EADAS TRAFFIC DATA CONVERTER (ETDC) SD-3B213-01

TROUBLE-LOCATING PROCEDURES

ENGINEERING AND ADMINISTRATIVE DATA ACQUISITION SYSTEM (EADAS)

1. GENERAL

1.01 This section describes the methods used for locating troubles in the EADAS Traffic Data Converter (ETDC) from the Central Unit (CU) location via the teletypewriter and the line printer. This section also contains suggested corrective procedures for these troubles. In most cases the corrective procedures take place at the ETDC location.

1.02 This section is reissued to generally update the section and to change BSP section reference numbers. Revision arrows are used to emphasize the more significant changes. Equipment Test Lists are not affected.

1.03 The procedures in this section are used when the tests in Section ♦190-510-211 and Section 190-510-212♦ have failed.

1.04 *Before any of the procedures in this section are performed, it is important that consideration be given to the data which is blocked while maintenance procedures are being performed. Release of the ETDC shall be obtained from Central Unit operations personnel prior to placing the unit in the maintenance mode.*

1.05 Refer to Section ♦190-510-204♦ for operating procedures.

1.06 Refer to Section ♦190-510-211♦ for tests of ETDC at CU location.

1.07 Refer to Section ♦190-510-212♦ for tests of ETDC at ETDC location.

1.08 Refer to Sections ♦190-510-214 and 190-510-215♦ for connection verification tests.

1.09 For trouble locating procedures of the CU, refer to Section ♦190-510-205.♦

1.10 In this section, the PROBABLE CAUSE column contains the units or items that are likely to be the cause of trouble. These probable causes are numbered, and there are corresponding numbered suggested corrective procedures listed in the SUGGESTED CORRECTIVE PROCEDURE column.

1.11 Power shall be removed from the ETDC by operating the PWR switch to off position before removing or remounting any circuit pack.

Note: Set ACO switch to OFF position before removing power to prevent an office alarm.

2. APPARATUS

2.01 KS-20538 volt-ohm-milliammeter (or equivalent) equipped with test leads (VOM).

3. ETDC DOES NOT RESPOND TO COMMANDS: This procedure isolates the cause of no response of ETDC to commands given (1) locally (at the ETDC), (2) remotely (at the CU), or (3) locally and remotely.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
Home or remote ETDC does not respond at all (to CU or local commands).	1. CP 9 (AR641) at affected ETDC. 2. CP 18 (AR650). 3. Fuse failure in fuse card.	1. Replace CP 9 and try local commands. 2. Replace CP 18. 3. Replace blown fuse.
All ETDCs on a channel respond to local commands but not to CU commands.	1. Data link to CU. 2. DSH data set at home ETDC. 3. CP 10 (AR642) in home ETDC. 4. CP 18 (AR650) in home ETDC. 5. CP 5 (AR637) or CP 24 (AR750) in home ETDC.	1. Check the data link. 2. Follow procedure A in Part 10. 3. Replace CP 10. 4. Replace CP 18. 5. Replace CP 5 or CP 24.
Home ETDC responds to all commands; all remote ETDCs respond to local commands but not to CU commands. *Note:* If only one remote ETDC is present, use next procedure.	1. CP 17 (AR649) in home ETDC.	1. Replace CP 17.
A single remote ETDC responds to local commands but not to CU commands. Home ETDC performs properly.	1. Data link between home and remote ETDCs. 2. DSR data set at home unit or DSH data set at remote unit. 3. CP 10 (AR642) in remote ETDC. 4. CP 18 (AR650) in remote ETDC. 5. CP 17 (AR649) in home ETDC. 6. CP 5 (AR637) or CP 24 (AR750) in remote ETDC. 7. CP 4 (AR636) in remote ETDC.	1. Check the data link. 2. Follow procedure A in Part 10. 3. Replace CP 10 in remote ETDC. 4. Replace CP 18 in remote ETDC. 5. Replace CP 17 in home ETDC. 6. Replace CP 5 or CP 24 in remote ETDC. 7. Replace CP 4 in remote ETDC.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
Home or remote ETDC does not respond to TUR control commands (CU or local commands).	1. CP 9 (AR641). 2. CP 18 (AR650).	1. Replace CP 9. 2. Replace CP 18.
Home or remote ETDC does not respond to CU TUR control commands but does respond to local TUR control commands.	1. CP 18 (AR650).	1. Replace CP 18.
Home or remote ETDC does not respond to ETDC test commands (CU or local commands).	1. CP 9 (AR641). 2. CP 8 (AR640).	1. Replace CP 9. 2. Replace CP 8.
Home or remote ETDC does not respond to CU ETDC test commands but does respond to local commands.	1. CP 18 (AR650).	1. Replace CP 18.

4. MAINTENANCE TESTS: This part uses the results of maintenance tests to isolate the cause of troubles in the ETDC.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
Fail Inhibit Test (Fail 1) (a) All or most assigned registers.	1. CP 9 (AR641). 2. CP 8 (AR640).	1. Replace CP 9. 2. Replace CP 8.
(b) A block of registers associated with one input circuit pack.	1. Input circuit pack associated with block of registers that failed.	1. Replace associated input circuit pack. (See Table A for locating an input circuit pack.)
(c) A few registers or single register.	1. Circuit pack or packs associated with registers that failed. 2. CP 11 (AR643). 3. CP 7 (AR639) or CP 27 (AR757). 4. CP 8 (AR640). 5. CP 5 (AR637), CP 24 (AR750), or CP 26 (AR755).	1. Replace associated circuit pack or packs. (See Table A for locating an input circuit pack.)

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
Fail Busy Test (Fail 2) (a) All or most assigned registers (with no conspic-uous pattern).	1. CP 9 (AR641). 2. CP 8 (AR640). 3. CP 11 (AR643). 4. CP 5 (AR637), CP 24 (AR750),or CP 26 (AR755).	1. Replace CP 9. 2. Replace CP 8. 3. Replace CP 11. 4. Replace CP 5, CP 24, or CP 26.
(b) A block of regis-ters associated with one input circuit pack. *Note:* See Part 4 if more than one block of data fails.	1. Input circuit pack associated with block of registers that failed. 2. CP 4 (AR636).	1. Replace associated input cir-cuit pack. (See Table A for locating an input circuit pack.) 2. CP 4.
(c) A few registers or a single regis-ter.	1. Circuit pack or packs associ-ated with registers that failed.	1. Replace associated input cir-cuit pack. (See Table A for locating an input circuit pack.)
Fail Inhibit and Busy Tests (Fail 3)	1. Fail 1 and Fail 2 at the same time.	1. Perform corrective procedures outlined in Fail 1. Repeat Maintenance Tests. 2. Perform corrective procedures outlined in Fail 2 if necessary.
Fail Map Test (Fail 4) (a) Data looks like that of another type of input card.	1. Input circuit pack interchanged with another type pack.	1. Arrange cards properly.
(b) No data from sin-gle input card.	1. Missing input card. 2. Busy failure on all inputs on input circuit pack.	1. Mount input card in vacant slot. 2. Replace defective input circuit pack. (See Table A for locating an input circuit pack.)
(c) Data from un-equipped loca-tion.	1. Extra input card.	1. Remove extra input card.
Fail Inhibit and Map Tests (Fail 5)	1. Fail 1 and Fail 4 at the same time.	1. Perform corrective procedures for Fail 1 and repeat Mainte-nance Test. 2. Perform corrective procedures for Fail 4 if needed.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
Fail Busy and Map Tests (Fail 6)	1. Fail 2 and Fail 4 at the same time. *Note:* The Busy Test can fail in such a manner as to cause the Map Test to fail also.	1. Perform corrective procedures for Fail 2 and repeat Maintenance Test. 2. Perform corrective procedures for Fail 4 if needed.
Fail Inhibit, Busy, and Map Tests (Fail 7)	1. Fail 1, Fail 2, and Fail 4 at the same time.	1. Perform corrective procedures for Fail 1 and repeat the Maintenance Test. 2. Perform corrective procedures for Fail 2 and repeat the Maintenance Test. 3. Perform corrective procedures for Fail 4 and repeat the Maintenance Test.
Busy Test failures having consistent failures (groups of 2, 4, 8, 16, or 32 adjacent registers with score of 0).	1. CP 7 (AR639) or CP 27 (AR757). 2. CP 4 (AR636). 3. CP 11 (AR643).	1. Replace CP 7 or CP 27. 2. Replace CP 4. 3. Replace CP 11.

5. **DATA ERRORS:** This part locates probable causes of no data or incorrect data being received at the central unit.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
No data being received at the central unit anytime.	1. ETDC in maintenance mode. 2. No power at ETDC [PWR INT lamp lighted on CP 17 (AR649)]. 3. Missing voltage at ETDC. 4. Data link. 5. Data set. 6. CP 4 (AR636). 7. CP 5 (AR637), CP 24 (AR750), or CP 26 (AR755). 8. CP 8 (AR640). 9. CP 7 (AR639) or CP 27 (AR757). 10. CP 11 (AR643).	1. Follow procedure B in Part 10. 2. Check power by following procedure C in Part 10. 3. Follow ETDC turn-on procedure. 4. Check data link. 5. Follow procedure A in Part 10. 6. Replace CP 4. 7. Replace CP 5, CP 24, or CP 26. 8. Replace CP 8. 9. Replace CP 7 or CP 27. 10. Replace CP 11.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE

Consistent parity errors.	1. CP 5 (AR637),
	   CP 24 (AR750),
	   or CP 26 (AR755).
		1. Replace CP 5, CP 24,
		   or CP 26.

Inconsistent parity errors.	1. Data link.
	
	2. Data set.
	
	3. CP 5 (AR637),
	   CP 24 (AR750),
	   or CP 26 (AR755).
		1. Check data link.
		
		2. Follow procedure A in Part 10.
		
		3. Replace CP 5, CP 24,
		   or CP 26.

Excessive data or unassigned addresses.	1. CP 5 (AR637),
	   CP 24 (AR750),
	   or CP 26 (AR755).
	
	2. CP 11 (AR643).
	
	3. CP 4 (AR636).
	
	4. CP 7 (AR639)
	   or CP 27 (AR757).
	
	5. CP 8 (AR640).
		1. Replace CP 5, CP 24,
		   or CP 26.
		
		2. Replace CP 11.
		
		3. Replace CP 4.
		
		4. Replace CP 7 or CP 27.
		
		5. Replace CP 8.

6. **REMOTE ETDC FAILURE:** This procedure isolates
   the probable cause of remote ETDC failure to
   either the home ETDC or remote ETDC.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE

Maintenance Test failure at home and remote ETDC.	1. Failure in home ETDC.	1. Clear problem in home ETDC
		   first by following procedures
		   in Part 3.

Maintenance Test failure at remote ETDC only.	1. See Part 4 for causes of
	   maintenance failures.
	
	2. Data link between home and
	   remote ETDCs.
	
	3. DSR data set at home ETDC
	   or DSH data set at remote
	   ETDC.
	
	4. CP 16 (AR648) in home
	   ETDC.
		1. See Part 4 for procedures to
		   correct maintenance failure
		   conditions.
		
		2. Check data link.
		
		3. Follow procedure A in Part 10.
		
		4. Replace CP 16 (AR648) in
		   home ETDC.

7. **MISCELLANEOUS CONDITIONS:** This part identifies the probable cause of inputs overscoring or underscoring and usage and discrete failure.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
Usage and discrete failures.	1. CP 8 (AR640). 2. CP 9 (AR641). 3. CP 11 (AR643).	1. Replace CP 8. 2. Replace CP 9. 3. Replace CP 11.
Input registers underscore during normal operation.	1. CP 11 (AR643). 2. CP 7 (AR639) or CP 27 (AR757).	1. Replace CP 11. 2. Replace CP 7 or CP 27.

8. **INDIVIDUAL CIRCUIT USAGE RECORDER (ICUR) CONDITIONS:** This part identifies the probable cause of data loss or incorrect data from the ETDC with the ICUR feature.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
No ICUR data	1. CP 20 (AR649). 2. CP 21 (AR746). 3. CP 19 (AR 693).	1. Replace CP 20. 2. Replace CP 21. 3. Replace CP 19.
Loss of switch horizontal or vertical	1. CP 21 (AR746).	1. Replace CP 21.
Loss of detectors	1. CP 21 (AR746). 2. CP 19 (AR693).	1. Replace CP 21. 2. Replace CP 19.
Loss of peg count data but still transmits ICUR data	1. CP 20 (AR694).	1. Replace CP 20.
Loss of ICUR data but still transmits peg count data	1. CP 20 (AR694). 2. CP 19 (AR693).	1. Replace CP 20. 2. Replace CP 19.
Excessive overflow and parity	1. CP 20 (AR694).	1. Replace CP 20.

9. EXPANDED REVERSE CONTROLS CONDITIONS:
This part identifies the probable cause of the ETDC not responding or executing commands.

SYMPTOM	PROBABLE CAUSE	SUGGESTED CORRECTIVE PROCEDURE
No response to command.	1. CP 23 (AR749) NL/LC switch is in wrong position.	1. Put switch in correct position. *Note:* NL for CCU generated commands; LC for locally generated commands.
	2. CP 23 (AR749).	2. Replace CP 23.
	3. CP 22 (AR748).	3. Replace CP 22.
Not executing command.	1. CP 22 (AR748).	1. Replace CP 22.
Loss of executed command.	1. CP 22 (AR748).	1. Replace CP 22.
	2. CP 23 (AR749).	2. Replace CP 23.

TABLE A

ETDC INPUT CARD NO.	ADDRESSES ON PRINTOUT	ETDC INPUT CARD NO.	ADDRESSES ON PRINTOUT
0	00000 — 00031	16	00512 — 00543
1	00032 — 00063	17	00544 — 00575
2	00064 — 00095	18	00576 — 00607
3	00096 — 00127	19	00608 — 00639
4	00128 — 00159	20	00640 — 00671
5	00160 — 00191	21	00672 — 00703
6	00192 — 00223	22	00704 — 00735
7	00224 — 00255	23	00736 — 00767
8	00256 — 00287	24	00768 — 00799
9	00288 — 00319	25	00800 — 00831
10	00320 — 00351	26	00832 — 00863
11	00352 — 00383	27	00864 — 00895
12	00384 — 00415	28	00896 — 00927
13	00416 — 00447	29	00928 — 00959
14	00448 — 00479	30	00960 — 00991
15	00480 — 00511	31	RESERVED FOR DISCRETE EVENTS

10. CHECKING PROCEDURES

A. Data Set Check

The local Self Test can be performed on the data set as follows.

(1) Depress and hold the LT key for approximately 15 seconds. All the indicators on the data set faceplate shall remain lighted while the LT key is depressed.

(2) If the TM indicator is extinguished while LT key is depressed, repeat (1) four additional times. The TM indicator shall not extinguish during any of the four additional trials.

(3) If the test requirements cannot be met, the data set is defective and shall be replaced.

(4) If the data set does meet the requirements, report the results to the Central Unit location.

B. Restore From Maintenance Mode

(1) If ETDC is not in maintenance mode, the TST lamp on CP 11 (AR643) will be extinguished. This condition shall be reported to the central unit location.

▶*Note:* The TST lamp may be lighted if the NL/LC switch on CP 23 (AR749) is not in the correct position—NL for CCU generated commands; LC for locally generated commands which also lights the test lamp on CP 11 (AR643).◀

(2) If the ETDC is in the maintenance mode, the TST lamp on CP 11 (AR643) will be lighted. Remove the ETDC from the maintenance mode and restore as follows:

(a) At the ETDC, set the A0 through A3 switches to 0-0-0-0.

(b) Operate LT1 switch to LCL.

(c) Operate LT2 switch to LCL.

(d) Set A0 through A3 switches to 0-0-0-1, respectively. ▶(Restore command.)◀

(e) Operate the TST switch to TST. The TST lamp on CP 11 (AR643) should extinguish when switch is operated.

(f) Set switch A0 through A3 switches to 0-0-0-0.

(g) Set LT2 switch to RMT.

(h) Set LT1 switch to RMT.

C. Power Check

Perform the following procedure step-by-step until the trouble is encountered.

(1) Check the PWR switch to ensure it is in the ON position.

(2) Using VOM, check the voltage at terminal 104 of CP 17.

There should be –48 Vdc present. No voltage indicates a bad –48A fuse.

(3) Using VOM, check the voltage at terminals 16 and 17 of J1 connector (at back of frame).

There should be between +4.8 and +5.2 Vdc present. No voltage or incorrect voltage indicates a defective converter.

(4) Using VOM, check the voltage at terminal 40 at 03-27 (at back of frame).

There should be between –21.6 and –26.5 Vdc present. No voltage indicates a bad –24V fuse or defective dc-dc converter.

(5) Using VOM, check the voltage at terminal 35 at 03-24 (at back of frame).

There should be between +4.8 and +5.2 Vdc present. No voltage indicates a bad PF fuse or a faulty fuse board (CP 25 or CP 29.)

(6) Using VOM, check the voltage at terminal 216 at 03-27 (at back of frame).

There should be between –2.8 and –3.2 Vdc present. No voltage indicates a faulty CP 18 (AR650).

(7) Using VOM, check the voltage between pins 30 and 31, and between pins 31 and 32 of equipped data sets.

There should be between 12.2 and 14.8 Vdc present. No voltage indicates a bad data set fuse or a defective dc-dc converter.