

## FAULT ISOLATION PROCEDURES

### NO. 1 AUTOMATIC MESSAGE ACCOUNTING RECORDING CENTER (AMARC)

#### 1. GENERAL

**1.01** This section provides a flow diagram to be followed for isolating and correcting a fault in one processor unit (one side) of the No. 1 AMARC in the event of a failure.

**Note:** Should an emergency condition exist as identified in Section 201-900-303, refer to appropriate procedure in that section.

**1.02** This section is reissued to include additional information and changes for performing fault isolation in the No. 1 AMARC. Revision arrows are used to emphasize the more significant changes.

**1.03** The fault being isolated could be in Western Electric (WE\*) produced equipment or in Digital Equipment Corporation (DEC†) produced equipment. If the equipment is DEC produced, the isolation of faulty equipment is left to the personnel responsible for DEC produced equipment. If the equipment is WE produced, isolation of faulty equipment is the responsibility of the telephone company personnel.

**1.04** Reference should be made to the No. 1 AMARC input/output manuals for detailed explanations of input and output messages where the need arises.

**1.05** ♦Generic 4 and 5 program applications provide for a functional input/output (I/O) terminal arrangement feature. When this feature is enabled, the terminal normally associated with processor 0 is dedicated to the active processor and becomes the alerting terminal. The other terminal normally

\* Registered trademark of Western Electric.

† Registered trademark of Digital Equipment Corporation.

associated with processor 1 is dedicated to the standby processor and becomes the analysis terminal. All active processor input and output messages are entered and printed out at the alerting terminal. All input and output messages for the standby processor are entered and printed out at the analysis terminal. To determine if the I/O terminals are in the functional mode, a **REPT SYS!** input message is entered at either terminal for a REPT SYS STA report. The state of the I/O terminals is provided in this report.♦

**1.06** While performing the procedures of this section, various other output messages may be printed due to time period or configuration of the system. Any automatic output messages **not** associated with a trouble condition may be disregarded. Any trouble conditions generated by the system, either automatically or in response to an input message request, should be analyzed using the IM and OM before continuing with the procedures.

**1.07** Should the failure be such that the input/output (I/O) terminal printout does not aid in isolating the problem, then the flowchart of this section should be used. Should the failure be such that the printout and/or interpretation of the printout shows signs of isolating the problem, refer to the IM and OM for input and output messages necessary to clear the problem and analyze the output message to determine action to be taken. Reference should also be made to Section 201-900-308 for further interpretation of both message and corrective action.

**1.08** Should a failure occur, the telephone company personnel should try to isolate the problem, then if necessary call personnel responsible for maintenance of DEC equipment.

**1.09** Whenever personnel responsible for DEC equipment are called to the No. 1 AMARC

#### NOTICE

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location, all cables (see Table C) between the central processor unit and the data set connection circuit (DSCC) bay should be disconnected at the cinch end. Circuit card CPC6 (JW176) should be removed from the associated data set interface and auxiliary function (DSIAF) circuit and replaced with circuit card CPC7 (JW181). Further details of processor isolation procedures are given in Section 201-900-301.

1.10 The JW176 circuit card should be replaced with the JW181 circuit card before shutting off ac power from a failing (half) system. When a hardware failure occurs and a part replacement is necessary, ac power should be shut off only on the failing (half) system. To shut ac power off, the key on the processor console should be switched to the OFF position. Selective ac power cut-off (dedicated power supply switches) should be used only if ac power needs to be on while the defective part is being replaced or repaired.

**Caution: Never shut off ac power simultaneously on both processors.**

1.11 Should a failure occur in a circuit that is powered by two ac sources, such as the data set connection circuit (SD-1P050-01) or the power alarm and display circuit (SD-1P051-01), caution should be used while correcting the failure. Caution is required since one ac source must remain on.

1.12 It should be noted that when a system switch occurs, there is no interruption in the collection of billing data. Call records received following the switch are entered on the new active processor AMA tape. However, since the day's data now resides on two tapes, it is necessary to remove both tapes for transportation (forwarding) to the accounting center. This condition is indicated by the remove both tapes (RMVBT) lamp being lighted on the alarm and display panel of the data set connection bay. Refer to appropriate procedure in Section 201-900-301 for removing both tapes when required.

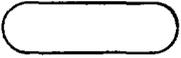
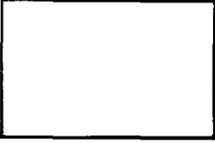
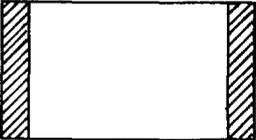
**Note:** Because of the status of the system at the time of transfer, the tape associated with the OOS processor may not have a transfer label written on it.

1.13 Begin the fault isolation procedure (Fig. 2) at the word START on the first sheet. Follow through on succeeding sheets, as required, making necessary YES/NO decisions.

1.14 The symbols which are used for the flow diagram of this section are shown in Table A. Associated with each symbol is a brief description of its function.

1.15 Figure 1 shows the allocation of responsibilities of the No. 1 AMARC System.

TABLE A

SYMBOL	EXPLANATION
	Indicates the beginning of the procedure and an exit or entrance reference to pages within same procedure.
	Indicates an action which is performed on a manual or automatic basis.
	Parentheses are used to reference supporting-type data.
	The end of procedure symbol is used to denote that the task of fault isolating has been completed.
	Used to indicate the direction of information flow.
	Used to indicate two processes flowing into a common sequence.
	Used to represent a decision which determines which one of two paths to take.
	The admonishment symbol is used to enclose A (1) danger, (2) caution, or (3) warning. The symbol is detached from the logic flow but placed in a prominent location near the step where the danger, caution, or warning is applicable.

◆ TABLE B ◆

SINGLE CHANNEL FAULT SYMPTOMS

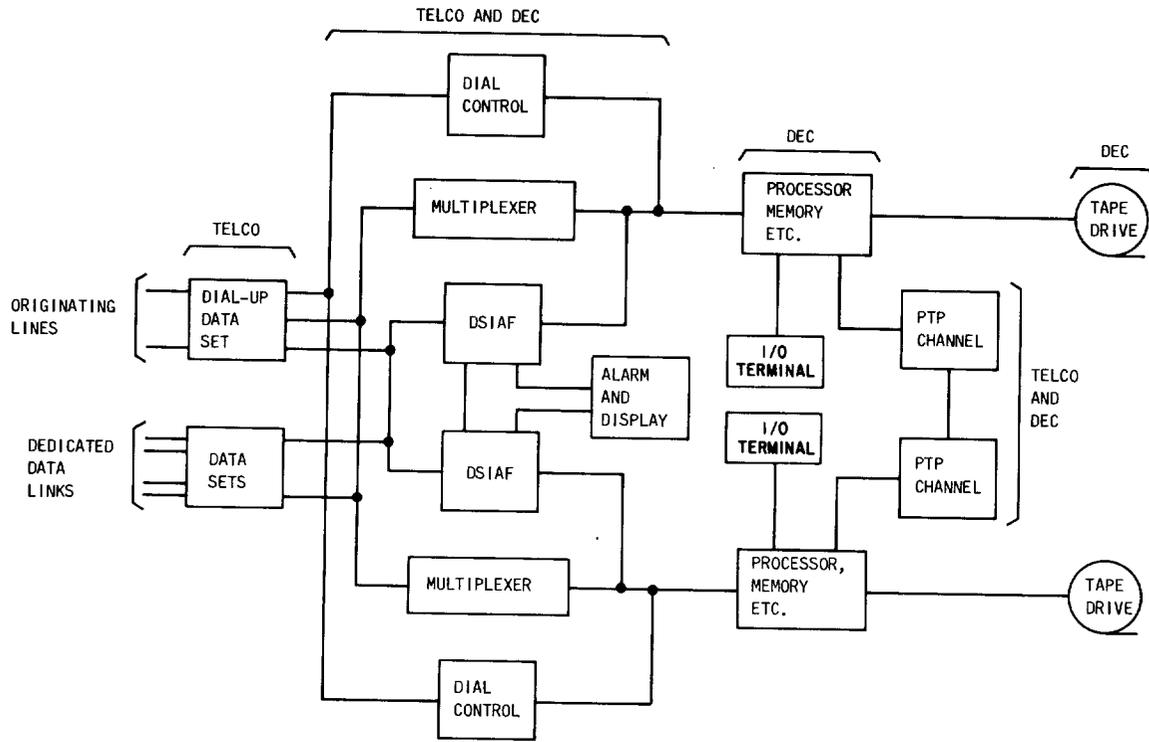
SYMPTOM	CHECK							
Cyclic redundancy check (CRC) block time out, block overflow on active (if monitored) and standby followed by dialup (DLP)	<table border="1" data-bbox="893 400 1182 491"> <tr> <td data-bbox="893 400 1039 491">Facility</td> <td data-bbox="1039 400 1182 491">Data Set</td> <td data-bbox="1182 400 1376 491">Remote Terminal</td> </tr> </table>				Facility	Data Set	Remote Terminal	
Facility	Data Set	Remote Terminal						
Channel goes to dialup (DLP) after clear to send (CTS) on active and remote location response on standby	<p data-bbox="769 506 1339 570">Request to send (RTS) or clear to send (CTS) signal on active.</p> <table border="1" data-bbox="893 591 1182 687"> <tr> <td data-bbox="893 591 1039 687">DSIAF</td> <td data-bbox="1039 591 1182 687">DS Conn.</td> <td data-bbox="1182 591 1376 687">Data Set</td> </tr> </table>				DSIAF	DS Conn.	Data Set	
DSIAF	DS Conn.	Data Set						
Channel goes to dialup (DLP) after no remote location response (RLR) time-out on standby [no remote location response (RLR) on active if CHL MON]	<p data-bbox="769 704 1128 736">Transmit (T) signal on active</p> <table border="1" data-bbox="799 746 1265 842"> <tr> <td data-bbox="799 746 913 842">Facility</td> <td data-bbox="913 746 1039 842">DJ11</td> <td data-bbox="1039 746 1182 842">DS Conn.</td> <td data-bbox="1182 746 1376 842">Data Set</td> </tr> </table>				Facility	DJ11	DS Conn.	Data Set
Facility	DJ11	DS Conn.	Data Set					
Remote location response (RLR) on standby, no errors on active, standby taken out of service	<p data-bbox="769 857 1257 921">Retransmit (R) signal on out-of-service processor.</p> <table border="1" data-bbox="1025 942 1281 1034"> <tr> <td data-bbox="1025 942 1182 1034">DJ11</td> <td data-bbox="1182 942 1376 1034">DS Conn.</td> </tr> </table>				DJ11	DS Conn.		
DJ11	DS Conn.							

TABLE C

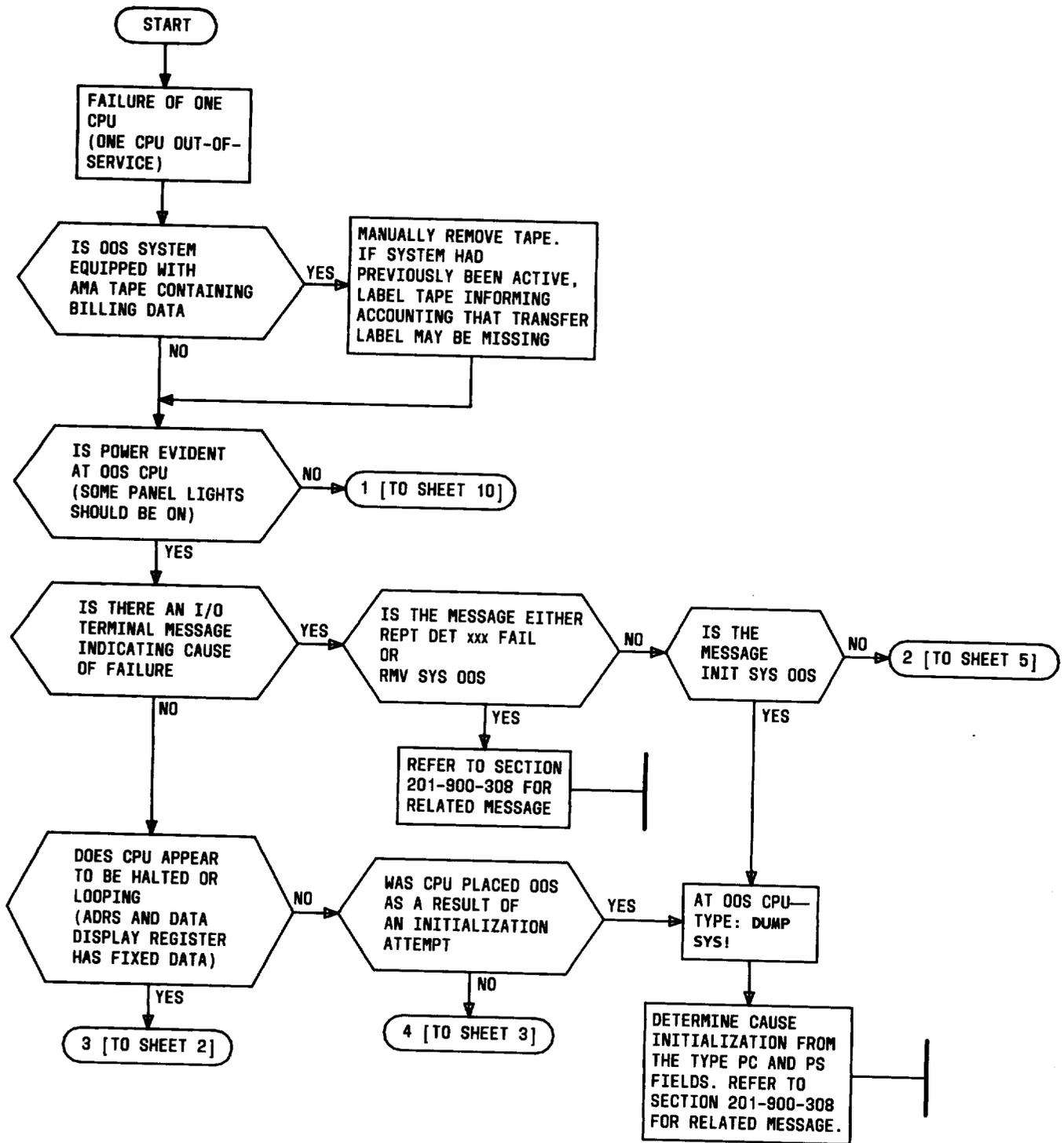
## CABLE REMOVAL FOR DEC DIAGNOSTICS

FOR PROCESSOR 0		FOR PROCESSOR 1	
CA_ NUMBER	J_ NUMBER	CA_ NUMBER	J_ NUMBER
CA8-0	J11A	CA8-1	J11A
CA9-0	J12A	CA9-1	J12A
CA10-0	J5A-0	CA13-1	J8A-1
CA11-0	J6A-0	CA12-1	J7A-1
CA12-0	J7A-0	CA11-1	J6A-1
CA13-0	J8A-0	CA10-1	J5A-1
CA14-0	J9A-0	CA14-1	J9A-1
CA15-0	J10A-0	CA15-1	J10A-1
CA16-0	J3A	CA17-1	J4C
CA17-0	J4A	CA16-1	J3C

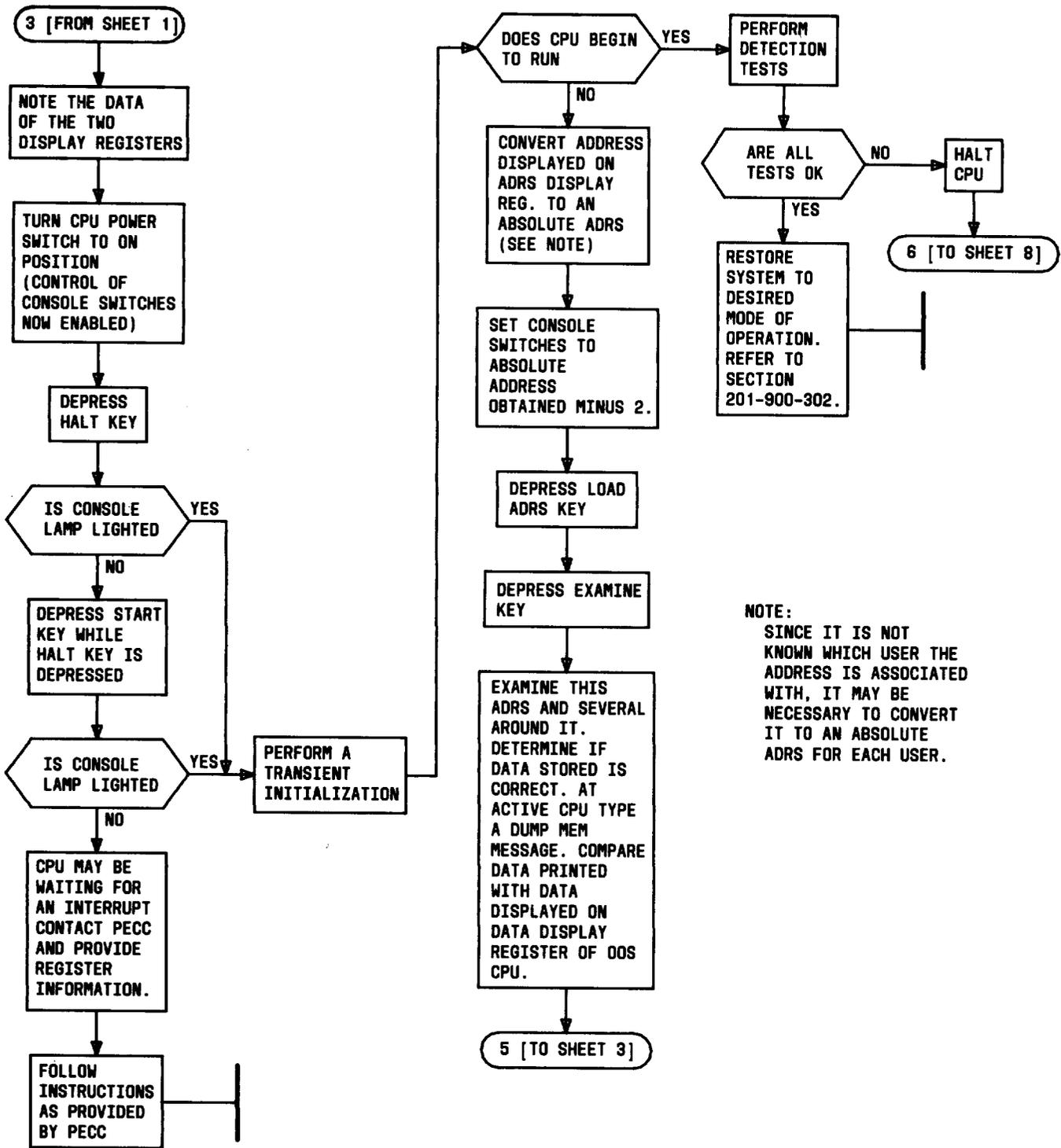
*Note:* Remove cables by disconnecting the cinch end in the DSCC bay.



◆ Fig. 1—No. 1 AMARC Allocation of Responsibilities ◆

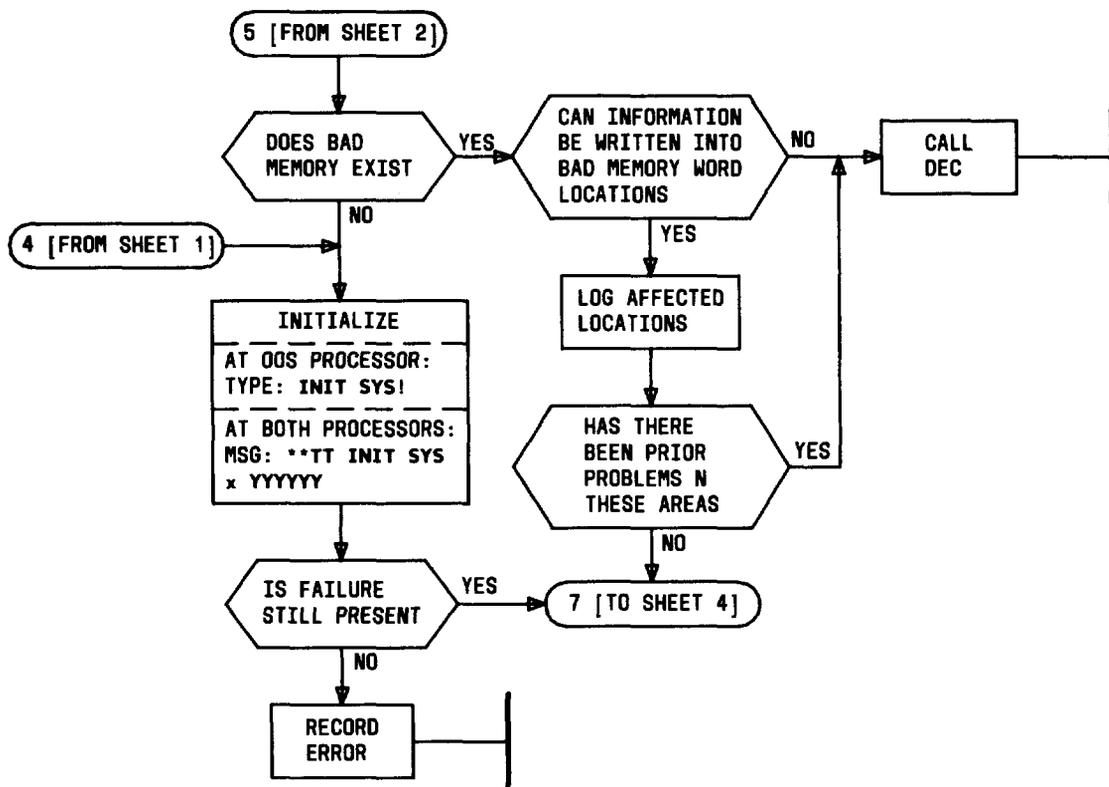


◆ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 1 of 10) ◆

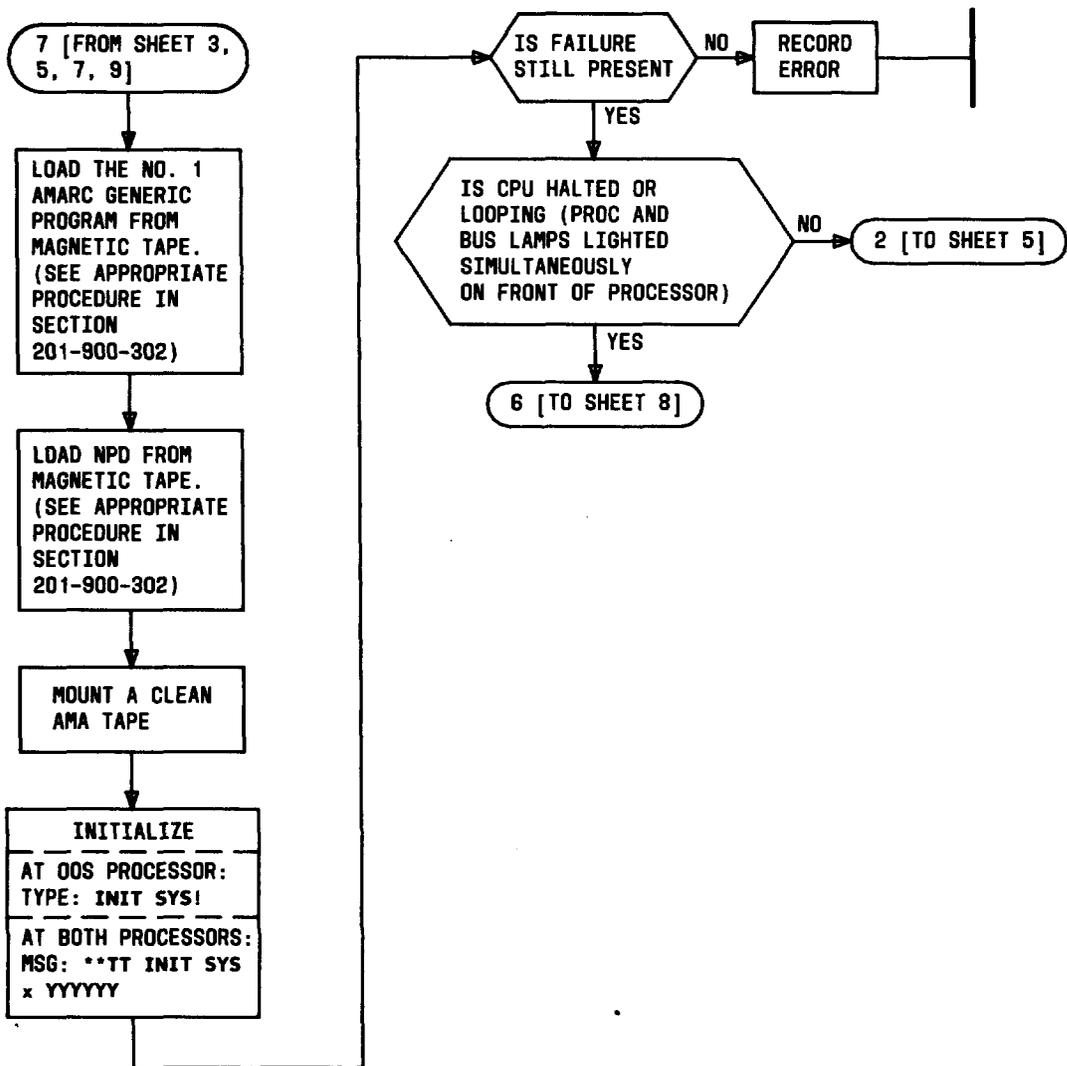


NOTE:  
 SINCE IT IS NOT KNOWN WHICH USER THE ADDRESS IS ASSOCIATED WITH, IT MAY BE NECESSARY TO CONVERT IT TO AN ABSOLUTE ADRS FOR EACH USER.

◆ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 2 of 10) ◆



◆ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 3 of 10) ◆



◆ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 4 of 10)◆

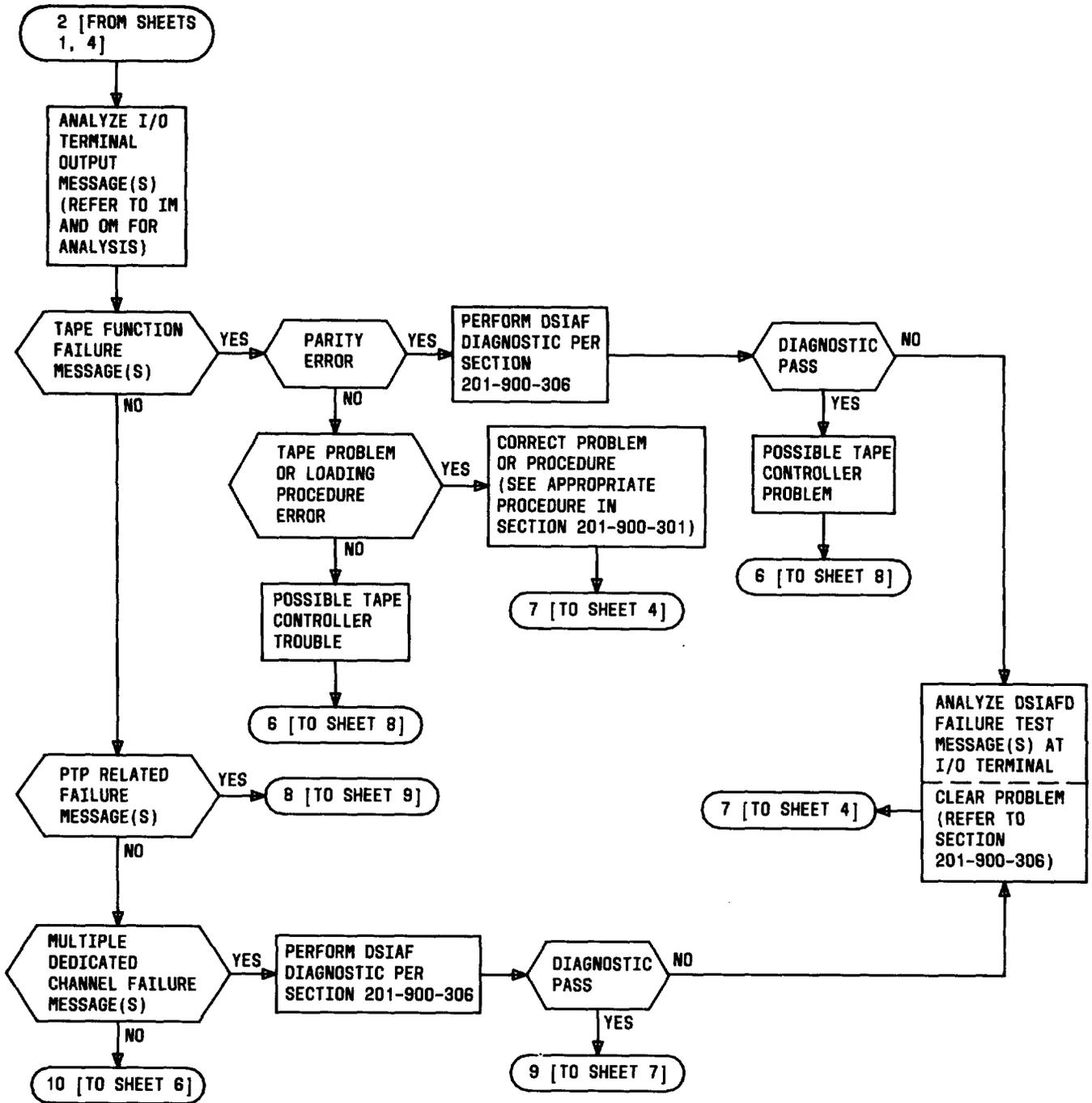
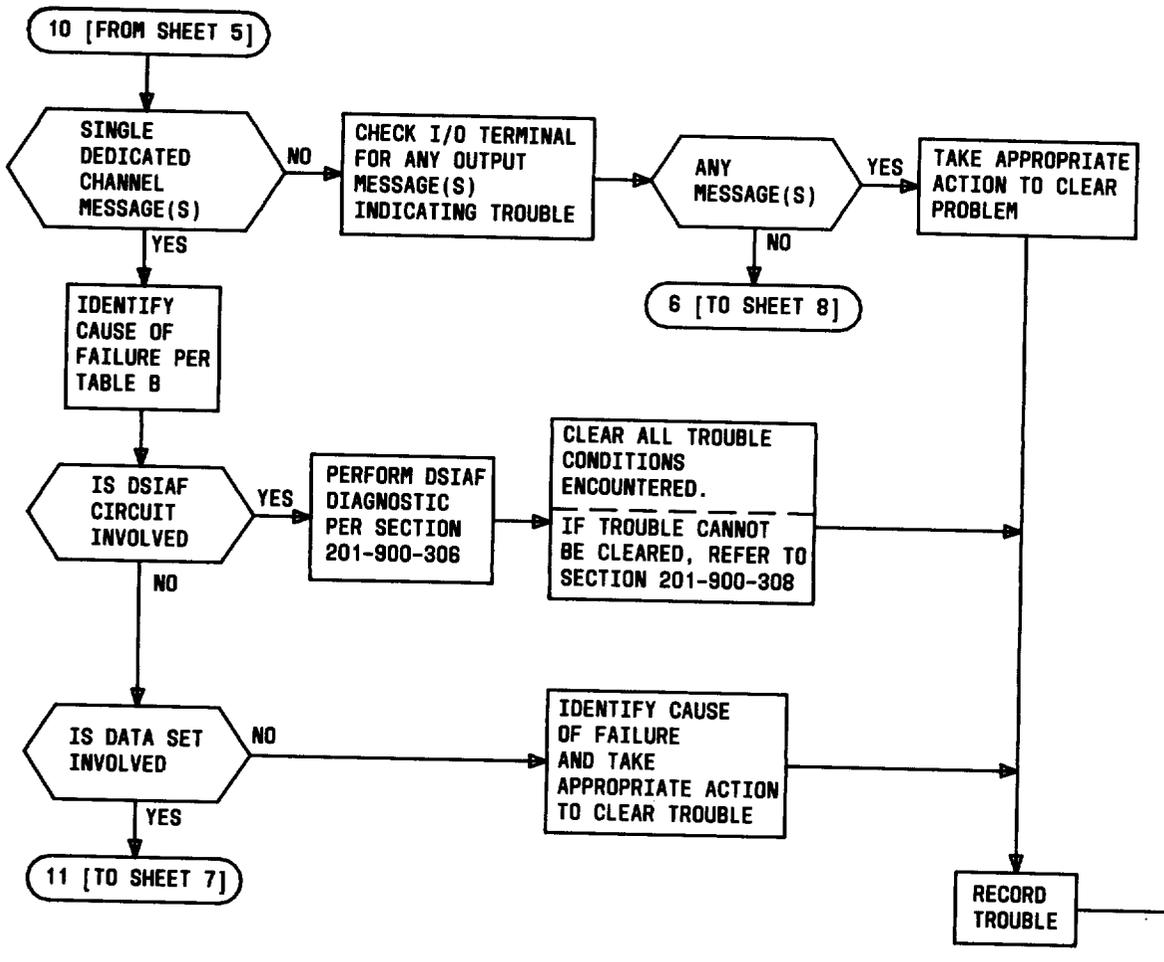
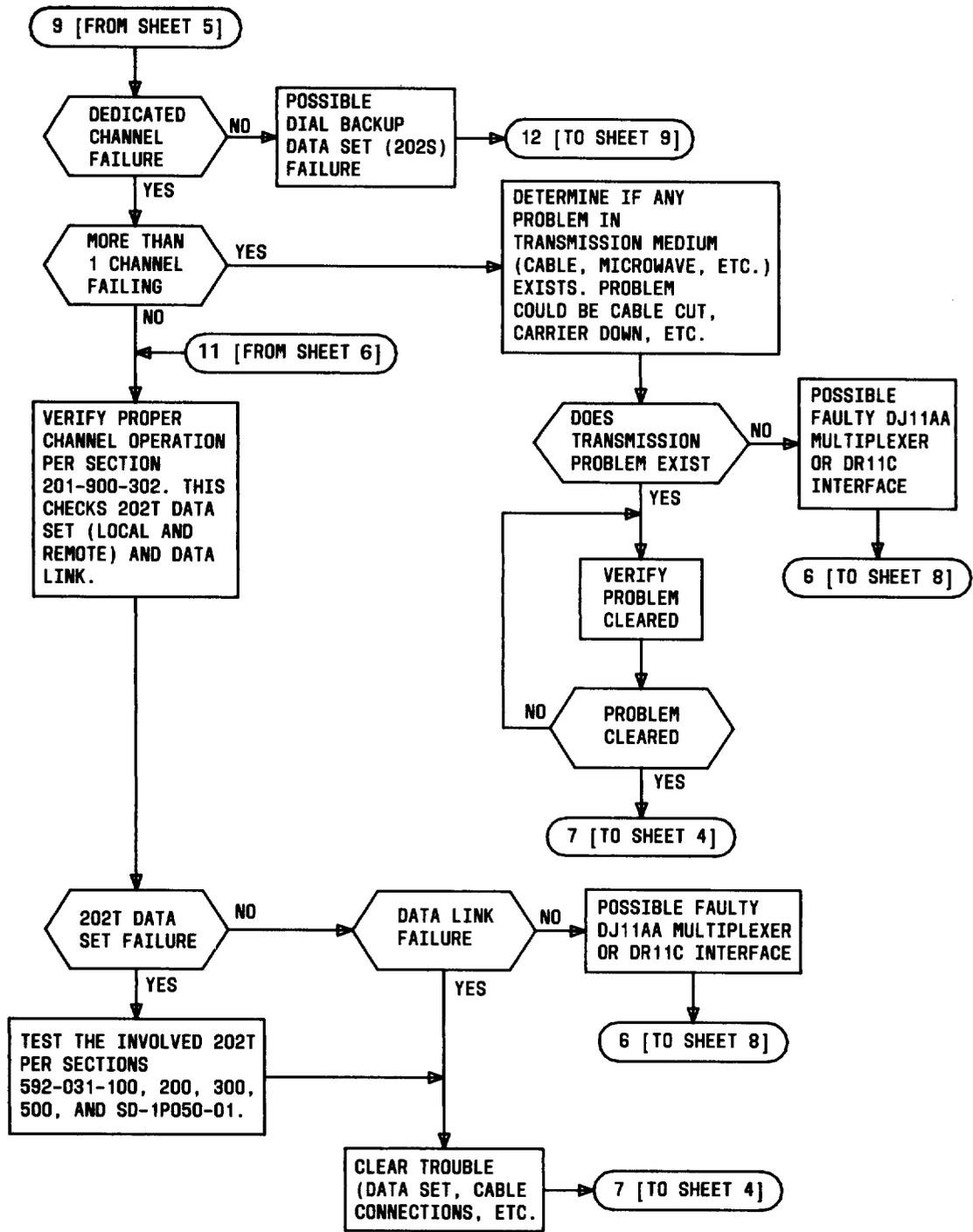


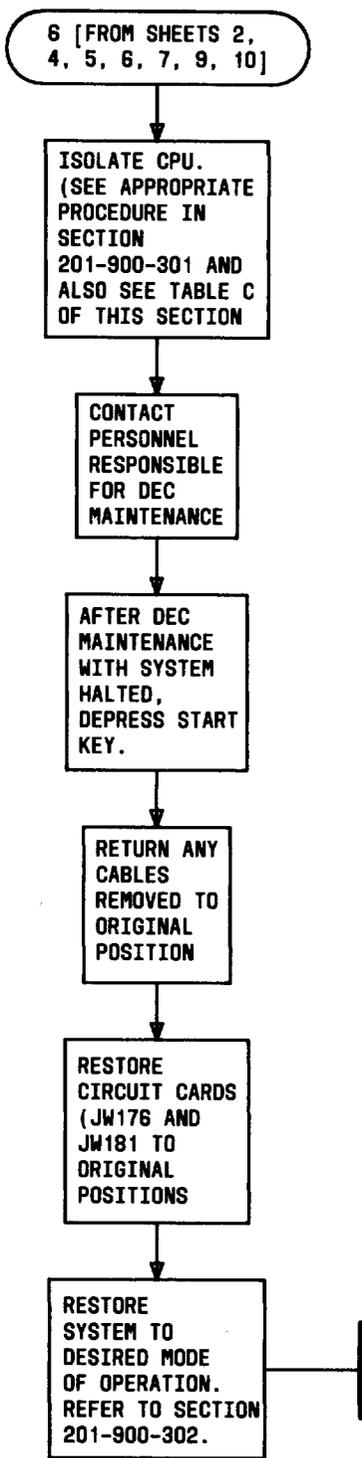
Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 5 of 10)



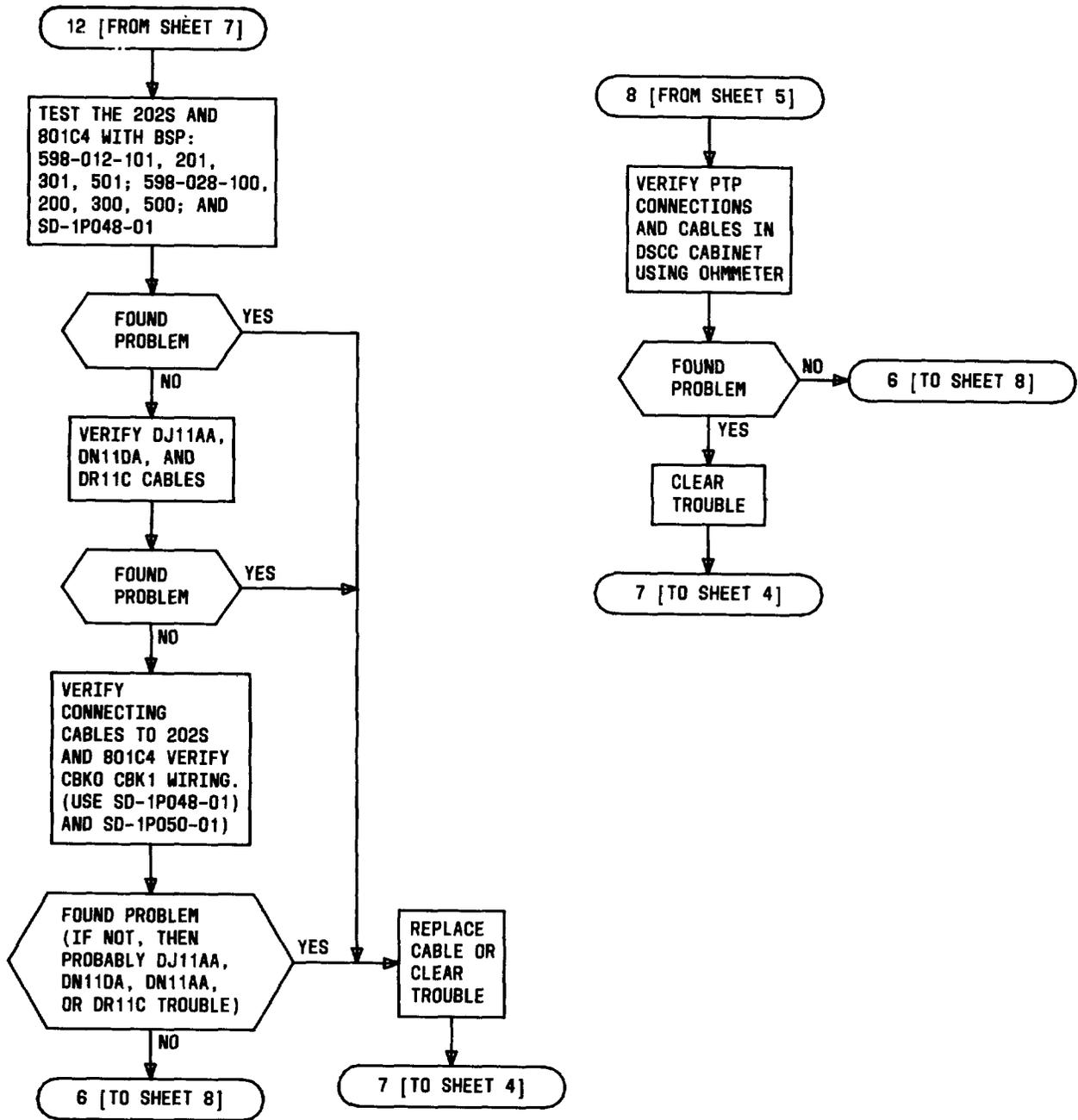
◆ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 6 of 10)◆



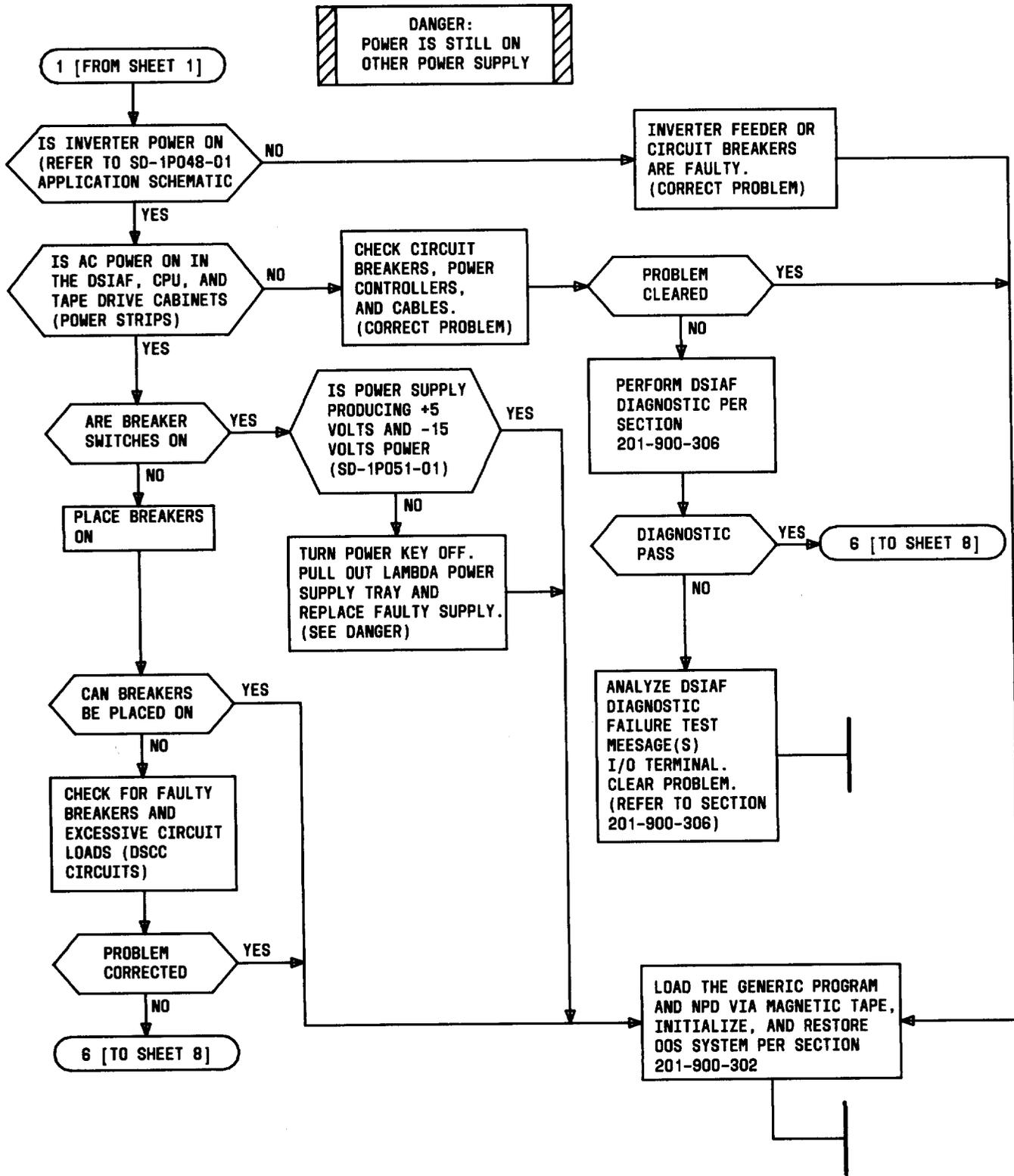
▶ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 7 of 10) ◀



◆ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 8 of 10)◆



◆ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 9 of 10)◆



◆ Fig. 2—Fault Isolation Procedure Flow Diagram (Sheet 10 of 10)◆