

E2A TELEMETRY STATUS AND COMMAND REMOTE AND TELEMETRY-TO-COMPUTER TRANSLATOR TESTS

CONTENTS	PAGE
1. INTRODUCTION	1
2. TCT MAINTENANCE	1
A. CHART 1—TCT REPLACEMENT	2
3. REMOTE MAINTENANCE	2
A. CHART 2—COMMON CONTROL AND STATUS INPUT TEST	7
B. CHART 3—CONTROL POINT OUTPUT MAINTENANCE	23
C. CHART 4—SATELLITE COMMUNICATOR TEST	44
4. REFERENCES	49

System/Network Management (EADAS/NM), Telecommunications Alarm Surveillance and Control System (TASC), community dial office (CDO) satellite communicator unit, and E3 Telemetry Alarm System. Except for the E3 Telemetry Alarm System, the E2A equipment includes the telemetry-to-computer translator (TCT) located at the central and the remotes located in remoted central offices. In the case of E3, the same E2A remotes are used; however, there is an E3 alarm central in lieu of TCTs and minicomputer hardware at the central station.

1.02 This section has been reissued to correct the maintenance procedure for the CDO satellite communicator unit, and to make minor editorial changes.

2. TCT MAINTENANCE (Applies to all Systems Except E3)

2.01 A spare TCT is provided at the central for maintenance purposes. If a TCT is determined to be faulty, it is replaced with the spare as set forth in Chart 1. When the TCT has been replaced, verify proper operation through the use of the system test sections listed in Part 4.

1. INTRODUCTION

1.01 This section provides the maintenance procedures for the E2A equipment used in status and command applications such as the Engineering and Administrative Data Acquisition

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

CHART 1

TCT REPLACEMENT

APPARATUS:

None.

STEP	PROCEDURE
1	Notify the central operator that the TCT is about to be replaced.
2	Disconnect the power cord and the three connectorized cables from connectors J1, J2, and J3 located on the back of the TCT.
3	Slide the defective TCT out of the cabinet and replace it with the spare.
4	Reconnect the cables and power cord removed in Step 2.
5	Notify the central operator that the defective TCT has been replaced.

3. REMOTE MAINTENANCE (Applies to all Systems)

3.01 The status and command remote (Fig. 1) consists of a J92621F basic remote module (BRM), up to four J92621G expander (EX) modules (one shown in Fig. 1), or up to four J92621AG CDO satellite communicator units, or up to four J92621G and J9261AG units in combination. The BRM is equipped with up to eleven circuit packs (CP) as stated in Table A, and each expander module is equipped with up to nine circuit packs as stated in Table B. Each circuit pack is assigned a number and a specific location within the remote. The location codes are stamped on the BRM and expander modules for each slot, as shown in Fig. 1. The number and type of CPs in the modules depend on the needs of the specific wire center.

3.02 If the remote fails to respond to the central's commands, an initial check should be made to ensure that the proper voltages are supplied to the various terminal strips on the rear of the BRM (see Fig. 2). Each voltage is measured between the terminals listed in Table C and ground (GND).

3.03 The -48 Vdc or -24 Vdc (depending on the application) source supplies power to the power converter (CP 12 or CP 38). The converter then supplies the +5 Vdc, +15 Vdc, and -15 Vdc power necessary to operate the remainder of the CPs in the BRM and the expanders. If the -48 Vdc or -24 Vdc is not present, check the 3-ampere power-converter fuse located on the central office (CO) miscellaneous fuse panel. If the -48 Vdc or -24 Vdc is present but the +5 Vdc, +15 Vdc, and/or -15 Vdc power sources are not, remove the power-converter fuse on the CO miscellaneous fuse panel and then replace CP 12 or CP 38 in the BRM. Once replaced, reinsert the fuse and recheck voltage sources.

3.04 The E2A remote consists of common control, status input, and control point circuitry. Testing of the circuitry is accomplished through the use of the E-telemetry station test set, the general purpose plug-in, and the K1-1 extender board and associated lamp boards, K1-4 and K1-5. If the remote does not respond or responds with errors after verifying that the proper power supply voltages exist, then the problem is probably in the common control circuit. If the remote transmits

without parity errors but fails to report alarms and statuses properly, the problem probably exists in the status input circuitry. If a control point fails to operate properly, the problem probably exists in the control point circuitry. The following paragraphs describe the procedures for troubleshooting these problems.

Common Control and Status Input Maintenance

3.05 Chart 2 provides, in step-procedure form, the maintenance procedures for the common control and status input circuitry. Table D is used in conjunction with Chart 2 and lists a STATUS INPUT table for each system being maintained. These tables (E through J) are divided into several parts, each part providing information unique to each wire-center application.

3.06 Tables E through J contain test set information (column A) which indicates how certain switches on the test set are to be set, status information (column B) which indicates the card reference or group-subgroup number, and the diagnostics (column C) which indicates the defective

CP, the location of the CP, and in which module (BRM, EX1, etc) the CP is.

3.07 If only a few status points are not reporting correctly, the faulty CP may be defined by determining the card reference or group-subgroup numbers for the status point via the system interconnect drawings (see Part 4), and then locate that entry in Table E, F, G, H, I, or J (depending on the application under column B for the particular wire center). Column C will indicate the CP associated with that status point. Replace the CP and see if the status point then reports correctly. If it still does not report correctly, perform the test in Chart 2.

Control Point Maintenance

3.08 Chart 3 provides, in step-procedure form, the maintenance procedures for the control point circuitry. Refer to Table K for a list of the systems and their associated CONTROL POINT tables to be used in conjunction with Chart 3. These tables (L through Q) provide specific information for each type of wire center.

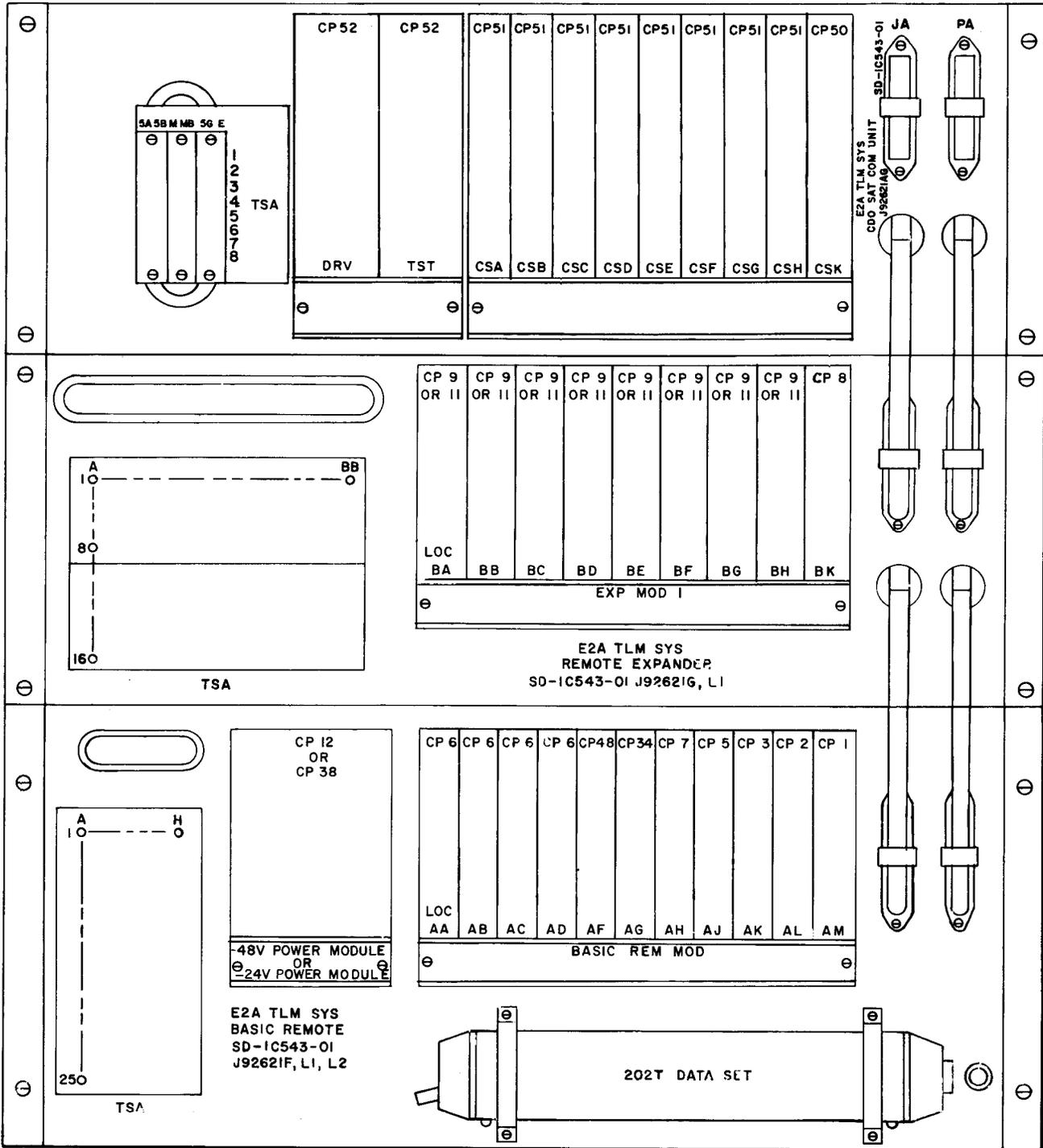


Fig. 1—Front View of E2A Remote With One Expander Module and One CDO Satellite Communicator Unit

TABLE A

J92621F STATUS AND COMMAND BASIC REMOTE MODULE

LOCATION	CP NUMBER
AA	6
AB	6
AC	6
AD	6
AF	48
AG	34
AH	7
AJ	5
AK	3
AL	2
AM	1

TABLE B

J92621G STATUS AND COMMAND EXPANDER MODULE

LOCATION	CP NUMBER
BA	9 or 11
BB	9 or 11
BC	9 or 11
BD	9 or 11
BE	9 or 11
BF	9 or 11
BG	9 or 11
BH	9 or 11
BK	8

Note: The circuit pack in locations BA through BH depends on the wire center configuration.

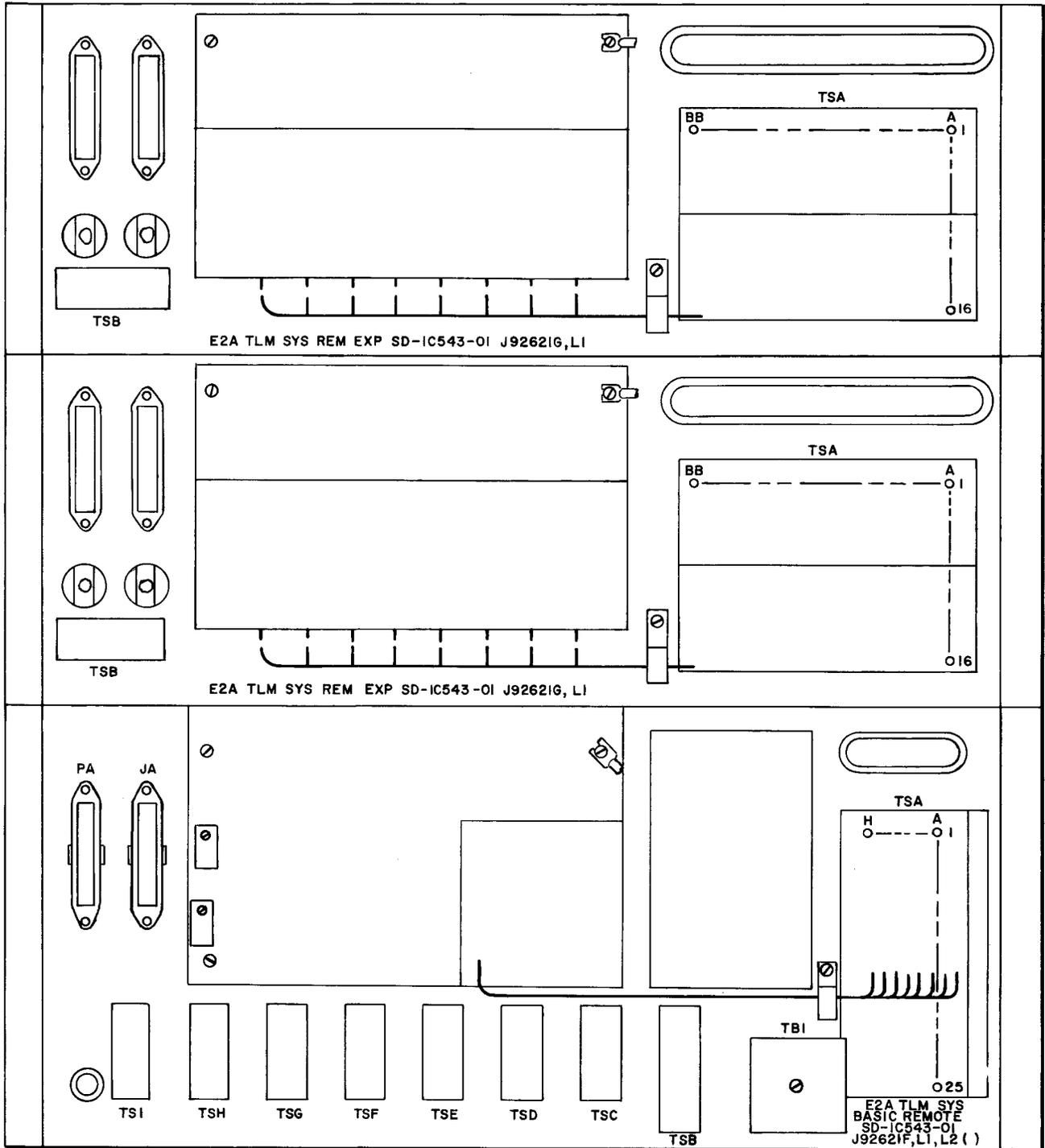


Fig. 2—Rear View of E2A Remote With Two Expander Modules

TABLE C

PANEL	TERMINAL STRIP	TERMINAL	VOLTAGE LEVEL
BRM	TSF	+5	+5 ± 0.25 Vdc
BRM	TSD, TSE	+15	+15 ± 1 Vdc
BRM	TSD, TSE	-15	-15 ± 1 Vdc
BRM	TSB	-24	-24 ± 2 Vdc
BRM	TSB	-48	-48 ± 4 Vdc
BRM	TSF	USV	-48 ± 4 Vdc
EX1, EX2	TSB	+5	+5 ± 0.25 Vdc
EX1, EX2	TSB	USV	-48 ± 4 Vdc

Note: (FF) indicates factory furnished.

CHART 2

COMMON CONTROL AND STATUS INPUT TEST

APPARATUS:

E-Telemetry Station Test Set (KS-20937,L1)

General Purpose Plug-in (KS-20937,L4)

E2A Test Cable (KS-20937,L6)

Spare Circuit Packs

STEP

PROCEDURE

Caution:

- *Prior to any remote maintenance, ensure that the monitored wire center has been switched to the local control mode.*
- *Remove power from bay before removing or replacing any circuit pack.*

Note: Removing or replacing circuit packs can be done by placing the **SERVICE** switch on the E2A BRM to the **CP SRV** position if so equipped. Those units powered by a power expander unit may have their circuit packs removed in the same manner if the power expander unit is equipped with a **CP SRV** switch. If not equipped, the power must be removed from these units.

CHART 2 (Contd)

- | STEP | PROCEDURE |
|------|---|
| 1 | <p>On the 202T data set, depress and hold the local test (LT) key for approximately 15 seconds.</p> <p>Requirement: The MR, RS, CS, CO, and TM lamps illuminate and remain illuminated for the duration of time that the LT key is depressed. If the TM lamp extinguishes during the 15-second period, repeat Step 1 four additional times. If the TM lamp remains extinguished, have the data set replaced and repeat the test.</p> |
| 2 | <p>Once the original data set or the new data set has met the requirements in Step 1, ensure that the following options in the data set are set per the associated schematic and the following:</p> |

<u>FEATURE OPTION</u>	<u>SETTING</u>
1. 4-wire operation	(FF)
2. Soft turnoff and squelch interval	0,0
3. Fast carrier detection—in	(FF)
4. Clear to send interval—8ms	(FF)
5. Clamp—in	(FF)
6. Carrier detection reset	IN
7. Continuous carrier—out	(FF)
8. Grounding option	Signal ground not connected to frame ground
1 2 3 4 5 6 7 8 9 0	
0 0 X X 0 0 0 X X X	

- | | |
|---|---|
| 3 | <p>Once the requirement in Step 1 is met and the data set options are correct, there is reasonable assurance that the data set is in proper working condition. Additional problems are probably within the remote circuitry. Steps 4 through 12 isolate the remote circuit problems with the data set disconnected.</p> |
| 4 | <p>Insert and connect the general purpose plug-in unit into the station test set.</p> |
| 5 | <p>Locate and remove plug P1 from the 202T data set at the remote unit.</p> |

CHART 2 (Contd)

STEP	PROCEDURE
------	-----------

6	Mate the female pin connector of the E2A test cable to the P1 plug removed from the data set in Step 4. Plug the other end of the test cable into the J2 connector on the station test set.
---	---

7	Set the controls on the station test set as follows:
---	--

<u>SWITCH</u>	<u>POSITION</u>
POWER	OFF
SYSTEM	E2A
PARITY	B
BIT RATE	1200
MODE	CONT
ENABLE	NORMAL
DISPLAY ERROR WORD	OFF
DISPLAY WORD SELECT	1
MESSAGE LENGTH WORDS	1
RCU	OFF
WORD 1	01011111111000000
WORD 2 through WORD 4	00000000000000000

8	Move the POWER switch to the ON (up) position.
---	--

9	Depress, in order, the MASTER CLEAR and START pushbutton switches.
---	--

Requirement: The TMT, RCV, and VALID WORD lamps blink. If the requirement is met, continue with Step 10. If the requirement is not met, repeat Step 9. If the WORD requirement is still not met or the ERROR WORD lamp blinks, replace all of the following circuit packs:

- CP 1
- CP 2
- CP 3
- CP 48
- CP 5
- CP 7 (If expander or communicator is provided)

CHART 2 (Contd)

STEP

PROCEDURE

Inspect CP 34 for proper cross-connections through the use of the notes on the appropriate interconnect drawings. If the requirement in Step 9 can now be met, determine the defective CPs as follows:

Insert the original CPs back in the remote unit, one at a time, repeating Step 9 after each replacement until the unit malfunctions. The last original CP installed is defective and shall be replaced with a spare. Continue with this procedure until all CPs have been checked. Send the defective CP back to Western Electric for repair. If all the CPs have been replaced with spares and the remote still fails Step 9, remove the two plugs connecting the F- and G-panels and repeat Step 9. If the remote then functions properly, determine the faulty G-panel by reconnecting the plugs between the F- and G-panels; and then, starting at the top G-panel, disconnect each G-panel until the remote functions properly. The last G-panel disconnected is faulty and should be inspected for backplane wiring or connector problems. If the remote still fails to operate correctly, either a spare CP in the BRM is defective or the BRM backplane wiring or connectors are faulty. When this occurs, refer to SD-1C533-01 and SD-1C543-01.

- 10 Hold the TEST switch on CP 34 in the 1 (up) position.

Requirement: RECEIVE INFORMATION lamps 1 through 17 illuminate. If this requirement is not met, refer to the STATUS INPUT table (E, F, G, H, I, or J) that corresponds to the system being maintained, and replace the appropriate CP corresponding to the test set switch settings per that table. If the problem still exists, replace the TEST GENERATOR CP. Refer to Table D for proper STATUS INPUT table.

- 11 Hold the TEST switch on CP 34 in the 0 (down) position.

Requirement: RECEIVE INFORMATION lamp 1 remains illuminated, and lamps 2 through 17 extinguish. If the requirement is not met, refer to the STATUS INPUT table (E, F, G, H, I, or J) that corresponds to the system being maintained and replace the appropriate CP corresponding to the test set switch settings per that table.

- 12 Repeat the procedure used in Steps 10 and 11 for each set of switch settings (WORD 1, switches 13 through 17, and DISPLAY WORD SELECT switch positions) as shown in the STATUS INPUT table (E, F, G, H, I, or J). Refer to Table D for the STATUS INPUT table corresponding to the system being maintained.

CHART 2 (Contd)

STEP**PROCEDURE****TABLE D****STATUS INPUT TABLES**

SYSTEM	TABLE
CSACS—NO. 1, 350A AND 355A STEP-BY-STEP CENTRAL OFFICE	E
CSACS—NO. 5 CROSSBAR CENTRAL OFFICE	F
EADAS/NM—CROSSBAR TANDEM OFFICES	G
EADAS/NM — NO. 4A OR 4M ETS CROSSBAR OFFICES	H
EADAS/NM—NO. 4A OR 4M CARD TRANSLATOR OFFICES	I
TASC or E3 ALARM SYSTEM—ALL OFFICES	J

TABLE E
STATUS INPUTS
CSACS—NO. 1, 350A AND 355A STEP-BY-STEP CENTRAL OFFICE

LINE	A TEST SET INFORMATION					DISPLAY WORD SELECT SWITCH POSITION	B STATUS INFO	C DIAGNOSTIC INFO
	WORD 1 SWITCH SETTINGS						CARD REFERENCE	CP—LOCATION—MODULE
	13	14	15	16	17			
1	0	0	0	0	0	1	1A	6 AA BRM
2	0	0	0	0	0	2	1B	6 AB BRM
3	0	0	0	0	0	3	1C	6 AC BRM
4	0	0	0	0	0	4	1D	6 AD BRM
5	0	0	0	0	0	5	2A	9 BA EX1
6	0	0	0	0	0	6	2A	9 BA EX1
7	0	0	0	0	0	7	2B	9 BB EX1
8	0	0	0	0	0	8	2B	9 BB EX1
9	0	0	0	0	0	9	2C	9 BC EX1
10	0	0	0	0	0	10	2C	9 BC EX1
11	0	0	0	0	0	11	2E	9 BE EX1
12	0	0	0	0	0	12	2E	9 BE EX1
13	0	0	0	0	0	13	3F	9 BF EX2
14	0	0	0	0	0	14	3F	9 BF EX2
15	0	0	0	0	0	15	3G	9 BG EX2
16	0	0	0	0	0	16	3G	9 BG EX2
17	0	0	0	0	1	1	2F	9 BF EX1
18	0	0	0	0	1	2	2F	9 BF EX1
19	0	0	0	0	1	3	2G	9 BG EX1
20	0	0	0	0	1	4	2G	9 BG EX1
21	0	0	0	0	1	5	2H	9 BH EX1
22	0	0	0	0	1	6	2H	9 BH EX1

TABLE E (Contd)

STATUS INPUTS
CSACS—NO. 1, 350A AND 355A STEP-BY-STEP CENTRAL OFFICE

LINE	A TEST SET INFORMATION					B STATUS INFO	C DIAGNOSTIC INFO
	WORD 1 SWITCH SETTINGS					DISPLAY WORD SELECT SWITCH POSITION	CARD REFERENCE
	13	14	15	16	17		
23	0	0	0	0	1	7	3A 9 BA EX2
24	0	0	0	0	1	8	3A 9 BA EX2
25	0	0	0	0	1	9	3B 9 BB EX2
26	0	0	0	0	1	10	3B 9 BB EX2
27	0	0	0	0	1	11	3C 9 BC EX2
28	0	0	0	0	1	12	3C 9 BC EX2
29	0	0	0	0	1	13	3D 9 BD EX2
30	0	0	0	0	1	14	3D 9 BD EX2
31	0	0	0	0	1	15	3E 9 BE EX2
32	0	0	0	0	1	16	3E 9 BE EX2
33	0	0	0	1	0	1	4A 9 BA EX3
34	0	0	0	1	0	2	4A 9 BA EX3
35	0	0	0	1	0	3	4C 9 BC EX3
36	0	0	0	1	0	4	4C 9 BC EX3
37	0	0	0	1	0	5	4D 9 BD EX3
38	0	0	0	1	0	6	4D 9 BD EX3
39	0	0	0	1	0	7	4E 9 BE EX3
40	0	0	0	1	0	8	4E 9 BE EX3
41	0	0	0	1	0	9	4F 9 BF EX3
42	0	0	0	1	0	10	4F 9 BF EX3
43	0	0	0	1	0	11	4G 9 BG EX3
44	0	0	0	1	0	12	4H 9 BH EX3

TABLE E (Contd)

STATUS INPUTS
CSACS—NO. 1, 350A AND 355A STEP-BY-STEP CENTRAL OFFICE

LINE	A TEST SET INFORMATION					B STATUS INFO	C DIAGNOSTIC INFO
	WORD 1 SWITCH SETTINGS					DISPLAY WORD SELECT SWITCH POSITION	CARD REFERENCE
	13	14	15	16	17		
45	0	0	0	1	0	13	4H 9 BH EX3
46	0	0	0	1	0	14	4H 9 BH EX3
47	0	0	0	1	1	1	5A 9 BA EX4
48	0	0	0	1	1	2	5A 9 BA EX4
49	0	0	0	1	1	3	5B 9 BB EX4
50	0	0	0	1	1	4	5B 9 BB EX4
51	0	0	0	1	1	5	5C 9 BC EX4
52	0	0	0	1	1	6	5C 9 BC EX4
53	0	0	0	1	1	7	5D 9 BD EX4
54	0	0	0	1	1	8	5D 9 BD EX4
55	0	0	0	1	1	9	5E 9 BE EX4
56	0	0	0	1	1	10	5E 9 BE EX4
57	0	0	0	1	1	11	5F 9 BF EX4
58	0	0	0	1	1	12	5F 9 BF EX4
59	0	0	0	1	1	13	5G 9 BG EX4
60	0	0	0	1	1	14	5G 9 BG EX4
61	0	0	0	1	1	15	5H 9 BH EX4
62	0	0	0	1	1	16	5H 9 BH EX4

TABLE F
STATUS INPUTS
CSACS—NO. 5 CROSSBAR CENTRAL OFFICE

LINE	A TEST SET INFORMATION					B STATUS INFO	C DIAGNOSTIC INFO	
	13	WORD 1 SWITCH SETTINGS			17	DISPLAY WORD SELECT SWITCH POSITION	CARD REFERENCE	CP—LOCATION—MODULE
1	0	0	0	0	0	1	1A	6 AA BRM
2	0	0	0	0	0	2	1B	6 AB BRM
3	0	0	0	0	0	3	1C	6 AC BRM
4	0	0	0	0	0	4	1D	6 AD BRM
5	0	0	0	0	0	5	2A	9 BA EX1
6	0	0	0	0	0	6	2A	9 BA EX1
7	0	0	0	0	0	7	2B	9 BB EX1
8	0	0	0	0	0	8	2B	9 BB EX1
9	0	0	0	0	0	9	2C	9 BC EX1
10	0	0	0	0	0	10	2C	9 BC EX1
11	0	0	0	0	0	11	2E	9 BE EX1
12	0	0	0	0	0	12	2E	9 BE EX1
13	0	0	0	0	0	14	3D	9 BD EX2
14	0	0	0	0	1	1	2F	9 BF EX1
15	0	0	0	0	1	2	2F	9 BF EX1
16	0	0	0	0	1	3	2G	9 BG EX1
17	0	0	0	0	1	4	2G	9 BG EX1
18	0	0	0	0	1	5	2H	9 BH EX1
19	0	0	0	0	1	6	2H	9 BH EX1
20	0	0	0	0	1	7	3A	9 BA EX2
21	0	0	0	0	1	8	3A	9 BA EX2

TABLE F (Contd)

CSACS—NO. 5 CROSSBAR CENTRAL OFFICE

LINE	A TEST SET INFORMATION					B STATUS INFO	C DIAGNOSTIC INFO	
	WORD 1 SWITCH SETTINGS				DISPLAY WORD SELECT SWITCH POSITION	CARD REFERENCE	CP—LOCATION—MODULE	
13	14	15	16	17				
22	0	0	0	0	1	9	3B	9 BB EX2
23	0	0	0	0	1	10	3B	9 BB EX2
24	0	0	0	0	1	11	3C	9 BC EX2
25	0	0	0	0	1	12	3C	9 BC EX2
26	0	0	0	0	1	13	3F	9 BF EX2
27	0	0	0	0	1	14	3F	9 BF EX2
28	0	0	0	0	1	15	3G	9 BG EX2
29	0	0	0	0	1	16	3G	9 BG EX2
30	0	0	0	1	0	1	4A	9 BA EX3
31	0	0	0	1	0	2	4A	9 BA EX3
32	0	0	0	1	0	3	4C	9 BC EX3
33	0	0	0	1	0	4	4C	9 BC EX3
34	0	0	0	1	0	5	4D	9 BD EX3
35	0	0	0	1	0	6	4D	9 BD EX3
36	0	0	0	1	0	7	4E	9 BE EX3
37	0	0	0	1	0	8	4E	9 BE EX3
38	0	0	0	1	0	9	4F	9 BF EX3
39	0	0	0	1	0	10	4F	9 BF EX3
40	0	0	0	1	0	11	4G	9 BG EX3
41	0	0	0	1	0	12	4G	9 BG EX3
42	0	0	0	1	0	13	4H	9 BH EX3
43	0	0	0	1	0	14	4H	9 BH EX3
44	0	0	0	1	1	1	5A	9 BA EX4

CHART 2 (Contd)

STEP	PROCEDURE
------	-----------

TABLE F (Contd)

STATUS INPUTS
CSACS—NO. 5 CROSSBAR CENTRAL OFFICE

LINE	A TEST SET INFORMATION					B STATUS INFO	C DIAGNOSTIC INFO
	WORD 1 SWITCH SETTINGS					DISPLAY WORD SELECT SWITCH POSITION	CARD REFERENCE
	13	14	15	16	17		
45	0	0	0	1	1	2	5A 9 BA EX4
46	0	0	0	1	1	3	5B 9 BB EX4
47	0	0	0	1	1	4	5B 9 BB EX4
48	0	0	0	1	1	5	5C 9 BC EX4
49	0	0	0	1	1	6	5C 9 BC EX4
50	0	0	0	1	1	7	5D 9 BD EX4
51	0	0	0	1	1	8	5D 9 BD EX4
52	0	0	0	1	1	9	5E 9 BE EX4
53	0	0	0	1	1	10	5E 9 BE EX4
54	0	0	0	1	1	11	5F 9 BF EX4
55	0	0	0	1	1	12	5F 9 BF EX4
56	0	0	0	1	1	13	5G 9 BG EX4
57	0	0	0	1	1	14	5G 9 BG EX4
58	0	0	0	1	1	15	5H 9 BH EX4
59	0	0	0	1	1	16	5H 9 BH EX4

CHART 2 (Contd)

STEP

PROCEDURE

TABLE G

STATUS INPUTS
EADAS/NM-CROSSBAR TANDEM OFFICES

LINE	A TEST SET INFORMATION					DISPLAY WORD SELECT SWITCH POSITION	B STATUS INFO		C DIAGNOSTIC INFO		
	WORD 1 SWITCH SETTINGS	13	14	15	16		17	GROUP-SUBGROUP	CP-LOCATION-MODULE		
1	0	0	0	0	0	1	1	1	6	AA	BRM
2	0	0	0	0	0	2	1	2	6	AB	BRM
3	0	0	0	0	0	3	1	3	6	AC	BRM
4	0	0	0	0	0	4	1	4	6	AD	BRM
5	0	0	0	0	0	5	1	5	9	BA	EX2
6	0	0	0	0	0	6	1	6	9	BA	EX2
7	0	0	0	0	0	7	1	7	9	BB	EX2
8	0	0	0	0	0	8	1	8	9	BB	EX2
9	0	0	0	0	0	9	1	9	9	BC	EX2
10	0	0	0	0	0	10	1	10	9	BC	EX2
11	0	0	0	0	0	11	1	11	9	BD	EX2
12	0	0	0	0	0	12	1	12	9	BD	EX2
13	0	0	0	0	1	1	2	1	6	AA	BRM

CHART 2 (Contd)

STEP

PROCEDURE

TABLE H

STATUS INPUTS
EADAS/NM—NO. 4A OR 4M ETS CROSSBAR OFFICES

LINE	A TEST SET INFORMATION					DISPLAY WORD SELECT SWITCH POSITION	B STATUS INFO		C DIAGNOSTIC INFO		
	13	14	15	16	17		GROUP	SUBGROUP	CP	LOCATION	MODULE
1	0	0	0	0	0	1	1	1	6	AA	BRM
2	0	0	0	0	0	2	1	2	6	AB	BRM
3	0	0	0	0	0	3	1	3	6	AC	BRM
4	0	0	0	0	0	4	1	4	6	AD	BRM
5	0	0	0	0	0	5	1	5	9	BA	EX1
6	0	0	0	0	0	6	1	6	9	BA	EX1
7	0	0	0	0	0	7	1	7	9	BB	EX1
8	0	0	0	0	0	8	1	8	9	BB	EX1
9	0	0	0	0	1	1	2	1	6	AA	BRM

CHART 2 (Contd)

STEP

PROCEDURE

TABLE I

STATUS INPUTS
EADAS/NM—NO. 4A OR 4M CARD TRANSLATOR OFFICES

LINE	A TEST SET INFORMATION					DISPLAY WORD SELECT SWITCH POSITION	B STATUS INFO		C DIAGNOSTIC INFO		
	WORD 1 SWITCH SETTINGS	13	14	15	16		17	GROUP—SUBGROUP	CP—LOCATION—MODULE		
1	0	0	0	0	0	1	1	1	6	AA	BRM
2	0	0	0	0	0	2	1	2	6	AB	BRM
3	0	0	0	0	0	3	1	3	6	AC	BRM
4	0	0	0	0	0	4	1	4	6	AD	BRM
5	0	0	0	0	0	5	1	5	9	BA	EX1
6	0	0	0	0	0	6	1	6	9	BA	EX1
7	0	0	0	0	0	7	1	7	9	BB	EX1
8	0	0	0	0	0	8	1	8	9	BB	EX1
9	0	0	0	0	0	9	1	9	9	BC	EX1
10	0	0	0	0	0	10	1	10	9	BC	EX1
11	0	0	0	0	0	11	1	11	9	BD	EX1
12	0	0	0	0	0	12	1	12	9	BD	EX1
13	0	0	0	0	0	13	1	13	9	BE	EX1
14	0	0	0	0	0	14	1	14	9	BE	EX1

TABLE J
STATUS INPUTS
TASC or E3 ALARM SYSTEM – ALL OFFICES

LINE	A TEST INFORMATION					DISPLAY WORD SELECT SWITCH POSITION	B STATUS INFO		C DIAGNOSTIC INFO			SYSTEM
	WORD 1 SWITCH SETTINGS						GROUP – SUBGROUP	CP LOCATION	MODULE			
	13	14	15	16	17							
1	0	0	0	0	0	1	1	1	6	AA	BRM	TASC or E3
2	0	0	0	0	0	2	2	2	6	AB	BRM	
3	0	0	0	0	0	3	3	3	6	AC	BRM	
4	0	0	0	0	0	4	4	4	6	AD	BRM	
5	0	0	0	0	0	5	5	5	9			
6	0	0	0	0	0	6	6	6	9			
7	0	0	0	0	0	7	7	7	9			
8	0	0	0	0	0	8	8	8	9			
9	0	0	0	0	0	9	9	9	9			
10	0	0	0	0	0	10	10	10	9			
11	0	0	0	0	0	11	11	11	9	See note below		
12	0	0	0	0	0	12	12	12	9			
13	0	0	0	0	0	13	13	13	9			
14	0	0	0	0	0	14	14	14	9			
15	0	0	0	0	0	15	15	15	9			
16	0	0	0	0	0	16	16	16	9			
1	0	0	0	0	1	1	2	1	9			TASC only
2	0	0	0	0	1	2	2	2	9			
3	0	0	0	0	1	3	2	3	9			
4	0	0	0	0	1	4	2	4	9			
5	0	0	0	0	1	5	2	5	9			
6	0	0	0	0	1	6	2	6	9			
7	0	0	0	0	1	7	2	7	9	See note below		
8	0	0	0	0	1	8	2	8	9			
9	0	0	0	0	1	9	2	9	9			
10	0	0	0	0	1	10	2	10	9			
11	0	0	0	0	1	11	2	11	9			
12	0	0	0	0	1	12	2	12	9			
13	0	0	0	0	1	13	2	13	9			

TABLE J (Contd)

STATUS INPUTS
TASC or E3 ALARM SYSTEM – ALL OFFICES

LINE	A TEST INFORMATION					DISPLAY WORD SELECT SWITCH POSITION	B STATUS INFO		C DIAGNOSTIC INFO		SYSTEM
	WORD 1 SWITCH SETTINGS						GROUP – SUBGROUP	CP LOCATION	MODULE		
	13	14	15	16	17						
14	0	0	0	0	1	14	2	14	9	TASC only	
15	0	0	0	0	1	15	2	15	9		
16	0	0	0	0	1	16	2	16	9		
1	0	0	0	1	0	1	3	1	9		
2	0	0	0	1	0	2	3	2	9		
3	0	0	0	1	0	3	3	3	9		
4	0	0	0	1	0	4	3	4	9		
5	0	0	0	1	0	5	3	5	9		
6	0	0	0	1	0	6	3	6	9		
7	0	0	0	1	0	7	3	7	9		
8	0	0	0	1	0	8	3	8	9		
9	0	0	0	1	0	9	3	9	9		
10	0	0	0	1	0	10	3	10	9		
11	0	0	0	1	0	11	3	11	9		
12	0	0	0	1	0	12	3	12	9		
13	0	0	0	1	0	13	3	13	9		
14	0	0	0	1	0	14	3	14	9		
15	0	0	0	1	0	15	3	15	9		
16	0	0	0	1	0	16	3	16	9		
1	0	0	0	1	1	1	4	1	9		
2	0	0	0	1	1	2	4	2	9		
3	0	0	0	1	1	3	4	3	9		
4	0	0	0	1	1	4	4	4	9		
5	0	0	0	1	1	5	4	5	9		
6	0	0	0	1	1	6	4	6	9		
7	0	0	0	1	1	7	4	7	9		
8	0	0	0	1	1	8	4	8	9		

See
note
below

TABLE J (Contd)
STATUS INPUTS
TASC or E3 ALARM SYSTEM – ALL OFFICES

LINE	A TEST INFORMATION					B STATUS INFO		C DIAGNOSTIC INFO		SYSTEM	
	WORD 1 SWITCH SETTINGS					DISPLAY WORD SELECT SWITCH POSITION	GROUP – SUBGROUP	CP LOCATION	MODULE		
	13	14	15	16	17						
9	0	0	0	1	1	9	4	9	9	See note below	TASC only
10	0	0	0	1	1	10	4	10	9		
11	0	0	0	1	1	11	4	11	9		
12	0	0	0	1	1	12	4	12	9		
13	0	0	0	1	1	13	4	13	9		
14	0	0	0	1	1	14	4	14	9		
15	0	0	0	1	1	15	4	15	9		
16	0	0	0	1	1	16	4	16	9		

Note: Status inputs for TASC and E3 are locally job-engineered. See appropriate local office assignment record or T-drawing and table above to determine which CPs are equipped and how they are assigned.

CHART 3
CONTROL POINT OUTPUT MAINTENANCE

APPARATUS:

- E-Telemetry Station Test Set (KS-20937,L1)
- General Purpose Plug-in (KS-20937,L4)
- E2A Test Cable (KS-20937,L6)
- E2A K1-1 Extender Board (KS-20937,L9)
- E2A K1-4 Lamp Board (KS-20937,L12)
- E2A K1-5 Lamp Board (KS-20937,L13)
- Spare Circuit Packs

CHART 3 (Contd)

STEP	PROCEDURE
------	-----------

Caution:

- **Prior to any remote maintenance, ensure that the monitored wire center has been switched to the local control mode.**
- **Remove power from bay before removing or replacing any circuit pack.**

Note: Removing or replacing circuit packs can be done by placing the **SERVICE** switch on the E2A BRM to the **CP SRV** position if so equipped. Those units powered by a power expander unit may have their circuit packs removed in the same manner if the power expander unit is equipped with a **CP SRV** switch. If not equipped, the power must be removed from these units.

- 1 On the 202T data set depress and hold the LT key for approximately 15 seconds.

Requirement: The MR, RS, CS, CO, and TM lamps illuminate and remain illuminated for the duration of time that the LT key is depressed. If the TM lamp extinguishes during the 15-second period, repeat Step 1 four additional times. If the TM lamp remains extinguished, replace the data set and repeat the test.

- 2 Once the original data set or the new data set has met the requirement in Step 1, ensure that the options in the data set are set per the associated schematic and as follows:

Note: (FF) indicates factory furnished.

<u>FEATURE OPTION</u>	<u>SETTING</u>
1. 4-wire operation	(FF)
2. Soft turnoff and squelch intervals	0,0
3. Fast carrier detection—in	(FF)
4. Clear to send interval—8ms	(FF)
5. Clamp—in	(FF)
6. Carrier detection reset	IN
7. Continuous carrier—out	(FF)
8. Grounding option	Signal ground not connected to frame ground

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

CHART 3 (Contd)

STEP	PROCEDURE
3	Once the requirement in Step 1 is met and the proper options are set, there is reasonable assurance that the data set is in proper working condition. Additional problems are probably within the remote circuitry. Steps 4 through 30 isolate the remote circuit problems with the data set disconnected.
4	Find the appropriate system and central office for which maintenance is required in Table E.
5	Note the block number (or card reference), CP number, CP location, and the module in which the CP is located.
6	Test each CP 6 and CP 11 as set forth in the following procedure.
7	Insert and connect the general plug-in unit into the station test set.
8	Locate and remove plug P1 from the 202T data set at the remote unit.
9	Mate the female pin connector of the E2A test cable to the P1 plug removed from the data set in Step 8. Plug the other end of the test cable into the J2 connector on the station test set.
10	Set the controls on the station test set as follows:

<u>SWITCH</u>	<u>POSITION</u>
SYSTEM	E2A
PARITY	B
BIT RATE	1200
MODE	CONT
ENABLE	NORMAL
DISPLAY ERROR WORD	OFF
DISPLAY WORD SELECT	1
POWER	OFF
RCU	OFF
MESSAGE LENGTH	3
WORD 1	01001111111011111
WORD 2	10011111111001111
WORD 3	10000000000000000
WORD 4	00000000000000000

CHART 3 (Contd)

STEP	PROCEDURE
11	Move the POWER switch to the ON (up) position.
12	Depress, in order, the MASTER CLEAR and START pushbuttons.
	Requirement: RECEIVE INFORMATION lamps 1 and 12 illuminate. If this requirement is not met, perform Steps 1 through 11 of Chart 2.
13	Remove CP 6 from location AA and insert the K1-1 extender board in its place.
14	Plug the CP 6 card into the end of the extender board.
15	Plug the K1-4 (list 12) lamp board into the K1-1 extender board.
16	Set WORD 3 switch 2 on the test set to the 1 (up) position.
17	Depress, in order, the MASTER CLEAR and START pushbuttons.
	Requirement: Lamp 1 on the K1-4 lamp board illuminates. If the requirement is not met, replace the associated CP 6 and repeat the step.
	Note: If after replacing CP 6 the control point still does not operate, replace both CP 5 and CP 7 with spares. If the control point then operates properly, determine the defective CP by replacing the original CPs back in the unit, one at a time, until the unit malfunctions. The last CP replaced is defective and should be sent to Western Electric for repair.
18	Set WORD 3 switch 2 on the test set to the 0 (down) position.
	Requirement: Lamp 1 on the K1-4 lamp board extinguishes. If the requirement is not met, replace the associated CP 6 and repeat the step.
19	Repeat the procedure in Steps 16 through 18 for each remaining control point for the CP 6 card under test, referring to Table R for the WORD 3 switch settings for each control point.
20	Repeat the procedure in Steps 13 through 19 for each remaining CP 6 listed in the CONTROL POINT table (see Table K for proper CONTROL POINT table associated with system being maintained).
21	Remove the last CP 6 tested, the K1-4 lamp board, and the extender board. Reinsert the CP 6 in the module.
22	Remove the first CP 11 listed in Table L, M, N, O, P or Q, and insert the K1-1 extender board in its place.
23	Plug the CP 11 card into the end of the extender board.

CHART 3 (Contd)

STEP	PROCEDURE
24	Plug the K1-5 lamp board into the K1-1 extender board.
25	Obtain the block number from Table L, M, N, O, P, or Q, depending on system being maintained, for the removed CP 11. Proceed to Table R and find that block number (column 1) and set the WORD 3 switches, on the test set, for the first control point.
26	Set WORD 3 switch 2 to the 1 (up) position.
27	Depress, in order, the MASTER CLEAR and START pushbuttons. Requirement: Lamp 1 on the K1-5 lamp board illuminates. If the requirement is not met, replace CP 11 and repeat the step. Note: If after replacing CP 11 the control point still does not operate, replace both CP 5 and CP 7 with spares. If the control point then operates properly, determine the defective CP by replacing the original CPs back in the unit, one at a time, until the unit malfunctions. The last CP is defective and should be sent to Western Electric for repair.
28	Set WORD 3 switch 2 on the test set to the 0 (down) position. Requirement: Lamp 1 on the K1-5 lamp board extinguishes. If the requirement is not met, replace CP 11 and repeat the step.
29	Repeat the procedure in Steps 26 through 28 for each remaining control point for the CP 11 card under test, referring to Table R for the WORD 3 switch settings for each control point.
30	Repeat the procedure in Steps 25 through 29 for each remaining CP 11 listed in Table L, M, N, O, P, or Q, depending on system being maintained.

TABLE K

SYSTEM	TABLE
CSACS—NO. 1, 350A AND 355A STEP-BY-STEP CENTRAL OFFICE	L
CSACS—NO. 5 CROSSBAR CENTRAL OFFICE	M
EADAS/NM—CROSSBAR TANDEM OFFICES	N
EADAS/NM—NO. 4A OR 4B ETS CROSSBAR OFFICES	O
EADAS/NM—NO. 4A OR 4M CARD TRANSLATOR OFFICES	P
TASC OR E3 ALARM SYSTEM—ALL OFFICES	Q

CHART 3 (Contd)

STEP PROCEDURE

TABLE L

CONTROL POINTS
CSACS-NO. 1, 350A AND 355A STEP-BY-STEP CENTRAL OFFICE

A CONTROL POINT			B DIAGNOSTIC		
GARD REFERENCE	BLOCK NO.	RELAY NO.	CP-LOCATION-MODULE		
1A	1	1 - 8	6	AA	BRM
1B	1	9 - 16	6	AB	BRM
1C	2	17 - 24	6	AC	BRM
1D	2	25 - 32	6	AD	BRM
2D	4	49 - 64	11	BD	EX1
3H	6	81 - 96	11	BH	EX2
4B	8	113 - 128	11	BB	EX3

CHART 3 (Contd)

STEP

PROCEDURE

TABLE M

CONTROL POINTS
CSACS—NO. 5 CROSSBAR CENTRAL OFFICE

A CONTROL POINT			B DIAGNOSTIC		
CARD REFERENCE	BLOCK NO.	RELAY NO.	CP	LOCATION	MODULE
1A	1	1 - 8	6	AA	BRM
1B	1	9 - 16	6	AB	BRM
1C	2	17 - 24	6	AC	BRM
1D	2	25 - 32	6	AD	BRM
2D	4	49 - 64	11	BD	EX1
3E	5	65 - 80	11	BE	EX2
3H	8	113 - 128	11	BH	EX2
4B	10	145 - 160	11	BB	EX3

CHART 3 (Contd)

STEP PROCEDURE

TABLE N
CONTROL POINTS
EADAS/NM-CROSSBAR TANDEM OFFICES

A CONTROL POINT		B DIAGNOSTIC
BLOCK NO.	RELAY NO.	CP-LOCATION-MODULE
1	1 - 8	6 AA BRM
1	9 - 16	6 AB BRM
2	1 - 8	6 AC BRM
2	9 - 16	6 AD BRM
3	1 - 16	11 BE EX2
4	1 - 16	11 BF EX2
5	1 - 16	11 BG EX2
6	1 - 16	11 BH EX2
7	1 - 16	11 BA EX1
8	1 - 16	11 BB EX1
9	1 - 16	11 BC EX1

CHART 3 (Contd)

STEP

PROCEDURE

TABLE O

CONTROL POINTS
EADAS/NM—NO. 4A OR 4B ETS CROSSBAR OFFICES

A CONTROL POINT		B DIAGNOSTIC		
BLOCK NO.	RELAY NO.	CP—LOCATION—MODULE		
1	1 - 8	6	AA	BRM
1	9 - 16	6	AB	BRM
2	1 - 8	6	AC	BRM
2	9 - 16	6	AD	BRM
3	1 - 16	11	BG	EX1

CHART 3 (Contd)

STEP

PROCEDURE

TABLE P
CONTROL POINTS
EADAS/NM-NO. 4A OR 4M CARD TRANSLATOR OFFICES

A CONTROL POINT		B DIAGNOSTIC
BLOCK NO.	RELAY NO.	CP-LOCATION-MODULE
1	1 - 8	6 AA BRM
1	9 - 16	6 AB BRM
2	1 - 8	6 AC BRM
2	9 - 16	6 AD BRM
3	1 - 16	11 BG EX1
4	1 - 16	11 BH EX1
11	1 - 16	11 BA EX2
5	1 - 16	11 BC EX2
6	1 - 16	11 BD EX2
7	1 - 16	11 BE EX2
8	1 - 16	11 BF EX2
9	1 - 16	11 BG EX2
10	1 - 16	11 BH EX2

TABLE Q
CONTROL POINTS
TASC OR E3 ALARM SYSTEM – ALL OFFICES

A CONTROL POINT		B DIAGNOSTIC			SYSTEM
BLOCK NO.	RELAY NO.	CP	LOCATION	MODULE	
1	1-8	6	AA	BRM	E3 or TASC
1	9-16	6	AB	BRM	
2	1-8	6	AC	BRM	
2	9-16	6	AD	BRM	
3	1-16	11	See note below.		
4	1-16	11			
5	1-16	11	See note below.		TASC only
6	1-16	11			
7	1-16	11			
8	1-16	11			
9	1-16	11			
10	1-16	11			
11	1-16	11			
12	1-16	11			
13	1-16	11			
14	1-16	11			
15	1-16	11			
16	1-16	11			

Note: Control points for TASC and E3 are locally job-engineered. See appropriate local office assignment record or T-drawing and table above to determine which CPs are equipped and how they are assigned.

TABLE R
CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER						
		NUMBER	LOC	6	7	8	9	10	11	12	13	14								
1	1 1	6	AA	0	0	0	0	0	0	0	0	0	0	0	1					
	2 2			1	0	0	0	0	0	0	0	0	0	2						
	3 3			0	1	0	0	0	0	0	0	0	0			3				
	4 4			1	1	0	0	0	0	0	0	0	0				4			
	5 5			0	0	1	0	0	0	0	0	0	0					5		
	6 6			1	0	1	0	0	0	0	0	0	0						6	
	7 7			0	1	1	0	0	0	0	0	0	0							7
	8 8			1	1	1	0	0	0	0	0	0	0							
	9 9	6	AB	0	0	0	1	0	0	0	0	0	1							
	10 10			1	0	0	1	0	0	0	0	0		2						
	11 11			0	1	0	1	0	0	0	0	0			3					
	12 12			1	1	0	1	0	0	0	0	0				4				
	13 13			0	0	1	1	0	0	0	0	0					5			
	14 14			1	0	1	1	0	0	0	0	0						6		
	15 15			0	1	1	1	0	0	0	0	0							7	
	16 16			1	1	1	1	0	0	0	0	0								8
2	1 17	6	AC	0	0	0	0	1	0	0	0	0	1							
	2 18			1	0	0	0	1	0	0	0	0		2						
	3 19			0	1	0	0	1	0	0	0	0			3					
	4 20			1	1	0	0	1	0	0	0	0				4				
	5 21			0	0	1	0	1	0	0	0	0					5			
	6 22			1	0	1	0	1	0	0	0	0						6		
	7 23			0	1	1	0	1	0	0	0	0							7	
	8 24			1	1	1	0	1	0	0	0	0								8

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
2 (Contd)	9 25	6	AD	0	0	0	1	1	0	0	0	0	1	
	10 26			1	0	0	1	1	0	0	0	0		2
	11 27			0	1	0	1	1	0	0	0	0		3
	12 28			1	1	0	1	1	0	0	0	0		4
	13 29			0	0	1	1	1	0	0	0	0		5
	14 30			1	0	1	1	1	0	0	0	0		6
	15 31			0	1	1	1	1	0	0	0	0		7
	16 32			1	1	1	1	1	0	0	0	0		8
3	1 33	11	*	0	0	0	0	0	1	0	0	0	1	
	2 34			1	0	0	0	0	1	0	0	0		2
	3 35			0	1	0	0	0	1	0	0	0		3
	4 36			1	1	0	0	0	1	0	0	0		4
	5 37			0	0	1	0	0	1	0	0	0		5
	6 38			1	0	1	0	0	1	0	0	0		6
	7 39			0	1	1	0	0	1	0	0	0		7
	8 40			1	1	1	0	0	1	0	0	0		8
	9 41			0	0	0	1	0	1	0	0	0	9	
	10 42			1	0	0	1	0	1	0	0	0		10
	11 43			0	1	0	1	0	1	0	0	0		11
	12 44			1	1	0	1	0	1	0	0	0		12
	13 45			0	0	1	1	0	1	0	0	0		13
	14 46			1	0	1	1	0	1	0	0	0		14
	15 47			0	1	1	1	0	1	0	0	0		15
	16 48			1	1	1	1	0	1	0	0	0		16

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
4	1 49	11	*	0	0	0	0	1	1	0	0	0	1	1
	2 50			1	0	0	0	1	1	0	0	0	2	
	3 51			0	1	0	0	1	1	0	0	0	3	
	4 52			1	1	0	0	1	1	0	0	0	4	
	5 53			0	0	1	0	1	1	0	0	0	5	
	6 54			1	0	1	0	1	1	0	0	0	6	
	7 55			0	1	1	0	1	1	0	0	0	7	
	8 56			1	1	1	0	1	1	0	0	0	8	
	9 57			0	0	0	1	1	1	0	0	0	9	
	10 58			1	0	0	1	1	1	0	0	0	10	
	11 59			0	1	0	1	1	1	0	0	0	11	
	12 60			1	1	0	1	1	1	0	0	0	12	
	13 61			0	0	1	1	1	1	0	0	0	13	
	14 62			1	0	1	1	1	1	0	0	0	14	
	15 63			0	1	1	1	1	1	0	0	0	15	
	16 64			1	1	1	1	1	1	0	0	0	16	
5	1 65	11	*	0	0	0	0	0	0	1	0	0	1	1
	2 66			1	0	0	0	0	0	1	0	0	2	
	3 67			0	1	0	0	0	0	1	0	0	3	
	4 68			1	1	0	0	0	0	1	0	0	4	
	5 69			0	0	1	0	0	0	1	0	0	5	
	6 70			1	0	1	0	0	0	1	0	0	6	
	7 71			1	0	1	0	0	0	1	0	0	7	
	8 72			1	1	1	0	0	0	1	0	0	8	

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
5 (Contd)	9 73			0	0	0	1	0	0	1	0	0	9	
	10 74			1	0	0	1	0	0	1	0	0	10	
	11 75			0	1	0	1	0	0	1	0	0	11	
	12 76			1	1	0	1	0	0	1	0	0	12	
	13 77			0	0	1	1	0	0	1	0	0	13	
	14 78			1	0	1	1	0	0	1	0	0	14	
	15 79			0	1	1	1	0	0	1	0	0	15	
	16 80			1	1	1	1	0	0	1	0	0	16	
6	1 81	11	*	0	0	0	0	1	0	1	0	0	1	
	2 82			1	0	0	0	1	0	1	0	0	2	
	3 83			0	1	0	0	1	0	1	0	0	3	
	4 84			1	1	0	0	1	0	1	0	0	4	
	5 85			0	0	1	0	1	0	1	0	0	5	
	6 86			1	0	1	0	1	0	1	0	0	6	
	7 87			0	1	1	0	1	0	1	0	0	7	
	8 88			1	1	1	0	1	0	1	0	0	8	
	9 89			0	0	0	1	1	0	1	0	0	9	
	10 90			1	0	0	1	1	0	1	0	0	10	
	11 91			0	1	0	1	1	0	1	0	0	11	
	12 92			1	1	0	1	1	0	1	0	0	12	
	13 93			0	0	1	1	1	0	1	0	0	13	
	14 94			1	0	1	1	1	0	1	0	0	14	
	15 95			0	1	1	1	1	0	1	0	0	15	
	16 96			1	1	1	1	1	0	1	0	0	16	

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY † NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
7	1 97	11	*	0	0	0	0	0	1	1	0	0	1	
	2 98			1	0	0	0	0	1	1	0	0		2
	3 99			0	1	0	0	0	1	1	0	0		3
	4 100			1	1	0	0	0	1	1	0	0		4
	5 101			0	0	1	0	0	1	1	0	0		5
	6 102			1	0	1	0	0	1	1	0	0		6
	7 103			0	1	1	0	0	1	1	0	0		7
	8 104			1	1	1	0	0	1	1	0	0		8
	9 105			0	0	0	1	0	1	1	0	0	9	
	10 106			1	0	0	1	0	1	1	0	0	10	
	11 107			0	1	0	1	0	1	1	0	0	11	
	12 108			1	1	0	1	0	1	1	0	0	12	
	13 109			0	0	1	1	0	1	1	0	0	13	
	14 110			1	0	1	1	0	1	1	0	0	14	
	15 111			0	1	1	1	0	1	1	0	0	15	
	16 112			1	1	1	1	0	1	1	0	0	16	
8	1 113	11	*	0	0	0	0	1	1	1	0	0	1	
	2 114			1	0	0	0	1	1	1	0	0		2
	3 115			0	1	0	0	1	1	1	0	0		3
	4 116			1	1	0	0	1	1	1	0	0		4
	5 117			0	0	1	0	1	1	1	0	0		5
	6 118			1	0	1	0	1	1	1	0	0		6
	7 119			0	1	1	0	1	1	1	0	0		7
	8 120			1	1	1	0	1	1	1	0	0		8

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES								OBSERVE LAMP NUMBER	
		NUMBER	LOC	6	7	8	9	10	11	12	13		14
8 (Contd)	9 121			0	0	0	1	1	1	1	0	0	9
	10 122			1	0	0	1	1	1	1	0	0	10
	11 123			0	1	0	1	1	1	1	0	0	11
	12 124			1	1	0	1	1	1	1	0	0	12
	13 125			0	0	1	1	1	1	1	0	0	13
	14 126			1	0	1	1	1	1	1	0	0	14
	15 127			0	1	1	1	1	1	1	0	0	15
	16 128			1	1	1	1	1	1	1	0	0	16
9	1 129	11	*	0	0	0	0	0	0	0	1	0	1
	2 130			1	0	0	0	0	0	0	1	0	2
	3 131			0	1	0	0	0	0	0	1	0	3
	4 132			1	1	0	0	0	0	0	1	0	4
	5 133			0	0	1	0	0	0	0	1	0	5
	6 134			1	0	1	0	0	0	0	1	0	6
	7 135			0	1	1	0	0	0	0	1	0	7
	8 136			1	1	1	0	0	0	0	1	0	8
	9 137			0	0	0	1	0	0	0	1	0	9
	10 138			1	0	0	1	0	0	0	1	0	10
	11 139			0	1	0	1	0	0	0	1	0	11
	12 140			1	1	0	1	0	0	0	1	0	12
	13 141			0	0	1	1	0	0	0	1	0	13
	14 142			1	0	1	1	0	0	0	1	0	14
	15 143			0	1	1	1	0	0	0	1	0	15
	16 144			1	1	1	1	0	0	0	1	0	16

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)
CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
10	1 145	11	*	0	0	0	0	1	0	0	1	0	1	
	2 146			1	0	0	0	1	0	0	1	0		2
	3 147			0	1	0	0	1	0	0	1	0		3
	4 148			1	1	0	0	1	0	0	1	0		4
	5 149			0	0	1	0	1	0	0	1	0		5
	6 150			1	0	1	0	1	0	0	1	0		6
	7 151			0	1	1	0	1	0	0	1	0		7
	8 152			1	1	1	0	1	0	0	1	0		8
	9 153			0	0	0	1	1	0	0	1	0	9	
	10 154			1	0	0	1	1	0	0	1	0	10	
	11 155			0	1	0	1	1	0	0	1	0	11	
	12 156			1	1	0	1	1	0	0	1	0	12	
	13 157			0	0	1	1	1	0	0	1	0	13	
	14 158			1	0	1	1	1	0	0	1	0	14	
	15 159			0	1	1	1	1	0	0	1	0	15	
	16 160			1	1	1	1	1	0	0	1	0	16	
11	1 161	11	*	0	0	0	0	0	1	0	1	0	1	
	2 162			1	0	0	0	0	1	0	1	0		2
	3 163			0	1	0	0	0	1	0	1	0		3
	4 164			1	1	0	0	0	1	0	1	0		4
	5 165			0	0	1	0	0	1	0	1	0		5
	6 166			1	0	1	0	0	1	0	1	0		6
	7 167			0	1	1	0	0	1	0	1	0		7
	8 168			1	1	1	0	0	1	0	1	0		8

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
11 (Contd)	9 169			0	0	0	1	0	1	0	1	0	9	
	10 170			1	0	0	1	0	1	0	1	0	10	
	11 171			0	1	0	1	0	1	0	1	0	11	
	12 172			1	1	0	1	0	1	0	1	0	12	
	13 173			0	0	1	1	0	1	0	1	0	13	
	14 174			1	0	1	1	0	1	0	1	0	14	
	15 175			0	1	1	1	0	1	0	1	0	15	
	16 176			1	1	1	1	0	1	0	1	0	16	
12	1 177	11	*	0	0	0	0	1	1	0	1	0	1	
	2 178			1	0	0	0	1	1	0	1	0	2	
	3 179			0	1	0	0	1	1	0	1	0	3	
	4 180			1	1	0	0	1	1	0	1	0	4	
	5 181			0	0	1	0	1	1	0	1	0	5	
	6 182			1	0	1	0	1	1	0	1	0	6	
	7 183			0	1	1	0	1	1	0	1	0	7	
	8 184			1	1	1	0	1	1	0	1	0	8	
	9 185			0	0	0	1	1	1	0	1	0	9	
	10 186			1	0	0	1	1	1	0	1	0	10	
	11 187			0	1	0	1	1	1	0	1	0	11	
	12 188			1	1	0	1	1	1	0	1	0	12	
	13 189			0	0	1	1	1	1	0	1	0	13	
	14 190			1	0	1	1	1	1	0	1	0	14	
	15 191			0	1	1	1	1	1	0	1	0	15	
	16 192			1	1	1	1	1	1	0	1	0	16	

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
13	1 193	11	*	0	0	0	0	0	0	1	1	0	1	
	2 194			1	0	0	0	0	0	1	1	0		2
	3 195			0	1	0	0	0	0	1	1	0		3
	4 196			1	1	0	0	0	0	1	1	0		4
	5 197			0	0	1	0	0	0	1	1	0		5
	6 198			1	0	1	0	0	0	1	1	0		6
	7 199			0	1	1	0	0	0	1	1	0		7
	8 200			1	1	1	0	0	0	1	1	0		8
	9 201			0	0	0	1	0	0	1	1	0	9	
	10 202			1	0	0	1	0	0	1	1	0	10	
	11 203			0	1	0	1	0	0	1	1	0	11	
	12 204			1	1	0	1	0	0	1	1	0	12	
	13 205			0	0	1	1	0	0	1	1	0	13	
	14 206			1	0	1	1	0	0	1	1	0	14	
	15 207			0	1	1	1	0	0	1	1	0	15	
	16 208			1	1	1	1	0	0	1	1	0	16	
14	1 209	11	*	0	0	0	0	1	0	1	1	0	1	
	2 210			1	0	0	0	1	0	1	1	0		2
	3 211			0	1	0	0	1	0	1	1	0		3
	4 212			1	1	0	0	1	0	1	1	0		4
	5 213			0	0	1	0	1	0	1	1	0		5
	6 214			1	0	1	0	1	0	1	1	0		6
	7 215			0	1	1	0	1	0	1	1	0		7
	8 216			1	1	1	0	1	0	1	1	0		8

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
14 (Contd)	9 217			0	0	0	1	1	0	1	1	0	9	
	10 218			1	0	0	1	1	0	1	1	0	10	
	11 219			0	1	0	1	1	0	1	1	0	11	
	12 220			1	1	0	1	1	0	1	1	0	12	
	13 221			0	0	1	1	1	0	1	1	0	13	
	14 222			1	0	1	1	1	0	1	1	0	14	
	15 223			0	1	1	1	1	0	1	1	0	15	
	16 224			1	1	1	1	1	0	1	1	0	16	
15	1 225	11	*	0	0	0	0	0	1	1	1	0	1	
	2 226			1	0	0	0	0	1	1	1	0	2	
	3 227			0	1	0	0	0	1	1	1	0	3	
	4 228			1	1	0	0	0	1	1	1	0	4	
	5 229			0	0	1	0	0	1	1	1	0	5	
	6 230			1	0	1	0	0	1	1	1	0	6	
	7 231			0	1	1	0	0	1	1	1	0	7	
	8 232			1	1	1	0	0	1	1	1	0	8	
	9 233			0	0	0	1	0	1	1	1	0	9	
	10 234			1	0	0	1	0	1	1	1	0	10	
	11 235			0	1	0	1	0	1	1	1	0	11	
	12 236			1	1	0	1	0	1	1	1	0	12	
	13 237			0	0	1	1	0	1	1	1	0	13	
	14 238			1	0	1	1	0	1	1	1	0	14	
	15 239			0	1	1	1	0	1	1	1	0	15	
	16 240			1	1	1	1	0	1	1	1	0	16	

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01.

† Some systems number relays by block (1-16), others number consecutively (1-256).

TABLE R (Contd)

CONTROL POINTS

BLOCK NUMBER	RELAY† NUMBER	CP		WORD 3 SWITCHES										OBSERVE LAMP NUMBER
		NUMBER	LOC	6	7	8	9	10	11	12	13	14		
16	1 241	11	*	0	0	0	0	1	1	1	1	0	1	
	2 242			1	0	0	0	1	1	1	1	0	2	
	3 243			0	1	0	0	1	1	1	1	0	3	
	4 244			1	1	0	0	1	1	1	1	0	4	
	5 245			0	0	1	0	1	1	1	1	0	5	
	6 246			1	0	1	0	1	1	1	1	0	6	
	7 247			0	1	1	0	1	1	1	1	0	7	
	8 248			1	1	1	0	1	1	1	1	0	8	
	9 249			0	0	0	1	1	1	1	1	0	9	
	10 250			1	0	0	1	1	1	1	1	0	10	
	11 251			0	1	0	1	1	1	1	1	0	11	
	12 252			1	1	0	1	1	1	1	1	0	12	
	13 253			0	0	1	1	1	1	1	1	0	13	
	14 254			1	0	1	1	1	1	1	1	0	14	
	15 255			0	1	1	1	1	1	1	1	0	15	
	16 256			1	1	1	1	1	1	1	1	0	16	

* The assignment of relay block numbers to CP LOC is controlled by crossconnect options specified on 1C-543-01

† Some systems number relays by block (1-16), others number consecutively (1-256).

CHART 4

SATELLITE COMMUNICATOR TEST

APPARATUS:

E-Telemetry Station Test Set (KS-20937,L1)

General Purpose Plug-in (KS-20937,L4)

E2A Test Cable (KS-20937,L6)

CHART 4 (Contd)

STEP

PROCEDURE

Caution: Remove power before removing or replacing any circuit pack or unit.

Note: Removing or replacing circuit packs can be done by placing the **SERVICE** switch on the E2A BRM to the **CP SRV** position if so equipped. Those units powered by a power expander unit may have their circuit packs removed in the same manner if the power expander unit is equipped with a **CP SRV** switch. If not equipped, the power must be removed from these units.

- 1 Insert and connect the general purpose plug-in into the station test set.
- 2 Locate and remove plug P1 from the rear of the 202T data set.
- 3 Mate the female pin connector of the E2A test cable to the P1 plug removed from the data set. Plug the other end of the E2A test cable into the J2 connector on the station test set. Make sure the test set POWER switch is in the OFF position.
- 4 Remove the satellite common interface circuit pack (CP 52) from the DRIVE position of the interface drive and test module, and insert it into the TEST slot.

Requirement: Test lamp on CP 52 is on.

- 5 Set the station test set switches to the positions as follows:

<u>SWITCH</u>	<u>POSITION</u>
SYSTEM	E2A
BIT RATE	1200
PARITY	B
MODE	ONCE
ENABLE	NORMAL
DISPLAY ERROR WORD	OFF
MESSAGE LENGTH WORDS	4
→ RCU	OFF ←

Per Satellite Control Circuit Pack Test

- 6 Remove the per-satellite control circuit pack (CP 51) to be tested, and check the position of switch S1 (should be in the SGA or SGB position).

CHART 4 (Contd)

STEP	PROCEDURE
7	Compare the position of switch S1 (Step 6) and the circuit pack location (CSA, CSB, etc) with Table S, and set DISPLAY WORD SELECT switch to the position indicated in the table.
8	Set the WORD 1, 2, 3, and 4 bit switches as follows:

TABLE S
DISPLAY WORD SELECT SWITCH
SETTING

PER SATELLITE CONTROL CIRCUIT PACK LOCATION	STS DISPLAY WORD SELECT SWITCH POSITION	
	SGA	SGB
CSA	1	9
CSB	2	10
CSC	3	11
CSD	4	12
CSE	5	13
CSF	6	14
CSG	7	15
CSH	8	16

- 9 Reinsert CP 51 into the system.
- 10 Remove CP 50 and check switch S1 to determine which of the 4 toggles is operated.
- 11 Set the WORD 4 bit switches 16 and 17 to the positions indicated in Table T. These two bits represent the group address selected by switch S1 of the satellite common control circuit pack (CP 50).
- 12 Remove CP 50 and check switch S2 to determine which of the 8 toggles is operated.
- 13 Reinsert CP 50 and set WORD 3 bit switches 11, 12, and 13 to the positions indicated in Table U. These settings are part of the relay address and correspond to the S2 switch setting on the satellite common control CP.

CHART 4 (Contd)

STEP	PROCEDURE
14	Set WORD 3 bit switches 8, 9, and 10 to the positions indicated in Table V. The switch setting corresponds to the location of the particular per-satellite control circuit pack (CP 51) being tested.
15	Set WORD 3 bit switches 2, 6, and 13 through 17 to the positions indicated in Table W. Bit 2 is the relay OPERATE or RELEASE code; bits 6 and 7 represent the relay point number within a given satellite.
16	Set the test set POWER switch to the ON position.
17	Momentarily operate the MASTER CLEAR switch.
18	Press and release the START switch five times, each time at a one-second rate. Operation of the START switch at a faster or slower rate will not provide the correct results.

Requirement: The station test set RECEIVE INFORMATION lamps will display as follows:

WORD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	0	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1
2	1	0	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1
→ 3	1	X	0	0	0	X	X	X	X	X	X	X	X	X	X	X	X ←
4	0	1	0	1	1	1	1	1	1	1	1	0	0	0	0	X	X

Note: The bits marked with an X in WORDS 3 and 4 will be set according to the following steps.

Note: For the proper indication at RECEIVE INFORMATION bits A, B, C, and D, see Table W.

- | | |
|----|--|
| 19 | Repeat Step 18 with the exception of setting WORD 1 switch 1 to 1 (up) prior to the fifth time the START switch is pressed. |
| | Requirement: RECEIVE INFORMATION bit 17 extinguishes. |
| 20 | Set WORD 1 switch 1 to 0 and repeat Steps 15 through 19 for remaining settings. |
| 21 | Perform Steps 6 through 20 for each per-satellite control circuit pack (CP 51). |
| 22 | If a requirement is not met while testing the per-satellite control circuit packs (CP 51), replace the circuit pack being tested and repeat the step. If problems still exist, replace CP 50 and CP 52, and repeat the step. |

CHART 4 (Contd)

STEP	PROCEDURE
------	-----------

TABLE T

S1 SWITCH TOGGLE OPERATED	WORD 4 BITS	
	16	17
1	0	0
2	0	1
3	1	0
4	1	1

TABLE V

CP51 LOCATION	WORD 3 BITS		
	8	9	10
CSA	0	0	0
CSB	1	0	0
CSC	0	1	0
CSD	1	1	0
DSE	0	0	1
CSF	1	0	1
CSG	0	1	1
CSH	1	1	1

TABLE U

S2 SWITCH TOGGLE OPERATED	WORD 3 BITS		
	11	12	13
2	1	0	0
3	0	1	0
4	1	1	0
5	0	0	1
6	1	0	1
7	0	1	1

→TABLE W←

WORD 3 BITS								INFORMATION LAMPS				FUNCTION
2	6	7	13	14	15	16	17	A	B	C	D	
1	0	0	0	0	0	0	0	1	1	1	0	— OPERATE RELAY 1
0	0	0	0	0	0	0	0	0	1	1	0	— RELEASE RELAY 1
1	1	0	0	0	0	0	0	1	0	1	0	— OPERATE RELAY 2
0	1	0	0	0	0	0	0	0	0	1	0	— RELEASE RELAY 2
1	0	1	0	0	0	0	0	1	1	0	0	— OPERATE RELAY 3 (MOM.)
1	1	1	0	0	0	0	0	1	0	0	0	— OPERATE RELAY 4 (MOM.)
1	0	1	1	1	1	1	1	1	1	0	1	— OPERATE TEST 0s
0	0	1	1	1	1	1	1	0	1	0	0	— RELEASE TEST 0s
0	1	1	1	1	1	1	1	0	0	0	0	— RELEASE TEST 1s

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	1

4. REFERENCES

4.01 The following Bell System Practices and schematic drawings provide additional information pertaining to the operation and maintenance of the E2A remote and the TCT.

SECTION**TITLE**

103-117-101 E-Telemetry Station Test Set—Description, Operation, and Maintenance

201-616-000

CSACS—TOP

201-647-100

E3 System Description

201-647-101

E3 Central Description

201-647-301

E3 Central Operations

201-647-500

E3 Initial Trouble Diagnosis

252-116-301

EADAS/NM—Operational Procedures

252-116-302

EADAS/NM Central Unit—Trouble Sectionalization

592-031-100

Data Set 202T—Description and Operation

592-031-300

Data Set 202T—Maintenance

592-031-500

Data Set 202T—Test Procedures

DRAWING**TITLE**

SD-1C533-01

E2A Remote Circuit Modules

SD-1C542-01

TCT Application Schematic

SD-1C543-01

E2A Status and Command Remote Application Schematic

SECTION 201-653-504

SD-1P025-01	CSACS—Step-by-Step Interconnection Circuit	SD-1P129-01	TASC Crossbar Tandem Interconnection
SD-1P027-01	CSACS—No. 5 Crossbar Interconnection Circuit	SD-1P130-01	TASC Transmission Equipment Interconnection Circuit
SD-2P070-01	E3 Alarm System Application Schematic	SD-1P131-01	TASC Building and Power Interconnection Circuit
SD-1P126-01	TASC Step-by-Step Interconnection Circuit	SD-3B233-01	EADAS/NM-No. 4A or 4M Interconnection Circuit
SD-1P127-01	TASC No. 5 Crossbar Interconnection Circuit	SD-3B234-01	EADAS/NM-Crossbar Tandem Office-Interconnection Circuit
SD-1P128-01	TASC No. 1 Crossbar Interconnection Circuit		