

TELEMETRY MAINTENANCE
COMMON PRODUCT LINE CONSIDERATIONS
E2A TELEMETRY

	PAGE		PAGE
1. GENERAL	1	Figures	
2. TROUBLE RECOGNITION	2	1. E2A Telemetry Remote Equipment Maintenance Phases	6
A. General	2	Tables	
B. E1 and E2 Status Reporting and Control System and E3 Alarm System	2	A. E2A Telemetry Remote Equipment Listing	3
C. E-Type Telemetry Remote Equipment	2	B. E2A Telemetry Remote Equipment and Associated Maintenance System	5
3. TROUBLE ISOLATION	4	C. SYSTEM TROUBLE INDICATORS	7
A. General	4	D. KS-20937 E-Telemetry Station Test Set E-Telemetry Systems List Configurations	9
B. E1 and E2 Status Reporting and Controls System and E3 Alarm System	4	E. E3 Alarm Central Units Circuit Pack Recommendations	11
C. E-Type Telemetry Remote Equipment	4	F. E2A Telemetry Remote Equipment Spare Circuit Pack Recommendations	12
4. TROUBLE CORRECTION	6	G. E2A TCT Spare Circuit Pack Recommendations	17
5. SPECIAL TROUBLE ISOLATION AND CORRECTION PROCEDURES	8		
A. E2A Telemetry Computer Translator (TCT) Equipment	8	1. GENERAL	
B. E2 Telemetry Central Unit With Remote Callup (RCU)	8	1.01 This section provides the users of E-type remote telemetry equipment, which can be E1, E2, and E2A units, an overall maintenance plan with associated procedures. Since the E2A telemetry remote equipment is the prevalent type of equipment being used in maintenance systems, these procedures	
C. E2A Community Dial Office (CDO) Satellite Unit	9		
6. CIRCUIT PACKS	10		

deal mainly with this equipment. The maintenance plan is based on the following phases:

- (a) Trouble recognition
- (b) Trouble isolation
- (c) Trouble correction
- (d) Circuit pack repair.

1.02 Whenever this section is reissued, the reason for reissue will be given in this paragraph.

1.03 The E-type telemetry equipment is used as remote units for the larger maintenance systems. The following larger maintenance systems are the central units:

- (a) Cable Pressure Monitoring System (CPMS)
- (b) Carrier Transmission Maintenance System (CTMS)
- (c) Centralized Status Alarm and Control System (CSACS)
- (d) Engineering and Administrative Data Acquisition System (EADAS)
- (e) E1 Status Reporting and Control System
- (f) E2 Status Reporting and Control System
- (g) E3 Alarm System
- (h) Switching Control Center System (SCCS)
- (i) Surveillance and Control of Transmission System (SCOTS)
- (j) Telecommunications Alarm Surveillance and Control System (TASC)
- (k) T-Carrier Administration System (TCAS)
- (l) ESS* switch applications.

1.04 Each type of E-type telemetry remote equipment is used for a specific purpose. The various maintenance systems will use combinations of

the E-type remote equipment to perform the telemetry functions. Table A is a listing of each type of E2A telemetry equipment, and Table B is a listing of E2A telemetry equipment used with each maintenance system application.

1.05 Figure 1 shows the procedures for E-telemetry remote equipment maintenance phases.

2. TROUBLE RECOGNITION

A. General

2.01 A failure in the E-type telemetry remote equipment is indicated by one or all of the following conditions:

- (a) A failure alarm that is built in the E-type telemetry remote equipment
- (b) A built-in failure alarm in the central units
- (c) Recognition by maintenance personnel of suspicious system performance.

2.02 The types of indicators used to recognize trouble conditions in the E-type telemetry remote equipment and E-type central units are shown in Table C. Trouble indicators provided by other types of central units are detailed in the practices dealing with that particular maintenance system.

B. E1 and E2 Status Reporting and Control System and E3 Alarm System

2.03 The trouble isolation, correction, and repair procedures are self-contained within each of the systems. The procedures are contained in the maintenance practices of that particular system.

C. E-Type Telemetry Remote Equipment

2.04 The E-type telemetry remote equipment is part of a larger maintenance system; therefore, the trouble recognition function is performed by the maintenance system's central unit or the software failure monitors. The trouble isolation begins with the practices that deal with the E-type telemetry remote equipment functions within the larger maintenance system.

* Trademark of AT&T Technologies

TABLE A
E2A TELEMETRY REMOTE EQUIPMENT LISTING

EQUIPMENT	NAME	DRAWING
J92621A	CPMS remote unit	SD1C538-01
J92621B	1ESS* switch remote	SD1C539-01
J92621C	1ESS switch central unit	SD1C540-01
J92621D	SCC C1 central unit	SD1C541-01
J92621E	TCT unit	SD1C542-01
J92621F	Basic remote unit	SD1C543-01
J92621G	Remote expander	SD1C543-01
J92621H	4ESS switch remote unit	SD1C544-01
J92621J	4ESS switch central unit	SD1C545-01
J92621K	SCOTS-C1 remote unit	SD1C546-01
J92621L	Power expander unit	SD1C543-01
J92621M	SCC remote unit TSPS/ETS	SD2P021-01
J92621P	SCC Traffic Service Position System (TSPS), 2ESS/AIS central unit	SD1C540-01
J92621R	Remote common control unit	SD2P022-01
J92621S	Scan and control unit	SD2P022-01
J92621T	Bus repeater unit	SD2P022-01
J92621U	Fuse and alarm unit	SD2P022-01
J92621AA	Remote group scan module unit	SD2P022-01
J92621AB	Remote switch selector panel	SD2P022-01
J92621AC	Remote switch expander panel	SD2P022-01
J92621AD	2ESS Automatic Intercept System (AIS) remote unit	SD2P021-01

* Trademark of AT&T Technologies

TABLE A (Contd)

E2A TELEMETRY REMOTE EQUIPMENT LISTING

EQUIPMENT	NAME	DRAWING
J92621AE	2B/3 ESS switch remote unit	SD2P021-01
J92621AF	CDO satellite unit	SD2P050-01
J92621AG	CDO satellite communications unit	SD1C543-01
J92621AH	1A processor SCC remote	SD2P023-01
J92621AJ	4ESS Switch Combined Maintenance Operations Center (CMOC) and SCC expander unit	SD2P024-01
J92621AK	4ESS switch CMOC central unit	SD2P025-01
J92621AL	Interface and communications control unit	SD2P022-01
J1P029A	Alarm Processing Remote (APR)	SD2P022-01
J1P056A	Digital alarm scanner	SD1P185-01
J1P057A	Advanced Telemetry Processor (ATP)	SD1P190-01

2.05 When E2A telemetry remote equipment are used in the E3 Alarm System, the E3 Telemetry System procedures are used to isolate trouble to the E3 alarm central unit or E2A remote units.

3. TROUBLE ISOLATION

A. General

3.01 The trouble condition is isolated to a particular E-type telemetry remote unit, data network, or connecting circuit. In the case where the data set is built into the E-type telemetry equipment, the data set is maintained as a plug-in replaceable unit which is similar to a circuit pack. The only E-type telemetry remote units that do not have a built-in data set are the E2A telemetry computer translator (TCT) units. In those cases where the data set is not built in, the data set will be maintained in the same manner as a customer premise data set. The procedures for maintenance are contained in the appropriate data set practices, and the testing will be done in conjunction with the Data Set Test Center.

B. E1 and E2 Status Reporting and Controls System and E3 Alarm System

3.02 The trouble isolation procedure for these systems is to isolate the trouble to a particular telemetry terminal or the data network using tests prescribed in the appropriate maintenance practice for that system. If a network trouble is suspected, it might be necessary to use a private line test board to determine the portion of the network causing the trouble.

C. E-Type Telemetry Remote Equipment

3.03 The trouble isolation procedure for the E-type telemetry remote equipment is to use the procedures in the maintenance practices of the larger maintenance system. The larger maintenance system procedures will use the maintenance central unit, the private line test board (for private line applications), or a Data Test Center to isolate the trouble.

3.04 If it is determined that the E-type telemetry remote equipment is the cause of the trouble,

TABLE B

**E2A TELEMETRY REMOTE EQUIPMENT AND ASSOCIATED MAINTENANCE SYSTEM
MAINTENANCE SYSTEMS E2A TELEMETRY EQUIPMENT**

SYSTEM	EQUIPMENT	REFERENCE
Cable Pressure Monitoring System (CPMS)	J92621A J92621E	201-653-503
Carrier Transmission Maintenance System (CTMS)	J1P029B,C	201-653-522
Centralized Status Alarm and Control System (CSACS)	J92621F J92621G	201-653-504
Engineering and Administrative Data Acquisition System (EADAS)	J92621E J92621F J92621G J92621L	201-653-504
Surveillance and Control of Transmission System (SCOTS)	J92621E J92621K J1P029A J1P056A J1P057A	201-653-505 201-653-522 201-653-509 201-653-510
Switching Control Center System (SCCS)	J92621B J92621C J92621D J92621M J92621P J92621AD J92621AE J1P056A	201-653-505 201-653-509
Telecommunications Alarm Surveillance and Control System (TASC)	J92621E J92621F J92621G J92621L J92621AG J1P029A J1P056A	201-653-504 201-653-522 201-653-509
T-Carrier Administration System (TCAS)	J92621R J92621U J92621AA J92621AB J92621AC J1P029A J1P029D J1P056A J1P051A	201-653-522 201-653-522 201-653-509 201-653-510
4ESS Switch Combined Maintenance Operations Center (CMOC)	J92621AH J92621AJ J92621AK	201-653-508
4ESS Switch Network Management (NM)	J92621H J92621J	201-653-506

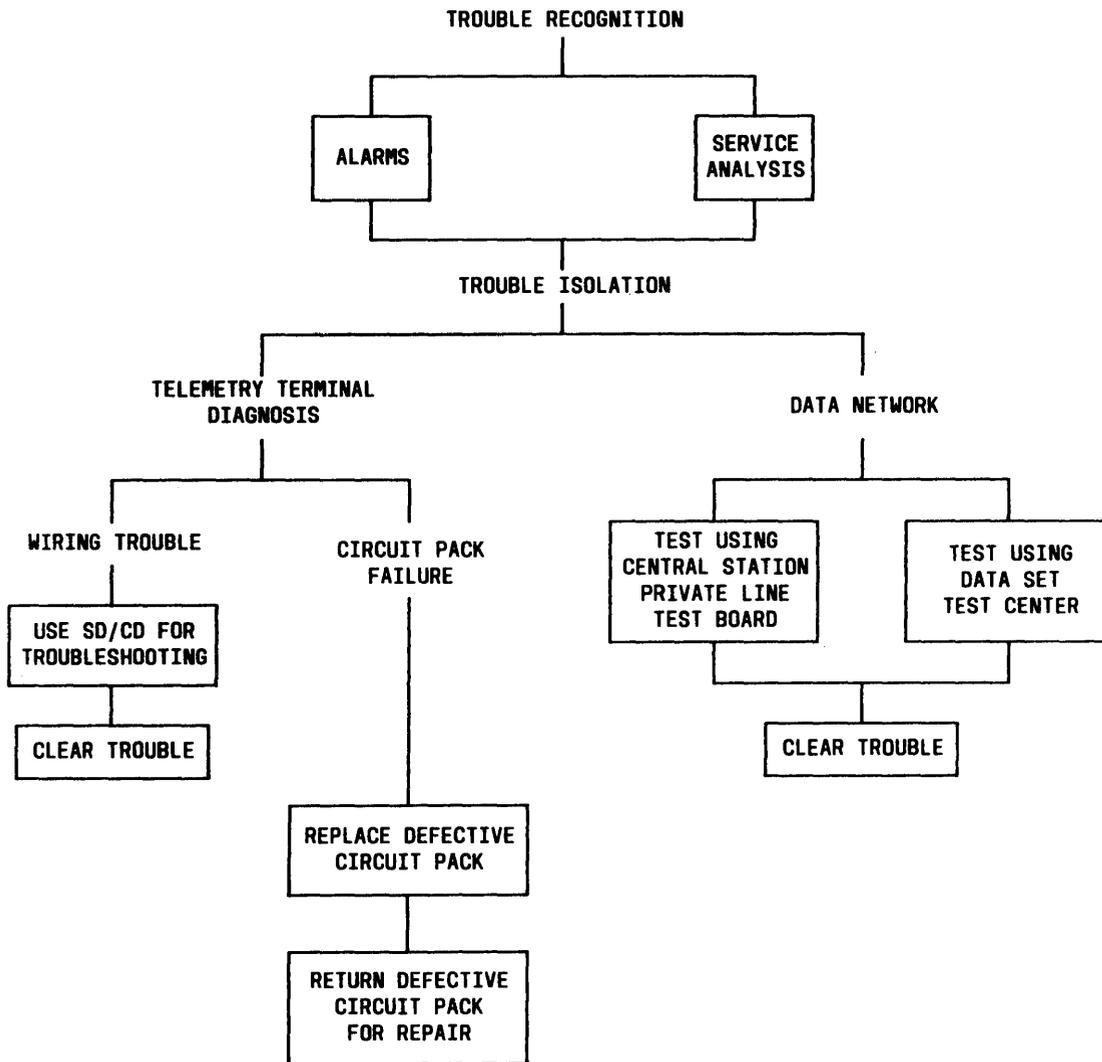


Fig. 1—E2A Telemetry Remote Equipment Maintenance Phases

the maintenance practices dealing with this equipment will be used to isolate and correct the trouble.

4. TROUBLE CORRECTION

4.01 The main assumptions of the E-type telemetry remote equipment maintenance procedures are that the major causes of troubles can be isolated to the circuit packs; therefore, the maintenance forces must have access to working spare circuit packs including a spare data set.

4.02 In the event the replacement of circuit packs does not clear the trouble, the maintenance forces must revert to the use of the schematic draw-

ing (SD) and circuit description (CD) for the unit in trouble. This type of troubleshooting includes the use of an oscilloscope, voltmeter, or other test equipment which makes it time-consuming and difficult.

4.03 To enable the maintenance forces to determine which circuit packs are causing the trouble, the KS-20937 E-telemetry station test set is used to test the E-type telemetry remote equipment. At the remote units or the central unit, the test set will provide on-site diagnosis of failures by acting as a central unit. Similarly, the test set can act as a remote station when testing a central unit by simulating remote responses to central unit commands.

TABLE C
SYSTEM TROUBLE INDICATORS

E-TELEMETRY TYPE TERMINAL	TYPE OF TROUBLE INDICATION	CAUSE OF ALARM
E1 alarm remotes	Fuse alarm	Fuse activated.
E1 alarm centrals	Fuse alarm	Fuse activated.
	Remote fail alarm	Remote failed to several successive alarm poll commands.
E2 alarm remotes	Fuse alarm	Fuse activated.
E2 alarm centrals	Remote fail alarm	Remote failed to respond to several successive alarm poll commands.
	Command error	Remote failed to respond to report or remote switch command.
E2 status polling remotes	Fuse alarm	Fuse activated.
E2 status polling central	Fuse alarm	Fuse activated.
	Remote fail alarm	Remote failed to respond to two successive group report commands.
	Central fail alarm	Central has stopped polling remote stations.
E2A remotes	Power fail alarm	Power supply voltages to the E2A terminal have been interrupted.
	Central fail alarm	Central has stopped interrogating its remotes (optional).
E2A centrals	Power fail alarm	Power supply voltages to the E2A terminal have been interrupted.
	Central fail alarm	Central has stopped its interrogating.
	Remote fail alarm	Remote failed to respond to two successive group report commands.
	Command fail alarm	Remote failed to respond to a manually initiated relay output command.

TABLE C (Contd)
SYSTEM TROUBLE INDICATORS

E-TELEMETRY TYPE TERMINAL	TYPE OF TROUBLE INDICATION	CAUSE OF ALARM
E2A TCTs	Several failure alarms, such as those in E-telemetry centrals, are provided from the TCT.	Depending on the application, one or more TCT alarm relays are used to provide overall system or power alarm information to the office alarm system.
E3 alarm central	Remote fail alarm	Remote failed to respond to seven consecutive interrogations.
	Central fail alarm	Central failed to periodically reset a built-in sanity timer or when one or more direct current (dc) voltages are interrupted in the central or when alternating current (ac) is interrupted to the central.

4.04 All the current E-type telemetry remote equipment maintenance procedures provide for the use of the test set and will preclude the use of a central unit to perform tests. The test set usage permits the central unit to operate normally with the other remote units while the off-line remote unit is being repaired.

4.05 The test set requires different list configurations for the E-type telemetry remote equipment and the E2A TCT equipment. Table D shows the different listings for the E-type telemetry equipment.

5. SPECIAL TROUBLE ISOLATION AND CORRECTION PROCEDURES

A. E2A Telemetry Computer Translator (TCT) Equipment

5.01 Whenever a larger maintenance system using E2A TCT equipment has a trouble condition, the trouble isolation procedures to the TCT equipment are provided in the maintenance procedures of the larger maintenance system. In some cases, the TCT equipment is looped together which provides for different types of testing procedures. The following are the different testing methods:

- (a) Use of software diagnostics

- (b) Substitution of equipment method

- (c) Use of the E-telemetry station test set.

5.02 Instead of replacing defective circuit packs in the TCT equipment, it is recommended that the entire J92621E TCT unit be replaced with a spare TCT unit. This procedure will require that an entire J92621E TCT unit be maintained as spare. In general, one spare TCT unit is recommended per ten operational TCT units.

5.03 Sometimes, if the operation of the central unit permits, the circuit packs in the spare TCT unit could be used to isolate the trouble. In general, even if this method is used, the entire TCT unit should be replaced with a spare TCT unit. The central unit maintenance procedure will specify which isolation method is to be used.

B. E2 Telemetry Central Unit With Remote Callup (RCU)

5.04 The testing of the E2 telemetry central unit with RCU will require not only the use of the E-telemetry station test set but also the remote callup test set (RCU-100). The use of the additional test set is required to simulate the interface of the RCU module with the L5 Transmission Surveillance System (TSS). It is recommended that the RCU-100 test set be provided per each TSS and located with

TABLE D

**KS-20937 E-TELEMETRY STATION TEST SET
E-TELEMETRY SYSTEMS LIST CONFIGURATIONS**

E-TELEMETRY SYSTEM	LIST NUMBERS
E1 Alarm Remotes	1 and 7, 2 or 3, 5
E1 Alarm Centrals	1 and 7, 4, 5
E2 Alarm Remotes (without remote callup)	1 and 7, 2 or 3, 5
E2 Alarm Remotes (with or without remote callup*)	1 and 7, 2, 5
E2 Alarm Centrals (with or without remote callup)	1 and 7, 4, 5
E2 Status Polling Remotes	1 and 7, 2 or 3, 5
E2 Status Polling Centrals	1 and 7, 4, 5
E2A Remotes and E2A Centrals	1 and 7, 4, 5†
E2A TCTs	1 and 7, 4, 8
E3 Alarm Centrals	1 and 7, 4, 6

* An RCU-100 test set is also required.

† E2A remote units associated with the SCCS, CSACS, TASC, E3, and EADAS N/M Systems also require Lists 9 through 13. These are test scanners which isolate the E2A remote unit's status scanners and control relays from the office wiring during testing.

the remote spare circuit packs and the E-telemetry station test set. The location can be either the E2 central unit location or the TSS location, whichever is convenient.

5.05 In the procedure to isolate the trouble, the E2 telemetry remote unit is disconnected from the data set and the TSS. The RCU-100 test set is substituted for the TSS and is used in conjunction with the E-telemetry station test set to test the E2 telemetry remote unit.

5.06 The RCU-100 test set can be obtained from the Bedford Electronics Company; Bedford, Massachusetts.

C. E2A Community Dial Office (CDO) Satellite Unit

5.07 The E2A CDO satellite unit (J92621AF) cannot be tested with the KS-20937 E-telemetry station test set. The unit can be tested with a specially wired connector (J92621AF, List 2) that will connect to the unit's office wiring connector.

5.08 When the J92621AF, List 2 test connector is plugged into the connector, five light-emitting diodes (LEDs) will flash slowly in a predetermined sequence if the satellite unit is functioning properly. If the sequence is not observed, the satellite unit should be replaced. The satellite unit should be replaced as a single unit. The use of the J92621AF, List 2 test connector is detailed in the appropriate maintenance procedures for the E2A CDO satellite unit.

5.09 A J92621AF, List 2 test connector should be provided per each maintenance center that has the E2A CDO satellite unit as part of its system.

6. CIRCUIT PACKS

6.01 The major emphasis on the testing of the E-type telemetry systems is the ability to replace circuit packs to clear trouble conditions; therefore, spare circuit packs must be available for replacements.

6.02 At each central unit location, the following circuit pack spares should be maintained for the E-type telemetry central unit:

- (a) E1 and E2 telemetry central units—list of circuit packs shown in the pertinent J-drawing for the central unit.
- (b) E3 alarm central unit—Table E is a list of spare circuit packs.

6.03 At a designated location, one set of remote station circuit packs should be maintained for each ten remote units monitored by the central unit. The following are the recommendations:

- (a) E1 remote units—One of each circuit pack (listing on the J92615J SD), plus an additional alarm network and alarm detector

- (b) E2 remote units—One of each circuit pack (listing on the J92617J or AJ SD), plus an additional alarm network and alarm detector

- (c) E2A remote units—Table F is a list of spare circuit pack recommendations

- (d) E2A TCT units—Table G is a list of spare circuit pack recommendations.

6.04 The following types of carrying cases can be provided to house the spare circuit packs.

- (a) E2 Telemetry Systems—The 70-0111 carrying case available from the William Bal Corporation; Elizabeth, N.J.

- (b) E2A Telemetry Systems—The KS-20680, List 1 carrying case

- (c) Advanced telemetry processor (ATP) and digital alarm scanner (DAS)—The KS-22867, List 1 carrying case.

6.05 When a circuit pack has been identified as the cause of the trouble condition and has been replaced, no provisions have been provided to repair the circuit pack at the field location. The defective circuit pack should be returned to the appropriate repair group.

TABLE E

**E3 ALARM CENTRAL UNITS SPARE CIRCUIT PACK
RECOMMENDATIONS**

CIRCUIT PACK ED-CODE	AMOUNT
2P100-30	1
2P101-30	1
2P106-30	1
2P110-30	1
2P102-30	1
2P234-30	1
2P111-30	1
2P209-30	1
2P210-30	1
2P211-30	1
2P212-30	1
2P213-30	1
2P214-30	1
2P272-30 G1, G2	1 (Standalone central only)
2P272-30 G1, G3	1 (Standalone central only)
2P271-30	*
2P270-30 G1, G2	1 (Slave central only)
2P270-30 G1, G3	1 (Slave central only)
2P269-30 G1, G2	1 (Master central only)
2P269-30 G1, G3	1 (Master central only)

* Each E3 alarm central has an ED 2P271-30 station constants circuit pack which is programmed with information peculiar to the central unit and its remotes. Therefore, a spare ED 2P271-30 must be ordered for each central unit with information specified in the form of group numbers on the ED-code.

TABLE F

E2A TELEMETRY REMOTE EQUIPMENT SPARE CIRCUIT PACK RECOMMENDATIONS

E-TELEMETRY SYSTEM	CIRCUIT PACK ED-CODE	AMOUNT
CPMS (J92621A)	1C871-30	1
	1C872-30	1
	1C873-30	1
	1C875-30	1
	1C924-30	1
	1C927-30	1
	2P153-30	1
SCC — 1ESS Switch (J92621B)	1C871-30	1
	1C872-30	1
	1C873-30	1
	1C875-30	1
	1C876-30	2
	1C877-30	1
	1C879-30	2
	1C880-30	1
	1C881-30	1
	1C882-30	1
	1C924-30	1
	2P153-30	1
	202T, L1 data set	1
4ESS Switch Network Management (J92621H)	1C871-30	1
	1C872-30	1
	1C873-30	1
	1C875-30	1
	1C877-30	1
	1C879-30	2
	1C882-30	1
	1C924-30	1
	2P153-30	1
	202T, L1 data set	1
CSACS, EADAS N/M, TASC, E3 Alarm System (J92621F/F/G/AH)	1C871-30	1
	1C872-30	1
	1C873-30	1
	1C875-30	1
	1C876-30	2
	1C877-30	1
	1C879-30	2
	1C881-30	1
	1C882-30	*

See footnotes at end of table.

TABLE F (Contd)

E2A TELEMETRY REMOTE EQUIPMENT SPARE CIRCUIT PACK RECOMMENDATIONS

E-TELEMETRY SYSTEM	CIRCUIT PACK ED-CODE	AMOUNT
CSACS, EADAS N/M, TASC, E3 Alarm System (J92621F/G/AG) (contd)	1C924-30	1
	1C928-30	*
	2P153-30	1
	2P155-30	†
	2P228-30	†
	2P229-30	†
	202T, L1 data set	1
SCOTS/C1 Interface (J92621K)	1C871-30	1
	1C872-30	1
	1C873-30	1
	1C875-30	1
	1C877-30	1
	1C880-30	2
	1C924-30	1
	1C925-30	2
	2P153-30	1
202T, L1 data set	1	
SCC-TSPS/SCC-ETS (J92621M)	1C871-30	1
	1C872-30	1
	1C873-30	1
	1C875-30	1
	1C876-30	2
	1C877-30	1
	1C879-30	2
	1C881-30	1
	1C882-30	1
	1C924-30	1
	2P153-30	1
	202T, L1 data set	1
SCC -- 2ESS Switch AIS (J92621AD)	1C871-30	1
	1C72-30	1
	1C873-30	1
	1C875-30	1
	1C876-30	2
	1C877-30	1
	1C879-30	2
	1C881-30	1
	1C882-30	1
	1C924-30	1
	2P153-30	1
	2P230-30	1
	202T, L1 data set	1

See footnotes at end of table.

TABLE F (Contd)

E2A TELEMETRY REMOTE EQUIPMENT SPARE CIRCUIT PACK RECOMMENDATIONS

E-TELEMETRY SYSTEM	CIRCUIT PACK ED-CODE	AMOUNT
SCC — 2/3 ESS Switch (J92621AE)	1C871-30	1
	1C872-30	1
	1C873-30	1
	1C875-30	1
	1C877-30	1
	1C879-30	1
	1C882-30	1
	1C924-30	1
	1C925-30	2
	1C927-30	2
	2P153-30	1
	202T, L1 data set	
	SSC — 1ESS Switch, 4ESS Switch CMCC (J92621AH/AJ)	1C871-30
1C872-30		1
1C873-30		1
1C875-30		1
1C877-30		1
1C881-30		2
1C882-30		1
1C924-30		1
1C925-30		3
1C927-30		2
2P152-30		1
2P153-30		1
E2A CDO Satellite (J92621AF)		Provide one J92621AF-1 for each ten satellites. In addition, provide one J92621AF-1, L2 test connector for each ten satellites as described in Table B.
E2A Alarm Remote (J1P029A-L5, J1P029B, C)	2P100-30	1
	2P101-30	1
	2P104-30	1
	2P109-30	1
	2P144-30	1
	2P145-30	1
	2P146-30	1
	2P147-30	1
	2P152-30	1
	2P274-30 G1, G2	1

TABLE F (Contd)

E2A TELEMETRY REMOTE EQUIPMENT SPARE CIRCUIT PACK RECOMMENDATIONS

E-TELEMETRY SYSTEM	CIRCUIT PACK ED-CODE	AMOUNT
E2A Alarm Remote (J1P029A-L5, J1P029B, C) (Contd)	2P274-30 G1, G3	1
	1C879-30	1
	202T, L1 data set	1
	208B power converter	‡
	208C power converter	‡
	208D power converter	‡
	208E power converter	‡
	2P275-30	§
E2A Alarm Remote (J1P029A-L11)	ED-2P100-30, G1	1
	ED-2P104-30, G1	1
	ED-2P144-30, G1	1
	ED-2P145-30, G1	1
	ED-2P146-30, G1	1
	ED-2P147-30, G1	1
	ED-2P235-30, G1	1
	ED-2P236-30, G1	1
	ED-2P246-30, G1	1
	ED-2P275-(), G2	1
	202T, L1 data set	1
	208B power converter	‡
	208C power converter	‡
	208D power converter	‡
208E power converter	§	
TCAS-E2A Alarm Remote (J1P029D)	ED-2P100-30, G1	1
	ED-2P104-30, G1	1
	ED-2P144-30, G1	1
	ED-2P145-30, G1	1
	ED-2P146-30, G1	1
	ED-2P147-30, G1	1
	ED-2P235-30, G1	1
	ED-2P236-30, G1	1
	ED-2P237-(), G1, G2	1
	202T, L1 data set	1
	208B power converter	‡
	208C power converter	‡
	208D power converter	‡
	208E power converter	§
Digital Alarm Scanner (DAS) (J1P956A)	103314431 (TM312)	1
	103314449 (TM313)	1
	103700977 (MC1P028A-1)	1
	103314498 (TM318)	1
	103314506 (TM319)	1

See footnotes at end of table.

TABLE F (Contd)

E2A TELEMETRY REMOTE EQUIPMENT SPARE CIRCUIT PACK RECOMMENDATIONS

E-TELEMETRY SYSTEM	CIRCUIT PACK ED-CODE	AMOUNT
Advanced Telemetry Processor (ATP) (J1P057A)	MC1P030A1 (TM216, MEM-1)	1
	MC1P031A1 (TM216, MEM-2, FT3C)	1
	MC1P032A1 (TM396)	1
	MC1P033A1 (SIO)	1
	MC1P034A1 (SIO, FT3C)	1
	MC1P035A1 (TM383)	1
	MC1P038A1 (TM216, MEM-2, TD45)	1
	MC1P039A1 (TM216, MEM-2, P140)	1
	MC1P040A1 (TM216, MEM-2, D46, DR11)	1
	MC1P041A1 (TM216, MEM-2, DMG)	1
	MC1P042A1 (SIO, TD45)	1
	MC1P043A1 (SIO, P140)	1
	MC1P044A1 (SIO, DR6, DR11)	1
	MC1P045A1 (SIO, DR6, DR11)	1
	MC1P046A1 (SIO, DMG)	1
	103314431 (TM312)	1
	103314449 (TM313)	1
103314456 (TM314)	1	
103314464 (TM315)	1	

* If any remotes are powered by -48 volts office battery, one ED-1C928-30 spare unit will be required for each ten remote units. If any remote units are powered by -24 volts office battery, one ED-1C928-30 spare unit will be required per ten units.

† These spare units are required only if any remote units are equipped with the J92621AG panel. If this is the case, one ED-2P155-30, ED-29229-30, and two ED-2P228-30 spare units will be required for each ten remote units.

‡ If any remote units are powered by -48 volts office battery, provide one 208B and one 208D power converter per each ten remote units. If any remote units are powered by -24 volts office battery, provide one 208C and one 208E power converter per each ten remote units.

§ Each remote unit has an ED 2P275-30 station constants circuit pack which is programmed with information peculiar to that remote unit. Therefore, a spare ED 2P275-30 circuit pack must be ordered for each remote unit with information specified in the form of group numbers on that ED-code.

TABLE G

E2A TCT SPARE CIRCUIT PACK RECOMMENDATIONS

E-TELEMETRY SYSTEM	CIRCUIT PACK ED-CODE	AMOUNT
CPMS, CSACS, EADAS TASC, TCAS, Control Console 1A (CC1A)	J92621E-1, L1 — Some mechanical piece parts are provided in L2, L3, L4, and L6 (order as required).	1*
SCOTS	J92621E1, L1, L5 — Some mechanical piece parts are provided in L2, L3, L4, and L6 (order as required).	1*
SCC — 1ESS Switch (J92621C)†	1C871-30 1C872-30 1C873-30 1C884-30 1C885-30 1C886-30 1C887-30 1C888-30 1C889-30 1C890-30 1C892-30 1C962-30 202T data set	1 1 1 1 1 1 2 1 1 1 1 1 1 1
4ESS Switch Network Management (N/M) (J92621J)	1C871-30 1C872-30 1C873-30 1C884-30 1C885-30 1C886-30 1C887-30 1C888-30 1C962-30 202T data set 1C882-30	1 1 1 1 1 1 2 1 1 1 1 1
SCC-TSPS (J92621P)†	1C871-30 1C872-30 1C873-30 1C884-30 1C885-30 1C886-30 1C887-30 1C888-30	1 1 1 1 1 1 2 1

See footnote at end of table.

TABLE G (Contd)

E2A TCT SPARE CIRCUIT PACK RECOMMENDATIONS

E-TELEMETRY SYSTEM	CIRCUIT PACK ED-CODE	AMOUNT
SCC-TSPS (J92621P)* (Contd)	1C889-30	1
	1C890-30	1
	1C891-30	1
	1C892-30	1
	1C962-30	1
	202T data set	1
SCC — 4ESS Switch CMOC (J92621AK)	1C871-30	1
	1C872-30	1
	1C873-30	1
	1C884-30	1
	1C885-30	1
	1C886-30	1
	1C887-30	3
	1C888-30	1
	1C889-30	1
	1C890-30	1
	1C891-30	2
	1C892-30	1
	1C962-30	1
	2P152-30	1

* In general, one J92621E unit should be spared for each 10 TCT units with consideration given to the availability and distribution of spares throughout a system.

† The SCC applications involving the use of the J92621C and/or J92621P E2A central units also involve the use of the J92621D, E2A SCC critical indicator central unit. The spares shown for the J92621C and J92621P units may be used for the J92621D unit which, therefore, does not require its own set of spares. The SCC central locations with both the J92621C and J92621P units may be provided with a single set of spares, since the spares for both units are the same. However, if a total of ten or more J92621C and/or J92621P units are equipped in an SCC central location, a set of spares for each ten units should be provided.