUT' TO CHG BUSY OUT STAT OF DISPLD WAKEUP TRK.					

ISSUE 5
FLIPCHART

PROC 536

FLIPCHART
ISSUE 5

AUTOMATIC WAKEUP CIRCUIT TEST

PROC 536

TEST NO	EQUIPMENT LOCAIION: TESTS 2 & 3							RMCE BUSY STATUS	FAILURE CODE	SIGNAL STATUS	NUMBER OF FAILURES	FAILURE INDEX	FAILURE HISTORY			
	MODULE	CAB	CAR	SLOT	CKT	TYPE							FAILURES PER HOUR	FAILURES BEGAN (HOURS AGO)	MOST RECENT FAILURE: HOURS AGO	MOST RECENT FAILURE: MINUTES AGO
1	2	3	4	5	6	7		8	9	10	11	12	13	14	15	16
2.		0.	1.	3.		6.	0.	1.	1.		1.	—	—.	2.	1.	—	—.	—	—.	—	—.	—	—.	—	—.	536

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

B. FIELD DEFINITIONS AND CODES

Field	Code	Definition
1	1,2,3	Test number.
2	0-24	Module number.
3	0-4	Cabinet number.
4	0-4	Carrier number.
5	6-13, 15-20	Slot number for LC13.
	6-13, 15-25	Slot number for LC190.
6	0,1	Circuit under test.
7		Circuit type:
	1	LC13
	2	LC190
	3	Test line
8		Maintenance busy status:
	0	Not busied out.
	1	Busied out.
9		Test 1:
	1	Control pulse not detected.
		Test 2:
	1	Control pulse not detected when it should be.
	2	Control pulse stuck active.
	3	Control pulse too short.
	4	Control pulse too long.
	5	Wakeup message not detected.
	97	Test line in use or not administered.
	98	Network order incomplete.
	99	No time slot.
10 (Test 2 or 3 only)		Signal status:
	0	Control pulse not detected

B. FIELD DEFINITIONS AND CODES (Contd)

Field	Code	Definition
10 (Contd)	1	Control pulse detected
	2	Audio message detected
11	0-6	Test 1: Number of circuits in the failure history Tests 2 and 3: Number of circuits in the failure table
12		Test 1:
	0	Failure summary
	1-6	Failure history
		Tests 2 and 3:
	0	No failures
	1-6	Index into failure table
13 (Test 1 only)	0-3	Failure Summary: Sum of approximate number of failures per hour for all failing circuits Failure History: Approximate number of failures per hour for the circuit being displayed
14 (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 display circuit (to the nearest hour)
14 (Contd)		
Number of hours plus minutes since: Failure Summary: Most recent failure of any circuit Failure History: Most recent failure of the displayed circuit		
15 (Test 1 only)	0-136	Hours
16 (Test 1 only)	0-59	Minutes

C. TEST PROCEDURES

A list of automatic wakeup circuit tests, what each one does, and how each is run follows:

Call in Procedure 536:

PROC NO.; 536; ENTER

Test 1 is automatically selected.

Depressing the NEXT TEST key repeatedly advances the procedure to the desired test.

Test 1:

Test 1 displays a failure history of automatic

wakeup circuit failures. The failure history is recorded by the on-line auto-wakeup tests.

To start the test, select Test 1 and 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	Total number of failures.
12	0, indicating failure summary.
13-16	Failure summary.

The failure summary displays all the circuit 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
2-7	Equipment location of the first failing circuit.
8	Maintenance busy status of failing circuit.
9	Associated failure code.
11	Total number of failures.
12	Incremented to 1.
13-16	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 failures have been displayed, dashes fields 2 through 16. Depressing NEXT CIRCUIT again causes Test 1 to be executed, starting the sequence over with an update failure summary.

Depressing the BUSY OUT or RLS BUSY OUT key changes the maintenance busy status of the displayed circuits.

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

Test 2:

Test 2 is used to test all automatic wakeup circuits for correct operation of control pulses generated by them. These pulses are used to identify which phase of the wakeup message should be selected when the called station goes off-hook.

When the Audichron machine is used as the source

of the message, the presence of the pulse also indicates that the audio level is adequate for the respective channel.

> **NOTE**
>
> Entry into Tests 2 and 3 displays the test line (field 7 = 3) location, which is not displayed again during the test run.

To start the test, select Test 2 and depress the EXECUTE key. The WAIT indicator on the MAAP turns on and the local failure table is zeroed out. All fields are dashed on the MAAP display.

The first circuit to be tested is determined by the first inactive-to-active transition of a control pulse. The location of that circuit is displayed in fields 2 through 7 as it is tested. As each subsequent circuit is tested, its equipment location is displayed in fields 2 through 7. Also detected are its maintenance busy status (field 8) and signal pulse status (field 10). The latter field alternates encodes 1, 0, 2 as each location is tested.

> **NOTE**
>
> The test of an LC13 circuit takes approximately 3.5 seconds. An LC190 circuit takes approximately 2 seconds.

If a failure is detected, the NETWORK OTHER-515 and MINOR alarm indicators are turned on. On conclusion of the test (WAIT turns off), the first failed circuit is displayed as follows:

Field	Contents
2-7	Equipment location and type of failed circuit.
8	Maintenance busy status.
9	Associated failure code.
10	Signal pulse status.
11	Number of failed circuits.
12	1, indicating first failing circuit.

On conclusion of the test, the NEXT CIRCUIT key can be depressed repeatedly to display the remainder of the failing circuits. Depressing NEXT CIRCUIT after all circuits have displayed, dashes all fields but field 1. Depressing NEXT CIRCUIT again causes Test 2 to be executed as described previously.

> **NOTE**
>
> If two signals from an AUDICHRON machine are reversed, it is possible for the test results to differ when Test 2 is run several times. This occurs because the expected pulse sequence is based on the pulse assumed to be the starting point.

C. TEST PROCEDURES (Contd)

Depressing the BUSY OUT or RLS BUSY OUT key changes the maintenance busy status of the displayed circuit.

The STOP key can be used to stop Test 2. When the test is stopped in this manner, the first failing circuit, if any, is displayed in fields 2 through 7. Field 11 displays the number of failed circuits and field 12 displays the individual failure index of 1 (or 0 if there are no failures).

The NETWORK OTHER-515 indicator is automatically turned off (indicating the automatic wakeup circuit alarm is retired) when the following conditions are met:

1. All automatic wakeup circuits pass Test 2.

2. No other source of the NETWORK OTHER-515 alarm exists.

The MINOR alarm indicator is turned off when all sources of that alarm (including the auto-wakeup alarm) are cleared.

Test 3:

Test 3 is the same as Test 2 except that it runs continuously and it cannot be used to retire the alarm. Also the WAIT indicator does not turn on.

D. REPAIR GUIDE

When an automatic wakeup circuit test fault is indicated, the following steps should be performed in the order shown to isolate and repair the faulty unit:

NOTE

Each phase of the wakeup message (2 for the LC190 and 4 for the AUDICHRON machine) may be monitored from an attendant console. Use Procedure 100 to determine the assigned trunk dial access code for the trunk group associated with the wakeup trunks. Dial this access code followed by the channel number from a console in order to monitor the wakeup message:

- First, enter equipment location in Procedure 150 and perform a display operation to determine the trunk group number.

- Next enter the trunk group number in Procedure 100 and perform a display operation to determine the corresponding dial access code.

- Last, dial the 3-digit dial access code, followed by the channel number, to monitor the wakeup message from an attendant console.

D. REPAIR GUIDE (Contd)

Step **Isolation Procedure**

1. Execute Test 1 and record the failure history generated by the on-line maintenance software.

2. Execute Test 2 and record the results. Test 2 should detect the same failures as displayed in Test 1. In addition, it may also detect other failures.

3. Refer to Table 536-1 for failure code and corrective action.

4. After corrective action has been taken, execute Test 2 to verify that no other failures exist. Then go to Procedure 560, Test 2, and release the busy out state of any wakeup circuits busied out by the on-line maintenance software.

Table 536-1. Automatic Wakeup Circuit Test Repair Procedure

Failure Code	Corrective Action
Unit Type 1 (LC13) Failures.	
1	**NOTE** The absence of a control pulse, when the AUDICHRON option is available, may be due to the failure of the AUDICHRON machine, a low audio level on the repective massage channel, or a wiring error on the cross-connect field. Use the telephone handset at the AUDICHRON machine to verify the presence of the message on the channel corresponding to the failing circuit. Verify that the control signal on the ALI lead (TP4 for circuit 0 or TP9 for circuit 1) changes from -48V to ground once each 14 seconds for approximately 0.25 seconds. Use a test handset to verify the presence of the wakeup message at the LC13 (TP1 and TP2 for circuit 0 or TP6 and TP7 for circuit 1). The control pulse should precede the message. Check the options on the LC13 for proper switch settings. Replace the LC13.

Table 536-1. Automatic Wakeup Circuit
Test Repair Procedure (Contd)

Failure Code	Corrective Action
2	Check the control pulse on the ALI lead (TP4 or TP9 on the LC13). Verify that it changes from -48V to ground once each 14 seconds for approximately 0.25 second. If the control control pulse does not change states, check the wiring of the ALI lead. If the control pulse does not change status, replace the LC13.
3 or 4	Replace LC13. Check the timing of the ALI lead corresponding to the failing circuit (TP4 or TP9). Verify that it changes from -48V to ground once each 14 seconds for approximately 0.25 second. Check the operation of the AUDICHRON machine.
5	Check the power supply for the auxiliary cabinet. Turn on, if off. Use telephone handset to detect presence of message. If there is no message, create a test message. If message is still not detected, check operation of AUDICHRON* machine.
Unit Type 2 (LC190) failures.	
1-5	Replace the LC190.
* Trademark of Audichron Corp.	

END