

DIMENSION® 2000 PBX  
ANI ALARM TEST  
(PROC 514)

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1. GENERAL

- 1.1 Procedure 514T should be used when the NETWORK ANI-514 and MINOR alarm indicators are turned on.
- 1.2 Procedure 514 is used to:
- a) Display the ANI (automatic number identification) trunk circuit failures.
  - b) Send messages to test an ANI trunk circuit.
  - c) Retire the alarm when all ANI trunk circuits pass Test 2.
- 1.3 Procedure 514 provides four tests:

Test 1 - Failure history.

Test 2 - Sends four messages to test each ANI trunk circuit.

Test 3 - Sends a single message to test the ANI trunk circuit.

Test 4 - Continuously sends each of four messages alternately to each circuit of a selected ANI circuit pack.

PRIVATE

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1.4 Fields are defined in Table A (see Figure 1).

TABLE A  
FIELD AND CODES DEFINITION

<u>Field</u>	<u>Code</u>	<u>Definition</u>															
1	1-4	Test number															
2		Data message being sent in tests 2, 3 and 4:															
		<table border="1"> <thead> <tr> <th></th> <th><u>Line</u></th> <th><u>Trunk</u></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0123</td> <td>4567</td> </tr> <tr> <td>1</td> <td>1357</td> <td>0246</td> </tr> <tr> <td>2</td> <td>2000</td> <td>3988</td> </tr> <tr> <td>3</td> <td>1010</td> <td>1010</td> </tr> </tbody> </table>		<u>Line</u>	<u>Trunk</u>	0	0123	4567	1	1357	0246	2	2000	3988	3	1010	1010
	<u>Line</u>	<u>Trunk</u>															
0	0123	4567															
1	1357	0246															
2	2000	3988															
3	1010	1010															
3	0-24	Module number															
4	0-4	Cabinet number															
5	0-4	Carrier number															
6	29	LC32B slot number															
7	0,1	Circuit number															
8		Failure code:															
(Test 2, 3 and 4 only)	0	Pass															
	1	No acknowledgement from LC31C															
	2	No acknowledgement from LC123 in LC32B trunk circuit path															
	3	2-out-of-5 error code from LC31C															
	4	Always busy from LC31C															
	5	No word shift from LC31C															
	6	Loop current on or off at wrong time from LC32B															
	7	Wrong circuit from LC32B															
	8	Bid error from LC32B															
9	0-99	Failures per hour for all circuits and for indi- vidual circuits															
10	0- 60,000	Number of ANI calls attempted															
11		Load erros at LC31C															
12		Maximum wait internal exceeded															
13		Transmission errors at LC31C															
14		Queue overflow errors															

TEST 1: DISPLAYS FAILURE HISTORY. USE 'CLEAR DATA', 'EXECUTE' TO CLEAR FAILURE HISTORY.		TEST 2: SENDS 4 TEST MESSAGES THROUGH THE DISPLAYED ANI TRUNK CKT.		TEST 3: SENDS A SINGLE TEST MESSAGE THROUGH THE DISPLAYED TRUNK CIRCUIT. USE 'NEXT DATA' TO SELECT ANOTHER DATA PATTERN.		TEST 4: SENDS EACH OF 4 TEST MESSAGES ALTERNATELY TO EACH CIRCUIT OF THE SELECTED ANI TRUNK BOARD CONTINUOUSLY UNTIL AN ERROR IS DETECTED OR 'STOP' IS PRESSED.		FAILURE CODES (TEST 2,3,4): 0=PASS 1=NO ACKNOWLEDGE (CONTROL) 2=NO ACKNOWLEDGE (TRUNK) 3=2/3 ERROR (CONTROL) 4=ALWAYS BUSY (CONTROL) 5=NO WORD SHIFT (CONTROL) 6=NO LOOP CURRENT (TRUNK) 7=WRONG CHAN (TRUNK) 8=BIJ ERROR (TRUNK)							
USE 'NEXT CIRCUIT' FOR ADVANCING TO THE NEXT ANI TRUNK.		USE THE ANI TEST SET. USE 'NEXT UNIT' TO DISPLAY ADDITIONAL FAILURES AFTER TEST IS EXECUTED.													
FLIPCHART ISSUE		+		+		PROC 514		+		+					
FLIPCHART ISSUE		+		+		ANI FAILURES		+		+					
TEST NO	TEST 3 DATA	TRUNK CIRCUIT						F A I L U R E	F A I L U R E S P E R H O U R	A N I A T T E M P T S	L O A D E R R O R S	T I M E O U T E R R O R S	T R A N S - M I S S I O N E R R O R S	O V E R F L O W E R R O R S	P R O C 5 1 4
		EQUIPMENT LOCATION													
		M O D U L E	C A B	C A R R	S L O T	C K T									
1	2	3	4	5	6	7	8	9	10	11	12	13	14		

FIGURE 1 - PROCEDURE 514 FLIPCHART

2. RECORD

2.1 Form SD-97-1313 is required to record the results of this test.

3. CIRCUIT PACK(S) MAY BE REQUIRED

<u>AMT.</u>	<u>LC NUMBER</u>	<u>ITE</u>	<u>DESCRIPTION (Note 1)</u>
1	LC31C		ANI Data Register
1	LC32B		ANI Data Transmitter

4. TEST EQUIPMENTS

<u>AMT.</u>	<u>ITE</u>	<u>DESCRIPTION</u>
1	5630	ANI Data Link Test Set
1	9091	Test Set Cord

Note 1: Refer to Customer Order Document for actual slot(s) assignment.

5. VALID MAAP KEYS

RESET - Starts the procedure from its beginning

NEXT TEST - Advances to the next test number

EXECUTE - Starts the displayed test

NEXT CIRCUIT - Advances to the next failing circuit

NEXT UNIT - Displays any additional failure in field 8 after test 2, 3, or 4 has been executed

NEXT DATA - Selects another test message data pattern for test 3.

STOP - Stops the testing (test 4)

CLEAR DATA, EXECUTE - Clears the failure history (test 1)

6. TEST PROCEDURE

6.1 A list of ANI trunk circuit tests, what each one does and how each is run follows:

CAUTION: If the central office is connected to the ANI trunk under test instead of to the ANI test set, test messages may be recorded as valid ANI calls.

6.2 PROC NO., 514, ENTER - Loads program into memory from tape. Test 1 is automatically selected (default test). Depressing the NEXT KEY key repeatedly advances the procedure to the desired test.

NOTE: Special error code 74 indicates that the PBX is not equipped with ANI class of service. When this error code is displayed, the test is terminated and the MAAP will not respond to further input.

6.3 Test 1:

Test 1 provides a failure history of ANI trunk circuits.

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:

<u>Field</u>	<u>Contents</u>
9	Failures per hour
10	Number of ANI calls
11	Load errors
12	Maximum wait interval exceeded
13	Transmission errors
14	Queue overflow errors

Depressing the NEXT CIRCUIT key displays the first failing circuit in the failure history in fields 3 through 7.

6.3.1 After the first failing circuit is displayed, depressing the NEXT CIRCUIT key repeatedly displays the failures per hour (field 9) associated with the ANI trunk circuit displayed in fields 3 through 7. Depressing NEXT CIRCUIT after all failures per hour have been displayed dashes all fields except the test number. Depressing NEXT CIRCUIT again causes Test 1 to be displayed from the beginning.

#### 6.4 Test 2:

Test 2 automatically sends four test messages to the ANI trunk circuit displayed.

Test 2 requires the use of the ANI test set to avoid sending test messages to the central office. Connect and operate the ANI test set as described in the paragraph on use of the ANI test set.

##### 6.4.1 To start the test, select Test 2 and depress the EXECUTE key.

The WAIT indicator on the MAAP turns on and field 8 (failure code) is dashed.

##### 6.4.2 When a failure is detected, the NETWORK ANI-514 and MINOR alarm indicators are turned on. The following is displayed:

<u>Field</u>	<u>Contents</u>
3-7	Equipment location of failed ANI trunk circuit
8	Failure code

Depressing the NEXT UNIT key repeatedly displays additional failure codes associated with the failed circuit.

##### 6.4.3 To advance to the next ANI trunk, depress the NEXT CIRCUIT key. EXECUTE must be depressed to start the test.

The STOP key can be used to stop the test any time the WAIT indicator is turned on.

##### 6.4.4 The NETWORK ANI-514 indicator is automatically turned off (indicating the ANI trunk alarm is retired) when all trunks pass Test 2.

#### 6.5 Test 3:

Test 3 sends a selected single test message to the ANI trunk circuit displayed.

Test 3 requires the use of the ANI test set to avoid sending test messages to the central office. Connect and operate the ANI test set as described in the paragraph on use of the ANI test set.

6.5 Test 3: (Cont'd)

- 6.5.1 To start the test, select Test 3 and depress the EXECUTE key. The WAIT indicator on the MAAP turns on and field 8 is dashed. On conclusion of the test, the WAIT indicator turns off.

If a failure is detected, the following is displayed:

<u>Field</u>	<u>Contents</u>
2	Data message being sent
3-7	Equipment location of failed ANI trunk circuit
8	Failure code associated with failed ANI trunk circuit

Depressing the NEXT DATA key advances the test data message index in field 2. The NEXT CIRCUIT key is used to select another ANI trunk for testing. Depressing EXECUTE starts the test for the selected data message and ANI trunk circuit.

- 6.5.2 NEXT UNIT advances the display through the failure codes for the displayed equipment location and message. If there are no failures, field 8 alternately displays zero and dash on repeatedly depressing NEXT UNIT.

The STOP key can be used to stop Test 2 any time the WAIT indicator is turned on.

6.6 Test 4:

Test 4 sends four messages, first to one circuit on the displayed LC32 circuit pack, then to the other circuit on the circuit pack. The test is used to continuously test the ANI trunk circuits suspected of having intermittent failures or to trace wiring problems.

- 6.6.1 The ANI test set should be used with Test 4 to avoid sending test messages to the central office. Connect and operate the ANI test set as described in the paragraph on use of the ANI test set.
- 6.6.2 To start the test, select Test 4 and depress EXECUTE. The test runs continuously until a failure is detected or the STOP key is used.

If a failure has occurred, the following is displayed:

<u>Field</u>	<u>Contents</u>
2	Data message being sent
3-7	ANI trunk circuit
8	Failure code associated with ANI trunk circuit
10	Number of ANI calls attempted

Depressing NEXT UNIT advances the display through the failure codes. NEXT CIRCUIT can be used to select the ANI trunk circuit desired for testing. EXECUTE must be depressed to start the test. The STOP key can be used to stop the test any time the WAIT indicator is turned on.

#### 6.7 Use of the ANI Test Set:

- 6.7.1 The PBX ANI-Data Link Test Set is used when running Tests 2, 3, and/or 4 of this procedure. This test set verifies the four-digit trunk and station number assignment of a PBX equipped with ANI. See Figure 2 for a diagram of the test set panel.
- 6.7.2 To set up the ANI Test Set, proceed as follows:
- a. Position the test set adjacent to the LC32 circuit pack to be tested.
  - b. At the test set, set the POWER switch to the OFF position.
  - c. Connect the furnished test cable from the monitor jack on the LC32 circuit pack to the DATA LINK jack on the test set.
  - d. Connect the 117-Vac test set line cord to a 117-Vac source.
  - e. At the PBX disconnect the ANI trunks from the central office.

6.7.3 At the test set, set the switches as follows:

<u>Switch</u>	<u>Position</u>
ERROR MODE/VERIFY MODE	ERROR MODE
DISPLAY TRUNK/STATION NUMBER NORMAL/HOLD	NORMAL
DISPLAY TRUNK/STATION NUMBER TRUNK/STATION	Either
MODE	ANI or SELF-CH
ALARM	ON
Note: The test can be run with the Alarm Switch off. Observa- tion of the ERROR COUNT display can be used as an alarm indicator.	
SELF-CHECK	OFF
POWER	ON

6.7.4 Observe the TRUNK/STATION NUMBER MATCH display on the test set. It sequentially displays the trunk or station numbers listed in Table A for field 2. When an error is detected, the following may be observed:

- a. The ERROR COUNT advances one count.
- b. The audible alarm sounds, if enabled.
- c. The error word(s) on the TRUNK/STATION NUMBER MATCH display is dashed or shown incorrectly.

6.7.5 Reverse the DISPLAY TRUNK/STATION switch setting to complete the display of the remaining messages.

6.7.6 Set the TRUNK/STATION NUMBER NORMAL/HOLD switch to the HOLD position to lock an error into the display register. If this is not done before the next message is sent, the new message clears the register.

Note: While the switch is in the HOLD position, succeeding messages are not displayed. However, any message with an error advances the error counter.

7. TROUBLESHOOTING AIDS

7.1 When an ANI trunk circuit failure is indicated, the following steps should be performed in the order shown to isolate and repair the faulty unity.

- | <u>Step</u> | <u>Isolation Procedure</u>   |
|-------------|--|
| 1.          | Using Test 1, step through the failure history and record the results.   |
| 2.          | Connect the ANI test set as described in the paragraph on Use of the ANI Test Set.   |
| 3.          | Execute Test 2 for each trunk and record the failure codes for each test.  |
| 4.          | Based on the test results, take the corrective action indicated, in the order listed, in Table B for each failed circuit. Test 3 may be used as an aid which enables the user to send the same message to the same circuit each time EXECUTE is depressed. |
| 5.          | When Test 2 is repeated after a circuit pack has been removed and inserted, the test may fail because the circuit pack is not initialized properly. Repeat Test 2 in this case.  |
| 6.          | If intermittent ANI circuit failures or wiring problems are suspected, use Test 4 to continuously test suspect circuits.   |
| 7.          | After all failures have been corrected, repeat Test 1 to clear the failure history and Test 2 to retire the alarm.   |

TABLE B  
ANI TRUNK TEST REPAIR PROCEDURE

<u>Failure Code</u>	<u>Corrective Action</u>
1, 3, 4, or 5	Replace LC31C Replace LC32B Check the ribbon cable from LC31C to LC32B Check the other wiring
6, 7, or 8	Replace LC32B Replace LC31C Check the ribbon cable from LC31C to LC32B Check the other wiring
2	Replace LC123 Run Procedure 506 to test this circuit pack for scan/ distributor functioning

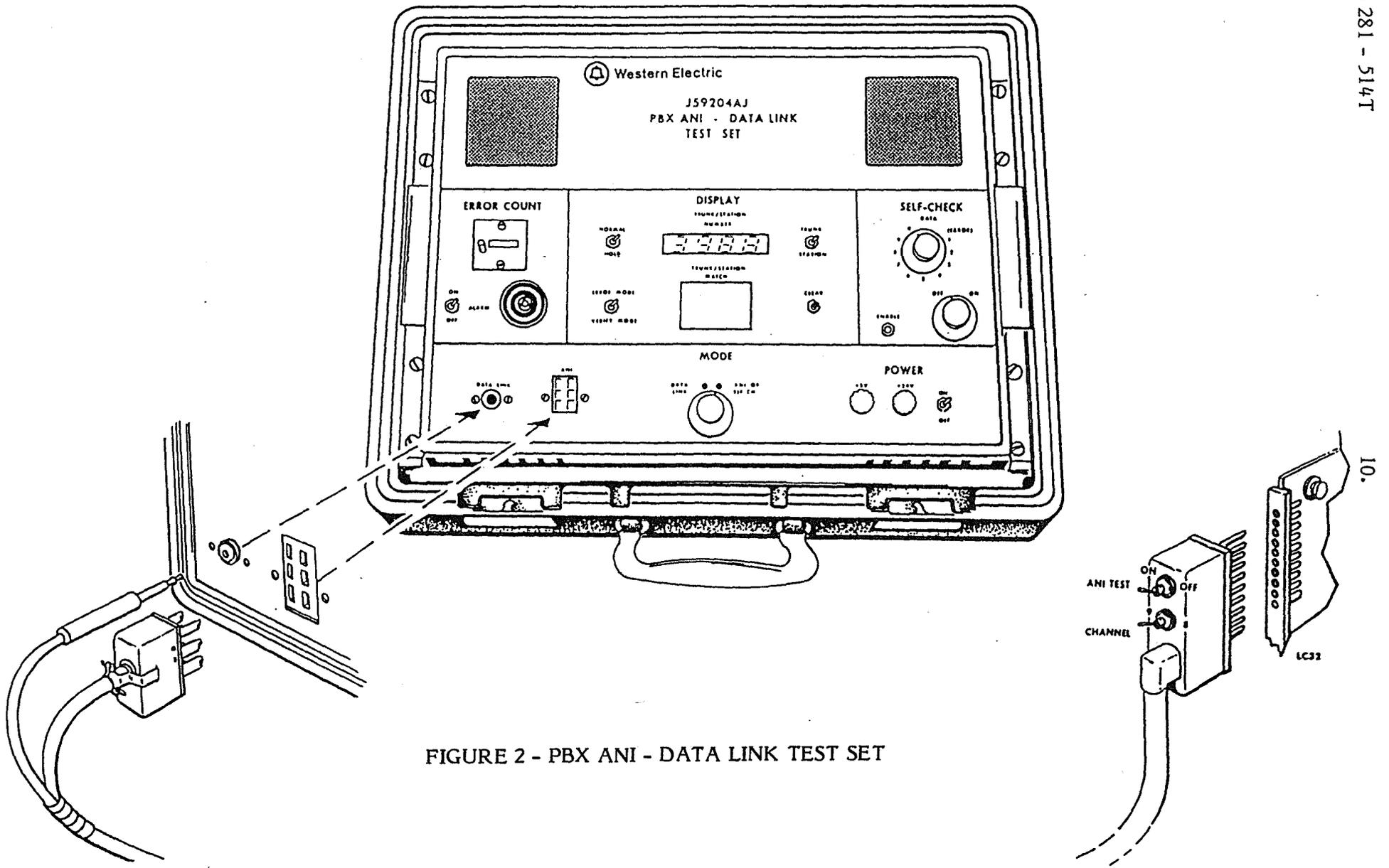


FIGURE 2 - PBX ANI - DATA LINK TEST SET

Reason for Issue:  
New Section

Manager, Denver PBX PECC