E3 ALARM SYSTEM
E3 CENTRAL
MAINTENANCE

CONTENTS PAGE

1. GENERAL

1.01 This section provides the procedures for locating troubles within the E3 central. Also included are initial installation checks and a procedure for determining the preinstalled station constants. Initial trouble diagnosis for the E3 Alarm System is covered in Section 201-647-500.

1.02 This section is reissued to include maintenance tests for master and slave configured E3 alarm centrals.

1.03 The E3 Alarm System consists of a central terminal, a number of remote terminals, and a multipoint data facility. The E3 central, hereinafter referred to as E3C, can be equipped to perform any one of three functional modes—stand-alone, slave, or master. Each type of E3C controls its own network of remote terminals via commands and receives, interprets, and displays data from these remotes. A slave E3C, however, may transfer control of its remotes to a master E3C. A master E3C may control up to three slave remote networks in addition to its own remotes. Operation of the E3C is covered in Section 201-647-301. This section provides only the operational information necessary to perform the tests contained within.

1.04 Most E3C failures will probably occur as component failures on a plug-in circuit pack (CP). Repair will be primarily CP replacement from spares. Faulty CPs should be forwarded to a repair center per local instructions. When CP replacement does not correct the E3C trouble, signal tracing and continuity checks along with visual inspections will be necessary. This latter type of troubleshooting should uncover such faults as shorts, broken wires, loose or open connections, etc.

Note: Remove power from the E3C when circuit pack replacement is required.

1.05 Fault diagnosis to a single CP may be difficult due to the interactive function of many E3C CPs. Faulty CPs are isolated by replacing a group of CPs to clear the fault, then returning the original CPs to the system (one at a time) until the fault reappears. The faulty CP, thus located, can be replaced from spares and the other original CPs returned to their proper slot. The tests in this section should then be reconducted to verify that the fault has been completely cleared.

1.06 Physical access to CPs is obtained by removing the top grill at the rear of the E3C. Flat cables will have to be removed in some cases during CP replacement. All flat cables and CP connectors are adequately marked so cable removal and replacement should pose no problem. The arrows molded into the plastic material of the male and female connectors must mate. Use a SCOTCHFLEX tool No. 3438, or equivalent, when pulling flat cable connectors.

1.07 Physical access to the CP basket (mounting slots) and display panel wiring is obtained by removal of the E3C top cover. To remove the top cover, remove the top rear grill, the eight screws (four on each side), then lift the cover up and forward being careful not to scratch the display surface. Reverse the procedure to replace the top cover. Annual replacement of the A and B batteries also requires that the top cover be removed.

1.08 The tests of this section assume that test personnel are familiar with the operation and use of the test equipment specified. If not, reference should be made to the applicable Bell System Practices and/or manufacturer's publications. If the E3C is not equipped with an associated teletypewriter (TTY) printer and/or is not connected to office audible and/or visual alarms, references to these functions should be disregarded during tests.

1.09 Some portion of the test results obtained in the charts of this section will depend on the particular set of station constants installed. Test personnel should refer to station or other appropriate office records for the constants and use that information to aid in interpreting test data when required. Much of the TTY printout will also be dependent upon station constants. These printouts should be disregarded unless specified in the test procedure.

2. APPARATUS

2.01 The following apparatus is required to conduct the tests in this section:

1—***E-Telemetry Station Test Set,*** KS-20937 (STS), List 1, equipped with the general purpose plug-in, List 4, and an E2A Test Cable, List 6

1—***SCOTCHFLEX Tool No. 3438,*** or equivalent

1—***DC Voltmeter***

1—***Screwdriver,*** as required.

3. INSTALLATION

3.01 Chart 1 applies only to initial installation of an E3C or when it is physically relocated. Chart 2 should be used during installation and relocation of an E3C at 6-month intervals, and as required by other charts.

CHART 1

INSTALLATION AND INITIALIZATION

STEP	PROCEDURE
	INSTALLATION
1	Physically place the E3C in position and make the following connections:

Power—Connect E3C line cord to an active 115 ±10 Vac, 50- to 60-Hz outlet capable of delivering 2 amperes of current.

Remote Data Set—The E3C J82 output must be connected to J2 of the remote network 202T data set via the cable supplied or an M25B (or equivalent) cord.

Central Data Set—If the E3C is a slave or master, also connect the J83 output to J2 of the central network 202T data set via the second data set cable.

Office Alarm—If E3C is to provide an indication to office alarms, connect those alarm circuits to E3C P81 provided. Table A defines the J81 output signals.

Printer—If the E3C installation includes a Model 35 TTY printer, establish the connection via the TTY cable supplied. The TTY cable connector attaches to J80 of the E3C, and the loose wires connect to terminals 7 and 8 of the TTY terminal strip (located at the rear of the TTY under the top cover).

INITIALIZATION

2 Check address switches on the microcomputer circuit packs per Table B, 202T data set conditioning, and dc voltage adjustment.

DATA SET, 202T (Section 592-031-100)

3 The data set (two if slave or master E3C) is conditioned as follows:

OPTIONS REQUIRED

Transmit Line Signal Level—0 dBm

4-Wire Operation—In

Soft Turnoff and Squelch Intervals—0, 0

CHART 1 (Contd)

STEP	PROCEDURE

Fast Carrier Detect—In

Clear to Send Interval—8 ms

Control by DAS, 828 Type—Out

Clamp—In

Carrier Detector Reset—In

Ground—Signal Ground Not Connected to Frame (S1 Open)

Continuous Carrier—Out

SHORTING PLUG AND SWITCH SETTINGS

Shorting Plugs—E21 to E23
E25 to E26

Switch—S1 (inside data set housing)—Open

Switch—S2 (X = rocker depressed on numbered side)

1	2	3	4	5	6	7	8	9	0
X	0	0	X	0	0	0	X	0	X

Switch—S3 (X = rocker depressed on numbered side)

1	2	3	4	5	6	7	8	9	0
0	0	X	X	0	0	0	X	X	X

CHART 2

DC POWER TESTS

The dc power tests of this chart should be conducted during initial installation tests and at intervals not exceeding 6 months thereafter. Batteries A and B must be replaced annually, and the required information must be recorded on the battery record card.

Note: Batteries A and B each consist of three 1.5-volt nickel-cadmium cells, Eveready CH500 or equivalent, inserted into plastic tubes mounted within the cabinet. A total of six cells are required for complete battery replacement. Initial charging is not required.

Caution: The annual replacement of batteries A and B must be staggered by at least 24 hours.

If the E3C has been disconnected from ac power, or if the POWER switch has been OFF for a period exceeding 30 days, batteries A and B should be replaced and the tests of Charts 2 and 3 (and 4 through 6, if required) of this section conducted before returning the E3C to service.

STEP	PROCEDURE
1	If this is an initial installation test, operate the POWER switch to ON and wait 5 minutes before proceeding to Step 2. If E3C power is already ON, proceed directly to Step 2.
2	Using the test points provided on the DC VOLTAGE MONITOR (at the rear of the E3C) and the dc voltmeter, verify that the voltages are within the limits indicated: +5V (4.9 to 5.1 Vdc) -9V (-8.85 to -9.15 Vdc) +12V (11.8 to 12.2 Vdc) -12V (-11.8 to -12.2 Vdc) If the voltages are not within limits, adjust the power supplies as required. ***Note:*** The -12V power supply is not adjustable. The VOLTAGE MONITOR lamp should be lighted when the voltages are within limits. If a power supply cannot be adjusted to within the limits specified, remove the lower grill (rear) and top cover and replace the defective supply as follows: ***Warning: Hazardous voltages—Disconnect E3C line cord.*** (a) To remove the +12V supply, remove the terminal wires and four mounting screws; slide the unit out from the rear of the chassis. Reverse the procedure during replacement.

CHART 2 (Contd)

STEP	PROCEDURE
	(b) To remove the +9V supply, remove the terminal wires and four hex-type screws; slide the unit out from the rear of the chassis. Reverse the procedure during replacement.
	(c) To remove the +5V supply, turn the E3C over onto its right side when viewed from the rear. ***The +5V supply weighs 18 pounds and should be properly supported during removal.*** Disconnect the wiring to the terminal block through the access hole in the bottom of the chassis. (These terminals are somewhat hard to reach.) Remove the four mounting screws from the bottom of the chassis and slide the unit out from the rear. Reverse the procedure during replacement.
	(d) To remove the -12V supply (located on the blower plate between blowers), remove the four screws on the display assembly and hinge the assembly forward. Then remove the blower support plate (four screws) and hinge it forward. Remove the terminal wires and four screws on the power supply (located at the rear of the blower plate) and remove the supply. Reverse the procedure during replacement.
3	If it is necessary to replace a power supply, reconduct Steps 1 and 2.

4. MAINTENANCE

4.01 The charts contained in this section provide a guide in exercising the E3C to verify its operation capability or aid in trouble isolation in event of failure. Chart 3 verifies the capability of an E3C to control its remote network. It should be used first in checking any E3C, regardless of configuration. Slave and master E3Cs must also meet the requirements of Charts 4 and 5, respectively, to verify their capability to operate over the central network.

CHART 3

MAINTENANCE TESTS
E3 CENTRAL REMOTE NETWORK

This chart contains the procedures to verify the operational capability of the E3C to control its remote network. It is the complete test for the stand-alone E3C and the first part of slave and master E3C maintenance testing (see Charts 4 and 5). The tests of this chart must be conducted in the sequence indicated since the conditions established in one step may affect the outcome of a later step. The E3C audible alarm will sound at times not specified in the test procedure. Operate the AUDIBLE RELEASE to silence the alarm. Disregard TTY printouts and SYSTEM SUMMARY display indications not specified in the test procedure. The test procedures in this chart assume that all requirements are met. Some steps have more than one requirement. All requirements must be met before proceeding with the next step. If it is necessary to replace a plug-in circuit pack to correct a trouble, the entire test of this chart should be reconducted. When a circuit pack

CHART 3 (Contd)

is being replaced, ensure that any switches or shorting plugs on the replacing circuit pack are set or installed the same as on the defective unit (also, see Table B). The type of test or operational function being conducted in this chart is indicated by the bold type and abbreviated title prior to the step itself. This is included for information only.

STEP	PROCEDURE

Note: The dc power tests of Chart 2 should be conducted prior to this test, and the ac power to the E3C should be OFF. (The ac power switch is located on the right side of the E3C when facing the unit.) If the E3C power switch is ON, as would be the case during trouble-locating type tests, Steps 2 and 3 may be omitted.

PRETEST CONNECTIONS AND SETUP

1 Perform the following functions in order:

(a) Verify that the STS, E3C, and printer power is OFF.

(b) Disconnect the data set cable at J2 of the 202T, and connect the STS test cable to the data set end of that cable.

(c) At the STS, set the POWER switch to ON, momentarily operate MASTER CLEAR, and set the remaining switches as follows:

MESSAGE LENGTH WORDS—16
RCU—OFF
WORD 1, 3, and 4—Bit 1 to 1, all others to 0
WORD 2—Bits 1 and 16 to 1, all others to 0
SYSTEM—E2A
PARITY—B
BIT RATE—1200 BITS/SEC
MODE—ANSWER
ENABLE—NORMAL
DISPLAY ERROR WORD—OFF
DISPLAY WORD SELECT—1

(d) Verify that the office alarm system is connected to the E3C and powered.

(e) At the printer, turn ac power on and place ON-LINE.

E3C POWER ON

2 Operate the ac power switch on the E3C to the ON position.

CHART 3 (Contd)

STEP	PROCEDURE

Requirement 1: Evidence of ac power applied. If the requirement is not met, verify that the ac outlet being used is active, that fuse F1 is not blown, that a dc power supply has not failed, or that a dc voltage is not out of limits.

Requirement 2: E3C audible alarm (buzzer) on steady. If not, suspect LOCAL AUDIBLE DISABLE switch is in OFF position or audible alarm failure.

Requirement 3: Office audible and visual alarms on. If not, suspect office alarm system or CP 202 of E3C.

Requirement 4: On E3C display, observe CENTRAL FAIL. If not, suspect CP 202 or CP 206.

Requirement 5: At E3C keyboard, observe lamps on (lighted). If not, suspect CP 111 at position M2P.

AUDIBLE RELEASE (ALARM CUTOFF)

3 Momentarily operate the AUDIBLE RELEASE key on the E3C keyboard.

Requirement: The E3C audible alarm silences. If not, suspect CP 202.

START POLL

4 Momentarily operate the START POLL key on the E3C keyboard.

Note: If there is no evidence of E3C response as the key is operated, suspect CP 100, CP 101, CP 112s at positions M2E and M2F, and CP 202.

Requirement 1: The E3C display is blank; all keyboard lamps go off except AUTO PRINT. If not, suspect CP 111 at position M2P.

Requirement 2: The START POLL lamp blinks on-off — on-off, goes to OFF or to ON for the remainder of a 20-second period, then restarts the sequence. If not, suspect CP 111 at position M2P.

Requirement 3: On the STS, lamps WORD (1-4), TMT, RCV, and part of the RECEIVE INFORMATION lamps blink or are steady on while the E3C START POLL lamp blinks. If not, suspect CP 106 or CP 201.

Requirement 4: The TTY prints SYSTEM STARTED, CLOCK NOT SET. If not, suspect CP 110 or the TTY.

Note: If the TTY printout contains the message ♦♦♦THRESHOLD MEMORY TEST FAILED, turn the ac power switch to OFF, set S3 on CP 114 in position M2J at the rear

CHART 3 (Contd)

STEP	PROCEDURE

of the unit to ON (down), and repeat Steps 2, 3, and 4; then set S3 to the OFF (up) position.

Requirement 5: The REMOTE FAIL indication and a number representing each remote expected to respond with four subgroups of data will appear in the E3C SYSTEM SUMMARY display and on the TTY printout within 140 seconds. If not, suspect the CP 112s (position M2E, M2F, or M2K.

SET CLOCK

5 Initiate (set) the clock by the following sequence of actions. Each action consists of operating four of the numeric (0 through 9) keys on the E3C keyboard and the CODE ENTRY (CE) key.

(a) Enter 9999, then operate CE.

(b) Enter year (example 1977), then CE.

(c) Enter 11ww (ww = month, example 02 = Feb), then CE.

(d) Enter 22xx (xx = day of month, example 02 = 2nd), then CE.

(e) Enter 33yy (yy = hour in 24-hour clock, example 14 = 2:00 pm), then CE.

(f) Enter 44zz (zz = minute, example 31), then CE.

(g) Enter 8888, then CE.

Requirement: TTY should print correct day, month, year, hour:minute, clock reset.

Example:
02 FEB 1977
14:31 CLOCK RESET

If not, suspect CP 102s, CP 106, CP 112s (positions M2E and M2F), CP 203, CP 204, and CP 205.

LOCAL TEST

6 At the E3C keyboard, operate and hold the LOCAL TEST key.

Requirement: All E3C display lamps except CENTRAL FAIL are on, the audible alarm beeps, and all keyboard lamps are on (slave E3C) or all are on except one in the lower left (stand-alone or master E3C).

7 Release LOCAL TEST key and operate the AUDIBLE RELEASE key.

CHART 3 (Contd)

STEP	PROCEDURE

Requirement: E3C audible silences, display returns to normal, and all keyboard lamps except AUTO PRINT are off. START POLL blinks periodically. If local test requirements are not met, suspect CP 106, CP 111s, and CP 204.

Note: When instructions in the following steps refer to an SAC remote, it means an E2A Status and Command remote as identified by the station constants for the E3C under test. SAC remotes generally have lower numbers than CDO satellites and start with the number 1.

REMOTE TEST ONES AND ZEROS

8 Perform the following functions:

(a) If master E3C, operate 1 and SELECT CENTRAL keys.

(b) At the E3C, operate a numeric key(s) corresponding to an unfailed SAC remote, the SELECT REMOTE key, and then the REMOTE TEST ONE key.

Requirement: The E3C keyboard SCAN POINTS and REMOTE TEST ONE lamps are on; in the DATA DISPLAY—SCAN POINTS, 31, REMOTE (No.), and DISPLAY 1 are visible. After approximately 15 seconds, the REMOTE TEST ONE lamp goes off.

9 Operate the REMOTE TEST ZERO key.

Requirement: The REMOTE TEST ZERO keyboard lamp is on for approximately 15 seconds, then goes off. If not, suspect CP 106, CP 201, CP 202, or CP 204.

CLEAR FUNCTION

10 Operate the CLEAR FUNCTION key on E3C keyboard.

Requirement: The DATA DISPLAY clears and all keyboard lamps go off except AUTO PRINT and START POLL. (START POLL returns to normal polling mode.) If not, suspect CP 204.

AUTO PRINT

11 At the E3C keyboard, operate the AUTO PRINT key.

Requirement: The keyboard AUTO PRINT lamp is off and the TTY prints date, time, and AUTO PRINT OFF.

12 Operate the AUTO PRINT key a second time.

Requirement: The keyboard AUTO PRINT lamp is on and the TTY prints date, time, and AUTO PRINT ON. If not, suspect CP 204, CP 110, or the TTY.

CHART 3 (Contd)

STEP	PROCEDURE

SELECT REMOTE AND SCAN POINTS

13 At the E3C keyboard, operate the SCAN POINTS key (if master E3C, operate numeric key 1 and SELECT CENTRAL key), then the numerical keys corresponding to an unfailed SAC remote, then the SELECT REMOTE key.

Requirement: On the E3C keyboard, the SCAN POINTS lamp is lighted; the START POLL lamp blinks constantly; and the DATA DISPLAY visually indicates SCAN POINTS, REMOTE (No. as selected), DISPLAY 1, and 31. If not, suspect CP 106, CP 112s and CP 201.

TRY AGAIN

14 Select one of the failed remotes and, at the E3C keyboard, enter the selected remote number and operate the SELECT REMOTE key.

Requirement: The DATA DISPLAY shall clear and TRY AGAIN will become visible and flash.

15 Operate the CLEAR FUNCTION key.

Requirement: TRY AGAIN will extinguish. If not, suspect CP 102s and CP 112s.

THRESHOLD VALUE CHANGES

16 This step requires that several actions and observations be conducted in sequence. If a requirement is not met during the sequence, refer to Note 1 of Step 22 for the most probable cause.

Note: Refer to local E3C records to determine threshold values to expect. Record any changes observed or entered.

(a) On CP 114 in the E3C (position M2J), set switch S3 to ON (down).

(b) Enter numerals 7777 on the E3C keyboard, then operate CODE ENTRY (CE).

Requirement: The E3C audible alarm shall beep; all displays shall be blank; and the TTY prints date, time, and CHANGE THRESHOLD VALUE PROGRAM ACTIVE.

17 Operate numerals 01 and SELECT REMOTE.

Requirement: REMOTE 01 and DISPLAY 1 appear on display.

18 Enter numerals 1104 and CE.

CHART 3 (Contd)

STEP	PROCEDURE

Requirement: In DATA DISPLAY, 4 should appear, and 04 or previously assigned value will appear to the right of DISPLAY 1 (where control numbers normally appear). Retain this number for use in Step 21.

19 Enter 2201 and CE.

Requirement: 04 will change to 01 on display where control numbers normally appear.

20 Operate PRINT key.

Requirement: The TTY will print threshold values for REMOTE 1, DISPLAY 1. Point 01 will have a value of 01; and all remaining points should be 04, or the assigned value, or SP.

21 Enter 22 and the number retained in Step 18; then operate CE.

22 On CP 114, operate switch S3 to the OFF (up) position; then enter 6666 and CE.

Requirement: The START POLL lamp blinks, the AUTO POLL lamp is on, and the TTY prints SYSTEM STARTED.

Note 1: If the requirements of Steps 16 through 22 are not met, suspect CP 112s, CP 114, CP 203, and CP 204.

Note 2: Other TTY and SYSTEM SUMMARY activity may occur.

NEW ALARM

23 Conduct the following in sequence:

(a) If master E3C, operate the numeric key 1 and SELECT CENTRAL key.

(b) On the STS, set the WORD 1, bit 2 switch to 1.

Requirement: Within 20 to 80 seconds, observe that the E3C audible alarm sounds (beeps), that a flashing REMOTE NEW ALARM and numeral(s) appear in the SYSTEM SUMMARY display, and that the TTY prints time, NEW ALARM, REM—(No.), DIS-01, PT-01 for each remote number appearing above.

24 Select one of the remotes with a flashing numeral; enter the number corresponding to the remote selected; and momentarily operate the SELECT REMOTE key and the NEW ALARMS key.

Requirement: REMOTE—(No. selected), DISPLAY 1, NEW ALARMS, and 1 appear in DATA DISPLAY. The NEW ALARMS lamp on the E3C keyboard is lighted (on).

CHART 3 (Contd)

STEP	PROCEDURE

25 Momentarily operate ACK NEW ALARMS key.

Requirement: The 1 vanishes from DATA DISPLAY and the flashing number of the selected remote vanishes from SYSTEM SUMMARY. If not, suspect CP 106, CP 112s, CP 114, CP 201, and CP 202.

REMOTES WITH ALARMS

26 On the E3C keyboard, operate and hold the REMOTES WITH ALARMS key while observing that SYSTEM SUMMARY headings are blank and that all numbers previously flashing and the number that vanished in Step 25 now appear steady. Release the REMOTES WITH ALARMS key and observe that the SYSTEM SUMMARY display returns to normal. If not, suspect CP 102s and CP 112s.

CONTROL OPERATION

27 This procedure requires that several actions and observations be conducted in sequence. If a requirement is not met during the sequence, refer to the note following Step 34 for the most probable cause.

(a) At the STS, set the WORD 1, bit 2 switch to 0.

(b) At the E3C keyboard (if master E3C, operate the 1 and SELECT CENTRAL keys), select and enter the number of an unfailed SAC remote; and momentarily operate the SELECT REMOTE key.

28 Select the first control number listed in Table C, enter the numeral, and momentarily operate the SELECT CONTROL key.

Requirement: In the DATA DISPLAY, observe SCAN POINTS, 31, REMOTE (No.), DISPLAY 1, and CONTROL (No.) visible.

29 Simultaneously depress the ON and EXECUTE CONTROL keys while observing the STS RECEIVE INFORMATION 2 through 17 lamps.

Note: The bit pattern will appear only briefly when the E3C keys are depressed. Repeat the key operation as required to observe all lamps on the STS.

Requirement 1: The lamps listed in Table C for WORD 1 appear on briefly on the STS.

Requirement 2: The EXECUTE CONTROL lamp on the E3C keyboard is on momentarily with each key operation.

Requirement 3: The TTY will print (time), CTL ON, REM—(No.), CTL—(No.) for each control key operation.

CHART 3 (Contd)

STEP	PROCEDURE
30	On the STS, set the DISPLAY WORD SELECT switch to 2 and repeat Step 29. ***Requirement:*** Same as Step 29 except lamps listed in Table C for WORD 2 should appear on.
31	On the STS, set the DISPLAY WORD SELECT switch to 3 and repeat Step 29. ***Requirement:*** Same as Step 29 except lamps listed in Table C for WORD 3 shall appear on.
32	On the STS, set the DISPLAY WORD SELECT switch to 1. Repeat Steps 28, 29, 30, and 31 using the second control number and its requirements as listed in Table C.
33	On the STS, set the DISPLAY WORD SELECT switch to 1. Repeat Steps 28, 29, 30, and 31 using the third control number and its requirements as listed in Table C.
34	Simultaneously depress the OFF and EXECUTE CONTROL keys on the E3C keyboard. ***Requirement 1:*** The STS RECEIVE INFORMATION lamps 1, 9, 10, and 11 should appear on briefly. ***Requirement 2:*** The TTY will print (time), CTL OFF, REM—(No.), CTL—57. ***Note:*** If the requirements of Steps 28 through 34 are not met, suspect CP 106, CP 112s, CP 201, and CP 202.
	REMOTE FAIL RESET
35	At the STS, set the MESSAGE LENGTH WORDS to 4 and set WORD 1, bit 2 switch to 1. ***Requirement 1:*** After approximately 80 seconds, the REMOTE NEW ALARM heading in the SYSTEM SUMMARY display on the E3C will begin to flash (if not already flashing), and the E3C audible alarm will sound (beeping). ***Requirement 2:*** The SAC remotes, which have been active, will fail within 140 seconds (number will appear steady in the SYSTEM SUMMARY display and audible alarm will change to steady on).
36	After Step 35, requirements 1 and 2, have occurred, momentarily operate the RESET REMOTE FAIL key. ***Requirement:*** The numbers for remotes equipped with four data subgroups should begin to flash in SYSTEM SUMMARY. If not, suspect CP 102s, CP 112s, and CP 114.

CHART 3 (Contd)

STEP	PROCEDURE
	RECEIVE PARITY CHECK
37	At the E3C, momentarily operate the SCAN POINTS key, numerals for an unfailed remote, and SELECT REMOTE; then at the STS, set the PARITY switch to A and observe the requirements. ***Requirement:*** Within 10 seconds of setting the PARITY switch to A, the DATA DISPLAY on the E3C clears, the number of the remote selected appears steady in the SYSTEM SUMMARY display, office audible and visual alarms are activated, and the TTY prints (time) REMOTE (NO.) FAILED. If the requirement is not met, suspect CP 102s, CP 106, CP 112s, CP 201, and CP 202. After observing the requirement, clear the remote fail by setting the PARITY switch on the STS to B and, after 20 seconds, momentarily operating the RESET REMOTE FAIL key on the E3C.
	END OF TEST
	The capability of the E3C to correctly control its remote network has been verified if the preceding tests have been completed and all requirements have been met. If the E3C is a stand-alone, return it to system configuration by disconnecting the STS test cable from the E3C data set 1 cable and reconnect the E3C data set 1 cable to J2 of the remote network 202T data set. When the E3C is "ON-LINE," verify that the threshold values agree with local assignments per E3 Central, Operations (Section 201-647-301). If the E3C is a slave or master, proceed to Chart 4 or 5, as appropriate. The station constants may be checked by using Chart 6.

CHART 4

MAINTENANCE TESTS
SLAVE E3 CENTRAL

This chart contains procedures to verify the capability of a slave E3C to accept, act on, and respond to commands received via its data set 2 (master-slave network) interface. The slave E3C should meet the requirements of Chart 3 before beginning Chart 4. The steps must be conducted in the listed sequence, since conditions established in one step may affect the results of later steps. Disregard printouts not specified in the test requirements. All requirements of each step will be met before proceeding with the next step. If a plug-in circuit pack is replaced to correct a trouble, the entire test (Charts 3 and 4) should be reconducted. When a circuit pack is replaced, ensure that any switches or shorting plugs on the replaced circuit pack are set or installed the same as on the removed unit (also, see Table B).

CHART 4 (Contd)

STEP	PROCEDURE

Note: If the E3C power switch is ON, Steps 2 and 3 may be omitted.

PRETEST CONNECTIONS AND SETUP

1 Perform the following functions in sequence:

(a) Disconnect the E3C data set 2 cable at J2 of the master-slave network 202T and connect the STS test cable to the data set end of that cable.

(b) Disconnect the data set 1 cable from J82 of the E3C.

(c) At the STS, set the POWER switch to ON, and set the remaining switches as follows:

MESSAGE LENGTH WORDS—1
RCU—OFF
WORD 1—Bits 2 and 15 to 1, other bits to 0
SYSTEM—E2A
PARITY—B
BIT RATE—1200 BITS/SEC
MODE—ONCE
ENABLE—NORMAL
DISPLAY ERROR WORD—OFF
DISPLAY WORD SELECT—1

(d) Verify that the printer is connected to the slave E3C and is powered and on-line.

E3C POWER ON

2 Operate the ac power switch to the ON position. Momentarily operate the STS MASTER CLEAR switch.

Requirement 1: Observe that the E3C audible alarm is on steady. If not, suspect that the LOCAL AUDIBLE DISABLE switch is in the OFF position or audible alarm failure. Operate the AUDIBLE RELEASE key on the keyboard.

Requirement 2: On the E3C display, observe CENTRAL FAIL. If not, suspect CP 202 or CP 206.

Requirement 3: At the E3C keyboard, observe that all lamps are on (lighted). If not, suspect CP 111 at position M2P.

START POLL

3 Momentarily operate the START POLL key on the E3C keyboard.

CHART 4 (Contd)

STEP	PROCEDURE

Note: If none of the requirements are met, suspect CP 100, CP 101, CP 106, CP 112s at positions M2E and M2F, and CP 202.

Requirement 1: The E3C display is blank; all keyboard lamps go off except AUTO PRINT. If not, suspect CP 111 at position M2P.

Requirement 2: The START POLL keyboard lamp blinks on-off — on-off, pauses, and repeats at 20-second intervals.

Requirement 3: The printer prints SYSTEM STARTED, CLOCK NOT SET. If not, suspect CP 110 or the printer.

Requirement 4: In the SYSTEM SUMMARY display and on the printout, a REMOTE FAIL indication and a number representing each remote, equipped in the station constants, will appear within 140 seconds. If not, suspect the CP 112s in positions M2E, M2F, and M2K.

LOCAL TEST

4 At the E3C keyboard, operate and hold the LOCAL TEST key and observe requirement 1; then release the LOCAL TEST key, operate the AUDIBLE RELEASE key, and observe requirement 2.

Requirement 1: All slave E3C display lamps except CENTRAL FAIL are on, all keyboard lamps are on, and the E3C audible alarm beeps.

Requirement 2: The E3C audible silences, display returns to normal, and all keyboard lamps are off except AUTO PRINT and START POLL (blinks). If not, suspect CP 106, CP 111s, and CP 204.

NET

5 Operate the E3C NET key.

Requirement 1: The E3C display will clear, except a single-digit number (2, 3, or 4) will appear in the center of the SYSTEM SUMMARY display.

Requirement 2: The keyboard lamps are off except NET is on.

Requirement 3: The printer will print the date and time and CENT TRFR. If requirements are not met, suspect CP 112s in positions M2E, M2F, and M2K.

CHART 4 (Contd)

STEP	PROCEDURE
	READ SYSTEM SUMMARY DATA
6	Observe the number in the E3C SYSTEM SUMMARY display; then at STS, set bits 10 and 11 of WORD 1 as follows: If DISPLAY No. = 2—Bit switch 10 = 0 and 11 = 1. If DISPLAY No. = 3—Bit switch 10 = 1 and 11 = 0. If DISPLAY No. = 4—Bit switch 10 = 1 and 11 = 1. Momentarily operate the STS MASTER CLEAR and START switches. ***Requirement:*** The STS TMT and RCV lamps will blink on and an STS RECEIVE INFORMATION lamp 2-17 will be on for each failed remote in the E3C remotes 1 through 16. If not, suspect CP 112s at positions M2E and M2F, CP 201 and CP 202.
7	At the STS, reverse the position of the WORD 1, bit 10, switch. Momentarily operate the MASTER CLEAR and START switches, observe the requirement, and return the WORD 1, bit 10, switch to original position. ***Requirement:*** The STS RCV light will not blink on. If the requirement is not met, suspect CP 112 in position M2K. ***Note:*** If the requirements of Steps 8, 9, 10, and 11 are not met, suspect CP 112s at positions M2E and M2F.
8	At the STS, change the MODE switch to CONT, change the DISPLAY WORD SELECT switch to 16, and operate the START switch. ***Requirement 1:*** The STS TMT and RCV lights will blink continuously. ***Requirement 2:*** STS RECEIVE INFORMATION lamps 16 and 17 are on. (Disregard other lamps.)
9	Operate the slave E3C NET key. Observe the requirements and operate the NET key again. ***Requirement 1:*** The STS RECEIVE INFORMATION lamp 16 is off. ***Requirement 2:*** The E3C keyboard NET lamp is off and the AUTO PRINT lamp is on.
	READ STATION CONSTANTS
10	At the STS, operate WORD 1, bits 12 and 14 switches to 1; WORD 1, bit 15 switch to 0; the MODE switch to ONCE; and the DISPLAY WORD SELECT switch to 1. Momentarily depress the MASTER CLEAR and START switches.

CHART 4 (Contd)

STEP	PROCEDURE

Requirement: The STS RECEIVE INFORMATION lamps (four lamps per remote) indicate the station constants for the slave E3C remotes 1 through 4 per the following code:

0000 = No remote
0001 = E2A SAC remote with one display
0010 = E2A SAC remote with two displays
0011 = E2A SAC remote with three displays
0100 = E2A SAC remote with four displays
1111 = E2A CDO satellite remote.

For example, if bits 10 through 13 = 0010, then the station constants identify remote 3 as an E2A SAC remote with two displays.

Note: The configurations of the remainder of the E3C remotes may be determined by incrementing the DISPLAY WORD SELECT switch from 2 to 16 and operating the MASTER CLEAR and START switches after each increment (eg, bits 6 through 9 of WORD 9 represent remote 34).

READ LOCAL/TRANSFER BUFFER

11 At the STS, set bit 14 of WORD 1 to 0 and bit 15 to 1. Momentarily operate the MASTER CLEAR and START switches.

Requirement: The STS RECEIVE INFORMATION lamps 2 through 17 will be off.

END OF TEST

12 ***Note:*** The Chart 4 steps verify the basic operational capability of a slave E3C interface with a master E3C. The capability of the slave E3C to correctly respond to all master E3C commands has not been verified due to limitations of the STS and unknowns associated with the slave E3C remote network. If the slave central fails to operate correctly after completing the Chart 4 steps, suspect CP 112s in positions M2E, M2F, and M2K.

Return the slave E3C to system configuration by disconnecting the STS test cable from the E3C data set 2 cable and reconnecting the E3C data set 2 cable to the central network 202T data set J2. Reconnect the data set 1 cable to J82 of the E3C.

CHART 5

MAINTENANCE TESTS
MASTER E3 CENTRAL

This chart contains procedures to verify the capability of a master E3C to command slave E3Cs and to correctly interpret and display data received from its slave E3Cs. The master E3C should meet the requirements of Chart 3 before beginning Chart 5. The steps must be conducted in the listed sequence since conditions established in one step may affect the results of later steps. Disregard printouts not specified in the test requirements. All requirements of each step shall be met before proceeding with the next step. If a plug-in circuit pack is replaced to correct a trouble, the entire test (Charts 3 and 5) will be repeated. When a circuit pack is replaced, ensure that any switches or shorting plugs on the replacing circuit pack are set or installed the same as on the removed unit (also, see Table B).

STEP	PROCEDURE

Note: If the E3C power switch is ON, Step 2 may be omitted.

PRETEST CONNECTIONS AND SETUP

1 Perform the following functions in sequence:

(a) Disconnect the data set 2 cable, from J83 of E3C, at J2 of the master-slave network 202T and connect the STS test cable to the data set end of that cable.

(b) Disconnect the data set 1 cable at J82 of the E3C.

(c) At the STS, set the POWER switch to ON, and set the remaining switches as follows:

MESSAGE LENGTH WORDS—16
RCU—OFF
WORDS 1, 2, and 4—Bit 1 to 1 and remaining bits to 0
WORD 3—Bits 1 and 13 to 1, and others to 0
SYSTEM—E2A
PARITY—B
BIT RATE BITS/SEC—1200
MODE—ANSWER
ENABLE—NORMAL
DISPLAY ERROR WORD—OFF
DISPLAY WORD SELECT—1

(d) Verify that the printer is connected to the master E3C and is powered and on-line.

E3C POWER ON

2 At the E3C, operate the ac power switch to ON. Observe requirement 1; then operate the AUDIBLE RELEASE switch and observe requirements 2 and 3.

CHART 5 (Contd)

STEP	PROCEDURE

Requirement 1: The E3C audible alarm is on steady. If not, suspect that the LOCAL AUDIBLE DISABLE switch is in the OFF position or local alarm failure.

Requirement 2: All E3C displays are off except CENTRAL FAIL. If not, suspect CP 202 or CP 206.

Requirement 3: At the E3C keyboard, obsérve that all lamps are on (lighted). If not, suspect CP 111 at location M2P.

START POLL

3 Momentarily depress the STS MASTER CLEAR switch and the START POLL key on the E3C keyboard.

Note: If none of the following requirements are met, suspect CP 100, CP 101, CP 106, CP 112s in locations M2E and M2F, and CP 202.

Requirement 1: The E3C display is blank; all keyboard lamps go off except AUTO PRINT. If not, suspect CP 111 at location M2P.

Requirement 2: The START POLL keyboard lamp blinks on-off — on-off, pauses, and repeats at 20-second intervals.

Requirement 3: The STS TMT and RCV lamps blink briefly at 20-second intervals.

Requirement 4: The STS RECEIVE INFORMATION lamps 2 and 15 will be on.

Note: In this and subsequent steps, the STS RECEIVE INFORMATION lamps 10 and 11 will represent the highest-numbered slave central (2 = 01, 3 = 10, and 4 = 11) in the master-slave central network.

Requirement 5: The message CENTRAL 1 REMOTE FAIL will appear in the E3C SYSTEM SUMMARY display within 150 seconds.

LOCAL TEST

4 Depress and hold the E3C LOCAL TEST key while observing requirement 1; then release the key.

Requirement: All E3 master central displays will appear and all keyboard lamps, except the lower left, will be on. If not, suspect CP 111s or CP 112s in positions M2E and M2F.

CHART 5 (Contd)

STEP	PROCEDURE
	CENTRAL TRANSFER
5	At the STS, operate bit switch 16 of WORD 4 to 1 and observe the TMT, RCV, and RECEIVE INFORMATION lamps. ***Requirement 1:*** After the first blink of the STS TMT and RCV lamps, RECEIVE INFORMATION lamps 2, 12, and 14 should be on. After the second blink, lamps 2 and 15 should be on. ***Requirement 2:*** At the E3C, the words CENTRAL and REMOTE NEW ALARM should appear and flash in the SYSTEM SUMMARY display. One or more slave central numbers (2, 3, or 4) will also be present and flashing. If the requirements are not met, suspect CP 201, CP 202, and CP 112s at positions M2E and M2F.
	SELECT CENTRAL
6	At the E3C keyboard, depress the 2 and SELECT CENTRAL keys. ***Requirement:*** The following will appear in the SYSTEM SUMMARY display: REMOTES FOR CENTRAL, a large number corresponding to the one entered above, 28 and 47 (flashing), and 44 and 63 (steady). If not, suspect CP 112s at positions M2E and M2F.
	SELECT REMOTE
7	At the E3C keyboard, operate the 2, 8, and SELECT REMOTE keys and observe requirement 1; then depress the SCAN POINTS key and observe requirements 2 and 3. ***Requirement 1:*** REMOTE 28 and DISPLAY 1 should appear in the DATA DISPLAY. ***Requirement 2:*** SCAN POINTS, 44, and 63 are visible in the DATA DISPLAY. ***Requirement 3:*** At the STS, the WORD, TMT, and RCV lamps blink constantly, and RECEIVE INFORMATION lamps 2, 5, 6, 8, 9, 11, 13, and 15 are on. If the requirements are not met, suspect CP 112s in positions M2E and M2F.
	SELECT DISPLAY
8	Depress the E3C 2 and SELECT DISPLAY keys. ***Requirement 1:*** The DISPLAY number is now 2. ***Requirement 2:*** The STS RECEIVE INFORMATION lamps 2, 5, 6, 8, 9, 11, 13, 15, and 17 are on. If the requirements are not met, suspect CP 112s in positions M2E and M2F.

CHART 5 (Contd)

STEP	PROCEDURE

CONTROL EXECUTE

9 Momentarily depress the E3C 1, 0, and SELECT CONTROL keys.

Requirement: CONTROL 10 should be visible in the DATA DISPLAY.

Note: The information to be observed in the Step 10 through 12 requirements will appear on the STS only briefly. Repeat the key operation as required (allowing the E3C EXECUTE CONTROL lamp to go off between operations) to observe that the information is correct.

10 Simultaneously depress the E3C ON and EXECUTE CONTROL keys while observing the STS RECEIVE INFORMATION lamps.

Requirement 1: The STS RECEIVE INFORMATION lamps 2, 5 through 11, and 13 through 17 are on briefly.

Requirement 2: The E3C EXECUTE CONTROL keyboard lamp is on for approximately 5 seconds when the keys are operated.

11 Operate the STS DISPLAY WORD SELECT switch to 2. Simultaneously depress the E3C ON and EXECUTE CONTROL keys while observing the STS RECEIVE INFORMATION lamps.

Requirement: The STS RECEIVE INFORMATION lamps 5 through 7, 11, and 14 through 17 are on briefly.

12 Operate the STS DISPLAY WORD SELECT switch to 3. Simultaneously depress the E3C ON and EXECUTE CONTROL keys while observing the STS RECEIVE INFORMATION lamps.

Requirement: The RECEIVE INFORMATION lamps 2, 6, and 8 are on briefly.

Note: If any of the Step 9 through 12 requirements are not met, suspect CP 112s at positions M2E and M2F.

PRINT DATA

13 Momentarily operate the E3C CLEAR FUNCTION key.

14 At the STS, operate the DISPLAY WORD SELECT switch to 1.

15 In the order given, set the STS switches as listed: bit 13 of WORD 1 to 1, bit 13 of WORD 3 to 0, and then bit 17 of WORD 4 to 1 for one blink sequence of TMT and RCV lamps, then back to 0.

CHART 5 (Contd)

STEP	PROCEDURE

Requirement 1: STS RECEIVE INFORMATION lamps 2 and 14 are on after the first blink of the TMT and RCV lamps.

Requirement 2: The printer should print the following:

Time NEW ALM: CENT-02 REM-01 DIS-01 PT-01
Time NEW ALM: CENT-02 REM-01 DIS-01 PT-01
Time NEW ALM: CENT-02 REM-01 DIS-01 PT-04

This message will repeat in multiples of 5 for each slave E3C (CENT number will change) in the master E3C station constants.

If the requirements are not met, suspect CP 110, or CP 112s at positions M2E, M2F, and M2K.

END OF TEST

16 ***Note:*** The Chart 5 steps verify the basic capability of a master E3C to control the slave centrals under its command. All of the master E3C commands have not been verified due to limitations of the STS. If the master E3C fails to operate correctly after completing the Chart 5 steps, suspect CP 112s in positions M2E, M2F, and M2K. Return the master E3C to system configuration by disconnecting the STS test cable from the E3C data set cable and reconnecting the E3C data set 2 cable to J2 of the central network 202T data set. Reconnect the data set 1 cable to J82 of the E3C.

5. STATION CONSTANTS

CHART 6

STATION CONSTANT DETERMINATION

The tests in this chart verify the station constants with which a particular E3C is equipped. These tests should be conducted during initial installation tests and at any time system configuration or station constants change (add a remote, etc). Each step in the test procedure is designed to determine one station constant parameter. The list numbers (L100, L201, etc) in parentheses reference the parameter as it appears on the station constant listing attached to the E3C. The steps in this chart are intended to be conducted in sequence. Conditions established in previous steps are assumed to exist.

CHART 6 (Contd)

STEP	PROCEDURE

Note: Disregard all display and printer activity during these tests unless directed by the procedure.

TEST SETUP

1 Verify that the E3C, STS, and TTY printer power is OFF.

2 Disconnect the E3C data set 1 cable at J2 of the remote network 202T and connect it to the List 6 cable of the STS.

3 Verify that the printer is connected to the E3C.

4 At the STS, set the switches as follows:

POWER—ON
MASTER CLEAR—Depress momentarily
MESSAGE LENGTH WORDS—4
RCU—OFF
WORD 1, 3, and 4—Bit 1 to 1, all others to 0
WORD 2—Bits 1 and 16 to 1, all others to 0
SYSTEM—E2A
PARITY—B
BIT RATE—1200 BITS/SEC
MODE—ANSWER
ENABLE—NORMAL
DISPLAY ERROR WORD—OFF
DISPLAY WORD SELECT—1

5 Verify that the TTY printer is powered and on-line.

6 Set the E3C LOCAL AUDIBLE DISABLE switch to OFF.

STATION CONSTANT DETERMINATION

Total Remotes (L100 and L101s)

7 At the E3C, set the POWER switch to ON; at the STS, momentarily operate MASTER CLEAR and set the PARITY switch to A; then at the E3C, momentarily operate the START POLL key (master E3C only, operate the 1 and SELECT CENTRAL keys).

Requirement: Within 3 minutes after operating START POLL, observe that the E3C SYSTEM SUMMARY display indicates as REMOTE FAIL all SAC and CDO satellite remotes; and the printer will list all remotes as failed.

CHART 6 (Contd)

STEP	PROCEDURE

SAC Remotes Reporting Four Data Subgroups (L100 Equipped With Four or Less Subgroups)

8 At the E3C, operate the POWER switch to OFF then to ON again and momentarily operate the START POLL key. At the STS, set the PARITY switch to B, set the MESSAGE LENGTH WORDS switch to 16, and momentarily operate MASTER CLEAR. (Master E3C only, operate the 1 and SELECT CENTRAL keys.)

Requirement: Within 3 minutes, the E3C SYSTEM SUMMARY display and the printer will indicate as REMOTE FAIL those SAC remotes expected to respond with four data subgroups.

SAC Remotes Reporting 16 Data Subgroups (L100 Equipped With Five or More SG or HUB) and CDO Satellite (L101) Remote Hubbing

9 At the E3C, operate the POWER switch to OFF then to ON again and momentarily operate the START POLL key. At the STS, set the MESSAGE LENGTH WORDS switch to 4 and momentarily operate MASTER CLEAR. (Master E3C only, operate the 1 and SELECT CENTRAL keys.)

Requirement: Within 3 minutes, the E3C SYSTEM SUMMARY display will indicate as REMOTE FAIL those SAC remotes which report 16 data subgroups and all CDO satellite remotes, and the printer will list all 16 data subgroup SAC remotes and associated CDO satellite remotes as failed. CDO satellite remotes hubbed to a particular SAC remote will be listed immediately after that SAC remote.

Alarm Masks With Threshold (L200-L215) (See Table D)

Note: Steps 10 and 11 check alarm masks for ***all*** remotes, and Steps 12 and 13 check a ***specific*** remote.

10 At the E3C:

(a) Operate switch S3 on CP 114 (M2J) to the CLOSED (down) position.

(b) Enter 7777 on the keyboard.

(c) Operate CODE ENTRY.

(d) Momentarily operate AUTO PRINT.

Requirement: The printer lists all remotes and subgroups ***with*** threshold alarm scan points. Subgroup 1 = points 1 through 16, subgroup 2 = points 17 through 32, subgroup 3 = points 33 through 48, and subgroup 4 = points 49 through 64. Alarm points will be listed by number followed by a threshold value (08-04, 15-01, etc). Scan points that are not alarms will have SP (status point) in the threshold value position (10-SP, 31-SP, etc) in the printout.

CHART 6 (Contd)

STEP	PROCEDURE

11 At the E3C, after the printout is complete:

(a) Operate switch S3 on CP 114 (M2J) to OPEN (up).

(b) Enter 6666 on the keyboard.

(c) Momentarily operate CODE ENTRY key.

12 For a specific remote at the E3C:

(a) Operate switch S3 on CP 114 (M2J) to the CLOSED (down) position.

(b) Enter 7777 on the keyboard.

(c) Momentarily operate CODE ENTRY key.

(d) Select the remote of interest by entering its number on the keyboard, then momentarily operating the SELECT REMOTE key.

(e) Momentarily operate the PRINT key.

Requirement: The TTY printer lists all threshold alarm subgroups assigned to the selected remote. Alarm scan points will be listed by number followed by a threshold value (01-01, 12-04, etc). Nonalarm scan points will have SP (status point) printed following the number (14-SP, 15-SP, etc). [Data subgroups assigned to CDO satellites hubbed to an SAC remote will not be listed. To determine a CDO satellite alarm mask, enter its remote number in Step 12(d).]

(f) Repeat Step 12(d) and (e) to determine alarm masks (with threshold) for any other specific remote.

13 After all alarm masks of interest are determined at the E3C, operate switch S3 on CP 114 (M2J) to OPEN (up); then enter 6666 on the keyboard and momentarily operate the CODE ENTRY key.

Alarm Masks Without Threshold (L216-L232) (See Table D) for SAC Remotes to Report Four Data Subgroups (L100 Equipped With Four or Less Subgroups)

14 For alarm masks ***without*** threshold:

(a) At the E3C, turn the power off, then on again. Momentarily operate the START POLL key, then the AUTO PRINT key. Observe that the keyboard AUTO PRINT lamp is off.

CHART 6 (Contd)

STEP	PROCEDURE

(b) At the STS, set the MESSAGE LENGTH WORDS switch to position 4, then operate the MASTER CLEAR key. Set ***all*** WORD (1 through 4) bit (1 through 17) switches to the 1 (up) position.

(c) At the E3C (master E3C only, operate the 1 and SELECT CENTRAL keys), select and enter on the numeric keys the number of the SAC remote of interest; then momentarily operate the SELECT REMOTE key followed by momentary operation of the SCAN POINTS key.

Requirement: The DATA DISPLAY on the E3C will have all SCAN POINTS 1-64 on.

(d) At the E3C, momentarily operate the ALARMS key.

Requirement: In the DATA DISPLAY, the points that are on (lighted) in subgroups not listed in Step 12 are alarm points without threshold. The points not on (blank) are status points. Display points correspond to subgroups as follows:

SUBGROUP	POINTS
1	1-16
2	17-32
3	33-48
4	49-64

(e) Repeat Step 14(c) and (d) for each remaining remote of interest.

Alarm Masks Without Threshold for SAC Remotes to Report 16 Data Subgroups (L100) and CDO Satellite Remotes (L101)

15 For CDO satellite remotes (L101):

(a) At the E3C, turn the power switch to OFF, then back to ON. Momentarily operate the START POLL key, then the AUTO PRINT key while observing that the keyboard AUTO PRINT lamp extinguishes (goes off).

Note: If the test is delayed at this point, the E3C will declare all CDO remotes as failed 30 minutes after Step 15(a). To continue the test, repeat Step 15(a) and proceed with Step 15(b).

(b) At the STS, set the MESSAGE LENGTH WORDS switch to 16. Momentarily operate MASTER CLEAR; then operate the WORD 1-4 switches for bit 17 to 0 (down). (All other bit switches should be up.)

CHART 6 (Contd)

STEP	PROCEDURE

(c) At the E3C (master E3C only, operate the 1 and SELECT CENTRAL keys), enter the number of a CDO satellite of interest into the keyboard. Momentarily operate the SELECT REMOTE; then momentarily operate SCAN POINTS.

Requirement: The E3C DATA DISPLAY will display SCAN POINTS 1-15 (disregard 16) on (lighted).

(d) Momentarily operate the ALARMS key.

Requirement: The E3C DATA DISPLAY points visible (on) are the alarm points for that remote. The points not visible (off) are the status points.

(e) Repeat Step 15(c) and (d) for all other CDO satellite remotes of interest.

(f) At the STS, after completing (e) above, set the bit 17 switches of WORD 1-4 to 1 (up).

16 For SAC remotes to report 16 data subgroups:

(a) At the E3C, select an SAC remote of interest and enter its number into the keyboard. Momentarily operate the SELECT REMOTE key; then momentarily operate the SCAN POINTS key.

Requirement: The E3C DATA DISPLAY will have SCAN POINTS 1-64 visible (on) except any subgroup assigned to a hubbed CDO satellite.

(b) Momentarily operate the ALARMS key on the E3C.

Requirement: The DATA DISPLAY points remaining visible (on) in subgroups not listed in Steps 10 through 13 are nonthreshold alarm points for DISPLAY 1 of the SAC remote as follows:

SUBGROUP	POINTS
1	1-16
2	17-32
3	33-48
4	49-64

Note: Subgroups assigned CDO satellites hubbed to the selected SAC remote will be blank and threshold subgroups may be visible.

CHART 6 (Contd)

STEP	PROCEDURE

(c) At the E3C, enter the number of one of the remaining displays (2, 3, or 4) on the keyboard and momentarily operate the SELECT DISPLAY key.

Requirement: Verify the alarm points per Table E.

(d) Repeat Step 16 for each remaining remote of interest, reporting 16 data subgroups.

Central Address—Slave E3C

17 At the slave E3C, operate the NET key momentarily.

Requirement: A single digit (2, 3, or 4), indicating the slave central's address, will appear in the SYSTEM SUMMARY display.

Number of Slave E3Cs a Master E3C Will Poll

18 At the master E3C, disconnect the data set 2 cable at J83. Operate the power switch to OFF, then back to ON. Momentarily operate the START POLL key; then operate the AUTO PRINT key while observing that the keyboard AUTO PRINT lamp extinguishes (goes off).

Requirement: Within 3 minutes, the master E3C SYSTEM SUMMARY display will list the slave E3Cs it is equipped to poll within the CENTRAL REMOTE FAIL heading. The possible slave E3Cs are 2, 3, and 4.

Reconnect the data set 2 cable to J83.

End of test. Return system to normal.

19 The station constant verification is complete. Return the system to normal (as required) as follows:

(a) Turn E3C and STS power off.

(b) Disconnect the E3C data set and the STS, List 6 cables. Connect the E3C data set cable to the 202T data set connector J2.

(c) Return the E3C, LOCAL AUDIBLE DISABLE switch to ON.

(d) Turn the E3C power switch to ON and momentarily operate the START POLL key.

TABLE A

E3C OFFICE ALARM OUTPUTS

J81	SIGNAL
3	MNA (audible)
4	MNAR (audible return)
9	MNV (visual)
10	MNVR (visual return)

TABLE B

CIRCUIT PACK ADDRESS SWITCH SETTINGS

STAND-ALONE E3C						
BASKET LOCATION	CP NUMBER	SWITCH	SETTINGS*			
			1	2	3	4
M2A	100	S2	0	0	0	0
M2C	106		0	0	C	C
M2D	110	S1	0	0	0	C
		S2	C	C	C	C
M2E	112		0	0	0	0
M2F	112		C	0	0	0
M2G	102		0	0	0	C
M2H	102		C	0	0	C
M2J	114	S1	DOWN			
		S2	0	C	0	C
M2K	112		C	C	0	C
M2P	111		C	C	0	C
M2R	111		0	0	C	C
M2S	111		C	0	C	C
SLAVE OR MASTER E3C Same as Stand-Alone E3C except:						
M2J	114	S2	C	C	0	C
M2L	102		0	C	0	C

*0 = Switch depressed on side opposite number.

C = Switch depressed on numbered side.

In addition, CP 101 at M2B must have shorting plugs between the following points: E3-E4, E9-E10, E18-E19, and E21-E22.

TABLE C

CONTROL OPERATION

CONTROL	LAMPS ON FOR WORD 1	LAMPS ON FOR WORD 2	LAMPS ON FOR WORD 3
1	2, 5 through 11, 13 through 17	1, 4 through 8, 14 through 17 (see note)	1, 2
8	2, 5 through 11, 13 through 17	1, 4 through 8, 14 through 17 (see note)	1, 2, 6, 7, 8
57	2, 5 through 11, 13 through 17	1, 4 through 8, 14 through 17 (see note)	1, 2, 9, 10, 11

Note: 4 through 8 = remote number minus 1 in binary; 4 = LSB (least significant bit).

TABLE D

E3C ALARM LISTS

LIST NO.	ALARM THRESHOLD	SUBGROUP MASK PATTERN	
		ALARMS	STATUS
200	WITH	16	—
201	THRESHOLD	15	1
202		14	2
203		13	3
204		12	4
205		11	5
206		10	6
207		9	7
208		8	8
209		7	9
210		6	10
211		5	11
212		4	12
213		3	13
214		2	14
215		1	15
216		—	16
217	WITHOUT	16	—
218	THRESHOLD	15	1
219		14	2
220		13	3
221		12	4
222		11	5
223		10	6
224		9	7
225		8	8
226		7	9
227		6	10
228		5	11
229		4	12
230		3	13
231		2	14
232		1	15

TABLE E

E3C DISPLAYS, SUBGROUPS AND SCAN POINTS

DISPLAY	SUBGROUP	POINTS
2	5	1—16
	6	17—32
	7	33—48
	8	49—64
3	9	1—16
	10	17—32
	11	33—48
	12	49—64
4	13	1—16
	14	17—32
	15	33—48
	16	49—64

Note: Subgroups assigned CDO satellites hubbed to the selected SAC remote will be blank and threshold subgroups may be visible.