DIMENSION® 600/2000 PBX
PIC DEVICE TEST
(PROC 531)

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 531.

1.2 The attachment provides test procedures for the peripheral devices connected to PICs.

ATTACHMENT

PROC 531 (8 pages)

Reason for Issue:
New Section

Manager, Denver PBX PECC

PROCEDURE 531 - PIC DEVICE TEST

A. DESCRIPTION

Procedure 531 provides the capability to send a single or continuous test message to a printer or cathode ray tube (CRT) terminal connected to a selected peripheral interface circuit (PIC). It also detects and tests the Property Management System (PMS) and long distance billing data set devices.

Procedure 531 is used to:

- Troubleshoot problems with the cabling between the selected PIC and its printer or CRT.
- Troubleshoot problems with the printer or CRT itself.

Three tests are available:

- Test 1 – Sends a single print message to a printer or CRT.
- Test 2 – Continuously sends a print message to a printer or CRT.
- Test 3 – Selects and tests devices without sending print message.

TEST 1:	TEST 2:	TEST 3:	FAILURE CODES (FIELD 8):	OTHER CODES:			SPECIAL ERROR CODE:
SENDS A SINGLE PRINT MESSAGE TO THE PRINTER OR CRT.	SENDS A CONTINUOUS PRINT MESSAGE TO THE PRINTER OR CRT.	TEST EACH PIC WITHOUT SENDING PRINT MESSAGE TO THE DEVICE.	0=PASS 1=LC34 ADDRESSING 2=PIC SELF TEST 3=PIC INITIALIZATION 4=DEVICE NOT DETECTED	FIELD 2: 8=PRINTER 9=LD9 INTFC 10=PMS 11=CRT	FIELD 7: 0=NOT BUSIED 1=BUSIED OUT	FIELD 9: 0=0 1=110 BPS 2=300 BPS 3=1200 BPS 4=2400 BPS 5=9600 BPS	80=PRINTER TYPE NOT ASSIGNED, DEFAULT ASSUMED

USE 'NEXT UNIT' TO ADVANCE TO NEXT DEVICE TYPE. USE 'NEXT CKT' TO ADVANCE TO NEXT DEVICE ASGND WITH THE DISPLAYED DEVICE TYPE.

ISSUE 5
FLIPCHART

PROC 531

FLIPCHART
ISSUE 5

PIC DEVICE TEST

TEST NO	DEVICE ID: DEVICE TYPE	DEVICE ID: DEVICE NUMBER	EQUIPMENT LOC: CARR	EQUIPMENT LOC: S' JT	EQUIPMENT LOC: CKT	NTCE BUSY STATUS	FAILURE CODE	DATA RATE		PROC 531
1	2	3	4	5	6	7	8	9		

1.		8.		1.	1.	23.	0.	1.	5.	2.	—	—	—	—	—	—	—	—	—	—	—	—		531
1		2		3	4	5	6	7	8	9														

B. FIELD DEFINITIONS AND CODES

Field	Code	Definition
1	1, 2	Test number.
2		Type of peripheral to be tested:
	8	Printer.
	9	Long distance billing data set (Test 3).
	10	Property Management System (Test 3).
	11	CRT.
3	1-28	Number of the peripheral device to be tested.
4	0	Basic control carrier.
	1	Growth control carrier.
	2	I/O growth carrier.
5	30-38	Slot number if field 4 = 0.
	20-33	Slot number if field 4 = 1 or 2.
6	0, 1	Number of circuit assigned to interface.
7		Maintenance busy status of PIC:
	0	Not busied out.
	1	Busied out.
8		Failure Code:
	0	Pass.
	1	LC34 addressing.
	2	PIC internal self test.
	3	PIC initialization by PBX failed.
	4	Peripheral device not detected.
9		Data rate of data link between PIC and peripheral devices (in bits per second):
	0	Out of range.
	1	110
	2	300
	3	1200
	4	2400
	5	9600

C. TEST PROCEDURES

A list of PIC device tests, what each one does, and how each is run follows:

Call in Procedure 531:

PROC NO; 531; ENTER

Test 1 is automatically selected.

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

Test 1:

Test 1 sends a single test message (Figure 531-1 or 531-2) to the peripheral device.

When Test 1 is selected, the first assigned device in the system is displayed as follows:

Field	Contents
2-6	Device identification (ID) and equipment location.
7	Maintenance busy status.

Field 2 flashes indicating an optional entry field. Either the device displayed can be tested or another device can be selected. If the device displayed is to be tested, depress the EXECUTE key.

If another device is to be tested, selection can be made by entering a new device ID, a new equipment location, using the NEXT CIRCUIT key, and/or using the NEXT UNIT key.

A new device ID can be entered as follows:

(Device Type); ENTER; (Device Number); ENTER

The device equipment location is displayed when EXECUTE is depressed.

A new equipment location can be entered as follows:

CHANGE FIELD; 4; ENTER; (Carrier); ENTER; (Slot); ENTER; (Circuit); ENTER

The device ID is then automatically displayed when EXECUTE is depressed.

The NEXT CIRCUIT key can be used to sequence through all the device numbers of the device type displayed. NEXT UNIT can be used to sequence through device types 8 and 11. When a device type is displayed, the first device number of that device type is automatically displayed. Using NEXT UNIT and NEXT CIRCUIT, any of PIC devices 8 and 11 in the system can be selected.

CAUTION

Before a PIC device can be tested using Procedure 531, it must be busied out. Because service is disrupted, the consequences of doing so must be considered in advance.

To start the test, busy out the device (if it is not already busied out) and depress the EXECUTE key; eg:

BUSY OUT; EXECUTE

The BUSY OUT indicator on the MAAP turns on and a 1 is displayed in field 7, indicating the device displayed is busied out, when BUSY OUT is depressed. Busying out the device prevents on-line messages from being intermixed with off-line messages generated by the test.

When EXECUTE is depressed, the WAIT indicator on the MAAP turns on, transmission of the test message is begun, and the data rate code is displayed in field 9. After the message has been sent, the failure code is displayed in field 8.

If a failure is detected, the NETWORK OTHER-515 and MAJOR alarm indicators on the Alarm Panel are turned on. The failure code for the first failure detected is displayed in field 8.

The NETWORK OTHER-515 indicator can be turned off and the PIC device alarm retired using Procedure 530. Procedure 531 cannot be used for these purposes.

While using Procedure 531, special error code 80 may appear in the ERROR display. This code indicates the printer type being tested has not been defined in Procedure 220 and a default device type has been assumed.

On conclusion of the test (WAIT indicator turns off), the NEXT CIRCUIT and NEXT UNIT keys can be used to select the remaining type 8 and 11 devices in the system for test. When all the device numbers of a given type have been displayed, depressing NEXT CIRCUIT dashed fields 3 through 9. Depressing NEXT CIRCUIT again displays the first device number of the displayed device type again.

When all the 8 and 11 device types in a system have been displayed, depressing NEXT UNIT again dashes fields 2 through 9. Depressing NEXT UNIT again displays the first device type assigned in the system.

On concluding Test 1, all devices busied out must be released from the busy-out condition using the RLS BUSY OUT key.

C. **TEST PROCEDURES** (Contd)

> **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 7 to determine whether the devices being tested have been released from busy out.

Test 2:

Test 2 is used to continuously test any PIC device suspected of having intermittent failures or to help trace wiring problems. A test message is continuously sent to the device being tested. Test 2 operates the same as Test 1 except the test runs continuously.

When Test 2 is selected, the device that was last displayed during the previous test is displayed in fields 2 through 6. The device displayed or another may be tested as described for Test 1.

To start the test, depress EXECUTE. A flashing 0 in field 8 indicates the test is running. If a failure is detected, the NETWORK OTHER-515 and MAJOR alarm indicators are turned on. The failure code for the first failure detected is flashed in field 8.

When it is desired to test another device, stop the test, select the new device, busy it out if necessary, and restart the test; eg:

STOP; (Select new device); BUSY OUT; EXECUTE

On concluding TEST 2, all devices busied out must be released from the busy-out condition using the RLS BUSY OUT key.

Test 3:

Test 3 is used to detect the presence of all devices (types 8-11) in the system and test the selected type without sending a print message. The operation of Test 3 is the same as Test 1, except that all types are tested and no print message is sent.

D. **REPAIR GUIDE**

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

Step	Isolation Procedure
1.	Busy out the PIC and execute Test 1 or 3.
2.	If the failure code indicates a failure has been detected, use Table 531-1 to isolate the failure and clear the fault.
3.	Verify that the data rate displayed in field 9 corresponds to that shown in Table 531-2.

D. REPAIR GUIDE (Contd)

Step	Isolation Procedure
4.	If the displayed data rate is not correct, verify that the data rate option switch inside the PIC is set correctly.
5.	If the displayed data rate is wrong and the switch setting is correct, replace the PIC.
6.	If special error code 80 is displayed for a printer test, the printer type has not been defined in Procedure 220.

> **NOTE**
>
> The print message will still be transmitted to the printer, but a 26 column wide (Victor) message will be assumed.

Step	Isolation Procedure
7.	If the printer test message is not as shown in Fig. 531-1 (Victor printer) or Fig. 531-2 (Model 43 TTY printer or CRT), verify that the parity option in the printer or CRT is set for even parity.
8.	If the problem is intermittent, if the test message is not printed at all, or if a wiring problem is suspected, execute Test 2 to generate a continuous test message.
9.	If a failure code is displayed refer to Table 531-1 to correct the failing condition. Otherwise, replace the following equipment in the order shown: a. Printer (CRT). b. Cable between the PIC and the printer. c. PIC.

D. REPAIR GUIDE (Contd)

Table 531-1. PIC Device Test Repair Procedure

Failure Code	Corrective Action
1	Use Procedure 530, Test 3 to test the data channel and correct the failure condition. Use Procedure 530, Test 4 to clear the alarm.
2,3	Use Tests 4 and 5 of Procedure 530 to isolate the failure source and clear the alarm.
4	If the TERMINAL READY (TR) lamp is on at the PIC, replace the PIC and use Procedure 530, Test 4, to clear the alarm. If the TERMINAL READY (TR) lamp is off: • Verify that the printer (CRT) and PIC are turned on. • Verify that the printer (CRT) is connected to the PIC. • Verify that the printer is not out of paper. • Replace the extension cable between the PIC and printer (CRT). • Replace the PIC.

Table 531-1. PIC Device Test Repair Procedure (Contd)

Failure Code	Corrective Action
4 (Contd)	• Replace the printer (CRT). Use Procedure 530, Test 4 to clear the alarm.

Table 531-2. PIC Device Data Rates

Device Type	Data Rate Encode	Data Rate (Bits Per Second)
9 (Long distance billing data set)	1	110
8 (Printer)	2	300
10 (PMS)	3	1200
11 (CRT)	4	2400

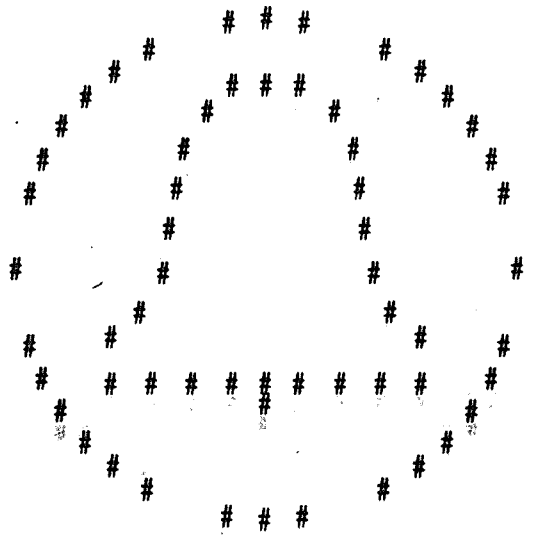
```
A QUICK BROWN FOX JUMPED
OVER THEY LAZY DOG'S BACK.
0123456789
!"#$%&'()*+,-./:;<=>?@
```

Fig. 531-1 — Test Message for Victor Printer

```
A QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK.
0123456789 !"#$%&'()*+,-./:;<=>?@
```

Fig. 531-2 — Test Message for Model 43 TTY Printer

A QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK
0123456789 !"#$%&'()*+,-./:;<=>?@



End of Test Message.

Fig. 531-3 – Test Message for CRT