X-RAY PROGRAM PACKAGE OPERATING PROCEDURE FOR REMOTE MAINTENANCE, ADMINISTRATION, AND TRAFFIC SYSTEM 1 (RMATS-1), CUSTOMER ADMINISTRATION CENTER SYSTEM (CACS), AND "DIMENSION®" 100 AND 400 PBXs

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1. GENERAL

1.01 The X-ray program package (tape cartridge) is a series of software programs used to exercise and troubleshoot the DIMENSION 100 and 400 PBXs, RMATS-1, and CACS. The X-ray program may be used at the time of installation and/or when troubleshooting chronic, intermittent, or multiple faults (when service can be interrupted).

1.02 This section is reissued for the following reasons:

(a) To add Test 50 (Selectable Burn-in Test). This test is provided in X-ray tape TP-1E490, Issue 2.

(b) To add the Continuous Burn-in option. This option is provided in X-ray tape TP-1E490, Issue 2.

(c) To add that memory is recorded on tape periodically with X-ray tape TP-1E490, Issue 2.

(d) To add fault codes 1300 through 1306 and 2010 through 2012 and to change fault codes 1406 and 1411.

(e) To delete fault codes in Part 5 that were not octal numbers.

(f) To add Fig. 8, 9, 37, and 38.

(g) To add a burn-in test for Station Message Detail Recording (SMDR).

Change arrows have been used to designate technical changes.

1.03 Four X-ray program tapes, structured to test different equipment types, are available. Table A shows which X-ray tapes can be used for the various DIMENSION 100 and 400 PBX memory configurations.

1.04 Additions and changes to the tapes are identified by the issue number shown in Table B. Prior to Issue 9, only the even-numbered tapes were available for field use. Issues 3, 5, and 7 were for use at the factory only. ⧫Throughout this document, X-ray tape TP-1E490, Issue 1 and Issue 2, are referred to as TP-1E490 where no differences exist. Where differences do exist, the issue number is designated.⧫

"DIMENSION" 100 AND 400 PBXs

1.05 The X-ray programs are loaded (via a tape cartridge) into the tape transport assembly. The memory load capability of the read-only memory of the system is used to load the X-ray programs into the main memory. When the X-ray programs are properly loaded, call processing is disabled and all in-progress calls are dropped. The X-ray programs consist of a series of specific tests (octally numbered from 00 to 50) which may be selected and started at the Maintenance and Administration Panel (MAAP). However, after initial tape load, tests 00 and 01 (or 02) will cycle automatically until a fault is detected or until manually interrupted at the MAAP or at the alarm panel. Figure 1 depicts the operating procedures for X-ray testing.

RMATS-1 AND CACS

1.06 The operating procedure for RMATS-1 and CACS is basically the same as for a DIMENSION PBX. The primary difference is that only a few of the X-ray tests can be used to exercise RMATS-1 and CACS; specifically, tests 00, 01, 06, 12, 14, 20, 27, 31, 32, 35, and 36. Also, RMATS-1 and CACS is equipped with a second tape drive. This second tape drive (minirecorder B) must be loaded with any issue of X-ray tape in order to test the tape interface and tape drive. If there is no tape in tape unit 2 of RMATS-1 or CACS, the tests will be performed on tape unit 1 only. If tape unit 2 has a tape installed, regardless of its issue, both tape units will be tested (prior to Issue 12 of TP-1E139). For X-ray tapes TP-1E139, Issue 12 and TP-1E490, if a tape is installed in tape unit 2, it must be a DIMENSION 2000 PBX X-ray tape (any issue); or else fault code 2001 will be displayed.

When an LC30B is in slot 42 of the RMATS or CACS control carrier and an X-ray tape TP-1E490 or TP-1E139, Issue 12 is loaded into the

system, fault code 2000 will be displayed. See paragraph 2.01.

1.07 Another prime difference between RMATS-1 and the DIMENSION PBXs is that RMATS-1 can be equipped with four MAAPs, two DIMENSION 400 PBX MAAPs and two DIMENSION 2000 PBX MAAPs. The minimum MAAP requirement is one DIMENSION 400 PBX type (designated SMAAP-1). Normally, tests are initiated at SMAAP-1; however, if SMAAP-2 is present, it can be used to control the testing with the following exceptions: If a fault occurs, control will revert to SMAAP-1. Also, any time the CLEAR ENTRY button is used, SMAAP-1 must be used to reinitiate the test program, and, if the ERROR lamp is flashing, control must be initiated from SMAAP-1 before SMAAP-2 can be used.

1.08 The DIMENSION 2000 PBX type MAAP(s) (designated LMAAP) connected to an RMATS-1 is tested in the same manner as the SMAAP. However, if there is only one LMAAP, it must be connected to the 1MAP connector with no LC171B installed in slot 35. An LC171B installed in either slot 34 or 35 of the control carrier with no LMAAP connected to the corresponding 1MAP or 2MAP connector will produce a fault code of 1126, when attempting to run MAAP test 1.

1.09 The operating procedure shown in Fig. 1 is also applicable to RMATS-1 and CACS. In some instances, small differences exist in the performance of certain tests. These differences are so noted on the affected test procedures. Different procedures are included for test 35 and the MAAP tests.

2. LOADING X-RAY TAPE AND SELECTING X-RAY TESTS

2.01 The circuit packs shown in Table C are always required for X-ray testing. Some of these have been modified to provide new features. When a circuit pack is modified, it is recoded with an alpha suffix and the recoded circuit pack can be used in place of the earlier version.

All X-ray tests can be run with or without loop-around equipment, with the following exceptions:

- ***Burn-in mode 02***
- ***Execute 16***
- ***Tests 33 and 34***

These tests must have loop-around equipment. The following tests are more thorough when loop-around equipment is used:

- ***Repeat 02***
- ***Execute 02***
- ***Tests 17 and 42.***

When the following X-ray tests are run, connections to the cross-connect field should be disconnected by removing connectors to line and trunk carriers:

- ***Test 02***
- ***Test 17***
- ***Test 42.***

Whenever a carrier designation strip calls for a specific code of CP (ie, LC29B), a CP with a succeeding suffix letter (ie, LC29C, etc) is interchangeable with it. Reverse interchangeability, however, cannot be tolerated.

When an LC30B is in slot 42 of the RMATS or CACS control carrier and X-ray tape Issue 12 is loaded into the system, fault code 2000 will be displayed. This fault is corrected at the MAAP by entering the number "30" into word 15 of memory using the following procedure:

- Depress WORD.
- Dial the 2-digit number 15.
- Depress CHANGE.
- Dial the 2-digit number 30.
- Depress ENTER.
- Depress RESET.
- Depress EXECUTE.
- Dial the 2-digit number 01.
- Proceed with testing.

When an LC447 is installed in slot 42 of the RMATS control carrier and X-ray tape Issue 12 is loaded into the system, a DIMENSION 2000 PBX X-ray tape (PG1E188, any issue) must be inserted into tape unit 2 in order to test the LC447, else fault code 2000 will be displayed. If an X-ray 2000 tape is in tape unit 2 and fault code 2000 persists, replace LC447.

LOADING X-RAY TAPE

2.02 X-ray programs are loaded into the main memory via a tape cartridge (J58879TB) inserted into the tape transport assembly. After microdiagnostics 0 through 8 have been run successfully, microdiagnostic 9 reruns microdiagnostics 0 through 8 and then initiates loading the X-ray program tape into the main memory. Figure 2 is a flow diagram for tape loading; Fig. 3 is a flow diagram for running microdiagnostics 0 through 8. When microdiagnostic test 8 is run or when the X-ray tape is loaded, contents of the memory will be lost; therefore, all hotel/motel billing, etc, should be recorded before performing either operation.

SELECTING X-RAY TESTS

2.03 After initial tape load, if the tape has not been initialized for burn-in (see paragraph 2.08), test 00 will run once and then test 01 will cycle automatically until an error is detected or until stopped manually by depressing CLEAR ENTRY or HALT. If the tape has been initialized for burn-in, test 02 (rather than 01) will cycle automatically. Providing a MAAP is available, any X-ray test listed in Table D may be run with certain restrictions (refer to paragraph 2.18). If a MAAP is not available, only the automatically executed (01 or 02) or the microdiagnostic tests can be run. Table D also provides a brief description of each X-ray test and the circuit packs tested.

2.04 During the performance of a test, information is displayed on the MAAP. Flip charts which interpret the MAAP displays are included in Fig. 4 and 5 at the end of this section.

2.05 Tests selected at the MAAP may be run in either the execute mode or the repeat mode. A test is run in the execute mode by depressing MAAP button EXECUTE and a 2-digit number (01, 02, etc) indicating the test number. A test is begun in the repeat mode by depressing MAAP button REPEAT and a 2-digit number indicating the test number.

2.06 In the execute mode, the selected test is cycled continuously, but stops if a machine failure occurs, at which time a fault code is displayed on the alarm panel and on the MAAP. When a fault occurs, the trouble should be cleared and the test rerun [unless the Continue on Error or Test Mode option in X-ray TP-1E490 or the Continuous Burn-in option in X-ray TP-1E490, Issue 2 is being used (see paragraphs 3.12, 3.15, or 2.11, respectively)]. If the selected test is run in the repeat mode and a fault occurs, the fault data is logged in memory. The test restarts automatically and continues to cycle. Any additional faults (up to a maximum of 30) also are logged in memory and the testing continues. ▶With X-ray tape TP-1E490, Issue 2, the additional faults (up to a maximum of 42) are logged in memory and recorded on tape every 30 minutes and upon parking the tape (see paragraph 3.08).◀

2.07 The execute mode of testing probably will be used most often. However, for intermittent faults and/or for unattended testing, the repeat mode may be preferred. Figure 6 is a flowchart for running tests in the repeat mode.

2.08 At the factory, test 02 (system test) is run as a burn-in test in the repeat mode of operation. The burn-in test requires the loading of an initialization code into memory which results in the system configuration (under test) being recorded on the tape. This then becomes the burn-in code for that tape. Once the tape has been initialized, the recorded configuration cannot be erased; however, the tape can be reinitialized for use on a system with a different configuration. Loop-around fixtures are required for test 02 burn-in. In order to use the loop-around fixtures, an LC14 must be installed in slot 9 of trunk carrier 0 (slot 8 when the J58879CC carrier is used).

2.09 The X-ray tapes, when shipped to the field, have not been initialized and may be used to run test 02 in the repeat mode without regard to system configuration. However, if the tape is initialized during field use and is then run on a system with a different configuration, it must be reinitialized.

2.10 When test 02 (repeat mode) is run with a tape that has been initialized, the accumulated test time is displayed on the MAAP and recorded on the tape every 30 minutes. The elapsed time since last recording can be saved on tape by performing a park tape on the MAAP. Also, during test 02, the current system configuration is periodically compared with the configuration that was recorded when the tape was last initialized. If the two configurations do not

agree, the test will stop and a fault code will be displayed on the MAAP. Therefore, if a fault code from 1070 to 1114 is displayed, it means that the tape was initialized on a system with a configuration different from the current configuration. The tape is usually reinitialized (Fig. 7) to update the configuration and clear the recorded test time.

> ***Note:*** When test 02 (repeat mode) is run, errors logged in memory on the first pass can be erased from memory by reinitializing burn-in (see Fig. 7).

CONTINUOUS BURN-IN

2.11 ▶In X-ray tape TP-1E490, Issue 2, test 02 (repeat mode) may be set in the Continuous Burn-in option via control word 17 (see Fig. 8). The right-most digit on the MAAP will flash on and off when the Continuous Burn-in option is set. With the Continuous Burn-in option set, the test will not stop on an error until the error shutdown threshold is reached. If the error count (ie, the current total number of errors) is below the error shutdown threshold, the test continues to run; otherwise, the test stops. If a network port (line or trunk) circuit pack is the cause of an error, the circuit pack address, time of the error, and fault code are added to a list in memory of failing circuit packs. These failing circuit packs are exempt from further testing while the Continuous Burn-in option is active. This list of failing circuit packs and error information in memory is recorded on tape approximately every 30 minutes or upon parking of the tape and thus will not be lost due to a power failure. Display 2 is used to display the failures that have occurred while the Continuous Burn-in option is active (see Fig. 9 and paragraph 3.07). This list of failing circuit packs is cleared from memory upon a reinitialization of burn-in on the first pass completed. If a non-network port circuit pack is the cause of an error, the time of the error and fault code are added to the list of failing circuit packs and is logged in memory. However, these failing circuit packs are not exempt from further testing. The Continuous Burn-in option allows for the system under test to be left unattended for long periods of time (eg, over a week-end).

2.12 The error shutdown threshold can be set from 2 to 20 (octal 2 to 24) via word 20 (octal). If this limit is not set in word 20 then the X-ray program defaults to a threshold of 8. The adjusted shutdown threshold must be entered in octal.

2.13 Since the addresses of line and trunk boards that fail during Continuous Burn-in are stored in memory and no longer tested, these failing circuit packs may be removed from the system. When removing circuit packs during continuous testing, first use DISPLAY 2 (see paragraph 3.07) to accumulate the addresses of the boards that failed. Next, set the HALT/GO switch to the GO position. Then, depress the RESET button, REPEAT button, and digits 0 and 2, respectively, on the MAAP to return the system to Continuous Burn-in. The failing circuit packs may be left in the system during a complete Continuous Burn-in cycle. New circuit packs may not be added to the slots of removed failing circuit packs until the system is reinitialized for burn-in.

2.14 X-ray TP-1E490, Issue 2 saves in memory the test, mode of operation, control word 17, and the shutdown threshold level. This is done so that in case of a power down or failure, X-ray returns to its original test and mode of operation upon a type reload when power is restored.◀

LOOP-AROUND FIXTURES

2.15 Loop-around fixtures, which are intended for factory use only, provide more comprehensive testing on certain X-ray tests. Two types of loop-around fixtures are provided for the line carriers and two types for the trunk carriers. One line carrier fixture is used for line carrier 0 and the other is used for all other line carriers. The trunk carrier fixtures are provided in the same manner, one for trunk carrier 0 and the other for all other trunk carriers.

2.16 The line carrier fixtures make possible a thorough test of both analog and digital circuits on installed line and attendant interface circuit packs when running X-ray tests 02 and 17. The trunk carrier fixtures do the same for installed trunk circuit packs when running X-ray tests 02, 33, 34, and 42. When using the trunk carrier fixtures, contact interface circuit pack LC14 must be installed in slot 9 of carrier 0 (slot 8 when the J58879CC carrier is used).

2.17 Loop-around connector plugs make possible a complete test of installed RMATS (or CACS) circuit packs when running test 35. Use of data link loop-back plugs will improve the serial data link test when running tests 01 and 02.

TEST RESTRICTIONS

2.18 The additions and changes (shown in Table B) that resulted in reissues of the tapes also cre-

ated certain test restrictions. The restrictions imposed by the various issues of the tapes are listed in Table E.

3. FAULT IDENTIFICATION PROCEDURES

3.01 Faults are identified by obtaining the fault code (octal) number from MAAP fields 11 through 15 or indirectly from the alarm panel. The fault code is then used to find a repair procedure. Section 5 of this document provides a list of fault code numbers, corresponding MAAP display formats, a description of the fault, and a repair procedure (if applicable). In some cases, the display format (flipchart) refers to a table or figure for interpretation of the MAAP display. These tables are included as Tables F through Q and these figures are included as Fig. 10 through 14. Figure 15 is a procedure for the replacement of circuit packs and other components.

3.02 When the lighted indicator lamps on the alarm panel do not change within a 5-second period, as described in Fig. 2, a fault has occurred. A fault may also be indicated on the MAAP. During normal operation, the indicator lamps on the MAAP will flash as indicated in Fig. 2. If the alarm panel indicator lamps (lighted) do not change within a 5-second period and the ERROR lamp is flashing, a fault has occurred and the fault code may be obtained from the MAAP.

3.03 Additional information to assist in clearing troubles may be found in Part 4 where each specific X-ray program is described. The description of the tests may be helpful in analyzing intermittent or multiple faults.

MAAP FAULT IDENTIFICATION PROCEDURE

3.04 Faults indicated on the MAAP should be located and corrected as follows:

(1) Obtain the fault code from the MAAP (fields 11 through 15).

(2) Using the fault code, refer to Section 5 for the corresponding fault description and repair procedure.

(3) If the fault code is not listed in Section 5, run microdiagnostics 0 through 8 to identify and correct the processor fault.

3.05 If more than one display format is listed for a fault code in Section 5, the first refers to the display associated with the indicated test number. The second display format indicates additional information that may be recalled from memory. This information is displayed as indicated in Fig. 4 on the respective display format.

3.06 If the test was running in the repeat mode when the fault occurred, the fault code that would normally be displayed on the MAAP is instead logged in memory. This data may be read (recalled from the memory) by depressing the DISPLAY key on the MAAP followed by depressing digit 2 on the data entry pad. In the repeat mode, there may be more than one fault logged in memory. All faults are read by repeatedly depressing the digit 2 until a single-digit number appears in the fault code fields. This number is the quantity of tape-read failures that resulted in tape retries. During the recall operation, the earliest occurring fault is displayed first. The fault record is cleared from the MAAP display by depressing RESET.

3.07 ▶With X-ray tape TP-1E490, Issue 2, errors that occur during a test in the repeat mode are logged in memory and this memory is periodically recorded on tape. Each error has the time the error occurred, the board that failed if applicable, the fault code, and the error number logged in memory. The error number signifies the order of occurrence. To display the error information stored in memory, depress the DISPLAY button, then the digit 2 button on the MAAP (Fig. 9 is displayed). The present error count is initially displayed. If the error count is above zero, depress the digit 2 button to display the error information of the first error occurrence. This is the first error since memory was last cleared. Memory can be cleared due to a power down, power failure, or a reinitialization for burn-in (Fig. 7). Each error number (up to 42) is chronologically displayed with each depression of the digit 2 button until all desired fault codes and error information have been displayed. At any time the MAAP can be reset to normal operation mode by depressing the RESET button.

3.08 When using X-ray tape TP-1E490, Issue 2, errors that are logged in memory are recorded on tape approximately every 30 minutes and upon a tape park. Thus, the recorded errors are not lost due to a power failure. Reloading the tape restores the error information to memory. This error information on the tape is erased and changed upon reinitialization of burn-in and on the first pass completed (see Fig. 7).◀

3.09 If microdiagnostics are called for in the repair procedure of Section 5, rerun microdiagnostics

0 through 8 (Fig. 3) and repair as indicated. Replace in sequence means to replace the designated circuit packs in the sequence listed. For example, replace in sequence LC37, LC22 should be interpreted as follows: Replace the LC37 circuit pack and rerun the test. If the fault symptoms are unchanged, return the original (removed) LC37 circuit pack to the correct slot, replace the LC22 circuit pack, and rerun the test. If the fault symptoms are unchanged, reinstall the original LC22, etc.

3.10 After the necessary repairs are made, start the appropriate X-ray test (Fig. 16 through 37) to verify the repair. Table Q lists groups of fault codes requiring an X-ray tape reload. The flowcharts (Fig. 16 through 37) indicate the sequence of activities required and should result in clearing troubles if a permanent (hard) fault is found. If the flowcharts for X-ray tests do not result in clearing the faults, the trouble is most likely in the backplane wiring, wrong circuit pack installed in slot, or circuit pack not properly seated, etc.

ALARM PANEL FAULT IDENTIFICATION PROCEDURE

3.11 When a fault is indicated by the alarm panel lamps, the fault code may be determined from the alarm panel if a MAAP is not attached to the system, as follows:

(1) Interpret each lighted alarm panel indicator lamp as a number using the list of alarm panel lamp values in Fig. 2.

(2) Determine the fault code by adding the (octal) numbers. The octal sum of the numbers is equal to the fault code number.

(3) Using the obtained fault code, refer to Section 5 for the corresponding fault description and repair procedure. If the fault does not appear in the section, run microdiagnostics 0 through 8 to identify and correct the processor fault.

(4) After making the necessary repairs, rerun the appropriate X-ray test (Fig. 16 through 37) to verify the repairs. After repairing the fault, it may be necessary to reload the X-ray tape. See Table Q.

CONTINUE ON ERROR

3.12 In X-ray tape TP-1E490, a Continue on Error option is available which allows testing of lines and trunks to be continued after an error has occurred, without starting the test over. This capability is available only on the first pass of test 42 or test 17 and only when testing in the looped-around mode (line and trunk loop-around boxes installed and an LC14 installed). An attempt to use the option on any other test or during other than the first pass of the applicable tests is ignored. The Continue on Error option is applicable only on the following circuit packs:

LC02
LC03
LC08
LC09
LC10
LC11
LC13
LC280
LC293
LC361

3.13 When test 42 or 17 is running on its first pass and a fault is found in one of the applicable circuit packs, the test will stop as usual and a fault code will be displayed. The test number will flash on and off at the SMAAP, indicating that the Continue on Error option is allowed. To continue on error, the faulty circuit pack is pulled (but not replaced) and the COE button on the SMAAP is depressed. (The COE button is an unlabeled button located on the left end of the middle row of buttons on the SMAAP.) ▶The test number stops flashing on and off after the depression of the COE button. But for X-ray tape TP-1E490, Issue 2, the test number continues to flash on and off (indicating the Continue on Error option is being used) after the depression of the COE button.◀ The test continues at the next circuit pack, allowing the remainder of the system to be checked without waiting for a retest of previously tested circuit packs.

3.14 At the successful conclusion of the first pass of a test in which the Continue on Error option has been activated, the test number will flash on and off on the SMAAP. Error code 620 will be displayed on the SMAAP and on the alarm panel. Most faulty circuit packs will have been pulled out and the system should respond as usual to any command.

TEST MODE

3.15 In X-ray tape TP-1E490, a Test Mode option has been added which allows stepping through

a carrier after a fault has occurred. This capability is available only on the first pass of tests 17 and 42 and only when testing in the looped-around mode (line and trunk loop-around boxes installed and LC14 installed). An attempt to use Test Mode on any other test or during other than the first pass of the applicable tests is ignored. Test Mode is applicable only on the following circuit packs:

LC02
LC03
LC08
LC09
LC10
LC11
LC13
LC280
LC293
LC361

3.16 When test 17 or 42 is running on its first pass and a fault is found in one of the applicable circuit packs, the test will stop as usual and a fault code will be displayed. The test number and ERROR lamp will flash on and off at the SMAAP.

3.17 To step forward through the carrier, depress the TEST MODE button on the SMAAP (an unlabeled button which is the second button from the left in the middle row of buttons on the SMAAP) and then depress the STEP button the desired number of times. A number of circuit packs equal to the number of depressions of the STEP button will be skipped in a forward direction. Depressing the ENTER button on the SMAAP will cause testing to resume at a location equal to the faulty circuit pack plus the number of depressions of the STEP button.

3.18 In order to step backward through a carrier after a faulty circuit pack is detected (fault code displayed with ERROR lamp and test number flashing), the TEST MODE and REMOVE buttons are depressed on the SMAAP and then STEP is depressed the desired number of times. A number of circuit packs equal to the number of depressions of the STEP button will be skipped in the reverse direction. Depressing the ENTER button will cause testing to resume at a location equal to the faulty circuit pack minus the number of depressions of the STEP button.

4. X-RAY PROGRAM DESCRIPTION

4.01 This part contains a description of the X-ray programs which are structured into tests 00 through 50). The tests and associated programs are listed in Table D.

XREXEC (X-RAY EXECUTIVE ROUTINE)

4.02 XREXEC initializes the processor and cycles the X-ray tests (excluding microtests) that have been chosen (selected) via the MAAP. The cycler portion of the routine runs the X-ray test selected. If one of the programs detects a fault, the cycle stops and an error subroutine (ERROR) is called.

4.03 When a fault is detected, a fault code is displayed on the alarm panel and on the MAAP. The program then enters a wait loop or a trap. XREXEC also keeps a continuous count of the X-ray subroutines. This count is monitored by the 25-millisecond clock interrupt program to determine if any X-ray program is stuck (hung up) in a loop. XREXEC toggles the alarm panel PASS lamp at the end of each successful X-ray test pass. The PASS lamp on the alarm panel is alternately off, then on for successive passes of an X-ray test. Therefore, the PASS lamp can be used to determine how long each test runs.

INITPI (PROGRAM INTERRUPT INITIALIZATION)

4.04 During the startup of each test, the program interrupt initialization subroutine (INITPI) is called by the X-ray executive routine (XREXEC). This subroutine initiates the 25-millisecond and 10-millisecond program interrupts and verifies that these interrupts occur at the proper rate. A collection of line-dependent parameters used by many of the other programs is initialized.

ALARMS (ALARM PANEL INDICATORS, TEST 00)

4.05 ALARMS is performed at the beginning of the XREXEC routine. This test runs only once. Each software-controlled alarm indicator lamp on the alarm panel (MAJOR, MINOR, I/O BUS, PROC, MEM, TAPE, SCAN, NET, FACILITY, PASS, FAIL, and TRANSFER) is activated in a left-to-right and top-to-bottom sequence. Each alarm lamp is activated for approximately 0.2 second. A visual verification may be obtained by observing that all software-controlled alarms can be activated and that correlation with the alarm panel register is correct. Hardware faults are displayed on the alarm panel in octal code.

4.06 Program instructions used in the ALARMS program have not been tested because

ALARMS precedes the program instruction set test program (INSTRC). Consequently, each program instruction used in the ALARMS program is tested prior to the actual alarm indicator test. If a failure occurs in an instruction (used to provide the 0.2-second alarm activation interval), the program attempts to display a fault code on the alarm panel.

INIT B (SUCCESSFUL LOAD INDICATOR, TEST 00)

4.07 This routine is used to indicate that the X-ray programs have been successfully loaded into the main store by the microloader. It also verifies that control has been successfully passed to a program in the main store. This routine checks the following functions:

- Ability to transfer control from the microloader to a program in the main store
- Ability to fetch, decode, and execute a high level instruction from the main store
- Operation of the program instruction load immediate (LI), load alarm panel register (AP), and branch long (BL)
- Operation of the alarm indicators corresponding to bits 0 through 10 of the alarm word.

T1SUBR (SUBROUTINE CALL, TEST 00)

4.08 This program, the last to run in test 00, tests the operation of the processor on a subroutine call and initializes all status memory following tape load. At the end of the program, T1SUBR transfers control to test 01.

MEMXRY (PROCESSOR REGISTER MEMORY [RM], TESTS 00, 01, 02)

4.09 MEMXRY performs the processor register memory (RM) test. The registers are checked first for stuck bits by passing all 1s and then all 0s through the registers (except RM3) 15 times. Each of the 4 by 16 bytes comprising the registers has all possible data patterns written in and checked.

MEMTST (MEMORY, TESTS 00, 01, 02, 14)

4.10 In test 00, the memory test (MEMTST) follows the processor register memory (RM) test (MEMXRY). The memory in which MEMTST resides is tested first. In the first pass after memory load, the equipped memory locations are found and a memory map is constructed. All equipped memory circuit packs are then tested. The following are the major functions checked:

- Word parity
- Alternate FFFF and 0000
- Alternate 0000 and FFFF
- Parity bit set to 1
- Parity bit set to 0
- Address of location into location.

These tests are run on memory boards containing the X-ray program, provided an extra 4K of memory is available in which memory contents of the board to be tested can be saved. If an extra 4K of memory is not available, the following secondary tests are performed:

- Word parity
- All 1s in each word using special program instruction TLOC (test memory location)
- All 0s in each word using special program instruction TLOC
- Parity bit set to 1
- Parity bit set to 0.

If a fault is detected during the memory test run, a code is displayed on the alarm panel and the MAAP, enabling the observer to determine the defective board.

DLXRAY (SERIAL DATA LINK, TESTS 01, 02)

4.11 This subroutine checks every data channel three times per second. The checks are performed when the channels are idle, except for the attendant console channels which are constantly checked. A low-speed channel is tested using message 0E57 and a high-speed channel is tested with message F0F0. Also, channels equipped with the data link loopback fixture are checked to the connector

using message 0E57, and channels supplied with attendant consoles are checked for correct echo using the same message (0E57).

MPTST (MAAP TEST, TESTS 01, 02)

4.12 This subroutine checks the MAAP lamps and provides a coded display for each button keyed.

AP LED (ALARM PANEL EXERCISER, TESTS 01, 02)

4.13 This program exercises the alarm panel by stepping the lamps in a repetitive pattern. The state of the PASS lamp is set as defined by the base level program cycler.

INTRUP (HARDWARE INTERRUPT VERIFICATION, TESTS 01, 02, 32)

4.14 This subroutine checks the write-protect register for bits stuck at 0 and forces the following interrupts:

- Illegal OP code
- Write-protect
- Branch-allow
- Program sanity
- Microparity.

INSTRC (INSTRUCTION SET VERIFICATION, TESTS 01, 02, 31)

4.15 This subroutine verifies every instruction possible without interfering with the requirement that program interrupts run concurrently. Each instruction is used to verify that the processor performs as intended. The subroutine (INSTRC) is called by the executive routine (XREXEC) during startup of every test and is also cycled with other programs in tests 01, 02, and 31.

ATTXRY (ATTENDANT CONSOLE, TESTS 01, 02, 13)

4.16 This subroutine exercises the lamps on up to four attendant consoles by stepping them through a periodic sequence. Hotel-motel display units are included in the exercise. After one pass through the lamp sequence, the program accepts button inputs from the consoles and provides a positive indication that the button input was received. In most cases, the lamp associated with the button is turned on and all other lamps are turned off.

TAPXRY (TAPE INTERFACE, TESTS 01, 02, 12, 27)

4.17 TAPXRY tests the tape controller (LC29 or LC29B, LC30 or LC30B or LC30C), tape drive, tape buffers, and all tape status indicators. The tape is verified to be an X-ray tape and then the read/write capability is tested. If LC447 (Tape Control Interface B) is present in RMATS, TP-1E139, Issue 12 and TP-1E490 will use TAPXRY to test the additional capability of LC447. The LC447 allows writing data to three tape tracks of the B minirecorder (tape unit 2) of RMATS while the LC30/B/C allows writing data to only two tracks. During TAPXRY with an LC447 present, data is written to each of the three tracks. After the data is written to the three tracks, the data is read back and verified. A DIMENSION 2000 PBX X-ray tape must be used in the B minirecorder to provide the additional tape tracks required for testing the LC30, LC30B, LC30C, or LC447.

RMATS (TESTS 01, 02, 35)

4.18 In the DIMENSION 100 and 400 PBXs, the RMATS X-ray program tests the LC171 (or LC171B) circuit pack. With no loop-around fixture, the correct response to a read I/O command is checked and then the correct response to major and minor alarm signals is checked. If the loop-around fixture is connected, an additional test is performed to check for correct response to an 8-bit data word and to a 7-bit data word with overrun error. In X-ray test 35 only, an optional manual test is available for a traffic data request to an LC171 (or LC171B) circuit pack. A loop-around fixture is required for the LC171 (or LC171B) and a test point on the LC171 (or LC171B) is grounded by the operator to simulate a traffic data request. Special codes are displayed to indicate a pass or fail condition.

4.19 At RMATS-1 and CACS, if an LC179 circuit pack is present, it will be tested first, followed by the manual test of the LC171 (or LC171B) circuit packs. With the LC179 loop-around fixture connected, the LC179 channel is tested for each of its inputs and outputs. The LC179 channel 600 tests the two interrupt outputs from each LC171 (or LC171B).

SCNXRY (SCANNER/DISTRIBUTOR, TESTS 02, 03, 04, 05)

4.20 This subroutine runs a group of 23 tests to identify faults internal to the LC46 scanner/distributor circuit pack. SCNXRY also checks the scanner interface in conjunction with the line and trunk carriers. These tests detect stuck bit faults on the status buses; on the port, board, or carrier select lead; and on auxiliary signaling leads.

4.21 The X-ray tests have been arranged to allow fault diagnosis and repair procedures to be based on the first test to fail and the number of tests to fail. The block of 23 tests is run 10 times, each time the subroutine SCNXRY is called. If the same fault is detected on each of the ten runs of the test, the fault is determined to be a hard fault; otherwise, the fault is considered an intermittent fault.

NETWRK (DIGITAL NETWORK, TESTS 02, 04, 05)

4.22 This subroutine verifies the time-division network control (LC47B), the digital portions of the buffer board, the time-division network, and the shift registers on all equipped line and trunk circuits. Stuck-active board and port selects are detected. If no faults are detected, the number of lines, trunks, TOUCH-TONE® calling registers, and attendant interface shift register circuits are displayed. The eight shift registers on the tone boards (LC04 and LC05 or LC204) are included in the line count.

PAMXRY (TONE TEST, TESTS 02, 05)

4.23 This subroutine (PAMXRY) verifies a portion of the analog network consisting of the carrier 0 PAM network, the PAM bus amplifiers (LC48), the carrier 0 LC50 network's buffer circuit pack, and the tone generator boards (LC04 and LC05B or LC204). The test connects each tone to the tone monitor circuit and verifies that the tone monitor is correct.

4.24 The first tone checked is dial tone (on port equipment number 0). The tone monitor does not have a port equipment number, but can be enabled via a scanner/distributor address. When the tone monitor is enabled, any network commands to any port equipment number are also provided to the monitor. The tone monitor is enabled throughout the tone test. The sequence of events for checking each tone is as follows:

(1) Clear the port equipment number of tones to be tested (this also clears the tone monitor).

(2) Assign the next time slot to the tone port equipment number (the same time slot is assigned to the monitor).

(3) Check the monitor output after it stabilizes. The paths taken by each tone are as follows:

(a) Tone port

(b) Carrier 0 transmit bus [circuit 0, LC50, has second light emitting diode (LED) on when the tone is present]

(c) PAM bus amplifier (LC48 has both LEDs on when the tone is present)

(d) Carrier receive bus (carrier 0, LC50, has the top LED on when the tone is present)

(e) Tone monitor (LC04).

4.25 At the beginning of the tone test, no time slots are assigned. As the test progresses, tones are left assigned to time slots and ports. Dial tone is connected to the first six available time-division shift registers on every carrier. The last available time slot is assigned first. During the tone test, dial tone is audible at every attendant console handset. A test station plugged into the first six lines on any carrier will receive dial tone. Dial tone is routed to every carrier over the PAM bus and lights the top LED on every LC50 buffer board. Approximately 66 seconds after the tone test begins, the network is cleared, all the above mentioned LEDs related to the time-division network analog path are extinguished, and the test continues if no tone has failed.

PWR DIU (ELECTRONIC TELEPHONE CONTROLLER TEST CONTROL, TESTS 02, 07, 10)

4.26 This subroutine computes the data channel address and manages the testing of each electronic telephone controller exiting after completing one pass through each controller.

SMDR (STATION MESSAGE DETAIL RECORDING, TESTS 02, 15)

A. For X-Ray Tapes Other Than TP-1E490

4.27 This subroutine verifies SMDR equipment operation. The equipment is assumed to be a serial data channel 640. The integrity of the data link is verified by first checking the echo on a continuous

repetition of a no-operating instruction (NOP) message for 1 second. A series of 12-word messages is then transmitted with each message, resulting in one printed line. The SMDR printout is shown in Fig. 12, Sheet 1. The processing of NOPs, retransmissions, and data formatting verifies the SMDR memory and printer.

B. For X-Ray Tape TP-1E490

SMDR Output to Printer

4.28 The SMDR test is designed to provide output to either a printer or a 9-track tape, at the discretion of the X-ray test operator. The printout can be verified for accuracy by comparing the printout with Fig. 12, Sheets 2 and 3. When the output is to a 9-track tape, the tape data must be read elsewhere for verification.

4.29 To output the SMDR test data to an SMDR printer, the following procedure is used at the MAAP:

(1) Depress EXECUTE.

(2) Dial the digits 15 and wait for a blinking PASS lamp.

(3) Depress PROC NO.

(4) Dial the digits 21.

(5) Depress ENTER.

(a) A 12-word message of 'NOP' commands is transmitted to the SMDR.

(b) If the data link is working, the WAIT LED will light.

(6) Depress STEP.

- Step 1 of the test is executed.
- The data shown in Fig. 12, Sheet 2, is automatically printed on the SMDR printer.
- If timing is correct, the WAIT LED will light immediately after the last line is printed.

(7) Depress STEP.

(a) Step 2 of the test is executed.

(b) The data shown in Fig. 12, Sheet 2, is automatically printed on the SMDR printer.

The difference between Step 2 and Step 1 is that the output data in Step 2 is "retransmitted" and is interlaced with erroneous messages.

(8) Depress STEP.

- Step 3 of the test is executed.
- The data shown in Fig. 12, Sheet 3, is automatically printed on the SMDR printer.
- If timing is correct, the WAIT LED will light after the last line is printed.

(9) Depress STEP.

- Step 4 of the test is executed.
- The data shown in Fig. 12, Sheet 3, is automatically printed on the SMDR printer. The difference between Step 4 and Step 3 is that the output data in Step 4 is all "retransmitted" and is interlaced with erroneous messages.
- If timing is correct, the WAIT LED will light immediately after the last line is printed.
- If the data link is working, the WAIT LED will light.

(10) Depress STEP. BUSY OUT LED lights, indicating end of test.

▶***Note:*** For X-ray tape TP-1E490, Issue 2, Step 5 of the SMDR test is executed after the STEP button is depressed. The result of Step 5 being executed is the continuous alternation between Step 2 and Step 4 every 5 minutes. This test provides "burn-in' for the SMDR. To exit Step 5 or if Step 5 is not desired, depress the RLS BUS/OUT.◀

(11) Depress RLS BUS/OUT.

(a) A 620 error message is displayed.

(b) X-ray returns to standard operation.

SMDR Output to 9-Track Tape

4.30 To output the SMDR test data to an SMDR 9-track tape, the following procedure is used.

The control carrier must have memory boards in positions 01, 02, and 03 or the SMDR tape will not load.

Note: Steps 1 through 14 are done ***at the MAAP.***

(1) Power down the tape unit and SMDR carrier and insert tape cartridge.

(2) Turn on power and load tape.

(3) Set panel switch to ON.

(4) Set selector to EXTENSION NUMBER.

(5) Dial the extension number 1111 using the thumbwheel switches.

(6) Depress CLEAR DISPLAY.

(7) Depress LOAD. Verify that tape moves to load point.

(8) Depress ON LINE.

(9) Depress DUMP MEMORY five times.

(10) Depress ON LINE (indicator LED goes off).

(11) Depress REWIND.

(12) Depress CLEAR DISPLAY.

(13) Depress ON LINE (indicator LED goes on).

(14) Ensure that READ STATUS and WRITE ENABLE LEDs are on.

Note: Steps 15 through 27 are used to verify that a certain pattern is written for every six blocks of data. The data pattern is displayed starting from the duration time block window, and may be broken up. Steps 15 through 22 are done ***at the MAAP.***

(15) Depress EXECUTE.

(16) Dial the digits 15.

(17) Depress PROC NO.

(18) Dial the digits 45.

(19) Depress ENTER. A series of dashes should appear on the MAAP.

(20) Dial the digit 1.

(21) Depress ENTER.

(22) Depress STEP (six blocks of data are written on the 9-track tape). The data can be verified by comparing the data pattern in Fig. 12, Sheet 4, with the data displayed in the SMDR tape unit windows.

Note: Steps 23 through 27 are done ***at the SMDR tape unit.***

(23) Depress CLEAR DISPLAY (tape unit windows are cleared of data).

(24) Depress REPEAT (six blocks of data are written to the SMDR tape and displayed in the SMDR tape unit windows). Again, the data can be verified using Fig. 12, Sheet 4.

Note: Each successive depression of the CLEAR DISPLAY and REPEAT keys on the SMDR tape unit will write six blocks of data on the SMDR 9-track tape and display the data in the tape unit windows. This data can be verified using Fig. 12, Sheet 4. (Be sure the REPEAT key is ***not*** depressed after the last line of information in Fig. 12, Sheet 4 is displayed. If depressing of the REPEAT key is continued, the displays will be incorrect.)

(25) Dial the following calling numbers using the thumbwheel switches. Between each set of numbers, depress CLEAR DISPLAY and REPEAT.

0123
1234
2345
3456
4567
5678
6789
7890
8901
9012
7747

Each set of numbers appears in the STA or ORIG TRUNK window of the SMDR tape unit.

(26) Place the selector in AUTOMATIC.

(27) Depress CLEAR DISPLAY (on MAAP) and REPEAT (on MAAP).

(a) The pattern 012345678901234567890------- is displayed across the entire LED display. The pattern may be broken up.

(b) The digits 7890 are displayed in the STA or ORIG TRUNK window.

4.31 At the SMDR tape unit, verify that the calendar clock display is functioning properly as follows:

(1) Place TIME/DATE switch in the TIME position.

(2) Depress and hold down the SET MINUTES switch (minutes display cycles from 00 through 59 and back to 00).

(3) Depress and hold down SET HOURS switch (hours display cycles from 00 through 23 and back to 00).

(4) Using SET HOURS and SET MINUTES switches, set the time to 23 hours and 59 minutes.

Note: When the time cycles from 23:59 to 00:00, the date changes and one block of data is written on the tape.

(5) Place TIME/DATE switch in the DATE position.

(6) Depress and hold down the SET DATE switch.

(7) Verify that the entire calendar year plus one day can be cycled. (There will be no 02/29 date.)

(8) Reset the time and date to the correct reading.

4.32 To terminate the SMDR test, proceed as follows:

(1) Depress TAPE UNLOAD.

(2) When tape stops moving, depress ON LINE. Indicator LED goes off.

(3) Depress REWIND.

(4) Remove tape.

(5) Depress RLS BUS/OUT.

(a) A 620 error message is displayed.

(b) X-ray returns to standard operation.

LINRAY (LINE AND TRUNK TEST, TESTS 02, 17, 42)

4.33 This program exercises and tests each line, trunk, and attendant port circuit. The test is effective only if the line and trunk loop-around fixtures are used. Each port is tested for tone transmission, and each relay is operated and released. The principal functions of the test are:

- Disconnect group ringing on the line carriers.
- Verify switchhook status, analog transmission paths, and relay operation on all lines and attendant ports.
- For X-ray tapes other than TP-1E490, locate and test trunks in the order of LC6, LC12, LC8, LC9, LC280, LC13, and LC11.
- For X-ray tape TP-1E490, locate and test trunks in the order of LC12 (see LC12 TST, paragraph 4.44), LC10C, LC6B, LC8D, LC361, LC280, LC9D, LC13B, and LC11B.
- When running test 42 or 02 and an LC36 is present, pin 80 of the LC361 slot must be tied to ground or to pin 85 of the LC361 slot. This will ensure that trunk testing will operate properly when loop-around equipment is not present.

4.34 For Issue 12 of TP-1E139, TP-1E140, and TP-1E141, Test 17 (and test 02) tests LC145s if they are located in carrier 0, slots 7 through 9 and/or 11 through 18. (Refer to paragraph 4.36 for an explanation of LC145 testing using TP-1E490.) Though there is normally only one LC145 per system, up to 11 LC145s can be tested. Each LC145 is tested, beginning with the highest number slot position. The test on each LC145 lasts approximately 4 minutes. The LC145 tones appear at port 0 of the first LC02 installed in line carrier 0, slots 4 through 6. The tones can be monitored with a station set attached to this port. Care should be taken not to introduce sound into the transmitter, since such sounds could cause an error. The tones monitored at the LC02 consist of the following:

- Medium pitch tone—10 seconds
- Low pitch tone—10 seconds

- High pitch tone—10 seconds
- Wait (no tone)—30 seconds
- Three short bursts of medium tone—5 seconds
- Wait (no tone)—30 to 35 seconds
- Low pitch tone—1 minute, 30 seconds
- Wait (no tone)—30 seconds
- Three short bursts of medium tone—5 seconds.

4.35 When using any X-ray tape with loop-around equipment installed, the LEDs on LC02s and LC02Bs will light when test 17 is being run. When using any X-ray tape other than TP-1E490 and loop-around equipment is not used, the LEDs on LC02s and LC02Bs do not light when test 17 is run. When using X-ray tape TP-1E490 without loop-around equipment installed, the LED on each LC02B will light when the circuit pack is tested. At the end of test 17 the LEDs on all LC02Bs will be lighted (LC02s will not be lighted at end of test 17 when not using TP-1E490).

LC145TST (LC145 TEST, TESTS REPEAT 02, 47—TP-1E490 ONLY)

4.36 This test makes a search for LC145s, and if found, the LC145 is tested as described in paragraph 4.34. The stipulation in test 17 that LC145s must be in slots 7 through 9 and/or 11 through 18 does not apply for this test.

LC293TST (LC293 TEST, TESTS REPEAT 02, 17)

4.37 This subroutine is used to test the LC293 Line Circuit Conference Bridge. The LC293 allows up to 40 parties to participate in a conference call. A software controlled switch enables or disables a party from participating in the conference. Loop-around equipment is required for a full test of the LC293 (without loop-around, the LC293 is treated like an LC02). LC293TST tests the ports on the LC293 by using tone tests. If a port is found to be operating improperly, the appropriate error code is displayed on the MAAP and alarm panel.

ANITST (AUTOMATIC NUMBER IDENTIFICATION, TESTS 02, 23)

4.38 When LC31 (or LC31C) is plugged in, this subroutine exercises the Automatic Number Identification (ANI) circuits but has limited capability for automatically detecting faults. The program runs continuously in X-ray tests 02 and 23 with a 1-minute startup delay in test 02. A message is sent out every 2 to 5 seconds on an ANI trunk. With an ANI test set, all 2-out-of-5 codes are checked by observing the following messages:

Line No.	Trunk No.
0123	4567
1357	0246
2000	3988
1010	1010

EMXFER (EMERGENCY TRANSFER VERIFICATION, TEST 06)

4.39 This program turns on all software-controlled LEDs on the alarm panel (including the emergency transfer lamp), stops program interrupt activity, and enters a 20-second time-out program loop. If the processor enters emergency transfer and stops, the alarm panel LEDs will remain on and there will be no activity on the MAAP. If the processor fails to enter emergency transfer within 20 seconds, a special code will appear on the MAAP and the ERROR lamp will flash.

TTRECREG ("TOUCH-TONE" CALLING RECEIVER-REGISTER, TEST 21)

4.40 This subroutine tests the receiver-register board packs under manual control from a test station and the MAAP (the MAAP is used to access each register). This subroutine performs the following:

(a) Automatically checks analog circuits associated with TOUCH-TONE calling registers

(b) Verifies that all TOUCH-TONE dialing digits are received and decoded correctly

(c) Verifies that the 2-out-of-7 TOUCH-TONE calling code is visible in the lamp field on the LC10B/C circuit pack

(d) Verifies, on the test station handset, the eight call progress tones for LC4 and LC5 or LC204 circuit packs, and the four tones from LC17, tone plant circuit pack, if present

(e) On X-ray tape TP-1E490, test 21 verifies the two port originating/receiving functions on the LC10C.

LC38WR (HOTEL-MOTEL MEMORY WRITE, TEST 24)

4.41 This subroutine copies the contents of memory locations 800 through BFF into locations FC00 through FFFF. Fault code 620 indicates successful completion.

LC38CK (HOTEL-MOTEL MESSAGE CHECK, TEST 25)

4.42 The LC38CK verifies that the hotel-motel memory (LC39 or LC40) is unaffected by power faults. To determine whether battery backup (LC38) is working, it is necessary to run test LC38WR (test 24) then power down the system and reload the tape.

LC14TST (CONTACT INTERFACE, TEST 33)

4.43 This subroutine verifies the operation of the contact interface LC14 circuit pack.

LC16TST (MESSAGE REGISTER, TEST 34)

4.44 This subroutine verifies the operation of the message register LC16 (or LC16B, LC16D) circuit pack. Before test 34 is run, test 42 should be run until the first LC08 is tested (the LEDs on the LC08 alternately blink for a second or two while the LC08 is being tested).

TAP CK (TAPE CHECK, TEST 36)

4.45 This test verifies that the portion of an X-ray used for read and write operations by the system X-ray is operating properly. The test detects worn spots or portions of the tape that may have been overwritten by defective tape interface hardware. The tape is checked by reading and verifying each track A and B record twice.

LC121TST ("TOUCH-TONE" DIALING SENDER, TESTS 02, 40, 42)—FOR X-RAY TAPES OTHER THAN TP-1E490

4.46 This program tests LC12 TOUCH-TONE dialing senders. In one configuration, tests 02 and 42 test LC12s using a TOUCH-TONE calling receiver (LC54 or LC54B) along with a TOUCH-TONE calling register (LC10 or LC10B) which is installed in slot 17 of trunk carrier 0 (first trunk carrier). In another configuration, LC12s are tested by tests 02 and 42 using a TOUCH-TONE calling register and receiver (LC10C) installed in slot 17 of trunk carrier 0. Tests 02 and 42 also test LC12 dial tone detector circuits.

4.47 Test 40 uses an LC12 installed in slot 8 of trunk carrier 0 to test each TOUCH-TONE calling register (LC10 or LC10B) and TOUCH-TONE calling receiver (LC54 or LC54B) or each TOUCH-TONE calling register and receiver (LC10C). TOUCH-TONE dialing combinations (1-12) are tested for recognition in the receivers. Each of the 16 TOUCH-TONE dialing frequencies are then tested singly and checked for recognition. Then 33 false TOUCH-TONE dialing combinations with half-tone frequencies are sent and checked for no recognition in the receivers.

LC12TST ("TOUCH-TONE" DIALING SENDER, TESTS 02, 42)—FOR X-RAY TAPE TP-1E490

4.48 X-ray tape TP-1E490 does not contain a test 40. The LC10s (LC10s, LC10Bs, or LC10Cs) can be tested in any trunk carrier and are not required to be in a special slot. When LC12s are in the system, the LC12s are tested during the first part of test 42. The LC12s are tested using an LC10. The dial tone detector circuit in the LC12 is tested and TOUCH-TONE dialing combinations (1-12) are tested for recognition in the receivers. Each of the 16 TOUCH-TONE dialing frequencies is tested singly and checked for recognition. Then 33 false TOUCH-TONE dialing combinations with half-tone frequencies are sent and checked for no recognition in the receiver. After all LC12s are tested, one LC12 is used to test all LC10s.

4.49 A routine has been included in test 42 which identifies LC14s. For the routine to work properly, an LC08B or an LC285 must be somewhere in the system and all trunk loop-around equipment must be properly attached.

MAPS JUMBO (TESTS 01, 02, 31)

4.50 The MAPS JUMBO is a microcode routine which scans a table of data and returns the location of the first set bit it encounters. This routine runs as part of tests 01 and 02. It also runs each time any other X-ray test is executed.

NTWK (PORT COUNT DISPLAY TEST, TESTS 46, 03, 04)

4.51 X-ray tape TP-1E490 contains a test 46 which tests the carriers and then displays, on display format FV, the ports found for each carrier. A port is counted when it has a working time slot shift register. When test 46 is initiated, error code 620 should be displayed. By repeatedly depressing the STEP button on the MAAP, the port information for the desired carrier can be displayed on the MAAP. If an error code in the range 406 through 446 is displayed rather than error code 620, the STEP button may still be used to determine which carriers were checked. If only a portion of a carrier is checked before a fault occurs, only those ports checked will be displayed.

NONX_BRN (TEST 50 SELECTABLE BURN-IN TESTING)

4.52 ▶X-ray tape TP-1E490, Issue 2, contains a test 50 (see Fig. 37) which allows the user to select the X-ray tests to be executed during burn-in testing (repeat 02). The following X-ray tests may be selected during X-ray test 50: 01, 03, 04, 05, 07, 10, 14, 16, 17, and 42. A maximum of eight tests may be selected. X-ray tests 17 and 42 perform the standard network tests for port packs (lines and trunks, respectively).

4.53 To execute test 50, depress the EXECUTE button and the digits "5" and "0" on the MAAP. The MAAP display should be clear except for the digits "50" in the right hand side of the display. The MAAP is now ready for the input of the tests desired. Next, via the MAAP, enter the two digits of each test desired. When both digits are entered they should flash on and off. The flashing of the two digits indicates the test selected has been accepted. The flashing of the accepted test number stops when other tests are entered or when the user exits test 50. To exit test 50, depress the CLEAR ENTRY button. The system is now programmed to execute only these selected tests during burn-in instead of the normal burn-in (ie, repeat 02). Test 50, if desired, should be run prior to initialization of Burn-in.

4.54 The tests selected via test 50 can be displayed on the MAAP via DISPLAY 7. To display the selected tests, depress the DISPLAY button and the digit 7 button (Fig. 38 is displayed). The tests selected (up to eight) are displayed in the same order as they were entered during test 50. Depress the RESET button on the MAAP to return the MAAP to the normal operating mode.

4.55 If test 50 is desired, run test 50 prior to initialization of burn-in. This action will initialize the system with the selected tests in test 50 to be run during burn-in. Upon initialization of burn-in (Fig. 7), the dashes displayed on the MAAP should blink if test 50 was executed prior to initializing burn-in.

4.56 X-ray tape TP-1E490, Issue 2, saves in memory the tests selected under test 50 and information necessary to return X-ray to its present mode of operation in case of a power down or failure. Since memory is recorded on tape every 30 minutes and on a park tape, X-ray will return to its original test and mode of operation upon a tape reload when power is returned. This information on the tape will be erased and changed upon a reinitialization of burn-in on the first pass completed.◀

5. FAULT IDENTIFICATION AND CORRECTION

5.01 The following is a listing of fault codes (presented in octal). The fault codes appear in numerical order. Listed with each fault code is information which applies to that particular fault code. In general, this information is presented in the format:

(a) DISPLAY FORMAT (See Note)

(b) FAULT DESCRIPTION

(c) REPAIR PROCEDURE

Note: Display format AP* indicates no fault codes will be displayed at the MAAP. To determine the fault code, observe the indicator lights on the alarm panel. Add the assigned value of these indicators to get the fault code number (refer to Fig. 2).

Fault Code 0

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: This code is not assigned since it corresponds to no illuminated software-controlled indicators on alarm panel.

(c) REPAIR PROCEDURE: No fault—No repair procedure.

Fault Code 1

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: This code appears only during alarm panel X-ray test and is not used as a fault code.

(c) REPAIR PROCEDURE: No fault—No repair procedure.

Fault Code 2

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: See description for fault code 1.

(c) REPAIR PROCEDURE: No fault—No repair procedure.

Fault Code 3

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Bad parity found in memory after power failure.

(c) REPAIR PROCEDURE: Program will automatically rest without displaying the fault code. If the fault is displayed, replace in sequence LC21 and LC20.

Fault Code 4

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: See description for fault code 1.

(c) REPAIR PROCEDURE: No fault—No repair procedure.

Fault Code 5

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Forward branch instruction failed.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence circuit packs LC23B, LC52, and LC20.

Fault Code 6

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Improper jump to location 0.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20, LC23B, LC52, and LC53.

Fault Code 7

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: RM register bit stuck.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace LC20.

Fault Code 10

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Same as fault code 1.

(c) REPAIR PROCEDURE: No fault—No repair procedure.

Fault Code 11

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Data dependent RM register fault.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20 and LC52.

Fault Code 12

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Branch-back instruction failed.

(c) REPAIR PROCEDURE: Perform diagnostic test and replace in sequence LC23B, LC52, and LC20.

Fault Code 13

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: An exclusive OR operation improperly set condition flop.

(c) REPAIR PROCEDURE: Perform diagnostic test and replace in sequence LC52, LC22, LC23B, and LC20.

Fault Code 14,15,16

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Failure of an instruction to set condition flop or failure of a conditional branch instruction.

(c) REPAIR PROCEDURE: Perform diagnostic test and replace in sequence LC23B, LC52, and LC20.

Fault Code 17

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: 16 bits of immediate data were loaded and read; word read failed the comparison with word loaded test.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC52, LC23B, and LC20.

Fault Code 20

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Same as fault code 1.

(c) REPAIR PROCEDURE: No fault—No repair procedure.

Fault Code 21

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: RM3 has a bit stuck at zero.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20 and LC52.

Fault Code 22

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: A data comparison was made that failed to zero condition flop.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC22, LC52, and LC23B.

Fault Code 23

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No subroutine enabled.

(c) REPAIR PROCEDURE: Replace in sequence LC23B, LC52, and LC20.

Fault Code 24

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Failure of an attempt to load one register with data from another.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20, LC52, LC22, and LC23B.

Fault Code 25

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: The register to be loaded has a bit stuck at 1 or same as fault code 24.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20, LC52, LC22, and LC23B.

Fault Code 26

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: An attempt was made to add 1 to contents of a register and attempt failed.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20, LC52, LC22, and LC23B.

Fault Code 27

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Wrong program address in RM1 while testing hardware interrupt.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20, LC52, LC22, and LC53.

Fault Code 30,31

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: 16 bits of data were added to a register and condition flop failed to reset or condition flop was not set to indicate overflow.

(c) REPAIR PROCEUDRE: Perform microdiagnostic test and replace in sequence LC52 and LC20.

Fault Code 32

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: A rotate left operation of data in a register failed.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC52, LC20, and LC32B.

Fault Code 33

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Same as fault code 32.

(c) REPAIR PROCEDURE: Same as fault code 32.

Fault Code 34

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: No acknowledgement of sent I/O message to write/protect register.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC37, LC21, and LC22.

Fault Code 35

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Condition flop was not correctly set to 0 by a register comparison operation.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC52, LC20, and LC22.

Fault Code 36,37

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: A load register operation failed or condition flop was not correctly set to 1 by a register comparison operation.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC52 and LC20.

Fault Code 40

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Same as fault code 1.

(c) REPAIR PROCEDURE: Same as fault code 1.

Fault Code 41

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Complement of data operation failed.

(c) REPAIR PROCEDURE: Perform diagnostic test and replace LC52.

Fault Code 42

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: A register load operation failed.

(c) REPAIR PROCEDURE: Perform diagnostic test and replace in sequence LC20, LC22, and LC52.

Fault Code 43

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: A register load with a word from memory failed.

(c) REPAIR PROCEDURE: Perform diagnostic test and replace in sequence LC37 (or LC238 or LC346), LC36 (or LC236), LC20, LC21, and LC52.

Fault Code 44

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Branched to incorrect location.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC37, LC52, and LC36.

Fault Code 45

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Branch complete, but register did not increment.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20 and LC52.

Fault Code 46

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Branched to wrong address.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20, LC52, LC37 (or LC238 or LC368), and LC36 (or LC236).

Fault Code 47,50

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Data into or out of hold get counter failed or the hold get counter was not reset after a branch to a saved address.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC52, LC20, and LC22.

Fault Code 51

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Branch instruction was ignored.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace LC52.

Fault Code 52

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Branched, but lost return address.

(c) REPAIR PROCEDURE: Perform microdiagnostic test and replace in sequence LC20 and LC52.

Fault Code 53

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A set bit instruction failed to set correct bit.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC22.

Fault Code 54

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: After a test bit operation, condition flop was in wrong state.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 55

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A bit is stuck a 1 in RM4.

(c) REPAIR PROCEDURE: Replace LC20.

Fault Code 56

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to wrong program address.

(c) REPAIR PROCEDURE: Replace in sequence LC21, LC37 (LC238/LC368), and LC20.

Fault Code 57

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A performed addition is incorrect.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 60

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory was in bit swap state when loaded from tape.

(c) REPAIR PROCEDURE:

(1) Rerun microdiagnostic 8.

(2) Reload tape.

(3) Replace in sequence LC35, LC36, (LC236), and LC37 (LC238/LC368).

Fault Code 61

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot zero real time clock or cannot load real time clock into a register.

(c) REPAIR PROCEDURE: Replace LC53.

Fault Code 62

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: The processor is running at least 25 percent too fast or real time clock is too slow.

(c) REPAIR PROCEDURE: Replace in sequence LC53 and LC22.

Fault Code 63

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot load item vector table base register with 1s.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 64

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot load 0s into transfer vector table base register.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 65

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot load 0s into item vector table register.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 66

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot load transfer vector table register with 1s.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 67

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot load item vector table base address.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 70

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot load transfer vector table base address.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 71

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: The processor is running at least 25 percent too fast or real time clock is running to slow.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC22, LC37 (LC238/LC368), and LC52.

Fault Code 72

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 25-ms interrupt never occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53 and LC22.

Fault Code 73

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 10-ms program interrupt is occurring when it should be masked out.

(c) REPAIR PPOCEDURE: Replace in sequence LC20, LC22, and LC53.

Fault Code 74

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot find write protect block size.

(c) REPAIR PROCEDURE: Replace LC37 (LC238/LC368).

Fault Code 75

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Failure of test for 0 bit in RM4.

(c) REPAIR PROCEDURE: Replace LC20.

Fault Code 76

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 25-ms program interrupt occurred only once. Probably program interrupt and instruction not working.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC53.

Fault Code 77

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment of an instruction to take I/O message for bit swap register.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC35, LC36 (LC236), and LC21.

Fault Code 100

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Same as fault code 1.

(c) REPAIR PROCEDURE: Same as fault code 1.

Fault Code 101,102

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 10-ms program interrupt never occurred or took longer than 11-ms.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC53, and LC20.

Fault Code 103

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 10-ms interrupt rate is wrong.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC20.

Fault Code 104

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 25-ms program interrupt rate is wrong when 10-ms program interrupt is on.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC20, and LC53.

Fault Code 105

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Instruction to disable program interrupt failed.

(c) REPAIR PROCEDURE: Replace LC22.

Fault Code 106,107

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Data from RM0 or RM1 was put into memory and read from memory into RM3. This operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 110

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Illegal OP code interrupt failed to occur for an OP code of 0 (illegal code).

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC22, and LC23B.

Fault Code 111

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Write protect interrupt failed to occur and protected word was overwritten.

(c) REPAIR PROCEDURE: Replace in sequence LC37 (LC238/LC368) and LC22.

Fault Code 112

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Write protect interrupt failed to occur, but protected word was not overwritten.

(c) REPAIR PROCEDURE: Replace in sequence LC37 (LC238/LC368) and LC22.

Fault Code 113

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Microparity interrupt failed to occur.

(c) REPAIR PROCEDURE: Replace in sequence LC23B, LC22, LC21, and LC53.

Fault Code 114

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branch-allow interrupt failed, branched to an instruction where branch-allow bit was 0.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC22, and LC23B.

Fault Code 115

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A branch-to-address instruction acted similar to a no-OP instruction.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 116

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Program sanity interrupt occurred to soon.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC52.

Fault Code 117

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: RM3 data was compared to RM4 data and failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 120

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Program sanity failed to occur in 450 ms.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC53.

Fault Code 121

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Test of initialization sanity check flip-flop did not set condition flip-flop or instruction to set initialization sanity check flip-flop failed.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC52.

Fault Code 122

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Test of initialization sanity check flip-flop did not reset condition flip-flop.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC52.

Fault Code 123

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branch occurred without correct condition.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 124

(a) DISPLAY FORMAT: F5.

(b) FAULT DESCRIPTION: An unexpected hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC22, LC23B, LC48, LC52, and LC21.

Fault Code 125

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 126

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Emergency transfer failed or took longer than 20 seconds.

(c) REPAIR PROCEDURE: Replace in sequence LC18B and LC52.

Fault Code 127

(a) DISPLAY FORMAT: F5.

(b) FAULT DESCRIPTION: Expected interrupt occurred, but no return code was found.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 130

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Failed a bit test of RM4 after data was loaded from memory.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC37 (LC238/LC368).

Fault Code 131,132

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 25-ms program interrupt failed to decrement hold get register or failed to load proper return address in hold get area.

(c) REPAIR PROCEDURE: Replace in sequence LC22, and LC52, and LC53.

Fault Code 133,134

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 10-ms program interrupt failed to decrement hold get register or failed to load proper return address in hold get area.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC52, and LC53.

Fault Code 135

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: RM0 has a bit stuck at 0.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 136

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Load-a-register instruction failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 137,140

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A register bit is stuck.

(c) REPAIR PROCEDURE: Replace LC20

Fault Code 141,142

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An exclusive OR operation failed to reset condition flop or modified data in the wrong register.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC20.

Fault Code 143

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An exclusive OR operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC20.

Fault Code 144

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An exclusive OR operation failed to zero correct register.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 145,146

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Insert bit operation failed.

(c) REPAIR PROCEDURE: Replace LC20.

Fault Code 147

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A branch on not-condition branched when condition flop was 1.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 150

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A branch on not-condition did not branch when condition flop was 0.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 151

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched long when condition flop was 0.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 152

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Did not branch long when condition flop was 1.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 153

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched long on not-condition when condition flop was 1.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 154,155

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Did not branch long on not-condition when condition flop was 0 or backward failure.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 156,157

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Register operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC37, (LC238/LC368), LC52, LC21, and LC23B.

Fault Code 160

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Store contents of a register into another register failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 161,162

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Load data from memory into a register failed or failure to store data from a register at an address from another request.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, LC37 (LC238/LC368), LC21, and LC23B.

Fault Code 163

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Failure to load memory data into a register.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC37 (LC238/LC368), LC52, LC21, and LC23B.

Fault Code 164,165

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Data stored or loaded has improper value.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC23B.

Fault Code 166,167

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: RM13 or RM15 was not updated by a store or load instruction.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 170

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A store at location instruction failed to store proper value.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 171

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A load at location instruction failed to load proper value.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 172,173

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A store at location or a load at location instruction failed to load register address 0 or 1.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC20.

Fault Code 174

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A store at address instruction failed to store correctly.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 175

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A load at address instruction failed to load correctly.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 176

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A store or load at address instruction updated register address 0 incorrectly.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC20.

Fault Code 200

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Same as fault code 1.

(c) REPAIR PROCEDURE: No repair procedure required.

Fault Code 201

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Inserting data under a mask into a register failed.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC20, LC52, and LC23B.

Fault Code 202

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Inserting data under a mask into memory failed.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC20, LC52, and LC21.

Fault Code 203

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Data input into memory under a mask was read out into a register. Readout value was incorrect.

(c) REPAIR PROCEDURE: Replace in sequence LC37, LC20, LC52, and LC53.

Fault Code 204

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Data input into a register under a variable mask has incorrect value.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC20, and LC52.

Fault Code 205

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot load a register with data under variable masking.

(c) REPAIR PROCEDURE: Replace in sequence LC37 (LC238/LC368), LC20, LC52, and LC53.

Fault Code 206,207

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot zero a register or cannot exchange data between two registers.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 210

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A register content was not correctly updated after a store or load operation.

(c) REPAIR PROCEDURE: Replace in sequence LC20 and LC52.

Fault Code 211

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A register load under a mask failed.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC52, LC20, and LC23B.

Fault Code 212,213

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An AND operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 214,215,216,217

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An inclusive OR operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 220

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An exclusive OR operation did not reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 221,223

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A complement operation did not set or reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 222

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A complement operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 224

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare operation did not reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 225

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare operation changed register content.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 226

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare operation did not set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 227

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare operation under mask did not reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC52, and LC23B.

Fault Code 230

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare operation under mask changed a register content.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC20, LC52, and LC23B.

Fault Code 231

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare operation under mask did not set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC52, and LC23B.

Fault Code 232

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation did not reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 233

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation did not set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 234

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation gave incorrect answer.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 235

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation did not reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, LC23B.

Fault Code 236

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation did not set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 237

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation gave incorrect answer.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 240

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation did not reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 241

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation did not set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC21B.

Fault Code 242

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add operation gave incorrect answer.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 243

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add 1 to memory operation failed to reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 244

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add 1 to memory operation failed to increment memory.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC37 (LC238/LC368), LC21, and LC23B.

Fault Code 245

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An add 1 to memory operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 246

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 247

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation gave wrong answer.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 250

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation failed to reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC23B and LC52.

Fault Code 251

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation failed to reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC23B and LC52.

Fault Code 252

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation gave wrong answer.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 253

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 254

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation failed to reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC23B and LC52.

Fault Code 255

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 256

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A subtract operation gave wrong answer.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 257

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A load register operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 260,261

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A set bit or 0 bit in register operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 262,263,264

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A test bit or 0 bit in register operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 265

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A set bit in register operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 266

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A 0 bit in memory operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC21, LC37 (LC238/LC368), and LC23B.

Fault Code 267

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A test bit in memory operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC21, LC37 (LC238/LC368), and LC23B.

Fault Code 270

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A set bit in memory operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC21, LC37 (LC238/LC368), and LC23B.

Fault Code 271

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A rotate data to right operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC20, LC52, and LC23B.

Fault Code 272

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A rotate data to left operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC20, LC52, and LC23B.

Fault Code 273

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A rotate data to right operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC20, LC52, and LC23B.

Fault Code 274

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A rotate data to left operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC20, LC52, and LC23B.

Fault Code 275

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A test for all 0s operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 276

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A test for all 0s operation failed to reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC20.

Fault Code 277

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare and rotate under mask operation failed to set condition flop.

(c) REPAIR PROCEDURES: Replace in sequence LC53, LC20, LC52, and LC23B.

Fault Code 300

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare and rotate under mask operation failed to reset condition flop on a mismatch.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC53, LC20, and LC23B.

Fault Code 301

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare and rotate under an all 1s mask operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC52, LC20, and LC23B.

Fault Code 302

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A compare and rotate under mask operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC20, LC52, and LC23B.

Fault Code 303

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A find low 0 operation failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC21, and LC23B.

Fault Code 304

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A find low 0 operation identified wrong bit as the first 0.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC21, and LC23B.

Fault Code 305

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A find low 0 operation failed to set low 0 to 1.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 306

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A find low 0 operation failed to reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 307

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A find low 0 operation changed a register contents when no 0 was found.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 310

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Status of LC05B incorrect.

(c) REPAIR PROCEDURE: Replace LC05B. (Note 1)

Fault Code 311

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Status of LC04 incorrect.

(c) REPAIR PROCEDURE: Replace LC04. (Note 1)

Fault Code 312

(a) DISPLAY FORMAT: FB.

(b) FAULT DESCRIPTION: At least one tone failed and:

(1) If tone which failed is No. 10 or less

(2) If tone which failed is No. 200 or less

(3) If tones which failed are No. 377 (all tones)

(4) If tone which failed is between 400-4000.

(c) REPAIR PROCEDURE:

(1) Replace in sequence LC04, LC05B, and LC45.

(2) Replace in sequence LC05B, LC04, and LC45.

(3) Replace in sequence LC04 and LC05, and LC48, and all LC50s (one at a time). (Note 1)

(4) Replace LC17.

Note 1: Fault codes 310, 311, and 312 are unique conditions, rarely encountered. Codes 310 and 311 are generated by a test operation that is dependent upon some portions of the LC02's working correctly. After applying the repair procedures, if the fault still exists, unplug all LC02s except the first one in line carrier 0 and run test 5. If the test now finds no faults, plug in the LC02s one at a time until the packs or pack causing the fault is located. Replace the faulty LC02s. A missing or poorly connecting fuse for LC02s could also cause this code. With all but one LC02 unplugged, if the fault still exists, replace that LC02 and verify the power connections to its connection.

Fault Code 313

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment of send input/output message to scanner.

(c) REPAIR PROCEDURE: Replace LC46.

Fault Code 314

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment of send input/output message to network control.

(c) REPAIR PROCEDURE: Replace LC47B. If X-ray 40, check for LC12 installed in carrier 8 (slot 6) in DIMENSION PBX equipped with J58879CC control carrier.

Fault Code 315

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment of take input/output message to network control.

(c) REPAIR PROCEDURE: Replace LC46.

Fault Code 316 thru 326

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 327

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment of take input/output message to scanner.

(c) REPAIR PROCEDURES: Replace in sequence LC46, LC47B. (Minimum of three LC02s or one LC45 and two LC02s required in carrier 0.)

Fault Code 330

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault.

(c) REPAIR PROCEDURE: Replace in sequence LC46, LC47B, and LC31B.

Fault Code 331

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault.

(c) REPAIR PROCEDURE: Replace in sequence LC46, LC47B, and LC31B.

Fault Code 332 thru 345

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault.

(c) REPAIR PROCEDURE: Unplug all LC49B (or LC41) circuit packs, except the one in carrier 0. Run test 5. If test passes, plug in LC49B circuit packs, one at a time. Replace any one which causes a failure. If test failed with the LC49B circuit packs out, replace in sequence LC46 and LC49B in carrier 0; then plug in the LC49B circuit packs per previous instruction.

Fault Code 346

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault. First trunk carrier (trunk carrier 0 = system carrier No. 8).

(c) REPAIR PROCEDURE: Replace LC50 in first trunk carrier. If fault still exists, replace original LC50 and unplug all other circuit packs in carrier, except LC50 and 49B or LC41. If fault still exists, replace LC46. Plug in (one at a time) all circuit packs in first trunk carrier, replacing only the one that causes the fault to reoccur. Use test 5.

Fault Code 347

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault. Second carrier (trunk carrier 1 = system carrier No. 7).

(c) REPAIR PROCEDURE: Same as procedure for fault code 346, except substitute trunk carrier 1 for trunk carrier 0. Use test 5.

Fault Code 350

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault (system carrier No. 6 is either trunk carrier 2 [third trunk carrier] or line carrier 6).

(c) REPAIR PROCEDURE: Same as procedure for fault code 346, except substitute either trunk carrier 2 or line carrier 6 for carrier 0. Use test 5.

Fault Code 351

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault. System carrier No. 5 (either trunk carrier 3 or line carrier 5).

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, except substitute trunk carrier 3 or line carrier 5 for trunk carrier 0. Use test 5.

Fault Code 352

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault. Line carrier 4.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, except substitute line carrier 4 for trunk carrier 0. Use test 5.

Fault Code 353

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault. Line carrier 3.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, except substitute line carrier 3 for trunk carrier 0. Use test 5.

Fault Code 354

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault. Line carrier 2.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, except substitute line carrier 2 for trunk carrier 0. Use test 5.

Fault Code 355

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault. Line carrier 1.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, except substitute line carrier 1 for trunk carrier 0. Use test 5.

Fault Code 356

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Scanner solid fault. Line carrier 0.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, except substitute line carrier 0 for trunk carrier 0. Use test 5. (Do not unplug LC04 and/or LC05B.) Finally, replace LC44.

Fault Code 357

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 330, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Replace in sequence LC46 and LC47B.

Fault Code 360

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 331, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Replace in sequence LC46 and LC47B.

Fault Code 361 thru 374

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 332, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 332.

Fault Code 375

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 346, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346.

Fault Code 376

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 347, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, substituting carrier 7.

Fault Code 377

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 350, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Following same repair procedure as for fault code 346, substituting carrier 6.

Fault Code 400

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 351, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, substituting carrier 5.

Fault Code 401

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 352, except failure in intermittent rather than solid.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, substituting carrier 4.

Fault Code 402

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 353, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 345, substituting carrier 3.

Fault Code 403

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 354, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Use same repair procedure as for fault code 346, substituting carrier 2.

Fault Code 404

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 355, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, substituting carrier 1. If this fails, replace LC47B.

Fault Code 405

(a) DISPLAY FORMAT: F6.

(b) FAULT DESCRIPTION: Same as fault code 356, except failure is intermittent rather than solid.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 346, substituting carrier 0.

Fault Code 406

(a) DISPLAY FORMAT: F7.

(b) FAULT DESCRIPTION: Maximum time to execute a network command has been exceeded.

(c) REPAIR PROCEDURE: Replace LC47B.

Fault Code 407

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: At least 576 network ports could not be cleared.

(c) REPAIR PROCEDURE: Replace LC47B.

Fault Code 410

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found on carrier 0 during network verification (line carrier 00).

(c) REPAIR PROCEDURE: Replace in sequence LC50 (carrier 0) and LC47B.

Fault Code 411

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found in carrier 1 during network verification (line carrier 1).

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC41 or LC49B on same carrier or LC45.

Fault Code 412

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found on carrier 2 during network verification (line carrier 2).

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC41 or LC49B on same carrier or LC45.

Fault Code 413

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found on carrier 3 during network verification (line carrier 3).

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC41 or LC49B on same carrier or LC45.

Fault Code 414

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found on carrier 4 during network verification (line carrier 4).

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC41 or LC49B on same carrier or LC45.

Fault Code 415

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found on carrier 5 during network verification (line carrier 5 or trunk carrier 3).

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC41 or LC49B on same carrier or LC45.

Fault Code 416

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found on carrier 6 during network verification (line carrier 6 or trunk carrier 2).

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC41 or LC49B on same carrier or LC45.

Fault Code 417

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found on trunk carrier 1 during network verification.

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC49B on same carrier or LC45.

Fault Code 420

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad board found on trunk carrier 0 during network verification.

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC49B on same carrier or LC45.

Fault Code 421

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 422

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Multiple bad boards in carrier.

(c) REPAIR PROCEDURE: Replace LC49B or LC41 in same carrier.

Fault Code 423

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: More than one carrier found which has bad boards during network clear test.

(c) REPAIR PROCEDURE: Replace in sequence indicated bad boards, LC41 or LC49B on indicated carrier and LC47B on indicated carrier. If this fails, power down system (momentarily) and restart test.

Fault Code 424

(a) DISPLAY FORMAT: F8.

(b) FAULT DESCRIPTION: Response invalid on verification of assigned time slot.

(c) REPAIR PROCEDURE: Replace LC47B. If this fails, determine failing carrier by

unplugging the LC49B and LC50 circuit packs in each carrier (one at a time) until test passes. When failed carrier is determined, unplug all port circuits in that carrier, plug in the LC49B and LC50 circuit packs for that carrier and then reinsert the remaining circuit packs (one at a time), replacing any circuit pack that caused the failure to reoccur. If this fails replace LC45.

Fault Code 425

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad network port found.

(c) REPAIR PROCEDURE: Replace indicated board or LC45, LC47B, in sequence. If this fails, power down system (momentarily) and restart test. If fault is for X-ray 45 on board 1 of a line carrier other than 0 with LC41B present, check connection between slot 10, pin 20 and slot 9, pin 11.

Fault Code 426

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Board select bit is stuck at active.

(c) REPAIR PROCEDURE: Replace LC49B in indicated carrier. If this fails, unplug all circuit packs except LC49B and LC50 in indicated carrier. Reinstall each circuit pack (one at a time) until fault recurs. Replace circuit pack causing recurrence of fault. If this fails, replace LC50 in indicated carrier.

Fault Code 427

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Port select bit stuck or busy-idle bit stuck.

(c) REPAIR PROCEDURE: Follow same repair procedure as for fault code 426.

Fault Code 430

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Command to remove specified time slot from port failed.

(c) REPAIR PROCEDURE: Replace LC47B.

Fault Code 431

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Time slot 0 assignment fails intermittently. Port number is displayed.

(c) REPAIR PROCEDURE: Replace circuit pack in displayed port location.

Fault Code 432

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Port select bit 0 stuck at active on this carrier.

(c) REPAIR PROCEDURE: Replace LC49B or LC41 in indicated carrier.

Fault Code 433

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Network control slot addressing problem.

(c) REPAIR PROCEDURE: Replace in sequence LC47B, LC49.

Fault Code 434

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Network control always reads and writes the same time slot.

(c) REPAIR PROCEDURE: Replace in sequence LC47B, LC49.

Fault Code 435

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Removes time slot command and clears more than one time slot.

(c) REPAIR PROCEDURE: Replace in sequence LC47B, LC49.

Fault Code 436

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Removes time slot command and fails intermittently or noise-enabled a time slot on this port.

(c) REPAIR PROCEDURE: Replace indicated circuit pack.

Fault Code 437

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Network trunk port faulty.

(c) REPAIR PROCEDURE: Replace indicated trunk circuit pack.

Fault Code 440

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Line circuit port faulty.

(c) REPAIR PROCEDURE: Replace indicated line circuit pack.

Fault Code 441

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Intermittent network failure or noise.

(c) REPAIR PROCEDURE: Replace in sequence indicated port circuit pack, LC47B, each LC49B or LC41, LC46, each LC50, and LC05B.

Fault Code 442

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Board select bit is stuck at active.

(c) REPAIR PROCEDURE: Replace LC49B in indicated carrier.

Fault Code 443

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No network ports found to be equipped.

(c) REPAIR PROCEDURE: Determine that all circuit packs are properly inserted and if problem persists, replace LC47B.

Fault Code 444

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RMV3 (remove 3-dB pad). Command fails to clear specified port.

(c) REPAIR PROCEDURE: Replace LC47B.

Fault Code 445

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: ADD 3 (add 3-dB pad). Command fails to establish good connection.

(c) REPAIR PROCEDURE: Replace LC47B.

Fault Code 446

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RMV_SLT_3 (remove time slot associated with 3_dB pad). Command fails to clear port.

(c) REPAIR PROCEDURE: Replace LC47B.

Fault Code 447 thru 453

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 454

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Hold get address register is incorrect.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 455

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Return address saved in hold get area is incorrect.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 456

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot hold register in hold get area.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 457

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot get register information from hold get area.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 460

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Content of register cannot be kept in hold get area.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 461

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cannot retrieve content of register that was put into hold get area.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 462

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Did not branch as directed by a register content.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, LC37 (LC238/LC368), LC21, and LC23B.

Fault Code 463

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched, but did not decrement register.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, LC37, (LC238/LC368), LC21, and LC23B.

Fault Code 464

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Failed on a branch as directed by a register content when register number was 0.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, LC37 (LC238/LC368), LC21, and LC23B.

Fault Code 465

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Did not respond to a branch to program address instruction.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, LC21, LC37 (LC238/LC368), and LC23B.

Fault Code 466

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to incorrect location.

(c) REPAIR PROCEDURE: Replace in sequence LC37 (LC238/LC368), LC36 (LC236), LC52, LC20, LC21, and LC23B.

Fault Code 467

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Failed to branch as instructed.

(c) REPAIR PROCEDURE: Replace in sequence LC23B, LC52, and LC20.

Fault Code 470

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branch to incorrect location.

(c) REPAIR PROCEDURE: Replace in sequence LC23B, LC52, and LC20.

Fault Code 471

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branch instruction was ignored.

(c) REPAIR PROCEDURE: Replace in sequence LC23B, LC52, and LC20.

Fault Code 472

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to incorrect location.

(c) REPAIR PROCEDURE: Replace in sequence LC23B and LC52.

Fault Code 473

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branch instruction with no address information did not set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC23B, and LC20.

Fault Code 474

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branch instruction was ignored.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 475

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched, but lost return address.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 476

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Returned to incorrect location on return from a branch.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 477

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Returned to correct location, but did not reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 500

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to incorrect location.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 501

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched, but lost return address.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 502

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to saved address, but failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 503

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to incorrect location.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 504

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to saved address, but bad data entered into a register.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 505

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to saved address, but failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 506

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to saved address, but failed to restore register.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 507

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to incorrect location.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 510

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to saved address, but failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 511

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to saved address and loaded return code, but failed to restore registers.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 512

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched to incorrect location.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 513

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Branched correctly, but loaded incorrect return code.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 514,515,516

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A register was loaded incorrectly.

(c) REPAIR PROCEDURE: Replace in sequence LC20, LC52, and LC23B.

Fault Code 517

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Replaced register information incorrectly.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 520

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Replace register information incorrectly.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 521,522

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Did not zero correct item.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 523,524

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Correct item was not set to 1.

(c) REPAIR PROCEDURE: Replace in sequence LC52, LC20, and LC23B.

Fault Code 525,526,527

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A comparison test failed to reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 530

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A comparison test failed to set condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 531,532,533,534

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A test for 0 operation failed to set or reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 535,536,537

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A test for all 1s operation failed to set or reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 540

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A test for all 1s operation failed to set or reset condition flop.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 541

(a) DISPLAY FORMAT: F3,FT.

(b) FAULT DESCRIPTION: A processor error hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC22, LC23B, and LC21.

Fault Code 542

(a) DISPLAY FORMAT: F3,FT.

(b) FAULT DESCRIPTION: An illegal OP code hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC22, and LC23B.

Fault Code 543

(a) DISPLAY FORMAT: F3,FT.

(b) FAULT DESCRIPTION: A write protect hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC22, LC37 (LC238/LC368), and LC23B.

Fault Code 544

(a) DISPLAY FORMAT: F3,FT.

(b) FAULT DESCRIPTION: A branch-allowed hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC22, LC52, and LC23B.

Fault Code 545

(a) DISPLAY FORMAT: F3,FT.

(b) FAULT DESCRIPTION: A parity hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC22, and LC21.

Fault Code 546

(a) DISPLAY FORMAT: F3,FT.

(b) FAULT DESCRIPTION: A program sanity hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53 and LC22.

Fault Code 547

(a) DISPLAY FORMAT: F3,FT.

(b) FAULT DESCRIPTION: A microsanity hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC53, LC22, LC23B, and LC52.

Fault Code 550

(a) DISPLAY FORMAT: F3,FT.

(b) FAULT DESCRIPTION: A microparity hardware interrupt occurred.

(c) REPAIR PROCEDURE: Replace in sequence LC23B, LC53, and LC22.

Fault Code 551

(a) DISPLAY FORMAT: F5.

(b) FAULT DESCRIPTION: Interrupt return code is incorrect.

(c) REPAIR PROCEDURE: Replace LC22.

Fault Code 552

(a) DISPLAY FORMAT: F5.

(b) FAULT DESCRIPTION: Illegal OP code appears as incorrect interrupt code.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC53.

Fault Code 553

(a) DISPLAY FORMAT: F5.

(b) FAULT DESCRIPTION: A write protect interrupt appears as incorrect interrupt code.

(c) REPAIR PROCEDURE: Replace in sequence LC22, LC53, and LC37 (LC238/LC368).

Fault Code 554

(a) DISPLAY FORMAT: F5.

(b) FAULT DESCRIPTION: Incorrect interrupt code appears, but should be branch-allow.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC53.

Fault Code 555

(a) DISPLAY FORMAT: F5.

(b) FAULT DESCRIPTION: Incorrect interrupt code appears, but should be prorgram sanity.

(c) REPAIR PROCEDURE: Replace in sequence LC22 and LC53.

Fault Code 556

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 557 thru 572

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 573

(a) DISPLAY FORMAT: AP.

(b) FAULT DESCRIPTION: No acknowledgment of take input/output to a write protect register.

(c) REPAIR PROCEDURE: Replace LC37 (LC238/LC368), LC53.

Fault Code 574

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Write protect extends beyond boundary.

(c) REPAIR PROCEDURE: Replace LC37 (LC238/LC368).

Fault Code 575

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Write protect does not protect enough memory.

(c) REPAIR PROCEDURE: Replace LC37 (LC238/LC368).

Fault Code 576

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment of send I/O to write protect register.

(c) REPAIR PROCEDURE: Replace in sequence LC37 (LC238/LC368) and LC53.

Fault Code 577

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: The X-ray subroutine is stuck in a loop.

(c) REPAIR PROCEDURE: Replace in sequence LC23B, LC52, LC20, and LC22.

Fault Code 600

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 1 failed.

(c) REPAIR PROCEDURE: Replace memory board containing the failed memory block—See appropriate memory configuration in Table C.

Fault Code 601

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 2 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 602

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 3 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 603

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 4 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 604

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 5 failed.

(C) REPAIR PROCEDURE: SEE 600.

Fault Code 605

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 6 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 606

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 7 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 607

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 8 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 610

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 9 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 611

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 10 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 612

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 11 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 613

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 12 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 614

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 13 failed.

(c) REPAIR PROCEDURE: See 600.

Fault Code 615

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 14 failed.

(c) REPAIR PROCEDURE: Replace in sequence:

(1) Memory board containing the failed memory block—see appropriate memory configuration in Table C.

(2) LC20.

Fault Code 616

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 15 failed.

(c) REPAIR PROCEDURE: See 615.

Fault Code 617

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Memory block 16 failed.

(c) REPAIR PROCEDURE: Replace memory board containing the failed memory block—See appropriate memory configuration in Table C.

Fault Code 620

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION:

- MAAP "CLEAR ENTRY" key was depressed.
- Successful conclusion of first pass on which the Continue on Error option was activated.
- Illegal test number selected (ie, 51 or greater in octal).
- Successful completion of parking tape.

(c) REPAIR PROCEDURE: This is not a fault if MAAP key was depressed. If system recog-

nized key operation and key was not depressed, replace in sequence MAAP, LC44 circuit pack.

Fault Code 621

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Parity was tested and failed.

(c) REPAIR PROCEDURE: Replace LC21.

Fault Code 622

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Parity test failed to increment register.

(c) REPAIR PROCEDURE: Replace in sequence LC21 and LC52.

Fault Code 623

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Parity test modified memory data.

(c) REPAIR PROCEDURE: Replace in sequence LC21 and LC37 (LC238/LC368).

Fault Code 624

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Exclusive OR operation failed.

(c) REPAIR PROCEDURE: Replace in sequence LC52 and LC23B.

Fault Code 625

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A stuck bit was incremented while testing a specific memory location.

(c) REPAIR PROCEDURE: Run memory test 14, replace indicated board.

Fault Code 626

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Testing a memory location changed word in memory.

(c) REPAIR PROCEDURE: Replace LC37 (LC238/LC368).

Fault Code 627

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: System insane, repeated hardware interrupts.

(c) REPAIR PROCEDURE: Reload tape, replace in sequence LC22, LC53, LC52, LC20, LC23B, LC21, LC37 (LC238/LC368), and LC36 (LC236).

Fault Code 630

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Fault count exceeds 65,000.

(c) REPAIR PROCEDURE: Reload tape. Initiate test 2. Display fault data and clear as indicated.

Fault Code 631

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: 10-ms program interrupt stopped.

(c) REPAIR PROCEDURE: Replace in sequence LC53 and LC22.

Fault Code 632

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Parity interrupt occurred, but bad board was not found.

(c) REPAIR PROCEDURE: Replace in sequence LC21, LC52, and LC22.

Fault Code 633

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Encountered bad parity while testing bit swap, but parity test indicated good.

(c) REPAIR PROCEDURE: Replace in sequence LC35, LC36, LC37 (LC238/LC368), and LC21.

Fault Code 634

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Testing bit swap changed a word in memory.

(c) REPAIR PROCEDURE: Replace in sequence LC35, LC36 (LC236), and LC37 (LC238/LC368).

Fault Code 635

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Testing bit swap altered parity.

(c) REPAIR PROCEDURE: Replace in sequence LC35, LC36 (LC236), LC37 (LC238/LC368), and LC21.

Fault Code 636

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Found parity bit stuck high while testing bit swap.

(c) REPAIR PROCEDURE: Replace in sequence LC35, LC36 (LC236), LC21. Run test 14 and replace boards accordingly.

Fault Code 637

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Solid memory fault.

(c) REPAIR PROCEDURE: Use microdiagnostic test 8 to locate and clear problem.

Fault Code 640

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Data and register dependent. Add instruction error.

(c) REPAIR PROCEDURE: Replace LC20.

Fault Code 641

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Multiple write protect boundaries.

(c) REPAIR PROCEDURE: Replace LC37 (LC238/LC368).

Fault Code 642

(a) DISPLAY FORMAT: AP*.

(b) FAULT DESCRIPTION: Program address register is at all 1s.

(c) REPAIR PROCEDURE: Replace LC52.

Fault Code 643

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAAP unplugged during test 02, repeat mode.

(c) REPAIR PROCEDURE: None required.

Fault Code 644

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Tape cartridge was removed during test 02, repeat mode.

(c) REPAIR PROCEDURE: None required.

Fault Code 645

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment of a send input/output to the extended memory control register.

(c) REPAIR PROCEDURE: Replace LC368.

Fault Code 646

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 647

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Extended memory control register faulty when set to read 0, write 0.

(c) REPAIR PROCEDURE: Replace LC368.

Fault Code 650

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Extended memory control register faulty when set to read 0, write 1.

(c) REPAIR PROCEDURE: Replace LC368.

Fault Code 651

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Extended memory control register faulty when set to read 1, write 0.

(c) REPAIR PROCEDURE: See 650.

Fault Code 652

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Extended memory control register faulty when set to read 1, write 1.

(c) REPAIR PROCEDURE: See 650.

Fault Code 653

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Extended memory control register response disagrees with previous order.

(c) REPAIR PROCEDURE: See 650.

Fault Code 654

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment of a take input/output to the extended memory control register.

(c) REPAIR PROCEDURE: See 650.

Fault Code 655

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Same as 654.

(c) REPAIR PROCEDURE: See 650.

Fault Code 656

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Same as 654.

(c) REPAIR PROCEDURE: See 650.

Fault Code 657

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Extended memory control register failed to respond to the reset order to read 0, write 0.

(c) REPAIR PROCEDURE: See 650.

Fault Code 660

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Same as 654.

(c) REPAIR PROCEDURE: See 650.

Fault Code 661

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Same as 645.

(c) REPAIR PROCEDURE: See 650.

Fault Code 662

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Same as 654.

(c) REPAIR PROCEDURE: See 650.

Fault Code 663

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Same as 653.

(c) REPAIR PROCEDURE: See 650.

Fault Code 664 thru 667

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 670

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: First 16K in upper 64K memory board is bad.

(c) REPAIR PROCEDURE: Replace LC346.

Fault Code 671

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Second 16K in upper 64K memory board is bad.

(c) REPAIR PROCEDURE: See 670.

Fault Code 672

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Third 16K in upper 64K memory board is bad.

(c) REPAIR PROCEDURE: See 670.

Fault Code 673

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Fourth 16K in upper 64K memory board is bad.

(c) REPAIR PROCEDURE: See 670.

Fault Code 674 thru 763

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

(c) REPAIR PROCEDURE: None required.

Fault Code 764

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Parity check failed.

(c) REPAIR PROCEDURE: Replace LC21.

Fault Code 765

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Register has incorrect data after a parity check.

(c) REPAIR PROCEDURE: Replace in sequence LC21, LC20, and LC52.

Fault Code 766

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment on tape buffer register input/output.

(c) REPAIR PROCEDURE: Replace in sequence LC29B and LC30B.

Fault Code 767

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Tape buffer register contains stuck bit.

(c) REPAIR PROCEDURE: Replace in sequence LC30B and LC29B.

Fault Code 770,771

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Parity of input/output message is incorrect.

(c) REPAIR PROCEDURE: Replace in sequence LC29B, LC30B, and LC34Bs (LC366), LC44, LC31B, LC46, and LC47B.

Fault Code 772

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Unrecognized bad parity on input/output message.

(c) REPAIR PROCEDURE: Replace LC21.

Fault Code 773

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Tape input/output failed to return BR when parity was bad.

(c) REPAIR PROCEDURE: Replace in sequence LC29B and LC30B.

Fault Code 774

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment on input/output to tape controller.

(c) REPAIR PROCEDURE: Replace in sequence LC30B and LC29B.

Fault Code 775

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Tape status incorrect after TRSET command (such as cartridge unplugged).

(c) REPAIR PROCEDURE: Replace in sequence LC29B and LC30B.

Fault Code 776

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Tape activity begins even though the keyword is not in BR.

(c) REPAIR PROCEDURE: Replace in sequence LC30B and LC29B.

Fault Code 777

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No tape motion indicated.

(c) REPAIR PROCEDURE: Replace in sequence LC30B and LC29B.

Fault Code 1000

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Same as fault code 1.

(c) REPAIR PROCEDURE: No repair procedure required.

Fault Code 1001

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No load point indication.

(c) REPAIR PROCEDURE: Replace in sequence LC30B, LC29B, and tape drive unit.

Fault Code 1002

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Unexpected status change while moving tape between beginning of tape and load point early warning. Tape motion expected.

(c) REPAIR PROCEDURE: Same as procedure for fault code 1001.

Fault Code 1003

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Saw something other than load point when expected to see load point.

(c) REPAIR PROCEDURE: Same as procedure for fault code 1001.

Fault Code 1004

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Incorrect tape motion indication 30 ms after a jump command.

(c) REPAIR PROCEDURE: Same as procedure for fault code 1001.

Fault Code 1005

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: No tape motion 6 ms after a GO command.

(c) REPAIR PROCEDURE: Same procedure as for fault code 1001.

Fault Code 1006

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: No beginning-of-tape indication after 3 minutes of rewinding.

(c) REPAIR PROCEDURE: Same procedure as for fault code 1001.

Fault Code 1007

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Incorrect status change while rewinding to beginning of tape.

(c) REPAIR PROCEDURE: Same procedure as for fault code 1001.

Fault Code 1010

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: No tape-stopped indication 30 ms after beginning of tape reached.

(c) REPAIR PROCEDURE: Same procedure as for fault code 1001.

Fault Code 1011

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: No tape-off-reel indication.

(c) REPAIR PROCEDURE: Same procedure as for fault code 1001.

Fault Code 1012

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Cyclic redundant check circuit computed incorrectly on read.

(c) REPAIR PROCEDURE: Replace LC29B.

Fault Code 1013

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: No tape-motion indication on a GO command.

(c) REPAIR PROCEDURE: Replace in sequence LC30B, LC29B, and tape drive unit.

Fault Code 1014

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Status incorrect after a read attempt.

(c) REPAIR PROCEDURE: Replace in sequence LC29B and LC30B.

Fault Code 1015

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Tape record read incorrectly.

(c) REPAIR PROCEDURE: Replace in sequence LC29B, LC30B, and tape.

Fault Code 1016

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Unexpected program interrupt from tape controller.

(c) REPAIR PROCEDURE: Replace in sequence LC30B and LC29B.

Fault Code 1017

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Incorrect status while testing data lost signal.

(c) REPAIR PROCEDURE: Replace in sequence LC30B and LC29B.

Fault Code 1020

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Incorrect status while testing buffer overflow signal.

(c) REPAIR PROCEDURE: Replace in sequence LC30B and LC29B.

Fault Code 1021

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Defective tape.

(c) REPAIR PROCEDURE: Replace tape cartridge.

Fault Code 1022

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Defective tape.

(c) REPAIR PROCEDURE: Replace tape cartridge.

Fault Code 1023

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Status incorrect after read or write operation.

(c) REPAIR PROCEDURE: Replace in sequence LC29B, LC30B, and tape drive unit.

Fault Code 1024

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Status incorrect after reading back what was just written (track A).

(c) REPAIR PROCEDURE: Replace in sequence LC29B, LC30B, and tape drive unit.

Fault Code 1025

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Tape controller writes cyclic redundant check incorrectly.

(c) REPAIR PROCEDURE: Replace in sequence LC30B and LC29B.

Fault Code 1026

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Data written incorrectly on tape.

(c) REPAIR PROCEDURE: Replace in sequence LC29B, LC30B, tape drive unit, LC23B, +9V power supply.

Fault Code 1027

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Incorrect status while waiting for end of tape.

(c) REPAIR PROCEDURE: Same as for fault code 1026.

Fault Code 1030

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Incorrect status while waiting for beginning of tape.

(c) REPAIR PROCEDURE: Same as for fault code 1026.

Fault Code 1031

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Data read incorrectly from track B.

(c) REPAIR PROCEDURE: Same as for fault code 1026.

Fault Code 1032

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Bad status while reading a program block.

(c) REPAIR PROCEDURE: Same as for fault code 1026.

Fault Code 1033

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Bad tape.

(c) REPAIR PROCEDURE: Replace in sequence tape, LC29B, LC30B, tape drive unit, LC23B, +9V power supply.

Fault Code 1034

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Track B read failure.

(c) REPAIR PROCEDURE: Same as for fault code 1026.

Fault Code 1035

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: No acknowledgment on data link input/output.

(c) REPAIR PROCEDURE: Replace in sequence indicated LC34B (LC366) and LC44 or LC171B.

Fault Code 1036

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: No data link response in maintenance mode.

(c) REPAIR PROCEDURE: Same as for fault code 1035.

Fault Code 1037

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Incorrect data link response in maintenance mode.

(c) REPAIR PROCEDURE: Same as for fault code 1035.

Fault Code 1040

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Bad response to 8-bit data or no loop around.

(c) REPAIR PROCEDURE: Replace LC171. (See Note.)

Note: The test may lock-up if loop around fixture is installed and the power is turned on. If this occurs, turn off +5 circuit breaker to clear. To prevent lock-up, always install the loop around while the power is on.

Fault Code 1041

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Bad response to 7-bit data or overrun error.

(c) REPAIR PROCEDURE: Replace LC171.

Fault Code 1042

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Bad alarm.

(c) REPAIR PROCEDURE: Replace LC171.

Fault Code 1043

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Tape network interference.

(c) REPAIR PROCEDURE: Replace in sequence LC30B, LC29B, and LC21.

Fault Code 1044

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: No acknowledgment on input/output to ports 640 and 650.

(c) REPAIR PROCEDURE: Replace in sequence LC34B (LC366) (slot 32) and LC22.

Fault Code 1045

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Data link parity error.

(c) REPAIR PROCEDURE: Replace in sequence indicated LC34B (LC366) and LC21.

Fault Code 1046

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Data link echo error appears on a high speed port.

(c) REPAIR PROCEDURE: Replace indicated LC34B (LC366).

Fault Code 1047

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: No response from high speed data set.

(c) REPAIR PROCEDURE: Replace LC34B (LC366) associated with data set.

Fault Code 1050

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Indicates no SMDR is present.

(c) REPAIR PROCEDURE: If SMDR is present, repair or replace SMDR.

Fault Code 1051

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No hotel/motel memory board.

(c) REPAIR PROCEDURE: Install board if needed.

Fault Code 1052

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Hotel/motel battery backup not working.

(c) REPAIR PROCEDURE: Replace LC38.

Fault Code 1053

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: LC38 and LC39 test good.

(c) REPAIR PROCEDURE: No procedure (action) required.

Fault Code 1054

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: LC38 and LC40 test good.

(c) REPAIR PROCEDURE: No procedure (action) required.

Fault Code 1055

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Burn-in reinitialization was attempted while burn-in was running.

(c) REPAIR PROCEDURE: If reinitialization is desired first, operate CLEAR ENTRY key.

Fault Code 1056

(a) DISPLAY FORMAT: FL.

(b) FAULT DESCRIPTION: System was powered down during burn-in.

(c) REPAIR PROCEDURE: Not a fault. No action required.

Fault Code 1057

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Burn-in has not been requested. No burn-in record will be kept.

(c) REPAIR PROCEDURE: No procedure (action) required.

Fault Code 1060

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No ANI board (LC31B).

(c) REPAIR PROCEDURE: Do not run ANI test or install ANI board prior to running ANI test.

Fault Code 1061

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Incorrect status after writing ANI message.

(c) REPAIR PROCEDURE: Replace in sequence LC31B and LC32B.

Fault Code 1062,1063

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: ANI failure.

(c) REPAIR PROCEDURE: Replace LC31B.

Fault Code 1064

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Faulty status after selecting channel 9.

(c) REPAIR PROCEDURE: Replace LC32B.

Fault Code 1065

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No acknowledgment on ANI trunk input/output.

(c) REPAIR PROCEDURE: Replace LC46.

Fault Code 1066

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Faulty status after clearing ANI trunk.

(c) REPAIR PROCEDURE: Replace LC32B.

Fault Code 1067

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Faulty status after selecting ANI channel 8.

(c) REPAIR PROCEDURE: Replace LC32B.

Fault Code 1070

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Number of arrangement of high speed data links has changed since start of burn-in.

(c) REPAIR PROCEDURE: Restore system to original configuration or clear burn-in record. (See Fig. 8.)

Fault Code 1071

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Number of arrangement of low speed data links has changed since start of burn-in.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1072

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Number of arrangement of ETC data channels has changed since start of burn-in.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1073

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Number of arrangement of memory boards has changed since start of burn-in.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1074

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: An LC31B has been added or removed since start of burn-in.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1075

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Number of line carriers no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1076

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Number of trunk carriers no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1077

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Number of equipped line ports no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1100

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Number of trunk ports no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as fault code 1070.

Fault Code 1101

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Number of equipped TOUCH-TONE calling register ports no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1102

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Number of attendant interface ports no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1103

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 0 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1104

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 1 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1105

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 2 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1106

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 3 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1107

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 4 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1110

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 5 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1111

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 6 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1112

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 7 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1113

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier 8 board complement no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1114

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Number of attendant consoles no longer agrees with burn-in records.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1115

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Burn-in record tape information is out of synchronism. Record sequence numbers are incorrect. Tape may have a bad spot.

(c) REPAIR PROCEDURE: Clear burn-in records (see Fig. 8). If fault persists, replace X-ray tape.

Fault Code 1116

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Incorrect echo from attendant console.

(c) REPAIR PROCEDURE: Replace in sequence associated LC34B (LC366) and attendant console.

Fault Code 1117

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Getting a good echo from an attendant console that is unequipped.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1120

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Data link loop-around differs from tape burn-in data.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1121

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Carrier loop-around differs from tape burn-in data.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1122

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: ETC configuration differs from tape burn-in data.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1123

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Serial number on tape fails to match the system serial number.

(c) REPAIR PROCEDURE: Same as for fault code 1070.

Fault Code 1124,1125

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

(c) REPAIR PROCEDURE: None required.

Fault Code 1126

(a) DISPLAY FORMAT: FG,FI.

(b) FAULT DESCRIPTION: No data link response.

(c) REPAIR PROCEDURE: Same as 1130 (RMATS LMAAP).

Fault Code 1127

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 1130

(a) DISPLAY FORMAT: FG,FI.

(b) FAULT DESCRIPTION: Bad parity returned on indicated data channel.

(c) REPAIR PROCEDURE: Replace in sequence associated LC34B (LC366) and farend data interface unit (if far end is an ETC, replace LC60). Check cable between DIMENSION 400 PBX or 100 PBX and associated peripheral equipment.

Fault Code 1131

(a) DISPLAY FORMAT: FG,FI.

(b) FAULT DESCRIPTION: Data channel echo incorrect.

(c) REPAIR PROCEDURE: Same as for fault code 1130.

Fault Code 1132

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: More than four ETCs.

(c) REPAIR PROCEDURE: Disconnect extra ETC.

Fault Code 1133

(a) DISPLAY FORMAT: FG,FO.

(b) FAULT DESCRIPTION: ETC fault detected in station button test.

(c) REPAIR PROCEDURE: Replace in sequence station set and LC55.

Fault Code 1134

(a) DISPLAY FORMAT: FG,FI.

(b) FAULT DESCRIPTION: Faulty replies or data link noise during initial ETC communication.

(c) REPAIR PROCEDURE: Same as for fault code 1130.

Fault Code 1135

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Record number incorrect.

(c) REPAIR PROCEDURE: If a DIMENSION 2000 PBX X-ray tape (PG-1E188, Issue 9 or

is loaded into tape unit 2, run test 12 for 2 minutes (run test 27 at least once after each 1 minute of running test 12—this retensions the tape). Rerun test 36. If fault code 1135 persists, replace the tape cartridge.

Fault Code 1136

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Faults detected while running ETC memory tests.

(c) REPAIR PROCEDURE: Replace in sequence LC57 and LC58.

Fault Code 1137

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Station powered-up indication, but power-down command was sent.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1140

(a) DISPLAY FORMAT: FG,FI.

(b) FAULT DESCRIPTION: No data link echo on ETC memory read.

(c) REPAIR PROCEDURE: Replace in sequence LC60 and LC57.

Fault Code 1141

(a) DISPLAY FORMAT: FG,FI.

(b) FAULT DESCRIPTION: No data link echo on ETC memory write.

(c) REPAIR PROCEDURE: Replace LC60.

Fault Code 1142

(a) DISPLAY FORMAT: FK.

(b) FAULT DESCRIPTION: ETC memory fault.

(c) REPAIR PROCEDURE: Replace LC57.

Fault Code 1143

(a) DISPLAY FORMAT: FG,FI.

(b) FAULT DESCRIPTION: ETC memory content incorrect.

(c) REPAIR PROCEDURE: Replace LC57.

Fault Code 1144

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: ***All seems well*** is bad, but fault register is closed.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1145

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Fault register 0 is not clear, but ***all seems well*** is good and fault register is closed.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1146

(a) DISPLAY FORMAT: FG,FP.

(b) FAULT DESCRIPTION: ETC steering circuit faulty.

(c) REPAIR PROCEDURE: Replace indicated LC55.

Fault Code 1147

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: ***All seems well*** is bad on first attempt to run with fault register open.

(c) REPAIR PROCEDURE: Replace in sequence indicated bad board and LC59.

Fault Code 1150

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Bad response from SMDR.

(c) REPAIR PROCEDURE: Same as fault code 1050.

Fault Code 1151

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Fault register 1 is not cleared on first attempt run with fault register open. ***All seems well*** is good.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1152

(a) DISPLAY FORMAT: FG,FI.

(b) FAULT DESCRIPTION: Bad echo on all 0s message.

(c) REPAIR PROCEDURE: Replace LC60.

Fault Code 1153

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: ***All seems well*** is good and fault register is clear on all 0s message.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1154

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

(c) REPAIR PROCEDURE: None required.

Fault Code 1155

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Fault register incorrect after all 0s message (FR-2 was expected).

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1156

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Unexpected fault during message abort test.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1157

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Fault control bit 4 fails to mask message abort indication.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1160 thru 1161

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

(c) REPAIR PROCEDURE: None required.

Fault Code 1162

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: ***All seems well*** is good after forcing bad memory parity.

(c) REPAIR PROCEDURE: Replace in sequence LC57 and LC59.

Fault Code 1163

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Fault register is incorrect after forcing memory parity error.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1164

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: ***All seems well*** is bad when FC-5 and FC-6 are 0.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1165

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from test of FC-6.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1166 thru 1173

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

(c) REPAIR PROCEDURE: None required.

Fault Code 1174

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Forced scan high timer time-out is not detected.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1175

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on forced scan high timer time-out.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1176

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from scan high timer time-out test.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1177

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Forced scan timer time-out is not detected.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1200

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect for wrong type word in last ETC memory location.

(c) REPAIR PROCEDURE: Replace in sequence LC59 and LC58.

Fault Code 1201

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect for wrong type word in ETC memory location 0.

(c) REPAIR PROCEDURE: Replace in sequence LC59 and LC58.

Fault Code 1202,1203

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after restoring type word in ETC memory location 4095 or location 0.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1204,1205

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

(c) REPAIR PROCEDURE: None required.

Fault Code 1206

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on forced scan timer time-out.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1207

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from scan timer time-out test.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1210,1211

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Wrong type word in location 0 or location 4095 is not detected.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1212

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Type word at wrong location is not detected.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1213

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect for type word in wrong location.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1214

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from test on type word at wrong location.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1215

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Stuck station address bus is not detected.

(c) REPAIR PROCEDURE: Replace in sequence LC56 and LC59.

Fault Code 1216

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on stuck station address bus.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1217

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from test of stuck station address bus.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1220

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Stuck transmit-receive bus is not detected.

(c) REPAIR PROCEDURE: Replace in sequence LC56 and LC59.

Fault Code 1221

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on stuck transmit-receive bus.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1222

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from test of stuck transmit-receive bus.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1223

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Nonreturn of bit pulse from station set is not detected.

(c) REPAIR PROCEDURE: Replace in sequence LC56 and LC59.

Fault Code 1224

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on test for nonreturn of bit pulse.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1225

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from test of nonreturn of bit pulse.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1226

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Steering circuit enable stuck is not detected.

(c) REPAIR PROCEDURE: Replace in sequence LC56 and LC59.

Fault Code 1227

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on stuck steering circuit enable.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1230

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from test on stuck steering circuit enable.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1231

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No ETC found.

(c) REPAIR PROCEDURE: If ETC is present, check orientation of xmit-rec pairs on data channel; replace LC60.

Fault Code 1232

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: FC-7 (stop receiver) does not work.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1233

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on stop receiver test.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1234

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from test on stopped receiver.

(c) REPAIR PROCEDURE: Replace LC57.

Fault Code 1235

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Return of bit stuck in receiver is not detected.

(c) REPAIR PROCEDURE: Replace in sequence LC56, LC58, and LC59.

Fault Code 1236

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on test of return of bit stuck in receiver.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1237

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Failed to suppress receiver clear check.

(c) REPAIR PROCEDURE: Replace LC58.

Fault Code 1240

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from test on return of bit stuck in receiver.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1241

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Failed to disable transmitter.

(c) REPAIR PROCEDURE: Replace in sequence LC59 and LC56.

Fault Code 1242

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Status is incorrect on test of stuck transmitter.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1243

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status after exit from text on stuck transmitter.

(c) REPAIR PROCEDURE: Replace in sequence LC59 and LC56.

Fault Code 1244 thru 1247

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Change enable code faults.

(c) REPAIR PROCEDURE: Replace LC58.

Fault Code 1250

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Change register cannot be cleared.

(c) REPAIR PROCEDURE: Replace LC58.

Fault Code 1251

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Station power-down occurs less than 2 seconds after ETC communicator stops.

(c) REPAIR PROCEDURE: Replace LC58.

Fault Code 1252

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Station power down takes longer than 6 seconds after ETC communicator stops.

(c) REPAIR PROCEDURE: Replace LC58.

Fault Code 1253

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad fault status in station power-down test.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1254

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Failed to bypass station power-down indication.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1255

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: Bad status at exit from station power-down test.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1256

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: ETC processor faulty.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1257

(a) DISPLAY FORMAT: FG,FJ.

(b) FAULT DESCRIPTION: ETC fault while testing stations.

(c) REPAIR PROCEDURE: Replace LC59.

Fault Code 1260

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: No acknowledgment on data link input/output.

(c) REPAIR PROCEDURE: Replace LC34 (LC366).

Fault Code 1261 thru 1264

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Bad response to NB signal.

(c) REPAIR PROCEDURE: Replace in sequence LC179 and LC44.

Fault Code 1265 thru 1267

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Bad LC179 or LC171 response.

(c) REPAIR PROCEDURE: Replace in sequence LC179, LC171, and LC44.

Fault Code 1270

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Immediate response to reset failed.

(c) REPAIR PROCEDURE: Replace in sequence LC171 and LC44.

Fault Code 1271

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Not used.

Fault Code 1272 thru 1275

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Interrupts incorrect or missing.

(c) REPAIR PROCEDURE: Replace in sequence LC171, LC179, and LC44.

Fault Code 1276,1277

(a) DISPLAY FORMAT: FG.

(b) FAULT DESCRIPTION: Data link response incorrect.

(c) REPAIR PROCEDURE: Replace in sequence CP associated with indicated slot and LC44.

Fault Code 1300 thru 1302

(a) DISPLAY FORMAT: FW.

(b) FAULT DESCRIPTION: Trunk idle status incorrect. Correct idle status is X(F).

(c) REPAIR PROCEDURE: Replace indicated trunk and/or LC49.

Fault Code 1303

(a) DISPLAY FORMAT: FW.

(b) FAULT DESCRIPTION: Trunk idle status incorrect. Status should show trunk to be idle but reversed. Correct status is X(A).

(c) REPAIR PROCEDURE: Replace indicated trunk and/or LC49.

Fault Code 1304

(a) DISPLAY FORMAT: FW.

(b) FAULT DESCRIPTION: Trunk idle status incorrect. Correct status is X(F).

(c) REPAIR PROCEDURE: Replace indicated trunk and/or LC49.

Fault Code 1305

(a) DISPLAY FORMAT: FW.

(b) FAULT DESCRIPTION: Incorrect ground sensed status. Correct status for trunk 1 is X(8). Correct status for trunk 0 is X(2).

(c) REPAIR PROCEDURE: Replace indicated trunk and/or LC49.

Fault Code 1306

(a) DISPLAY FORMAT: FW.

(b) FAULT DESCRIPTION: Ground start status is incorrect. Correct status is X(2) if only GS1 is operated and X(A) if both GS1 and GS0 are operated.

(c) REPAIR PROCEDURE: Replace indicated trunk and/or LC49.

Fault Code 1307 thru 1320

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 1321

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Two-port originating receive function inoperative.

(c) REPAIR PROCEDURE: Replace indicated LC10.

Fault Code 1322 thru 1375

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 1376

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Button push not properly recognized on MAAP or CAP.

(c) REPAIR PROCEDURE: Replace MAAP, (CAP), LC44.

Fault Code 1377

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Improper use of continue on error or test mode by trying to step out of bounds of lines or trunks.

(c) REPAIR PROCEDURE: None.

Fault Code 1400 (See Note)

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Line off-hook status incorrect.

(c) REPAIR PROCEDURE: Replace in sequence LC02 and LC49.

Note: Fault codes displayed when loop-around fixtures are not used.

Fault Code 1401

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Two lines did not go on-hook.

(c) REPAIR PROCEDURE: Replace in sequence LC02, LC49, LC46, LC47.

Fault Code 1402 (See Note associated with 1400)

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone transmission failed.

(c) REPAIR PROCEDURE: Replace in sequence CP containing indicated port and LC50, LC49, LC04, LC48, LC47, LC45, LC34, console. If fault is not in carrier 0, make sure that carrier 0 has at least 3 LC02s or else 1 LC45 and 2 LC02s installed.

Fault Code 1403

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present.

(c) REPAIR PROCEDURE: Replace in sequence CP containing indicated port and LC50 and LC49.

Fault Code 1404

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Attendant off-hook status incorrect.

(c) REPAIR PROCEDURE: Replace in sequence LC45 and LC49.

Fault Code 1405

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: A ringing relay failed.

(c) REPAIR PROCEDURE: Replace in sequence LC02, LC49, LC46, LC47, LC21, LC22.

Fault Code 1406 (See Note associated with 1400)

(a) DISPLAY FORMAT: FW.

(b) FAULT DESCRIPTION: Trunk idle status incorrect. For LC11B trunks, status should be X(A). Status for all other boards should be X(F).

(c) REPAIR PROCEDURE: Replace indicated trunk and/or LC49.

Fault Code 1407

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ground detector incorrectly active.

(c) REPAIR PROCEDURE: Replace in sequence LC08 and LC49.

Fault Code 1410

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Loop or ground detector or loop current incorrect.

(c) REPAIR PROCEDURE: Repair indicated trunk and/or replace LC49.

Fault Code 1411

(a) DISPLAY FORMAT: FW.

(b) FAULT DESCRIPTION: Incorrect ground sensed status. Correct status for trunk 1 is X(8). Correct status for trunk 0 is X(2).

(c) REPAIR PROCEDURE: Replace indicated trunk and/or LC49.

Fault Code 1412 thru 1414

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Loop or ground detector or loop current incorrect.

(c) REPAIR PROCEDURE: Repair indicated trunk and/or replace LC49.

Fault Code 1415,1416

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Defective DX/E&M signal circuit or 2 dB pad.

(c) REPAIR PROCEDURE: Replace in sequence LC11 and LC49.

Fault Code 1417

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Defective end-of-announcement circuit.

(c) REPAIR PROCEDURE: Replace in sequence LC13 and LC49.

Fault Code 1420,1421

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: No lines off-hook.

(c) REPAIR PROCEDURE: Replace in sequence LC02 and LC49.

Fault Code 1422,1423

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Unidentified trunk.

(c) REPAIR PROCEDURE: Repair indicated trunk and/or replace LC49, LC14, —9V power supply.

Fault Code 1424

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Tip-ring resistance too low.

(c) REPAIR PROCEDURE: Replace in sequence LC08s and LC13s through-out system until defective board is located. Check +9V power supply.

Fault Code 1425

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: LC14 not installed in trunk carrier 00, slot 09.

(c) REPAIR PROCEDURE: Install LC14.

Fault Code 1426

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: No port available on line carrier 00 for trunk test.

(c) REPAIR PROCEDURE: If 9th port is equipped, replace in sequence the LC02 containing the 9th port, LC49, LC50, LC48.

Fault Code 1427

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: LC02 not available to accessed TOUCH-TONE calling receiver.

(c) REPAIR PROCEDURE: If there is at least one LC02 installed, replace in sequence the first LC02, LC49, LC50, LC48.

Fault Code 1430 (See Note associated with 1400)

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Fault port equipment number.

(c) REPAIR PROCEDURE: Replace CP indicated by port equipment number. However, since the number is faulty, it may not indicate the faulty CP.

Fault Code 1431 (See Note associated with 1400)

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Incorrect idle state of TOUCH-TONE calling receiver/register.

(c) REPAIR PROCEDURE: Replace in sequence LC10B (or LC10C), LC49.

Fault Code 1432

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: An LC08 talk relay failed.

(c) REPAIR PROCEDURE: Replace in sequence LC08 and LC49.

Fault Code 1433 thru 1436 (See Note associated with 1400)

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Analog switch stuck active.

(c) REPAIR PROCEDURE: Replace in sequence CP containing indicated port and LC50 and LC49.

Fault Code 1437 (See Note associated with 1400)

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: LC06 busy flip-flop failed.

(c) REPAIR PROCEDURE: Replace in sequence LC06 and LC49.

Fault Code 1440 (See Note associated with 1400)

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Defective tone board.

(c) REPAIR PROCEDURE: Replace in sequence LC04 and LC50.

Fault Code 1441,1442

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Relay or detector defective.

(c) REPAIR PROCEDURE: Replace LC17.

Fault Code 1443

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: This board or carrier not looped around for burn-in.

(c) REPAIR PROCEDURE: Attach loop-around fixtures when in burn-in mode.

Fault Code 1444

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Faulty LC41B idle status.

(c) REPAIR PROCEDURE: Replace in sequence LC41B and LC03 in slot 6 of the same carrier.

Fault Code 1445

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: Faulty LC41B active status.

(c) REPAIR PROCEDURE: Replace in sequence LC41B and LC03 in slot 6 of the same carrier.

Fault Code 1446

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Defective LC285 dial relay control.

(c) REPAIR PROCEDURE: Replace LC285

Fault Code 1447

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: LC285 PM output improperly idle.

(c) REPAIR PROCEDURE: Replace LC285.

Fault Code 1450

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: LC285 PM output improperly active.

(c) REPAIR PROCEDURE: Replace LC285.

Fault Code 1451 thru 1455

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 1456,1457

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: A message register circuit (0-7) stuck active.

(c) REPAIR PROCEDURE: Replace in sequence LC16 and LC49.

Fault Code 1460 thru 1462

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Message register circuit 0, 1, or 2 stuck inactive.

(c) REPAIR PROCEDURE: Replace in sequence LC16 and LC49.

Fault Code 1463

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Message register circuit 3 stuck inactive or—48V or LC14 missing.

(c) REPAIR PROCEDURE: Install LC14 and/or replace in sequence LC16 and LC49.

Fault Code 1464 thru 1477

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: A message register circuit (4—7) stuck inactive or 0—7 stuck active.

(c) REPAIR PROCEDURE: Replace in sequence LC16 and LC49.

Fault Code 1500

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A contact driver, or drivers, stuck inactive or test plug missing.

(c) REPAIR PROCEDURE: Install test plug and/or replace in sequence LC14 and LC49.

Fault Code 1501

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: A contact driver, or drivers, stuck active.

(c) REPAIR PROCEDURE: Replace in sequence LC14 and LC49.

Fault Code 1502 thru 1511

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: LC14 relay failed.

(c) REPAIR PROCEDURE: Replace in sequence LC14 and LC49.

Fault Code 1512 thru 1557

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 1560

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Faulty inner loop current detector.

(c) REPAIR PROCEDURE: Replace in sequence indicated CP and LC49.

Fault Code 1561

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DIAL* fails to disable trunk scan output.

(c) REPAIR PROCEDURE: See 1560.

Fault Code 1562

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Excessive inner loop detector impedance (ckt 0).

(c) REPAIR PROCEDURE: See 1560.

Fault Code 1563

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Excessive inner loop detector impedance (ckt 1).

(c) REPAIR PROCEDURE: See 1560.

Fault Code 1564

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: GND* fails to inhibit trunk scan output.

(c) REPAIR PROCEDURE: See 1560.

Fault Code 1565

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Faulty outer loop current detector.

(c) REPAIR PROCEDURE: See 1560.

Fault Code 1566

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Excessive outer loop detector impedance (ckt 0).

(c) REPAIR PROCEDURE: See 1560.

Fault Code 1567

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Excessive outer loop detector impedance (ckt 1).

(c) REPAIR PROCEDURE: See 1560.

Fault Code 1570

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Faulty 170 msec timer (ckt 0).

(c) REPAIR PROCEDURE: Replace in sequence indicated CP and LC49.

Fault Code 1571

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Faulty 170 msec timer (ckt 1).

(c) REPAIR PROCEDURE: See 1570.

Fault Code 1572

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Faulty ring detector.

(c) REPAIR PROCEDURE: See 1570.

Fault Code 1573

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring detector fails to retrigger on steady ringing.

(c) REPAIR PROCEDURE: See 1570.

Fault Code 1574

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring detector times out too soon.

(c) REPAIR PROCEDURE: See 1570.

Fault Code 1575

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring detector times out too late.

(c) REPAIR PROCEDURE: See 1570.

Fault Code 1576

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: LC285 5-second ring detector fails to reset.

(c) REPAIR PROCEDURE: Replace LC285.

Fault Code 1577

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: LC285 5-second ring detector fails to reset.

(c) REPAIR PROCEDURE: Replace LC285.

Fault Code 1600

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: TOUCH-TONE calling register output fails to agree with digit sent from LC12.

(c) REPAIR PROCEDURE: Replace in sequence LC12, LC54, LC10.

Fault Code 1601

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: TOUCH-TONE calling receiver/register responded to a false TOUCH-TONE dialing combination from LC12.

(c) REPAIR PROCEDURE: Replace in sequence LC54, LC10B, (or LC10C) LC12.

Fault Code 1602

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: LC12 dial tone detector failed to detect 350 Hz signal.

(c) REPAIR PROCEDURE: Replace in sequence LC12 and LC04.

Fault Code 1603

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Faulty response of LC12 dial tone detector to 440 Hz.

(c) REPAIR PROCEDURE: See 1602.

Fault Code 1604

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: LC12 dial tone detector fails to hold over tone break.

(c) REPAIR PROCEDURE: See 1602.

Fault Code 1605

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Faulty LC12 TOUCH-TONE signal.

(c) REPAIR PROCEDURE: See 1602.

Fault Code 1606

(a) DISPLAY FORMAT: FS.

(b) FAULT DESCRIPTION: Tone even occurred too soon.

(c) REPAIR PROCEDURE: Replace LC145.

Fault Code 1607

(a) DISPLAY FORMAT: FS.

(b) FAULT DESCRIPTION: On-hook even occurred too soon.

(c) REPAIR PROCEDURE: Replace LC145.

Fault Code 1610

(a) DISPLAY FORMAT: FS.

(b) FAULT DESCRIPTION: Off-hook even occurred too soon.

(c) REPAIR PROCEDURE: Replace LC145.

Fault Code 1611

(a) DISPLAY FORMAT: FS.

(b) FAULT DESCRIPTION: Tone event failed to occur.

(c) REPAIR PROCEDURE: Replace in sequence LC145, LC04.

Fault Code 1612

(a) DISPLAY FORMAT: FS.

(b) FAULT DESCRIPTION: On-hook even failed to occur.

(c) REPAIR PROCEDURE: Replace LC145.

Fault Code 1613

(a) DISPLAY FORMAT: FS.

(b) FAULT DESCRIPTION: Off-hook event failed to occur.

(c) REPAIR PROCEDURE: Replace LC145.

Fault Code 1614

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: LC145 Port A failed to remain on-hook after "Drop 400D" signal.

(c) REPAIR PROCEDURE: Replace LC145.

Fault Code 1615 thru 1617

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 1620

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Incorrect trunk idle status.

(c) REPAIR PROCEDURE: Replace indicated board.

Fault Code 1621

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Loop detector failed to detect a closed loop.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1622

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Loop current improperly present.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1623

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: OG1 not operated at A0 not sense loop.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1624

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RV0 not operated or REV1 not sensed.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1625

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RV0 not released or REV1 still sensed.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1626

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON1 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1627

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RLS1 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1630

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: REV1 sensed reversal.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1631

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RLS1 not released.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1632

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DISC1 timer too early.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1633

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RLS1 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1634

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON1 timer too early.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1635

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON1 timer too late.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1636

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON1 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1637

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RLS1 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1640

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: REV1 not sensed or RV0 not released.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1641

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: REV1 not sensed or RLS1 not released.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1642

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Scan memory wrong—ckt 1.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1643

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON1 or RLS1 timers too late.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1644

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON1 or RV0 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1645

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DISC1 timer too late.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1646

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RV0 not released or board not idle.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1647

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: OG0 not operated or A1 not sense loop.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1650

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RV1 not operated or REV0 not sensed.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1651

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RV1 not released or REV0 still sensed.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1652

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON0 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1653

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RLS0 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1654

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: REV0 sensed reversal.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1655

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RLS0 not released.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1656

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DISC0 timer too early.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1657

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RLS0 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1660

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON0 timer too early.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1661

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON0 timer too late.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1662

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON0 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1663

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RLS0 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1664

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: REV0 not sensed or RV0 not released.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1665

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: REV1 not sensed or RLS1 not released.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1666

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Scan memory wrong—ckt 0.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1667

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON0 or RLS0 timers too late.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1670

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DON0 or RV0 not operated.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1671

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: DISC0 timer too late.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1672

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: RV1 not release or board not idle.

(c) REPAIR PROCEDURE: See 1620.

Fault Code 1673

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Previously identified board now has error.

(c) REPAIR PROCEDURE: Replace indicated board; check loop equipment.

Fault Code 1700

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: No loop equipment.

(c) REPAIR PROCEDURE: Replace indicated LC361.

Fault Code 1701

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Failed ring trip during silent interval.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1702

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Wrong loop status and control on ckt 1.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1703

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Wrong loop status and control on ckt 0.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1704

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: 450 ms timer too early—ckt 0.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1705

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: 450 ms timer too early—ckt 1.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1706

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: 450 ms timer too late—ckt 0.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1707

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: 450 ms timer too late—ckt 1.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1710

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Failed ring trip during ring interval.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1711

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring back tone gone.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1712

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring control status wrong.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1713

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Circuit 1 failed ring lockout.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1714

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Circuit 1 ring control status wrong.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1715

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Circuit 1 failed ring lockout release.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1716

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring control status wrong.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1717

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Circuit 0 failed ring lockout.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1720

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Circuit 0 ring control status wrong.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1721

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Circuit 0 failed ring lockout release.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1722

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Board did not go idle.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1723

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring back tone improperly presented.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1724

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring back tone not found.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1725

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring control off delay failed.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1726

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring on time too short.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1727

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring on time too long.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1730

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Silent interval too short.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1731

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Silent interval too long.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1732

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Ring control failed to turn off ringing.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1733

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: 60 ms timer late—ckt 0.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1734

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: 60 ms timer late—ckt 1.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1735

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: 60 ms timer early—ckt 0.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1736

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: 60 ms timer early—ckt 1.

(c) REPAIR PROCEDURE: See 1700.

Fault Code 1737

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 1740

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS jumbo instruction failed.

(c) REPAIR PROCEDURE: Replace microcode board (LC23 or LC453).

Fault Code 1741

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS jumbo failed to return correct word pointer in R9.

(c) REPAIR PROCEDURE: Replace LC453.

Fault Code 1742

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS jumbo failed to return correct bit position pointer in R6.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1743

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS jumbo failed to return correct complemented data in R8.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1744

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct word pointer in R9.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1745

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct bit position pointer in R6.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1746

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct complemented data in R8.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1747

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct word pointer in R9.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1750

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct bit position pointer in R6.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1751

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct complemented data in R8.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1752

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct word pointer in R9.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1753

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct bit position pointer in R6.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1754

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: MAPS JUMBO failed to return correct complemented data in R8.

(c) REPAIR PROCEDURE: See 1741.

Fault Code 1755 thru 1777

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 2000

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: An LC30B or LC447 is installed in slot 42 of the RMATS control carrier.

(c) REPAIR PROCEDURE: If an LC30B, enter the number "30" in word 15 of memory using

the procedure described in paragraph 2.01. If an LC447 is in slot 42, then replace the LC447.

Fault Code 2001

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Wrong tape in B minirecorder.

(c) REPAIR PROCEDURE: Put a PG1E188 tape (any issue) into B minirecorder.

Fault Code 2002 thru 2007

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 2010

(a) DISPLAY FORMAT: F3.

(b) FAULT DESCRIPTION: New tests have been selected under Test 50 to run during burn-in without reinitializing burn-in.

(c) REPAIR PROCEDURE: Reinitialize burn-in.

Fault Code 2011

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Failed to find tape block number where error information is logged during burn-in.

(c) REPAIR PROCEDURE: Reinitialize burn-in; for repeated occurrences, replace tape, LC29, LC30C, minirecorder.

Fault Code 2012

(a) DISPLAY FORMAT: FE.

(b) FAULT DESCRIPTION: Tape is not located at correct block location for writing error information on tape.

(c) REPAIR PROCEDURE: Replace tape, LC29, LC30C minirecorder.

Fault Code 2013 thru 2177

(a) DISPLAY FORMAT: None.

(b) FAULT DESCRIPTION: Unused.

Fault Code 2200

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Conference off-hook status incorrect.

(c) REPAIR PROCEDURE: Replace in sequence LC293, LC49.

Fault Code 2201

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Bridge 3 disconnected.

(c) REPAIR PROCEDURE: Replace indicated LC293.

Fault Code 2202

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—All ports should be on-hook.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2203

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Bridge 0 disconnected.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2204

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—All ports should be on-hook.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2205

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone not present—Bridge on—Talk muted in reverse direction.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2206

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2207

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Talk muting is on from 0 to 3.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2210

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—Muting talk path affected bridge.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2211

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone not present—Bridge on—Talk muted in reverse directions.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2212

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2213

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Talk path muting is on from 3 to 0.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2214

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2215

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Bridge 0, 3 are off.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2216

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—All ports should be on-hook.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2217

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Bridge 2 disconnected.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2220

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—All ports should be on-hook.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2221

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Bridge 1 disconnect.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2222

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—All ports should be on-hook.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2223

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone not present—Bridge on—Talk muted in reverse direction.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2224

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2225

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Talk muting is on from 1 to 2.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2226

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—Muting talk path affected bridge.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2227

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone not present—Bridge on—Talk muted in reverse direction.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2230

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2231

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Talk muting is on from 2 to 1.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2232

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2233

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Bridge 1, 2 off.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2234

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—All ports should be off-hook.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2235

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Tone improperly present—Ports should have all been cleared.

(c) REPAIR PROCEDURE: See 2201.

Fault Code 2236

(a) DISPLAY FORMAT: F9.

(b) FAULT DESCRIPTION: Bad hook status—All ports should be off hook.

(c) REPAIR PROCEDURE: See 2201.

6. REFERENCES

6.01 The following sections are associated with the DIMENSION 100 and 400 PBX systems. These sections, when available, may be used for additional information.

SECTION	TITLE
332-610-100	Customer Premises Facility Terminal Equipment—General Description
554-010-100	DIMENSION® PBX Attendant Console Description
554-010-101	DIMENSION® Type PBXs— Auxiliary Circuits—Maintenance Support Information
554-010-122	DIMENSION® PBX Station Message Detail Recording (SMDR) Operation
554-010-130	DIMENSION® PBX Remote Maintenance, Administration, and Traffic System (RMATS-1) Description and Operation
554-101-100	DIMENSION® 400 PBX System Description
554-101-101	DIMENSION® 400 PBX Pre- installation and Planning Information
554-101-102	DIMENSION® 100 PBX—System Description
554-101-103	DIMENSION® 100 PBX Pre- installation and Planning Information
554-101-105	DIMENSION® 100 & 400 PBXs—Call Processing—Maintenance Support Information
554-101-106	DIMENSION® 100 & 400 PBXs—Scanner/Distributor and Network Control—Maintenance Support Information
554-101-107	DIMENSION® 100 & 400 PBXs—PAM Network and Port Circuits—Maintenance Support Information
554-101-108	DIMENSION® 100 & 400 PBXs Central Processor—Maintenance Support Information
554-101-110	DIMENSION® 100 & 400 PBXs—Maintenance Plan and Administrative Procedures
554-102-100	DIMENSION® 100 & 400 PBXs Software Operation—Maintenance Support Information
554-000-000	DIMENSION® PBX Numerical Index (Refer to numerical index for TOP)
554-191-100	DIMENSION® PBX—Feature Document Reference Guide
809-875-150	DIMENSION® 400 PBX Equipment Design Requirements
809-875-151	DIMENSION® 100 PBX Equipment Design Requirements

6.02 The following circuit schematic diagrams (SDs) and associated circuit descriptions (CDs) are applicable to the DIMENSION 400 PBX and may be referred to when required.

DRAWING	ISSUE TITLE
SD-1C586-01 1	TOUCH-TONE Calling Receiving Circuit Type G1
SD-1E440-01 1	DIMENSION® 400 PBX—System Application
SD-1E441-01 6	DIMENSION® 400 PBX—Power Distribution
SD-1E442-01 6	DIMENSION® 400 PBX—Processor, Memory, and Alarm Circuits
SD-1E443-01 4	DIMENSION® 400 PBX— Processor Interface Circuits

SD-1E444-01 7	DIMENSION® 400 PBX—Signal Distribution Circuits
SD-1E445-01 3	DIMENSION® 400 PBX—Line, Attendant, Tone, and Conference Circuits
SD-1E446-01 3	DIMENSION® 400 PBX—Central Office, Tie, Auxiliary Trunk, and Register Circuits
SD-1E490-01 1	RMATS-1 CF
SD-1E456-01	W1102C and 102D Display Circuits
SD-69910-01 1	Attendant Electronic Console
SD-7C010-1 1	Specification for CPFT

6.03 The following circuit schematic diagrams (SDs) and associated circuit descriptions are applicable to the DIMENSION 100 PBX and may be referred to when required.

DRAWING	ISSUE TITLE
SD-1C586-01 1	TOUCH-TONE Calling Receiving Circuit Type G1
SD-1E471-01 1	DIMENSION® 100 PBX—Power Distribution, Application, and Interconnect Circuits
SD-1E472-01 2	DIMENSION® 100 PBX—Processor, Memory, and Alarm Circuits
SD-1E473-01 1	DIMENSION® 100 PBX—Processor Interface Circuits
SD-1E474-01 1	DIMENSION® 100 PBX—Signal Distribution Circuits
SD-1E475-01 1	DIMENSION® 100 PBX—Line, Attendant, Tone, and Conference Circits
SD-1E476-01 1	DIMENSION® 100 PBX—Line, Office, Tie, Auxiliary Trunk, and Register Circuits
SD-1E477-01 1	DIMENSION® 100 PBX System Circuit
SD-66910-01 1	Attendant Electronic Console
SD-66942-01	TOUCH-TONE Calling Receiver
SD-70010-01 1	Specification for CPFT

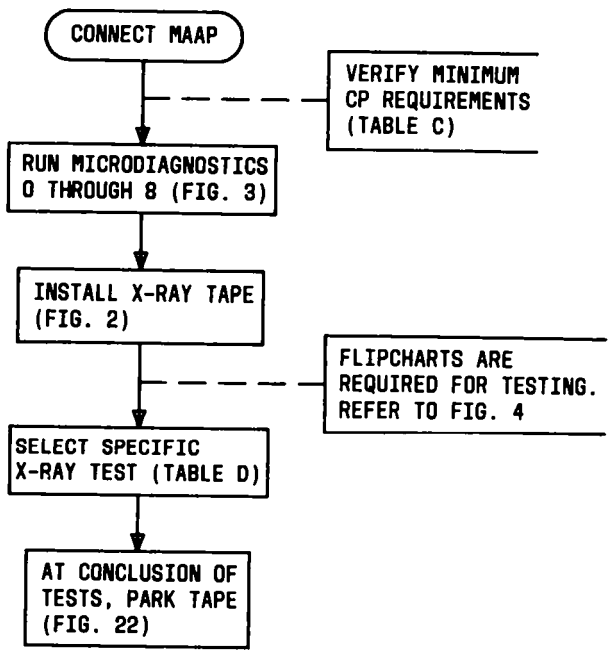
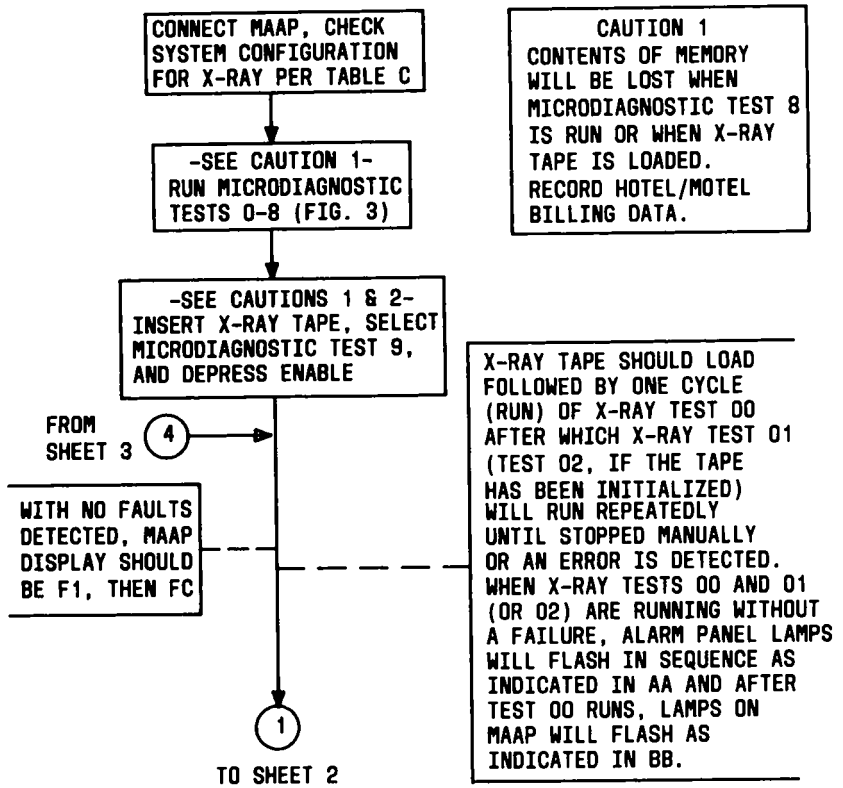


Fig. 1—X-Ray Tests Operating Procedure



BB

BUSY OUT	WAIT	ERROR	
●	●	●	1ST CYCLE 0.4 SEC
◇	●	●	2ND CYCLE 0.4 SEC
◇	◇	●	3RD CYCLE 0.4 SEC
◇	◇	◇	4TH CYCLE 0.4 SEC

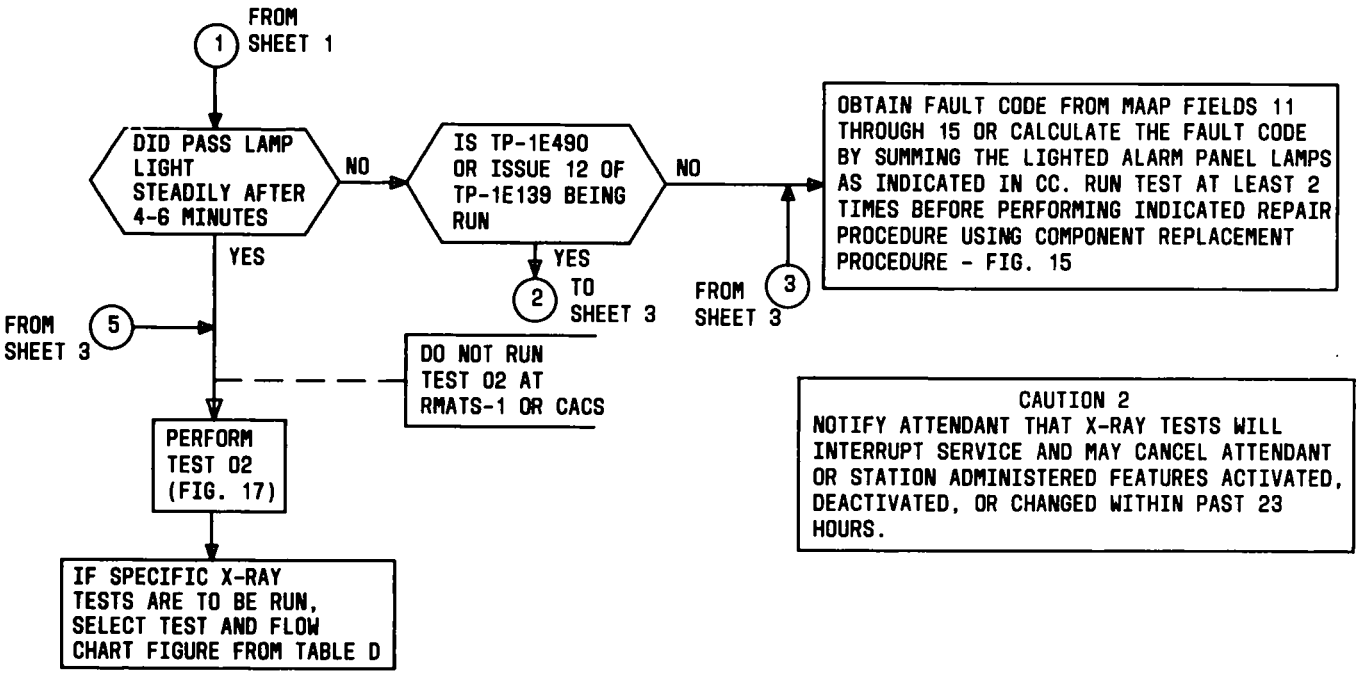
FLASHING SEQUENCE OF MAAP INDICATOR LAMPS (0.4 SEC FLASH)

CC

INDICATOR	XRAY FAULT VALUE
PROC	1
MEM	2
I/O BUS	4
SCAN	10
FACILITY	20
TAPE	40
NET	100
MINOR	200
MAJOR	400
PASS	1000
FAIL	2000

ASSIGNED FAULT CODE VALUE FOR ALARM PANEL LAMPS

Fig. 2—Tape Loading (Sheet 1 of 3)



AA

MAJOR	MINOR	OVER TEMP	FUSE	I/O BUS	PROC	MEM	BIT SWAP	TAPE	SCAN	NET	FACILITY	PASS	FAIL	
◇	o	o	o	o	o	o	o	o	o	o	o	o	o	1ST CYCLE
o	◇	o	o	o	o	o	o	o	o	o	o	o	o	2ND CYCLE
o	o	●	o	◇	o	o	o	o	o	o	o	o	o	3RD CYCLE
o	o	o	o	o	◇	o	o	o	o	o	o	o	o	4TH CYCLE
o	o	o	o	o	o	◇	o	o	o	o	o	o	o	5TH CYCLE
o	o	o	o	o	o	o	o	◇	o	o	o	o	o	6TH CYCLE
o	o	o	o	o	o	o	o	o	◇	o	o	o	o	7TH CYCLE
o	o	o	o	o	o	o	o	o	o	◇	o	o	o	8TH CYCLE
o	o	o	o	o	o	o	o	o	o	o	◇	o	o	9TH CYCLE
o	o	o	o	o	o	o	o	o	o	o	o	o	◇	10TH CYCLE

FLASHING SEQUENCE OF ALARM PANEL LAMPS (0.2 SEC FLASH)

NOTES:
1. THE SYMBOL " ◇ REPRESENTS A LIGHTED LAMP.
2. THE BIT SWAP INDICATOR FLASHES OUT OF SYNCHRONIZATION WITH THE OTHERS AS PORTIONS OF MEMORY TEST ARE RUN.

Fig. 2—Tape Loading (Sheet 2 of 3)

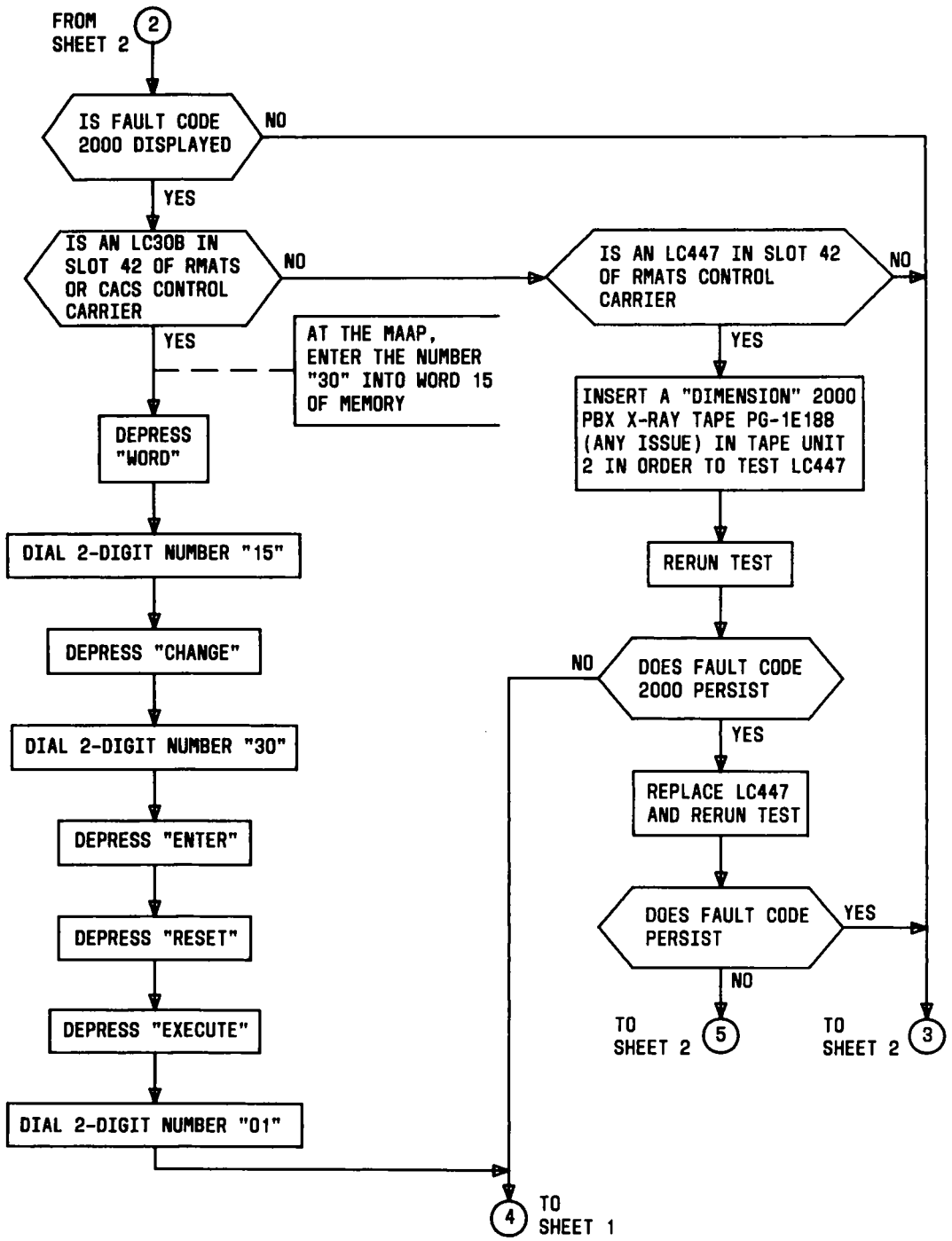
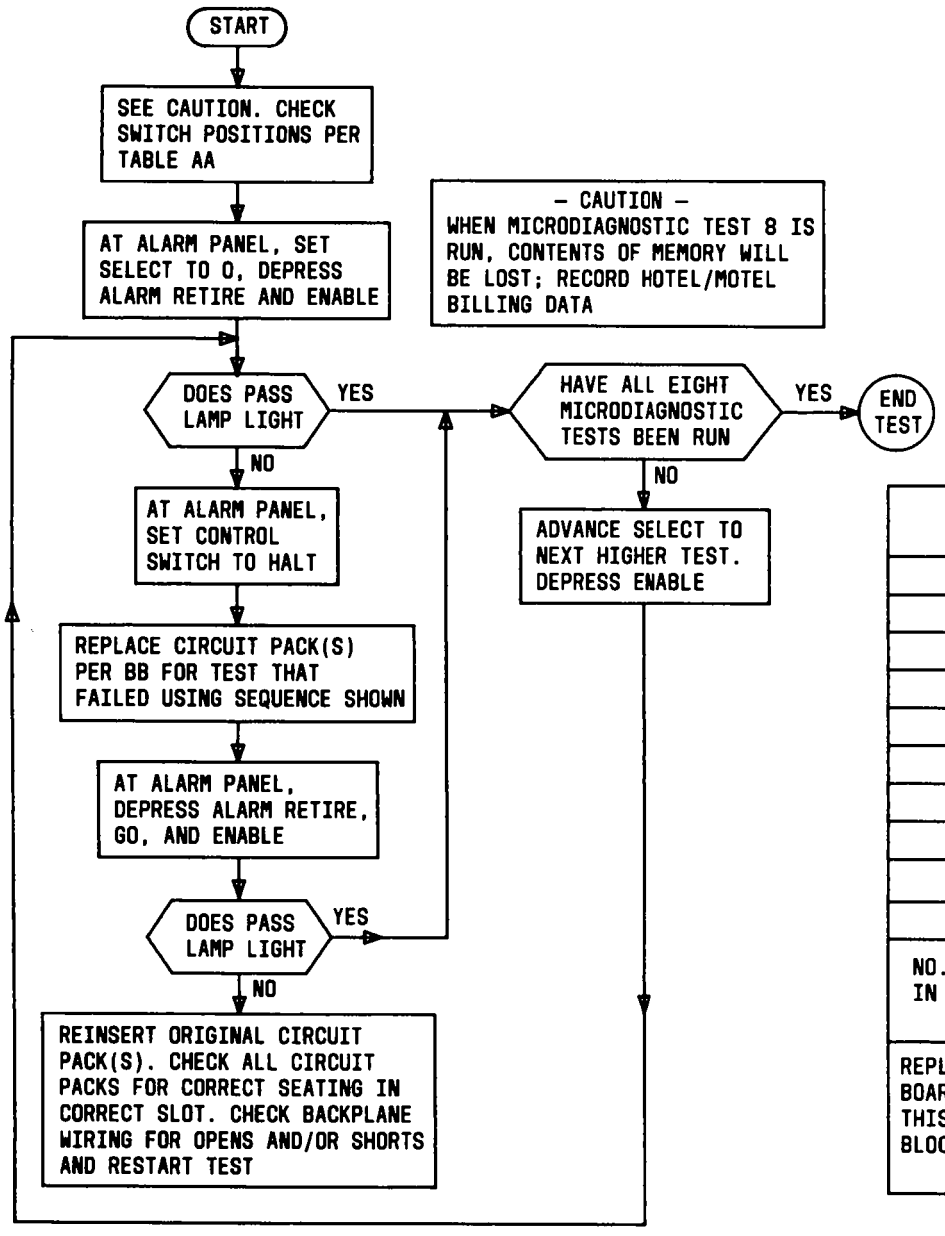


Fig. 2—Tape Loading (Sheet 3 of 3)



AA

SWITCH OR BREAKER	POSITION
POWER SUPPLY CIRCUIT BREAKERS	ON
CONTROL CARRIER CIRCUIT BREAKERS	ON
ALARM PANEL CONTROL	GO
EMERGENCY TRANSFER	NORMAL

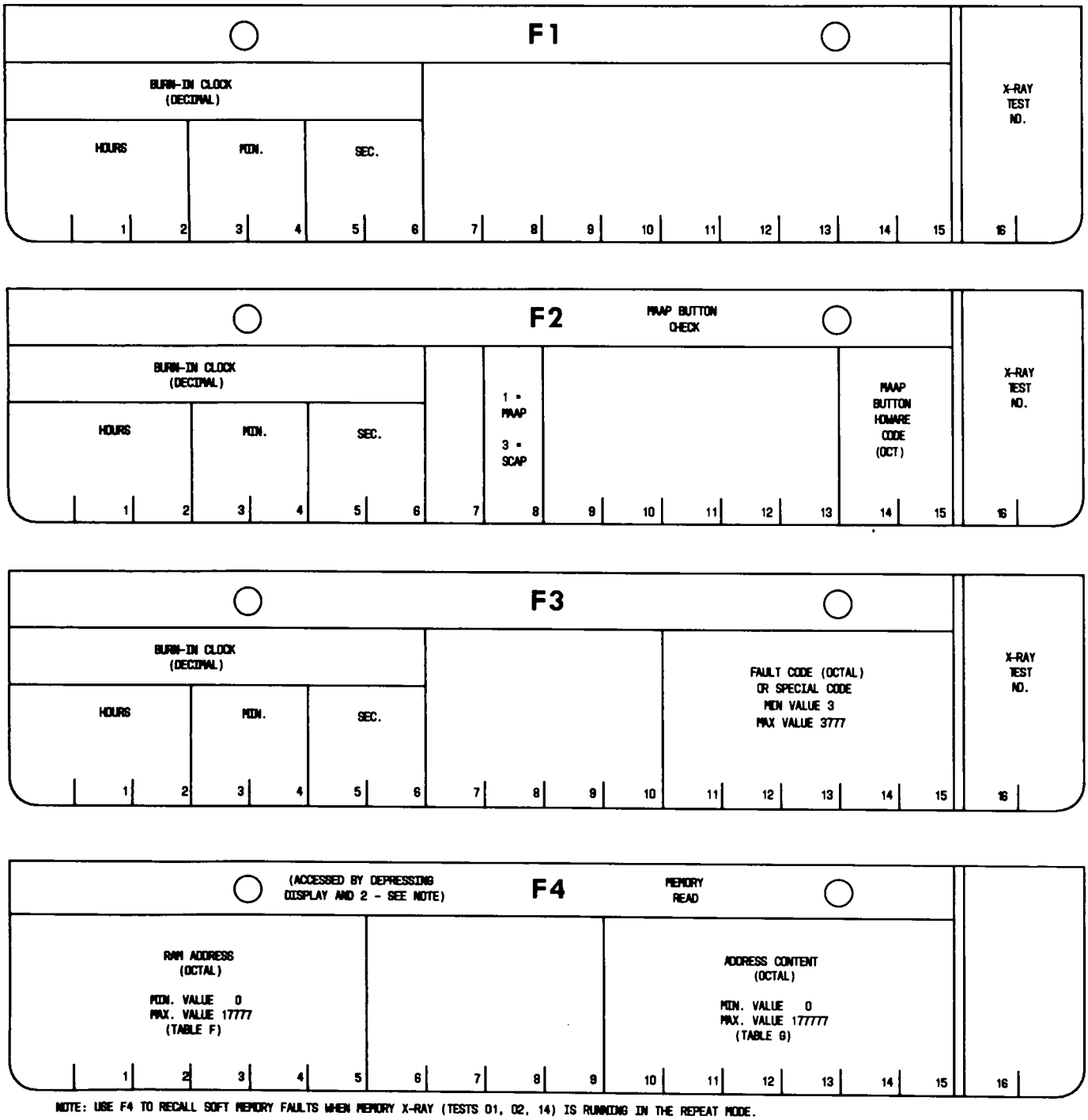
BB

TEST FAILING	CIRCUIT PACK REPLACEMENT
0	LC52, LC22 OR LC22B
1	LC21
2	LC20, LC23 OR LC23C, LC22 OR LC22B
3	LC53, LC22 OR LC22B
4	LC20
5	LC20, LC52
6	LC52
7	LC21, LC29 OR LC29B
8	MEMORY BOARD (INDICATED ON MAAP)

MAAP DISPLAY

NO. DISPLAYED IN FIELD 1	0	1	2	3	4	5	6	7	10	11	12	13	14	15	16	17
REPLACE MEMORY BOARD FOR THIS MEMORY BLOCK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Fig. 3—Microdiagnostic Tests 0 Through 8



NOTE: USE F4 TO RECALL SOFT MEMORY FAULTS WHEN MEMORY X-RAY (TESTS 01, 02, 14) IS RUNNING IN THE REPEAT MODE.

Fig. 4—MAAP Display Formats (Flipcharts) (Sheet 1 of 8)

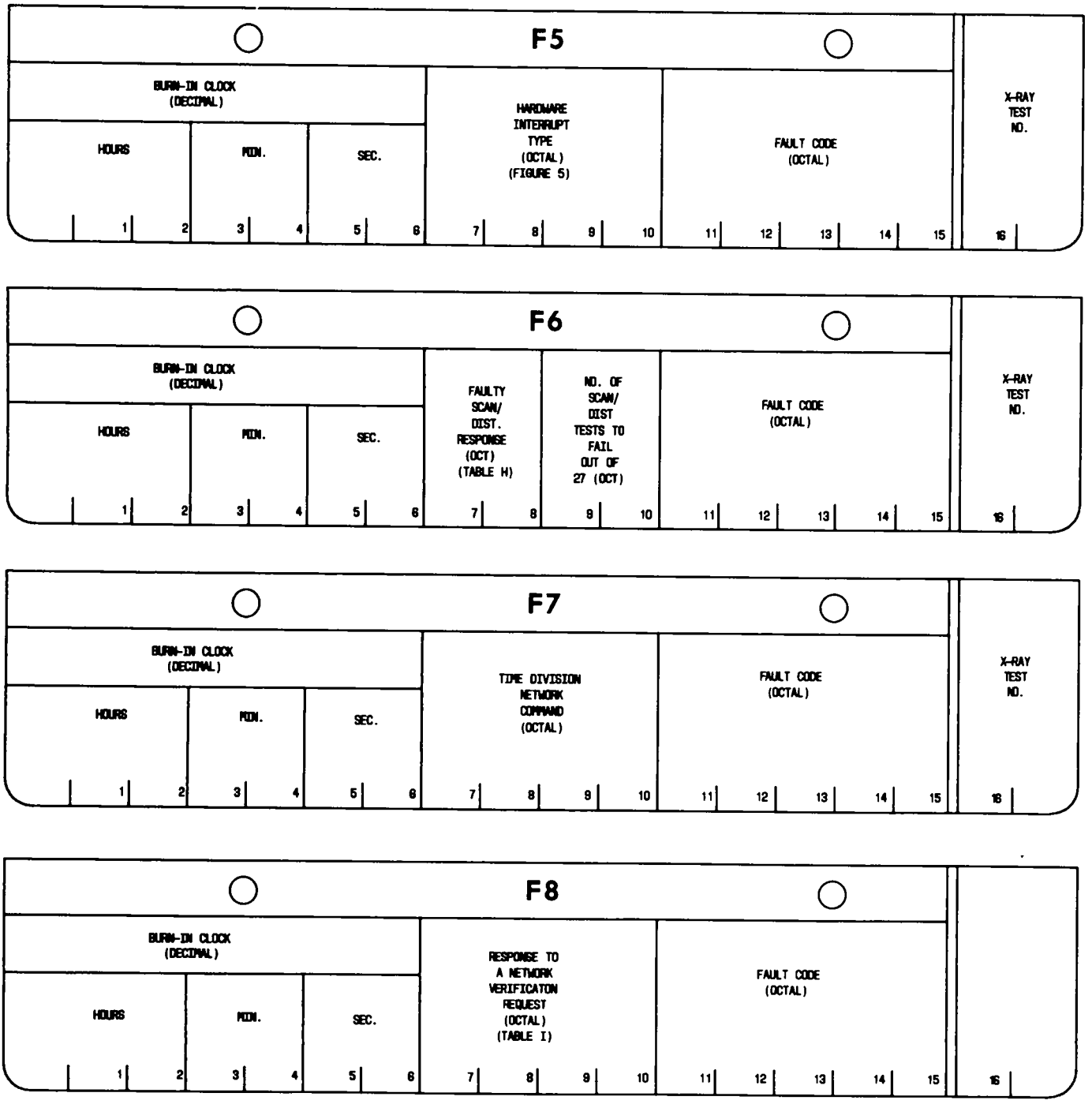


Fig. 4—MAAP Display Formats (Flipcharts) (Sheet 2 of 8)

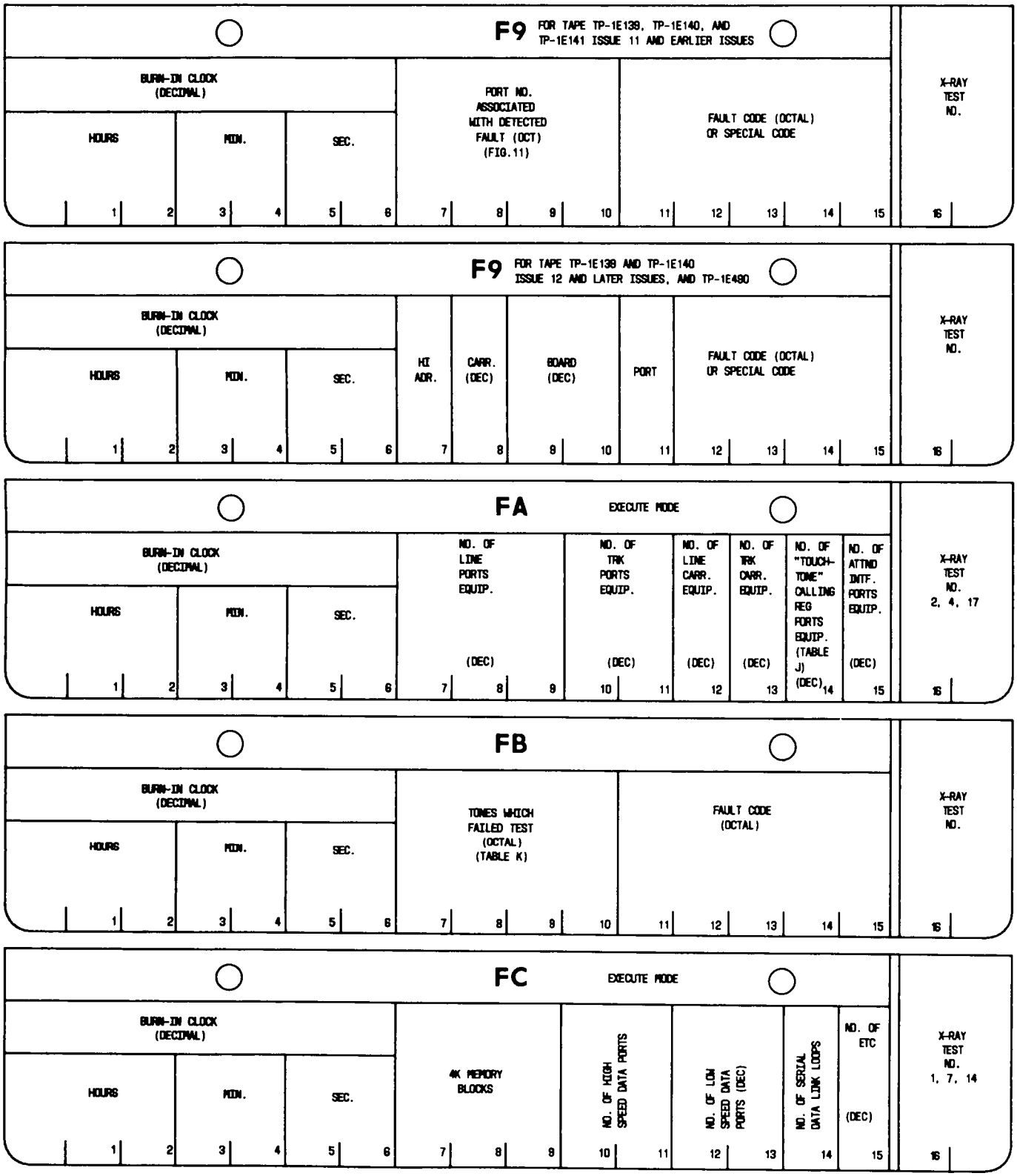


Fig. 4—MAAP Display Formats (Flipcharts) (Sheet 3 of 8)

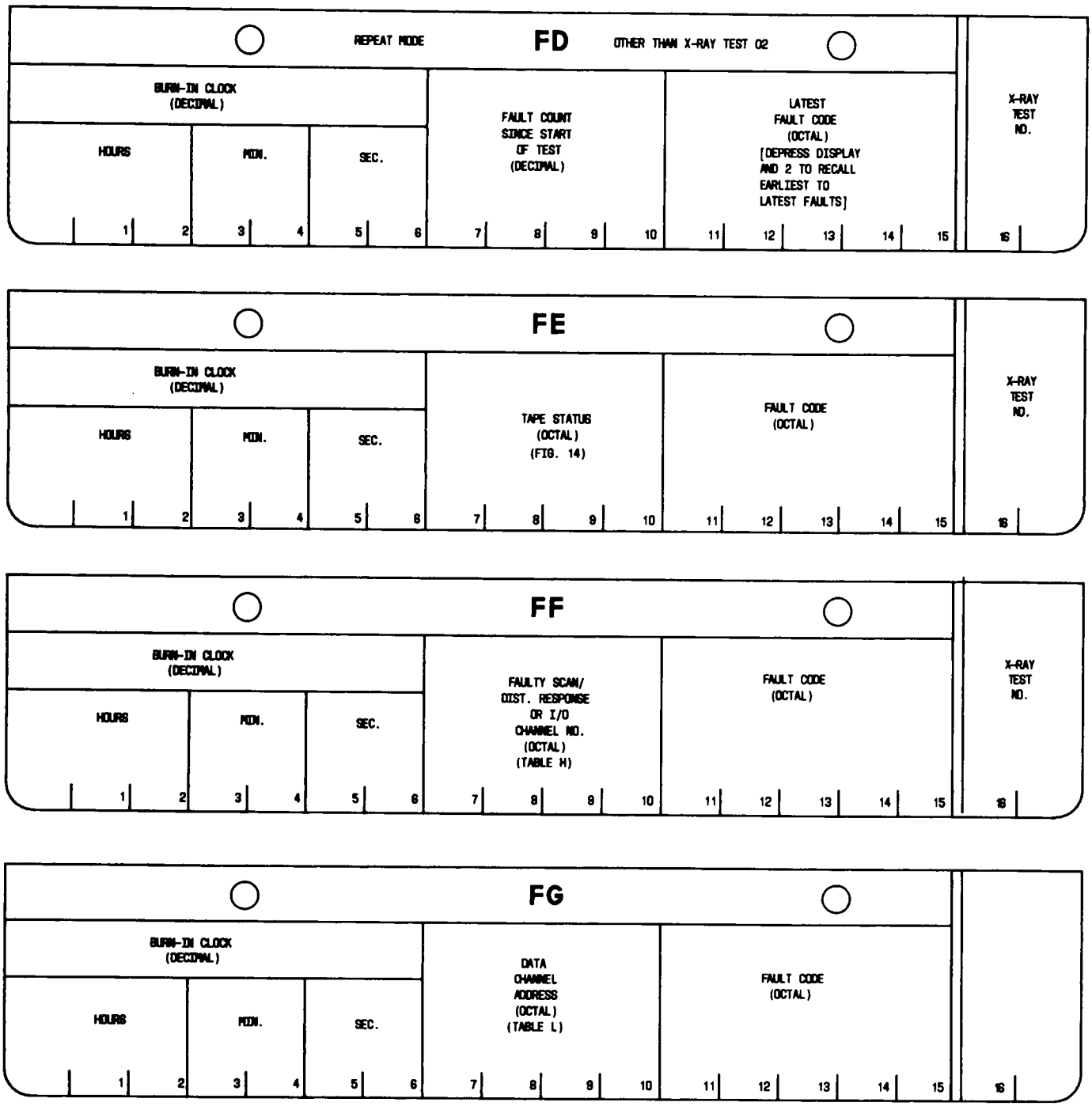


Fig. 4—MAAP Display Formats (Flipcharts) (Sheet 4 of 8)

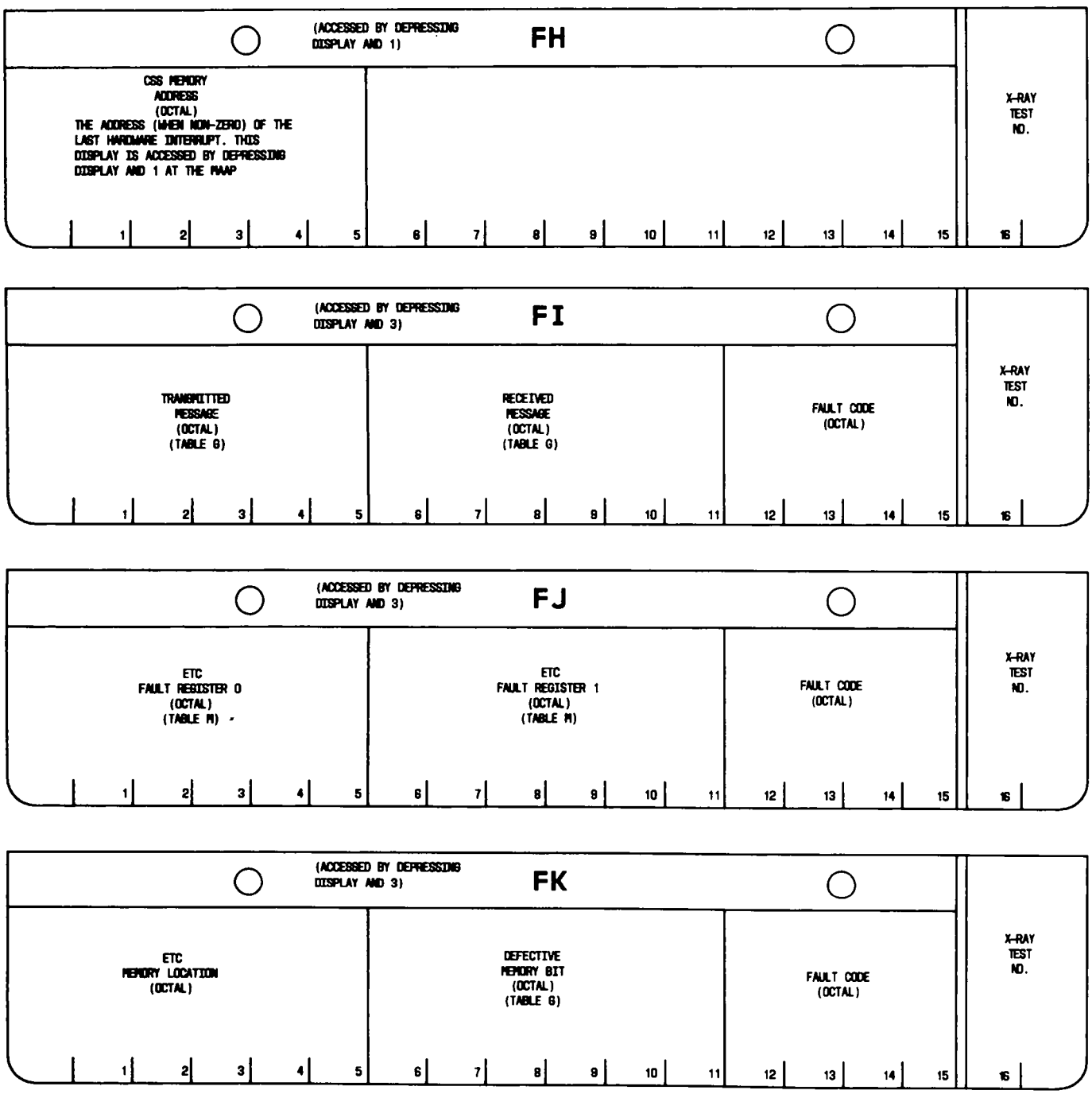


Fig. 4—MAAP Display Formats (Flipcharts) (Sheet 5 of 8)

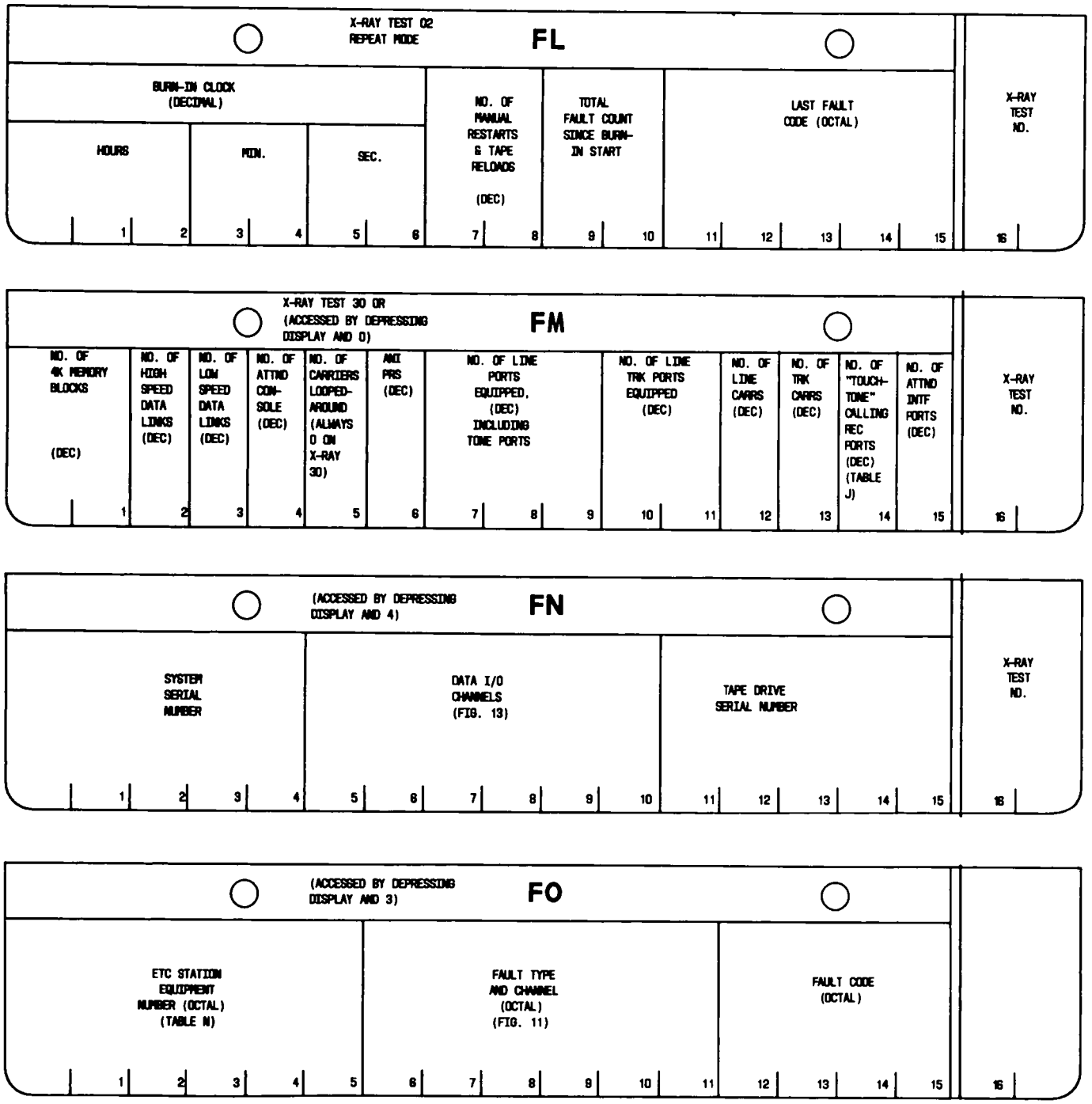


Fig. 4—MAAP Display Formats (Flipcharts) (Sheet 6 of 8)

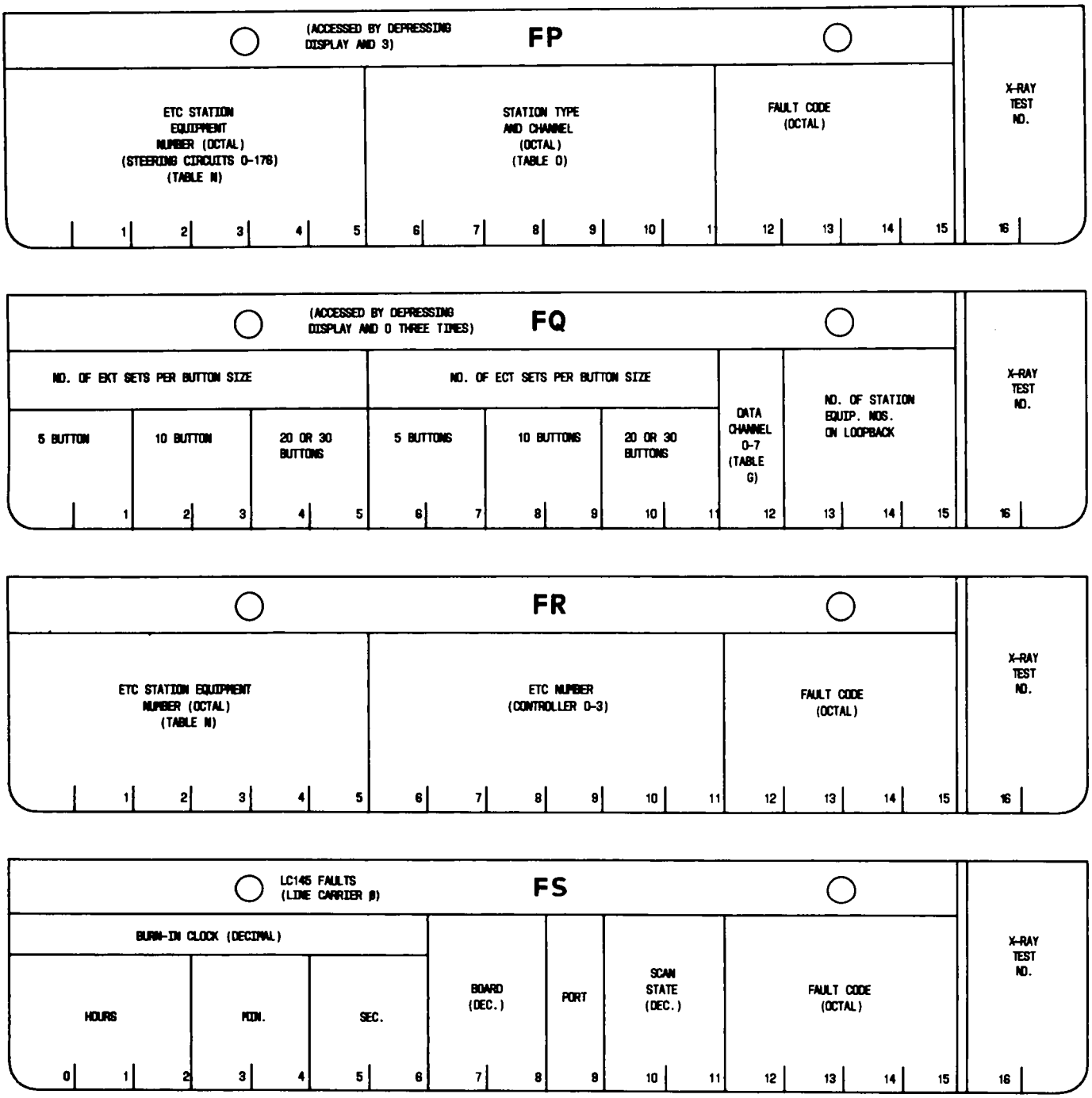
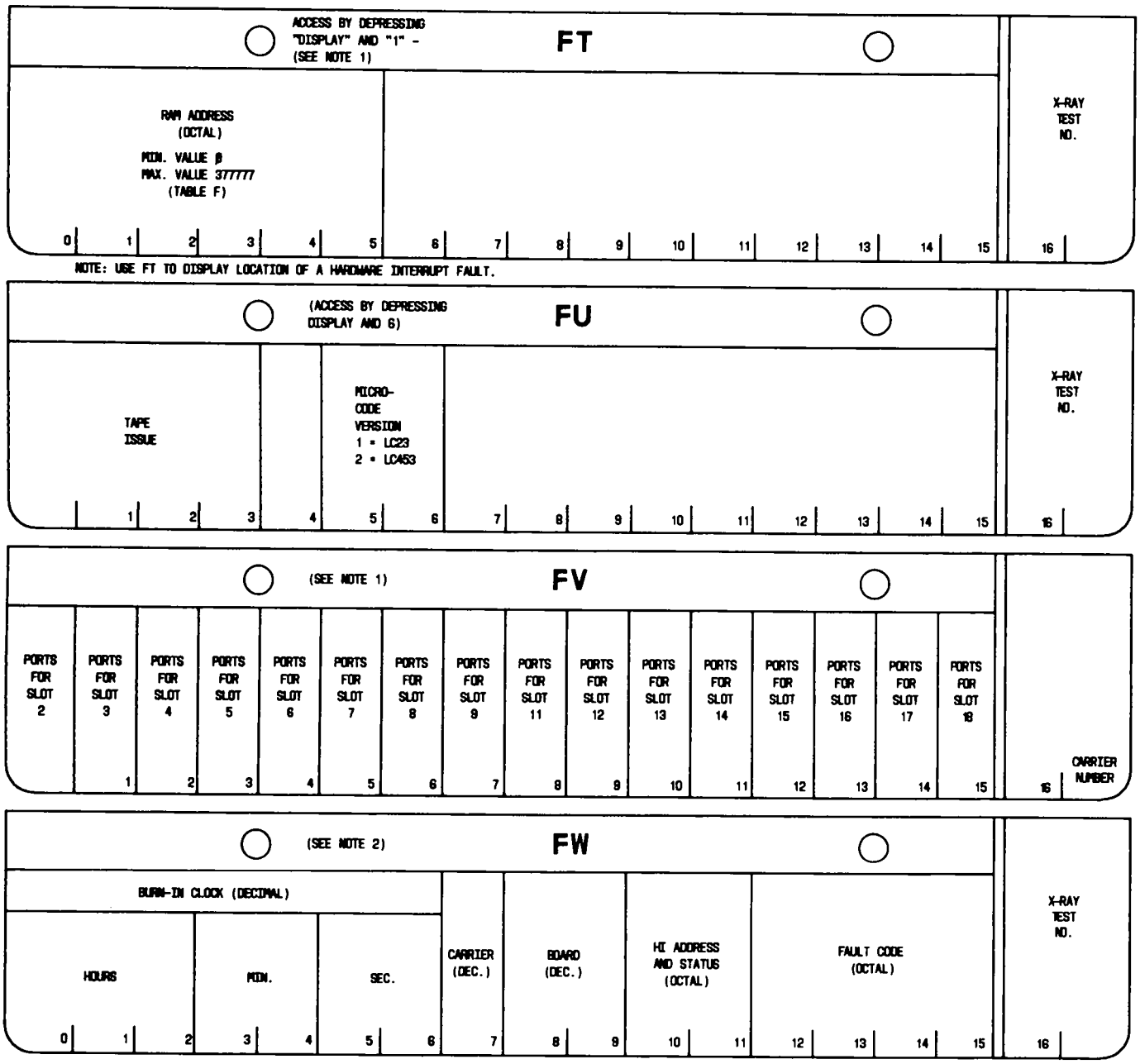


Fig. 4—MAAP Display Formats (Flipcharts) (Sheet 7 of 8)



NOTE 1:
FORMAT FV DISPLAYS THE NUMBER OF PORTS FOUND ON A PARTICULAR CARRIER. A PORT IS COUNTED IF IT HAS A WORKING TIME SLOT SHIFT REGISTER.

TO ACCESS, DEPRESS "EXECUTE" AND DIAL "46". WHEN ERROR "620" IS DISPLAYED, DEPRESS "STEP" BUTTON REPEATEDLY UNTIL INFORMATION FOR DESIRED CARRIER IS DISPLAYED. IF AN ERROR CODE 406 THROUGH 446 IS DISPLAYED, THE "STEP" BUTTON MAY STILL BE USED TO DETERMINE WHICH CARRIERS (OR PORTIONS OF CARRIERS) WERE ACTUALLY CHECKED.

NOTE 2:
FOR FORMAT FW THE HI ADDRESS AND STATUS IS ARRANGED AS FOLLOWS:

MAAP FIELDS				
10		11		
HI ADR. 4	SS3* 3	SS2* 2	SS1* 1	SS0* 0

Fig. 4—MAAP Display Formats (Flipcharts) (Sheet 8 of 8)

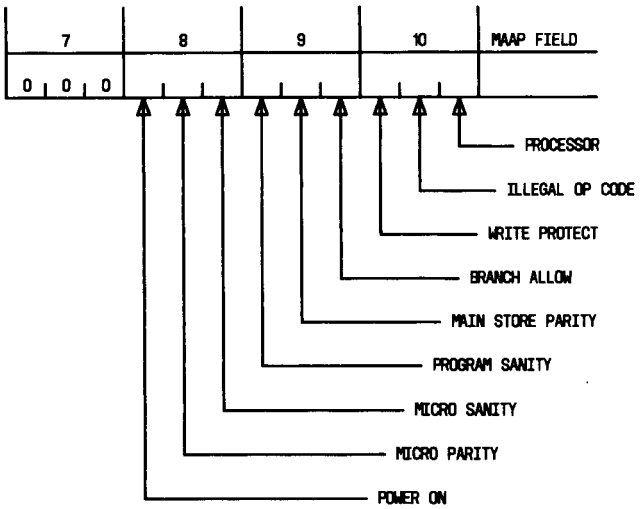
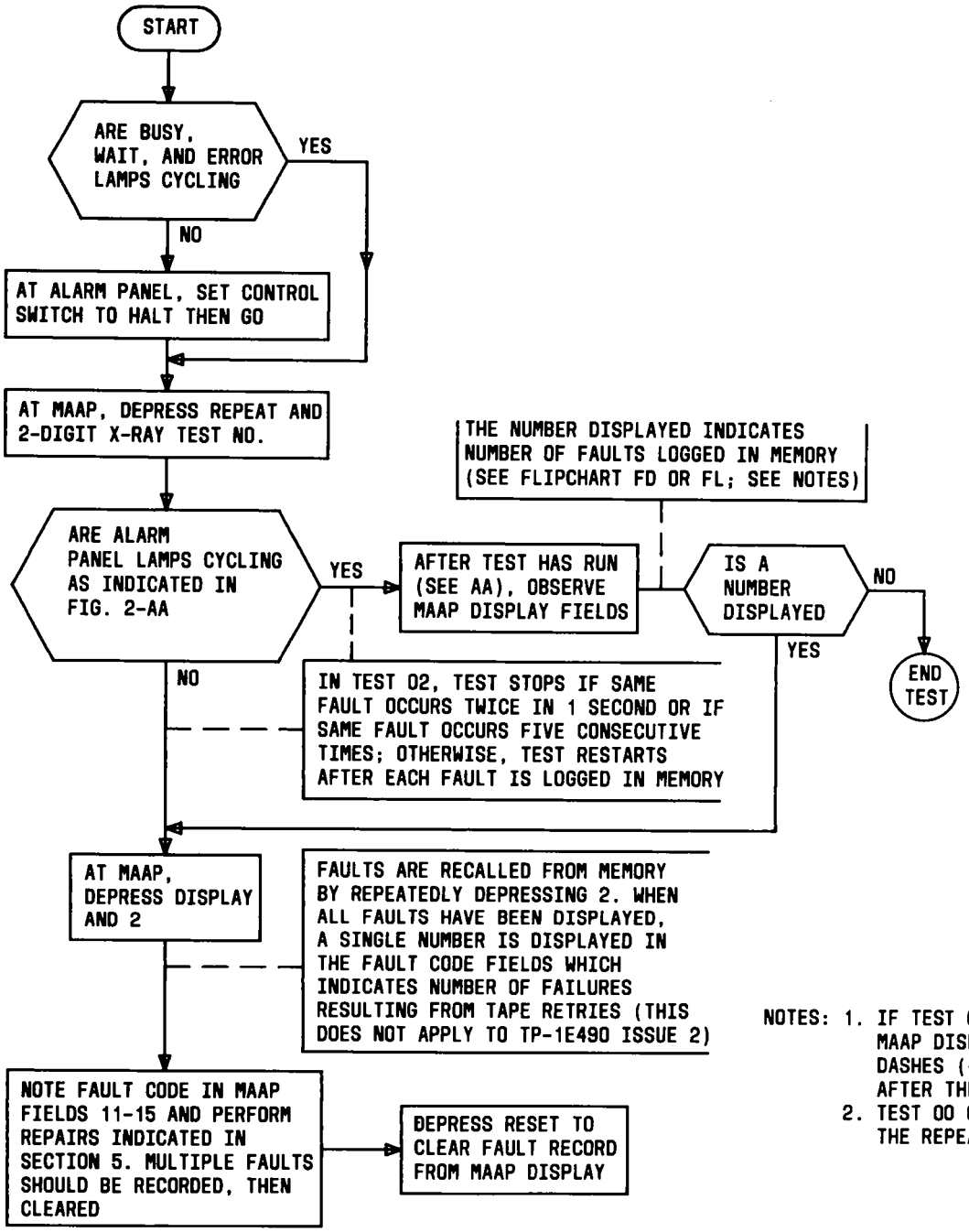


Fig. 5—Hardware Interrupt Type (Format F5)



AA

TEST NO.	TEST TIME (APPROX.)
01	4-6 MIN
02	6-36 MIN
03	1 SEC
04	2 SEC
05	68 SEC
07	1-5 SEC
10	25-120 SEC
12	12 SEC
14	10-60 SEC
15	5 MIN
17	10-30 SEC
27	4 MIN
30	15-130 SEC
31	1 SEC
32	1 SEC
33	2-4 SEC
34	30-60 SEC
35	50 SEC
40	5 SEC
42	10-30 SEC
47	5 MIN

NOTES:
1. IF TEST 02 IS RUNNING, MAAP DISPLAY CONSISTS OF DASHES (-) IN ALL FIELDS AFTER THE CLOCK FIELDS
2. TEST 00 CANNOT BE RUN IN THE REPEAT MODE

Fig. 6—Procedure to Run Tests in Repeat Mode

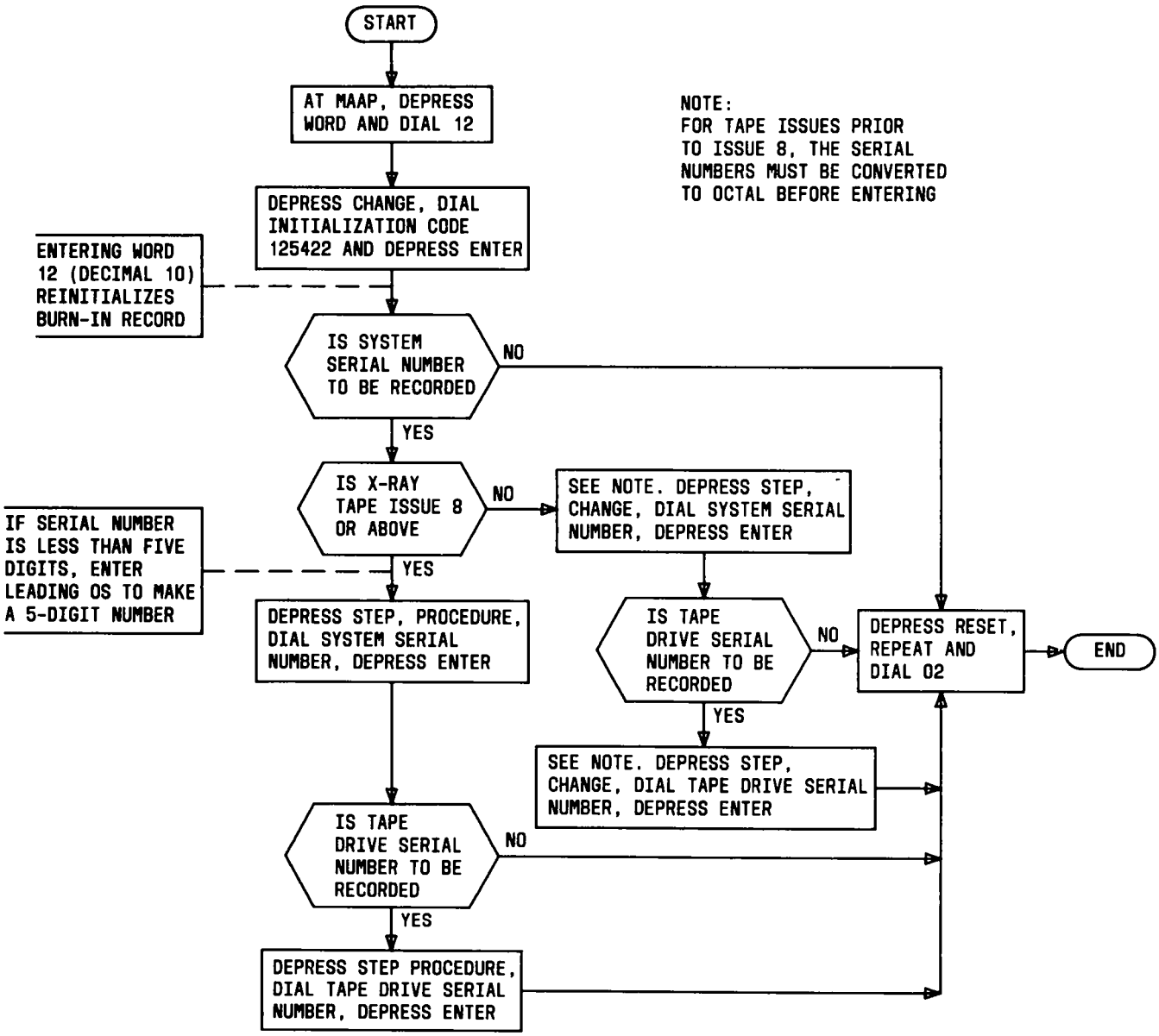


Fig. 7—Reinitializing the Burn-in Record

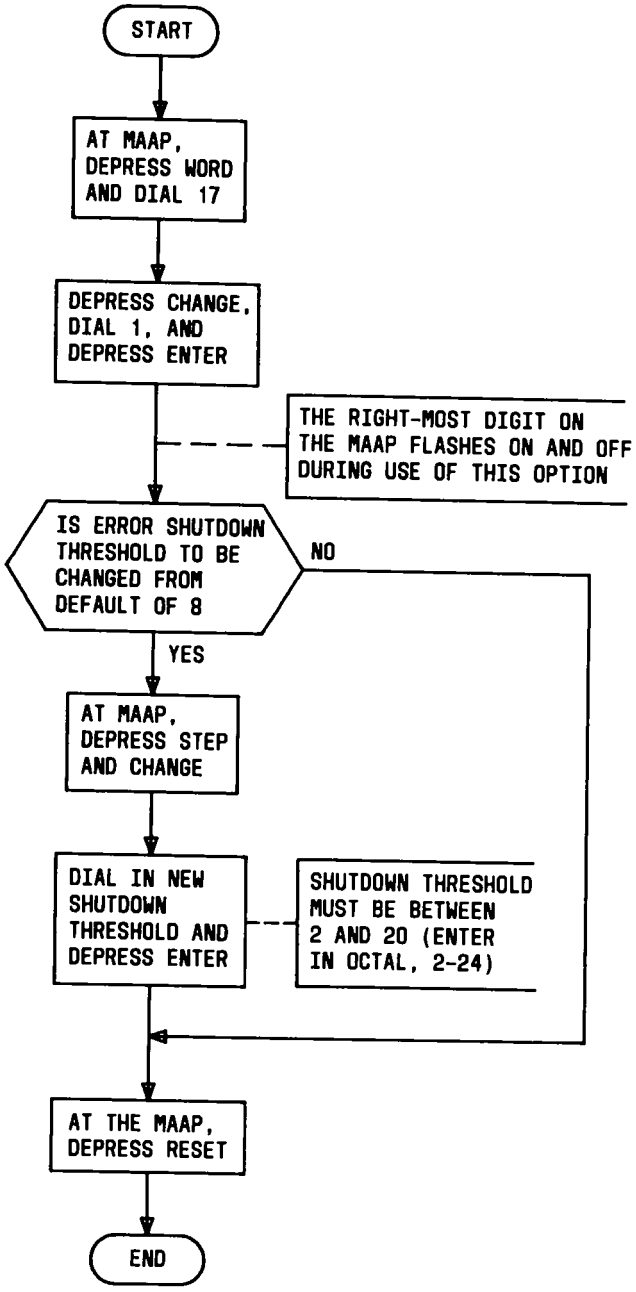


Fig. 8—Procedure to Run Continuous Burn-In Option

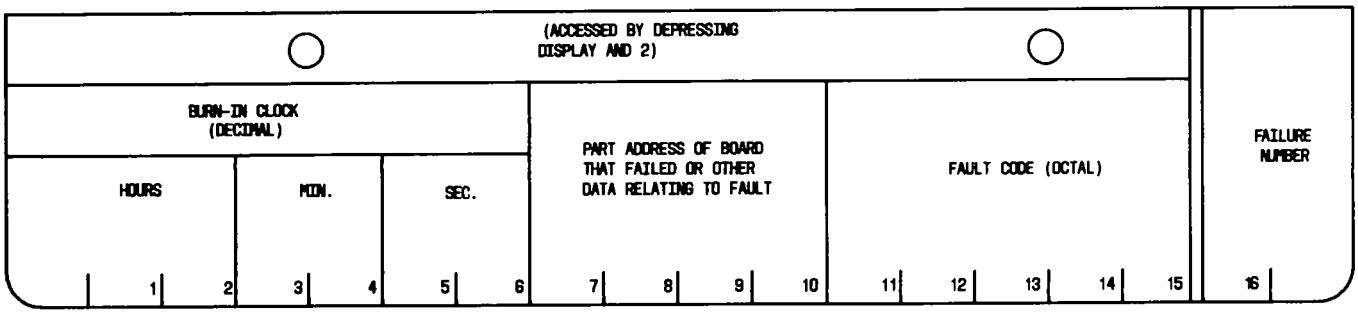
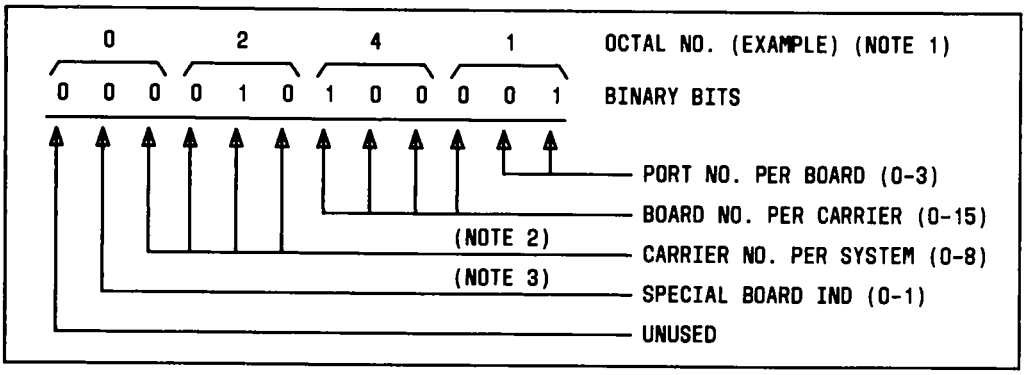


Fig. 9—Display 2



NOTE 1: THE OCTAL NUMBERS DISPLAYED IN MAAP FIELDS 7-10 MUST BE CONVERTED TO BINARY AND THE BINARY DIGITS CONVERTED TO DECIMAL IN THE FOLLOWING MANNER:

EXAMPLE OCTAL NO.	0	2	4	1
BINARY	0 0 0	0 1 0	1 0 0	0 0 1
DECIMAL	0	2	8	1
	SPECIAL BOARD	CARRIER NO.	BOARD NO.	PORT NO.

NOTE 2: CARRIER IDENTIFICATION

0 = LINE 0
1 = LINE 1
2 = LINE 2
3 = LINE 3
4 = LINE 4
5 = LINE 5 OR TRUNK 3
6 = LINE 6 OR TRUNK 2
7 = TRUNK 1
8 = TRUNK 0

NOTE 3: IN CARRIER 0, LC04 AND LC05B ARE GROUPED AS BOARD 0. BIT POSITION NUMBER 10 IS SET TO 1 TO INDICATE BOARD LC05B, AND 0 INDICATES BOARD LC04. CARRIER 0 HAS NO BOARD 1.

DEC	BINARY
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
10	1010
11	1011
12	1100
13	1101
14	1110
15	1111

Fig. 10—Port Number Associated With Detected Fault (Display Format F9)

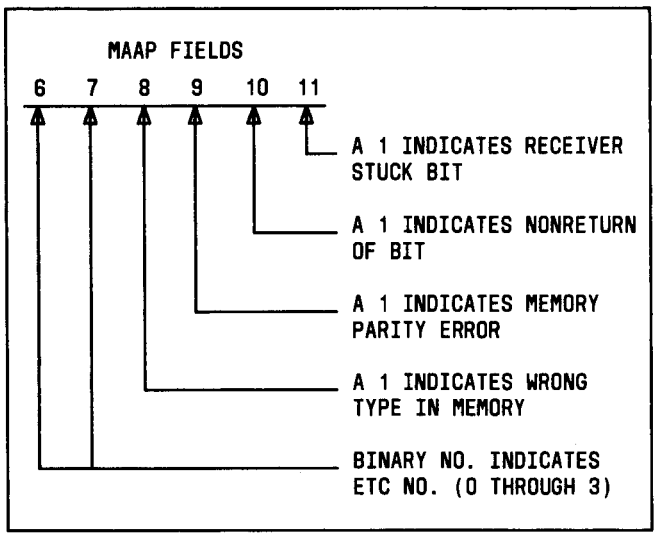


Fig. 11—ETC Fault Type and Channel (Display Format F0)

```
03 29
   13:24   1:35.7        246   135   12345-678-901-2345   1234   123456
   13:24   1:35.7        246   135   12345-678-901-2345   1234   123456
   13:24   1:35.7        246   135   12345-678-901-2345   1234   123456
   13:24   2:36.8   A    357   246   23456-789-012-3456   2345   234567
   13:24   3:57.9   B    468   357   34567-890-123-4567   3456   345678
   13:24   4:68.0   C    579   468   45678-901-234-5678   4567   456789
   13:24   5:79.1   D    680   579   56789-012-345-6789   5678   567890
   13:25   6:80.2   E    791   680   67890-123-456-7890   6789   678901
   13:25   7:91.3   F    802   791   78901-234-567-8901   7890   789012
   13:25   8:02.4   G    913   802   89012-345-678-9012   8901   890123
   13:25   9:13.5   H    024   913   90123-456-789-0123   9012   901234
   13:25   0:24.6   I    135   024   01234-567-890-1234   0123   012345
   13:25   1:11.1   A    111   111   11111-111-111-1111   1111   111111
   13:25   2:22.2   B    222   222   22222-222-222-2222   2222   222222
   13:25   4:44.4   D    444   444   44444-444-444-4444   4444   444444
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   7:77.7   G    777   777   77777-777-777-7777   7777   777777
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:25   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:26   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:26   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:26   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:26   8:88.8   H    888   888   88888-888-888-8888   8888   888888
   13:26   8:88.8   H    888   888   88888-888-888-8888   8888   888888
```

Fig. 12—SMDR Verification Printout (Sheet 1 of 4)

```
XX:XX  0:00.0  @  000  000  00000-000-000-0000  0000  00000
XX:XX  1:11.1  A  111  111  11111-111-111-1111  1111  11111
XX:XX  2:22.2  B  222  222  22222-222-222-2222  2222  22222
XX:XX  3:33.3  C  333  333  33333-333-333-3333  3333  33333
XX:XX  4:44.4  D  444  444  44444-444-444-4444  4444  44444
XX:XX  5:55.5  E  555  555  55555-555-555-5555  5555  55555
XX:XX  6:66.6  F  666  666  66666-666-666-6666  6666  66666
XX:XX  7:77.7  G  777  777  77777-777-777-7777  7777  77777
XX:XX  8:88.8  H  888  888  88888-888-888-8888  8888  88888
XX:XX  9:99.9  I  999  999  99999-999-999-9999  9999  99999
XX:XX   :  .
XX:XX   :  .
XX:XX  <:<<.<  L  <<<  <<<  <<<<<-<<<-<<<-<<<<  <<<<  <<<<<
XX:XX  =:==.=  M  ===  ===  =====-===-===-====  ====  =====
XX:XX  >:>>.>  N  >>>  >>>  >>>>>->>>->>>->>>>  >>>>  >>>>>
XX:XX  ?:??.?  O  ???  ???  ?????-???-???-????  ????  ?????
XX:XX  0:00.0  @  000  000  00000-000-000-0000  0000  00000
XX:XX  1:11.1  A  111  111  11111-111-111-1111  1111  11111
XX:XX  2:22.2  B  222  222  22222-222-222-2222  2222  22222
XX:XX  3:33.3  C  333  333  33333-333-333-3333  3333  33333
XX:XX  4:44.4  D  444  444  44444-444-444-4444  4444  44444
XX:XX  5:55.5  E  555  555  55555-555-555-5555  5555  55555
XX:XX  6:66.6  F  666  666  66666-666-666-6666  6666  66666
XX:XX  7:77.7  G  777  777  77777-777-777-7777  7777  77777
XX:XX  8:88.8  H  888  888  88888-888-888-8888  8888  88888
XX:XX  9:99.9  I  999  999  99999-999-999-9999  9999  99999
XX:XX   :  .
XX:XX   :  .
XX:XX  <:<<.<  L  <<<  <<<  <<<<<-<<<-<<<-<<<<  <<<<  <<<<<
XX:XX  =:==.=  M  ===  ===  =====-===-===-====  ====  =====
XX:XX  >:>>.>  N  >>>  >>>  >>>>>->>>->>>->>>>  >>>>  >>>>>
XX:XX  ?:??.?  O  ???  ???  ?????-???-???-????  ????  ?????
```

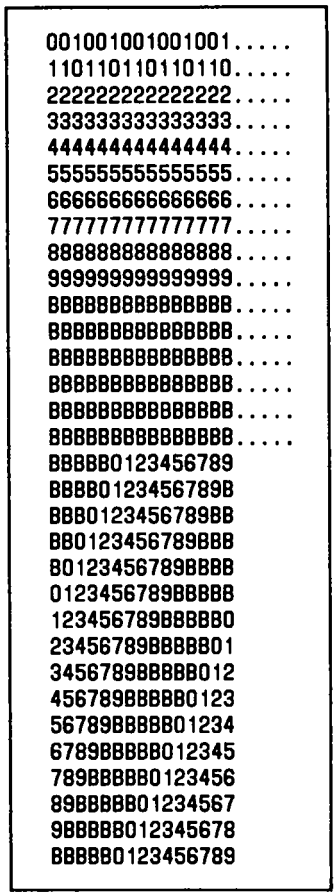
NOTE: "XX:XX" REPRESENTS THE TIME AS SHOWN ON THE CLOCK DISPLAY.

Fig. 12—SMDR Verification Printout (Sheet 2 of 4)

```
XX:XX 0:12.3 D 567 89   <=>?-012-345-6789     <= >?012
XX:XX 1:23.4 E 678 9   <=>?0-123-456-789     <=> ?0123
XX:XX 2:34.5 F 789   < =>?01-234-567-89     <=>? 01234
XX:XX 3:45.6 G 89   <= >?012-345-678-9  <   =>?0 12345
XX:XX 4:56.7 H 9   <=> ?0123-456-789-  <=   >?01 23456
XX:XX 5:67.8 I   < =>? 01234-567-89   <=>   ?012 34567
XX:XX 6:78.9    <= >?0 12345-678-9   <=>?   0123 45678
XX:XX 7:89.    <=> ?01 23456-789-  <-=>?0   1234 56789
XX:XX 8:9 .  L =>? 012 34567-89   <=-> 01   2345 6789
XX:XX 9:  .< M >?0 123 45678-9   <=>-? 12   3456 789
XX:XX  :  .= N ?01 234 56789-  <-=>?-0123   4567 89 <
XX:XX  :<=.> O 012 345 6789   <=->?0-1234   5678 9 <=
XX:XX <:=>.? @ 123 456 789   <=>-?01-2345   6789   <=>
XX:XX =:>?.0 A 234 567 89  <-=>?-012-3456   789   <=>?
XX:XX >:?0.1 B 345 678 9  <=->?0-123-4567   89    =>?0
XX:XX ?:01.2 C 456 789   <=>-?01-234-5678   9 < >?012
XX:XX 0:12.3 D 567 89   <=>?-012-345-6789     <= >?012
XX:XX 1:23.4 E 678 9   <=>?0-123-456-789     <=> ?0123
XX:XX 2:34.5 F 789   < =>?01-234-567-89     <=>? 01234
XX:XX 3:45.6 G 89   <= >?012-345-678-9  <   =>?0 12345
XX:XX 4:56.7 H 9   <=> ?0123-456-789-  <=   >?01 23456
XX:XX 5:67.8 I   < =>? 01234-567-89   <=>   ?012 34567
XX:XX 6:78.9    <= >?0 12345-678-9   <=>?   0123 45678
XX:XX 7:89.    <=> ?01 23456-789-  <-=>?0   1234 56789
XX:XX 8:9 .  L =>? 012 34567-89   <=-> 01   2345 6789
XX:XX 9:  .< M >?0 123 45678-9   <=>-? 12   3456 789
XX:XX  :  .= N ?01 234 56789-  <-=>?-0123   4567 89 <
XX:XX  :<=.> O 012 345 6789   <=->?0-1234   5678 9 <=
XX:XX <:=>.? @ 123 456 789   <=>-?01-2345   6789   <=>
XX:XX =:>?.0 A 234 567 89  <-=>?-012-3456   789   <=>?
XX:XX >:?0.1 B 345 678 9  <=->?0-123-4567   89    =>?0
XX:XX ?:01.2 C 456 789   <=>-?01-234-5678   9 < >?012
```

NOTE: "XX:XX" REPRESENTS THE TIME AS SHOWN ON THE CLOCK DISPLAY.

Fig. 12—SMDR Verification Printout (Sheet 3 of 4)



NOTES:
1. PATTERNS MAY BE BROKEN UP.
2. NOT ALL WINDOWS WILL BE BLANK.
3. THIS PATTERN IS VISIBLE IN THE "DIALED NUMBER" WINDOW AND SHOULD MOVE ACROSS THE WINDOW FOR EVERY 6 BLOCKS OF DATA. THIS PATTERN IS ALSO VISIBLE IN OTHER WINDOWS BUT MAY BE BROKEN UP.

Fig. 12—SMDR Verification Printout (Sheet 4 of 4)

5	6	7	8	9	10	← MAAP FIELDS (NOTE 2)
		6	7	8	9	
		0	3	1	4	← OCTAL NO. (EXAMPLE)
			0 1 1	0 0 1	1 0 0	← CONVERTED TO BINARY
	39* 38*	37 36	35	34	33	32 31 30	← RMATS-1 CF OR CACS SLOT
	37 36	35	34	33	32	31	30	← PBX SLOT (NOTE 1)

THE BINARY 1s INDICATE THE DATA CHANNEL(S) WHERE AN RMATS LC171 HAS BEEN IDENTIFIED.

OCTAL

3 INDICATES SLOT 33 (PBX) OR SLOT 34 (RMATS-1 CF OR CACS)
1 INDICATES SLOT 32 (RMATS-1 CF OR CACS)
4 INDICATES SLOT 31 (RMATS-1 CF OR CACS)
1 & 4 INDICATE SLOT 31 (PBX) * CACS ONLY

NOTES:

1. SLOT 32 IS THE ONLY SLOT IN A PBX WHICH WILL ACCOMMODATE AN LC171; THEREFORE, MAAP FIELDS 8 AND 9 (OR 9 AND 10) SHOULD INDICATE OCTAL 40 IF THE LC171 IS INSTALLED, OR 0 IF IT IS NOT INSTALLED. A BINARY POSITION DISPLAYING A 1 FOR AN I/O CHANNEL WHERE THERE IS NO LC171 INSTALLED INDICATES A DEFECTIVE LC34 (LC366) IN THE SLOT FOR THAT CHANNEL.
2. MAAP FIELDS → 10 9 ← TAPE ISSUE 10; 9 8 ← TAPE ISSUES BELOW 10

Fig. 13—RMATS Data Channel Identification (Format FN)

8	9	10
DISPLAY	DISPLAY	DISPLAY
0 = $\overline{TOR}$, $\overline{CIP}$	0 = $\overline{EOT}$, $\overline{BOT}$, $\overline{TM}$	0 = $\overline{DLOST}$
1 = $\overline{TOR}$	1 = $\overline{EOT}$, $\overline{BOT}$	1 = $\overline{DLOST}$, $\overline{LPEW}$
2 = $\overline{CIP}$	2 = $\overline{EOT}$, $\overline{TM}$	3 = $\overline{LPEW}$
	3 = $\overline{EOT}$	4 = $\overline{DLOST}$, $\overline{BOVF}$
	4 = $\overline{BOT}$, $\overline{TM}$	5 = $\overline{BOVF}$, $\overline{DLOST}$, $\overline{LPEW}$
	5 = $\overline{BOT}$	
	6 = $\overline{TM}$	6 = $\overline{BOVF}$

← MAAP FIELDS

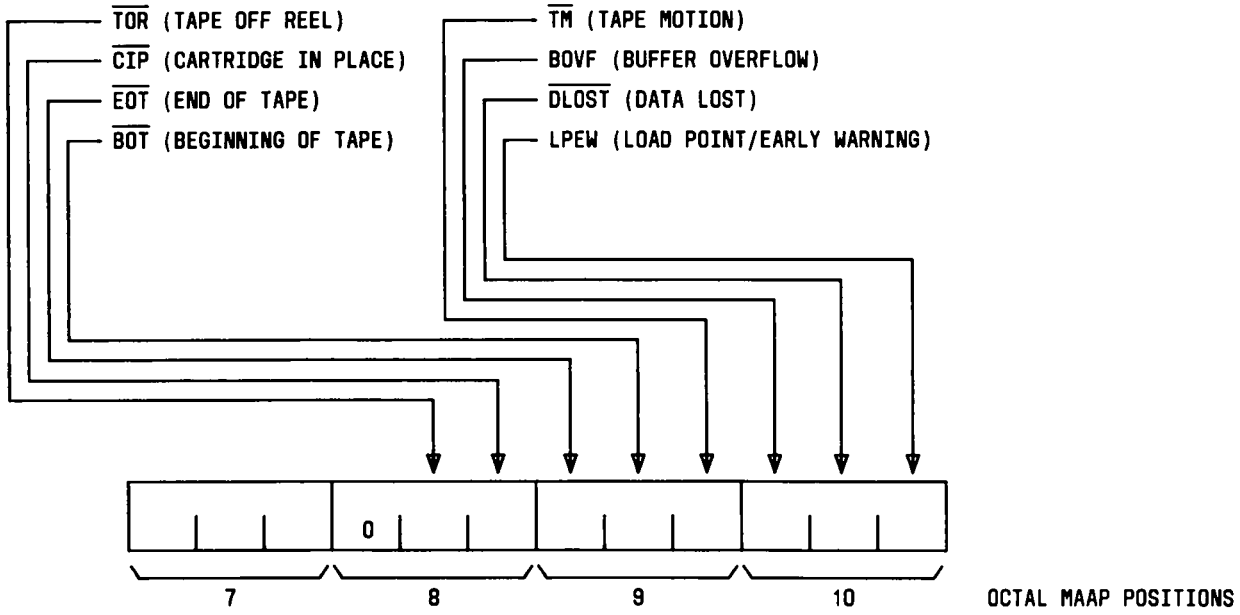


Fig. 14—Tape Status (Format FE)

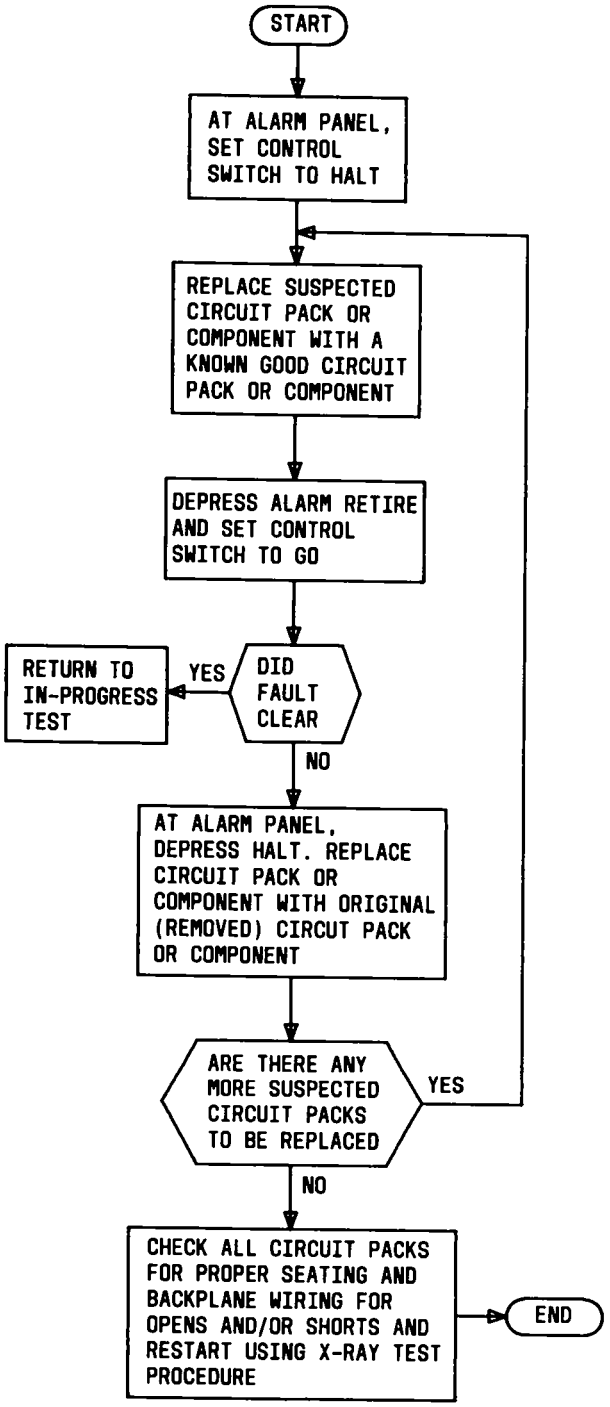
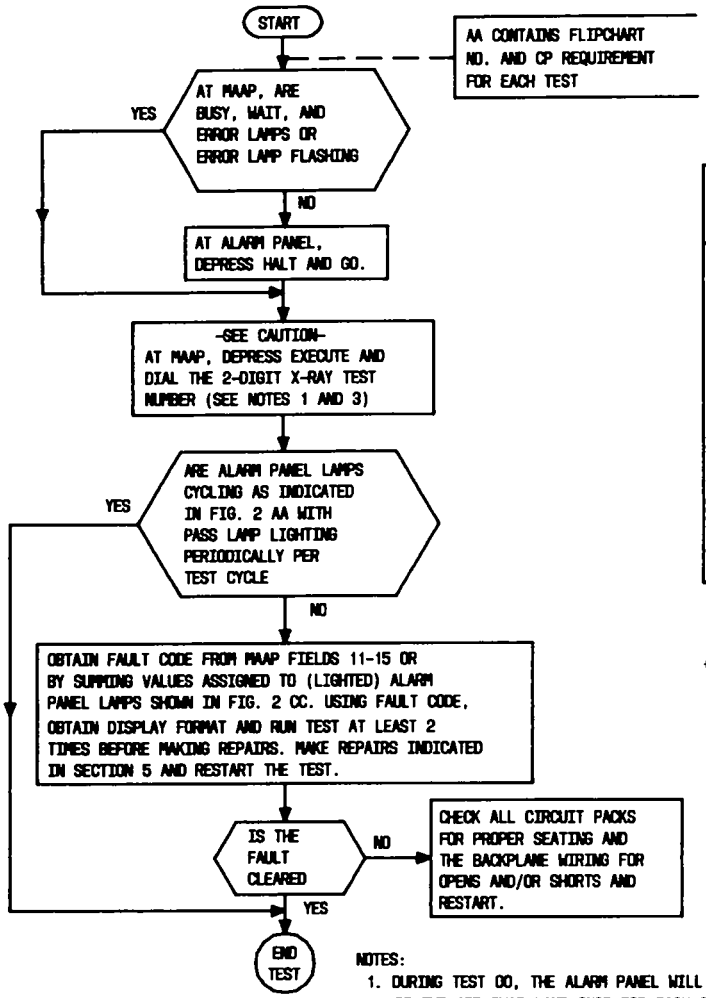


Fig. 15—Procedure for Replacing Circuit Packs or Components



AA

TEST NO.	CPS THAT MUST BE IN THE SYSTEM (IN ADDITION TO THOSE LISTED IN TABLE C)	DISPLAY FORMAT (FLIPCHART) AT START OF TEST	TEST TIME (APPROX)
01	-	FC	4-6 MIN
03	LC46, 47	F1	1 SEC
04	LC01, 46, 47, 49 OR 49C, 50	F1 THEN FA*	2 SEC
05	LC04, 05, 46 THRU 50	F1 THEN FA	68 SEC
12	-	F1	12 SEC
14	-	FC*	10-60 SEC
15	LC34 OR LC366	F1	5 MIN
17,42	-	F1 THEN FA	10-30 SEC**
27	-	F1	4 MIN
30	-	F1 THEN FM*	15-130 SEC
31	-	F1	1 SEC
32	-	F1	1 SEC
36	LC46, 47	F1	30 SEC
40	LC12	F9	5 SEC
47	LC145	F1 THEN FA	4 MIN

*DISPLAY AT SUCCESSFUL COMPLETION OF TEST.
**WITHOUT USE OF LOOP-AROUND FIXTURES.

CAUTION

WHEN RUNNING TEST 12: FOR EVERY 1 MINUTE OF RUNNING TEST 12, RUN TEST 27 (AT LEAST ONCE) TO RETENSION TAPE.

NOTES:
1. DURING TEST 00, THE ALARM PANEL WILL BE BLANK EXCEPT FOR A FLASH OF THE 8IT SWAP LAMP ONCE FOR EACH INSTALLED MEMORY BOARD, FOLLOWED BY THE ACTIVATION OF THE ALARM LAMPS AS DESCRIBED IN PARAGRAPH 4.05.
2. THE CLEAR ENTRY BUTTON ON THE MAAP MUST BE DEPRESSED AND HELD APPROX. 3 SECONDS TO TERMINATE TEST 32.
3. SEE PARAGRAPH 4.27 FOR TEST 15.

Fig. 16—Procedure to Run Tests 01, 03, 04, 05, 12, 14, 15, 17, 27, 30, 31, 32, 36, 40, 42, and 47

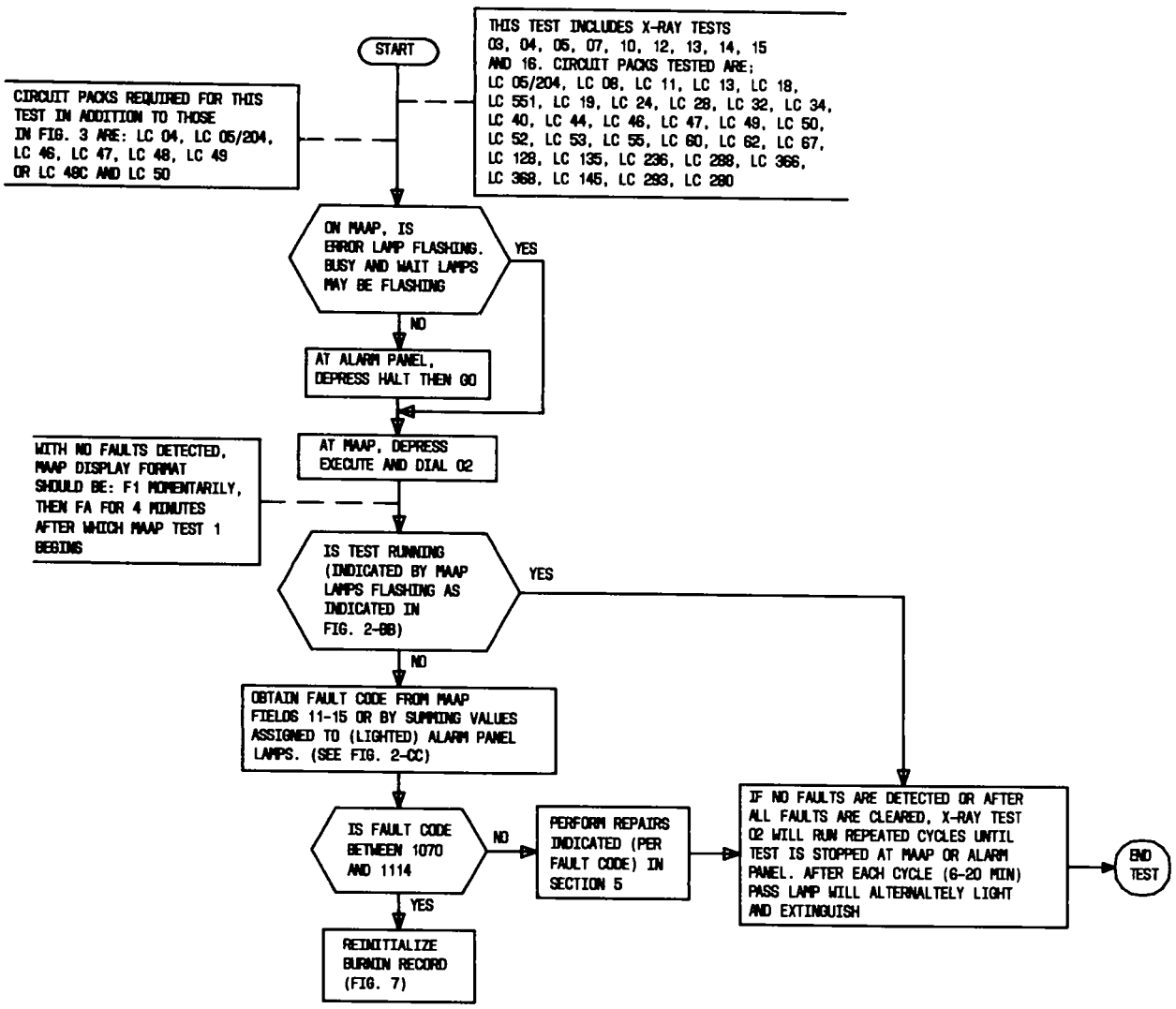


Fig. 17—Procedure to Run Test 02 (System Test)

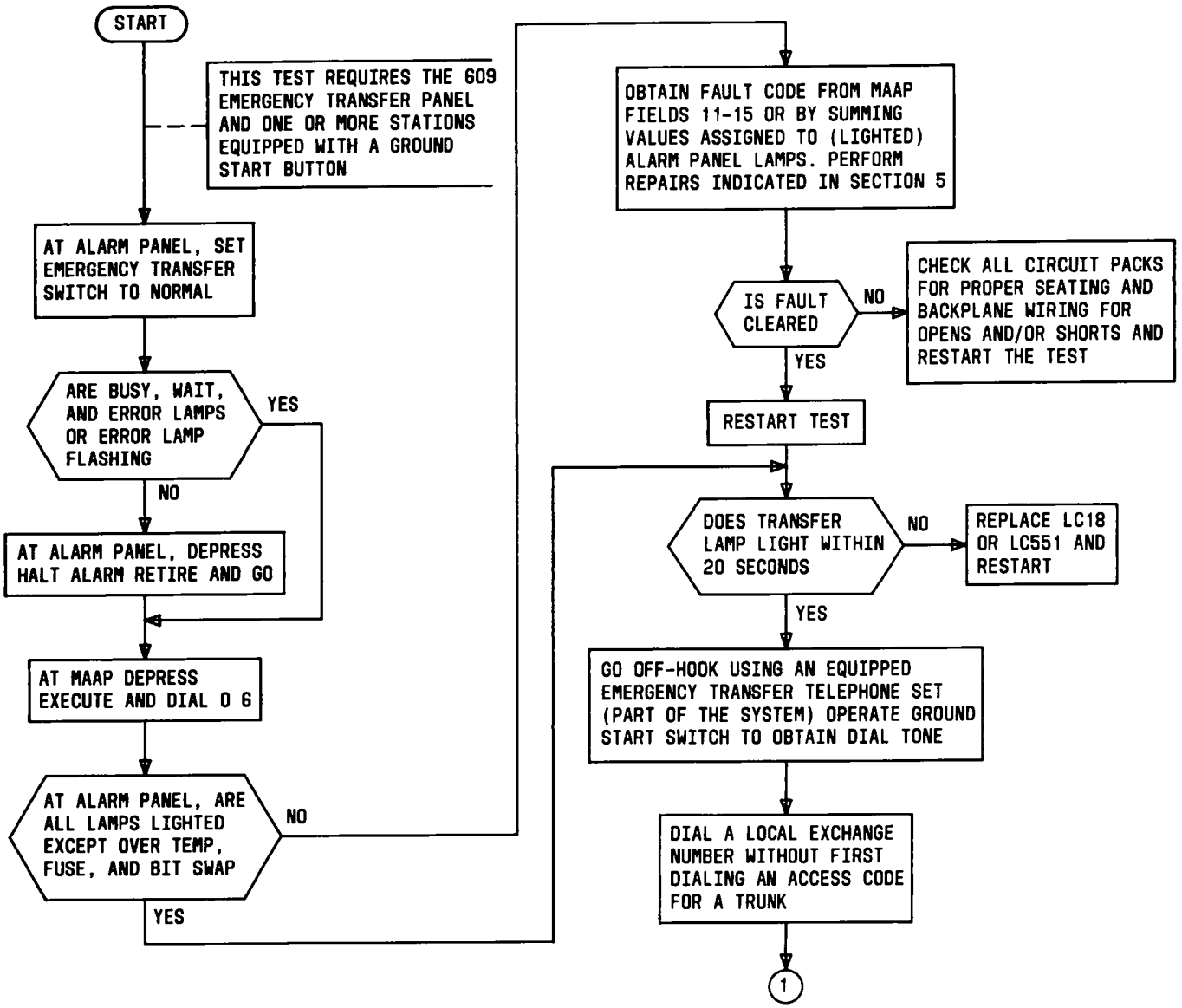


Fig. 18—Procedure to Run Test 06 (Emergency Transfer) (Sheet 1 of 2)

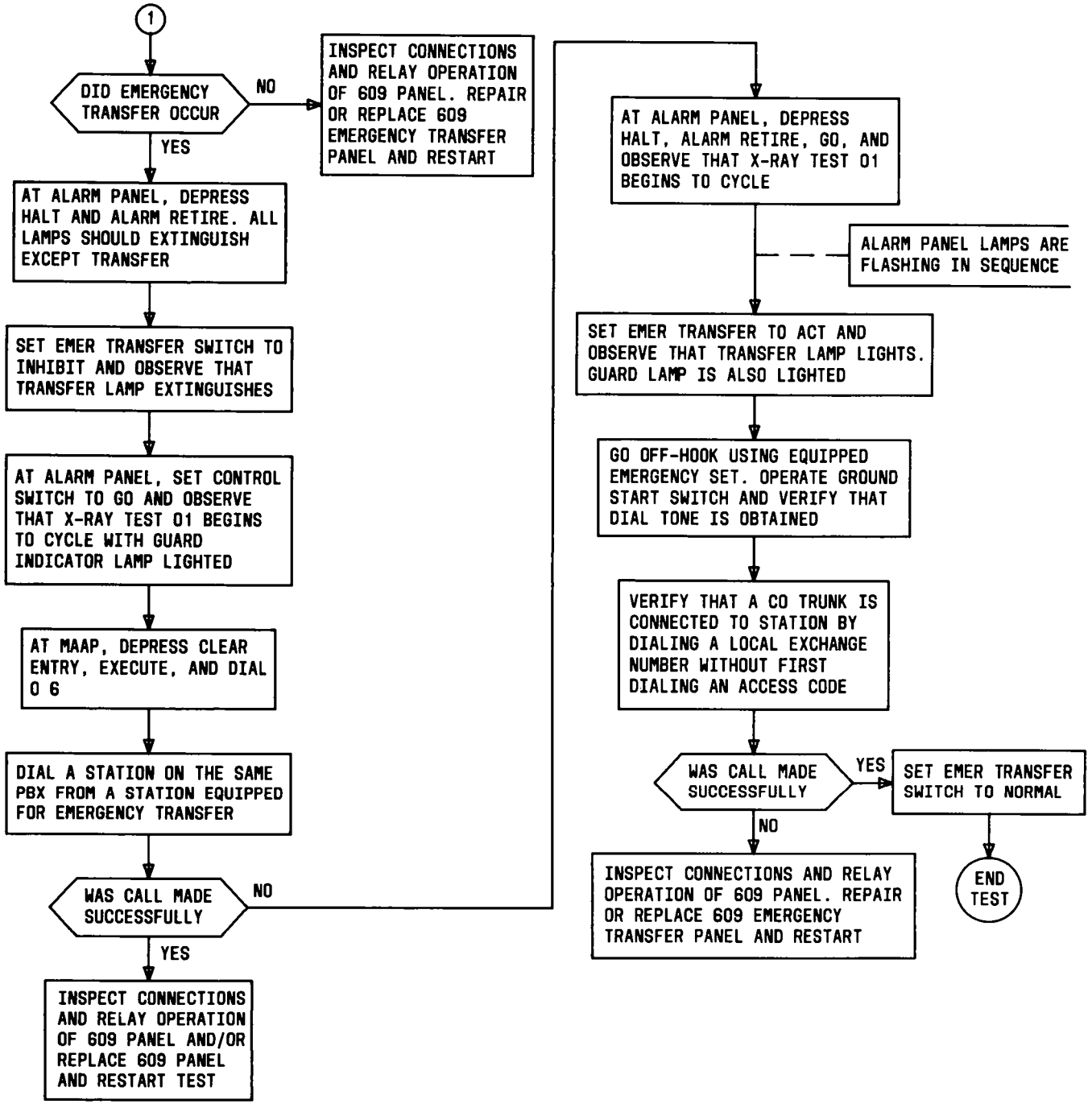


Fig. 18—Procedure to Run Test 06 (Emergency Transfer) (Sheet 2 of 2)

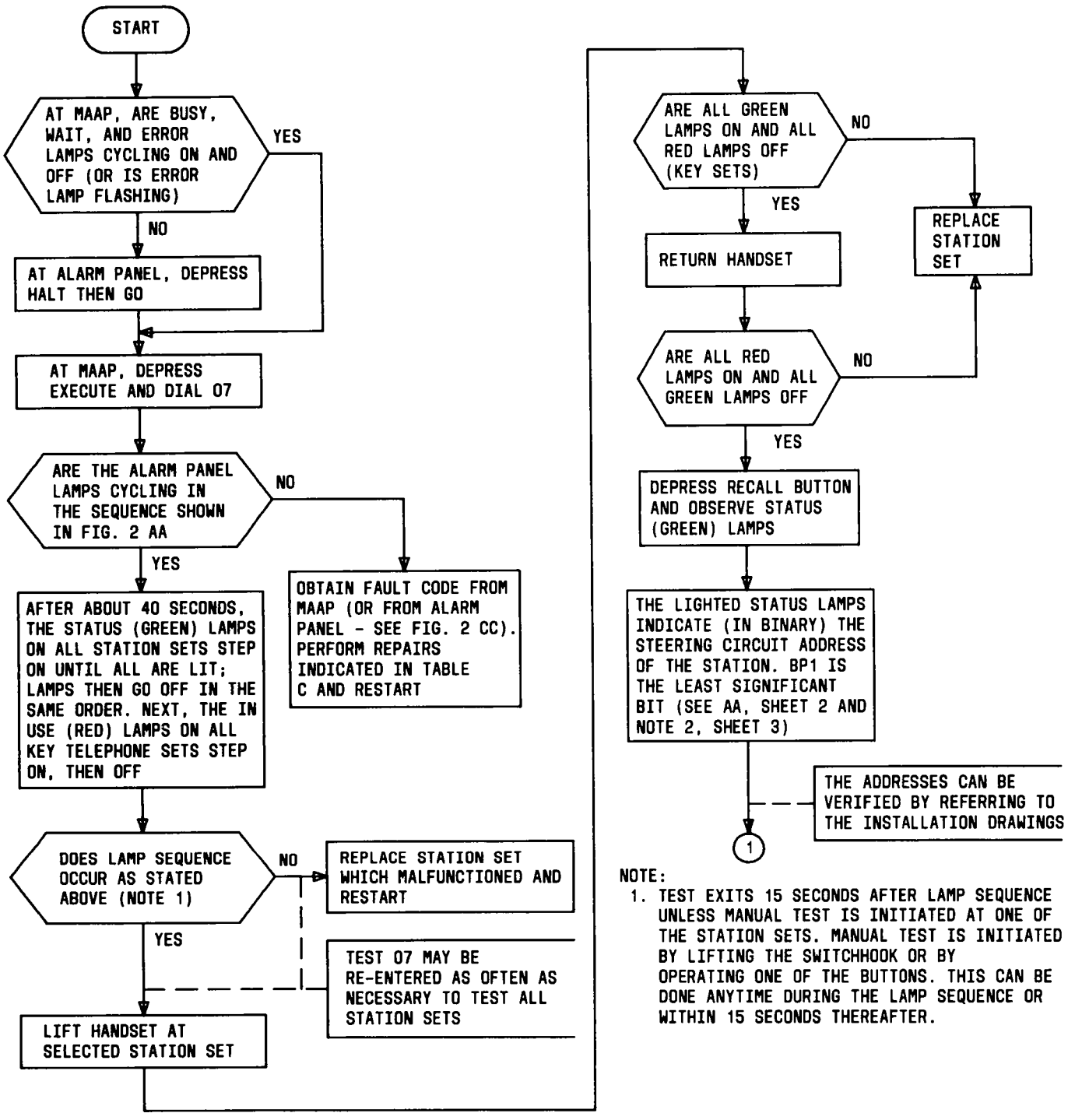


Fig. 19—Procedure to Run Test 07 (ETC) (Sheet 1 of 3)

AA

BUTTON	BINARY
BP8	128
BP7	64
BP6	32
BP5	16
BP4	8
BP3	4
BP2	2
BP1	1

STEERING CIRCUIT ADDRESS	BASIC CARRIER SLOT
0-7	00
10-17	01
20-27	02
30-37	03
40-47	04
50-57	05
60-67	06
70-77	07
	SUPP CARRIER SLOT
100-107	13
110-117	14
120-127	15
130-137	16
140-147	17
150-157	18
160-167	19
170-177	20

EXAMPLE: BP2, BP4 AND BPG LIT = 2 + 8 + 32 = 42

INDICATES SLOT 04 IN BASIC CARRIER

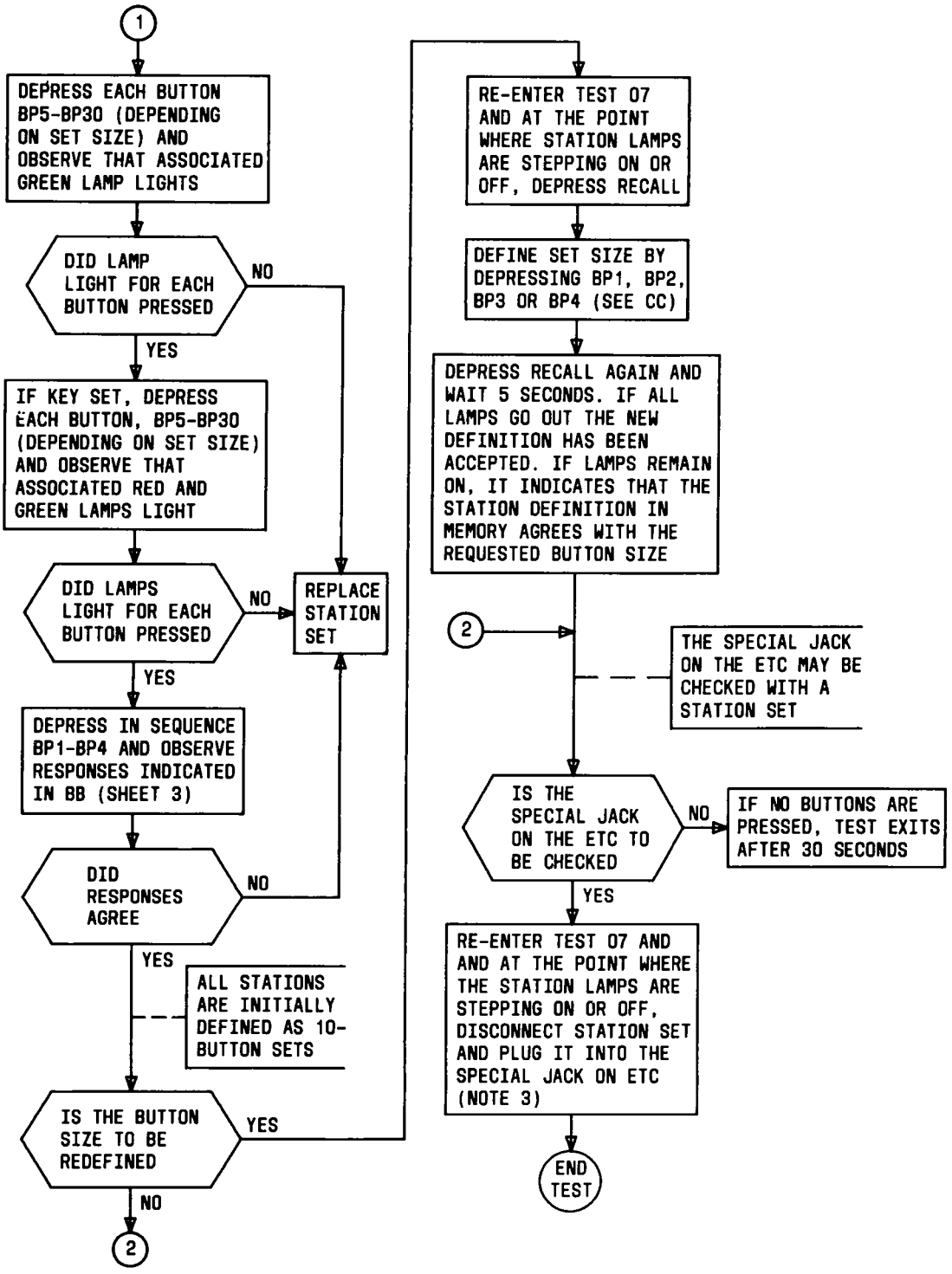


Fig. 19—Procedure to Run Test 07 (ETC) (Sheet 2 of 3)

BB

			RINGER		
BUTTON NUMBER	STATUS LAMP INDICATION	IN-USE LAMP INDICATION	20HZ RING RATE	FREQ	VOL
1	WINK (0.45 SEC ON, 0.05 SEC OFF)	STEADY	STA-TO-STA (1 SEC ON, 3 SEC OFF)	LOW (750 HZ)	LOW
2	FLASH (0.5 SEC ON, 0.5 SEC OFF)	STEADY	DID-ATND (0.3 SEC ON, 0.4 SEC OFF, 0.3 SEC ON, 3 SEC OFF)	HIGH (1500 HZ)	LOW
3	FLUTTER (0.05 SEC ON, 0.05 SEC OFF)	STEADY	PRIORITY (0.2 SEC ON 0.2 SEC OFF, 0.2 SEC ON, 0.2 SEC OFF, 0.2 SEC ON, 3 SEC OFF)	HIGH	FULL
4	WINK (0.45 SEC ON, 0.05 SEC OFF)	STEADY	INTERCOM (AS ASSIGNED BY PROC 061)	LOW	FULL

NOTES:

2. THE CONTROL BUTTONS (BP1-BP_) ARE NUMBERED FROM BOTTOM TO TOP AND LEFT TO RIGHT FOR 20-AND 30-BUTTON SETS.
3. THE JACK AND ASSOCIATED WIRING MAY BE CHECKED BY PERFORMING THE SWITCHHOOK AND BUTTON TESTS WHICH WERE DONE PREVIOUSLY ON THE STATION SET(S): HOWEVER, THE RECALL BUTTON TEST IS IGNORED. REMOVE STATION SET IMMEDIATELY AFTER PERFORMING THE TESTS OR THE NEXT CYCLE ON THIS ETC WILL FAIL.

CC

CONTROL BUTTON NUMBER	SET SIZE
1	5-BUTTON
2	10-BUTTON
3	20-BUTTON
4	30-BUTTON

Fig. 19—Procedure to Run Test 07 (ETC) (Sheet 3 of 3)

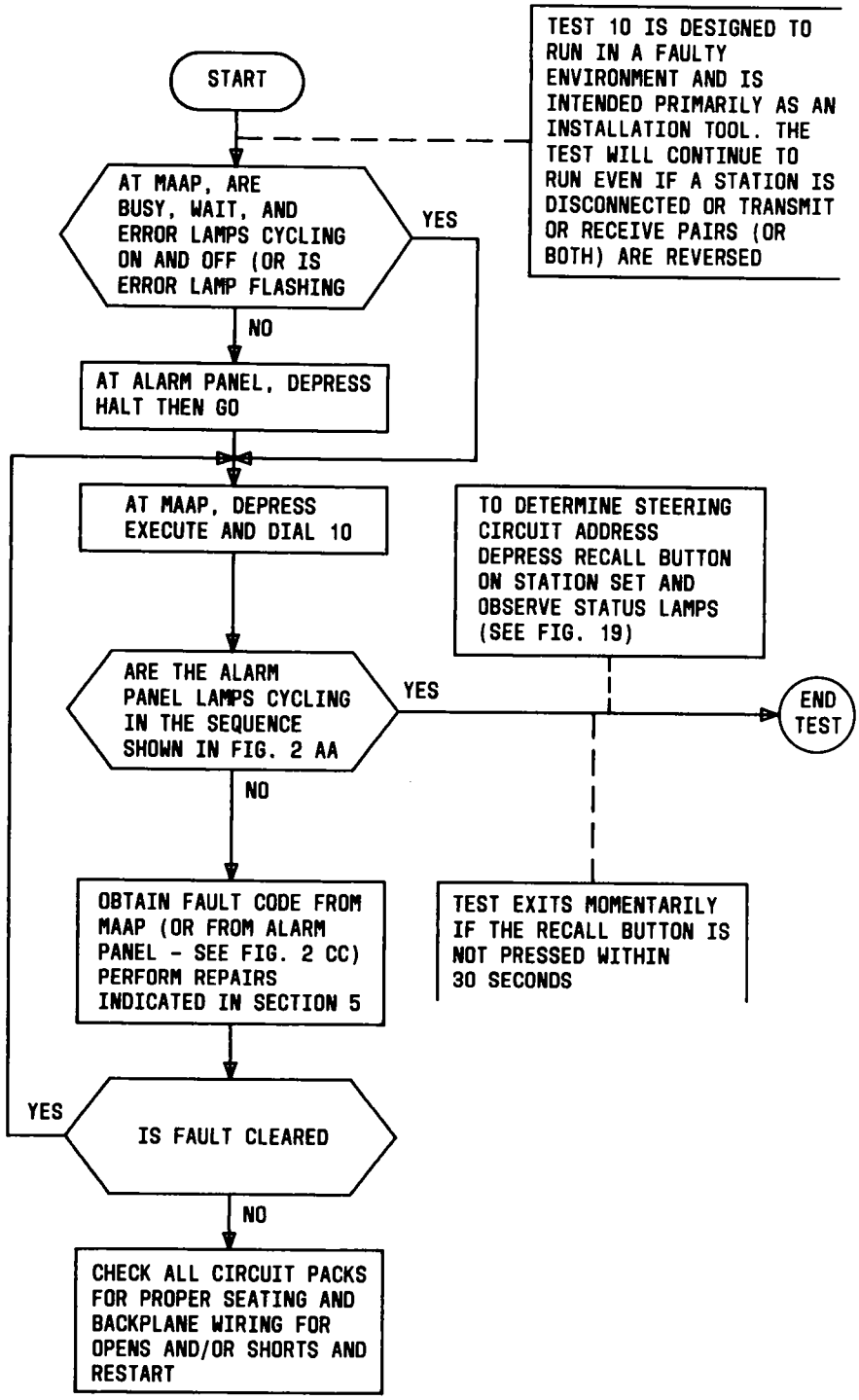


Fig. 20—Procedure to Run Test 10 (ETC Steering Ckts)

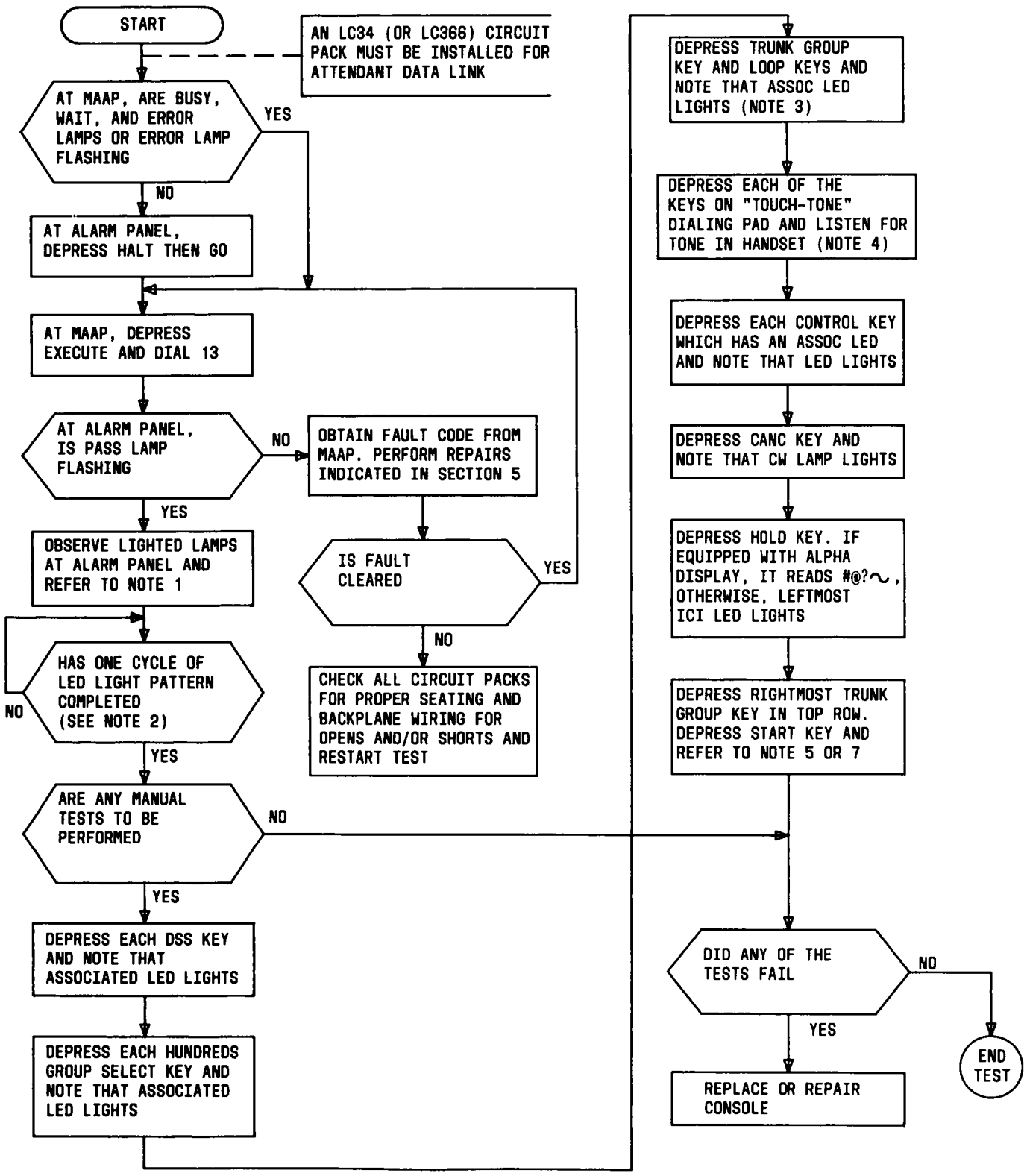


Fig. 21—Procedure to Run Test 13 (Attendant Console) (Sheet 1 of 2)

NOTES:

1. THE ALARM PANEL INDICATES THE CONSOLE(S) WHICH THE X-RAY PROGRAM HAS FOUND AND WILL TEST. THE TAPE, SCAN, NET, AND FACILITY LEDS INDICATE THE PRESENCE OF THE ASSOC CONSOLE. REFER TO TABLE AA.
2. ONE CYCLE OF THE AUTO. LED CONSOLE DISPLAY IS AS FOLLOWS: EACH BUSY LED IN TURN, EACH HUNDREDS GROUP IN TURN, ONE PULSE OF TONE RINGER, RIGHT SIDE OF LOWER PORTION OF CONSOLE WRITING EACH ROW OF LEDS LEFT TO RIGHT STARTING AT BOTTOM WORKING UP, CENTER PORTION (LOOPS) LEFT TO RIGHT, BOTTOM TO TOP, LEFT PORTION OF CONSOLE (TRUNK GROUPS) LEFT TO RIGHT, BOTTOM TO TOP, TONE RINGER SOUNDS WHILE ALPHANUMERIC IS BEING WRITTEN TO #@?~, 5 PULSES OF ALL LEDS WITH TONE RINGER.
3. TRUNK KEY OPERATION LIGHTS ONLY THE BUSY LED ROW, AND LOOP KEY OPERATION LIGHTS ONLY THE HOLD LED ROW.
4. THE TWO ROWS OF LEDS ABOVE THE LOWEST ROW OF TRUNK GROUP KEYS SHOULD LIGHT, ONE FOR EACH "TOUCH-TONE" DIALING BUTTON.
5. EACH TIME THE START KEY IS DEPRESSED, THE ALPHA CHARACTERS, BEGINNING WITH THE LEFT CHARACTER, ARE INCREMENTED IN THE FOLLOWING SEQUENCE: @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [~] { } ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
6. WHEN THE ANSWER KEY IS DEPRESSED, ANY LIGHTED LED OR ALPHANUMERIC CHARACTER IS EXTINGUISHED.
7. WITH X-RAY TAPE 1E490 ISSUE 2, EACH TIME THE START KEY IS DEPRESSED, ALL FOUR ALPHA CHARACTERS ARE SIMULTANEOUSLY INCREMENTED IN THE SEQUENCE SHOWN IN NOTE 5.

AA

TAPE	SCAN	NET	FACILITY	CONSOLE(S) FOUND
♦	♦	♦	♦	NO CONSOLES
○	♦	♦	♦	CONSOLE 0
○	○	♦	♦	CONSOLES 0 AND 1
○	○	○	♦	CONSOLES 0, 1, AND 2
○	○	○	○	CONSOLES 0, 1, 2, AND 3

♦ = LIGHTED INDICATOR

Fig. 21—Procedure to Run Test 13 (Attendant Console) (Sheet 2 of 2)

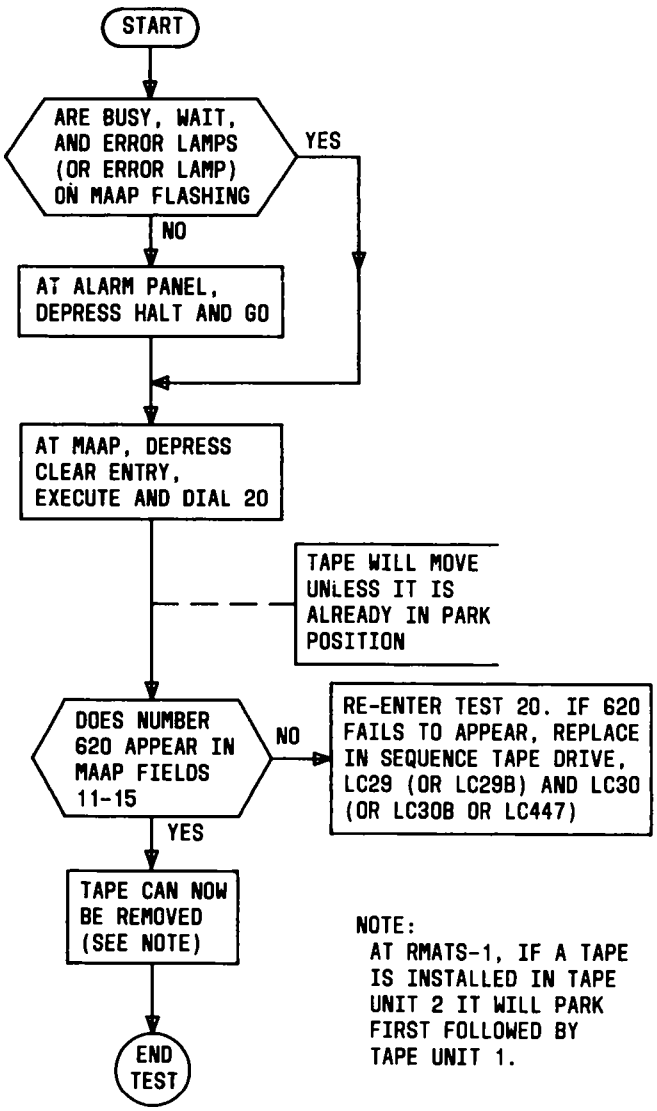


Fig. 22—Procedure to Run Test 20 (Park Tape)

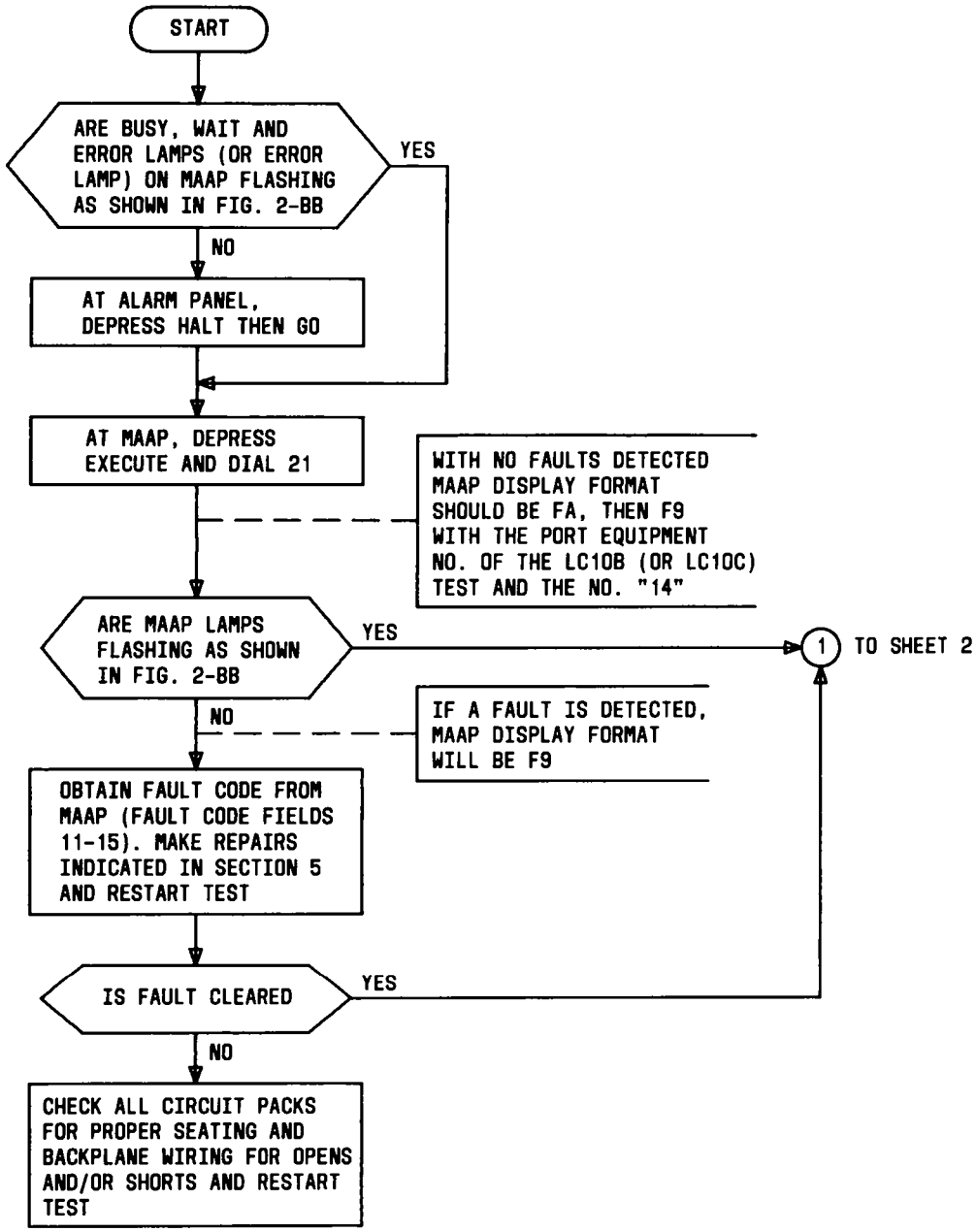
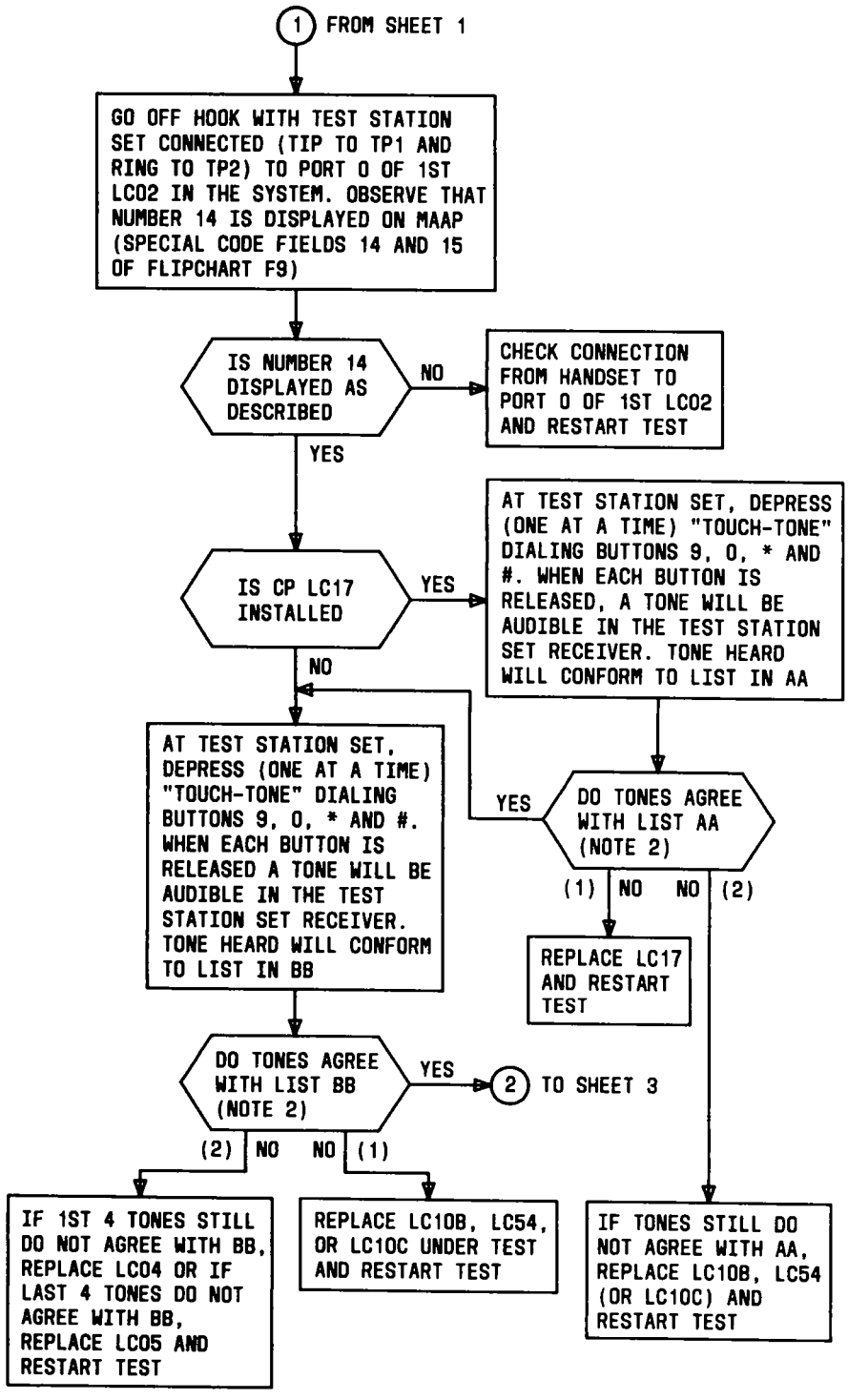


Fig. 23—Procedure to Run Test 21 (TOUCH-TONE Calling Receiver Register) (Sheet 1 of 3)

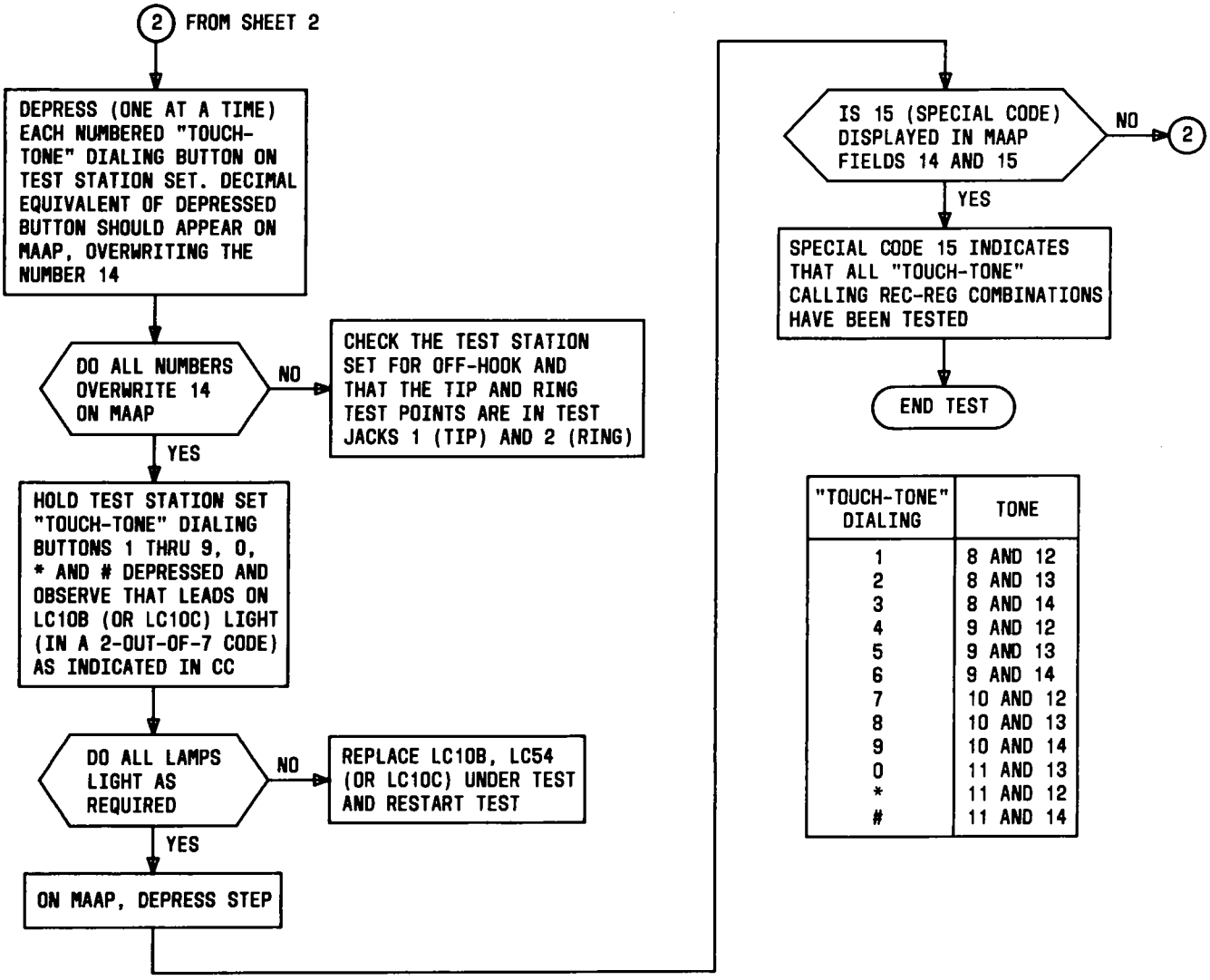


"TOUCH-TONE" DIALING BUTTON	TONE
0	IMMEDIATE RINGBACK
9	480 HZ
*	ZIP TONE
#	CHIMES (NOTE 1)

"TOUCH-TONE" DIALING BUTTON	TONE
1	DIAL
2	RECALL
3	MISC
4	INTERCEPT
5	BUSY
6	REORDER
7	AUDIBLE RINGBACK
8	SPECIAL AUDIBLE RINGBACK

NOTES:
1. THE CHIME OUTPUT MAY ALSO BE CHECKED BY CONNECTING A LOUDSPEAKER (600-OHM) OR TEST STATION SET RECEIVER BETWEEN PIN 43 OF CONNECTOR AX01 OR BACKPLANE PIN 94, SLOT 07 AND GROUND. THE CHIME CYCLE CONSISTS OF SEVEN INTERRUPTED CHIMES.
2. IF THE TONES FAIL TO AGREE WITH THE LIST, PERFORM THE ACTION ASSOCIATED WITH THE FIRST "NO (1). IF THIS DOES NOT CORRECT THE PROBLEM, PERFORM THE ACTION ASSOCIATED WITH THE SECOND "NO" (2).

Fig. 23—Procedure to Run Test 21 (TOUCH-TONE Calling Receiver Register) (Sheet 2 of 3)



"TOUCH-TONE" DIALING	TONE
1	8 AND 12
2	8 AND 13
3	8 AND 14
4	9 AND 12
5	9 AND 13
6	9 AND 14
7	10 AND 12
8	10 AND 13
9	10 AND 14
0	11 AND 13
*	11 AND 12
#	11 AND 14

Fig. 23—Procedure to Run Test 21 (TOUCH-TONE Calling Receiver Register) (Sheet 3 of 3)

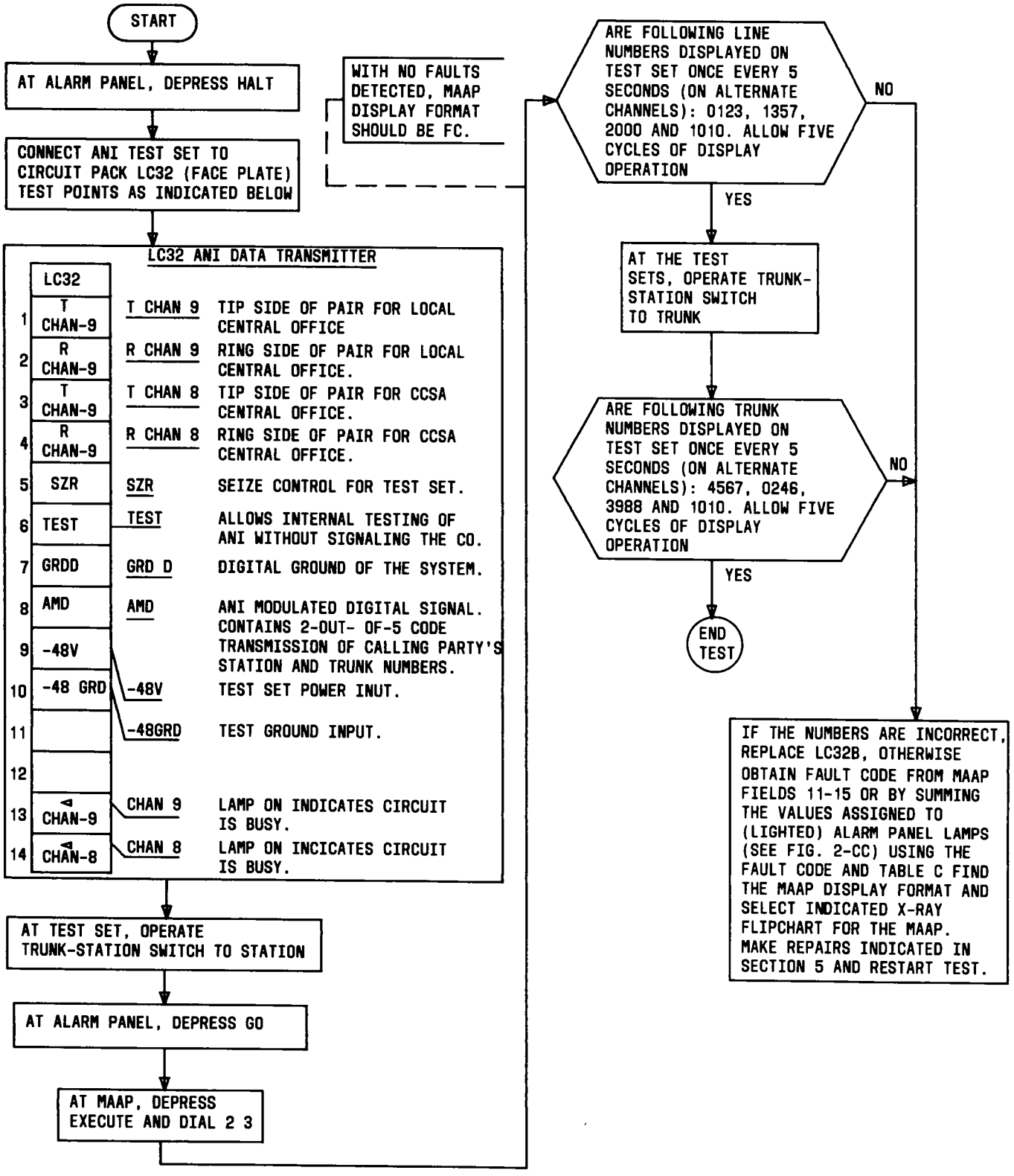


Fig. 24—Procedure to Run Test 23 (ANI)

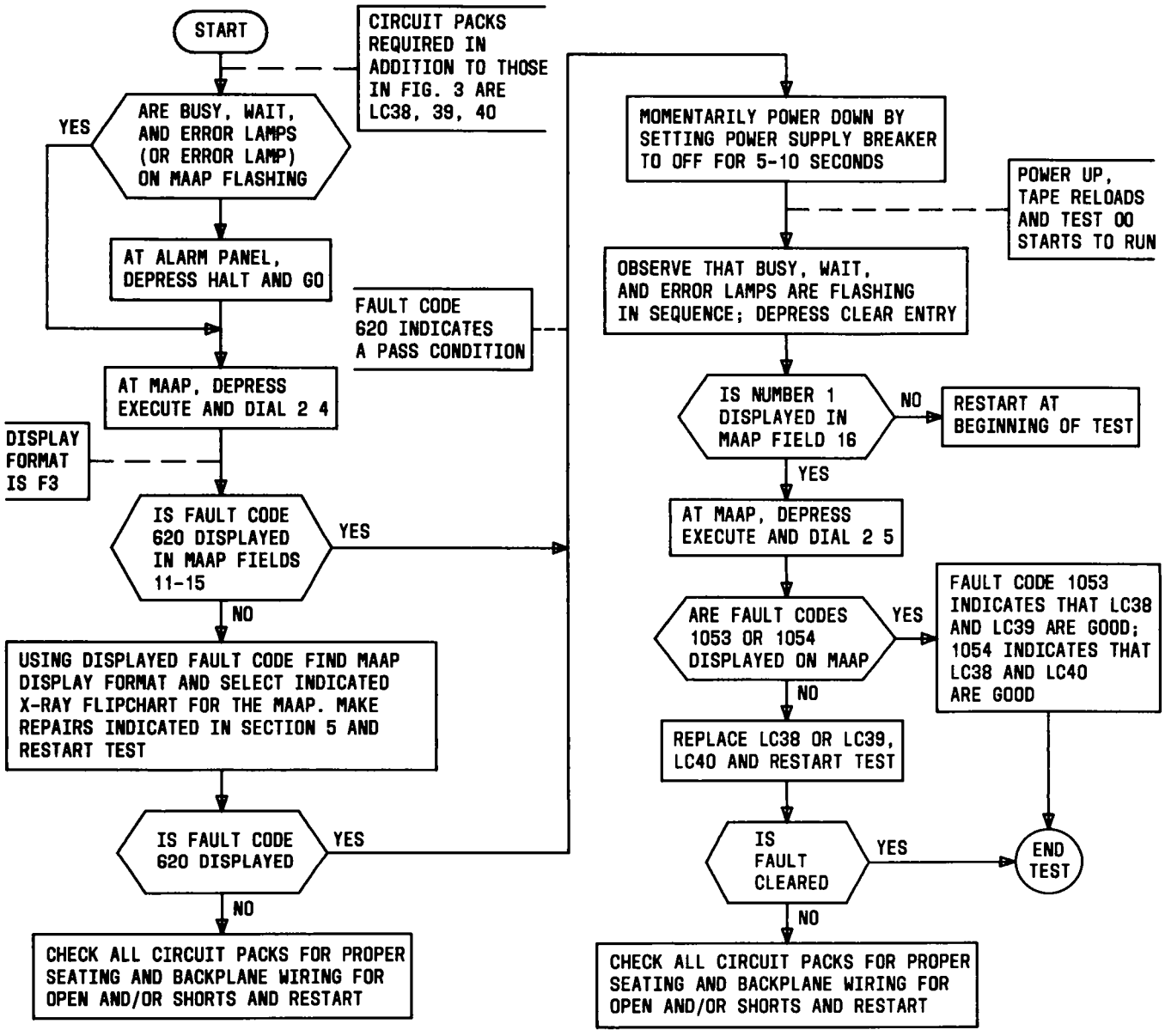


Fig. 25—Procedure to Run Test 24 (Battery Backup—Write Memory) and Test 25 (Battery Backup—Check Memory)

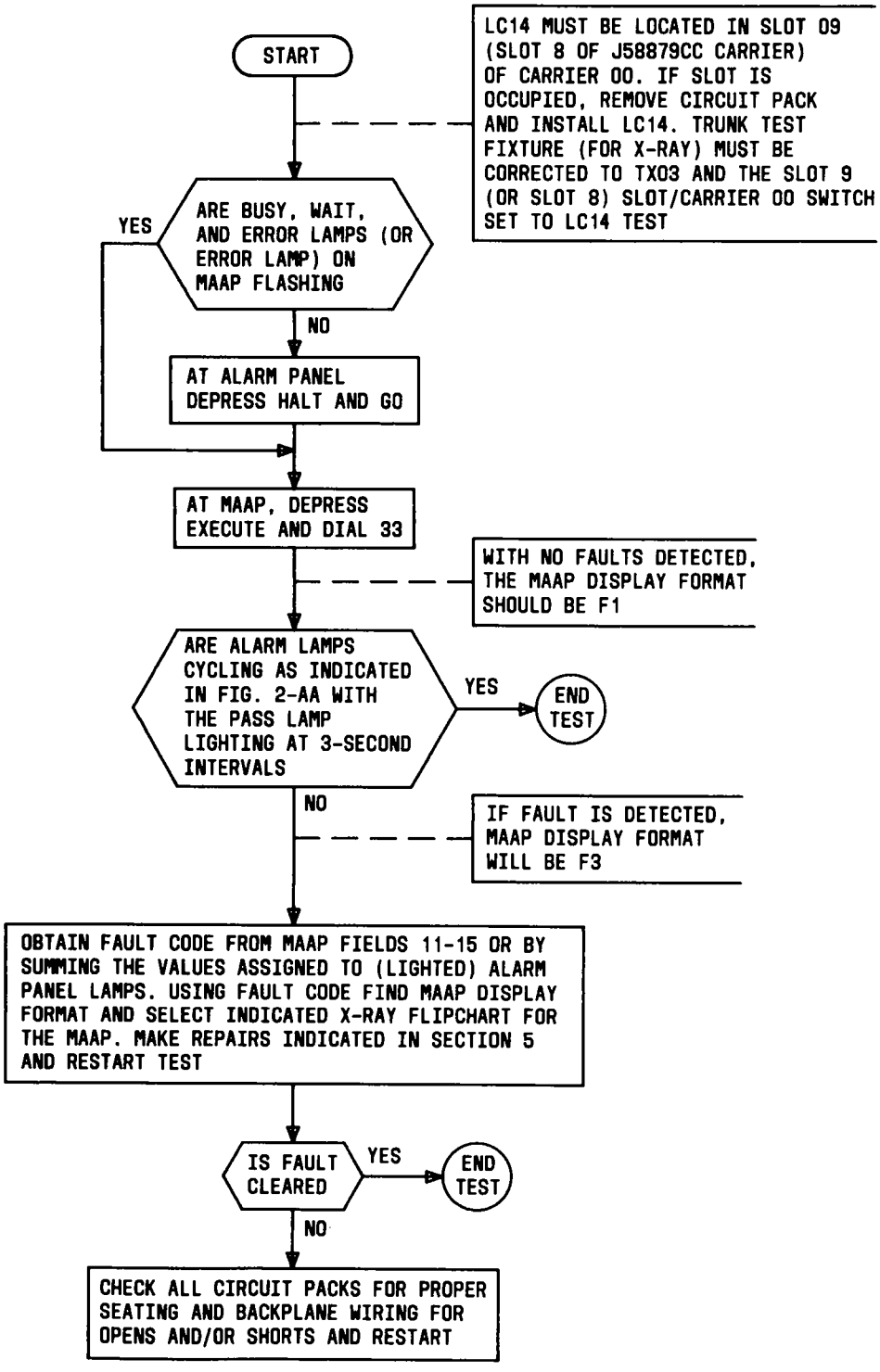


Fig. 26—Procedure to Run Test 33 (LC14 Test)

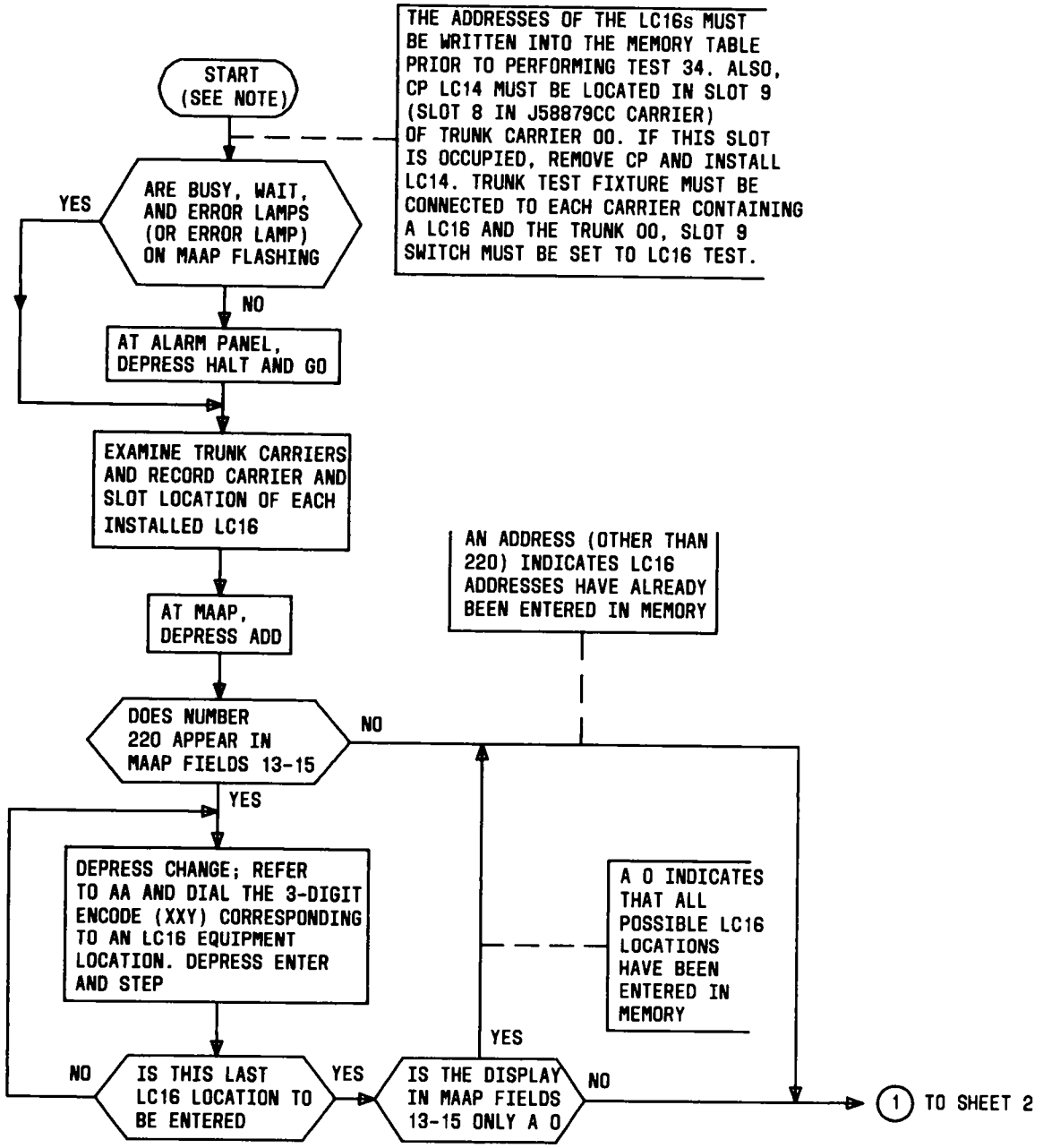
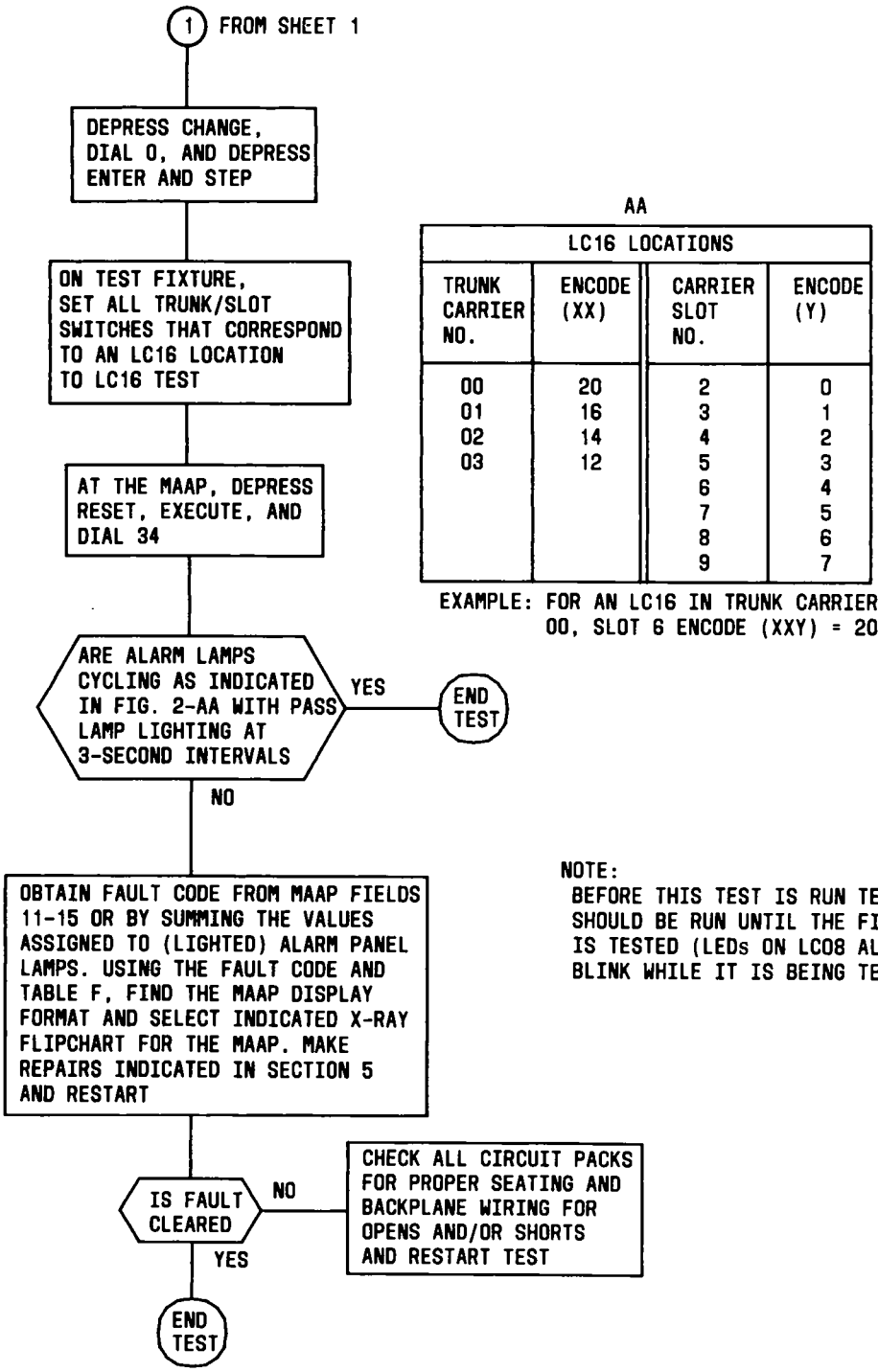


Fig. 27—Procedure to Run Test 34 (LC16 Test) (Sheet 1 of 2)



AA

LC16 LOCATIONS			
TRUNK CARRIER NO.	ENCODE (XX)	CARRIER SLOT NO.	ENCODE (Y)
00	20	2	0
01	16	3	1
02	14	4	2
03	12	5	3
		6	4
		7	5
		8	6
		9	7

EXAMPLE: FOR AN LC16 IN TRUNK CARRIER 00, SLOT 6 ENCODE (XXY) = 204

NOTE:
BEFORE THIS TEST IS RUN TEST 42 SHOULD BE RUN UNTIL THE FIRST LC08 IS TESTED (LEDs ON LC08 ALTERNATELY BLINK WHILE IT IS BEING TESTED).

Fig. 27—Procedure to Run Test 34 (LC16 Test) (Sheet 2 of 2)

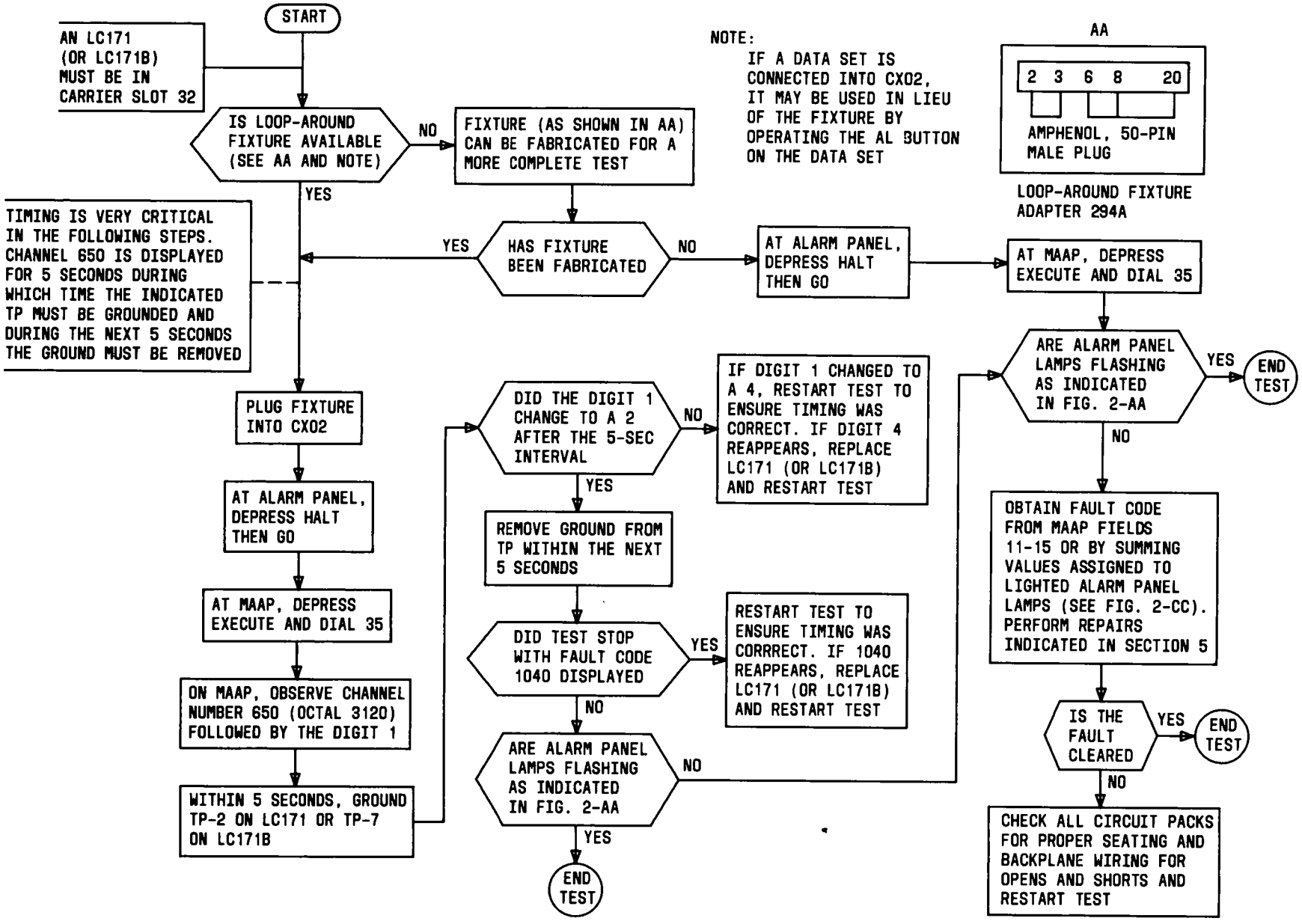


Fig. 28—Procedure to Run Test 35 (LC171 Test)

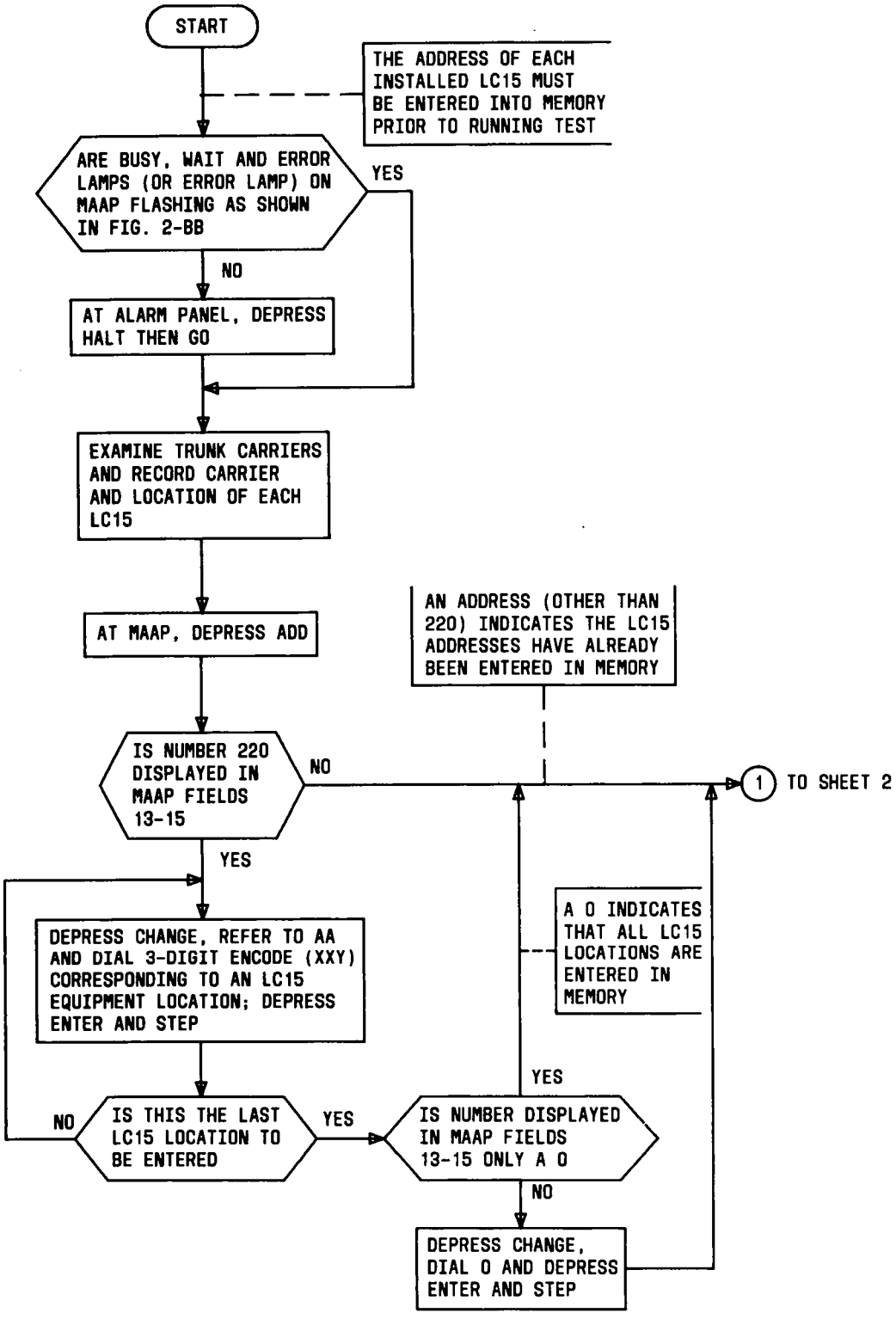
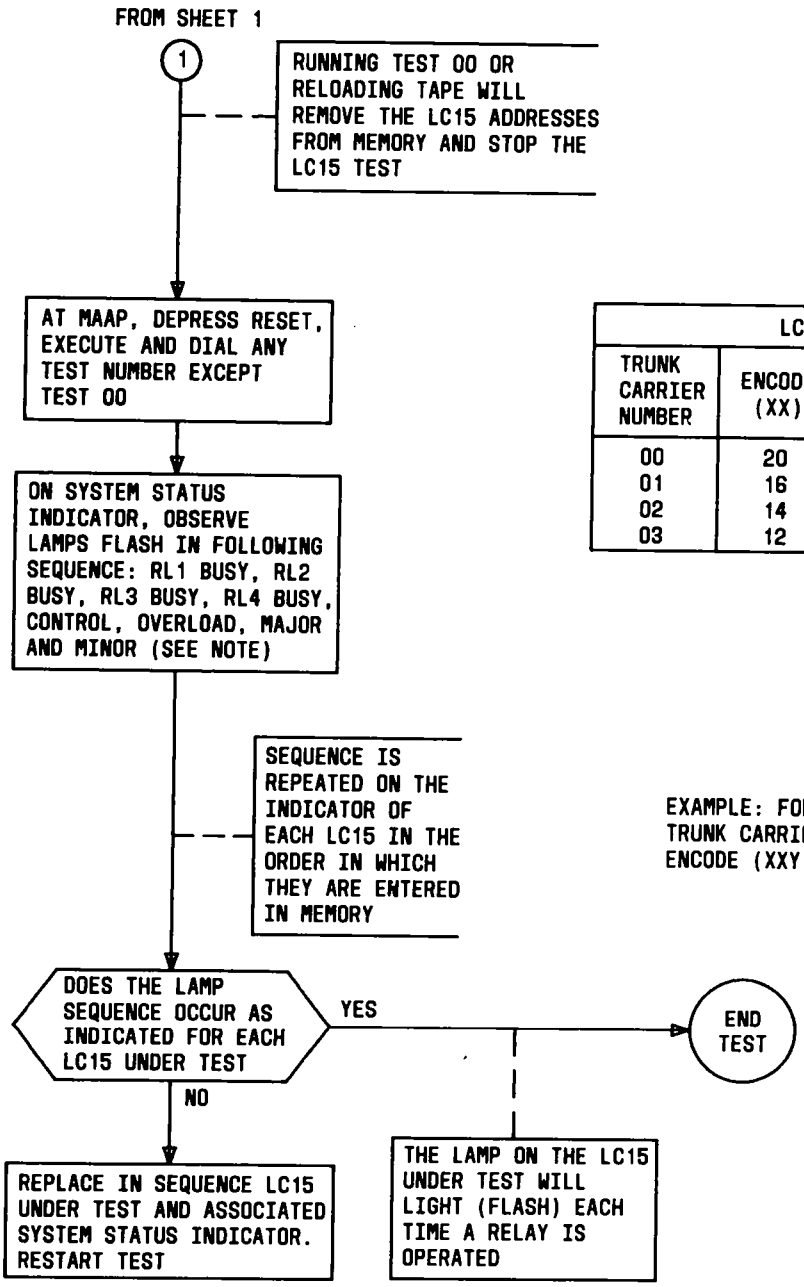


Fig. 29—Procedure to Test LC15 (Display Interface) (Sheet 1 of 2)



AA

LC15 LOCATIONS			
TRUNK CARRIER NUMBER	ENCODE (XX)	CARRIER SLOT NUMBER	ENCODE (Y)
00	20	2	0
01	16	3	1
02	14	4	2
03	12	5	3
		6	4
		7	5
		8	6
		9	7

EXAMPLE: FOR AN LC15 IN TRUNK CARRIER 00, SLOT 6, ENCODE (XXY) = 204

NOTE: WHEN THE SYSTEM STATUS INDICATORS ARE CROSS-CONNECTED TO AN INSTALLED PBX, THE MAJOR AND MINOR SSI INDICATORS ARE CONTROLLED FROM THE PBX ALARM CIRCUIT AND WILL BE LIT WHEN THE CORRESPONDING ALARM PANEL LEDS ARE LIT.

Fig. 29—Procedure to Test LC15 (Display Interface) (Sheet 2 of 2)

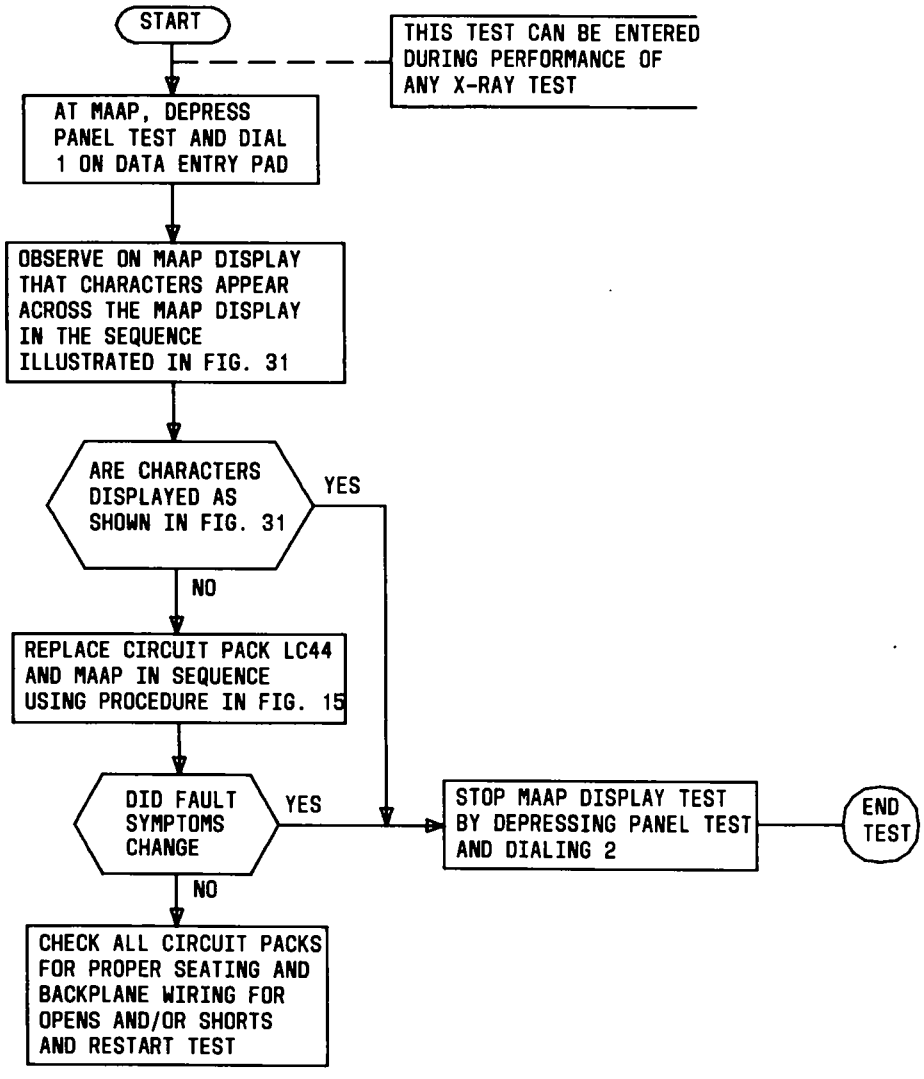


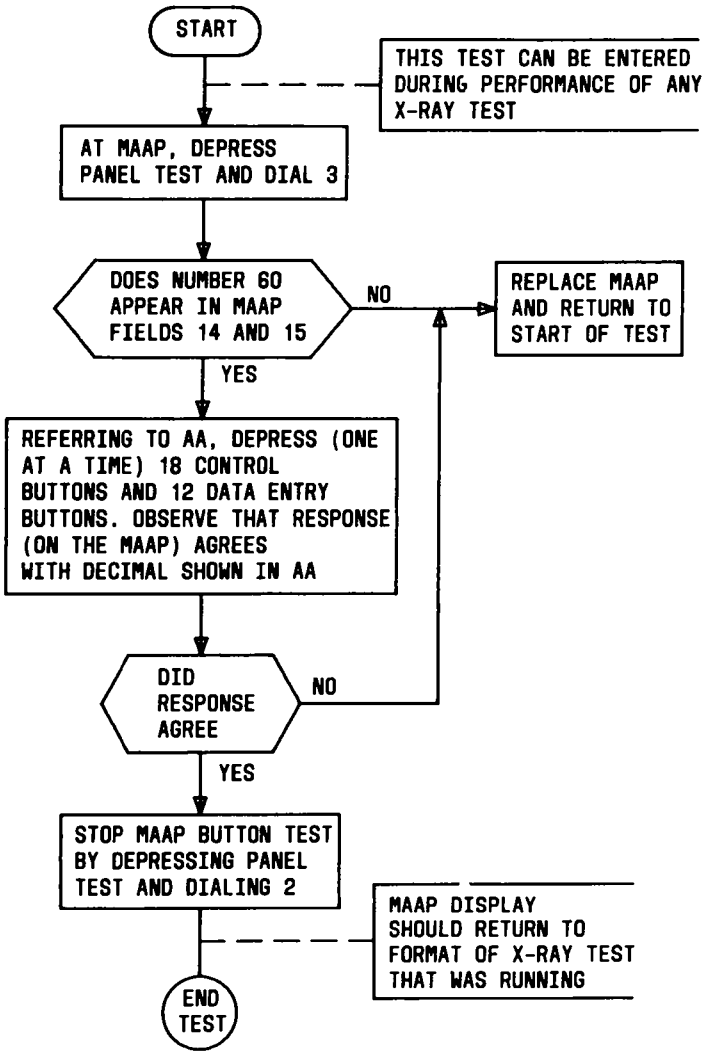
Fig. 30—Procedure to Run MAAP Display Test (MAAP Test 1)

STEP	CHARACTER DISPLAY																		
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		0.	0.
2	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.		1.	1.
3	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.		2.	2.
4	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.		3.	3.
5	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.		4.	4.
6	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.		5.	5.
7	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.	6.		6.	6.
8	7.	7.	7.	7.	7.	7.	7.	7.	7.	7.	7.	7.	7.	7.	7.	7.		7.	7.
9	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.		8.	8.
10	9.	9.	9.	9.	9.	9.	9	9.	9.	9.	9.	9.	9.	9.	9.	9.		9.	9.
11	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.		8.	8.
12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.	.
13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.	.
14	-.	-.	-.	-.	-.	-.	-.	-.	-.	-.	-.	-.	-.	-.	-.	-.		-.	-.
15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.	.
16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.	.
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1
19	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2	2
20	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		3	3
21	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		4	4
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		5	5
23	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		6	6
24	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7		7	7
25	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8		8	8
26	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9		9	9
27	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8		8	8
28																			
29																			
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
31																			
32																			

Fig. 31—MAAP Display Stepping Across 16-Digit Display (Sheet 1 of 2)

STEP	CHARACTER DISPLAY																		
1	0.																		
2	1.	0.																	
3	2.	1.	0.																
4	3.	2.	1.	0.															
5	4.	3.	2.	1.	0.														
6	5.	4.	3.	2.	1.	0.													
7	6.	5.	4.	3.	2.	1.	0.												
8	7.	6.	5.	4.	3.	2.	1.	0.											
9	8.	7.	6.	5.	4.	3.	2.	1.	0.										
10	9.	8.	7.	6.	5.	4.	3.	2.	1.	0.									
11	8.	9.	8.	7.	6.	5.	4.	3.	2.	1.	0.								
12	.	8.	9.	8.	7.	6.	5.	4.	3.	2.	1.	0.							
13	.	.	8.	9.	8.	7.	6.	5.	4.	3.	2.	1.	0.						
14	-.	.	.	8.	9.	8.	7.	6.	5.	4.	3.	2.	1.	0.					
15	.	-.	.	.	8.	9.	8.	7.	6.	5.	4.	3.	2.	1.	0.				
16	.	.	-.	.	.	8.	9.	8.	7.	6.	5.	4.	3.	2.	1.	0.			
17	0	.	.	.	.	.	8	9	8	7	6	5	4	3	2	1		0.	
18	1	0	.	.	-.	.	.	8	9	8	7	6	5	4	3	2		1.	0.
19	2	1	0	.	.	-.	.	.	8	9	8	7	6	5	4	3		2.	1.
20	3	2	1	0	.	.	-.	.	.	8	9	8	7	6	5	4		3.	2.
21	4	3	2	1	0	.	.	-.	.	.	8	9	8	7	6	5		4.	3.
22	5	4	3	2	1	0	.	.	-.	.	.	8	9	8	7	6		5.	4.
23	6	5	4	3	2	1	0	.	.	-.	.	.	8	9	8	7		6.	5.
24	7	6	5	4	3	2	1	0	.	.	-.	.	.	8	9	8		7.	6.
25	8	7	6	5	4	3	2	1	0	.	.	-.	.	.	8	9		8.	7.
26	9	8	7	6	5	4	3	2	1	0	.	.	-.	.	.	8		9.	8.
27	8	9	8	7	6	5	4	3	2	1	0	.	.	-.	.	.		8.	9.
28		8	9	8	7	6	5	4	3	2	1	0	.	.	-.	.		.	8.
29			8	9	8	7	6	5	4	3	2	1	0	.	.	-.		.	-
30	-			8	9	8	7	6	5	4	3	2	1	0	.	.		-.	.
31		-			8	9	8	7	6	5	4	3	2	1	0	.		.	-.
32			-			8	9	8	7	6	5	4	3	2	1	0		.	-

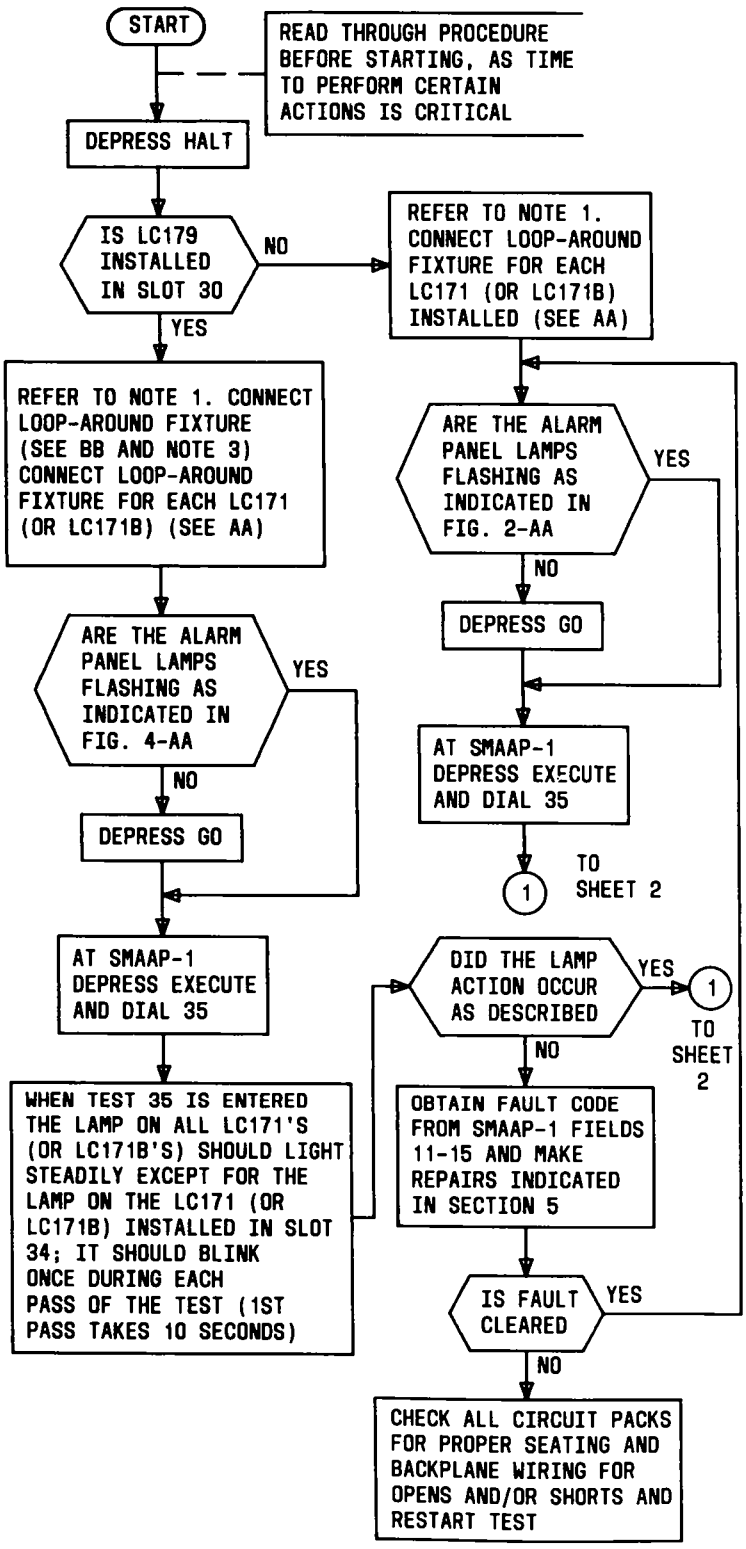
Fig. 31—MAAP Display Stepping Across 16-Digit Display (Sheet 2 of 2)



AA

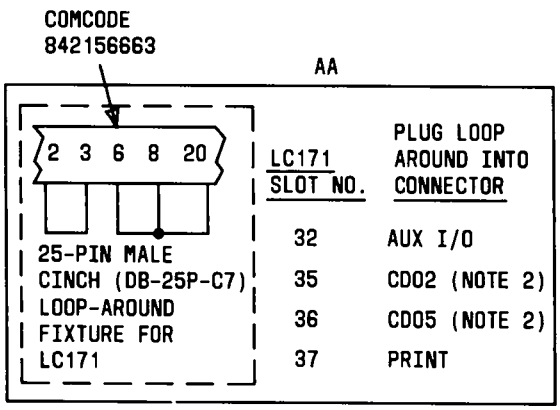
KEYS	DECIMAL DISPLAY
PANEL TEST	0.
PROC NO.	1.
RUN TAPE	2.
WORD	3.
RESET	4.
REPEAT	5.
BLANK	10.
BLANK	11.
SEIZE	12.
RLS BUS/OUT	13.
BUSY OUT	14.
PARK TAPE	15.
EXECUTE	20.
DISPLAY	21.
STEP	22.
REMOVE	23.
ADD	24.
CHANGE	25.
1	40.
2	50.
3	60.
4	41.
5	51.
6	61.
7	42.
8	52.
9	62.
CLEAR ENTRY	43.
0	53.
ENTER	63.
"BAD BUTTON CODE"	64.

Fig. 32—Procedure to Run MAAP Button Test (MAAP Test 3)

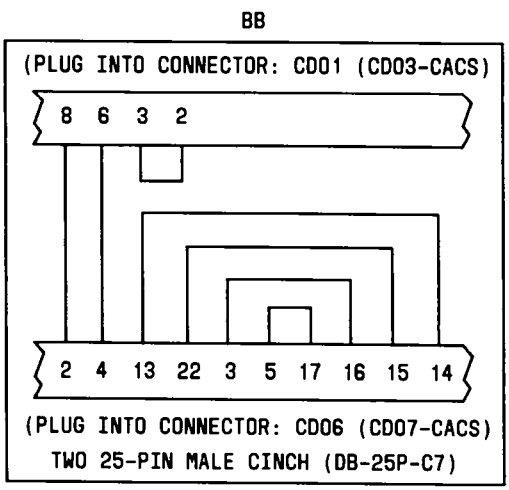


NOTES:

1. THE LOOP-AROUND FIXTURES ARE REQUIRED TO RUN TEST. IF NOT PROVIDED THEY MUST BE FABRICATED. TAG CABLES WHICH MUST BE REMOVED TO INSTALL FIXTURES.
2. IF A DATA SET IS CONNECTED INTO CD02 OR CD05, IT MAY BE USED IN LIEU OF THE FIXTURES BY OPERATING THE AL BUTTON ON THE DATA SET.
3. TWO BB FIXTURES REQUIRED FOR CACS



LOOP-AROUND FIXTURE FOR LC171 ADAPTER 294A



LOOP-AROUND FIXTURE FOR LC179 ADAPTER 287A

Fig. 33—Procedure to Run Test 35 at RMATS-1 or CACS (Sheet 1 of 3)

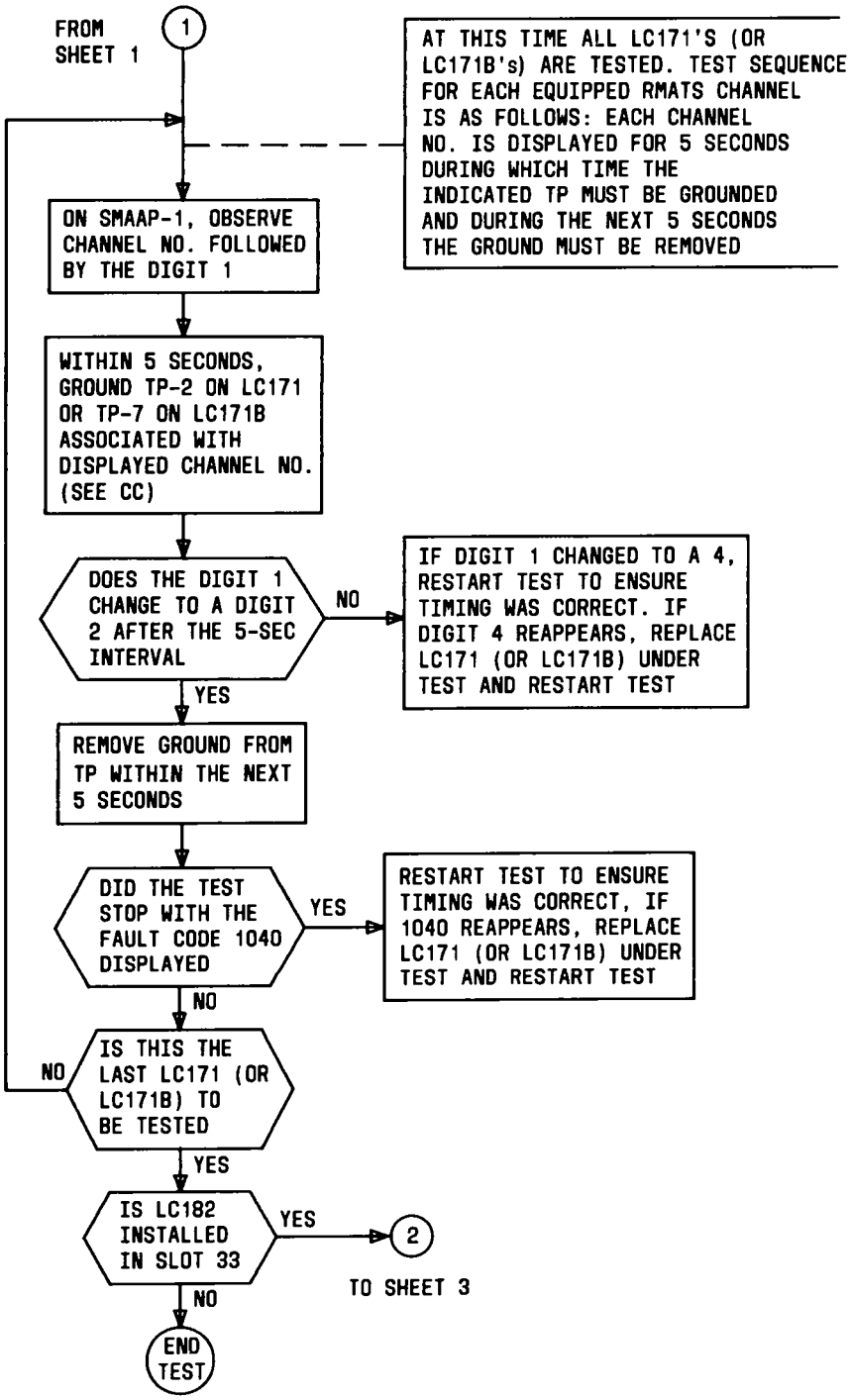


Fig. 33—Procedure to Run Test 35 at RMATS-1 or CACS (Sheet 2 of 3)

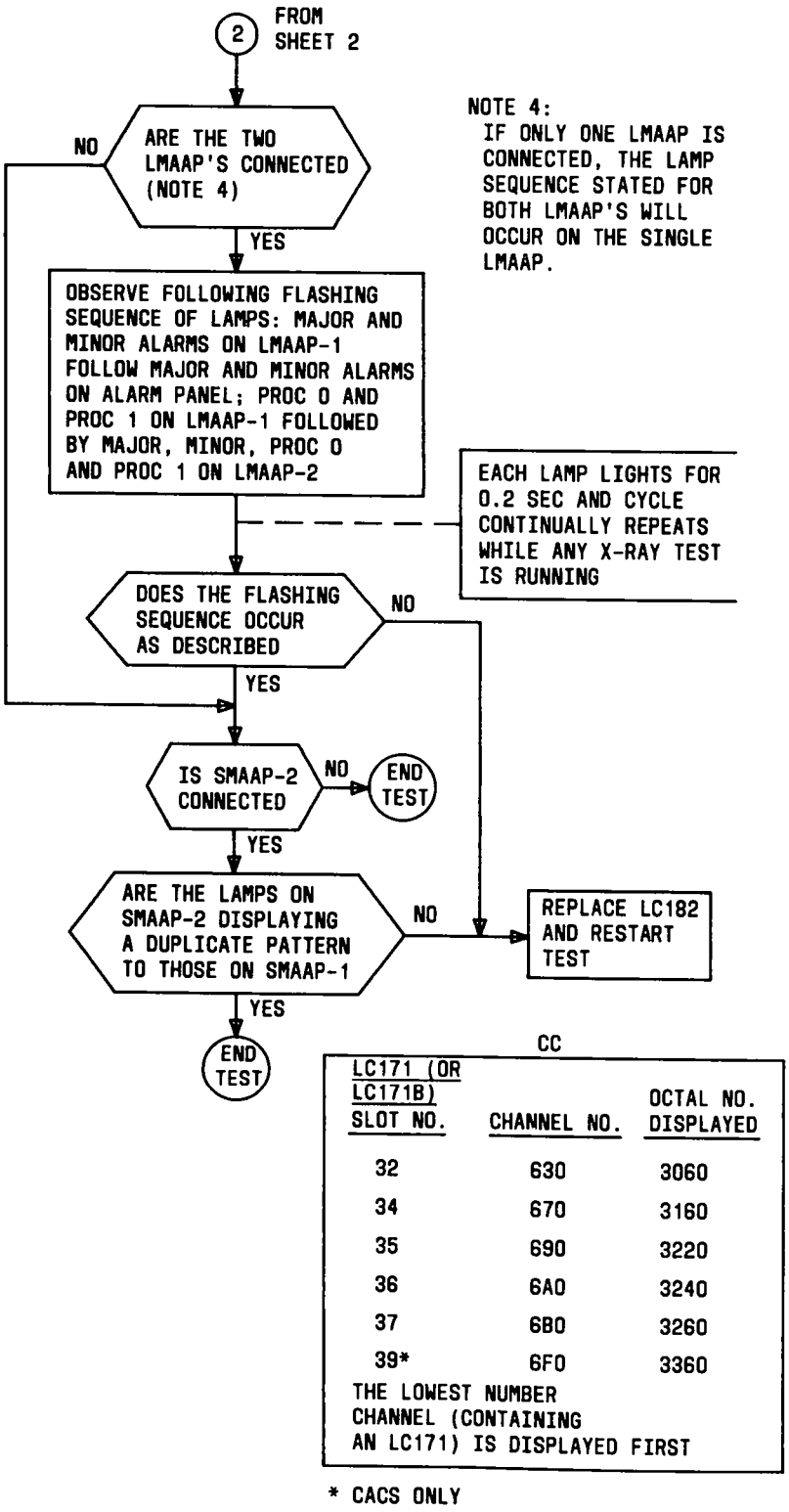


Fig. 33—Procedure to Run Test 35 at RMATS-1 or CACS (Sheet 3 of 3)

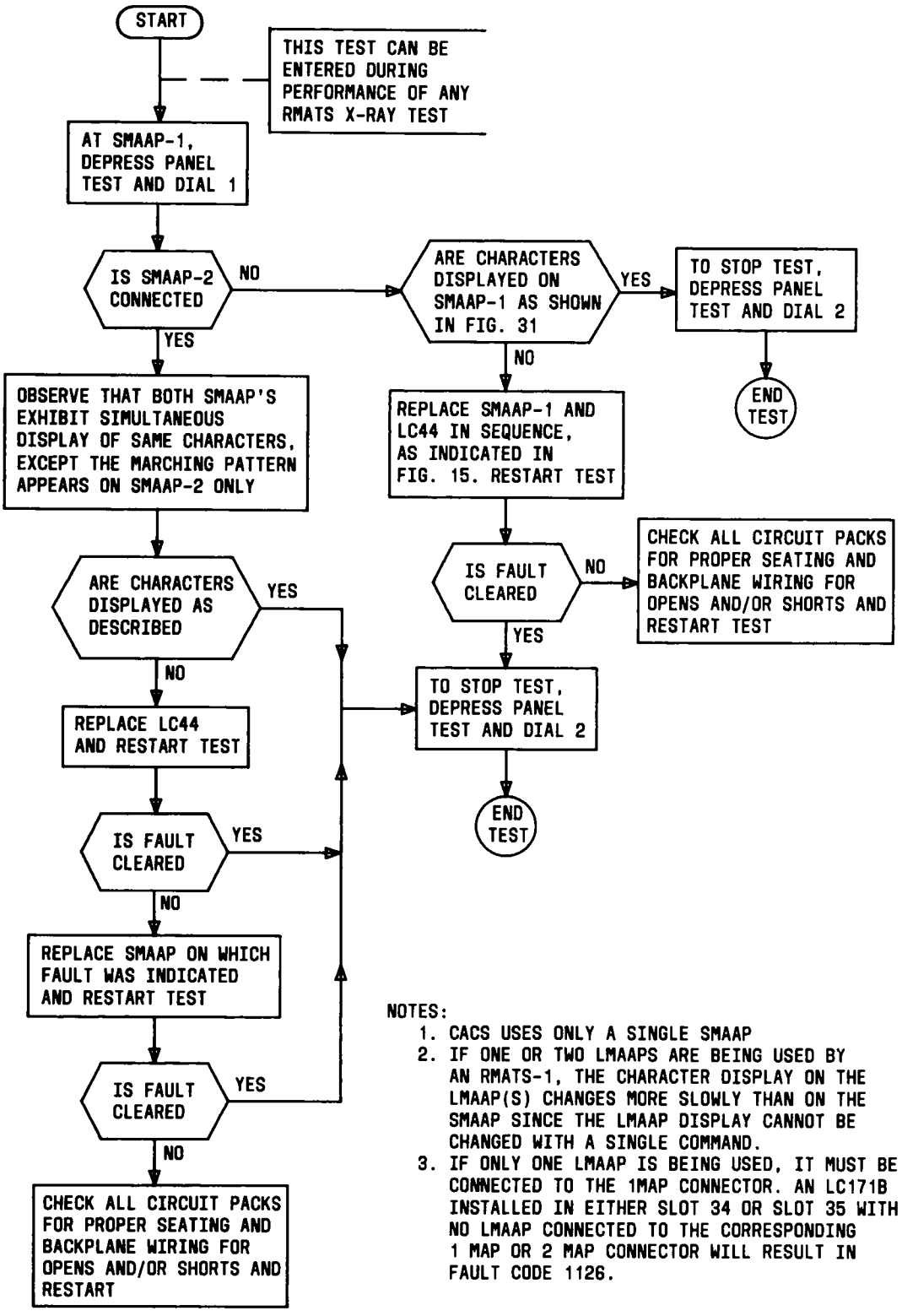
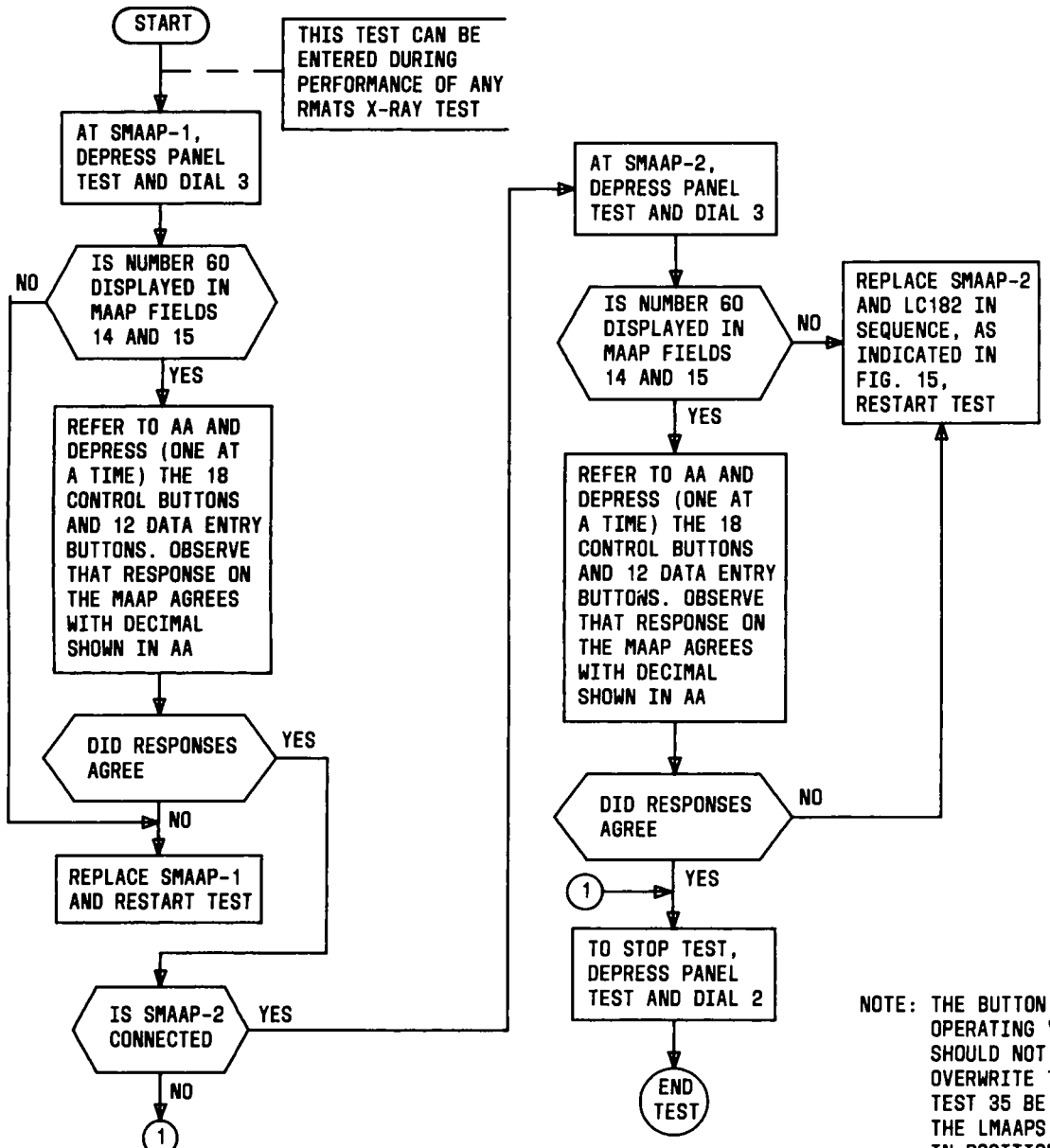


Fig. 34—Procedure to Run MAAP Display Test (MAAP Test 1) at RMATS-1 or CACS



AA

KEYS	DECIMAL DISPLAY
PANEL TEST	0.
PROC NO.	1.
RUN TAPE	2.
WORD	3.
RESET	4.
REPEAT	5.
START	10.
MSG	11.
SEIZE	12.
RLS BUS/OUT	13.
BUSY OUT	14.
SEARCH	15.
EXECUTE	20.
DISPLAY	21.
STEP	22.
REMOVE	23.
ADD	24.
CHANGE	25.
1	40.
2	50.
3	60.
4	41.
5	51.
6	61.
7	42.
8	52.
9	62.
CLEAR ENTRY	43.
0	53.
ENTER	63.

SMAAP BUTTON TEST DISPLAY

BB

KEYS	DECIMAL DISPLAY
RUN TAPE	00
PROC NO.	02
RESET	03
STOP	04
CLEAR DATA	05
WORD NO.	12
PARK TAPE	13
RLS BUSY OUT	14
BUSY OUT	15
REMOVE	20
ADD	21
CHANGE FIELD	23
NEXT UNIT	24
CHANGE	30
DISPLAY	31
EXECUTE	32
NEXT DATA	33
NEXT CIRCUIT	34
NEXT TEST	35
1	40
2	50
3	60
4	41
5	51
6	61
7	42
8	52
9	62
CLEAR ENTRY	43
0	53
ENTER	63

LMAAP BUTTON TEST DISPLAY

NOTE: THE BUTTON TEST ON AN LMAAP MAY BE CONDUCTED WITHOUT OPERATING "PANEL TEST" AND "3" ON THE SMAAP. HOWEVER, IT SHOULD NOT BE DONE WHILE MAAP TEST 1 IS RUNNING, WHICH WOULD OVERWRITE THE BUTTON CODE DISPLAY. IT IS RECOMMENDED THAT TEST 35 BE RUNNING WHEN MAAP TESTS 1 OR 3 ARE USED TO TEST THE LMAAPS. TABLE BB SHOWS THE LMAAP BUTTON CODE DISPLAYED IN POSITIONS 22 AND 23 DURING MAAP TEST 3.

Fig. 35—Procedure to Run SMAAP and LMAAP Button Test (MAAP Test 3) at RMATS-1 or CACS

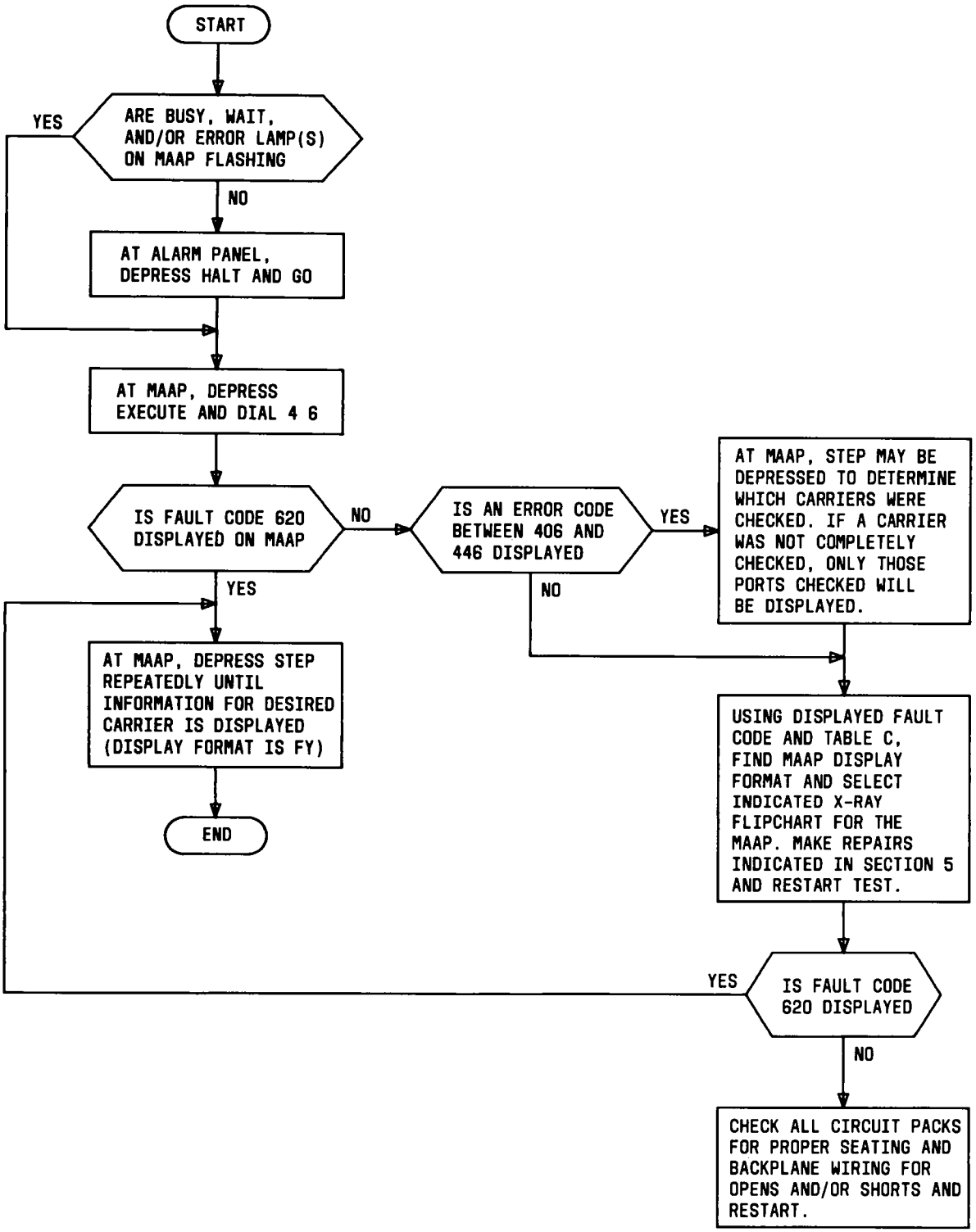


Fig. 36—Procedure to Run Test 46 (Port Count Display)

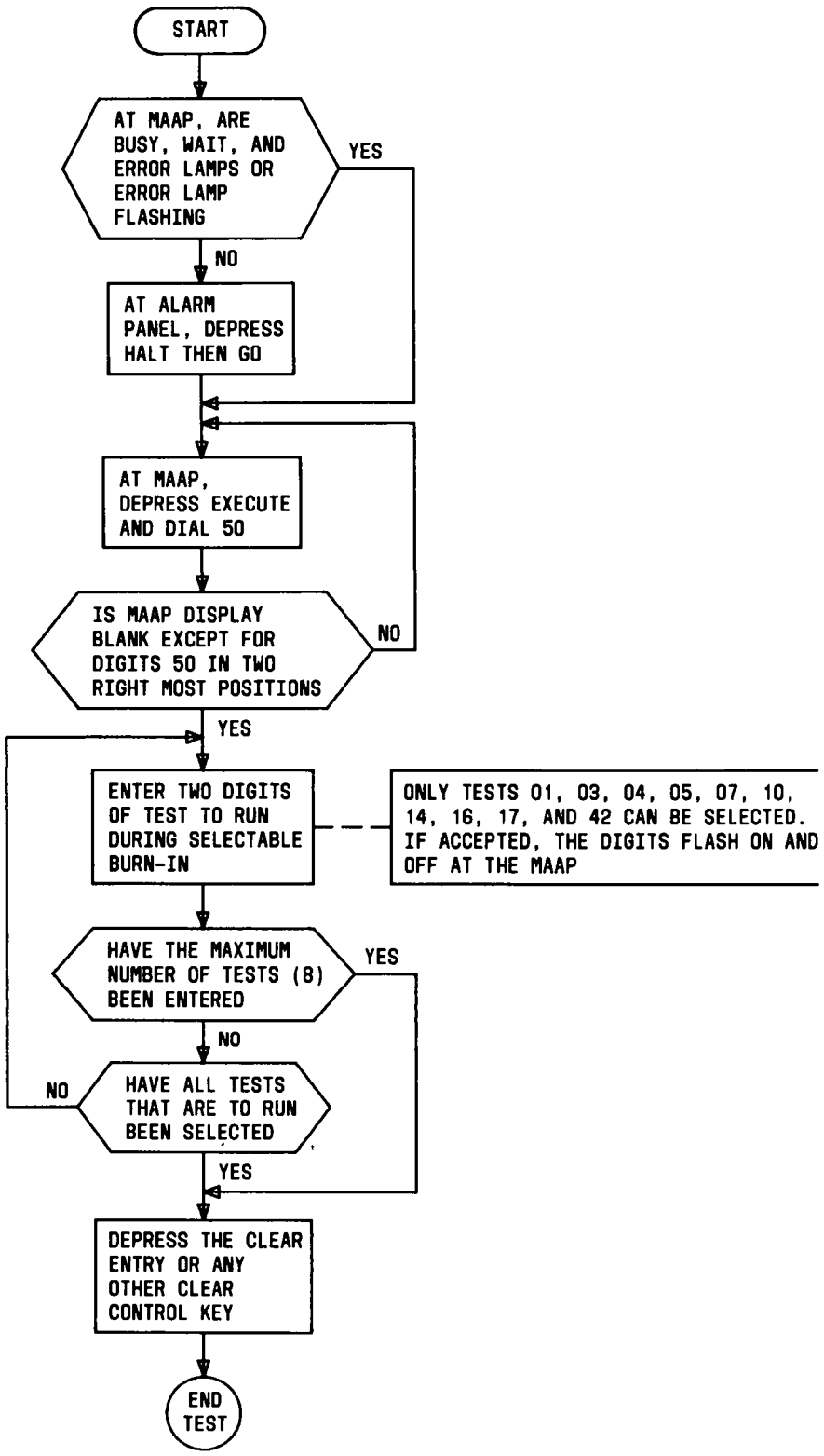


Fig. 37—Procedure to Run Test 50 (Selectable Burn-In Test)

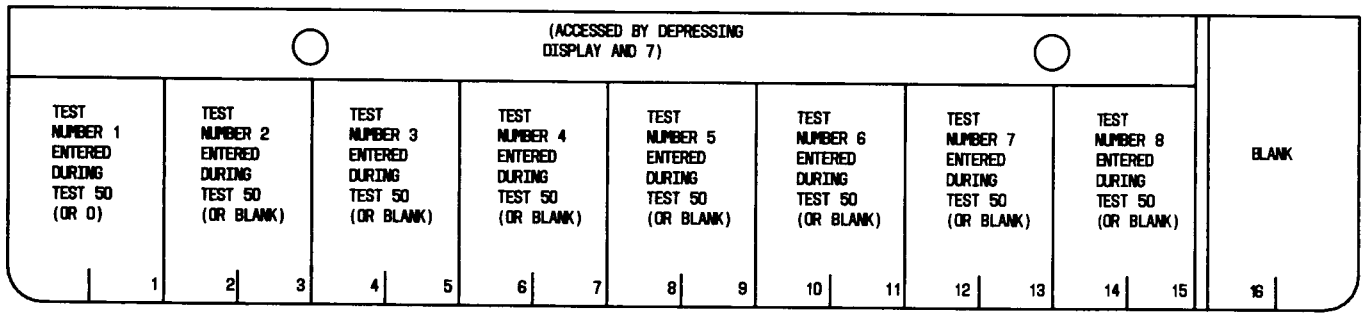


Fig. 38—Display 7

TABLE A

TAPES USED FOR VARIOUS MEMORY CONFIGURATIONS (NOTE 1)

MEMORY CONFIGURATIONS	X-RAY TAPE(S) WHICH CAN BE USED			
	TP-1E139 (NOTE 2)	TP-1E140	TP-1E141	TP-1E490
DIMENSION 100/400 PBX — 20K or 24K Memory (FP1)			X	
DIMENSION 100 PBX — 40K Memory LC28 (8K Boards)	X			X
DIMENSION 100 PBX — 48K Memory LC128B (16K Boards)	X			X
DIMENSION 100 PBX — 64K Memory LC128B (16K Boards)	X			X
DIMENSION 400 PBX — 64K Memory (1) LC25 (4K Boards) (2) LC128B (16K Boards)	X			X
DIMENSION 400 PBX — 48K Memory (FP3) LC39 & LC40 (4K Boards)		X		
DIMENSION 400 PBX — 48K Memory (FP3) LC39 & LC40 (16K Boards)		X		X
DIMENSION 400 PBX — 48K Memory LC128B (16K Boards)	X			X
DIMENSION 100/400 PBX — 64K Memory (With New Line/Trunk Carrier — J58879CC) LC346 (64K Board)				X
DIMENSION 100/400 PBX — 128K Memory (With New Line/Trunk Carrier — J58879CC) LC346 (64K Board)				X
RMATS-1 and CACS	X			X

Note 1: X = Can be used.

Note 2: TP-1E139:
Do not use if hotel/motel provided (FP3).
Issue 9 can be used for RMATS-1.
Issue 10 can be used for RMATS-1 and CACS.
Issue 11 can be used for RMATS-1, CACS, and LMAAP in RMATS-1.
Issue 12 can be used for RMATS-1, CACS, and LMAAP in RMATS-1.

TABLE B

X-RAY TAPES ISSUE CHANGES

ITEM	ADDITIONS OR CHANGES	ISSUES AFFECTED									
		TP-1E139, TP-1E140, TP-1E141								TP-1E490	
		2	4	6	8	9	10	11	12	1	2
1	Data link loop-around tests included (Tests 01 and 02).	X	X	X	X	X	X	X	X	X	X
2	Line and trunk loop-around tests included (Tests 02 and 17).		X	X	X	X	X	X	X	X	X
3*	Basic SMDR test included (Tests 02 and 15).		X	X	X	X	X	X	X	X	X
4	LC14 test, requiring test fixture, included (Test 33).		X	X	X	X	X	X	X	X	X
5	LC16 test, requiring test fixture, included (Test 34).		X	X	X	X	X	X	X	X	X
6	LC10/LC54 test included (Test 21).		X	X	X	X	X	X	X	X	X
7	Tape cartridge test included (Test 36).			X	X	X	X	X	X	X	X
8	LC171 test included (Tests 01, 02, and 35).			X	X	X	X	X	X	X	X
9	LC06 test included (Tests 02 and 17).				X	X	X	X	X	X	X
10	MAAP required to run burn-in test (Test 02).			X							
11	LC15, with system status indicator, test included (all tests, except 00).					X	X	X	X	X	X
12	LC17 test included (Tests 02, 17, and 21).					X	X	X	X	X	X
13	LC171 and LC179 tests included (RMATS-1 Tests 01 and 35).					X	X	X	X	X	X
14	LC182 test included (all RMATS-1 tests).					X	X	X	X	X	X
15	LC278, LC279 loop-start trunk tests added (Tests 02 and 17) (Tests 02 and 42 on Issue 11).						X	X	X	X	X
16	Input/Output cycle controlled from MAAP (Test 41).						X	X	X	X	X
17	LC03, LC41B test, requiring test fixture, included (Test 45).							X	X	X	X
18	Test 42 (trunk circuits only) included. Test 17 now tests line circuits only. LC12 test included (Tests 02 and 42).							X	X	X	X
19	LMAAP test included (RMATS-1, Test 35).							X	X	X	X
20	LC285 loop-start trunk tests added (Tests 02 and 42).							X	X	X	X
21	Tests 11 and 26 deleted (TORS and CCS PEG replaced by RMATS).						X	X	X	X	X
22	Test 40 tests LC10/LC54 pairs using an LC12 installed in Carrier 8, slot 8.							X	X		
23	LC145 test included (Tests 02 and 17)								X		
24	LC280 tie trunk tests added (Tests 02, 42)								X	X	X

* Does not apply to TP-1E141.

TABLE B (Contd)

X-RAY TAPES ISSUE CHANGES

ITEM	ADDITIONS OR CHANGES	ISSUES AFFECTED									
		TP-1E139, TP-1E140, TP-1E141								TP-1E490	
		2	4	6	8	9	10	11	12	1	2
25	LC447 RMATS minirecorder test added (Tests 01, 12, 27).								X	X	X
26	LC293TST included in Test 17.								X	X	
27	LC145TST included (Test 02 and 47).									X	X
28	Test 40 deleted, Test 42 now includes test of LC12s and LC10s. These boards have no placement restrictions.									X	X
29	Test 21 verifies the two port originating/receiving functions on LC10s.									X	X
30	Test 46 included.									X	X
31	LC361TST included (Test 42).									X	X
32	Continue on Error option.									X	X
33	Test Mode option.									X	X
34	Test 50 added (selectable testing for burn-in).										X
35	Errors during Burn-in logged in memory and recorded on tape.										X
36	Continuous Burn-in option included.										X
37	Added fault codes 1300-1306 and 2010-2012.										X
38	Changed fault codes 1406 and 1411.										X

TABLE C

CIRCUIT PACKS ALWAYS REQUIRED FOR X-RAY TESTS (NOTES 1 AND 2)

SYSTEM	MEMORY SIZE	CARRIER	SLOT	CIRCUIT PACK
"DIMENSION" 100 PBX	4K (LC25s)	CONTROL/TRUNK	00	LC 35
			01	LC 25
			13	LC 25
			14	LC 25
			15	LC 25
			16	LC 25
			17	LC 36
			18	LC 37
			19	LC 21
			20	LC 52
			21	LC 20
			22	LC 53
			23	LC 22
			24	LC 23 (MD) OR 23B*
			25	LC 19 (MD) OR SPARE*
			28	LC 18 (OR LC 551)
			29	LC 44
			39	LC 30B
			40	LC 29B
		RMATS AND CACS CONTROL CARRIER	00	LC 35
			01	LC 25
			10	LC 25
			11	LC 25
			12	LC 25
			13	LC 25
			14	LC 25
			15	LC 25
			16	LC 25
			17	LC 36
			18	LC 37
			19	LC 21
			20	LC 52
			21	LC 20
			22	LC 53
			23	LC 22
			24	LC 23B
			28	LC 18 (OR LC 551)
			29	LC 44
			34	LC 171B
			37	LC 171B
			42	LC 30B (OR LC 447)
			43	LC 29B

See footnotes at end of table.

TABLE C (Contd)

CIRCUIT PACKS ALWAYS REQUIRED FOR X-RAY TESTS (NOTES 1 AND 2)

SYSTEM	MEMORY SIZE	CARRIER	SLOT	CIRCUIT PACK
"DIMENSION" 100 PBX	8K (LC28s)	CONTROL/TRUNK	00	LC 35
			01	LC 28
			15	LC 28
			16	LC 28
			17	LC 36
			18	LC 37
			19	LC 21
			20	LC 52
			21	LC 20
			22	LC 53
			23	LC 22
			24	LC 23 (MD) OR 23B*
			25	LC 19 (MD) OR SPARE*
			28	LC 18 (OR LC 551)
			29	LC 44
			39	LC 30B
			40	LC 29B
	64K (LC 346s)	CONTROL/TRUNK	15	LC 346†
			16	LC 346†
			17	LC 236
			18	LC 238, LC 368†
			19	LC 21
			20	LC 52
			21	LC 20B
			22	LC 53
			23	LC 22B
			24	LC 23C, LC 453†
			28	LC 18D (OR LC 551)
			29	LC 44
			39	LC 46
			40	LC 47B
			41	LC 30B
			42	LC 29B

See footnotes at end of table.

TABLE C (Contd)

CIRCUIT PACKS ALWAYS REQUIRED FOR X-RAY TESTS (NOTES 1 AND 2)

SYSTEM	MEMORY SIZE	CARRIER	SLOT	CIRCUIT PACK
"DIMENSION" 400 PBX	4K (LC25s)	CONTROL	0	LC 35
			1	LC 25
			10	LC 25
			11	LC 25
			12	LC 25
			13	LC 25
			14	LC 25‡
			15	LC 25‡
			16	LC 25‡
			17	LC 36
			18	LC 37
			19	LC 21
			20	LC 52
			21	LC 20
			22	LC 53
			23	LC 22
			24	LC 23 (MD) OR 23B
			25	LC 19 (MD) OR SPARE
			28	LC 18 (OR LC 551)
			29	LC 44
			39	LC 30 OR 30B
			40	LC 29 OR 29B
		ETC BASIC	00	LC 55
			08	LC 56
			09	LC 57
			10	LC 58
			11	LC 59
			12	LC 60
		RMATS-1 AND CACS CONTROL	00	LC 35
			01	LC 25
			10	LC 25
			11	LC 25
			12	LC 25
			13	LC 25
			14	LC 25
			15	LC 25
			16	LC 25
			17	LC 36
			18	LC 37
			19	LC 21
			20	LC 52
			21	LC 20
			22	LC 53
			23	LC 22
			24	LC 23B
			28	LC 18

See footnotes at end of table.

TABLE C (Contd)

CIRCUIT PACKS ALWAYS REQUIRED FOR X-RAY TESTS (NOTES 1 AND 2)

SYSTEM	MEMORY SIZE	CARRIER	SLOT	CIRCUIT PACK
"DIMENSION" 400 PBX	4K (LC25s)	RMATS-1 AND CACS CONTROL	29	LC 44
			34	LC 171B
			37	LC 171B
			42	LC 30B (OR LC 447)
			43	LC 29B
	16K (LC 128Bs)	CONTROL	0	LC 135B
			1	LC 128B
			3	LC 128B
			4	LC 128B
			14	‡
			15	‡
			16	‡
			17	LC 236
			18	LC 238
			19	LC 21
			20	LC 52
			21	LC 20
			22	LC 53
			23	LC 22
			24	LC 23 (MD) OR 23B
			25	LC 19 (MD) OR SPARE
			28	LC 18 (OR LC 551)
			29	LC 44
			39	LC 30 OR 30B
			40	LC 29 OR 29B
		ETC BASIC	00	LC 55
			08	LC 56
			09	LC 57
			10	LC 58
			11	LC 59
			12	LC 60
	64K LC346s)	CONTROL/TRUNK	15	LC 346†
			16	LC 346
			17	LC 236
			18	LC 238, LC 368†
			19	LC 21
			20	LC 52
			21	LC 20B
			22	LC 53
			23	LC 22B
			24	LC 23C, LC 453†
			28	LC 18D, OR LC 551

See footnotes at end of table.

TABLE C (Contd)

CIRCUIT PACKS ALWAYS REQUIRED FOR X-RAY TESTS (NOTES 1 AND 2)

SYSTEM	MEMORY SIZE	CARRIER	SLOT	CIRCUIT PACK
"DIMENSION" 400 PBX	64K (LC364s)	CONTROL/TRUNK	29 39 40 41 42	LC 44 LC 46 LC 47B LC 30B LC 29B

Note 1: A minimum of 40K memory is required to run X-ray tape TP-1E490 (Issue 1).

Note 2: A minimum of 44K memory is required to run X-ray tape TP-1E490 (Issue 2).

* When LC 23B is used, slot 25 must be left vacant;
When LC 23(MD) is used, LC 19(MD) must occupy slot 25.

† An LC346 is placed in slot 15 when 128K memory is required. An LC346 is not required in slot 15 for a minimum configuration for running x-ray. However, if 128K of memory is being used, an LC368 must be in slot 18 and an LC453 must be in slot 24.

‡ For hotel/motel applications (PG1E003) use LC 38, LC 39, LC 40 as follows.

SLOT	*CP*
14 and 15	LC 38
16	LC 39 or LC 40

TABLE D

X-RAY TESTS, IDENTIFICATION AND DESCRIPTION

TEST NO.	TEST NAME	FUNCTIONAL AREA (PROGRAM)	CIRCUIT PACK TESTED	FLOWCHART FIG. NO.	TESTS FOR CACS/RMATS-1
00	Alarm Panel Test	Alarm Panel (ALARMS). High Level Instruction Decoding (INIT B). Processor RM Memory (MEMXRY). RAM Memory (MEMTST) Data Set Initialization (T1SUBR — Test 00 Transfers to Test 01 After One Pass.)	LC18 or LC551 Alarm Panel LC22 LC20 LC25, LC28, LC35, LC36, LC37, LC39, LC40, LC128, LC135, LC346, LC236, LC238	16	✓
01	Processor Test	Real Time Clock Interrupts (INITPI) Microinterrupts (INTRUP) Instruction Set (INSTRC) Maps Jumbo Processor RM Memory (MEMXRY) RAM Memory (MEMTST) Serial Data Links (DLXRAY) Attendant Console (ATTXRY) MAAP Test (MP Test — MAAP Tests Must Be Selected Manually.)	LC22 and LC53 LC53, LC22, and LC23 LC19, LC20, LC21, LC22, LC23, LC52, and LC53 LC20 LC25, LC28, LC35, LC36, LC37, LC39, LC40, LC128, LC135, LC346, LC236, LC238 LC368 LC34, LC366 and LC44 LC34, LC366 Console LC44, MAAP		

See footnotes at end of table

TABLE D (Contd)

X-RAY TESTS, IDENTIFICATION AND DESCRIPTION

TEST NO.	TEST NAME	FUNCTIONAL AREA (PROGRAM)	CIRCUIT PACK TESTED	FLOWCHART FIG. NO.	TESTS FOR CACS/RMATS-1
01 (Contd)	Processor Test (Contd)	RMATS	LC171 LC179 LC182		
		Tape Interface (TAPXRY)	LC29, LC30, LC447 Tape Transport		
		Alarm Panel Exerciser (AP_LED)	LC18 or LC551 Alarm Panel		
02	System Test	Real-Time Clock Interrupts (INITPI)	LC22 and LC53		
		Microinterrupts (INTRUP)	LC22, LC23, and LC53		
		Instruction Set (INSTRC) Maps Jumbo	LC19, LC20, LC21, LC22, LC23, LC52, and LC53		
		Processor (RM) Memory (MEMXRY)	LC20		
		RAM Memory (MEMTST)	LC25, LC28, LC35, LC36, LC37, LC39, LC40, LC128, LC135, LC346, LC236, LC238, LC368		
		Serial Data Links (DLXRAY — This Test is Improved By Use Of Loopback Test Fixtures.)	LC34, LC366 and LC44		
		Attendant Console (ATTXRY)	LC34, Console		
		Scanner/Distributor (SCNXRY)	LC46, LC49, and LC50		
		Time Division Network Conrol (NETWRK)	LC02, LC03, LC08, LC09, LC10, LC11, LC13, LC47, LC49		
		RMATS	LC171		

See footnotes at end of table.

TABLE D (Contd)

X-RAY TESTS, IDENTIFICATION AND DESCRIPTION

TEST NO.	TEST NAME	FUNCTIONAL AREA (PROGRAM)	CIRCUIT PACK TESTED	FLOWCHART FIG. NO.	TESTS FOR CACS/RMATS-1
02 (Contd)	System Test (Contd)	Tones (PAMXRY)	LC04, LC04, LC17, LC48 and LC50		
		Automatic Number Identificaton (ANITST)	LC31 and LC32		
		Electronic Telephone Controller (PWR_DIU)	LC55, LC56, LC57, LC58, LC59, LC60, and Station Set		
		MAAP (MP Test — MAAP Test 1 Starts After 4 Minutes. MAAP Test 3 Must Be Manually Requested.)	LC44, MAAP		
		Tape Interface (TAPXRY)	LC29, LC30, LC447		
			Tape Transport	17	
		Alarm Panel Exerciser (AP_LED)	LC18, Alarm Panel		
		Station Message Detail Recording (SMDR)	SMDR Circuit Packs; LC38, LC39, LC62, LC63, LC64, LC65, LC66, and LC67		
		Lines and Trunks (LINRAY — This test is Not Effective Unless Lines And/Or Trunks Loop-Around Fixtures Are Used.)	LC02, LC03, LC06, LC12, LC08, LC145 LC09, LC10, LC210 LC11, LC278 LC13, LC279 LC45, LC285 LC293, LC280 LC145, LC361		
03	Scanner/Distributor Test	(SCNXRY) Test NTWK	LC46, LC49, and LC50	16	

See footnotes at end of table.

TABLE D (Contd)

X-RAY TESTS, IDENTIFICATION AND DESCRIPTION

TEST NO.	TEST NAME	FUNCTIONAL AREA (PROGRAM)	CIRCUIT PACK TESTED	FLOWCHART FIG. NO.	TESTS FOR CACS/RMATS-1
04	Scanner/Distributor and Digital Network Test	SCNXRY, and Network NTWK	LC46, LC49, LC50, LC47, LC02, LC03, LC08, LC09, LC10, LC11, LC13	16	
05	Scanner/Distributor Analog and Digital Network Test	SCNXRY, Network and PAMXRY	LC46, LC49, LC50, LC47, LC49, LC02, LC03, LC08, LC09, LC10, LC11, LC13, LC04, LC05, LC17, LC48 and LC50	16	
06	Emergency Transfer	EMXFER	L18	18	✓
07	ETC Test	PWR_DIU	LC55, LC56, LC57, LC58, LC59, LC60, Station Set	19	
10 *	ETC_Steering CKTS Test	PWR_DIU	LC55 and Station Set	20	
12 †	Tape Drive Test	Tape Interface (TAPXRY —Early Warning and End of Tape Checks Not Included.)	LC29, LC30, LC447 Tape Transport	16	✓
13	Attendant Console Buttons Test	ATTXRY	Console	21	
14	Memory (RAM) Test	MEMTIST	LC25, LC28, LC35, L36, LC37, LC39, LC40, LC128, LC135, LC346, LC236, LC238, LC368	16	✓

See footnotes at end of table

TABLE D (Contd)

X-RAY TESTS, IDENTIFICATION AND DESCRIPTION

TEST NO.	TEST NAME	FUNCTIONAL AREA (PROGRAM)	CIRCUIT PACK TESTED	FLOWCHART FIG. NO.	TESTS FOR CACS/RMATS-1
15	SMDR Test	Station Message Detail Recording	SMDR Cicuit Packs; LC38, LC39, LC62, LC63, LC64, LC65, LC66, and LC67	16	
16 ‡	High-Speed Data Link Test (Factory Test Only)				
17 §	Lines CKTS Test	Linray	LC02, LC03, LC45, LC17, LC145, LC293	16	
20	Park Tape	System Clear		22	✓
21	TOUCH-TONE Calling REC, REG. Test	TOUCH-TONE Calling Receiver-Register	LC10B and LC54 or LC10C	23	
22 ‡	ETC_DMP (Factory Test Only)	Electronic Telephone Controller Memory Dump			
23	ANI Test	Automatic Number Identificaton	LC31 and LC32	24	
24	Battery Backup-Write Memory	LC38WR	LC38, LC39 and LC40	25	
25	Battery Backup-Check Memory	LC38CK	LC38, LC39, and LC40	25	
27 †	Tape Drive (Expanded)	Tape Interface, (TAPXRY) Including Early Warning and End of Tape Check	LC29, LC30, LC447 Tape Transport	16	✓
30	System Configuration Verification	TAPXRY		16	
31	Processor Instructions Test	Instruction Set (INSTRC), Maps Jumbo	LC19, LC20, LC21, LC22, LC23, LC52, LC53	16	✓

See footnotes at end of table

TABLE D (Contd)

X-RAY TESTS, IDENTIFICATION AND DESCRIPTION

TEST NO.	TEST NAME	FUNCTIONAL AREA (PROGRAM)	CIRCUIT PACK TESTED	FLOWCHART FIG. NO.	TESTS FOR CACS/RMATS-1
32	Microinterrupts CKTS Test	INTRUP (To Stop This Test, Depress Clear Entry Control Key For Several Seconds, Then Release.)	LC22, LC23, and LC53	16	✓
33 §	LC14 Test	Contact Interface	LC14	26	
34 ¶	LC16 Test	Message Register	LC16	27	
35 ¶	RMATS	Remote Maintenance Administration and Traffic System	LC171, LC179, LC182	28/33	✓
36	Tape Cartridge Test	TAP_CK	LC44, LC46, LC47, First Tape Cartridge	16	✓
37	AUTOVON (Factory Test Only)				
40 **	Automatic TOUCH-TONE Calling REC-REG Test	LC12 TST	LC54, LC10, LC12,	16	
41 ‡	MAAP Controlled I/O Cycle (Factory Test Only)				
42 §	Trunk Circuits Tests	LINRAY	LC06, LC08, LC09, LC10, LC11, LC12, LC13, LC278, LC279 LC285, LC07	16	
45 ‡	Message Waiting CKT Test (Factory Test Only)	MSG-WTG	LC03 LC41B		

See footnotes at end of table

TABLE D (Contd)

X-RAY TESTS, IDENTIFICATION AND DESCRIPTION

TEST NO.	TEST NAME	FUNCTIONAL AREA (PROGRAM)	CIRCUIT PACK TESTED	FLOWCHART FIG. NO.	TESTS FOR CACS/RMATS-1
46	Port Count Display test	NTWK	LC46, LC49 LC50, LC47, LC02, LC03, LC08, LC09, LC10, LC11, LC13, LC12, LC280, LC285, LC361, LC293	36	
47 ††	LC145 Test	LC145 TST	LC02, LC145	16	
50	Selectable Burn-In Test	#		37	
	LC15 Display Interface Test	Used With Any Test Number (ie, except Test 00)		29	

* ETC steering circuits which are not equipped with electronic key telephone (EKT or electronic customer telephone (ECT) sets are not tested.

† At RMATS-1, if there is not tape in tape unit 2, the test will be performed on tape unit 1 only. If tape unit 2 has an x-ray tape installed, regardless of the issue, both tape units will be tested. If TP-1E490 or Issue 12 of PG1E139 is loaded into the system and an LC447 is in slot 42 of the RMATS or CACS control carrier. A PG1E188 (any issue) must be in tape unit 2.

‡ Factory test only — not to be performed in the field

§ A complete test requires the use of LC14 with trunk loop-around fixtures

¶ Valid test for "DIMENSION" 100 and 400 PBX's only if equipped with an LC171 CP (Fig. 28)

** In X-ray tape TP-1E490 there is no test 40 (included in test 42).

†† For TP-1E490, LC145's, are tested by test 47. LC293's, are tested in TP-1E490 only.

‡‡ The following X-ray tests may be selected during test 50: 01, 03, 04, 05, 07, 10, 14, 16, 17, and 42. A maximum of eight of these tests may be selected. See the selected tests for the Functional Area and Component lists.

TABLE E

TEST RESTRICTIONS

ITEM	TEST RESTRICTIONS	TAPE ISSUES AFFECTED									
		TP-1E139, TP-1E140, TP-1E141								TP-1E490	
		2	4	6	8	9	10	11	12	1	2
1*	TEST 07: Test will not run unless ETC stations are equipped.	X									
2*	TESTS 02, 07, 10: During ETC tests, the HALT/GO switch must be left at GO when changing CPs.	X	X								
3	TESTS 01, 02, 35: CP LC171, if present, must be removed to run tests.	X	X								
4	TESTS 02, 07, 10: No more than two ETCs may be connected to the PBX.	X	X	X							
5	TESTS 02, 17: CP LC06, if present, must be removed to run tests.	X	X	X							
6	TESTS 12, 27: Test 12 should be limited to 1 minute of operation before retensioning the tape (by running test 27); otherwise, the tape may be unduly stressed, resulting in temporary test failure.	X	X	X	X	X	X	X	X	X	X
7	TESTS 02, 17: More than two looped-around LC11s per carrier may produce a false fault indication.		X								
8*	TESTS 02, 07, 10: ETC fault code 1122 may occur incorrectly.		X								
9	TEST 02, 17: The looped-around line/trunk carrier count (display format FM) is incorrect.		X								
10	TESTS 02, 17: LC02 CPs with 1-3 lines of-hook produce fault code 1400.		X								
11	TESTS 02, 17: Some looped-around LC08s may produce a false 1407 fault code.		X	X							
12	TESTS 02, 17: Trunk carrier 00, slot 9 must be empty or contain CP LC14; otherwise, fault code 1424 occurs incorrectly.		X	X							
13	TESTS 02, 17: Non-idle trunk circuits produce fault code 1406.		X	X	X						
14	TESTS 02, 17: If trunk carrier 00 contains CP LC32 in slot 11 (slot 7 of new (J58879CC) carrier) and is looped-around, the test box switch must be set to the LC9 position or fault code 1424 will occur.		X	X	X	X	X	X	X	X	X

* Does not apply to Tape TP-1E141.

TABLE E (Contd)

TEST RESTRICTIONS

ITEM	TEST RESTRICTIONS	TAPE ISSUES AFFECTED									
		TP-1E139, TP-1E140, TP-1E141								TP-1E490	
		2	4	6	8	9	10	11	12	1	2
15	With more than 60 lines off-hook in the first cabinet, the tape may be unable to reload due to loading down the 9-volt power supply. The power supply may also fail if CP LC47 is removed while line circuit loop-around boxes are attached.		X	X	X	X	X	X	X	X	X
16	TESTS 02, 17: When running loop-around tests on LC02s, some early versions of LC04 CPs with reduced output levels but without a corresponding increase in tone monitor sensitivity may cause an erroneous 1402 fault code.		X	X	X	X					
17	TESTS 02, 17: CP LC17, if present, must be removed to run tests; otherwise, erroneous fault codes 1420, 1421, or 1433 will occur.		X	X	X						
18	In a hotel/motel PBX, an LC39 or LC40 will cause an erroneous memory fault.			X							
19	TAPES TP-1E139 AND TP-1E140: 24K of memory is required.			X	X						
20	TAPE TP-1E141: ETC and SMDR tests deleted for PBX with 20K of memory.			X	X	X	X	X			
21	BURN-IN TEST 02: LC02 CPs with 1-3 lines off-hook will produce fault code 1400.			X	X	X	X	X	X	X	X
22*	TEST 15: With an SMDR attached, the fault which normally invokes fault code 1046 will instead cause the test to stop and loss of control at the MAAP. The 1046 fault code will not be displayed. The tape must be reloaded to regain control.			X	X						
23	Eight ports for each LC06 present are included in the count of equipment trunk ports (Display Formats FA and FM).				X	X	X	X	X	X	
24	TAPES TP-1E139 and TP-1E140: 28K of memory is required.					X	X	X			
25†	TEST 02, REPEAT MODE: Stops on a single fault.				X	X	X	X	X	X	X‡
26	No test is performed on an LC34 installed in slot 37 of a processor carrier.	X	X	X	X						

* Does not apply to Tape TP-1E141.
† Prior to Issue 8, Test 02 (repeat mode) stops after two of the same faults or after five different faults.
‡ Unless operating in Continuous Burn-in option.

TABLE E (Contd)

TEST RESTRICTIONS

ITEM	TEST RESTRICTIONS	TAPE ISSUES AFFECTED									
		TP-1E139, TP-1E140, TP-1E141								TP-1E490	
		2	4	6	8	9	10	11	12	1	2
27	When any equipped carrier becomes unequipped, the number of equipped line or trunk carriers displayed on the MAAP does not change unless the tape is reloaded.	X	X	X	X	X					
28	TESTS 02, 17: When one or more LC06s are installed in a trunk carrier and no LC10s are installed, an erroneous 1440 fault code will be displayed.				X	X					
29	TESTS 01, 02, 27: Certain LC34 faults are falsely identified as an RMATS channel. As a result, the X-ray erroneously invokes the RMATS Central Facility test which results in the following: tape fails to park on test 20 and tape fails to wind to the end on tests 01, 02, and 27. (See Flipchart FN, Fig. 4).					X					
30*†	TESTS 02, 04, 05, 17, 21: A PBX with at least one equipped line carrier but no equipped trunk carriers (a disabled carrier is treated as an unequipped carrier), a single LC02 in a J58879AC line carrier, or single LC02 in a J58881CB line/ trunk carrier will exhibit an erroneous 441 fault code.					X					
31	TESTS 02, 05: A PBX with five or more looped-around line carriers will exhibit an erroneous 312 fault code.					X					
32	TESTS 02, 17: If an LC27 is installed and five to eight ports are equipped in slots 4-6 of line carrier 00, an LC06 installed will produce an erroneous 1433 fault code.						X				
33	TESTS 02, 17: LC03 message waiting circuits are exercised and off-hook reset is tested if test 45 has previously been run, successfully or not.							X	X	X	X
34	TESTS 02, 42: The two LEDs on an LC08 installed in slot 9 of the first trunk carrier (slot 8 of the new control carrier) will light, and the idle state of the board will be tested along with any other trunk boards installed in the carrier.							X	X	X	X

* Does not apply to Tape TP-1E141.

† Prior to Issue 8, Test 02 (repeat mode) stops after two of the same faults or after five different faults.

TABLE E (Contd)

TEST RESTRICTIONS

ITEM	TEST RESTRICTIONS	TAPE ISSUES AFFECTED									
		TP-1E139, TP-1E140, TP-1E141								TP-1E490	
		2	4	6	8	9	10	11	12	1	2
35	TESTS 02, 17: If the system being tested is equipped with a 120B ring generator, the fuse to this generator must be removed.	X	X	X	X	X	X				
36	TESTS 02, 04, 17: An LC41B in a line carrier other than 0 requires at least one LC2 or LC3 in a slot above slot 3 to avoid erroneous fault code 425 for board 1.				X	X	X	X	X	X	X
37	TESTS 02, 40, 42: An LC10C in carrier 8, slot 9 may cause erroneous fault code 1433.		X	X	X	X	X	X			
38	TAPES TP-1E139 and TP-1E140: 32K memory required.								X		
39	TAPE TP-1E141: A CLEAR ENTRY after running test 00 or 01, or an EXECUTE 20 may display an erroneous fault code 543. The second CLEAR ENTRY or EXECUTE 20 will display the proper 620 fault code.							X			
40	TESTS 00, 01: The alarm panel fault code 6 may erroneously appear as fault code 7.							X			
41	TAPE TP-1E139 and TP-1E490: If an X-ray tape is inserted in tape unit 2, it must be an X-ray 2000 tape (PG-1E188, any issue). If a tape other than an X-ray 2000 tape is inserted in tape unit 2, fault code 2001 will be displayed.								X		
42	TEST 36: When a DIMENSION 2000 PBX X-ray tape (PG-1E188, Issue 9 or earlier) is loaded into tape unit 2, and test 36 fails with fault code 1135, test 12 should be run for 2 minutes (run test 27 at least once after each 1 minute of running test 12—this retensions the tape). Rerun test 36. If fault code 1135 persists, perform repair procedure in Table F for fault code 1135.								X	X	X
43	TAPE TP-1E139: If test 01, 27, or 36 is stopped while the X-ray tape is traveling in a forward direction (reverse direction does not apply), any future attempt to run test 12 will fail. Park tape (Test 20) must be run. Test 12 will then execute properly.								X		
44	TAPE TP-1E490 Issue 1: 40K of memory is required for X-ray.									X	

TABLE E (Contd)

TEST RESTRICTIONS

ITEM	TEST RESTRICTIONS	TAPE ISSUES AFFECTED									
		TP-1E139, TP-1E140, TP-1E141								TP-1E490	
		2	4	6	8	9	10	11	12	1	2
45	TAPE TP-1E490 Issue 2: 44K of memory is required for X-ray.										X
46	TEST 02, 17, 42: Connecting to the cross-connect field should be removed.	X	X	X	X	X	X	X	X	X	X
47	TEST 33, 34, BURN-IN 02: These tests must have loop-around equipment installed.	X	X	X	X	X	X	X	X	X	X
48	TEST 34: Before this test is run, test 42 should be run until the first LC08 is tested.									X	X

TABLE F

MEMORY BOARD ADDRESSES
DISPLAY FORMATS F4 AND FT

MEMORY BLOCK NO. (OCTAL)	CARRIER SLOT NO.	MEMORY ADDRESS			
		OCTAL		HEXADECIMAL	
		START	END	START	END
"DIMENSION" 100 PBX — 4K MEMORY BOARDS — 20K MEMORY					
00	01C	000000	007777	0000	0FFFF
14	13C	140000	147777	C000	CFFF
15	14C	150000	157777	D000	DFFF
16	15C	160000	167777	E000	EFFF
17	16C	170000	177777	F000	FFFF
"DIMENSION" 100 PBX — 4K AND 8K MEMORY BOARDS— 20K MEMORY					
00	01C	000000	007777	0000	0FFF
14	15C	140000	147777	C000	CFFF
15		150000	157777	D000	DFFF
16	16C	160000	167777	E000	EFFF
17		170000	177777	F000	FFFF
"DIMENSION" 100 PBX — 8K MEMORY BOARDS — 40K MEMORY					
00	01C	000000	007777	0000	0FFF
07		070000	077777	7000	7FFF
10	13C	100000	107777	8000	8FFF
11		110000	117777	9000	9FFF
12	14C	120000	127777	A000	AFFF
13		130000	137777	B000	BFFF
14	15C	140000	147777	C000	CFFF
15		150000	157777	D000	DFFF
16	16C	160000	167777	E000	EFFF
17		170000	177777	F000	FFFF

TABLE F (Contd)

MEMORY BOARD ADDRESSES
DISPLAY FORMATS F4 AND FT

"DIMENSION" 100 PBX — 16K MEMORY BOARDS — 48K MEMORY					
MEMORY BLOCK NO. (OCTAL)	CARRIER SLOT NO.	MEMORY ADDRESS			
		OCTAL		HEXADECIMAL	
		START	END	START	END
00	13C	000000	007777	0000	0FFF
05		050000	057777	5000	5FFF
06		060000	067777	6000	6FFF
07		070000	077777	7000	7FFF
10	15C	100000	107777	8000	8FFF
11		110000	117777	9000	9FFF
12		120000	127777	A000	AFFF
13		130000	137777	B000	BFFF
14	16C	140000	147777	C000	CFFF
15		150000	157777	D000	DFFF
16		160000	167777	E000	EFFF
17		170000	177777	F000	FFFF
"DIMENSION" 100 PBX — 16K MEMORY BOARDS — 64K MEMORY					
00	13C	000000	007777	0000	0FFF
01		010000	017777	1000	1FFF
02		020000	027777	2000	2FFF
03		030000	037777	3000	3FFF
04	14C	040000	047777	4000	4FFF
05		050000	057777	5000	5FFF
06		060000	067777	6000	6FFF
07		070000	077777	7000	7FFF

TABLE F (Contd)

MEMORY BOARD ADDRESSES
DISPLAY FORMATS F4 AND FT

"DIMENSION" 100 PBX — 16K MEMORY BOARDS — 64K MEMORY (Contd)					
MEMORY BLOCK NO. (OCTAL)	CARRIER SLOT NO.	MEMORY ADDRESS			
		OCTAL		HEXADECIMAL	
		START	END	START	END
10	15C	100000	107777	8000	8FFF
11		110000	117777	9000	9FFF
12		120000	127777	A000	AFFF
13		130000	137777	B000	BFFF
14	16C	140000	147777	C000	CFFF
15		150000	157777	D000	DFFF
16		160000	167777	E000	EFFF
17		170000	177777	F000	FFFF
"DIMENSION" PBX — (LC128) 16K MEMORY BOARDS — 48K MEMORY — FEATURE PACKAGE 3					
00	1	000000	007777	0000	0FFF
05		050000	057777	5000	5FFF
06		060000	067777	6000	6FFF
07		070000	077777	7000	7FFF
10	3	100000	107777	8000	8FFF
11		110000	117777	9000	9FFF
12		120000	127777	A000	AFFF
13		130000	137777	B000	BFFF
14	4	140000	147777	C000	CFFF
15		150000	157777	D000	DFFF
16		160000	167777	E000	EFFF
17	16*	170000	177777	F000	FFFF

* This is either an LC39 or LC40 cicuit pack.

TABLE F (Contd)

MEMORY BOARD ADDRESSES
DISPLAY FORMATS F4 AND FT

"DIMENSION" 400 PBX — (LC128B) 16K MEMORY BOARDS — 48K MEMORY					
MEMORY BLOCK NO. (OCTAL)	CARRIER SLOT NO.	MEMORY ADDRESS			
		OCTAL		HEXADECIMAL	
		START	END	START	END
00	1	000000	007777	0000	0FFF
05		050000	057777	5000	5FFF
06		060000	067777	6000	6FFF
07		070000	077777	7000	7FFF
10	3	100000	107777	8000	8FFF
11		110000	117777	9000	9FFF
12		120000	127777	A000	AFFF
13		130000	137777	B000	BFFF
14	4	140000	147777	C000	CFFF
15		150000	157777	D000	DFFF
16		160000	167777	E000	EFFF
17		170000	177777	F000	FFFF
"DIMENSION" 400 PBX — (LC25) 4K MEMORY BOARDS (Does not include Feature Package 3)					
00	1	000000	007777	0000	0FFF
01	2	010000	017777	1000	1FFF
02	3	020000	027777	2000	2FFF
03	4	030000	037777	3000	3FFF
04	5	040000	047777	4000	4FFF
05	6	050000	057777	5000	5FFF
06	7	060000	067777	6000	6FFF

TABLE F (Contd)

MEMORY BOARD ADDRESSES
DISPLAY FORMATS F4 AND FT

"DIMENSION" 400 PBX — (LC25) 4K MEMORY BOARDS (Contd) (Does not include Feature Package 3)					
MEMORY BLOCK NO. (OCTAL)	CARRIER SLOT NO.	MEMORY ADDRESS			
		OCTAL		HEXADECIMAL	
		START	END	START	END
07	8	070000	077777	7000	7FFF
10	9	100000	107777	8000	8FFF
11	10	110000	117777	9000	9FFF
12	11	120000	127777	A000	AFFF
13	12	130000	137777	B000	BFFF
14	13	140000	147777	C000	CFFF
15	14	150000	157777	D000	DFFF
16	15	160000	167777	E000	EFFF
17	16	170000	177777	F000	FFFF
"DIMENSION" 400 PBX — (LC25) 4K MEMORY BOARDS — FEATURE PACKAGE 3					
00	1	000000	007777	0000	0FFF
03	4	030000	037777	3000	3FFF
04	5	040000	047777	4000	4FFF
05	6	050000	057777	5000	5FFF
06	7	060000	067777	6000	6FFF
07	8	070000	077777	7000	7FFF
10	9	100000	107777	8000	8FFF
11	10	110000	117777	9000	9FFF
12	11	120000	127777	A000	AFFF
13	12	130000	137777	B000	BFFF

TABLE F (Contd)

MEMORY BOARD ADDRESSES
DISPLAY FORMATS F4 AND FT

"DIMENSION" 400 PBX — (LC25) 4K MEMORY BOARDS — FEATURE PACKAGE 3 (Contd)					
MEMORY BLOCK NO. (OCTAL)	CARRIER SLOT NO.	MEMORY ADDRESS			
		OCTAL		HEXADECIMAL	
		START	END	START	END
14	13	140000	147777	C000	CFFF
17	16*	170000	177777	F000	FFFF
"DIMENSION" 400 PBX — (LC128B) 16K MEMORY BOARDS — 64K MEMORY					
00	1	000000	007777	0000	0FFF
01		010000	017777	1000	1FFF
02		020000	027777	2000	2FFF
03		030000	037777	3000	3FFF
04	2	040000	047777	4000	4FFF
05		050000	057777	5000	5FFF
06		060000	067777	6000	6FFF
07		070000	077777	7000	7FFF
10	3	100000	107777	8000	8FFF
11		110000	117777	9000	9FFF
12		120000	127777	A000	AFFF
13		130000	137777	B000	BFFF
14	4	140000	147777	C000	CFFF
15		150000	157777	D000	DFFF
16		160000	167777	E000	EFFF
17		170000	177777	F000	FFFF

* This is either an LC39 or LC40 cicuit pack.

TABLE F (Contd)

MEMORY BOARD ADDRESSES
DISPLAY FORMATS F4 AND FT

"DIMENSION" 100/400 PBX — (LC346) 64K MEMORY BOARDS — 64K MEMORY					
MEMORY BLOCK NO. (OCTAL)	CARRIER SLOT NO.	MEMORY ADDRESS			
		OCTAL		HEXADECIMAL	
		START	END	START	END
00	16	000000	007777	0000	0FFF
01		010000	017777	1000	1FFF
02		020000	027777	2000	2FFF
03		030000	037777	3000	3FFF
04		040000	047777	4000	4FFF
05		050000	057777	5000	5FFF
06		060000	067777	6000	6FFF
07		070000	077777	7000	7FFF
10		100000	107777	8000	8FFF
11		110000	117777	9000	9FFF
12		120000	127777	A000	AFFF
13		130000	137777	B000	BFFF
14		140000	147777	C000	CFFF
15		150000	157777	D000	DFFF
16		160000	167777	E000	EFFF
17	170000	170000	177777	F000	FFFF
"DIMENSION" 100/400 PBX — (LC346) 64K MEMORY BOARDS — 128K MEMORY					
00 thru 17	16	000000	177777	00000	0FFFF
20 thru 37	15	200000	377777	10000	1FFFF

TABLE G

TRANSMITTED/RECEIVED MESSAGES
(DISPLAY FORMATS FI AND F4)

FIELD DISPLAYED (OCTAL)	10 (0 THRU 7 OCTAL)	11 (0 THRU 7 OCTAL)	12 (0 THRU 7 OCTAL)	13 (0 THRU 7 OCTAL)	14 (0 THRU 7 OCTAL)	15 (0 THRU 7 OCTAL)
MESSAGE BINARY BIT POSITION	15	14 13 12	11 10 9	8 7 6	5 4 3	2 1 0

TABLE H

FAULTY SCAN/DISTRIBUTOR RESPONSE (I/O CHANNEL NO.) (DISPLAY FORMAT F6 AND FF)

FAULT CODE	FAULTY SCAN/ DIST RESPONSE (I/O CHANNEL NO.)	ASSOCIATED LEAD OR LEADS	STUCK AT 0 OR 1	FAULT CODE	FAULTY SCAN/ DIST RESPONSE (I/O CHANNEL NO.)	ASSOCIATED LEAD OR LEADS	STUCK AT 0 OR 1
330	Disregard	MD00*	1	347	1	BB70*/SS0*	0
		MD01*	1		2	BB71*/SS1*	0
		MD02*	1		4	BB72*/SS2*	0
		MD03*	1		10	BB73*/SS3*	0
331	Disregard	MD00*	0		COMB.	COMB./COMB.	0
		MD01*	0	350	1	BB60*/SS0*	0
		MD02*	0		2	BB61*/SS1*	0
		MD03*	0		4	BB62*/SS2*	0
332	10	SAD10	0		10	BB63*/SS3*	0
333	1	SCEN8*	0		COMB.	COMB./COMB.	0
	2	SDA1*	0	351	1	BB50*/SS0*	0
	4	SDA2*	0		2	BB51*/SS1*	0
	10	SAD10	0		4	BB52*/SS2*	0
	COMB. †	COMB.	0		10	BB53*/SS3*	0
334	1	SCEN4*	0		COMB.	COMB./COMB.	0
	2	SCEN5*	0	352	1	BB40*/SS0*	0
	4	SCEN6*	0		2	BB41*/SS1*	0
	10	SCEN7*	0		4	BB42*/SS2*	0
	COMB.	COMB.	0		10	BB43*/SS3*	0
335	1	SCEN0*	0		COMB.	COMB./COMB.	0
	2	SCEN1*	0	353	1	BB30*/SS0*	0
	4	SCEN2*	0		2	BB31*/SS1*	0
	10	SCEN3*	0		4	BB32*/SS2*	0
	COMB.	COMB.	0		10	BB33*/SS3*	0
336	Disregard	SAD05*	1		COMB.	COMB./COMB.	0
337	Disregard	SAD04*	1	354	1	BB20*/SS0*	0
340	1	SAD04*	0		2	BB21*/SS1*	0
	2	SAD05*	0		4	BB22*/SS2*	0
	4	SPTEN*	0		10	BB23*/SS3*	0
	10	SCLK*	0		COMB.	COMB./COMB.	0
	COMB.	COMB.	0	355	1	BB10*/SS0*	0
341	Disregard	SAD03*	1		2	BB11*/SS1*	0
342	Disregard	SAD02*	1		4	BB12*/SS2*	0
343	Disregard	SAD01*	1		10	BB13*/SS3*	0
344	Disregard	SAD00*	1		COMB.	COMB./COMB.	0
345	1	SAD00*	0	356	1	BB00*/SS0*	0
	2	SAD02*	0		2	BB01*/SS1*	0
	4	SAD01*	0		4	BB02*/SS2*	0
	10	SAD03*	0		10	BB03*/SS3*	0
	COMB.	COMB.	0		COMB.	COMB./COMB.	0
346	1	BB80*/SS0*	0		COMB.	COMB./COMB.	0
	2	BB81*/SS1*	0				
	4	BB82*/SS2*	0				
	10	BB83*/SS3*	0				
	COMB.	COMB./COMB.	0				

† Displayed value can be a combination of 1, 2, 4 and 10, which indicates more than one fault. Decode the combination to determine specific faults.

TABLE I

RESPONSE TO NETWORK VERIFICATION REQUEST (OCTAL) (DISPLAY FORMAT F8)

RESPONSE TO NETWORK VERIFICATION REQUEST	DEFINITION
0	Port Unequipped
400	Invalid Network Connection
600	Valid Network Connection

TABLE J

QUANTITY OF "TOUCH-TONE" CALLING REGISTER PORTS (FIELD 14) (DISPLAY FORMATS FA AND FM)

DISPLAYED NO. DECIMAL	QUANTITY OF "TOUCH-TONE" CALLING REGISTERS
0	0 or 5 or 10 or 15
2	1 or 6 or 11 or 16
4	2 or 7 or 12
6	3 or 8 or 13
8	4 or 9 or 14

TABLE K

TONE THAT FAILED TEST—FIELDS 7 THRU 10 (DISPLAY FORMAT FB)

DISPLAYED NUMBER	TONE WHICH FAILED
1	Dial
2	Recall Dial
4	Miscellaneous
10	Intercept
20	Busy
40	Reorder
100	Audible Ring
200	Special Audible Ring
377	All Tones Failed
17	All Tones from LC04 (or LC204)
360	All Tones from LC05B (or LC204)
400	Immediate Ringback
1000	480 Hz
2000	Zip
4000	Chime
7400	All Tones from LC17

TABLE L

DATA CHANNELS — OCTAL (DISPLAY FORMAT FG)

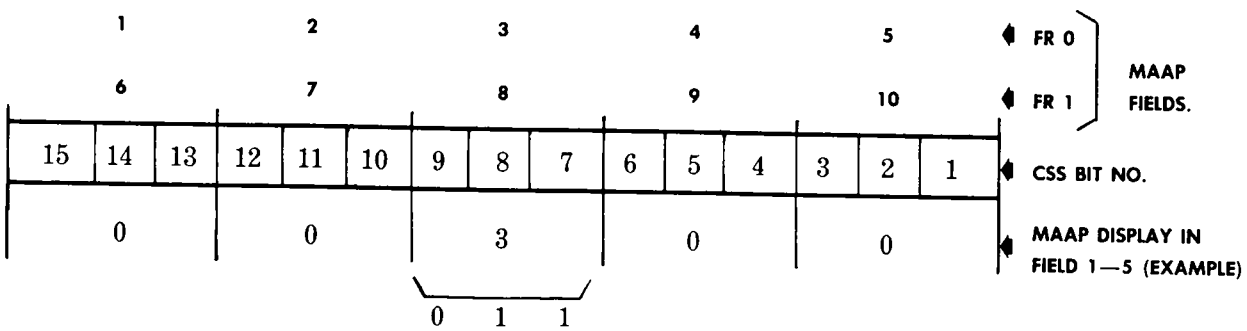
DL ADDRESS	CONTROL CARRIER SLOT NO.	CONTROL CARRIER CONN. DESIG
3000	30	CA01
3020	30	CA02
3040	31	CA03
3060	31	CA04
3100	32	CX03
3120	32	CX04
3140	33	CX01
3160	33	CX01
3200	34	CX01
3220	34	CX01
3240	35	CX01
3260	35	CX01

TABLE M

ETC FAULT REGISTERS 0 AND 1
(DISPLAY FORMAT FJ)
(SEE NOTE)

CSS BIT NO.	FR NO.	DEFECTIVE ETC BOARD OR COMPONENT
12	0	LC60
11	0	LC60
10	0	Indicates a bit set in FR1
9	1	LC57
9	0	LC57
10	1	LC57
8	0	LC58
7	0	LC58
8	1	Replace station set at last station address preceding displayed address
7	1	LC55 at displayed address
6	0	LC56
4	0	LC56
3	0	LC56
2	0	Pull each LC55 one at a time until fault clears or pull LC56
1	0	Blown fuse
0	0	Test station switch defective or LC56

Note: The following is an example of how the MAAP display is interpreted to determine a defective board for fault register (FR) 0.



Octal 3 converted to binary. The binary 1s are the fault indicators pointing to CSS bits 7 and 8. Per table above, LC58 (FR 0) is defective.

TABLE N

ETC STATION EQUIPMENT NUMBER (SEN) LOCATION (DISPLAY FORMATS FO, FP, AND FR)

SEN	SLOT	CONNECTOR
0—7	00	KX01
10—17	01	KX02
20—23	02	KX02
24—27	02	KX03
30—37	03	KX03
40—47	04	KX04
50—53	05	KX04
54—57	05	KX05
60—67	06	KX05
70—77	07	KX06
100—107	13	KX07
110—113	14	KX07
114—117	14	KX08
120—127	15	KX08
130—137	16	KX09
140—143	17	KX09
144—147	17	KX10
150—157	18	KC10
160—167	19	KX11
170—173	20	KX11
174—176	20	KX12

TABLE O

ETC STATION TYPE AND CHANNEL LOCATIONS (DISPLAY FORMAT FP)

ETC STATION TYPE AND CHANNEL			CHANNEL LOCATIONS					
DISPLAYED VALUE FOR STATION TYPE AND CHANNEL	SERIAL DATA CHANNEL	INCORRECT (FAULTY) STATION TYPE	SLOT	CONN	TRANS LEAD	PIN	REC LEND	PIN
6	660	No station terminated	33	CX01	IOXA6	1	IORA6	2
1006		EKT station			IOXB6	26	IORB6	27
2006		ECT station						
4006		Loop-back test set						
7	670	No station terminated	33	CX01	IOXA7	3	IORA7	4
1007		EKT station			IOXB7	28	IORB7	29
2007		ECT station						
4007		Loop-back test set						
10	680	No station terminated	34	CX01	IOXA8	5	IORA8	6
1010		EKT station			IOXB8	30	IORB8	31
2010		ECT station						
4010		Loop-back test set						
11	690	No station terminated	34	CX01	IOXA9	7	IORA9	8
1011		EKT station			IOXB9	32	IORB9	33
2011		ECT station						
4011		Loop-back test set						
12	6A0	No station terminated	35	CX01	IOXA10	9	IORA10	10
1012		EKT station			IOXB10	34	IORB10	35
2012		ECT station						
4012		Loop-back test set						
13	6B0	No station terminated	35	CX01	IOXA11	11	IORA11	12
1013		EKT station			IOXB11	36	IORB11	37
2013		ECT station						
4013		Loop-back test set						

TABLE P

DATA CHANNEL (DISPLAY FORMAT FQ)

DISPLAYED VALUE	HEX. CH. NO.	SLOT
6	660 6E0	33, 37
7	670, 6F0	33, 37
0	680	34
1	690	34
2	6A0	35
3	6B0	35
4	6C0	36
5	6D0	36

TABLE Q

FAULT CODES REQUIRING TAPE RELOAD

FAULT CODES	X-RAY TEST
5-307	01
454-513	01
541-577	*
600-626	14
627-631	*
632-637	14
642	*

* Multiple Tests