Task Oriented Practice
(TOP)

4ESS™ SWITCH

SIGNAL PROCESSOR 1

TERMINAL INTERFACE EQUIPMENT

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Developed by
AT&T Network Systems Customer Education & Training

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Developed by:

AT&T Network Systems Customer Education & Training

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Acceptance	NTP-002
Automatic Power Monitor Failure — Clear	TAP-146
Blown Fuse (Circuit Pack Associated) — Control Frame — Clear	TAP-121
Blown Fuse (Converter Associated) — Combined Distributor and Scanner Matrix (CD&SM) Frame (SD-4A028-02) — Clear	TAP-130
Blown Fuse (Converter Associated) — Control Frame — Clear	TAP-118
Blown Fuse (Converter Associated) — Distributor Applique (DA) Frame — Clear	TAP-142
Blown Fuse (Converter Associated) — Distributor and Scan Matrix Frame — Clear	TAP-136
Blown Fuse (**FB228** Associated) — Distributor Applique Frame (SD-4A028-01) — Clear	TAP-132
Blown Fuse (**FB230** Associated) — Distributor and Scanner Matrix Frame (SD-4A028-01) — Clear	TAP-127
Blown Fuse (**FG1**/**FG2** Associated) — Combined Distributor and Scanner Matrix Frame (SD-4A028-02) — Clear	TAP-145
Blown Fuse (J87407A Converter/**FC78** Associated) — Distributor and Scanner Matrix (D&SM) Frame (SD-4A028-01) — Clear	TAP-138
Blown Fuse (Power Switch Associated) — Combined Distributor and Scanner Matrix Frame (SD-4A028-02) — Clear	TAP-134
Blown Fuse (Power Switch Associated) — Control Frame — Clear	TAP-125
Blown Fuse (Power Switch Associated) — Distributor Applique Frame (SD-4A028-01) — Clear	TAP-143
Blown ST Fuse — Distributor Applique Frame (SD-4A028-01) — Clear	TAP-140
Circuit Pack — Combined Distributor and Scanner Matrix Frame (SD-4A028-02) — Replace	NTP-009
Circuit Pack — Control Frame — Replace	NTP-003
Circuit Pack — Distributor Applique Frame (SD-4A028-01) — Replace	NTP-004
Circuit Pack — Distributor and Scanner Matrix Frame (SD-4A028-01) — Replace	NTP-008
Circuit Pack — **FB230** — Distributor and Scanner Matrix Frame (SD-4A028-01) — Replace	NTP-013
Diagnostic Failure — Clear Replacing Circuit Packs	TAP-103

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Diagnostic Failure — TLP Abort — Clear	TAP-109
Diagnostic Failure — TLP Inhibit — Clear	TAP-108
Diagnostic Failure — TLP Queue Blockage — Clear	TAP-107
Diagnostic Failure — TLP Tape Acquisition Error — Clear	TAP-111
Diagnostic Failure — TLP Tape Not Mounted — Clear	TAP-112
Diagnostic Failure — TLP Tape Version X Does Not Match Expected Version Y — Clear	TAP-110
FB230 Circuit Pack — Distributor and Scanner Matrix Frame (SD-4A028-01) — Replace	NTP-013
Faulty Matrix Point; (SD-4A028-01) — Clear	TAP-147
Faulty Matrix Point; (SD-4A028-02) — Clear	TAP-149
F-Level Interrupt — Analyze	AT&T 234-151-003 (with 1A Processor) or AT&T 234-351-003 (with 1B Processor)
Lamps; Power Switch — Test	DLP-516
LED Lighted — Converter — Clear	TAP-141
LED Lighted — Circuit Pack — Clear	TAP-148
Maintenance Philosophy	TAD-100
Matrix Maintenance Limit Switch — Replace	NTP-006
Power Converter — Combined Distributor and Scanner Matrix Frame (SD-4A028-02) — Replace	NTP-012
Power Converter — Control Frame — Replace	NTP-007
Power Converter — Distributor Applique Frame (SD-4A208-01) — Replace	NTP-010
Power Converter — Distributor and Scanner Matrix Frame (SD-4A028-01) — Replace	NTP-011
Power Monitor Failure — Automatic — Clear	TAP-146

FIND YOUR JOB IN THE LIST BELOW . . . . . THEN GO TO

FIND YOUR JOB IN THE LIST BELOW . . . . . THEN GO TO

TTY Printout —	DGN:SP a,{IPUB b|CONTR c}:PH d STF ANALY:TLPFILE:SP a,{IPUB b|CONTR c}TLP CURRENT TLP SEARCH ABORTED	TAP-109
TTY Printout —	DGN:SP a,{IPUB b|CONTR c}:PH d STF ANALY:TLPFILE:SP a,{IPUB b|CONTR c} TLP PROGRAM ABORTED	TAP-109
TTY Printout —	DGN:SP a,{IPUB b|CONTR c}:PH d STF ANALY:TLPFILE:SP a,{IPUB b|CONTR c}TLPSRCH SUSPECTED FAULTY EQUIPMENT Note Column Contains NOTE 2, 20, or 21 Fuse Blown	SEE BLOWN FUSE ENTRIES
TTY Printout —	DGN:SP a,{IPUB b|CONTR c}:PH d STF ANALY:TLPFILE:SP a,{IPUB b|CONTR c}TLPSRCH SUSPECTED FAULTY EQUIPMENT Note Column Contains NOTE 2, 20, or 21 No Fuse Blown	TAP-146
TTY Printout —	DGN:SP a,{IPUB b|CONTR c}:PH d STF ANALY:TLPFILE:SP a,{IPUB b|CONTR c}TLPSRCH SUSPECTED FAULTY EQUIPMENT Note Column Does Not Contain NOTE 2, 20, or 21	TAP-103
TTY Printout —	DGN:SP a,{IPUB b|CONTR c}:PH d STF ANALY:TLPFILE:SP a,{IPUB b|CONTR c} TLP TAPE ACQUISITION ERROR MOUNT TAPE WITH FILE ID = f	TAP-111
TTY Printout —	DGN:SP a,{IPUB b|CONTR c}:PH d STF ANALY:TLPFILE:SP a,{IPUB b|CONTR c}TLP WARNING: VERSION X DOES NOT MATCH VERSION Y	TAP-110
TTY Printout —	DGN:SP a,{IPUB b|CONTR c}:PH d STF REPT:TAPE MUST BE MOUNTED FOR FUNCTION TLP	TAP-112

No acceptance test procedures are required for this frame.
Readiness of this frame to become part of working system
was established by successful completion of Installation
Handbook test procedures.

ACCEPTANCE

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO

1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At TTY, Type **RMV:SP** a,**CONTR** b! (a = Member Number, b = Controller 0 or 1)	—
3	Wait for System Response **RMV:SP** a,**CONTR** b **COMPLETED**	—
4	Condition Power Control Switch and Replace Circuit Pack	DLP-501
5	At TTY, Type **RST:SP** a,**CONTR** b! (a = Member Number, b = Controller 0 or 1)	—
6	Wait for System Response **RST:SP** a,**CONTR** b **COMPLETED** (**OS** Lamp Goes Off)	—
7	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO

1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	Condition Power Control Switch and Replace Circuit Pack:	
	A. Type **FB229**, **FB231**, or **FC78**	DLP-503
	B. Type **FB228**	DLP-504
3	Restore Pulse Points if Removed in Item 1	DLP-524

REPLACE CIRCUIT PACK, DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO

1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At TTY, Type **RMV:SP** a,**CONTR** b! (a = Member Number, b = 0 or 1)	—
3	Wait for System Response **RMV:SP** a,**CONTR** b **COMPLETED**	—
4	Rotate **ROS/OFF** Switch Clockwise to **ROS**	—
5	Observe **ACK** Lamp Flashes Off and On, and **OS** and **OFF NORM** Lamps Light	—
6	Condition Power Control Switch and Replace Power Switch	DLP-514
7	Rotate **ROS/OFF** Switch Counterclockwise to Normal Position	—
	NOTE: If **OS** lamp flashes and remains lighted, diagnostic passed	
8	Observe **OFF NORM** Lamp Goes Off	—
9	At TTY, Type **RST:SP** a,**CONTR** b! (a = Member Number, b = 0 or 1)	—
10	Wait for System Response **RST:SP** a,**CONTR** b **COMPLETED** (**OS** Lamp Goes Off)	—
11	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO

1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At TTY, Type **RMV:SP** a**,CONTR** b! (a = Member Number; b = Controller 0, if Pack in Bay 1 or 6, or Controller 1, if Pack in Bay 2 or 7)	_
3	Rotate **RML/ALM RETIRE** Switch Clockwise to **RML**	—
4	Observe **ACK** Lamp Flashes and **OFF NORM** and **MTCE LIMIT** Lamp Lights	—
5	Replace Matrix Maintenance Limit Switch	DLP-515
6	Rotate **RML/ALM RETIRE** Switch Counterclockwise to Normal Position	—
7	Observe **OFF NORM** and **MTCE LIMIT** Lamps Go Off	—
8	At TTY, Type **RST:SP** a **,CONTR** b! (a = Member Number; b = Controller 0 or 1)	—
9	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At TTY, Type **RMV:SP** a**,CONTR** b! (a = Member Number; b = Controller 0 if Pack in Bay 1 or 6, or Controller 1 if Pack in Bay 2 or 7)	—
3	Wait for System Response: **RMV:SP** a**,CONTR** b **COMPLETED**	—
4	Test Power Monitor Circuits	DLP-521
5	Condition Power Control Switch, and Replace Power Converter	DLP-519
6	At TTY, Type **RST:SP** a**,CONTR** b!	—
7	Wait for System Response: **RST:SP** a**,CONTR** b **COMPLETED** (**OS** Lamp Goes Off)	—
8	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At TTY, Type **RMV:SP** a,**CONTR** b! (a = Member Number; b = Controller 0, if Pack in Bay 1 or 6, or Controller 1 if Pack in Bay 2 or 7)	—
3	Wait for System Response **RMV:SP** a,**CONTR** b **COMPLETED**	—
4	Condition Power Control Switch and Replace Circuit Pack:	
	A. Access Unit (Vertical Levels 36, 40, 55, or 59)	DLP-501
	B. Type **FA610** or Associated **FC78** (Located in Same Bay and Level as **FA610** Circuit Packs)	DLP-503
	C. Type **FA605** or Associated **FC78** (Located in Same Bay and Level as **FA605** Circuit Packs)	DLP-502
5	At TTY, Type **RST:SP** a,**CONTR** b! (a = Member Number, b = Controller 0 or 1)	—
6	Wait for System Response **RST:SP** a,**CONTR** b **COMPLETED** (**OS** Lamp Goes Off)	—
7	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At TTY, Type **RMV:SP** a**,CONTR** b! (a = Member Number; b = Controller 0 if Pack in Bay 1 or 6, or Controller 1 if Pack in Bay 2 or 7)	—
3	Wait for System Response **RMV:SP** a**,CONTR** b **COMPLETED**	—
4	Condition Power Control Switch and Replace Circuit Pack:	
	A. Type **FA662**, **FA1236**, **FC465**, **FC466**	DLP-501
	B. Type **FG 1**	DLP-502
	C. Type **FG 2**	DLP-503
5	At TTY, Type **RST:SP** a**,CONTR** b!(a = Member Number, b = Controller 0 or 1)	—
6	Wait for System Response **RST:SP** a**,CONTR** b **COMPLETED** (**OS** Lamp Goes Off)	—
7	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	Test Power Monitor Circuits	DLP-521
3	Condition Power Switch and Replace Converter	—
	A. 98A-Type Converter	DLP-520
	B. All Other Type Converters	DLP-519
4	At TTY, Type **DGN:SP** a,**CONTR** b! (a = Member Number, b = Controller 0 or 1)	—
5	Wait for System Response **DGN:SP** a,**CONTR** b **ATP**	—
6	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At TTY, Type **RMV:SP** a,**CONTR** b! (a = Member Number; b = Controller 0 if Pack in Bay 1 or 6, or Controller 1 if Pack in Bay 2 or 7)	—
3	Test Power Monitor Circuits	DLP-521
4	Condition Power Control Switch and Replace Converter	
	A. 98A-Type Converter	DLP-520
	B. **CONTR 0/1** Switch Is Power Control Associated With Converter	DLP-519
	C. **MML** Switch Is Power Control Associated With Converter	DLP-518
5	At TTY, Type **RST:SP** a,**CONTR** b! (a = Member Number, b = Controller 0 or 1)	—
6	Wait for System Response **RST:SP** a,**CONTR** b **COMPLETED** (**OS** Lamp Goes Off)	—
7	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At TTY, Type **RMV:SP** a,**CONTR** b! (a = Member Number; b = Controller 0 if Pack in Bay 0 or 4, or Controller 1 if Pack in Bay 1 or 5)	
3	Test Power Monitor Circuits	DLP-521
4	Condition Power Control Switch and Replace Converter	—
	A. 98A-Type Converter	DLP-520
	B. All Other Type Converters	DLP-519
5	At TTY, Type **RST:SP** a,**CONTR** b! (a = Member Number, b = Controller 0 or 1)	—
6	Wait for System Response **RST:SP** a,**CONTR** b **COMPLETED** (**OS** Lamp Goes Off)	—
7	Restore Pulse Points if Removed in Item 1	DLP-524

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Determine if SP Is Equipped With Pulse Points and Remove	DLP-523
2	At **MML** Switch (TABLE A), Rotate **RML/ALM RETIRE** Switch Clockwise	DLP-502
3	Remove From Service SP Matrix Points Associated With **FB230** Circuit Pack	DLP-512
4	Remove Circuit Pack	—
5	Clean and Lubricate Terminals and Connectors Per Approved Procedures	—
6	Insert and Properly Seat Replacement Pack	—
7	At **MML** Switch, Rotate **RML/ALM RETIRE** Switch Counterclockwise to Normal Position	—
8	Observe **OFF NORM** and **MTCE LIMIT** Lamps Go Off	—
9	Restore to Service SP Matrix Points Associated With Replaced **FB230** Circuit Pack	DLP-513
10	Restore Pulse Points if Removed in Item 1	DLP-524

GENERAL

The maintenance philosophy contained in this volume is based upon the design of equipment (hardware), diagnostic software, and test equipment employed. Procedures are intended to aid personnel in performing trouble-clearing tasks. The degree to which these procedures accomplish this depends upon input and feedback from the user. Additions, corrections, and improvements to the data are encouraged. Manufacturer, engineering, and software documentation (such as I/O manuals, SDs, PRs, etc) which are available to the operating telephone company offices, are referenced where applicable. Some portions of those documents may be utilized in procedures, but only as examples. Test equipment (oscilloscopes, voltmeters, etc) and parameters involved in circuits being tested, adjusted, or checked are usually prescribed. The setup and method of use are not described unless it is unusual in some manner.

In an effort to increase network reliability and reduce service-effected incidents, a preconditioning process has been added to this document. The preconditioning process requires a determination if the Signal Processor being repaired is a base or supplementary Signal Processor (for example, is this frame equipped with pulse points). If the Signal Processor being repaired is equipped with pulse points, the pulse points associated with the Signal Processor being repaired are powered down prior to the replacement of any apparatus.

IXL PHILOSOPHY [IXL-001]

The IXL is structured to provide fast access to those procedures pertinent to symptoms identified. As an example, see the TTY printout
DGN:SP a,{**IPUB** b|**CONTR** c}**:PH** d **STF** message on the IXL. It would require a lengthy procedure (TAP) to cover all possibilities. The identification of secondary indications or messages provides some trouble sorting.

The primary message **"DGN:SP** a,..." is followed by various secondary messages which define the problem further. Most are related to problems which prevent generation of a suspected faulty equipment list. Where secondary message **ANALY:TLPFILE:SP**a, { **IPUB** b|**CONTR** c} **TLPSRCH SUSPECTED FAULTY EQUIPMENT** is generated. It is necessary to determine if the printout (**ANALY:TLPFILE**) has a NOTE 2 as stipulated. If not, the third line statement that **"**Note Column Does Not Contain NOTE 2**"** identifies the correct procedure reference. If NOTE 2 does appear in the NOTE column of the **ANALY:TLPFILE:** message printout, it is necessary to go to a fourth level indication. The fourth level indications are **"**Fuse Blown**"** and "No Fuses Blown", and appropriate procedures are referenced. Procedures unique to a particular modification of a frame are identified by the SD number of that frame. If not so identified, the procedure would apply to all modifications.

Power problems are sensed by scan points which generate a major or minor alarm. It is assumed that the user can locate the frame which was automatically powered down (1A power switch with **PWR OFF** lamp lighted and **OFF NORM** lamp off) due to the power fault. The user can follow the aisle pilot lights or read the **REPT:PA** printout which will identify the frame with the power fault. The precise structure of the message is given in input/output (I/O) message manuals. The symptoms described in the IXL reflect the previous assumptions and indicate other conditions, observable at the frame,

that would enable the user to access the proper trouble-clearing procedure. These conditions are a fuse blown or lighted LEDs on converters, or power-function circuit packs.

In general, most logic circuit failures cause the fault recovery program to request a diagnostic program. This method of requesting the diagnostic program includes the trouble-locating program TLP option. The IXL reflects this in TTY printouts listed. Other than the **ANALY:TLPFILE** supplementary messages which include the phrases **"SUSPECTED FAULTY EQUIPMENT"** or **"NULL PACK TEST GENERATED"**, all **ANALY:TLPFILE:** supplementary messages pertain to problems in generating a suspected faulty equipment list; and refer to procedures (TAPs) which attempt to correct the problem. If successful in generating a suspected faulty equipment list, these procedures refer to the appropriate procedure [TAP-103] which tells the user what to do with this list. If a SUSPECTED FAULTY EQUIPMENT list is not successfully generated, the TTY messages refer to the next level of trouble-clearing, raw data analysis [TAP-104] ; this is an alternative to the first and most common trouble-clearing approach.

TAP PHILOSOPHY

When documenting a procedural approach to trouble-clearing, certain assumptions are made. It is assumed that one fault is being cleared at a time. When directing the user to perform an action, it is assumed that the user performs that action correctly. Similarly, when the user is directed to make replacements, the replacement part is always assumed to be good and the equipment used for testing both built-in and commercial hardware and software is assumed to be good. These assumptions and the fact that the trouble-clearing procedures are designed for faults with consistent fault signatures provide procedures with a clean straightline approach to trouble-clearing. It is possible that some faults will not present a consistent fault signature or TLP pack list. If this occurs, then the diagnostic DGN should be repeated a number of times, and the most consistent signature and list should be used following the same general approach provided in the procedures. This repetitive DGN method should be used each time to determine if there is any change in the fault signature when any corrective action is taken unless that action results in clearing the problem.

The trouble-clearing TAPs, provided for diagnostic failures, are provided on three levels. The first level [TAP-103] is addressed to what to do with a software-generated TLP suspected faulty equipment list. Also, it provides a step-by-step procedure for replacing circuit packs one at a time and analyzing the results. This level is straightforward and requires some familiarity with the equipment (descriptive and theory BSPs), TTY techniques, and diagnostic printouts.

The second level of trouble-clearing is accessed from the first level TAP when the TLP-generated suspected faulty equipment list has been exhausted without clearing the problem; or it can be accessed directly from the IXL or any of the **ANALY:TLPFILE** TAPs which produce a **NULL PACK TEST GENERATED** response. This level [TAP-104] is known as raw data analysis. Raw data analysis describes what to do with the summary and supplemental data printed either with, or instead of the suspected faulty equipment list. It is expected that this will lead to an identification of faulty circuits within the SD and possibly additional suspect circuit packs not previously identified. This level of trouble-clearing is more complex; and requires knowledge of the equipment, TTY techniques and printouts, and SDs, PRs, etc.

TAP PHILOSOPHY (Contd)

The third level of trouble-clearing is signal tracing that uses interactive diagnostics [TAP-105]. This procedure is accessible only from the previous level [TAP-104] and uses information derived in the performance of that procedure. This level of trouble-clearing requires an increase in the capabilities cited in the first two levels with additional knowledge and skill in the setup and use of test equipment (oscilloscopes, voltmeters, etc).

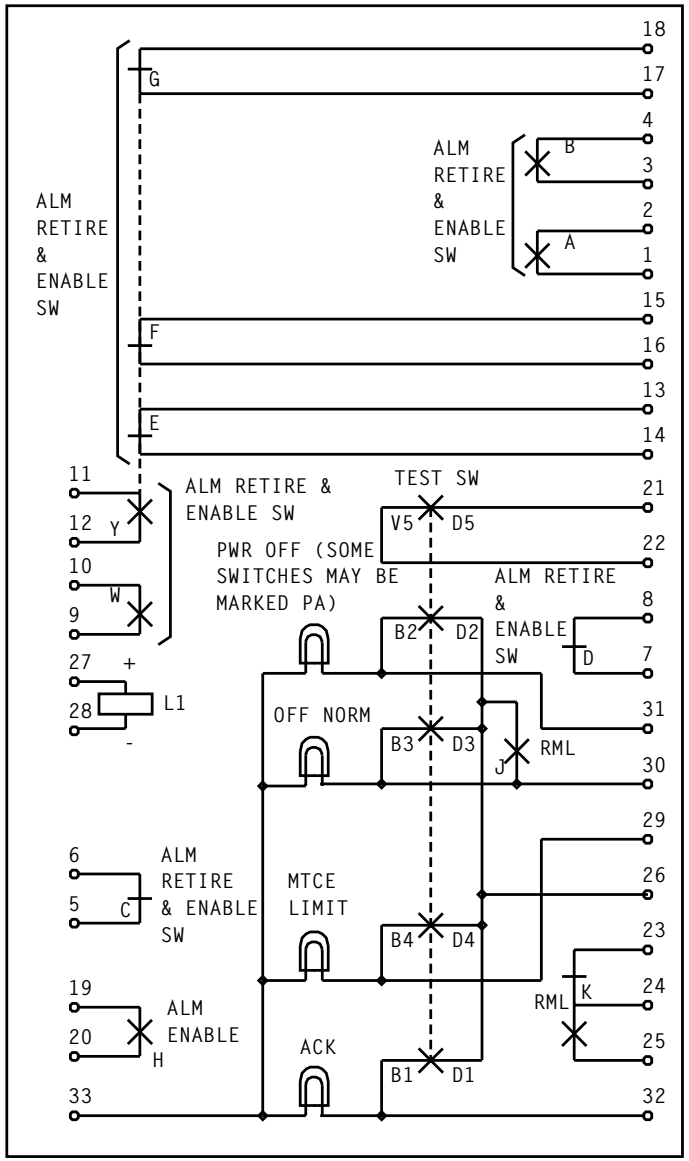
ALTERNATE METHODS

The more knowledgeable and experienced personnel may access TOP documents at a point in trouble-clearing where analyzation is completed (faulty component determined); and only repair or replacement required. In many instances, access to these procedures may be obtained by locating procedural data provided on the Task Index List. Most DLPs are built to support TAPs; and Non-Trouble Procedures (NTPs) with preconditioning and system restoration steps covered in those level procedures (TAPs, NTPs). Therefore, access to data (DLPs) on a hunt-and-find basis is a threat to equipment operation; and may compound trouble-clearing problems.

Another method of trouble-clearing that may be utilized is interrupt analysis. Interrupt analysis may produce a list of circuit packs that could cause a particular interrupt. Refer to AT&T 234-151-003 (with 1A Processor) or AT&T 234-351-003 (with 1B Processor) for interrupts. Prior to changing the circuit packs, a DGN should be run with ATP expected. If the DGN produces an ATP or STF, do the following:

- **ATP:** The first circuit pack found in the interrupt analysis should be changed. Should this be the wrong circuit pack, the probability is high that the interrup will occur again with the same sympton at this time, will occur again with the same symptom. At this time, the next identified pack should be changed.

- **STF:** The most suspect circuit pack is the pack that appears on both the TLP pack list and the list generated from the interrupt analysis.



MATRIX MAINTENANCE LIMIT SWITCH

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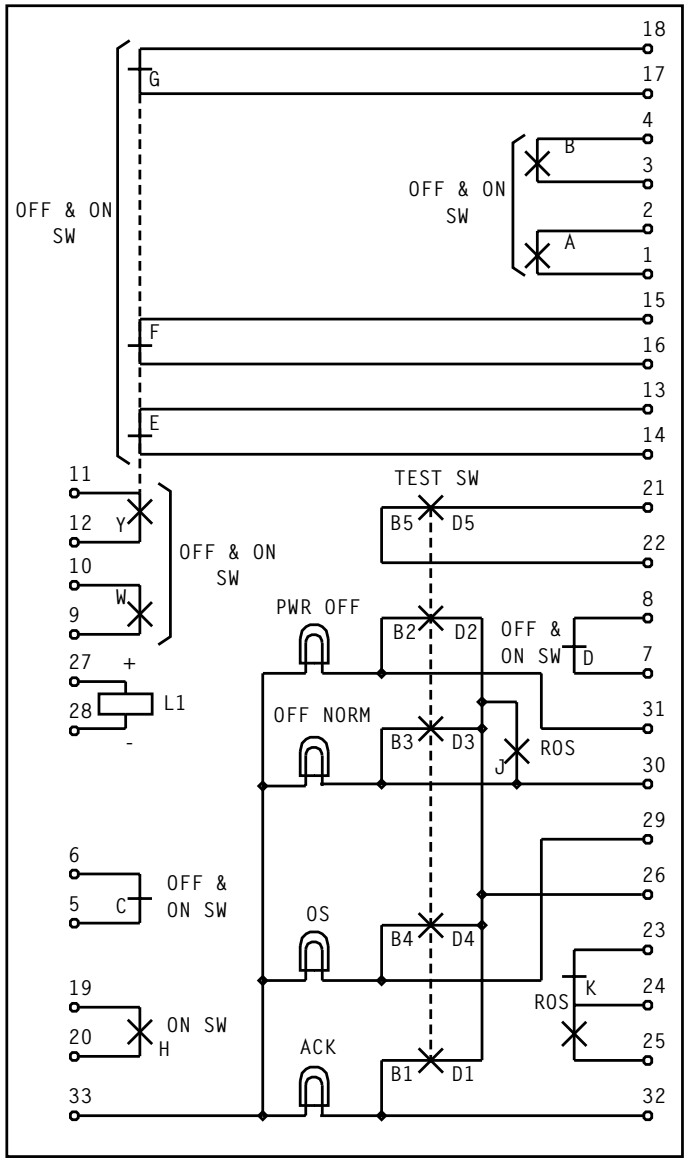

POWER SWITCH

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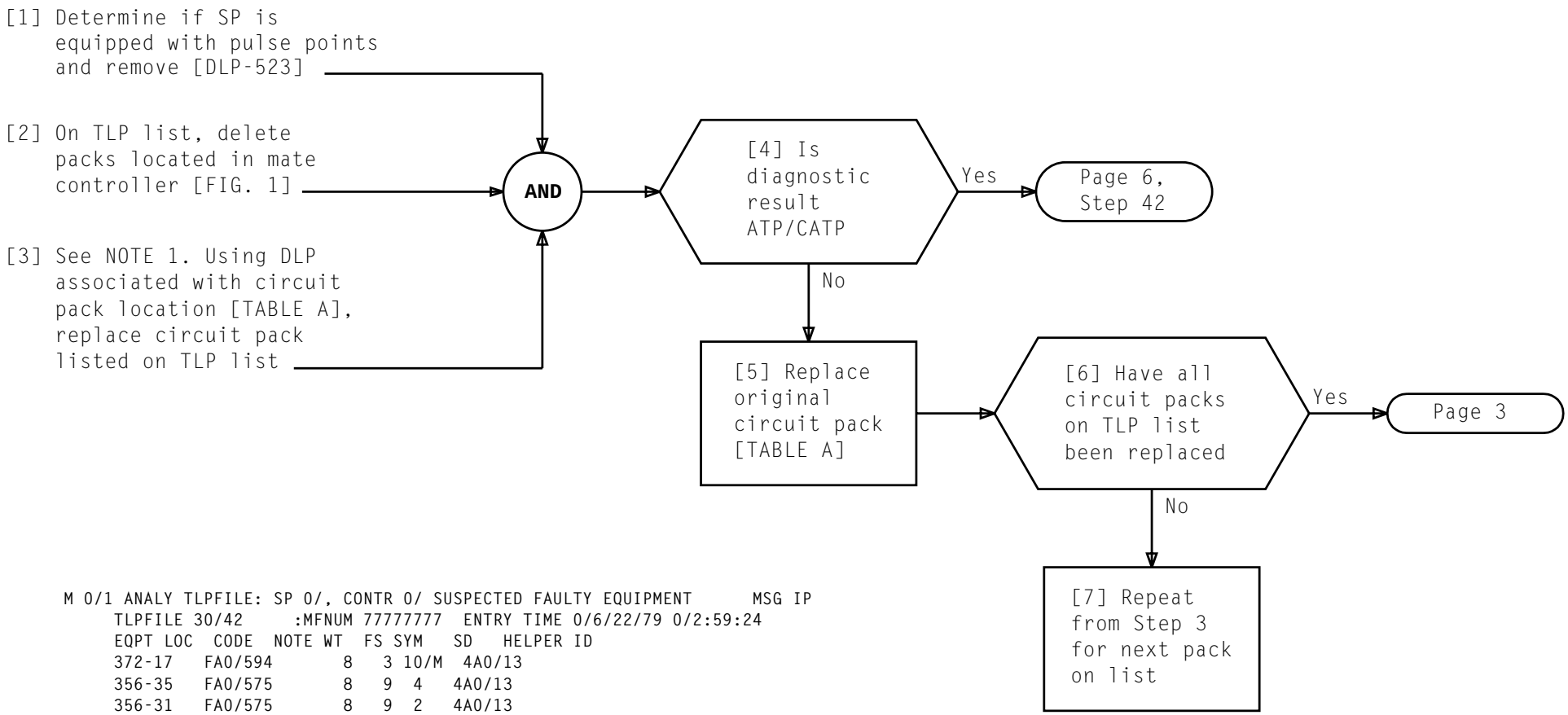



```
M 0/1 ANALY TLPFILE: SP 0/, CONTR 0/ SUSPECTED FAULTY EQUIPMENT      MSG IP
     TLPFILE 30/42     :MFNUM 77777777  ENTRY TIME 0/6/22/79 0/2:59:24
     EQPT LOC  CODE  NOTE WT  FS SYM   SD   HELPER ID
     372-17   FA0/594       8   3 10/M  4A0/13
     356-35   FA0/575       8   9  4    4A0/13
     356-31   FA0/575       8   9  2    4A0/13
     356-32   FA0/575       8   9  1    4A0/13
     356-33   FA0/575       8   9  3    4A0/13
     472-17   FA0/594       8  19 39M   4A0/13  :SP 0/, CONTR 1
     380/-0/7 FC00//12      8   2  5    4A0/13
     364-25   FA0/588       8   6 21M   4A0/13
     480/-0/7 FC00//12      8   3  5    4A0/13
     356-34   FA0/588       8   9 14M   4A0/13
     372-21   FA0/583       8  16  5M   4A0/13
     464-25   FA0/588       8   6 21M   4A0/13  :SP 0/, CONTR 1
     364-23   FA0/588       8  14  1M   4A0/13
     373-19   FA0/595          16  3M   4A0/13
```

MATE CONTROLLER CIRCUIT PACKS

FIG. 1 — Example of TLP List With Suspect Packs in Mate Controller

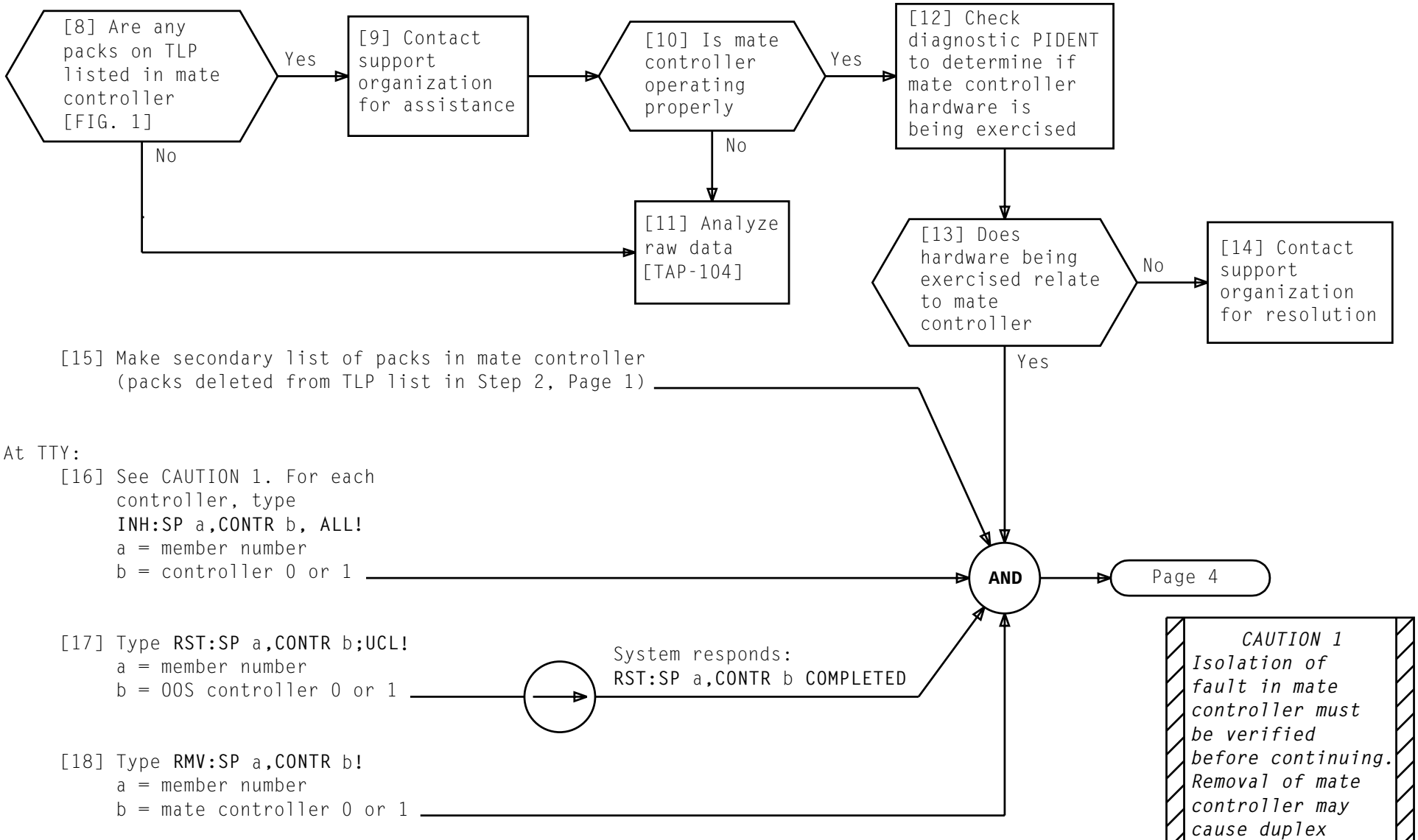
NOTE 1
Circuit packs are listed on TLP printout in order of fault causing probability and should be replaced one at a time in that order

CLEAR DIAGNOSTIC FAILURE BY REPLACING CIRCUIT PACKS

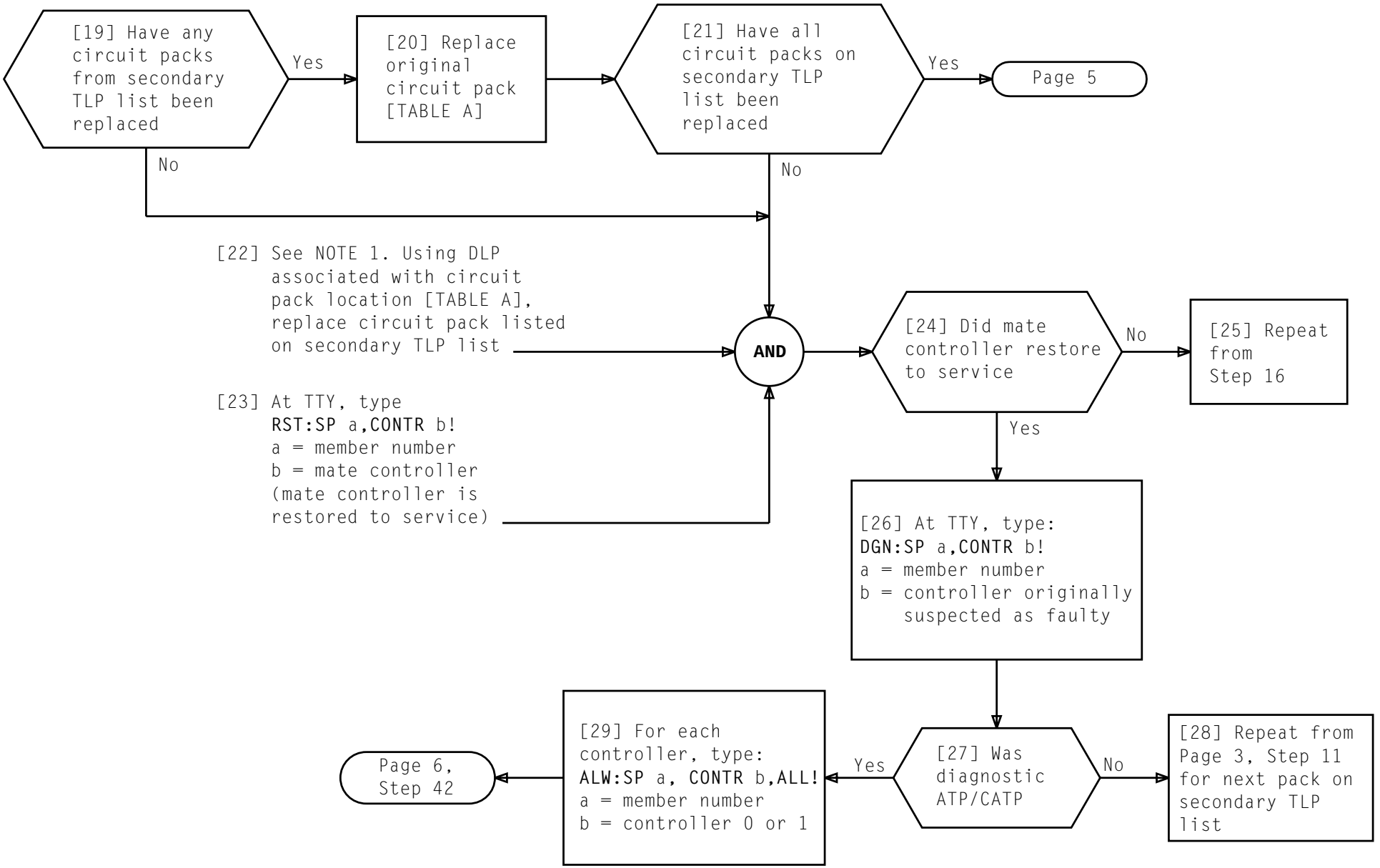
TABLE A				
CIRCUIT PACK LOCATION				REPLACE CIRCUIT PACK PROCEDURE
FRAME	BAY	VERTICAL	HORIZONTAL OR TYPE	
Control	*	All	All	DLP-501
Distributor applique	0/5	64, 68	**FB229**, **FB231**, or **FC78**	DLP-503
			FB228	DLP-504
		All others		DLP-504
Distributor and scanner matrix	2/7	45	8 through 38 **FA610**	DLP-503
			8 through 38 **FA605**	DLP-502
	1, 2, 6, 7	59, 55, 40, 36	All	DLP-501
		All others		DLP-502
Combined distributor and scanner matrix	0, 1, 4, 5	54, 62, 70, 78	All **FG 1**	DLP-502
	1, 5	54, 62, 70, 78	All **FG 2**†	DLP-503
	0, 1, 4, 5	43	**FA662** **FA1236**	DLP-501
		43, 47	**FC465** **FC466**	

* Bays 3/4 for SD-4A028-01. Bays 2/3 for SD-4A028-02
† SD-4A093-01, Option Z or Y only

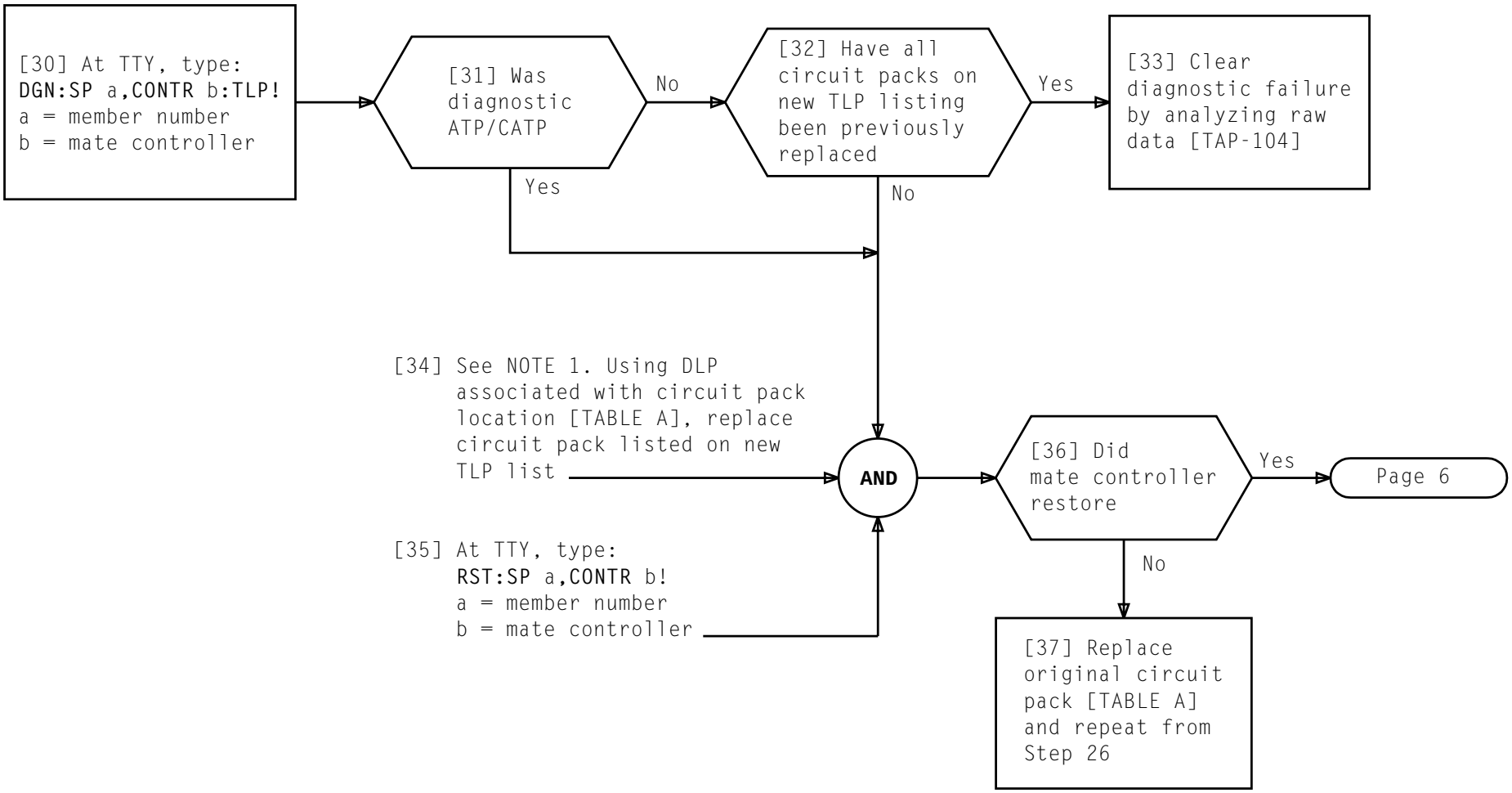
CLEAR DIAGNOSTIC FAILURE BY REPLACING CIRCUIT PACKS



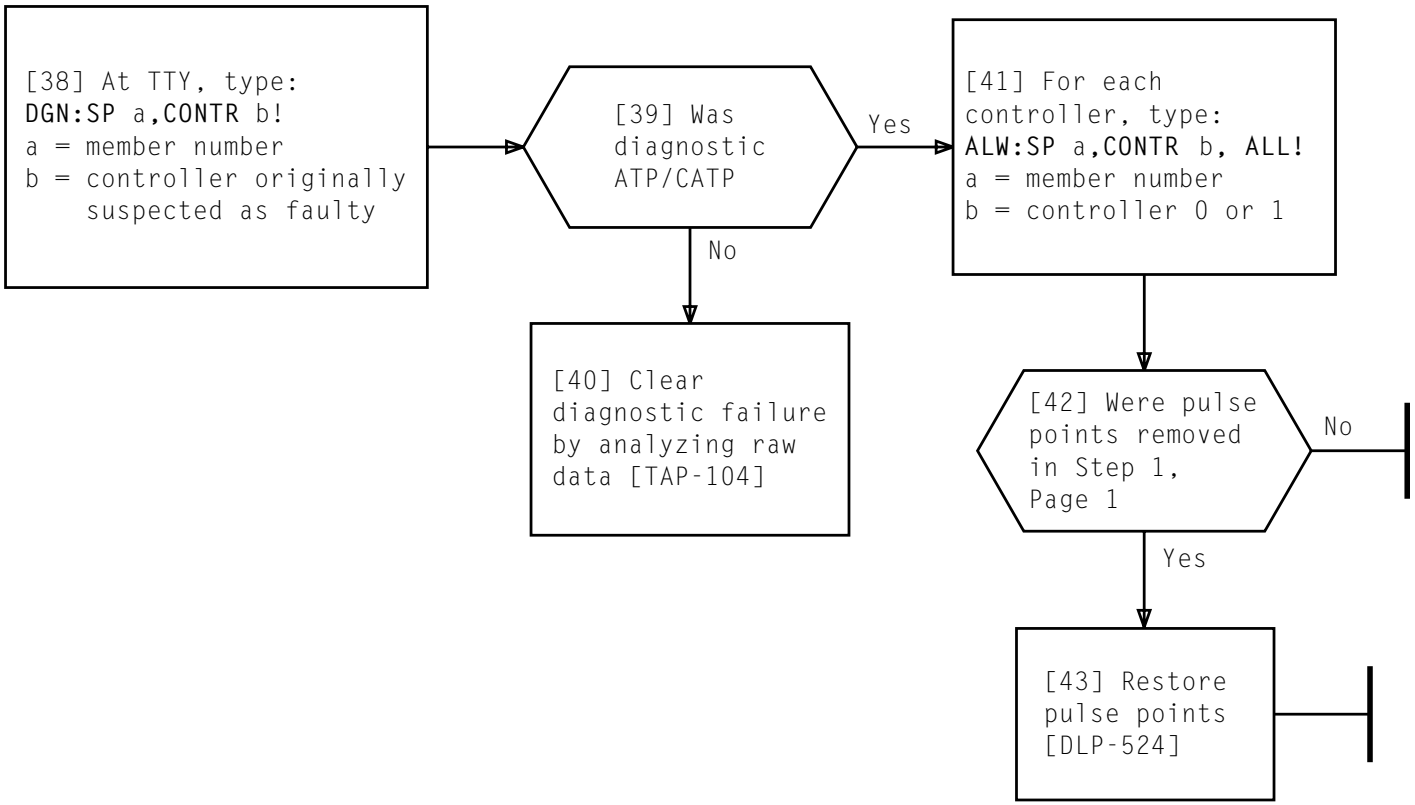
CLEAR DIAGNOSTIC FAILURE BY REPLACING CIRCUIT PACKS



CLEAR DIAGNOSTIC FAILURE BY REPLACING CIRCUIT PACKS



CLEAR DIAGNOSTIC FAILURE BY REPLACING CIRCUIT PACKS



CLEAR DIAGNOSTIC FAILURE BY REPLACING CIRCUIT PACKS

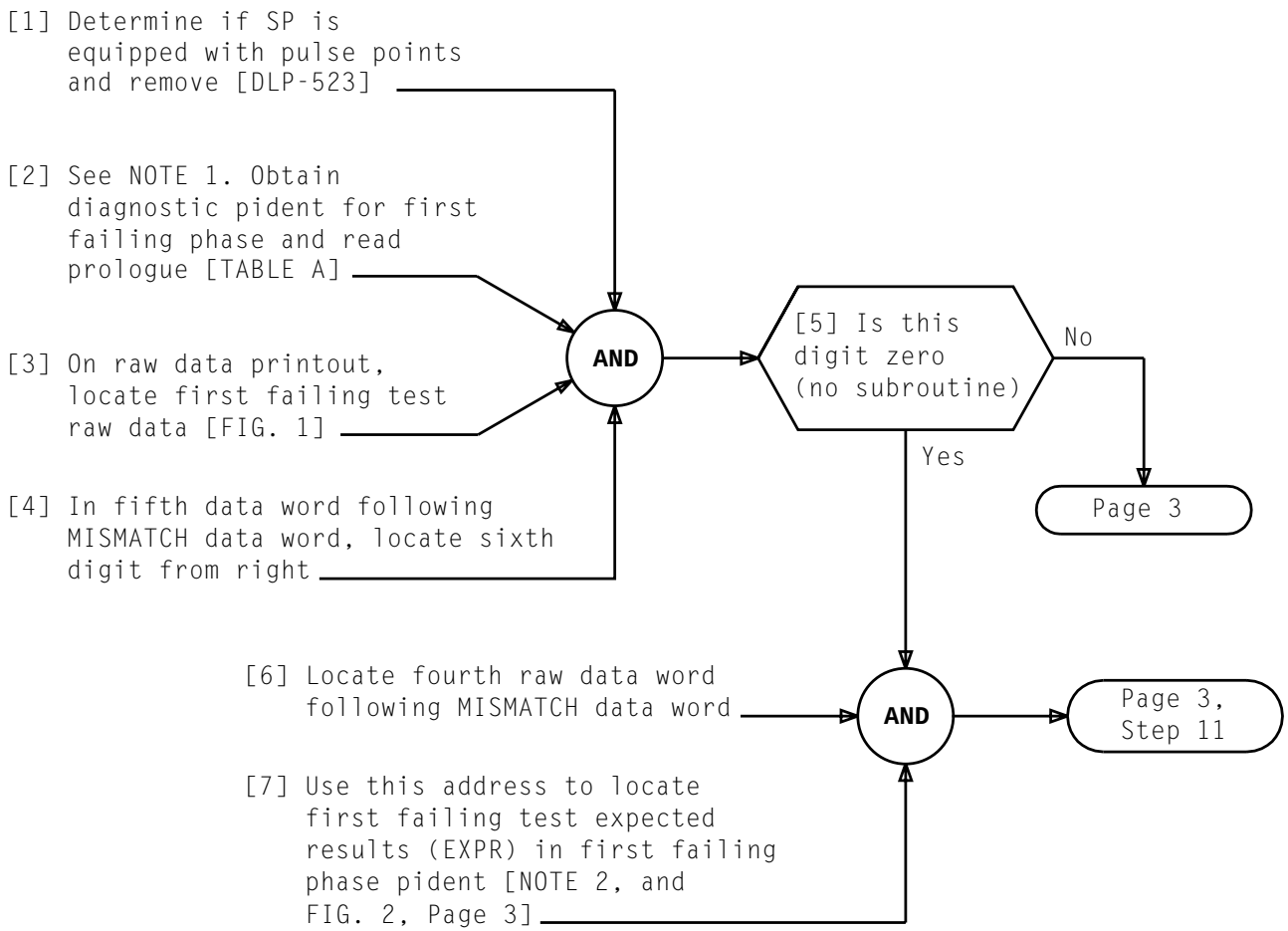


TABLE A
DIAGNOSTIC DOCUMENTATION

PHASE		PIDENT
Member type=SP,XL4UMTSP=1 (MT=1)		
CONTR	1-21	PUDGSP01—PUDGSP21
IPUB	99	PUDGSP99
Member type=CRMTX,XL4UMTSP=4 (MT=4)		
CONTR	1	PUDGSP27
	2,3	PUDGSP02,PUDGSP03
	4	PUDGSP28
	5-14	PUDGSP05—PUDGSP14
	15	PUDGSP29
	16	PUDGSP16
	17-19	PUDGSP30—PUDGSP32
	20	PUDGSP21
IPUB	99	PUDGSP99

NOTES
1. Refer to troubleshooting hints in pident prologue section of SD diagnostic listing for phase 1
2. Phase pident may consist of more than one strip with this address appearing in more than one strip. Be sure address located has EXPR data for your test

CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS

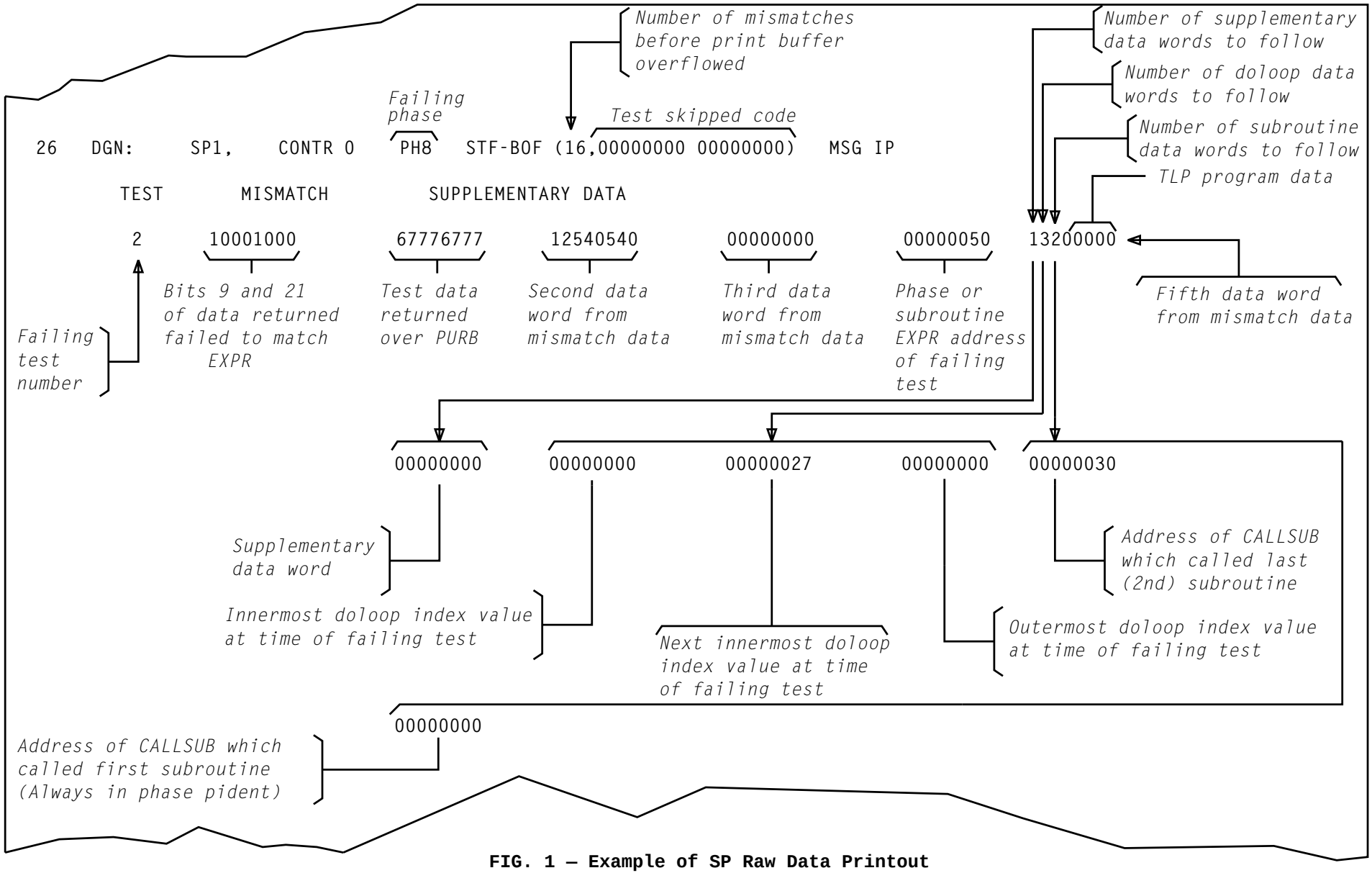


FIG. 1 – Example of SP Raw Data Printout

CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS

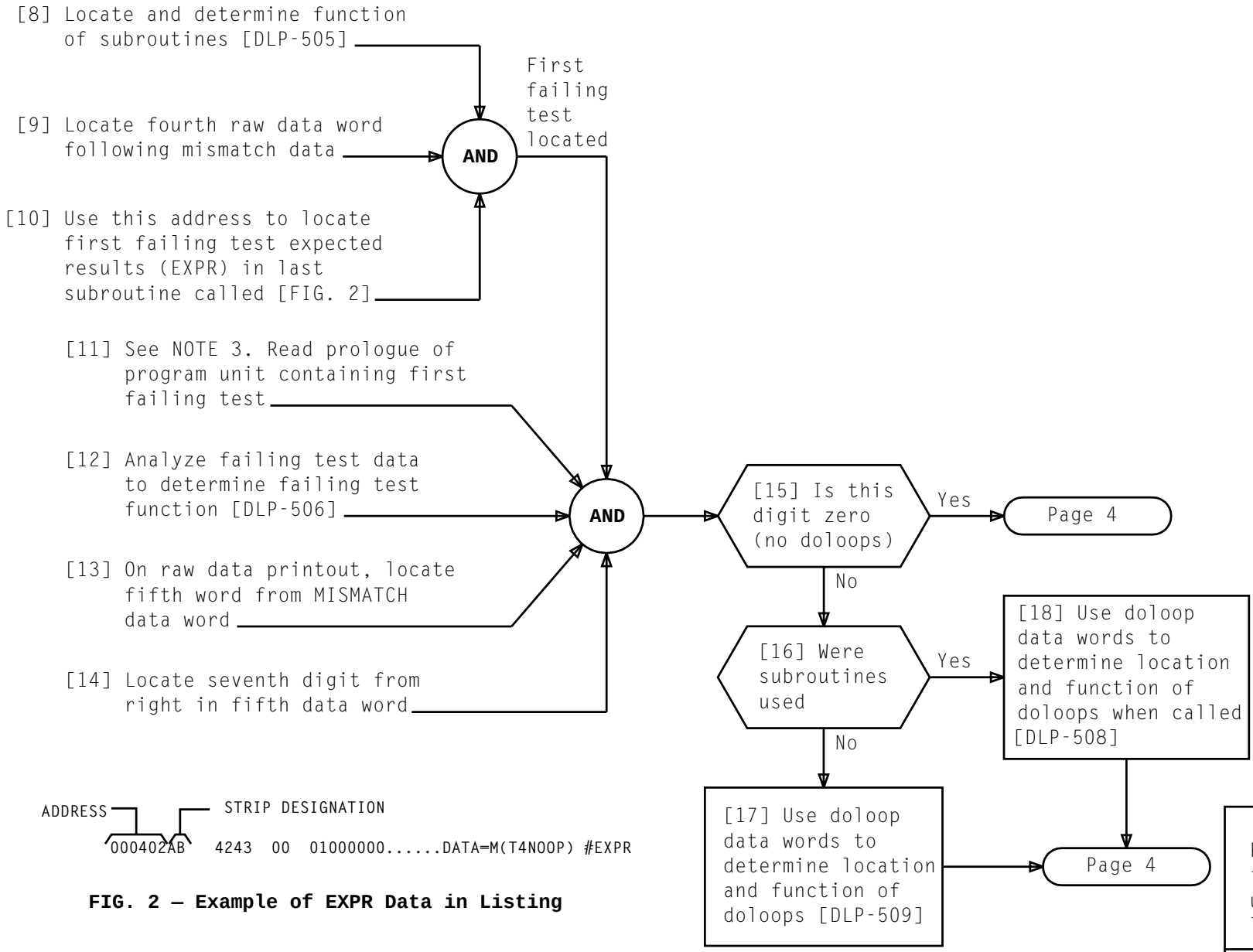
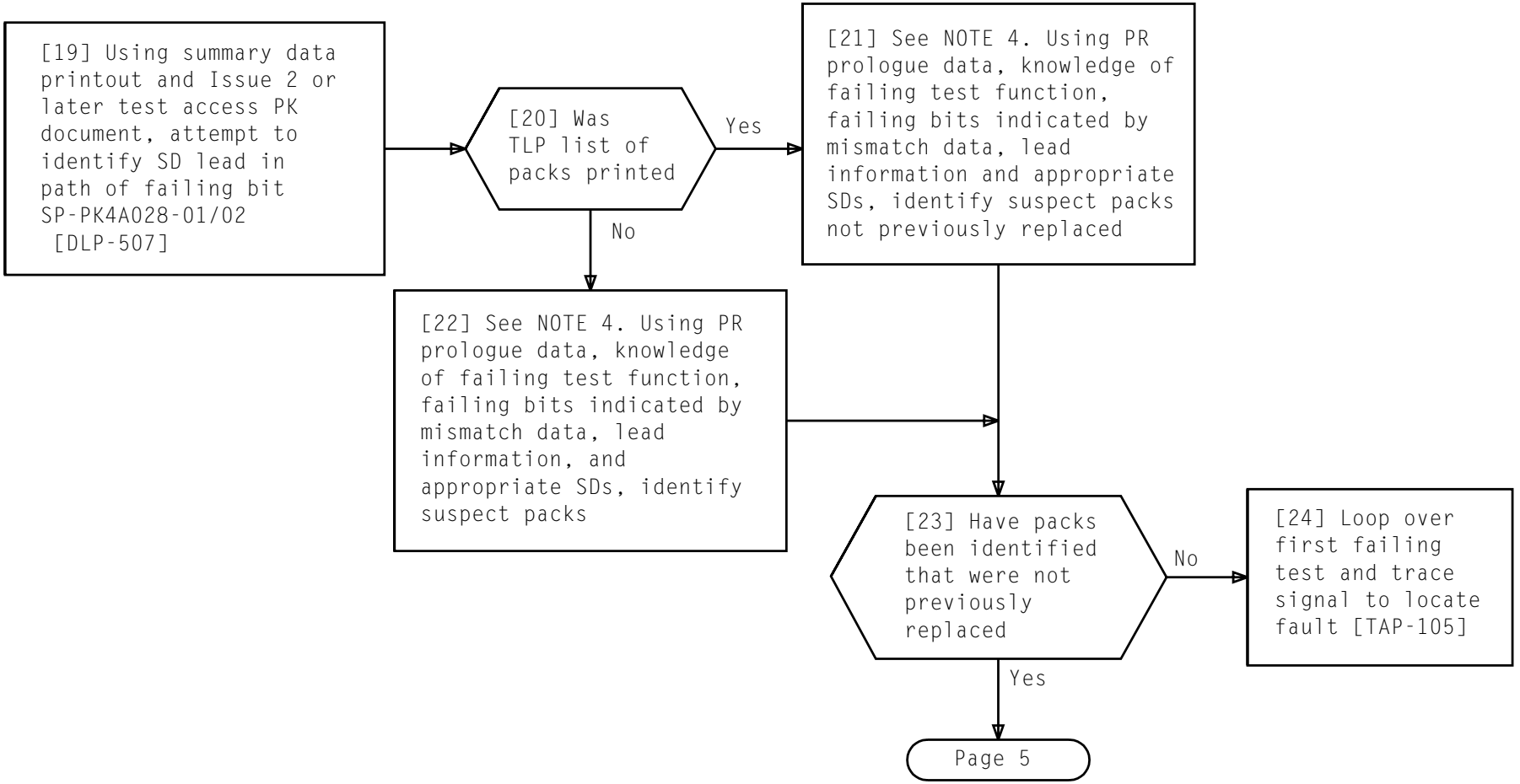


FIG. 2 – Example of EXPR Data in Listing

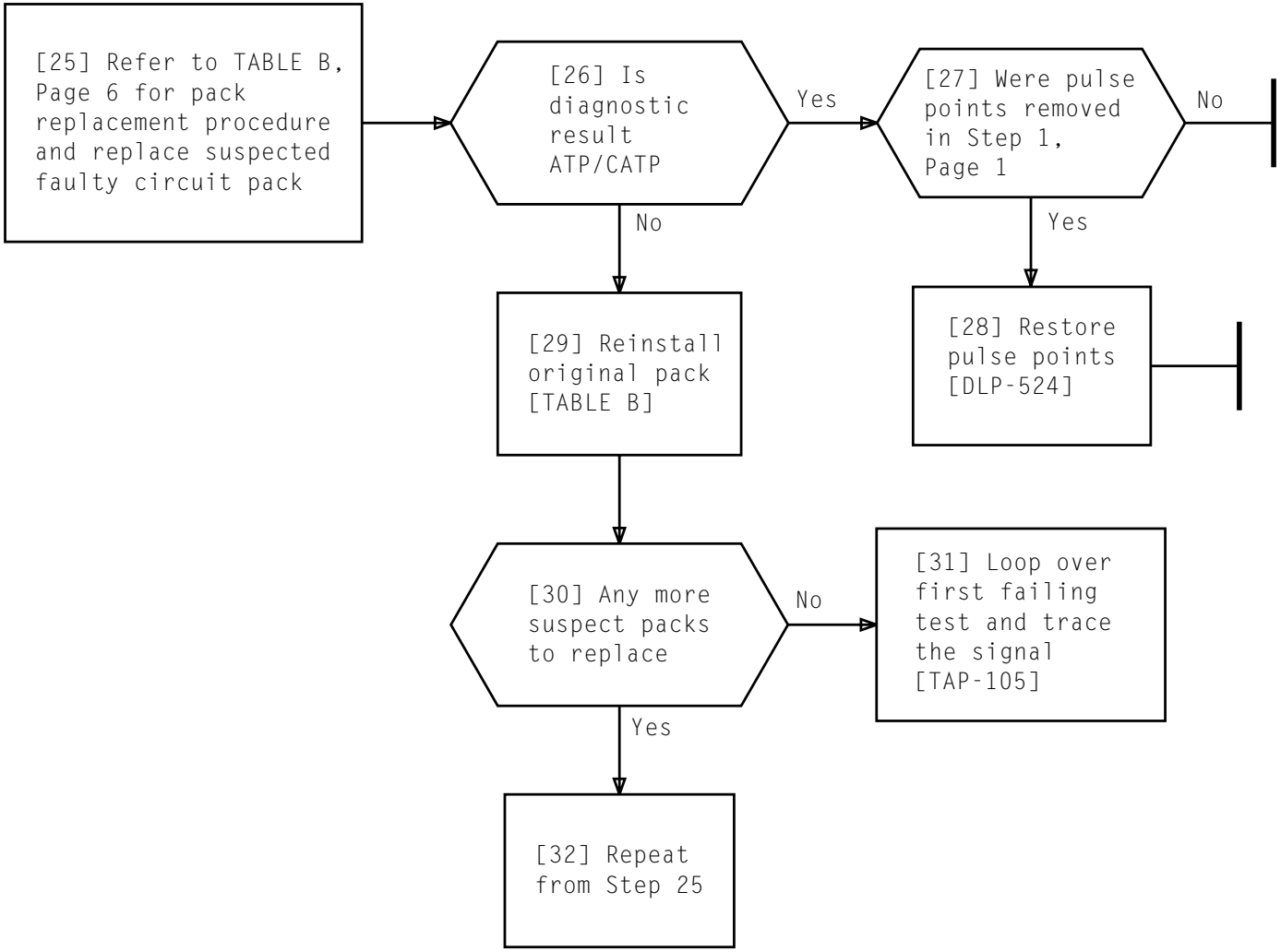
NOTE 3
Program unit name is indicated in upper left of each listing page

CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS



NOTE 4
A test often fails as result of read of memory or register. Fault could be in path of read or in path of write that set up read

CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS



CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS

TABLE B				
CIRCUIT PACK LOCATION				REPLACE CIRCUIT PACK PROCEDURE
FRAME	BAY	VERTICAL	HORIZONTAL OR TYPE	
Control	*	All	All	DLP-501
Distributor applique	0/5	64, 68	**FB229**, **FB231**, or **FC78**	DLP-503
			FB228	DLP-504
		All others		DLP-504
Distributor and scanner matrix	2/7	45	8 through 38 **FA610**	DLP-503
			8 through 38 **FA605**	DLP-502
	1, 2, 6, 7	59, 55, 40, 36	All	DLP-501
		All others		DLP-502
Combined distributor and scanner matrix	0, 1, 4, 5	54, 62, 70, 78	All **FG 1**	DLP-502
	1, 5	54, 62, 70, 78	All **FG 2** †	DLP-503
	0, 1, 4, 5	43	**FA662** **FA1236**	DLP-501
		43, 47	**FC465** **FC466**	

* Bays 3/4 for SD-4A028-01; Bays 2/3 for SD-4A028-02
† SD-4A093-01, Option Z or Y only

SUMMARY

Type TABLE A messages. Verify first failing test raw data printed twice. Resend last TABLE A message with RPT option deleted for infinite loop. Set up scope. If SYNC option is used, attach external sweep trigger to terminal indicated in TABLE B. Using raw data analysis information obtained in TAP-104, SDs/CDs, and circuit pack SDs, trace signal path of failing bits to isolate and clear fault. If looping is not successful, check for any packs on TLP list located in mate. If mate packs are listed, take down loop and replace mate packs. If mate pack replacement is not successful or if no mate packs are indicated on TLP list, perform further signal tracing using loop. For F-level interrupts, see AT&T 234-151-003 (with 1A Processor) or AT&T 234-351-003 (with 1B Processor).

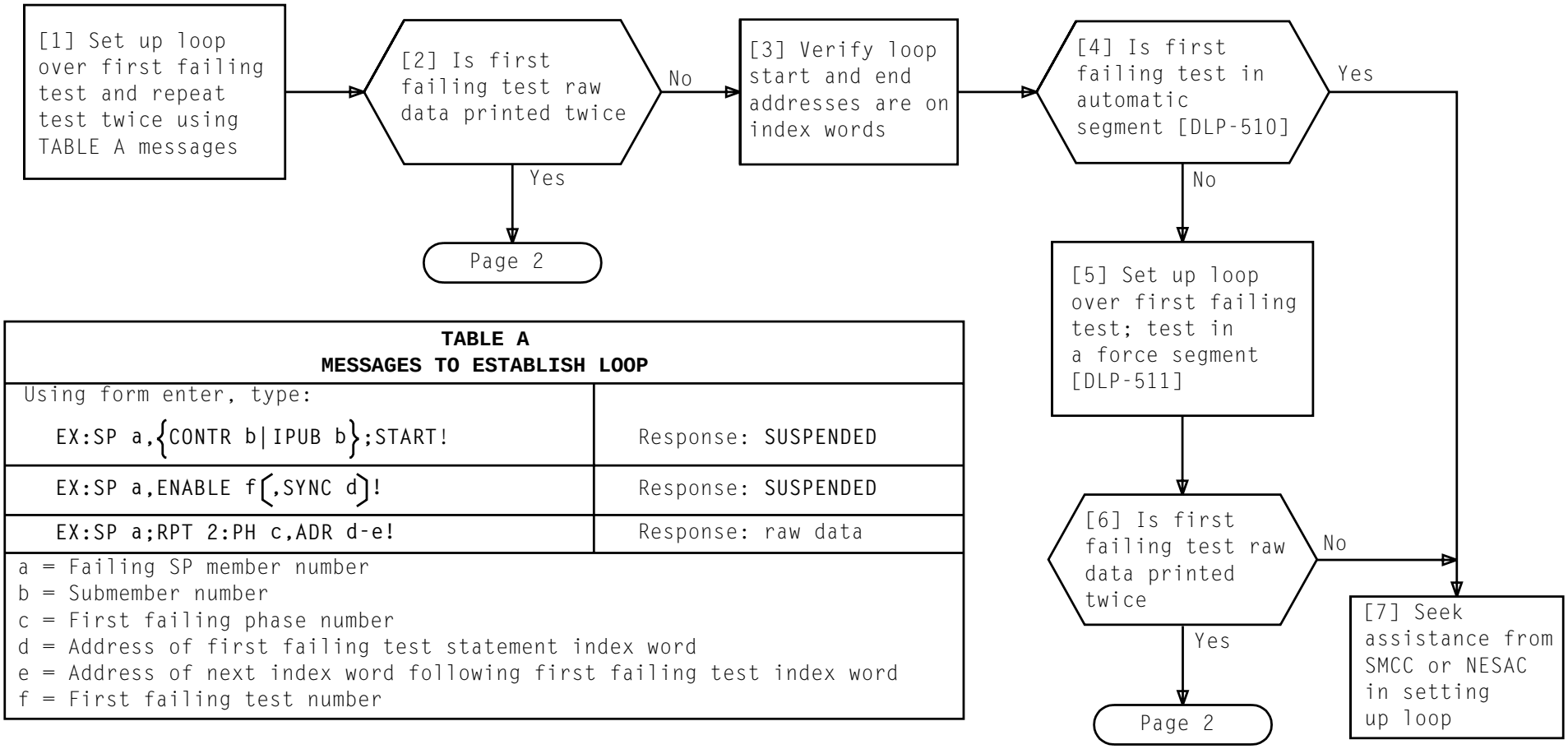


TABLE A
MESSAGES TO ESTABLISH LOOP

Using form enter, type:	
EX:SP a,{CONTR b|IPUB b};START!	Response: SUSPENDED
EX:SP a,ENABLE f[,SYNC d]!	Response: SUSPENDED
EX:SP a;RPT 2:PH c,ADR d-e!	Response: raw data

a = Failing SP member number
b = Submember number
c = First failing phase number
d = Address of first failing test statement index word
e = Address of next index word following first failing test index word
f = First failing test number

CLEAR DIAGNOSTIC FAILURE BY LOOPING OVER FIRST FAILING TEST AND TRACING SIGNAL TO LOCATE FAULT

[8] Set up infinite loop by typing **EX:SP a:PH c,ADR d-e!** See TABLE A for a, c, d, and e. Response is **LOOPING STARTED**

[9] Was SYNC option used in Step 1 [TABLE A]

No

[13] Set up scope

Yes

[14] See NOTE 2. Using raw data analysis information from TAP-104, SP SDs/CDs, PK failing test data, and circuit pack SDs, trace signal path of failing bits to isolate and clear fault

Page 3, Step 24

[10] Set up scope for signal tracing using external sweep trigger

[11] Connect external sweep trigger to terminals indicated in TABLE B (SP controller 0 or 1)

[12] See NOTE 1 and FIG. 1. Display sweep trigger and adjust for SYNC pulse display

AND

[15] Do you suspect you have located and cleared the fault

Yes

[18] Stop looping by typing **EX:SP a,CONTR b!**

No

[16] Any mate packs on TLP list

No

[19] Contact SMCC for assistance

Yes

[17] Have mate packs been replaced

Yes

No

Page 3

TABLE B	
SD-4A028-01	Connect 80-45-104 to 80-45-304 with clip lead. Connect external sweep trigger to clip lead
SD-4A093-01	Connect external sweep to 80-49-104

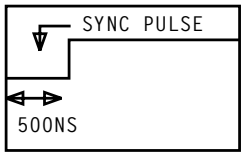
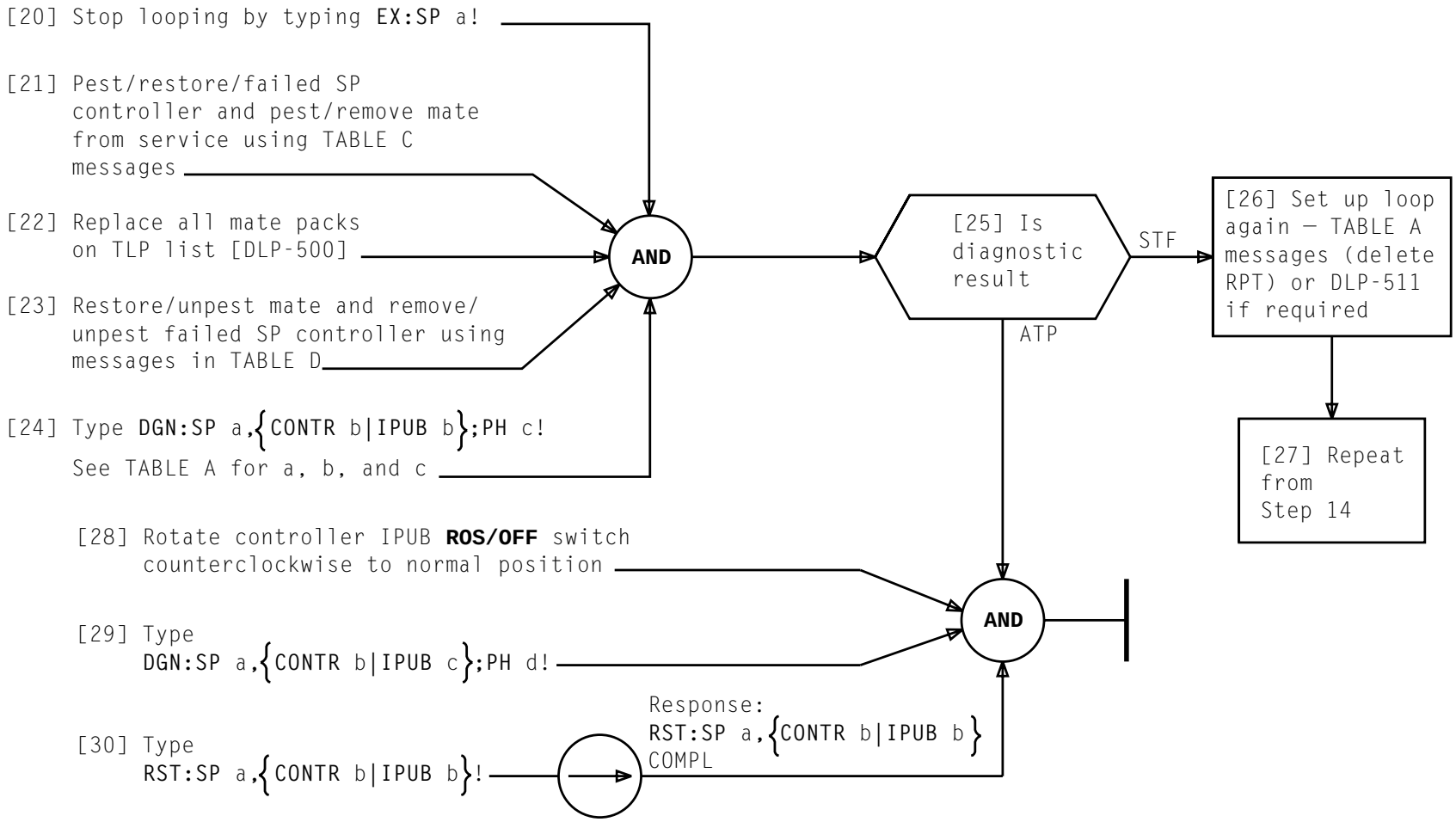


FIG. 1 — SYNC Pulse Display

NOTES

1. SYNC pulse s arrives over PUWB bit 36 which is not tested by SP diagnostic
2. Analysis of F-level interrupt associated with diagnostic failure may be helpful. See AT&T 234-151-003 (with 1A Processor) or AT&T 234-351-003 (with 1B Processor).

CLEAR DIAGNOSTIC FAILURE BY LOOPING OVER FIRST FAILING TEST AND TRACING SIGNAL TO LOCATE FAULT

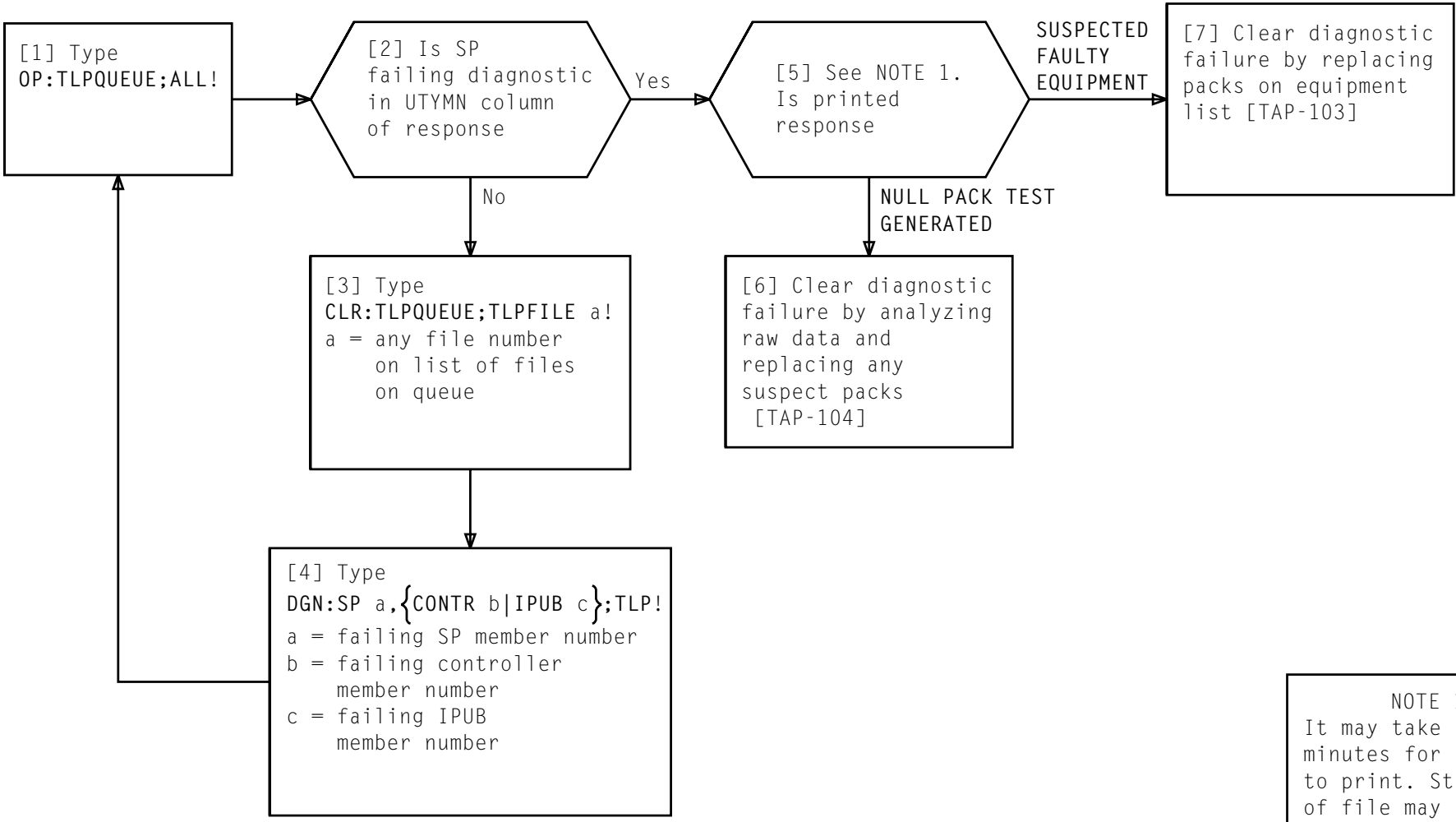


CLEAR DIAGNOSTIC FAILURE BY LOOPING OVER FIRST FAILING TEST AND TRACING SIGNAL TO LOCATE FAULT

TABLE C	
INH:SP a, CONTR b SPEC!	Response: (message repeated)
INH:SP a, CONTR d SPEC!	Response: (message repeated)
RST:SP a,{CONTR b|IPUB c};UCL!	Response: COMPL
RMV:SP a,{CONTR b|IPUB c}!	Response: COMPL
a = failing SP member number b = failing controller member number c = failing IPUB member number d = mate controller member number e = mate IPUB member number	

TABLE D	
DGN:SP a,{CONTR b|IPUB c};PH d!	Response: COMPL
DGN:SP a,{CONTR b|IPUB c};PH d!	Response: COMPL
ALW:SP a, CONTR d SPEC!	Response: (message repeated)
ALW:SP a, CONTR b SPEC!	Response: (message repeated)
a = failing SP member number b = failing controller member number c = failing IPUB member number d = mate controller member number e = mate IPUB member number	

CLEAR DIAGNOSTIC FAILURE BY LOOPING OVER FIRST FAILING TEST AND TRACING SIGNAL TO LOCATE FAULT



NOTE 1
It may take several minutes for list to print. Status of file may be monitored by typing OP:TLPQUEUE;ALL! TLP file currently being processed is indicated by asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLP DISK QUEUE FULL

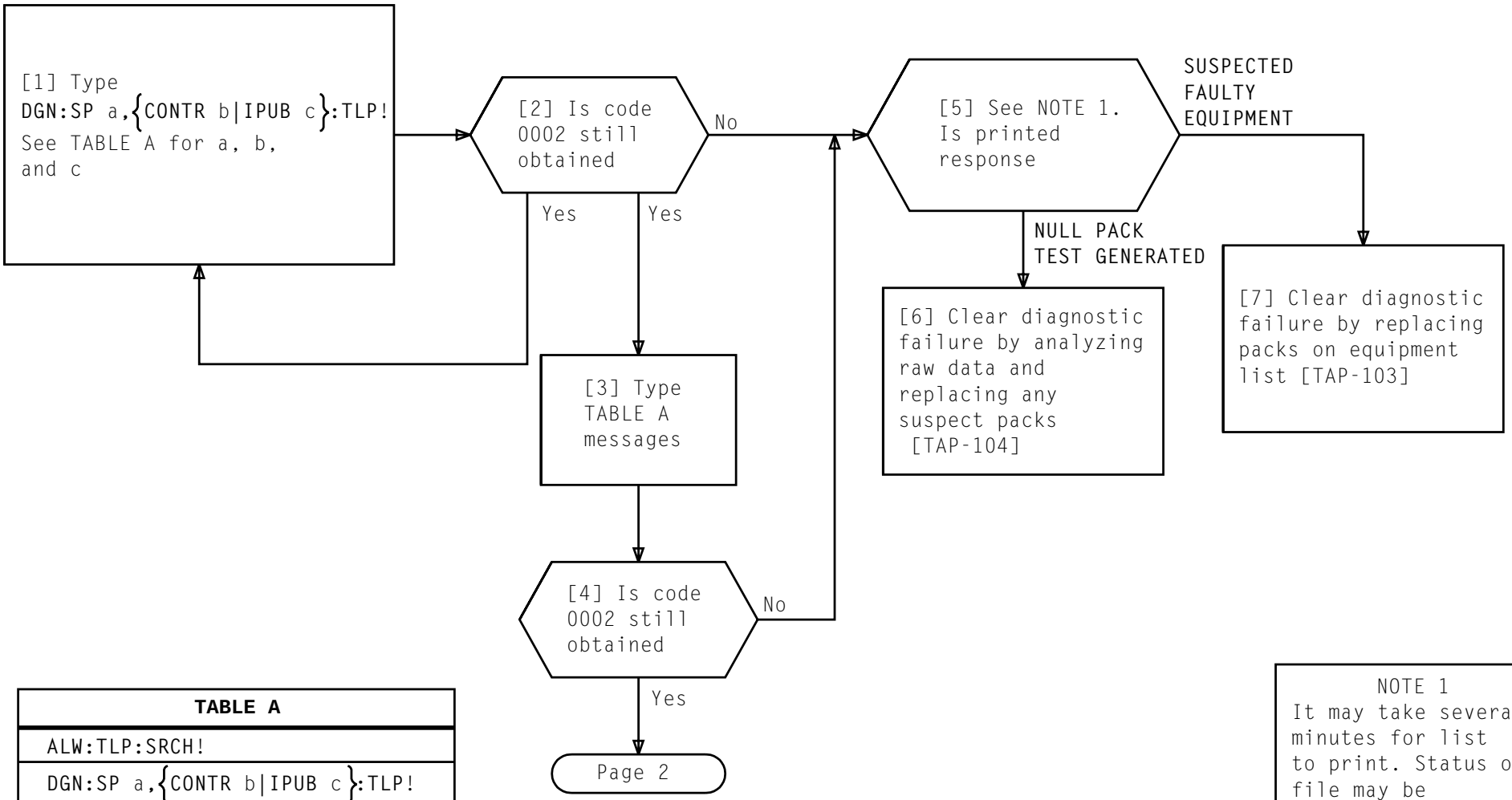
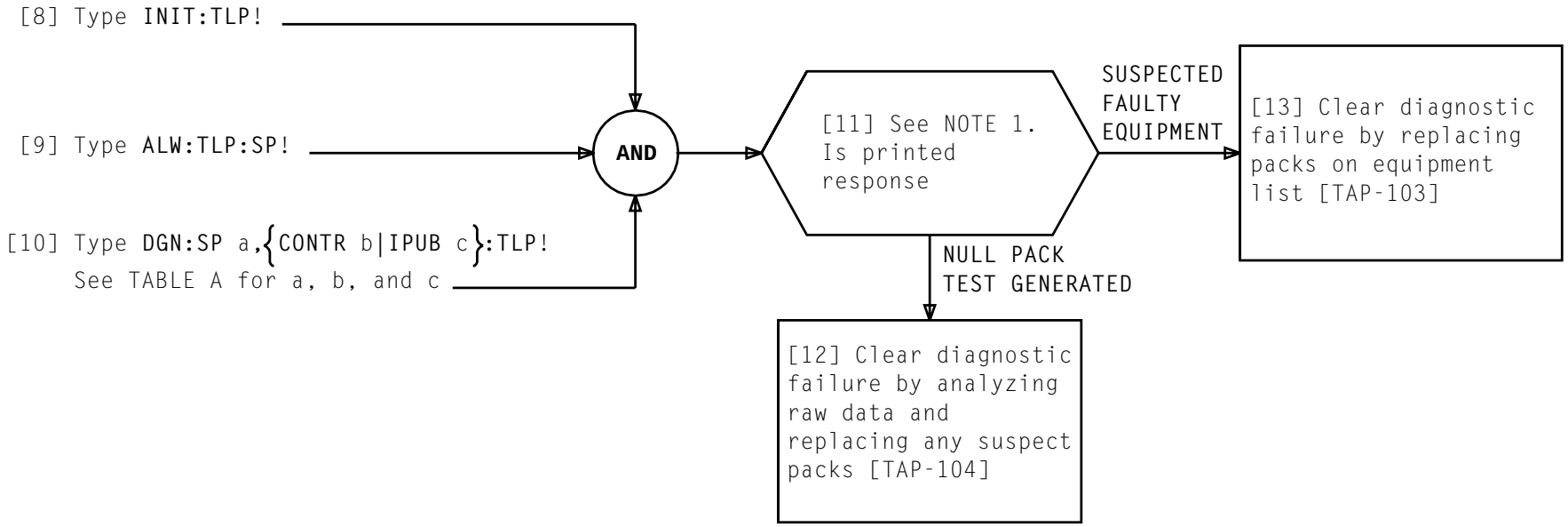


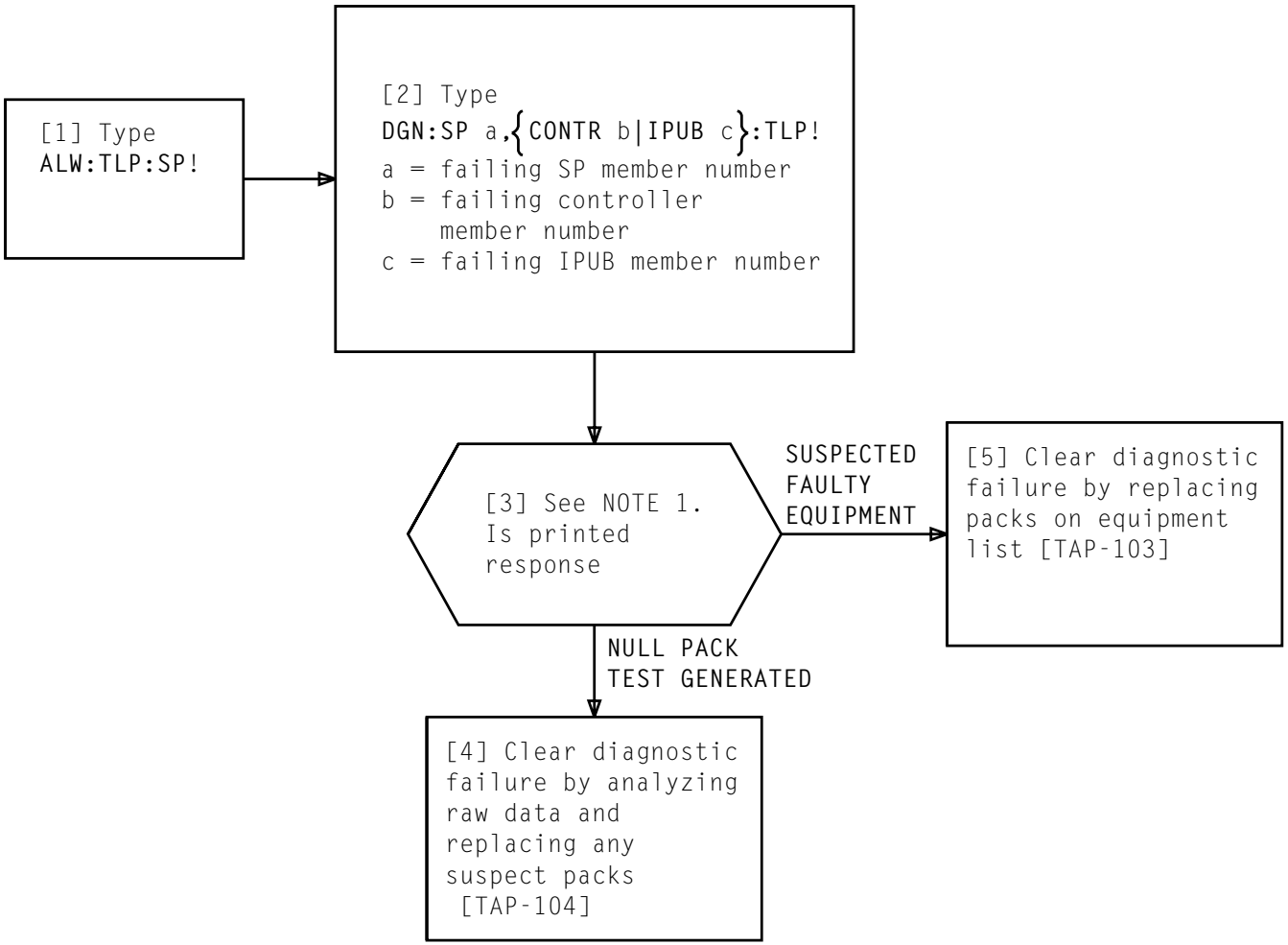
TABLE A
ALW:TLP:SRCH!
DGN:SP a,{CONTR b|IPUB c}:TLP!
a = failing SP member number b = failing controller member number c = failing IPUB member number

NOTE 1
It may take several minutes for list to print. Status of file may be monitored by typing OP:TLPQUEUE;ALL!
TLP file currently being processed is indicated by asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLP QUEUE BLOCKAGE

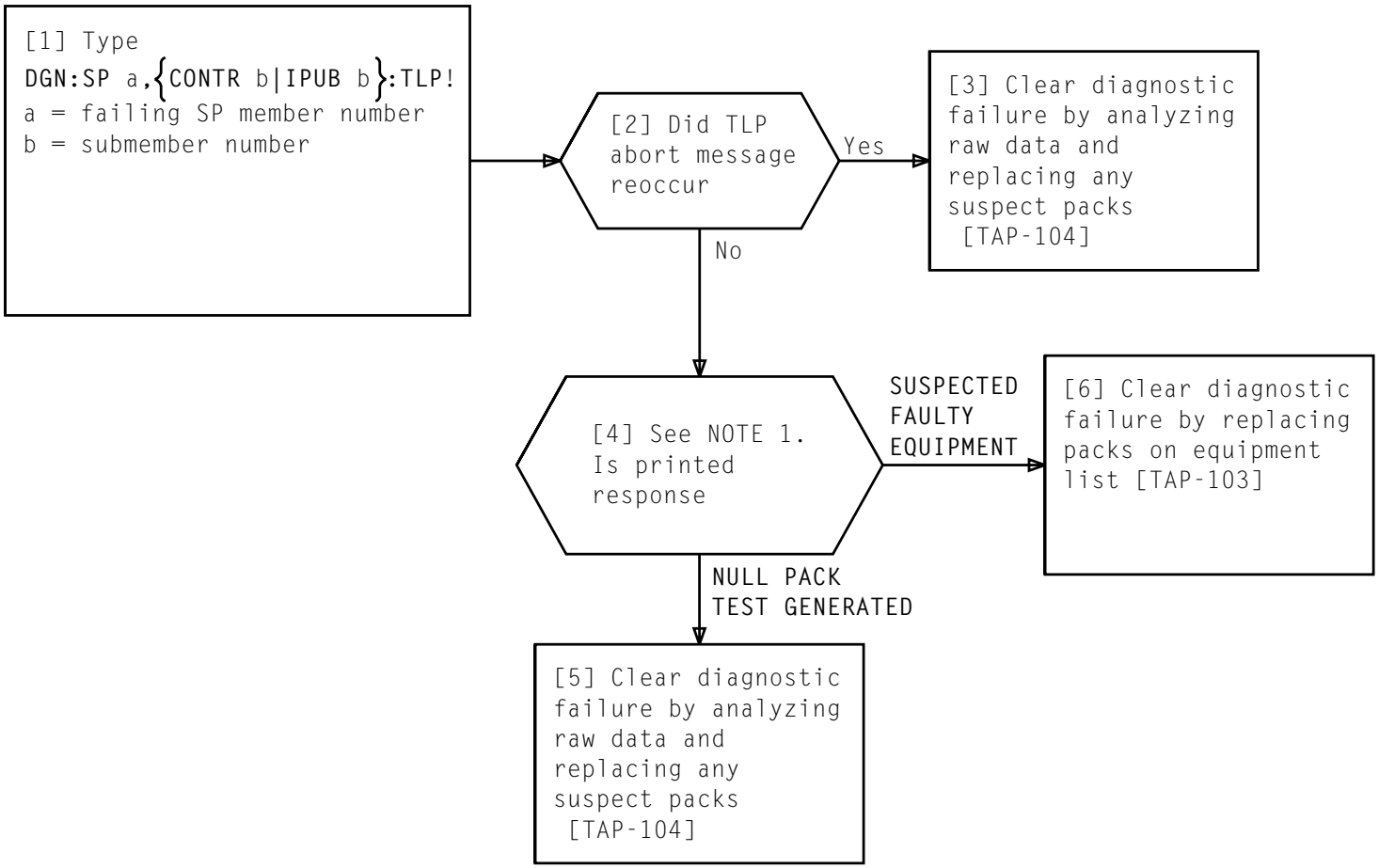


CLEAR DIAGNOSTIC FAILURE, TLP QUEUE BLOCKAGE



NOTE 1
It may take several minutes for list to print. Status of file may be monitored by typing OP:TLPQUEUE;ALL! TLP file currently being processed is indicated by asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLP INHIBIT



NOTE 1
It may take several minutes for list to print. Status of file may be monitored by typing OP:TLPQUEUE;ALL! TLP file currently being processed is indicated by asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLP ABORT

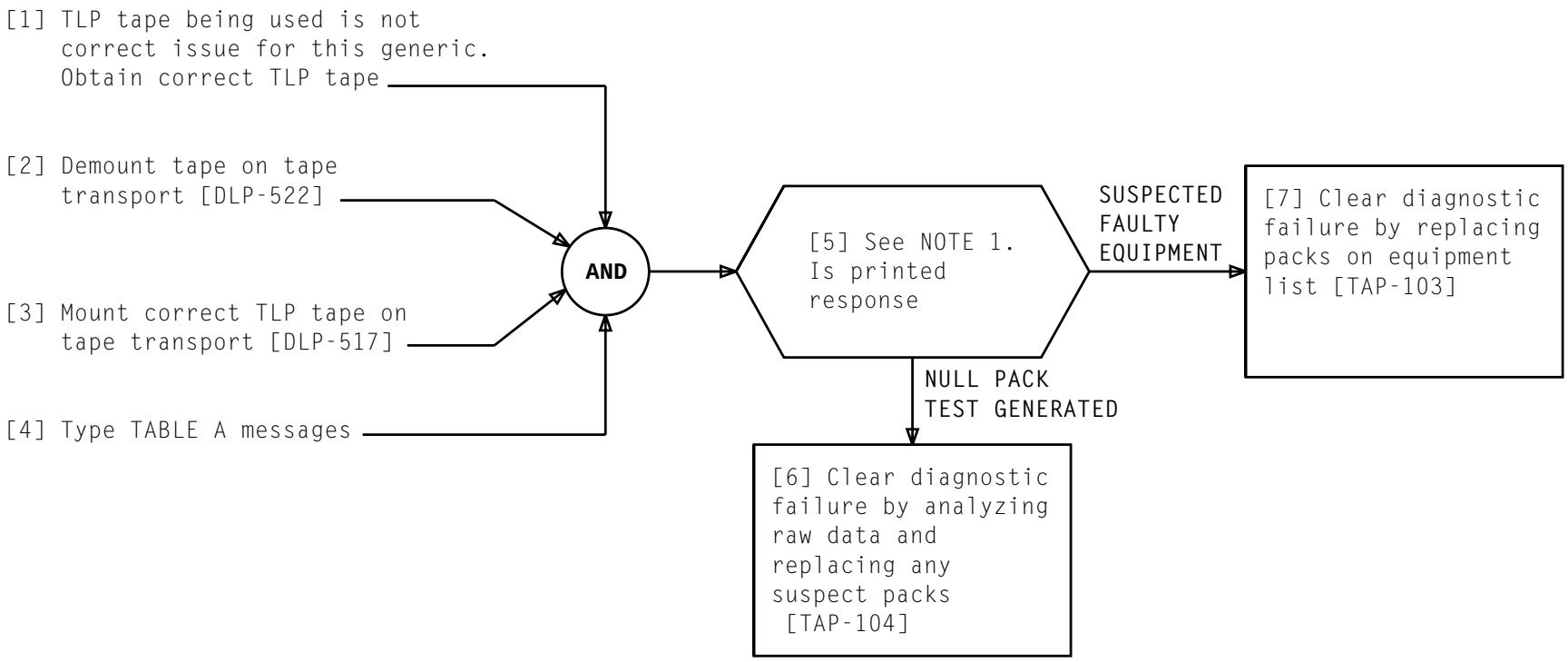


TABLE A
SET:TUC a:FUNCTION TLP!
ALW:TUC a:RO!
ALW:TLP:SRCH, SP!
DGN:SP b,{CONTR c|IPUB c}:TLP!
a = member number of TUC using TLP tape mounted b = failing SP member number c = submember number

NOTE 1
It may take several minutes for list to print. Status of file may be monitored by typing OP:TLPQUEUE;ALL! TLP file currently being processed is indicated by asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLP TAPE VERSION X DOES NOT MATCH EXPECTED VERSION Y

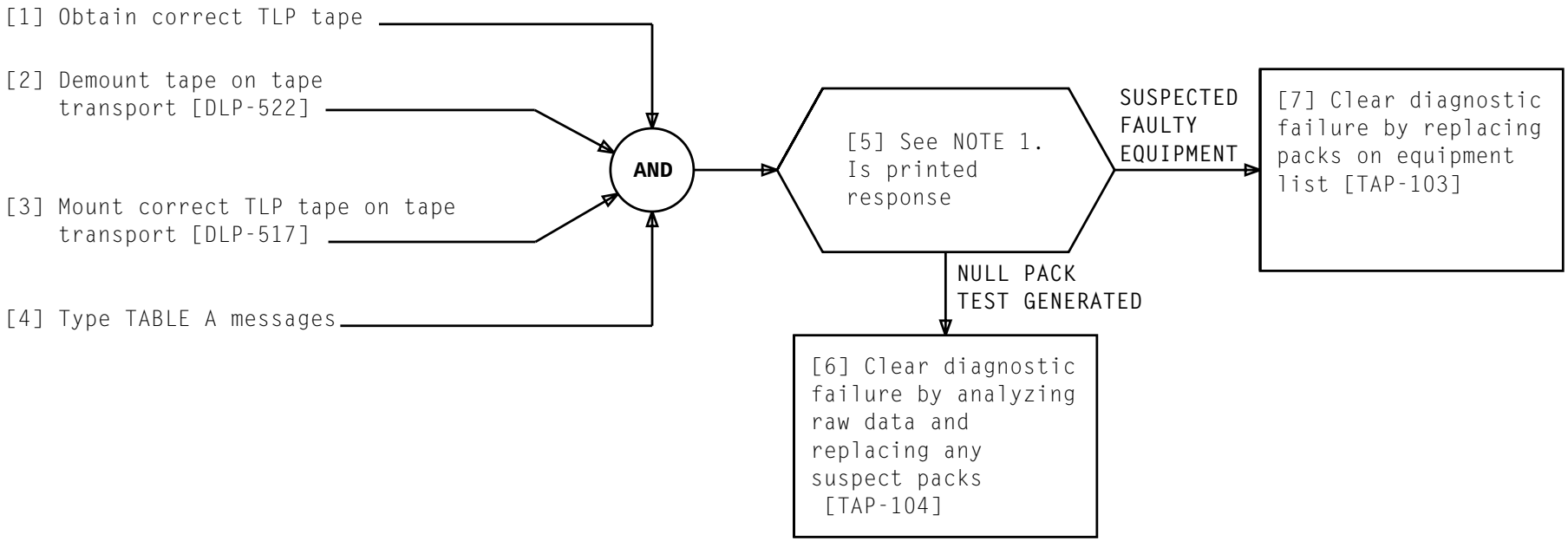


TABLE A
SET:TUC a;FUNCTION TLP!
ALW:TUC a: RO!
ALW:TLP:SRCH,SP!
DGN:SP b,{CONTR c|IPUB c}:TLP!
a = member number of TUC using TLP tape mounted b = failing SP member number c = submember number

NOTE 1
It may take several minutes for list to print. Status of file may be monitored by typing OP:TLPQUEUE;ALL!
TLP file currently being processed is indicated by asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLP TAPE ACQUISITION ERROR

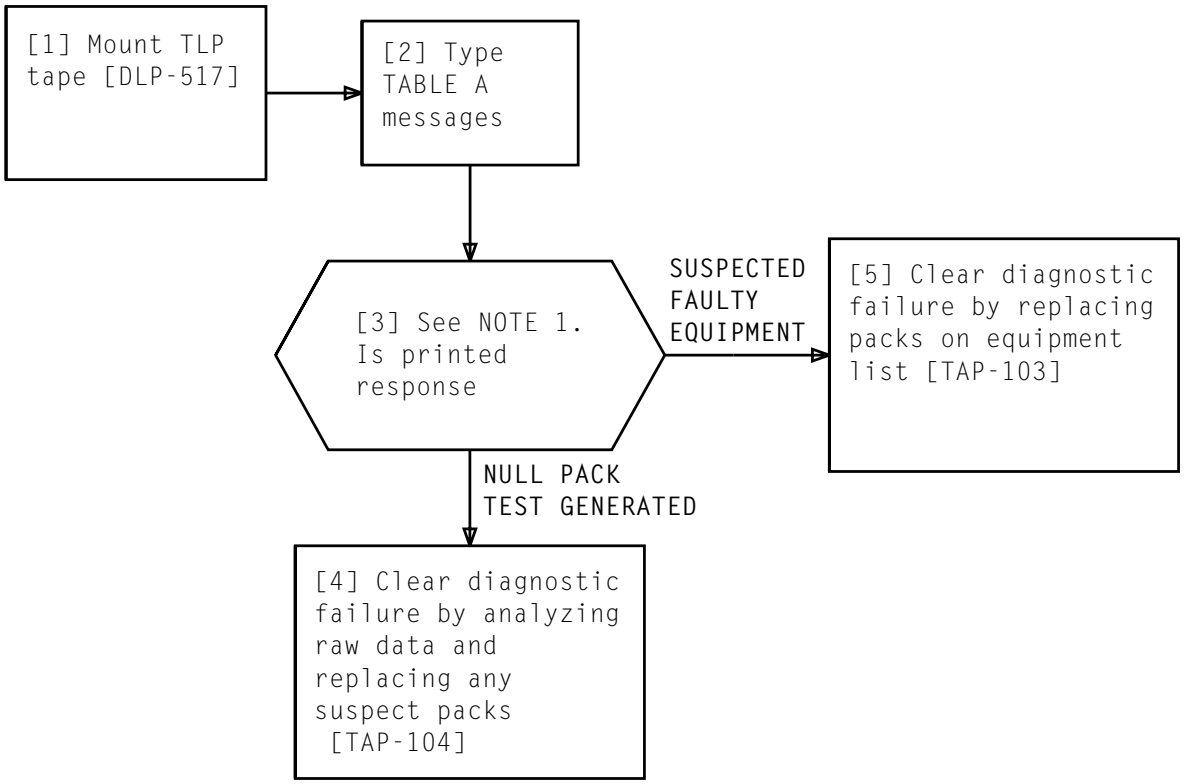
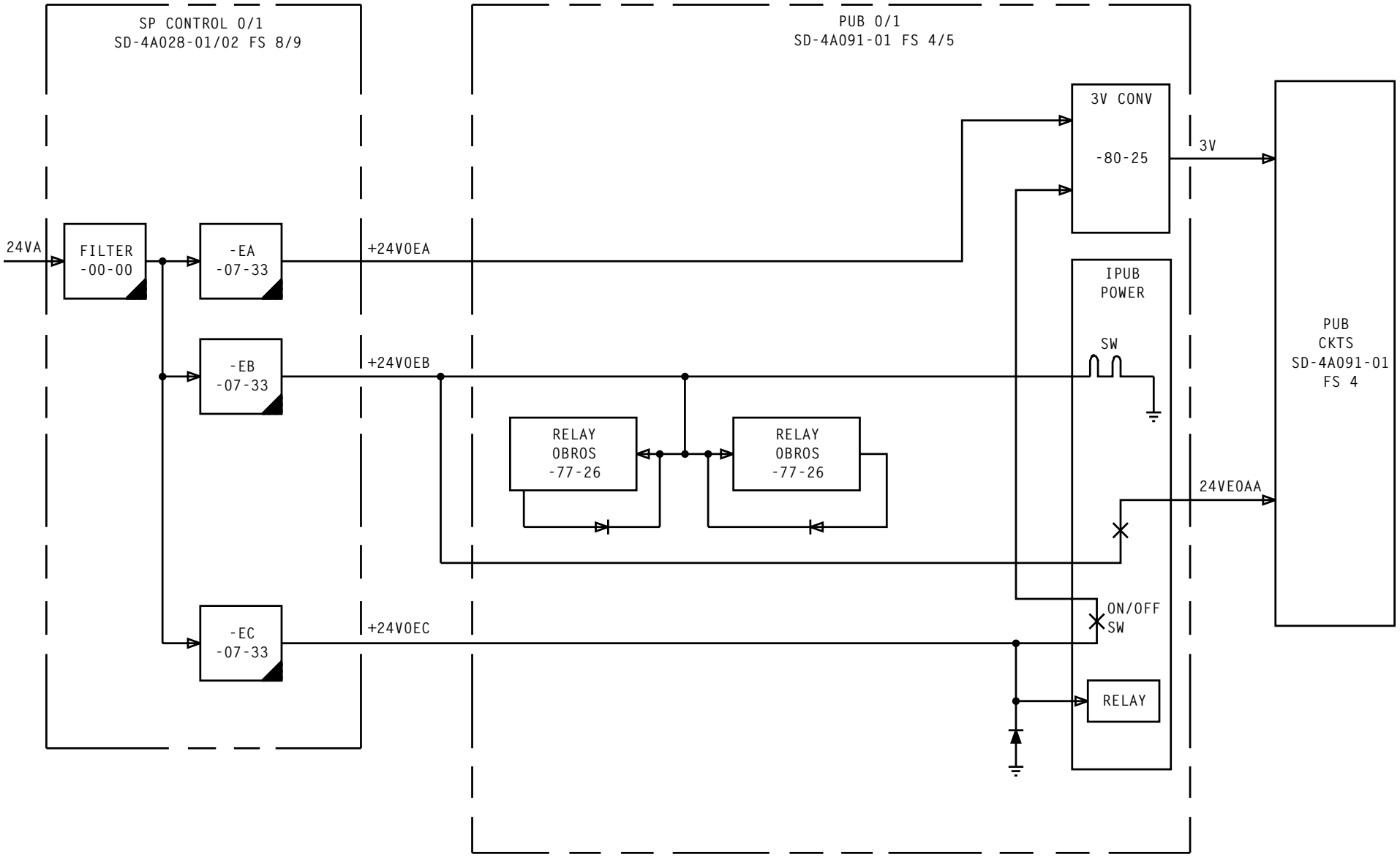


TABLE A
SET:TUC a;FUNCTION TLP!
ALW:TUC a:RO!
ALW:TLP:SRCH,SP!
DGN:SP b,{CONTR c|IPUB c}:TLP!
a = member number of TUC using TLP tape mounted b = failing SP member number c = submember number

NOTE 1
It may take several minutes for list to print. Status of file may be monitored by typing OP:TLPQUEUE;ALL! TLP file currently being processed is indicated by asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLP TAPE NOT MOUNTED



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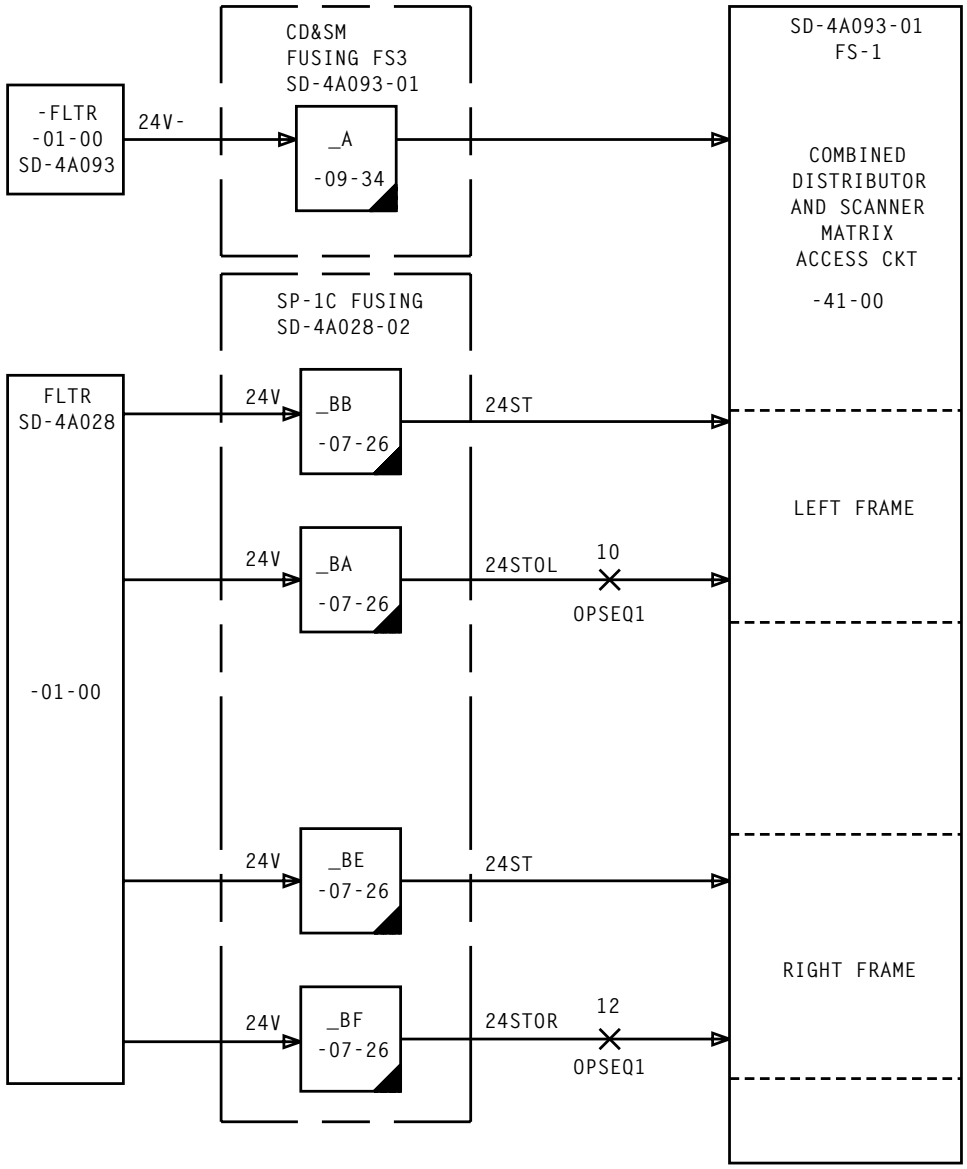
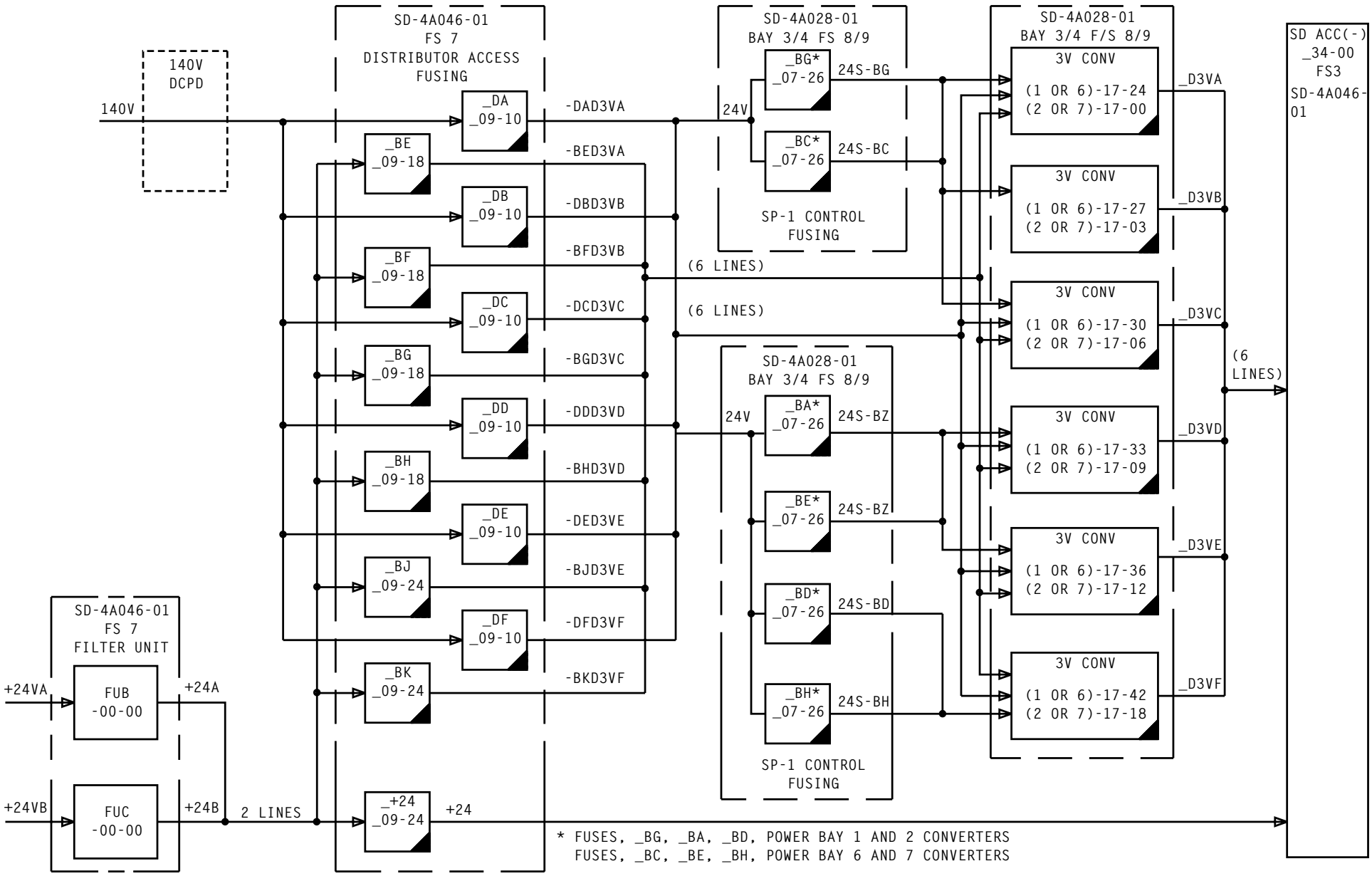
PUB 0/1 POWER DISTRIBUTION (SD-4A028-01/02)



COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME ACCESS CIRCUIT POWER DISTRIBUTION



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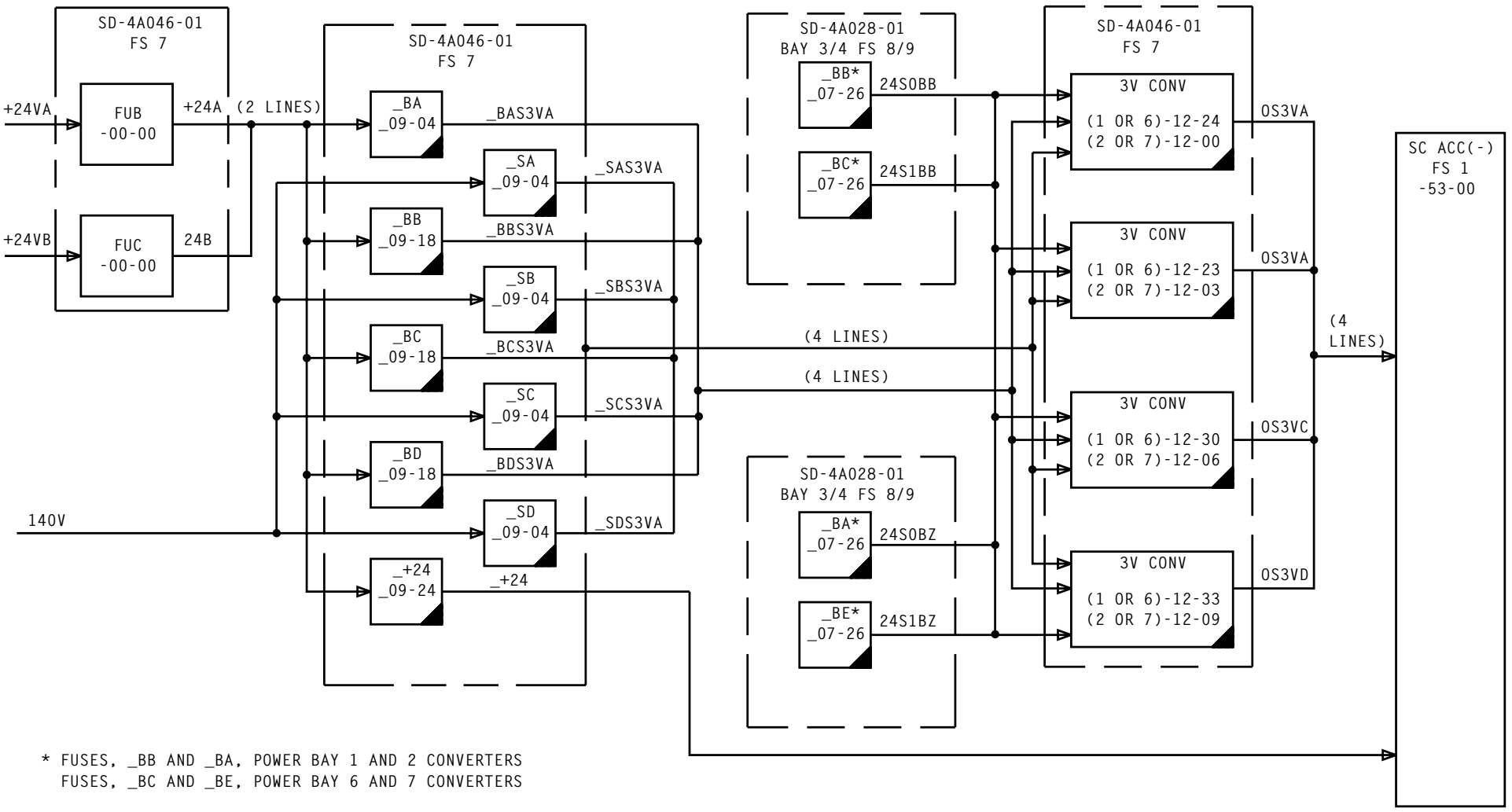
ACCESS CIRCUIT 0/1 POWER DISTRIBUTION (SD-4A046-01)



* FUSES, _BB AND _BA, POWER BAY 1 AND 2 CONVERTERS
FUSES, _BC AND _BE, POWER BAY 6 AND 7 CONVERTERS

SCANNER ACCESS 0/1 POWER DISTRIBUTION (SD-4A046-01)

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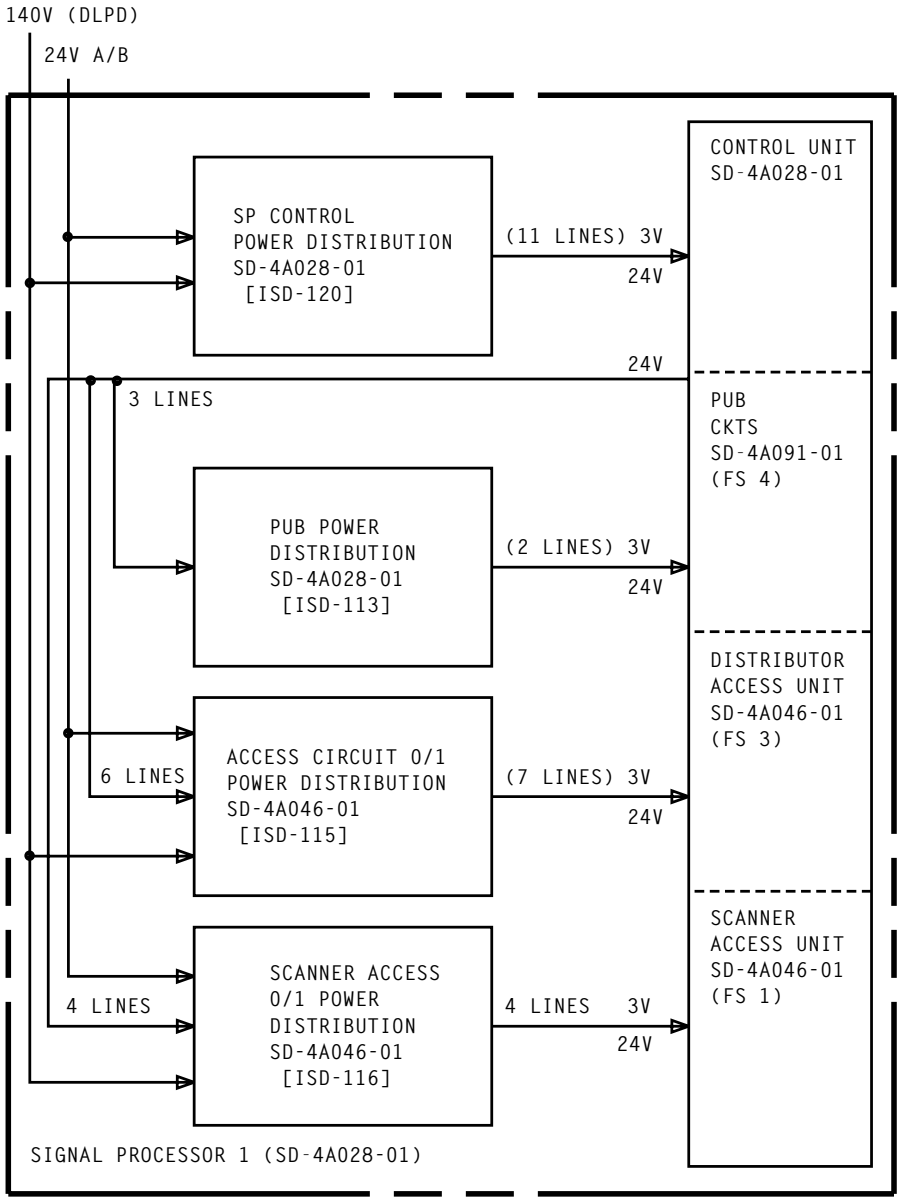
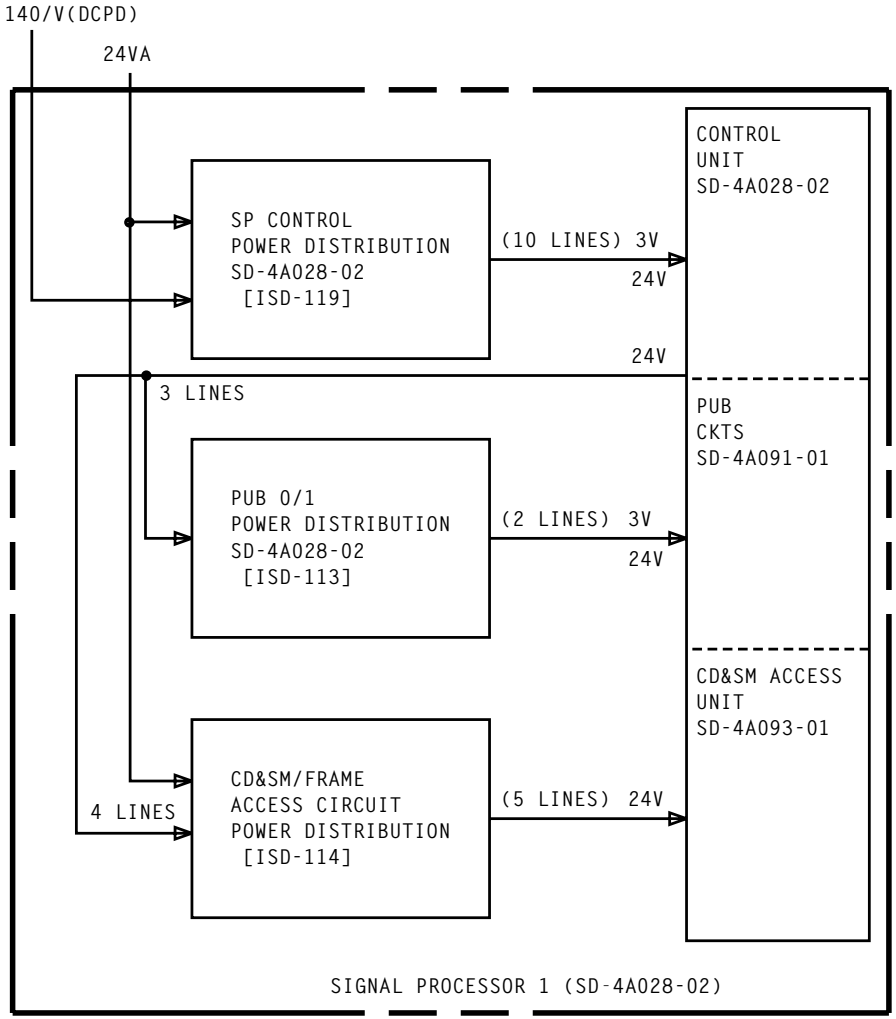




CONTROL FRAME POWER DISTRIBUTION

[1] Determine if SP is equipped with pulse points and remove [DLP-523]

[2] At power switch with **PWR OFF** lamp lighted [See TABLE A], rotate **ROS/OFF** switch clockwise to **ROS**

[3] Depress **ROS/OFF** switch

[4] At fuse panel, replace blown fuse

[5] At power switch, depress **ON** pushbutton

AND

[6] Did fuse blow

No

[7] See NOTE 1. At power switch, rotate **ROS/OFF** switch counterclockwise to normal position (**OS** and **OFF NORM** lamps go off)

Page 7, Step 30

Yes

[8] At power switch, depress **ROS/OFF** switch

PWR OFF lamp lights

[9] Unseat all converters associated with blown fuse [SP-1C (SD-4A028-01) TABLE B, (SP-1C (SD-4A028-02) TABLE C)]

[10] Replace blown fuse

AND

Page 2

[11] At power switch, depress **ON** pushbutton

PWR OFF lamp goes off

TABLE A
CONVERTER POWER CONTROL

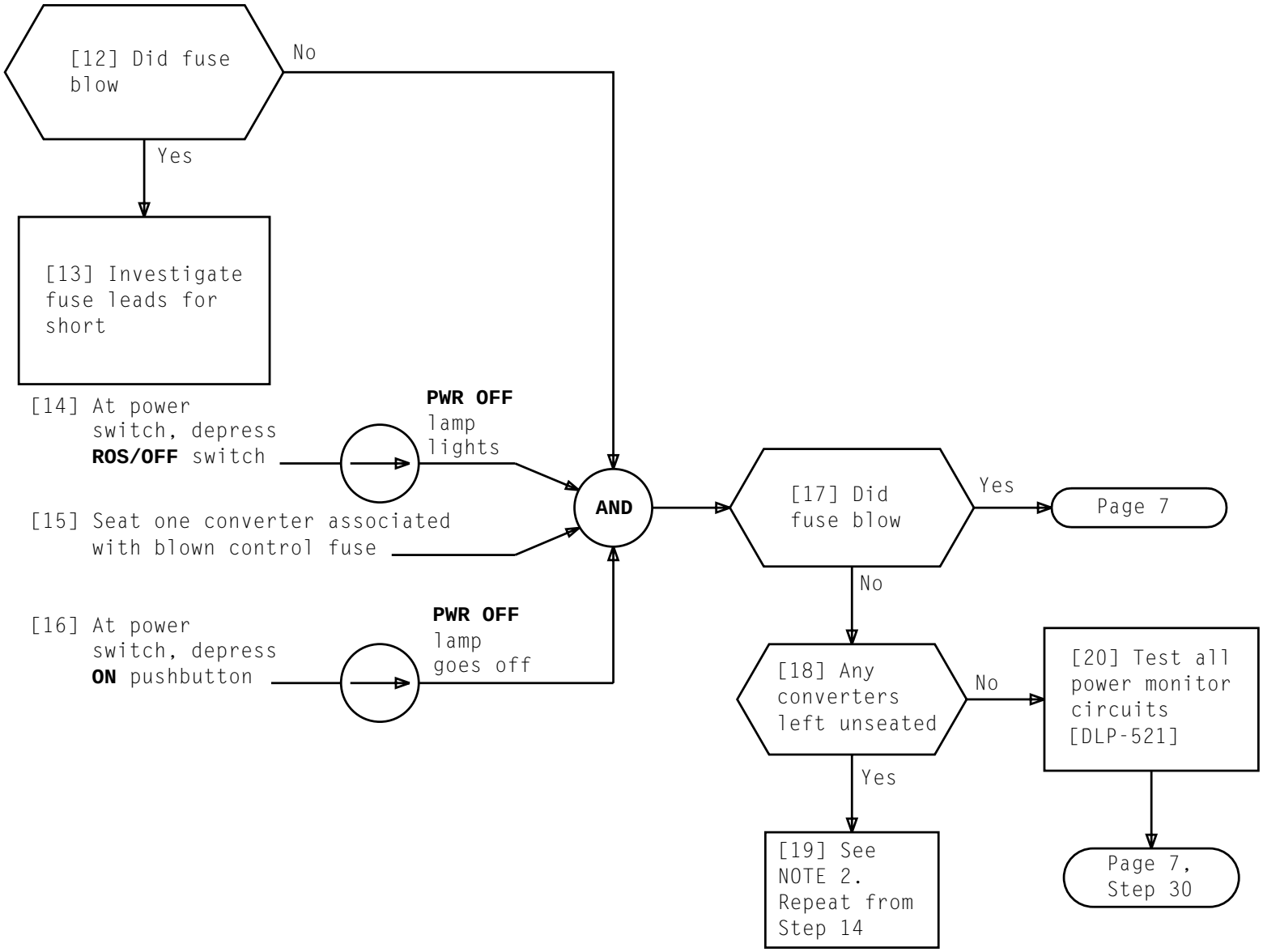
BLOWN FUSE NAME	POWER SWITCH LOCATION*	NAME	
_EA **_EC**	_80-29	**IPUB0**	**IPUB1**
All other fuses	_48-02	**CONTR0**	**CONTR1**

*Located in bay 2/3 for frame type SD-4A028-02

Located in bay 3/4 for frame type SD-4A028-01

NOTE 1
If **OS** lamp flashes and remains lighted, diagnostic failed

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), CONTROL FRAME



NOTE 2
When reseating converters, use different sequence of seating than was previously used

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CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), CONTROL FRAME

TABLE B
SD-4A028-01

CONTROL FRAME W/O COMBINED MATRIX						CONTROL FRAME W/O COMBINED MATRIX					
FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONVERTER LOCATION		FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONVERTER LOCATION	
BAY 3	BAY 4			BAY	BAY	BAY 3	BAY 4			BAY	BAY
0CA	**1CA**	07-18	+3V DC-DC CONV	317-12 317-18 312-12 312-18	417-12 417-18 412-12 412-18	**0CC**	**1CC**	07-18	+3V DC-DC CONV	317-36 317-42 312-36	417-36 417-42 412-36
0BJ	**1BJ**	07-26	+3V DC-DC CONV	317-12 317-18 312-12 312-18	417-12 417-18 412-12 412-18	**0BL**	**1BL**	07-33	+3V DC-DC CONV	317-36 317-42 312-36	417-36 417-42 412-36
0AA	**1AA**	07-09	+3V DC-DC CONV	317-12 317-18 312-12 312-18	417-12 417-18 412-12 412-18	**0AC**	**1AC**	07-09	+3V DC-DC CONV	317-36 317-42 312-36	417-36 417-42 412-36
0CB	**1CB**	07-18	+3V DC-DC CONV	317-24 317-30	417-24 417-30	**0EC**	**1EC**	07-33	PUB/3V CONV	380-25	480-25
0BK	**1BK**	07-33	+3V DC-DC CONV	317-24 317-30	417-24 417-30	**0EA**	**1EA**	07-33	PUB/3V CONV	380-25	480-25
0AB	**1AB**	07-09	+3V DC-DC CONV	312-24 312-30	417-24 417-30	**0BA**	**1BA**	07-26	+3V DC-DC CONV	112-33 117-33 117-36	212-09 217-09 217-12

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), CONTROL FRAME

TABLE B
SD-4A028-01 (Contd)

CONTROL FRAME W/O COMBINED MATRIX						CONTROL FRAME W/O COMBINED MATRIX					
FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONVERTER LOCATION		FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONVERTER LOCATION	
BAY 3	BAY 4			BAY	BAY	BAY 3	BAY 4			BAY	BAY
0BB	**1BB**	07-26	+3V DC-DC CONV	112-24 112-27 112-30	212-00 212-03 212-06	**0BD**	**1BD**	07-26	+3V DC-DC CONV	117-42	217-15
0BF	**1BF**	07-26	+3V DC-DC CONV	612-24 617-33 617-36	712-00 712-03 712-06	**0BH**	**1BH**	07-26	+3V DC-DC CONV	617-42	717-15
0BC	**1BC**	07-26	+3V DC-DC CONV	117-24 117-27 117-30	217-00 217-03 217-06	**0BE**	**1BE**	07-26	+3V DC-DC CONV	612-33 617-33 617-36	712-09 717-09 717-12
0BG	**1BG**	07-26	+3V DC-DC CONV	617-24 617-27 617-30	717-00 717-03 717-06						

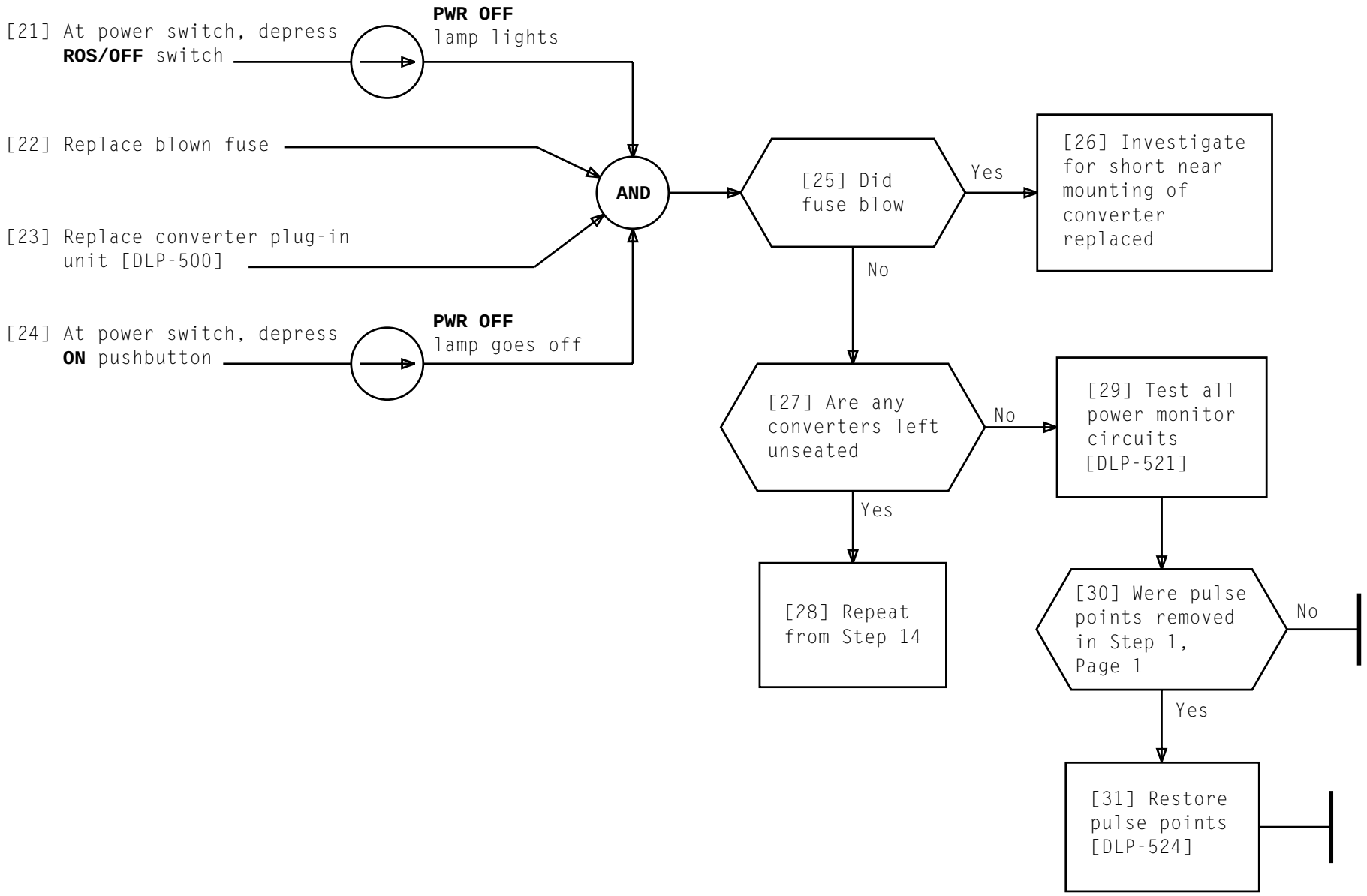
CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), CONTROL FRAME

TABLE C SD-4A028-02									
CONTROL FRAME W/COMBINED MATRIX					CONTROL FRAME W/COMBINED MATRIX				
FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONV LOCATION	FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONV LOCATION
BAY 2	BAY 3			BAY 2/3	BAY 2	BAY 3			BAY 2/3
0BK	**1BK**	07-33	+3V DC-DC CONV	17-24 17-30	**0BE**	**1BE**	07-26	+5V DC-DC CONV	(BAY 1/5) 47-22 47-59
0AB	**1AB**	07-09	+3V DC-DC CONV	17-24 17-30	**0BF**	**1BF**	07-26	+3V DC-DC CONV	(BAY 1/5) 47-40
0BL	**1BL**	07-33	+3V DC-DC CONV	17-36 17-42 12-36	**0BJ**	**1BJ**	07-33	+3V DC-DC CONV	17-12 17-18 12-12 12-18
0AC	**1AC**	07-09	+3V DC-DC CONV	17-36 17-42 12-36	**0AA**	**1AA**	07-09	+3V DC-DC CONV	17-12 17-18 12-12 12-18
0BB	**1BB**	07-26	+3V DC-DC CONV	(BAY 0/4) 47-40	**0EA**	**1EA**	07-33	+3V DC-DC CONV	80-25
0BA	**1BA**	07-26	+5V DC-DC CONV	(BAY 0/4) 47-22 47-59	**0CA**	**1CA**	07-18	+3V DC-DC CONV	17-12, 18 12-12, 18

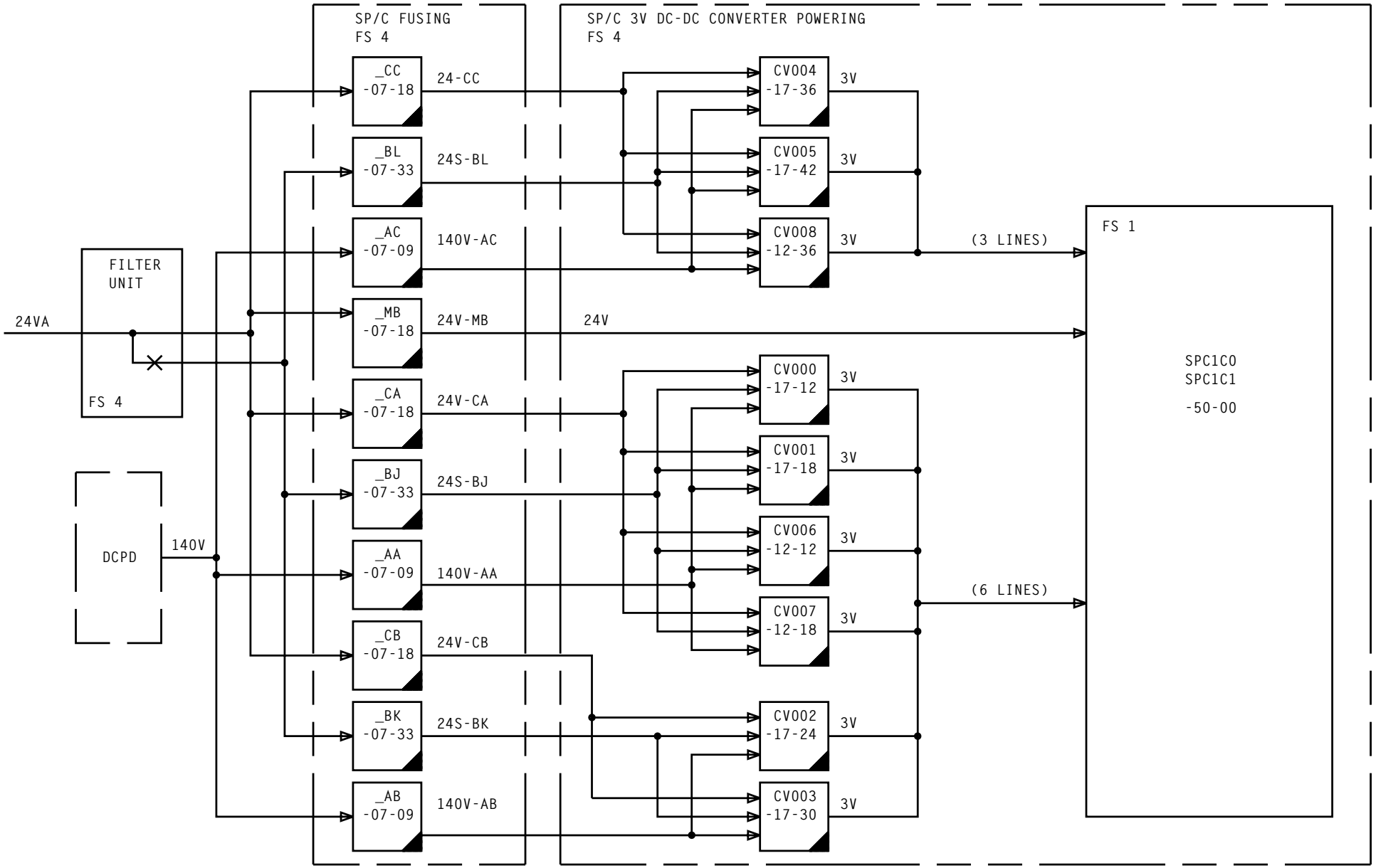
CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), CONTROL FRAME

TABLE C SD-4A028-02 (Contd)				
CONTROL FRAME W/COMBINED MATRIX				
FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONV LOCATION
BAY 2	BAY 3			BAY 2/3
0CB	**1CB**	07-18	+3V DC-DC CONV	17-24 17-30
0CC	**1CC**	07-18	+3V DC-DC CONV	17-36, 42 12-36

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), CONTROL FRAME



CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), CONTROL FRAME



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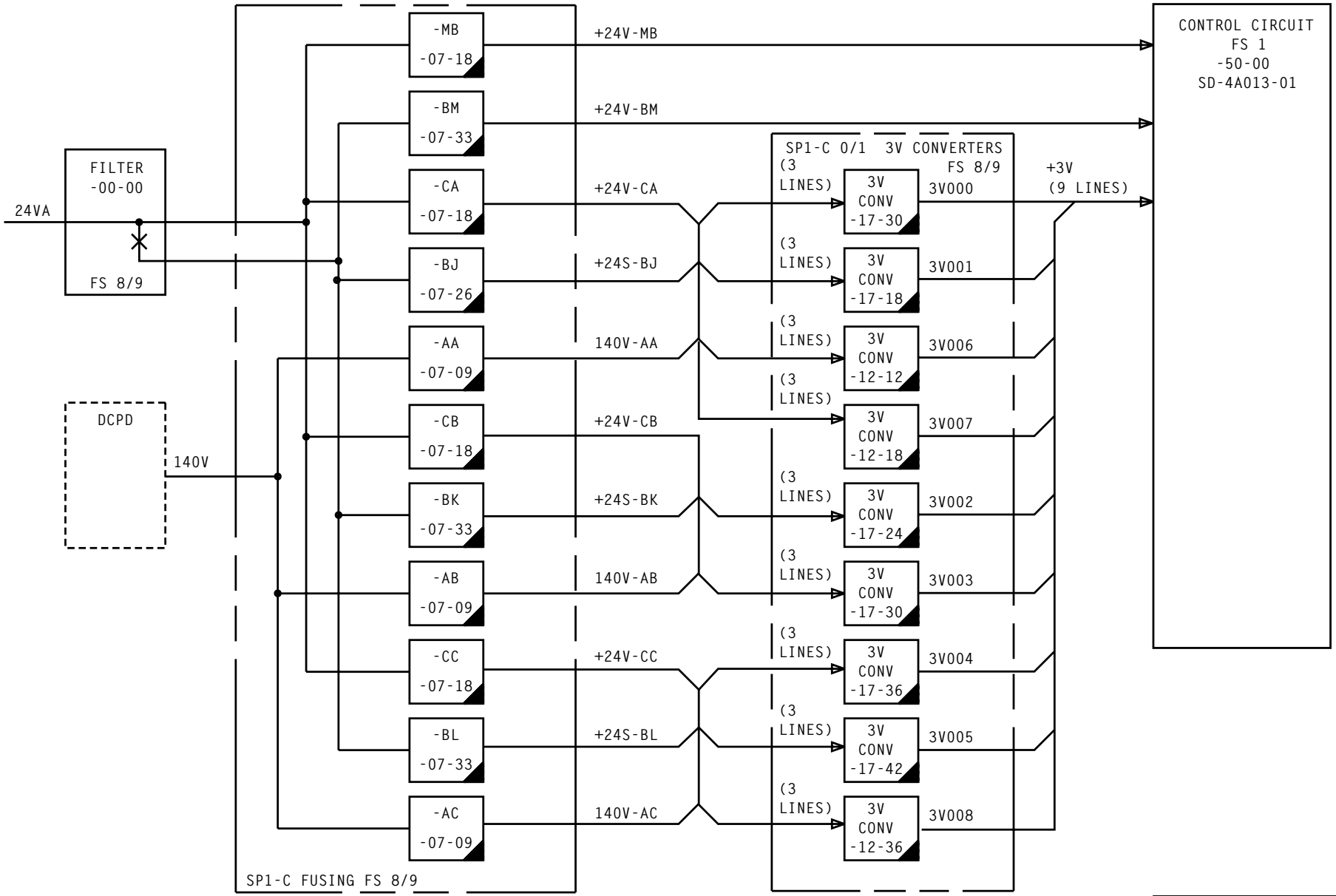
SIGNAL PROCESSOR CONTROL POWER DISTRIBUTION (SD-4A028-02)



SIGNAL PROCESSOR CONTROL POWER DISTRIBUTION (SD-4A028-01)

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(SD-4A028-01) ISD-120

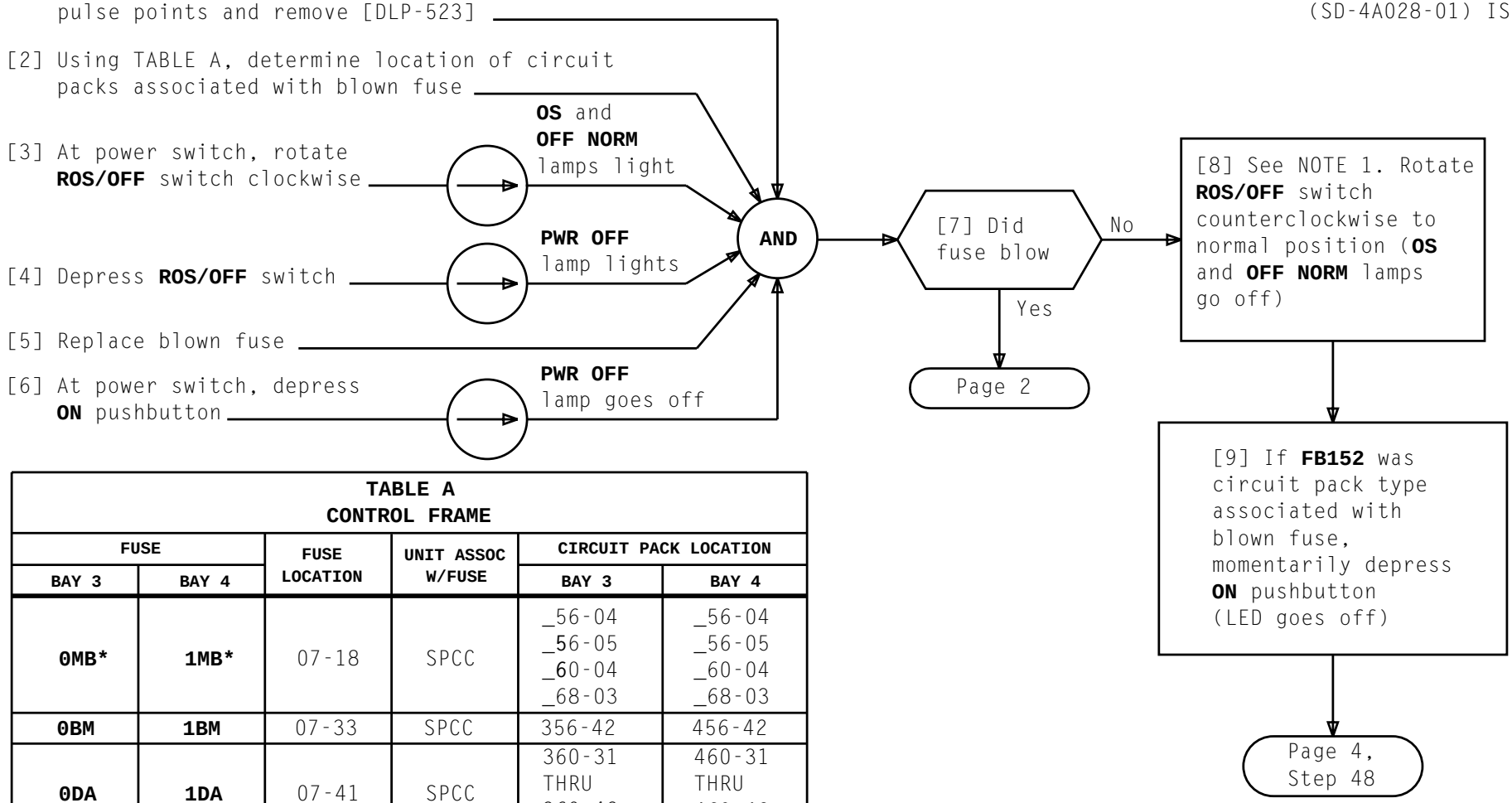


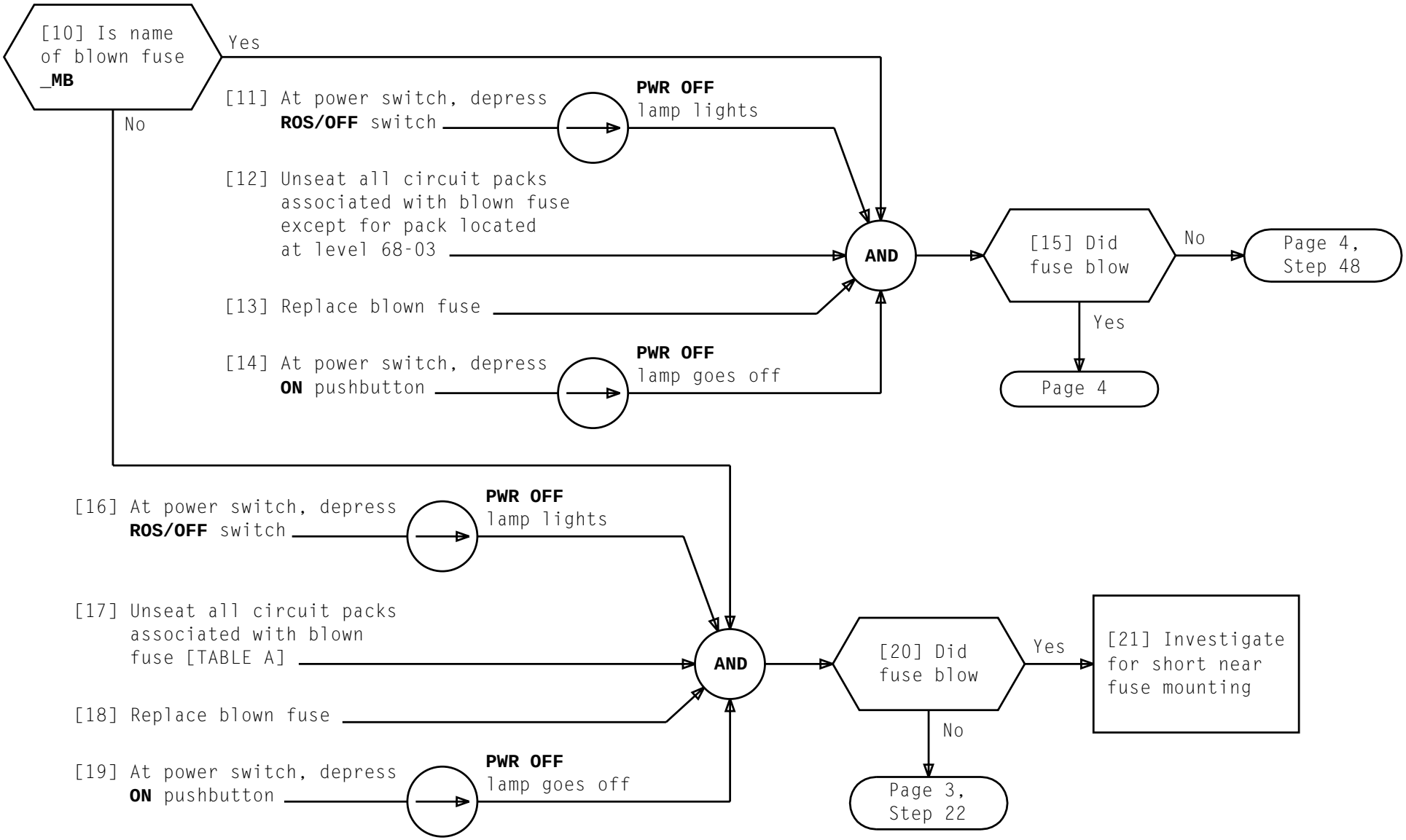
TABLE A
CONTROL FRAME

FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CIRCUIT PACK LOCATION	
BAY 3	BAY 4			BAY 3	BAY 4
0MB*	**1MB***	07-18	SPCC	_56-04 _56-05 _60-04 _68-03	_56-04 _56-05 _60-04 _68-03
0BM	**1BM**	07-33	SPCC	356-42	456-42
0DA	**1DA**	07-41	SPCC	360-31 THRU 360-42	460-31 THRU 460-42
0DB	**1DB**	07-41	SPCC	368-31 THRU 368-42	468-31 THRU 468-42

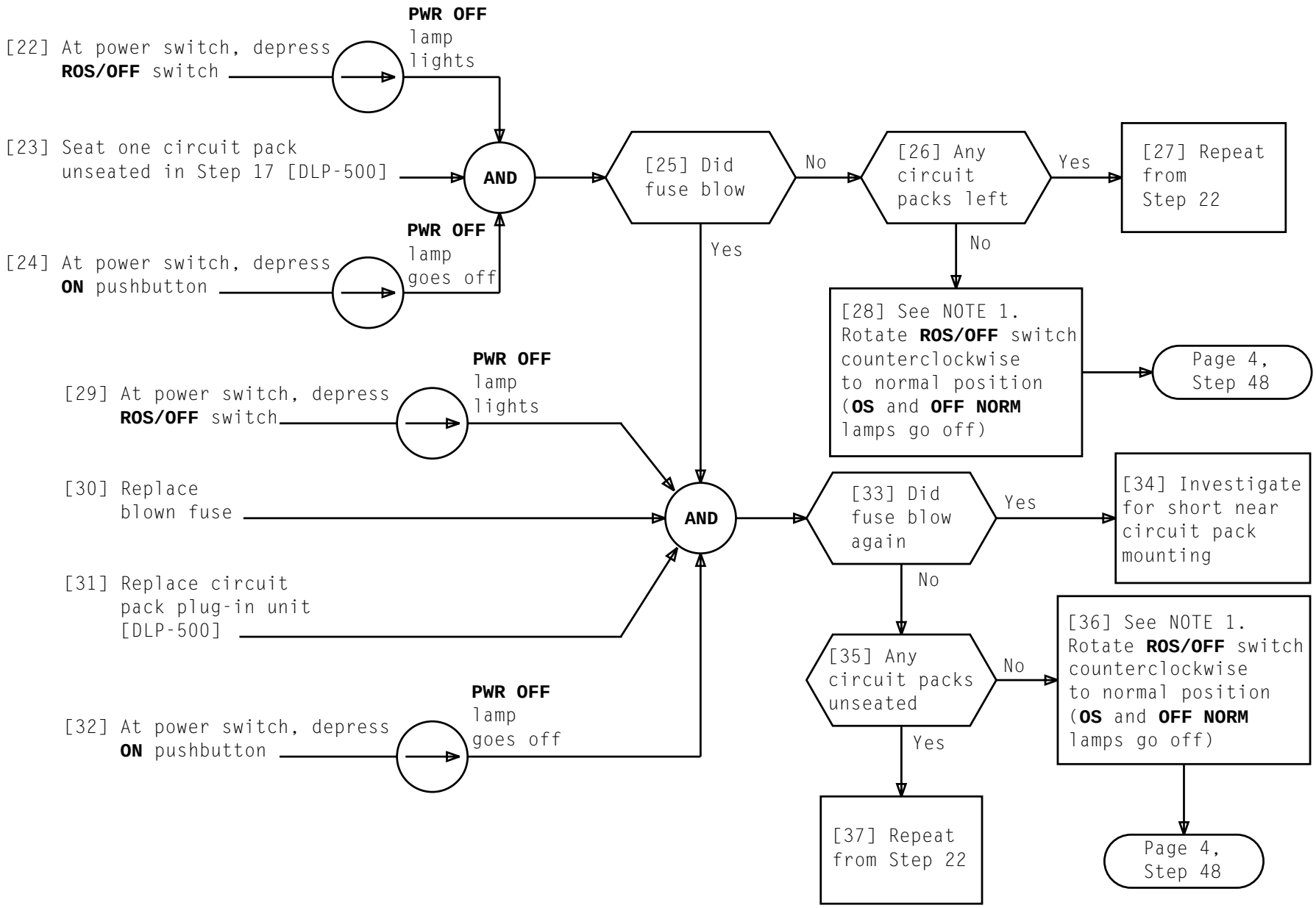
* Circuit packs associated with these fuses are located in bay 2 or 3 (SD-4A028-02) and bay 3 or 4 (SD-4A028-01), depending on the SP configuration

NOTE 1
If **OS** lamp flashes and remains lighted, diagnostic failed

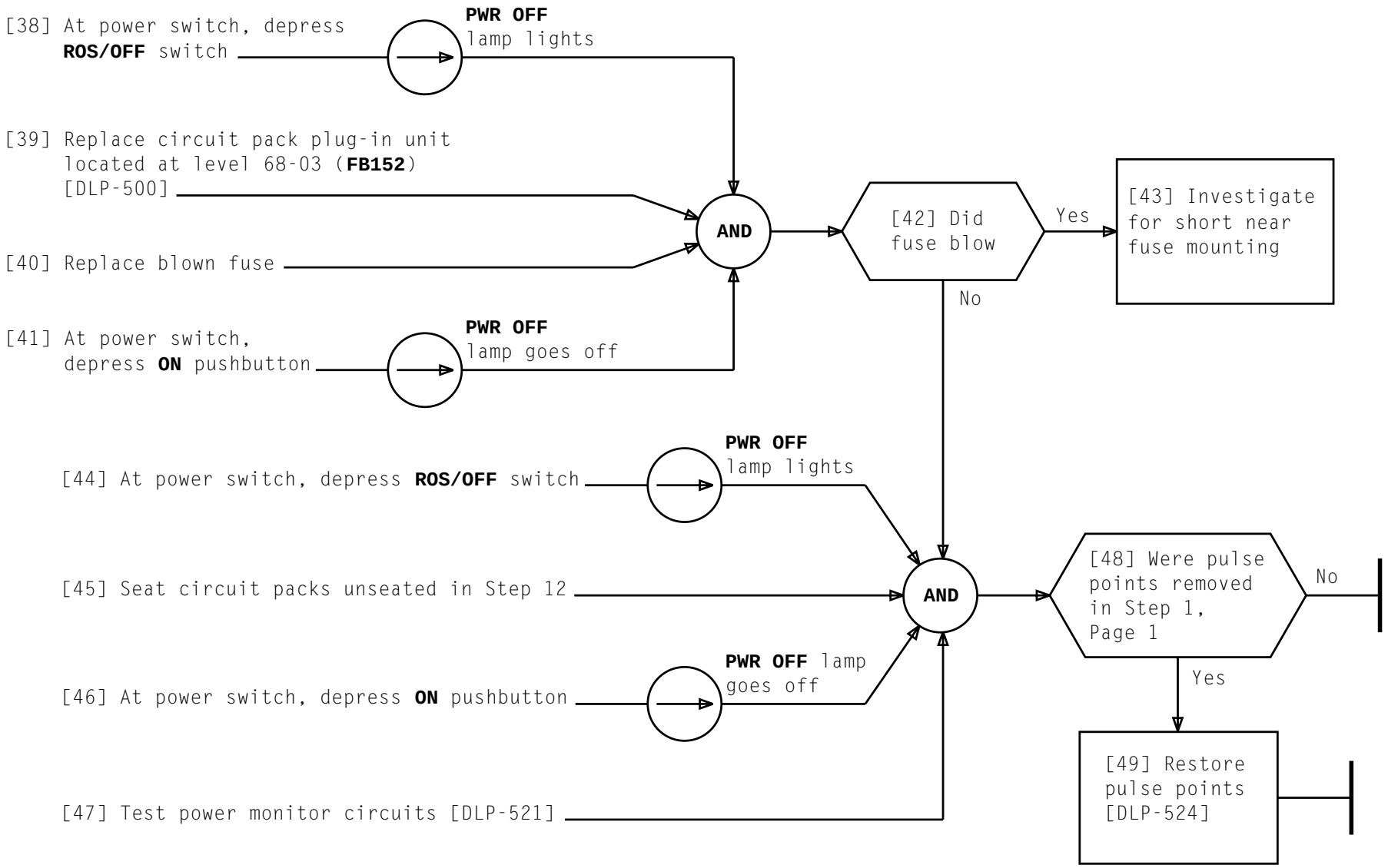
CLEAR BLOWN FUSE (CIRCUIT PACK ASSOCIATED), CONTROL FRAME



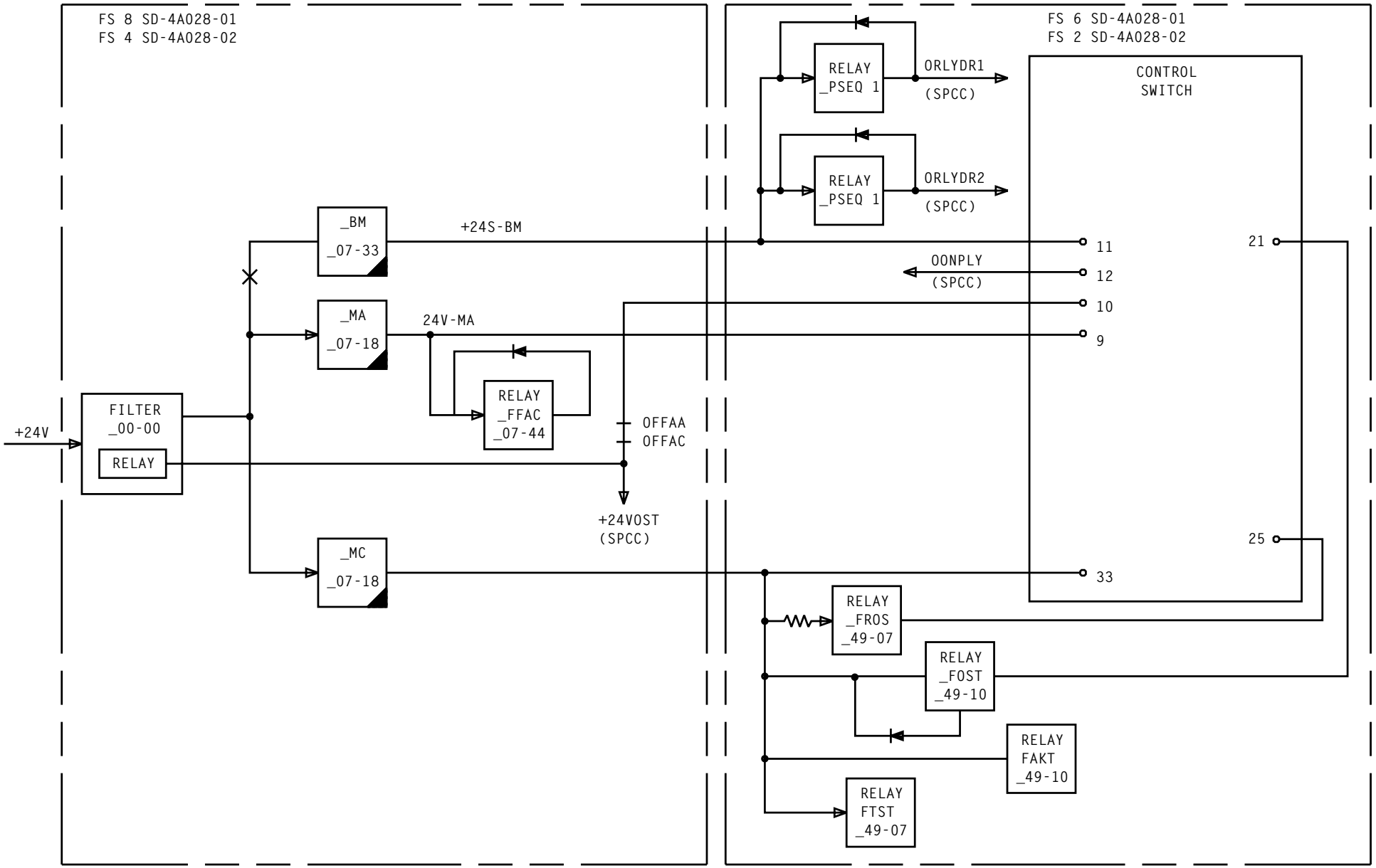
CLEAR BLOWN FUSE (CIRCUIT PACK ASSOCIATED), CONTROL FRAME



CLEAR BLOWN FUSE (CIRCUIT PACK ASSOCIATED), CONTROL FRAME



CLEAR BLOWN FUSE (CIRCUIT PACK ASSOCIATED), CONTROL FRAME



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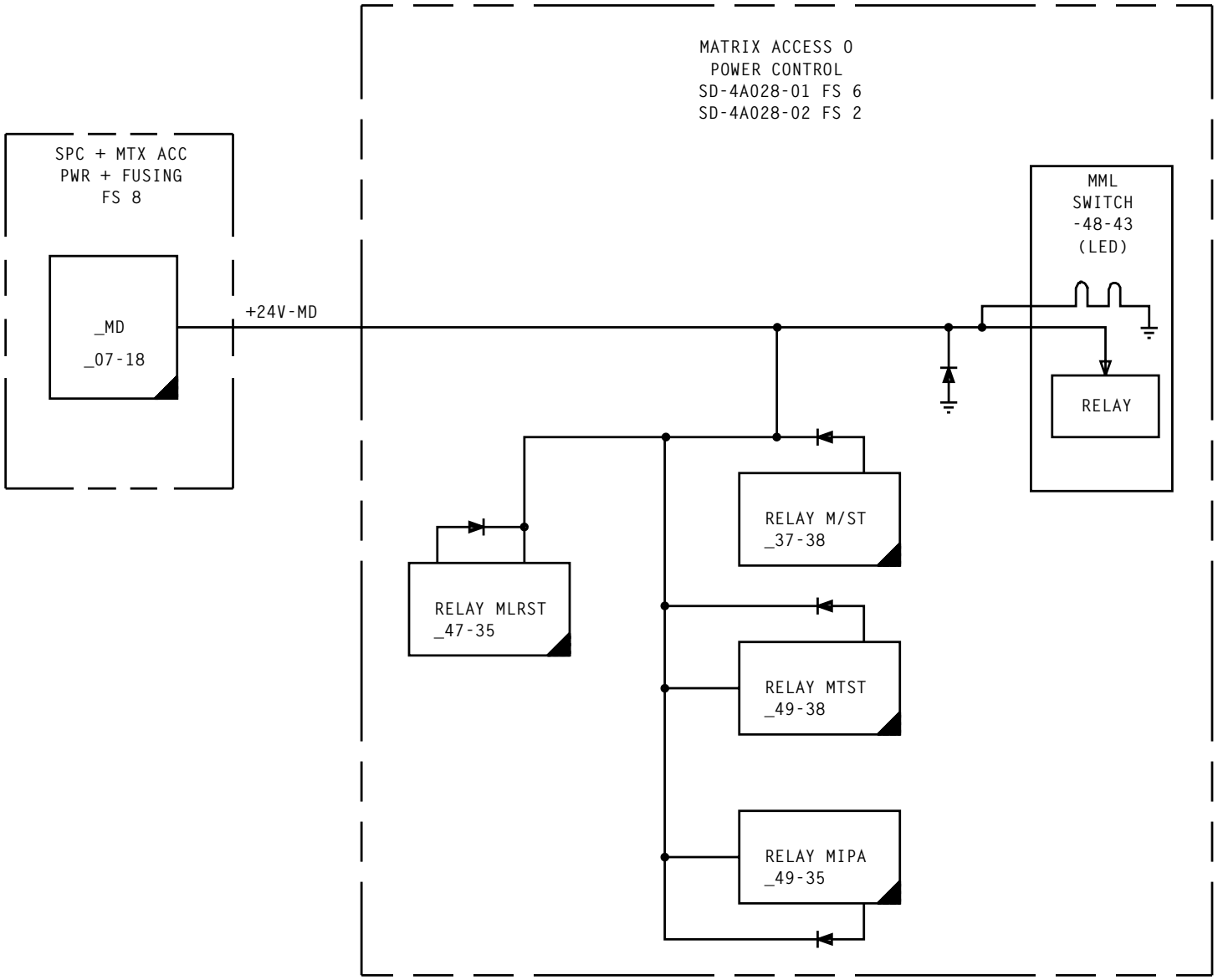
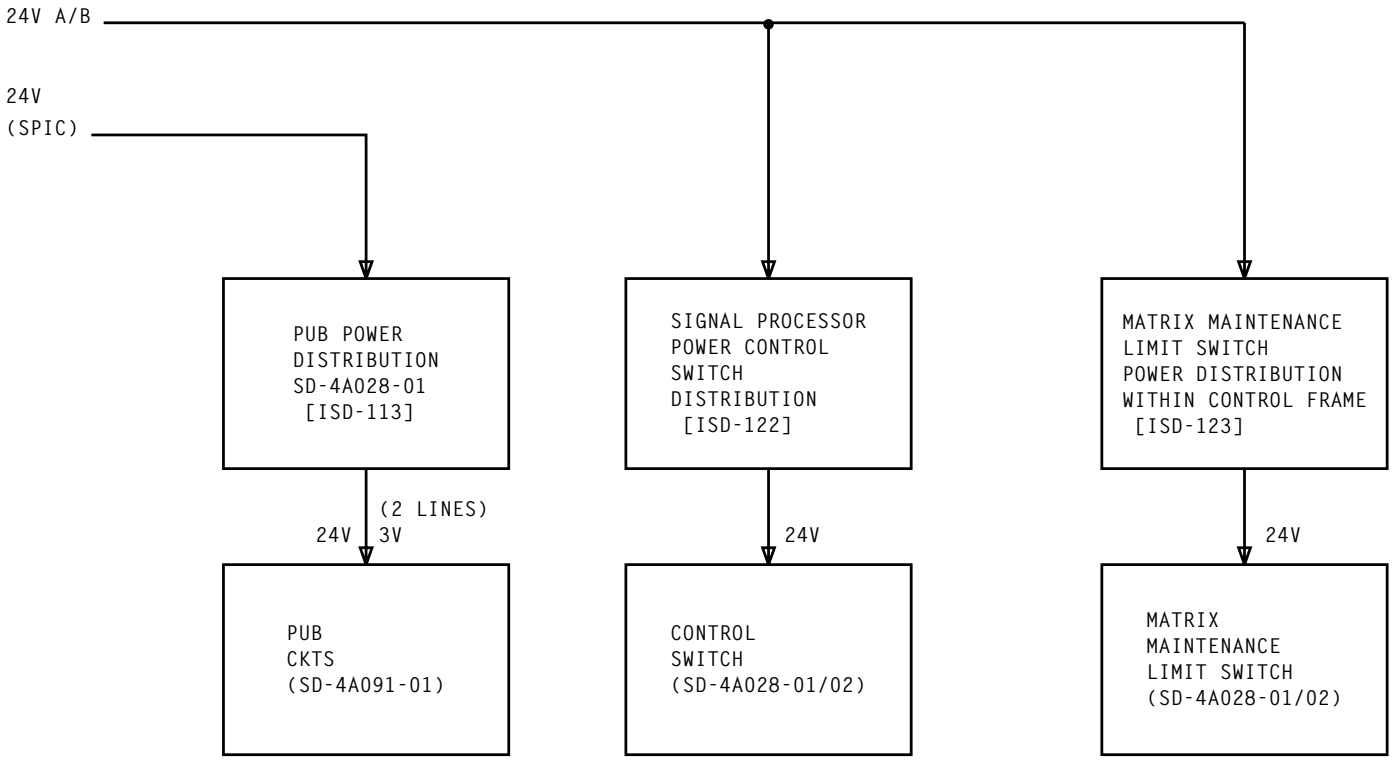
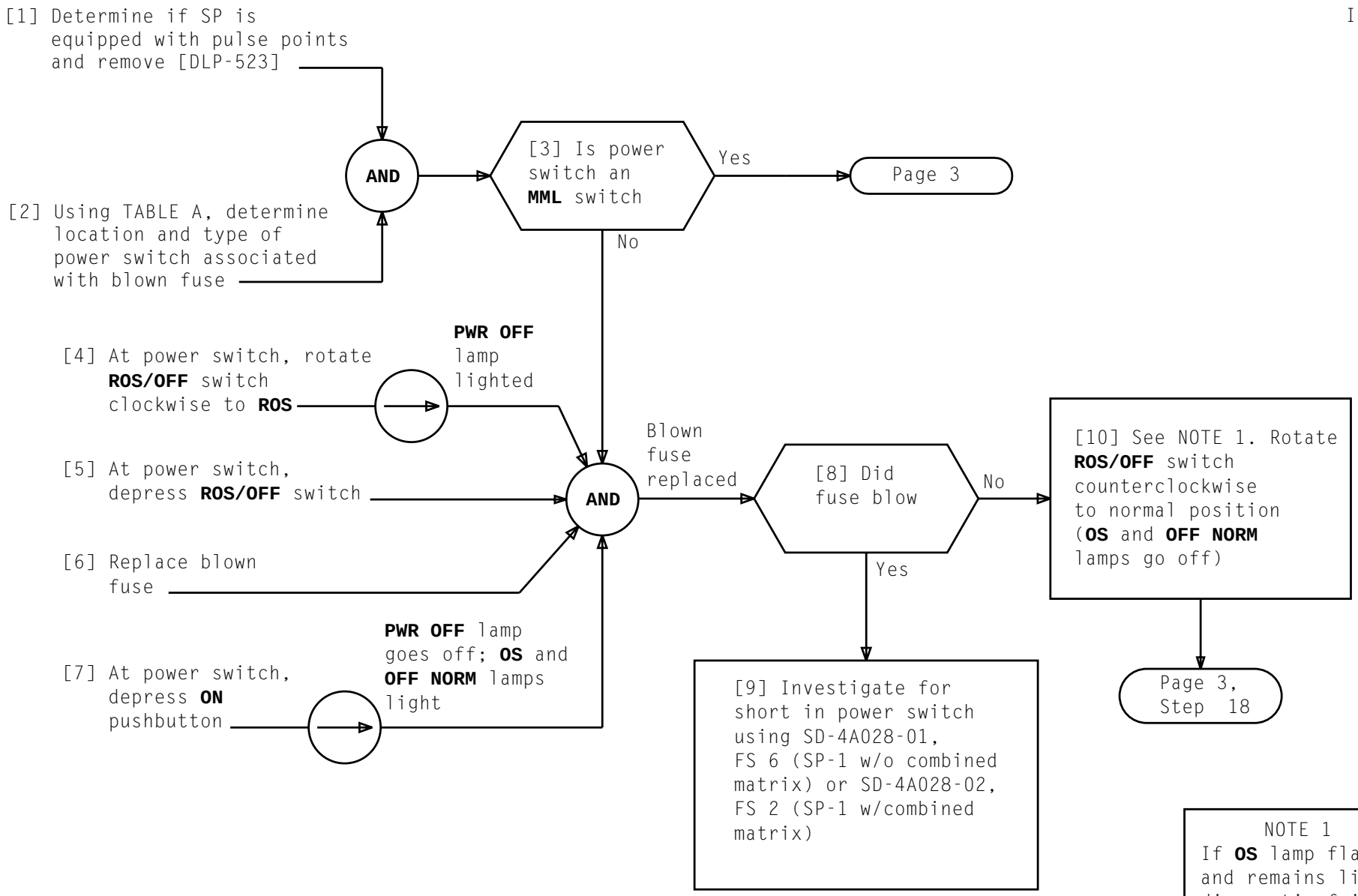
SIGNAL PROCESSOR POWER CONTROL SWITCH POWER DISTRIBUTION



MATRIX MAINTENANCE LIMIT SWITCH POWER DISTRIBUTION WITHIN CONTROL FRAME



CONTROL FRAME SWITCHES



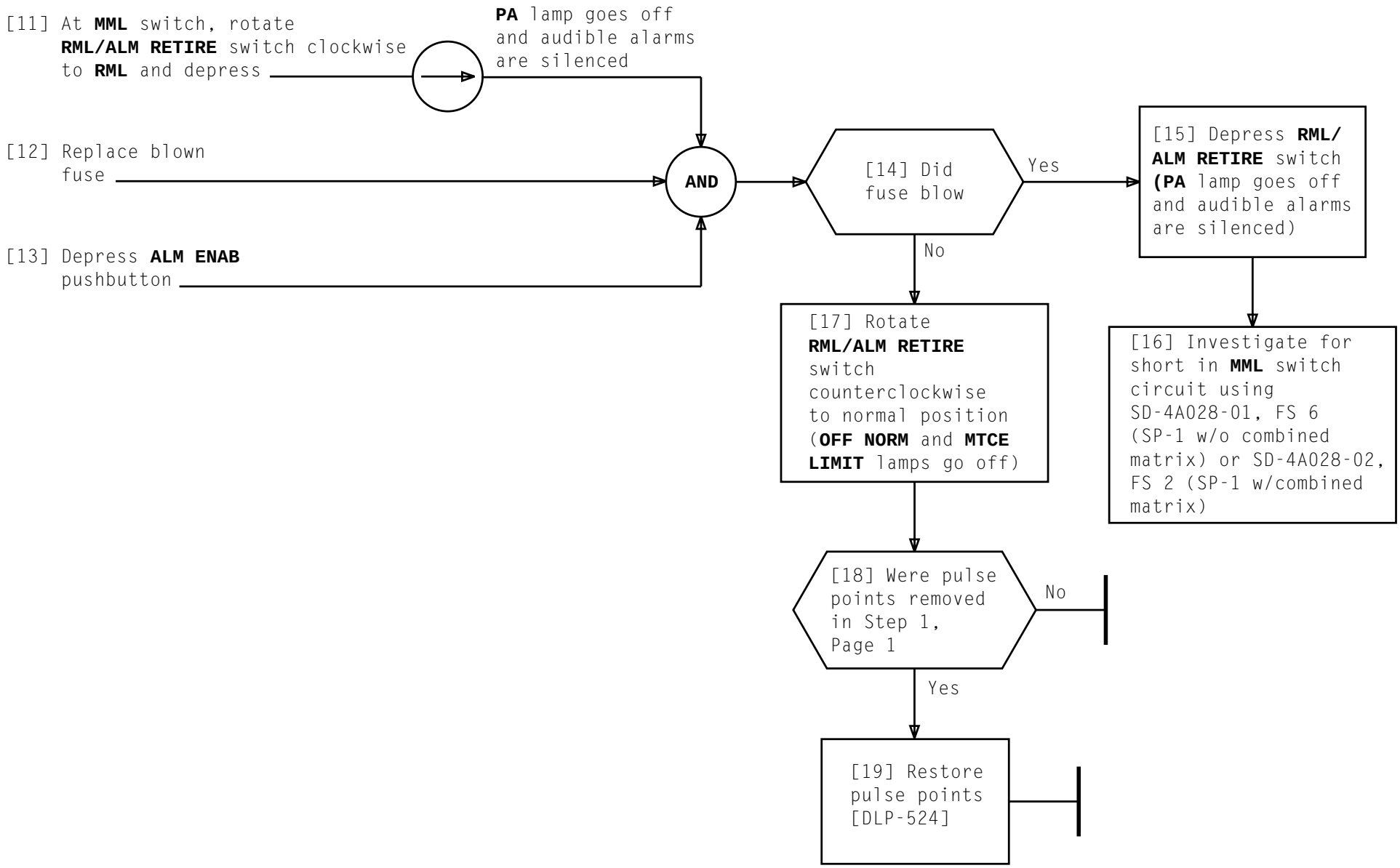
NOTE 1
If **OS** lamp flashes and remains lighted, diagnostic failed

CLEAR BLOWN FUSE (POWER SWITCH ASSOCIATED), CONTROL FRAME

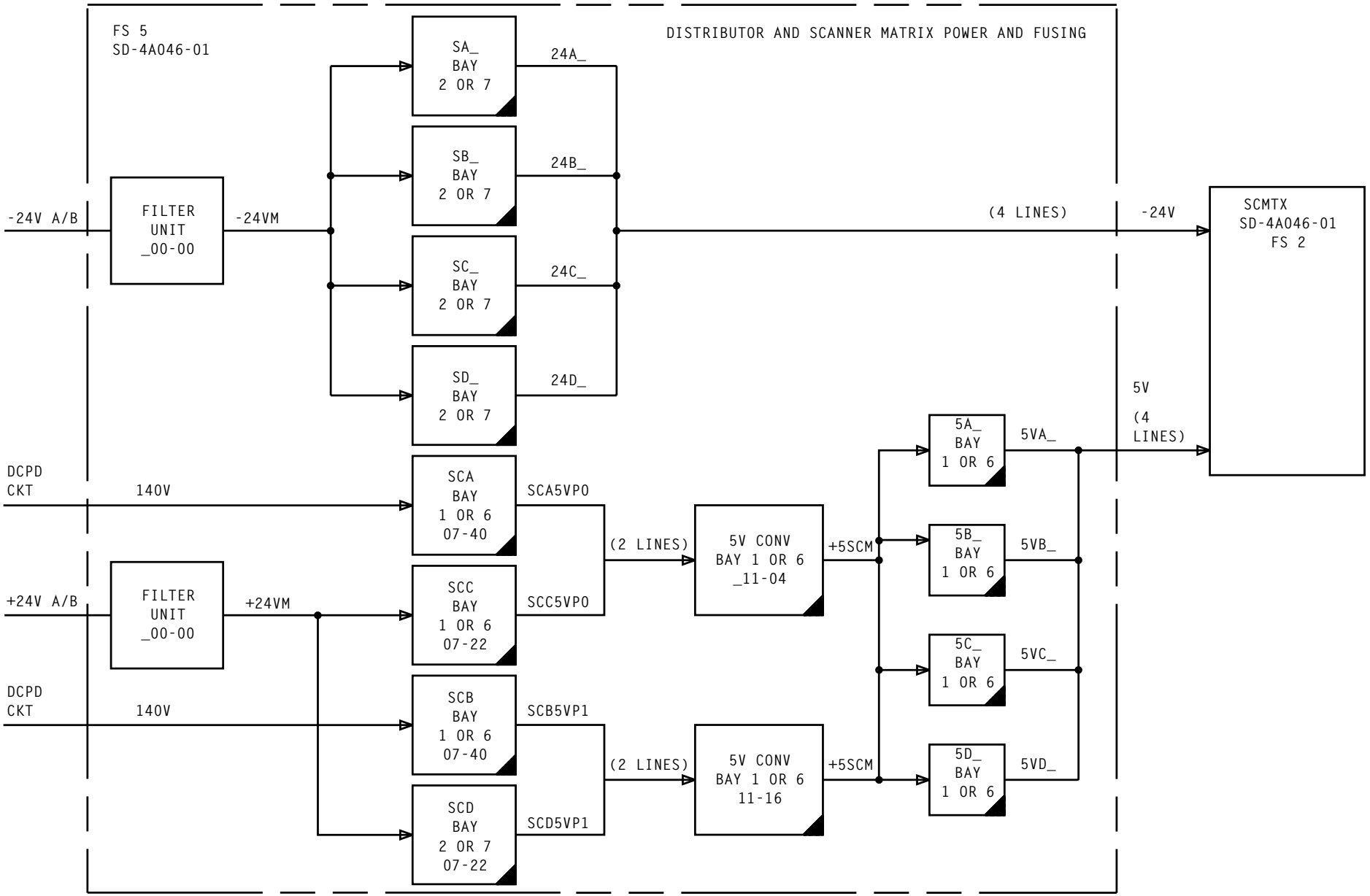
TABLE A
FUSE TO POWER SWITCH ASSIGNMENT

CONTROL FRAME W/COMBINED MATRIX (SD-4A028-02)					CONTROL FRAME W/O COMBINED MATRIX (SD-4A028-01)				
FUSE		FUSE LOCATION	UNIT ASSOCIATED W/FUSE	POWER SWITCH LOCATION	FUSE		FUSE LOCATION	UNIT ASSOCIATED W/FUSE	POWER SWITCH LOCATION
BAY 2	BAY 3				BAY 3	BAY 4			
OEB	**1EB**	07-33	**IPUB** power switch	80-43	**OMC**	**1MC**	07-18	**CONTR** power control	48-02
OEC	**1EC**	07-33	**IPUB** power switch	80-43	**OMA**	**1MA**	07-18	**CONTR** power control	48-02
OBM	**1BM**	07-18	**CONTR** power switch	48-02	**OMD**	—	07-18	**MML** switch	348-43
OMA	**1MA**	07-18	**CONTR** power switch	48-02	**OEB**	**1EB**	07-33	**IPUB** power switch	80-29
OMC	**1MC**	07-18	**CONTR** power switch	48-02					
OMD	—	07-18	**MML** switch	348-43					

CLEAR BLOWN FUSE (POWER SWITCH ASSOCIATED), CONTROL FRAME



CLEAR BLOWN FUSE (POWER SWITCH ASSOCIATED), CONTROL FRAME



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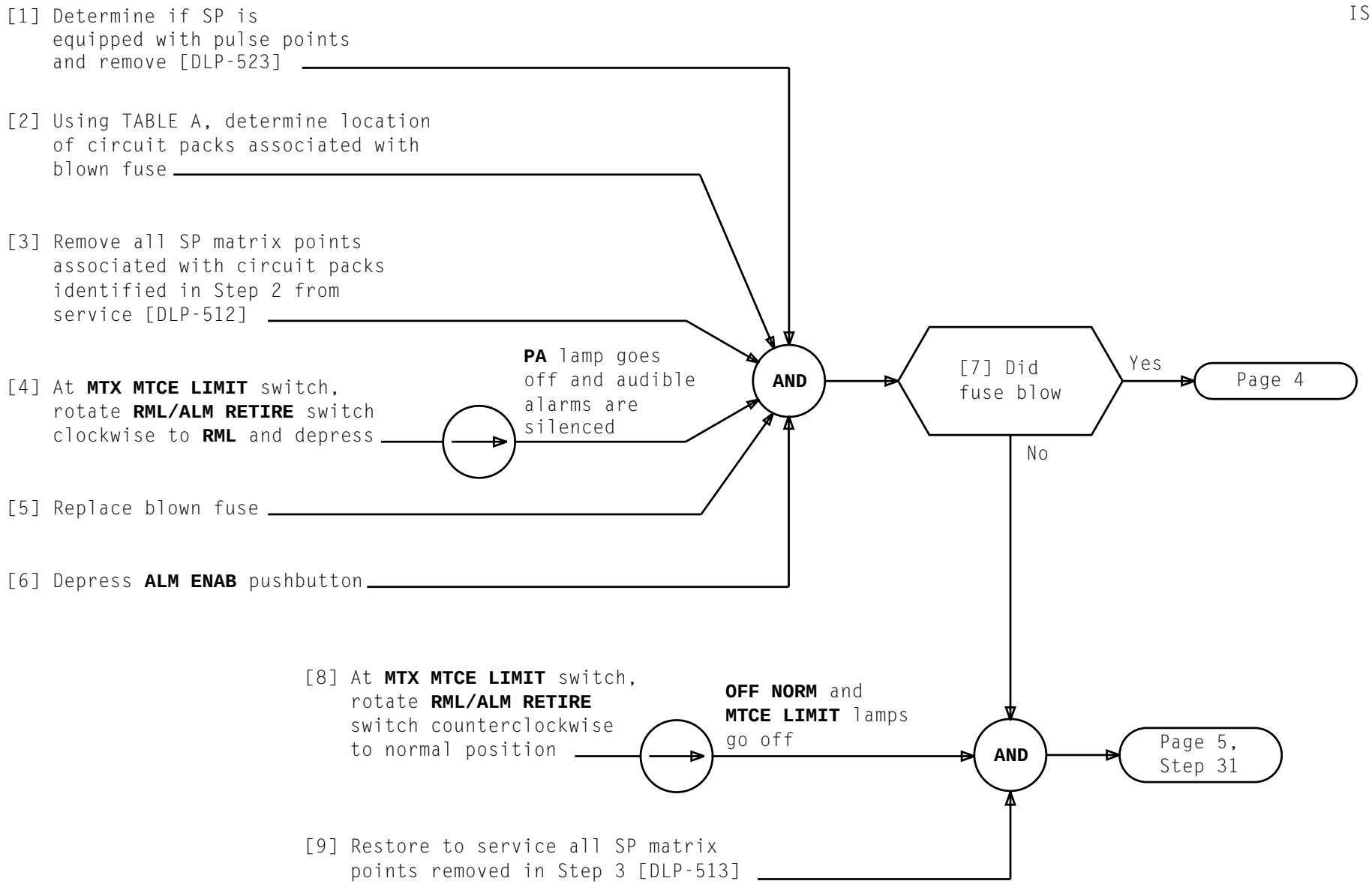
SCANNER MATRIX (0 THRU 5) POWER DISTRIBUTION (SD-4A046-01)



CLEAR BLOWN FUSE (FB230 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX (SD-4A028-01)

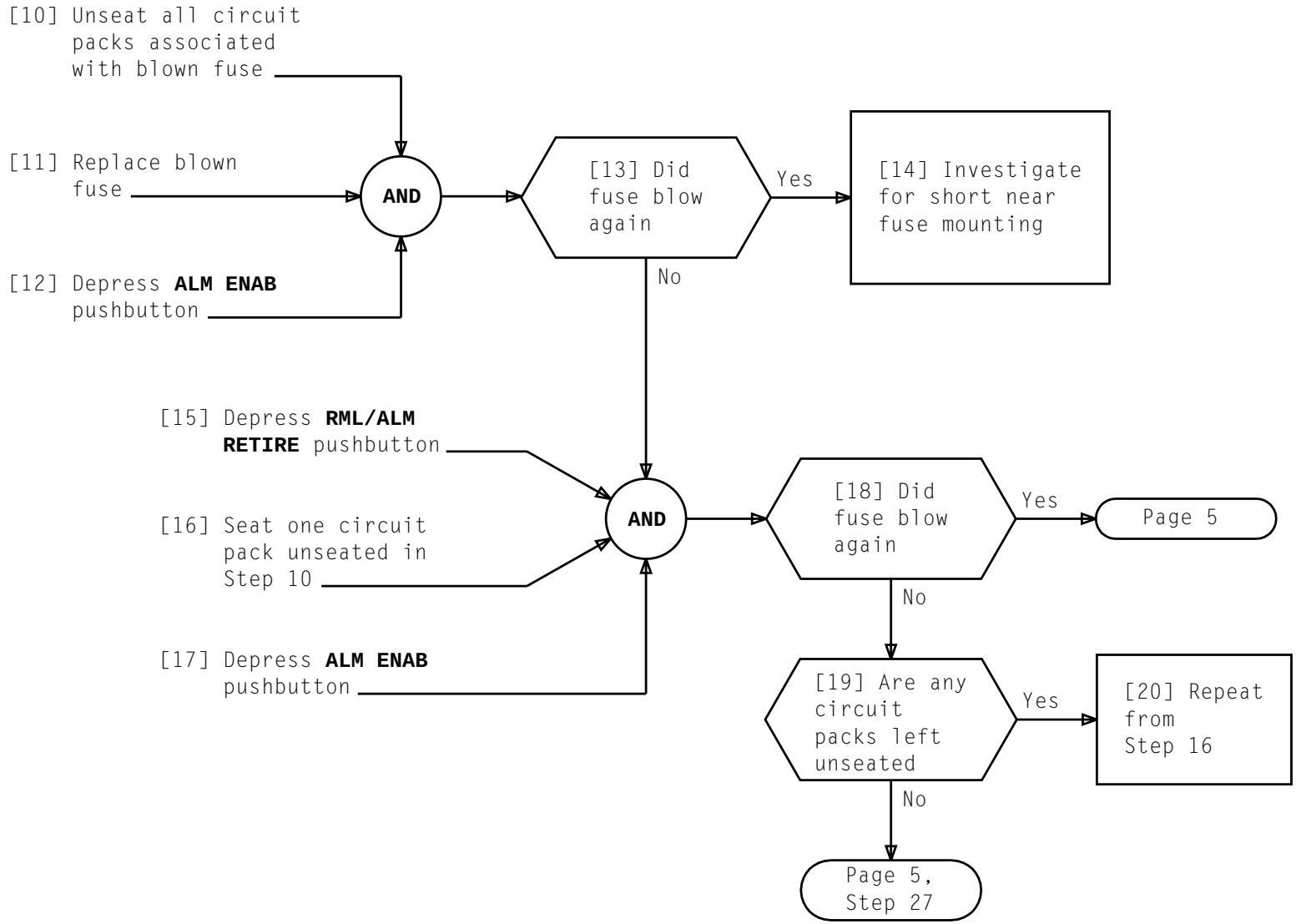
TABLE A DISTRIBUTOR AND SCANNER MATRIX FRAME											
FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CIRCUIT PACK LOCATION		FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CIRCUIT PACK LOCATION	
BAY 1/6	BAY 2/7			BAY 1/6	BAY 2/7	BAY 1/6	BAY 2/7			BAY 1/6	BAY 2/7
5A2	**5A3**	07-10	SCMTX CKT	63-04,06, 08,10, 12,14, 16,18	63-04,06, 08,10, 12,14, 16,18	**5B2**	**5B3**	07-10	SCMTX CKT	63-05,07, 09,11, 13,15, 17,19	63-05,07, 09,11, 13,15, 17,19
SA4	**SA5**	07-42	SCMTX CKT	68-04,06, 08,10, 12,14, 16,18	68-04,06, 08,10, 12,14, 16,18	**SB4**	**SB5**	07-42	SCMTX CKT	68-05,07, 09,11, 13,15, 17,19	68-05,07, 09,11, 13,15, 17,19
5A4	**5A5**	07-16	SCMTX CKT	68-04,06, 08,10, 12,14, 16,18	68-04,06, 08,10, 12,14, 16,18	**5B4**	**5B5**	07-16	SCMTX CKT	68-05,07, 09,11, 13,15, 17,19	68-05,07, 09,11, 13,15, 17,19
SB0	**SB1**	07-30	SCMTX CKT	50-05,07, 09,11, 13,15, 17,19	50-05,07, 09,11, 13,15, 17,19	**SC0**	**SC1**	07-30	SCMTX CKT	50-26,28, 30,32, 34,36, 38,40	50-26,28, 30,32, 34,36, 38,40
5B0	**5B1**	07-04	SCMTX CKT	50-05,07, 09,11, 13,15, 17,19	50-05,07, 09,11, 13,15, 17,19	**5C0**	**5C1**	07-64	SCMTX CKT	50-26,28, 30,32, 34,36, 38,40	50-26,28, 30,32, 34,36, 38,40
SB2	**SB3**	07-36	SCMTX CKT	63-05,07, 09,11, 13,15, 17,19	63-05,07, 09,11, 13,15, 17,19	**SC2**	**SC3**	07-36	SCMTX CKT	63-26,28, 30,32, 34,36, 38,40	63-26,28, 30,32, 34,36, 38,40

CLEAR BLOWN FUSE (FB230 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX (SD-4A028-01)

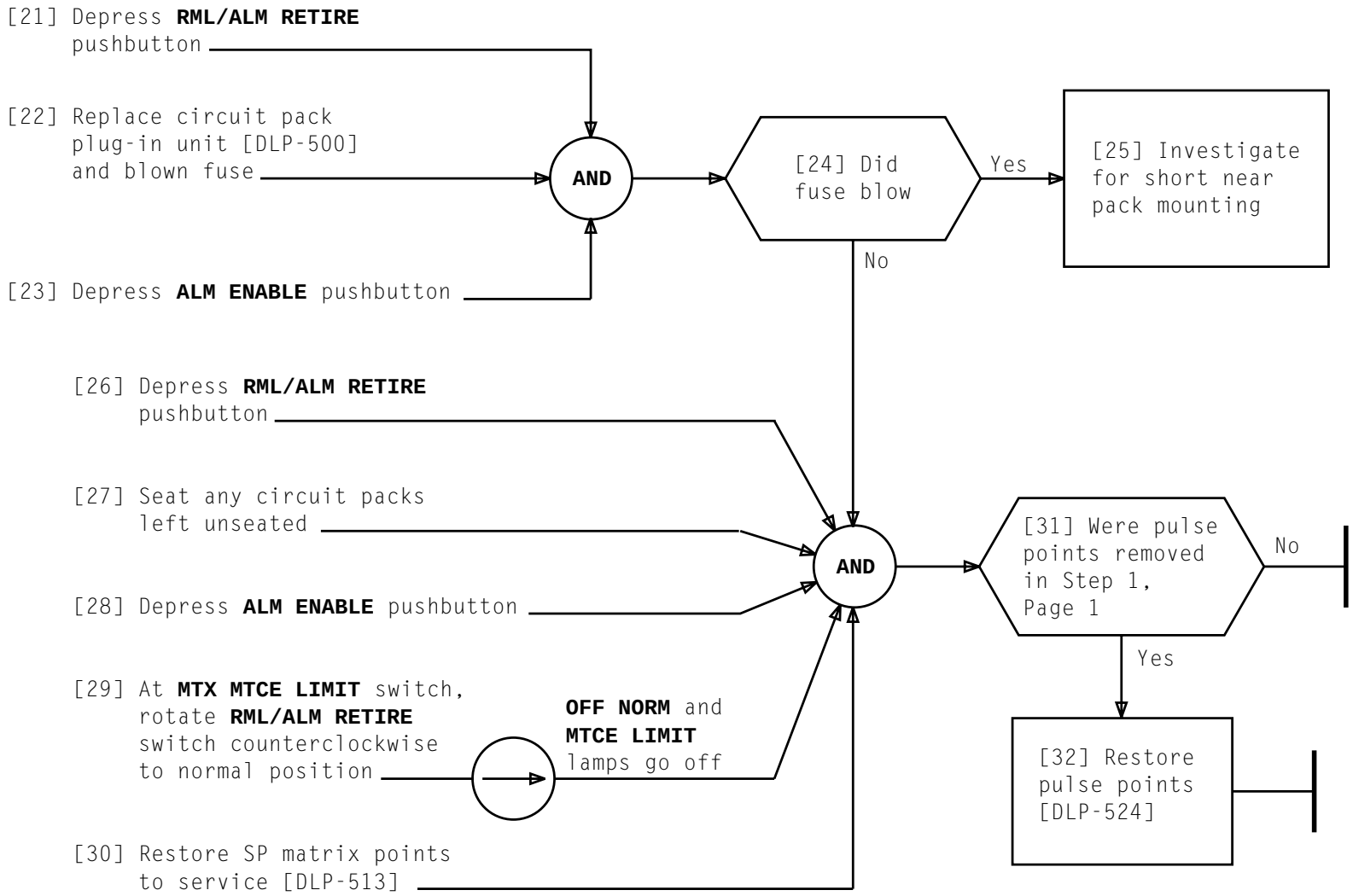
TABLE A
DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CIRCUIT PACK LOCATION		FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CIRCUIT PACK LOCATION	
BAY 1/6	BAY 2/7			BAY 1/6	BAY 2/7	BAY 1/6	BAY 2/7			BAY 1/6	BAY 2/7
5C2	**5C3**	07-10	SCMTX CKT	63-26,28, 30,32, 34,36, 38,40	63-26,28, 30,32, 34,36, 38,40	**5D2**	**5D3**	07-10	SCMTX CKT	63,27,29, 31,33, 35,37, 39,41	63,27,29, 31,33, 35,37, 39,41
SC4	**SC5**	07-42	SCMTX CKT	68-26,28, 30,32, 34,36, 38,40,	68-26,28, 30,32, 34,36, 38,40,	**SD4**	**SD5**	07-42	SCMTX CKT	68,27,29, 31,33, 35,37, 39,41	68,27,29, 31,33, 35,37, 39,41
5C4	**5C5**	07-16	SCMTX CKT	68-26,28, 30,32, 34,36, 38,40,	68-26,28, 30,32, 34,36, 38,40,	**5D4**	**5D5**	07-16	SCMTX CKT	68,27,29, 31,33, 35,37, 39,41	68,27,29, 31,33, 35,37, 39,41
SD0	**SD1**	07-30	SCMTX CKT	50-27,29, 31,33, 35,37, 39,41	50-27,29, 31,33, 35,37, 39,41	**SA0**	**SA1**	07-30	SCMTX CKT	50-04,06, 08,10, 12,14, 16,18	50-04,06, 08,10, 12,14, 16,18
5D0	**5D1**	07-04	SCMTX CKT	50-27,29, 31,33, 35,37, 39,41	50-27,29, 31,33, 35,37, 39,41	**5A0**	**5A1**	07-04	SCMTX CKT	50-04,06, 08,10, 12,14, 16,18	50-04,06, 08,10, 12,14, 16,18
SD2	**SD3**	07-36	SCMTX CKT	63-27,29, 31,33, 35,37, 39,41	63-27,29, 31,33, 35,37, 39,41	**SA2**	**SA3**	07-36	SCMTX CKT	63-04,06, 08,10, 12,14, 16,18	63-04,06, 08,10, 12,14, 16,18

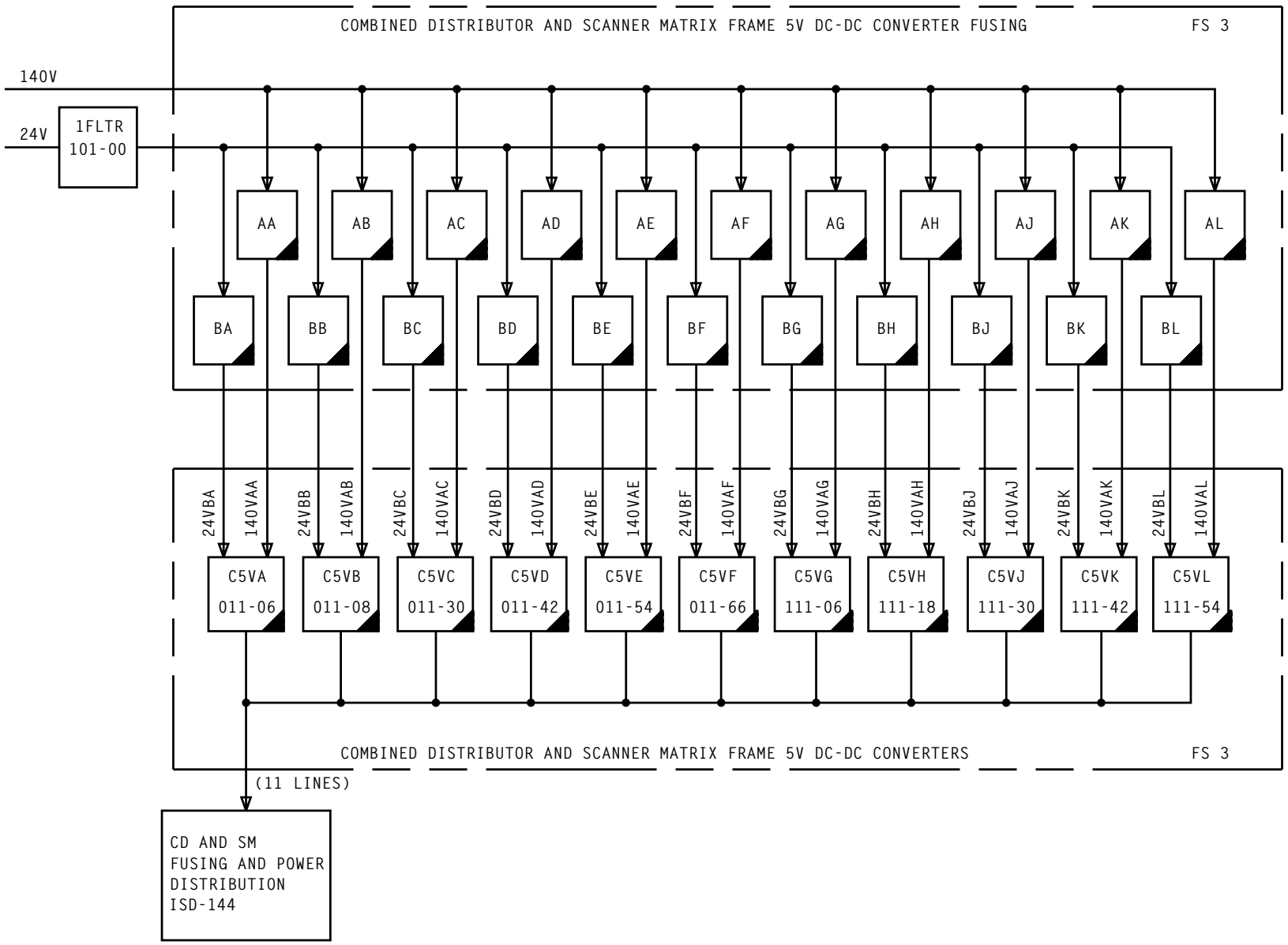
CLEAR BLOWN FUSE (FB230 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX (SD-4A028-01)



CLEAR BLOWN FUSE (FB230 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX (SD-4A028-01)



CLEAR BLOWN FUSE (FB230 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX (SD-4A028-01)



COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME 5V DC-DC POWER DISTRIBUTION (SD-4A093-01)

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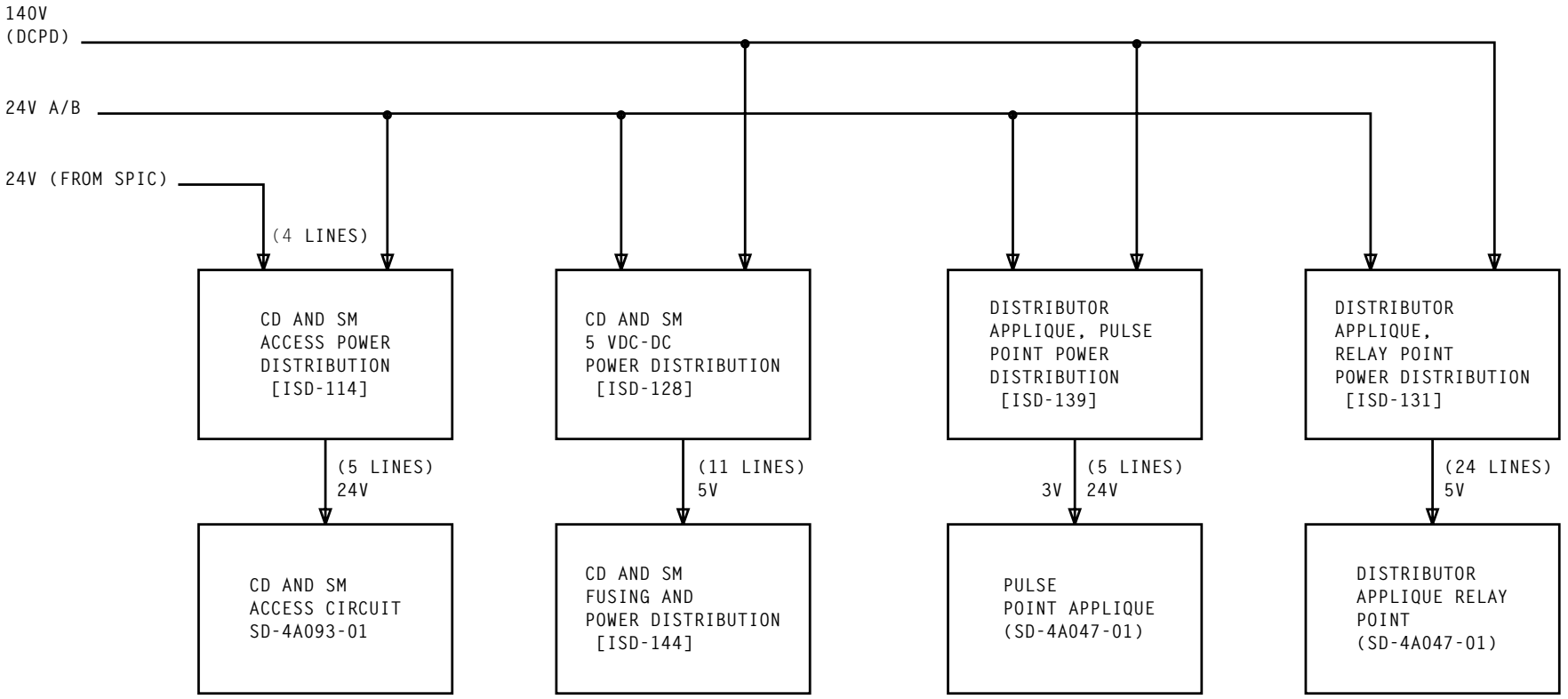
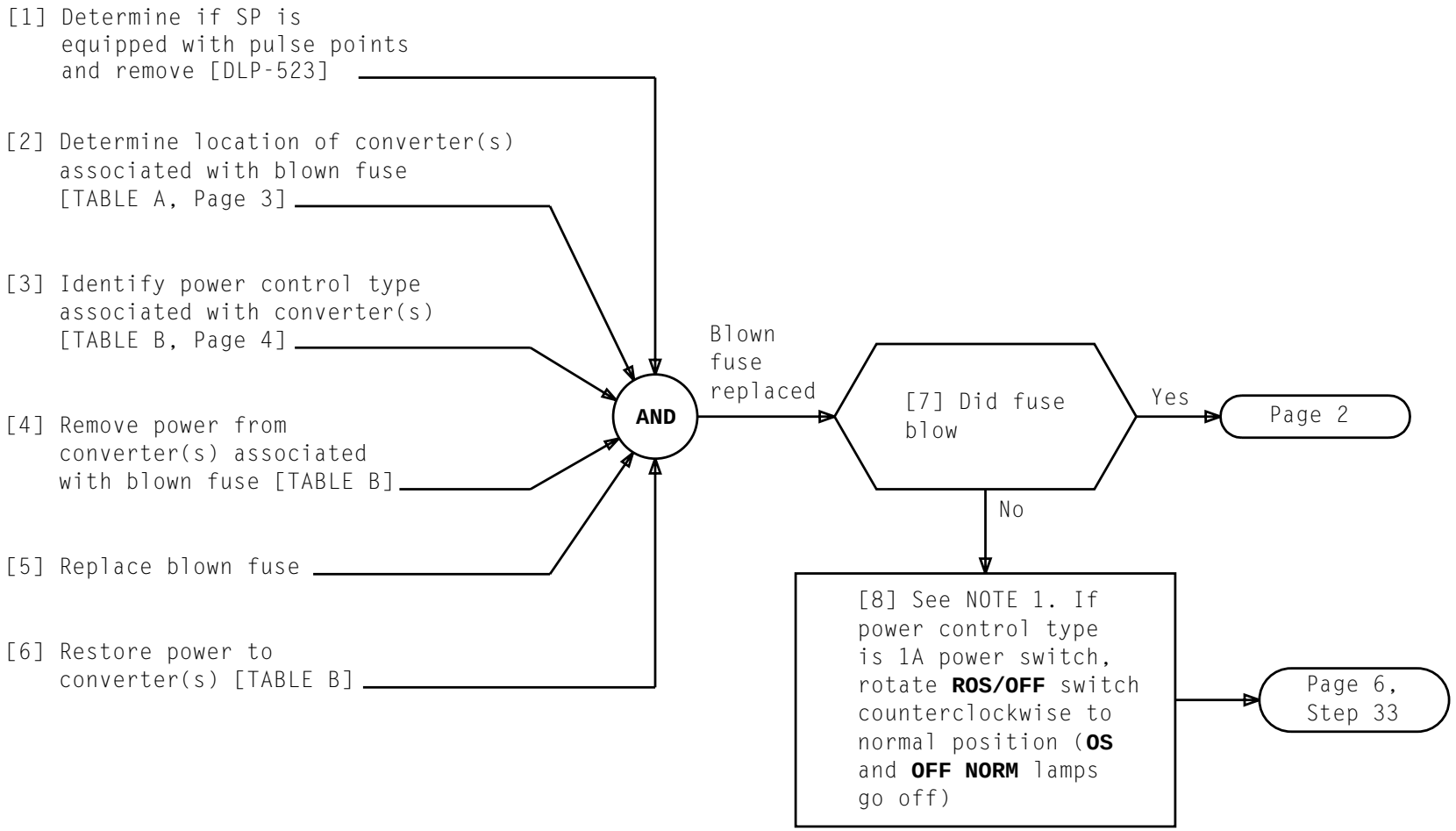


DISTRIBUTOR APPLIQUE OR COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME POWER DISTRIBUTION



CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

NOTE 1 If **OS** lamp flashes and remains lighted, diagnostic failed	
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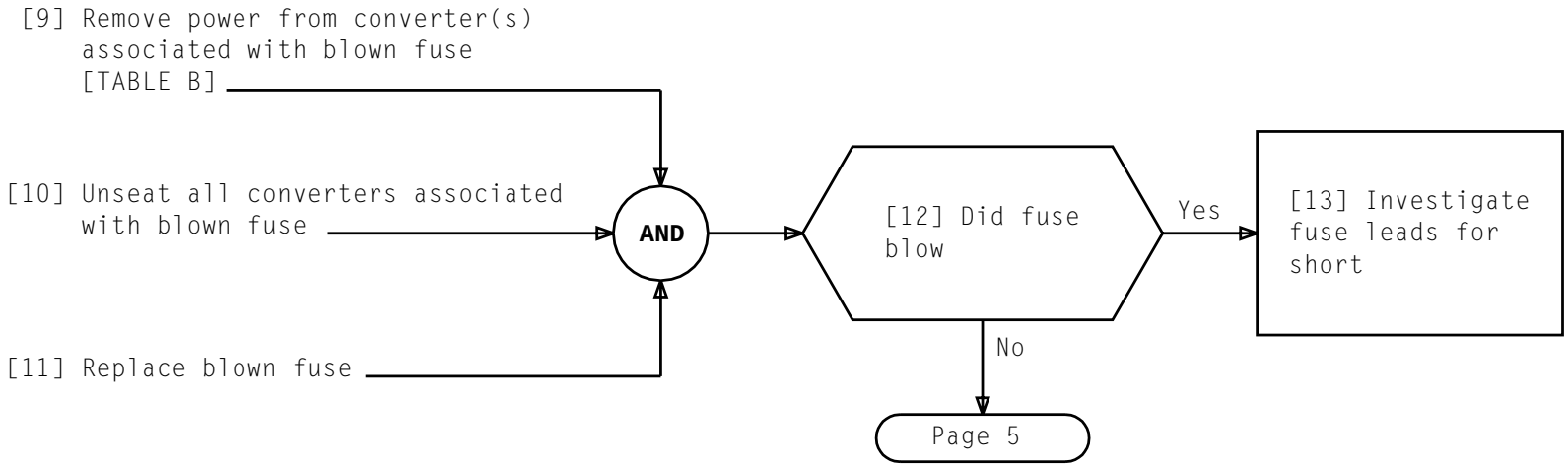


CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

TABLE A											
COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME				COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME				COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME			
FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION
BAY 0/4	BAY 0/4		BAY 0/4	BAY 0/4	BAY 0/4		BAY 0/4	BAY 0/4	BAY 0/4		BAY 0/4
(Bay 0/4) **AD**	09-14	+5V DC-DC CONV	11-42	(Bay 1/5) **AK**	09-20	+5V DC-DC CONV	(Bay 1/5) 11-42	(Bay 1/5) **1A**	09-34	+5V DC-DC CONV	47-22
(Bay 0/4) **AE**	09-14	+5V DC-DC CONV	11-54	(Bay 1/5) **AL**	09-20	+5V DC-DC CONV	(Bay 1/5) 11-54	**1A**	09-34	+5V DC-DC CONV	47-59
(Bay 0/4) **AF**	09-14	+5V DC-DC CONV	11-66	(Bay 0/4) **0A**	09-34	+3V DC-DC CONV	47-40	(Bay 0/4) **AA**	09-14	+5V DC-DC CONV	11-06
(Bay 1/5) **AG**	09-14	+5V DC-DC CONV	(Bay 1/5) 11-06	(Bay 0/4) **0A**	09-34	+5V DC-DC CONV	47-22	(Bay 0/4) **AB**	09-14	+5V DC-DC CONV	11-18
(Bay 1/5) **AH**	09-14	+5V DC-DC CONV	(Bay 1/5) 11-18	**0A**	09-34	+5V DC-DC CONV	47-59	(Bay 0/4) **AC**	09-14	+5V DC-DC CONV	11-30
(Bay 1/5) **AJ**	09-20	+5V DC-DC CONV	(Bay 1/5) 11-30	(Bay 1/5) **1A**	09-34	+3V DC-DC CONV	47-40	**BA**	09-14	+5V DC-DC CONV	11-06

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

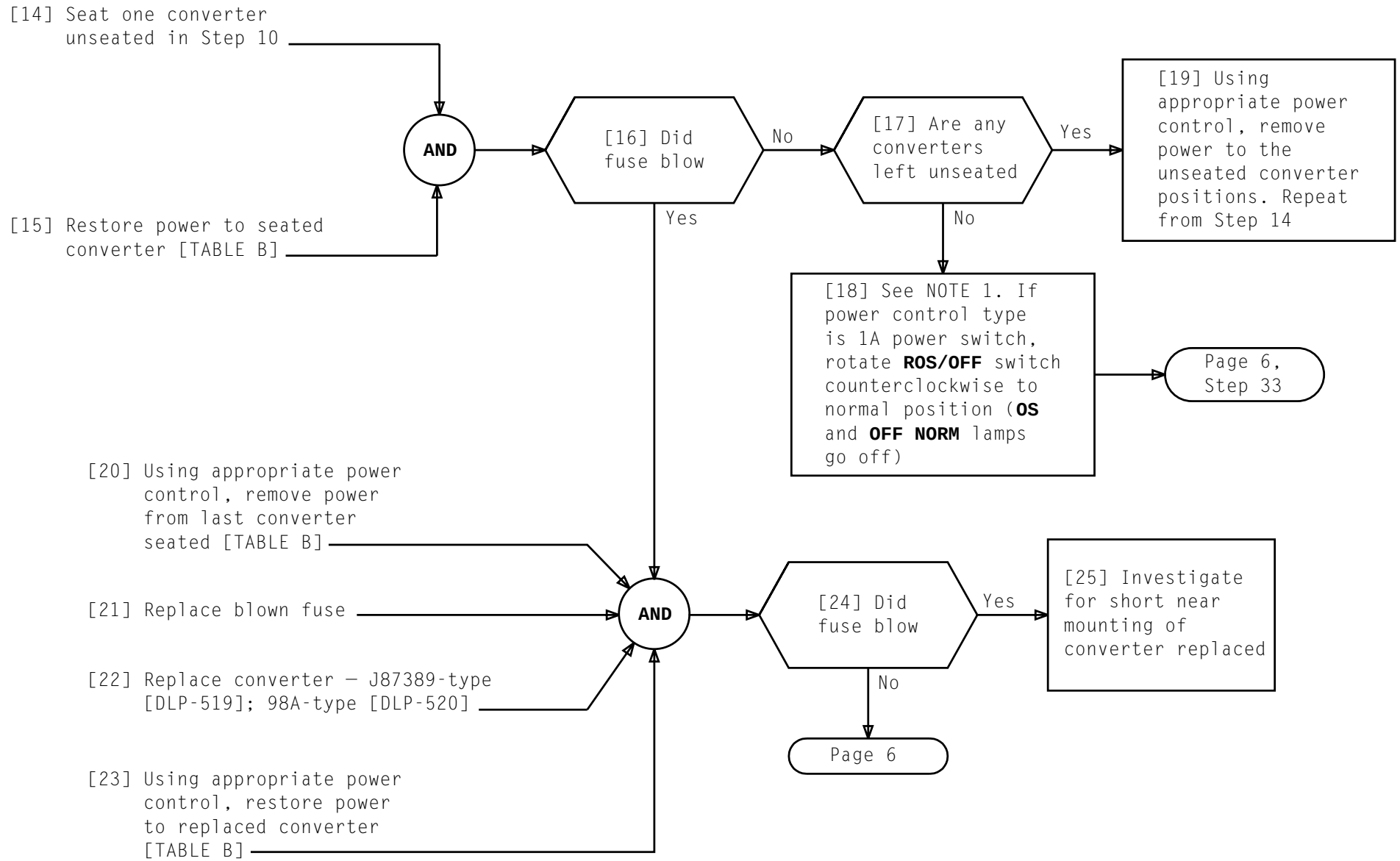
TABLE A
COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION
BAY 0/4	BAY 0/4		BAY 0/4	BAY 1/5	BAY 1/5		BAY 1/5	BAY 1/5	BAY 1/5		BAY 1/5
BB	09-14	+5V DC-DC CONV	11-18	(Bay 0/4) **BF**	09-14	**+5V** DC-DC CONV	(Bay 0/4) 11-66	**BK**	09-20	**+5V** DC-DC CONV	11-42
BC	09-14	+5V DC-DC CONV	11-30	**BG**	09-14	**+5V** DC-DC CONV	11-06	**BL**	09-20	**+5V** DC-DC CONV	11-54
BD	09-14	+5V DC-DC CONV	11-42	**BH**	09-14	**+5V** DC-DC CONV	11-18				
BE	09-14	+5V DC-DC CONV	11-54	**BJ**	09-20	**+5V** DC-DC CONV	11-30				

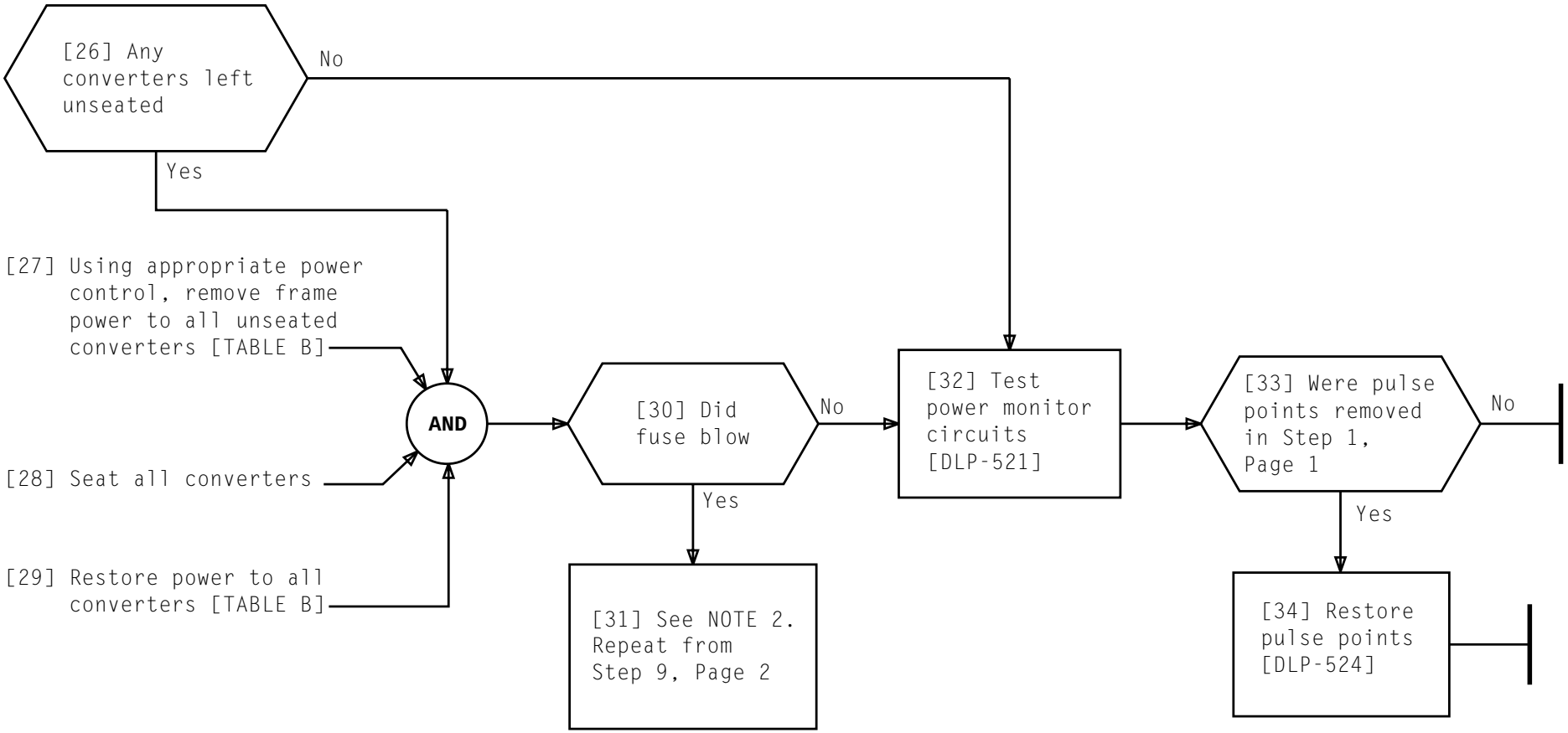
TABLE B
CONVERTER POWER SEQUENCE

POWER CONTROL TYPE	POWER REMOVAL	POWER RESTORAL
1A power switch associated with J87389-type converters	Ensure **ROS/OFF** switch rotated to **ROS** Wait until **OS** lamp lights Depress **ROS** switch	Depress **ON** switch
Toggle switch associated with 98A-type converter	Position **ON/OFF** toggle switch to **OFF**	Position **ON/OFF** toggle switch to **ON**

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

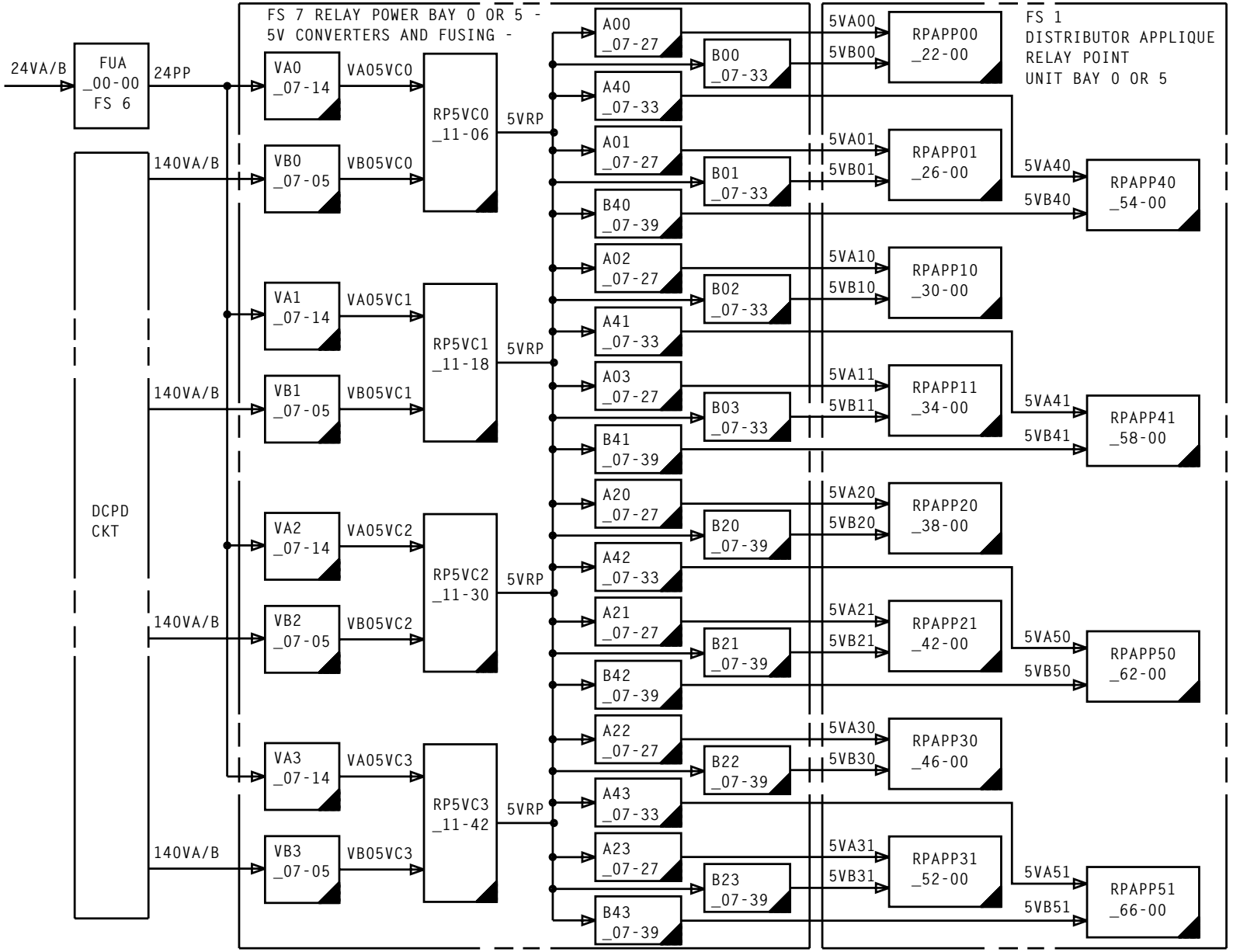


CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



NOTE 2
When reseating converters, use different sequence of seating than was previously used

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



DISTRIBUTOR APPLIQUE, RELAY POINT POWER DISTRIBUTION (SD-4A047-01)

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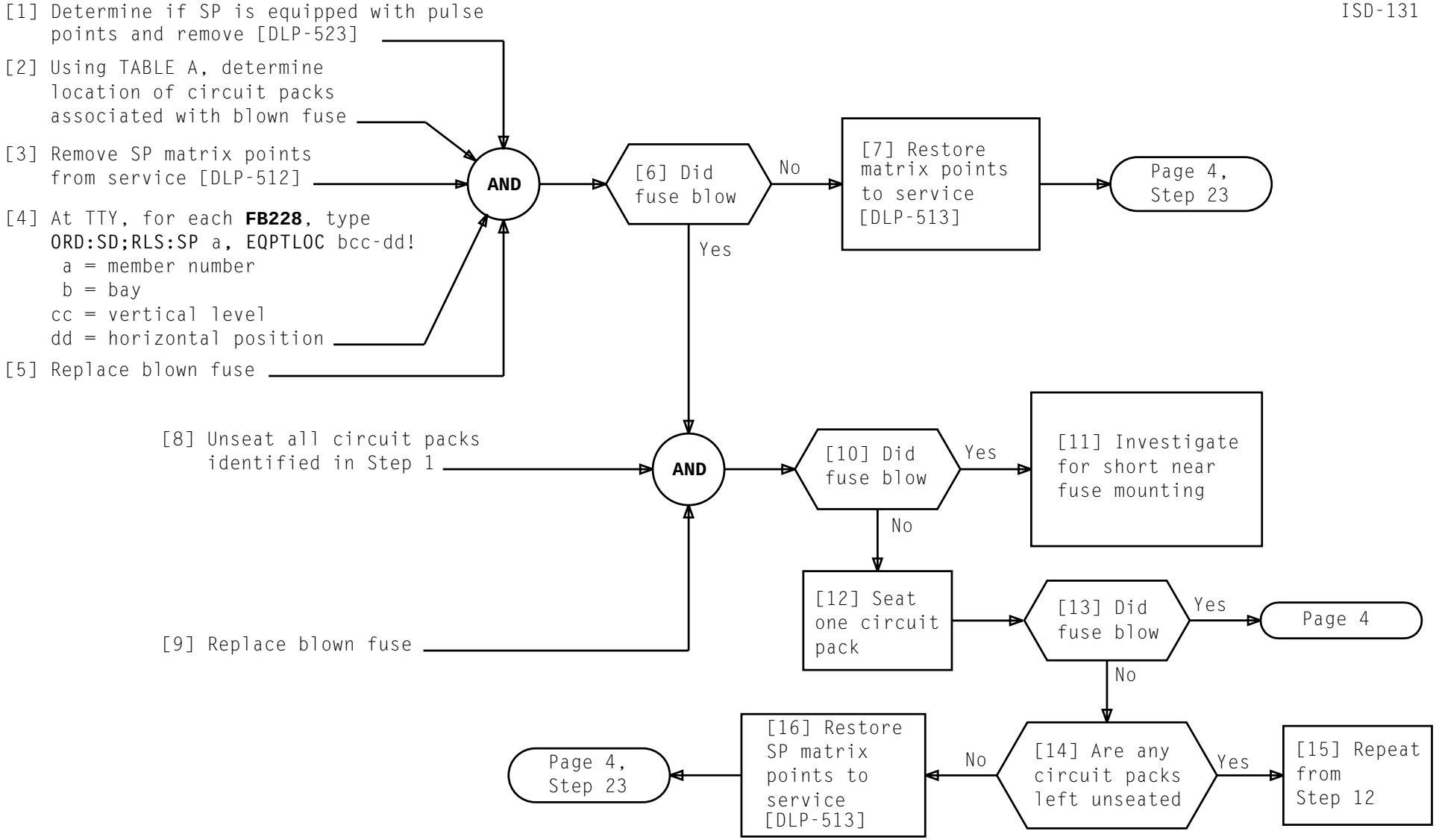


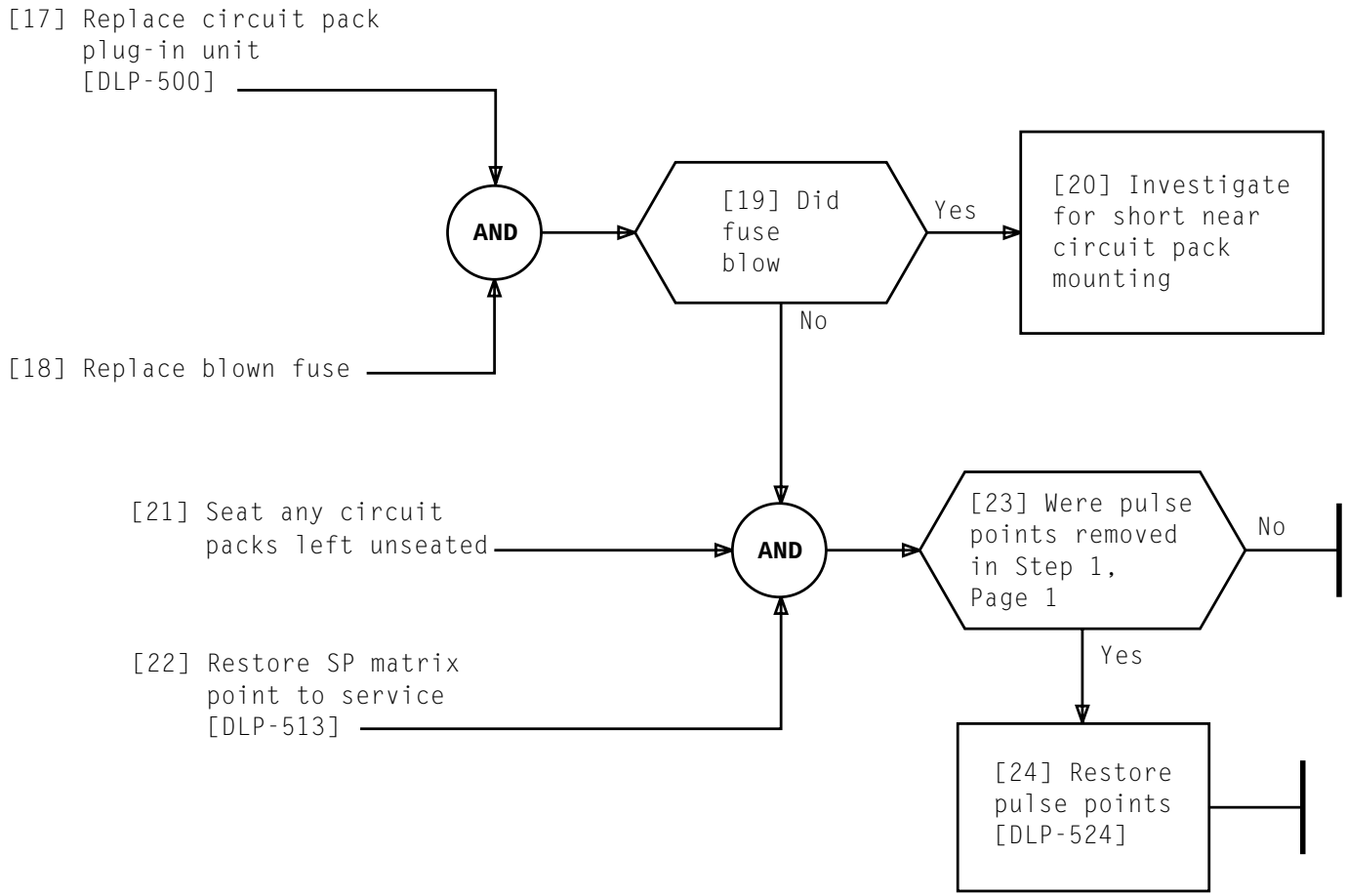
CLEAR BLOWN FUSE (FB228 ASSOCIATED), DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)

TABLE A DISTRIBUTOR APPLIQUE FRAME											
FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION
BAY 0/5	BAY 0/5		BAY 0/5	BAY 0/5	BAY 0/5		BAY 0/5	BAY 0/5	BAY 0/5		BAY 0/5
A00	07-27	RP APP00	24-02P through 24-32	**A03**	07-27	RP APP11	36-02P through 36-32	**A22**	07-27	RP APP30	48-02P through 48-32
B00	07-33	RP APP00	24-38P through 24-68	**B03**	07-33	RP APP11	36-38P through 36-68	**B22**	07-39	RP APP30	48-38P through 48-68
A01	07-27	RP APP01	28-02P through 28-38	**A20**	07-27	RP APP20	40-02P through 40-32	**A23**	07-27	RP APP31	52-02P through 52-32
B01	07-33	RP APP01	28-38P through 28-68	**B20**	07-39	RP APP20	40-38P through 40-68	**B23**	07-39	RP APP31	52-38P through 52-68
A02	07-27	RP APP10	32-02P through 32-32	**A21**	07-27	RP APP21	44-02P through 44-32	**A40**	07-33	RP APP40	56-02P through 56-32
B02	07-33	RP APP10	32-38P through 32-68	**B21**	07-39	RP APP21	44-38P through 44-68	**B40**	07-39	RP APP40	56-38P through 56-68

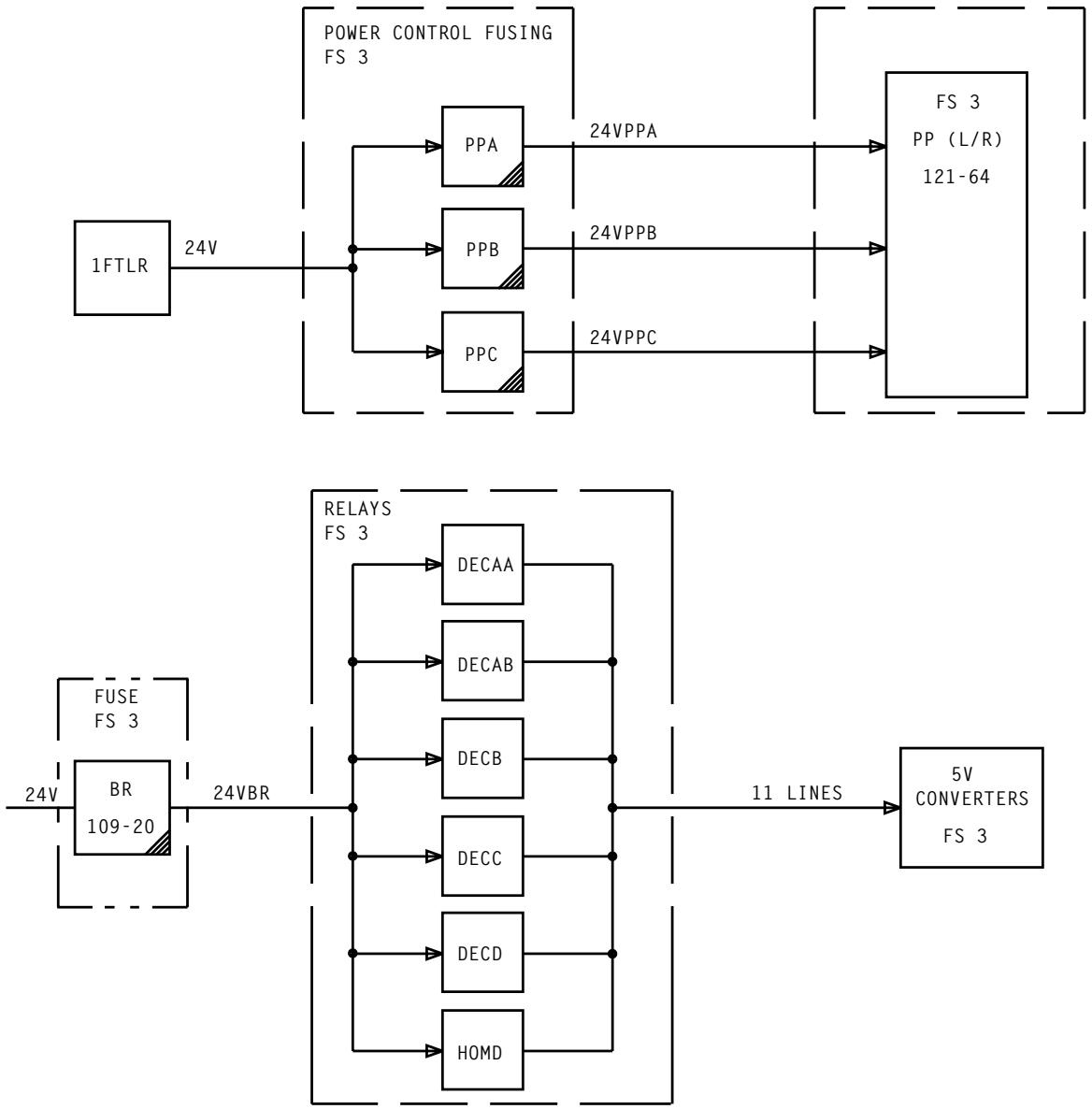
CLEAR BLOWN FUSE (FB228 ASSOCIATED), DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)

TABLE A DISTRIBUTOR APPLIQUE FRAME (Contd)			
FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION
BAY 0/5	BAY 0/5		BAY 0/5
A41	07-33	RP APP41	60-02P through 60-32
B41	07-39	RP APP41	60-38P through 60-68
A42	07-33	RP APP50	64-02P through 64-32
B42	07-39	RP APP50	64-38P through 64-68
A43	07-33	RP APP51	68-02P through 68-32
B43	07-39	RP APP51	68-38P through 68-68

CLEAR BLOWN FUSE (FB228 ASSOCIATED), DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)



CLEAR BLOWN FUSE (FB228 ASSOCIATED), DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)



COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME POWER CONTROL POWER DISTRIBUTION (SD-4A093-01)

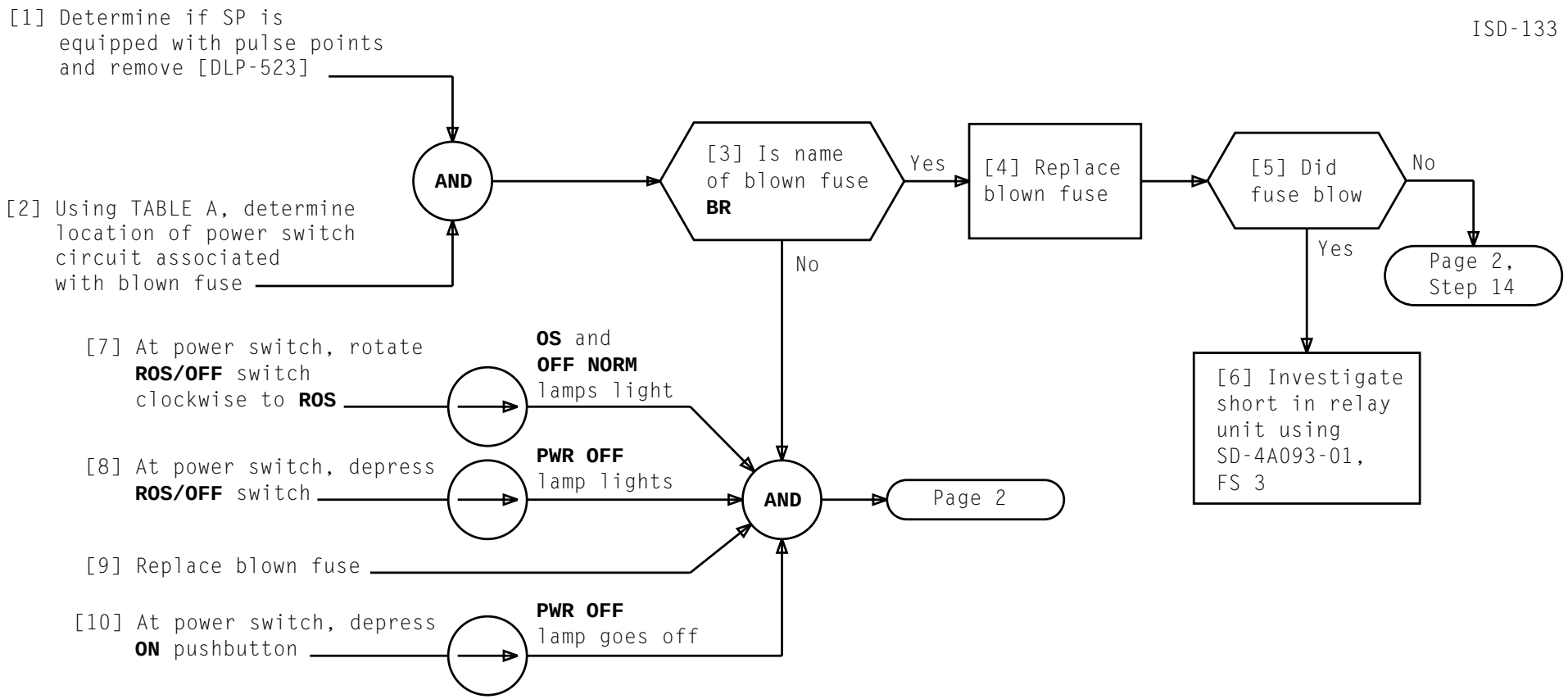
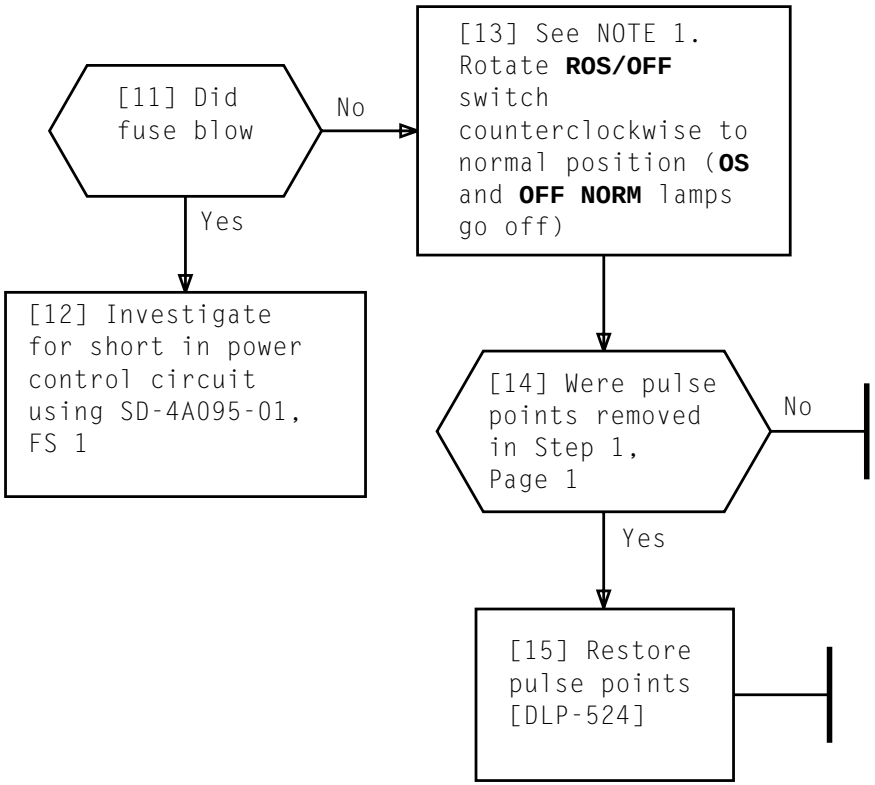


TABLE A
COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME

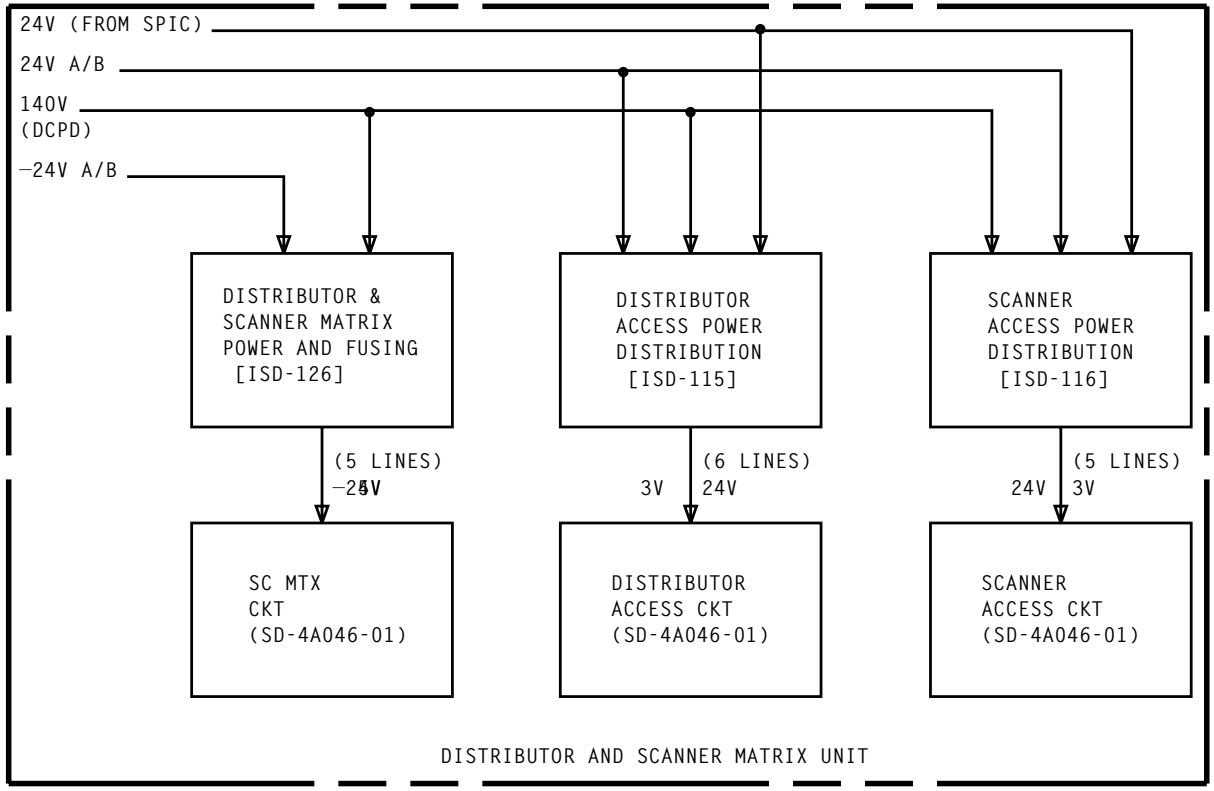
FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	SWITCH LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	SWITCH LOCATION
BAY 1/5	BAY 1/5		BAY 1/5	BAY 1/5	BAY 1/5		BAY 1/5
PPA	09-34	PP(L/R) CKT	21-64	**PPC**	09-34	PP(L/R) CKT	21-64
PPB	09-34	PP(L/R) CKT	21-64	**BR**	09-20	RELAY UNIT	21-13, 21-16, 21-19

CLEAR BLOWN FUSE (POWER SWITCH ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

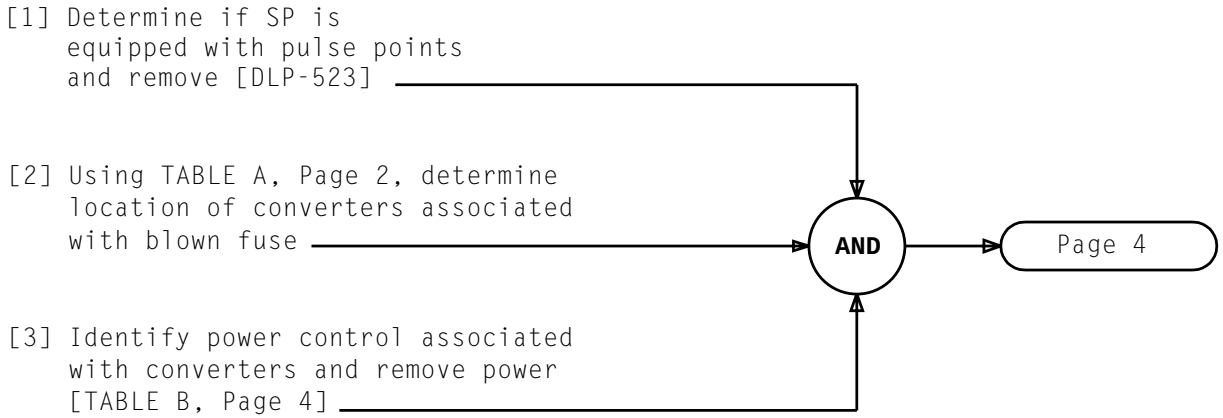


CLEAR BLOWN FUSE (POWER SWITCH ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

NOTE 1
If **OS** lamp flashes and remains lighted, diagnostic failed



DISTRIBUTOR AND SCANNER MATRIX FRAME POWER DISTRIBUTION



CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME

TABLE A
DISTRIBUTOR AND SCANNER MATRIX FRAME

FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONVERTER LOCATION		FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONVERTER LOCATION	
BAY 1/6	BAY 2/7			BAY 1/6	BAY 2/7	BAY 1/6	BAY 2/7			BAY 1/6	BAY 2/7
0DA	**1DA**	09-10	+3V DC-DC CONV	17-24	17-00	**0DD**	**1DD**	09-10	+3V DC-DC CONV	17-33	17-09
0BE	**1BE**	09-18	+3V DC-DC CONV	17-24	17-00	**0BH**	**1BH**	09-18	+3V DC-DC CONV	17-33	17-09
0DB	**1DB**	09-10	+3V DC-DC CONV	17-27	17-03	**0DE**	**1DE**	09-10	+3V DC-DC CONV	17-36	17-12
0BF	**1BF**	09-18	+3V DC-DC CONV	17-27	17-03	**0BJ**	**1BJ**	09-24	+3V DC-DC CONV	17-36	17-12
0DC	**1DC**	09-10	+3V DC-DC CONV	17-30	17-06	**0DF**	**1DF**	09-24	+3V DC-DC CONV	17-42	17-18
0BG	**1BG**	09-18	+3V DC-DC CONV	17-30	17-06	**0BK**	**1BK**	09-24	+3V DC-DC CONV	17-42	17-15

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME

TABLE A
DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONVERTER LOCATION		FUSE		FUSE LOCATION	UNIT ASSOC W/FUSE	CONVERTER LOCATION	
BAY 1/6	BAY 2/7			BAY 1/6	BAY 2/7	BAY 1/6	BAY 2/7			BAY 1/6	BAY 2/7
0SA	**1SA**	09-04	+3V DC-DC CONV	12-24	12-00	**0SD**	**1SD**	09-18	+3V DC-DC CONV	12-33	12-09
0BA	**1BA**	09-18	+3V DC-DC CONV	12-24	12-00	**0BD**	**1BD**	09-18	+3V DC-DC CONV	12-33	12-09
0SB	**1SB**	09-04	+3V DC-DC CONV	12-27	12-03	**SCA**	**—**	07-40	+5V DC-DC CONV	611-04	—
0BB	**1BB**	09-18	+3V DC-DC CONV	12-27	12-03	**SCB**	**—**	07-40	+5V DC-DC CONV	611-04 111-16	—
0SC	**1SC**	09-18	+3V DC-DC CONV	12-30	12-06	**SCC**	**—**	07-22	+5V DC-DC CONV	611-04	—
0BC	**1BC**	09-18	+3V DC-DC CONV	12-30	12-06	**SCD**	**—**	07-22	+5V DC-DC CONV	111-16 611-04	—

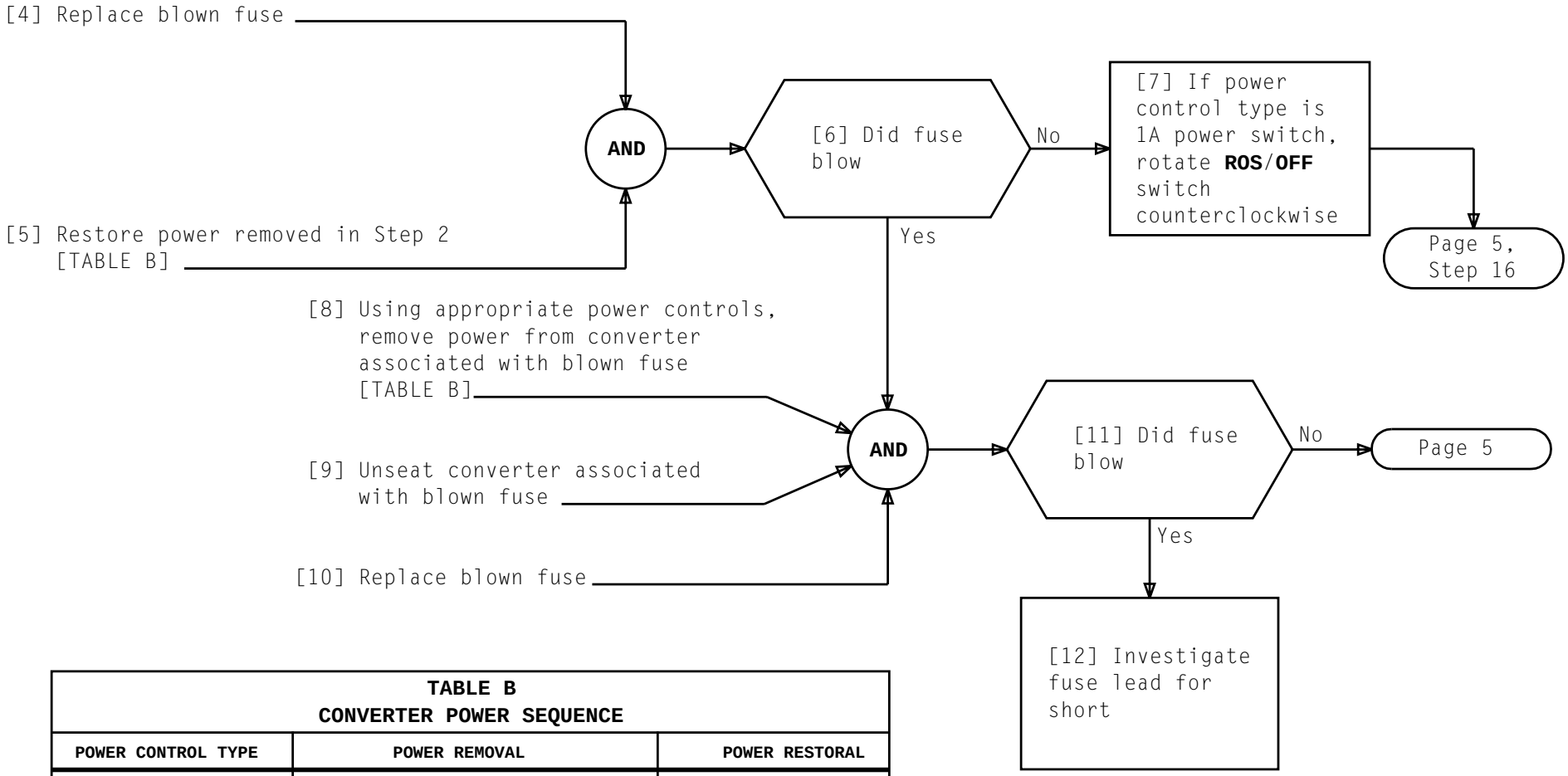
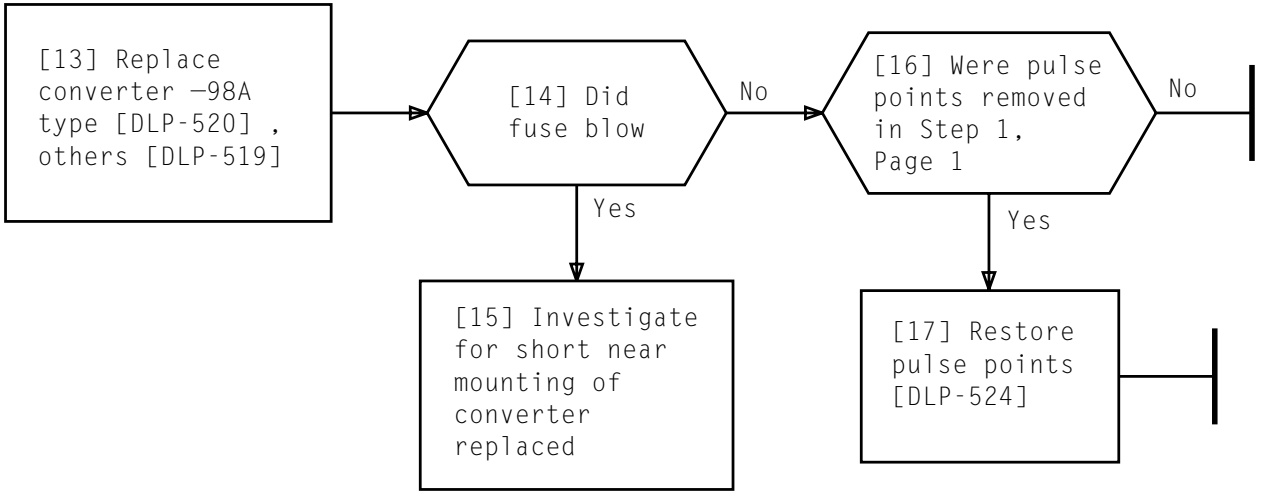


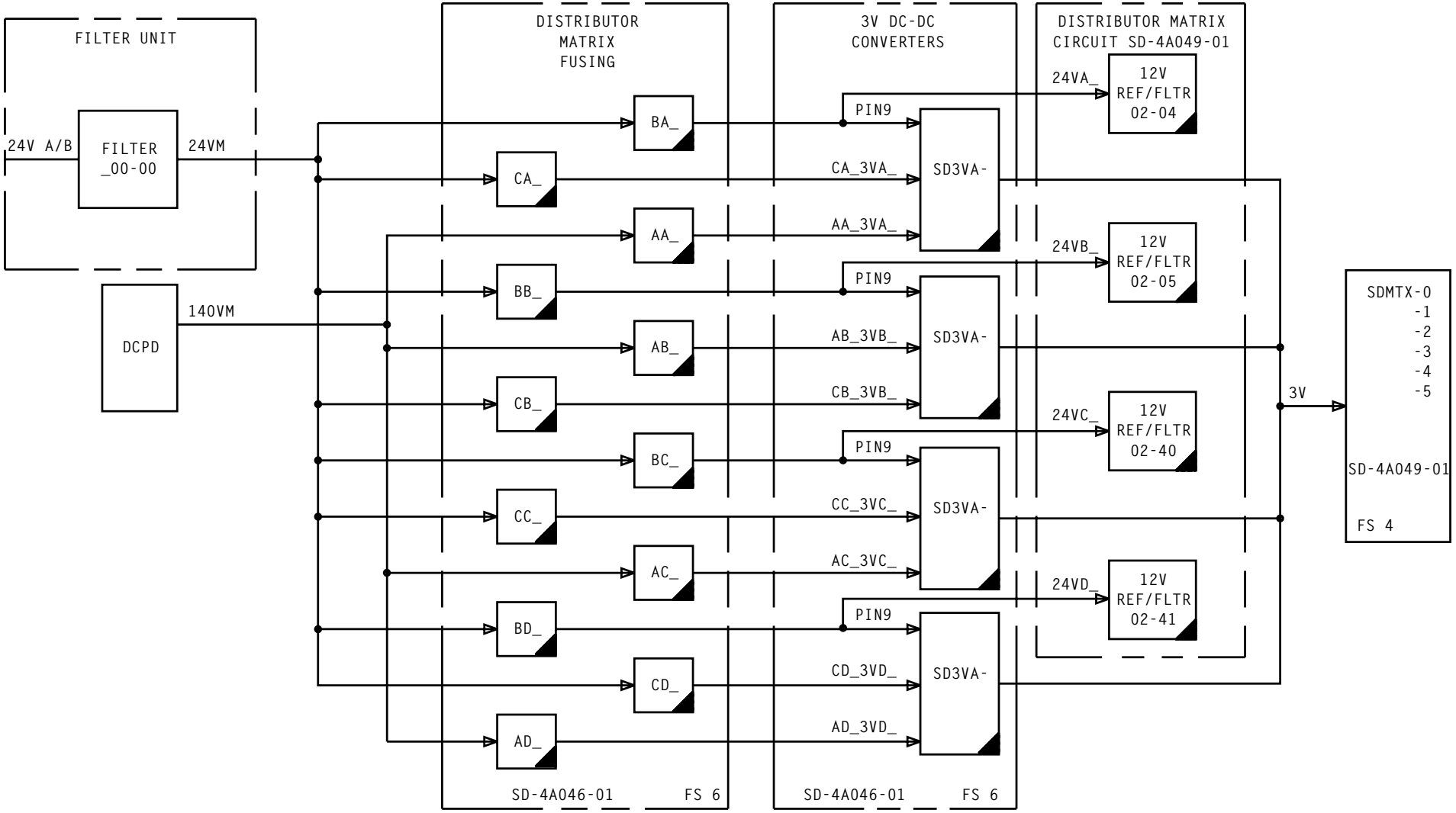
TABLE B
CONVERTER POWER SEQUENCE

POWER CONTROL TYPE	POWER REMOVAL	POWER RESTORAL
1A Power switch (J87407 or J87399 converter)	Ensure **ROS/OFF** switch rotated to **ROS** Depress **ROS/OFF** switch	Depress **ON** switch
Toggle switch (98A converter)	Position **ON/OFF** toggle switch to **OFF**	Position **ON/OFF** toggle switch to **ON**

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME



CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME



DISTRIBUTOR MATRIX POWER DISTRIBUTION (SD-4A046-01)

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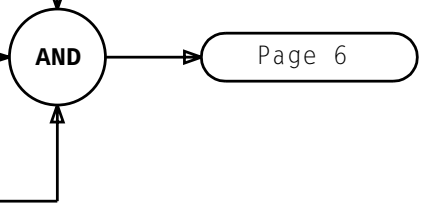
[1] Determine if SP is equipped with pulse points and remove [DLP-523]

[2] Using TABLE A, determine location of converter/circuit packs associated with blown fuse

[3] Identify and note power control fuses associated with converter [TABLE B, Page 7]



CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

TABLE A
DISTRIBUTOR AND SCANNER MATRIX FRAME

FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION
BAY 1/6	BAY 1/6		BAY 1/6	BAY 1/6	BAY 1/6		BAY 1/6	BAY 1/6	BAY 1/6		BAY 1/6
AA0	07-22	+3V DC-DC CONV	12-36	**AB0**	07-22	+3V DC-DC CONV	12-39	**AC0**	07-22	+3V DC-DC CONV	12-42
AA1	07-22	+3V DC-DC CONV	12-12	**AB1**	07-22	+3V DC-DC CONV	12-15	**AC1**	07-22	+3V DC-DC CONV	12-18
AA2	07-28	+3V DC-DC CONV	12-24	**AB2**	07-28	+3V DC-DC CONV	12-27	**AC2**	07-28	+3V DC-DC CONV	12-30
AA3	07-28	+3V DC-DC CONV	17-24	**AB3**	07-28	+3V DC-DC CONV	17-27	**AC3**	07-28	+3V DC-DC CONV	17-30
AA4	07-34	+3V DC-DC CONV	12-36	**AB4**	07-34	+3V DC-DC CONV	12-36	**AC4**	07-34	+3V DC-DC CONV	12-42
AA5	07-34	+3V DC-DC CONV	17-36	**AB5**	07-34	+3V DC-DC CONV	17-36	**AC5**	07-34	+3V DC-DC CONV	17-42

TABLE A
DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION
BAY 1/6	BAY 1/6		BAY 1/6	BAY 2/7	BAY 2/7		BAY 2/7	BAY 2/7	BAY 2/7		BAY 2/7
AD0	07-22	+3V DC-DC CONV circuit pack	12-45	**BA0**	09-30	+3V DC-DC CONV circuit pack	28-04* 12-36	**BB0**	09-30	+3V DC-DC CONV circuit pack	28-05* 12-39
AD1	07-22	+3V DC-DC CONV	12-21	**BA1**	09-30	+3V DC-DC CONV circuit pack	28-04* 12-12	**BB1**	09-30	+3V DC-DC CONV circuit pack	28-05* 12-15
AD2	07-28	+3V DC-DC CONV	12-33	**BA2**	09-36	+3V DC-DC CONV circuit pack	32-04* 12-24	**BB2**	09-36	+3V DC-DC CONV circuit pack	32-05* 12-27
AD3	07-28	+3V DC-DC CONV	17-33	**BA3**	09-36	+3V DC-DC CONV circuit pack	32-04* 17-27	**BB3**	09-36	+3V DC-DC CONV circuit pack	32-05* 17-27
AD4	07-34	+3V DC-DC CONV	12-45	**BA4**	09-42	+3V DC-DC CONV circuit pack	45-04* 12-36	**BB4**	09-42	+3V DC-DC CONV circuit pack	45-05* 12-39
AD5	07-34	+3V DC-DC CONV	17-45	**BA5**	09-42	+3V DC-DC CONV circuit pack	45-04* 17-36	**BB5**	09-42	+3V DC-DC CONV circuit pack	45-05* 17-39

* Circuit pack

CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

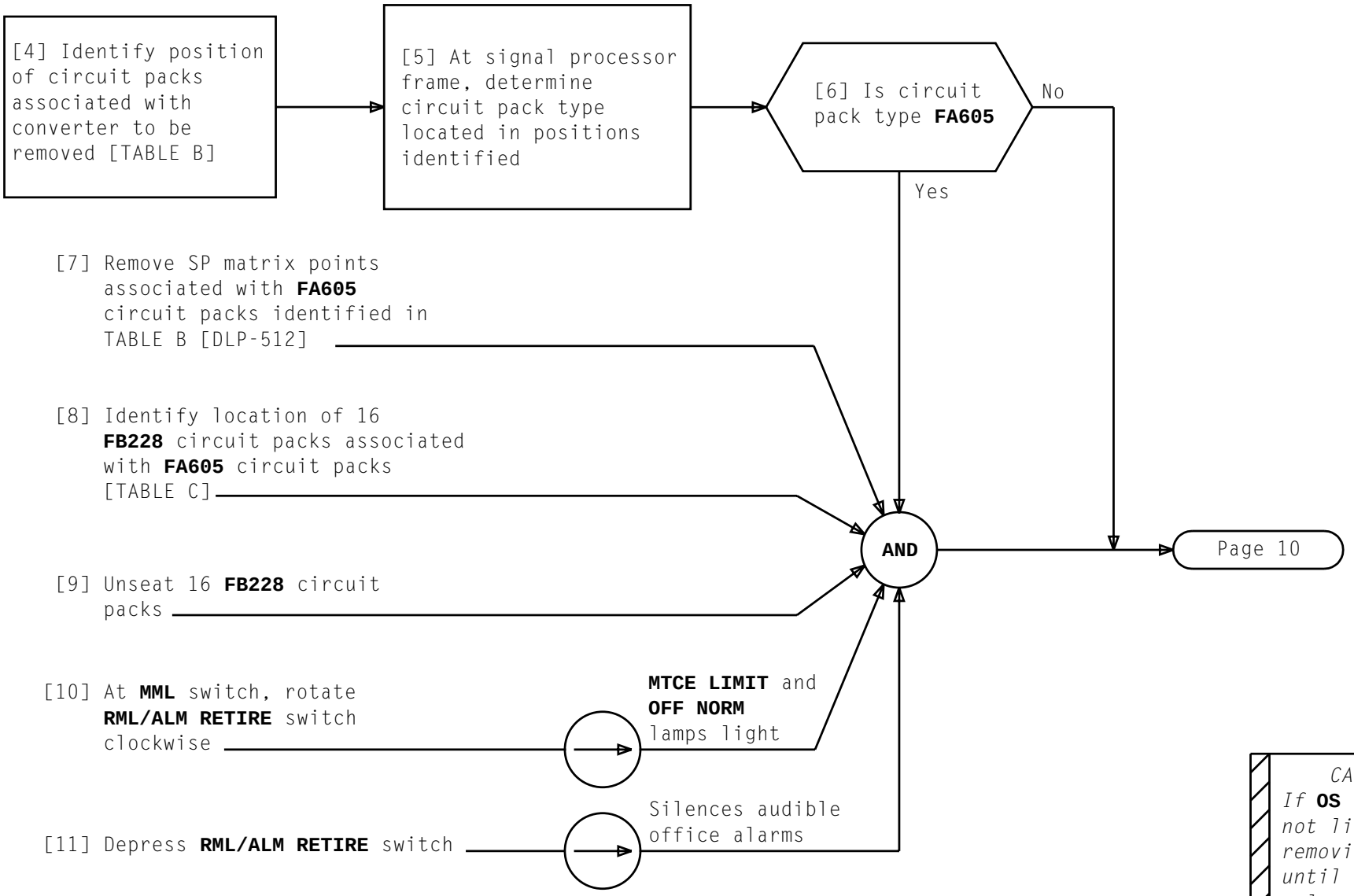
TABLE A
DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC W/FUSE	CP/CONV LOCATION
BAY 2/7	BAY 2/7		BAY 2/7	BAY 2/7	BAY 2/7		BAY 2/7	BAY 2/7	BAY 2/7		BAY 2/7
BC0	09-30	**+3V** DC-DC CONV circuit pack	28-40* 12-42	**BD0**	09-30	**+3V** DC-DC CONV circuit pack	28-41* 12-45	**CA0**	07-04	**+3V** DC-DC CONV	12-36
BC1	09-30	**+3V** DC-DC CONV circuit pack	28-40* 12-18	**BD1**	09-30	**+3V** DC-DC CONV circuit pack	28-41* 12-21	**CA1**	07-04	**+3V** DC-DC CONV	12-12
BC2	09-36	**+3V** DC-DC CONV circuit pack	32-40* 12-30	**BD2**	09-36	**+3V** DC-DC CONV circuit pack	32-41* 12-33	**CA2**	07-10	**+3V** DC-DC CONV	12-24
BC3	09-36	**+3V** DC-DC CONV circuit pack	32-40* 17-30	**BD3**	09-36	**+3V** DC-DC CONV circuit pack	32-41* 17-33	**CA3**	07-10	**+3V** DC-DC CONV	17-24
BC4	09-42	**+3V** DC-DC CONV circuit pack	15-40* 12-42	**BD4**	09-42	**+3V** DC-DC CONV circuit pack	45-41* 12-45	**CA4**	07-16	**+3V** DC-DC CONV	12-36
BC5	09-42	**+3V** DC-DC CONV circuit pack	45-40* 12-42	**BD5**	09-42	**+3V** DC-DC CONV circuit pack	45-41* 17-45	**CA5**	07-16	**+3V** DC-DC CONV	17-36

* Circuit pack

TABLE A
DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CP/CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CP/CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CP/CONV LOCATION
BAY 2/7	BAY 2/7		BAY 2/7	BAY 2/7	BAY 2/7		BAY 2/7	BAY 2/7	BAY 2/7		BAY 2/7
CB0	07-04	+3V DC-DC CONV	12-39	**CC0**	07-04	+3V DC-DC CONV	12-42	**CD0**	07-04	+3V DC-DC CONV	12-45
CB1	07-04	+3V DC-DC CONV	12-15	**CC1**	07-04	+3V DC-DC CONV	12-18	**CD1**	07-04	+3V DC-DC CONV	12-21
CB2	07-10	+3V DC-DC CONV	12-27	**CC2**	07-10	+3V DC-DC CONV	12-30	**CD2**	07-10	+3V DC-DC CONV	12-33
CB3	07-10	+3V DC-DC CONV	17-27	**CC3**	07-10	+3V DC-DC CONV	17-30	**CD3**	07-10	+3V DC-DC CONV	17-33
CB4	07-16	+3V DC-DC CONV	12-39	**CC4**	07-16	+3V DC-DC CONV	12-42	**CD4**	07-16	+3V DC-DC CONV	12-45
CB5	07-16	+3V DC-DC CONV	17-39	**CC5**	07-16	+3V DC-DC CONV	17-42	**CD5**	07-16	+3V DC-DC CONV	17-45



CAUTION 1
If **OS** *lamp does not light, delay removing power until duplicate pulse points are returned to service*

CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

TABLE B														
FRAME	CONVERTER LOCATION			ASSOCIATED PACK LOCATION			START FUSE				CONTROL FUSE			
							NAME	BLOCK LOCATION			NAME	BLOCK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR		BAY	VERT	HOR
Distributor and scanner matrix	1/6	12	36	1/6	28	08, 09, 11, 12	CA0	2/7	07	04	BA0	2/7	09	30
			39			14, 15, 17, 18	CB0				BB0			
			42			28, 29, 31, 32	CC0				BC0			
	1/6	12	45		28	34, 35, 37, 38	CD0			04	BD0			30
	2/7	12	24		32	08, 09, 11, 12	CA2			10	BA2			36
			27			14, 15, 17, 18	CB2				BB2			
			30			28, 29, 31, 32	CC2				BC2			
			33		32	34, 35, 37, 38	CD2			10	BD2			36
			36		45	08, 09, 11, 12	CA4			16	BA4			42
			39			14, 15, 17, 18	CB4				BB4			
			42			28, 29, 31, 32	CC4				BC4			
			45	1/6	45	34, 35, 37, 38	CD4			16	BD4			42
			12	2/7	28	08, 09, 11, 12	CA1			04	BA1			30
			15			14, 15, 17, 18	CB1				BB1			
			18			28, 29, 31, 32	CC1				BC1			
		12	21		32	34, 35, 37, 38	CD1			04	BD1			30
		17	24		45	08, 09, 11, 12	CA3			10	BA3			36
			27			14, 15, 17, 18	CB3				BB3			
			30			28, 29, 31, 32	CC3				BC3			
			33			34, 35, 37, 38	CD3			10	BD3			36
			36			08, 09, 11, 12	CA5			16	BA5			42
			39			14, 15, 17, 18	CB5				BB5			
			42			28, 29, 31, 32	CC5				BC5			
	2/7	17	45	2/7	45	34, 35, 37, 38	CD5	2/7	07	16	BD5	2/7	09	42

CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

TABLE C

FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION			FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	1/6	28	08	0/5	24	02P, 04, 05P, 07	Distributor and scanner matrix	2/7	28	08	0/5	32	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18		24	63P, 65, 66P, 68				18		32	63P, 65, 66P, 68
			28		28	02P, 04, 05P, 07				28		36	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
		28	38		28	63P, 65, 66P, 68			28	38		36	63P, 65, 66P, 68
		32	08		40	02P, 04, 05P, 07			32	08		48	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18		40	63P, 65, 66P, 68				18		48	63P, 65, 66P, 68
			28		44	02P, 04, 05P, 07				28		52	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
	1/6	32	38	0/5	44	63P, 65, 66P, 68		2/7	32	38	0/5	52	63P, 65, 66P, 68

CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

TABLE C (Contd)

FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION			FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	1/6	45	08	0/5	24	02P, 04, 05P, 07	Distributor and scanner matrix	2/7	45	08	0/5	32	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18	0/5	24	63P, 65, 66P, 68				18	0/5	32	63P, 65, 66P, 68
			28	0/5	28	02P, 04, 05P, 07				28	0/5	36	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
	1/6	45	38	0/5	28	63P, 65, 66P, 68		2/7	45	38	0/5	36	63P, 65, 66P, 68

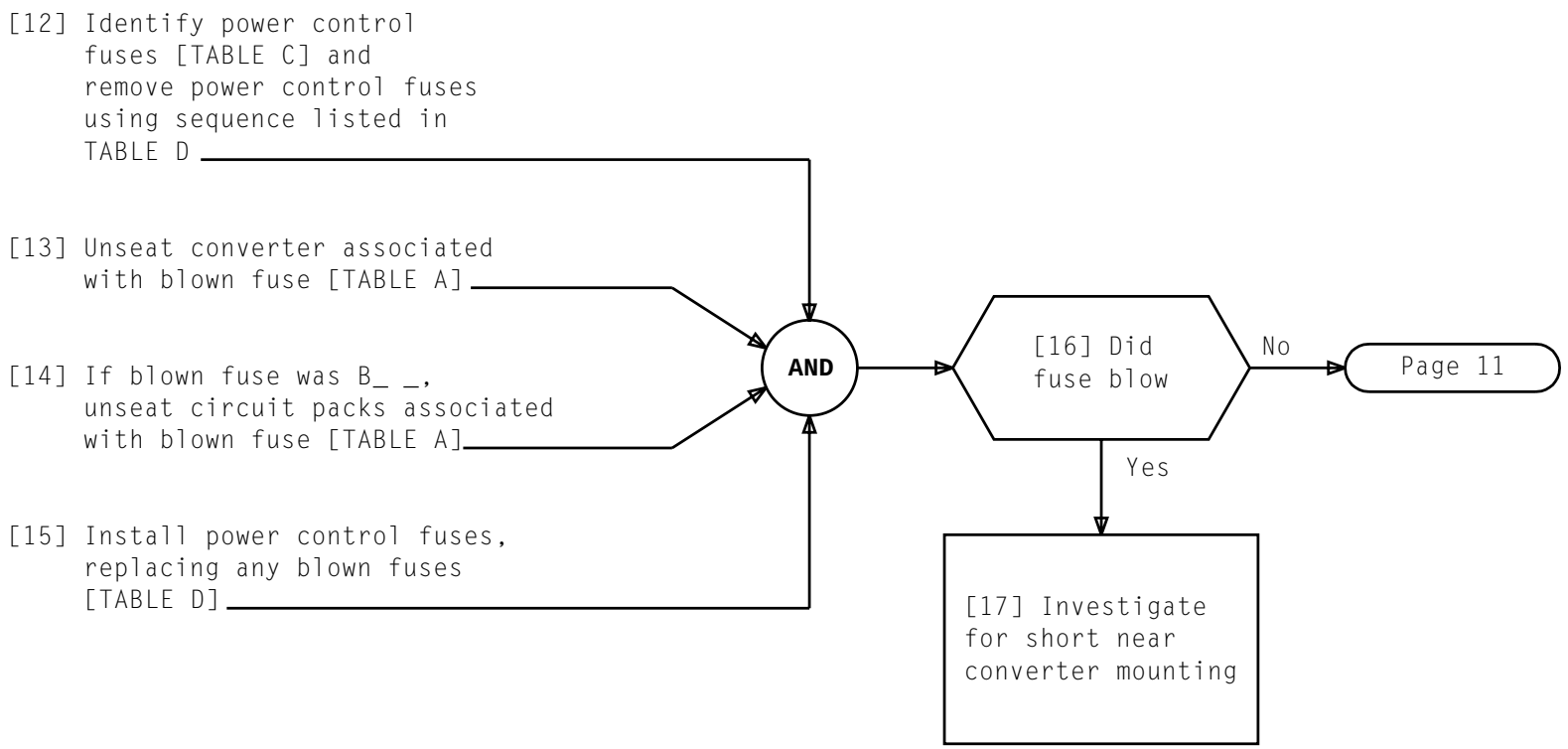
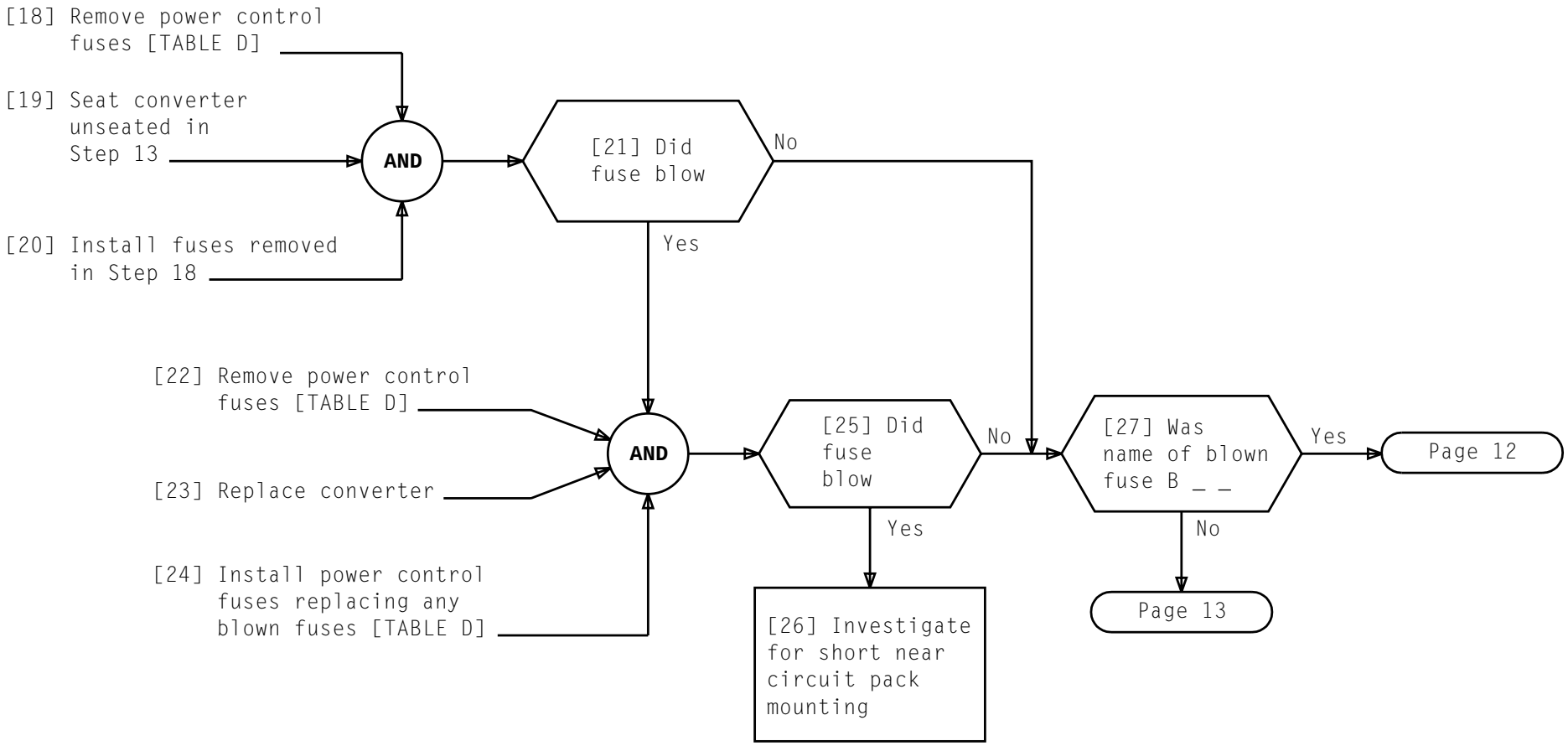


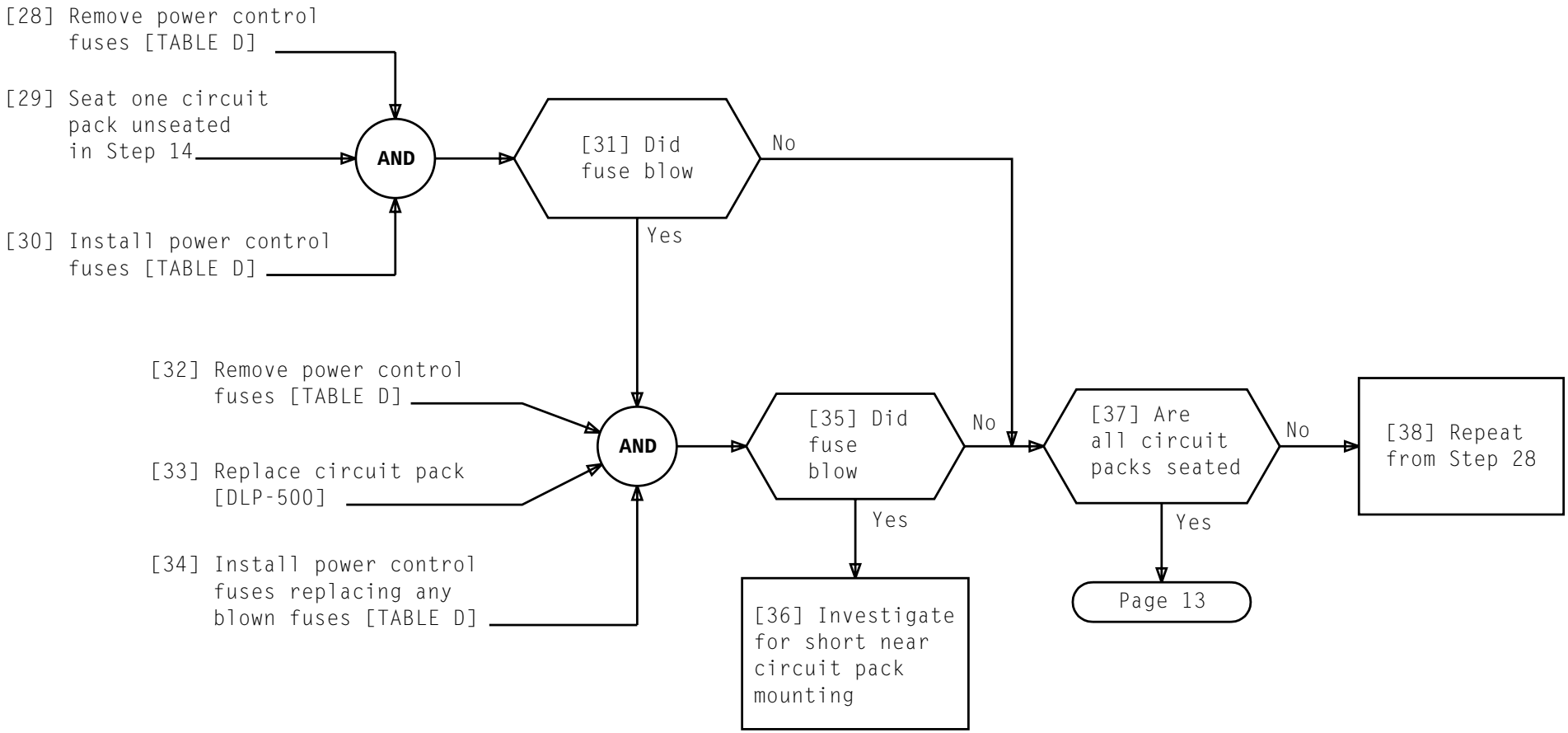
TABLE D
CONVERTER/CIRCUIT PACK POWER SEQUENCE

FUSE NAME	POWER REMOVAL	POWER RESTORAL
A _ _, B_ _ and C_ _	Remove start fuse (C_ _) first Remove control fuse (B_ _), then Remove **140V** fuse (A_ _) last	Install **140V** fuse (A _ _) first Install control fuse (B_ _), then Install start fuse (C_ _)

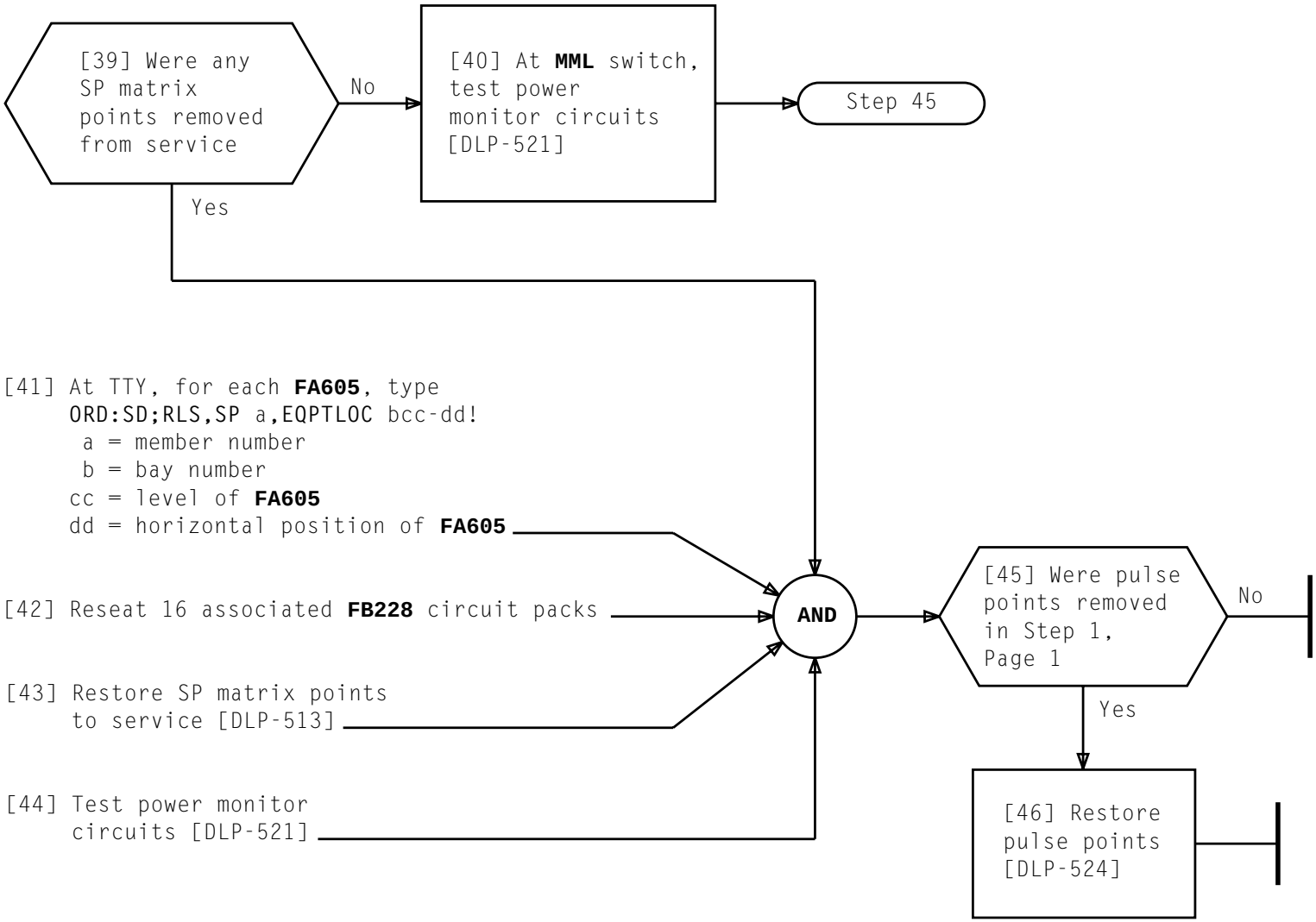
CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



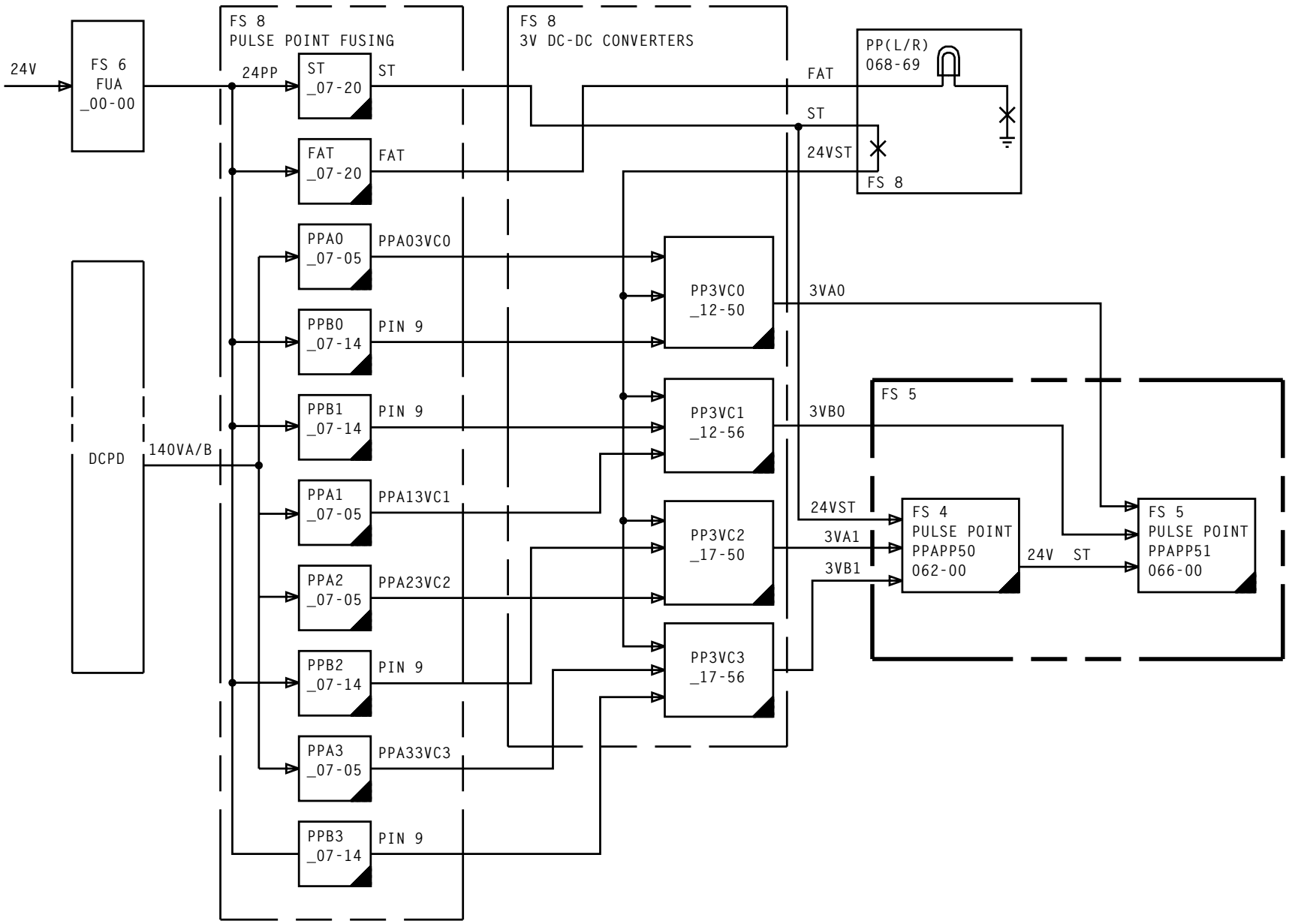
CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



CLEAR BLOWN FUSE (J87407A CONVERTER/FC78 ASSOCIATED), DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



DISTRIBUTOR APPLIQUE, PULSE POINT POWER DISTRIBUTION (SD-4A047-01)

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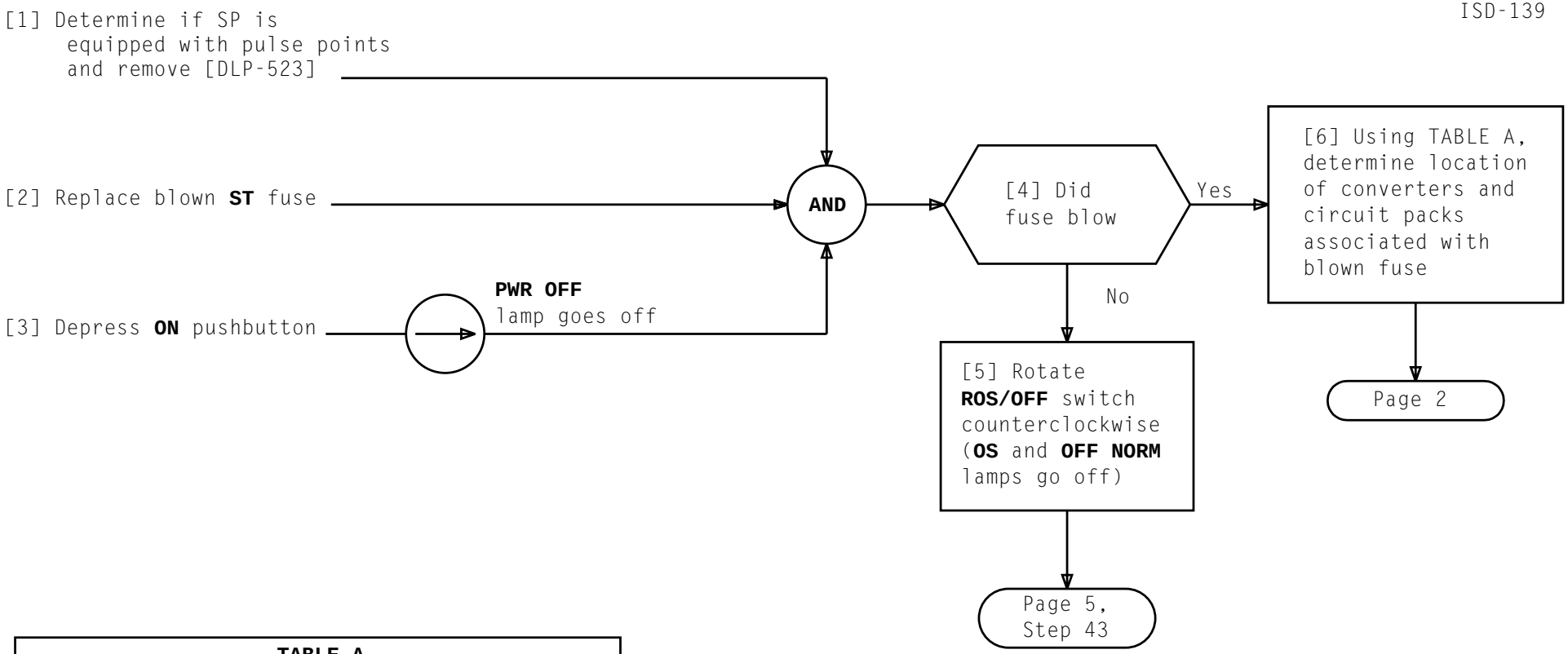
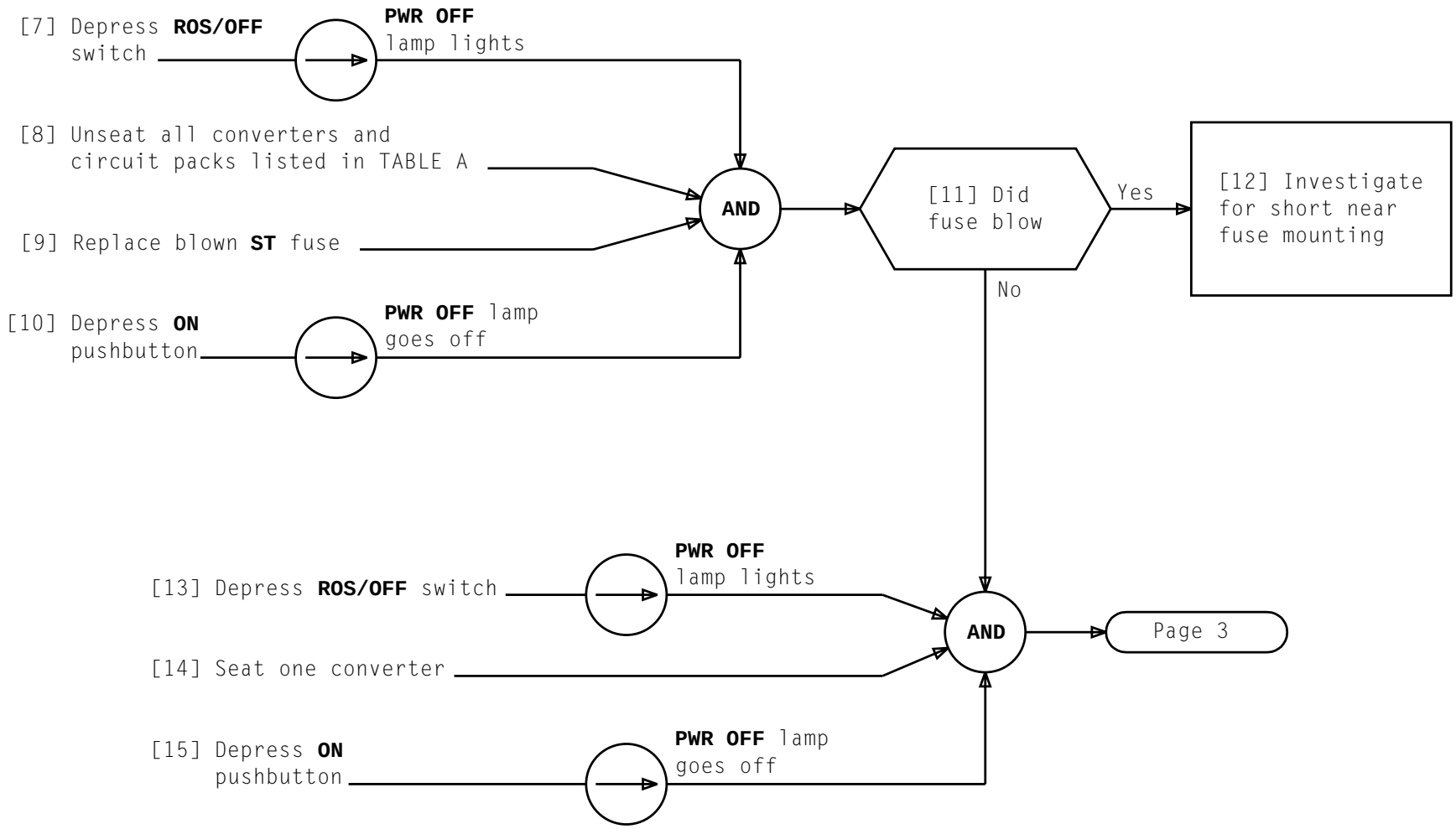


TABLE A

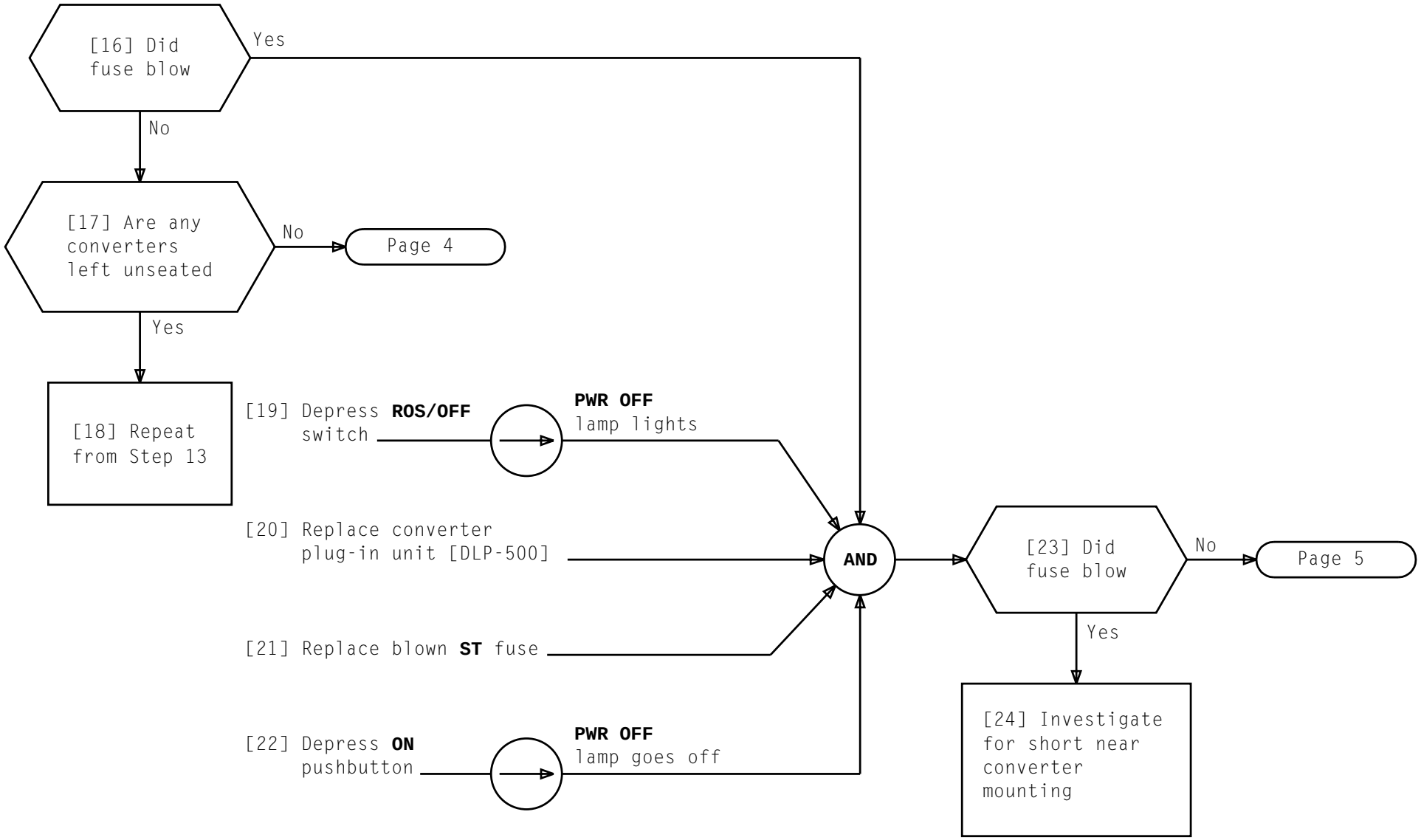
FUSE	FRAME ASSOC W/BLOWN FUSE	FUSE LOCATION	CONV/CP LOCATION ASSOC W/BLOWN FUSE
ST	Distributor applique	(Bay 0/5) 07-20	(Bay 0/5) 12-50, 56 17-50, 56 64-ALL* 68-ALL*

* Circuit packs

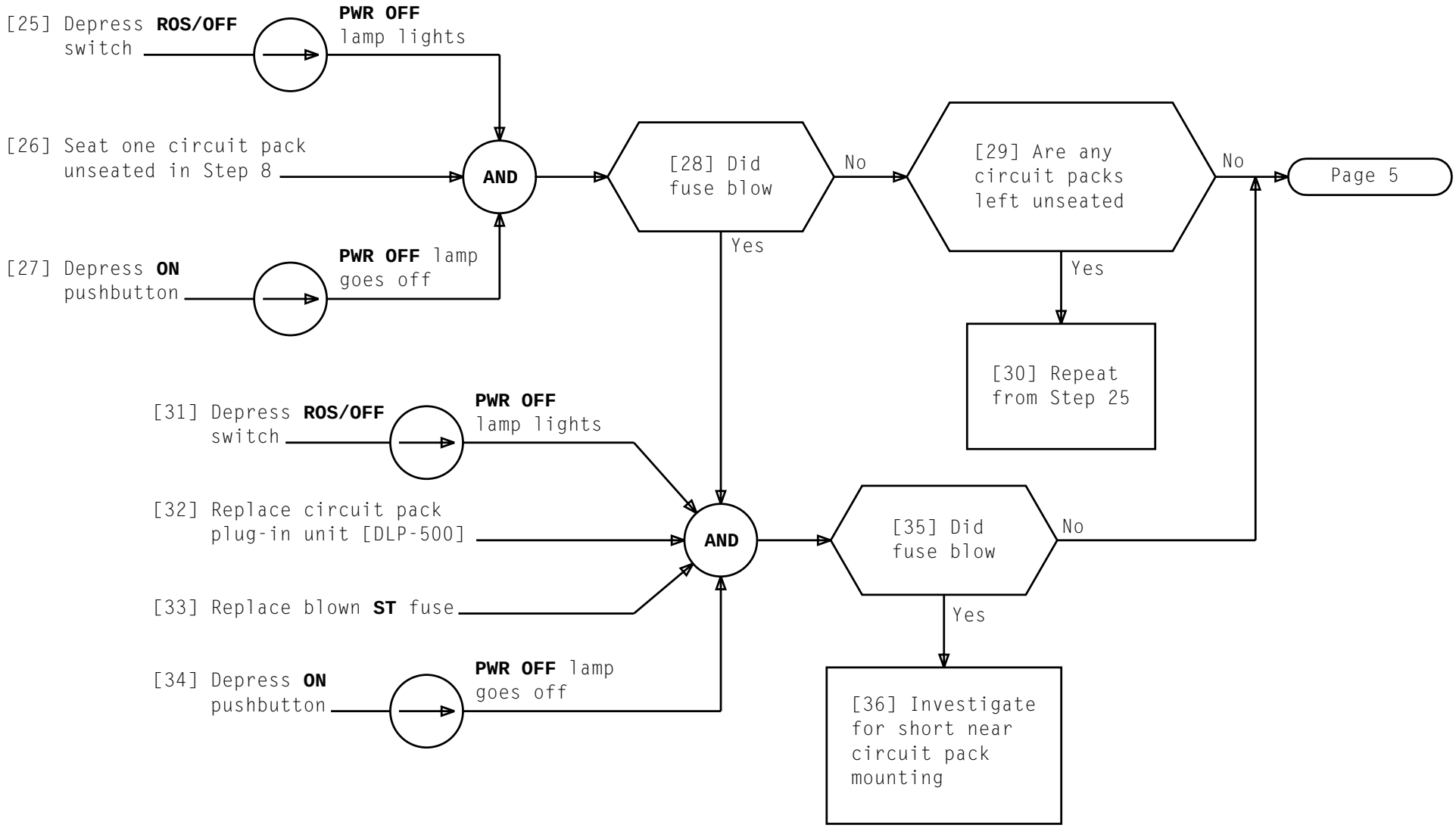
CLEAR BLOWN ST FUSE, DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)



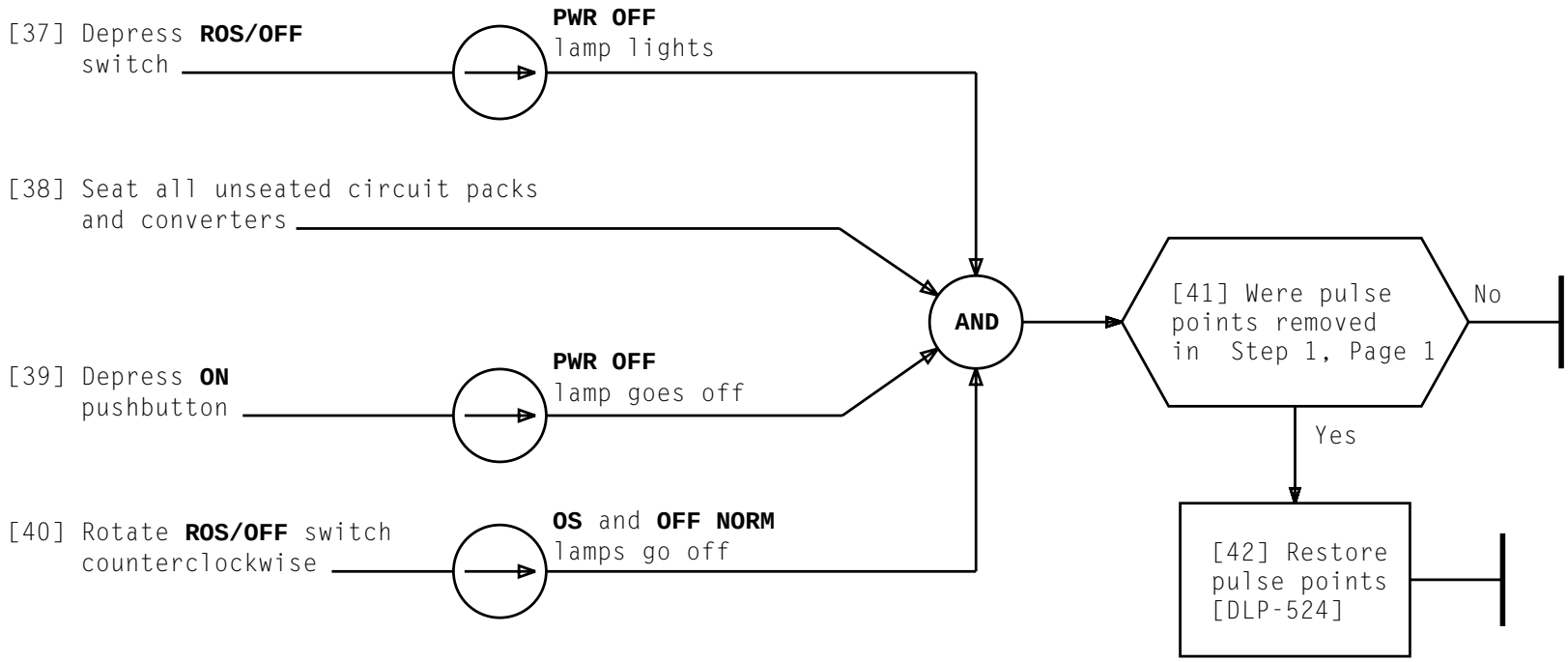
CLEAR BLOWN ST FUSE, DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)



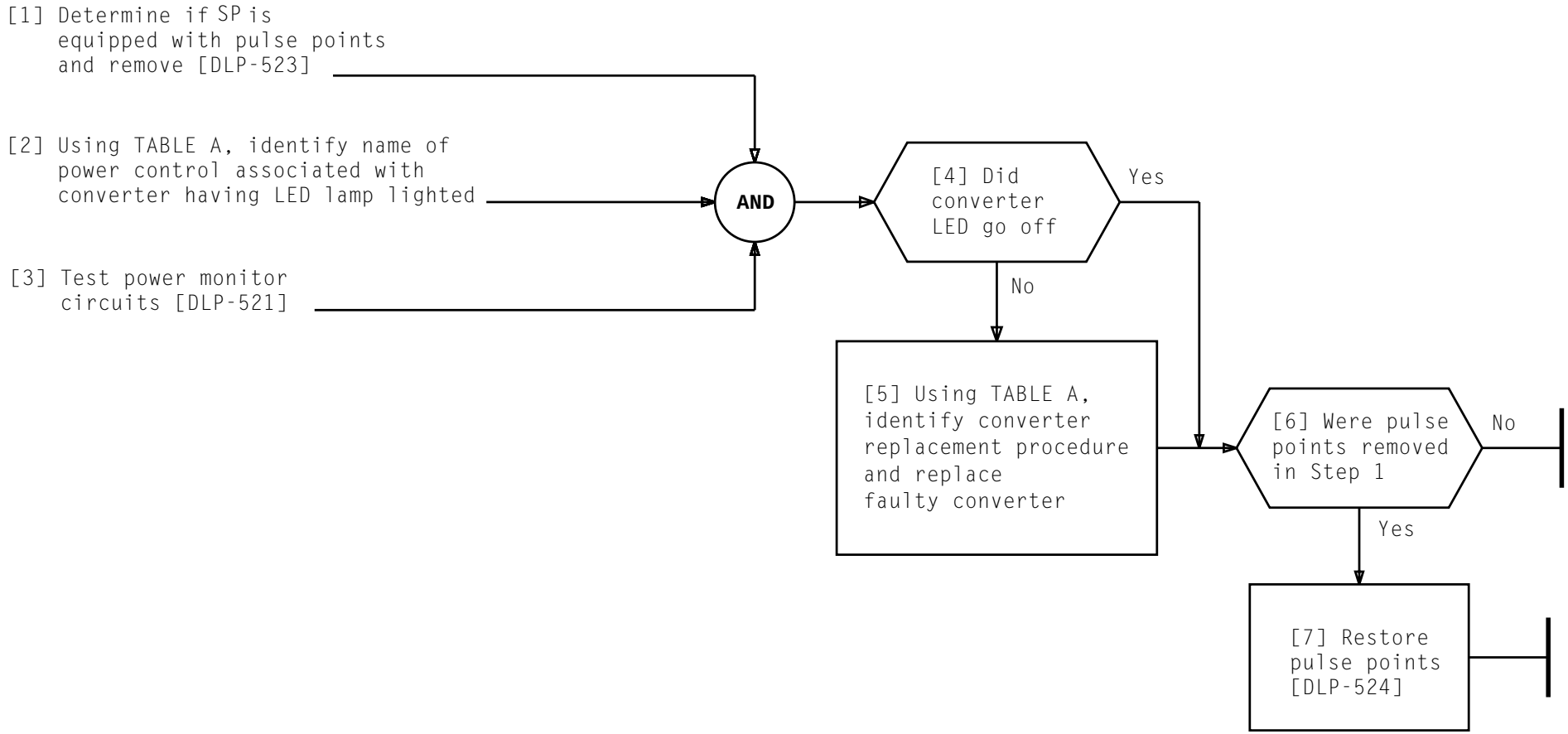
CLEAR BLOWN ST FUSE, DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)



CLEAR BLOWN ST FUSE, DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)



CLEAR BLOWN ST FUSE, DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)



CLEAR CONVERTER LED LIGHTED

TABLE A								
CONVERTER LOCATION				POWER CONTROL SWITCH				CONVERTER REPLACEMENT PROCEDURE
FRAME	BAY	VERTICAL	HORIZONTAL	NAME	LOCATION			
					BAY	VERTICAL	HORIZONTAL	
Control	*	80	24	IPUB 0/1	*	80	29	DLP-519
	All others			CONTR 0/1	*	48	02	
Distributor applique	0/5	12	50,56	PPL/PPR	0/5	68	69	DLP-519
	0/5	17	50,56	PPL/PPR	0/5	68	69	
	0/5	12	06,18,30,42	TOGGLE	On converter			DLP-520
Distributor and scanner matrix	1/6	11	4,16	TOGGLE	On converter			
	1/6	12	24,27,30,33	CONTR 0	3	48	02	DLP-519
	1/6	17	24,27,30, 33,42	CONTR 0	3	48	02	
	1/6	12	36,39,42,45	MML	3	48	43	DLP-518
	2/7	12	00,03,06,09	CONTR 1	4	48	02	DLP-519
	2/7	12	12,15,18,21 24,27,30,33, 36,39,42,45	MML	3	48	43	DLP-518
	2/7	17	00,03,06 09,12,18	CONTR 1	4	48	02	DLP-519
	2/7	17	24,27,30,33 36,39,42,45	MML	3	48	43	DLP-518

CLEAR CONVERTER LED LIGHTED

TABLE A (Contd)								
CONVERTER LOCATION				POWER CONTROL SWITCH				CONVERTER REPLACEMENT PROCEDURE
FRAME	BAY	VERTICAL	HORIZONTAL	NAME	LOCATION			
					BAY	VERTICAL	HORIZONTAL	
Combined distributor and scanner matrix	0/4	11	06,18,30, 42,54,66	TOGGLE	On converter			DLP-520
	0/4	47	22,40,59	CONTR 0	2	48	04	DLP-519
	1/5	11	06,18,30, 42,54	TOGGLE	On converter			DLP-520
	1/5	47	22,40,59	CONTR 1	3	48	04	DLP-519

* Located in Bay 3/4 for frame type SD-4A028-01
Located in Bay 2/3 for frame type SD-4A028-02

CLEAR CONVERTER LED LIGHTED

TABLE A
DISTRIBUTOR APPLIQUE FRAME

FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CONV LOCATION
BAY 0/5	BAY 0/5		BAY 0/5	BAY 1/5	BAY 1/5		BAY 1/5	BAY 1/5	BAY 1/5		BAY 1/5
VA0	07-14	+5V DC-DC CONV	11-06	**PPB2**	07-14	+3V DC-DC CONV	17-50	**PPB0**	07-14	+3V DC-DC CONV	12-50
VB0	07-05	+5V DC-DC CONV	11-06	**PPA3**	07-05	+3V DC-DC CONV	17-56	**PPB1**	07-14	+3V DC-DC CONV	12-56
VA1	07-14	+5V DC-DC CONV	11-18	**PPB3**	07-14	+3V DC-DC CONV	17-56	**PPA2**	07-05	+3V DC-DC CONV	17-50
VB1	07-05	+5V DC-DC CONV	11-18	**VA3**	07-14	+3V DC-DC CONV	11-42	**VB3**	07-14	+5V DC-DC CONV	11-42
VA2	07-14	+5V DC-DC CONV	11-30	**PPA0**	07-05	+3V DC-DC CONV	12-50				
VB2	07-05	+5V DC-DC CONV	11-30	**PPA1**	07-05	+3V DC-DC CONV	12-56				

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), DISTRIBUTOR APPLIQUE FRAME

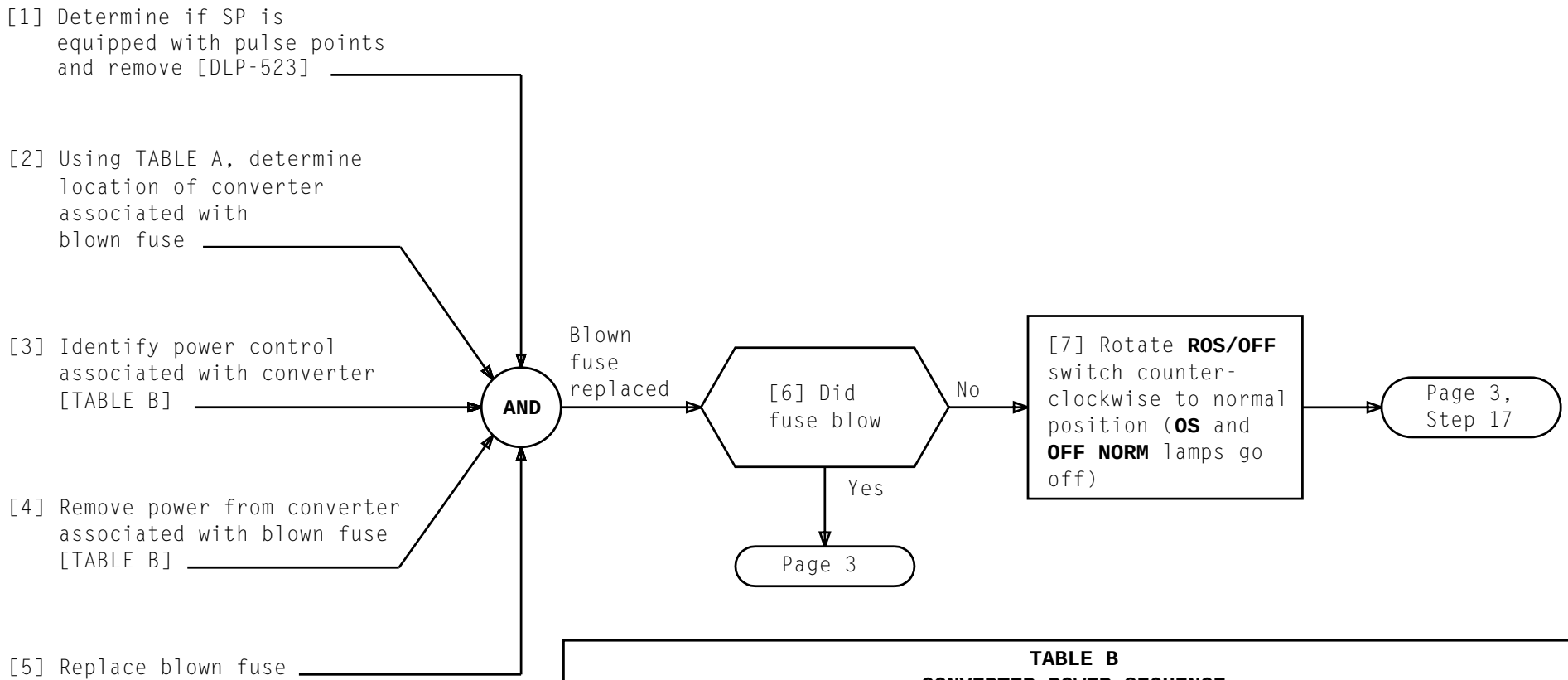
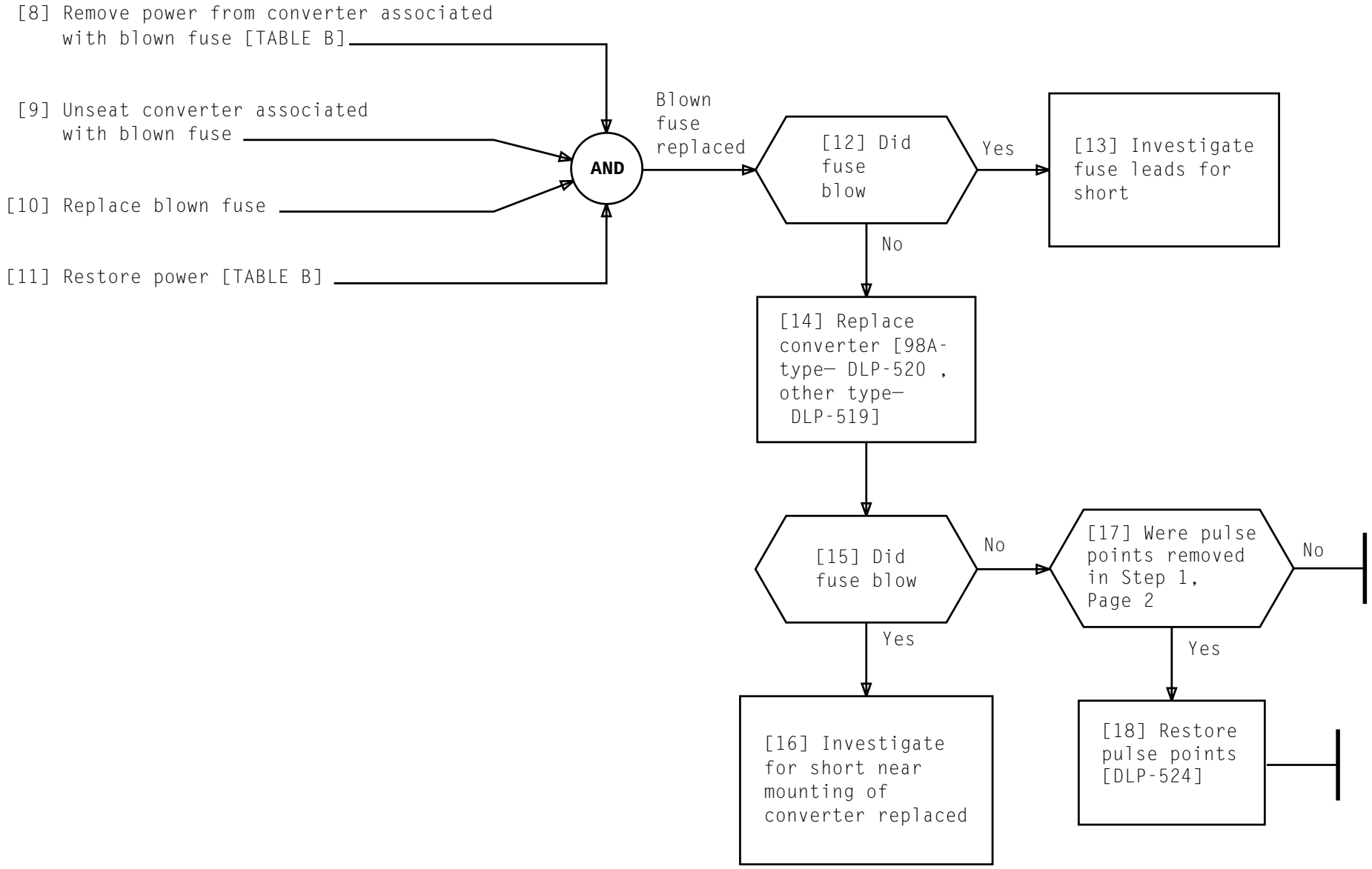


TABLE B
CONVERTER POWER SEQUENCE

CONVERTER TYPE	POWER CONTROL TYPE	POWER REMOVAL	POWER RESTORAL
J87407	Power switch **PPL/PPR**	Ensure **ROS/OFF** switch rotated to **ROS** Wait until **OS** lamp lights Depress **ROS** switch	Depress **ON** switch
98A	Toggle switch	Position **ON/OFF** toggle switch to **OFF**	Position **ON/OFF** toggle switch to **ON**

CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), DISTRIBUTOR APPLIQUE FRAME



CLEAR BLOWN FUSE (CONVERTER ASSOCIATED), DISTRIBUTOR APPLIQUE FRAME

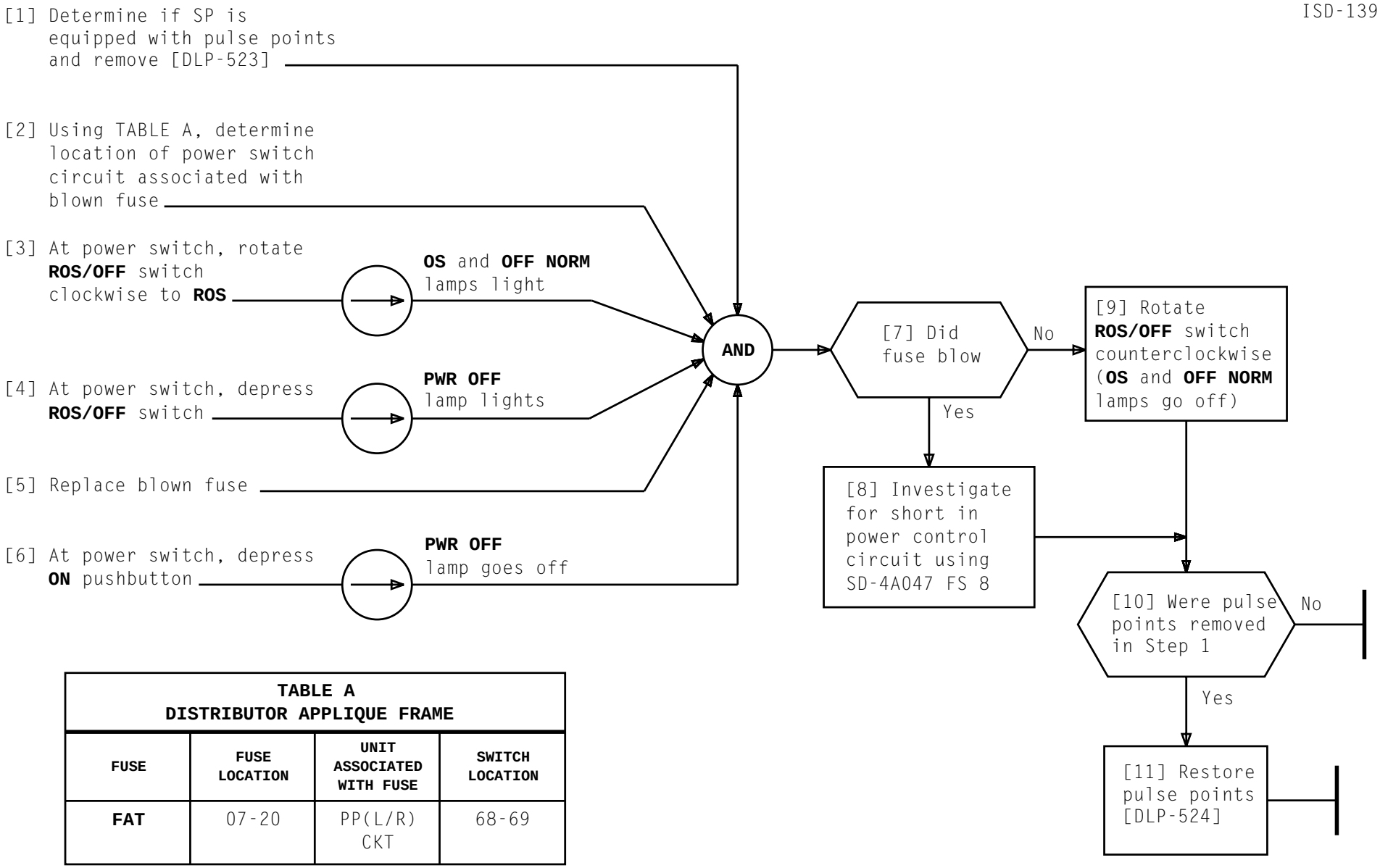
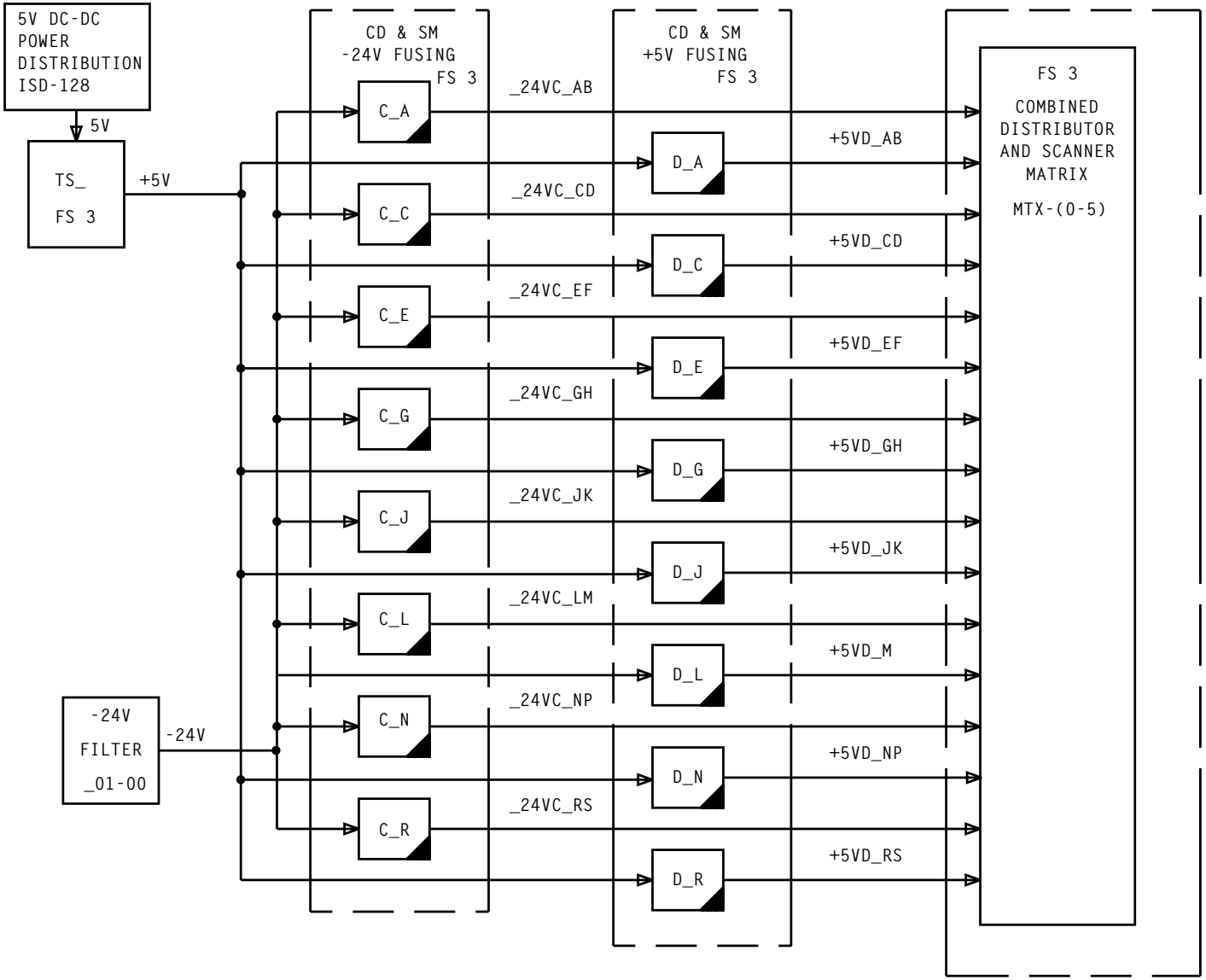


TABLE A
DISTRIBUTOR APPLIQUE FRAME

FUSE	FUSE LOCATION	UNIT ASSOCIATED WITH FUSE	SWITCH LOCATION
FAT	07-20	PP(L/R) CKT	68-69

CLEAR BLOWN FUSE (POWER SWITCH ASSOCIATED), DISTRIBUTOR APPLIQUE FRAME (SD-4A028-01)



COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME POWER DISTRIBUTION (SD-4A093-01)

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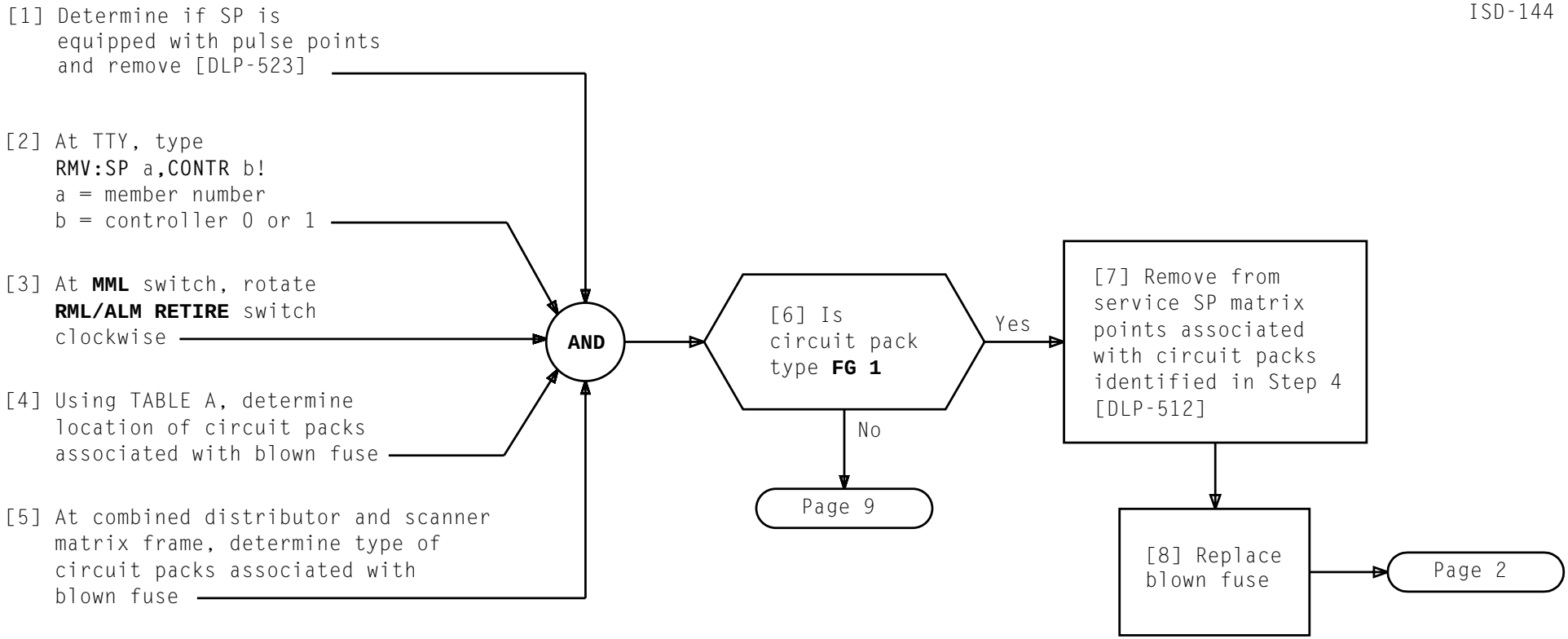
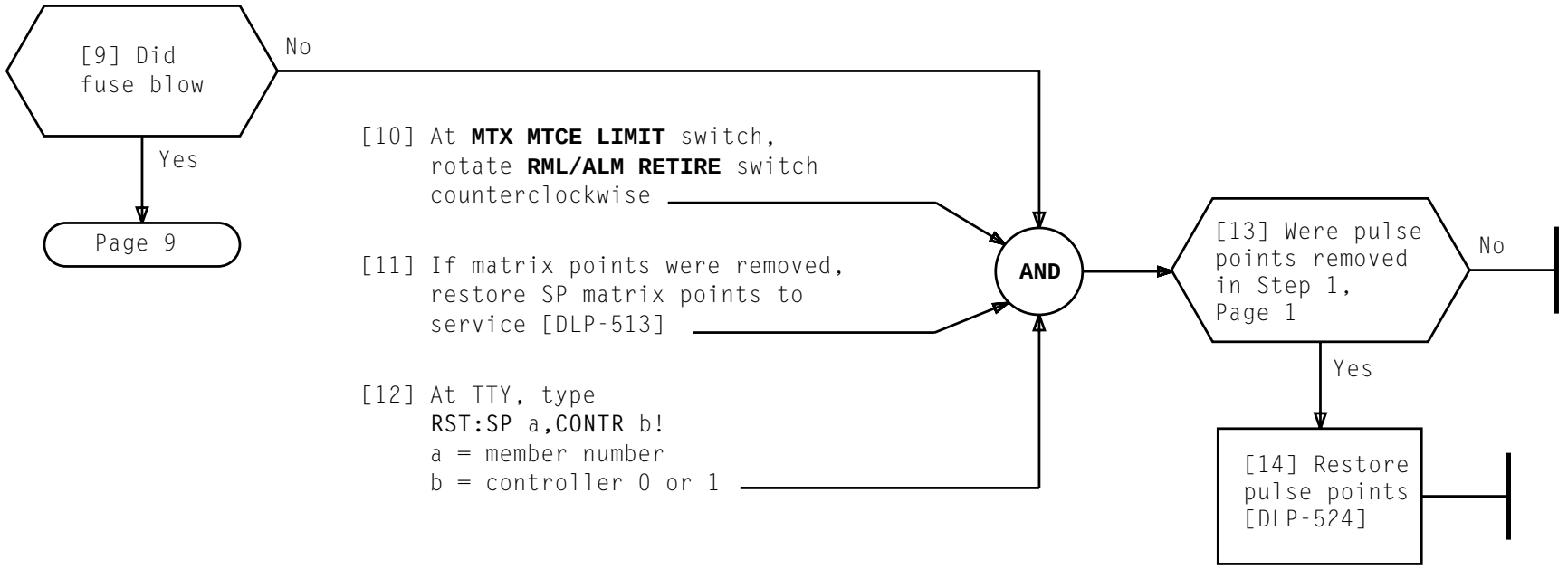


CAUTION 1
Depressing **ROS/OFF** *switch before duplicate pulse points are placed into service (*__OS__ *lamp lights) may cause service degradation*

CLEAR BLOWN FUSE (FG 1/FG 2 ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



CLEAR BLOWN FUSE (FG 1/FG 2 ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

TABLE A
COMBINED DISTRIBUTOR AND SCANNER MATRIX

FUSE	FUSE LOCATION	UNIT ASSOC	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION
BAY 0/4	BAY 0/4		BAY 0/4	BAY 0/4	BAY 0/4		BAY 1/5	BAY 0/4	BAY 0/4		BAY 1/5
C2A	07-20	MTX 2 CKT	60-22P, 60-24, 60-25P, 60-27	**C2N**	07-20	MTX 2	52-37P, 52-39, 52-40P, 52-42,	**C4J**	07-26	MTX 4L or MTX 4R CKT	26-22P, 26-24, 26-25P, 26-27,
C2C	07-20	MTX 2 CKT	60-30, 60-31P, 60-33, 60-34P	**C2R**	07-20	MTX 2	52-45, 52-46P, 52-48, 52-49P	**C4L**	07-26	MTX 4L or MTX 4R CKT	26-30, 26-31P, 26-33, 26-34P
C2E	07-20	MTX 2 CKT	60-37P, 60-39, 60-40P, 60-42,	**C4A**	07-26	MTX 4L or MTX 4R	34-22P, 34-24, 34-25P, 34-27	**C4N**	07-26	MTX 4L or MTX 4R CKT	26-37P, 26-39, 26-40P, 26-42
C2G	07-20	MTX 2 CKT	60-45, 60-46P, 60-48, 60-49P	**C4C**	07-26	MTX 4L or MTX 4R	34-30, 34-31P, 34-33, 34-34P	**C4R**	07-26	MTX 4L or MTX 4R CKT	26-45, 26-46P, 26-48, 26-49P
C2J	07-20	MTX 2 CKT	52-22P, 52-24, 52-25P, 52-27	**C4E**	07-26	MTX 4L or MTX 4R	34-37P, 34-39, 34-40P, 34-42,	**C0A**	07-14	MTX 0 CKT	76-22P, 76-24, 76-25P, 76-27,
C2L	07-20	MTX 2 CKT	52-30, 52-31P, 52-33, 52-34P	**C4G**	07-26	MTX 4L or MTX 4R	34-45, 34-46P, 34-48, 34-49P	**C0C**	07-14	MTX 0 CKT	76-30, 76-31P, 76-33, 76-34P

CLEAR BLOWN FUSE (FG 1/FG 2 ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

TABLE A
COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION
BAY 0/4	BAY 0/4		BAY 0/4	BAY 1/5	BAY 1/5		BAY 1/5	BAY 1/5	BAY 1/5		BAY 1/5
C0E	07-14	MTX 0 CKT	76-37P, 76-39, 76-40P, 76-42	**C1A**	07-14	MTX 1	76-22P, 76-24, 76-25P, 76-27	**C1N**	07-14	MTX 1 CKT	68-37P, 68-39, 68-40P, 68-42
C0G	07-14	MTX 0 CKT	76-45, 76-46P, 76-48, 76-49P	**C1C**	07-14	MTX 1	76-30, 76-31P, 76-33, 76-34P	**C1R**	07-14	MTX 1 CKT	68-45, 68-46P, 68-48, 68-49P
C0J	07-14	MTX 0 CKT	68-22P, 68-24, 68-25P, 68-27	**C1E**	07-14	MTX 1	76-37P, 76-39, 76-40P, 76-42	**C3A**	07-20	MTX 3 CKT	60-22P, 60-24, 60-25P, 60-27
C0L	07-14	MTX 0 CKT	68-30, 68-31P, 68-33, 68-34P	**C1G**	07-14	MTX 1	76-45, 76-46P, 76-48, 76-49P	**C3C**	07-20	MTX 3 CKT	60-30, 60-31P, 60-33, 60-34P
C0N	07-14	MTX 0 CKT	68-37P, 68-39, 68-40P, 68-42	**C1J**	07-14	MTX 1	68-22P, 68-24, 68-25P, 68-27,	**C3E**	07-20	MTX 3 CKT	60-37P, 60-39, 60-40P, 60-42
C0R	07-14	MTX 0 CKT	68-45, 68-46P, 68-48, 68-49P	**C1L**	07-14	MTX 1	68-30, 68-31P, 68-33, 68-34P	**C3G**	07-20	MTX 3 CKT	60-45, 60-46P, 60-48, 60-49P

TABLE A
COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION
BAY 1/5	BAY 1/5		BAY 0/4	BAY 1/5	BAY 1/5		BAY 1/5	BAY 1/5	BAY 1/5		BAY 1/5
C3J	07-20	MTX 3 CKT	52-22P, 52-24, 52-25P, 52-27	**C5E**	07-26	MTX 5 MTX 5P MTX 5PP CKT	34-37P, 34-39, 34-40P, 34-42,	**D5E**	07-47	MTX 5 MTX 5P MTX 5PP CKT	34-37P, 34-39, 34-40P, 34-42,
C3L	07-20	MTX 3 CKT	52-30, 52-31P, 52-33, 52-34P	**C5G**	07-26	MTX 5 MTX 5P MTX 5PP CKT	34-45, 34-46P, 34-48, 34-49P	**D5G**	07-47	MTX 5 MTX 5P MTX 5PP CKT	34-45, 34-46P, 34-48, 34-49P
C3N	07-20	MTX 3 CKT	52-37P, 52-39, 52-40P, 52-42,	**C5J**	07-26	MTX 5 MTX 5P MTX 5PP CKT	26-22P, 26-24, 26-25P, 26-27	**D5J**	07-47	MTX 5 MTX 5P MTX 5PP CKT	26-22P, 26-24, 26-25P, 26-27
C3R	07-20	MTX 3 CKT	52-45, 52-46P, 52-48, 52-49P	**C5L**	07-26	MTX 5 MTX 5P MTX 5PP CKT	26-30, 26-31P, 26-33, 26-34P	**D5L**	07-47	MTX 5 MTX 5P MTX 5PP CKT	26-30, 26-31P, 26-33, 26-34P
C5A	07-26	MTX 5 MTX 5P MTX 5PP CKT	34-22P, 34-24, 34-25P, 34-27	**C5N**	07-26	MTX 5 MTX 5P MTX 5PP CKT	26-37P, 26-39, 26-40P, 26-42,	**D5N**	07-47	MTX 5 MTX 5P MTX 5PP CKT	26-37P, 26-39, 26-40P, 26-42,
C5C	07-26	MTX 5 MTX 5P MTX 5PP CKT	34-30, 34-31P, 34-33, 34-34P	**C5R**	07-26	MTX 5 MTX 5P MTX 5PP CKT	26-45, 26-46P, 26-48, 26-49P	**D5R**	07-47	MTX 5 MTX 5P MTX 5PP CKT	26-45, 26-46P, 26-48, 26-49P

TABLE A
COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

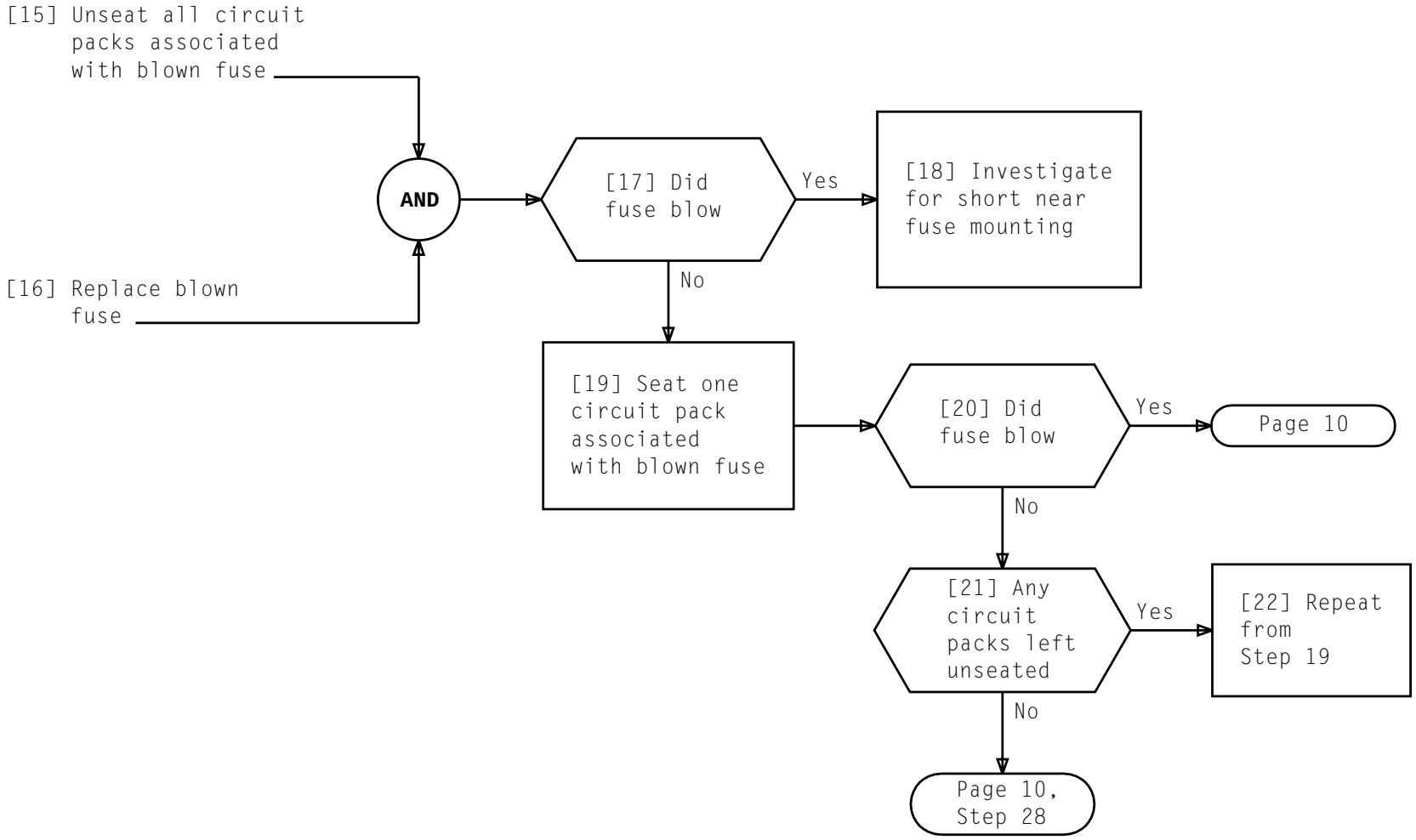
FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION
BAY 0/4	BAY 0/4		BAY 0/4	BAY 0/4	BAY 0/4		BAY 0/4	BAY 0/4	BAY 0/4		BAY 0/4
D2A	07-40	MTX 2 CKT	60-22P, 60-24, 60-25P, 60-27	**D2N**	07-40	MTX 2	52-37P, 52-39, 52-40P, 52-42,	**D4J**	07-47	MTX 4L or MTX 4R CKT	26-22P, 26-24, 26-25P, 26-27
D2C	07-40	MTX 2 CKT	60-30, 60-31P, 60-33, 60-34P	**D2R**	07-40	MTX 2	52-45, 52-46P, 52-48, 52-49P	**D4L**	07-47	MTX 4L or MTX 4R CKT	26-30, 26-31P, 26-33, 26-34P
D2E	07-40	MTX 2 CKT	60-37P, 60-39, 60-40P, 60-42,	**D4A**	07-47	MTX 4L or MTX 4R CKT	34-22P, 34-24, 34-25P, 34-27	**D4N**	07-47	MTX 4L or MTX 4R CKT	26-37P, 26-39, 26-40P, 26-42,
D2G	07-40	MTX 2 CKT	60-45, 60-46P, 60-48, 60-49P	**D4C**	07-47	MTX 4L or MTX 4R CKT	34-30, 34-31P, 34-33, 34-34P	**D4R**	07-47	MTX 4L or MTX 4R CKT	26-45, 26-46P, 26-48, 26-49P
D2J	07-40	MTX 2 CKT	52-22P, 52-24, 52-25P, 52-27	**D4E**	07-47	MTX 4L or MTX 4R CKT	34-37P, 34-39, 34-40P, 34-42,	**D0A**	07-34	MTX 0 CKT	76-22P, 76-24, 76-25P, 76-27
D2L	07-40	MTX 2 CKT	52-30, 52-31P, 52-33, 52-34P	**D4G**	07-47	MTX 4L or MTX 4R CKT	34-45, 34-46P, 34-48, 34-49P	**D0C**	07-34	MTX 0 CKT	76-30, 76-31P, 76-33, 76-34P

TABLE A
COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)

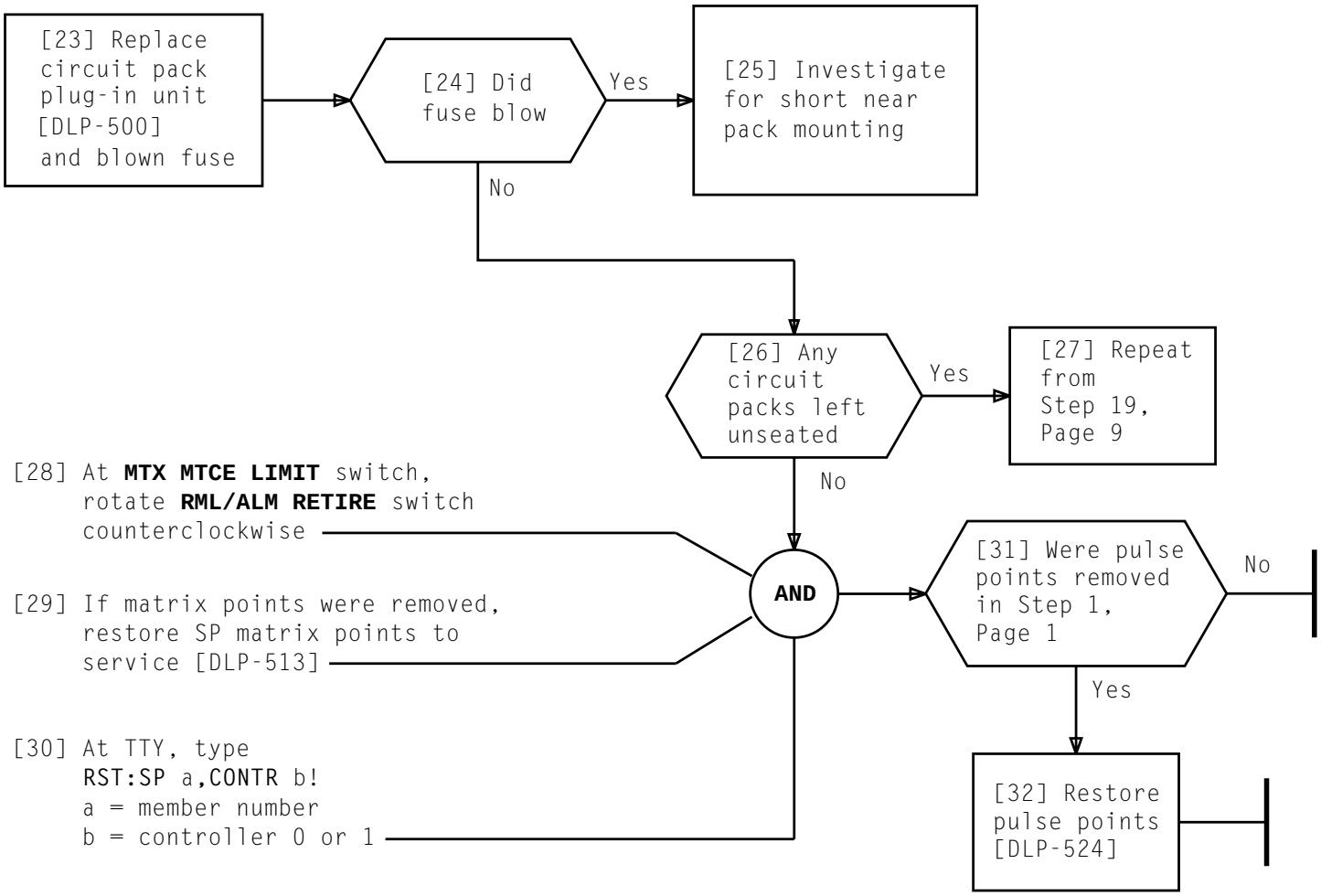
FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION	FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION
BAY 0/4	BAY 0/4		BAY 0/4	BAY 1/5	BAY 1/5		BAY 1/5	BAY 1/5	BAY 1/5		BAY 1/5
D0E	07-34	MTX 0 CKT	76-37P, 76-39, 76-40P, 76-42,	**D1A**	07-34	MTX 1 CKT	76-22P, 76-24, 76-25P, 76-27	**D1N**	07-34	MTX 1 CKT	68-37P, 68-39, 68-40P, 68-42,
D0G	07-34	MTX 0 CKT	76-45, 76-46P, 76-48, 76-49P	**D1C**	07-34	MTX 1 CKT	76-30, 76-31P, 76-33, 76-34P	**D1R**	07-34	MTX 1 CKT	68-45, 68-46P, 68-48, 68-49P
D0J	07-34	MTX 0 CKT	68-22P, 68-24, 68-25P, 68-27	**D1E**	07-34	MTX 1 CKT	76-37P, 76-39, 76-40P, 76-42,	**D3A**	07-40	MTX 3 CKT	60-22P, 60-24, 60-25P, 60-27
D0L	07-34	MTX 0 CKT	68-30, 68-31P, 68-33, 68-34P	**D1G**	07-34	MTX 1 CKT	76-45, 76-46P, 76-48, 76-49P	**D3C**	07-40	MTX 3 CKT	60-30, 60-31P, 60-33, 60-34P
D0N	07-34	MTX 0 CKT	68-37P, 68-39, 68-40P, 68-42,	**D1J**	07-34	MTX 1 CKT	68-22P, 68-24, 68-25P, 68-27	**D3E**	07-40	MTX 3 CKT	60-37P, 60-39, 60-40P, 60-42,
D0R	07-34	MTX 0 CKT	68-45, 68-46P, 68-48, 68-49P	**D1L**	07-34	MTX 1 CKT	68-30, 68-31P, 68-33, 68-34P	**D3G**	07-40	MTX 3 CKT	60-45, 60-46P, 60-48, 60-49P

TABLE A COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (Contd)			
FUSE	FUSE LOCATION	UNIT ASSOC WITH FUSE	CIRCUIT PACK LOCATION
BAY 1/5	BAY 1/5		BAY 1/5
D3J	07-40	MTX 3 CKT	52-22P, 52-24, 52-25P, 52-27
D3L	07-40	MTX 3 CKT	52-30, 52-31P, 52-33, 52-34P
D3N	07-40	MTX 3 CKT	52-37P, 52-39, 52-40P, 52-42,
D3R	07-40	MTX 3 CKT	52-45, 52-46P, 52-48, 52-49P
D5A	07-47	MTX 5 MTX 5P MTX 5PP CKT	34-22P, 34-24, 34-25P, 34-27
D5C	07-47	MTX 5 MTX 5P MTX 5PP CKT	34-30, 34-31P, 34-33, 34-34P

CLEAR BLOWN FUSE (FG 1/FG 2 ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



CLEAR BLOWN FUSE (FG 1/FG 2 ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)



CLEAR BLOWN FUSE (FG 1/FG 2 ASSOCIATED), COMBINED DISTRIBUTOR AND SCANNER MATRIX FRAME (SD-4A028-02)

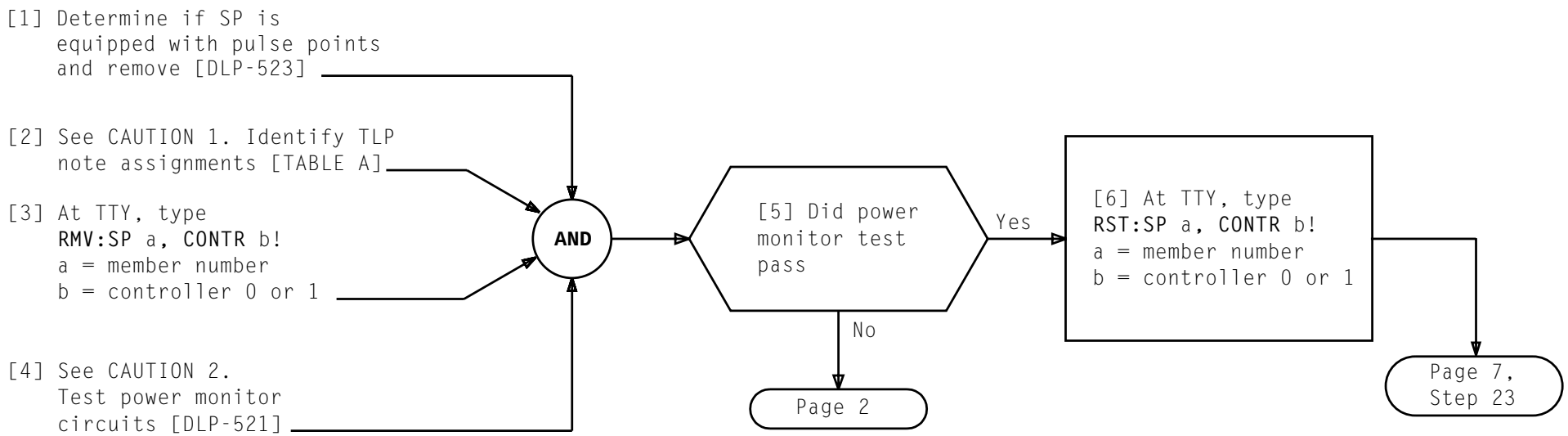


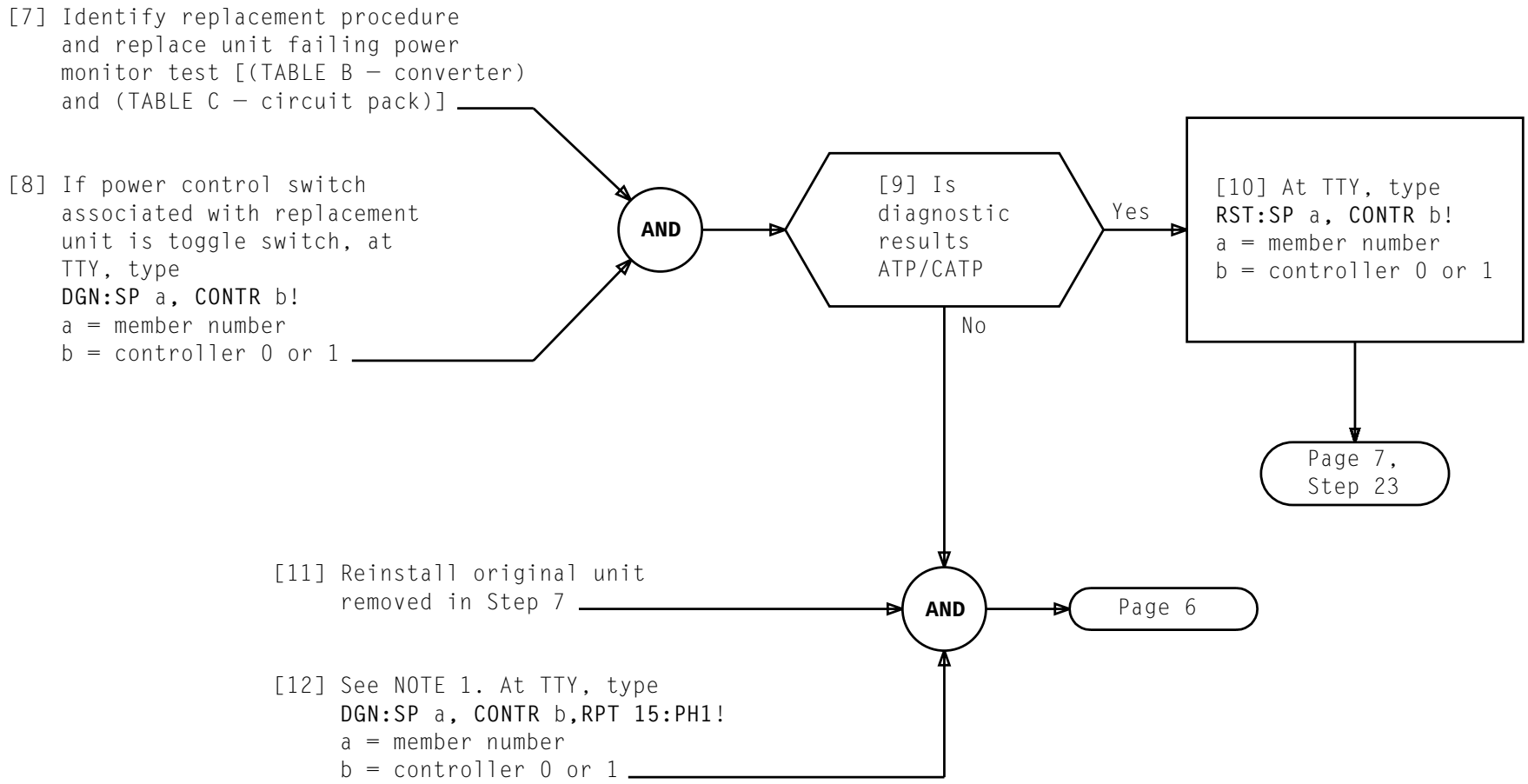
TABLE A
TLP NOTE ASSIGNMENTS

UNIT	NOTE NUMBER	DESCRIPTION
General	2	Automatic power monitor test has failed
Signal processor	20	Equipment locations listed with this note indicate location of power switch which can be used to manually test the group of power converters which have failed diagnostic. TLP resolution on these converters is poor; therefore, manual test procedures should be followed to identify faulty circuit pack
	21	TLP unable to resolve fault to one converter; therefore, manual test procedures should be followed to identify faulty converter. Equipment locations listed with this note refer to a base frame location which holds the six 5V converters implicated by the diagnostic power test. The TLP prints location 000-00 for bays 0 and 1, and converters 500-00 for bays 5 and 6

CAUTIONS

1. *Clearing power monitor failures when NOTE 21 is listed in TLP NOTE column and no 98A converter LED is lighted may result in service interruptions*
2. *Testing 98A converter with any other converter in same bay out of service may cause service interruptions*

CLEAR AUTOMATIC POWER MONITOR FAILURE



NOTE 1
This test is to check the power monitor sequence circuits for slow response. Look for LED lamps that are noticeably out of step with others

CLEAR AUTOMATIC POWER MONITOR FAILURE

TABLE B								
CONVERTER LOCATION				POWER CONTROL SWITCH				CONVERTER REPLACEMENT PROCEDURE
FRAME	BAY	VERTICAL	HORIZONTAL	NAME	LOCATION			
					BAY	VERTICAL	HORIZONTAL	
Control	*	80	24	IPUB 0/1	*	80	29	DLP-519
	All others			CONTR 0/1	*	48	02	
Distributor applique	0/5	12	50,56	PPL/PPR	0/5	68	69	DLP-519
	0/5	17	50,56	PPL/PPR	0/5	68	69	
	0/5	12	06,18,30,42	TOGGLE	On converter			DLP-520
Distributor and scanner matrix	1/6	11	4,16	TOGGLE	On converter			
	1/6	12	24,27,30,33	CONTR 0	3	48	02	DLP-519
	1/6	17	24,27,30, 33,42	CONTR 0	3	48	02	
	1/6	12	36,39,42,45	MML	3	48	43	DLP-518
	2/7	12	00,03,06,09	CONTR 1	4	48	02	DLP-519
	2/7	12	12,15,18,21 24,27,30,33, 36,39,42,45	MML	3	48	43	DLP-518
	2/7	17	00,03,06 09,12,18	CONTR 1	4	48	02	DLP-519
	2/7	17	24,27,30,33 36,39,42,45	MML	3	48	43	DLP-518

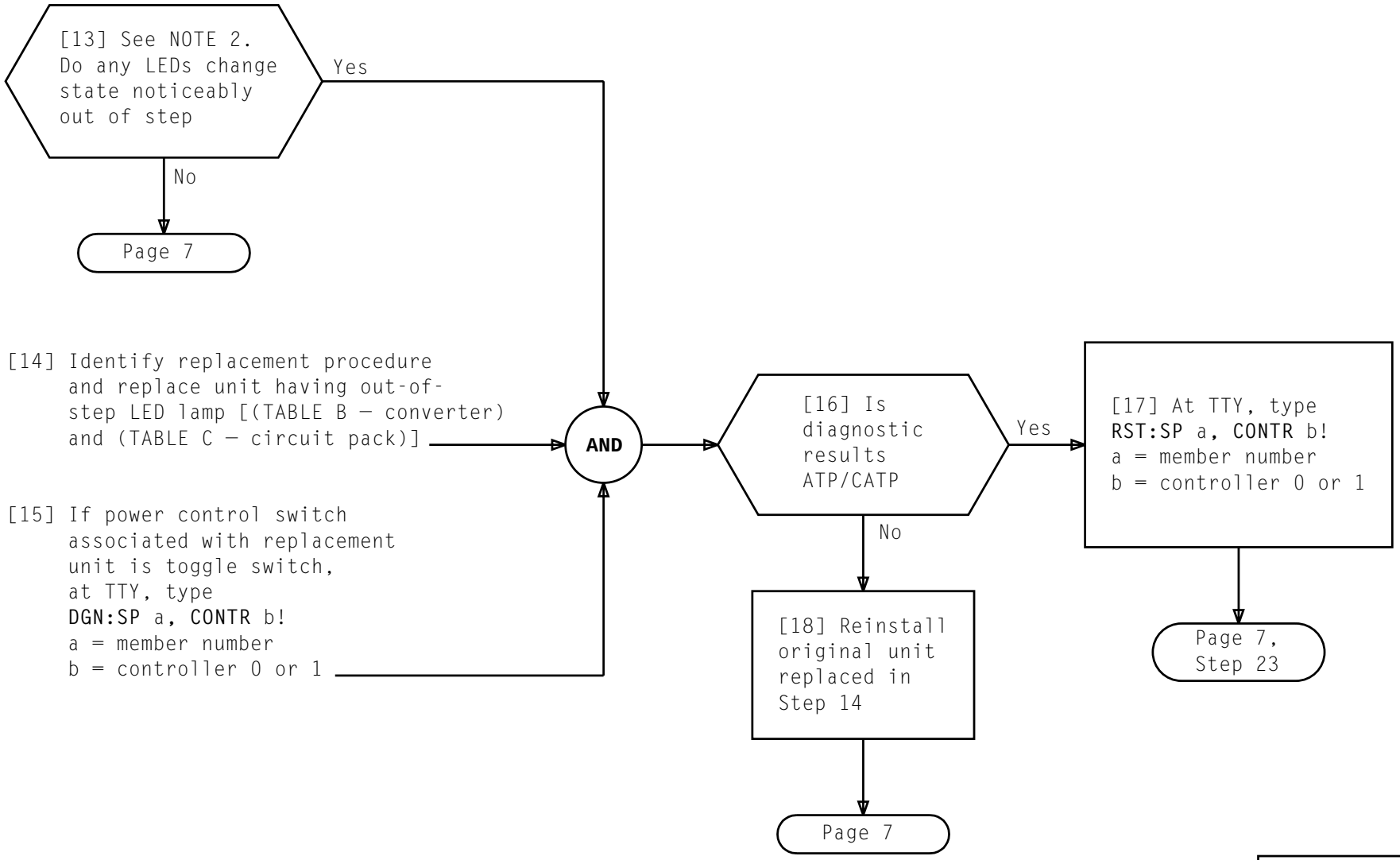
TABLE B (Contd)								
CONVERTER LOCATION				POWER CONTROL SWITCH				CONVERTER REPLACEMENT PROCEDURE
FRAME	BAY	VERTICAL	HORIZONTAL	NAME	LOCATION			
					BAY	VERTICAL	HORIZONTAL	
Combined distributor and scanner matrix	0/4	11	06,18,30, 42,54,66	TOGGLE	On converter			DLP-520
	0/4	47	22,40,59	CONTR 0	2	48	04	DLP-519
	1/5	11	06,18,30, 42,54	TOGGLE	On converter			DLP-520
	1/5	47	22,40,59	CONTR 1	3	48	04	DLP-519
* Located in Bay 3/4 for frame type SD-4A028-01 Located in Bay 2/3 for frame type SD-4A028-02								

TABLE C

CIRCUIT PACK LOCATION				REPLACE CIRCUIT PACK PROCEDURE
FRAME	BAY	VERTICAL	HORIZONTAL OR TYPE	
Control	*	All	All	DLP-501
Distributor applique	0/5	64, 68	**FB229**, **FB231**, or **FC78**	DLP-503
			FB228	DLP-504
		All others		DLP-504
Distributor and scanner matrix	2/7	45	8 through 38 **FA610**	DLP-503
			8 through 38 **FA605**	DLP-502
	1, 2, 6, 7	59, 55, 40, 36	All	DLP-501
		All others		DLP-502
Combined distributor and scanner matrix	0, 1, 4, 5	54, 62, 70, 78	All **FG 1**	DLP-502
	1, 5	54, 62, 70, 78	All **FG 2**†	DLP-503
	0, 1, 4, 5	43	**FA662** **FA1236**	DLP-501
		43, 47	**FC465** **FC466**	

* Bays 3/4 for SD-4A028-01. Bays 2/3 for SD-4A028-02
† SD-4A093-01, Option Z or Y only

CLEAR AUTOMATIC POWER MONITOR FAILURE



NOTE 2
Normally, LEDs will not all change state simultaneously

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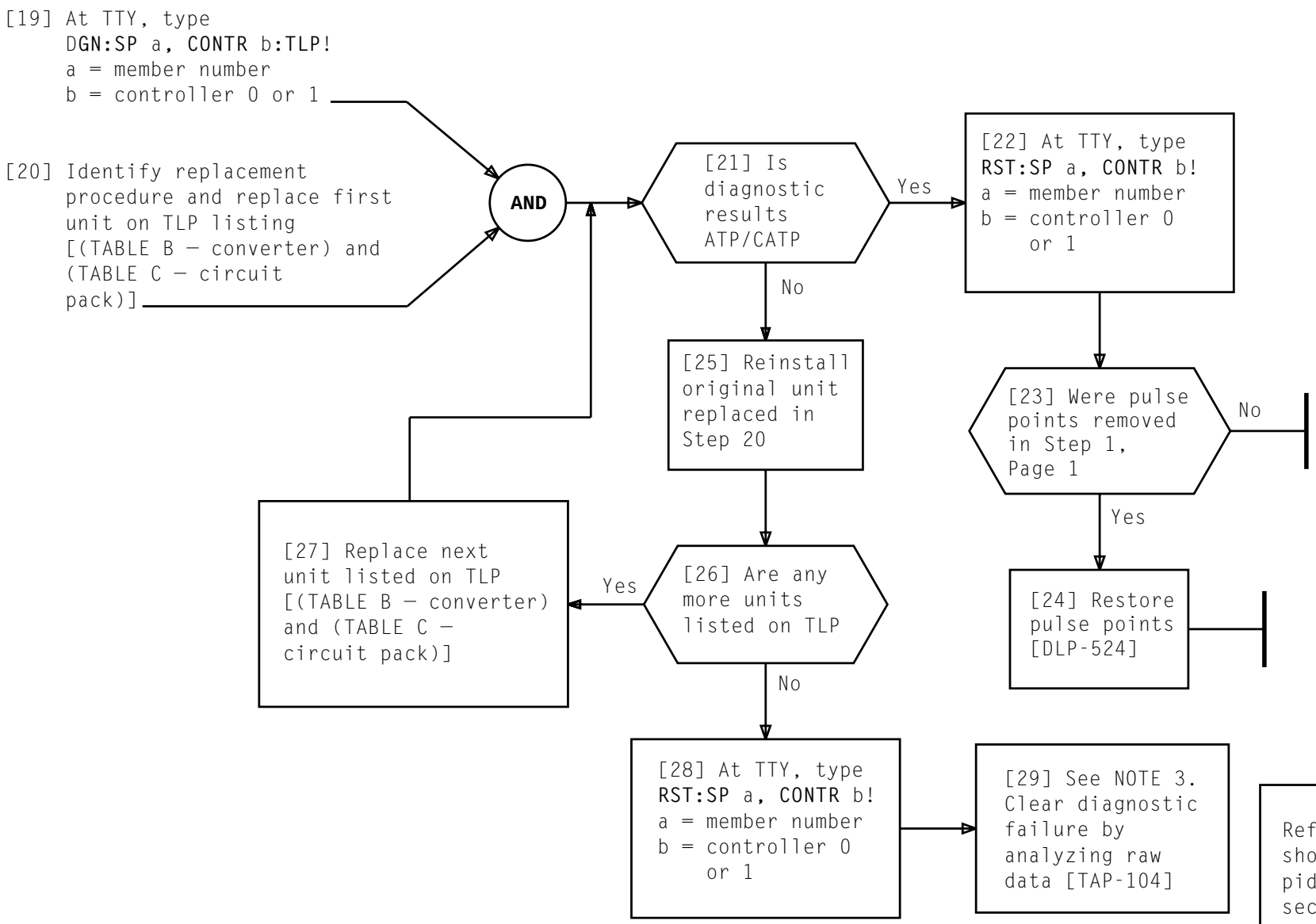
CLEAR AUTOMATIC POWER MONITOR FAILURE



NOTE 3
Refer to trouble-shooting hints in pident prologue section of SD diagnostic listing, phase 1

CLEAR AUTOMATIC POWER MONITOR FAILURE

SUMMARY

Ensure both controllers are in service, then diagnose both controllers using the MATRIX MEMORY option with TLP. If diagnostic comes back STF, refer to TAP-103. If ATP, input **VER:SPMTXPK** using appropriate pack type option and matrix point indentification number. Replace circuit pack in location identified by **VER:SPMTXPK** message. If matrix point is still in trouble, identify and replace the associated matrix flip-flop circuit pack which operated the matrix point.

[1] Determine if SP is equipped with pulse points and remove [DLP-523]

At TTY:

[2] If either controller is out of service, type **RST:SP** a, **CONTR** b!
(a = member number)
(b = out-of-service CONTR)

[3] See CAUTION 1.
Type messages per TABLE A
(a = member number)
(b = out-of-service CONTR)

TABLE A

RMV:SP a, **CONTR** b! (Wait for system response **RMV:SP** a, **CONTR** b **COMPLETED**)
DGN:SP a, **CONTR** b;**MML,MEMORY,TLP**!

AND

[4] Was diagnostic ATP/CATP

No → TAP-103

Yes

At TTY:

[5] Type **RST:SP** a, **CONTR** b!
(a = member number)
(b = out-of-service CONTR)

OS lamp goes off

AND

[7] Was diagnostic ATP/CATP

Yes → Page 2

No → TAP-103

[6] Type messages per TABLE A for other controller
(a = member number)
(b = out-of-service CONTR)

CAUTION 1
Ensure both controllers are in service before continuing to prevent service interruption

CLEAR FAULTY MATRIX POINT (SD-4A028-01)

[8] At TTY, type appropriate message per TABLE B

[9] See FIG. 1. Using **VER:SPMTXPK** response message, identify location of circuit pack associated with faulty matrix point

AND

[10] What circuit pack type is located in equipment location

FB228 → Page 3

FB229 → Page 6

FA230 → Page 7

TABLE B

FAULTY MATRIX POINT TYPE	MESSAGE
Scan	VER:SPMTXPK:SCP,{ CIN e | TAN f | OTAN g | TSN h | TDN i | MSN j }!
Distributor	VER:SPMTXPK:{ SDM | SDP },{ CIN e | TAN f | OTAN g | TSN h | TDN i | MDN k }!

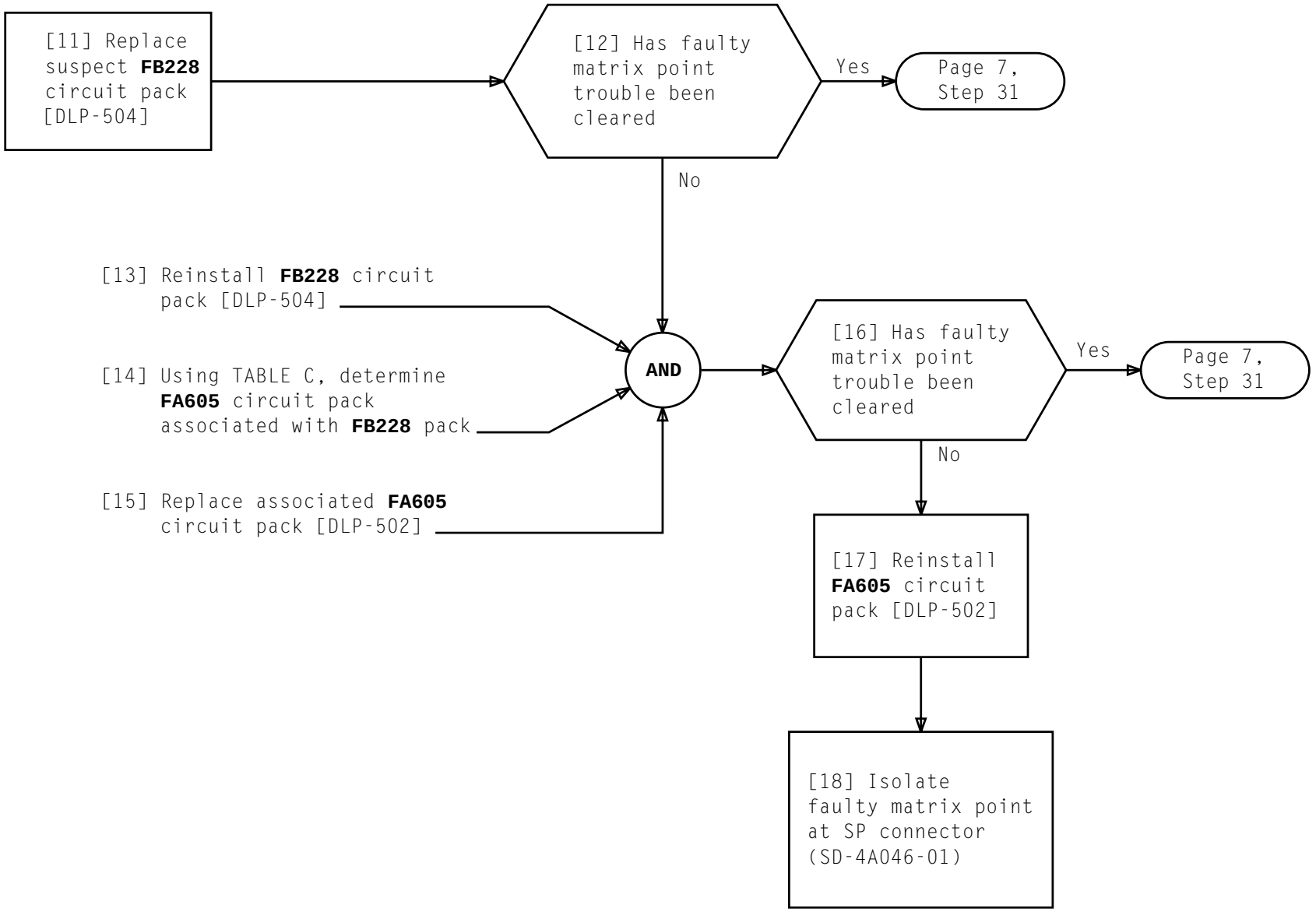
CIRCUIT PACK EQUIPMENT LOCATION

```
VER:SPMTXPK: SCP,TSN 000000PF1

M 37 VER:SPMTXPK:SCP,TSN 0000001
     UNIV  SCAN MATRIX  PACK IOC: SP 0     EQPTLOC 150 -0 4 FIN 01002.01
     TSN     UTMN,NTPI/CIN          PK REPAIR REF
     0000000   UNASSIGNED POINT
     0000001   UNASSIGNED POINT
     0000002   UNASSIGNED POINT
     0000003   CIN 0 TLDO OH GL 4AT 4ES  07  NOTIFY TOC-RMV CKT
     0000100   CIN 73 DLLS TX TA 4AT 4ES  07  NOTIFY TOC-RMV CKT
     0000101   CIN 72 STLS MO 09  4AT 4ES  07  NOTIFY TOC-RMV CKT
     0000102   CIN 73 STLS MO 09  4AT 4ES  07 NOTIFY TOC-RMV CKT
     0000103   CIN 96 STLS MO 09  4AT 4ES  07  NOTIFY TOC-RMV CKT
```

FIG. 1 – Example of VER:SPMTXPK **Response Message**

CLEAR FAULTY MATRIX POINT (SD-4A028-01)



CLEAR FAULTY MATRIX POINT (SD-4A028-01)

TABLE C

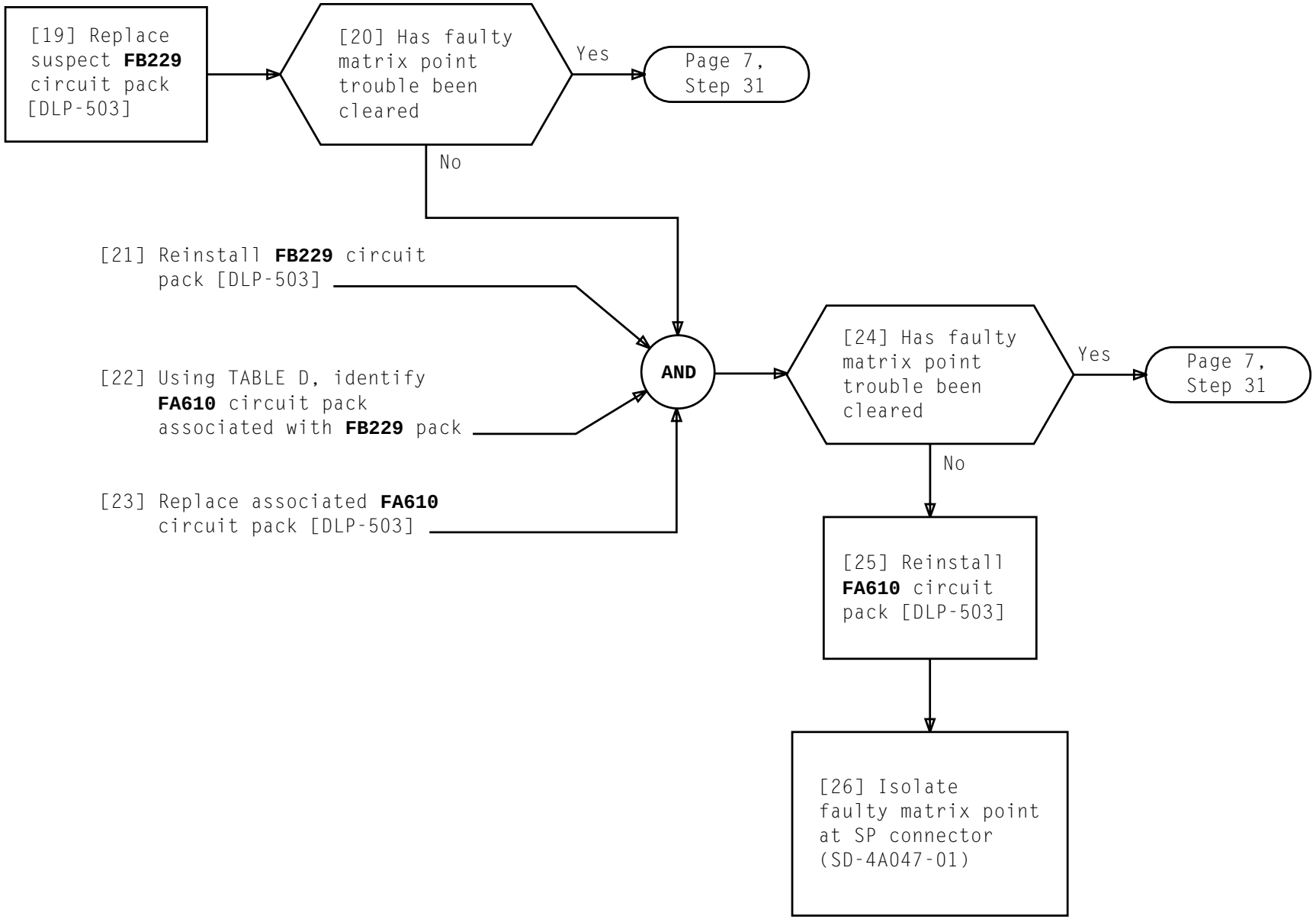
FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION			FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	1/6	28	08	0/5	24	02P, 04, 05P, 07	Distributor and scanner matrix	2/7	28	08	0/5	32	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18		24	63P, 65, 66P, 68				18		32	63P, 65, 66P, 68
			28		28	02P, 04, 05P, 07				28		36	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
		28	38		28	63P, 65, 66P, 68			28	38		36	63P, 65, 66P, 68
		32	08		40	02P, 04, 05P, 07			32	08		48	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18		40	63P, 65, 66P, 68				18		48	63P, 65, 66P, 68
			28		44	02P, 04, 05P, 07				28		52	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
	1/6	32	38	0/5	44	63P, 65, 66P, 68		2/7	32	38	0/5	52	63P, 65, 66P, 68

CLEAR FAULTY MATRIX POINT (SD-4A028-01)

TABLE C (Contd)

FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION			FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	1/6	45	08	0/5	56	02P, 04, 05P, 07	Distributor and scanner matrix	2/7	45	08	0/5	64	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18	0/5	56	63P, 65, 66P, 68				18	0/5	64	63P, 65, 66P, 68
			28	0/5	60	02P, 04, 05P, 07				28	0/5	68	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
	1/6	45	38	0/5	60	63P, 65, 66P, 68		2/7	45	38	0/5	68	63P, 65, 66P, 68

CLEAR FAULTY MATRIX POINT (SD-4A028-01)



CLEAR FAULTY MATRIX POINT (SD-4A028-01)

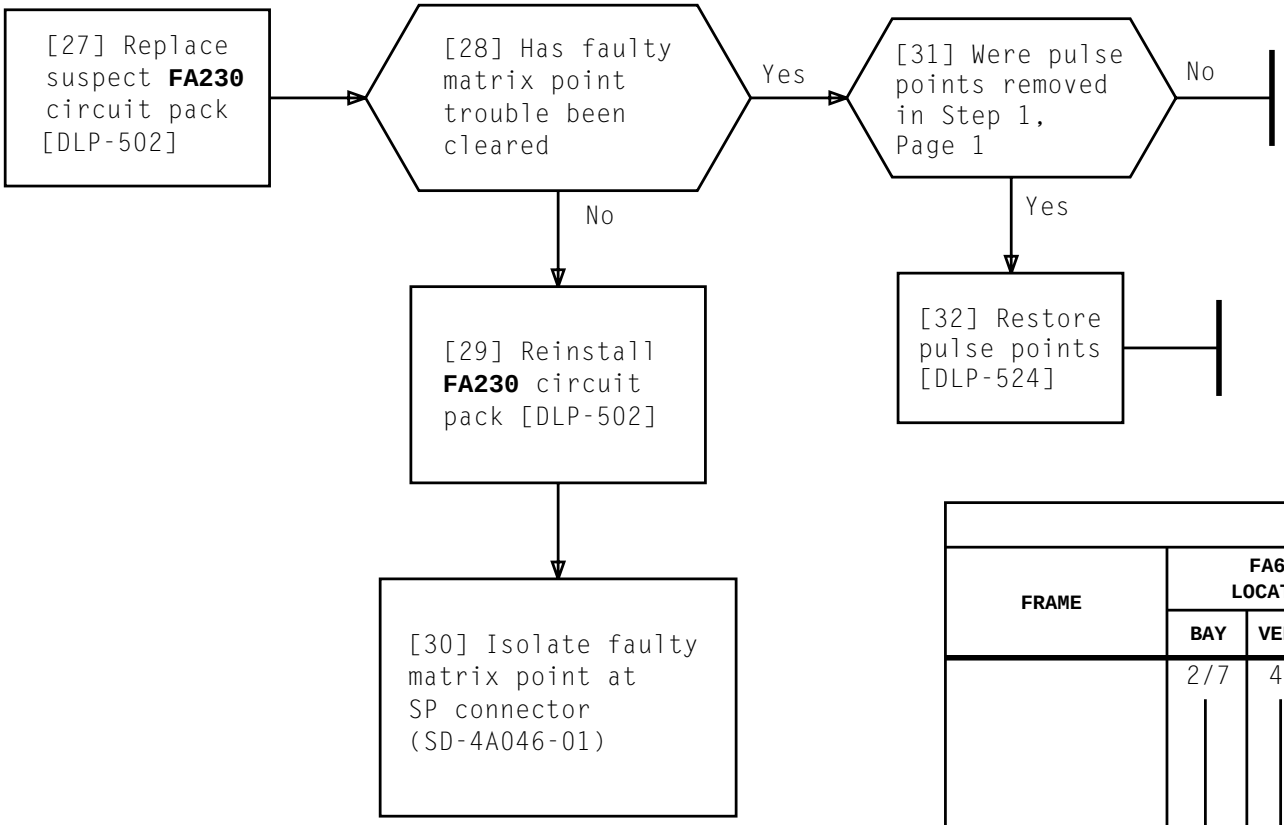
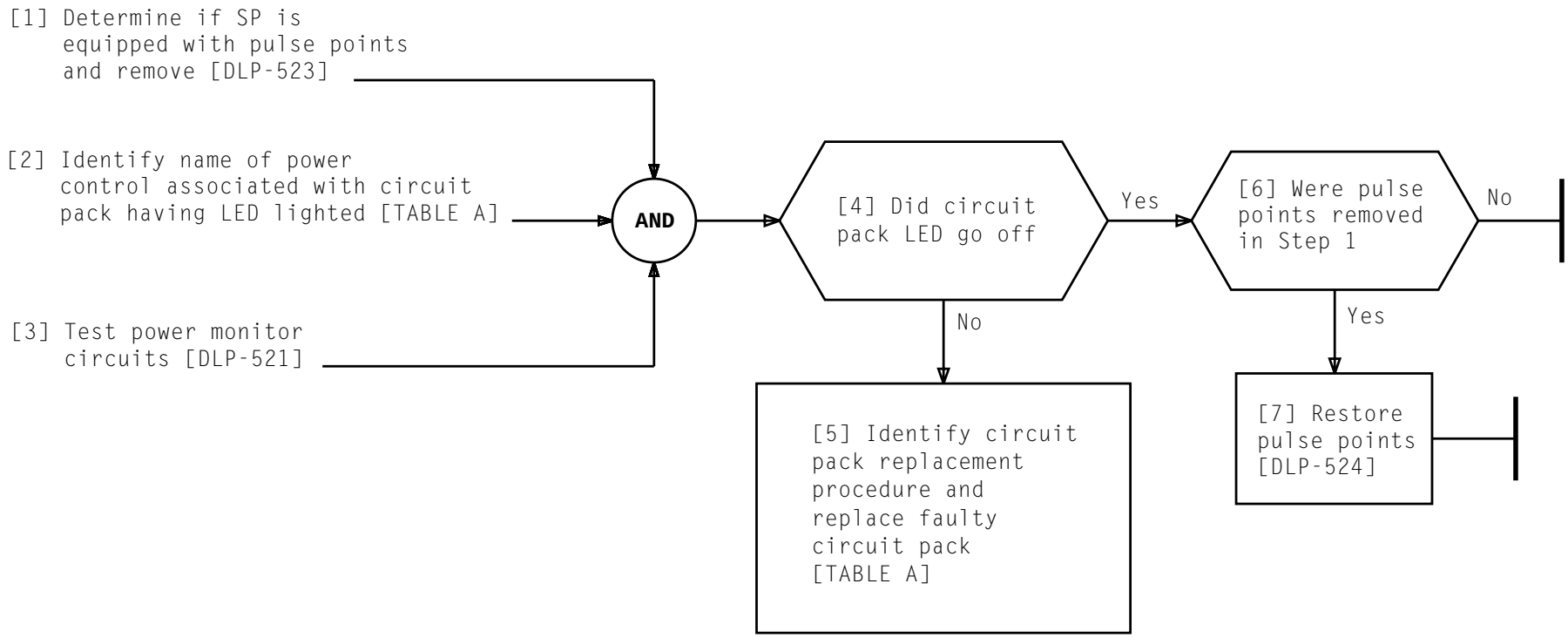


TABLE D

FRAME	FA610 LOCATION			ASSOCIATED FB229 PACK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	2/7	45	08	0/5	64	02P, 04, 05P, 7
			09			08P, 10, 11P, 13
			11			17P, 19, 20P, 22
			12			23P, 25, 26P, 28
			14			33P, 35, 36P, 38
			15			39P, 41, 42P, 44
			17			48P, 50, 51P, 53
			18	0/5	64	54P, 56, 57P, 59
			28	0/5	68	02P, 04, 05P, 07
			29			08P, 10, 11P, 13
			31			17P, 19, 20P, 22
			32			23P, 25, 26P, 28
			34			33P, 35, 36P, 38
			35			39P, 41, 42P, 44
			37			48P, 50, 51P, 53
	2/7	45	38	0/5	68	54P, 56, 57P, 59

CLEAR FAULTY MATRIX POINT (SD-4A028-01)

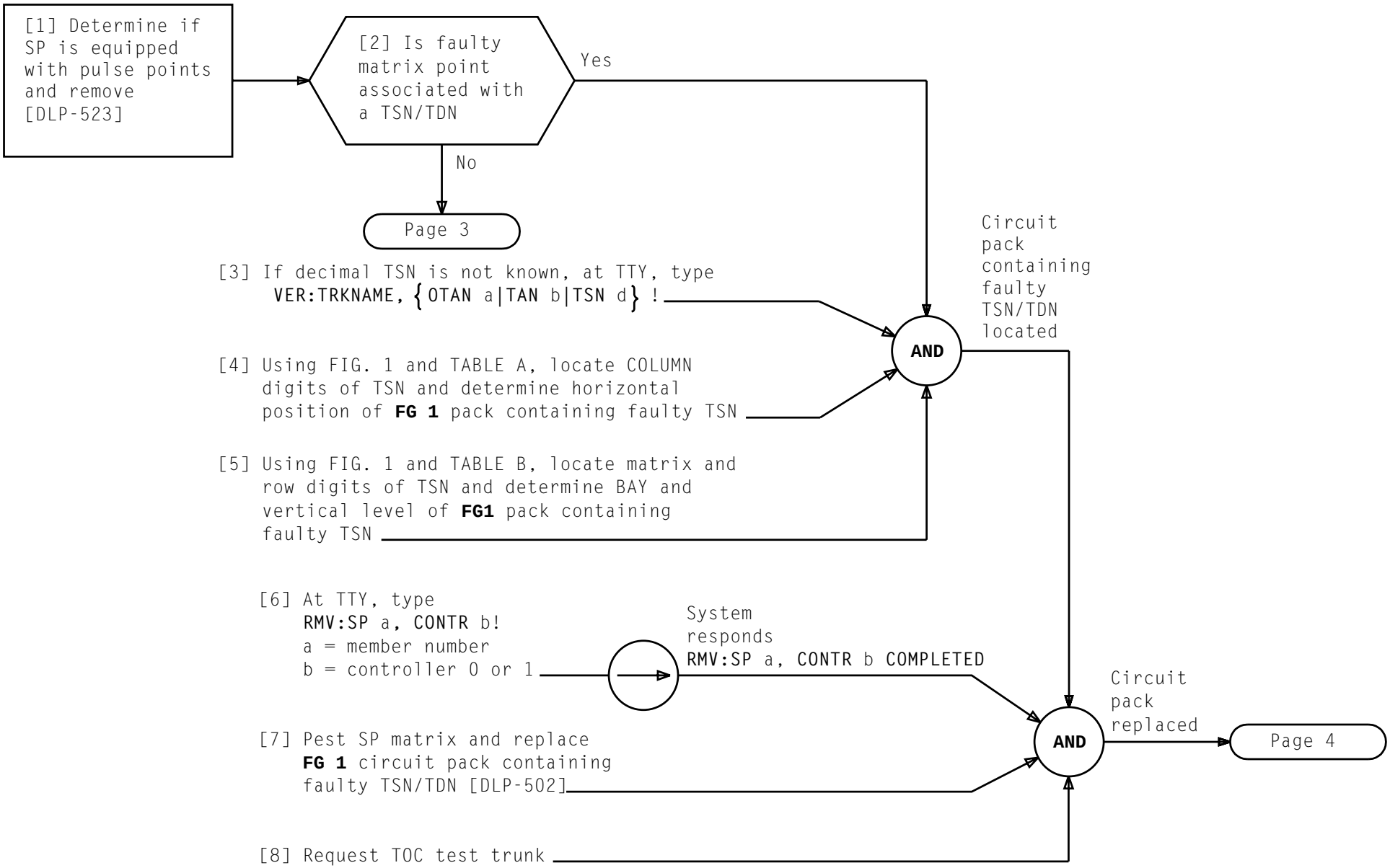


CLEAR CIRCUIT PACK LED LIGHTED

TABLE A
CIRCUIT PACKS CONTAINING LEDs (SD-4A028-01/02)

CIRCUIT PACK LOCATION				SWITCH				REPLACE CIRCUIT PACK PROCEDURE
FRAME	BAY	VERT	HOR	NAME	LOCATION			
					BAY	VERT	HOR	
Controller (SD-4A028-01)	3/4	68 56 55 36	03 42 05 05	CONTR 0/1	3/4	48	02	DLP-501
Distributor and scanner matrix	1/6	55 36	05 05	CONTR 0	3	48	02	DLP-501
	2/7	55 36	05 05	CONTR 1	4	48	02	DLP-501
	1/6	28	04,05,40,41	MTX MTCE LIMIT	3	48	43	DLP-502
		32	04,05,40,41					
		45	04,05,40,41					
	2/7	28	04,05,40,41	MTX MTCE LIMIT	3	48	43	DLP-502
		32	04,05,40,41					
		45	04,05,40,41					
Distributor applique	0/5	64	14,29,45,60	PPL/R	0/5	68	68	DLP-503
		68	14,29,45,60					
Controller (SD-4A028-02)	2/3	68	03	CONTR 0/1	2/3	48	02	DLP-501

CLEAR CIRCUIT PACK LED LIGHTED



CLEAR FAULTY MATRIX POINT (SD-4A028-02)

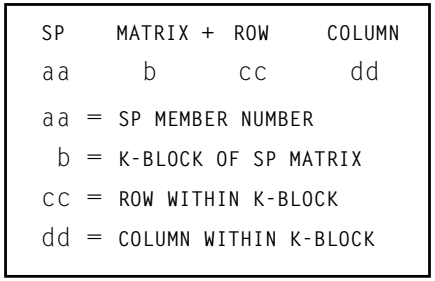


FIG. 1 — SP Matrix Point Layout (7-Digit TSN or TDN)

TABLE A
HORIZONTAL POSITION OF CIRCUIT PACK

HOR POSITION	COLUMN NUMBER
22P	00
24	01
25P	02
27	03
30	04
31	05
33	06
34P	07
37P	08
39	09
40P	10
42	11
45	12
46P	13
48	14
49P	15

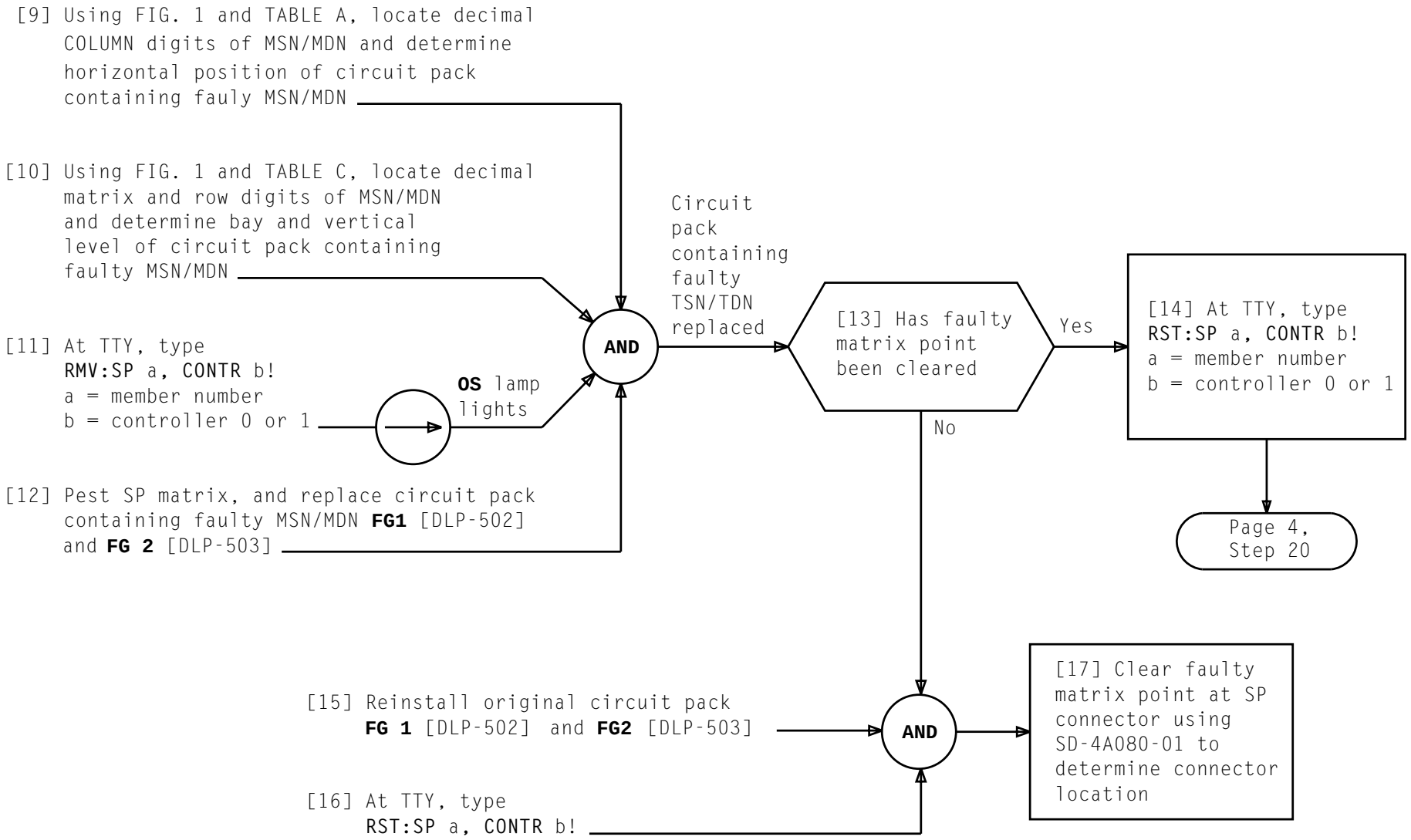
TABLE B
UNIVERSAL SCAN POINTS (TSN)

CIRCUIT PACK LOCATION		K-BLOCK	MATRIX AND ROW
BAY	VERT LEVEL		
0	76	0	000-015
0	68	0	016-031
1	76	0	032-047
1	68	0	048-063
4	76	1	064-079
4	68	1	080-095
5	76	1	096-111
5	68	1	112-127
0	60	2	128-143
0	52	2	144-159
1	60	2	160-175
1	52	2	176-191
4	60	3	192-207
4	52	3	208-223
5	60	3	224-239
5	52	3	240-255

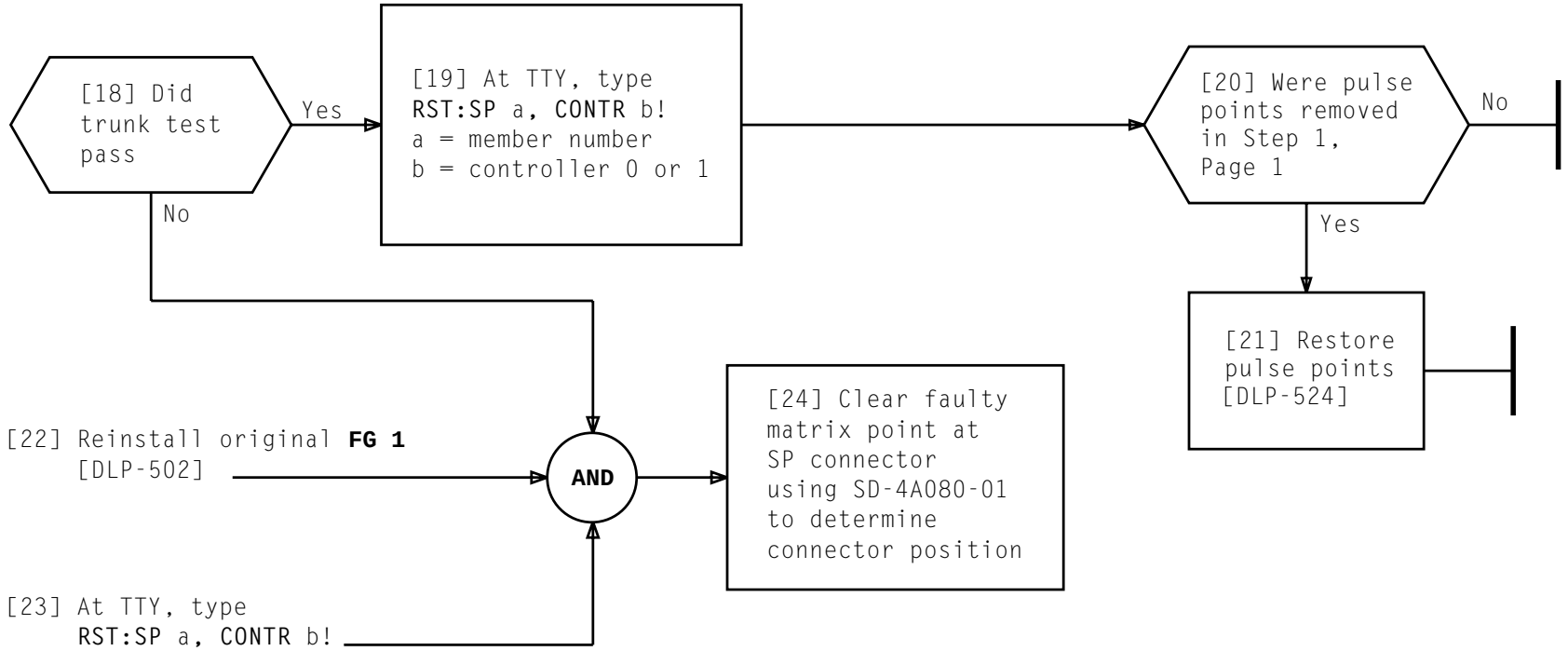
TABLE C
MISCELLANEOUS SCAN AND DISTRIBUTOR POINTS LAYOUT

CIRCUIT PACK LOCATION		K-BLOCK	MATRIX AND ROW
BAY	VERT LEVEL		
0	34	4	000-015
0	26	4	016-031
1	34	4	032-047
1	26	4	048-063
4	34	5	064-079
4	26	5	080-095
5	34	5	096-111
5	26	5	112-127

CLEAR FAULTY MATRIX POINT (SD-4A028-02)

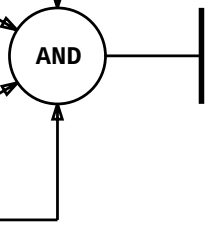


CLEAR FAULTY MATRIX POINT (SD-4A028-02)

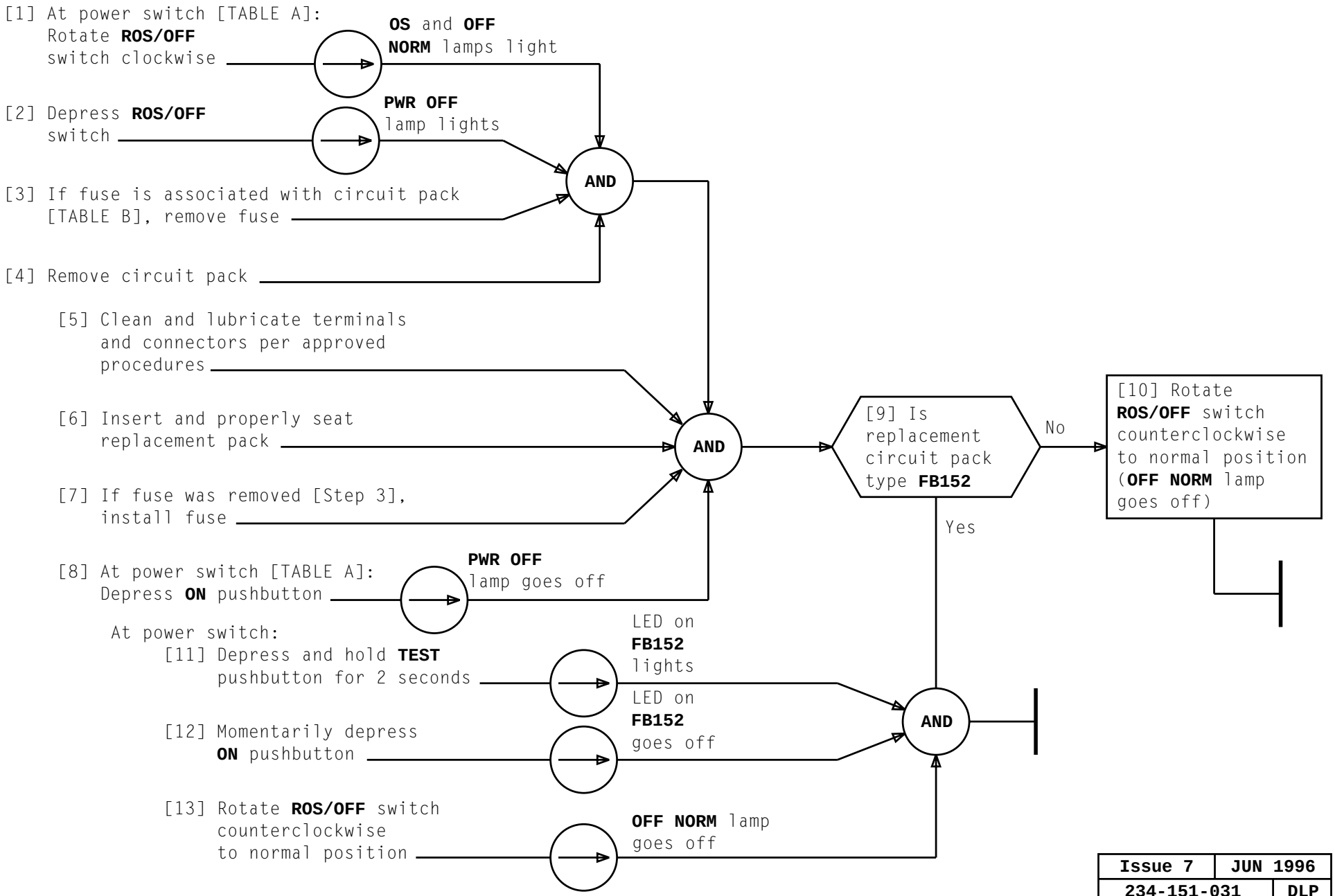


CLEAR FAULTY MATRIX POINT (SD-4A028-02)

1. Remove plug-in unit from frame
2. Inspect backplane connector for bent, broken or shorted contacts
3. Clean and lubricate pack terminals and connectors per approved procedures
4. Insert and ensure proper seating of replacement unit



REPLACE PLUG-IN UNIT



REPLACE CIRCUIT PACK, POWER CONTROLLED BY POWER SWITCH

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TABLE A

CIRCUIT PACK LOCATION				SWITCH			
FRAME	BAY	VERT	HOR OR TYPE	NAME	LOCATION		
					BAY	VERT	HOR
Control	*	80	All	**IPUB 0/1**	*	80	29
		All others		**CONTR 0/1**	*	48	02
Distributor and scanner matrix	1/6	59	All	**CONTR 0**	3	48	02
		55					
		40					
		36					
	2/7	59	All	**CONTR 1**	4	48	
		55					
		40					
		36					
Combined distributor and scanner matrix	0/4	All	**FA662**	**CONTR 0**†	2	48	02
			FA1236				
			FC465				
			FC466				
	1/5	All	**FA662**	**CONTR 1**‡	3	48	
			FA1236				
			FC465				
			FC466				

* Bays 3/4 for SD-4A028-01; Bays 2/3 for SD-4A028-02
† Removes power from bays 0, 2, and 4
‡ Removes power from bays 1, 3, and 5

TABLE B

CIRCUIT PACK LOCATION				FUSE			
FRAME	BAY	VERT	HOR	DESIG	BLOCK LOCATION		
					BAY	VERT	HOR
Control	*	68	3	**OMB/1MB**	*	07	18
	*	60	4	**OMB/1MB**	*	07	18
	*	56	4,5	**OMB/1MB**	*	07	18
	*	56	40, 42	**OBM/1BM**	*	07	33
Distributor and scanner matrix	1/6	55	5	**0 ++24**	1/6	09	24
	1/6	36	5	**0 ++24**	1/6	09	24
	2/7	55	5	**1 ++24**	2/7	09	24
	2/7	36	5	**1 ++24**	2/7	09	24

* Bays 3/4 for SD-4A028-01; Bays 2/3 for SD-4A028-02

REPLACE CIRCUIT PACK, POWER CONTROLLED BY POWER SWITCH

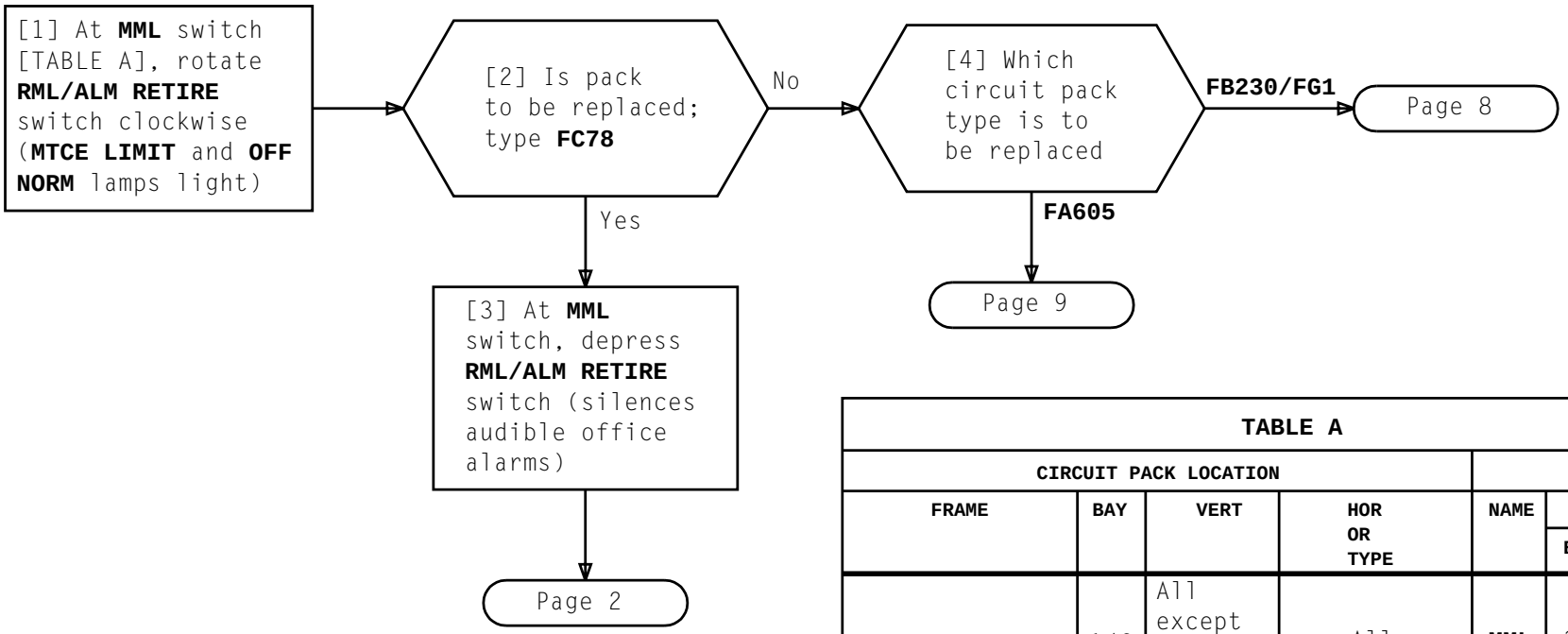
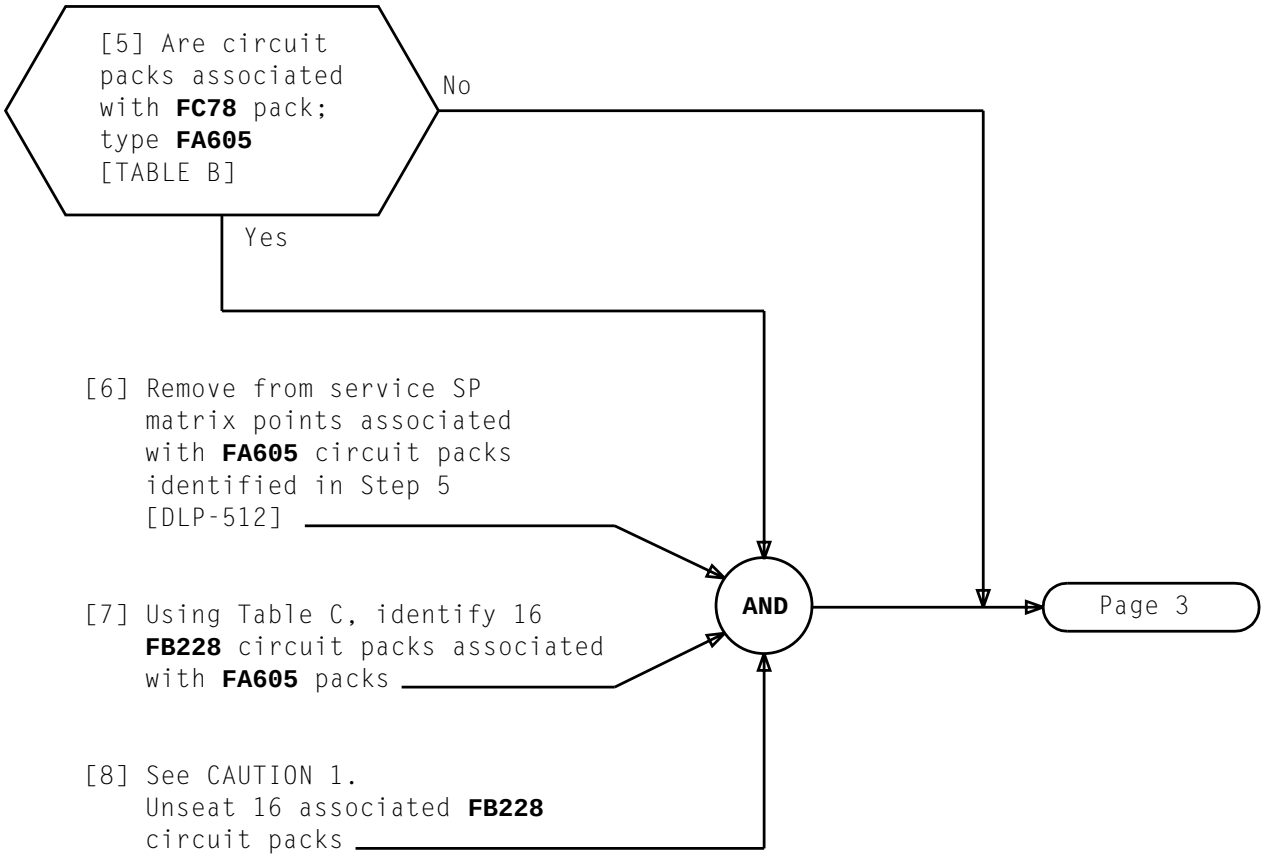


TABLE A

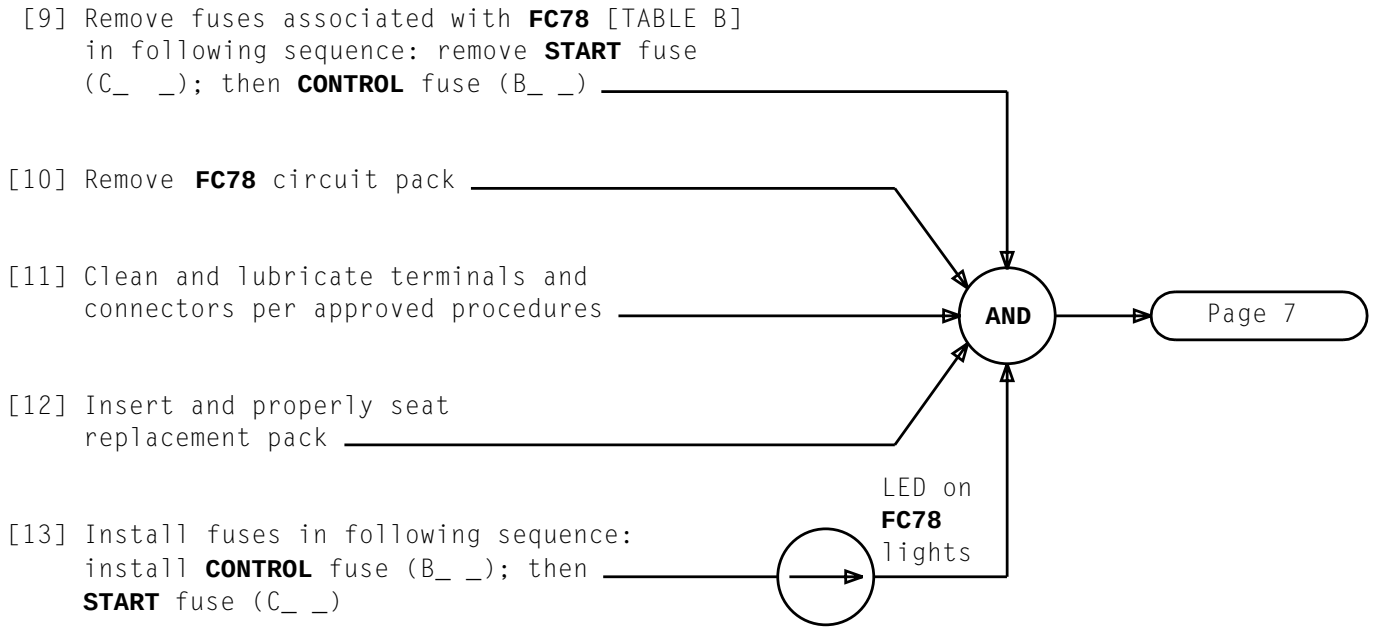
CIRCUIT PACK LOCATION				SWITCH			
FRAME	BAY	VERT	HOR OR TYPE	NAME	LOCATION		
					BAY	VERT	HOR
Distributor and scanner matrix	1/6	All except 36, 40 55, & 59	All	**MML**	3	48	43
	2/7	45	8 through 38 **FA605** CPs	**MML**	3	48	43
		All others except on VERT 36,40,55,59		**MML**	3	48	43
Combined distributor and scanner matrix	0 1 4 5	All **FG 1** CPs		**MML**	2	48	43

REPLACE CIRCUIT PACK, ALARMS RETIRED WITH MATRIX MAINTENANCE LIMIT SWITCH



CAUTION 1
If **OS** *lamp does not light, delay pack replacement until duplicate pulse points are returned to service*

REPLACE CIRCUIT PACK, ALARMS RETIRED WITH MATRIX MAINTENANCE LIMIT SWITCH



REPLACE CIRCUIT PACK, ALARMS RETIRED WITH MATRIX MAINTENANCE LIMIT SWITCH

TABLE B

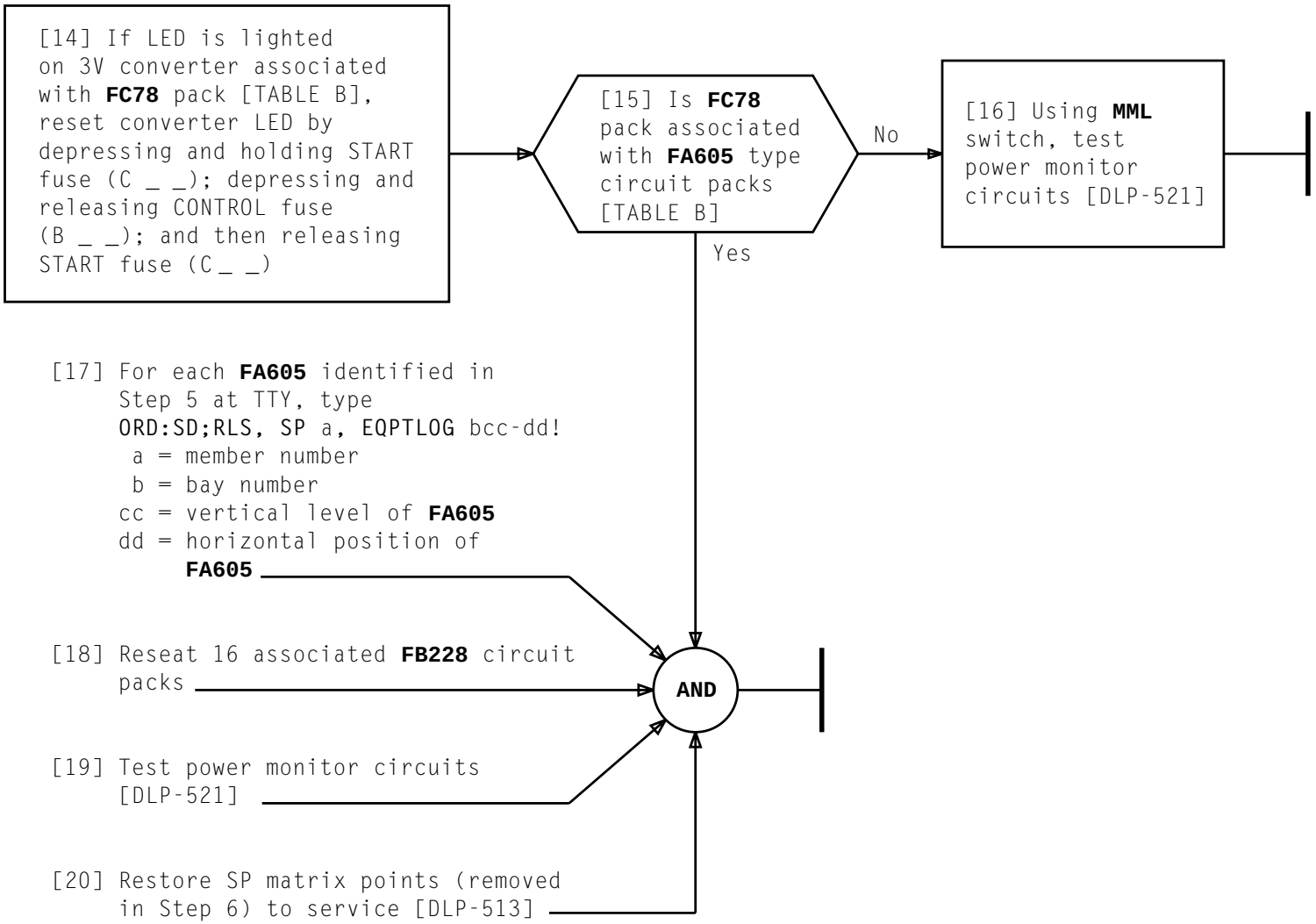
FRAME	FC78 PACK LOCATION			ASSOCIATED PACK LOCATION			START FUSE				CONTROL FUSE				ASSOCIATED CONVERTER LOCATION		
							NAME	BLOCK LOCATION			NAME	BLOCK LOCATION					
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	1/6	28	04	1/6	28	08, 09, 11, 12	CA0	2/7	07	04	BA0	2/7	09	30	1/6	12	36
			05			14, 15, 17, 18	CB0				BB0						39
			40			28, 29, 31, 32	CC0				BC0						42
		28	41		28	34, 35, 37, 38	CD0			04	BD0			30	1/6	12	45
		32	04		32	08, 09, 11, 12	CA2			10	BA2			36	2/7	12	24
			05			14, 15, 17, 18	CB2				BB2						27
			40			28, 29, 31, 32	CC2				BC2						30
		32	41		32	34, 35, 37, 38	CD2			10	BD2			36			33
		45	04		45	08, 09, 11, 12	CA4			16	BA4			42			36
			05			14, 15, 17, 18	CB4				BB4						39
			40			28, 29, 31, 32	CC4				BC4						42
	1/6	45	41	1/6	45	34, 35, 37, 38	CD4			16	BD4			42			45
	2/7	28	04	2/7	28	08, 09, 11, 12	CA1			04	BA1			30			12
			05			14, 15, 17, 18	CB1				BB1						15
			40			28, 29, 31, 32	CC1				BC1						18
		28	41		28	34, 35, 37, 38	CD1			04	BD1			30		12	21
		32	04		32	08, 09, 11, 12	CA3			10	BA3			36		17	24
			05			14, 15, 17, 18	CB3				BB3						27
			40			28, 29, 31, 32	CC3				BC3						30
		32	41		32	34, 35, 37, 38	CD3			10	BD3			36			33
		45	04		45	08, 09, 11, 12	CA5			16	BA5			42			36
			05			14, 15, 17, 18	CB5				BB5						39
			40			28, 29, 31, 32	CC5				BC5						42
	2/7	45	41	2/7	45	34, 35, 37, 38	CD5	2/7	07	16	BD5	2/7	09	42	2/7	17	45

TABLE C														
FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION			FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION			
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR	
Distributor and scanner matrix	1/6	28	08	0/5	24	02P, 04, 05P, 07	Distributor and scanner matrix	2/7	28	08	0/5	32	02P, 04, 05P, 07	
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13	
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26	
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32	
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43	
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49	
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62	
			18		24	63P, 65, 66P, 68				18		32	63P, 65, 66P, 68	
			28		28	02P, 04, 05P, 07				28		36	02P, 04, 05P, 07	
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13	
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26	
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32	
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43	
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49	
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62	
		28	38		28	63P, 65, 66P, 68			28	38		36	63P, 65, 66P, 68	
		32	08		40	02P, 04, 05P, 07			32	08		48	02P, 04, 05P, 07	
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13	
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26	
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32	
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43	
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49	
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62	
			18		40	63P, 65, 66P, 68				18		48	63P, 65, 66P, 68	
			28		44	02P, 04, 05P, 07				28		52	02P, 04, 05P, 07	
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13	
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26	
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32	
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43	
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49	
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62	
	1/6	32	38	0/5	44	63P, 65, 66P, 68		2/7	32	38	0/5	52	63P, 65, 66P, 68	

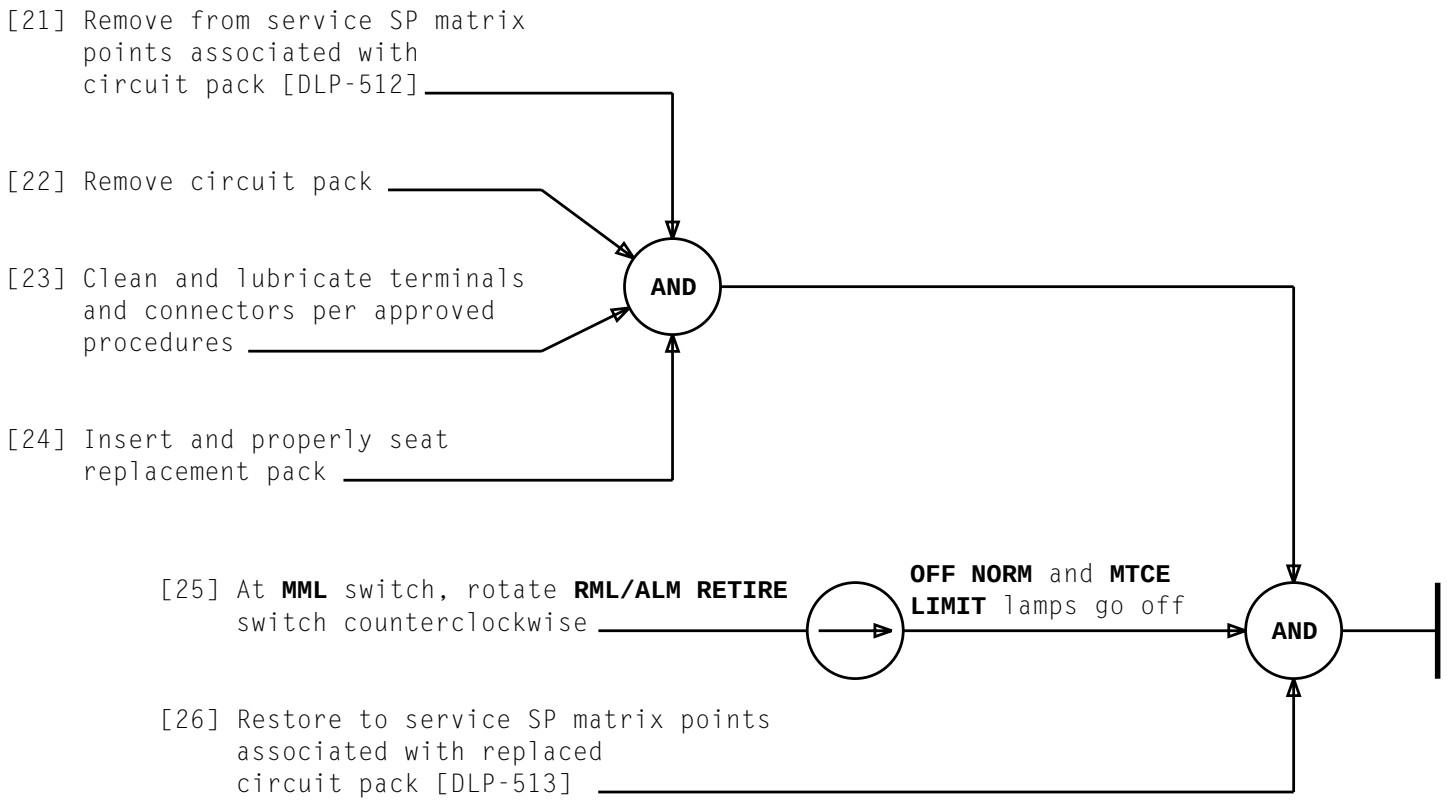
REPLACE CIRCUIT PACK, ALARMS RETIRED WITH MATRIX MAINTENANCE LIMIT SWITCH

TABLE C (Contd)

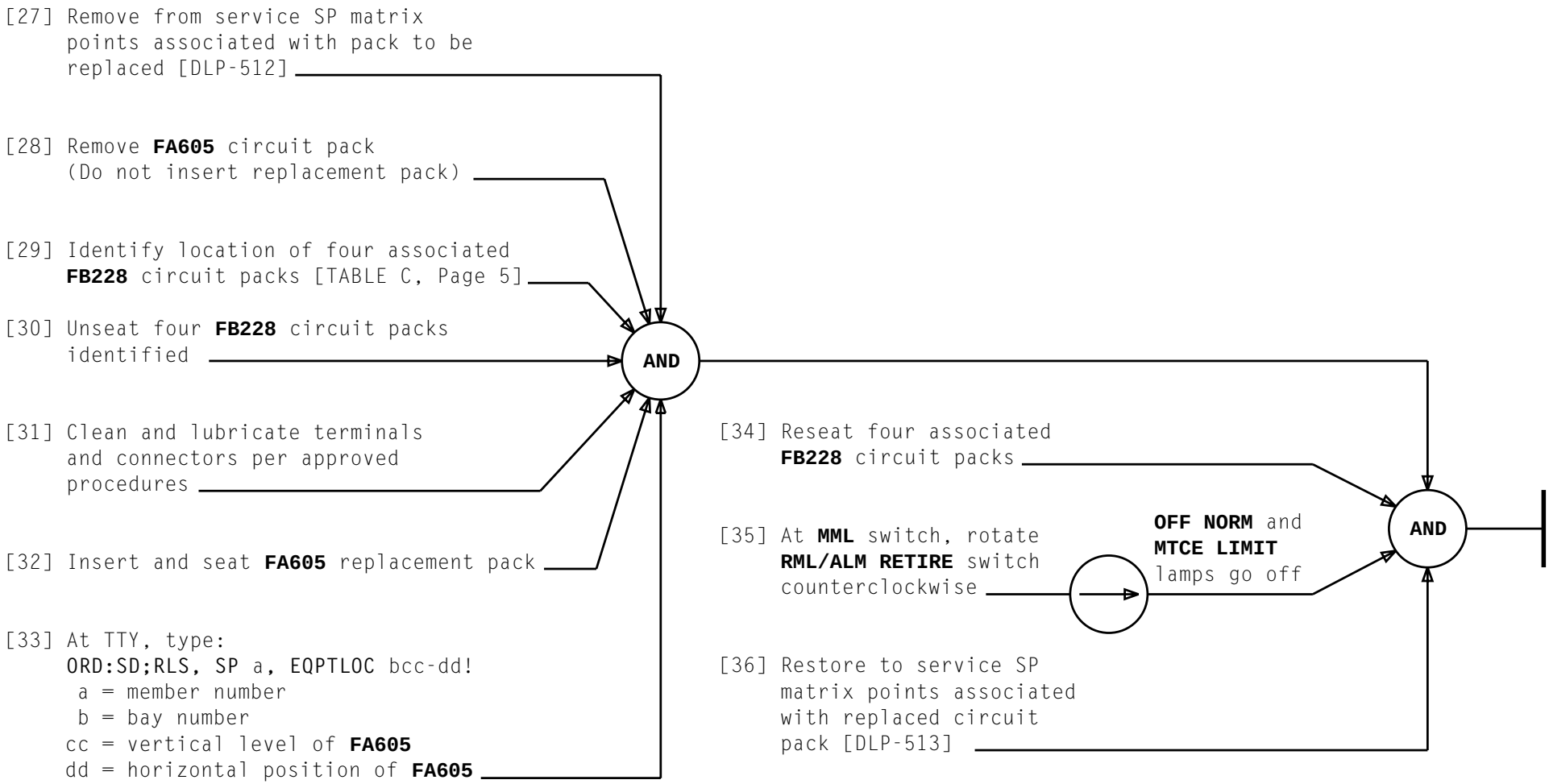
FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION			FRAME	FA605 LOCATION			ASSOCIATED FB228 PACK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	1/6	45	08	0/5	56	02P, 04, 05P, 07	Distributor and scanner matrix	2/7	45	08	0/5	64	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18	0/5	56	63P, 65, 66P, 68				18	0/5	64	63P, 65, 66P, 68
			28	0/5	60	02P, 04, 05P, 07				28	0/5	68	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
	1/6	45	38	0/5	60	63P, 65, 66P, 68		2/7	45	38	0/5	68	63P, 65, 66P, 68



REPLACE CIRCUIT PACK, ALARMS RETIRED WITH MATRIX MAINTENANCE LIMIT SWITCH



REPLACE CIRCUIT PACK, ALARMS RETIRED WITH MATRIX MAINTENANCE LIMIT SWITCH



REPLACE CIRCUIT PACK, ALARMS RETIRED WITH MATRIX MAINTENANCE LIMIT SWITCH

REPLACE CIRCUIT PACK

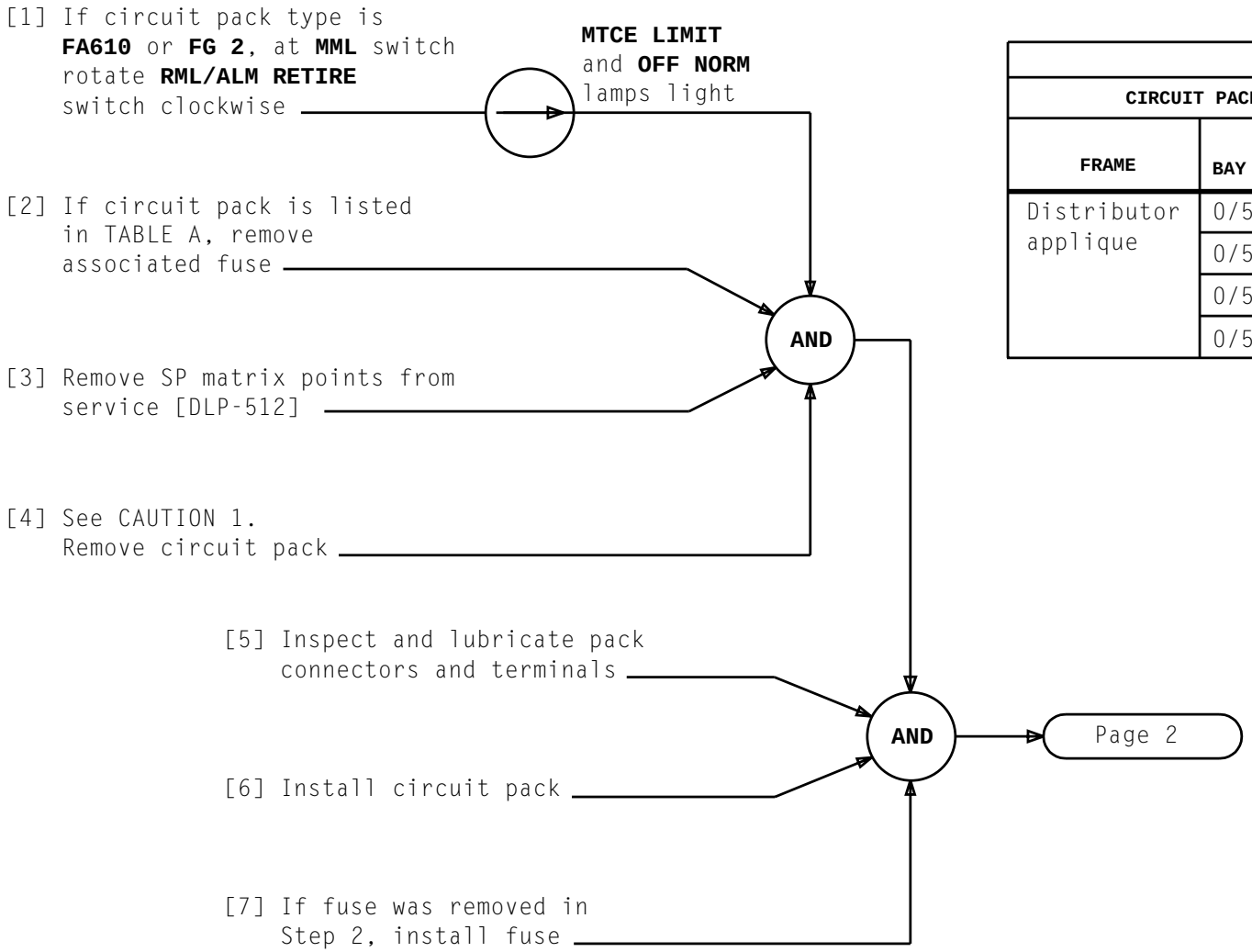
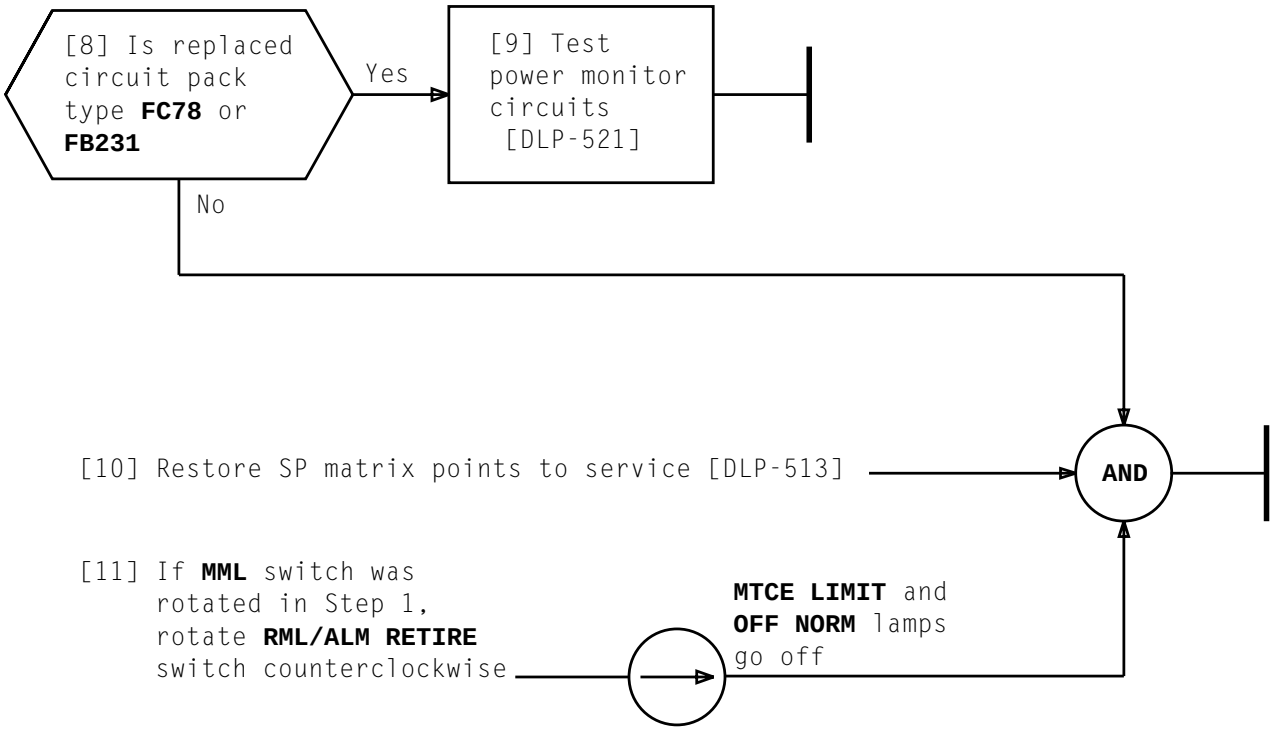


TABLE A

CIRCUIT PACK LOCATION				FUSE			
					BLOCK LOCATION		
FRAME	BAY	VERT	HOR	DESIG	BAY	VERT	HOR
Distributor applique	0/5	68	2 thru 29	**PPB0**	0/5	07	14
	0/5	68	33 thru 60	**PPB1**	0/5	07	14
	0/5	64	2 thru 29	**PPB2**	0/5	07	14
	0/5	64	33 thru 60	**PPB3**	0/5	07	14

CAUTION 1
If OS lamp does not light, delay pack replacement until duplicate pulse points are returned to service



REPLACE CIRCUIT PACK

1. Remove SP matrix points from service [DLP-512]

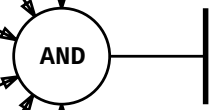
2. At TTY, type
   ORD:SD;RLS:SP a,**EQPTLOC** bcc-dd!
   a = member number
   b = bay
   cc = vertical level
   dd = horizontal position

3. See NOTE 1. Remove **FB228** circuit pack

4. Inspect and lubricate packs, terminals, and connectors

5. Install and properly seat **FB228** circuit pack

6. Restore SP matrix points to service [DLP-513]



REPLACE FB228 CIRCUIT PACKS

NOTE 1
Circuit pack should be removed with distributor applique frame powered up

[1] See FIG. 1, Page 2. On raw data printout for first failing test, locate last data word printed

In first failing phase pident:

[2] Use last data word address to locate where first subroutine was called

[3] Read any comments at CALLSUB statement located

[4] Note name of subroutine called in CALLSUB statement label item

[5] Locate and read prologue of program unit containing CALLSUB statement

AND

In loader map symbols section:

[6] Locate name of subroutine called in symbol column (name noted in Step 4)

[7] In PIDENT column, note pident that contains this subroutine and obtain this pident

In pident containing subroutine:

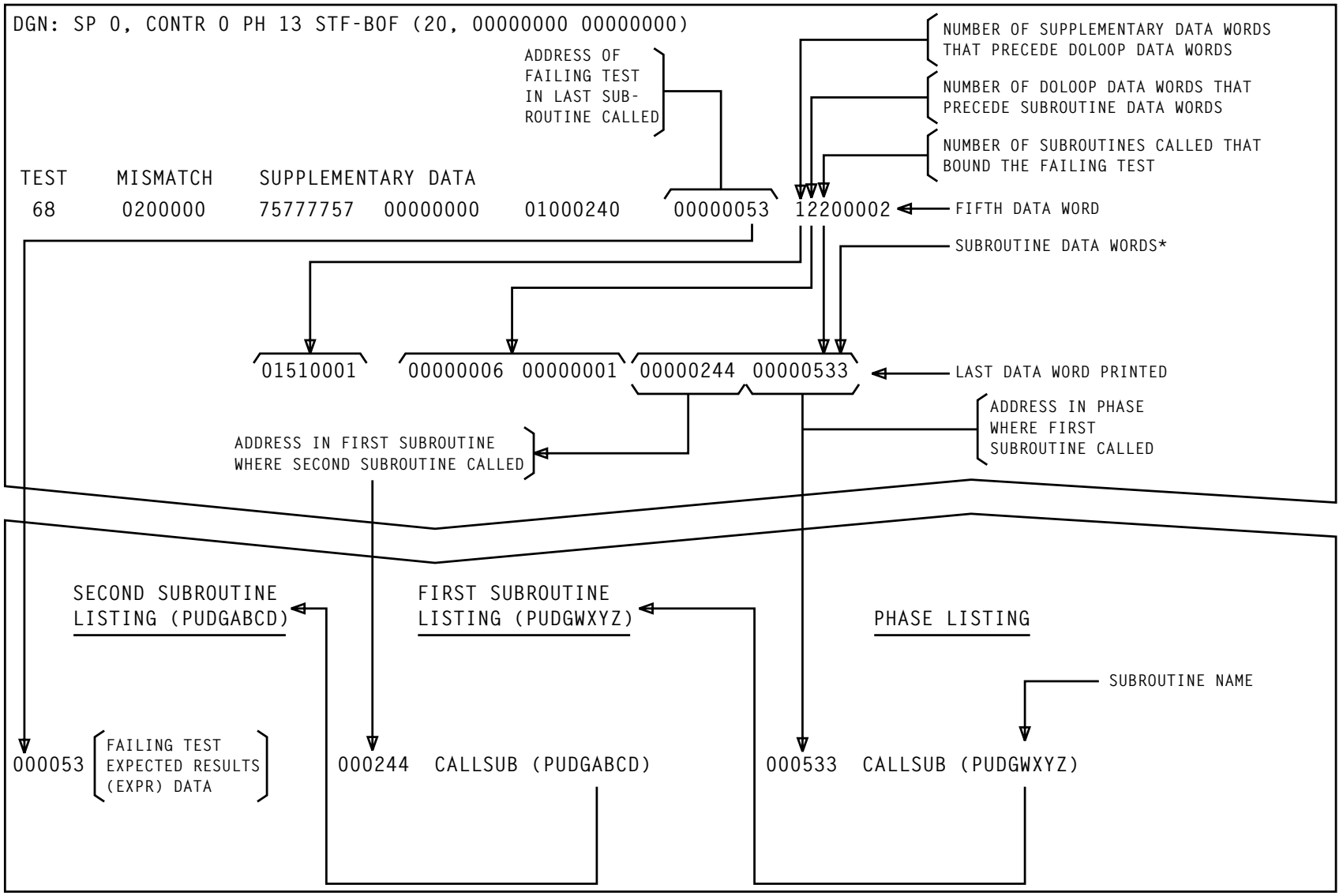
[8] Locate subroutine using pident reference section

[9] Read subroutine prologue

AND

Page 3

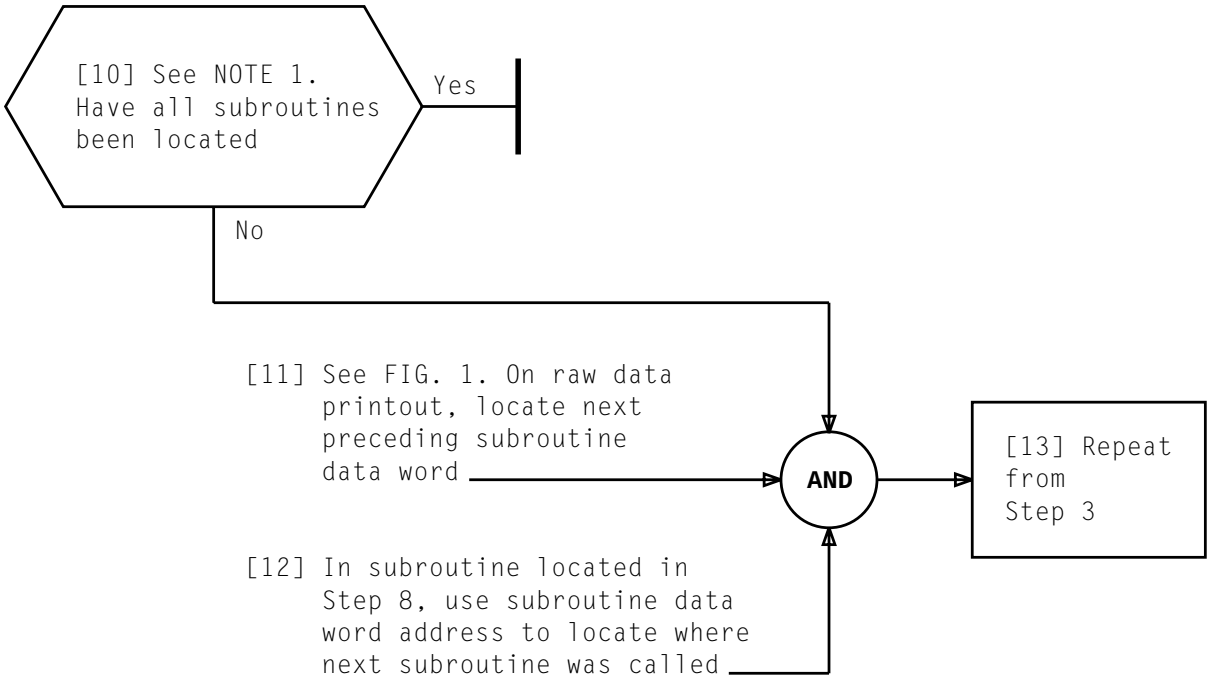
DETERMINE LOCATION AND FUNCTION OF SUBROUTINES CALLED



* SUBROUTINE DATA WORDS PRECEDING LAST ONE PRINTED ARE FOR THE 2ND, 3RD, ETC, SUBROUTINES CALLED (RIGHT TO LEFT)

FIG. 1 — Relationship of Subroutine Data Words to Phase and Subroutine Listings

DETERMINE LOCATION AND FUNCTION OF SUBROUTINES CALLED



DETERMINE LOCATION AND FUNCTION OF SUBROUTINES CALLED

NOTE 1
On raw data printout, the sixth digit in fifth data word following mismatch data indicates number of subroutines called

NOTE: AT&T 234-180-020 contains a description of DIAL statements

1. Read several DIAL statements just before failing test to determine what was occurring prior to test failing

2. Read failing test DIAL statement and any comments

3. Note "asterisk data" that follows failing test number in listing

4. Note relationship of asterisk line data to first five raw data printout words that follow mismatch data [FIG. 1]

5. In TABLE A, locate failing DIAL statement and use description column to determine meaning of data contained in second and third raw data words following mismatch data

NOTE: For scan point, SD point, and SP point addresses the third data word breaks down as follows:
23-17 = Don't care
16-12 = SP number
11-10 = Matrix
09-04 = Row
03-00 = Column

6. Use TABLE B to obtain additional information with respect to second and third data words

End of procedure

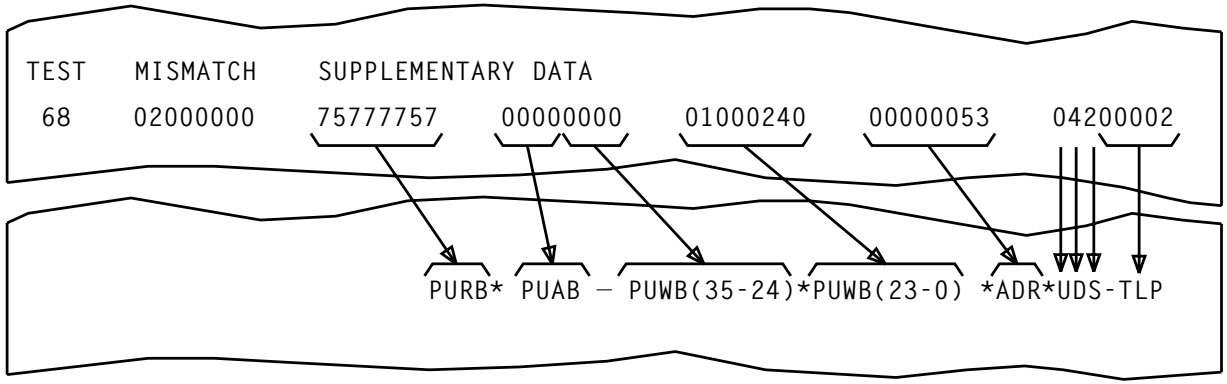


FIG. 1 — Example of Raw Data Printout Relationship to Asterisk Line at Failing Test

ANALYZE FAILING TEST DATA TO DETERMINE TEST FUNCTION

TABLE A
DESCRIPTION OF DATA CONTAINED IN SECOND AND THIRD DATA WORD FOR EACH TYPE DIAL TEST STATEMENT

DIAL TEST STATEMENT	DESCRIPTION (NOTE)
CCBB	A = B = 0, C buffer bus address
CITOP CITOPI	Standard PUB format*
CLKOP	A = fault chain, B = reply bus C = CC pulse point address
MEMOPI	Standard PUB format* PUWB bits 16-10 = address of memory accessed PUWB bits 9-7 = memory level for time-slot memories and busy-idle map memories bit 0 = switching and permuting CKT
MTXMOP	Standard PUB format* PUWB bits 8-0 = matrix under test
PLOP	"MA" pulse point accessed by an SP: A (bits 11-2) = SP K code B = SP OPCODE to bit pulse point 0 (1640) C = address of point "MA" pulse point accessed by CC pulse point A = B = 0, C = CC pulse point address
PUDROP PUDROPI	Standard PUB format*
PULSE	A = B = 0, C = CC pulse point address
PULSI	Same as PLOP statement
PUOP PUOPI	Standard PUB format*
PUOPBBR PUOPIBBR	PUOP Part: standard PUB format* BBR Part: A = B = 0, C = buffer bus address

DIAL TEST STATEMENT	DESCRIPTION (NOTE)
SCANI	A (bits 11-2) = SP K code B = SP OPCODE to bit pulse point 0 (1640) C = address of point
SDI	A (bits 11-2) = SP K code B = SP OPCODE to bit pulse point 0 (1640) C = address of point
SESOP	Standard PUB format*
STORE	A = B = 0, C = specified expected result for VIC diagnostic, B = VIC failing test
TMSOP TMSOPI	Standard PUB format* PUWB bits 16-10 = address of memory accessed
TSIESR	Standard PUB format* except C = don't care
TSIMOP	Same as MEMOPI statement

Note: The following format relates A, B, and C to the second and third data words following mismatch data

SECOND WORD _____ THIRD WORD _____

AAAABBBB CCCCCCCC

*The standard PUB format is:

A = PUEA/PUAB
B = PUWB (Bits 35-24) = OPAD, (Bits 35-29) = OPCODE
C = PUWB (Bits 23-0) = ADDRESS

TABLE B	
SECOND AND/OR THIRD DATA WORD	**LOCATION OF INFORMATION**
	SD-4A028-01 Frame
OPAD/OPCODE	SD-4A013-01
SD point address	VER:SPMTXPK:SDP,MDN O' a! a = SD point address
Scan point address	VER:SPMTXPK:SCP,MSN O' a! a = scan point address

On summary data printout [FIG. 1, Page 2]:

1. Note monitor point address on first CD line under V1 column

2. Convert to decimal the octal failing bit in leftmost four octal digits of word under adjacent V2 column.

In test access PK document:

3. Find address and failing bit

NOTE: Negative addresses (for example, 77771510) precede positive addresses in PK. If address is not found, other addresses and bits may be investigated using other V column pairs (first CD line or other CD lines). The PK data for these addresses are further removed from the fault and PR data may be of greater value

4. Note pack type and gate name for failing bit

In CPS for pack type:

5. Locate component list section

6. Look in each DESIG column for gate name

NOTE: If (A) or (B) appears after gate name in Test Access PK, it indicates A or B half of register (gate)

7. In adjacent SH LOC column, use location indicated to find gate in CPS

8. At gate, note lead name and terminal leaving the gate to outside the pack [FIG. 2, Page 2]

In test access PK document:

9. For failing bit note FS, SD, and symbol name

In SD FS indicated:

10. Locate symbol number having same symbol name as indicated in test access PK for failing bit

11. Find lead interconnection section for this symbol

12. Using terminal and lead name noted in Step 8, find corresponding SD lead name

IDENTIFY LEAD IN PATH OF FAILING BIT USING SUMMARY DATA PRINTOUT AND TEST ACCESS PK DOCUMENT

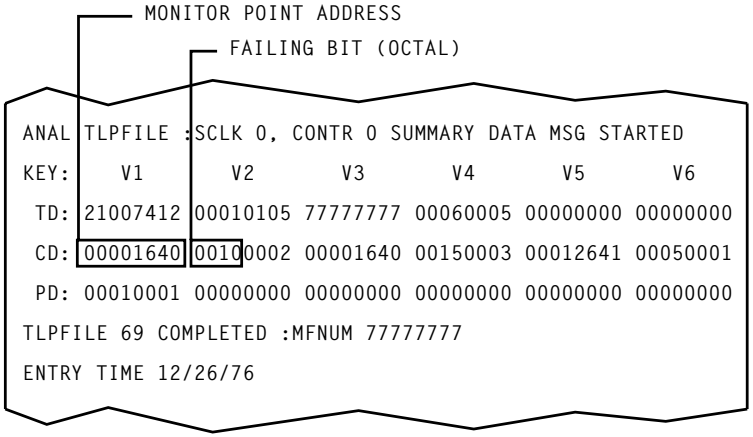


FIG. 1 — Example of Summary Data Printout

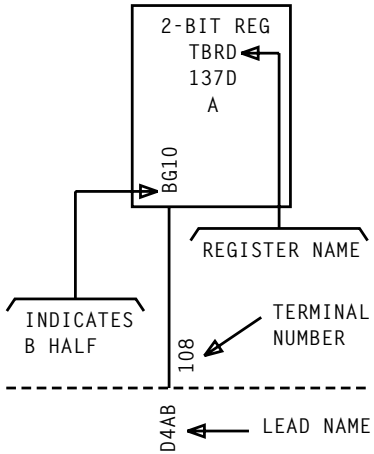


FIG. 2 — Example of Lead Leaving B Half of a CPS Register

IDENTIFY LEAD IN PATH OF FAILING BIT USING SUMMARY DATA PRINTOUT AND TEST ACCESS PK DOCUMENT

SUMMARY

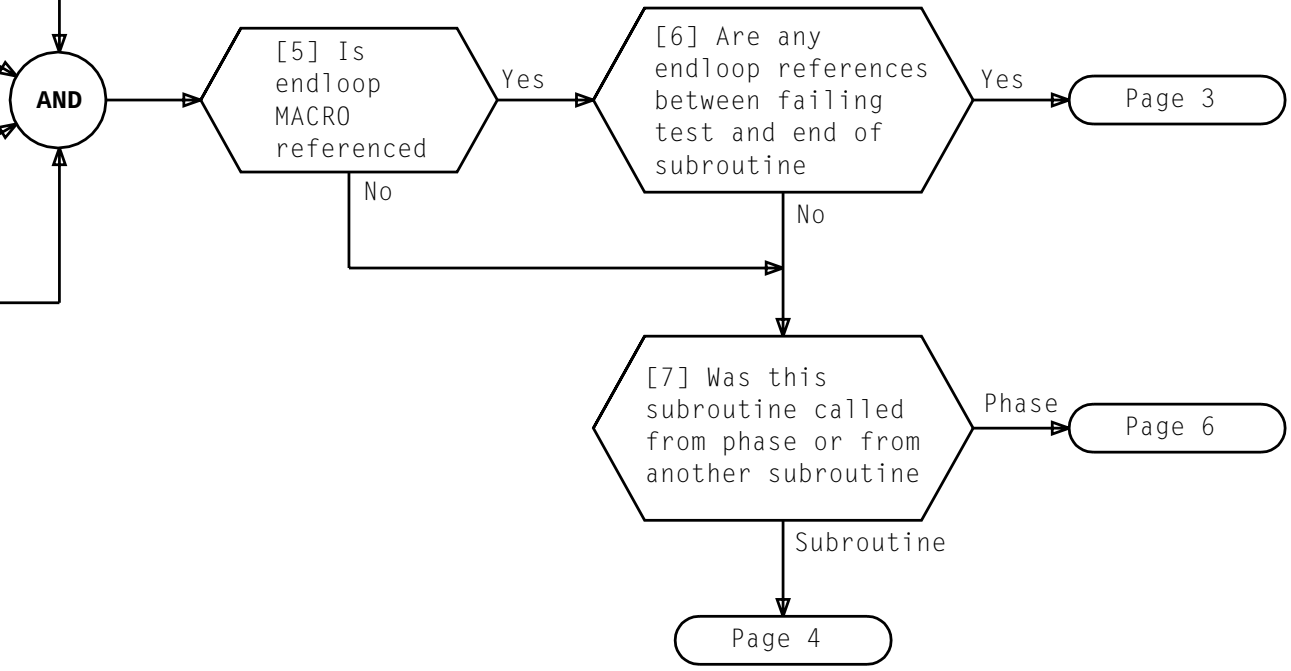
Locate failing test in last subroutine called. Look past failing test for endloop statements. For each endloop statement located in subroutine, use endloop label variable to identify location of associated doloop statements. Locate each doloop statement. Obtain doloop index values from raw data printout and determine meaning for each doloop [FIG. 1]. If endloop statement was not found in subroutine, go to where subroutine was called and look for endloop statements after CALLSUB statement. Continue to look for endloop statements after CALLSUB statements until all doloops indicated on raw data printout for first failing test are located. Read any comments at the doloop statements

[1] Refer to FIG. 1 and DIAL statement definitions in AT&T 234-180-020 as necessary

[2] Locate failing test in last subroutine called and note page and line number of expected results (EXPR)

[3] Locate last address in this subroutine and note page and line number

[4] Locate subroutine pident reference section



DETERMINE LOCATION AND FUNCTION OF DOLOOPS, SUBROUTINES CALLED

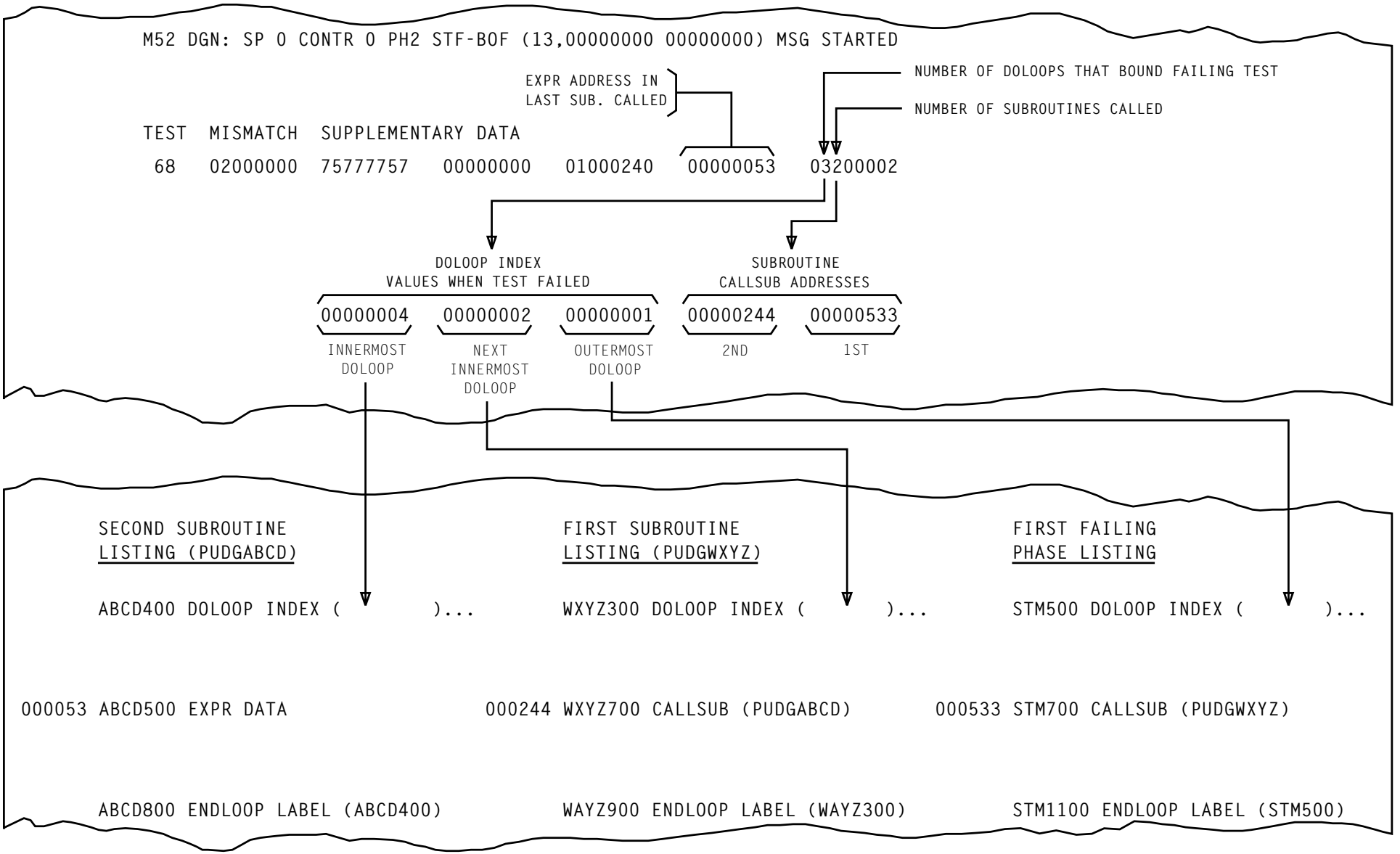
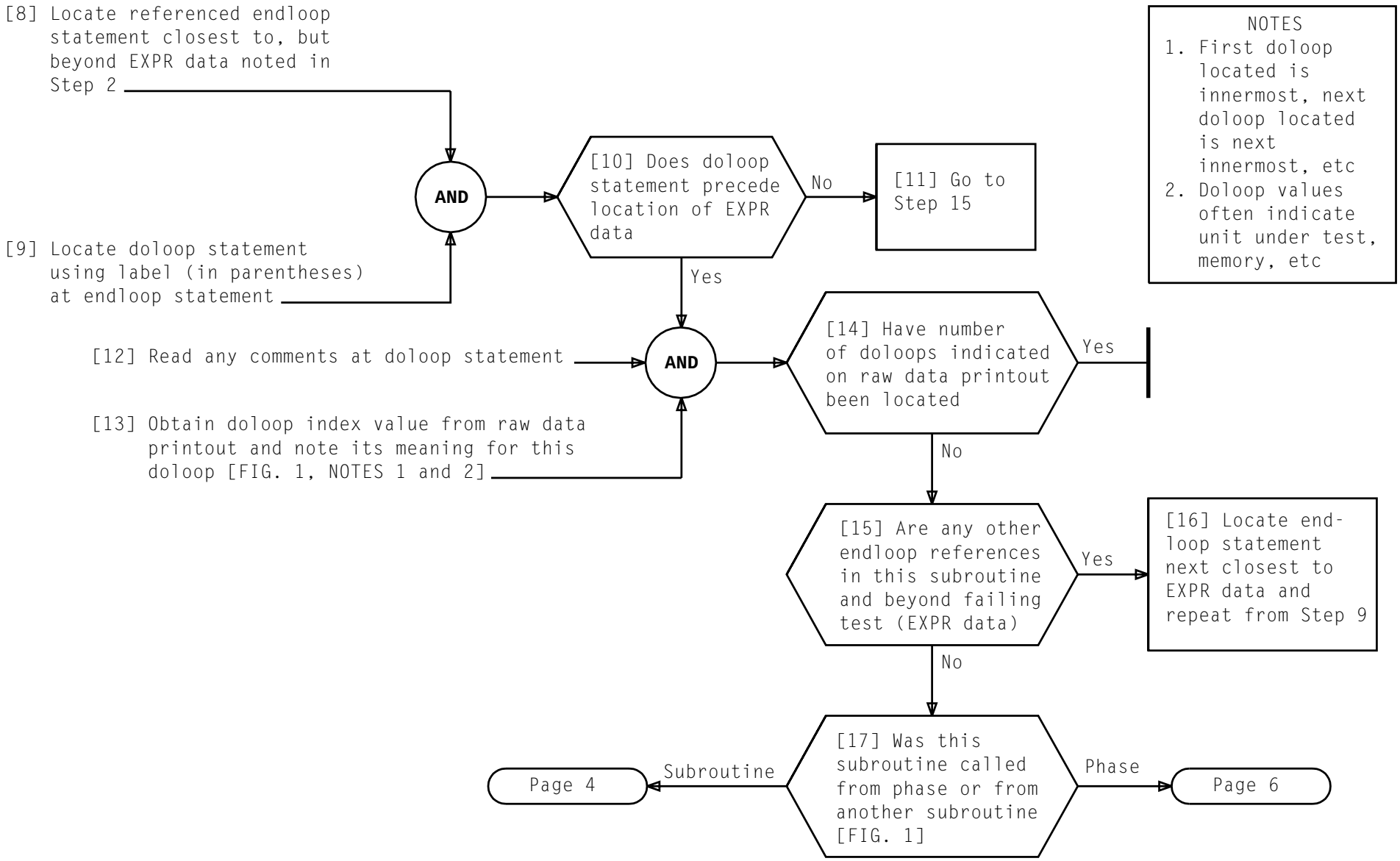
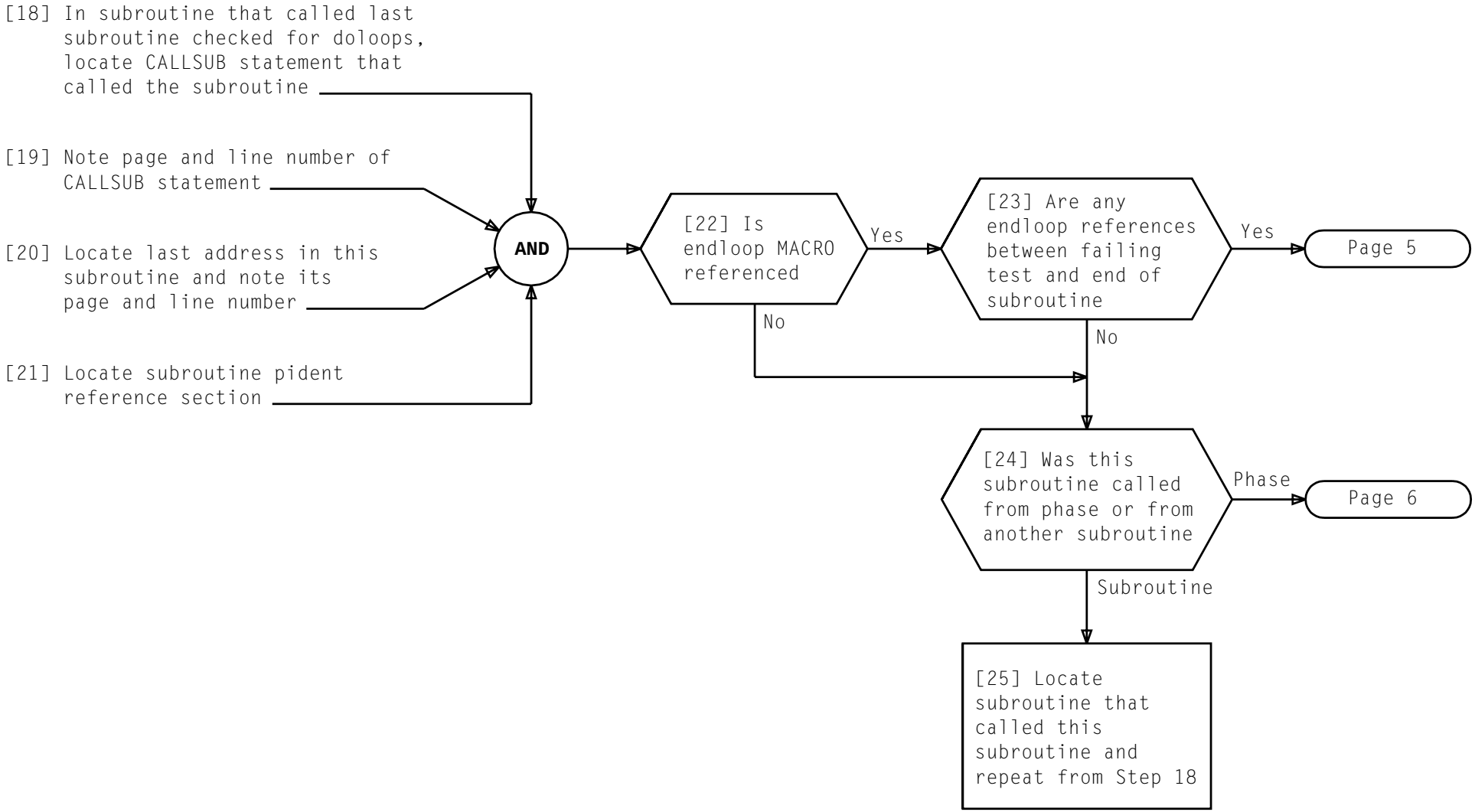


FIG. 1 – Example of Doloop Raw Data Relationship to Listings When Subroutines Called

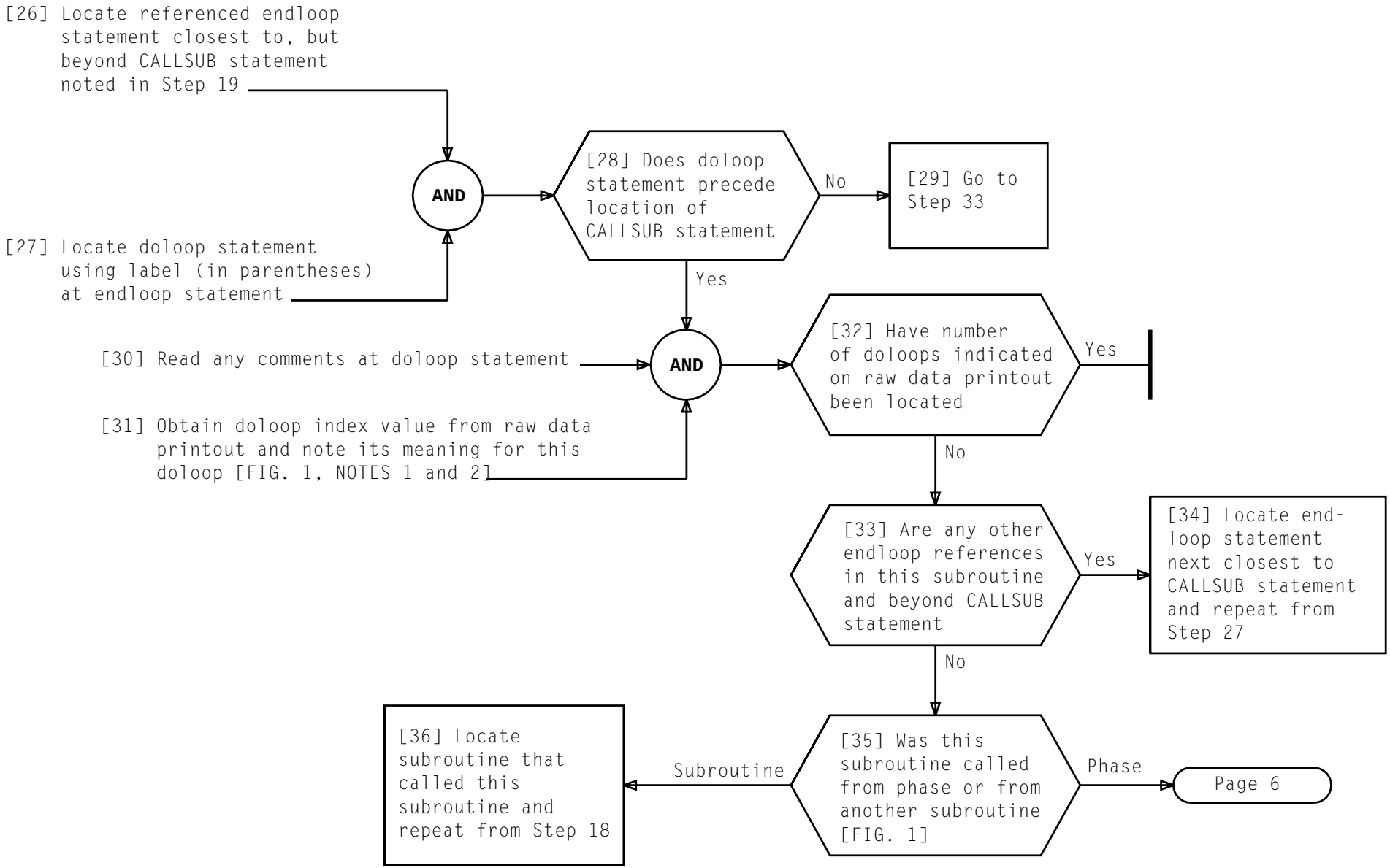
DETERMINE LOCATION AND FUNCTION OF DOLOOPS, SUBROUTINES CALLED



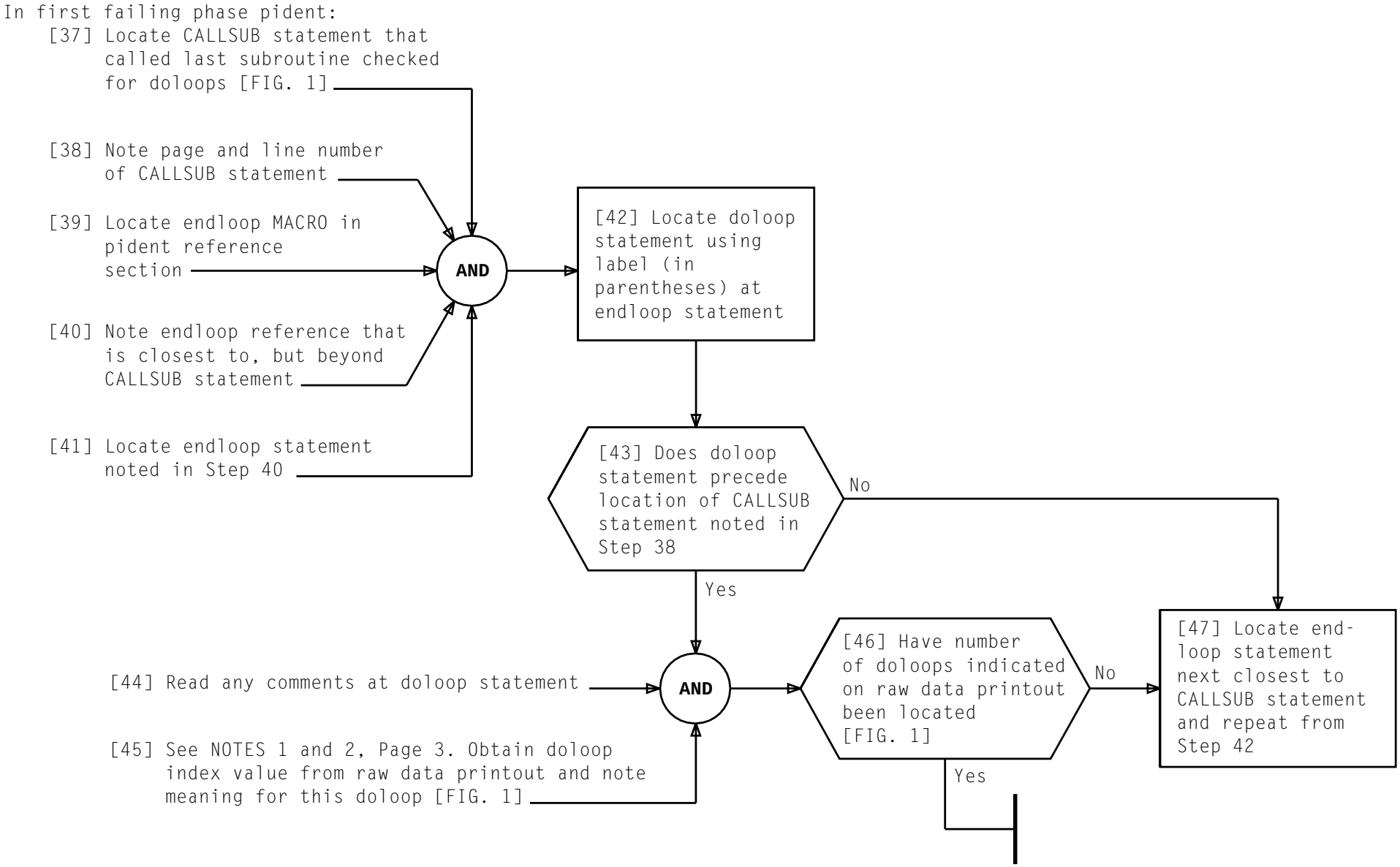
DETERMINE LOCATION AND FUNCTION OF DOLOOPS, SUBROUTINES CALLED



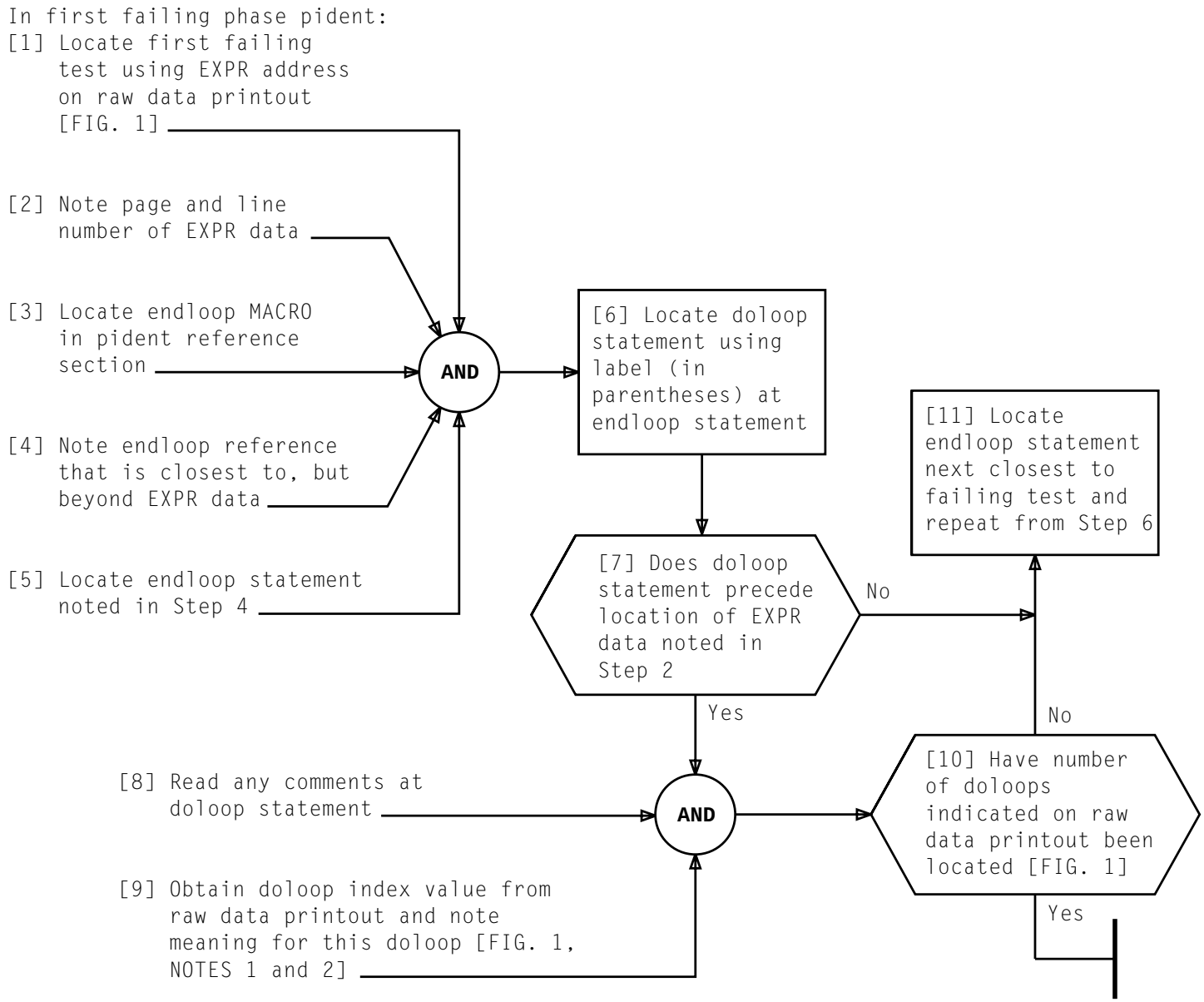
DETERMINE LOCATION AND FUNCTION OF DOLOOPS, SUBROUTINES CALLED



DETERMINE LOCATION AND FUNCTION OF DOLOOPS, SUBROUTINES CALLED



DETERMINE LOCATION AND FUNCTION OF DOLOOPS, SUBROUTINES CALLED



NOTES
1. First doloop located is innermost, next doloop located is next innermost, etc
2. Doloop values often indicate unit under test, memory, etc

DETERMINE LOCATION AND FUNCTION OF DOLOOPS, NO SUBROUTINES CALLED

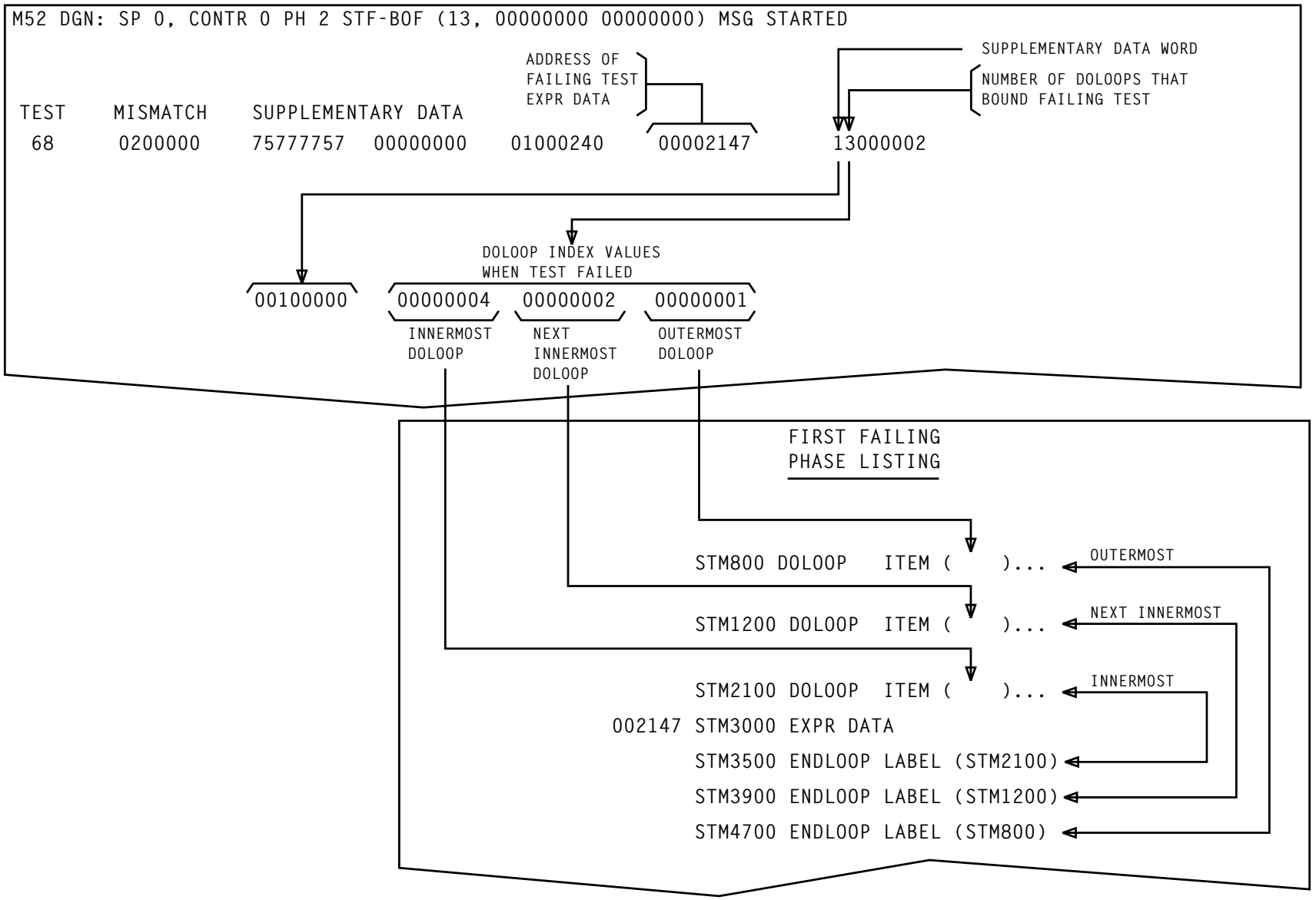
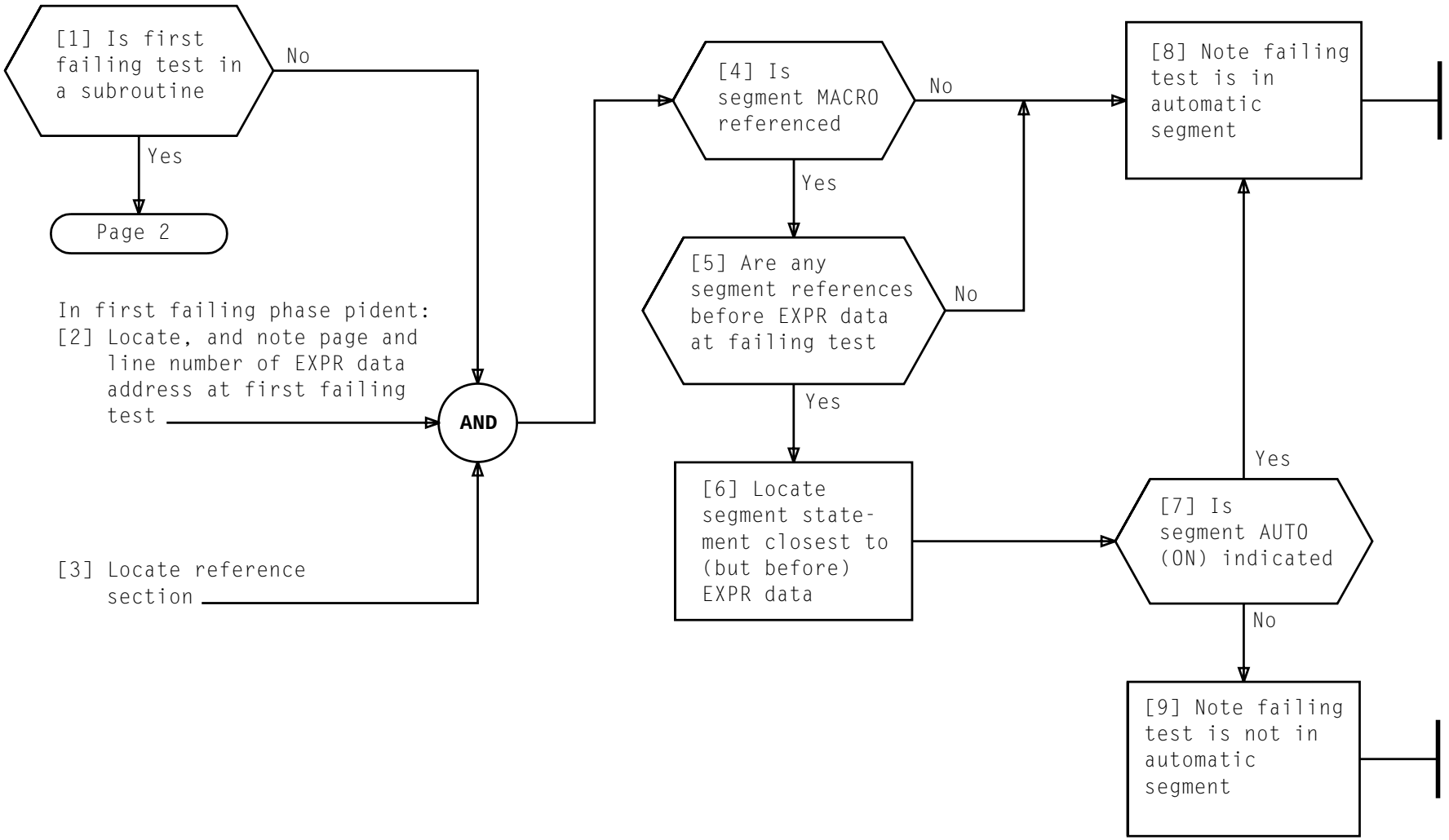


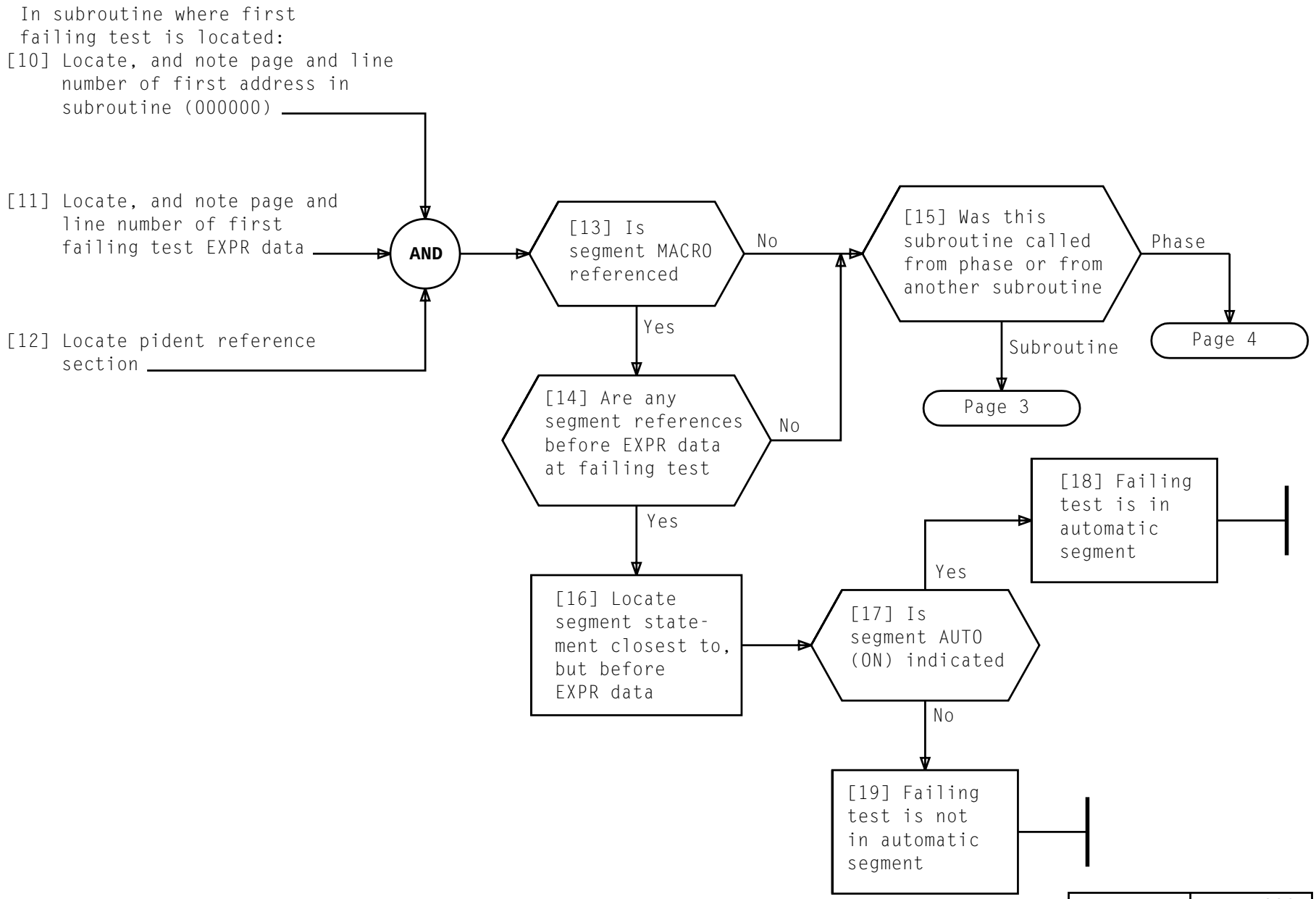
FIG. 1 – Example of Raw Data Doloop Word Relationship to Phase Listing

DETERMINE LOCATION AND FUNCTION OF DOLOOPS, NO SUBROUTINES CALLED

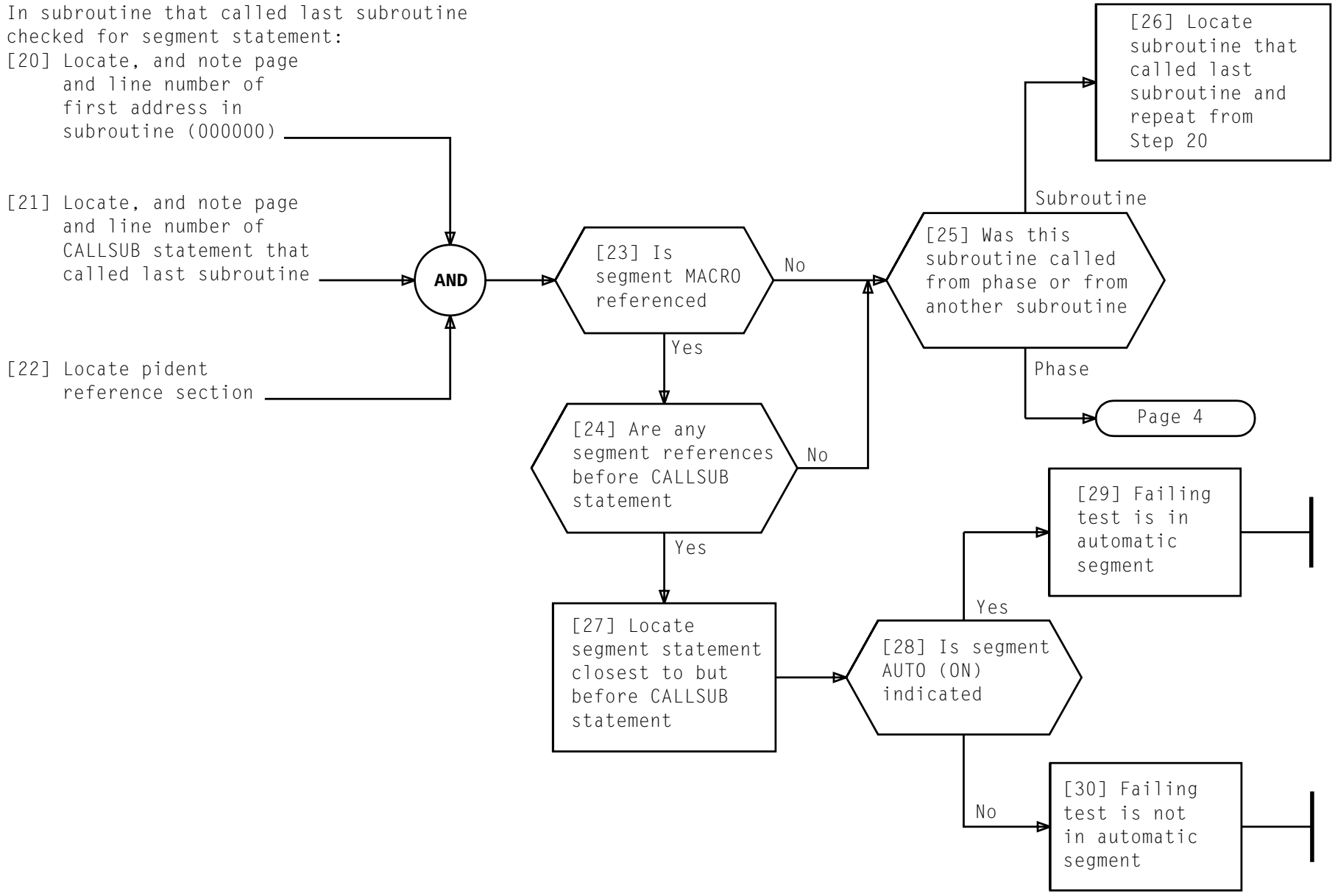
SUMMARY
Locate first segment statement before first failing test. If segment statement has AUTO (ON) indicated, the failing test is in an automatic segment. If AUTO (ON) is not indicated, the failing test is not an automatic segment. If no segment statement is found before the first failing test, the failing test is in an automatic segment.



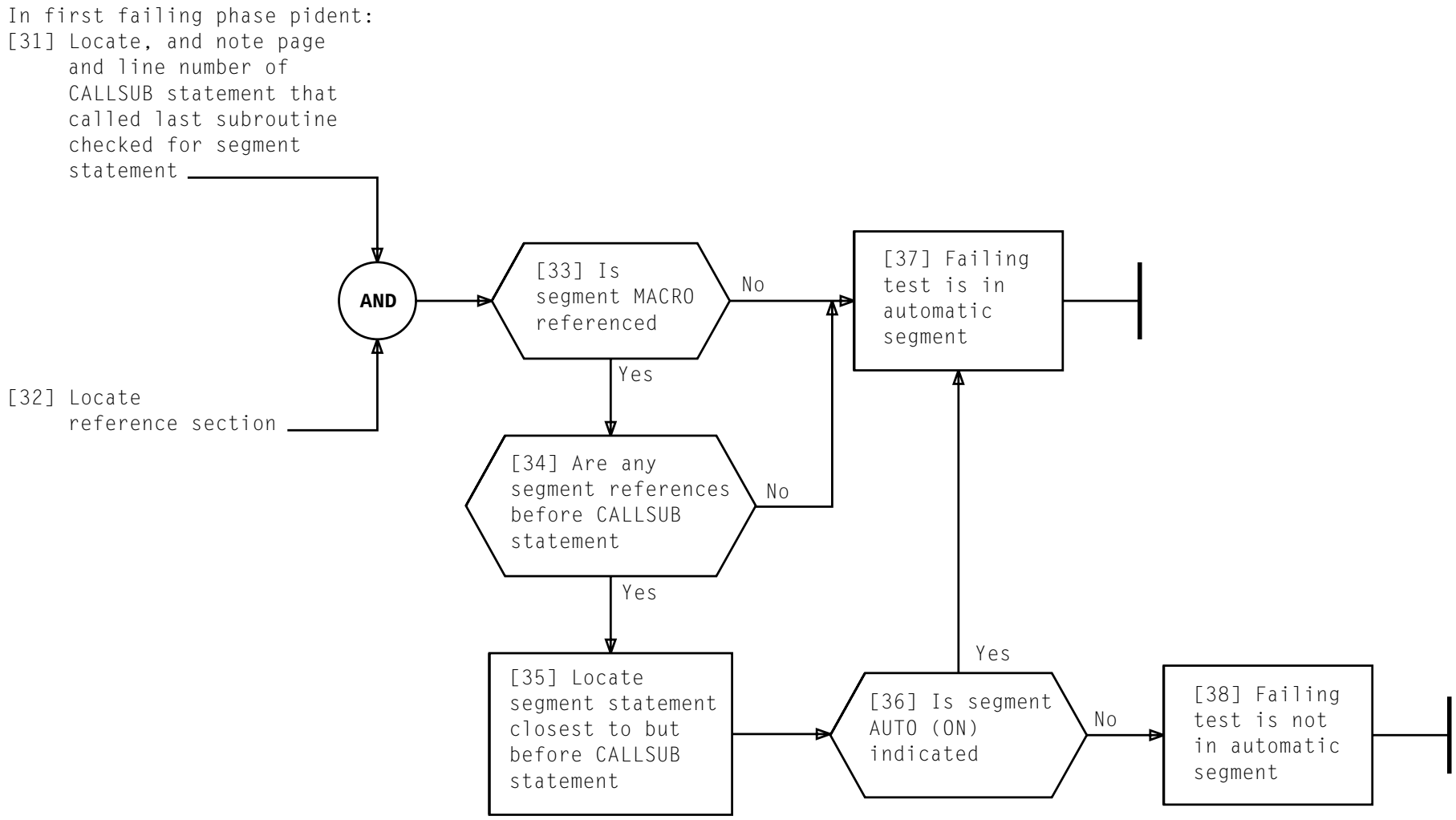
DETERMINE IF FAILING TEST IS IN AUTOMATIC SEGMENT



DETERMINE IF FAILING TEST IS IN AUTOMATIC SEGMENT



DETERMINE IF FAILING TEST IS IN AUTOMATIC SEGMENT



DETERMINE IF FAILING TEST IS IN AUTOMATIC SEGMENT

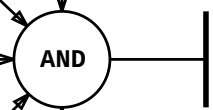
1. Locate segment statement that determined failing test was not in an automatic segment

2. Note segment statement index word address for later use (loop–start address)

3. Locate first segment statement after first failing test

4. Note index word address of DIAL statement that follows segment statement located in Step 3 (loop–end address)

5. Type **EX:SP** a;**RPT 2:PH** b,**ADR** c-d!
   a = failing SP member number
   b = first failing phase
   c = loop–start address (Step 2)
   d = loop–end address (Step 4)



SET UP LOOP OVER FIRST FAILING TEST WHEN TEST IS IN FORCE SEGMENT

Reissued

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REMOVE SP MATRIX POINTS FROM SERVICE

SUMMARY

When SP frame does not contain combined distributor and scanner matrix frame, and both controllers are in service, remove only points identified in suspect pack. When either controller is OOS, remove all points on associated packs from service. On all frames, use **SET:TRKSTAT MTC. DSA,CIN** e:**SDM!** to remove TSN or TDN points on a pack. Use TABLE C to identify required action to remove affected MDN points on a pack

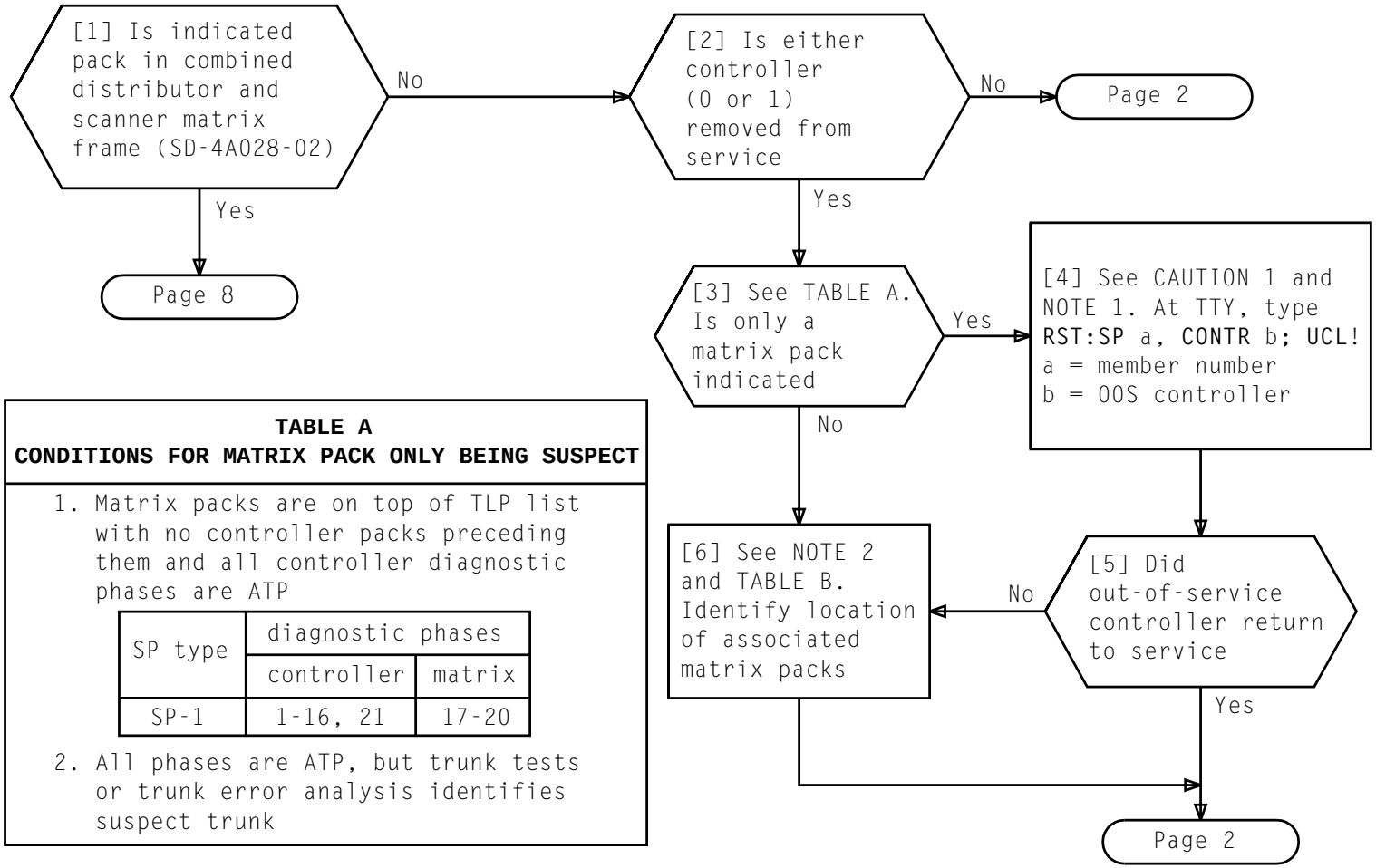


TABLE A
CONDITIONS FOR MATRIX PACK ONLY BEING SUSPECT

1. Matrix packs are on top of TLP list with no controller packs preceding them and all controller diagnostic phases are ATP

SP type	diagnostic phases	
	controller	matrix
SP-1	1-16, 21	17-20

2. All phases are ATP, but trunk tests or trunk error analysis identifies suspect trunk

NOTES

1. Unconditional restoral of associated controller could eliminate time-consuming process of removing from service other matrix packs. If restoral fails, F-level will occur and associated packs must be removed from service
2. Points on associated matrix packs must also be removed from service before removal of suspect matrix pack

CAUTION 1

Take extreme care to ensure that these procedures are used. Restoral of a bad controller with the matrix pested can affect all matrix points depending on fault location

[7] Identify matrix point types associated with matrix pack by typing
VER:SPMTXPK: SP a,**EQPTLOC** bcc-dd!
a = member number
b = bay number
cc = level
dd = horizontal position

[8] Are point types TSN or TDN

No

[9] See TABLE C. Determine required action for each UNIT TYPE (UTMN) associated with miscellaneous point

Yes

[10] See NOTE 3. Request TOC to type
OP:TRKSTAT,CIN e:**SDM**!
and note status of each trunk

[11] See NOTE 3. Notify TOC to type
SET:TRKSTAT,MTC.DSA,CIN e:**SDM**!
e = each trunk on verify message [Step 7]

[12] See NOTE 3. Request TOC to type
OP:TRKSTAT,CIN e:**SDM**!
;and verify each trunk is MTC, DSA and TRAF (OOSI)

TABLE B

TYPE OF PACK	TABLE	PAGE
Scan point packs	D	6
SD point packs	E	7

NOTE 3
If CINs are associated with **FB228** circuit pack, each matrix point must be removed on a per-CIN basis. (SDM option will not work)

REMOVE SP MATRIX POINTS FROM SERVICE

TABLE C	
UNIT TYPE	**REQUIRED ACTION**
Alarm grid (miscellaneous A and B frame)	1. Miscellaneous SD points (MDN) associated with GRID unit type in miscellaneous A or B frame — MOC and TEC work centers should be notified. They should retire any existing alarms, remove any alarm transfers or grouping between maintenance centers, and remove any foreign alarm transfers which exist. These can be reestablished when SP repair work is completed. 2. Miscellaneous scan points associated with GRID unit type in miscellaneous A or B frame — Office alarm system will not work to full capacity when the scan pack is removed. The MOC (and TECs) should be notified that GRID is disabled during repair activity. Effects could be loss of grid report messages (but retention of frame alarm messages when provided), inability to retire alarms via alarm retire keys (but OK via TTY), and loss of alarm messages from a foreign alarm system. Audible and visual indicators will still be present. Remove any transfer grouping or foreign alarm for each point involved At TTY, for transfers type **STOP:CFR;ALMGRP[MC** a**]!** (a = maintenance center) At TTY, type for stopping alarm routing: **STOP:RTE;ALM [MC** a**]!** (a = maintenance center)
Ring and tone	Miscellaneous scan and SD points associated with the ringing and tone plant — MOC and TEC work centers should be notified giving them unit type and member number information. When pack replacement is complete, audit 20 should be requested (**AUD: NUM**). Obtain unit status and retain for restoral. At TTY, type **OP:TONESTAT!**
51-A test position	Miscellaneous scan and SD points associated with 51A test positions (TPOS) — Loss of scan or SD points at the test position will disable some of the testing capabilities. Notify TOC to suspend testing and place the position in the "position unattended" state to prevent incoming 101 calls at the positions involved until the SP repair work is complete. Request TOC to suspend tests and verify MTC DSA and TRAF (OOSI). At TTY, for each trunk involved, type **OP:TRKSTAT, CIN** e! (e = trunk identity)
DOCT or NMDR power	Miscellaneous scan points associated with power for DOCT and NMDR units — MOC, MAC, and NMC work centers should be notified that acknowledgment failures on DOC transmitters may be caused by SP repair activity. These work centers should evaluate the need for manual action while SP repair activity is in progress

TABLE C (Contd)	
UNIT TYPE	**REQUIRED ACTION**
TTF frame	Miscellaneous scan points associated with TTF frames — TEC should be notified that alarm TTY messages will not be printed for units involved if an alarm sounds for the frame. Aisle pilot lamps will have to be used to locate the trouble
Network management	Miscellaneous scan and SD points related to network management units — for SD points, DOC signals and acknowledgments cannot be sent; for scan points, DOC signals and acknowledgments cannot be received. Notify MAC and NMC work centers giving them the unit type and member number involved, and MSN or MDN number so one can determine the CIN of the affected TSG. (This determination can be done from paper records or via verification of unit-type translator, and DOCT to TSG and DOCR to TSG translators.)
Recorded announcement	1. Miscellaneous SD points associated with the recorded announcement frame — the MOC and TEC work centers should be notified. When the pack replacement work is complete, audit 47 should be requested (**AUD: NUM**). 2. Miscellanous scan points associated with the RA frame — the recorded announcement frame should be removed if scan pack replacement is being done. A 100-ms closure required every 4 seconds for the message phase update function may be missing and will cause customers to be connected to the wrong phase of a message. The MOC should be notified that RA frame needs to be taken out of service in connection with an SP matrix repair procedure. Obtain unit status and retain for restoral. At TTY, type **OP:RASTAT** a! (a = member number)
Signal processor	Associated with all duplicated pulse points (MDNs) — the only action required is to remove the pulse points from service and power unit down via **PPL 0** or **PPR 0** switch. If the mate pulse cannot be accessed (ie, by VIF), out-of-service request will be denied.
Trunk and service circuits	On all universal scan and SD points, and on miscellaneous scan SD or pulse points associated with circuits — CIN of the circuit should be identified and all circuits should be turned down (maintenance disabled) by TOC or MOC before any packs are removed. At TTY, for each trunk involved, type **SET:TRKSTAT MTC,DSA,CIN** e!; and verify MTC DSA and TRAF (OOSI) **OP:TRKSTAT, CIN** e! (e = trunk identity)
DOC transmitter and NMDC frame	Only for miscellaneous scan points associated with the peripheral unit report, ignore NTPI, for DOC transmitter and NMDC frame — MOC should be notified that SP repair activity may affect status of units involved. Unit type and member number information should be passed to the MOC.

TABLE C (Contd)

UNIT TYPES	REQUIRED ACTION
Automatic Distribution Group (International Operator Center)	Automatic Distribution Group (ADG) is associated with International Operator Center (IOC) for gateway offices. If this is a scan point, notify ADG management for the DG member number specified. ADG distribution must not be changed during repair procedures since changes will not be processed by ***4ESS***™ switch during that time. Obtain the base scan point for this unit-type member number from the unit-type translator. Set the T-bits for the base point to ignore using ORD:TBITS;IGNORE:MSH ---! After pack has been replaced, set T-bits for the base point to NORM. If this is an SD point, then the ADG management should be notified that acknowledgments will not be sent during the repair process time.
Unit types other than above	The MOC and TEC work centers should be notified of the sort of SP repair procedure being performed, and should be given the unit type and member number of each unit implicated. At TTY, type INH:AUD:NUM 28!; and for each MSN involved, type ORD:TBITS;IGNORE:MSN e! (e = scan number identity). While MSNs are set to ignore, any state changes on these scan points will not be acknowledged until MSNs are set back to normal. If this is a base SP and these points are associated with the **ACK/OS/OFF** switch peripheral unit frames, there are no T-bits to set. For base SP, see WARNING 1.

WARNING 1

If this is a base SP and the points associated with the FA605 pack or power converter are for **ACK/OS/OFF** *switches on peripheral units, you will receive* REPT POWER ALARM FAILURES *on removal. This is a normal condition.*

REMOVE SP MATRIX POINTS FROM SERVICE

TABLE D					
LOCATION OF SCAN CIRCUIT PACK BEING REPLACED	ASSOCIATED SCAN PACK LOCATION (NOTE)		LOCATION OF SCAN CIRCUIT PACK BEING REPLACED	ASSOCIATED SCAN PACK LOCATION (NOTE)	
	CONTROLLER 0 ACTIVE AND CONTR 1 00S	CONTROLLER 1 ACTIVE AND CONTR 0 00S		CONTROLLER 0 ACTIVE AND CONTR 1 00S	CONTROLLER 1 ACTIVE AND CONTR 0 00S
abb-04	abb-06, 10		abb-26	abb-28, 32	
abb-05	abb-07, 11		abb-27	abb-29, 33	
abb-06		abb-04, 08	abb-28		abb-26, 30
abb-07		abb-05, 09	abb-29		abb-27, 31
abb-08	abb-06, 10		abb-30	abb-28, 32	
abb-09	abb-07, 11		abb-31	abb-29, 33	
abb-10		abb-04, 08	abb-32		abb-26, 30
abb-11		abb-05, 09	abb-33		abb-27, 31
abb-12	abb-14, 18		abb-34	abb-36, 40	
abb-13	abb-15, 19		abb-35	abb-37, 41	
abb-14		abb-12, 16	abb-36		abb-34, 38
abb-15		abb-13, 17	abb-37		abb-35, 39
abb-16	abb-14, 18		abb-38	abb-36, 40	
abb-17	abb-15, 19		abb-39	abb-37, 41	
abb-18		abb-12, 16	abb-40		abb-34, 38
abb-19		abb-13, 17	abb-41		abb-35, 39

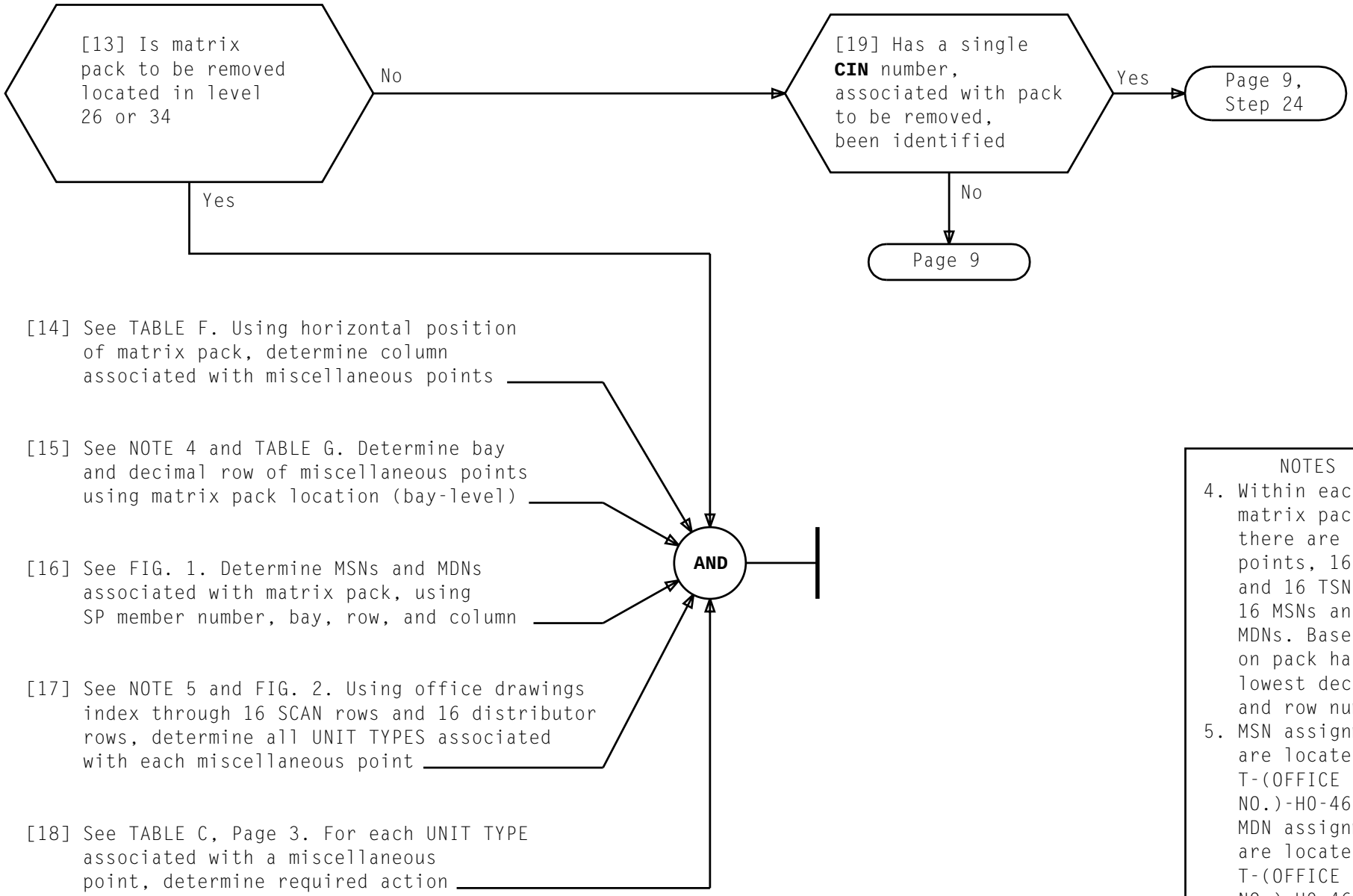
NOTE: Associated scan matrix circuit packs are always located in same bay and at the same vertical location (abb) as matrix pack to be replaced

a = bay
bb = vertical location

TABLE E		
LOCATION OF SD CIRCUIT PACK BEING REPLACED	ASSOCIATED SD PACK LOCATION (NOTE)	
	CONTROLLER 0 ACTIVE AND CONTR 1 00S	CONTROLLER 1 ACTIVE AND CONTR 0 00S
abb-08	abb-09,11	
abb-14	abb-15,17	
abb-09	abb-12	abb-08
abb-15	abb-18	abb-14
abb-11	abb-12	abb-08
abb-17	abb-18	abb-14
abb-12		abb-09,11
abb-18		abb-15,17
abb-28	abb-29,31	
abb-34	abb-35,37	
abb-29	abb-32	abb-28
abb-35	abb-38	abb-34
abb-31	abb-32	abb-28
abb-37	abb-38	abb-34
abb-32		abb-29,31
abb-38		abb-35,37

NOTE: Associated SD matrix packs are always located in same bay and at the same vertical location (abb) as matrix pack to be replaced

a = bay
bb = vertical location



NOTES

4. Within each matrix pack, there are 32 points, 16 TDNs and 16 TSNs, or 16 MSNs and 16 MDNs. Base point on pack has lowest decimal K and row number
5. MSN assignments are located in T-(OFFICE BASE NO.)-HO-461-00. MDN assignments are located in T-(OFFICE BASE NO.)-HO-462-00

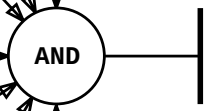
REMOVE SP MATRIX POINTS FROM SERVICE

[20] See TABLE H. Determine matrix and row of universal points, using matrix pack location (bay-level)

[21] See TABLE F. Using vertical position of matrix pack, determine matrix column associated with universal points

[22] See NOTE 4 and FIG. 3. Using SP member number (matrix, row and column), determine base TSN associated with matrix pack

[23] Determine CIN of trunk by using base TSN and requesting TOC type:
VER:TRKNAME,TSN aa bcc dd!
aa = SP member number
b = K-block of matrix
cc = row within K-block
dd = column



[24] Using CIN number, request TOC type:
OP:TRKSTAT,CIN e:SDM!
e = base trunk identifier
Note trunk status of each trunk on output message

[25] Place each trunk into a maintenance disable state by requesting TOC type:
SET:TRKSTAT,MTC.DSA,CIN e:SDM!
CIN e = each trunk identifier associated with matrix pack

[26] See NOTE 6. Verify that each trunk is in **MTC.DSA** state, type:
OP:TRKSTAT,CIN e:SDM!
e = base trunk identifier

NOTE 6
A waiting period may be required, since a trunk must first be in a nonactive state before being placed into a maintenance-disable state

REMOVE SP MATRIX POINTS FROM SERVICE

TABLE F HORIZONTAL POSITION OF CIRCUIT PACK	
HORIZONTAL POSITION	COLUMN NUMBER
22P	00
24	01
25P	02
27	03
30	04
31	05
33	06
34P	07
37P	08
39	09
40P	10
42	11
45	12
46P	13
48	14
49P	15

TABLE G MISCELLANEOUS SCAN AND DISTRIBUTOR POINTS LAYOUT			
CIRCUIT PACK LOCATION		MATRIX (K-BLOCK)	DECIMAL ROW
BAY	VERTICAL LEVEL		
0	34	4	000-015
0	26	4	016-031
1	34	4	032-047
1	26	4	048-063
4	34	5	064-079
4	26	5	080-095
5	34	5	096-111
5	26	5	112-127

TABLE H UNIVERSAL SCAN AND DISTRIBUTOR POINTS (TSN)			
CIRCUIT PACK LOCATION		MATRIX (K-BLOCK)	DECIMAL K AND ROW
BAY	VERTICAL LEVEL		
0	76	0	000-015
0	68	0	016-031
1	76	0	032-047
1	68	0	048-063
4	76	1	064-079
4	68	1	080-095
5	76	1	096-111
5	68	1	112-127
0	60	2	128-143
0	52	2	144-159
1	60	2	160-175
1	52	2	176-191
4	60	3	192-207
4	52	3	208-223
5	60	3	224-239
5	52	3	240-255

REMOVE SP MATRIX POINTS FROM SERVICE

SP	BAY	ROW	COLUMN
aa	b	cc	dd

aa = SP MEMBER NUMBER
b = BAY IN SP
cc = ROW
dd = COLUMN WITHIN K-BLOCK

FIG. 1 — SP Matrix Point Layout

SP	MATRIX + ROW	COLUMN
aa	b cc	dd

aa = SP MEMBER NUMBER
b = K-BLOCK OF SP MATRIX
cc = ROW WITHIN K-BLOCK
dd = COLUMN WITHIN K-BLOCK

FIG. 3 — SP Matrix Point Layout (7-Digit TSN or TDN)

UNIT TYPE ASSOCIATED WITH MDN POINT, 00 014 00

UNIT TYPE ASSOCIATED WITH MDN POINT, 00 015 00

CONN	PIN	SP POINT ROW	COL	PTTYP	UNIT TYPE	FRM NO	FLOOR LOC	CKT NO	ABB ORDR CODE	SIGNAL LEAD DESIG	T-DRAW NO	T-DRAW FIG	PF	CHG
04	17	014	00	SD	MFS	0000	10092.02	014	0502	DA00	1C498-11	1	P	
04	18	014	01	SD	MFS	0000	10092.02	014	0502	DA01	1C498-11	1	P	
04	19	014	02	SD	MFS	0000	10092.02	014	0502	DA00	1C498-11	1	P	
04	20	014	03	SD	MFS	0000	10092.02	014	0502	DA01	1C498-11	1	P	
15	23	014	14	SD	TSI	0004	11006.05			DA02	4A011-11	1	P	
15	24	014	15	SD	TSI	0004	11006.05			DA03	4A011-11	1	P	
05	1	015	00	SD	MFS	0000	10092.02	015	0502	DA00	1C498-11	1	P	
05	2	015	01	SD	MFS	0000	10092.02	015	0502	DA01	1C498-11	1	P	
05	3	015	02	SD	MFS	0000	10092.02	015	0501	DA00	1C498-11	1	P	
05	4	015	03	SD	MFS	0000	10092.02	015	0501	DA01	1C498-11	1	P	
05	5	015	04	SD	MFS	0000	10092.02	015	0501	DA02	1C498-11	1	P	
05	6	015	05	SD	MFS	0000	10092.02	015	0501	DA03	1C498-11	1	P	
05	7	015	06	SD	MFS	0000	10092.02	015	0501	DA04	1C498-11	1	P	
05	8	015	07	SD	MFS	0000	10092.02	015	0501	DA05	1C498-11	1	P	
16	1	015	08	SD	TSI	0002	11006.03			DA04	4A011-11	1	P	
16	2	015	09	SD	TSI	0002	11006.03			DA05	4A011-11	1	P	
16	3	015	10	SD	TSI	0002	11006.03			DA06	4A011-11	1	P	
16	4	015	11	SD	TSI	0002	11006.03			DA07	4A011-11	1	P	
16	5	015	12	SD	TSI	0002	11006.03			DA08	4A011-11	1	P	
16	6	015	13	SD	TSI	0002	11006.03			DA09	4A011-11	1	P	
16	7	015	14	SD	TSI	0002	11006.03			DA10	4A011-11	1	P	
16	8	015	15	SD	TSI	0002	11006.03			DA11	4A011-11	1	P	

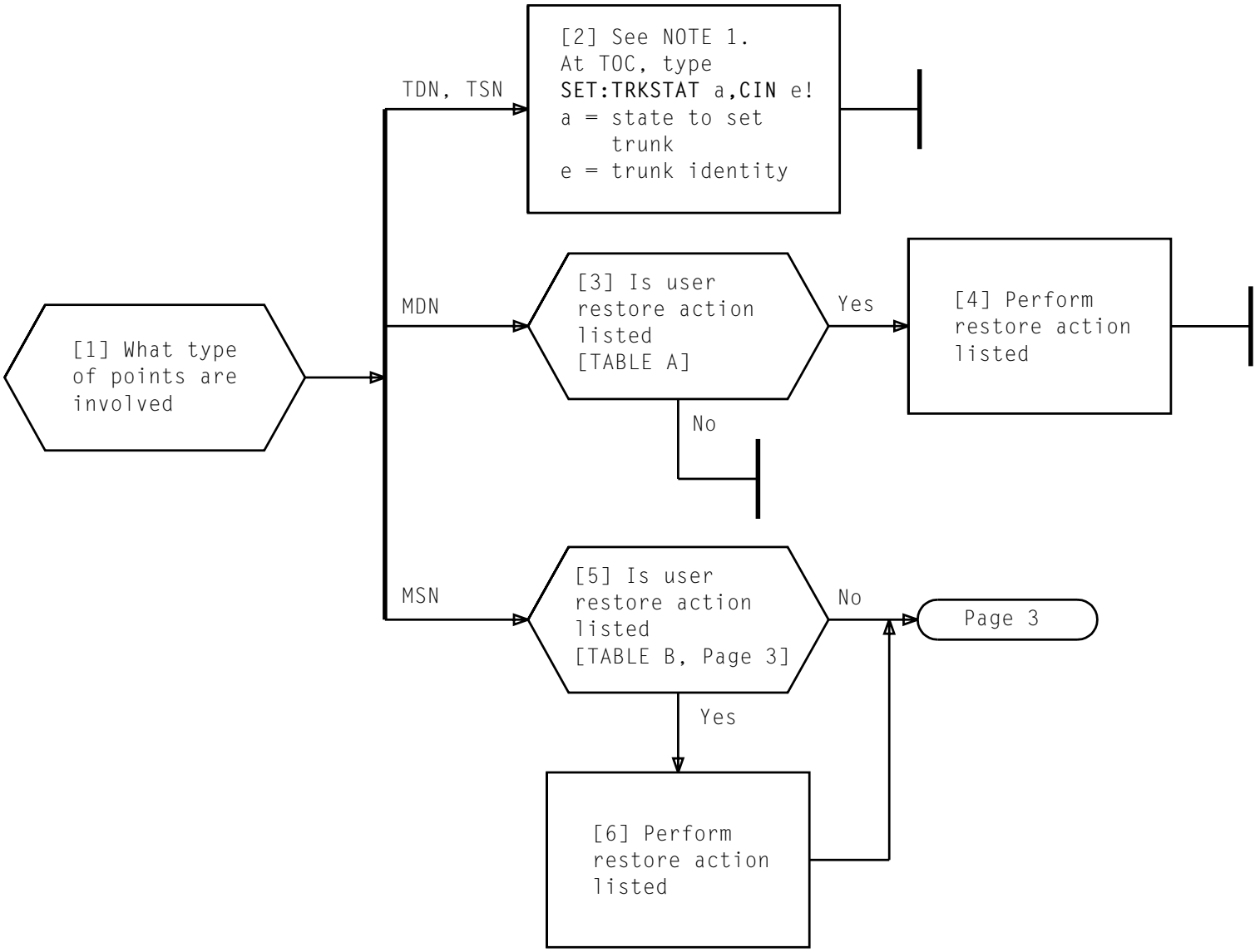
4ESS SWITCH MISCELLANEOUS SIG DIST POINT ASSIGNMENTS
FOR SIGNAL PROCESSOR FRAME 00 BAY 0
AT&T

ISSUE 01
SHEET 1
TS T52

T-(OFFICE BASE NO.)-H0-462-00

FIG. 2 — Example of Miscellaneous SD Points Associated With SP 00 Bay 0 Column 00, Row 014 and 015

REMOVE SP MATRIX POINTS FROM SERVICE



RESTORE SP MATRIX POINTS TO SERVICE

NOTE 1
Trunk status was noted when SP matrix points were removed from service; set the trunks to those states

TABLE A	
USER	**RESTORE ACTION**
Trunk circuits	At TOC,for each trunk involved, type: SET:TRKSTAT ACT,CINe! (e = trunk identity)
Recorded announcements	At MOC, type: AUD:NUM 47! and take whatever manual action needed to restore RA frame to prior status before pack is replaced
Ringing and tone	At MOC, type: AUD:NUM 20! and take whatever actions needed to restore frame to prior status before pack is replaced
Alarm transfer or grouping	At MOC, for transfer, type: STOP:RTE:ALM [,MC a]! (a = maintenance center to be transferred from) or for grouping, type: STOP:CFR:ALM GRP [,MC a]!
Service circuits	At MOC for each service circuit involved, type: SET:TRKSTAT ACT,CIN e! (e = service circuit identity)
51A test position	Notify TOC points are restored to service and for each trunk removed from service type: SET:TRKSTAT ACT,CIN e! (e = trunk identity)

RESTORE SP MATRIX POINTS TO SERVICE

[7] At MOC, type:
ORD:TBITS;NORM:SP a,**EQPTLOC** bcc-dd!
a = member number
b = bay number
cc = level
dd = horizontal position

[8] At MOC, type:
ALW:AUD:NUM 28!

[9] At MOC, type:
AUD:NUM 28!

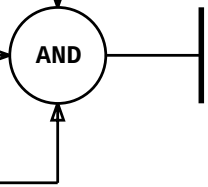
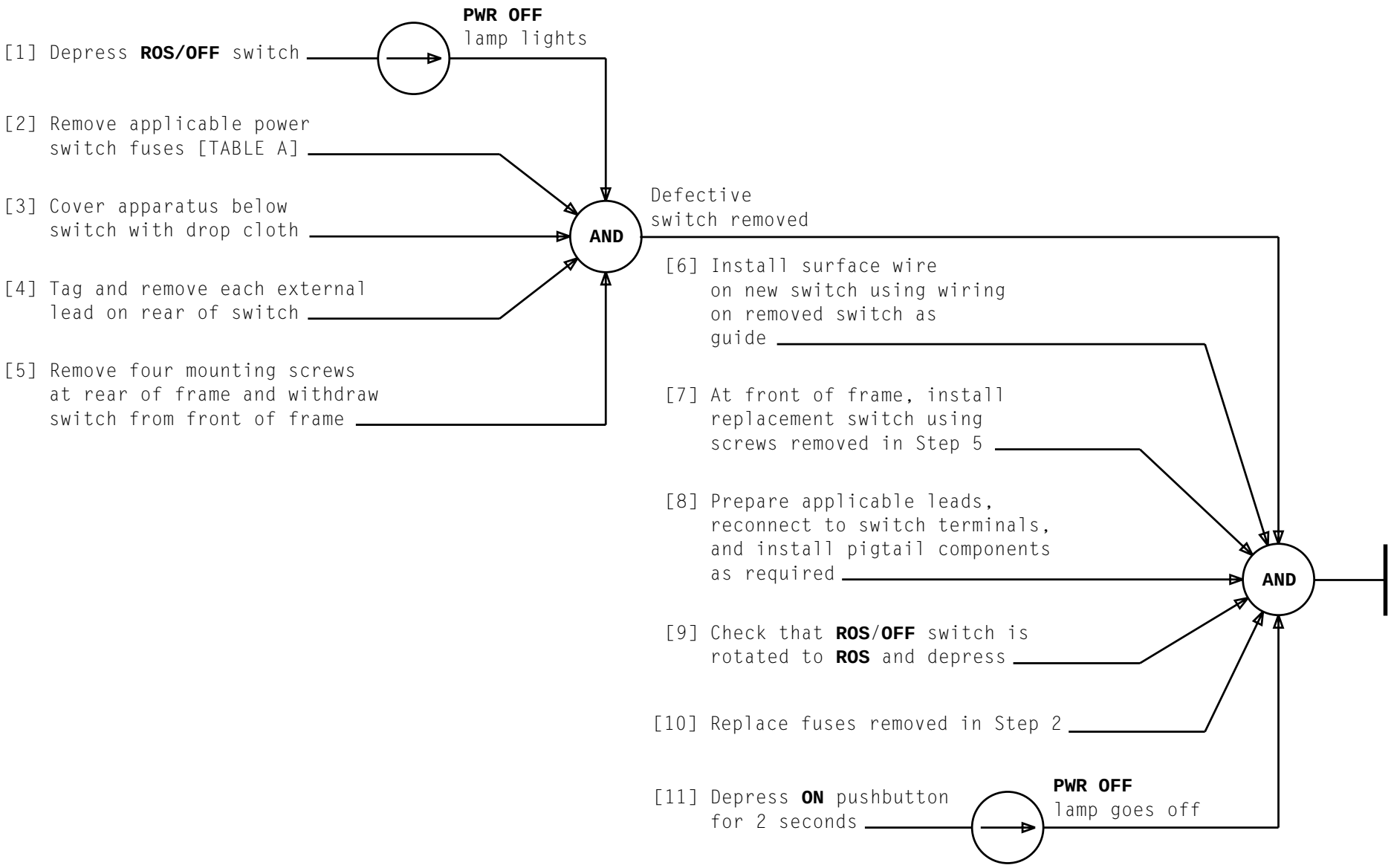


TABLE B

USER	RESTORE ACTION
Recorded announcement	At TOC, for each trunk involved, type: **SET:TRKSTAT ACT,CIN** e**!** e = trunk identity Take whatever manual action needed to restore RA frame to prior status before pack is replaced
Ringing and tone	At MOC, type: **AUD:NUM 20!** Take whatever actions needed to restore frame to prior status before pack is replaced
51A Test position	Notify TOC points are restored to service
Service circuits	At MOC, for each trunk involved, type: **SET:TRKSTAT ACT,CIN** e**!** e = trunk identity

RESTORE SP MATRIX POINTS TO SERVICE



REPLACE POWER SWITCH

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TABLE A					
FRAME	UNIT LOCATION	UNIT DESIGNATION	SWITCH LOCATION	ASSOCIATED FUSES +24V	
				FUSE LOCATION	FUSE DESIG
Control frame	76	Peripheral bus interface unit	80-30	07-33	**0EA, 0EB, 0EC**
Bays 2 and 3 (SD-4A028-02)	46	Control unit	48-02	07-18 07-33	**0MA, 0MC, 0BM**
	76	Peripheral bus interface unit	80-36	07-33	**1EA, 1EB, 1EC**
Bays 3 and 4 (SD-4A028-01)	46	Control unit	48-02	07-18 07-33 07-33	**1MA 1MC 1BM**
	—	Distributor and scanner matrix	348-43	307-18	**0MD**
Distributor applique bay 0 or 5	62	Distributor applique pulse point unit	68-70	07-20	**ST, FAT**
Distributor and scanner matrix Bays 1 and 2 or Bays 6 and 7	53	Scanner access unit	55-42 (IND)	07-20	**0SA**
	34	Distributor access unit	36-42 (IND)	07-20	**0DA**
	53	Scanner access unit	55-42 (IND)	07-20	**1SA**
	34	Distributor access unit	36-42 (IND)	07-20	**1DA**

REPLACE POWER SWITCH

TABLE A (Contd)					
FRAME	UNIT LOCATION	UNIT DESIGNATION	SWITCH LOCATION	ASSOCIATED FUSES +24V	
				FUSE LOCATION	FUSE DESIG
Combined distributor and scanner matrix Bay 0 and 1 or Bay 4 and 5	41	Distributor and scanner access unit	41-69 (indicator)	07-20	**ODA** **OSA**
				07-20	**1DA** **1SA**
	20	Pulse point relay unit	20-60	09-34	**PPA** **PPB** **PPC**

REPLACE POWER SWITCH

[1] Depress **RML/ALM RETIRE** switch

[2] Remove applicable **MTX MTCE LIMIT** switch fuses [TABLE A]

[3] Cover apparatus below switch with drop cloth

[4] Tag and remove each external lead on rear of limit switch

[5] Remove four mounting screws and withdraw switch from front of frame

[6] Install surface wire on new switch using removed switch surface wiring as a guide

[7] At front of frame, install replacement switch using screws removed in Step 5

[8] Prepare applicable leads and reconnect to switch terminals. Install pigtail components as required

[9] Check that **RML**/**ALM RETIRE** switch is rotated to **RML** and depress

[10] Replace fuses removed in Step 2

[11] Depress **ALARM ENABLE** pushbutton for 2 seconds

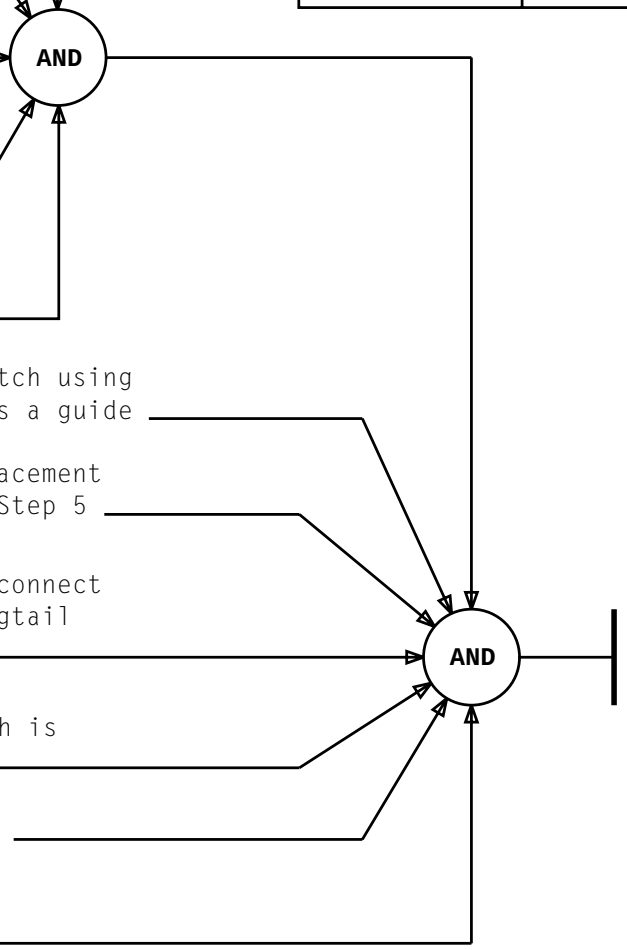
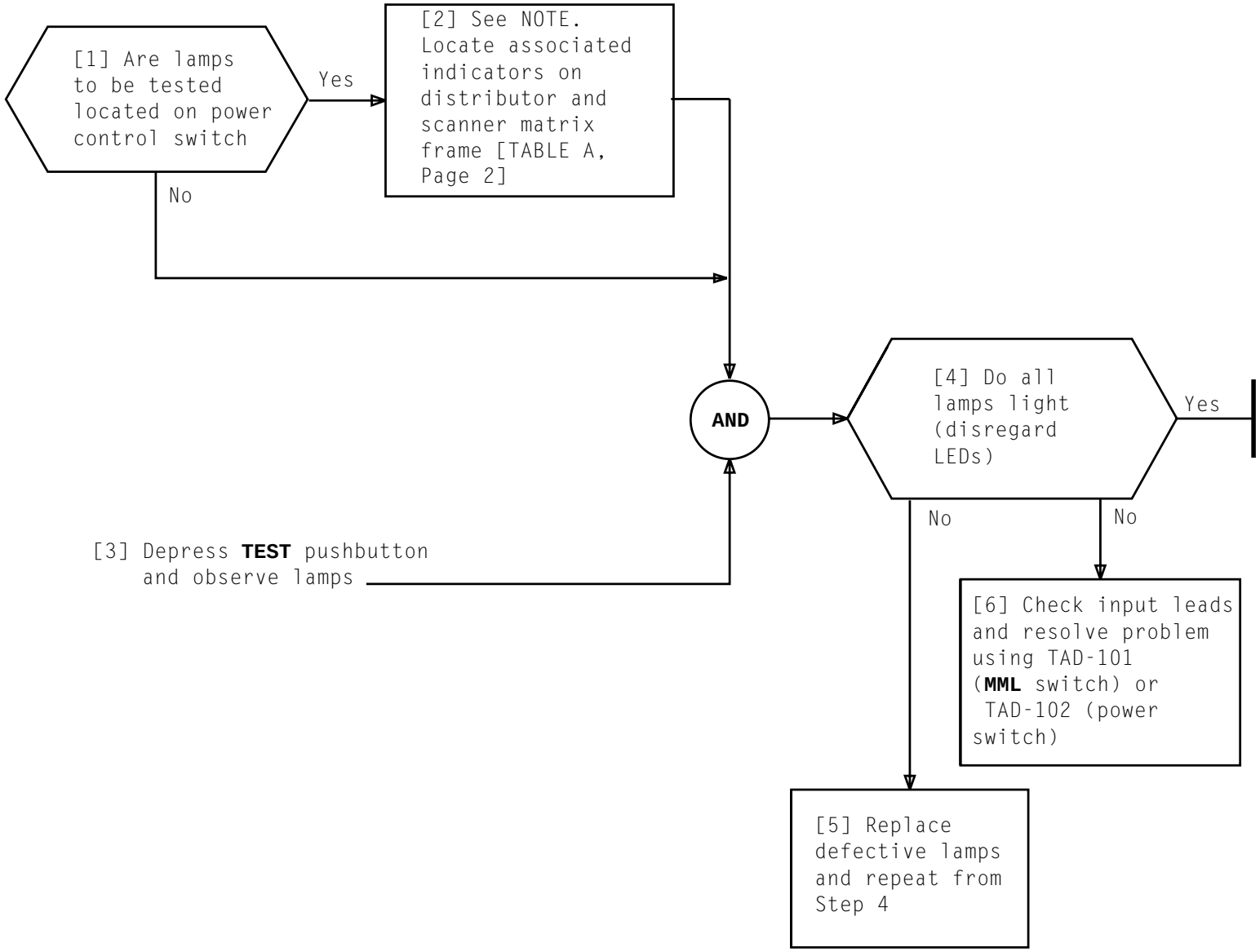


TABLE A

FRAME	UNIT LOCATION	UNIT DESIGNATION	SWITCH LOCATION	+24V	
				LOCATION	DESIG
Control frame	46	Control unit	48-46	007-18	**OMD** fuse

REPLACE MATRIX MAINTENANCE LIMIT SWITCH

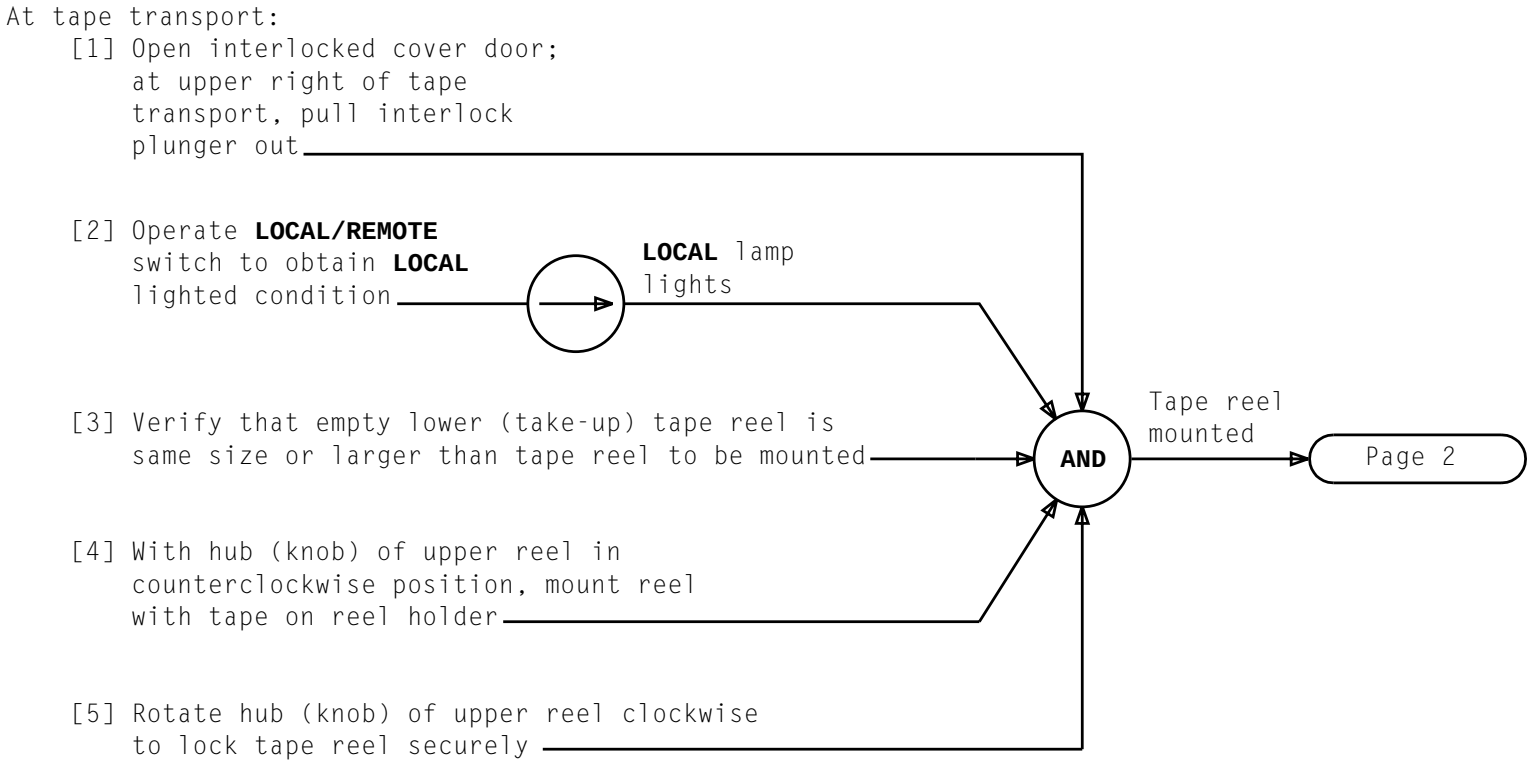


TEST LAMPS ON POWER SWITCH

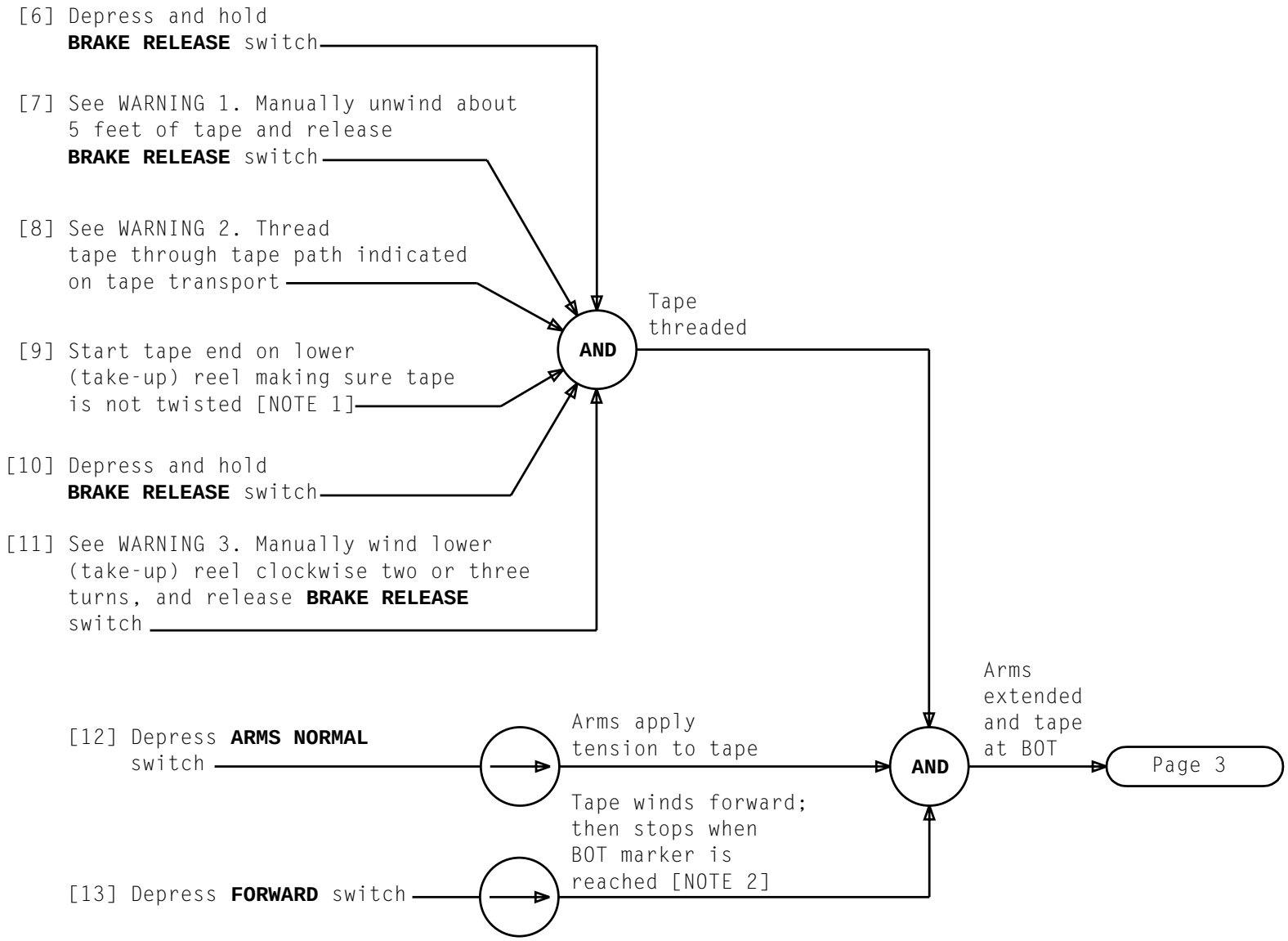
NOTE
Indicator on each scanner access unit and distributor access unit of the distributor and scanner matrix duplicates appropriate power switch lamps on the control unit

TABLE A				
FRAME	**SWITCH/INDICATOR**	**BAY**	**(VERT) POSITION**	**FUNCTION**
Control	Power switch	3 and 4	80	Peripheral bus
	Power switch	3 and 4	48	Controls lamps on associated indicators
	Matrix maintenance limit switch	3	48	Controls alarm capabilities
Distributor applique	Power switch	0 and 5	68	Pulse point switch
Distributor and scanner matrix	Indicator	1 and 2 6 and 7	36 and 55	Duplicates power switch lamps on SP-1C control panel
Control	Power switch	2 and 3	80	Peripheral bus
	Power switch	2 and 3	40	Controls lamps on associated indicators
	Matrix maintenance limit switch	2	48	Controls alarm capabilities
Combined distributor and scanner matrix	Power switch	1 and 5	21	Pulse point switch
	Indicator	0 and 4	43	Duplicates power switch lamps on SP — 1C control panel

TEST POWER SWITCH LAMPS



MOUNT TAPE ON TAPE TRANSPORT, TAPE UNIT



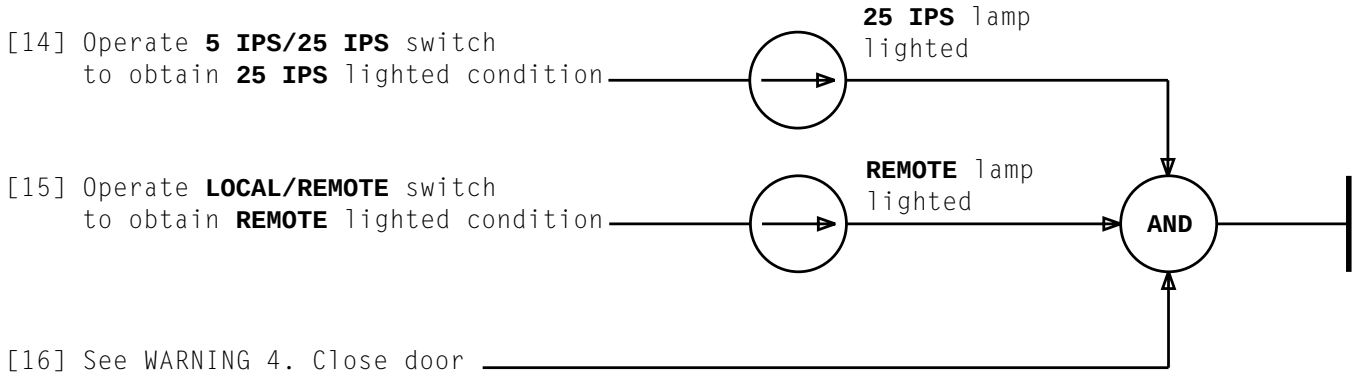
NOTES

1. To start tape on take-up reel, it may help to moisten the tape end (moistened fingers); and stick it to the reel axle
2. Tape may not stop at BOT marker if fast forward is depressed

WARNINGS

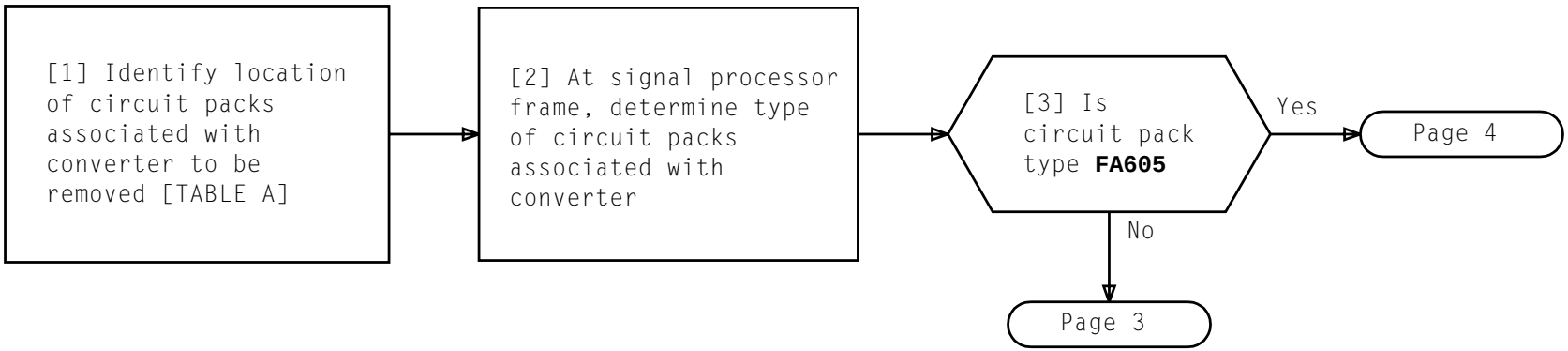
1. *Contamination of tape by contact with floor will damage tape heads*
2. *If tape read surfaces are touched, body oils will contaminate tape*
3. *If tape is not properly aligned along rollers and guides, or is too loose, it may be damaged*

MOUNT TAPE ON TAPE TRANSPORT, TAPE UNIT



WARNING 4
Closing tape transport door in harsh manner may upset alignment

MOUNT TAPE ON TAPE TRANSPORT, TAPE UNIT



REPLACE DC-DC CONVERTER, POWER CONTROLLED BY MML SWITCH

TABLE A DISTRIBUTOR MATRIX UNIT POWER								
REPLACEMENT CONVERTER LOCATION	ASSOCIATED PACK POSITIONS		START FUSE		CONTROL FUSE (+24V FUSE)		140V FUSE	
	VERT	HOR	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME
X12-36	X28	08,09,11,12	Y07-04	**CA0**	Y09-30	**BA0**	*X07-22	**AA0**
X12-39	X28	14,15,17,18	Y07-04	**CB0**	Y09-30	**BB0**	X07-22	**AB0**
X12-42	X28	28,29,31,32	Y07-04	**CC0**	Y09-30	**BC0**	X07-22	**AC0**
X12-45	X28	34,35,37,38	Y07-04	**CD0**	Y09-30	**BD0**	X07-22	**AD0**
Y12-12	Y28	08,09,11,12	Y07-04	**CA1**	Y09-30	**BA1**	X07-22	**AA1**
Y12-15	Y28	14,15,17,18	Y07-04	**CB1**	Y09-30	**BB1**	X07-22	**AB1**
Y12-18	Y28	28,29,31,32	Y07-04	**CC1**	Y09-30	**BC1**	X07-22	**AC1**
Y12-21	Y28	34,35,37,38	Y07-04	**CD1**	Y09-30	**BD1**	X07-22	**AD1**
Y12-24	X32	08,09,11,12	Y07-10	**CA2**	Y09-36	**BA2**	X07-28	**AA2**
Y12-27	X32	14,15,17,18	Y07-10	**CB2**	Y09-36	**BB2**	X07-28	**AB2**
Y12-30	X32	28,29,31,32	Y07-10	**CC2**	Y09-36	**BC2**	X07-28	**AC2**
Y12-33	X32	34,35,37,38	Y07-10	**CD2**	Y09-36	**BD2**	X07-28	**AD2**
Y17-24	Y32	08,09,11,12	Y07-10	**CA3**	Y09-36	**BA3**	X07-28	**AA3**
Y17-27	Y32	14,15,17,18	Y07-10	**CB3**	Y09-36	**BB3**	X07-28	**AB3**
Y17-30	Y32	28,29,31,32	Y07-10	**CC3**	Y09-36	**BC3**	X07-28	**AC3**
Y17-33	Y32	34,35,37,38	Y07-10	**CD3**	Y09-36	**BD3**	X07-28	**AD3**
Y12-36	X45	08,09,11,12	Y07-16	**CA4**	Y09-42	**BA4**	X07-34	**AA4**
Y12-39	X45	14,11,17,18	Y07-16	**CB4**	Y09-42	**BB4**	X07-34	**AB4**
Y12-42	X45	22,29,31,32	Y07-16	**CC4**	Y09-42	**BC4**	X07-34	**AC4**
Y12-45	X45	34,35,37,38	Y07-16	**CD4**	Y09-42	**BD4**	X07-34	**AD4**
Y17-36	Y45	08,09,11,12	Y07-16	**CA5**	Y09-42	**BA5**	X07-34	**AA5**
Y17-39	Y45	14,15,17,18	Y07-16	**CB5**	Y09-42	**BB5**	X07-34	**AB5**
Y17-42	Y45	28,29,31,32	Y07-16	**CC5**	Y09-42	**BC5**	X07-34	**AC5**
Y17-45	Y45	34,35,37,38	Y07-16	**CD5**	Y09-42	**BD5**	X07-34	**AD5**
* X = Bay 1 or 6; Y = Bay 2 or 7								

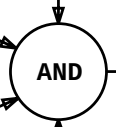
REPLACE DC-DC CONVERTER, POWER CONTROLLED BY MML SWITCH

[4] Remove fuses associated with converter in the following sequence: **START** fuse (C_ _), **+24V CONTROL** fuse (B_ _), **140V** fuse (A_ _) [TABLE A]

[5] See CAUTION 1. Remove converter

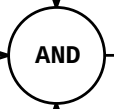
[6] Inspect backplane connectors for bent, broken, or shorted contacts

[7] Install and seat replacement converter



Converter replaced

[8] See NOTE 1. Install fuses in following sequence: **140V** fuse (A_ _), +**24V** CONTROL fuse (B_ _), **START** fuse (C_ _)

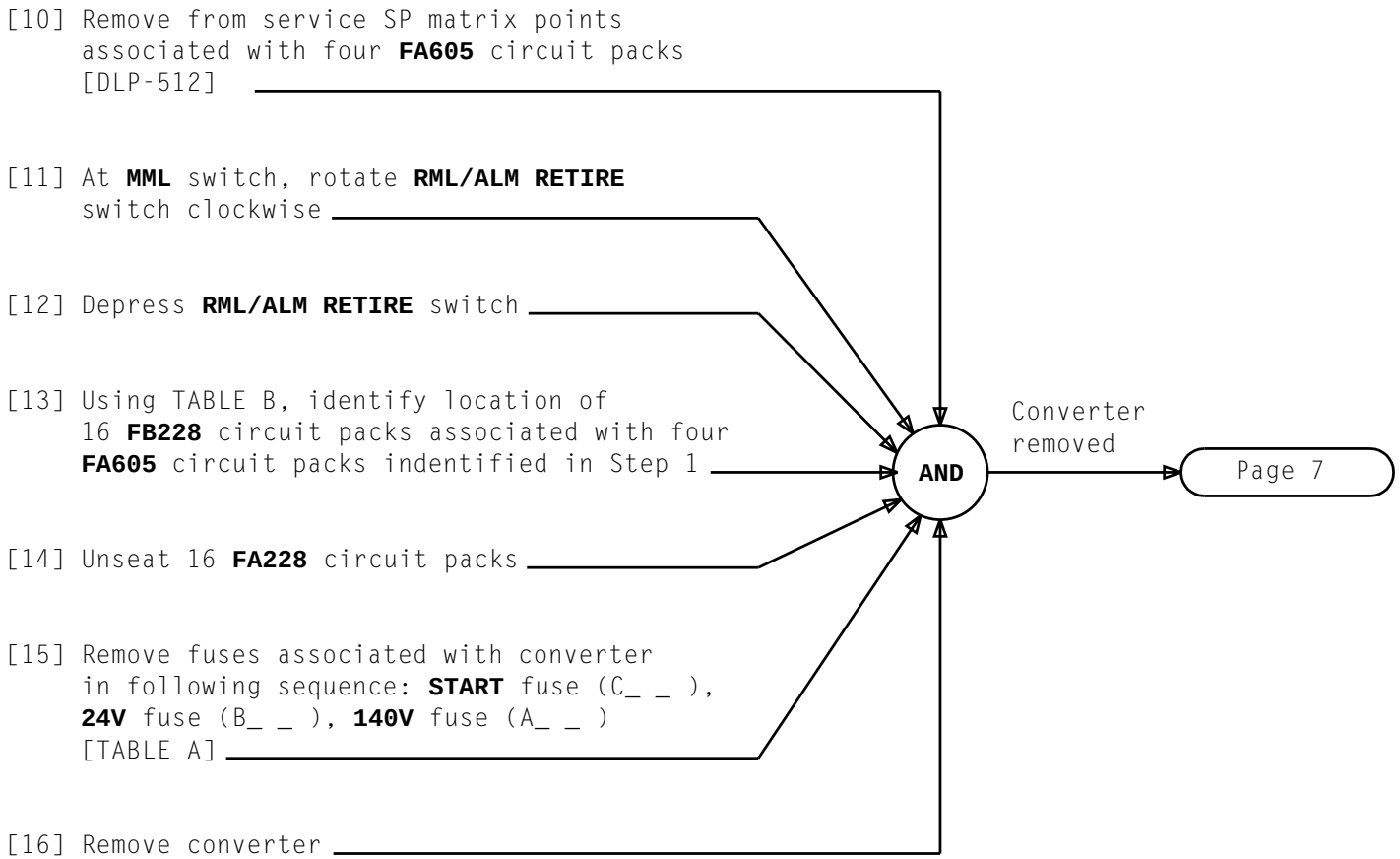


[9] Test power monitor circuits [DLP-521]

NOTE 1
If fuses are not installed in proper sequence, converter will not power up

CAUTION 1
If OS lamp does not light, delay pack replacement until duplicate pulse points are returned to service

REPLACE DC-DC CONVERTER, POWER CONTROLLED BY MML SWITCH



REPLACE DC-DC CONVERTER, POWER CONTROLLED BY MML SWITCH

TABLE B

FRAME	FA605 LOCATION			ASSOCIATED PACK LOCATION			FRAME	FA605 LOCATION			ASSOCIATED PACK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	1/6	28	08	0/5	24	02P, 04, 05P, 07	Distributor and scanner matrix	2/7	28	08	0/5	32	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18		24	63P, 65, 66P, 68				18		32	63P, 65, 66P, 68
			28		28	02P, 04, 05P, 07				28		36	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
		28	38		28	63P, 65, 66P, 68			28	38		36	63P, 65, 66P, 68
		32	08		40	02P, 04, 05P, 07			32	08		48	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18		40	63P, 65, 66P, 68				18		48	63P, 65, 66P, 68
			28		44	02P, 04, 05P, 07				28		52	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
	1/6	32	38	0/5	44	63P, 65, 66P, 68		2/7	32	38	0/5	52	63P, 65, 66P, 68

REPLACE DC-DC CONVERTER, POWER CONTROLLED BY MML SWITCH

TABLE B (Contd)

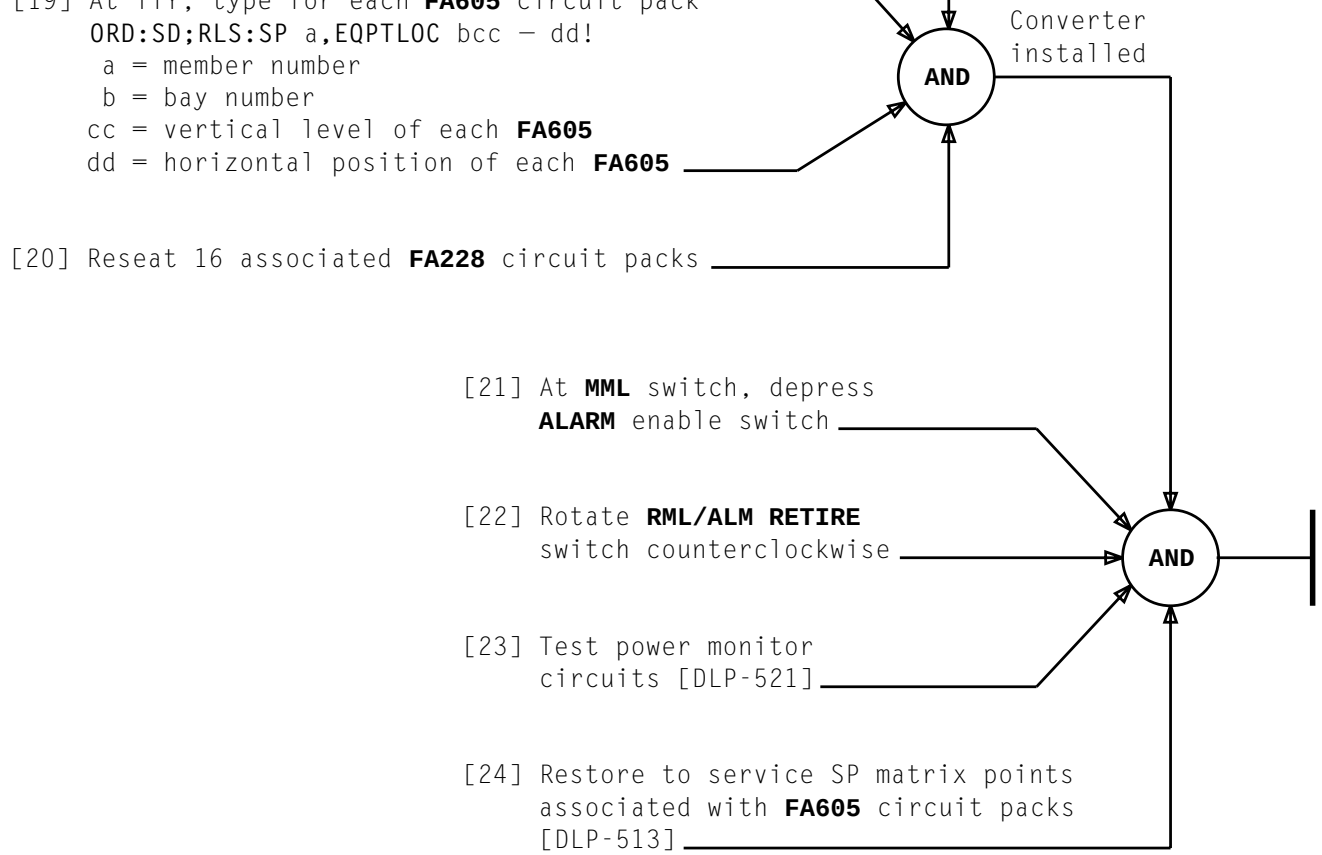
FRAME	FA605 LOCATION			ASSOCIATED PACK LOCATION			FRAME	FA605 LOCATION			ASSOCIATED PACK LOCATION		
	BAY	VERT	HOR	BAY	VERT	HOR		BAY	VERT	HOR	BAY	VERT	HOR
Distributor and scanner matrix	1/6	45	08	0/5	56	02P, 04, 05P, 07	Distributor and scanner matrix	2/7	45	08	0/5	64	02P, 04, 05P, 07
			09			08P, 10, 11P, 13				09			08P, 10, 11P, 13
			11			21P, 23, 24P, 26				11			21P, 23, 24P, 26
			12			27P, 29, 30P, 32				12			27P, 29, 30P, 32
			14			38P, 40, 41P, 43				14			38P, 40, 41P, 43
			15			44P, 46, 47P, 49				15			44P, 46, 47P, 49
			17			57P, 59, 60P, 62				17			57P, 59, 60P, 62
			18	0/5	56	63P, 65, 66P, 68				18	0/5	64	63P, 65, 66P, 68
			28	0/5	60	02P, 04, 05P, 07				28	0/5	68	02P, 04, 05P, 07
			29			08P, 10, 11P, 13				29			08P, 10, 11P, 13
			31			21P, 23, 24P, 26				31			21P, 23, 24P, 26
			32			27P, 29, 30P, 32				32			27P, 29, 30P, 32
			34			38P, 40, 41P, 43				34			38P, 40, 41P, 43
			35			44P, 46, 47P, 49				35			44P, 46, 47P, 49
			37			57P, 59, 60P, 62				37			57P, 59, 60P, 62
	1/6	45	38	0/5	60	63P, 65, 66P, 68		2/7	45	38	0/5	68	63P, 65, 66P, 68

[17] Inspect and seat replacement converter

[18] See NOTE 2. Install converter fuses in the following sequence: **140V** fuse (A_ _), **+24V** fuse (B_ _), **START** fuse (C_ _) [TABLE A]

[19] At TTY, type for each **FA605** circuit pack
ORD:SD;RLS:SP a,EQPTLOC bcc — dd!
a = member number
b = bay number
cc = vertical level of each **FA605**
dd = horizontal position of each **FA605**

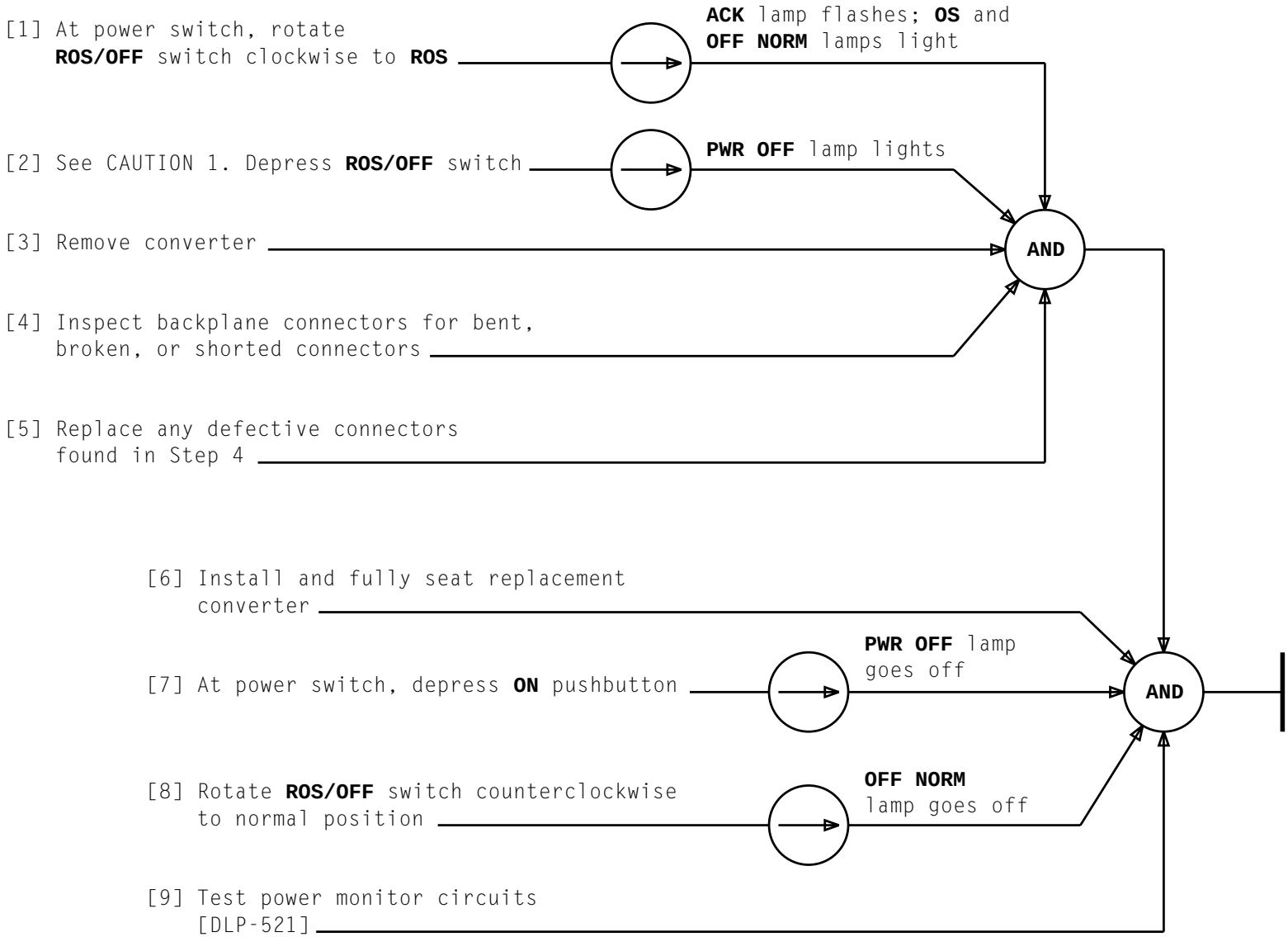
[20] Reseat 16 associated **FA228** circuit packs



NOTE 2

If fuses are not installed in proper sequence, converter will not power up

REPLACE DC-DC CONVERTER, POWER CONTROLLED BY MML SWITCH



CAUTION 1

If **PPL/PPR** *switch is the power control associated with converter, ensure* **OS** *lamp is lighted, indicating duplicate pulse points have been placed into service*

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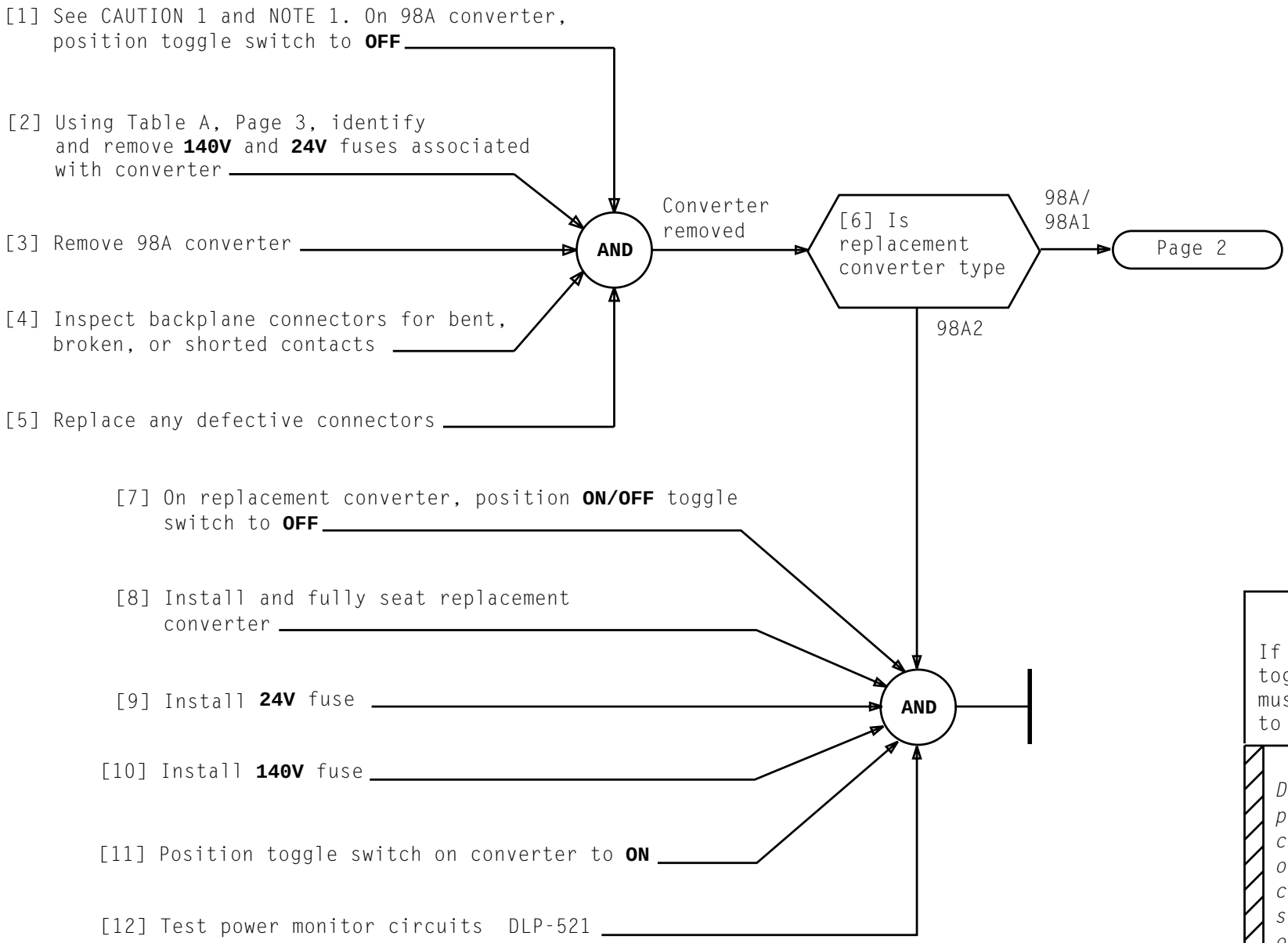
REPLACE POWER CONVERTER



NOTE 1

If converter is 98A2 toggle switch, it must be pulled out to position switch

CAUTION 1

Do not remove power from converter if any other 98A converter in same bay is out of service

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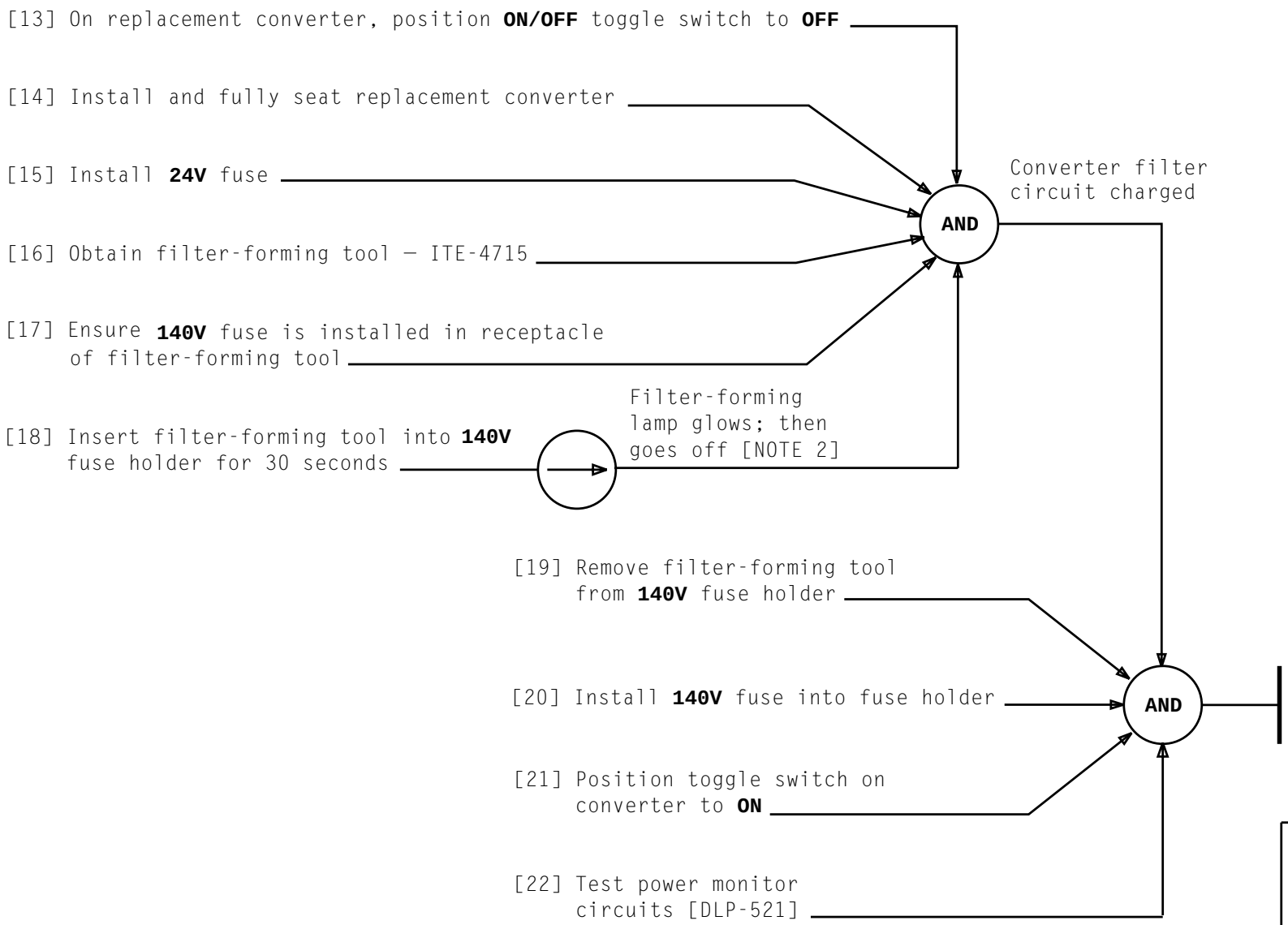
REPLACE 98A CONVERTER

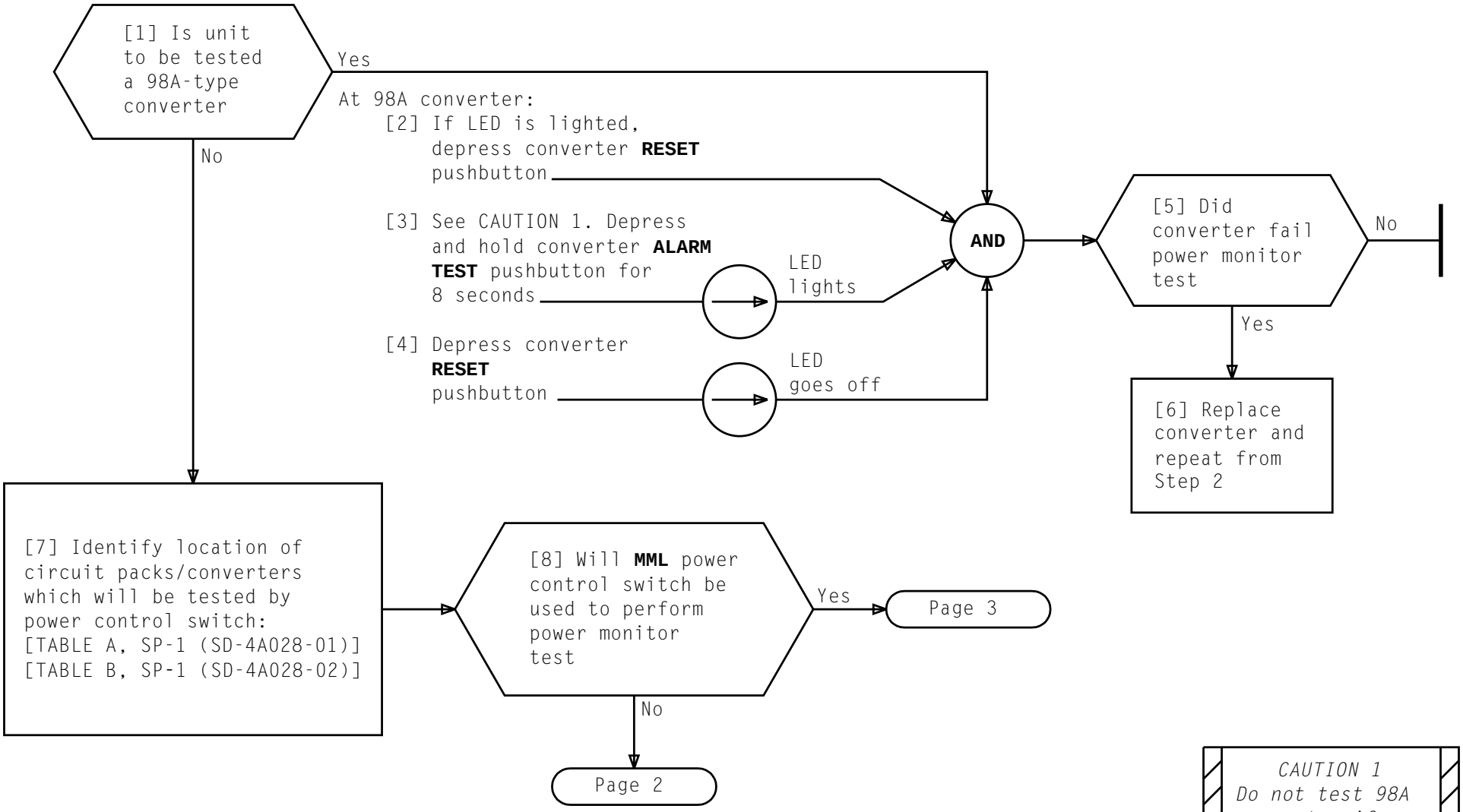


NOTE 2

If filter capacitor is already charged, lamp will remain off

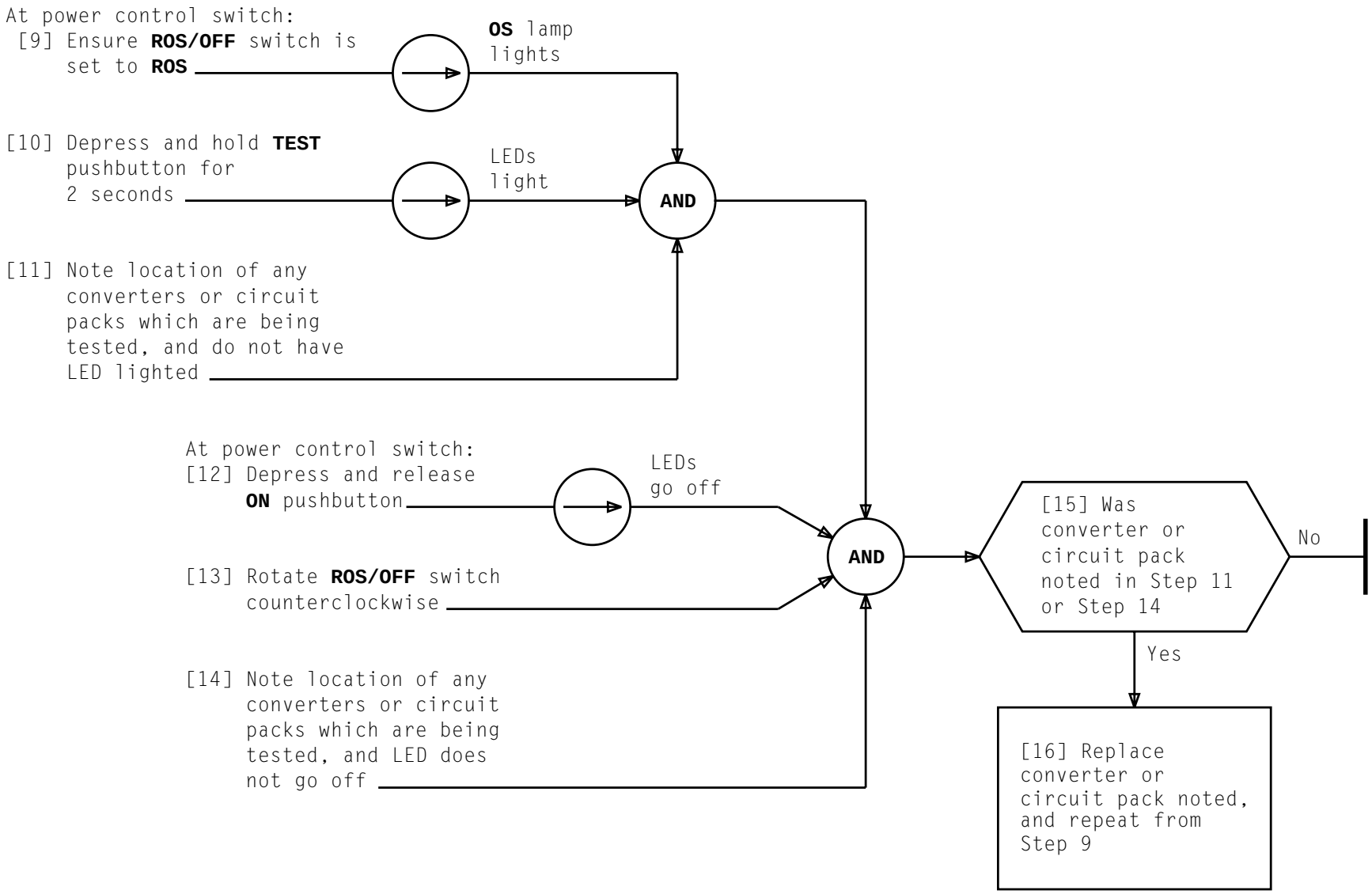
REPLACE 98A CONVERTER

TABLE A											
98A CONVERTER LOCATION				FUSE TYPE							
FRAME	BAY	VERT	HOR	140V				24V			
				NAME	LOCATION			NAME	LOCATION		
					BAY	VERT	HOR		BAY	VERT	HOR
Distributor and scanner matrix (SD-4A028-01)	1/6	11	04	**SCA**	1/6	07	40	**SCC**	2/7	07	22
	1/6	11	16	**SCB**	1	07	40	**SCD**	2/7	07	22
Distributor applique (SD-4A028-01)	0/5	11	06	**VB0**	0/5	07	05	**VA0**	0/5	07	14
	0/5	11	18	**VB1**	0/5	07	05	**VA1**	0/5	07	14
	0/5	11	30	**VB2**	0/5	07	05	**VA2**	0/5	07	14
	0/5	11	42	**VB3**	0/5	07	05	**VA3**	0/5	07	14
Combined distributor and scanner matrix (SD-4A028-02)	0/4	11	06	**AA**	0/4	09	14	**BA**	1/5	09	14
	0/4	11	18	**AB**	0/4	09	14	**BB**	1/5	09	14
	0/4	11	30	**AC**	0/4	09	14	**BC**	1/5	09	14
	0/4	11	42	**AD**	0/4	09	14	**BD**	1/5	09	14
	0/4	11	54	**AE**	0/4	09	14	**BE**	1/5	09	14
	0/4	11	66	**AF**	0/4	09	14	**BF**	1/5	09	14
	1/5	11	06	**AG**	0/4	09	14	**BG**	1/5	09	14
	1/5	11	18	**AH**	0/4	09	14	**BH**	1/5	09	14
	1/5	11	30	**AJ**	0/4	09	20	**BJ**	1/5	09	20
	1/5	11	42	**AK**	0/4	09	20	**BK**	1/5	09	20
	1/5	11	54	**AL**	0/4	09	20	**BL**	1/5	09	20

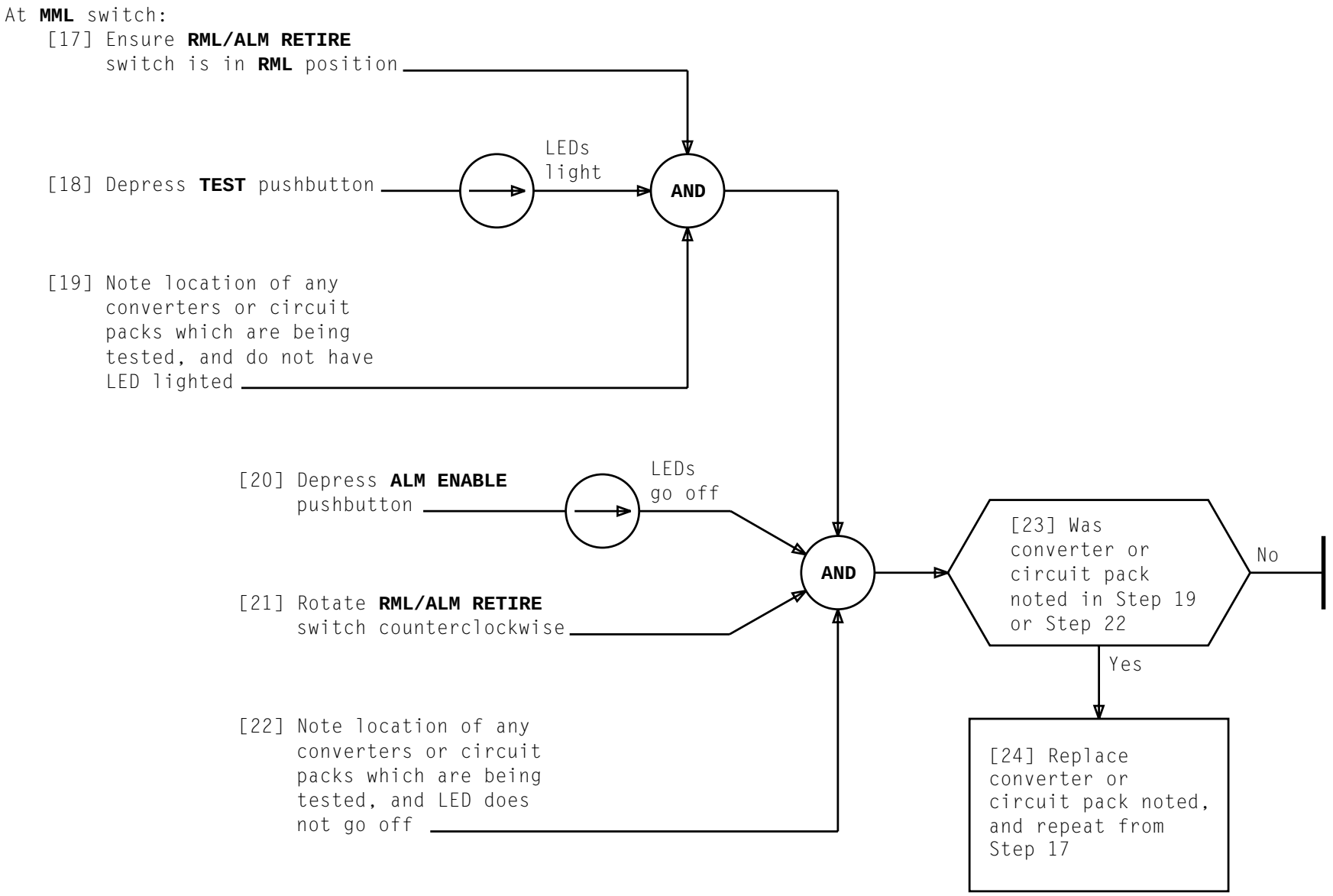


CAUTION 1
Do not test 98A converter if any other 98A converter in same bay has LED lighted

TEST POWER MONITOR CIRCUITS



TEST POWER MONITOR CIRCUITS



TEST POWER MONITOR CIRCUITS

TABLE A
CONVERTERS AND CIRCUIT PACKS CONTAINING LEDs
(SD-4A028-01 EXCEPT 98A-TYPE CONVERTERS)

BAY								POWER CONTROL SWITCH
0		1		2		3		
CONV	CP	CONV	CP	CONV	CP	CONV	CP	
–	–	–	–	–	–	80-24	–	IPUB 0 BAY 3
–	–	–	–	–	–	–	–	IPUB 1 BAY 4
–	–	12-24,27, 30,33 17-24,27, 30,33 36,42	55-05 36-05	–	–	12-12,18 24,30 36,42 17-04,12, 18,24,30 36,42	68-03, 56-42, 55-05, 36-05	CONTR 0 BAY 3
–	–	–	–	12-00,03, 06,09, 17-00,03, 06,09 12,18	55-05, 36-05	–	–	CONTR 1 BAY 4
–	–	12-36,39, 42,45	28-04,05, 40,41 32-04,05, 40,41 45-04,05, 40,41	12-12,15, 18,21, 24,27, 30,33, 36,39, 42,45, 17-24,27, 30,33, 36,39, 42,45	28-04,05, 40,41, 32-04,05 40,41, 45-04,05, 40,41	–	–	MML BAY 3
12-50,56, 17-50,56	64-14,29, 45,60 68-14,29, 45,60	–	–	–	–	–	–	PPL BAY 0
–	–	–	–	–	–	–	–	PPL BAY 5

TEST POWER MONITOR CIRCUITS

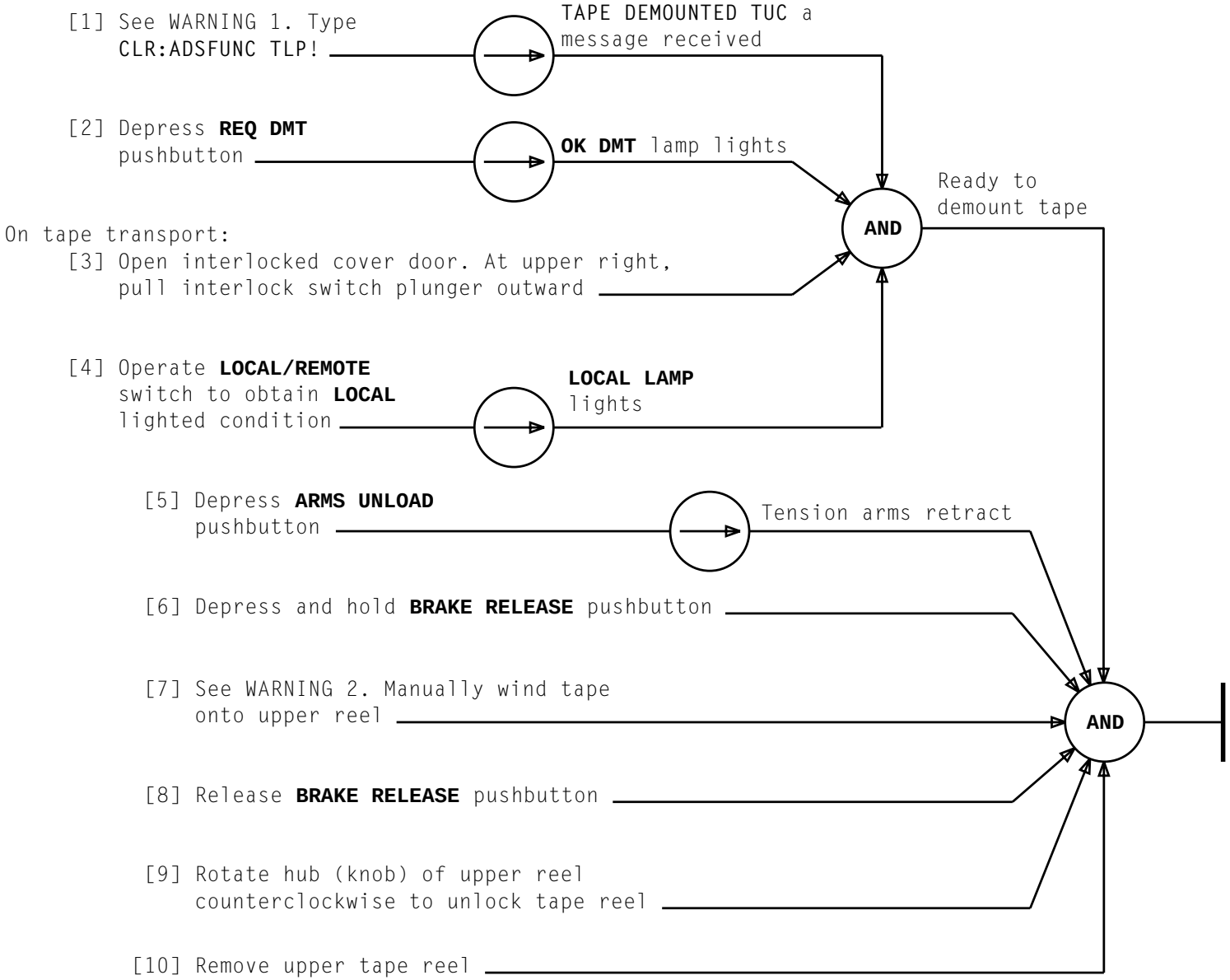
TABLE A (Contd)
CONVERTERS AND CIRCUIT PACKS CONTAINING LEDs
(SD-4A028-01 EXCEPT 98A-TYPE CONVERTERS)

BAY								POWER CONTROL SWITCH
4		5		6		7		
CONV	CP	CONV	CP	CONV	CP	CONV	CP	
–	–	–	–	–	–	–	–	IPUB 0 BAY 3
80-24	–	–	–	–	–	–	–	IPUB 1 BAY 4
–	–	–	–	12-24,27, 30,33, 17-24,27, 30,33, 36,42	55-05, 36-05	–	–	CONTR 0 BAY 3
12-12,18 24,30 36,42 17-04,12, 18,24,30 36,42	68-03, 56-42, 55-05, 36-05	–	–	–	–	12-00,03, 06,09, 12,18	55-05, 36-05	CONTR 1 BAY 4
–	–	–	–	12-36,39, 42,45	28-04,05, 40,41, 32-04,05, 40,41, 45-04,05, 40,41	12-12,15, 18,21, 24,27, 30,33, 36,39, 42,45, 17-24,27, 30,33, 36,39, 42,45	28-04,05, 40,41, 32-04,05, 40,41, 45-04,05, 40,41	MML BAY 3
–	–	–	–	–	–	–	–	PPL BAY 0
–	–	12-50,56 17-50,56	64-14,29, 45,60 68-14,29, 45,60	–	–	–	–	PPL BAY 5

TEST POWER MONITOR CIRCUITS

TABLE B
CONVERTERS AND CIRCUIT PACKS CONTAINING LEDs
(SD-4A028-02 EXCEPT 98A-TYPE CONVERTERS)

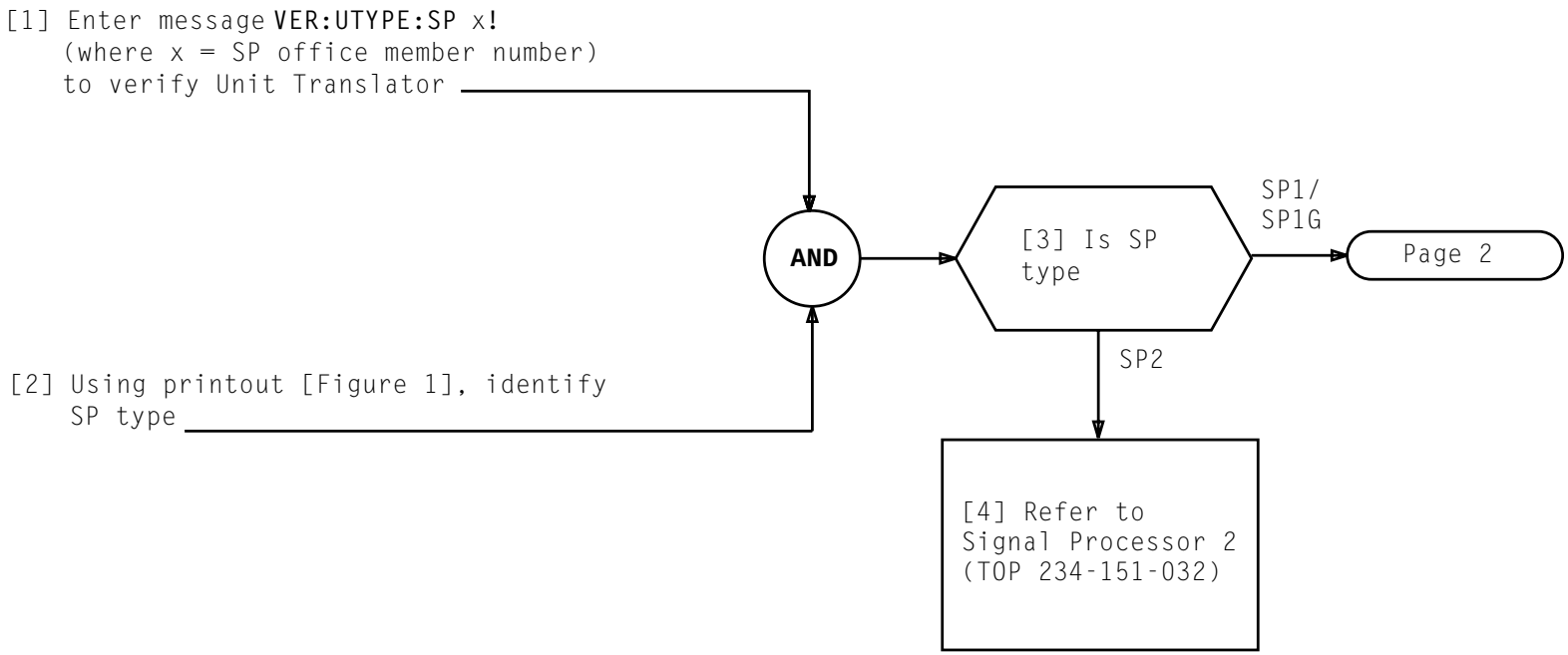
BAY												POWER CONTROL SWITCH
0		1		2		3		4		5		
CONV	CP	CONV	CP	CONV	CP	CONV	CP	CONV	CP	CONV	CP	
				80-34								PUB 0 BAY 2
						80-34						PUB 1 BAY 3
47-22,40, 59				12-12,18, 24,30 36,42 16-04,12,18, 24,30, 36,42	68-03			47-22,40, 59				CONTR 0 BAY 2
		47-22,40, 59				12-12,18, 24,30, 36,42 16-04,12,18 24,30, 36,42	68-03			47-22,40, 59		CONTR 1 BAY 3



WARNINGS

1. *Cycling tape transport or tape unit controller with tape over read/write heads may damage tapes*
2. *Pulling or dragging last 2 feet of tape across heads may contaminate heads*

DEMOUNT TLP TAPE FROM TAPE TRANSPORT



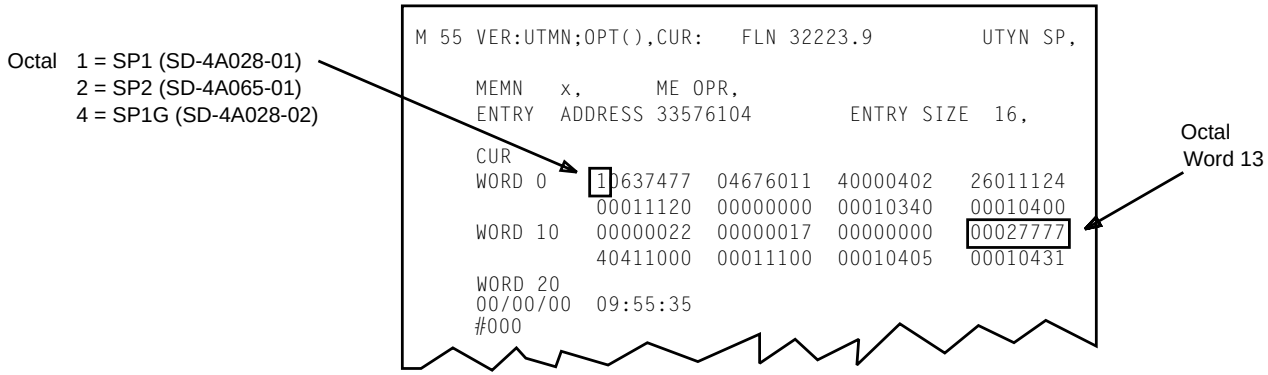


Figure 1. Typical VER:UTMN:OPT Message Printout

REMOVE PULSE POINT DURING MAINTENANCE ACTIVITY ON SP-TYPE FRAME

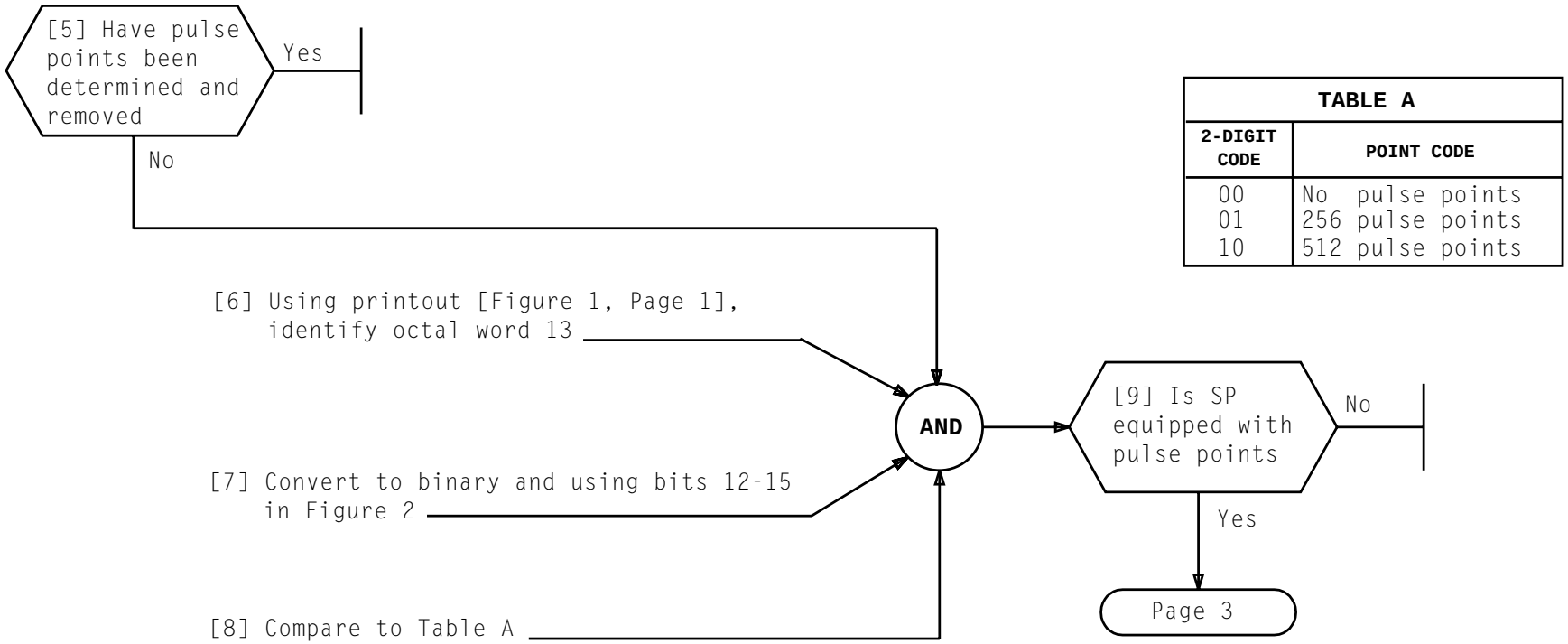


TABLE A	
2-DIGIT CODE	POINT CODE
00	No pulse points
01	256 pulse points
10	512 pulse points

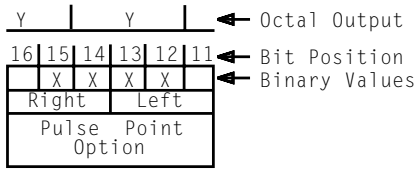


Figure 2. Layout of Partial Entry Data Word 13

[10] Using Figure 2, Page 1, determine if **PPL** (left) pulse points or **PPL** and **PPR** (right) pulse points are equipped

[11] At **PPL** (left) pulse points or **PPL** and **PPR** (right) (right) pulse points, determine in Step 6 [Table B], rotate **ROS/OFF** switch clockwise to **ROS** position

OFF NORM lamp lights and **ACK** lamp lights momentarily; then **OS** lamp lights

AND

[12] See CAUTION 1. Depress **ROS/OFF** switch

PWR OFF lamp lights

TABLE B

FRAME	NAME	SWITCH LOCATION		
		BAY	VERT	HOR
Distributor Applique (SD-4A028-01)	PPL	0	52	69
Distributor and Scanner Matrix (SD-4A028-01)	PPR	5	68	68
Combined Distributor and Scanner Matrix (SD-4A028-02)	PPL	1	22	65
	PPR	5	22	65

CAUTION 1
If OS lamp does not light, delay until duplicate pulse points are returned to service

REMOVE PULSE POINT DURING MAINTENANCE ACTIVITY ON SP-TYPE FRAME

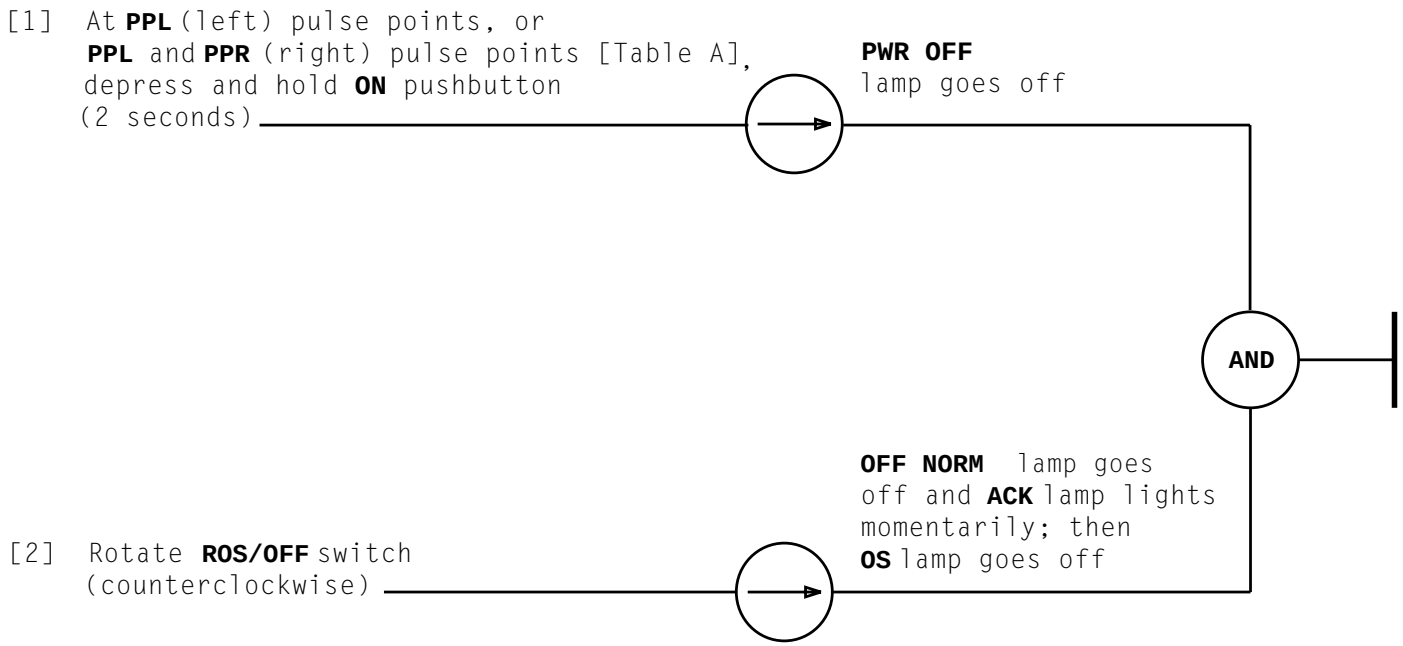


TABLE A

FRAME	NAME	SWITCH LOCATION		
		BAY	VERT	HOR
Distributor Applique (SD-4A028-01)	PPL	0	52	69
Distributor and Scanner Matrix (SD-4A028-01)	PPR	5	68	68
Combined Distributor and Scanner Matrix (SD-4A028-02)	PPL	1	22	65
	PPR	5	22	65

RESTORE PULSE POINT DURING MAINTENANCE ACTIVITY ON SP-TYPE FRAME

ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE
• IXL-001		ISD-122		DLP-507							
NTP-002		ISD-123		DLP-508							
NTP-003		ISD-124		DLP-509							
• NTP-004		TAP-125		DLP-510							
NTP-005		ISD-126		DLP-511							
NTP-006		• TAP-127		DLP-512							
NTP-007		ISD-128		DLP-513							
• NTP-008		ISD-129		DLP-514							
• NTP-009		• TAP-130		DLP-515							
• NTP-010		ISD-131		• DLP-516							
• NTP-011		• TAP-132		DLP-517							
• NTP-012		ISD-133		DLP-518							
• NTP-013		• TAP-134		• DLP-519							
• TAD-100		ISD-135		• DLP-520							
TAD-101		TAP-136		DLP-521							
TAD-102		ISD-137		DLP-522							
TAP-103		• TAP-138		• DLP-523							
TAP-104		ISD-139		DLP-524							
TAP-105		• TAP-140		• CKL-891							
TAP-106		TAP-141		TNG-893							
TAP-107		TAP-142									
TAP-108		• TAP-143									
TAP-109		ISD-144									
TAP-110		• TAP-145									
TAP-111		TAP-146									
TAP-112		TAP-147									
ISD-113		TAP-148									
ISD-114		TAP-149									
ISD-115		DLP-500									
ISD-116		DLP-501									
ISD-117		DLP-502									
TAP-118		DLP-503									
ISD-119		DLP-504									
ISD-120		DLP-505									
TAP-121		DLP-506									