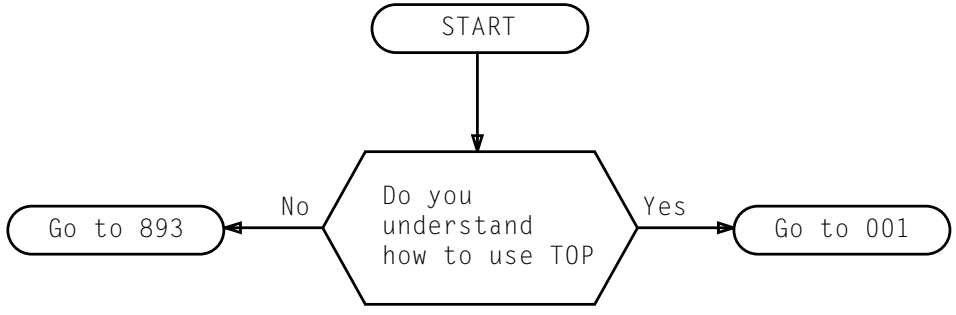
Lucent Technologies
Bell Labs Innovations

Task Oriented Practice (TOP)

4ESS™ SWITCH
Time Slot Interchange (TSI) Frame Trouble-Clearing TOP
Switching Network



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Developed by:

Lucent Technologies Systems for Network Operators Switching and Access Information Development
Lucent Technologies is the successor to the business and assets of AT&T Network Systems business unit.

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Acceptance	NTP-002
Circuit Filter Capacitor — Isolate Defective	TAP-134
Circuit Pack — In TSI Frame Or A-Link Controller — Replace	NTP-003
Connector Board; ED-4A148-30 DS-120 — Replace	NTP-008
Converter (245A With 245A); Bulk — In SD-4A083-01 Frame — Replace	NTP-005
Converter (245C With 245C); Bulk — In SD-4A083-01 Frame — Replace	NTP-009
Converter (245A With 245C); Bulk — Standard SPC (Two 245A Converters in Bay) In SD-4A083-01 Frame — Replace	NTP-010
Converter (245A With 245C); Bulk — Wideband SPC (Three 245A Converters in Bay) In SD-4A083-01 Frame — Replace	NTP-011
Converter (245C With 245A); Bulk — Standard SPC (No FA1816 and FA1817 in Bay) In SD-4A083-01 Frame — Replace	NTP-012
Converter (245C With 245A); Bulk — Wideband SPC (Bay Contains FA1816 and FA1817) In SD-4A083-01 Frame — Replace	NTP-013
Converter; Nonbulk — Replace	NTP-004
Diode — Power ORing — Check	NTP-006
Fuse; Blown — SD-4A011-01 Frame — Clear	TAP-116
Fuse; Blown — SD-4A011-02 Frame — Clear	TAP-123
Fuse; Blown — SD-4A083-01 Frame — Clear	TAP-104
LED Lighted Condition — FB152 Pack SD-4A011-01, 02 Frame — Clear	TAP-124
LED Lighted Condition — Nonbulk Converter — Clear	TAP-105
LED Lighted Condition — Bulk Converter and FC554 Pack on SD-4A083-01 Frame — Clear	TAP-108
LED Lighted Condition — Bulk Converter, FC554 and FC512 Packs on SD-4A083-01 Frame — Clear	TAP-131
Maintenance Philosophy	TAD-100

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

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

DGN:TSI a,[(CONTR b |IPUB c)] PH d STF
ANALY:TLPFILE:TSI a,[(CONTR b |IPUB c)] TLP
TLP TAPE ACQUISITION ERROR
MOUNT TAPE WITH FILE ID=f TAP-129

TTY Printout — REPT:TAPE MUST BE MOUNTED FOR FUNCTION TLP TAP-130

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

ACCEPTANCE

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
1	If Circuit Pack To Be Replaced Is an FC463 or FC464 Type,	
	1. Identify Units That Get Clock Signals From TSI Controller Containing FC463 or FC464 Pack	DLP-511
	2. Remove Identified Units From Service:	
	A. Type in **RMV:VIF** a,**CONTR** b! a = Member Number, b = Controller Number (Same as TSI Controller Number) *Response:* RMV:VIF a,CONTR b COMPLETED	–
	B. Type in **RMV:DT** a,**CONTR** b! a = Member Number, b = Controller Number (Same as TSI Controller Number) *Response:* RMV:DT a,CONTR b COMPLETED	–
	C. Type in **RMV:EST** a,**CONTR** b! a = Member Number, b = Controller Number (Same as TSI Controller Number) *Response:* RMV:EST a,CONTR b COMPLETED	–
	D. Peripheral Unit Controller	DLP-527
	E. Digital Interface Frame	DLP-527
2	Identify Power Switch and/or Fuse Associated With TSI Circuit Pack To Be Replaced	
	A. SD-4A011-01 Frame	DLP-519
	B. SD-4A011-02 Frame	DLP-520
	C. SD-4A083-01 Frame, and Pack Is FC512 or FC554 (With LED)	DLP-529
	D. SD-4A083-01 Frame, and Pack Is ***Not*** FC512 or FC554 (With LED)	DLP-521
	CAUTION: Care must be taken to ensure that power is removed using the proper power switch. Circuit pack that is to be removed may receive its power from opposite bay. If wrong power switch is used, service could be affected.	
3	Replace Circuit Pack	
	A. A-Link Controller	DLP-549
	B. Not Located In A-Link Controller	DLP-500

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
4	Ensure **OS** Lamp Goes Out After Diagnostic Is Completed	—
5	If Units Were Removed From Service, Restore by Typing:	—
	A. RST:VIF a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:VIF a,CONTR b COMPLETED	—
	B. RST:DT a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:DT a,CONTR b COMPLETED	—
	C. RST:EST a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:EST a,CONTR b COMPLETED	—
	D. RST DIF a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:DIF a,CONTR b COMPLETED	—
	E. RST:TSI a, ALC b! a = Member Number, b = Network Half Number (0 or 1)	—

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
1	Identify Power Controls Required To Remove Power From Nonbulk Converter	—
	A. SD-4A011-01 Frame	DLP-516
	B. SD-4A011-02 Frame	DLP-517
	C. SD-4A083-01 Frame	DLP-518
2	At Applicable Power Control Switch, Rotate **ROS/OFF** Switch to **ROS** Position	—
3	Ensure **OS** Lamp Lighted on Power Control Switch	—
4	Replace Non bulk Converter	DLP-513
5	Rotate **ROS/OFF** Switch to Normal Position	—
6	Ensure **OS** Lamp Goes Out After Diagnostic Completed	—

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	At Frame Power Control Switch in Bay Containing Converter, Rotate **ROS**/**OFF** Switch to **ROS** Position	—
2	Ensure **OS** Lamp Lighted on Power Control Switch	—
3	Replace Bulk Converter (245A With 245A)	DLP-509
4	Rotate **ROS**/**OFF** Switch to Normal Position	—
5	Ensure **OS** Lamp Goes Out After Diagnostic Completed ATP	—

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Request Printout of Equipment Status by Typing: OP:OOSUNITS!	—
2	Restore Any Affected Out-of-Service Unit to Service by Typing:	—
	A. RST:TSI a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:TSI a,CONTR b COMPLETED	—
	B. RST:DIF a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:DIF a,CONTR b COMPLETED	—
	C. RST:EST a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:EST a,CONTR b COMPLETED	—
	D. RST:DT a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:DT a,CONTR b COMPLETED	—
	E. RST:VIF a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:VIF a,CONTR b COMPLETED	—
3	Identify Affected TSI Associated Members	DLP-530
4	Remove TSI Associated Members and Controllers:	—
	A. Type in RMV:VIF a,CONTR b! a = Member Number, b = Controller Number (Same as TSI Controller Number) *Response:* RMV:VIF a,CONTR b COMPLETED	—
	B. Type in RMV:DT a,CONTR b! a = Member Number, b = Controller Number (Same as TSI Controller Number) *Response:* RMV:DT a,CONTR b COMPLETED	—
	C. Type in RMV:EST a,CONTR b! a = Member Number, b = Controller Number (Same as TSI Controller Number) *Response:* RMV:EST a,CONTR b COMPLETED	—
	D. Digital Interface Frame	DLP-527
	(Continued on Page 2)	

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
5	Remove TSI Member and Controller From Service by Typing: RMV:TSI a,CONTR b! a = Member Number, b = Controller Number *Response:* RMV:TSI a,CONTR b COMPLETED	—
6	Test Power ORing Diode	DLP-525
7	Restore All Associated Equipment to Service by Typing:	—
	A. RST:TSI a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:TSI a,CONTR b COMPLETED	—
	B. RST:DIF a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:DIF a,CONTR b COMPLETED	—
	C. RST:EST a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:EST a,CONTR b COMPLETED	—
	D RST:DT a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:DT a,CONTR b COMPLETED	—
	E. RST:VIF a,CONTR b! a = Member Number, b = Controller Number *Response:* RST:VIF a,CONTR b COMPLETED	—
8	If Diodes in Other Controllers Are To Be Tested, Repeat From Item 3	—

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
	NOTE: This procedure provides details for replacing one splitting transformer by pesting the TSI controller and associated port (EST — if provided, DIF, DT, or VIF) before replacing the bad transformer. If more than one transformer is bad or the entire board is to be replaced, the ports on ED-4A148-30 DS-120 connector board should be degrown per NTP-008 before replacing the transformers or board.	
	CAUTION: BLMs may occur during this procedure causing service to be degraded	
1	From Office Records, Determine Frames (DIF, DT, or VIF and EST — If Provided) Associated With TSI-SPC Having Bad Splitting Transformer	—
2	From Office Records, Determine TSN Associated With Splitting Transformer To Be Replaced	—
3	Determine Status of Trunks in TSG — Ignore Trunks That Are Out of Service (**OP:TRKSTAT,TSN** a,**SUM:NUM 120, STAT TRAF<OOSI>!**	—
4	Set Active Trunks to Maintenance Disabled (**SET:TRKSTAT MTC.DSA, TSN** a,**NUM 120, STAT ACT!**)	—
5	Check Trunk Status by Repeating Item 3	
6	If Some Trunks Are Still Active, Repeat Item 4	
7	If Echo Suppression (EST) Is Used, Pest EST Associated With DIF/DT/VIF (**INH:EST** a,**APUF!** and **INH:EST** a,**APUT!**)	—
8	Pest the DIF/DT/VIF by Typing A, B, or C:	
	A. (**INH:DIF** a,**APUF!** and **INH:DIF** a,**APUT!**)	—
	B. (**INH:DT** a,**APUF!** and **INH:DT** a,**APUT!**)	—
	C. (**INH:VIF** a,**APUF!** and **INH:VIF** a,**APUT!**)	—
9	Pest TSI Controller 0 (**INH:TSI** a,**CONTR 0,SPEC!**)	—
10	Pest TSI Controller 1 (**INH:TSI** a,**CONTR 1,SPEC!**)	—
11	Assure That All Pests Are Set (**OP:PERIFINH!**)	—
12	Remove Affected TSI (**RMV:TSI** a,**CONT 1!**)	—
13	Replace Splitting Transformer	DLP-542
14	Restore Affected TSI (**RST:TSI** a,**CONT 1!**)	—

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
15	Remove TSI Controller 1 Pest (ALW:TSI a,CONTR 1,SPEC!)	—
16	Remove TSI Controller 0 Pest (ALW:TSI a,CONTR 0,SPEC!)	—
17	Remove DIF/DT/VIF Pest by Typing A, B, or C:	—
	A. (ALW:DIF a,APUF! and ALW:DIF a,APUT!)	—
	B. (ALW:DT a,APUF! and ALW:DT a,APUT!)	—
	C. (ALW:VIF a,APUF! and ALW:VIF a,APUT!)	—
18	If Echo Suppression (EST) Is Used, Remove EST Pest (ALW:EST a,APUF! and ALW:EST a,APUT!)	—
19	Assure That All Pests Are Out (OP:PERIFINH!)	—
20	Turn Up Trunks for Service That Were Removed in Item 4	—
21	Have TOC Test Trunks, as Required	—

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
	NOTE: Degrow the seven DIU, DTU or VIU ports or the DS-120 connector board by doing items 1 through 22.	
1	From Office Records, Determine Frames (DIF, DT, or VIF) Associated With TSI-SPC Having Bad Connector Board	—
2	Determine From Office Records the DIU/DTU/VIU Number To Be Degrown and Associated DIF/DT/VIF, TSI and ESU, if Provided	—
3	Obtain From Office Records the Base Trunk Assignment Number (TAN) Served by DIU/DTU/VIU To Be Degrown	—
4	Verify TAN to DIU/DTU/VIU Assignment (**VER:TRKNAME, TAN** a**;DETL**!)	DLP-535
5	Change Degrowth DIU/DTU/VIU Trunks to Circuit Administration Disabled (CAD.DSA) State and Verify	DLP-536
	NOTE: All TANs assigned to the degrowth DIU/DTU/VIU must be in the CAD.DSA state in output message before continuing this procedure.	
6	If Service Circuit Trunks Are Associated With Degrowth DIU/DTU/VIU, Request Appropriate Administration Center To Delete Service Circuit Trunks Served by DIU/DTU/VIU To Be Degrown Using RC Form 202	—
7	Determine From Office Records if Any TANTOTANs and/or Nailup Connections Are Assigned to SPC in Associated TSI	—
8	If TANTOTANs Are Assigned, Obtain CIN Assignments of TANTOTANs on SPC To Be Degrown for Later Use	
9	If Nailup Connections Are Assigned, Obtain TAN Assignments of Nailup Connections on SPC To Be Degrown for Later Use	—
10	If TANTOTANs Are Assigned to SPC Being Degrown (Item 7), Using CIN Assignments Obtained in Item 8, Take Down Each TANTOTAN (**ORD:TANTOTAN;RLS,CIN** a**;CIN** b!)	DLP-540
11	If Nailup Connections Are Assigned to SPC Being Degrown (Item 7), Request Appropriate Administration Center To Delete Each Nailup Connection on List Obtained in Item 9 Using Recent Change Form 206	—
12	Verify That Spare DIU/DTU/VIU in Degrowth DIF/DT/VIF Is Available by Typing A, B, or C:	
	A. (**OP:OOSUNITS:DIF**!)	DLP-537
	B. (**OP:OOSUNITS:DT**!)	DLP-537
	C. (**OP:OOSUNITS:VIF**!)	DLP-537

REPLACE ED-4A148-30 DS-120 CONNECTOR BOARD

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
13	Remove Degrowth DIU/DTU/VIU From Service by Typing A, B, or C:	
	A. (**RMV:DIF** a,**DIU** b!)	DLP-538
	B. (**RMV:DT** a,**DTU** b!)	DLP-538
	C. (**RMV:VIF** a,**VIU** b!)	DLP-538
14	Recent Change Submember Equipage From OPER to SGRO Using RC Form 701 (Degrow) (Degrowth DIU/DTU/VIU)	DLP-533
15	Enter Message To Run Peripheral Unit Status Audit (**AUD:PUSTAT!**); Wait for Message Complete (MSG COMPL)	—
16	Diagnose Degrowth DIU/DTU/VIU by Typing A, B, or C:	
	A. (**DGN:DIF** a,**DIU** b!)	—
	B. (**DGN:DT** a,**DTU** b!)	—
	C. (**DGN:VIF** a,**VIU** b!)	—
17	At **MCC EQUIPMENT STATUS** Panel, Depress A, B, or C:	—
	A. **DIGITAL INTERFACE** Key and Assure That No DIU Is Listed for Degrowth Associated Half of DIF (0-15 or 16-31)	_
	B. **DIGROUP TERMINAL** Key and Assure That No DTU Is Listed for Degrowth Associated Half of DT (0-15 or 16-31)	_
	C. **VOICE INTERFACE UNIT** Key and Assure That No VIU Is Listed for Degrowth Associated Half of VIF (0-15 or 16-31)	_
18	If EST Exists Between Degrowth DIU/DTU/VIU and Associated TSI Port and EST Is Equipped With Operational ESU That Is Associated With Degrowth DIU/DTU/VIU TSI Port, Perform the Following:	
	1. Remove Associated ESU From Service (**RMV:EST** a,**ESU** b!)	DLP-539
	2. Recent Change Submember Equipage From OPER to SGRO Using RC Form 701 (Degrow) (ESU Associated With Degrowth DIU/DTU/VIU)	DLP-533
	3. Diagnose Degrowth Associated ESU (**DGN:EST** a,**ESU** b!)	—
	4. At **MCC EQUIPMENT STATUS** Panel, Depress ECHO SUPP TERMINAL Key and Assure That No ESU Is Listed for Degrowth Associated EST	_

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
19	Recent Change Submember Equipage From OPER to SGRO Using RC Form 701 (Degrow) (TSI Port Associated With Degrowth DIU/DTU/VIU)	DLP-533
20	Enter Message To Apply TSI Port Pest Control to Degrowth Associated TSI Port (**INH:TSI** a,**SPC** b, **PORT** c!)	—
21	Repeat Procedure From Item 1 Until All Grown Ports on the DS-120 Connector Board Are Degrown	
22	Remove Affected TSI From Service (**RMV:TSI** a,**CONT** 1!)	—
23	Replace DS-120 Connector Board	DLP-541
24	Restore Affected TSI to Service (**RST:TSI** a,**CONT** 1!)	—
	NOTE: Grow the seven DIU, DTU or VIU ports on the DS-120 connector board by doing Items 24a through 33.	
24a	Diagnose DIU/DTU/VIU by Typing A, B, or C; ATP Required:	
	A. (**DGN:DIF** a,**DIU** b!)	—
	B. (**DGN:DT** a,**DTU** b!)	—
	C. (**DGN:VIF** a,**VIU** b!)	—
25	Recent Change and Verify Submember Equipage SGRO to OPER (TSI Port Associated With Added DIU/DTU/VIU)	DLP-531
26	If ESU is Associated With Added DIU/DTU/VIU, Recent Change and Verify ESU Submember Equipage SGRO to OPER	DLP-531
27	Recent Change and Verify Submember Equipage SGRO to OPER (Connecting DIU/DTU/VIU)	DLP-531
28	Enter Message to Run Peripheral Unit Status Audit (**AUD:PUSTAT**!); Wait for Message Complete (MSG COMPL)	—
29	If ESU Is Associated With Added DIU/DTU/VIU, Restore ESU (**RST:EST** a,**ESU** b!)	DLP-534
30	Restore Growth Associated DIU/DTU/VIU by Typing A, B, or C:	
	A. (**RST:DIF** a,**DIU** b!)	DLP-532
	B. (**RST:DT** a,**DTU** b!)	DLP-532
	C. (**RST:VIF** a,**VIU** b!)	DLP-532
31	Enter Message To Allow Growth Associated TSI Port (**ALW:TSI** a,**SPC** b,**PORT** c!)	—
32	If TANTOTANs Were Released in Item 10, Connect Each TANTOTAN (**ORD:TANTOTAN;CONN,CIN** a,**CIN** b!)	DLP-540

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO		
33	If Nailup Connections Were Deleted in Item 11, Request Appropriate Administration Center To Connect Each Nailup Using RC Form 205	_
34	Repeat Procedure From Item 24a Until All Active Degrown Ports on the DS-120 Connector Board Are Grown and Restored	
35	If Any Service Circuit Trunks Are Required, Request Appropriate Administration Center To Add Trunks Using RC Form 200	_
36	Have TOC Test at Least One Trunk Associated With Each DIU/DTU/VIU	

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	At Frame Power Control Switch in Bay Containing Converter, Rotate **ROS**/**OFF** Switch to **ROS** Position	—
2	Ensure **OS** Lamp Lighted on Power Control Switch	—
3	Replace Bulk Converter (245C With 245C)	DLP-543
4	Rotate **ROS**/**OFF** Switch to Normal Position	—
5	Ensure **OS** Lamp Goes Out After Diagnostic Completed ATP	—

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	At Frame Power Control Switch in Bay Containing Converter, Rotate **ROS**/**OFF** Switch to **ROS** Position	—
2	Ensure **OS** Lamp Lighted on Power Control Switch	—
3	Replace Bulk Converter (245A With 245C)	DLP-544
4	Rotate **ROS**/**OFF** Switch to Normal Position	—
5	Ensure **OS** Lamp Goes Out After Diagnostic Completed ATP	—

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	At Frame Power Control Switch in Bay Containing Converter, Rotate **ROS**/**OFF** Switch to **ROS** Position	—
2	Ensure **OS** Lamp Lighted on Power Control Switch	—
3	Replace Bulk Converter (245A With 245C)	DLP-545
4	Rotate **ROS**/**OFF** Switch to Normal Position	—
5	Ensure **OS** Lamp Goes Out After Diagnostic Completed ATP	—

REPLACE BULK CONVERTER (245A WITH 245C) WIDEBAND SPC (THREE 245A CONVERTERS IN BAY) IN SD-4A083-01 FRAME

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	At Frame Power Control Switch in Bay Containing Converter, Rotate **ROS**/**OFF** Switch to **ROS** Position	—
2	Ensure **OS** Lamp Lighted on Power Control Switch	—
3	Replace Bulk Converter (245C With 245A)	DLP-546
4	Rotate **ROS**/**OFF** Switch to Normal Position	—
5	Ensure **OS** Lamp Goes Out After Diagnostic Completed ATP	—

REPLACE BULK CONVERTER (245C WITH 245A) STANDARD SPC (NO FA1816 AND FA1817 IN BAY) IN SD-4A083-01 FRAME

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	At Frame Power Control Switch in Bay Containing Converter, Rotate **ROS**/**OFF** Switch to **ROS** Position	—
2	Ensure **OS** Lamp Lighted on Power Control Switch	—
3	Replace Bulk Converter (245C With 245A)	DLP-547
4	Rotate **ROS**/**OFF** Switch to Normal Position	—
5	Ensure **OS** Lamp Goes Out After Diagnostic Completed ATP	—

REPLACE BULK CONVERTER (245C WITH 245A) WIDEBAND SPC (BAY CONTAINS FA1816 AND FA1817) IN SD-4A083-01 FRAME

GENERAL

The maintenance philosophy contained in this volume is based upon the design of equipment (hardware), diagnostic software and test equipment employed. **It is assumed that all coaxial cabling is non-faulty. Improper handling of cabling may damage cables or cause service interuption. Extreme care must be exercised when handling any coaxial cable.** 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, PKs, PRs, etc, which are available to the telephone company offices are referred to where applicable rather than duplicating that information in the TOP. Some portions of those documents may be utilized in procedures but only as examples for purposes of explanation. Test equipment (oscilloscopes, voltmeters, etc) and the parameters involved in the circuits being tested, adjusted, or checked are usually prescribed. Setup and method of use is not described unless it is unusual or unique.

IXL PHILOSOPHY [IXL-001]

The IXL is structured to provide fast access to those procedures pertinent to the symptoms identified. Procedures unique to a particular modification of TSI are identified by that frame's SD number. If not so identified, the procedure would apply to all modifications.

Power problems are sensed by scan points which generate an alarm. It is assumed that the user following the aisle pilot lights can locate the frame with the power fault which was automatically powered down (1A power switch with **PWR OFF** lamp lighted and **OFF NORM** lamp off) or by reading the **REPT:PA** printout which would identify the frame with power fault. The precise structure of the message is given in the input/output (I/O) message manuals. The symptoms described in the IXL reflect the assumptions above, and indicate other conditions that are observable at the frame that would enable the user to access the proper trouble-clearing procedure. These conditions are fuse blown, lighted LEDs on converters, or power function circuit packs.

In general, logic circuit failures cause the fault recovery program to request a diagnostic program. This method of requesting the diagnostic program includes the TLP option. The IXL reflects this in the TTY printouts listed. Outside of the first two supplementary messages (ANALY:TLPFILE:TSI a), all other supplementary messages pertain to problems in generating a SUSPECTED FAULTY EQUIPMENT list and reference to procedures (TAPs) which attempt to correct the problem. If successful in generating a SUSPECTED FAULTY EQUIPMENT list, those procedures reference to the appropriate procedure [TAP-101] which tells you what to do with this list. If not successful, they reference to the next level of trouble-clearing, raw data analysis [TAP-102] which 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 he performs that action correctly. Similarly, when directed to make replacements, the replacement part is always assumed to be good. Equipment used for testing, both built-in (hardware and software) and commercial, is assumed to be good. Only consistent fault signatures are covered.

Trouble-clearing TAPs for diagnostic failures are provided

on three levels. Level one [TAP-101] addresses what to do with a software-generated TLP **SUSPECTED FAULTY EQUIPMENT** list and 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 Lucent practices), TTY techniques, and with diagnostic printouts.

Second level of trouble clearing is accessed from the first level TAP when TLP generated **SUSPECTED FAULTY EQUIPMENT** list has been exhausted without clearing the problem. It can be accessed directly from the IXL or any of the **ANALY:TLPFILE:TSI** a TAPs which produce a **NULL PACK TEST GENERATED** response. This level [TAP-102] is known as raw data analysis and describes what to do with the summary and supplemental data printed out 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 equipment, of TTY techniques and printouts, and of SDs, PKs, PRs, etc.

Third level of trouble-clearing is signal tracing using interactive diagnostics [TAP-132]. This procedure is accessible only from the previous level [TAP-102] 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 but 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 (NTP/DLP) through the Index [IXL-001]. Most DLPs are built to support TAPs and 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 contained in TAP-141 may produce a list of circuit packs that could cause that interrupt. Prior to changing the circuit packs, a DGN should be run with ATP expected, if DGN produces:

(1) ATP — First circuit pack found in interrupt analysis should be changed. Should this be the wrong circuit pack, probability is high that interrupt will occur again with same symptom. Next identified pack should be changed at this time.

(2) STF — The most suspect circuit pack is the pack that appears on both TLP pack list and list generated from analysis of interrupt.

EQUIPMENT TEST LIST

This is a list of tasks recommended for preventive maintenance. Tasks are arranged by the frequency of the maintenance beginning with the shortest interval.

FREQUENCY	TASK	PROCEDURE
6 MONTHS	Tests Lamps on Power Switch	DLP-514
12 MONTHS	Check Power ORing Diodes	NTP-006

SUMMARY
Replace all listed packs located in failed TSI frame half beginning with first pack listed. After each pack replacement, check diagnostic results to determine if trouble was cleared. After all listed packs located in failed TSI frame half have been replaced, any listed packs in TMS frame helper unit are replaced. If trouble is not cleared, perform raw data analysis using TAP-102

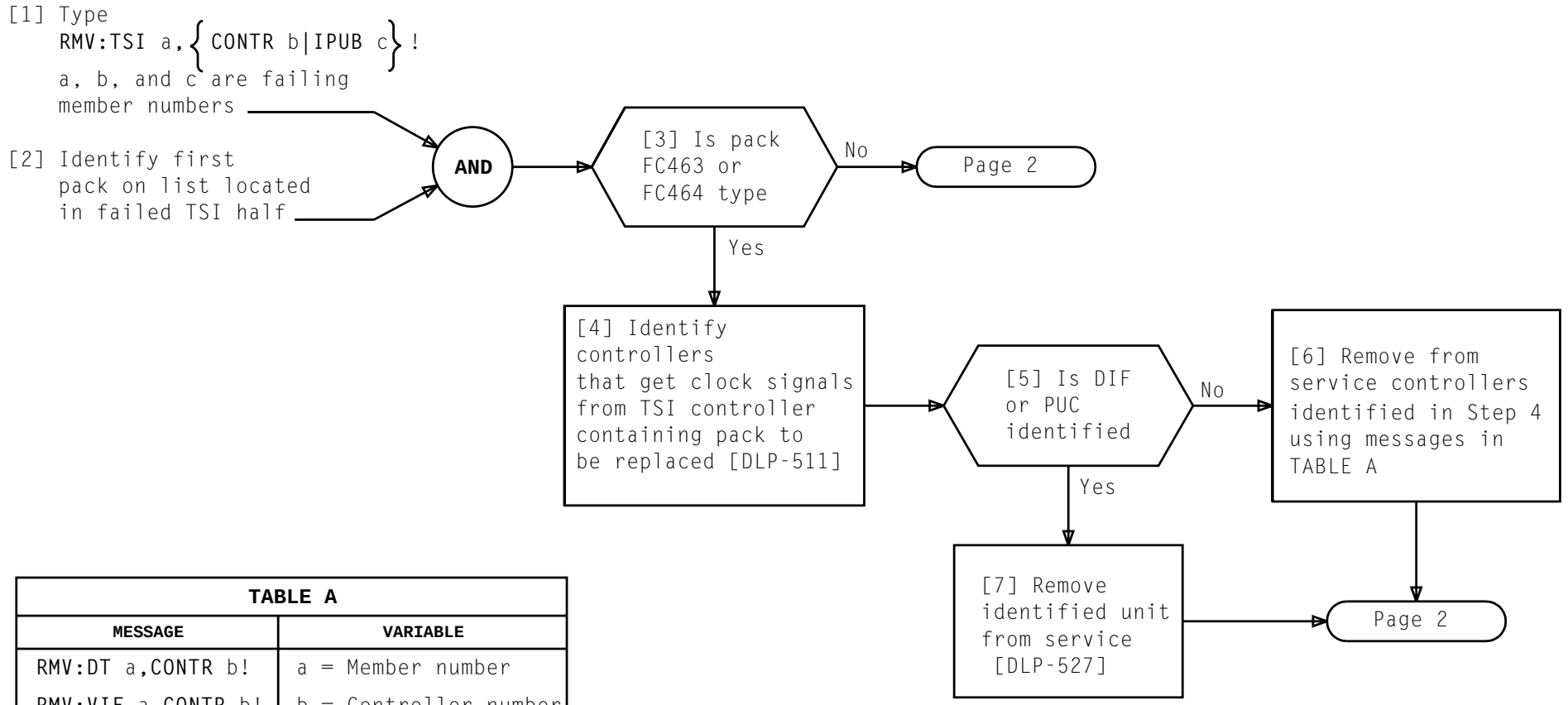


TABLE A

MESSAGE	VARIABLE
RMV:DT a,CONTR b!	a = Member number
RMV:VIF a,CONTR b!	b = Controller number
RMV:EST a,CONTR b!	

CLEAR DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST

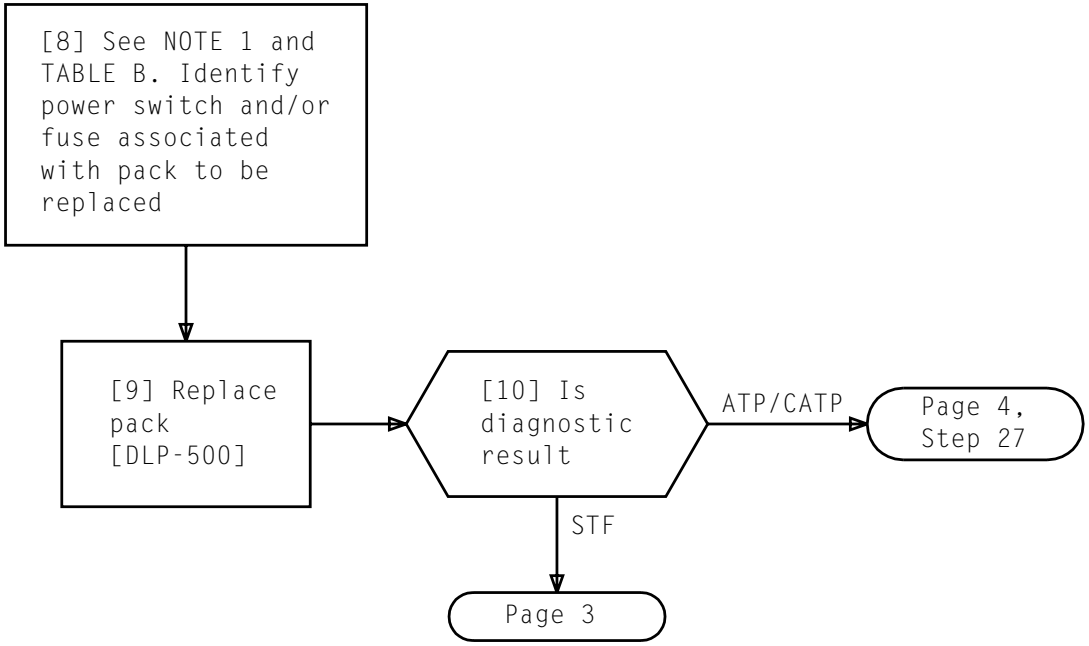
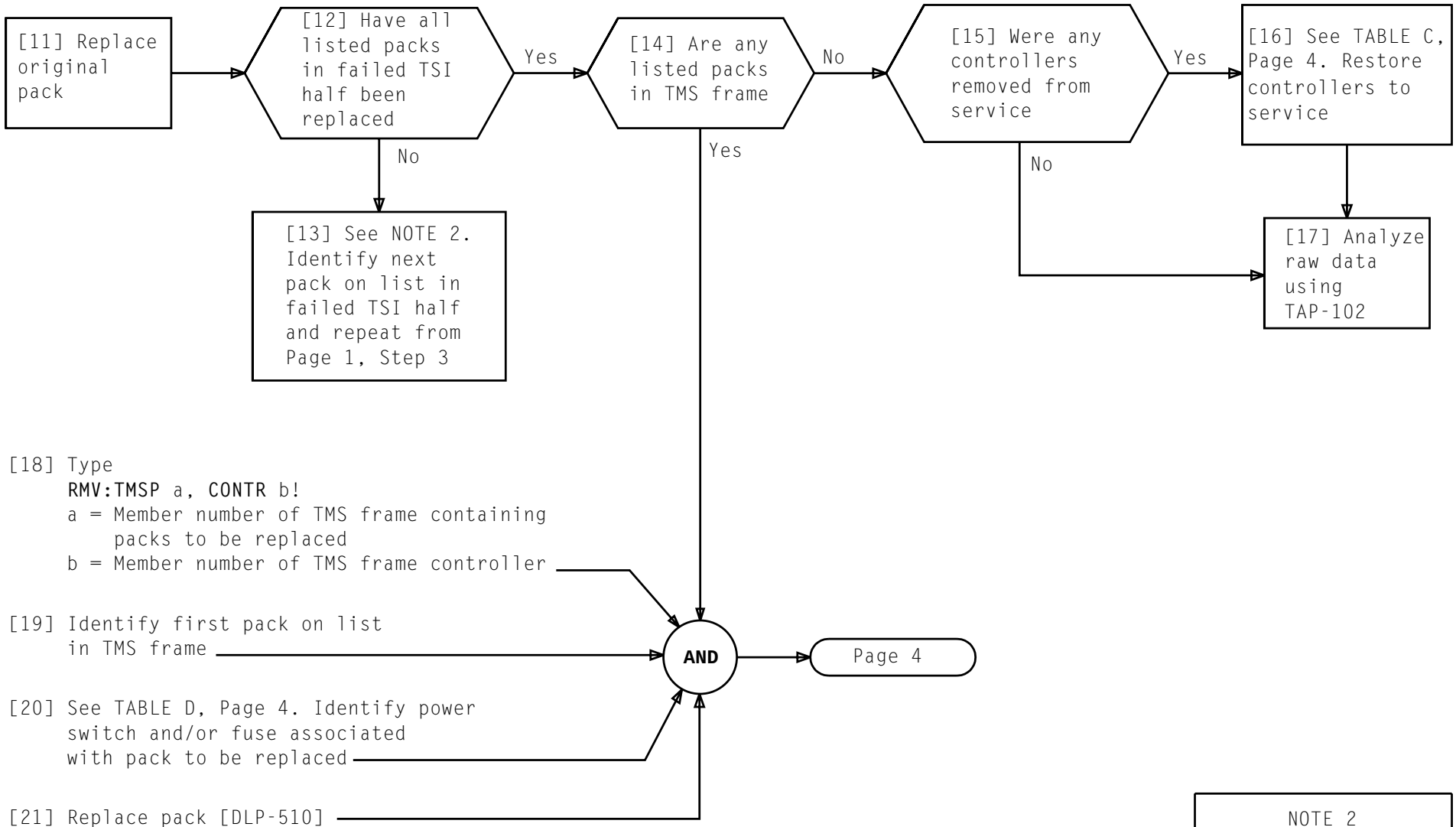


TABLE B	
FRAME	**PROCEDURE**
SD-4A011-01	DLP-519
SD-4A011-02	DLP-520
SD-4A083-01	DLP-521

CLEAR DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST

NOTE 1
Red designation marker at pack to be replaced indicates fuse removal required to replace pack



NOTE 2
Any listed packs in mate of failed TSI half should not be replaced

CLEAR DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST

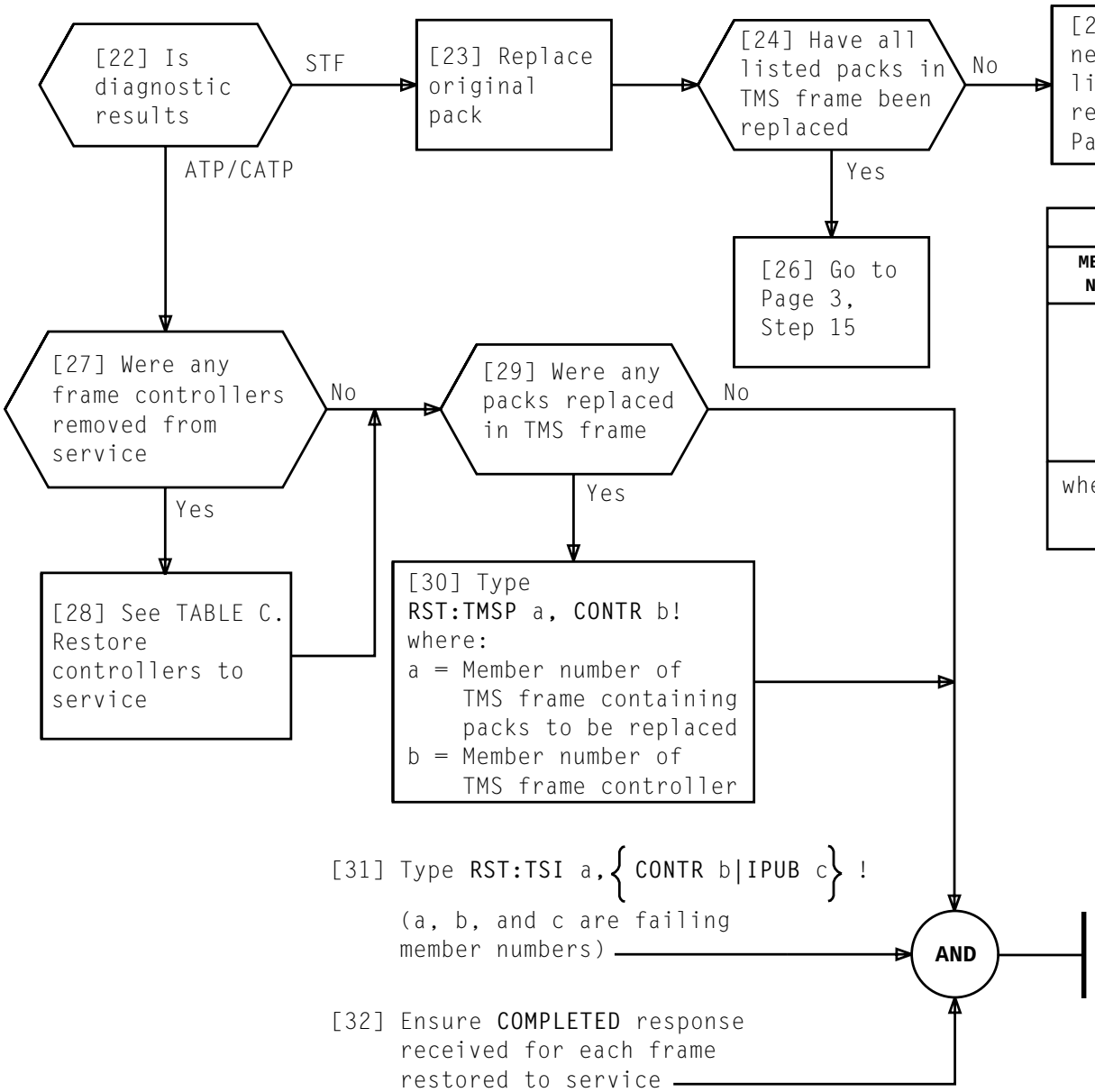


TABLE C

MESSAGE NUMBER	MESSAGE
1	RST:DT a, CONTR b!
2	RST:EST a, CONTR b!
3	RST:VIF a, CONTR b!
4	RST:DIF a, CONTR b!

where: a = Member number
b = Controller number

TABLE D

FRAME	PROCEDURE
SD-4A012-01	DLP-522
SD-4A012-02	DLP-523
SD-4A087-01	DLP-524

CLEAR DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST

SUMMARY

Read first failing phase prologue. Determine if subroutines were used and identify their location and function. Locate first failing test and determine test function. Determine if doloops were used and identify their location and function. Note PK information for failing bits in first failing test. Use PK information and knowledge of first failing test function to identify and replace any suspect packs other than those on TLP list previously replaced. If trouble is not cleared, refer to TAP-132. (Clear diagnostic failure by looping over first failing test and signal trace to locate fault.)

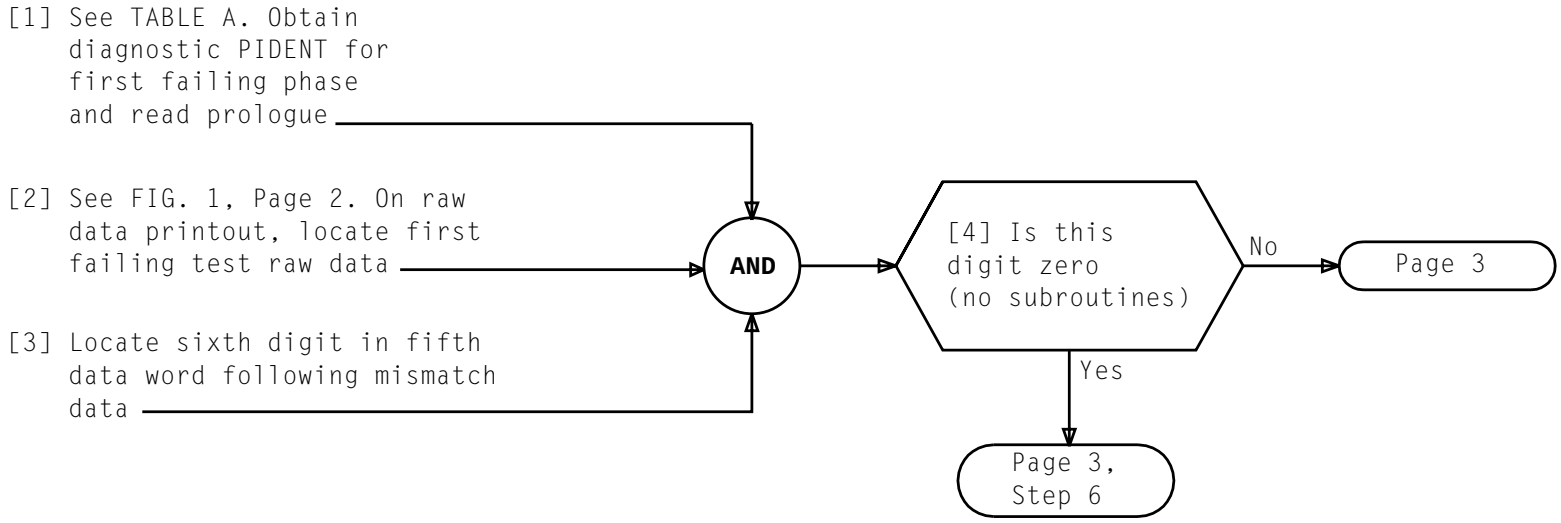


TABLE A - DIAGNOSTIC DOCUMENTATION

SD-4A011-01 OR SD-4A011-02	SD-4A083-01 FRAME
PR number=4A577 + phase number except IPUB (PH 99) is PR4A706. PIDENT is PUDGTIXX (XX=phase number) Subroutines in PUDGTIGR (4A577)	PR number=4A1018 + phase number except IPUB (PH 99) is PR4A706. PIDENT is PUDGTSXX (XX=phase number) Subroutines in PUDGTSGR (4A1018)

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

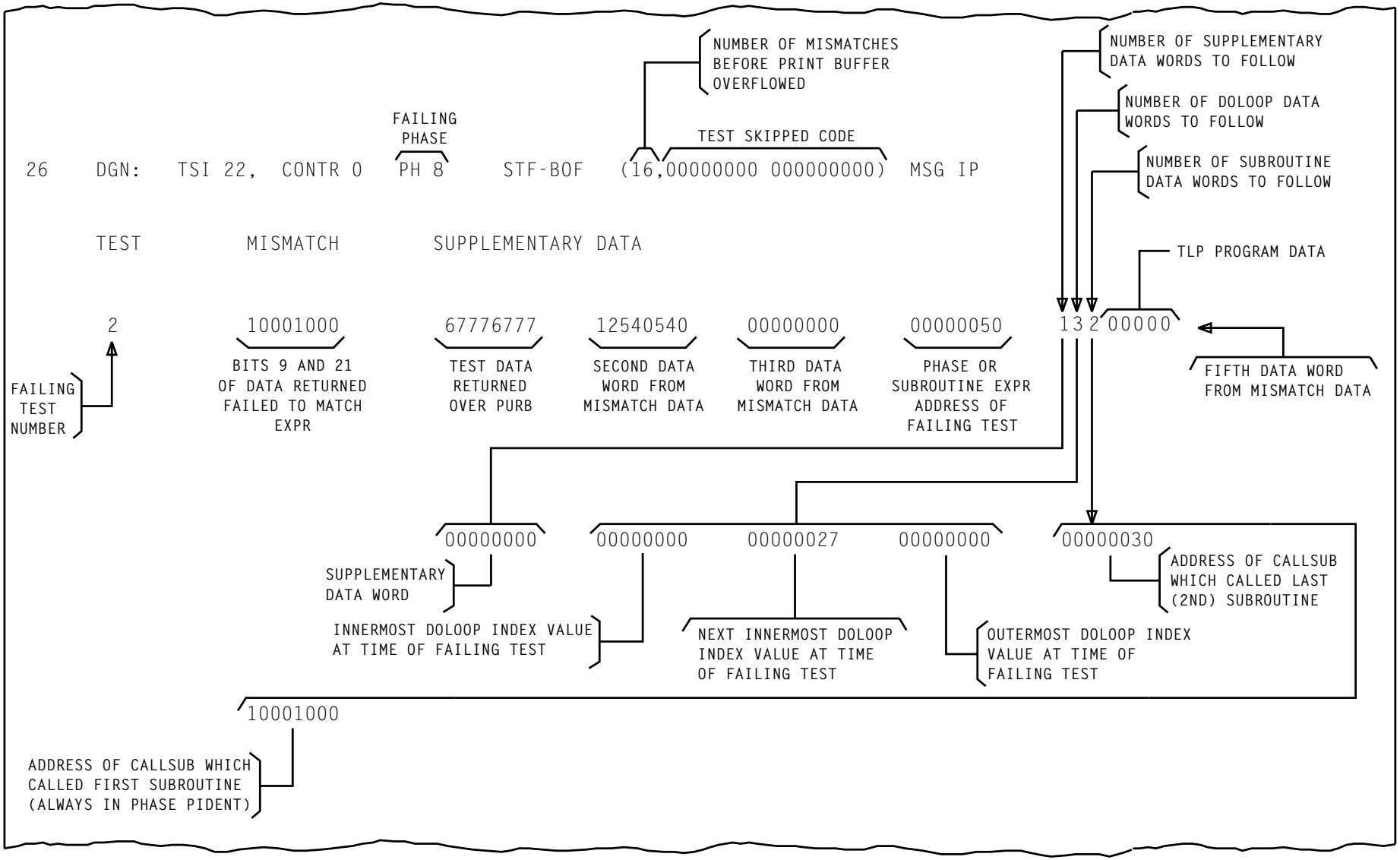


FIG. 1 – Example of TSI Raw Data Printout

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

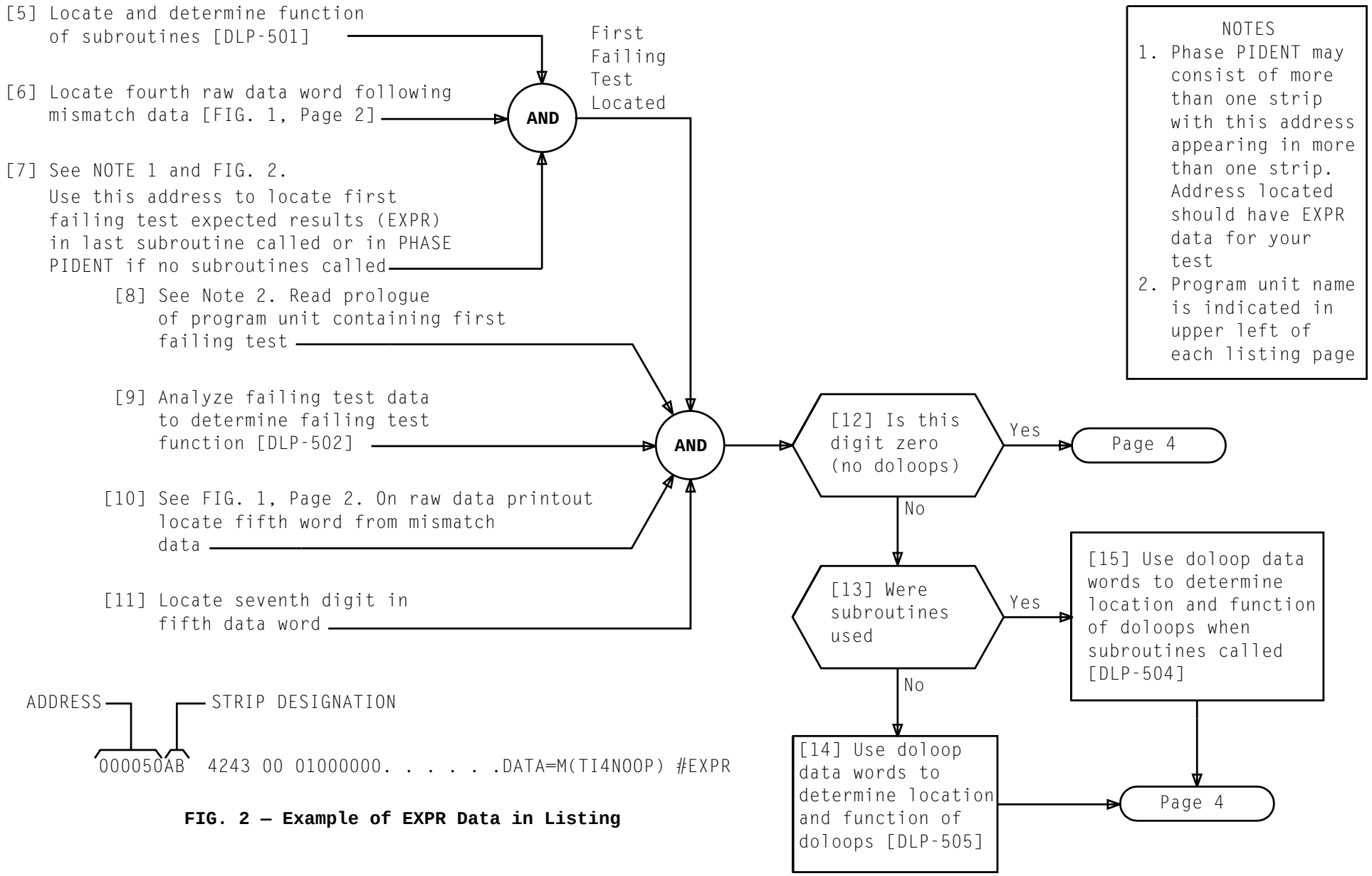
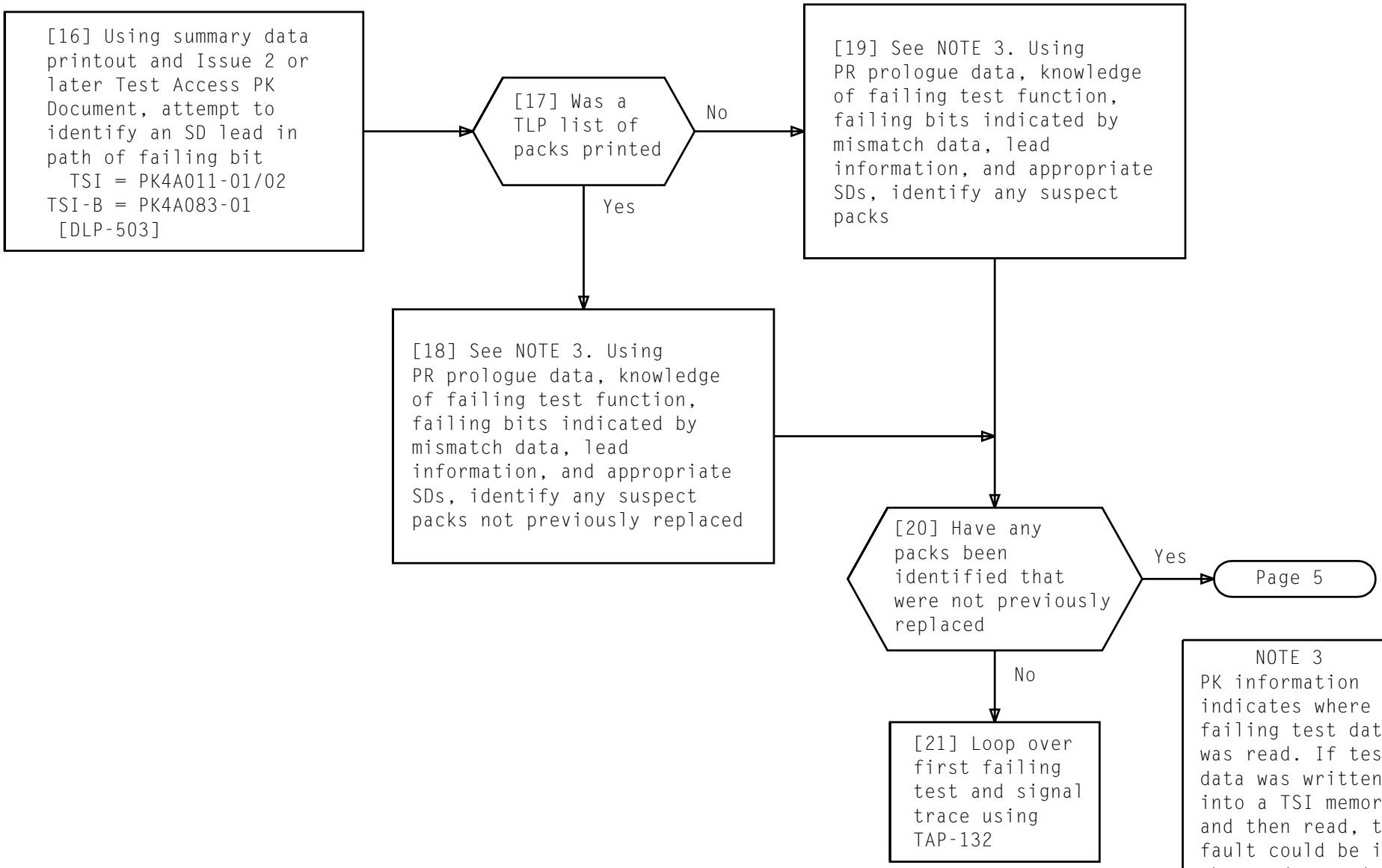
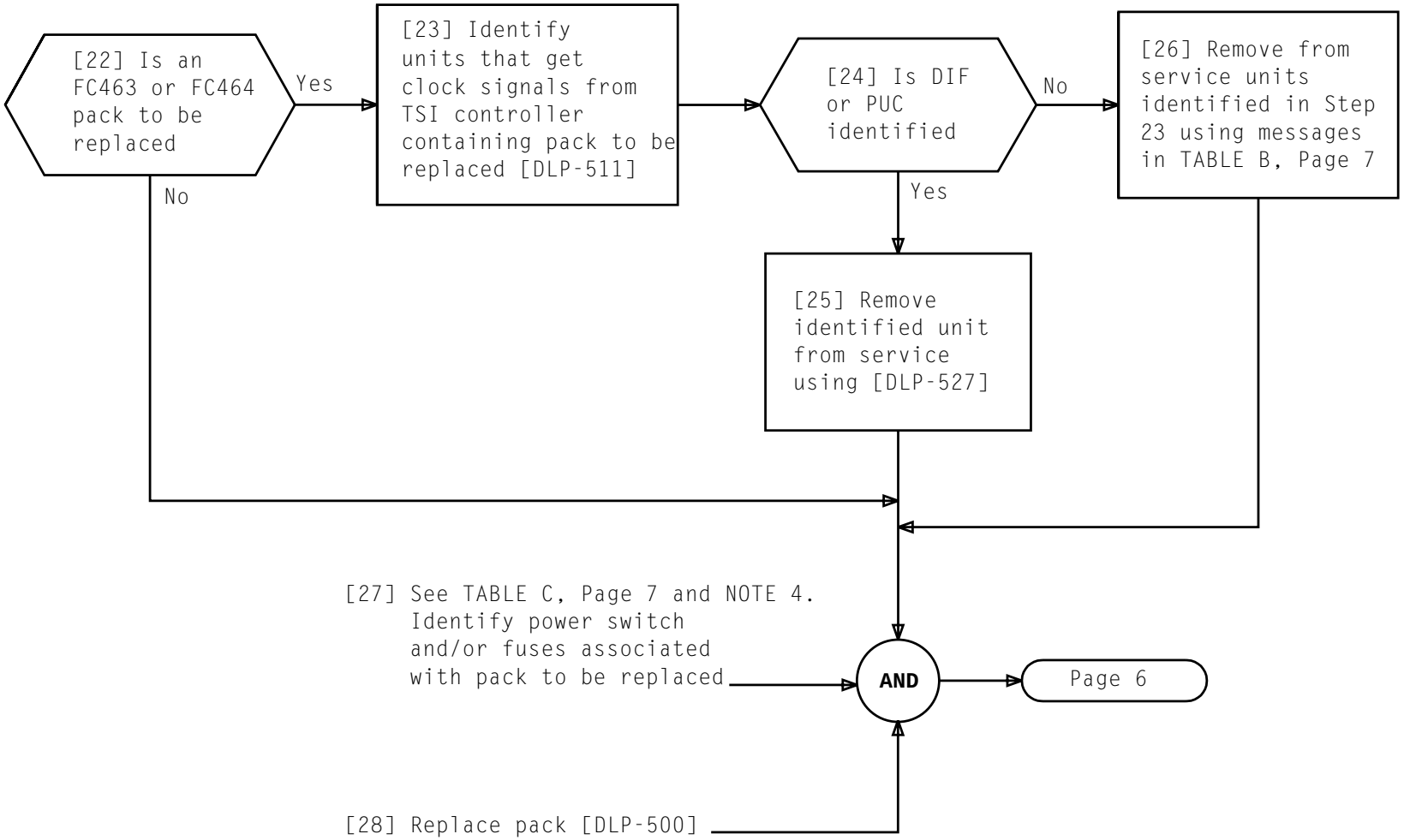


FIG. 2 — Example of EXPR Data in Listing

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

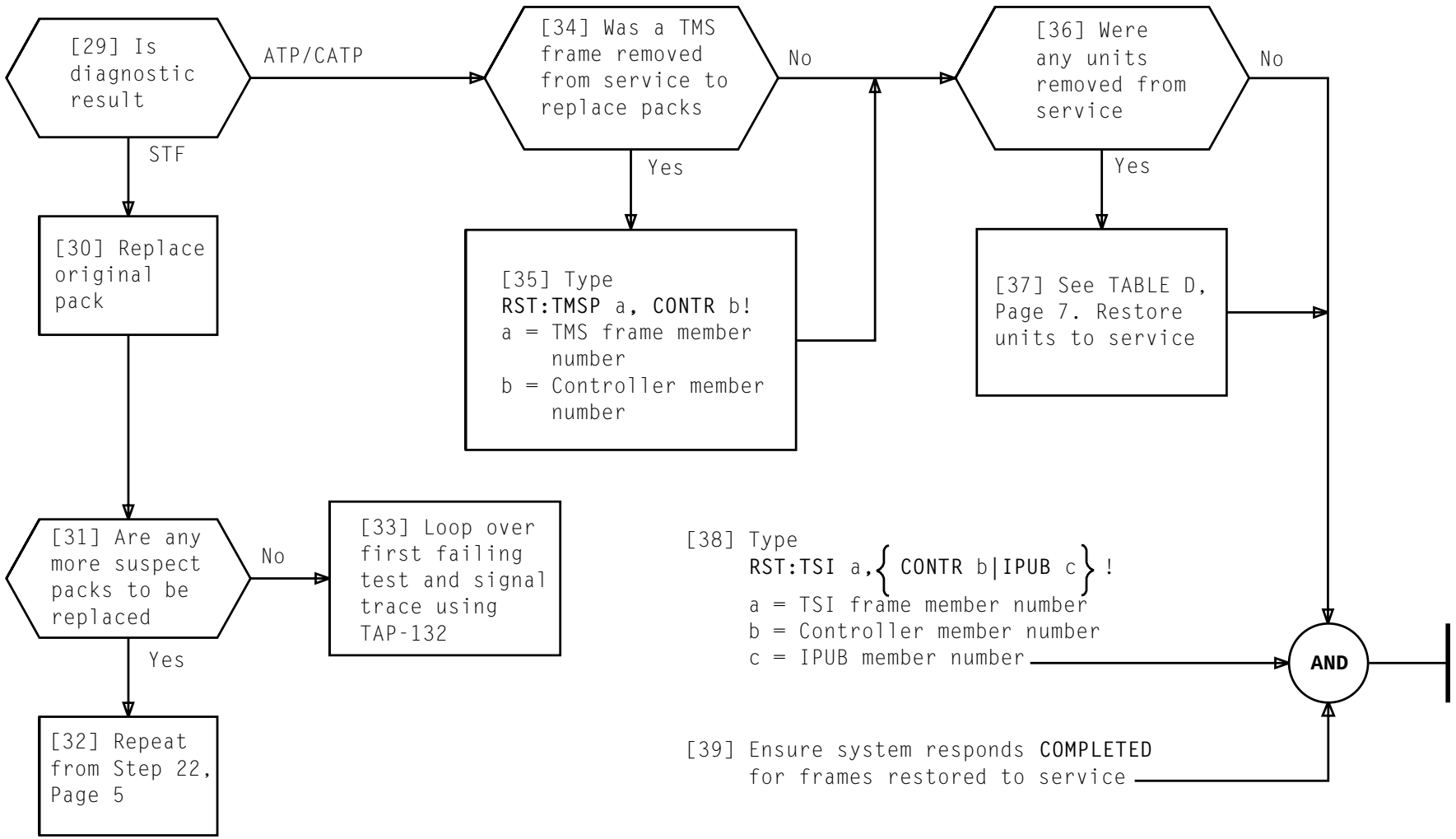


CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS



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

NOTE 4
Red designation marker at pack to be replaced indicates fuse removal required to replace pack



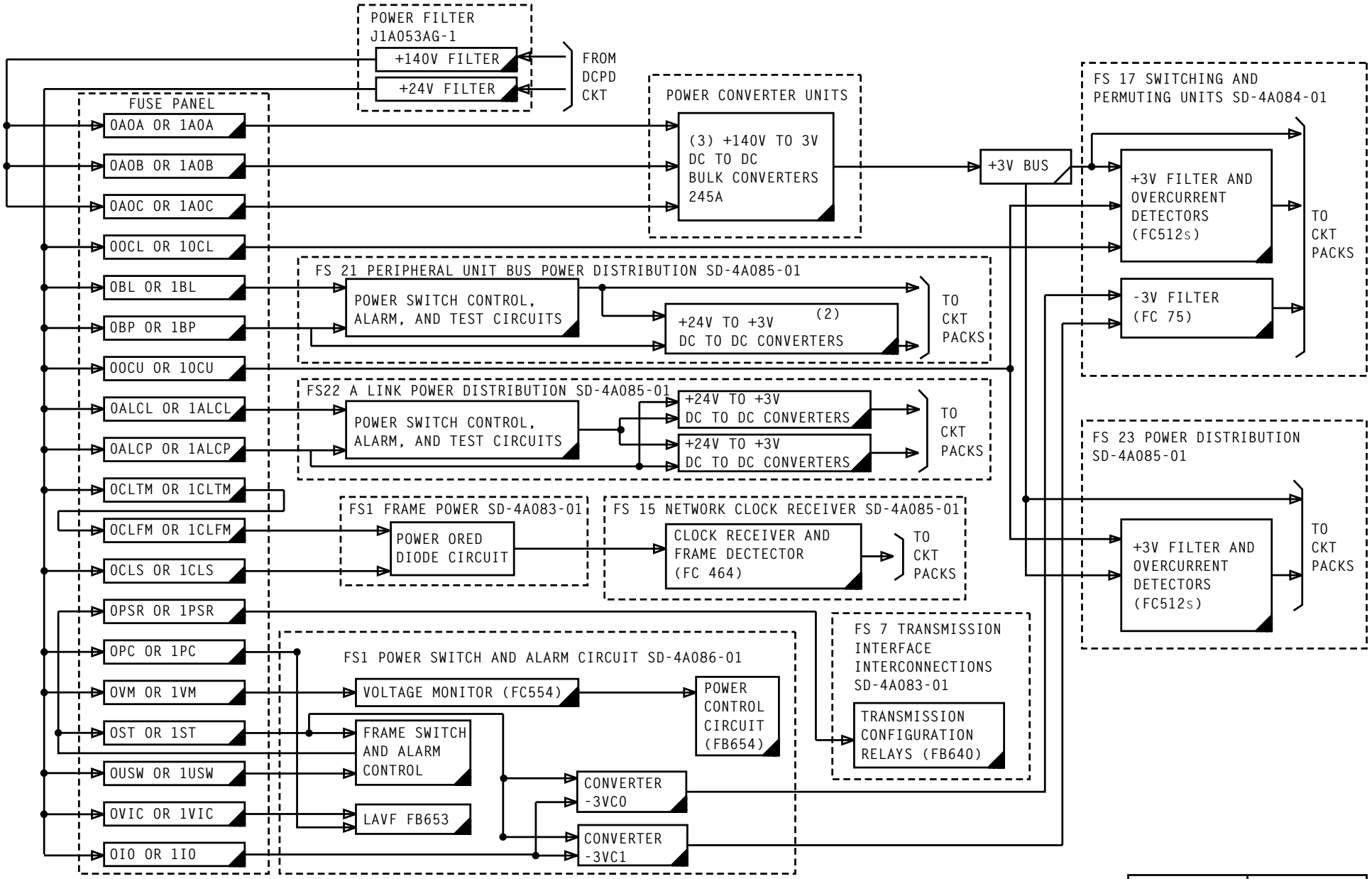
CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS

TABLE B	
MESSAGE	**VARIABLE**
RMV:VIF a, CONTR b! RMV:DT a, CONTR b! RMV:EST a, CONTR b!	a = Member number b = Controller number

TABLE C	
FRAME	**PROCEDURES**
SD-4A011-01	DLP-519
SD-4A011-02	DLP-520
SD-4A083-01	DLP-521

TABLE D	
MESSAGE	**VARIABLE**
RST:EST a, CONTR b! RST:DT a, CONTR b! RST:VIF a, CONTR b! RST:DIF a, CONTR b!	a = Member number b = Controller number

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



POWER DISTRIBUTION SD-4A083-01 FRAME

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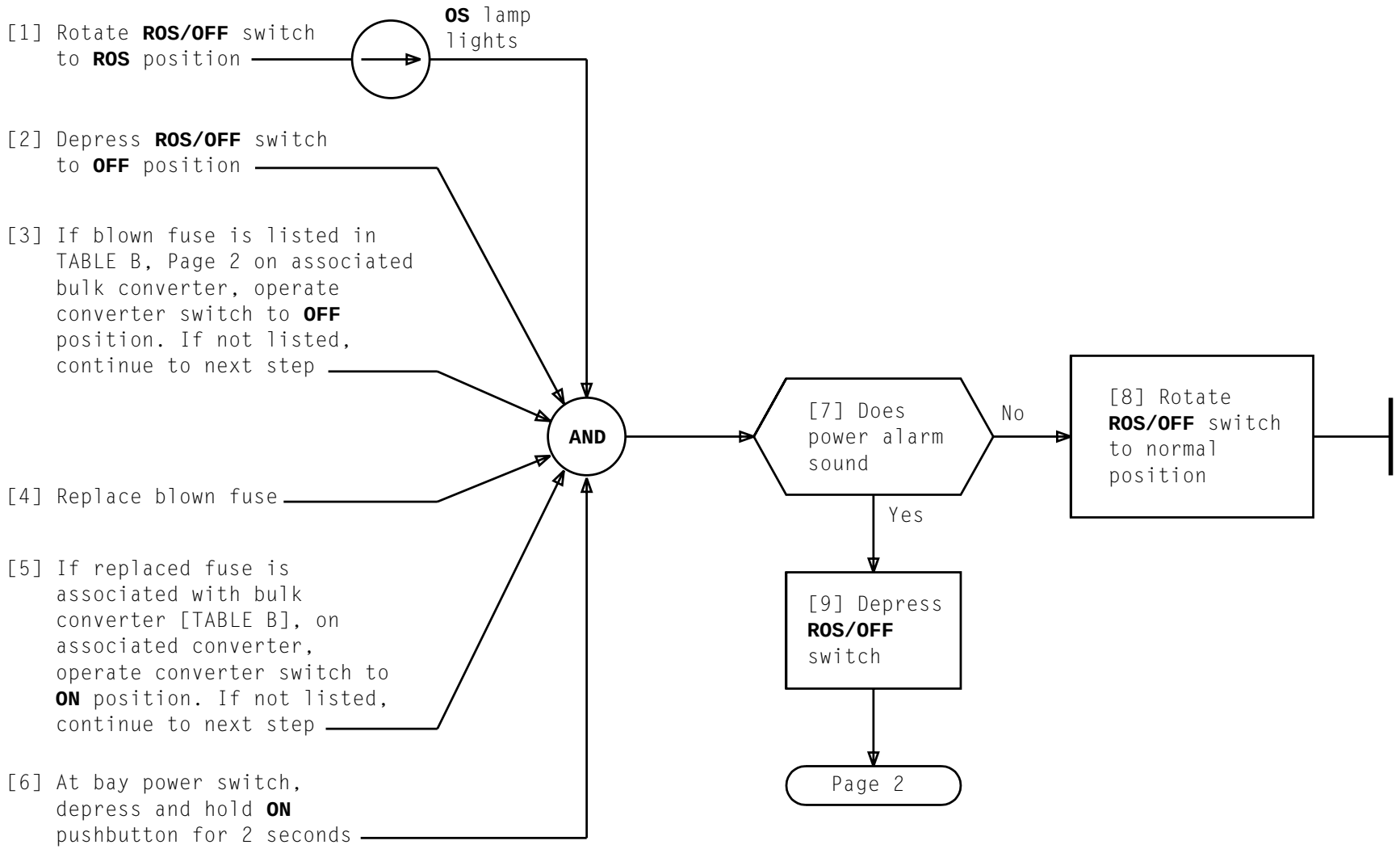


CLEAR BLOWN FUSE, SD-4A083-01 FRAME

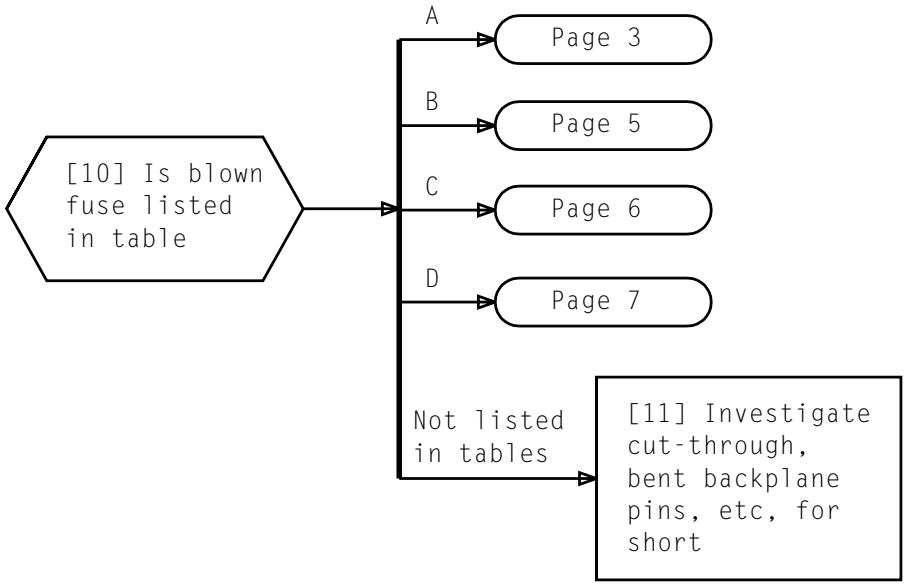


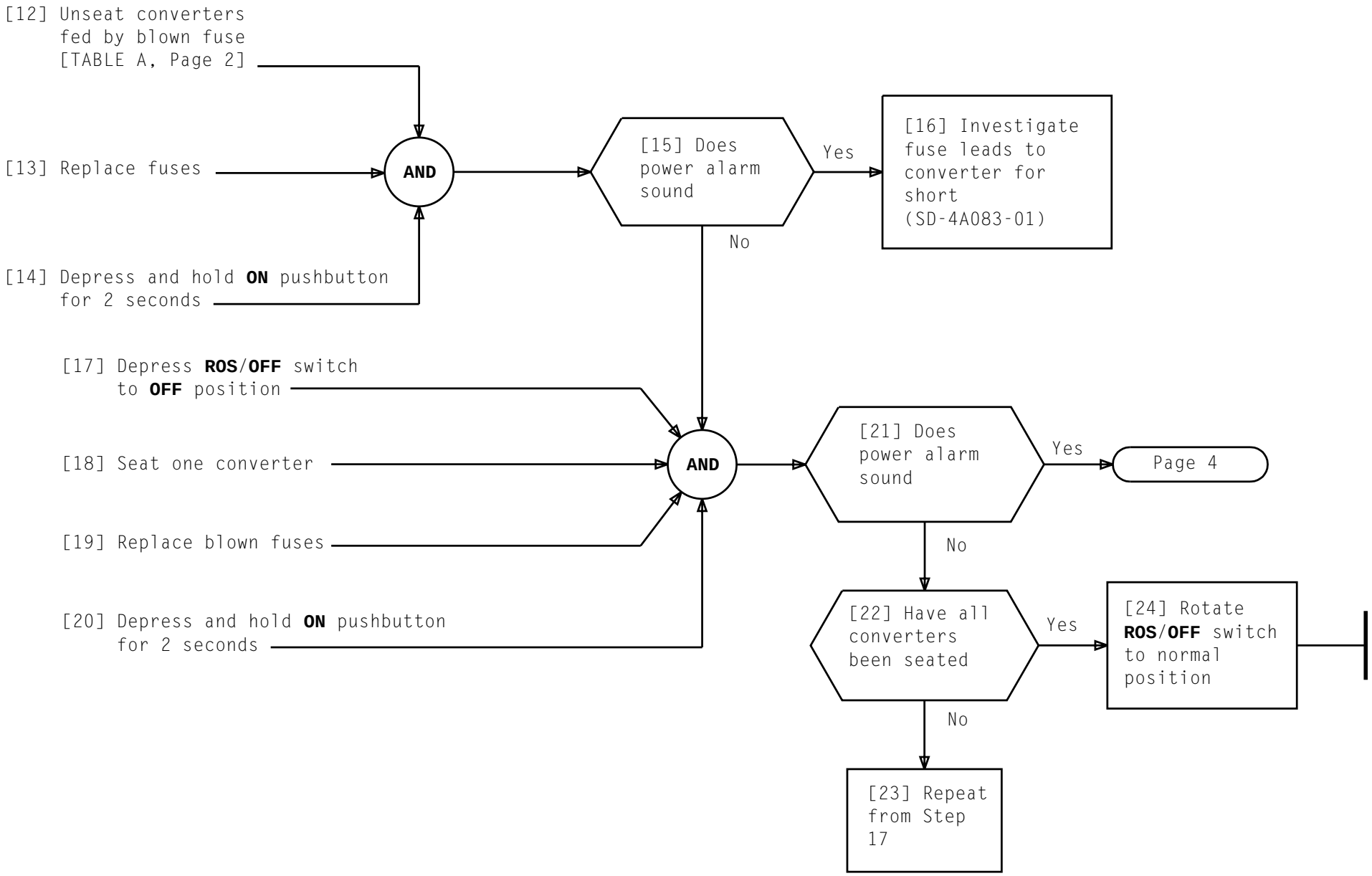
TABLE B			
FUSE BAY 0	BULK CONVERTERS FED AT LOCATION	FUSE BAY 1	BULK CONVERTERS FED AT LOCATION
0A0A	0-14-12	**1A0A**	1-14-12
0A0B	0-14-36	**1A0B**	1-14-36
0A0C	0-14-60	**1A0C**	1-14-60

TABLE C			
FUSE BAY 0	CIRCUIT PACKS FED AT LOCATION	FUSE BAY 1	CIRCUIT PACKS FED AT LOCATION
0VM	0—44—28	**1VM**	1—44—28
	0—44—29		1—44—29
	0—44—31		1—44-31
0PC	0—44—30	**1PC**	1—44—30
0VIC	0—44—33	**1VIC**	1—44—33
0PC		**1PC**	

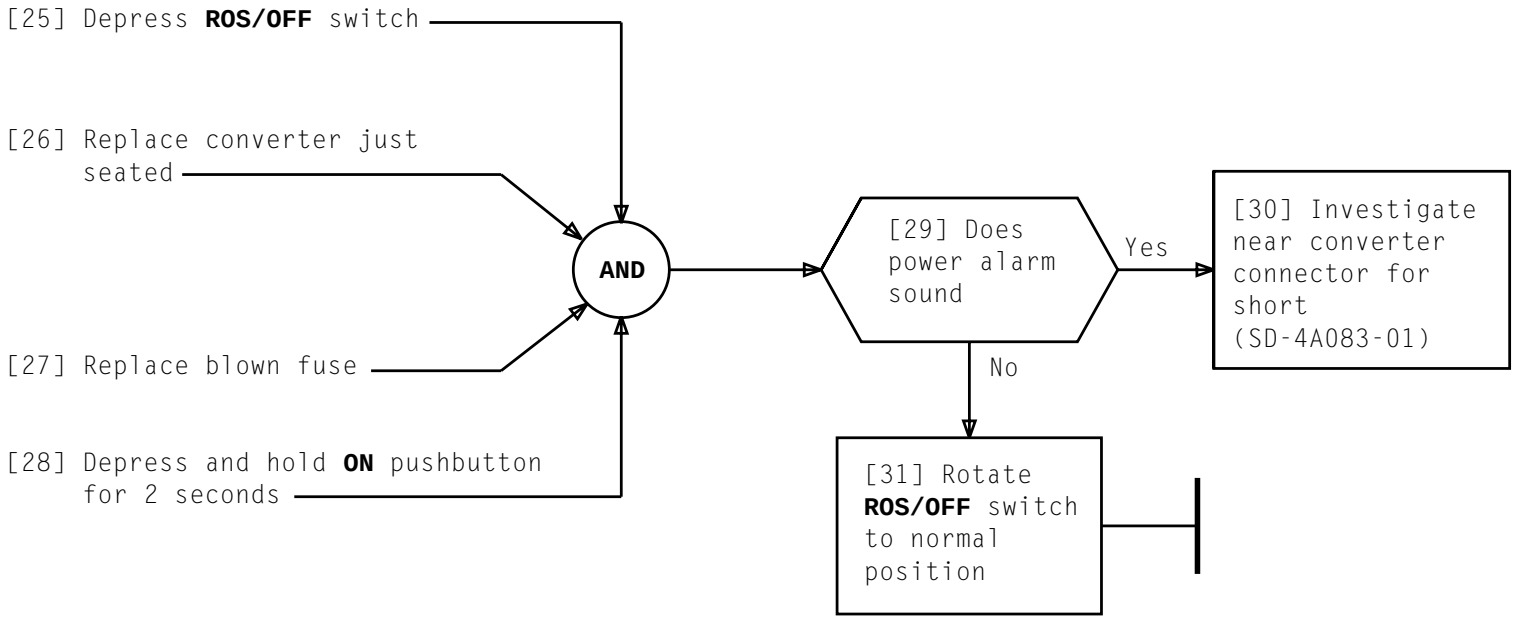
TABLE A			
FUSE BAY 0	NONBULK CONVERTERS FED AT LOCATION	FUSE BAY 1	NONBULK CONVERTERS FED AT LOCATION
0BP	0-80-59	**1BP**	1-80-59
0ALCP	0-76-18	**1ALCP**	1-76-18
	0-76-14		1-76-14
	0-76-30		1-76-30
	0-76-34		1-76-34

TABLE D			
FUSE BAY 0	FC464 PACK FED AT LOCATION	FUSE BAY 1	FC464 PACK FED AT LOCATION
0CLS	0—72—27	**1CLS**	1—72—27
0CLFM		**1CLFM**	

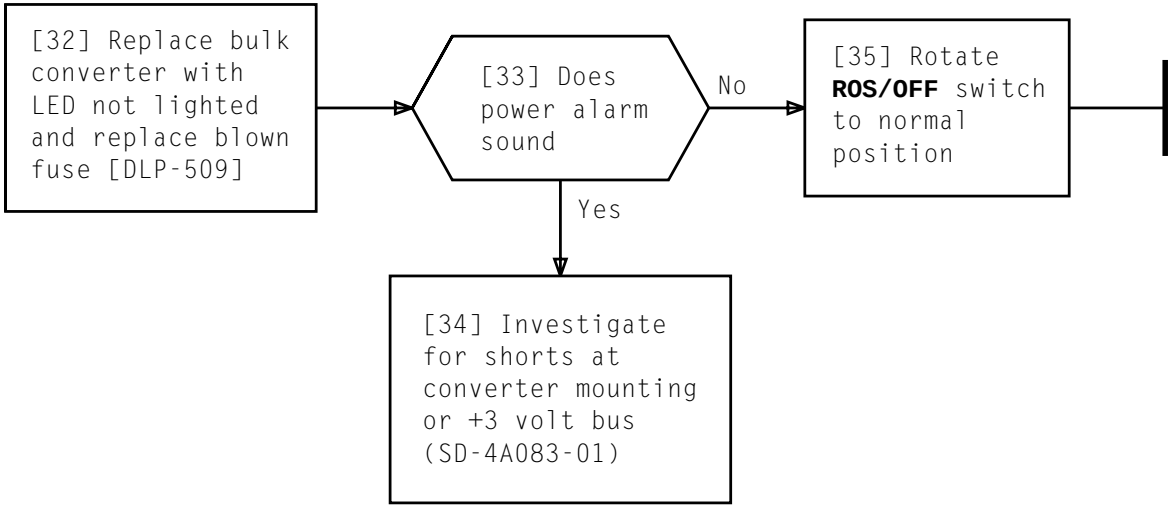
CLEAR BLOWN FUSE, SD-4A083-01 FRAME



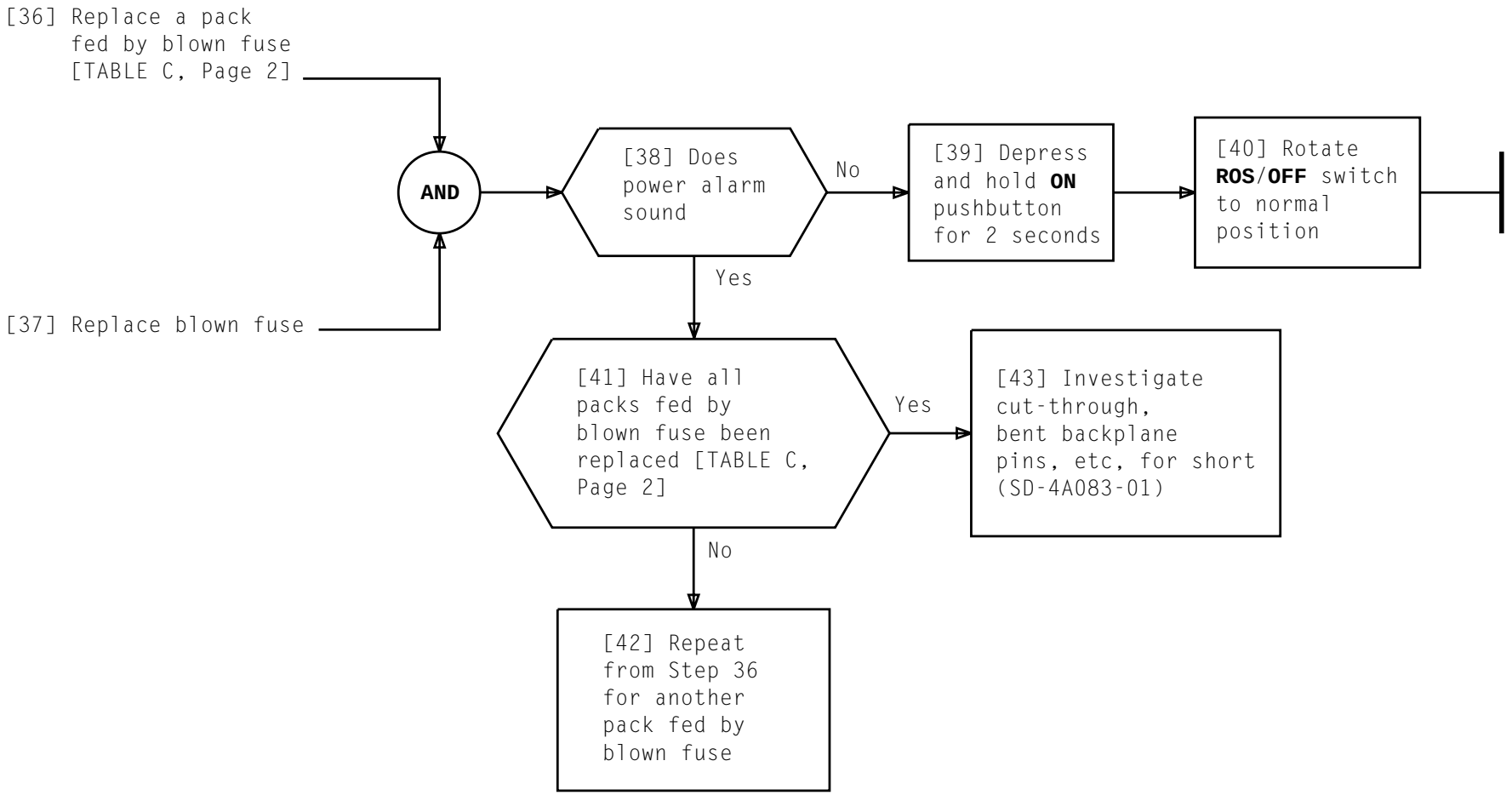
CLEAR BLOWN FUSE, SD-4A083-01 FRAME



CLEAR BLOWN FUSE, SD-4A083-01 FRAME



CLEAR BLOWN FUSE, SD-4A083-01 FRAME



CLEAR BLOWN FUSE, SD-4A083-01 FRAME

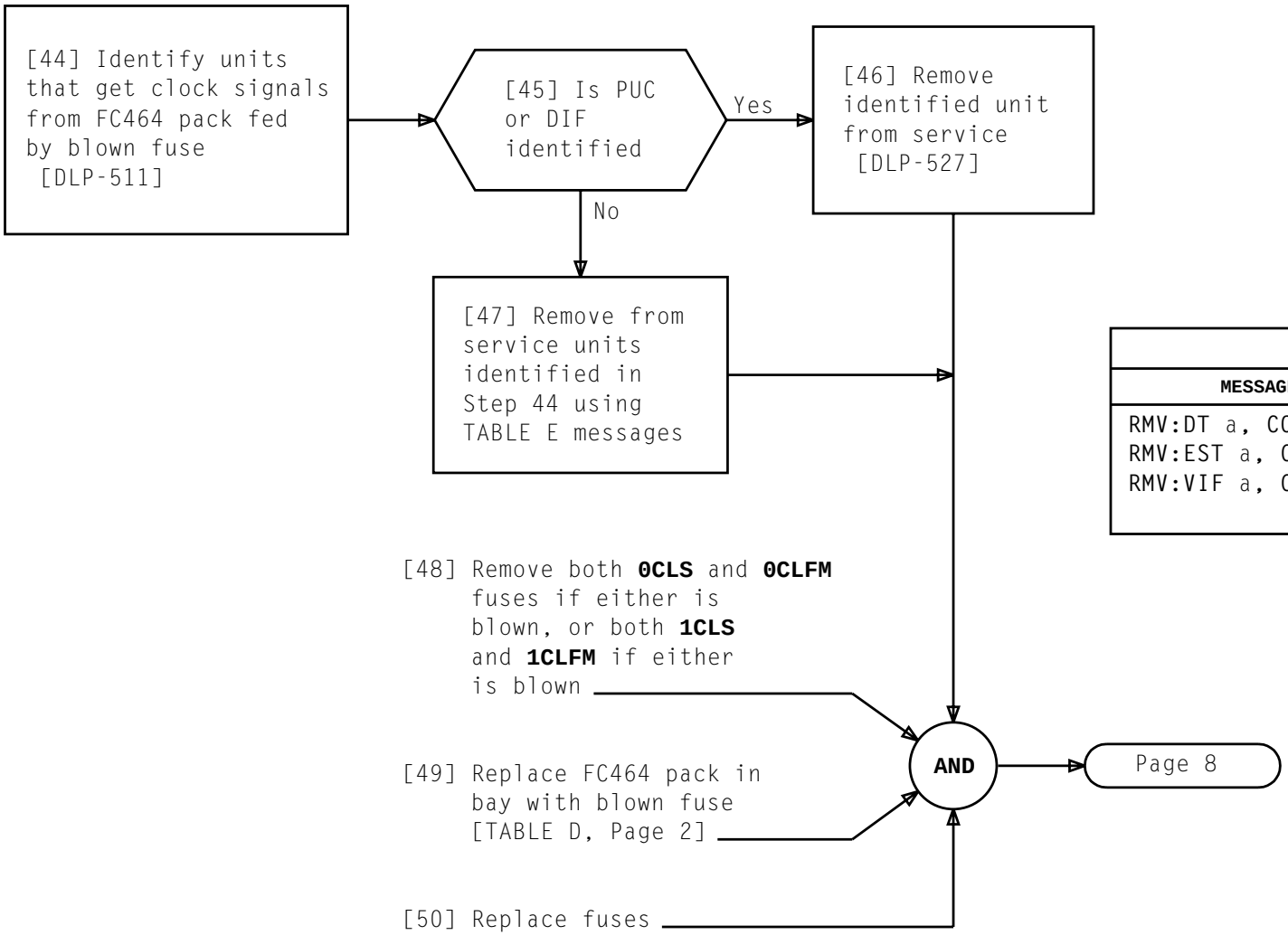


TABLE E	
MESSAGE	**VARIABLE**
RMV:DT a, CONTR b! RMV:EST a, CONTR b! RMV:VIF a, CONTR b!	a = Member number b = TSI bay containing blown fuse

CLEAR BLOWN FUSE, SD-4A083-01 FRAME

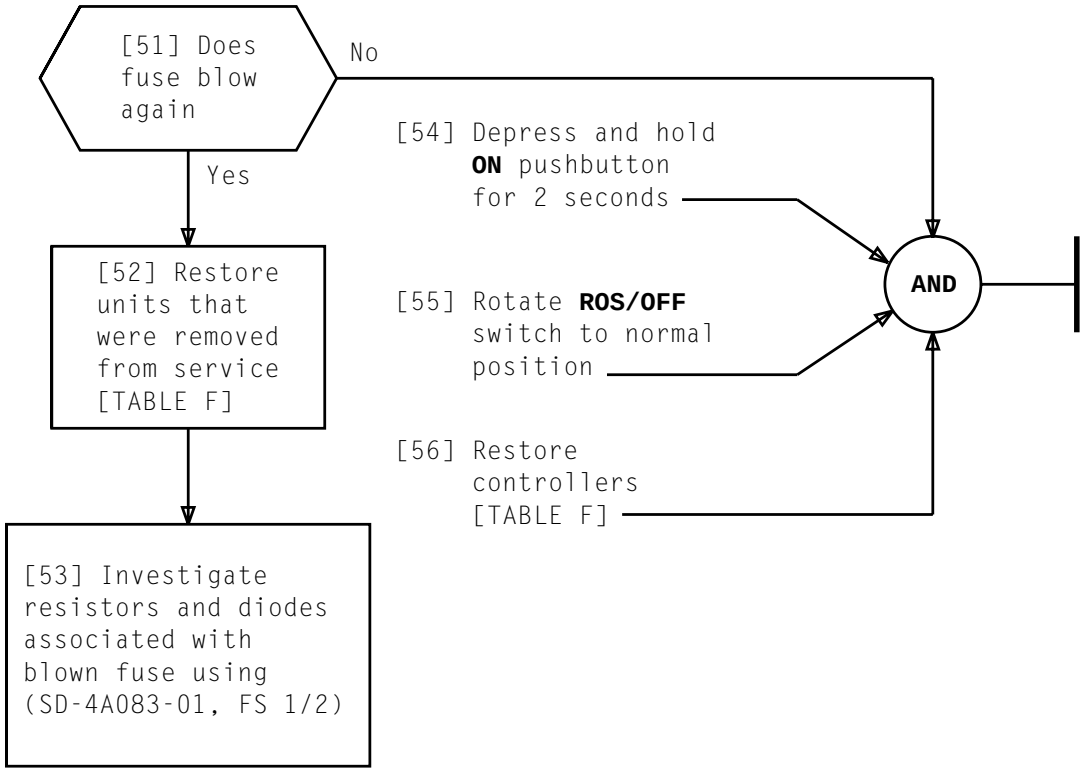


TABLE F	
MESSAGE	**VARIABLE**
RST:DT a, CONTR b! RST:EST a, CONTR b! RST:VIF a, CONTR b! RST:DIF a, CONTR b!	a = Member number of frame removed b = Member number of controller

CLEAR BLOWN FUSE, SD-4A083-01 FRAME

SD-4A011-01 ISD-109
SD-4A011-02 ISD-117
SD-4A083-01 ISD-103

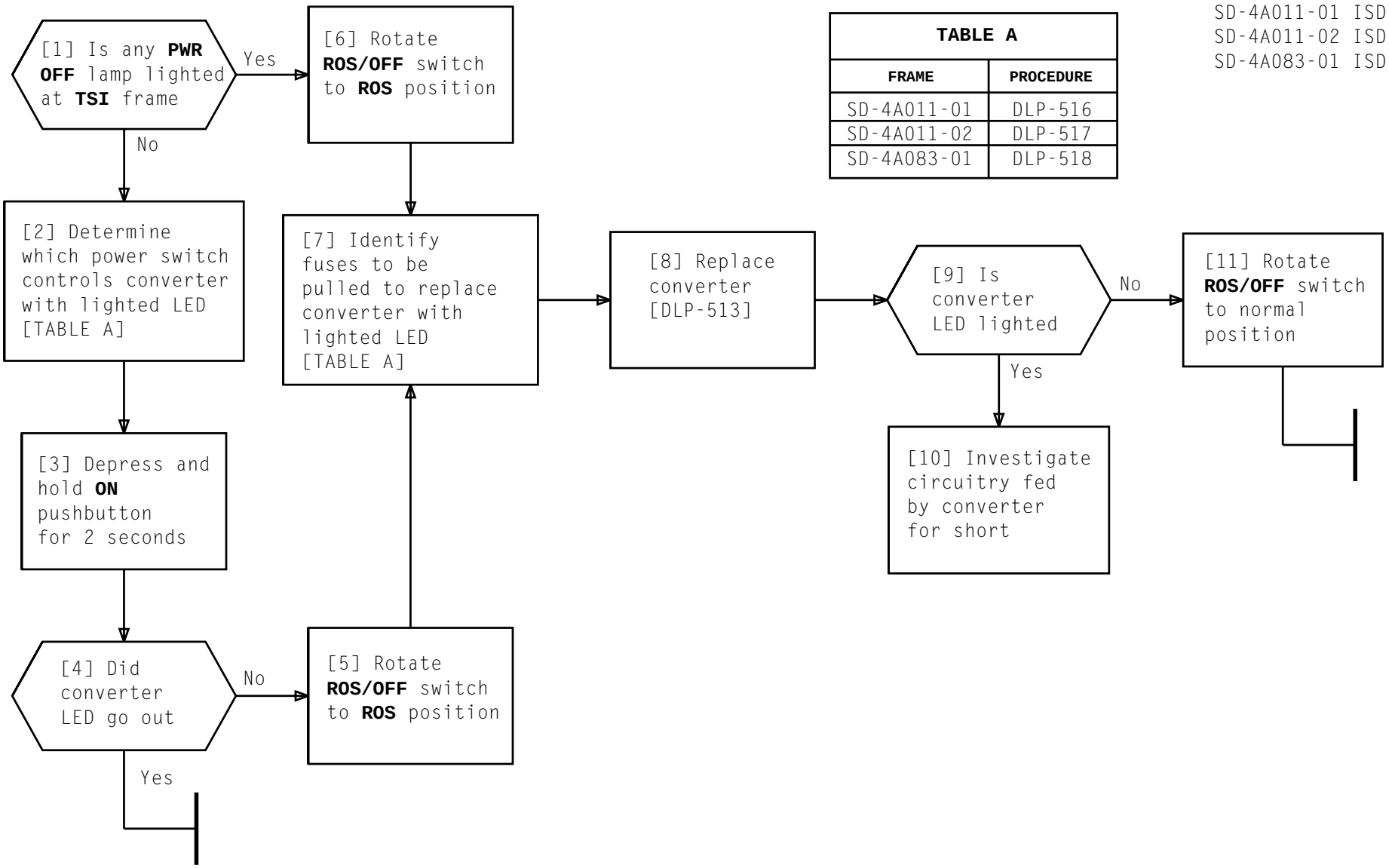


TABLE A

FRAME	PROCEDURE
SD-4A011-01	DLP-516
SD-4A011-02	DLP-517
SD-4A083-01	DLP-518

CLEAR NONBULK CONVERTER LED LIGHTED CONDITION

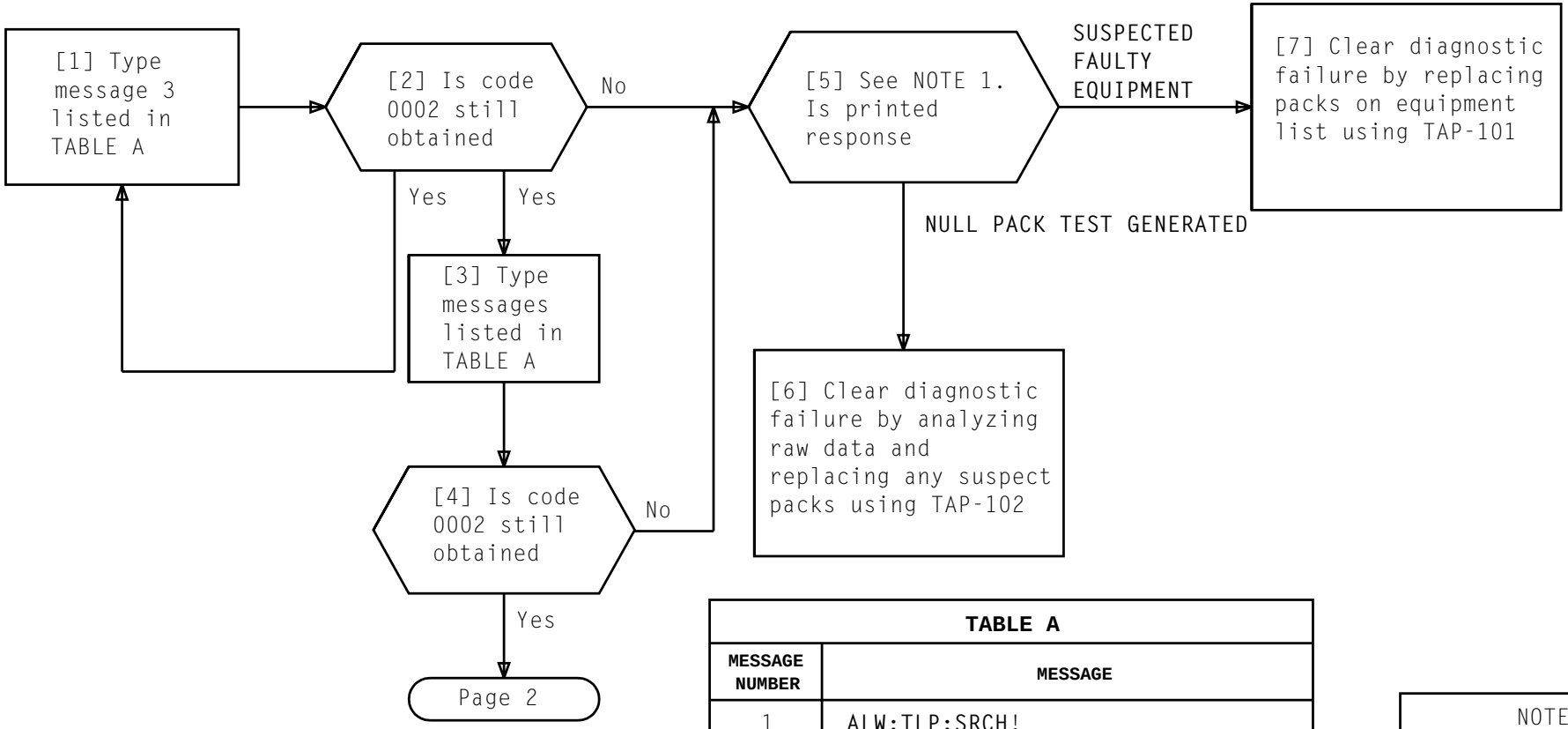


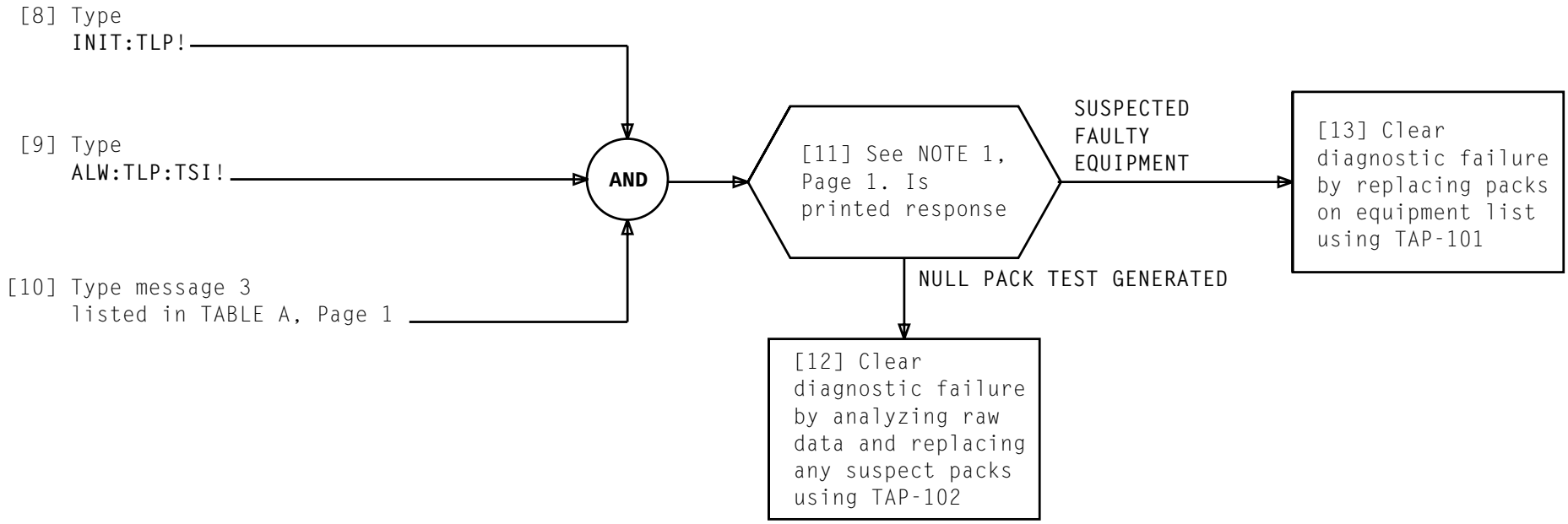
TABLE A

MESSAGE NUMBER	MESSAGE
1	ALW:TLP:SRCH!
2	ALW:TLP:SRCH!
3	DGN:TSI a,{ CONTR b|IPUB c } :TLP!

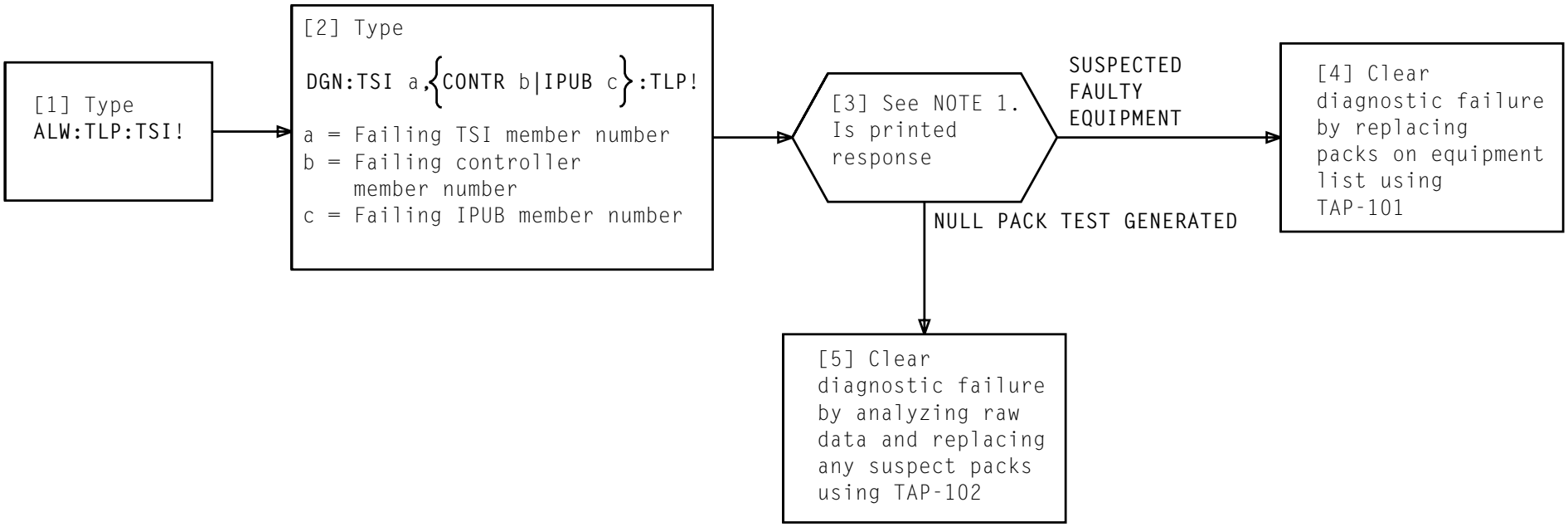
where: a = Failing TSI member number
b = Failing controller member number
c = Failing IPUB member number

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

CLEAR DIAGNOSTIC FAILURE, TLPQUEUE BLOCKAGE

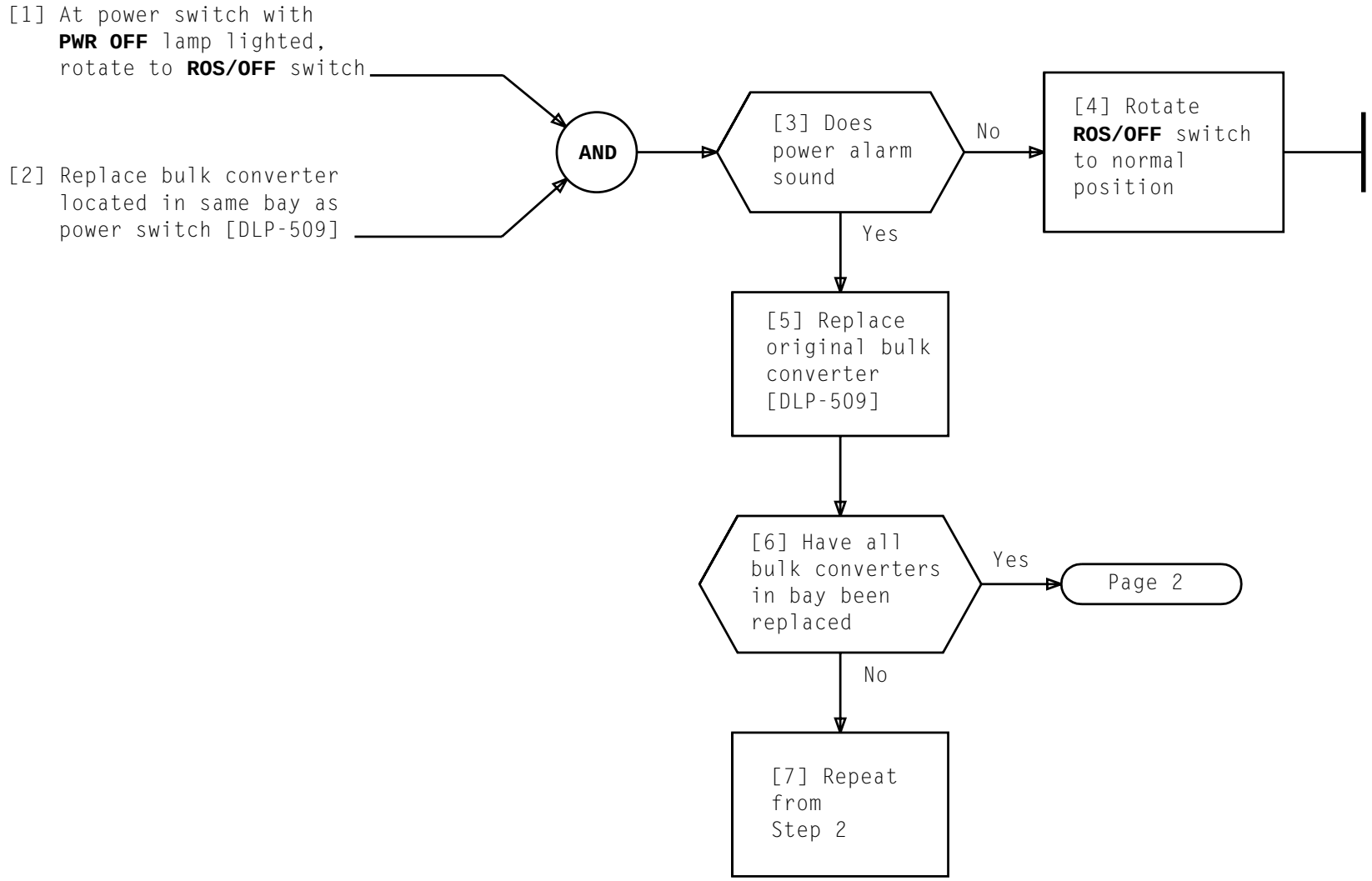


CLEAR DIAGNOSTIC FAILURE, TLPQUEUE BLOCKAGE



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

CLEAR DIAGNOSTIC FAILURE, REMOVE TSI TLP INHIBIT



CLEAR BULK CONVERTER AND FC554 PACK LED LIGHTED CONDITION, SD-4A083-01 FRAME

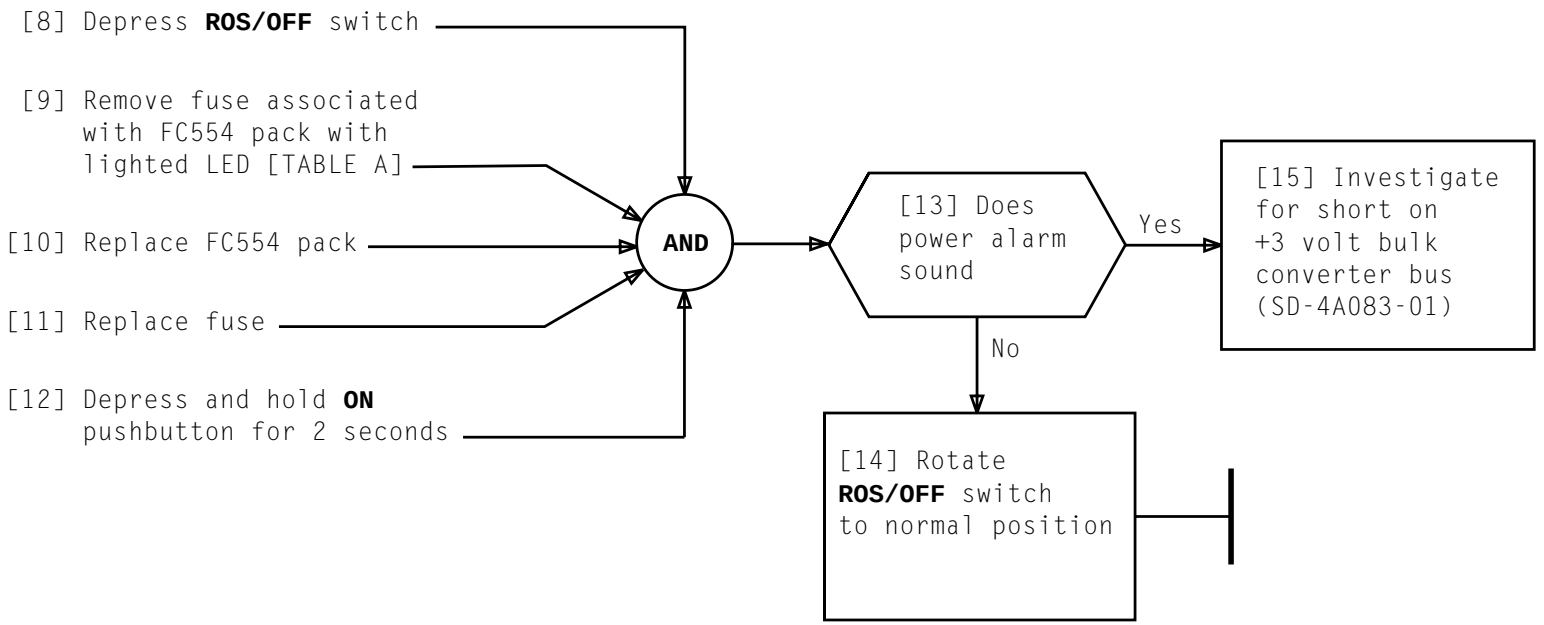
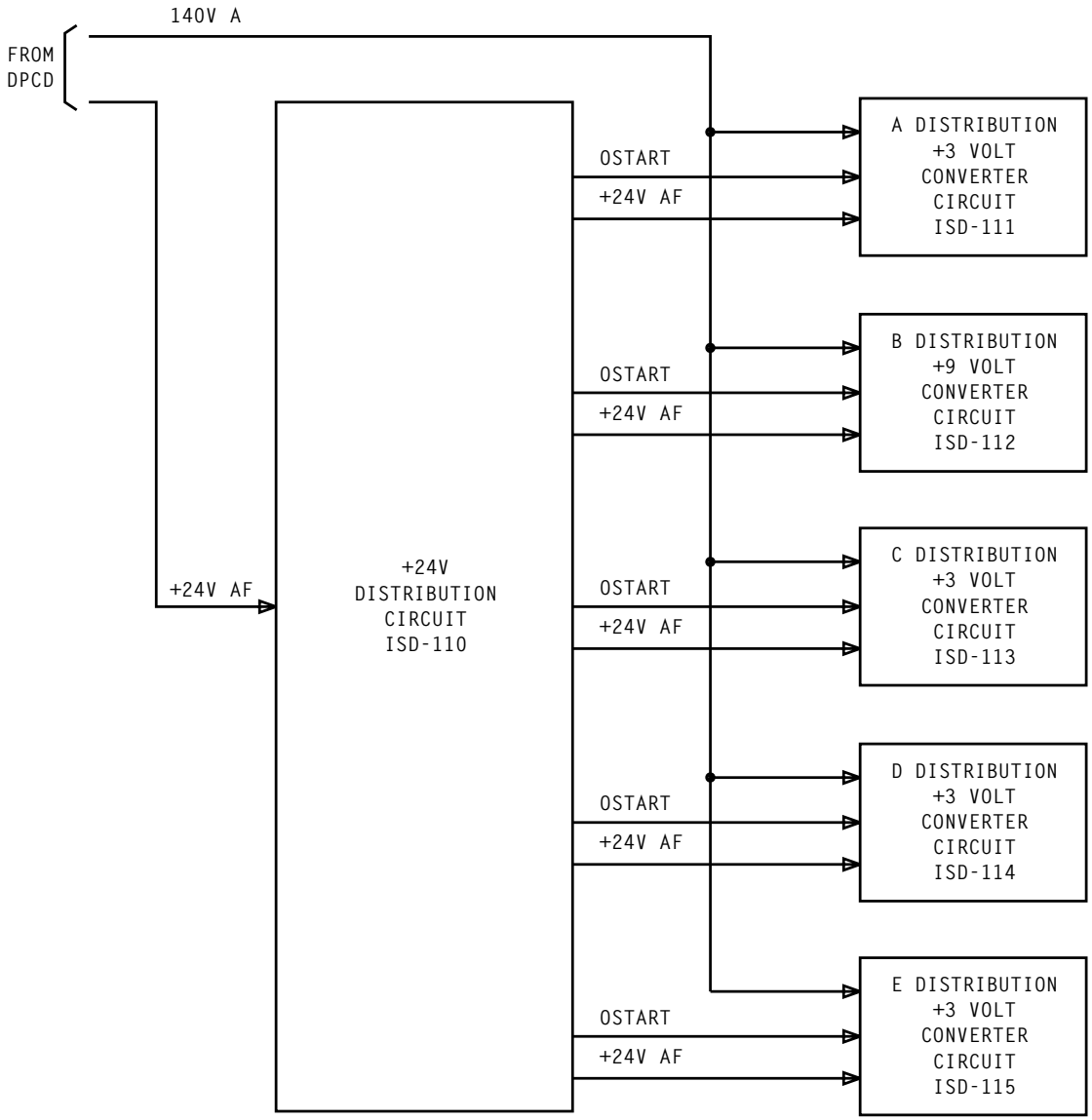
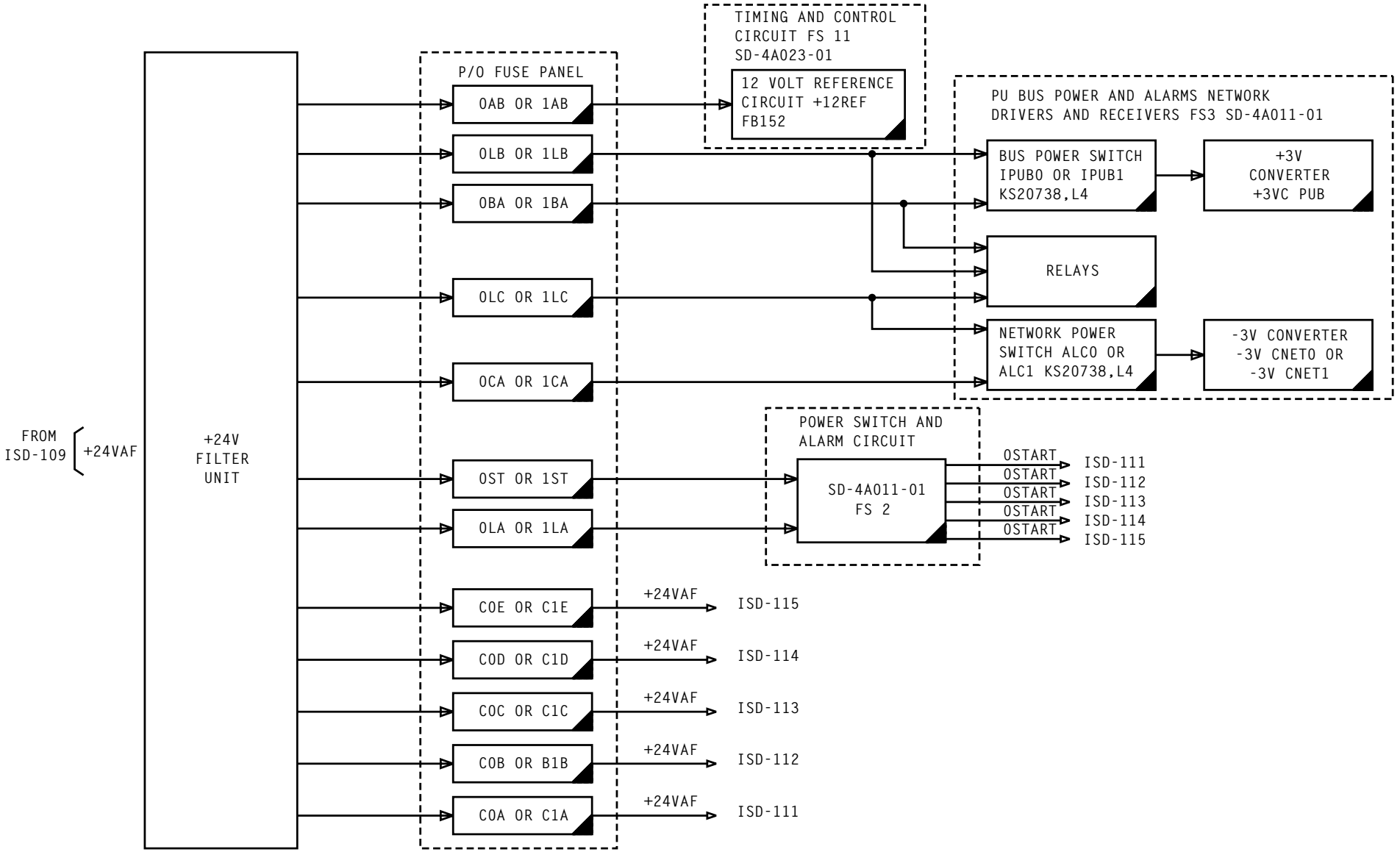


TABLE A		
FC554 LOCATION	**FUSE**	**FUSE LOCATION**
0-44-29	**OVM**	0-07-53
1-44-29	**1VM**	1-07-53

CLEAR BULK CONVERTER AND FC554 PACK LED LIGHTED CONDITION, SD-4A083-01 FRAME



24 VOLT FRAME DISTRIBUTION SD-4A011-01



24 VOLT DISTRIBUTION CIRCUIT

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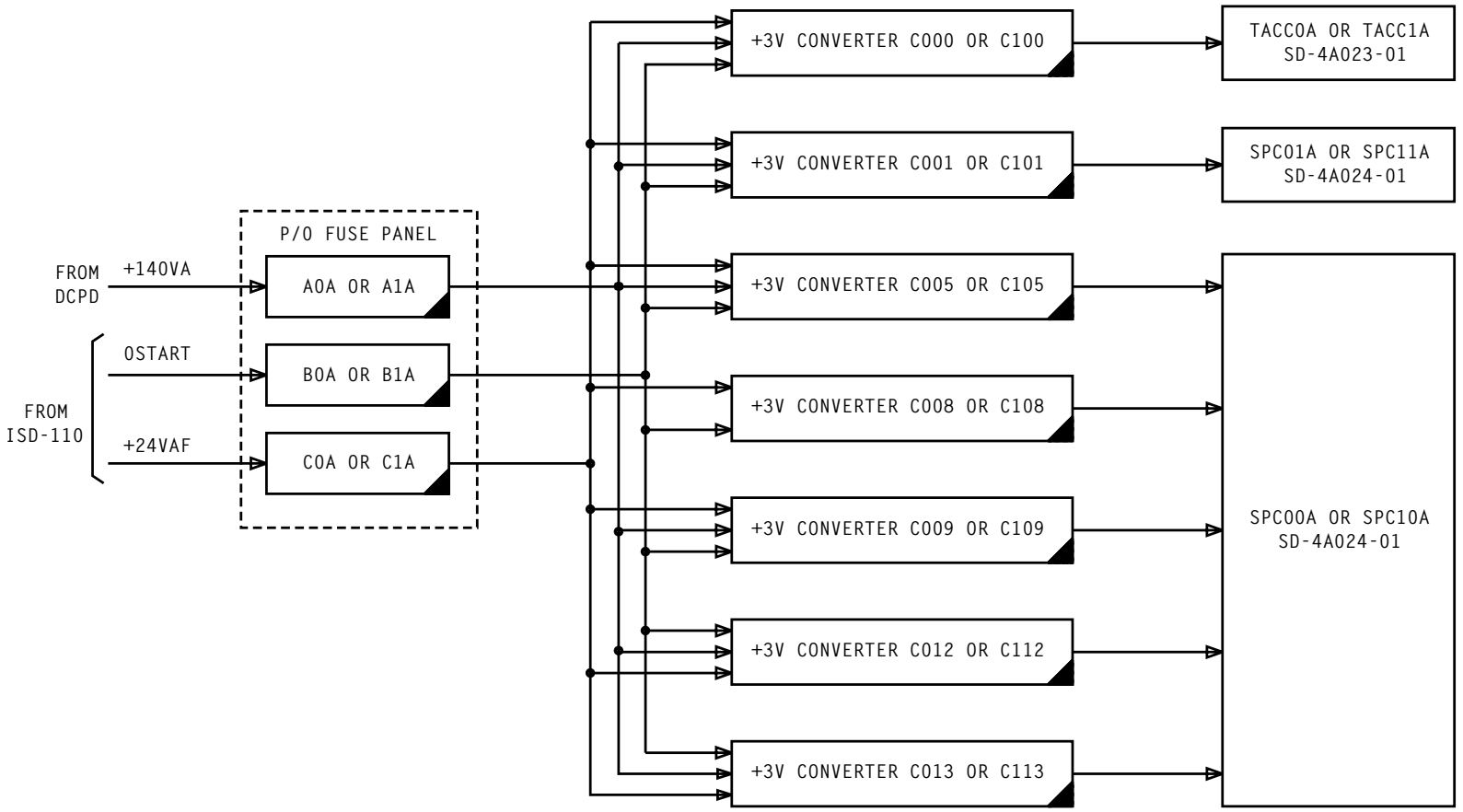
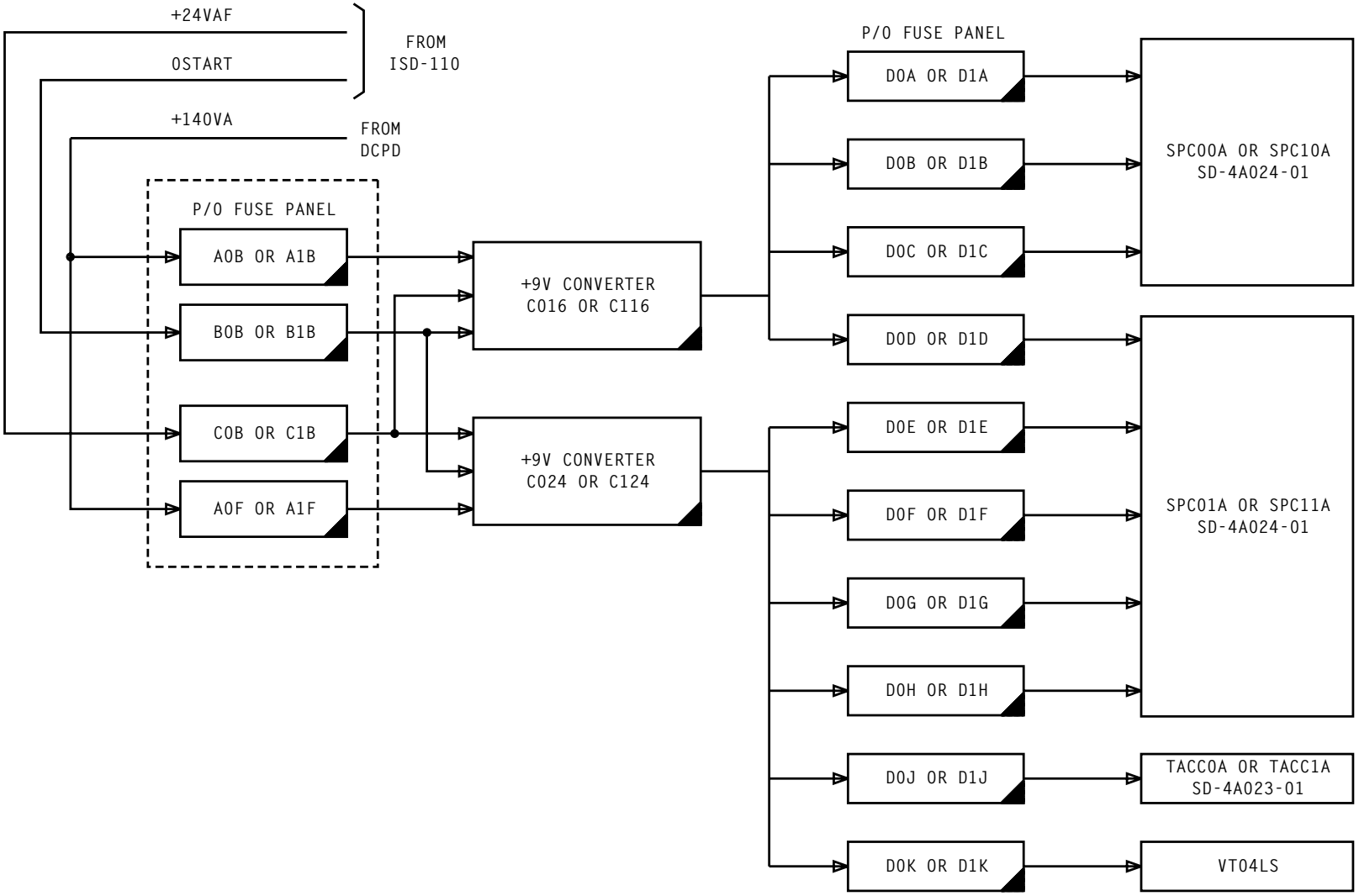


A DISTRIBUTION 3 VOLT CONVERTER CIRCUIT



B DISTRIBUTION 9 VOLT CONVERTER CIRCUIT

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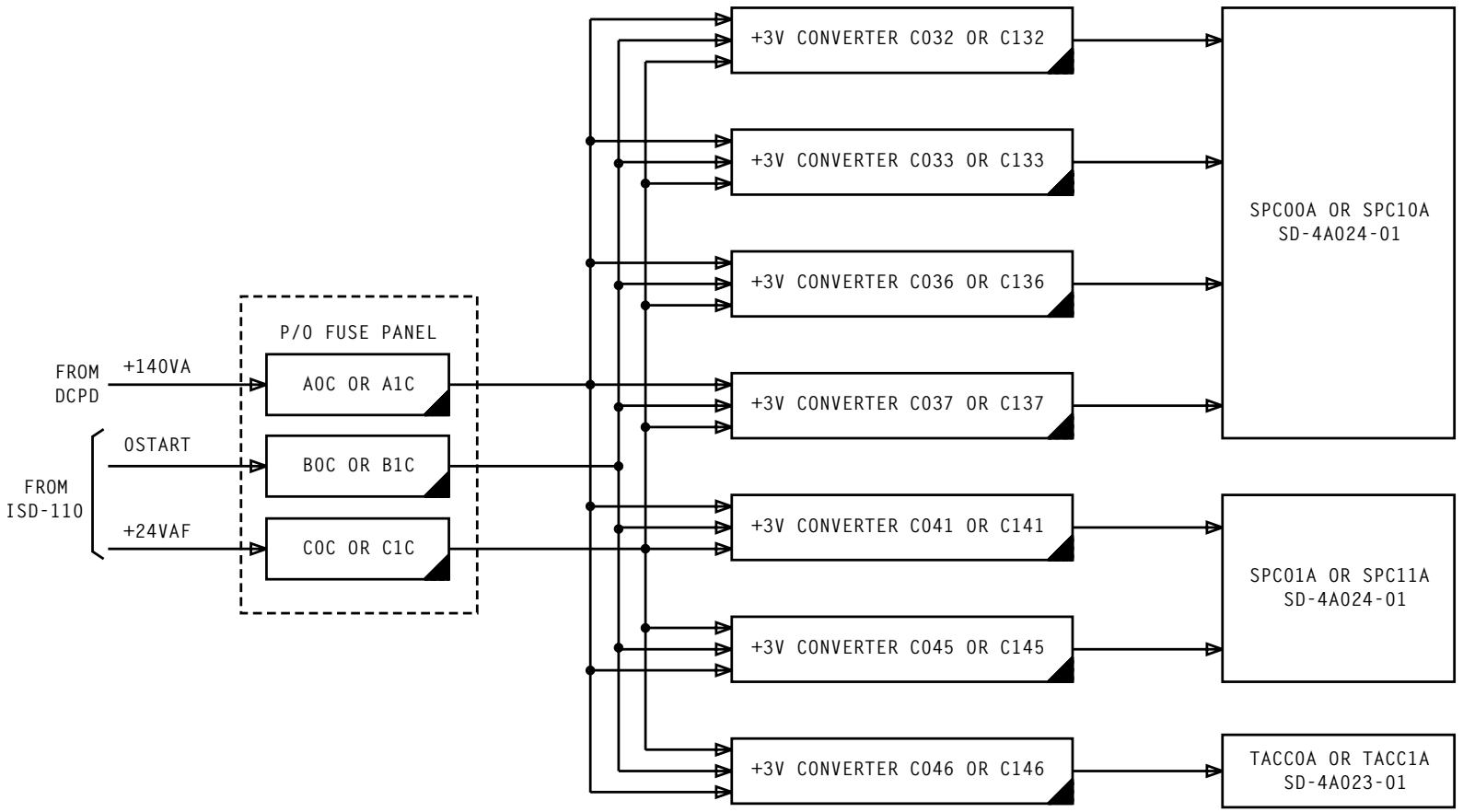
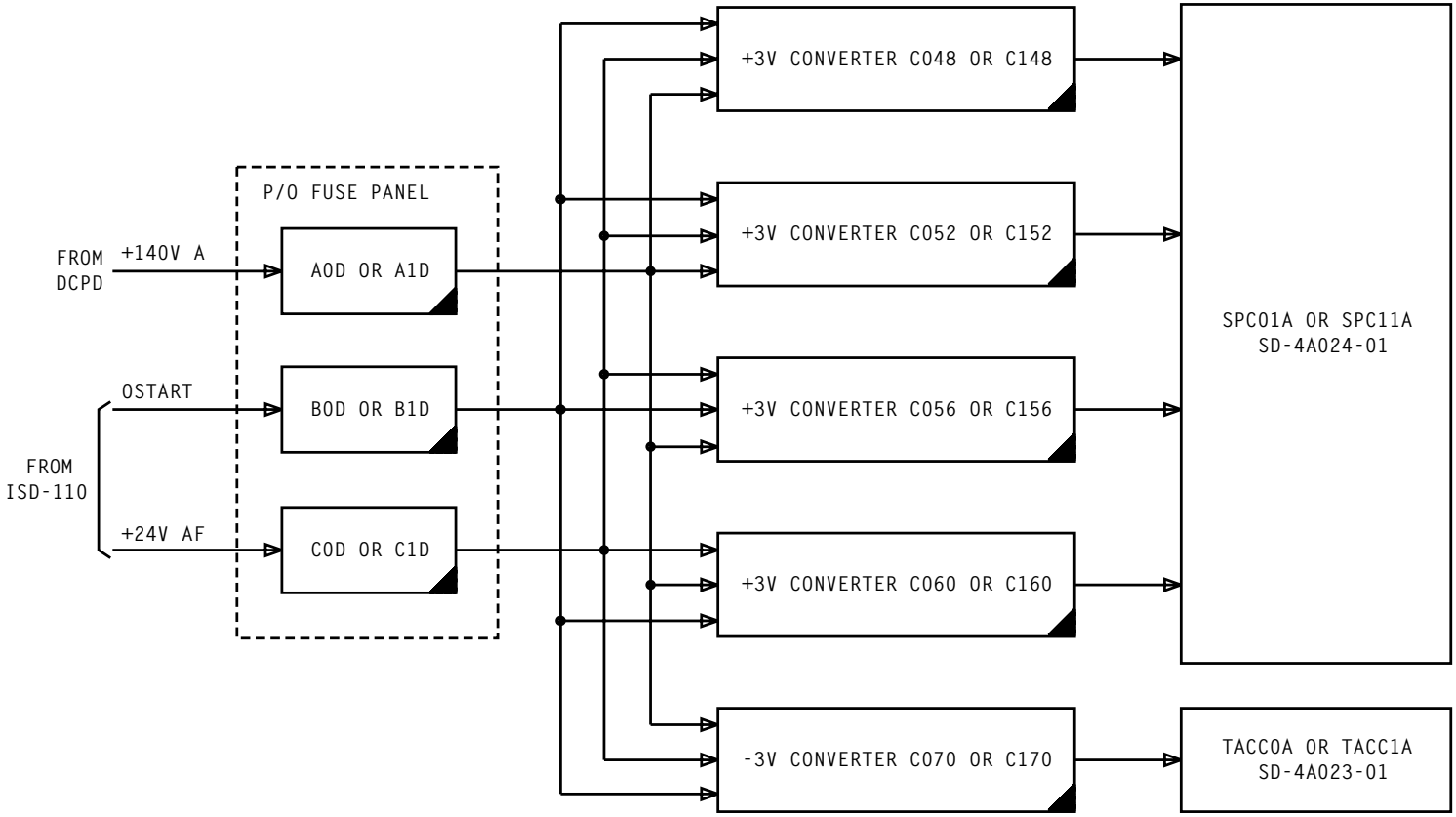
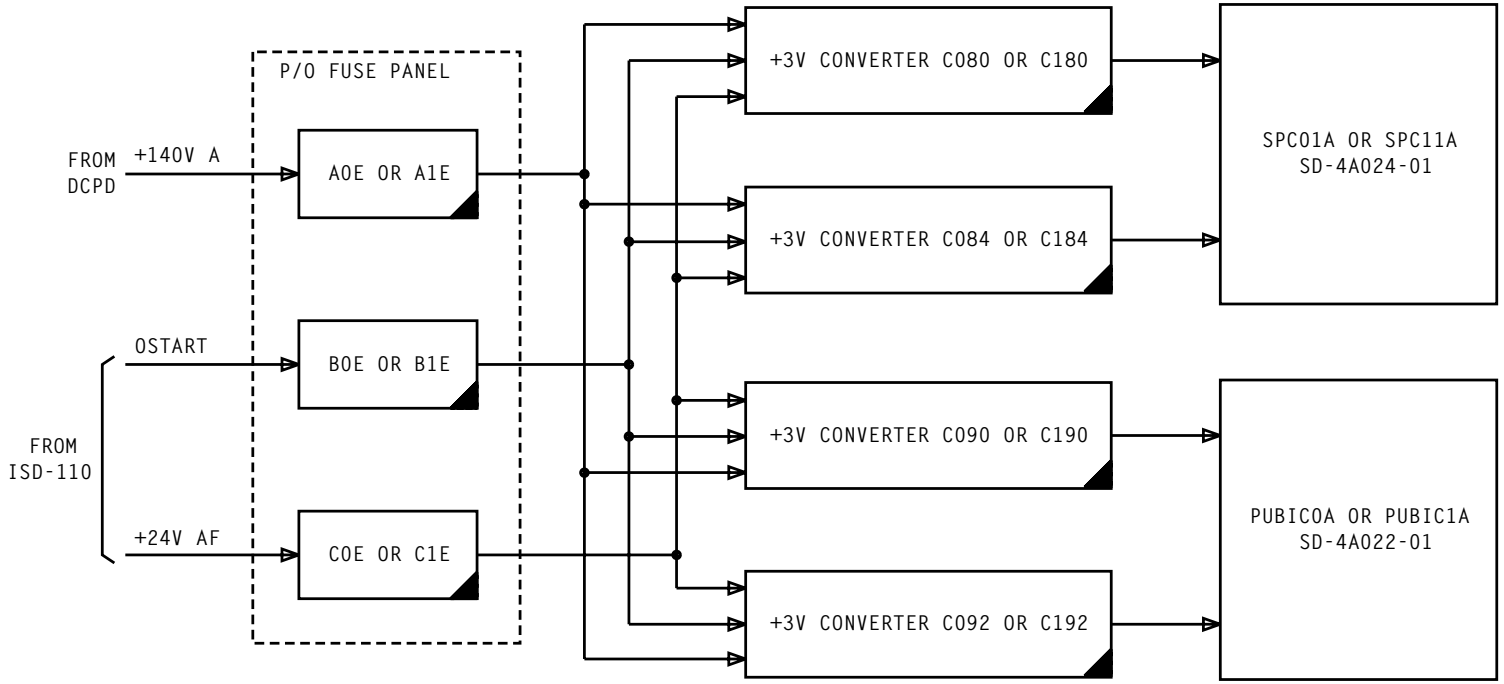


C DISTRIBUTION 3 VOLT CONVERTER CIRCUIT



D DISTRIBUTION 3 VOLT CONVERTER CIRCUIT



E DISTRIBUTION 3 VOLT CONVERTER CIRCUIT

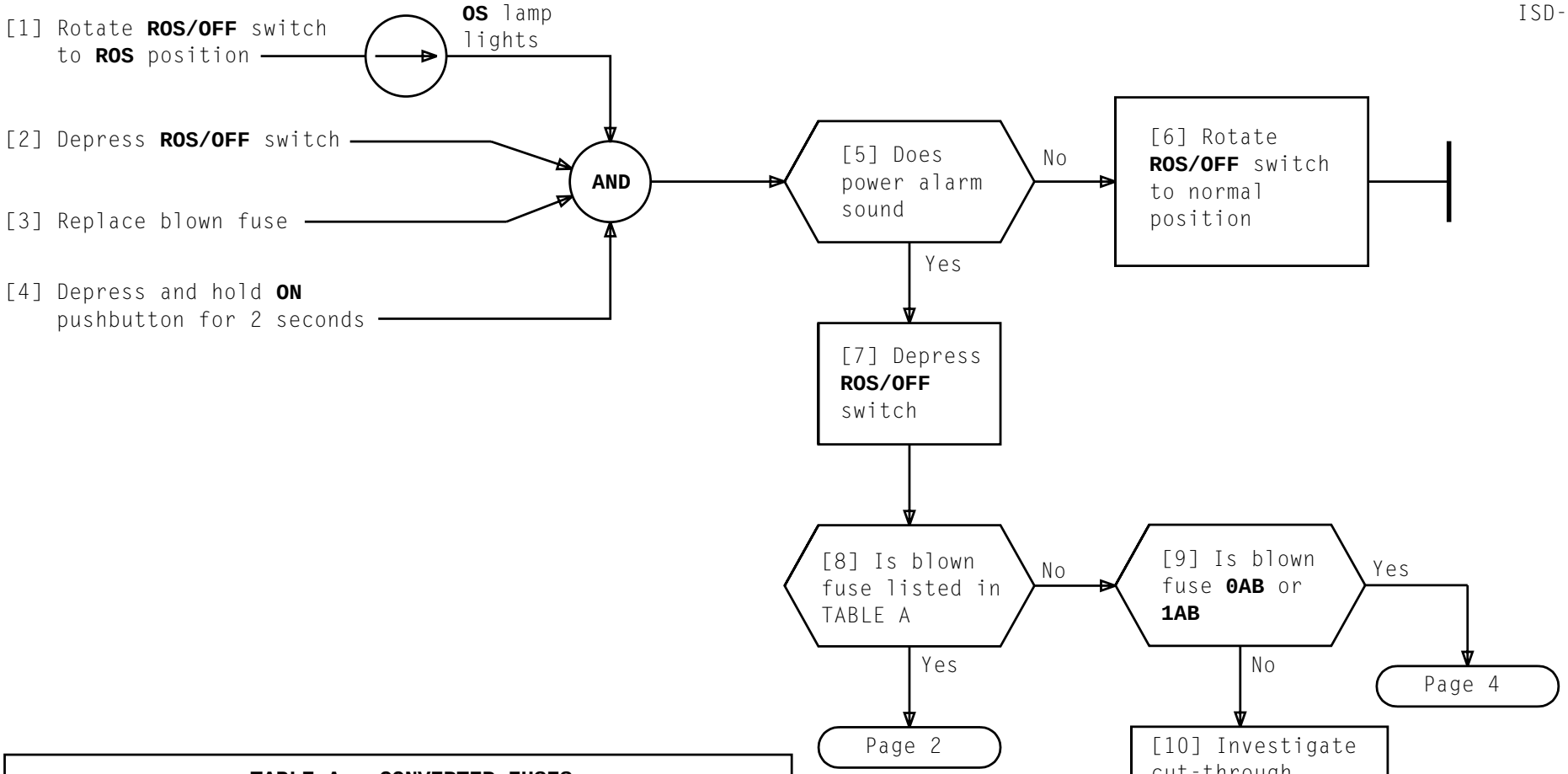
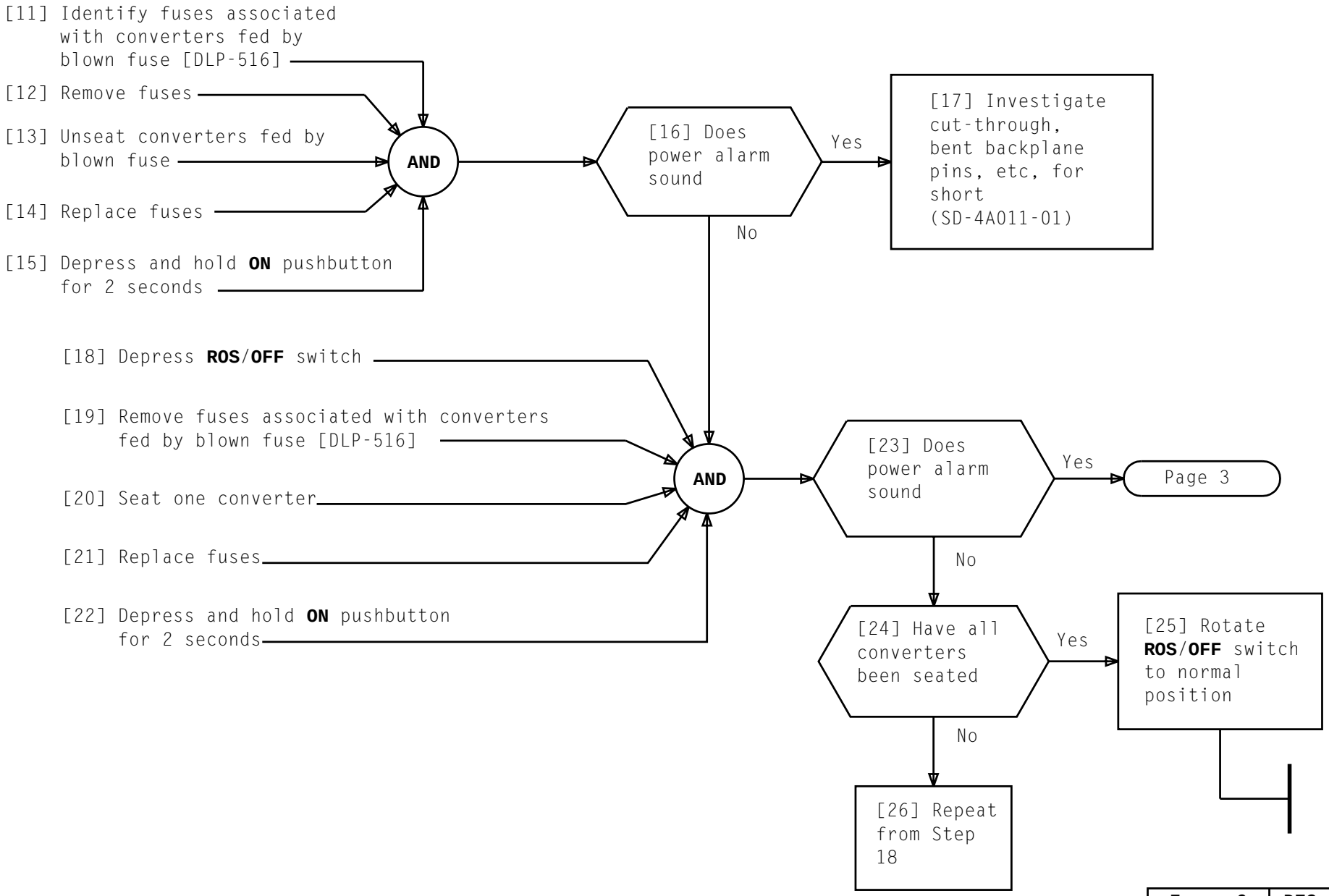
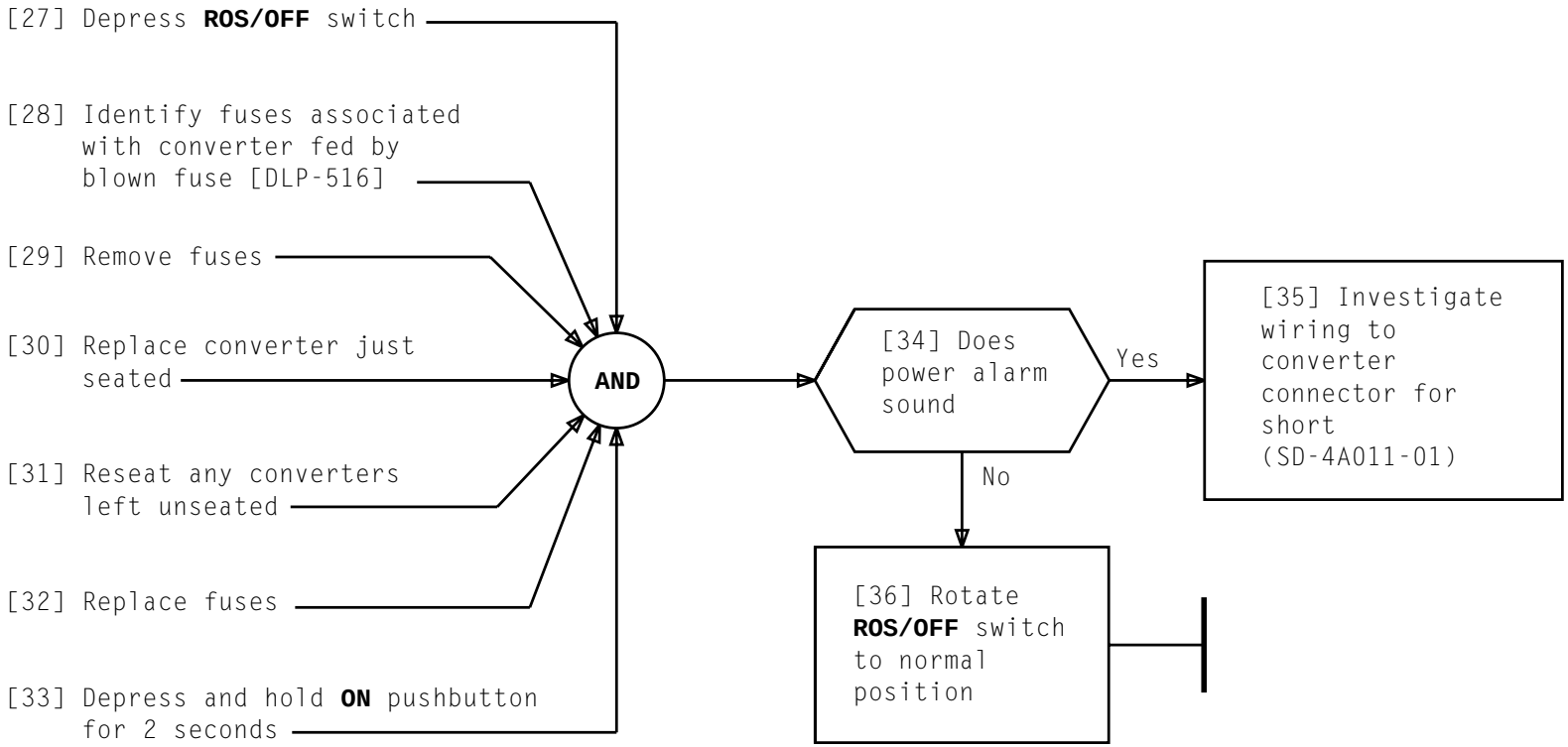


TABLE A — CONVERTER FUSES			
FUSE — BAY 0		**FUSE — BAY 1**	
A0A, B0A, C0A	ISD-111	**A1A, B1A, C1A**	ISD-111
A0B, B0B, C0B, A0F	ISD-112	**A1B, B1B, C1B, A1F**	ISD-112
A0C, B0C, C0C	ISD-113	**A1C, B1C, C1C**	ISD-113
A0D, B0D, C0D	ISD-114	**A1D, B1D, C1D**	ISD-114
A0E, B0E, C0E	ISD-115	**A1E, B1E, C1E**	ISD-115

CLEAR BLOWN FUSE, SD-4A011-01 FRAME



CLEAR BLOWN FUSE, SD-4A011-01 FRAME



CLEAR BLOWN FUSE, SD-4A011-01 FRAME

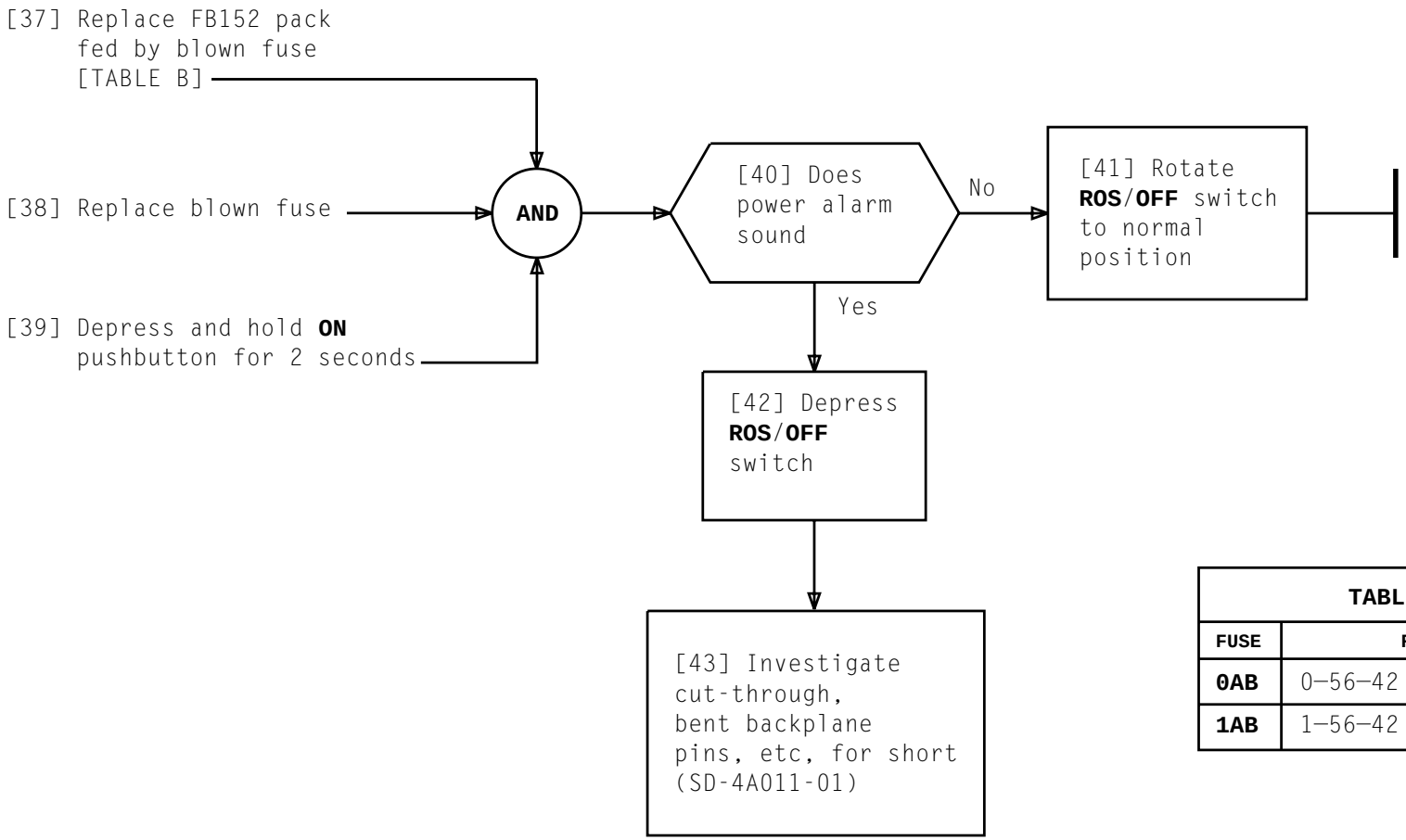
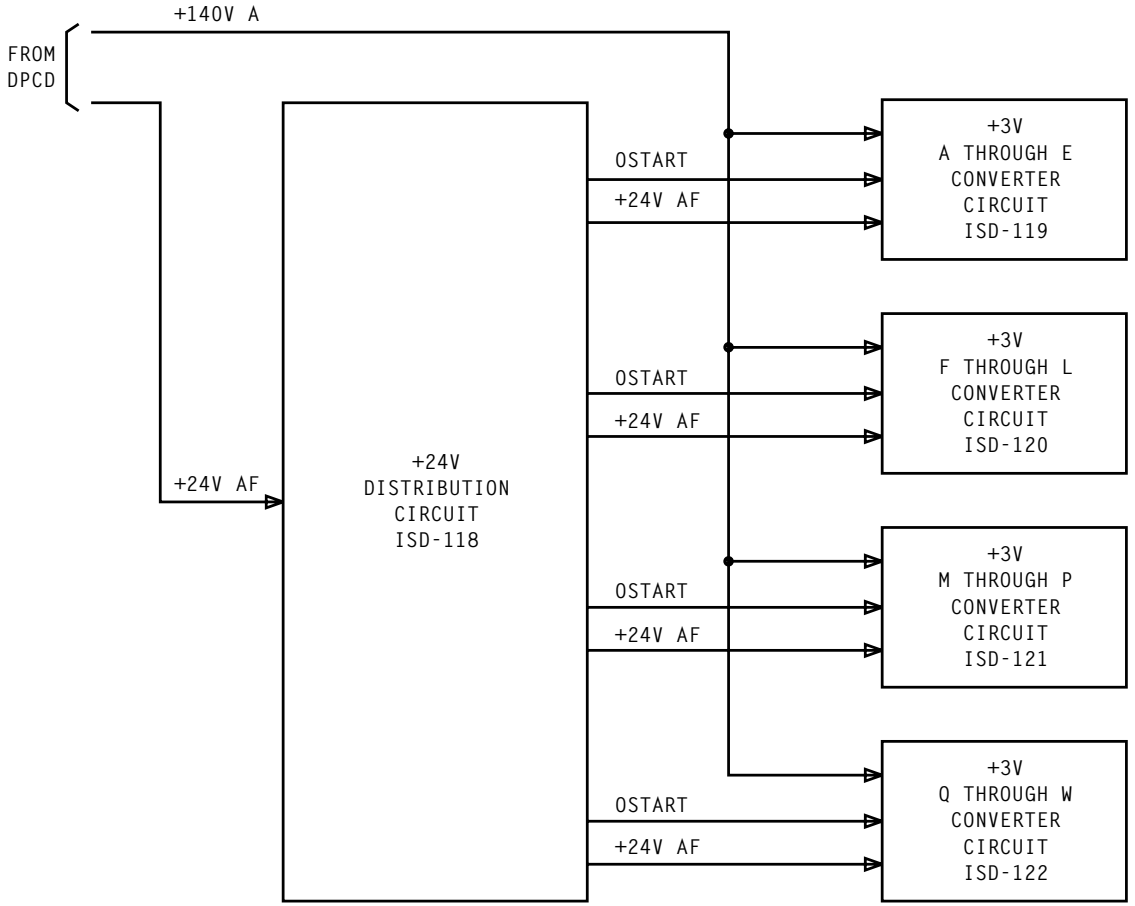
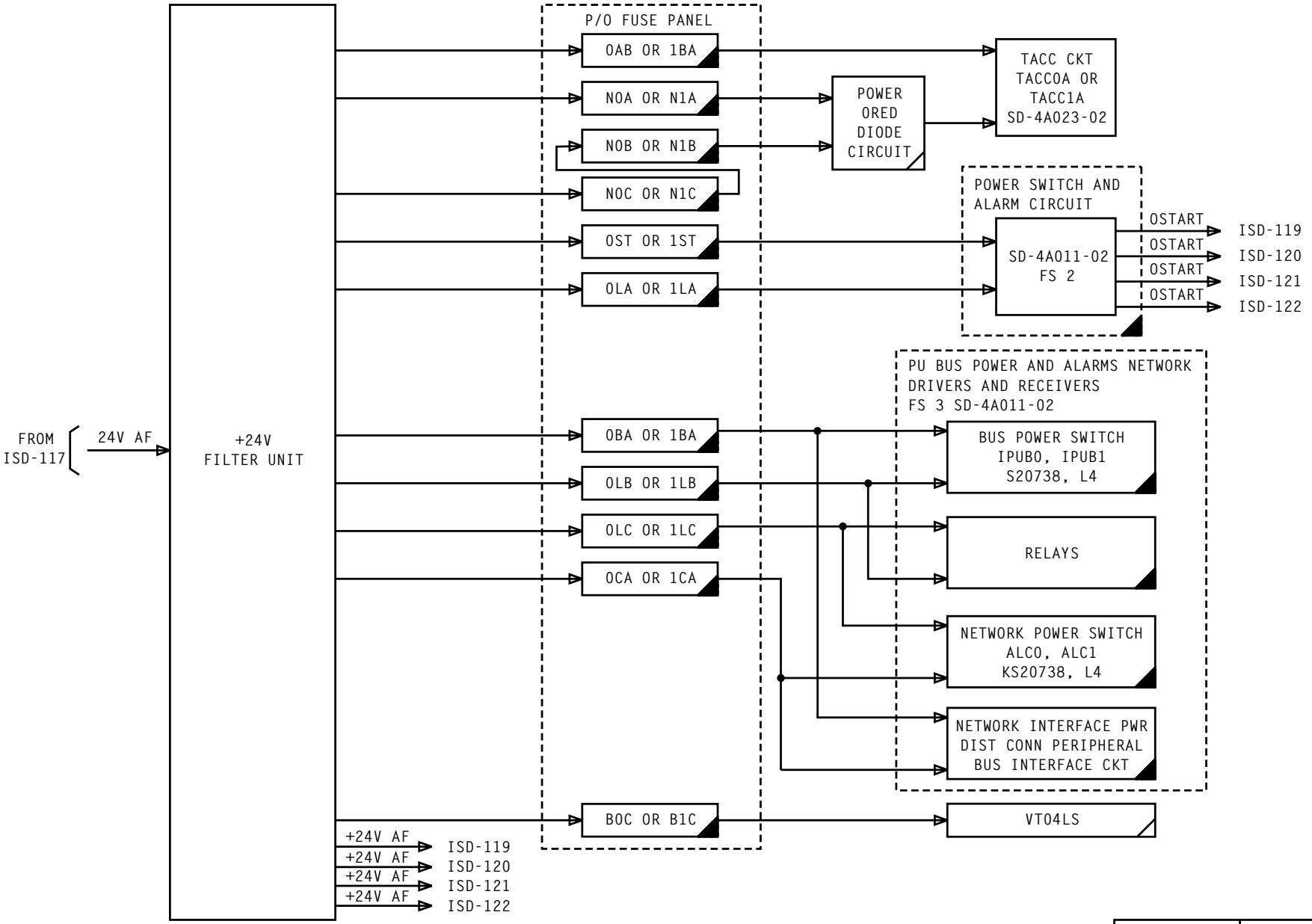


TABLE B		
FUSE	**FB152**	
0AB	0—56—42	ISD-110
1AB	1—56—42	

CLEAR BLOWN FUSE, SD-4A011-01 FRAME



24 VOLT FRAME DISTRIBUTION SD-4A011-02



24 VOLT DISTRIBUTION CIRCUIT

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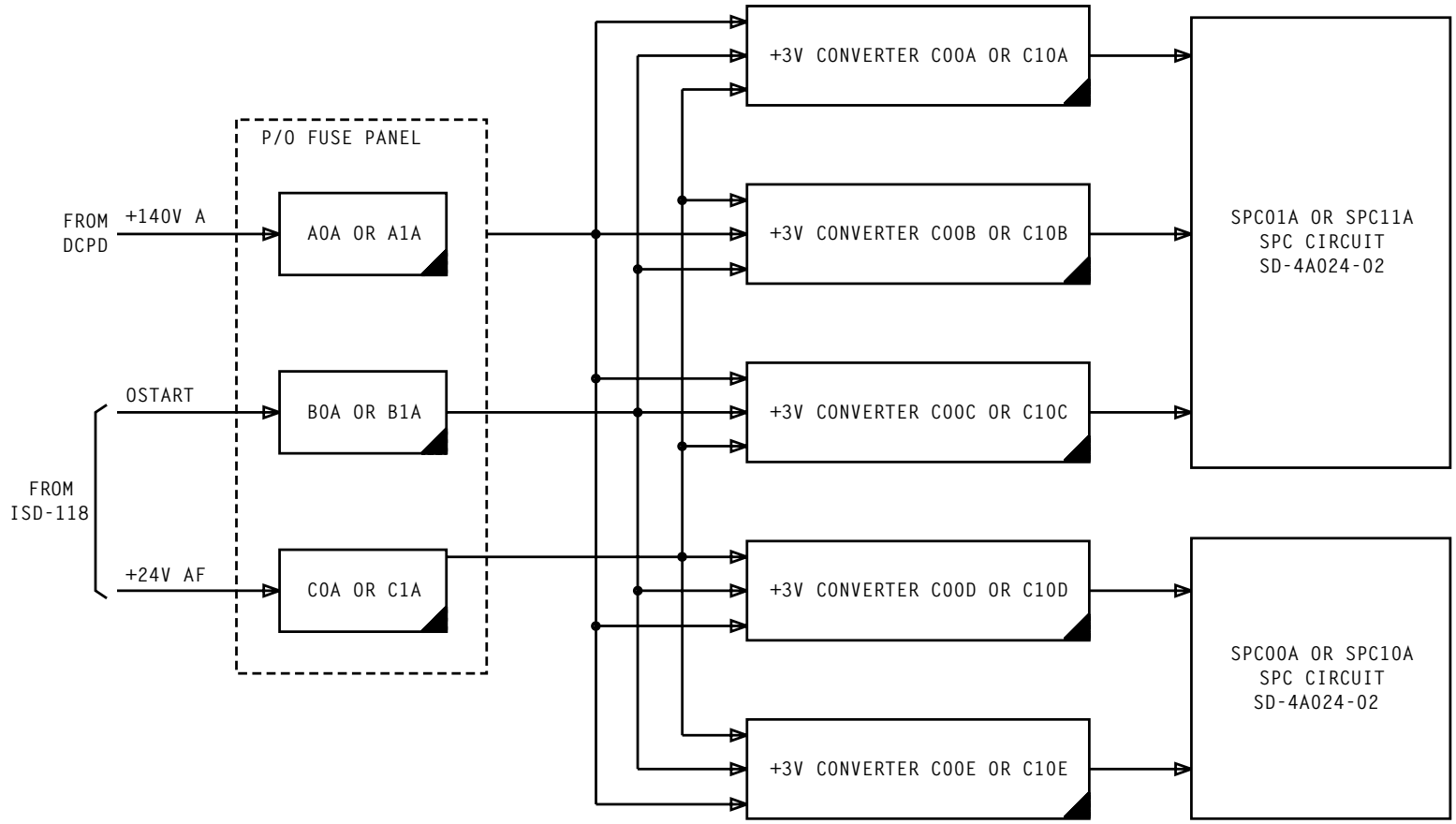
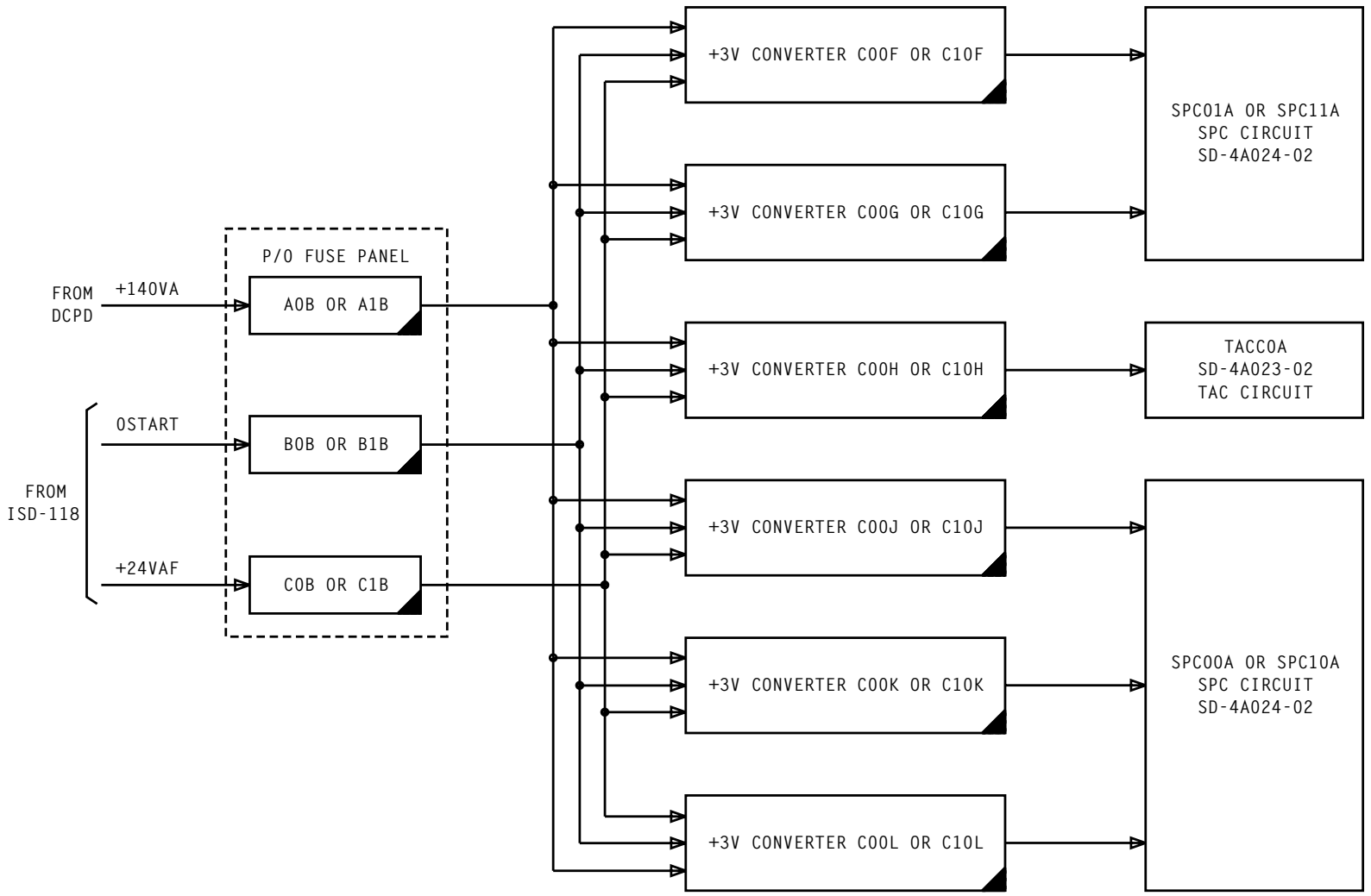
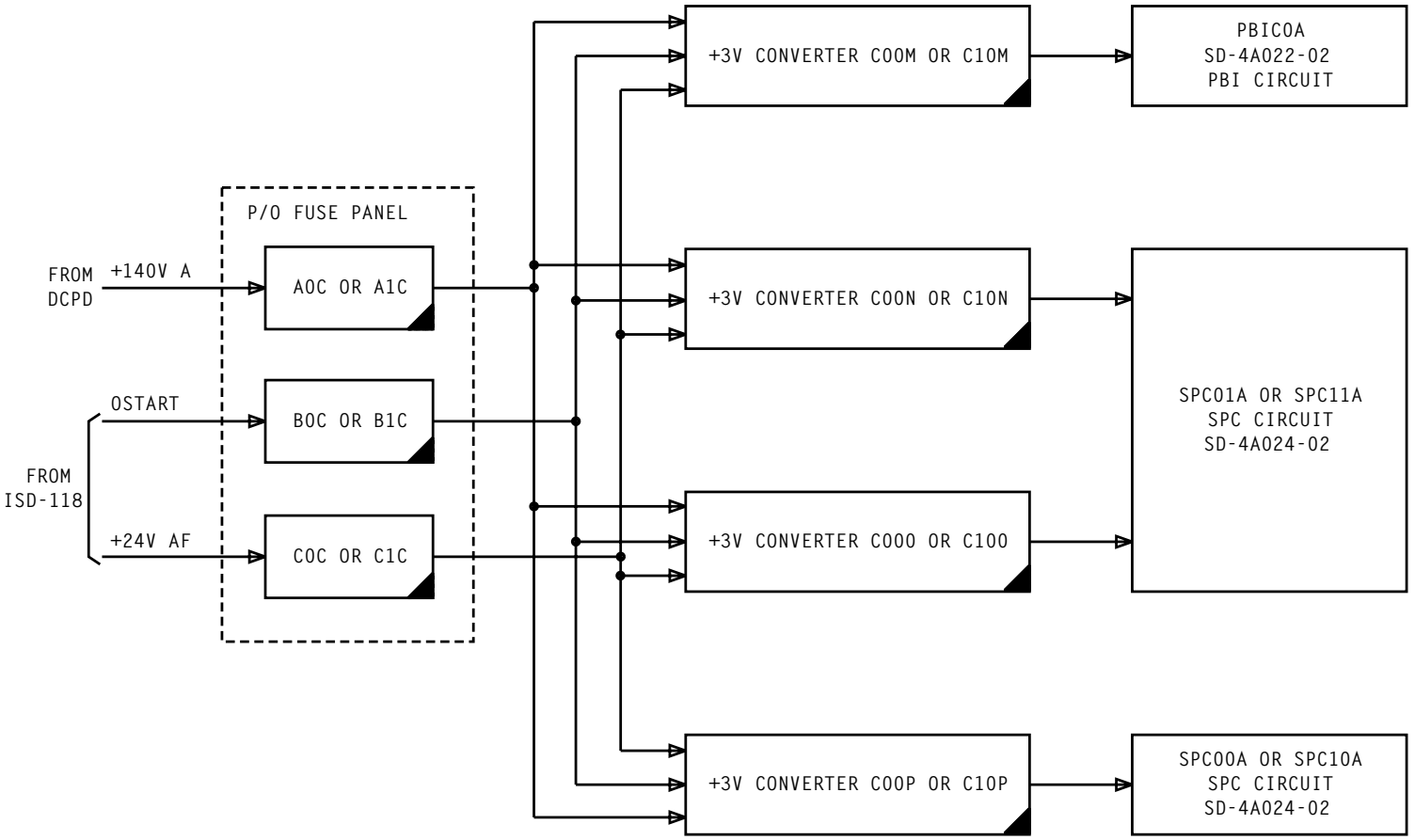


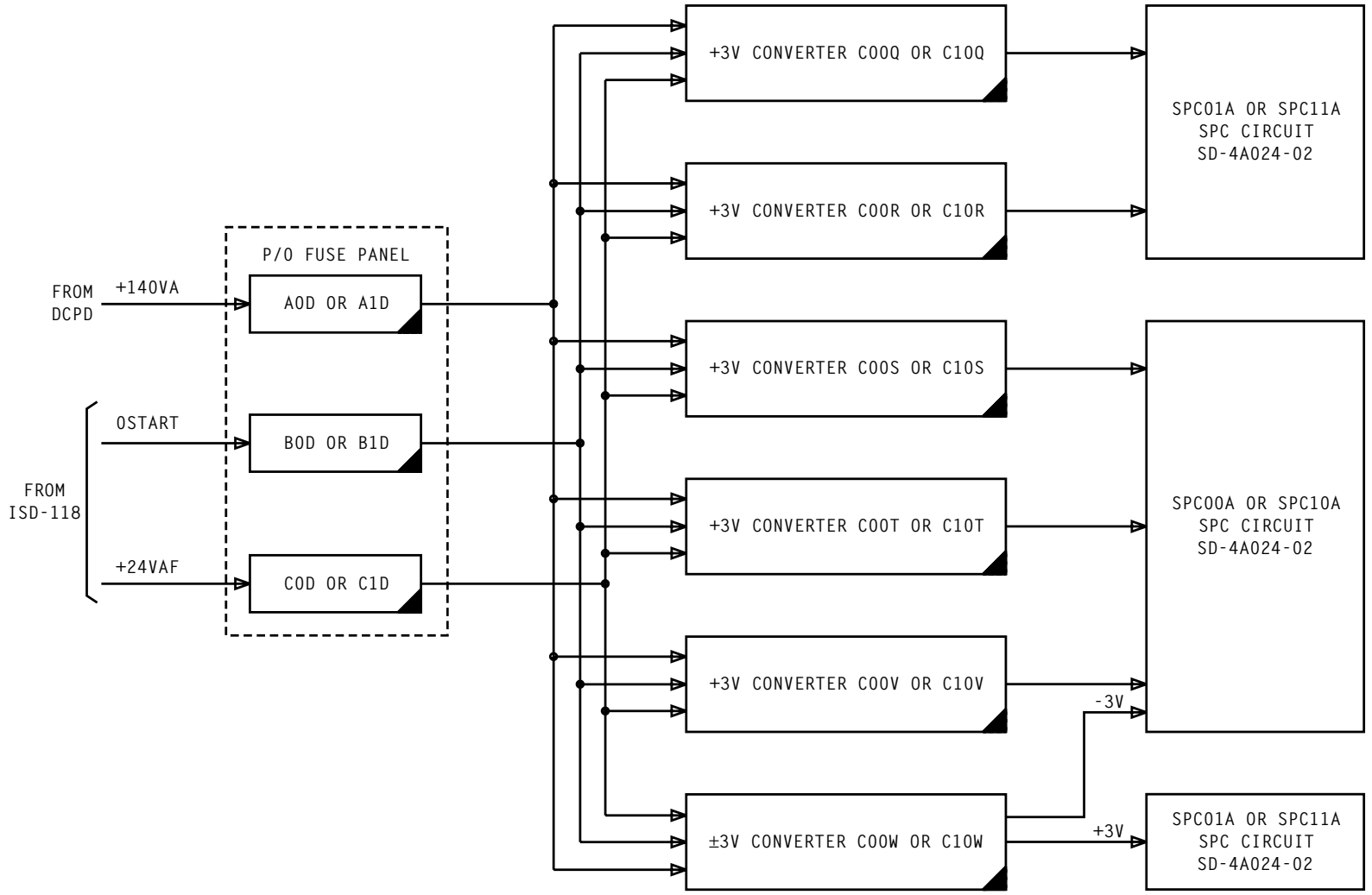
3 VOLT A THROUGH E CONVERTER CIRCUIT



3 VOLT F THROUGH L CONVERTER CIRCUIT



3 VOLT M THROUGH P CONVERTER CIRCUIT



3 VOLT Q THROUGH W CONVERTER CIRCUIT

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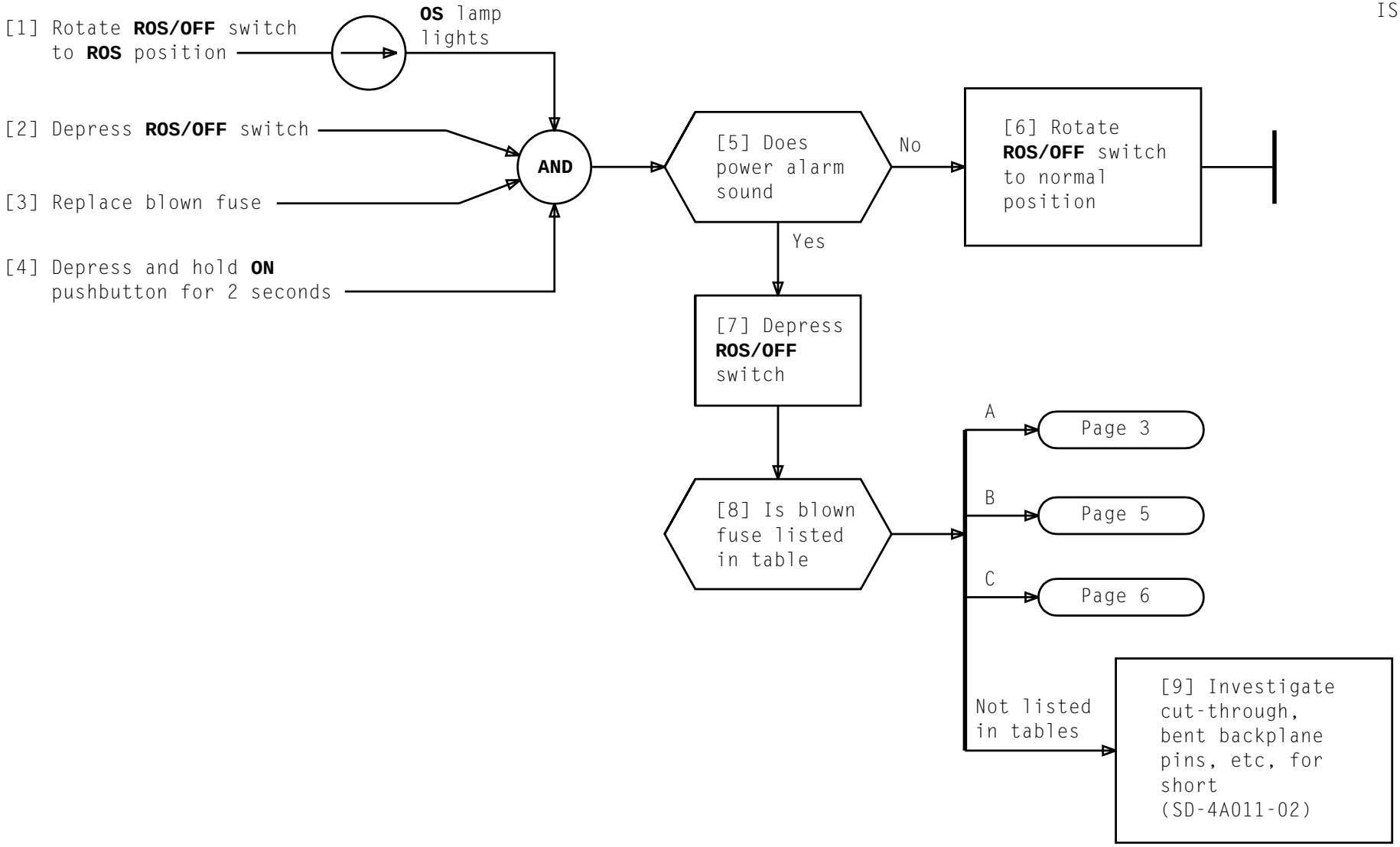


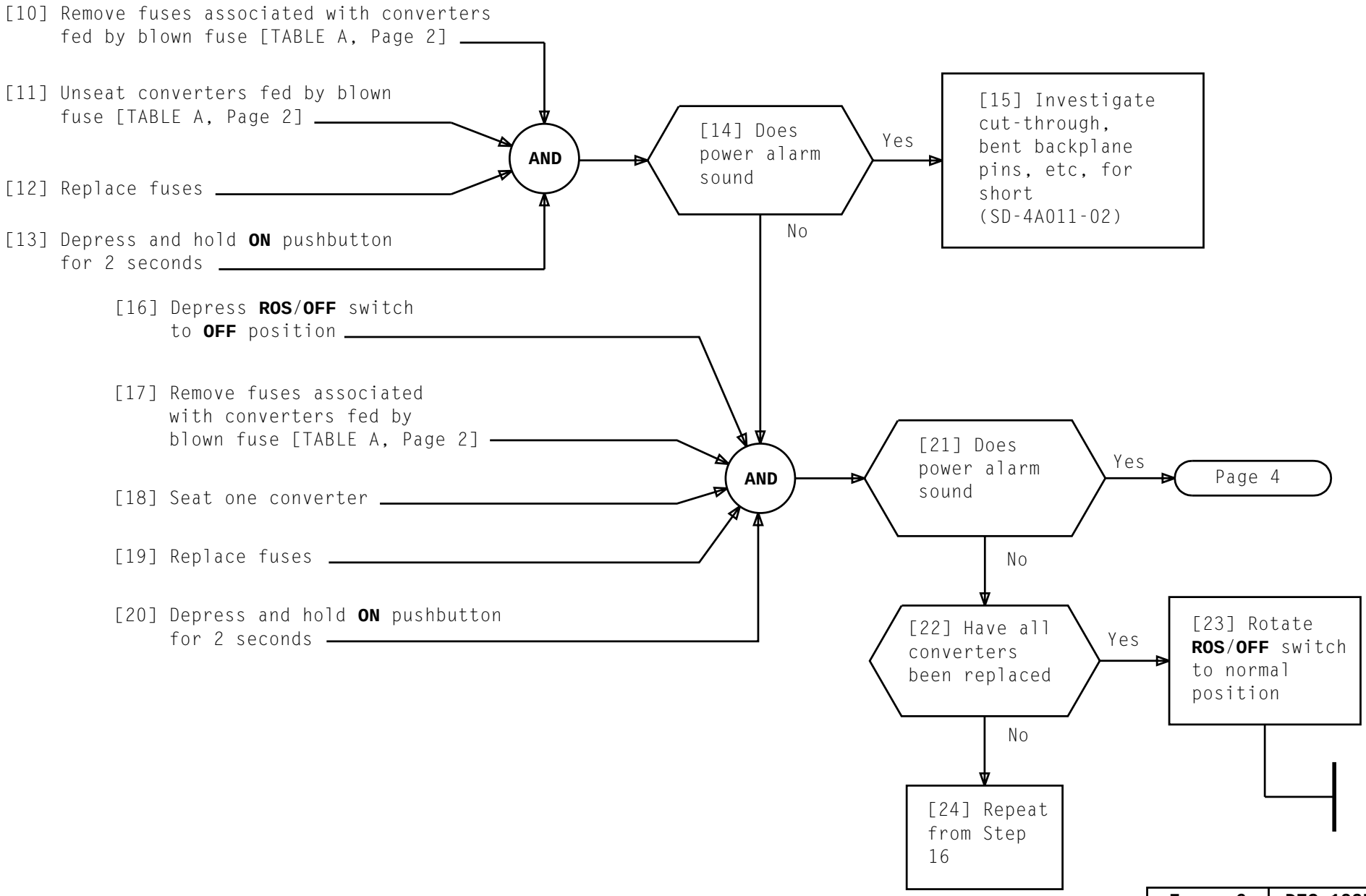
CLEAR BLOWN FUSE, SD-4A011-02 FRAME

TABLE A					
FUSE BAY 0	CONVERTERS FED AT LOC		FUSE BAY 1	CONVERTERS FED AT LOC	
0BA	0-80-55	ISD-118	**1BA**	1-80-55	ISD-118
0CA	0-76-11 0-76-15		**1CA**	1-76-11 1-76-15	
A0A **B0A** **C0A**	0-17-02 0-17-08 0-17-14 0-17-20 0-17-26	ISD-119	**A1A** **B1A** **C1A**	1-17-02 1-17-08 1-17-14 1-17-20 1-17-26	ISD-119
A0B **B0B** **C0B**	0-12-02 0-12-08 0-12-14 0-12-20 0-12-26 0-12-32	ISD-120	**A1B** **B1B** **C1B**	1-12-02 1-12-08 1-12-14 1-12-20 1-12-26 1-12-32	ISD-120
A0C **B0C** **C0C**	0-17-50 0-17-56 0-17-62 0-17-68	ISD-121	**A1C** **B1C** **C1C**	1-17-50 1-17-56 1-17-62 1-17-68	ISD-121
A0D **BOD** **C0D**	0-12-41 0-12-44 0-12-50 0-12-56 0-12-62 0-12-68	ISD-122	**A1D** **B1D** **C1D**	1-12-41 1-12-44 1-12-50 1-12-56 1-12-62 1-12-68	ISD-122

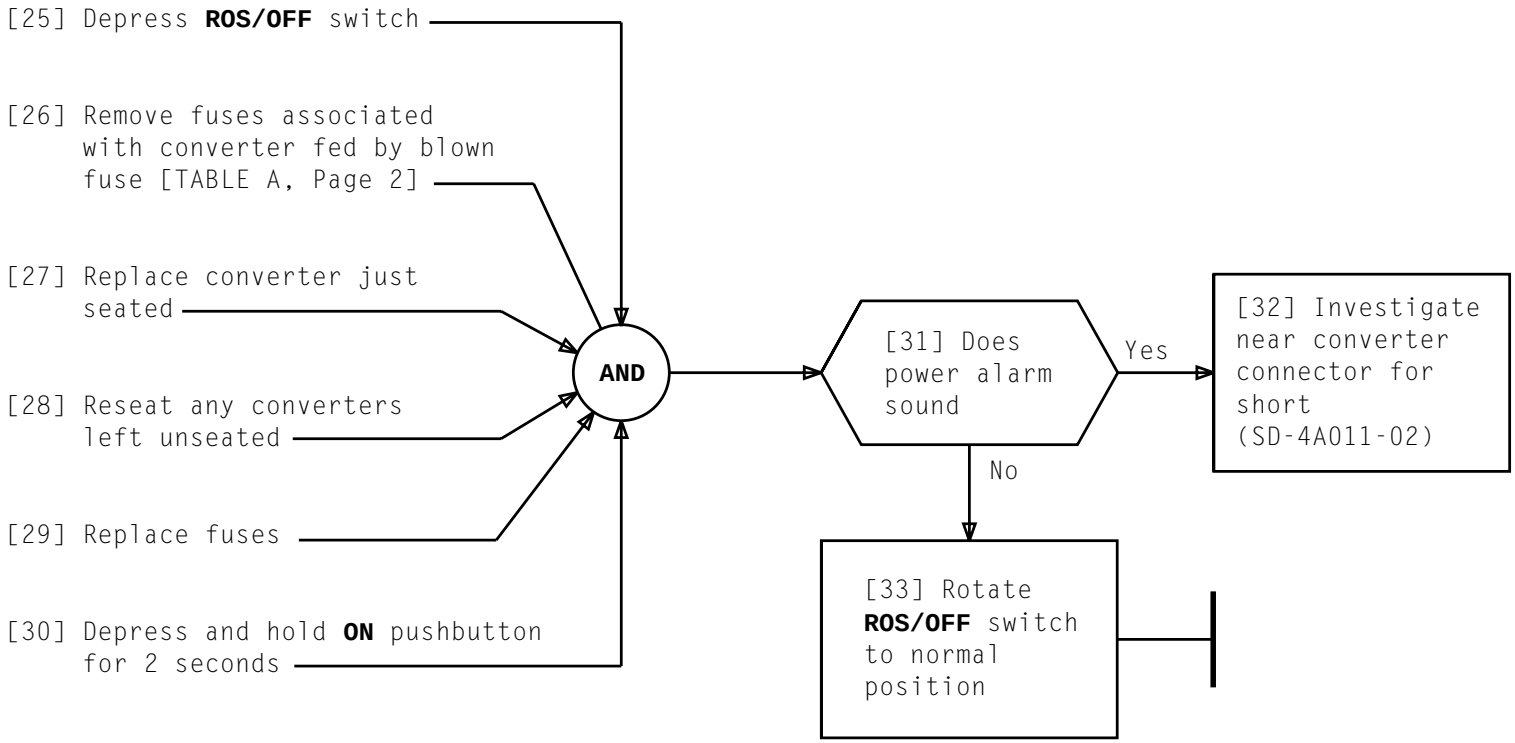
TABLE B					
FUSE BAY 0	CIRCUIT PACK FED AT LOCATION		FUSE BAY 1	CIRCUIT PACK FED AT LOCATION	
0AB	0-56-40	ISD-118	**1AB**	1-56-40	ISD-118

TABLE C					
FUSE BAY 0	FC463 PACK FED AT LOCATION		FUSE BAY 1	FC463 PACK FED AT LOCATION	
N0A	0-56-35	ISD-118	**N1A**	1-56-35	ISD-118
N0B			**N1B**		

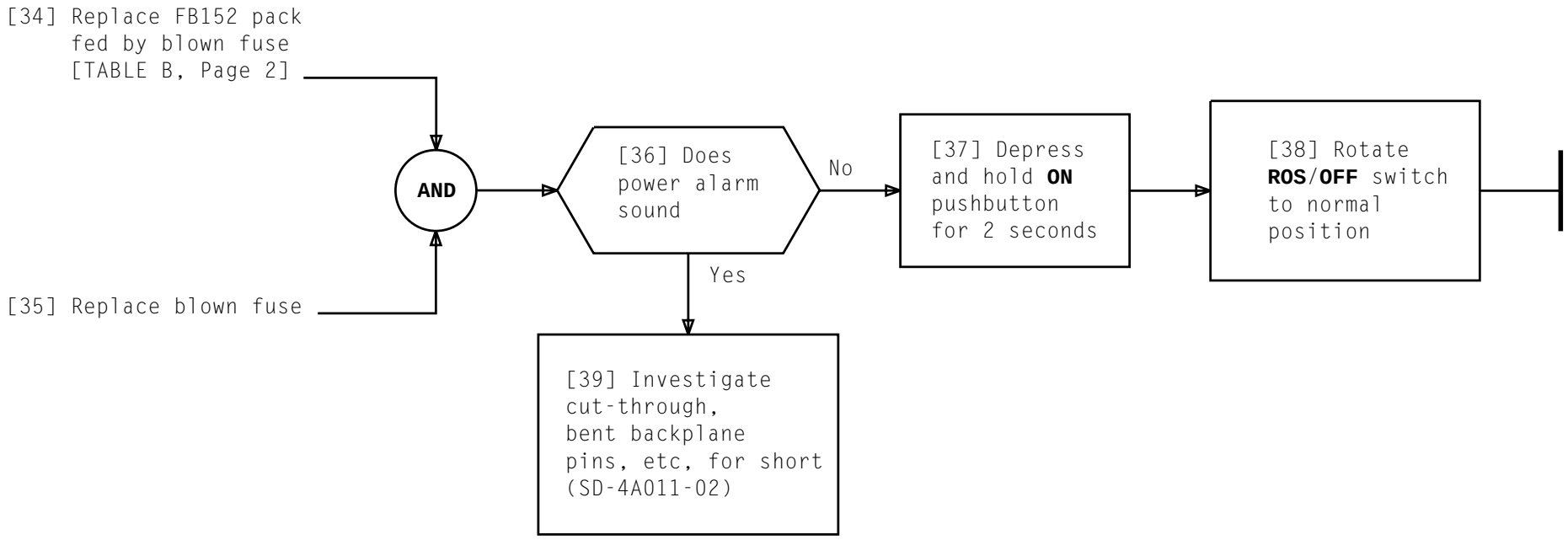
CLEAR BLOWN FUSE, SD-4A011-02 FRAME



CLEAR BLOWN FUSE, SD-4A011-02 FRAME



CLEAR BLOWN FUSE, SD-4A011-02 FRAME



CLEAR BLOWN FUSE, SD-4A011-02 FRAME

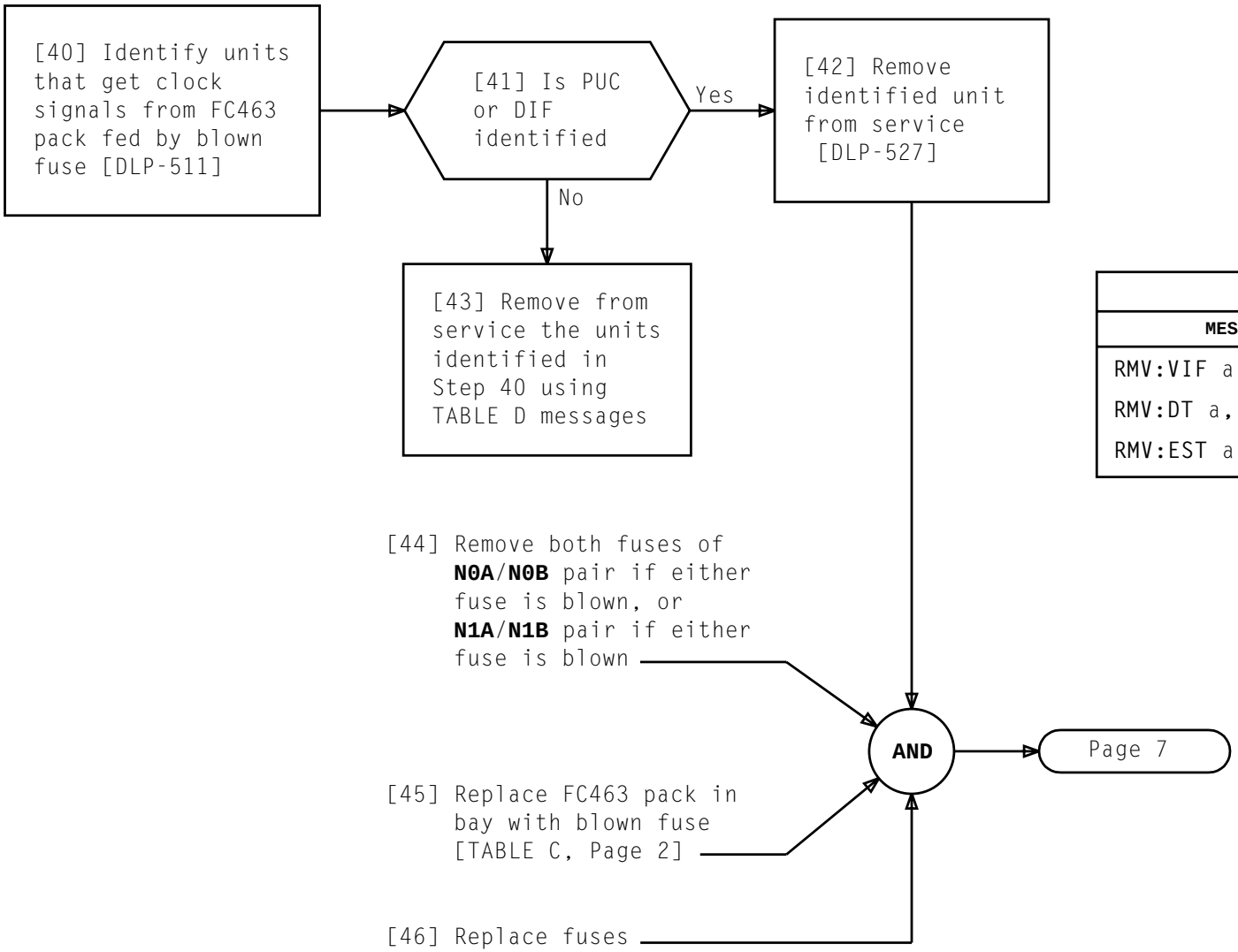


TABLE D	
MESSAGE	**VARIABLE**
RMV:VIF a, CONTR b! RMV:DT a, CONTR b! RMV:EST a, CONTR b!	a = Member number b = Controller number

CLEAR BLOWN FUSE, SD-4A011-02 FRAME

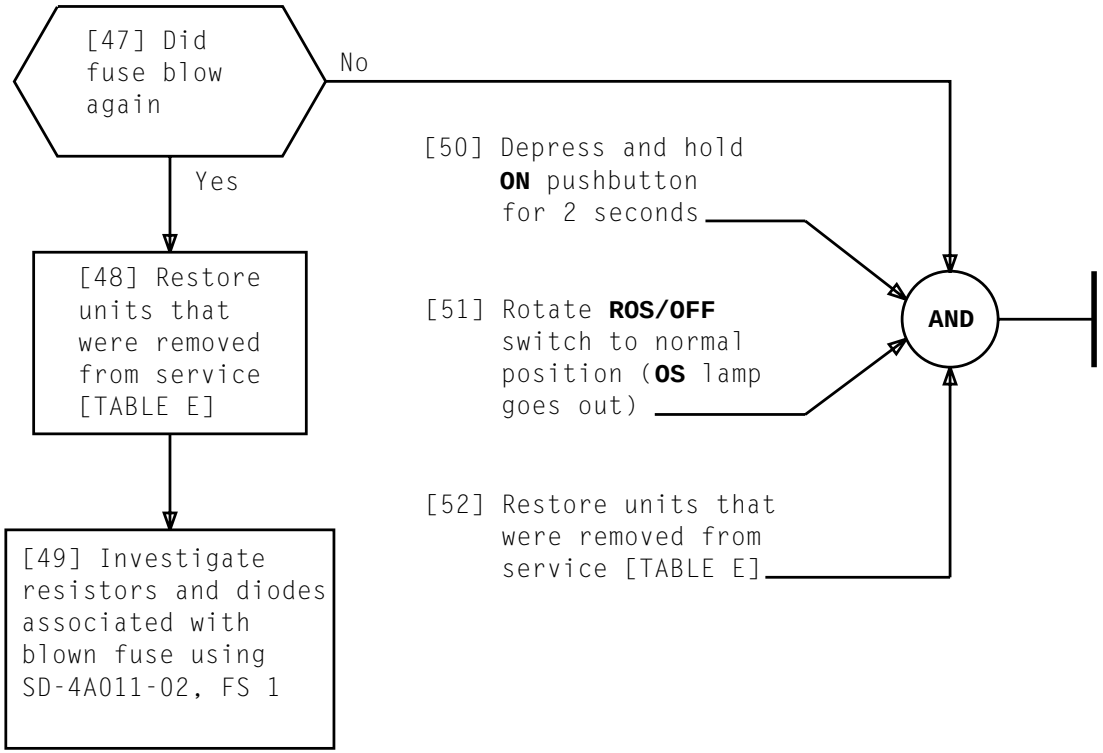


TABLE E

MESSAGE	VARIABLE
RST:EST a, CONTR b! RST:DT a, CONTR b! RST:DIF a, CONTR b! RST:VIF a, CONTR b!	a = Member number b = Controller number

CLEAR BLOWN FUSE, SD-4A011-02 FRAME

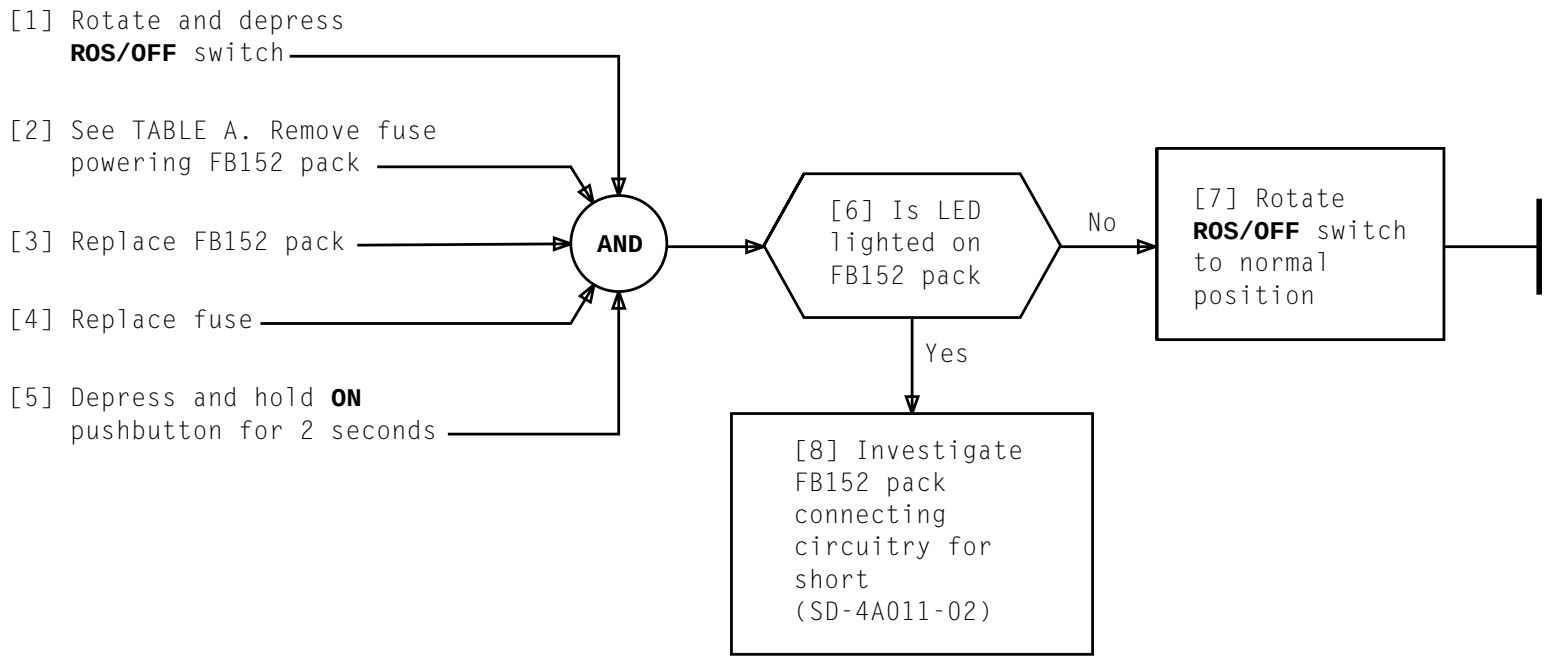
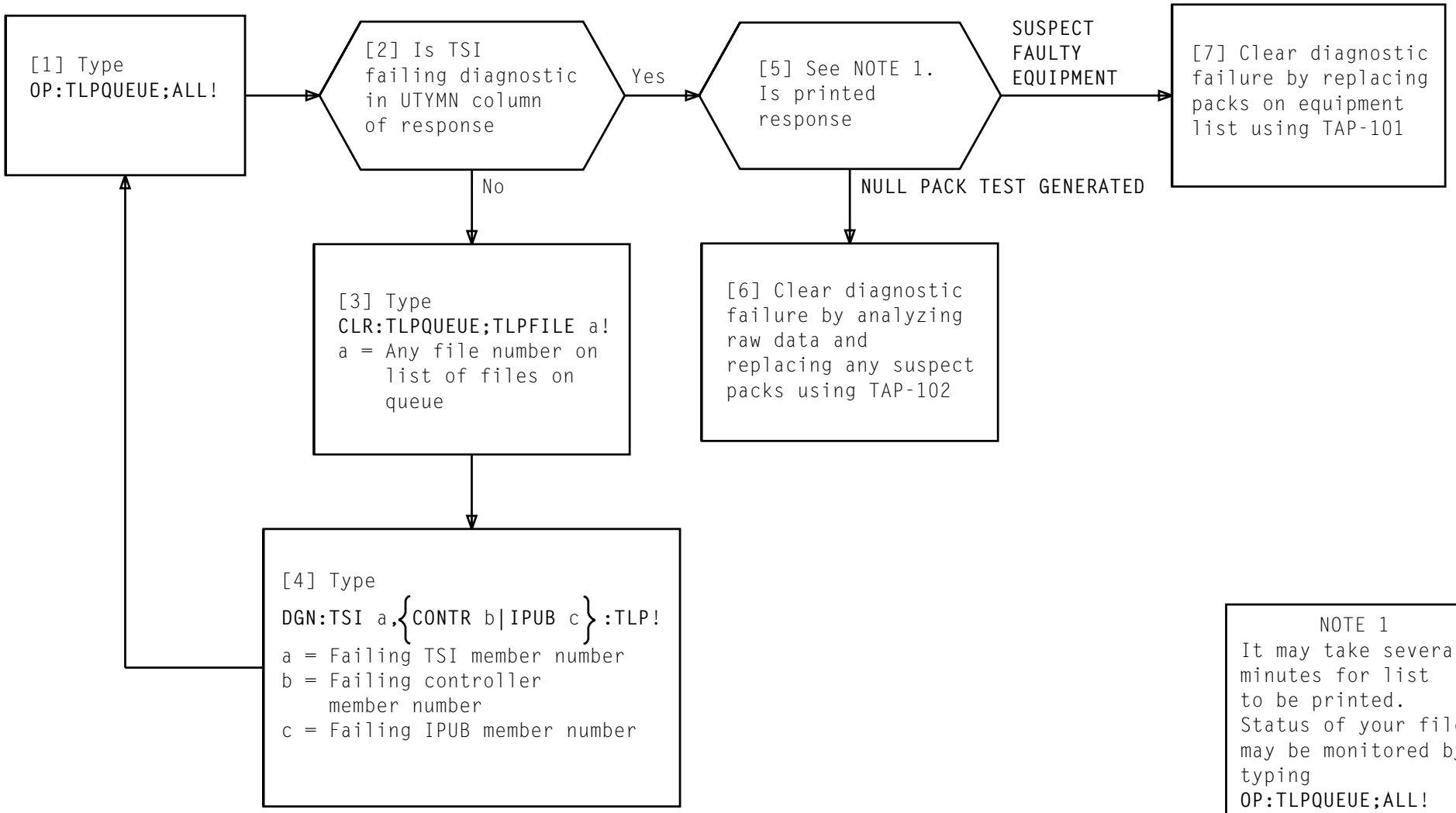


TABLE A

FB152 LOCATION	FUSE	FUSE LOCATION
0-56-42	**OAB**	0-07-30
1-56-42	**1AB**	1-07-30

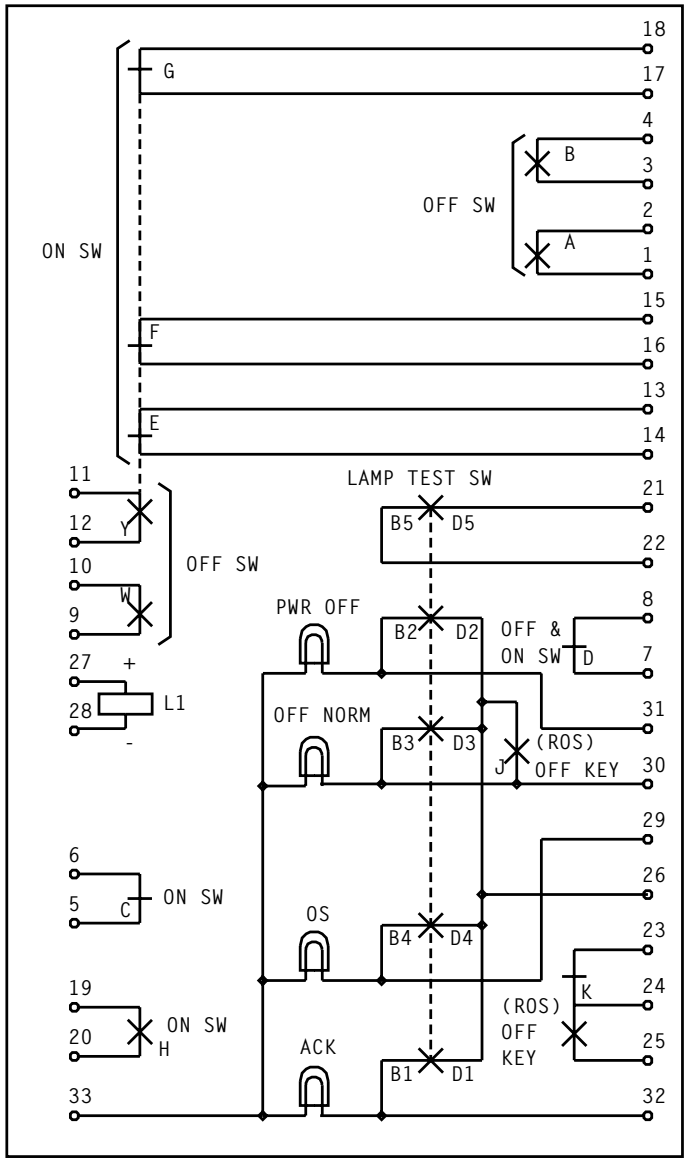
CLEAR FB152 PACK LED LIGHTED CONDITION
SD-4A011-01 AND SD-4A011-02 FRAME



NOTE 1

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

CLEAR DIAGNOSTIC FAILURE, TLP DISK QUEUE FULL



POWER SWITCH

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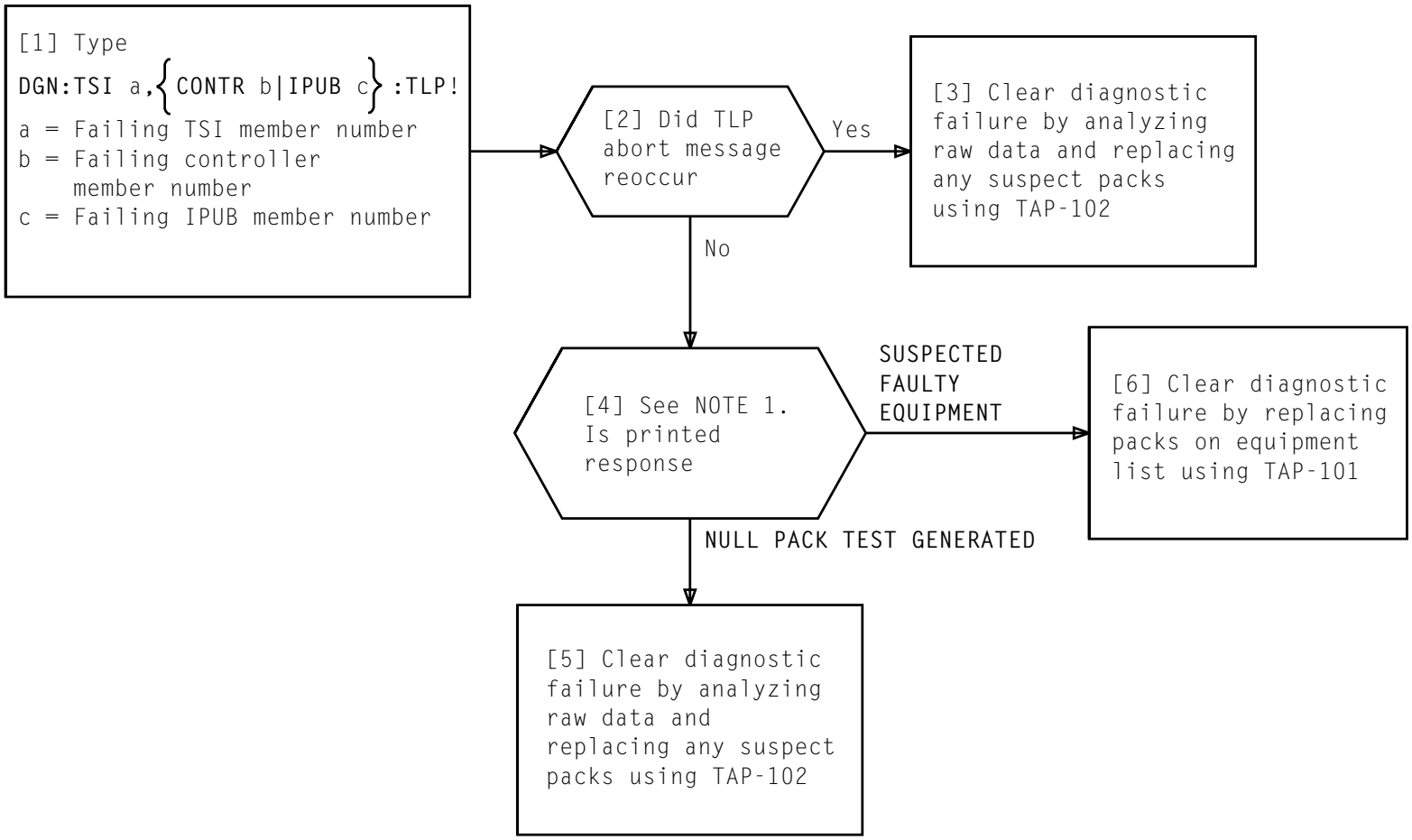


NOTE 1
It may take several minutes for list to be printed. Status of your file may be monitored by typing
OP:TLPQUEUE;ALL!
TLP file currently being processed is indicated by an asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLP ABORT

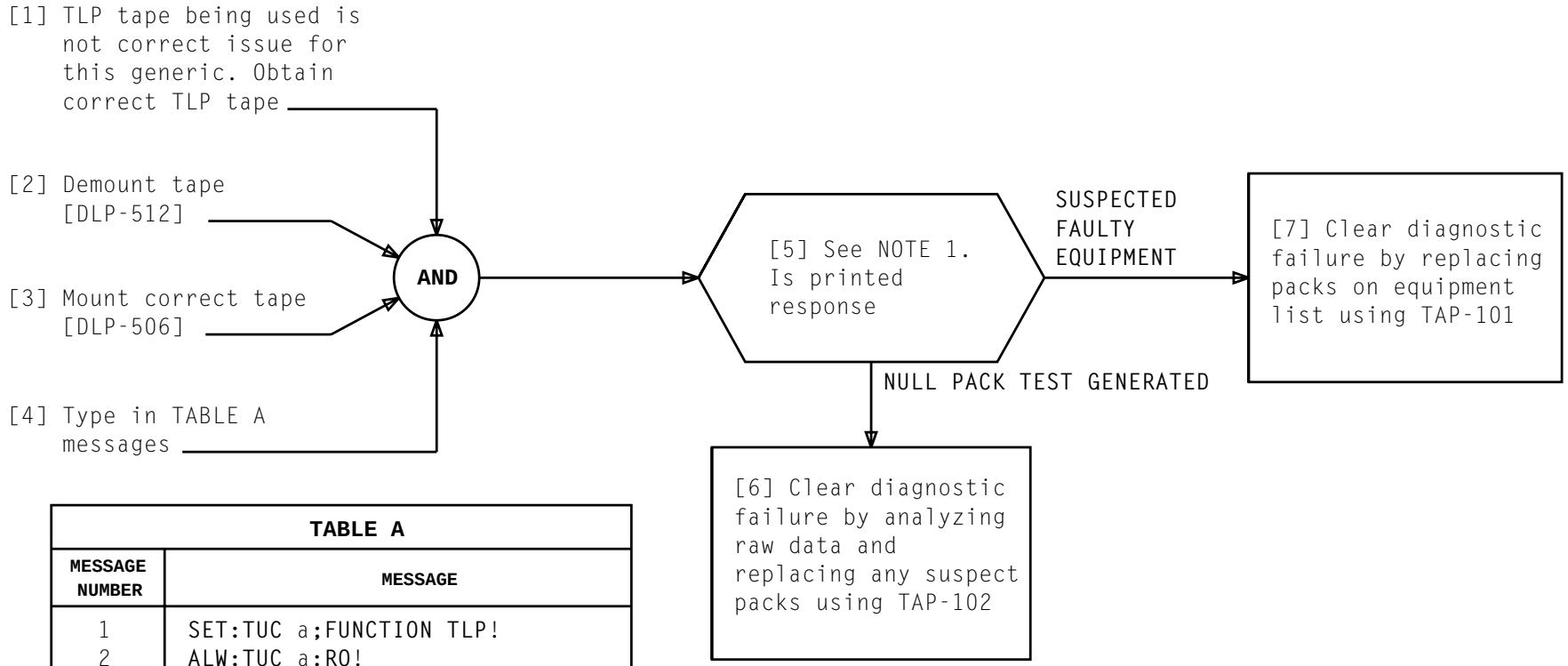


TABLE A

MESSAGE NUMBER	MESSAGE
1	SET:TUC a;FUNCTION TLP!
2	ALW:TUC a:RO!
3	ALW:TLP:SRCH,TSI!
4	DGN:TSI b,{CONTR c|IPUB d} :TLP!

where: a = Member number of TUC with TLP tape mounted
b = Failing TSI member number
c = Failing controller member number
d = Failing IPUB member number

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

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

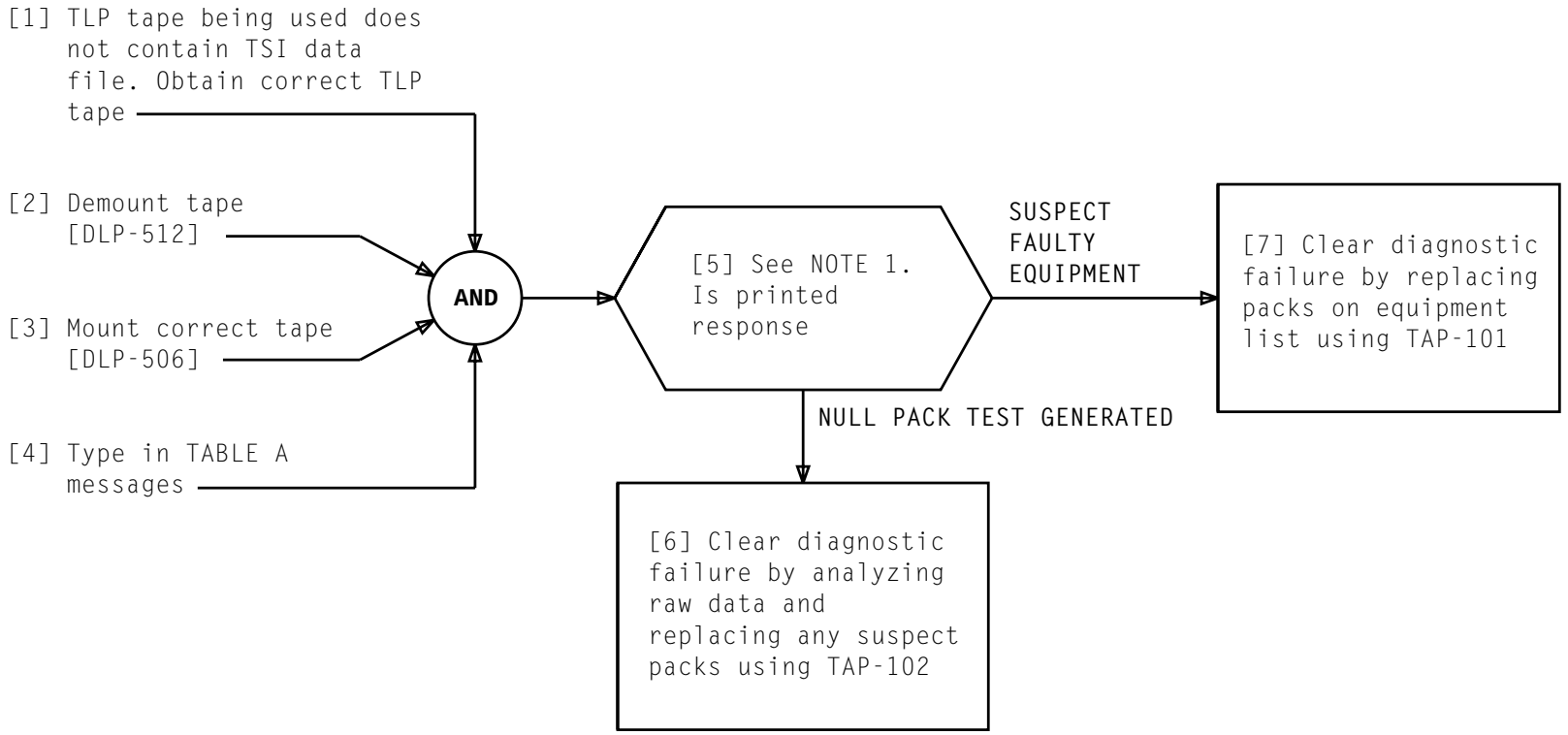


TABLE A	
MESSAGE	**VARIABLE**
SET:TUC a;FUNCTION TLP! ALW:TUC a:RO! ALW:TLP:SRCH,TSI! DGN:TSI b,{CONTR c|IPUB d} :TLP!	a = Member number of TUC with TLP tape mounted b = Failing TSI member number c = Failing controller member number d = Failing IPUB member number

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

CLEAR DIAGNOSTIC FAILURE, TLP TAPE AQUISITION ERROR

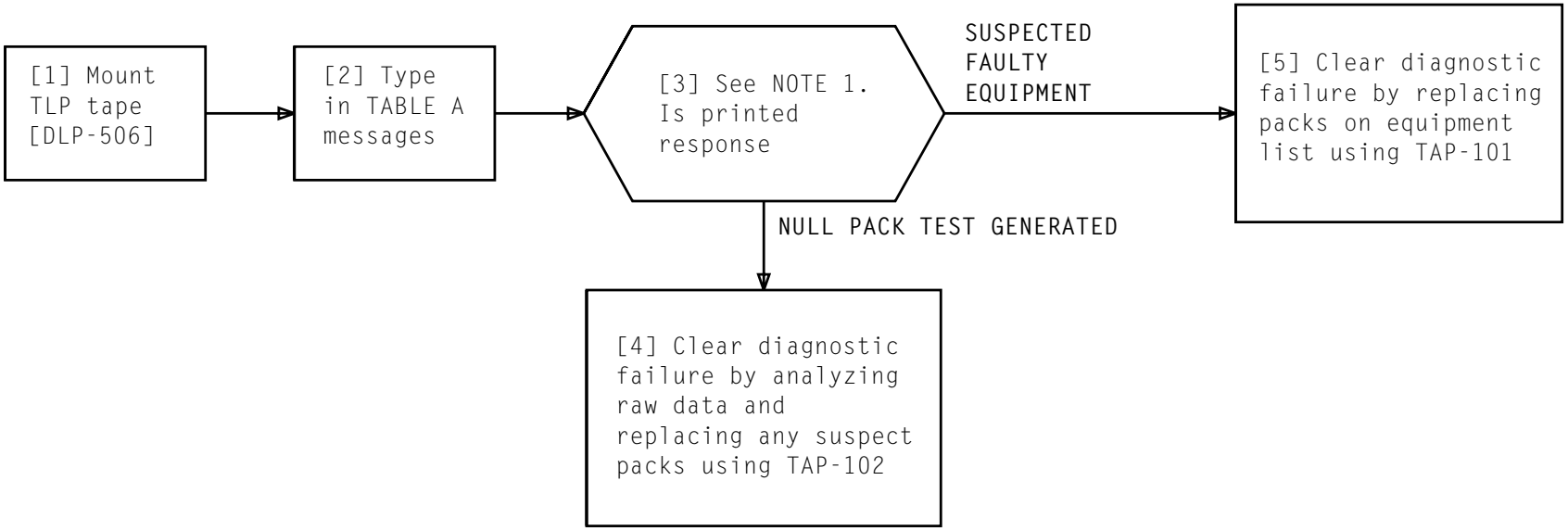


TABLE A

MESSAGE	VARIABLE
SET:TUC a;FUNCTION TLP! ALW:TUC a:RO! ALW:TLP:SRCH,TSI! DGN:TSI b,{CONTR c|IPUB d} :TLP!	a = Member number of TUC with TLP tape mounted b = Failing TSI member number c = Failing controller member number d = Failing IPUB member number

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

CLEAR DIAGNOSTIC FAILURE, TLP TAPE NOT MOUNTED

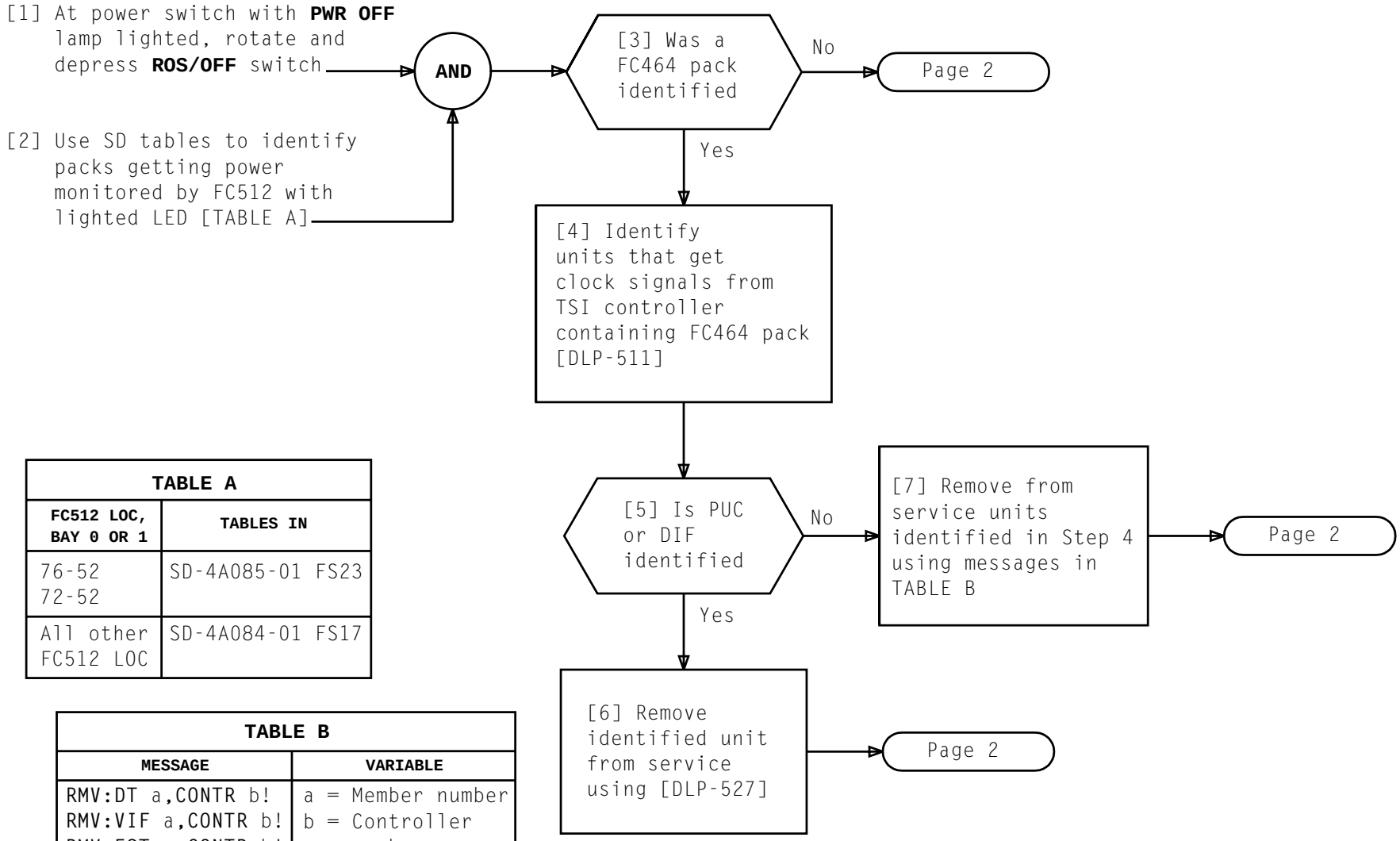


TABLE A

FC512 LOC, BAY 0 OR 1	TABLES IN
76-52 72-52	SD-4A085-01 FS23
All other FC512 LOC	SD-4A084-01 FS17

TABLE B

MESSAGE	VARIABLE
RMV:DT a,CONTR b! RMV:VIF a,CONTR b! RMV:EST a,CONTR b!	a = Member number b = Controller number

CLEAR BULK CONVERTER, FC554 PACK, AND FC512 PACK LED LIGHTED CONDITION, SD-4A083-01 FRAME

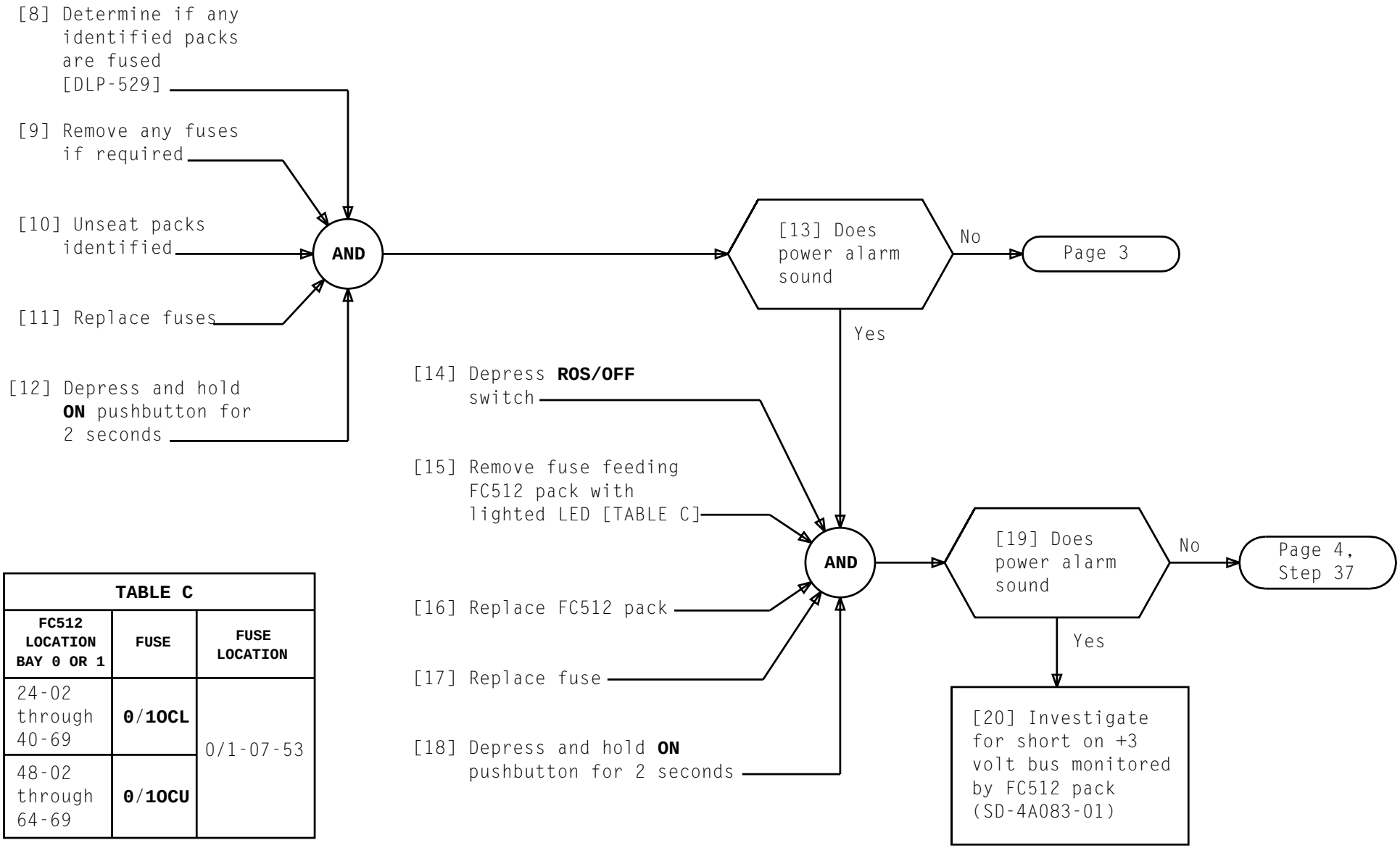
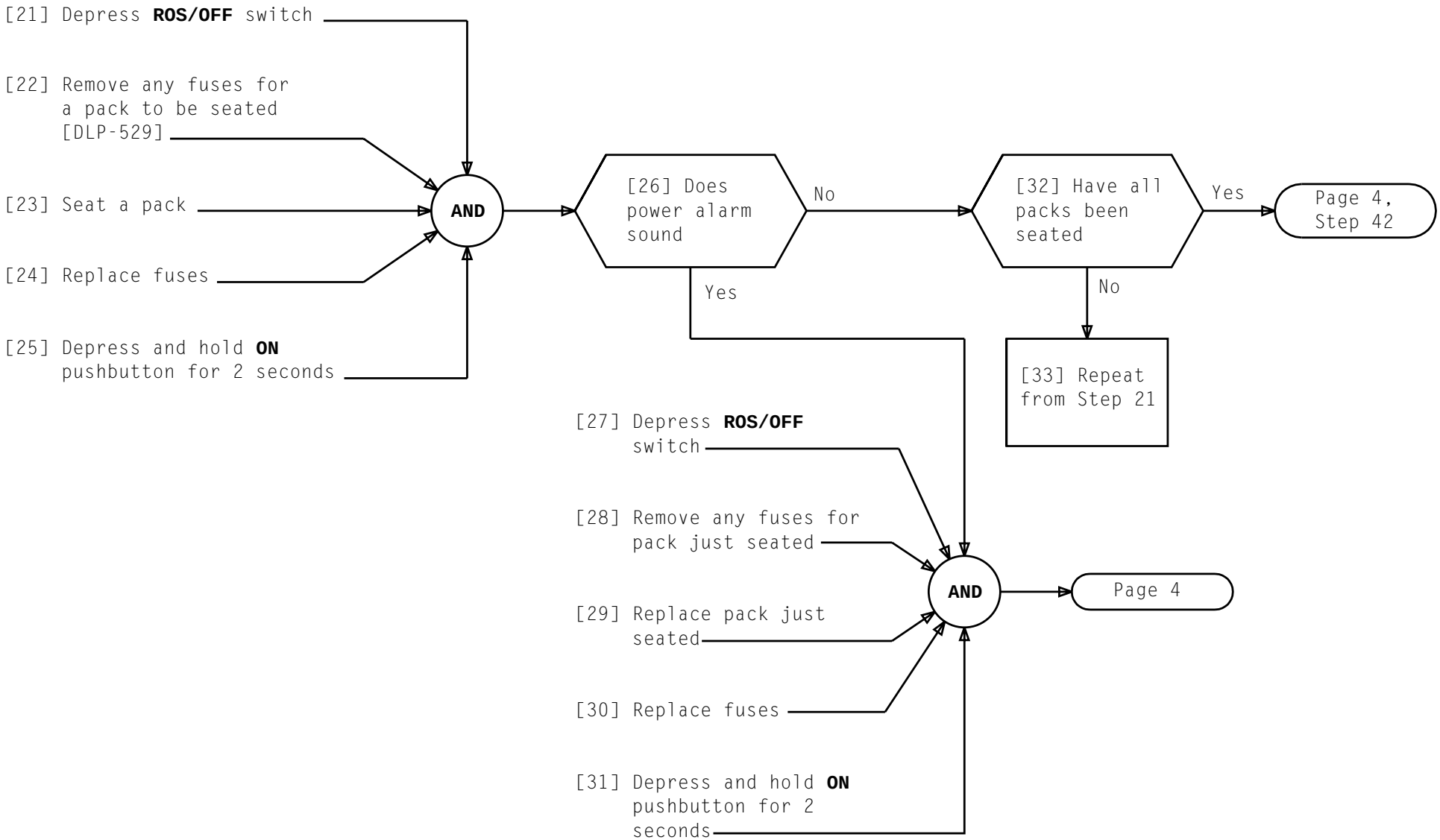


TABLE C		
FC512 LOCATION BAY 0 OR 1	**FUSE**	**FUSE LOCATION**
24-02 through 40-69	**0/1OCL**	0/1-07-53
48-02 through 64-69	**0/1OCU**	

CLEAR BULK CONVERTER, FC554 PACK, AND FC512 PACK LED LIGHTED CONDITION, SD-4A083-01 FRAME



CLEAR BULK CONVERTER, FC554 PACK, AND FC512 PACK LED LIGHTED CONDITION, SD-4A083-01 FRAME

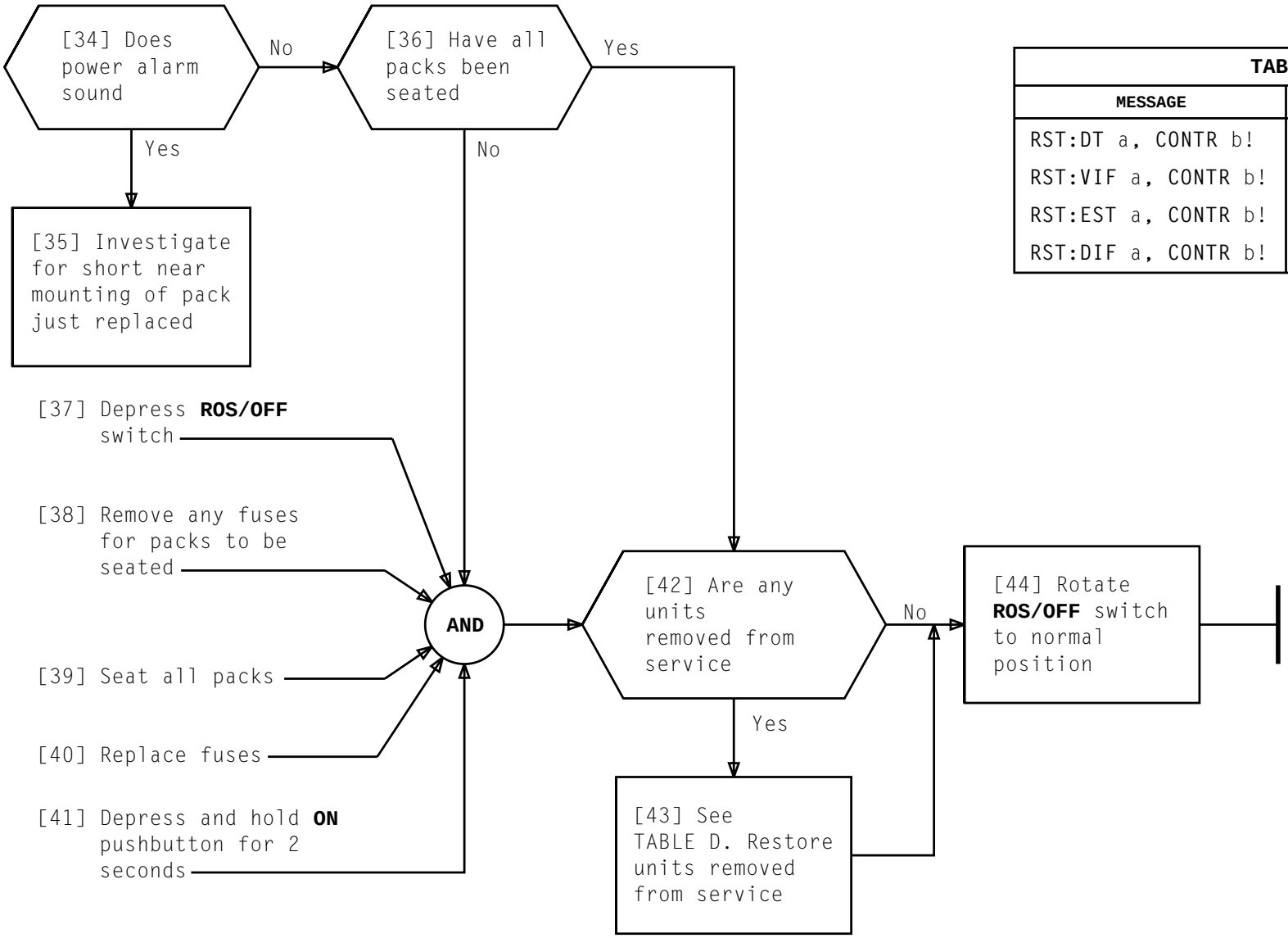


TABLE D

MESSAGE	VARIABLE
RST:DT a, CONTR b! RST:VIF a, CONTR b! RST:EST a, CONTR b! RST:DIF a, CONTR b!	a = Member number of unit removed b = Member number of controller

CLEAR BULK CONVERTER, FC554 PACK, AND FC512 PACK LED LIGHTED CONDITION, SD-4A083-01 FRAME

SUMMARY

Type in TABLE A messages. Verify that first failing test raw data is printed twice to verify correct loop address. 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-102, SDs/CDs, and circuit pack SDs signal, trace path of failing bits to isolate and clear fault. If F-Level interrupt is associated with diagnostic failure, see TOP 234-151-003.

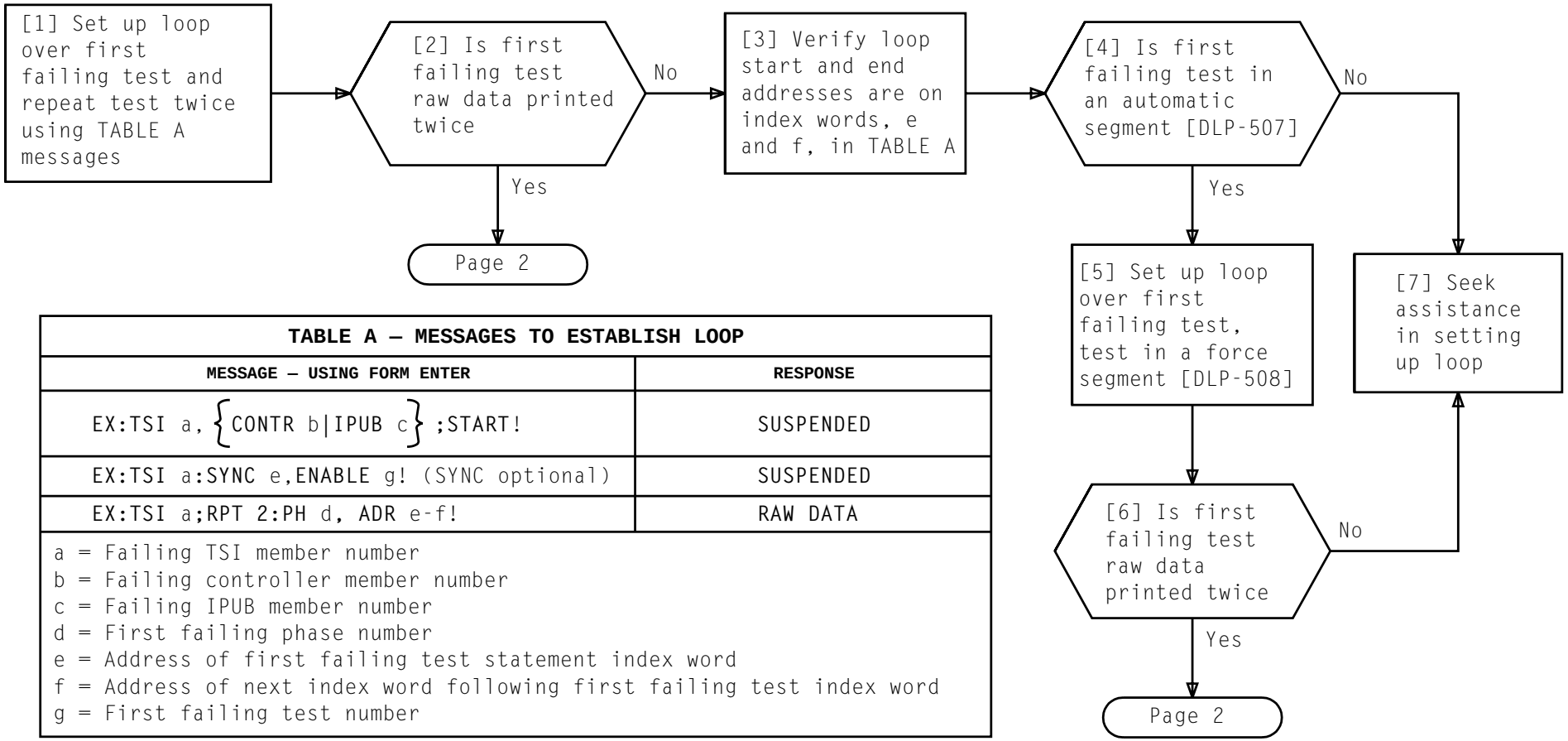


TABLE A — MESSAGES TO ESTABLISH LOOP

MESSAGE — USING FORM ENTER	RESPONSE
EX:TSI a, {CONTR b|IPUB c} ;START!	SUSPENDED
EX:TSI a:SYNC e,ENABLE g! (SYNC optional)	SUSPENDED
EX:TSI a;RPT 2:PH d, ADR e-f!	RAW DATA

a = Failing TSI member number
b = Failing controller member number
c = Failing IPUB member number
d = First failing phase number
e = Address of first failing test statement index word
f = Address of next index word following first failing test index word
g = First failing test number

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

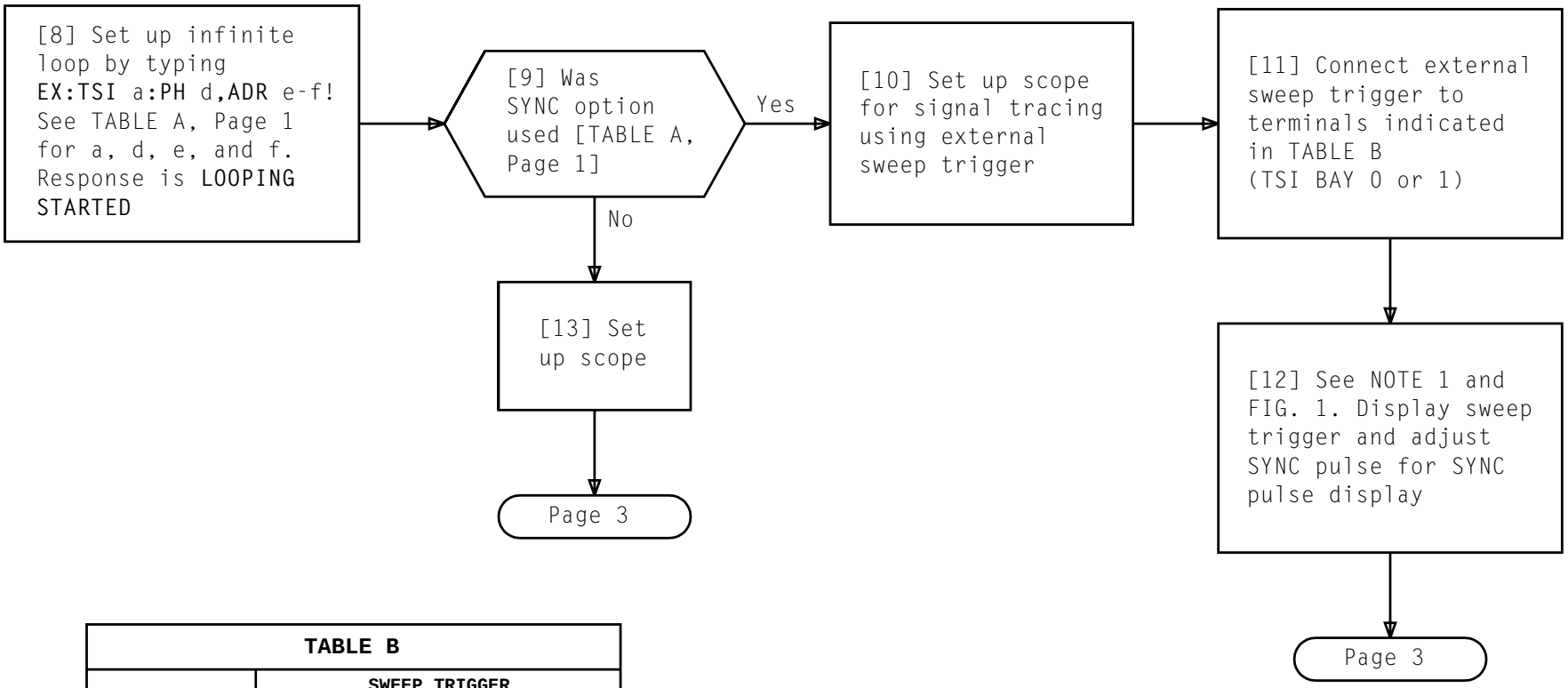


TABLE B

FRAME	SWEEP TRIGGER TO FRAME
SD-4A011-01	Connect 80-45-104 to 80-45-304 with clip lead. Connect EXT sweep trigger to clip lead
SD-4A011-02	Connect EXT sweep to 80-45-104
SD-4A083-01	Connect EXT sweep to 80-49-104

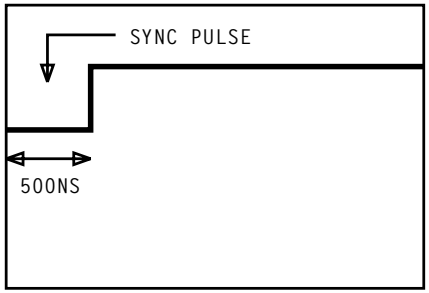
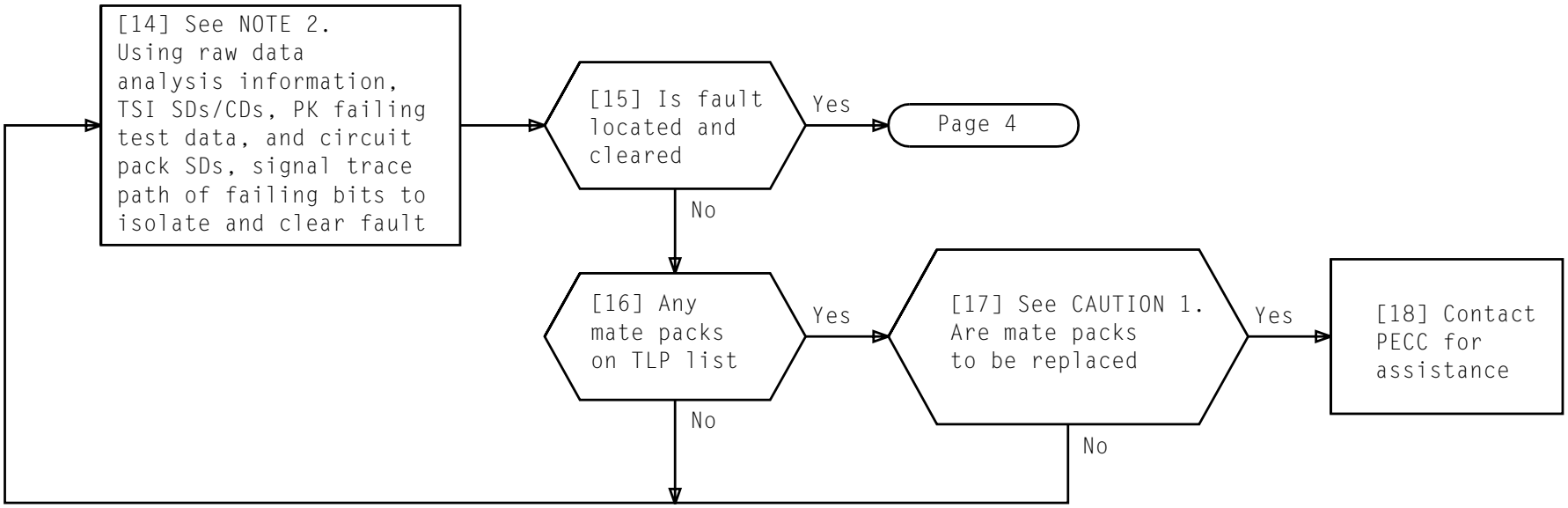


FIG. 1 — Sync Pulse Display

NOTE 1
SYNC pulse arrives over PUWB bit 36 which is not tested by TSI diagnostic

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



NOTE 2
Analysis of F-Level interrupt associated with diagnostic failure may also be helpful
[TOP 234-151-003]

CAUTION 1
Mate pack replacement may cause service degrading condition

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

[19] Type
OP:MACLI,CLASS MTCE!

[20] Type
STOP:MACLI,CLASS MTCE,SUBCLASS a!
a = Subclass assigned faulty TSI (see previous message response)

[21] See TABLE A, Page 1 for a, b, and c.
Type
DGN:TSI a, { CONTR b | IPUB c } !

AND

[22] Is diagnostic result

STF

[23] Set up loop again using TABLE A, Page 1 messages (delete RTP) or DLP-508 if required, and repeat from Step 14

ATP/CATP

[24] Was a TMS frame removed from service to replace packs

Yes

[25] Type
RST:TMSP a, CONTR b!
a = TMS frame member number
b = Controller

No

TABLE C

MESSAGE	VARIABLE
RST:DT a, CONTR b! RST:VIF a, CONTR b! RST:EST a, CONTR b! RST:DIF a, CONTR b!	a = Member number of unit removed b = Submember number of controller removed

[26] If other units were removed from service, restore using TABLE C messages

AND

[27] See TABLE A, Page 1 for a, b, and c.
Type
RST:TSI a, { CONTR b | IPUB c } !

System responds
RST:TSI a, { CONTR b | IPUB c } COMPLETED

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

CLEAR AUTOMATIC POWER MONITOR TEST FAILURE

[1] Test power alarm circuits [DLP-526]

[2] Did system respond ATP

Yes

No

[3] At TTY, type
DGN:TSI a,{**CONTR** b|**IPUB** c} **;RPT 15:PH1!**
a = TSI member number
b = Controller member number
c = IPUB member number

[4] See NOTE 1. Do any LEDs change state out of step

No

Yes

[10] At TTY, type
DGN:TSI a,{**CONTR** b|**IPUB** c} **:TLP!**
then go to TAP-101
a = TSI member number
b = Controller member number
c = IPUB member number

[5] At frame power switch, rotate **ROS/OFF** switch clockwise to **ROS**

OFF NORM and **OS** lamps light

[6] Identify power controls associated with out-of-step unit [TABLE A]

[7] Replace out-of-step unit
Circuit pack [DLP-500]
Bulk converter [TABLE B, Page 2]
Nonbulk converter [DLP-513]

[8] At frame power switch, rotate **ROS/OFF** switch counterclockwise

AND

[9] Did system respond ATP

No

Yes

TABLE A

FRAME	CIRCUIT PACKS	NONBULK CONVERTERS	BULK CONVERTERS
SD-4A011-01	DLP-533	DLP-516	NA
SD-4A011-02	DLP-533	DLP-517	NA
SD-4A083-01	DLP-529	DLP-518	FR switch

NOTE 1
Normally, LEDs will not all change state simultaneously

TABLE B	
PROCEDURE	**PROCEDURE NUMBER**
Replace Bulk Converter (245A With 245A)	NTP-005
Replace Bulk Converter (245C With 245C)	NTP-009
Replace Bulk Converter (245A With 245C) Standard SPC (Two 245A Converters in Bay)	NTP-010
Replace Bulk Converter (245A With 245C) Wideband SPC (Three 245A Converters in Bay)	NTP-011
Replace Bulk Converter (245C With 245A) Standard SPC (No FA1816 and FA1817 in Bay)	NTP-012
Replace Bulk Converter (245C With 245A) Wideband SPC (Bay Contains FA1816 and FA1817)	NTP-013

CLEAR AUTOMATIC POWER MONITOR TEST FAILURE

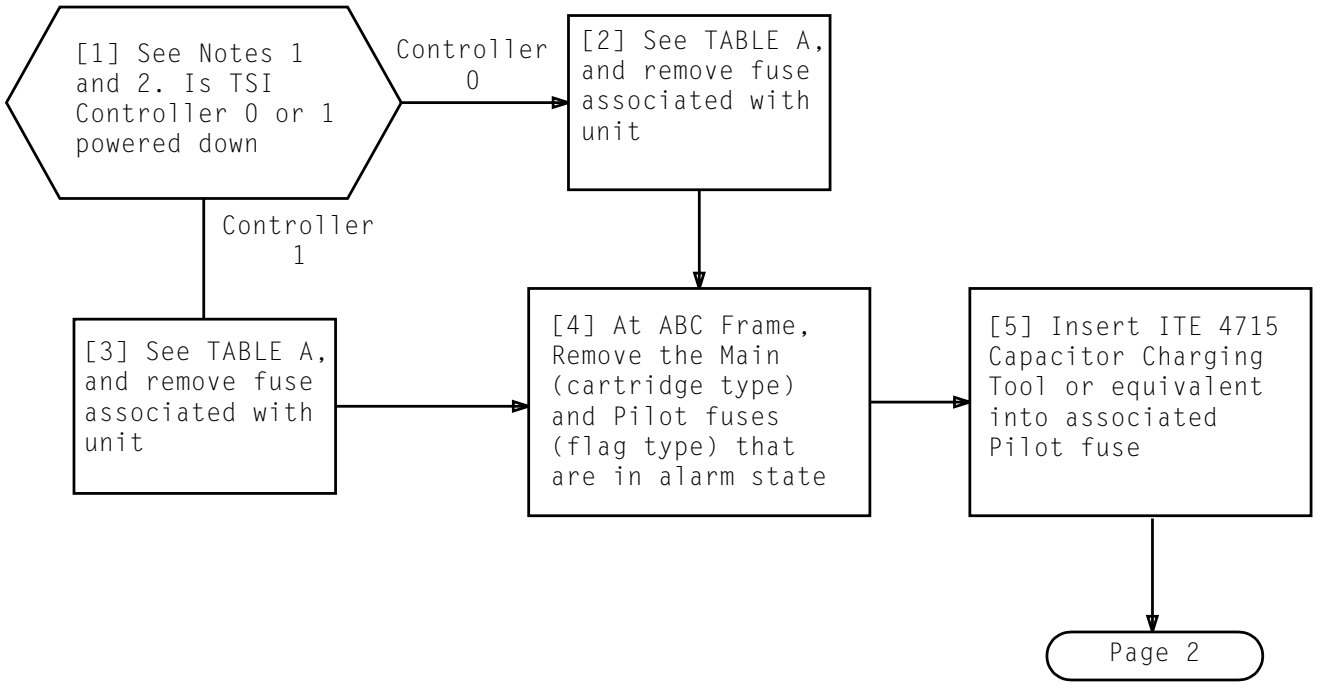


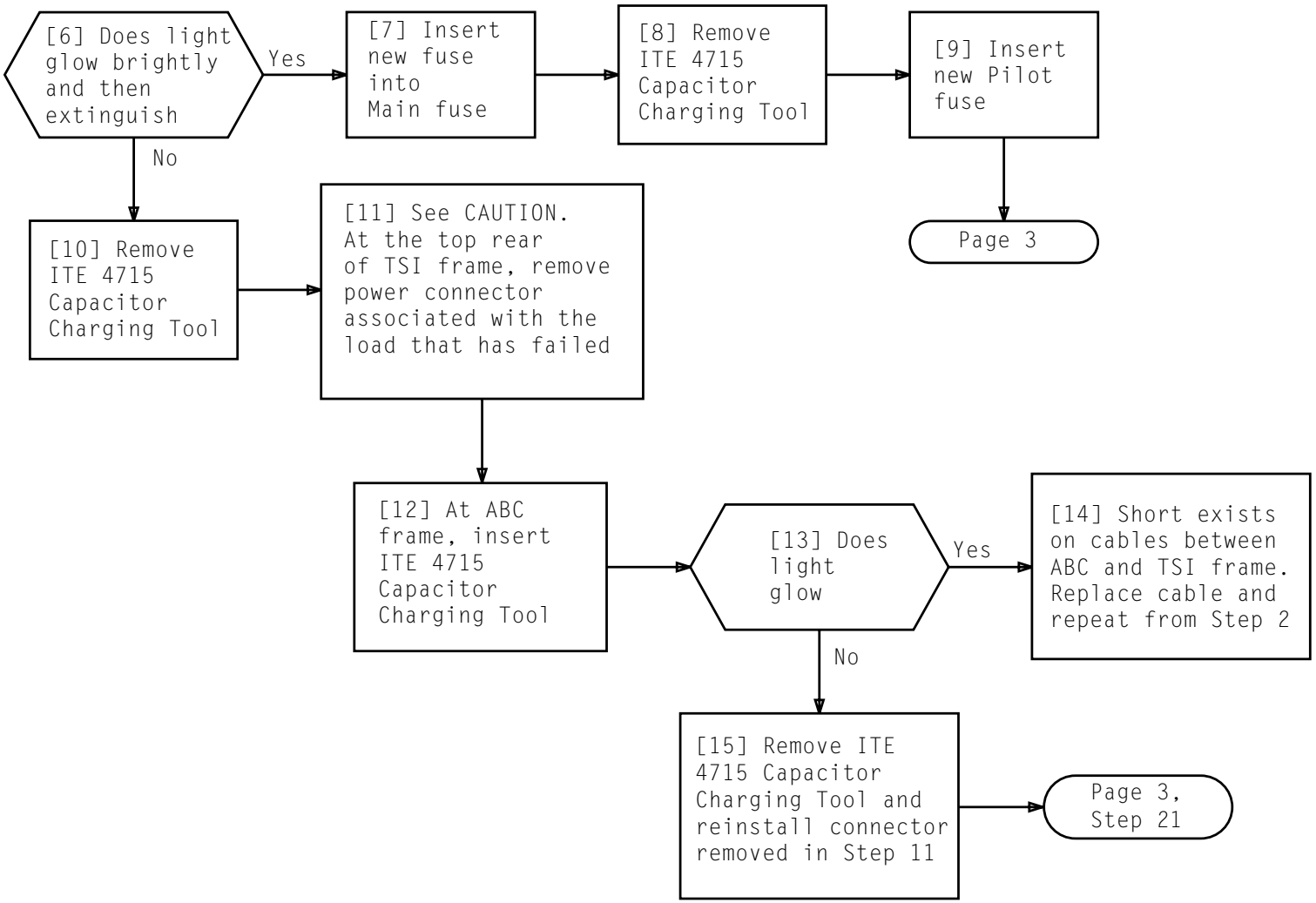
TABLE A

	CONVERTER	LOCATION	FUSE	LOCATION
CONT 0	0C0A	0-14-12	0A0A	007-13
	0C0B	0-14-36	0A0B	
	0C0C	0-14-60	0A0C	
CONT 1	1C0A	1-14-12	1A0A	107-13
	1C0B	1-14-36	1A0B	
	1C0C	1-14-36	1A0C	

NOTES

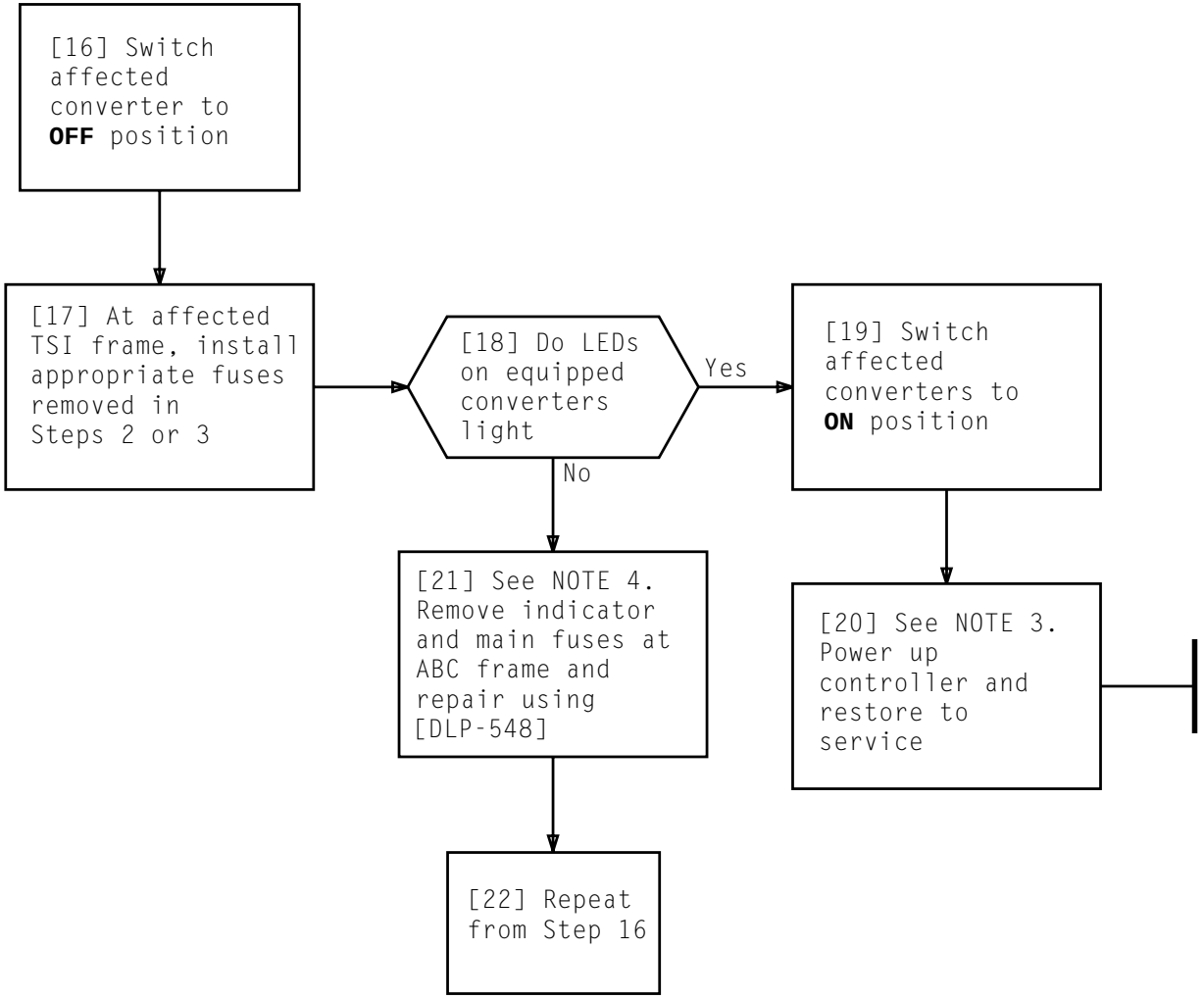
1. It is assumed that an attempt has been made at the +140V Distribution Frame to restore power to TSI frame; and charging lamp does not extinguish indicates short circuit exists, or charging lamp extinguishes but the LED on a given 245 type converter does not light indicates an open diode
2. TSI-B frames may be equipped with either two or three converters, if two are present a "dummy fuse" will be present in the 0A0B/ 1A0B fuse position. The diode (CR2) and capacitor (C2) may not be equipped depending on vintage of frame

ISOLATE DEFECTIVE FILTER CIRCUIT TIME SLOT INTERCHANGE (TSI)



CAUTION
Removing wrong connector will duplex fail TSI-B

ISOLATE DEFECTIVE FILTER CIRCUIT TIME SLOT INTERCHANGE (TSI) FRAME



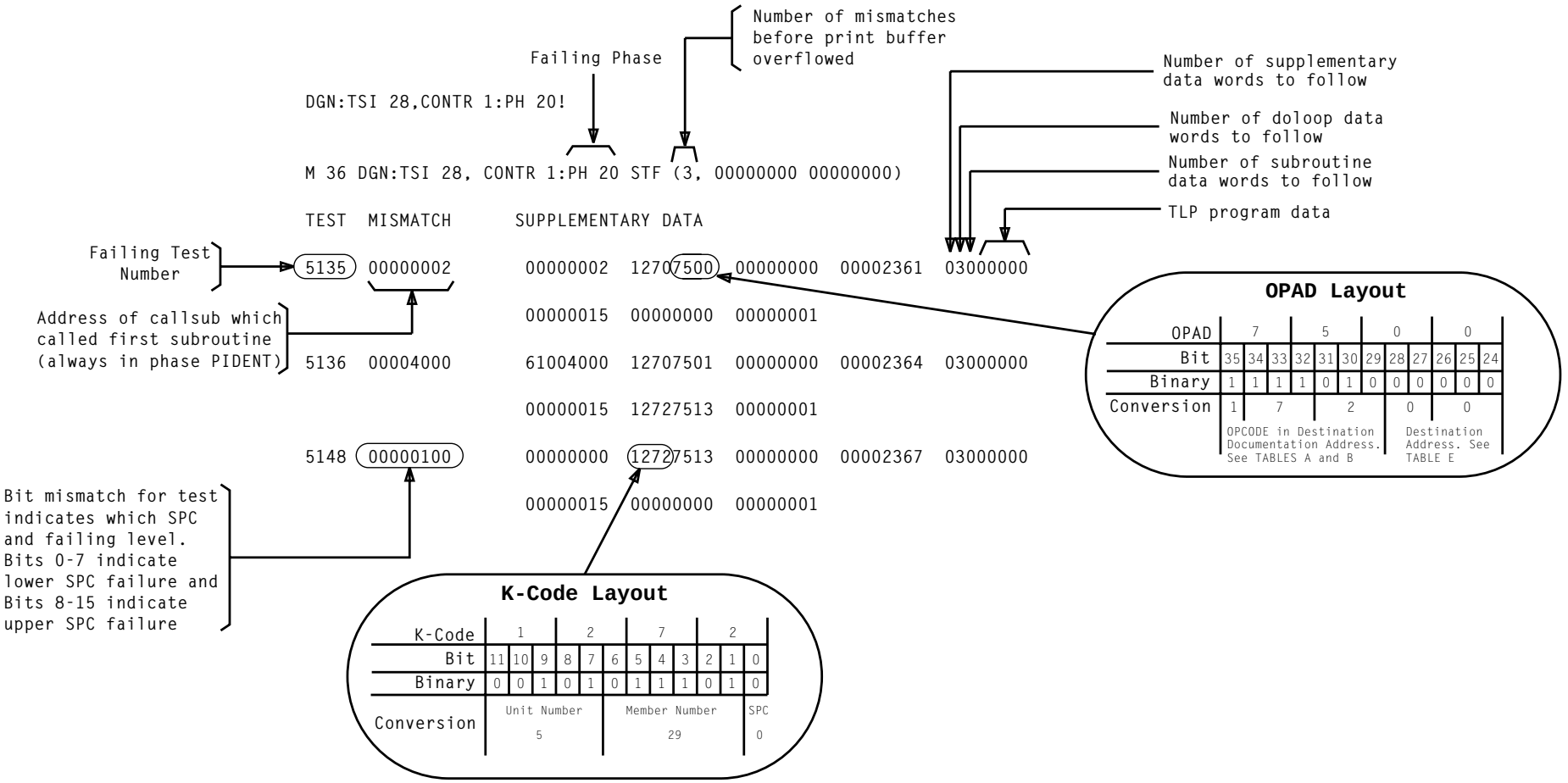
NOTES

3. If you have reached this point without replacing any frame components in the TSI bay, there are damaged filter circuit parts in the TSI bay. It is likely that a power failure will occur in the +140V circuitry again. It is recommended that the filter circuit components be replaced at the earliest convenience
4. If you have come to this step from Step 15, the initial indication is a shorted capacitor in the filter circuit. If you arrived via Step 18, the symptom is an open diode

ISOLATE DEFECTIVE FILTER CIRCUIT TIME SLOT INTERCHANGE (TSI) FRAME

SUMMARY

Phase 20/23 checks the ability of the TSI to operate and verify autonomous switching from active to standby when errors occur. It also tests to ensure that the TSI is able to receive data from either of the duplicated TMS halves. This example depicts a breakdown of data for a typical failure.



TSI-B PHASE 20/23 FAILURE – SAMPLE DATA LAYOUT

TABLE A — NORMAL OPCODES		
PUWB 35-24	**OPCODE 0**	**ORDER**
0000	000	NO-OP order. If this code is detected, the order sequencer returns to its idle state with no all-seems-well pulse generated and no error source register strobe
0400	010	Connect receiver side of the switching and permuting circuit denoted by bits 0 and 1 of enable address bus (E0 & E1) to originate a path to the time-multiplexed switch (TMS). A receive time slot memory (TSM) is read; then it is written with connection data if no errors have occurred during the read cycle
0440	011	Connect both receive and transmit sides of switching and permuting circuit denoted by E0 & E1 to originate and terminate a path to a TMS. Receive and transmit TSMs and a busy/idle map memory are read. Then, if no errors are detected, the TSMs are written with connection data; and the busy/idle bit and parity bit inverted
0500	012	Connect transmit side of switching and permuting circuit denoted by E0 & E1 to terminate a path from TMS. Transmit TSM and busy/idle map memory are read; then, if no errors are detected, the transmit TSM is written with connection data; and the busy/idle map memory word is rewritten with appropriate channel busy/idle bit and parity bit inverted
0540	013	Read a receive and a transmit TSM in switching and permuting circuit, denoted by E0 & E1
0600	014	Read a receive TSM in two switching and permuting circuits
0640	015	Read a busy/idle map memory in switching and permuting circuit, denoted by E0 & E1
0700	016	Read a transmit TSM in two switching and permuting circuits
0740	017	Read Buffer Memory "DS" in two switching and permuting circuits
1000	020	Disconnect a path in the receive side of the switching and permuting circuit, denoted by E0 & E1. A receive TSM is read; then it is written with a wired-in disconnect code, if no errors are detected read cycle
1040	021	Disconnect paths in both receive and transmit sides of the switching and permuting circuit, denoted by E0 & E1. Receive and transmit TSMs and the busy/idle map memory are read. If no errors are detected, the TSMs are written with appropriate channel busy/idle bit wired in disconnect code and parity bit inverted

TABLE A — NORMAL OPCODES (Contd)		
PUWB 35-24	**OPCODE 0**	**ORDER**
1100	022	Disconnect a path in transmit side of the switching and permuting circuit, denoted by E0 & E1. The transmit TSM and busy/idle map memory are then read; then, if no errors are detected, transmit TSM is written with disconnect code; and the busy/idle map memory word is rewritten with appropriate channel busy/idle bit and parity bit inverted
1240	025	Read a busy/idle map memory in two switching and permuting circuits
2440	051	Write data (9 bits) to one word of maintenance Buffer Memory "A" in the switching and permuting circuit, denoted by E0 & E1
2500	052	Write data (11 bits) and correct parity to one word of a receive TSM in the switching and permuting circuit, denoted by E0 & E1
2540	053	Write data (11 bits) and correct parity to one word of a transmit TSM in the switching and permuting circuit, denoted by E0 & E1
2640	055	Write data (8 bits) and correct parity to one word of the busy/idle map memory in the switching and permuting circuit, denoted by E0 & E1

TABLE B — MAINTENANCE OPCODES		
PUWB 35-24	**OPCODE 0**	**ORDER**
4440	111	Read a Buffer Memory "A" output data register in two switching and permuting circuits
4500	112	Read a maintenance Buffer Memory "A" output data register in two switching and permuting circuits
4600	114	Read a Buffer Memory "B" output data register in two switching and permuting circuits
4700	116	Read a Buffer Memory "C" data hold register in two switching and permuting circuits
50xx	120	Read miscellaneous internal points which are not level oriented. The internal point is elected by a 5-bit address taken from bits 24 through 28 of the write bus. Table C lists the various internal points and octal values of corresponding addresses
5040	121	Read a word from a Buffer Memory "A" in two switching and permuting circuits
5100	122	Read a word from a maintenance Buffer Memory "B" in two switching and permuting circuits
5200	124	Read a word from a Buffer Memory "B" in two switching and permuting circuits
5300	126	Read a word from a Buffer Memory "C" in two switching and permuting circuits
54xx	130	Wrote miscellaneous internal points which are not level oriented. The internal point selected by a 5-bit address taken from bits 24 through 28 of the write bus. Table D lists the various internal points and octal values of corresponding addresses
6440	131	Write data (9 bits) to one word in one Buffer Memory "A" in one switching and permuting circuit
6500	152	Write data (12 bits) to one word of receive TSMs in one switching and permuting circuit
6540	153	Write data (12 bits) to one word of transmit TSMs in one switching and permuting circuit
6600	154	Write data (9 bits) to one word in one Buffer Memory "B" in one switching and permuting circuit
6640	155	Write data (9 bits) to one word of busy/idle map memory in one switching and permuting circuit
6700	156	Write data (9 bits) to one word in one Buffer Memory "C" in one switching and permuting circuit
6740	157	Write data (9 bits) to one word in one Buffer Memory "D" in one switching and permuting circuit
7000	160	Loop raw order 24 bits of write bus data to the reply bus
7040	161	Advance autonomous timing circuits one twisted ring counter phase
7100	162	Advance autonomous timing circuits one time slot (16 twisted ring counter phases)

TABLE B — MAINTENANCE OPCODES (Contd)		
PUWB 35-24	**OPCODE 0**	**ORDER**
7140	163	Advance autonomous timing circuits 16 twisted ring counter phases with time slot counter advances inhibited
7400/ 7440	170/ 171	Read status register in Controller 0/1
7500/ 7540	172/ 173	Read error source register in Controller 0/1. Bit 29 of the write bus indicates the controller. Bits 24 through 28 of the write bus are used to select which error source register is to be read as shown in Table E
7600/ 7640	174/ 175	Write status register in Controller 0/1. New state of the status register is returned on reply bus. Write bus bits 0 through 11 carry data for one 12-bit half of register to be written through a mask as indicated by bits 12 through 23 of the write bus. Bit 24 selects access to most significant 12 bits when set and least significant when reset. This order, which is normally executed, is synchronized with autonomous timing unless write bit 27 is set. If bit 28 is set, all source registers in controller are cleared
7740	177	NO-OP order

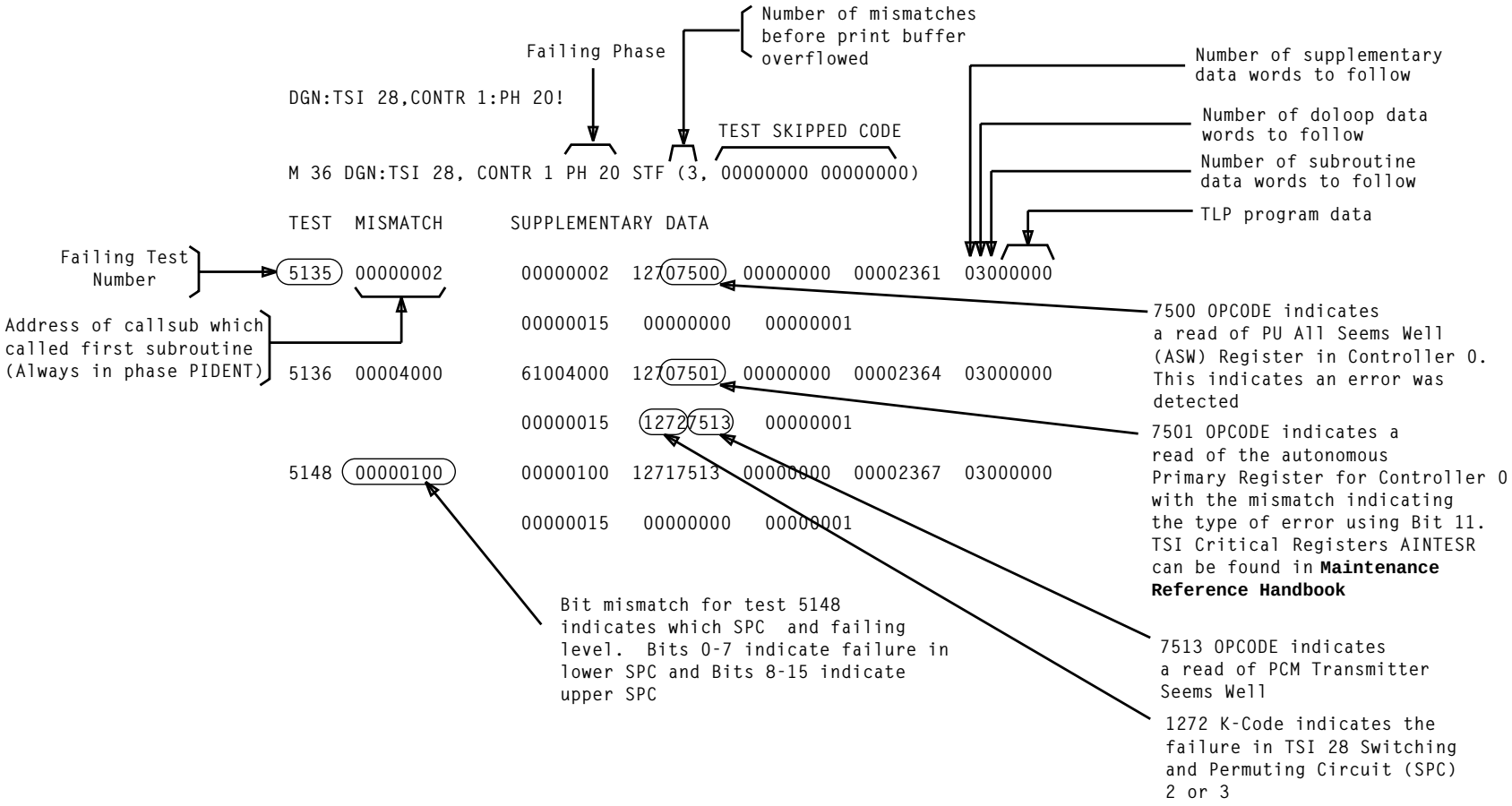
TABLE C — ADDRESS ASSIGNMENTS FOR OPCODE 0120	
OCTAL ADDRESS	**READ POINT**
00	Reply Register
01	Originating serial switch
02	Terminating serial switch
03	Serial recorrelator
04	Serial decorrelator
23-26	Unassigned
27	Time slot counter, Phases A and T
30	Time slot counter, Phases R and D
31	Unassigned
32	Twisted ring counter
33	Unassigned
34	PCM growth flip/flops, SPC 0 or SPC 2
35	PCM growth flip/flops, SPC 1 or SPC 3
36-37	Unassigned

TABLE D — ADDRESS ASSIGNMENTS FOR OPCODE 0130	
OCTAL ADDRESS	**WRITE POINT**
00	PU error source register word 0
01	PU error source register word 1
02	Clear growth flip-flops, SPC 0 or SPC 2
03	Write growth flip/flops, SPC 0 or SPC 2
04	Clear growth flip/flops, SPC 1 or SPC 3
05	Write growth flip/flops, SPC 1 or SPC 3
06	Exercise primary error source register 0
07	Exercise primary error source register 1
10-26	Unassigned
27	Time slot counter, phase A
30-31	Unassigned
32	Clear twisted ring counter
33	Unassigned
34	PCM receiver framing exercise
35-37	Unassigned

TABLE E — ADDRESS ASSIGNMENTS FOR OPCODE 0172/173	
OCTAL ADDRESS	**ERROR SOURCE REGISTER READ POINT**
00	All seems well
01	Autonomous Primary
02	Autonomous secondary sense and lock
03	Auxiliary
04	Receive TSM Parity
05	Transmit TSM Parity
07	Buffer Memory "A" Parity
10	Buffer Memory "B" Parity
11	Unassigned
12	Loading one Detector (TRPF)
13	PCM Transmitter Seems Well
14	PCM Receiver Seems Well
15	Receive Mismatch
16	Transmit Mismatch
17	Unassigned
20	Sense and Lock from SPC 0
21	Sense and Lock from SPC 1
22	Sense and Lock from SPC 2
23	Sense and Lock from SPC 3
24	8-msec counter status
25	Even Number Pest Flops
26	Odd Number Pest Flops
27-31	Unassigned

SUMMARY

To determine which controller is failing, Bit 5 of the 7500 OPCODE must be observed. Bit 5 is a 0, indicating the failure is in Controller 0. In this example, an FA 1781 was found to be defective. The circuit was located in Controller 0, SPC 2 Level 6 at Location 06-05.



TSI-B PHASE 20 FAILURE - INDICATING CONTROLLER 0

SUMMARY

To determine failing controller, observe Bit 5 of 7554 OPCODE. In example, Bit 5 is set indicating failure is in Controller 1. The OPCODE 7554 generally indicates failure is associated with TSI PCM splitting transformer and associated circuitry. This failure occurred in TSI 12 SPC 3 Level 5. For this failure, the signal on output leads to Controller 0 were opposite in polarity but distorted. The output of PCM transformer is inputted to FB 221B circuit (SD-4A084, FS 11 Symbol 12). A broken wire from PCM transformer to FB 221B circuit caused the failure.

Example failure occurred in TSI 12, SPC 3 Level 5. Examine PCM splitting transformer and associated TSI circuitry for SPC 3 Level 5. Use SD-4A083 FS 7, Symbol 56 to determine pins associated with Controller 1. Using an oscilloscope and two scope probes, go across both output pins for Controller 1 (one pulse will be "+" square wave and the other will be "−" square wave). Compare it with output for Controller 0. If both are "+" or "−", suspect a bad TSI PCM splitting transformer or cold solder joint on PCM transformer. If opposite in polarity but distorted, suspect a cold solder joint or defective circuitry associated with SPC 3 Level 5

```
DGN:TSI 12,CONTR 1:PH 20!

M 01 DGN:TSI 12, CONTR 1 PH 20 STF (1,00000000 00000000)
TEST  MISMATCH      SUPPLEMENTARY DATA
12    00020000      00020000  1232 7554  00000000  00000452  00000000
```

Bit mismatch indicates which SPC and Level failing. Bits 0-7 indicate lower SPC; Bits 8-15 indicate upper SPC

1232 K-Code indicates failure is in TSI 12, SPC 2 or 3

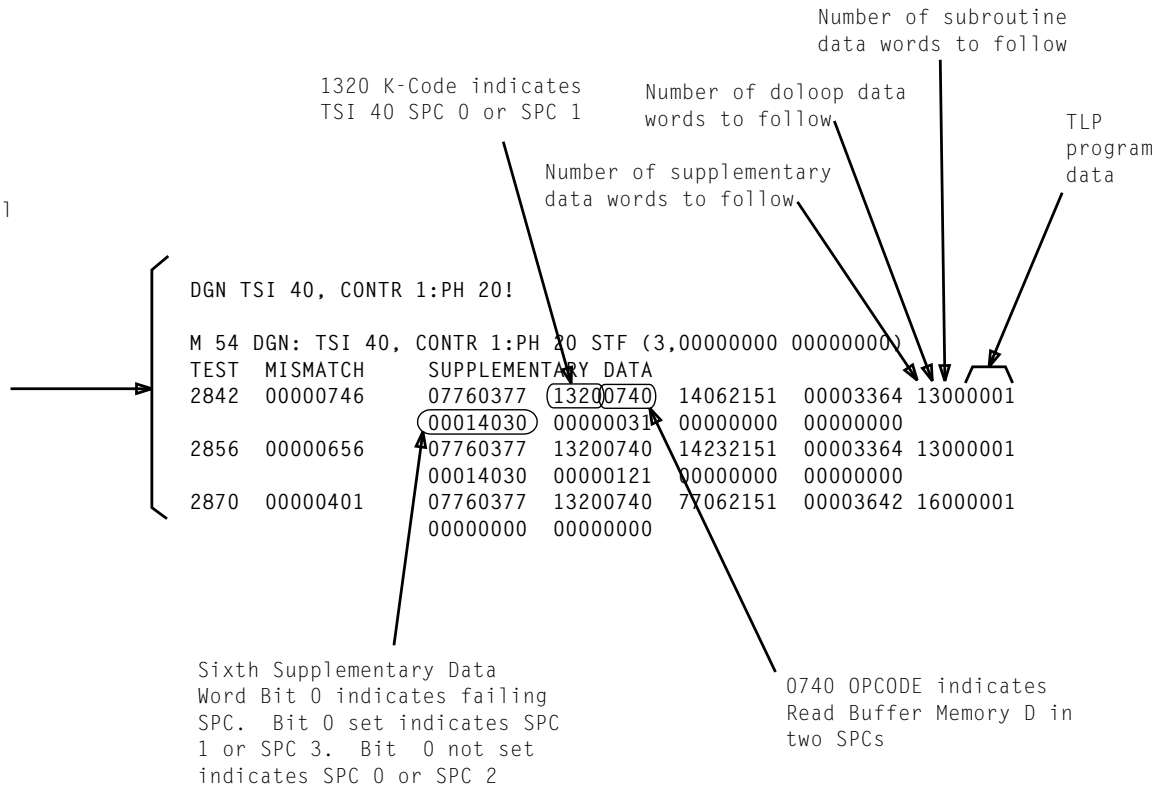
7554 OPCODE indicates read of PCM Receiver Seems Well in Controller 1

TSI-B PHASE 20 FAILURE - INDICATING CONTROLLER 1

SUMMARY

This example is to determine if both controllers are failing Phase 20 with same test and mismatches. Identical failures in both controllers indicate failure is associated with TSI PCM transformer. Example shows failure occurred in TSI 40, SPC 0 Level 3. The failure was caused by a cold solder joint on TSI PCM-splitting transformer for SPC 0 Level 3 at 124-09.

Example failure occurred in TSI 40, SPC 0 Level 3. Use SD-4A083 FS 7 to determine pins associated with Controller 0 and Controller 1. Symbol (SYM) 30 is used for SPC 0 Level 3. Using an oscilloscope and two scope probes, go across both output pins for Controllers 0 and 1 (one pulse will be "+" square wave and the other will be a "−" square wave). Compare output of a good level and the failing level. If both are "+ " or "−", suspect a bad TSI PCM splitting transformer or a bad TSI loop-around plug (if applicable). If opposite in polarity but distorted, suspect a cold solder joint on PCM transformer, a bad TSI/Digital Interface Frame (DIF) coaxial cable or associated circuitry



TSI-B PHASE 20 FAILURE IDENTICAL IN BOTH CONTROLLERS

SUMMARY	
Both controllers failing differently indicates that failure might not be confined to the TSI under test. Also, the TSI/ TMS A-link coaxial cable and the associated TMS hardware are	suspected for this type of failure. The failure in this example was caused by a defective transmit A-link coaxial cable from TSI 24 — Controller 0, Switch 0, Level 6.

The Network must be simplexed and the TSI-B Phase 20 must be performed separately on each side of the Network. In this example, Phase 20 ran CATP when Network 0 was removed from service, and failed when Network 1 was removed from service. The TSI 24 was unconditionally restored; then TMS Phase 8 diagnostics were executed on all TMS Controller 0s specifying growth and TMS level (octal). SD-4A083, Note 236 is used to determine the TMS level

```
DGN TSI 40, CONTR 1:PH 20!

M 21 DGN: TSI 24, CONTR 1:PH 20 STF (3,00000000 00000000)
TEST  MISMATCH  SUPPLEMENTARY DATA
3760  00000002  00000002  12607500  00000000  00002361 03000000
                00000000  00000001  00000000
3761  00002000  02002000  12607501  00000000  00002364 03000000
                00000000  00000001  00000000
3770  00020000  00020000  12607512  00000000  00002510 03000000
                00000000  00000001  00000000
```

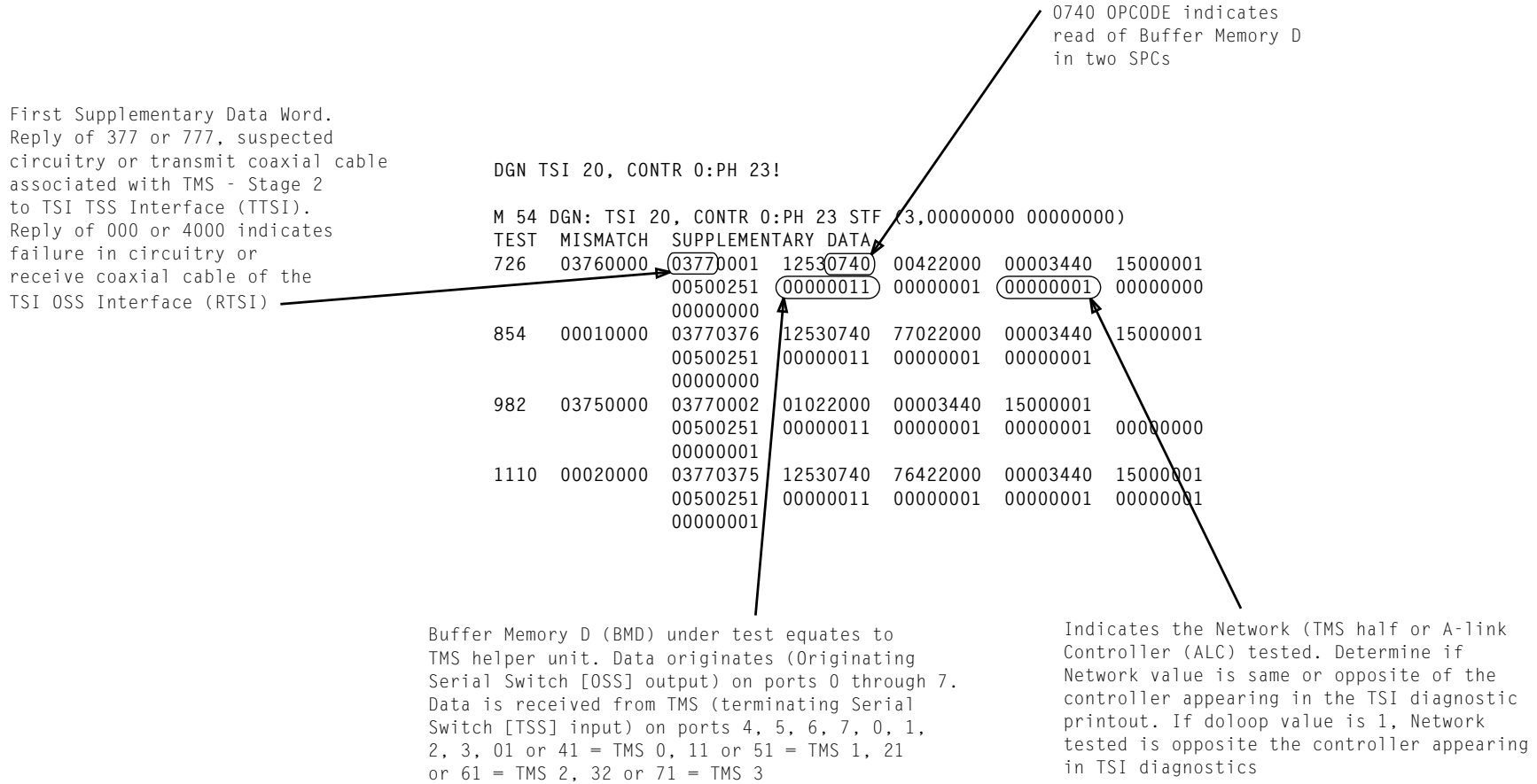
1260 K-Code at test 3770 indicates TSI 24 SPC 0 or SPC 1. Bit mismatch of 13 indicates SPC 1 Level 5 is at fault

7512 OPCODE indicates Transmission Parity Failure (TRPF) in Controller 0 (Bit 5 of OPCODE is not set)

TSI-B PHASE 20 FAILURE IN BOTH CONTROLLERS NOT IDENTICAL

SUMMARY

Phase 23 checks the ability of the TSI to operate and verify autonomous switching from active to standby when errors occur. It also tests to ensure that the TSI is able to receive data from either of the duplicated TMS halves. The coaxial cables between the TSI and TMS are considered as helper units, and are assumed to be non-faulty. If faults are suspected in the helper units, Phases 8 or 9 of the TMS diagnostics should be performed. Failure is caused by bad transmit coaxial cable from TSM 1-Controller 1, Switch Unit 5-Switch 1, Transmit 5 to TTSI 21, Bay 1 Circuit 1-Transmit 5.



TSI-B PHASE 23 FAILURE INDICATING BUFFER MEMORY D (BMD)

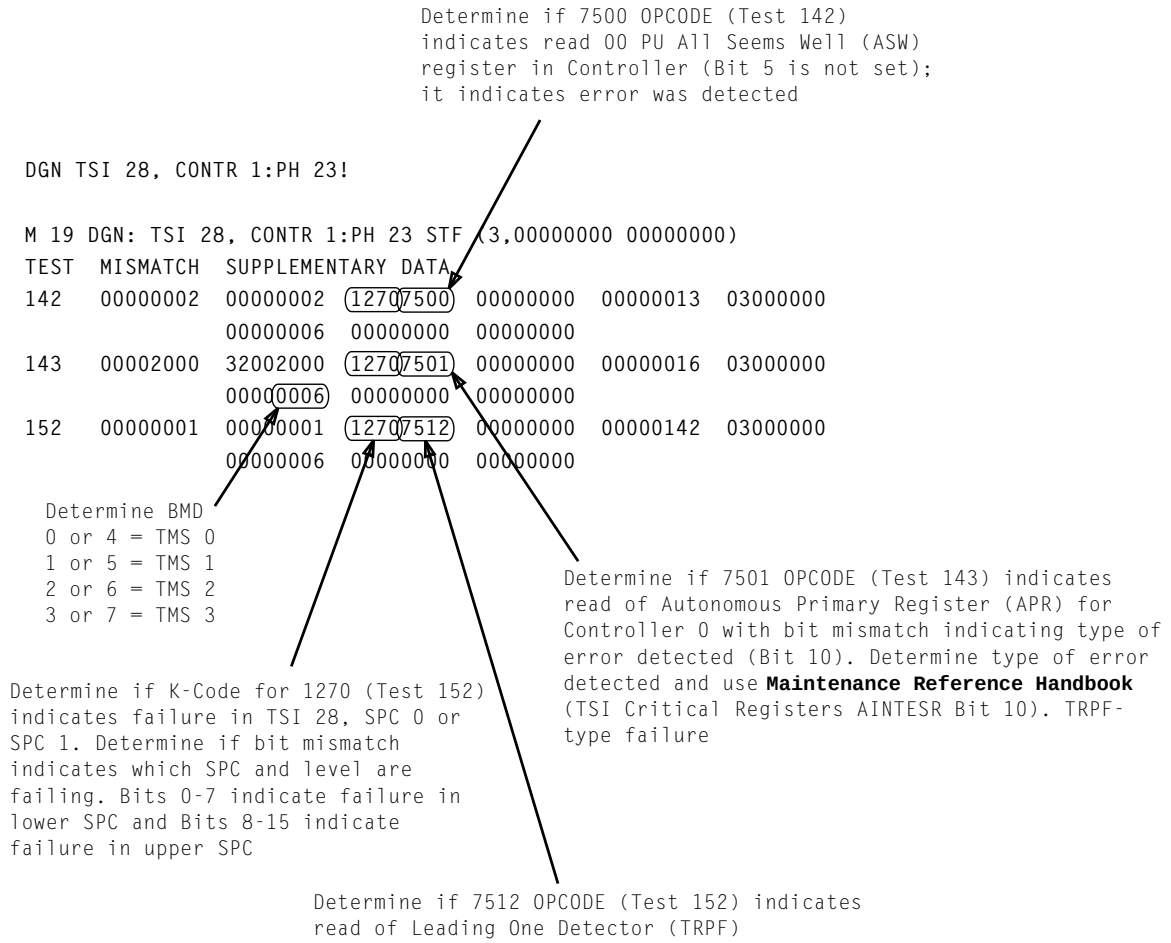
SUMMARY

The OPCODE and K-Code of the failing test must be examined to determine a TSI Phase 23 failure when failure is a Transmit Parity Failure (TRPF). The Supplementary Data must be examined in order to equate to the TMS under test. This failure was caused by a bad receive coaxial cable from TMS 2, Controller 1, Switch Unit 4, Switch 0 receive to TSI 28, Bay 1, Circuit 0, Receive 6.

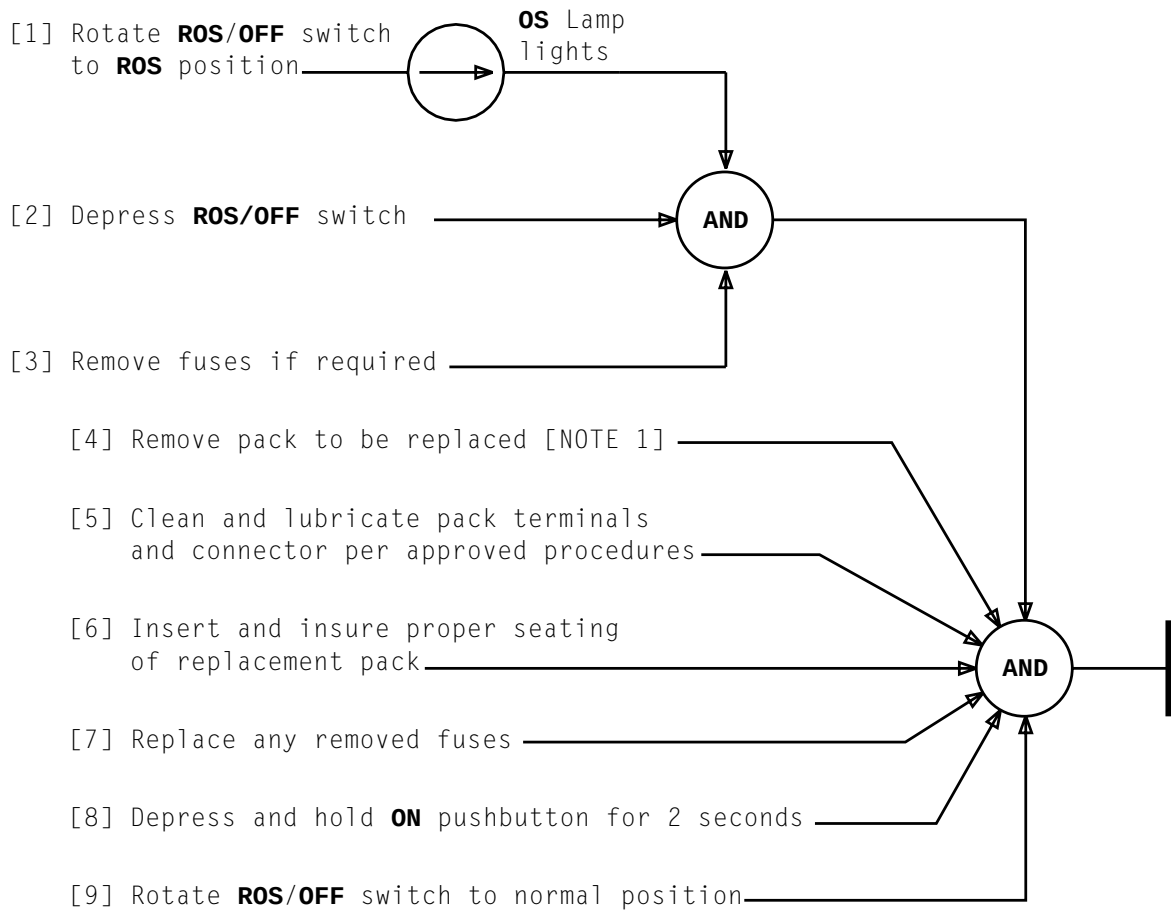
Examination of the Supplementary Data starts with the innermost doloop word (second line - first word) to determine BMD.

The next doloop (second line - second word) to determine SPC 0 or 1. Use the K-code to determine even or odd member number. The next doloop (second line, third word) denotes the Network (TMS half or ALC) being tested. The value does not directly give the Network half. If the value is 0, the Network tested is the same as the Controller appearing in the TSI diagnostic printout. If value is 1, the Network tested is opposite the Controller appearing in the TSI diagnostics.

Execution of TMS Phase 9 diagnostics specifying growth and Option 10 in the input message will set test path for 100 ms, and aid in detection of intermittent failures.



TSI-B PHASE 23 FAILURE INDICATING TRANSMISSION PARITY FAILURE (TRPF)



NOTE 1

Packs in locations designated FA632, FA633, and FA634 can be replaced with FA632B, FA633B, and FA634B packs respectively. Packs in locations designated FA632B, FA633B, and FA634B can not be replaced with FA632, FA633, and FA634 packs

REPLACE PACK

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

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

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

10. If all subroutines have been located, failing test is in last subroutine located. If all subroutines have not been located, continue with Step 11

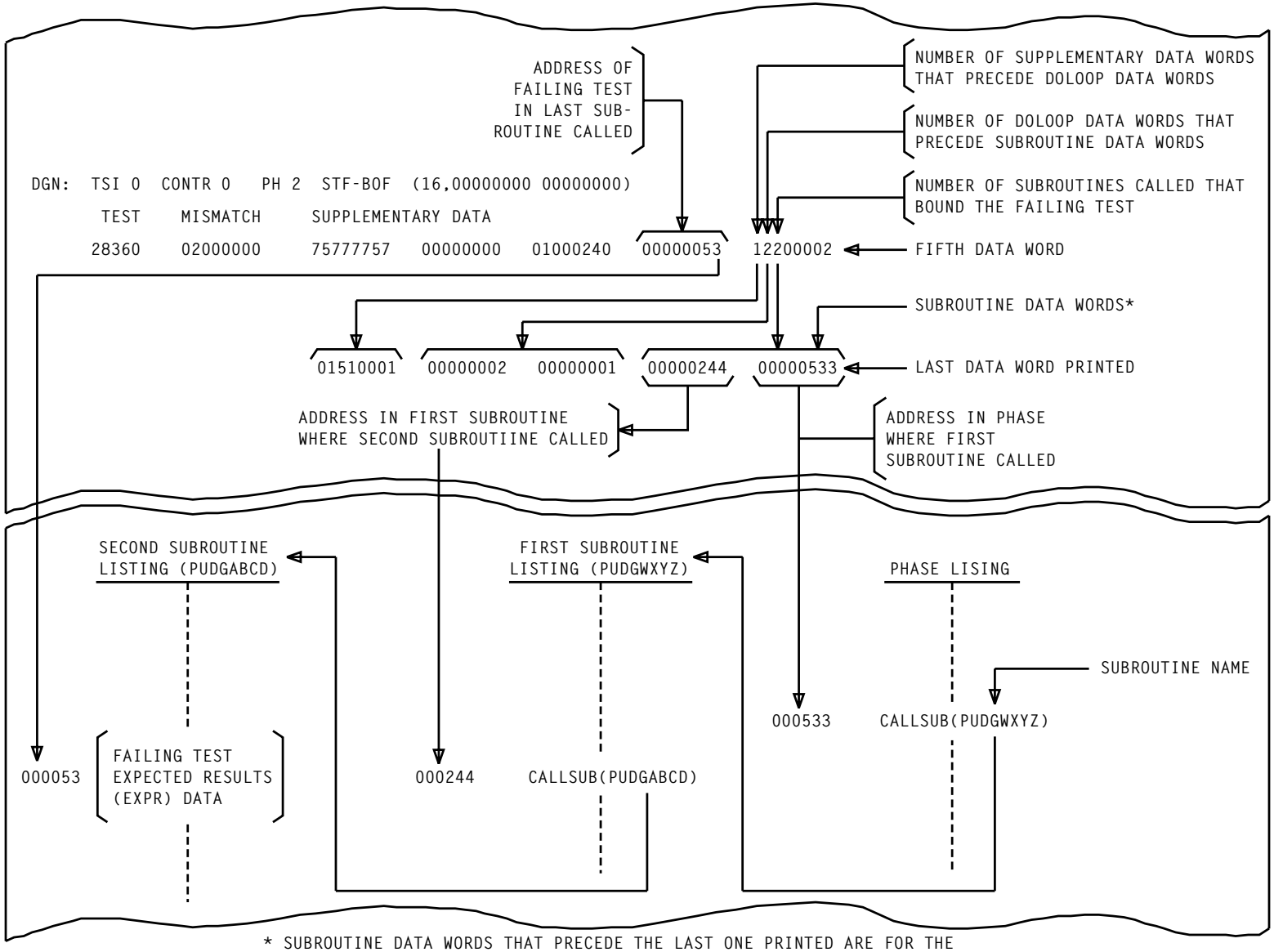
11. On raw data printout, locate next preceding subroutine data word [FIG. 1, Page 2]

In subroutine located in Step 8:

12. Use subroutine data word address to locate where next subroutine was called

13. Repeat from Step 3

DETERMINE LOCATION AND FUNCTION OF SUBROUTINES CALLED



* SUBROUTINE DATA WORDS THAT PRECEDE THE 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

NOTE: Section 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.

2. Read failing test DIAL statement and any comments

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

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

5. In TABLE A (Page 2), 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 (Page 3) to obtain additional information with respect to second and third data words

End of Procedure

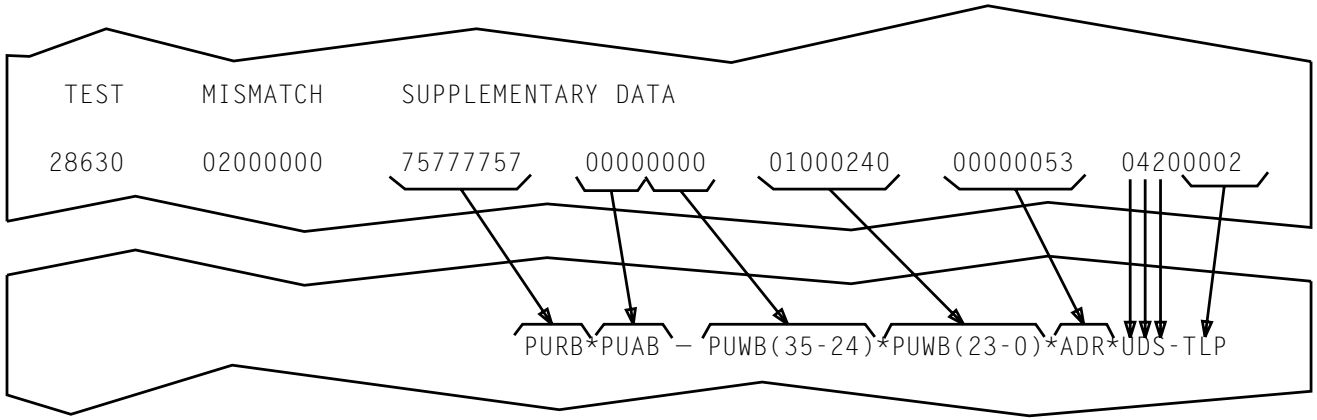


FIG. 1 — Example of Raw Data Printout Relationship to Asterisk Line at Failing Test

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*
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
PLUSI	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*
SCANI	A (bits 11-2) = SP K code B = SP OPCODE to read scan points 0/(1540) C = address of point
SDI	A (bits 11-2) = SP K code B = SP OPCODE to read SD points 0/(1440) 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

*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-4A011-01 FRAME	SD-4A011-02 FRAME	SD-4A083-01 FRAME
OPAD/OPCODE	SD-4A023-01 (B8GB-B8GE)	SD-4A023-02 (B8GB-B8GE)	SD-4A085-01 (B20GA-B20GH)
SD point address	VER:SPMTX:SDP,MDN O'a! a = SD point address		
Scan point address	VER:SPMTX:SCP,MSN O'a! a = Scan point address		

On Summary Data Printout FIG. 1:

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:

NOTE: Negative addresses, eg, 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 will be further removed from the fault and PR data may be of greater value

3. Find address and failing bit

4. Note pack type and gate name for failing bit

In Circuit Pack Schematic (CPS) for Pack Type:

5. Locate component list section

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

6. Look in each DESIG column for gate name

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]

In Test Access PK Document:

9. For failing bit, identify 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

NOTE: If terminal and lead name cannot be found for FS and symbol indicated in PK, and multiple symbol "m" is indicated for the bit in question, look for another symbol for pack type and location indicated in PK for this bit. This symbol could be in the same FS or in another FS.

End of Procedure

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

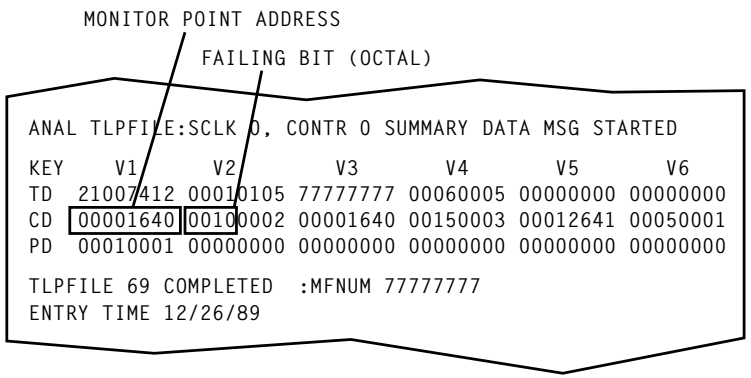


FIG. 1 — Example of Summary Data Printout

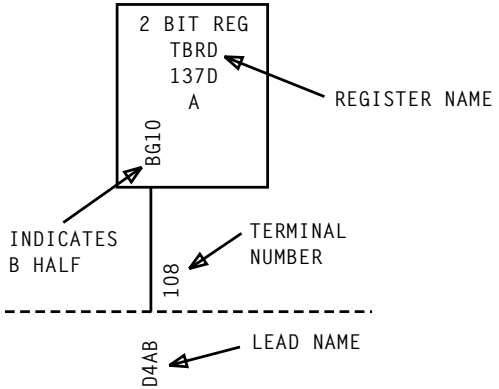


FIG. 2 — Example of Lead Leaving B Half of a CPS Register

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

SUMMARY

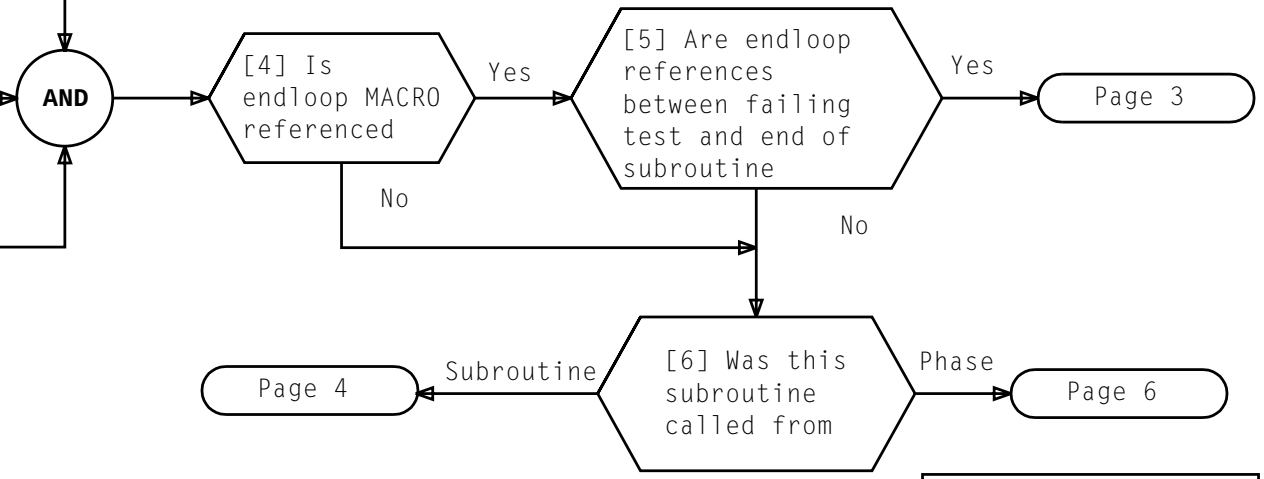
Locate failing test in last subroutine called. Look past failing test for endloop statements. For each endloop statement located in the subroutine, use endloop label variable to identify the location of the associated doloop statements. Locate each doloop statement. Obtain doloop index values from raw data printout and determine their meaning for each doloop [FIG. 1, Page 2]. If an endloop statement was not found in the subroutine, go to where the subroutine was called and look for endloop statements after the 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.

For the following steps refer to FIG. 1, Page 2. See NOTE 1:

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

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

[3] Locate subroutine PIDENT reference section



NOTE 1

DIAL statement definitions are located in Section 234-180-020 if needed

DETERMINE FUNCTION AND LOCATION OF DOLOOPS, SUBROUTINES CALLED

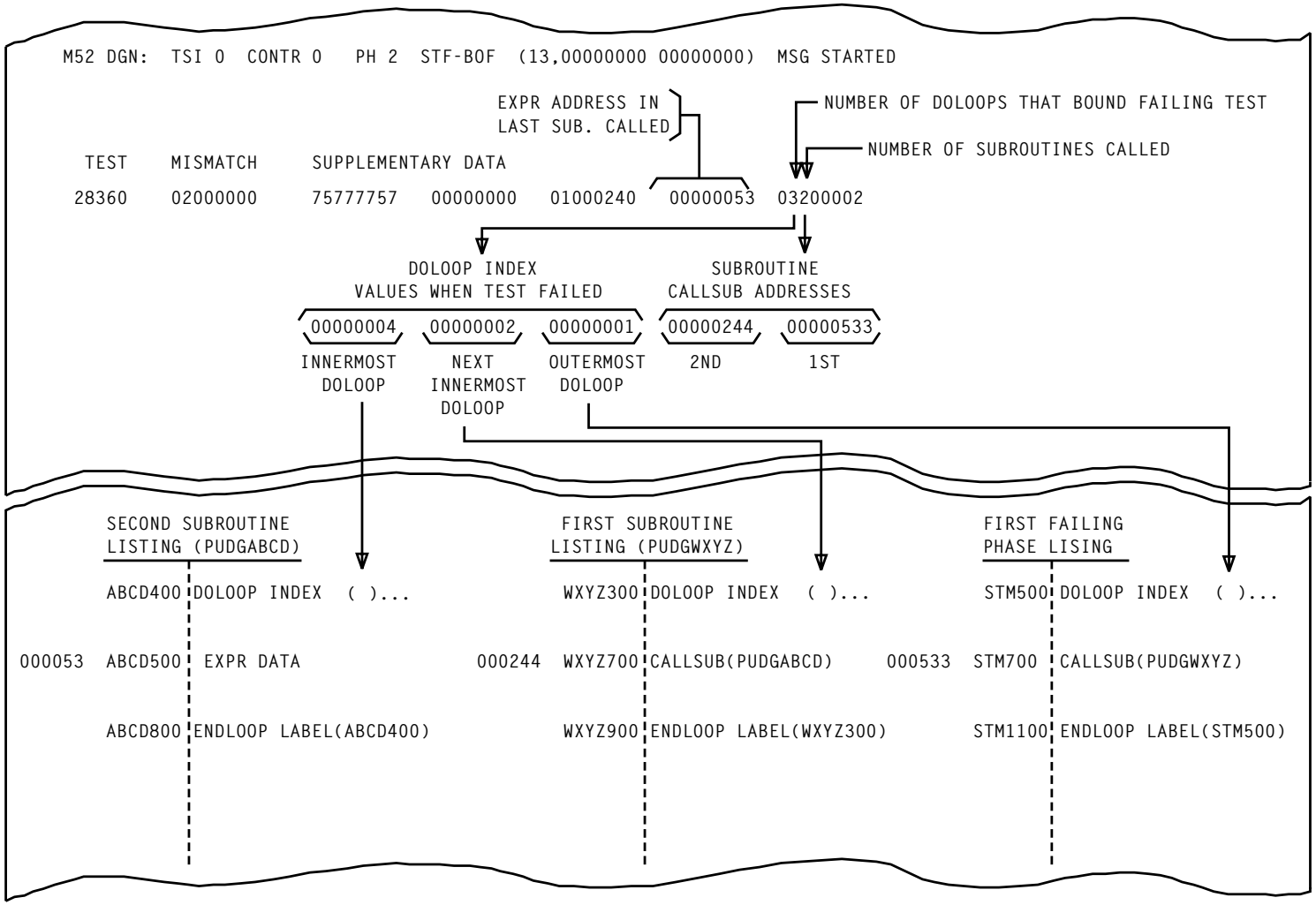
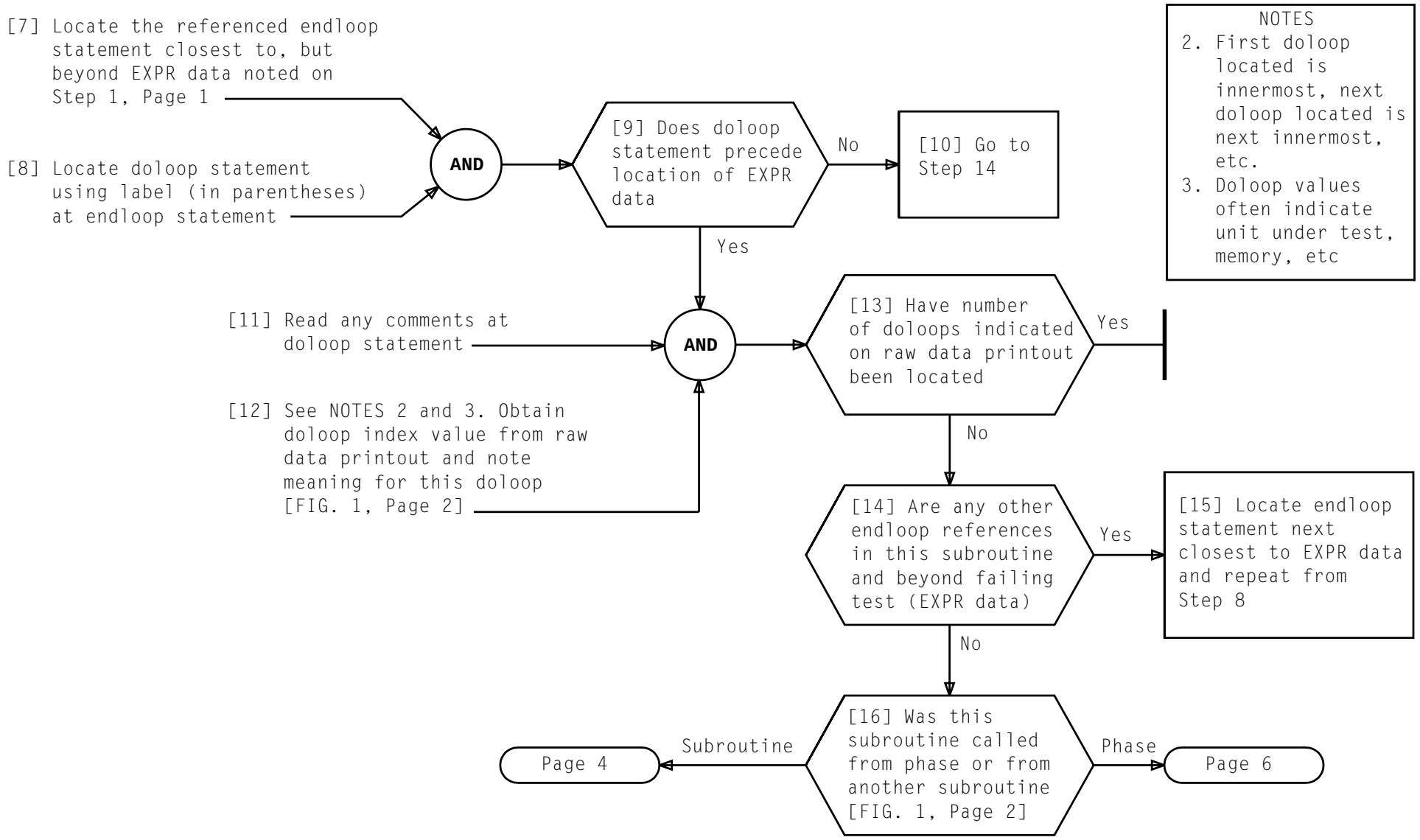
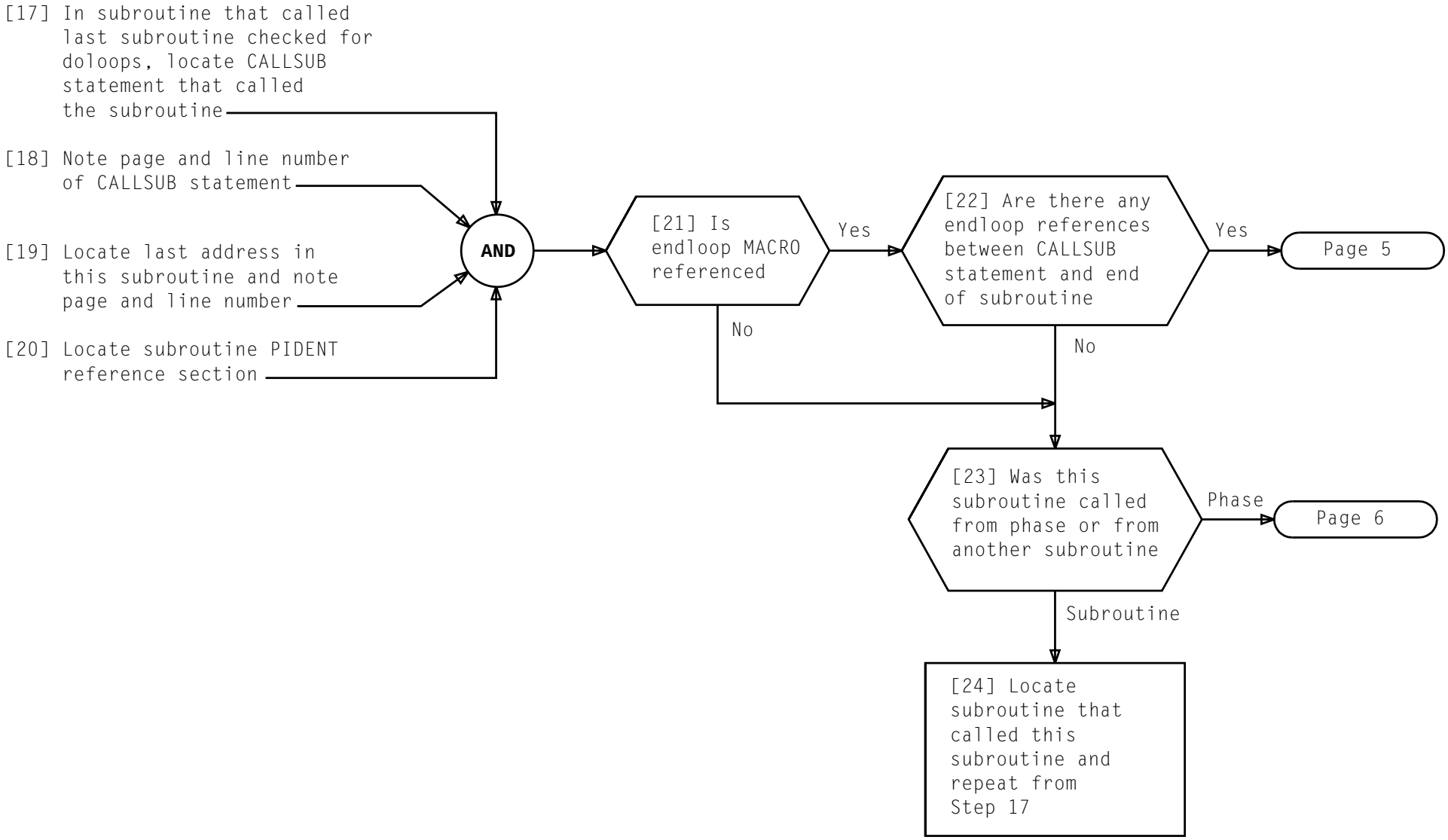


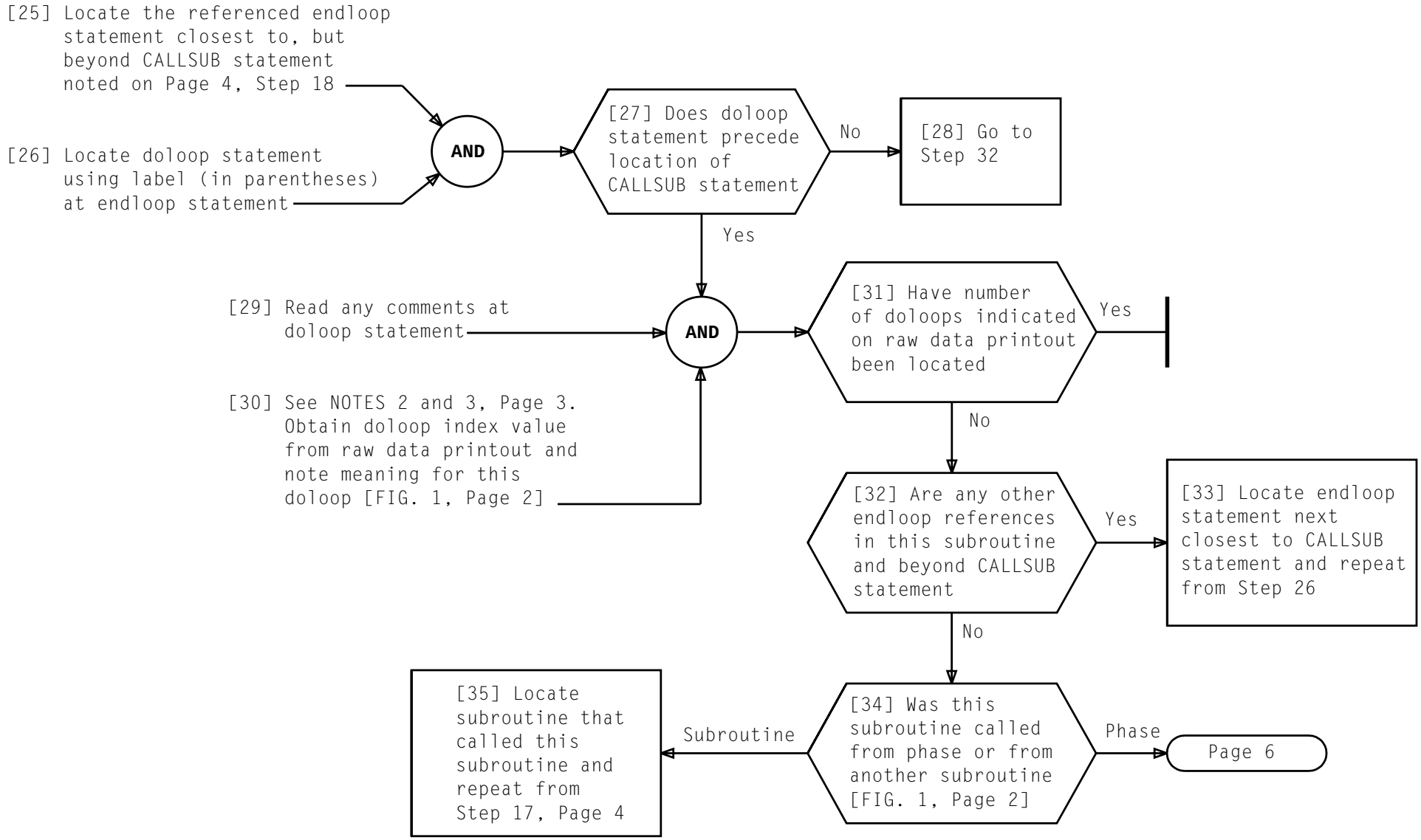
FIG. 1 — Example of Doloop Raw Data Relationship to Listings When Subroutines Called



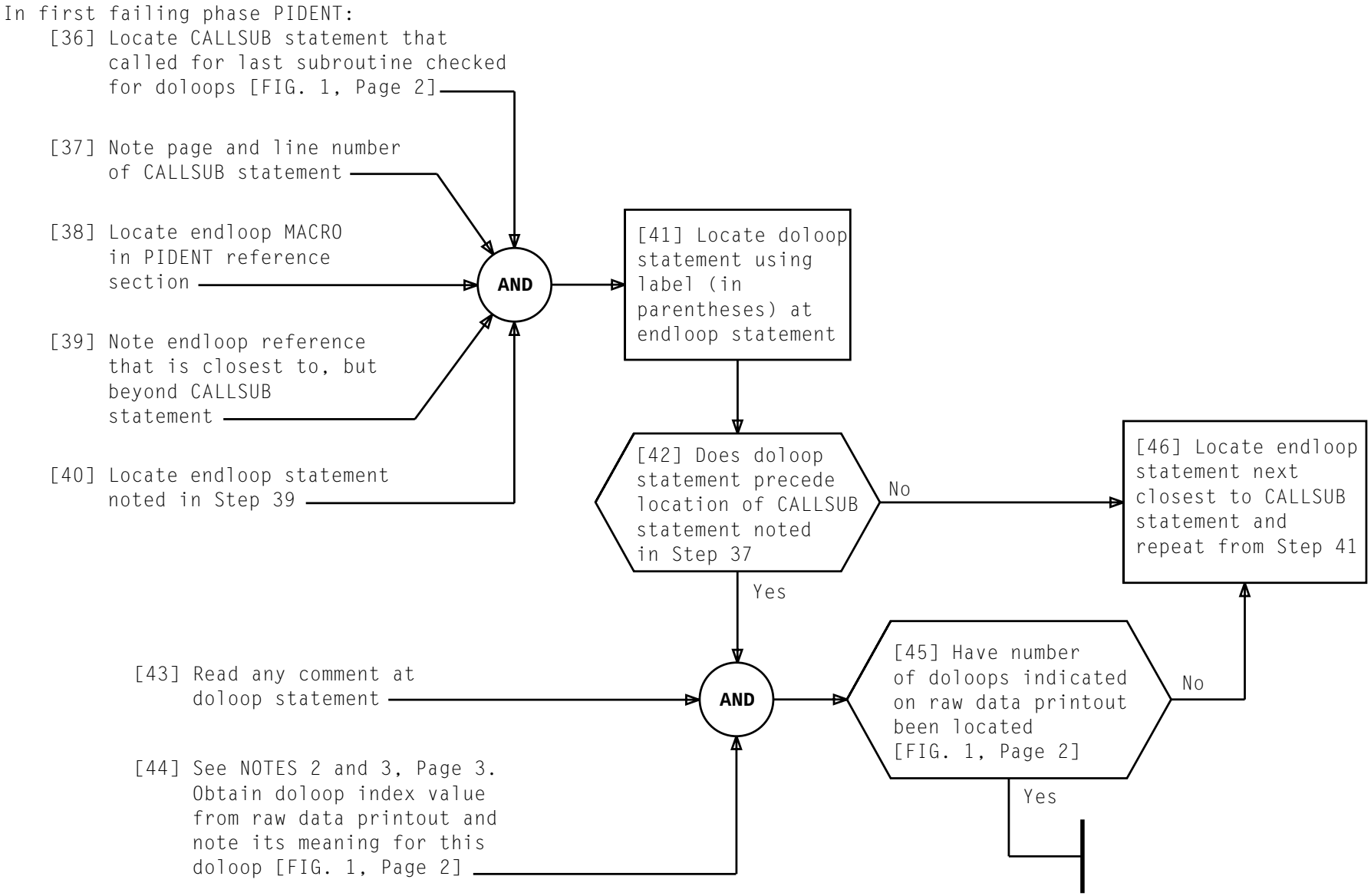
DETERMINE FUNCTION AND LOCATION OF DOLOOPS, SUBROUTINES CALLED



DETERMINE FUNCTION AND LOCATION OF DOLOOPS, SUBROUTINES CALLED

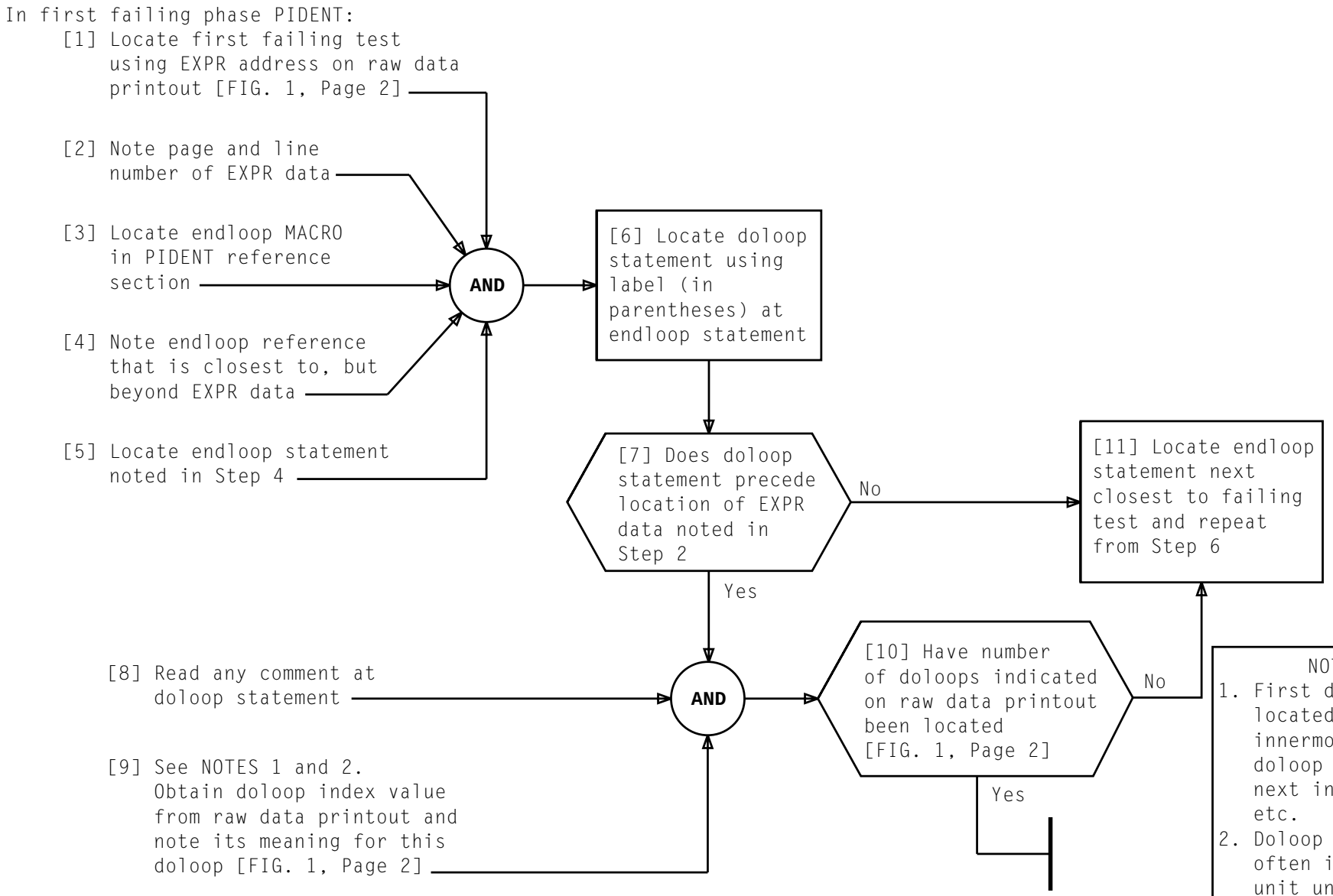


DETERMINE FUNCTION AND LOCATION OF DOLOOPS, SUBROUTINES CALLED



DETERMINE FUNCTION AND LOCATION OF DOLOOPS, SUBROUTINES CALLED

DETERMINE LOCATION AND FUNCTION OF DOLOOPS, NO 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

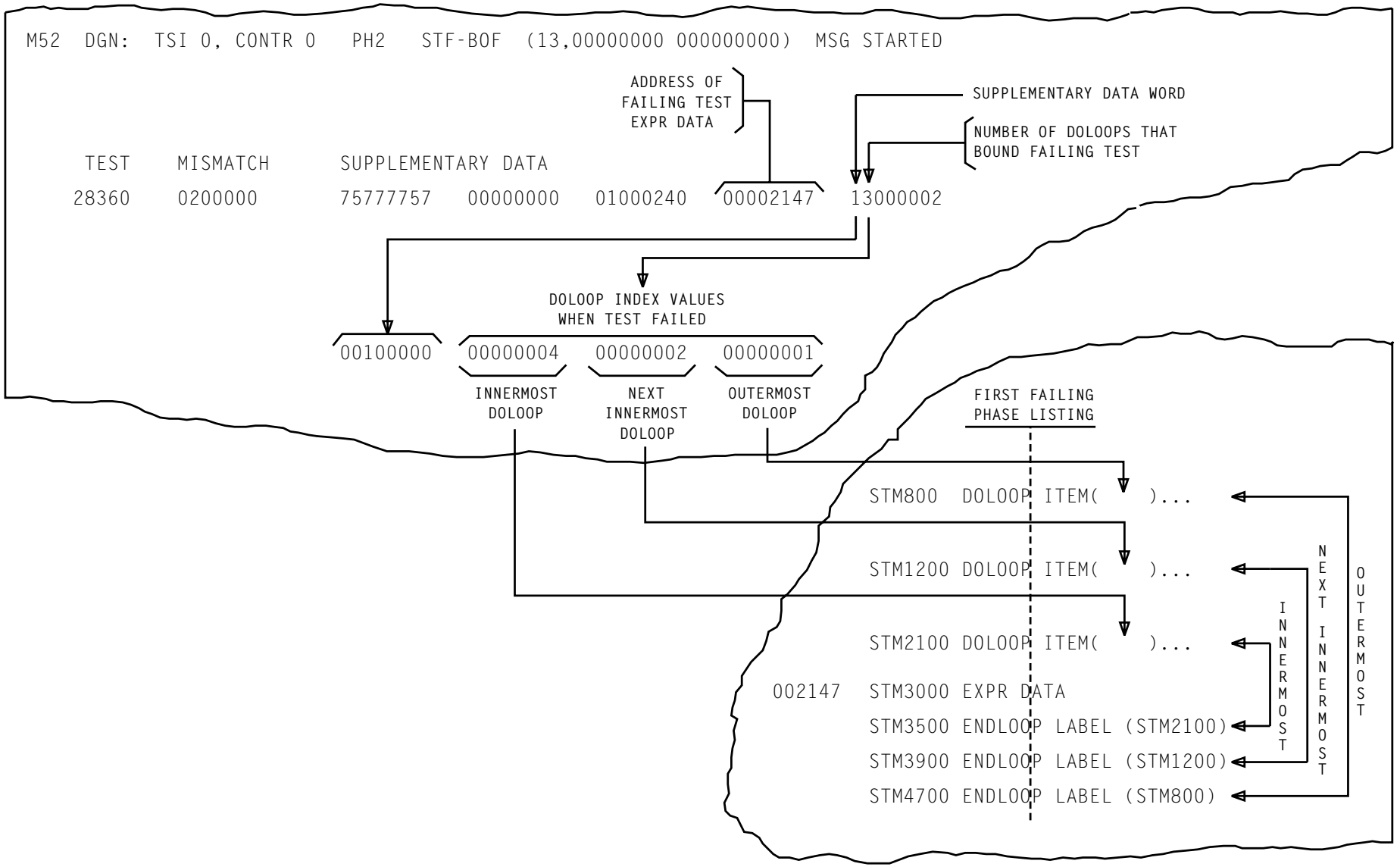
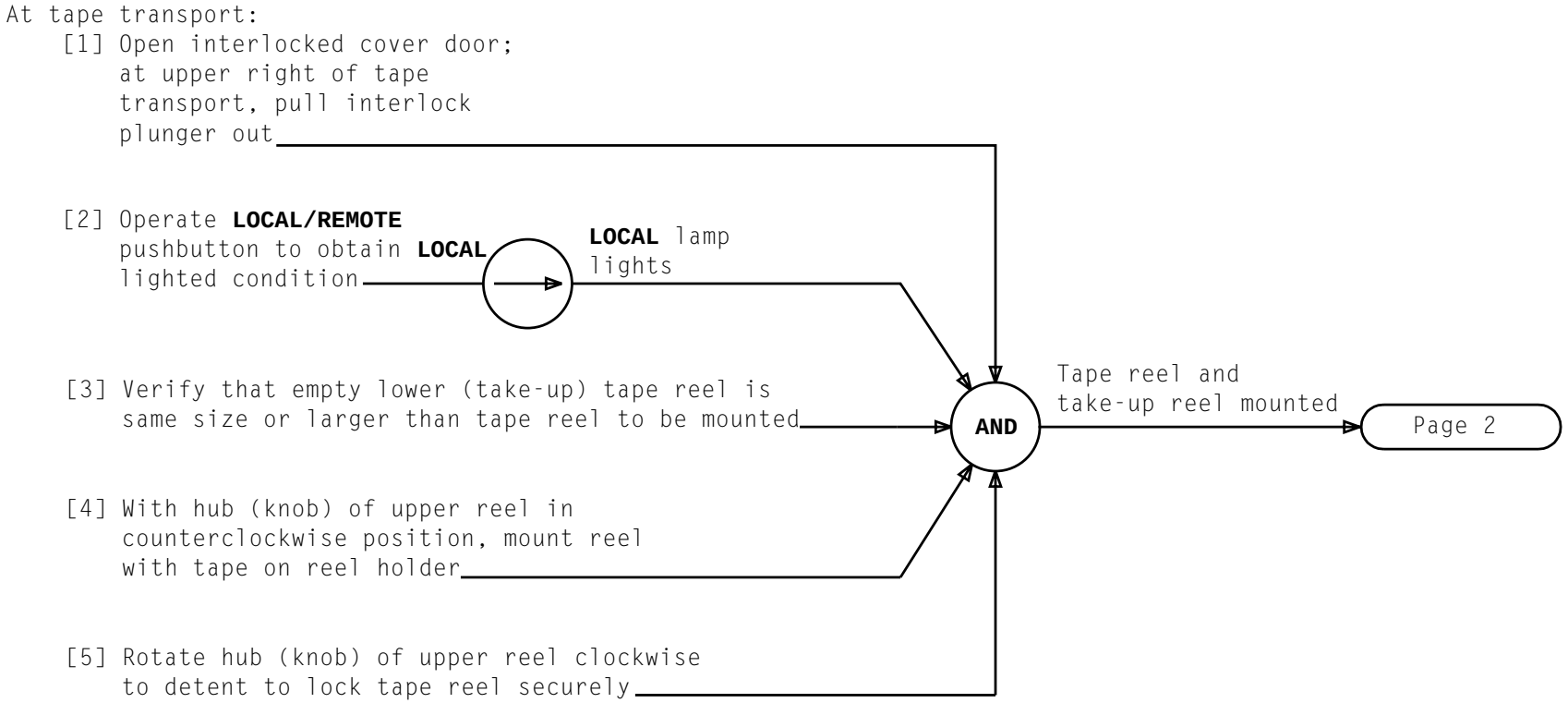
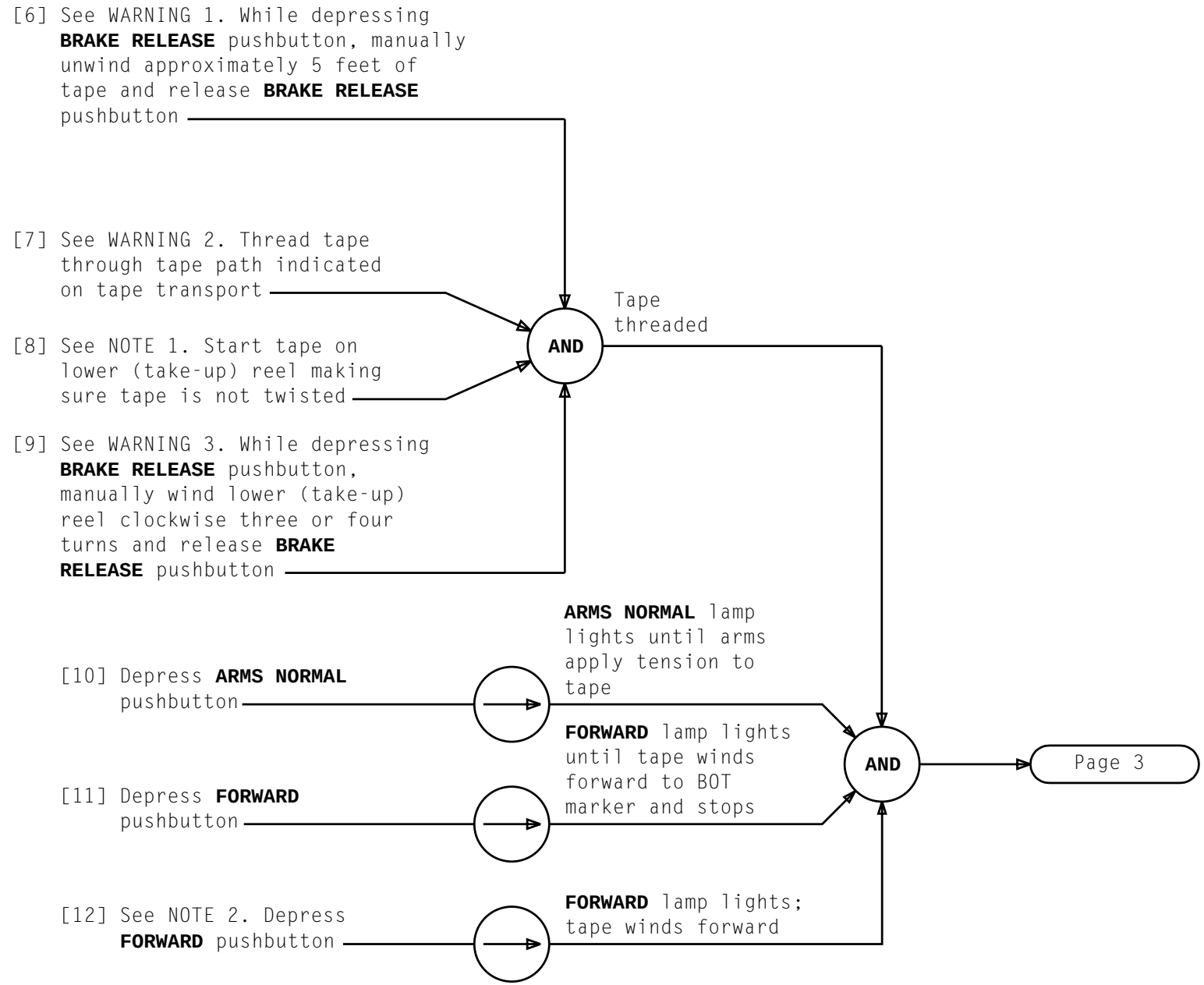


FIG. 1 – Example of Raw Data Doloop Word Relationship to Failing Phase Listing

DETERMINE LOCATION AND FUNCTION OF DOLOOPS, NO SUBROUTINES CALLED



MOUNT TAPE ON TAPE TRANSPORT



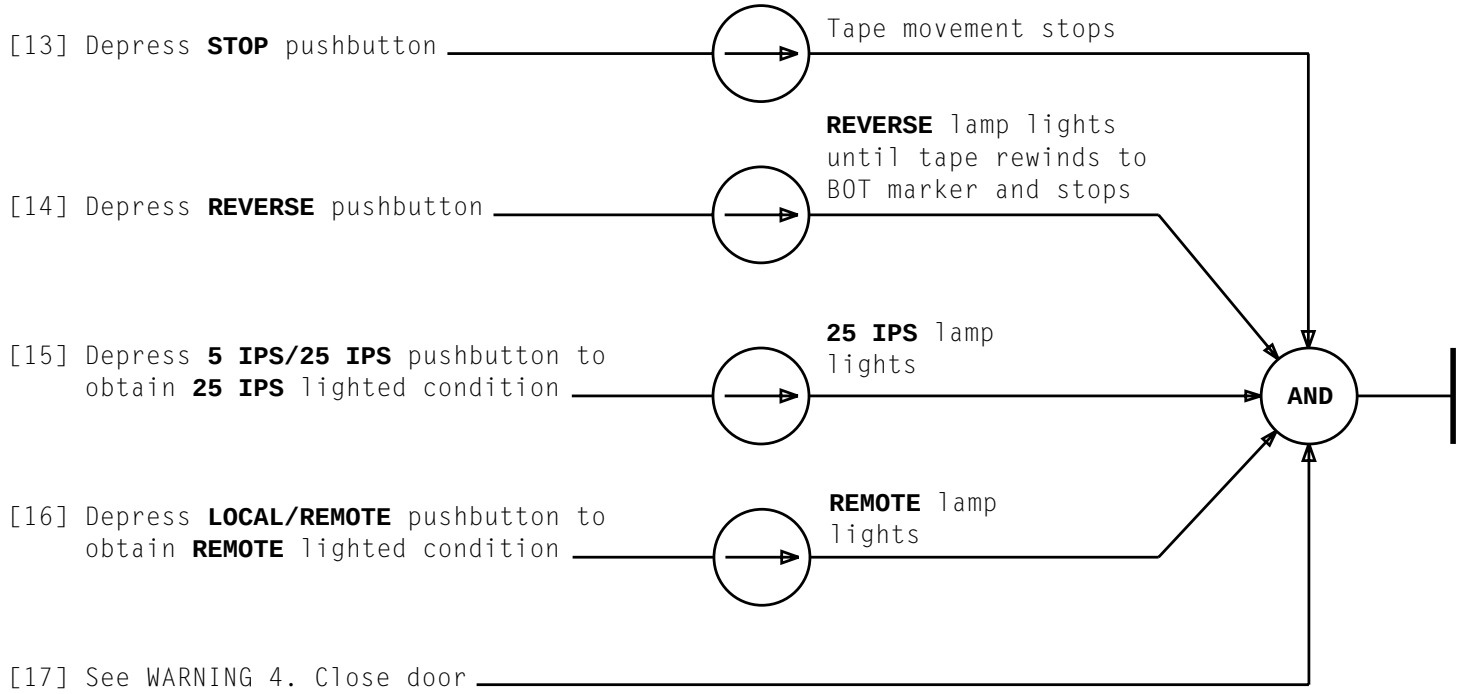
NOTES

1. To start tape on take-up reel, it may help to moisten tape end (moistened fingers) and stick tape to reel axle
2. Steps 12, 13, and 14 cause BOT marker to be approached from recorded area of tape

WARNINGS

1. *Contamination of tape by contact with floor will damage tape heads*
2. *Do not touch tape head surfaces; 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

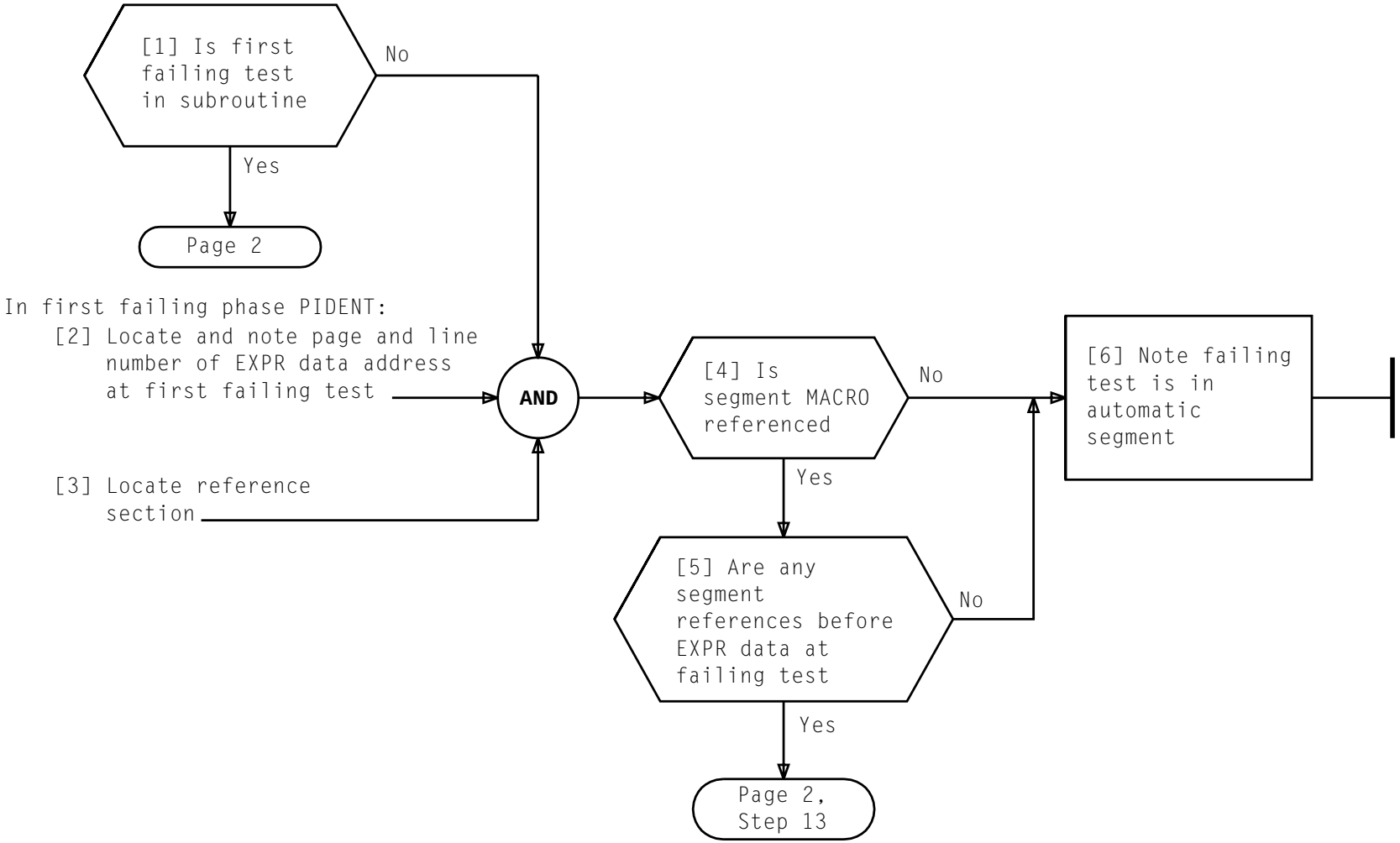


WARNING 4
Closing tape transport door in a harsh manner may upset alignment

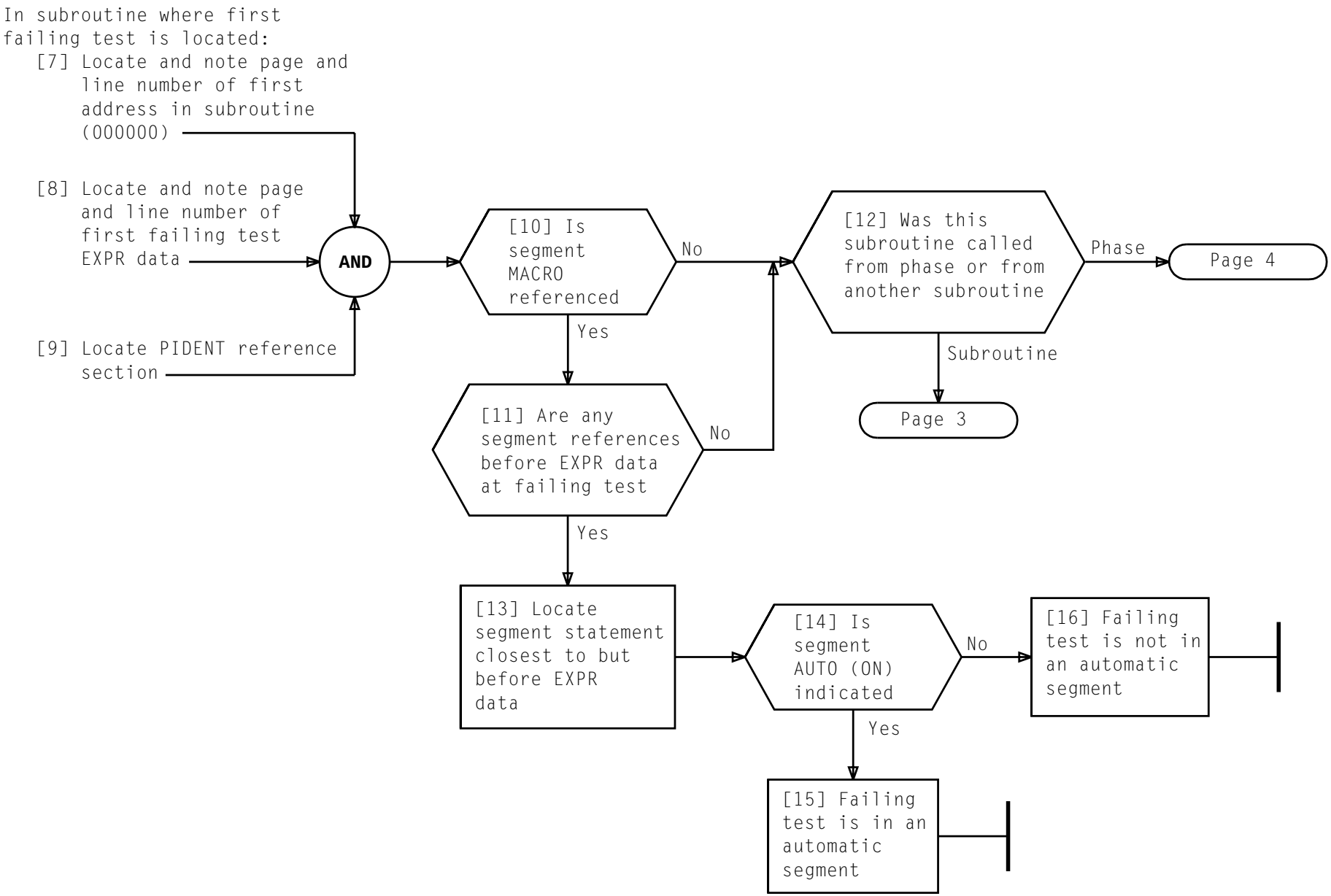
MOUNT TAPE ON TAPE TRANSPORT

SUMMARY

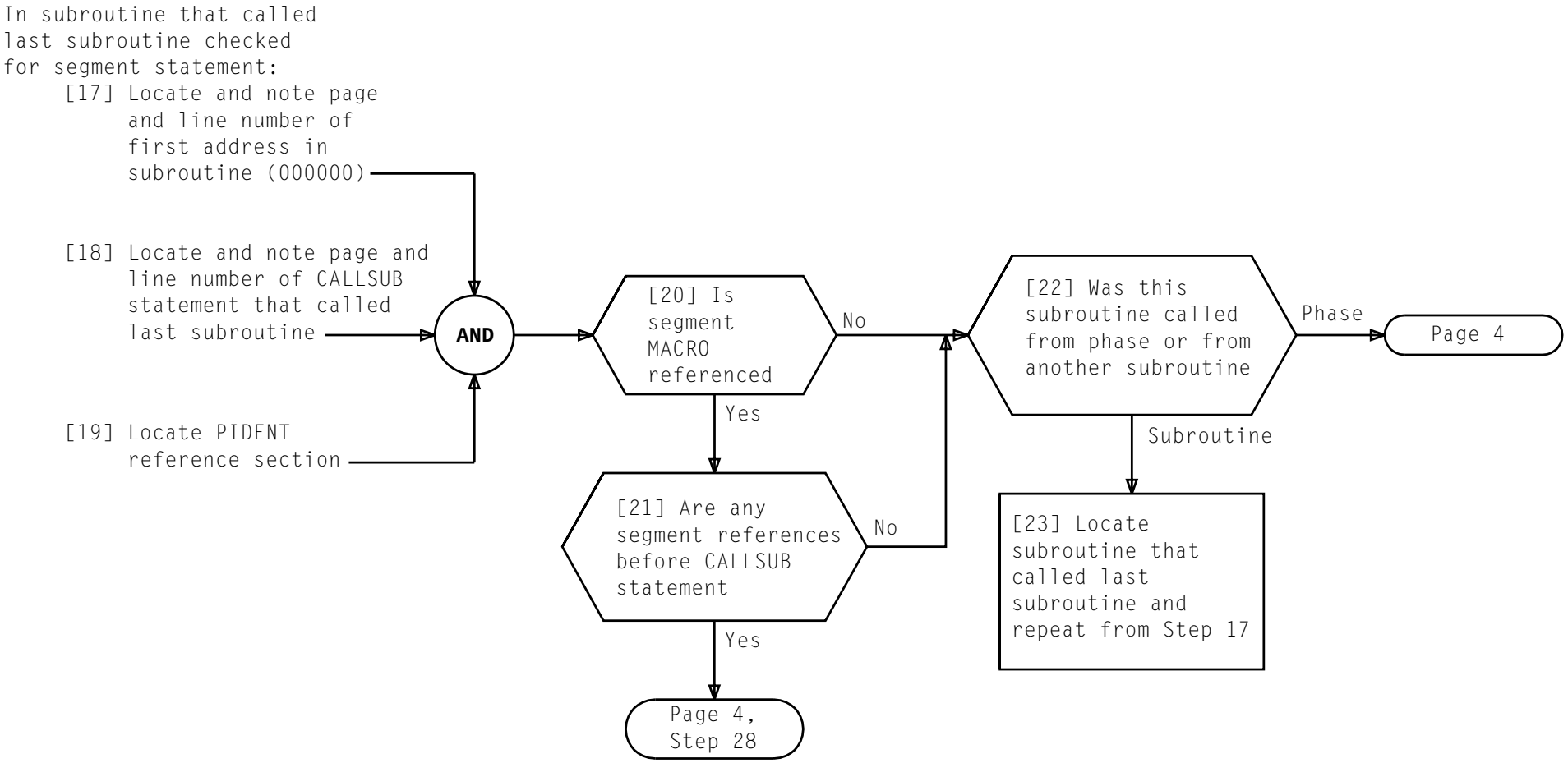
Locate first segment statement before first failing test. If segment statement has AUTO (ON) indicated, failing test is in automatic segment. If AUTO (ON) is not indicated, failing test is not in automatic segment. If no segment statement is found before first failing test, failing test is in automatic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



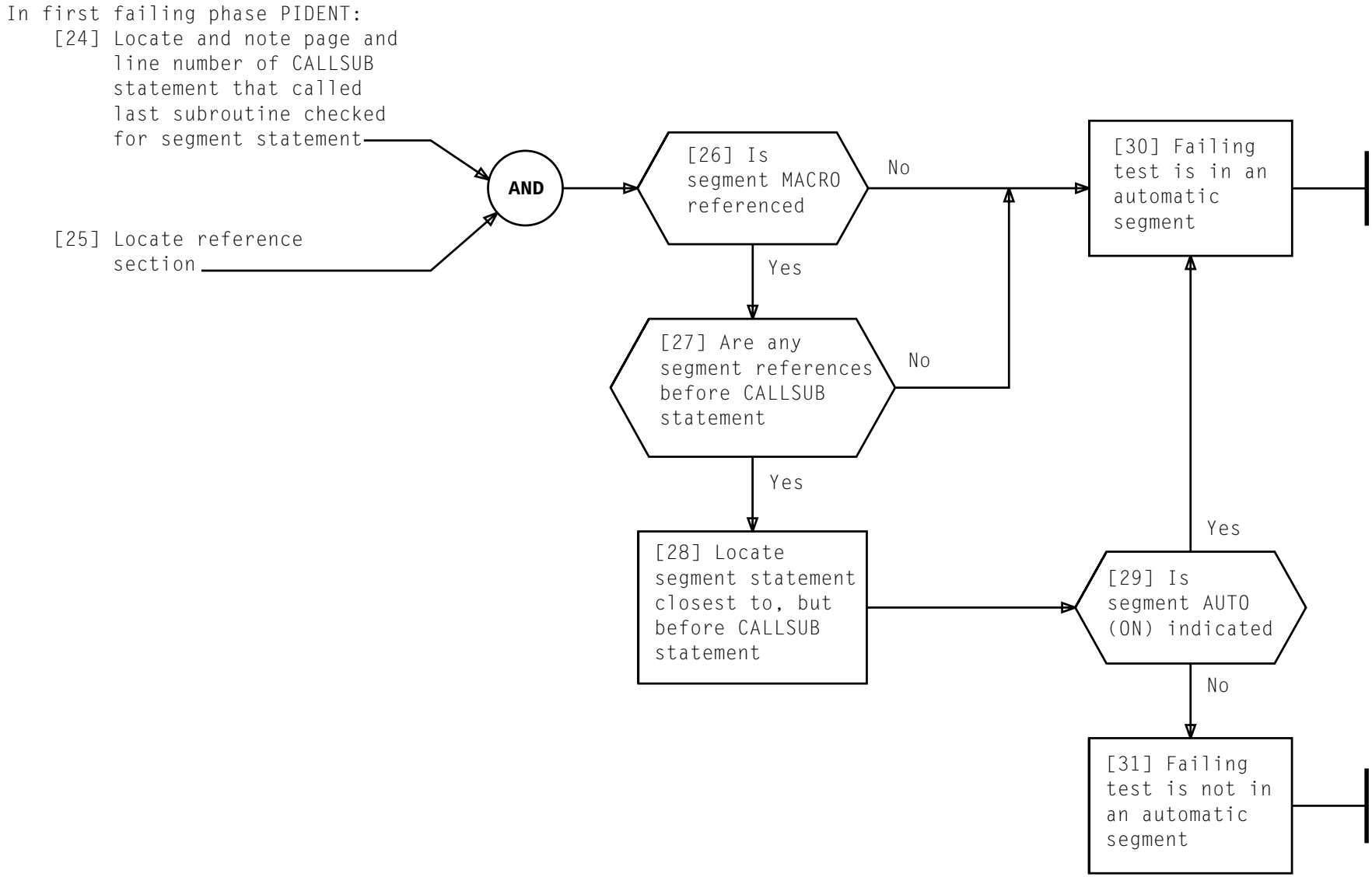
DETERMINE IF FAILING TEST IS IN AN AUTOMATIC SEGMENT



DETERMINE IF FAILING TEST IS IN AN AUTOMATIC SEGMENT



DETERMINE IF FAILING TEST IS IN AN AUTOMATIC SEGMENT



DETERMINE IF FAILING TEST IS IN AN AUTOMATIC SEGMENT

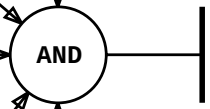
[1] Locate segment statement that determined failing test was not in an automatic segment

[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 in **EX:TSI** a**;RPT 2:PH** b**,ADR** c-d!
a = Failing TSI 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 IN A FORCE SEGMENT

REPLACE BULK CONVERTER (245A WITH 245A)

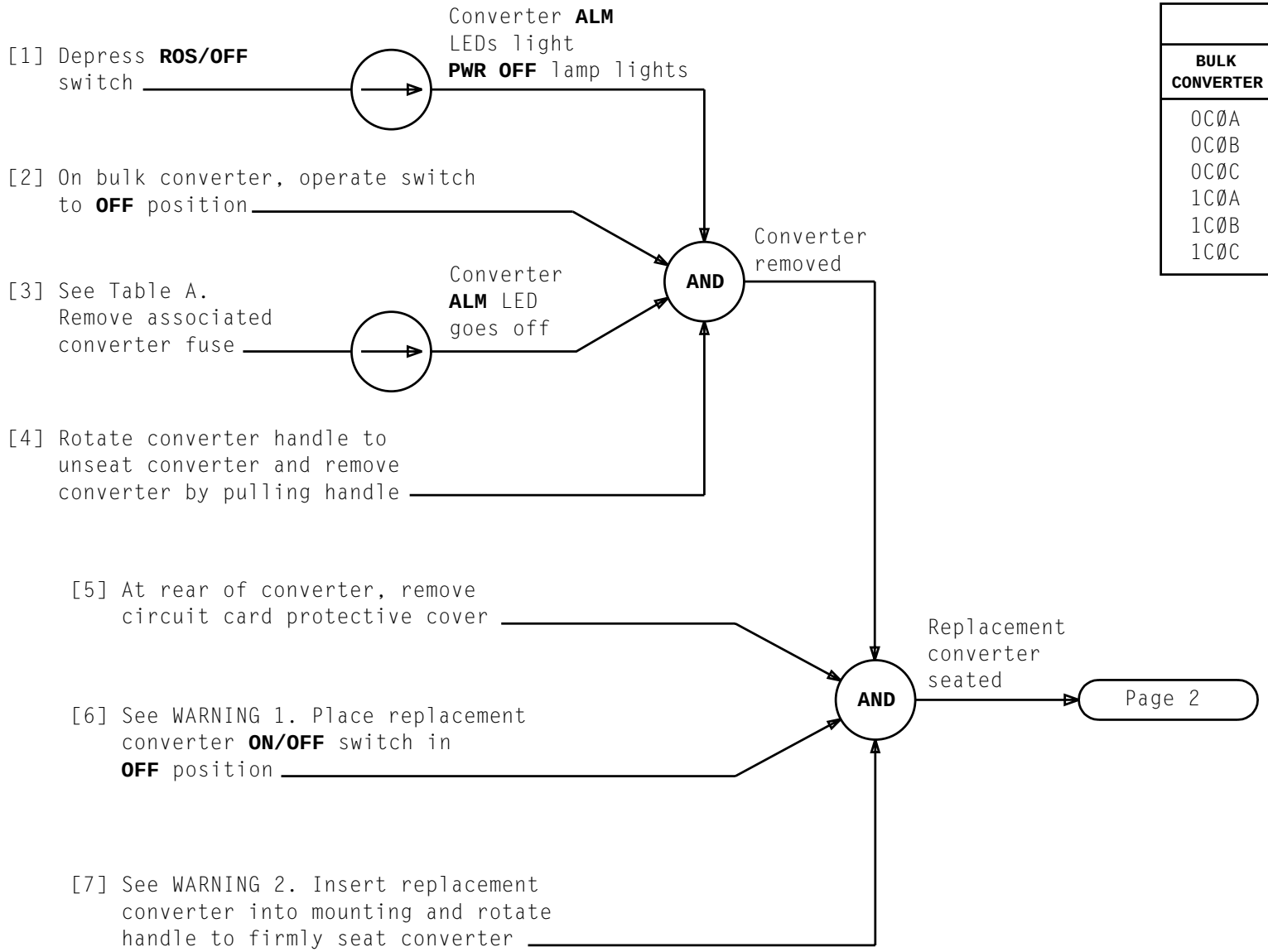
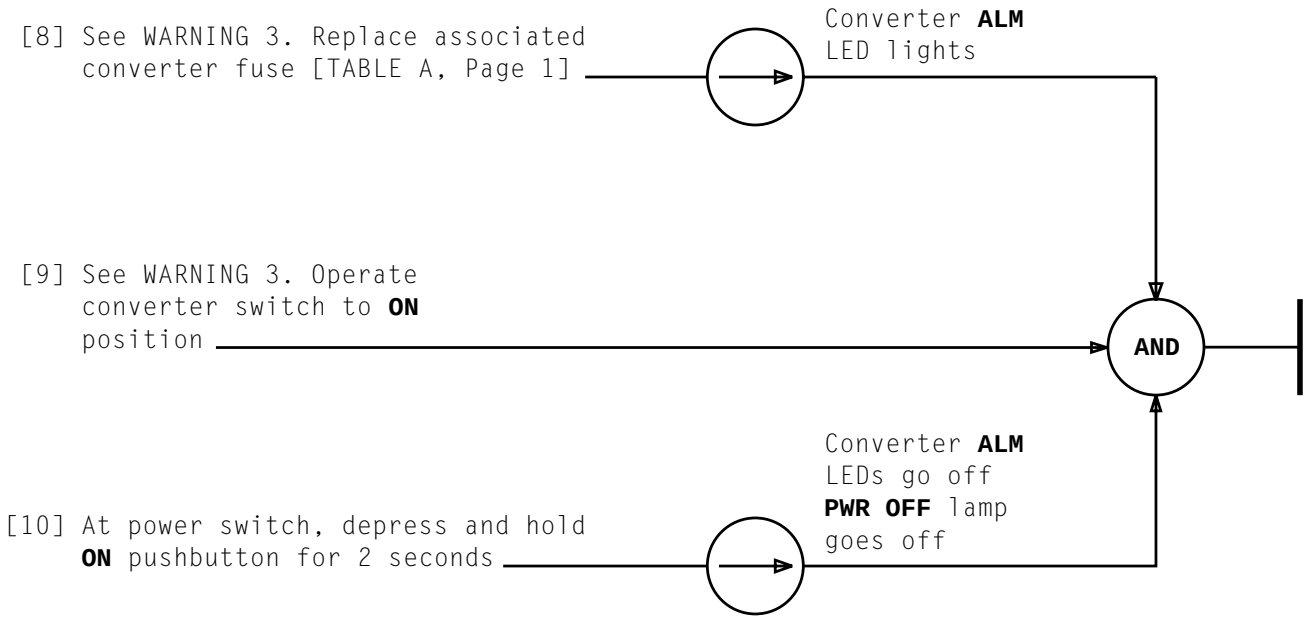


TABLE A

BULK CONVERTER	LOCATION	FUSE	LOCATION
0C0A	0-14-12	**0A0A**	0-07-08
0C0B	0-14-36	**0A0B**	0-07-09
0C0C	0-14-60	**0A0C**	0-07-10
1C0A	1-14-12	**1A0A**	1-07-08
1C0B	1-14-36	**1A0B**	1-07-09
1C0C	1-14-60	**1A0C**	1-07-10

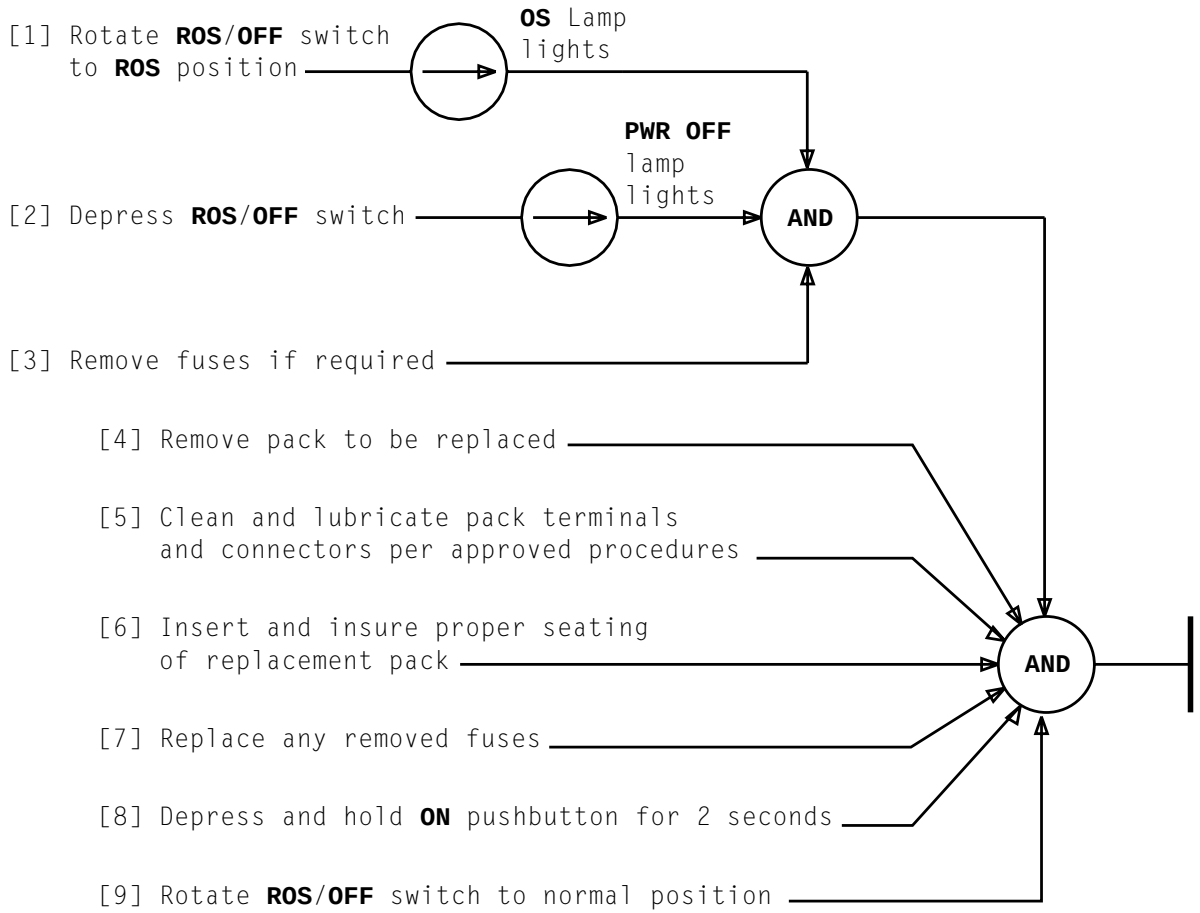
WARNINGS

1. *Failure to have ON/OFF switch in OFF position could result in damage to unit*
2. *Improper seating of unit may cause damage to converter*

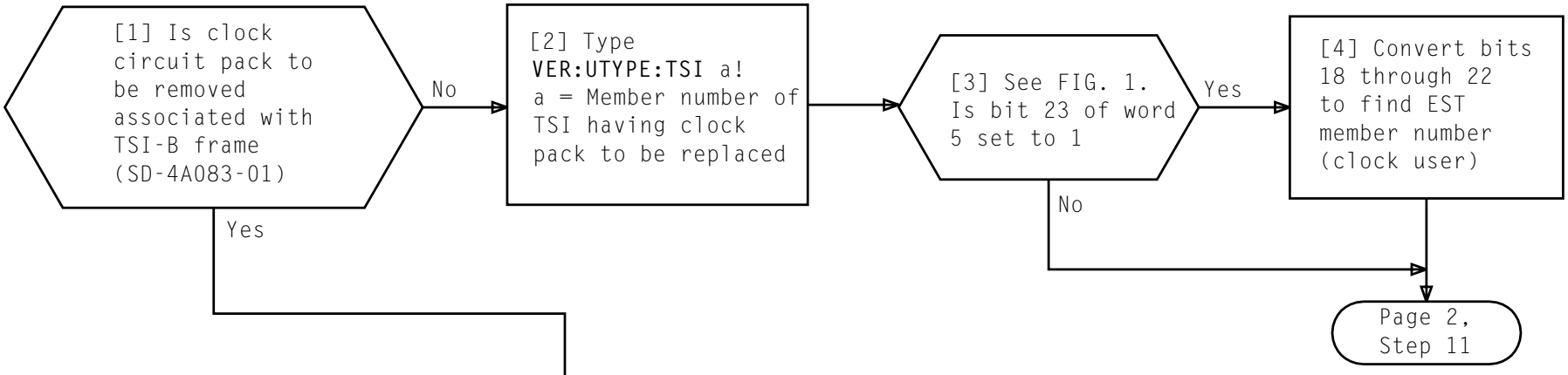


WARNING 3
Current surge could damage converters if fuses are not replaced before turning converters to ON position

REPLACE BULK CONVERTER (245A WITH 245A)



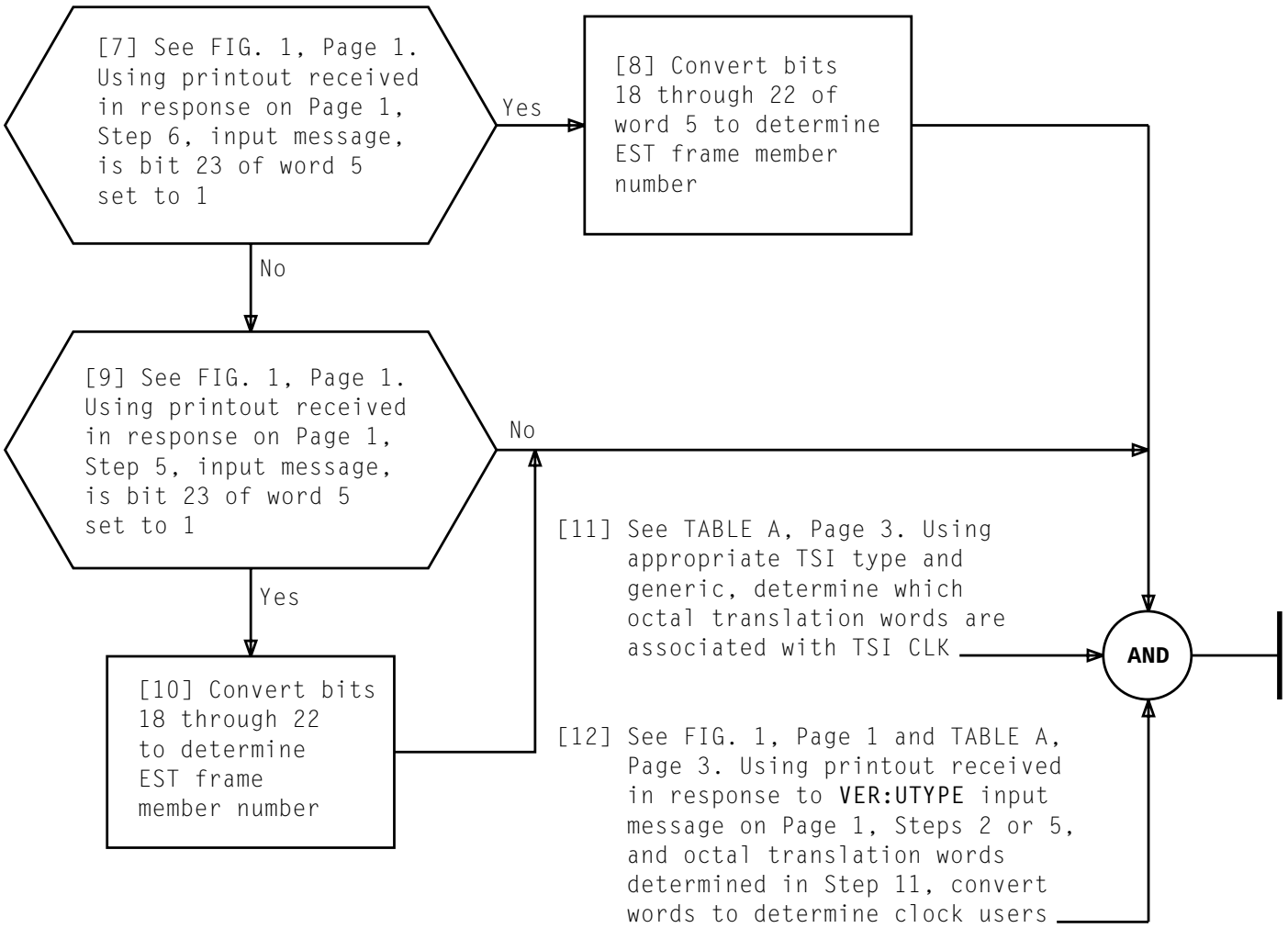
REPLACE PACK IN TMS FRAME (TSI HELPER UNIT)




```
VER:UTYPE:TSI 02! PF

M 49 VER:UTMN;OPT (), CUR:       FIN 16006.02,            UTYN TSI

     MEMN  2,      ME OPER,
     ENTRY ADDRESS 07612704       ENTRY SIZE 25

     CUR

     WORD 0    20637777  04014002  00001110  20000070
               00000110  00011110  00000130  00000150
     WORD 10   00000000  00000017  00000403  00037777
               00000000  00000000  60416040  60436042
     WORD 20   60456044  00006046  60616060  60636062
               60656064  00006066  60606040  60706050
     WORD 30   00000000
```

FIG. 1 – Typical Example of VER:UTYPE Output Message

IDENTIFY UNITS RECEIVING CLOCK SIGNALS FROM TSI FRAMES



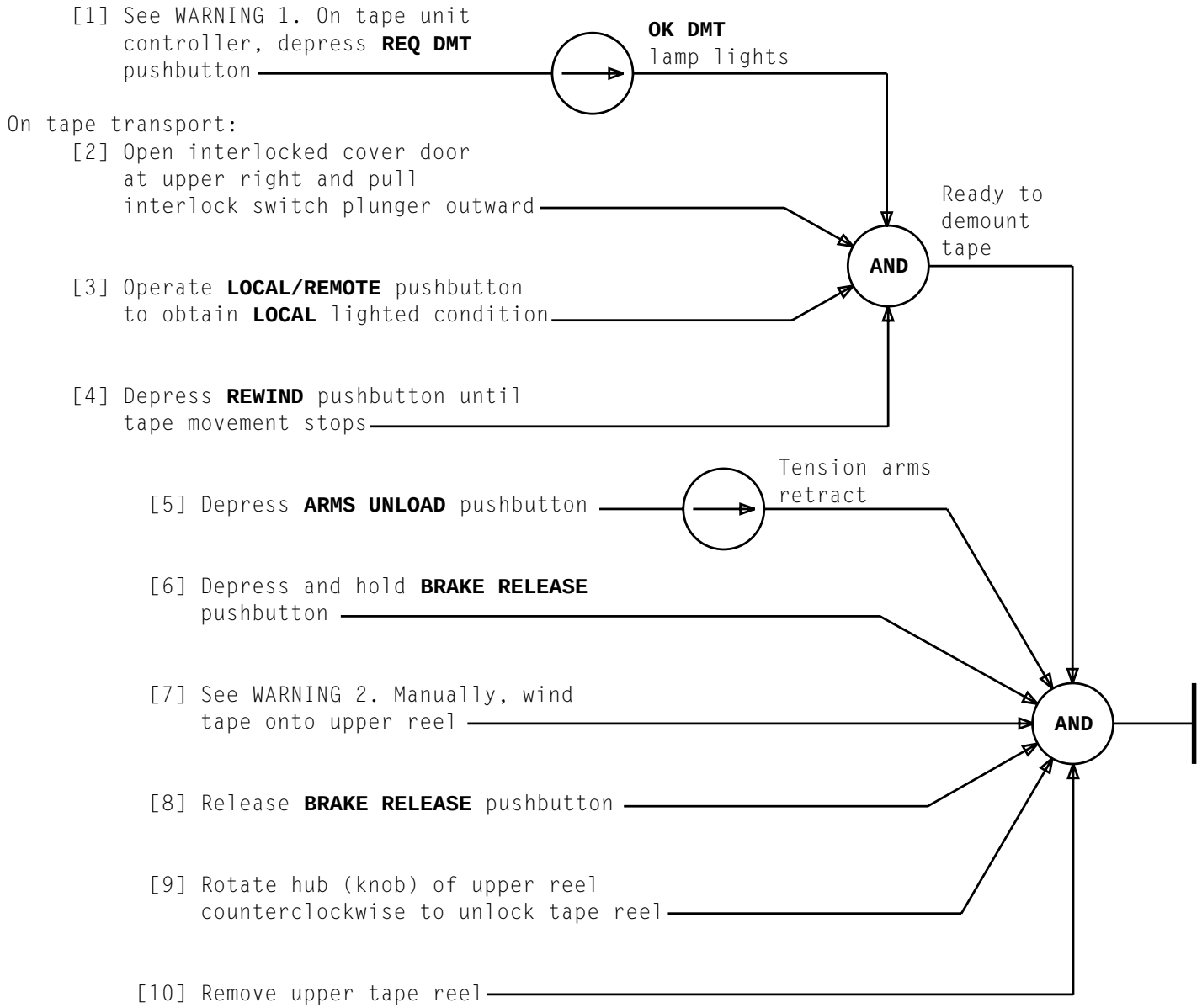
IDENTIFY UNITS RECEIVING CLOCK SIGNALS FROM TSI FRAMES

TABLE A

TSI TYPE	ASSOC TSI CLK	OCTAL WORD	BITS 23 22	21 20 19 18	17 16 15 14 13 12 11	10 9 8 7	6 5 4 3 2 1 0
TSI-A SD-4A011-01 SD-4A011-02	Clock 0 Bit (0-10) Clock 1 Bit (11-21)	’16	NA	Frame type (DT=0001) (VIF=0011) (DIF=0100)	* Member number (DT, VIF, †DIF)	Frame type (DT=0001) (VIF=0011) (DIF=0100)	* Member number (DT, VIF, †DIF)
TSI-B SD-4A083-01	Clock A Bit (0-10) Clock B Bit (11-21)	’16	NA	Frame type (DT=0001) (VIF=0011) (DIF=0100)	* Member number (DT, VIF, †DIF)	Frame type (DT=0001) (VIF=0011) (DIF=0100)	* Member number (DT, VIF, †DIF)
	Clock C Bit (0-10) Clock D Bit (11-21)	’17					
	Clock E Bit (0-10)	’20	NA				

* Member number to be converted to decimal
† Due to internal wiring, other procedures must be used to determine member number

IDENTIFY UNITS RECEIVING CLOCK SIGNALS FROM TSI FRAMES



WARNINGS

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

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DEMOUNT TAPE ON TAPE TRANSPORT

[1] Ensure **ROS/OFF** switch is rotated to **ROS**, then depress **ROS/OFF** switch

[2] Unseat fuses that provide power to converter to be replaced

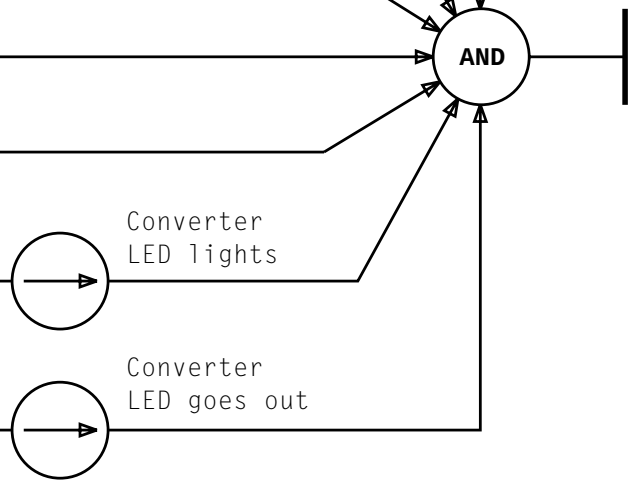
[3] Replace converter

[4] Reseat fuses and replace any blown fuses

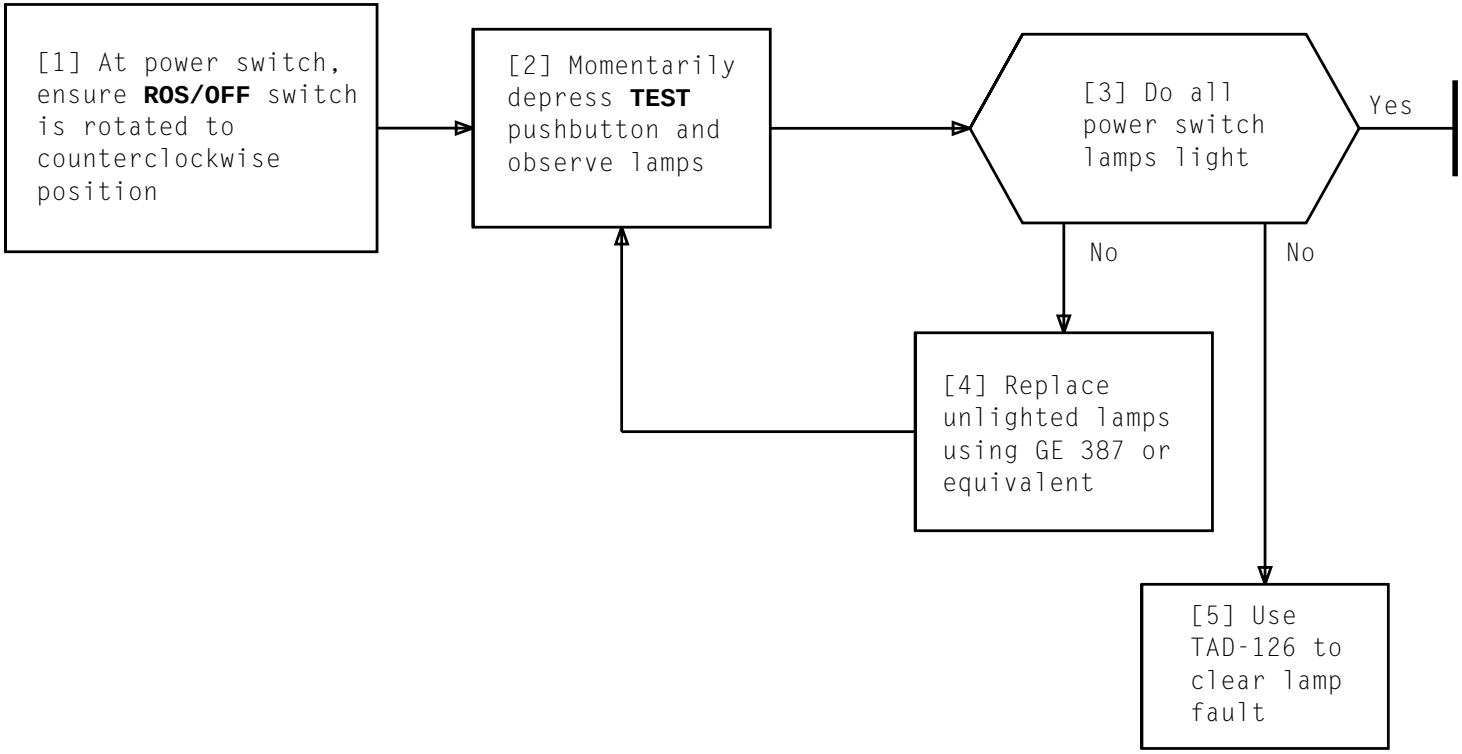
[5] Depress and hold **ON** pushbutton for 2 seconds

[6] At power switch, depress and hold **TEST** pushbutton for 2 seconds

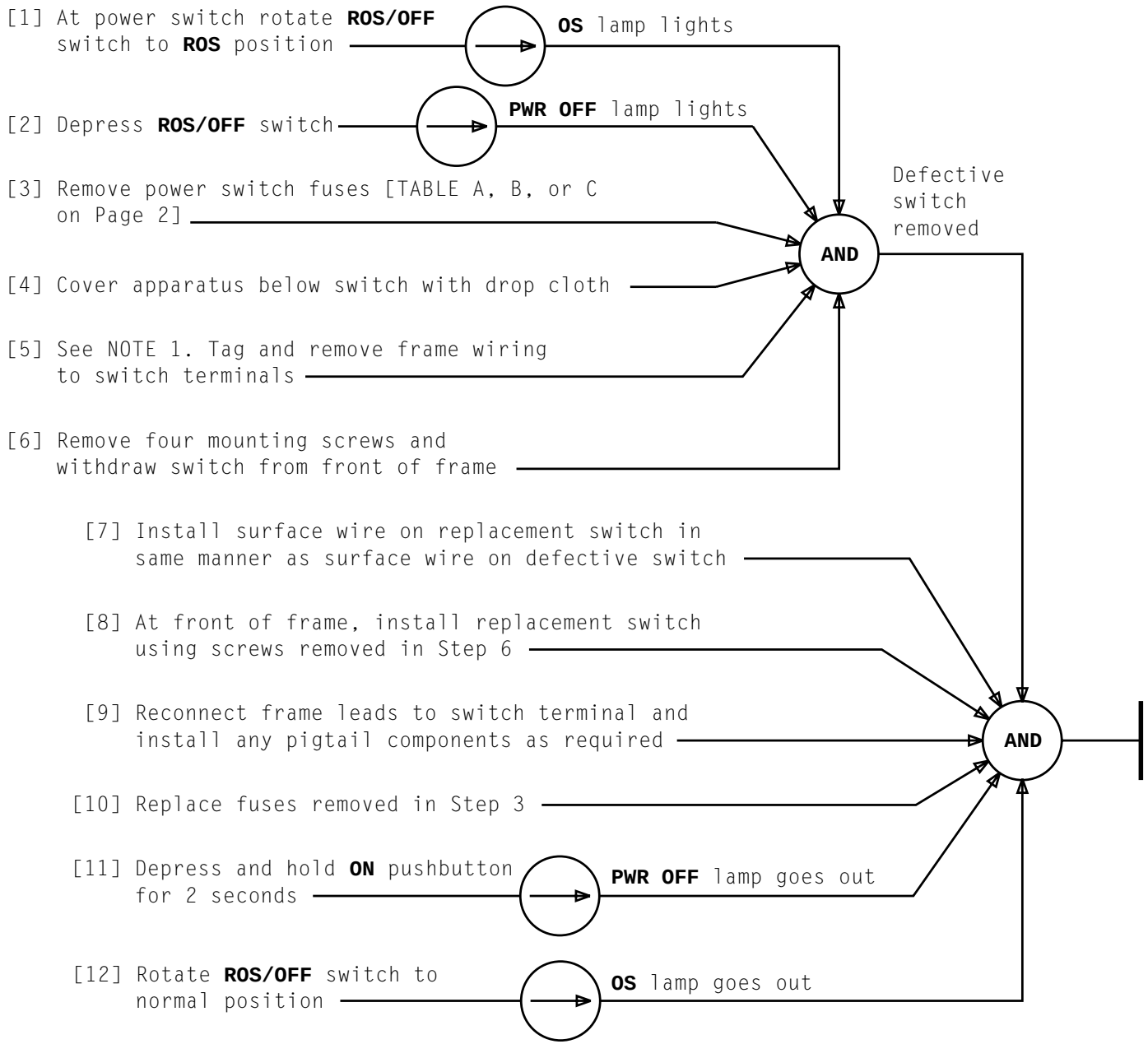
[7] Depress and hold **ON** pushbutton for 2 seconds



REPLACE NONBULK CONVERTER



TEST LAMPS ON POWER SWITCH



REPLACE POWER SWITCH

NOTE 1
Surface wiring on switch terminals should not be removed. It will be used as a guide for installing surface wire on the replacement switch (Step 7)

TABLE A — SD-4A011-01 FRAME					
BAY 0			BAY 1		
SWITCH LOCATION	FUSE	FUSE LOCATION	SWITCH LOCATION	FUSE	FUSE LOCATION
80-18	**0LC** **0CA**	07-37 07-37	80-18	**1LC** **1CA**	07-37 07-37
80-64	**0LB** **0BA**	07-46 07-37	80-64	**1LB** **1BA**	07-46 07-37
53-40	**0ST** **0LA**	07-30 07-37	53-40	**1ST** **1LA**	07-30 07-37

TABLE B — SD-4A011-02 FRAME					
BAY 0			BAY 1		
SWITCH LOCATION	FUSE	FUSE LOCATION	SWITCH LOCATION	FUSE	FUSE LOCATION
80-23	**0LC** **0CA**	07-30 07-30	80-23	**1LC** **1CA**	07-30 07-30
80-29	**0LB** **0BA**	07-30 07-37	80-29	**1LB** **1BA**	07-30 07-37
53-43	**0ST** **0LA**	07-30 07-37	53-43	**1ST** **1LA**	07-30 07-37

TABLE C — SD-4A083-01 FRAME					
BAY 0			BAY 1		
SWITCH LOCATION	FUSE	FUSE LOCATION	SWITCH LOCATION	FUSE	FUSE LOCATION
80-65	**0BP** **0BL**	07-46 07-46	80-65	**1BP** **1BL**	07-46 07-46
72-03	**0ALCL** **0ALCP**	07-53 07-53	72-03	**1ALCL** **1ALCP**	07-53 07-53
44-37	**0USW** **0VIC**	07-53 07-53	44-37	**1USW** **1VIC**	07-53 07-53

REPLACE POWER SWITCH

CONVERTER LOCATION BAY 0	REQUIRED TO REMOVE CONVERTER				CONVERTER LOCATION BAY 1	REQUIRED TO REMOVE CONVERTER			
	POWER SWITCH	SWITCH LOCATION	FUSE	FUSE LOCATION		POWER SWITCH	SWITCH LOCATION	FUSE	FUSE LOCATION
80-31,76-31	**ALC 0**	0-80-18	**0CA**	0-07-37	80-31,76-31	**ALC 1**	1-80-18	**1CA**	1-07-37
80-58	**PUB 0**	0-80-64	**0BA**	0-07-37	80-58	**PUB 1**	1-80-64	**1BA**	1-07-37
22-02 22-08 22-14 22-20 22-35	Frame PWR bay 0	0-53-40	**A0D** **B0D** **C0D**	0-07-10 0-07-17 0-07-30	22-02 22-08 22-14 22-20 22-35	Frame PWR bay 1	1-53-40	**A1D** **B1D** **C1D**	1-07-10 1-07-17 1-07-30
22-50 22-56 *22-65 22-68	Frame PWR bay 0	0-53-40	**A0E** **B0E** **C0E**	0-07-10 0-07-17 0-07-30	22-50 22-56 *22-65 22-68	Frame PWR bay 1	1-53-40	**A1E** **B1E** **C1E**	1-07-10 1-07-17 1-07-30
17-02 17-08 17-14 17-20 12-02 12-14 12-19	Frame PWR bay 0	0-53-40	**A0A** **B0A** **C0A**	0-07-10 0-07-17 0-07-30	17-02 17-08 17-14 17-20 12-02 12-14 12-19	Frame PWR bay 1	1-53-40	**A1A** **B1A** **C1A**	1-07-10 1-07-17 1-07-30
17-50 17-56 17-62 17-68 12-50 12-56 12-71	Frame PWR bay 0	0-53-40	**A0C** **B0C** **C0C**	0-07-10 0-07-17 0-07-30	17-50 17-56 17-62 17-68 12-50 12-56 12-71	Frame PWR bay 1	1-53-40	**A1C** **B1C** **C1C**	1-07-10 1-07-17 1-07-30
11-30	Frame PWR bay 0	0-53-40	**A0B** **B0B** **C0B**	0-07-10 0-07-17 0-07-30	11-30	Frame PWR bay 1	1-53-40	**A1B** **B1B** **C1B**	1-07-10 1-07-17 1-07-30
11-42	Frame PWR bay 0	0-53-40	**B0B** **C0B** **A0F**	0-07-17 0-07-30 0-07-10	11-42	Frame PWR bay 1	1-53-40	**B1B** **C1B** **A1F**	1-07-17 1-07-30 1-07-10

* Must be changed with a known good converter

CONVERTER TO POWER CONTROL CROSS REFERENCE TABLE, SD-4A011-01 FRAME

CONVERTER LOCATION BAY 0	REQUIRED TO REMOVE CONVERTER				CONVERTER LOCATION BAY 1	REQUIRED TO REMOVE CONVERTER			
	POWER SWITCH	SWITCH LOCATION	FUSE	FUSE LOCATION		POWER SWITCH	SWITCH LOCATION	FUSE	FUSE LOCATION
80-55	**PUB 0**	0-80-29	**0BA**	0-07-37	80-55	**PUB 1**	1-80-29	**1BA**	1-07-37
76-11,76-15	**ALC 0**	0-80-23	**0CA**	0-07-30	76-11,76-15	**ALC 1**	1-80-23	**1CA**	1-07-30
17-02 17-08 17-14 17-20 17-26	Frame PWR bay 0	0-53-43	**A0A** **B0A** **C0A**	0-07-10 0-07-17 0-07-17	17-02 17-08 17-14 17-20 17-26	Frame PWR bay 1	1-53-43	**A1A** **B1A** **C1A**	1-07-10 1-07-17 1-07-17
17-50 17-56 17-62 17-68	Frame PWR bay 0	0-53-43	**A0C** **B0C** **C0C**	0-07-10 0-07-17 0-07-17	17-50 17-56 17-62 17-68	Frame PWR bay 1	1-53-43	**A1C** **B1C** **C1C**	1-07-10 1-07-17 1-07-17
12-02 12-08 12-14 12-20 12-26 12-32	Frame PWR bay 0	0-53-43	**A0B** **B0B** **C0B**	0-07-10 0-07-17 0-07-17	12-02 12-08 12-14 12-20 12-26 12-32	Frame PWR bay 1	1-53-43	**A1B** **B1B** **C1B**	1-07-10 1-07-17 1-07-17
12-41 12-44 12-50 12-56 12-62 12-68	Frame PWR bay 0	0-53-43	**A0D** **B0D** **C0D**	0-07-10 0-07-17 0-07-17	12-41 12-44 12-50 12-56 12-62 12-68	Frame PWR bay 1	1-53-43	**A1D** **B1D** **C1D**	1-07-10 1-07-17 1-07-17

CONVERTER TO POWER CONTROL CROSS REFERENCE TABLE, SD-4A011-02 FRAME

CONVERTER LOCATION BAY 0	REQUIRED TO REMOVE CONVERTER				CONVERTER LOCATION BAY 1	REQUIRED TO REMOVE CONVERTER			
	POWER SWITCH	SWITCH LOCATION	FUSE	FUSE LOCATION		POWER SWITCH	SWITCH LOCATION	FUSE	FUSE LOCATION
80-59	**PUB 0**	0-80-65	**0BP**	0-07-46	80-59	**PUB 1**	1-80-65	**1BP**	1-07-46
76-18 76-14 76-30 76-34	**ALC 0**	0-72-03	**0ALCP**	0-07-53	76-18 76-14 76-30 76-34	**ALC 1**	1-72-03	**1ALCP**	1-07-53
44-14 44-18	**POSW 0**	0-44-37	**0IO**	0-07-53	44-14 44-18	**POSW 1**	1-44-37	**1IO**	1-07-53

NONBULK CONVERTER TO POWER CONTROL CROSS REFERENCE TABLE, SD-4A083-01 FRAME

PACK LOCATION BAY 0	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-33 to 80-46	Power switch	0-80-63	PU BUS 0 (IPUB 0)
76-03 to 76-07	Power switch	0-80-17	NT WRK 0 DRVR RECR (ALC 0)
76-37 to 76-60 72-all 68-all 64-all 60-all 56-04 to 56-39	Power switch	0-53-40	Frame PWR bay 0 (CONTR 0)
56-42	Power switch	0-53-40	Frame PWR bay 0 (CONTR 0)
	Fuse	0-07-30	**0AB**
56-43 50-all 46-all 42-all 38-all	Power switch	0-53-40	Frame PWR bay 0 (CONTR 0)

PACK LOCATION BAY 1	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-33 to 80-46	Power switch	1-80-63	PU BUS 1 (IPUB 1)
76-03 to 76-07	Power switch	1-80-17	NT WRK 1 DRVR RECR (ALC 1)
76-37 to 76-60 72-all 68-all 64-all 60-all 56-04 to 56-39	Power switch	1-53-40	Frame PWR bay 1 (CONTR 1)
56-42	Power switch	1-53-40	Frame PWR bay 1 (CONTR 1))
	Fuse	1-07-30	**1AB**
56-43, 56-44 56-55	Power switch	1-53-40	Frame PWR bay 1 (CONTR 1)
56-57	Power switch	0-53-40	Frame PWR bay 0 (CONTR 0)
56-59	Power switch	1-53-40	Frame PWR bay 1 (CONTR 1)
56-61	Power switch	0-53-40	Frame PWR bay 0 (CONTR 0)
50-all 46-all 42-all 38-all	Power switch	1-53-40	Frame PWR bay 1 (CONTR 1)

CIRCUIT PACK REPLACEMENT TABLE, SD-4A011-01 FRAME

PACK LOCATION BAY 0	POWER CONTROLS			PACK LOCATION BAY 1	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME		REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-33 to 80-51	Power switch	0-80-29	PU BUS 0 (IPUB 0)	80-33 to 80-51	Power switch	1-80-29	PU BUS 1 (IPUB 0)
76-03 to 76-07	Power switch	0-80-23	NT WRK 0 DRVR RECR (ALC 0)	76-03 to 76-07	Power switch	1-80-23	NT WRK 1 DRVR RECR (ALC 1)
76-34 to 76-60 72-all 68-all 64-all 60-all 56-05 to 56-34	Power switch	0-53-43	Frame PWR bay 0 (CONTR 0)	76-34 to 76-60 72-all 68-all 64-all 60-all 56-05 to 56-34	Power switch	1-53-43	Frame PWR bay 1 (CONTR 1)
56-35	Power switch	0-53-43	Frame PWR bay 0 (CONTR 0)	56-35	Power switch	1-53-43	Frame PWR bay 1 (CONTR 1)
	Fuses	0-07-42	**NOA, NOB**		Fuses	1-07-42	**N1A, N1B**
56-36	Power switch	0-53-43	Frame PWR bay 0 (CONTR 0)	56-36	Power switch	1-53-43	Frame PWR bay 1 (CONTR 1)
56-40	Power switch	0-53-43	Frame PWR bay 0 (CONTR 0)	56-40	Power switch	1-53-43	Frame PWR bay 1 (CONTR 1)
	Fuse	0-07-30	**OAB**		Fuse	1-07-30	**1AB**
56-42 50-all 46-all 42-all 38-all	Power switch	0-53-43	Frame PWR bay 0 (CONTR 0)	56-42 56-55	Power switch	1-53-43	Frame PWR bay 1 (CONTR 1)
				56-57	Power switch	0-53-43	Frame PWR bay 0 (CONTR 0)

CIRCUIT PACK REPLACEMENT TABLE, SD-4A011-02 FRAME

PACK LOCATION BAY 0	POWER CONTROLS			PACK LOCATION BAY 1	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME		REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
				56-59	Power switch	1-53-43	Frame PWR bay 1 (CONTR 1)
				56-61	Power switch	0-53-43	Frame PWR bay 0 (CONTR 0)
				50-all 46-all 42-all 38-all	Power switch	1-53-43	Frame PWR bay 1 (CONTR 1)

CIRCUIT PACK REPLACEMENT TABLE, SD-4A011-02 FRAME

PACK LOCATION BAY 0	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-37 to 80-55	Power switch	0-80-65	PU BUS 0 (IPUB 0)
76-06 to 76-26	Power switch	0-72-03	NT WRK 0 DRVR RECR (ALC 0)
76-39 to 76-52	Power switch	0-44-37	Frame PWR bay 0 (CONTR 0)
72-27	Power switch	0-44-37	Frame PWR bay 0 (CONTR 0)
	Fuses	0-07-37 0-07-46	**0CLFM** **0CLS**
72-28 to 72-52 64-02 to 64-61 64-65	Power switch	0-44-37	Frame PWR bay 0 (CONTR 0)
64-63, 67	Power switch	1-44-37	Frame PWR bay 1 (CONTR 1)
64-68, 69 60-22 to 60-69 52-02 to 52-61 52-65	Power switch	0-44-37	Frame PWR bay 0 (CONTR 0)
52-63, 67	Power switch	1-44-37	Frame PWR bay 1 (CONTR 1)
52-68, 69 48-22 to 48-69	Power switch	0-44-37	Frame PWR bay 0 (CONTR 0)
44-28, 29, 31	Fuse	0-07-53	**OVM**
44-30	Fuse	0-07-53	**OPC**
44-33	Fuses	0-07-46 0-07-53	**OVIC** **OPC**
40-02 to 40-61 40-65	Power switch	0-44-37	Frame PWR bay 0 (CONTR 0)

PACK LOCATION BAY 1	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-37 to 80-55	Power switch	1-80-65	PU BUS 1 (IPUB 1)
76-06 to 76-26	Power switch	1-72-03	NT WRK 1 DRVR RECR (ALC 1)
76-39 to 76-52	Power switch	1-44-37	Frame PWR bay 1 (CONTR 1)
72-27	Power switch	1-44-37	Frame PWR bay 1 (CONTR 1)
	Fuses	1-07-37 1-07-46	**1CLFM** **1CLS**
72-28 to 72-52 64-02 to 64-58 60-22 to 60-69 52-02 to 52-58 48-22 to 48-69	Power switch	1-44-37	Frame PWR bay 1 (CONTR 1)
44-28, 29, 31	Fuse	1-07-53	**1VM**
44-30	Fuse	1-07-53	**1PC**
44-33	Fuses	1-07-46 1-07-53	**1VIC** **1PC**
40-02 to 40-58 36-22 to 36-69 28-02 to 28-58 24-22 to 24-69	Power switch	1-44-37	Frame PWR bay 1 (CONTR 1)

CIRCUIT PACK REPLACEMENT TABLE, SD-4A083-01 FRAME

PACK LOCATION BAY 0	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
40-63, 67	Power switch	1-44-37	Frame PWR bay 1 (CONTR 1)
40-68, 69 36-22 to 36-69 28-02 to 28-61 28-65	Power switch	0-44-37	Frame PWR bay 0 (CONTR 0)
28-63, 67	Power switch	1-44-37	Frame PWR bay 1 (CONTR 1)
28-68, 69 24-22 to 24-69	Power switch	0-44-37	Frame PWR bay 0 (CONTR 0)

CIRCUIT PACK REPLACEMENT TABLE, SD-4A083-01 FRAME

PACK LOCATION BAY 0	POWER CONTROLS			PACK LOCATION BAY 1	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME		REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-01 to 80-14	Power switch	0-80-29	**IPUB0**	80-01 to 80-14	Power switch	1-80-29	**IPUB1**
76-ALL 72-ALL 68-02 to 68-35	Power switch	1-68-08	Frame power (CONTR)	64-ALL 60-ALL 56-ALL 52-ALL 48-ALL 44-ALL 40-ALL 36-ALL	Power switch	1-68-08	Frame PWR (CONTR)
68-40	Fuse	1-07-33	**AB**				
64-ALL 60-ALL 56-ALL 52-ALL 48-ALL 44-ALL 40-ALL 36-ALL	Power switch	1-68-08	Frame power (CONTR)				

CIRCUIT PACK REPLACEMENT TABLE, TMS FRAME (SD-4A012-01)

PACK LOCATION BAY 0	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-01 to 80-14	Power switch	0-80-29	**IPUB0**
68-40	Fuse	1-07-26	**AB**
76-ALL 72-ALL 68-02 to 68-35 64-ALL 60-ALL 56-ALL 52-ALL 48-ALL 44-ALL 40-ALL 36-ALL	Power switch	1-68-08	Frame PWR (CONTR)

PACK LOCATION BAY 1	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-01 to 80-14	Power switch	1-80-29	**IPUB1**
64-ALL 60-ALL 56-ALL 52-ALL 48-ALL 44-ALL 40-ALL 36-ALL	Power switch	1-68-08	Frame PWR (CONTR)

CIRCUIT PACK REPLACEMENT TABLE, TMS FRAME (SD-4A012-02)

PACK LOCATION BAY 0	POWER CONTROLS			PACK LOCATION BAY 1	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME		REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
80-14 to 80-32	Power switch	0-80-42	**C0IPUB1**	80-14 to 80-32	Power switch	1-80-42	**C1IPUB1**
76-14 to 76-32	Power switch	0-76-42	**C0IPUB0**	76-14 to 76-32	Power switch	1-76-42	**C1IPUB0**
72-18 to 72-56 68-15 to 68-56 64-19 to 64-52 60-19 to 60-52 52-19 to 52-52 48-19 to 48-52	Power switch	0-44-38	Frame PWR (CONTR 0)	72-18 to 72-56 68-15 to 68-56 64-19 to 64-52 60-19 to 60-52 52-19 to 52-52 48-19 to 48-52	Power switch	1-44-38	Frame PWR (CONTR 1)
44-26	Fuse	0-07-46	**C0A**	44-26	Fuse	1-07-46	**C1A**
44-28 to 44-34	Fuse	0-07-46	**C0B**	44-28 to 44-34	Fuse	1-07-46	**C1B**
40-19 to 40-52 36-19 to 36-52 28-19 to 28-52 24-19 to 24-52	Power switch	0-44-38	Frame PWR (CONTR 0)	40-19 to 40-52 36-19 to 36-52 28-19 to 28-52 24-19 to 24-52	Power switch	1-44-38	Frame PWR (CONTR 1)

CIRCUIT PACK REPLACEMENT TABLE, TMS FRAME (SD-4A087-01)

[1] See FIG. 1. Connect a 10k ohm, .5 watt resistor across the test leads of a voltmeter

[2] See TABLE A, Page 2 and NOTE 1. Remove fuse A

[3] Connect (+) lead of voltmeter [FIG. 1] to cathode of diode C [FIG. 2, Page 2], (—) lead to ground

AND

[4] Does voltage measure between +21 to +27 volts

Yes → Page 2

No

[5] See TABLE A, Page 2. Remove fuse B and replace open diode D

[6] Replace fuse B and repeat from Step 3

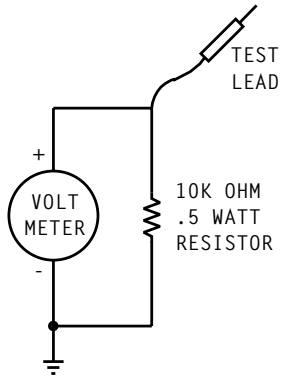


FIG. 1 — Test Circuit

NOTE 1

Designations shown are for both controller ORed diode circuits

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TEST POWER ORING DIODE

[7] See NOTE 2. Connect (+) lead of voltmeter [FIG. 1, Page 1] to anode of diode C; (—) lead to ground [FIG. 2]

[8] Does voltage measure between +1 volt and -1 volt

Yes → Page 3

No → [9] See TABLE A. Remove fuse B and replace shorted diode C. Install fuse B and repeat from Step 3, Page 1

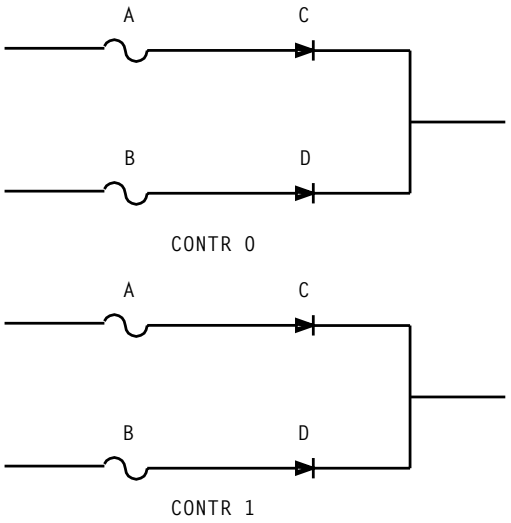


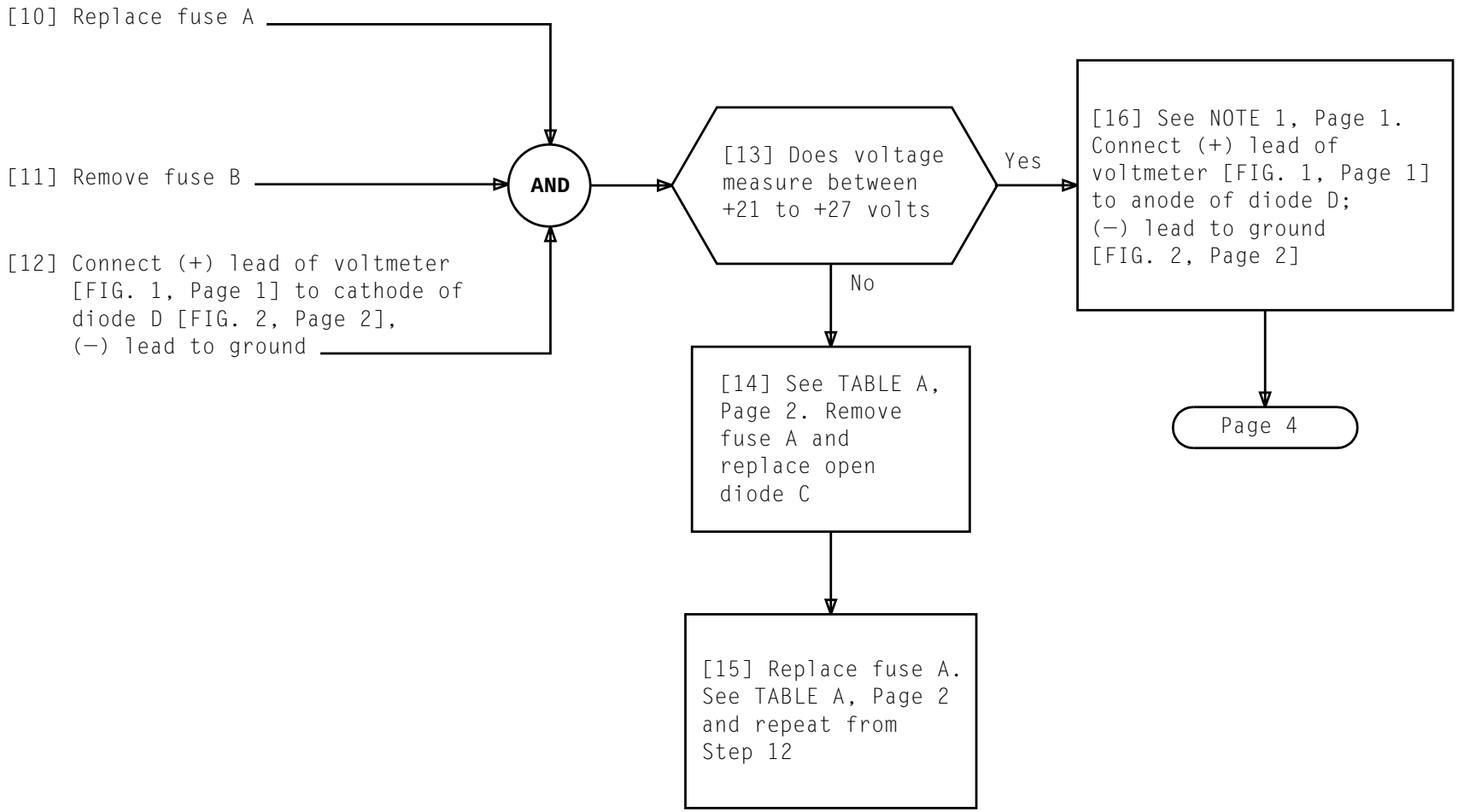
FIG. 2 — Power or Diode Network

TABLE A

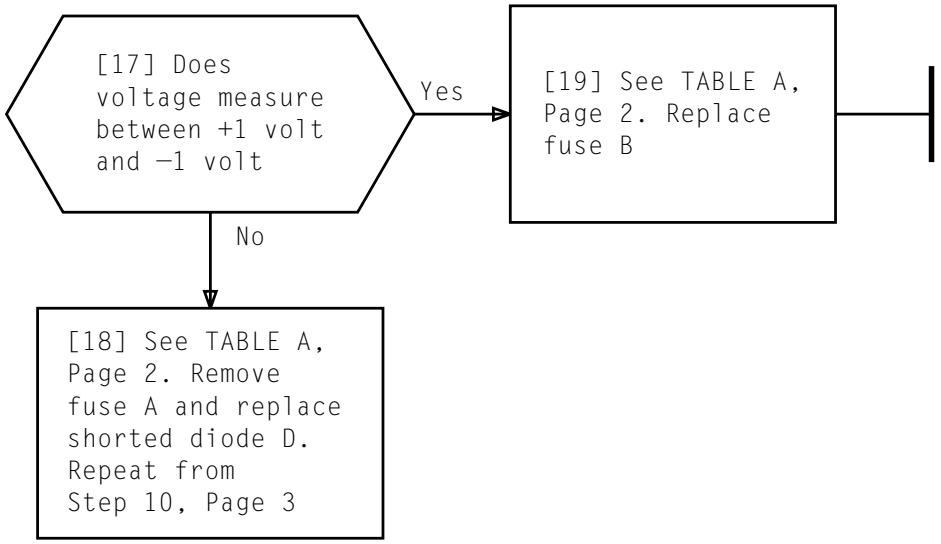
FRAME DRAWING	CONTR	FUSE		LOCATION	DIODE		LOCATION
SD-4A011-02	0	A	**N0A**	007-37	C	**CR032**	007-42RC
	1		**N1A**	107-37		**CR132**	107-42RC
	0	B	**N0B**	007-37	D	**CR033**	007-42RH
	1		**N1B**	107-37		**CR133**	107-42RH
SD-4A083-01	0	A	**0CLFM**	007-37	C	**0CR4**	007-59RA
	1		**1CLFM**	107-37		**1CR4**	107-59RA
	0	B	**0CLS**	007-46	D	**0CR5**	007-59RB
	1		**1CLS**	107-46		**1CR5**	107-59RB

NOTE 2
To measure negative voltage, test leads must be reversed

TEST POWER ORING DIODE



TEST POWER ORING DIODE



TEST POWER ORING DIODE

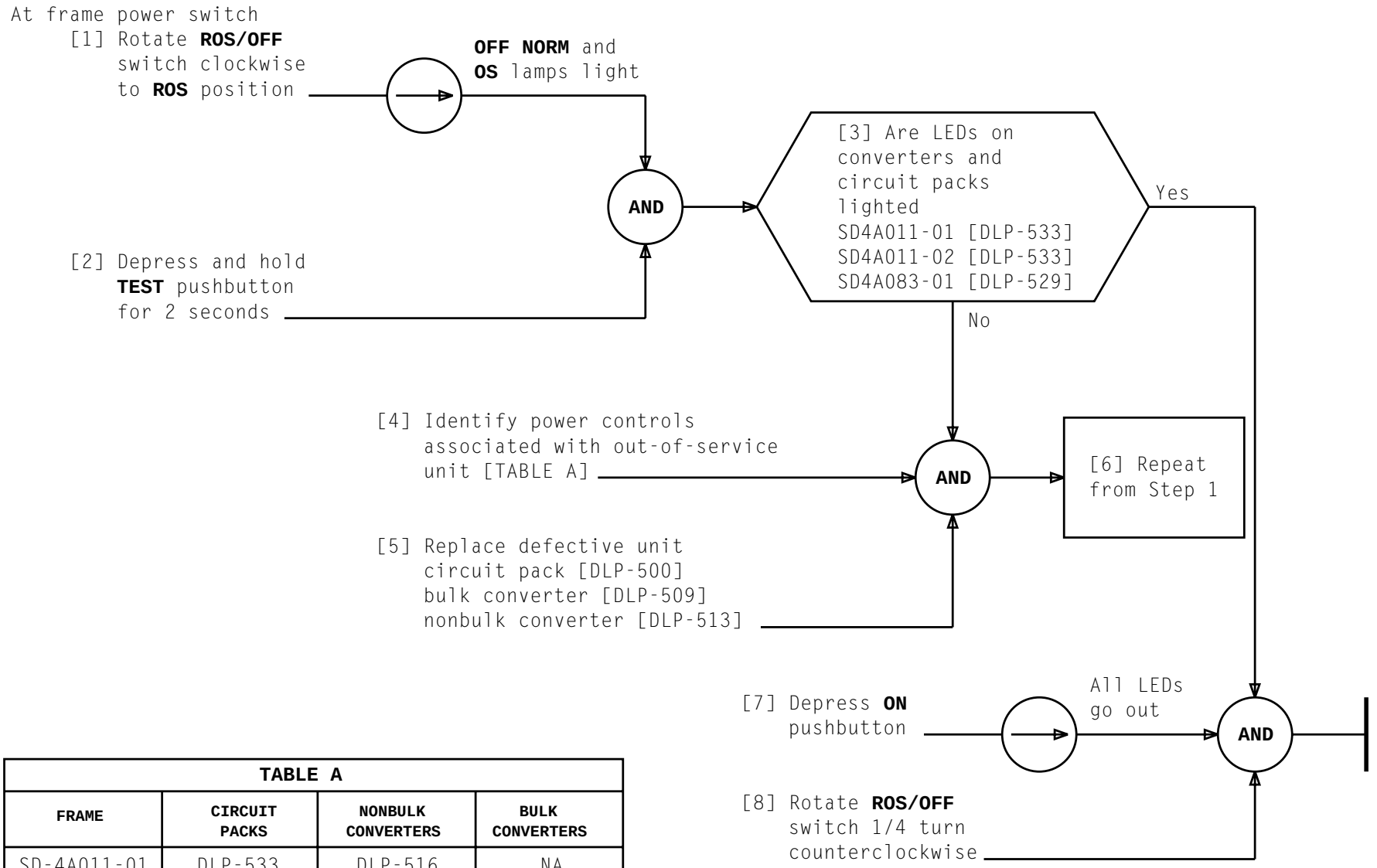
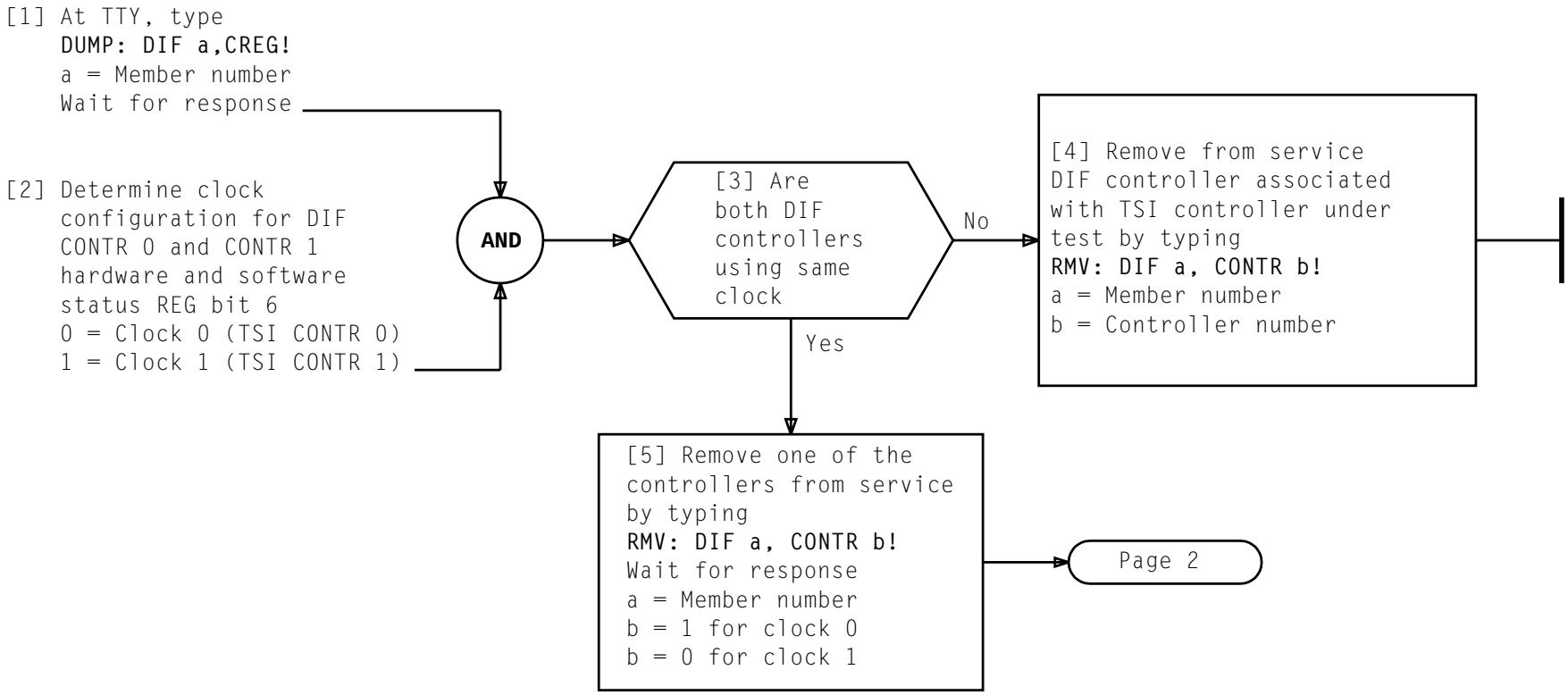
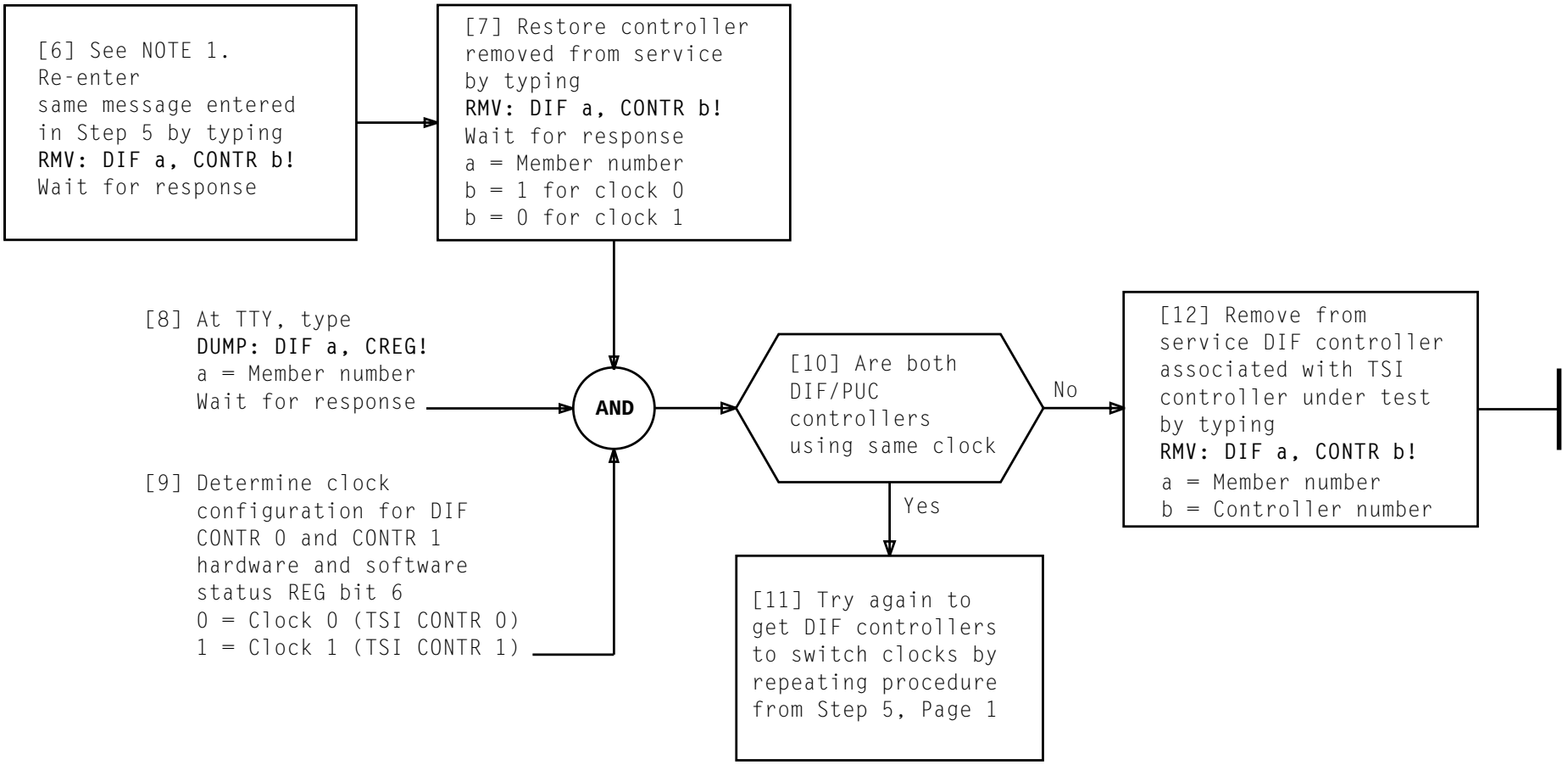


TABLE A			
FRAME	**CIRCUIT PACKS**	**NONBULK CONVERTERS**	**BULK CONVERTERS**
SD-4A011-01	DLP-533	DLP-516	NA
SD-4A011-02	DLP-533	DLP-517	NA
SD-4A083-01	DLP-529	DLP-518	FR switch

TEST TSI POWER ALARM CIRCUITS



REMOVE DIGITAL INTERFACE FRAME/PERIPHERAL UNIT CONTROLLER FROM SERVICE



NOTE 1
Steps 5, 6, and 7 attempts to get a DIF controller to switch clocks so that both DIF controllers will be operating on different clocks

REMOVE DIGITAL INTERFACE FRAME/PERIPHERAL UNIT CONTROLLER FROM SERVICE

1. Define error using PMDs [TABLE A]

End of procedure

TABLE A

PMD	ERROR DEFINITION	PMD	ERROR DEFINITION
PMD-006	Fault isolated by TNFRISAD. PMD will indicate that one controller of suspect member failed access test. Controller which failed will be suspect controller	PMD-021	Fault isolated by TNFRTMMN. This is a matched or nonunique type error which occurred in both controllers. Retry was performed and failed; therefore, it is hard nonunique (AINT)
PMD-007	Fault isolated by TNFRISAD. PMD will indicate that both controllers failed access test. Each controller is assigned half weight indicating nonunique failure	PMD-050	Fault isolated by TNFRTMMN. Retry was performed and passed. This is a unique fault which is up in only one controller; therefore, it is transient unique (ASWF)
PMD-010	Fault isolated by TNFRTMMN. Retry was performed and passed. This is a unique fault which is up in only one controller; therefore, it is transient unique (AINT)	PMD-051	Fault isolated by TNFRTMMN. Retry was performed and failed. This is a unique fault which is up in only one controller; therefore, it is hard unique (ASWF)
PMD-011	Fault isolated by TNFRTMMN. Retry was performed and failed. This is a unique fault which is up in only one controller; therefore, it is hard unique (AINT)	PMD-052	Fault isolated by TNFRTMMN. This is a software type fault. This PMD indicates that software has caused a problem. Hardware is not suspected (ASWF)
PMD-012	Fault isolated by TNFRTMMN. Retry was performed and passed. This is a unique fault which is up in one controller only; therefore, it is transient unique (AINT)	PMD-053	Fault isolated by TNFRTMMN. Retry was performed and passed. This is a unique type fault which occurred in both controllers; therefore, it is transient nonunique (ASWF)
PMD-013	Fault isolated by TNFRTMMN. Retry was performed and failed. This is a unique fault which is up in one controller only; therefore, it is hard unique (AINT)	PMD-054	Fault isolated by TNFRTMMN. Retry was performed and failed. This is a unique type fault which occurred in both controllers
PMD-020	Fault isolated by TNFRTMMN. This is a matched or nonunique type error which occurred in both controllers. Retry was performed and passed; therefore, it is transient nonunique (AINT)	PMD-055	Fault isolated by TNFRTMMN. Retry was performed and passed. This is a match type fault which occurred in one controller only; therefore, it is transient unique (ASWF)

TABLE A (Contd)

PMD	ERROR DEFINITION
PMD-056	Fault isolated by TNFRTMMN. Retry was performed and failed. This is a match type fault which occurred in one controller only; therefore, it is hard unique (ASWF)
PMD-100	Fault isolated by TNFRTSMN. Fault type is unique class-1 transient (retry passed). Error will be PFE, PFO, MODEF, RTSMPF, TTSMPF, BIMPF, or ASWF in only one controller when unit is simplex or duplex; or an RTSMA, TTSMA, or BIMA in only one controller when unit is duplex (ASWF)
PMD-101	Fault isolated by TNFRTSMN. Fault type is a unique class-1 hard (retry failed). Error will be PFE, PFO, MODEF, RTSMPF, TTSMPF, BIMPF, or ASWF in only one controller when unit is simplex or duplex; or RTSMA, TTSMA,or BIMA in only one controller when unit is duplex (ASWF)
PMD-102	Fault isolated by TNFRTSMN. Fault type is unique soft. Error will be MODEF in both controllers or RTSMA, TTSMA, or BIMA in both controllers if unit is duplex; or up in the in-service controller if unit is simplex (ASWF)
PMD-103	Fault isolated by TNFRTSMN. Fault type is unique transient (retry passed). Error is AMM, DWMM, or BIMWM in only one controller if unit is duplex; or up in the in-service controller if unit is simplex. BIMWM is not checked for CRTSI (ASWF)
PMD-104	Fault isolated by TNFRTSMN. Fault type is unique class-3 hard (retry failed). Error is AMM, DWMM, or BIMWM in only one controller if unit is duplex; or up in the in-service controller if unit is simplex. BIMWM is not checked for CRTS1 (ASWF)
PMD-105	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 transient (retry passed). Error will be PFE, PFO, RTSMPF, TTSMPF, BIMPF, or ASWF in both controllers (ASWF)
PMD-106	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 hard (retry failed). Error will be PFE, PFO, RTSMPF, TTSMPF, BIMPF, or ASWF in both controllers (ASWF)
PMD-150	Fault isolated by TNFRTSMN. Fault type is unique class-1 transient (retry passed). Error up in AINT error source register may be AINT only or SSWF; or any error which has secondary registers (RTMP, TTMP, BIMP, RSW, or BMAPF) where no errors are up in secondaries
PMD-151	Fault isolated by TNFRTSMN. Fault type is unique class-1 hard (retry failed). Error up in AINT error source register may be AINT only or SSWF; or any error which has secondary registers (RTMP, TTMP, BIMP, RSW, or BMAPF) where no errors are up in secondaries
PMD-152	Fault isolated by TNFRSTMN. Fault type is unique class-2 transient (retry passed). Error in AINT error source register may be CE or TSSC in only one controller; or an RTMP, TTMP, BIMP, RSW, BMAPF, or TSW in only one controller with errors up in secondary registers
PMD-153	Fault isolated by TNFRTSMN. Fault type is unique class-2 hard (retry failed). Error in AINT error source register may be CE or TSSC in only one controller; or RTMP, TTMP, BIMP, RSW, BMAPF, or TSW in only one controller with errors in secondary registers

TABLE A (Contd)			
PMD	**ERROR DEFINITION**	**PMD**	**ERROR DEFINITION**
PMD-160	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 transient (retry passed — both controllers). Error in AINT error source register or sense and lock register may be AINT only, CE, SSWF, or TSSC in both controllers; or RIMP, TIMP, BIMP, or BMBPF in both controllers with errors up in secondaries	PMD-172	Fault isolated by TNFRTSMN. A receive or transmit time slot memory parity failure has been detected in the AINT and/or SAL error source registers in both controllers. One or both of the controllers have failed the retry. The AUX data block provides the K-code of the suspect unit and the failing level. This is a class-4 hard failure
PMD-161	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 hard (retry failed — either controller). Error in AINT error source register or sense and lock register may be AINT only, CE, SSWF, or TSSC in both controllers; or RTMP, TTMP, BIMP, or BMBPF in both controllers with errors up in secondaries	PMD-173	Fault isolated by TNFRTSMN. A receive or transmit time slot memory parity failure has been detected in the AINT and/or SAL error source registers in both controllers. Both of the controllers have passed the retry. The AUX data block provides the K-code of the suspect unit and the failing level. This is a class-4 transient failure
PMD-170	Fault isolated by TNFRTSMN. Either a receive or transmit time slot memory parity failure has been detected in the AINT and/or SAL error source registers in only one controller. The error is partitionable and a retry of the failing controller has failed. The AUX data block provides the K-code of the suspect unit and the failing level. This is a class-2 hard fault	PMD-207	Fault isolated by TNFRTSMN. Fault is either TRPF, TMM, or TSW. The channel is busy to a time slot. In attempting to trace the call through the network, a mismatch in the TSM data was found in the RTSI. An RTMP error was then found in the RTSI AINT ESR. Suspect frame will be changed to RTSI and fault isolation reentered
PMD-171	Fault isolated by TNFRTSMN. Either a receive or transmit time slot memory parity failure has been detected in the AINT and/or SAL error source registers in only one controller. The error is partitionable and a retry of the failing controller has passed. The AUX data block provides the K-code of the suspect unit and the failing level. This is a class-2 transient fault	PMD-210	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. A path was found back to RTSI. RTSI has some error source bits set. Suspect frame will be changed to RTSI and fault isolation reentered
		PMD-211	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, the network routine (NTRO) for one controller is incorrect. AUX data block has more information. Fault is treated as unique error

TABLE A (Contd)			
PMD	**ERROR DEFINITION**	**PMD**	**ERROR DEFINITION**
PMD-212	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, TTSM memory did not have appropriate data. AUX data block has more information. Fault is treated as unique error	PMD-217	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, cutoff or multiple path has been found in TMS. AUX data block has more information. Fault is treated as software fault
PMD-213	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, TTSM information from two controllers did not agree. AUX data block has more information. Fault is treated as nonunique error	PMD-220	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, it was found RTSI duplex failed. AUX data block has more information. Fault is treated by letting ERAT attempt to take out RTSI
PMD-214	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, one TMS controller failed to pass access test. AUX data block has more information. This TMS controller is treated as unique fault	PMD-221	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, one RTSI controller failed access test. AUX data block has more information. Fault is treated as unique RTSI fault
PMD-215	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, both TMS controllers failed to pass access test. AUX data block has more information. Fault is treated as nonunique TMS fault	PMD-222	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, both RTSI controllers failed access tests. AUX data block has more information. Fault is treated as nonunique RTSI fault
PMD-216	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call though network, mismatch in data stored in TSM memory was found. AUX data block has more information. Fault is treated as TMS nonunique error	PMD-223	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, broken or multiple path found in RTSI. AUX data block has more information. Fault is treated as RTSI software fault

TABLE A (Contd)			
PMD	**ERROR DEFINITION**	**PMD**	**ERROR DEFINITION**
PMD-224	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to time slot. In attempting to trace call through network, mismatch in TMS routing F/F was found. AUX data has more information. Fault is treated as RTSI nonunique fault	PMD-231	Fault isolated by TNFRXMIT. Fault type is TMM or TSW error in both controllers but channel on which error occurred is not involved in network path. Therefore, fault is in this unit but is transient because retry passed. Fault may be in recorrelator or involve BUFC memory but cannot be isolated to unique controller
PMD-225	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, one RTSI controller has incorrect network routing. AUX data has more information. Fault is treated as RTSI unique fault	PMD-232	Fault isolated by TNFRXMIT. Fault type is TMM or TSW error in both controllers but channel on which error occurred is not involved in network path. Therefore, fault is in this unit and is hard because retry failed. Fault may be in recorrelator or involve BUFC memory but cannot be isolated to unique controller
PMD-226	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Channel is busy to a time slot. In attempting to trace call through network, mismatch in TSM data in RTSI was found. AUX data has more information. Fault is treated as RTSI nonunique fault	PMD-233	Fault isolated by TNFRXMIT. Fault type is TMM or TSW error occurring in both controllers. Check of busy idle memory map bits against TS memory was run. Check found that suspect controller has mismatch between time slot memory information and BIMM information. Information not found in other controller. Therefore, BIMM or TTSM in suspect controller may be at fault
PMD-227	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. The channel is busy to a time slot. In attempting to trace the call through network, a broken or multiple path was found in the RTSI. An RTMP error was then found in the RTSI AINT ESR. Suspect frame will be changed to the RTSI and fault isolation reentered	PMD-234	Fault isolated by TNFRXMIT. Fault type is TMM or TSW error occurring in both controllers. Check of busy idle memory map bits against TS memory was run. Check found mismatch in data between two controllers which is attributable to controller fault but cannot be further isolated to unique controller. BIMM or TTSM in one of two controllers is suspect
PMD-230	Fault isolated by TNFRXMIT. Fault type is TRPF, TMM, or TSW with no corresponding secondary ESR bits set. Fault is probably in indicated controller ESRS		

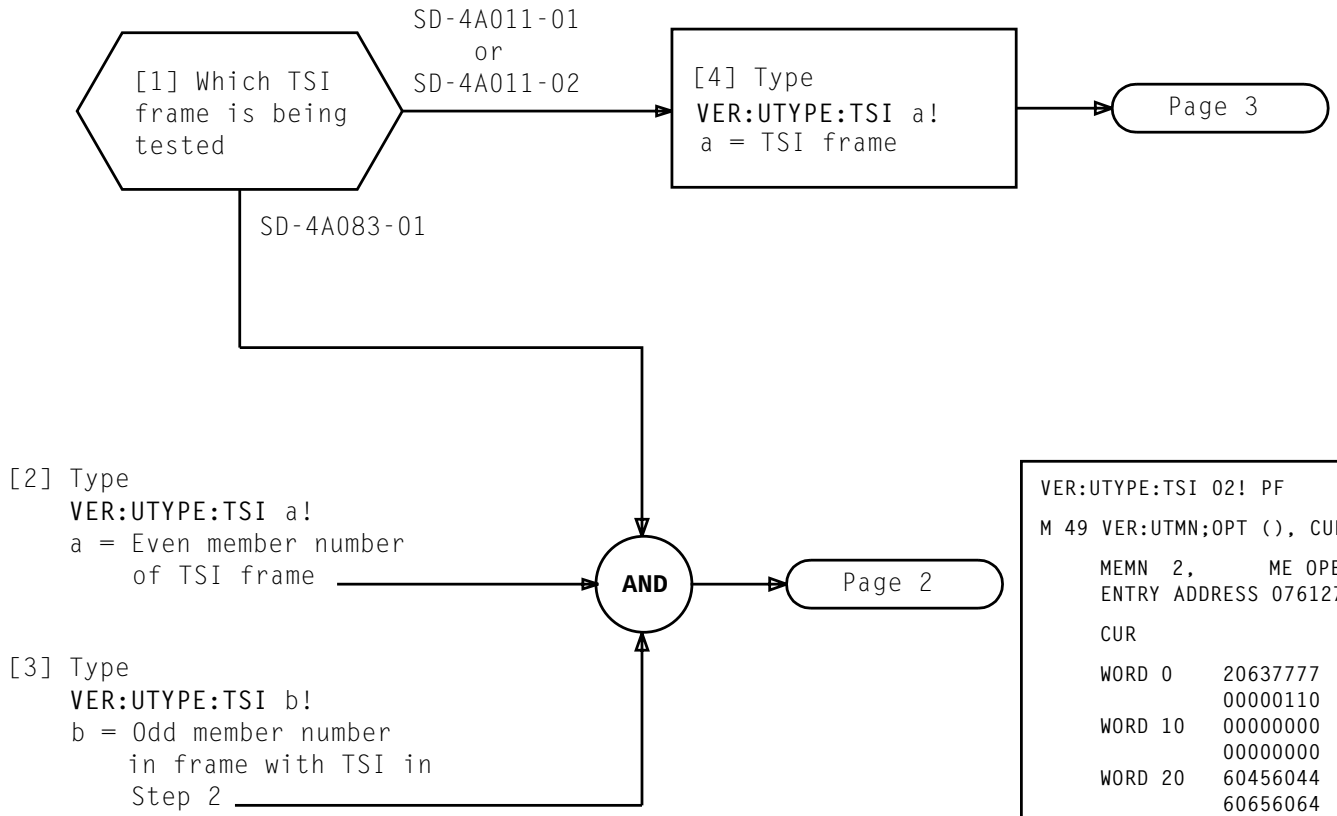
TABLE A (Contd)			
PMD	**ERROR DEFINITION**	**PMD**	**ERROR DEFINITION**
PMD-235	Fault isolated by TNFRXMIT. Fault type is TMM or TSW error occurring in both controllers. Check of busy idle memory map bits against TS memory was run. Check has found data between controllers to match but BIMM data and TS data does not correlate. Therefore, error is probably result of software error	PMD-241	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. Path was found on failing time slot. Attempts made to isolate fault to one of six possible controllers by reconfiguring network routing. AUX data block has more information. During the reconfiguration, the error went away. The fault will be treated as a transient error and all controllers involved in the initial failure will be sent to error analysis for further analysis.
PMD-236	Fault isolated by TNFRXMIT. Fault type is TMM or TSW error occurring in both controllers. Check of BIMM and TTSM information passed. Recorrelator tested and both controllers failed. Problem may be in cross controller matchers and will be treated as nonunique	PMD-242	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. A path has been found on the failing time slot. Attempts have been made to isolate the fault to one of six possible controllers by reconfiguring network routing. AUX data block has more information. The error was not isolated and must be considered nonunique. The final suspect list which is passed on to error analysis is found in the AUX data block.
PMD-237	Fault isolated by TNFRXMIT. Fault type is TMM or TSW error occurring in both controllers. Check of BIMM and TTSM information passed. Recorrelator tested and one controller failed. Fault is in recorrelator or associated circuits and will be treated as unique fault	PMD-243	Fault isolated by TNFRXMIT. Fault type is either TRPF, TMM, or TSW. A path has been found on the failing time slot. Attempts have been made to isolate the fault to one of six possible controllers by reconfiguring the network routing. AUX data block has more information. A single controller has been isolated. Its identity is in the suspect list word of the AUX data block.
PMD-240	Fault isolated by TNFRXMIT. Fault type is TMM or TSW error occurring in both controllers. Check of BIMM and TTSM information passed. Recorrelator tested and both controllers passed. Since failing channel is not involved in network path, no more testing can be done and fault must be in failing frame. Fault will be treated as nonunique	PMD-250	Fault isolated by TNFRXMIT. Fault type is hard RSW (retry failed). Fault is probably not in TSI recording error but in transmission subunit connected to interrupting port. AUX data block has details of interrupting ports

TABLE A (Contd)			
PMD	**ERROR DEFINITION**	**PMD**	**ERROR DEFINITION**
PMD-251	Fault isolated by TNFRXMIT. Fault type is transient RSW (retry passed). Fault is probably not in TSI recording error, but in transmisson subunit connected to interrupting ports. AUX data block has details of interrupting ports	PMD-305	Fault isolated by TNFRMMRT. Fault type is nonunique class-3 hard. Network connection from failing channel in BMA to maintenance channel in BMD made. Data received in BMD does not match data sent from BMA for both controllers
PMD-300	Fault isolated by TNFRMMRT. Fault type is unique class-3 hard. Attempt to change state of BMA port pest has failed	PMD-306	Fault isolated by TNFRMMRT. Fault type is unique class-3 hard. Network connection from failing channel in BMA to maintenance channel in BMD made. Data received in BMD does not match data sent from BMA for one controller
PMD-301	Fault isolated by TNFRMMRT. Fault type is unique class-3 hard. Attempt to change state of HFIS bit in hardware status register has failed	PMD-307	Fault isolated by TNFRMMRT. Fault type is nonunique class-3 hard. Attempt to make connection across the network failed
PMD-302	Fault isolated by TNFRMMRT. Fault type is unique class-3 hard. Attempt to reset FS and FE bits of hardware status register has failed	PMD-310	Fault isolated by TNFRMMRT. Fault type is nonunique class-3 transient. Loop-around connection of network made. Data received in maintenance channel of BMD matches data sent through failing channel of BMA for both controllers
PMD-303	Fault isolated by TNFRMMRT. Fault type is unique software error. Mismatch between controllers of data in critical register dump at time of interrupt. Either HFIS bit of hardware status word (for non-CRTSI only) or port pests do not match or software state and CREG value of port pests do not match	PMD-311	Fault isolated by TNFRMMRT. Fault type is nonunique class-3 transient. Loop-around connection of network made. Data received in maintenance channel of BMD does not match data sent through failing channel of BMA for both controllers
PMD-304	Fault isolated by TNFRMMRT. Fault type is nonunique class-3 transient. RMM, BMAPF, or BMBPF error not detected in SAL registers for either controller after both registers were cleared and unit was allowed to autonomously cycle	PMD-312	Fault isolated by TNFRMMRT. Fault type is unique class-3 hard. Loop-around connection of network made. Data received in maintenance channel of BMD does not match data sent through failing channel of BMA for one controller

TABLE A (Contd)			
PMD	**ERROR DEFINITION**	**PMD**	**ERROR DEFINITION**
PMD-313	Fault isolated by TNFRMMRT. Fault type is nonunique class-3 hard. No test made. Attempt to make loop-around connection of network failed	PMD-365	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 hard (retry failed). Error is DWMM in both controllers
PMD-360	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 transient (retry passed). Error is BIMWM up in both controllers	PMD-366	Fault isolated by TNFRTMMN. Match type error which occurred in both controllers. (MWM) Retry performed and passed; therefore, it is transient nonunique (ASWF)
PMD-361	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 hard transient (retry passed). Error is AMM in both controllers	PMD-367	Fault isolated by TNFRTMMN. Match type error which occurred in both controllers; (MWM) therefore, it is hard unique (ASWF)
PMD-362	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 transient (retry passed). Error is AMM in both controllers	PMD-370	Fault isolated by TNFRTMMN. Match type error which occurred in both controllers. (AMM) Retry performed and passed; therefore, it is transient nonunique (ASWF)
PMD-363	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 hard (retry failed). Error is AMM in both controllers	PMD-371	Fault isolated by TNFRTMMN. Match type error which occurred in both controllers. (AMM) Retry performed and failed; therefore, it is hard nonunique (ASWF)
PMD-364	Fault isolated by TNFRTSMN. Fault type is nonunique class-4 transient (retry passed). Error is DWMM in both controllers		

FRAME J4A001B-1, SD-4A083-01							
PACK LOCATION BAY 0	POWER CONTROLS			PACK LOCATION BAY 1	POWER CONTROLS		
	REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME		REQUIRED TO REPLACE PACK	CONTROL LOCATION	NAME
(FC512) 64-02, 03 64-68, 69 60-25, 44, 62 52-02, 03 52-68, 69 48-25, 44, 62	Power Switch and Fuse	0-44-37 0-07-53	Frame PWR bay 0 (CONTR 0) **0OCU**	(FC512) 64-02, 03 64-68, 69 60-25, 44, 62 52-02, 03 52-68, 69 48-25, 44, 62	Power Switch and Fuse	1-44-37 0-07-53	Frame PWR bay 1 (CONTR 1) **1OCU**
(FC554) 44-29	Fuse	0-07-53	**0VM**	(FC554) 44-29	Fuse	1-07-53	**1VM**
(FC512) 40-02, 03 28-68, 69 24-25, 44, 62 40-68, 69 36-25, 44, 62 28-02, 03	Power Switch and Fuse	0-44-37 0-07-53	Frame PWR bay 0 (CONTR 0) **0OCL**	(FC512) 40-02, 03 40-68, 69 36-25, 44, 62 28-02, 03 28-68, 69 24-25, 44, 62	Power Switch and Fuse	1-44-37 0-07-53	Frame PWR bay 1 (CONTR 1) **1OCL**

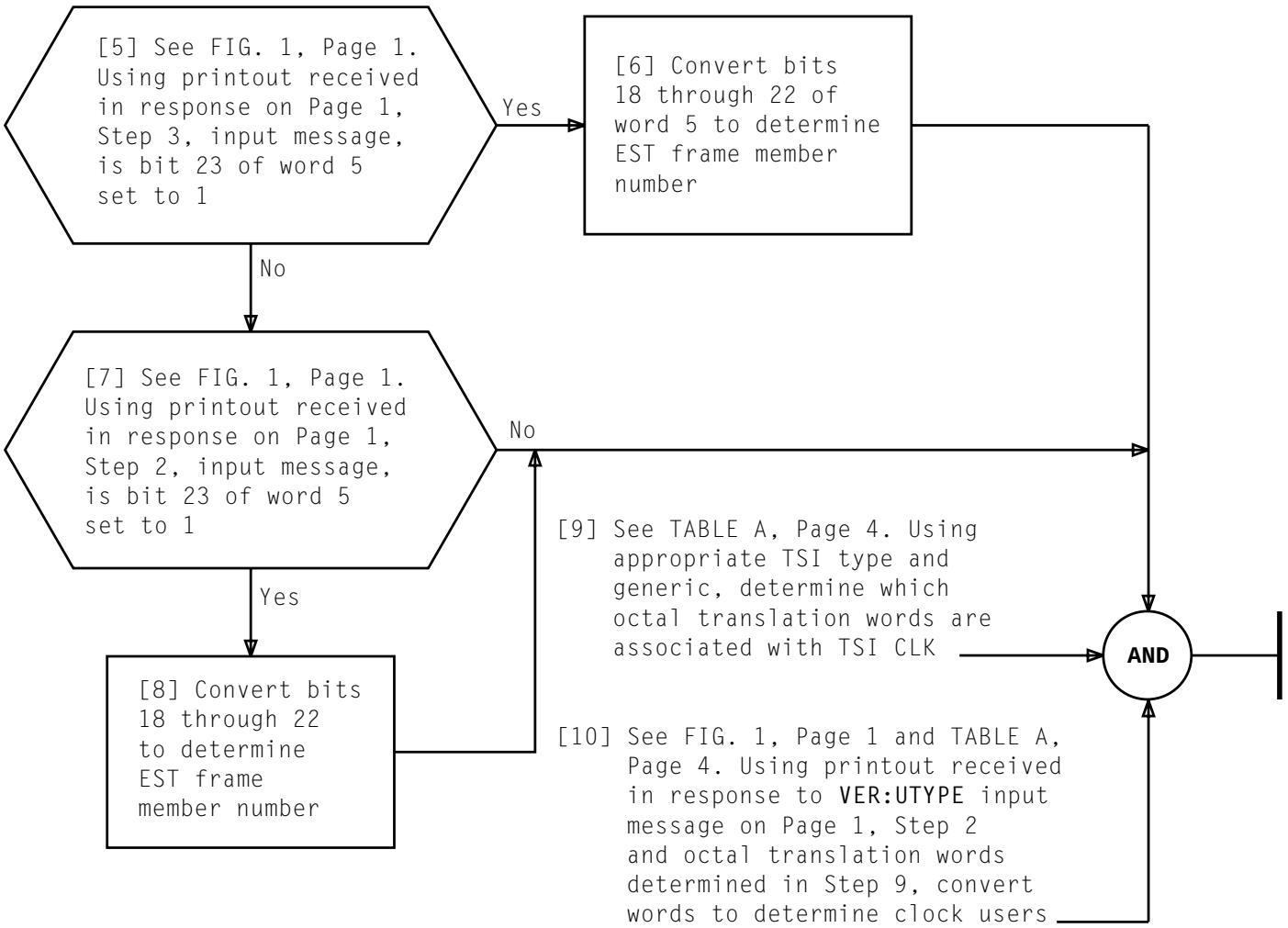
CIRCUIT PACK WITH LEDs — REPLACEMENT TABLE, SD-4A083-01 FRAME



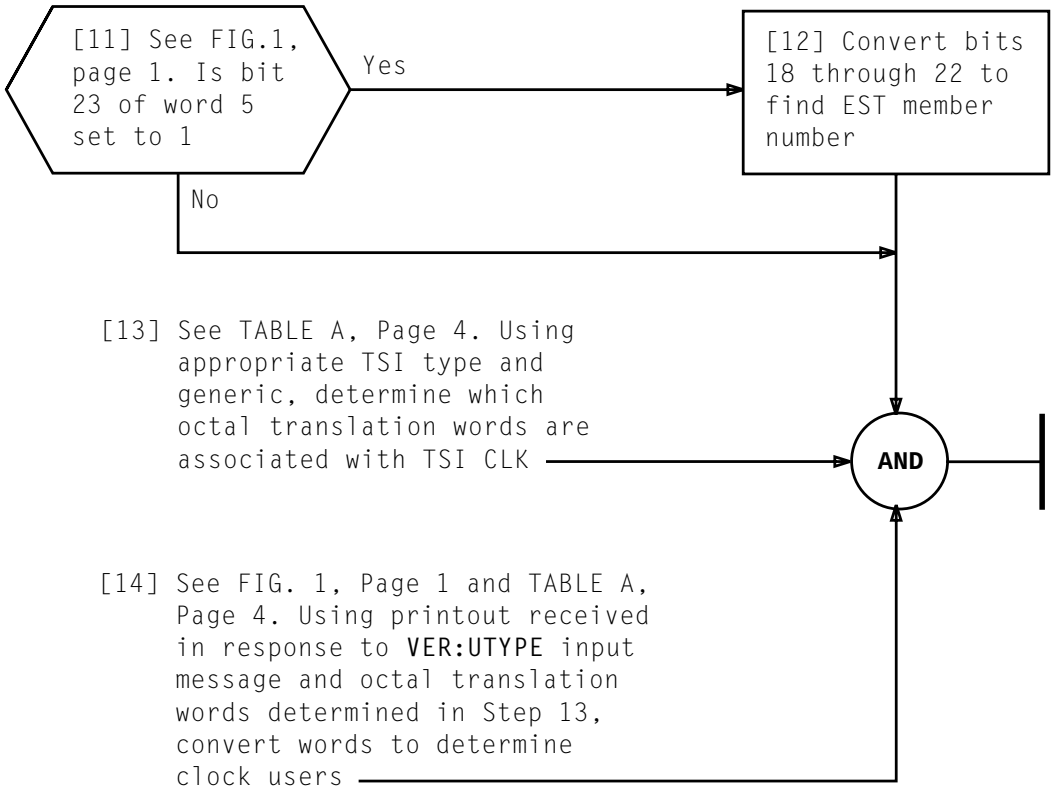

```
VER:UTYPE:TSI 02! PF

M 49 VER:UTMN;OPT (), CUR:       FIN 16006.02,            UTYN TSI

     MEMN  2,      ME OPER,
     ENTRY ADDRESS 07612704       ENTRY SIZE 25

     CUR

     WORD 0    20637777  04014002  00001110  20000070
               00000110  00011110  00000130  00000150
     WORD 10   00000000            00000403  00037777
               00000000  00000000  60416040  60436042
     WORD 20   60456044  00006046  60616060  60636062
               60656064  00006066  60606040  60706050
     WORD 30   00000000
```

FIG. 1 – Typical Example of VER:UTYPE Output Message

IDENTIFY TSI ASSOCIATED MEMBERS



IDENTIFY TSI ASSOCIATED MEMBERS



IDENTIFY TSI ASSOCIATED MEMBERS

TABLE A

TSI TYPE	ASSOC TSI CLK	OCTAL WORD	BITS 23 22	21 20 19 18	17 16 15 14 13 12 11	10 9 8 7	6 5 4 3 2 1 0
TSI-A SD-4A011-01 SD-4A011-02	Clock 0 Bit (0-10) Clock 1 Bit (11-21)	’16	NA	Frame type (DT=0001) (VIF=0011) (DIF=0100)	* Member number (DT, VIF, †DIF)	Frame type (DT=0001) (VIF=0011) (DIF=0100)	* Member number (DT, VIF, †DIF)
TSI-B SD-4A083-01	Clock A Bit (0-10) Clock B Bit (11-21)	’16	NA	Frame type (DT=0001) (VIF=0011) (DIF=0100)	* Member number (DT, VIF, †DIF)	Frame type (DT=0001) (VIF=0011) (DIF=0100)	* Member number (DT, VIF, †DIF)
	Clock C Bit (0-10) Clock D Bit (11-21)	’17					
	Clock E Bit (0-10)	’20	NA				

* Member number to be converted to decimal
† Due to internal wiring, other procedures must be used to determine member number

IDENTIFY TSI ASSOCIATED MEMBERS

SUMMARY

Call up recent change (RC) Form 700 on CRT. Using TTY, fill in blanks on RC Form 700 to change submember equipage. Using the assigned order number, activate the recent change; then verify current translations.

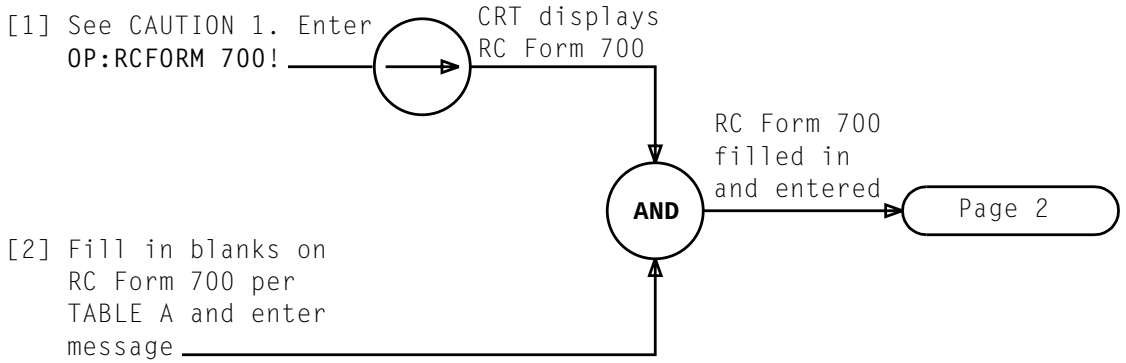


TABLE A

```
RC:UTYPE;CHG;OPT(EQP,GROW),TST:     UTYN a,
ORNU b,
                                 OLD  NEW
MEMN c,          ME    (----, ----),
                                 OLD  NEW
SUBMEM d,        SME   ( e  ,  e  ),
REMARKS----------------------------!
```

a = Unit type = VIF, DT, TGR, EST, TSI, DIF, or SP

b = RC order number

c = Member number of growth associated frame

d = Submember name
- = VIUEQ(0 to 6) (for VIU 0-6)
- = DTUEQ(0 to 7) (for DTU 0-7)
- = TMGRP(0 to 15) (for TGR 0-15)
- = ESEQ(0 to 14) (for ESU 0-14)
- = T0PRTEQ(0 to 6) (for SPC 0, Ports 0-6)
- = T1PRTEQ(0 to 6) (for SPC 1, Ports 0-6)
- = SP2EQ1 (for DT Interface Unit 1)
- = DIUEQ(0 to 31) (for DIU 0-31)
- = DIUSPQA (for Spare DIU 32)
- = DIUSPQB (for Spare DIU 33)

e = UNEQ, GROW or
  = GROW, SGRO or
  = SGRO, OPER

CAUTION 1
Calling up RC form will cause all CRT data to be cleared

RECENT CHANGE AND VERIFY SUBMEMBER EQUIPAGE

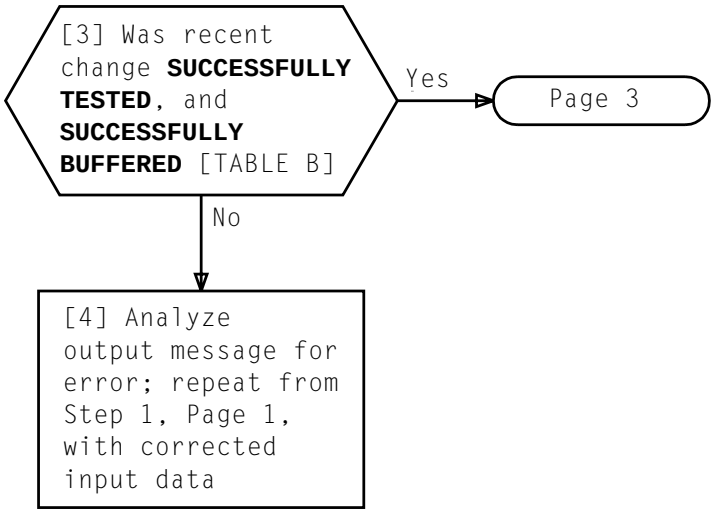


TABLE B

```
RC ORNU b SUCCESSFULLY TESTED
RC ORNU b SUCCESSFULLY BUFFERED
RC:UTYPE;CHG;OPT(EQP,GROW),BUF:   UTYN a,
ORNU b,
                      OLD  NEW
MEMN c,         ME (----,----),
                      OLD  NEW
SUBMEM d,     SME ( e   , e  ),
REMARKS ---------------------------- !
```

a = Unit type = VIF, DT, TGR, EST, TSI, DIF, or SP

b = RC order number

c = Member number of growth associated frame

d = Submember name
- = VIUEQ(0 to 6) (for VIU 0-6)
- = DTUEQ(0 to 7) (for DTU 0-7)
- = TMGRP(0 to 15) (for TGR 0-15)
- = ESEQ(0 to 14) (for ESU 0-14)
- = TOPRTEQ(0 to 6) (for SPC 0, Ports 0-6)
- = T1PRTEQ(0 to 6) (for SPC 1, Ports 0-6)
- = SP2EQ1 (for DT Interface Unit 1)
- = DIUEQ(0 to 31) (for DIU 0-31)
- = DIUSPQA (for Spare DIU 32)
- = DIUSPQB (for Spare DIU 33)

e = Entered submember equipage

RECENT CHANGE AND VERIFY SUBMEMBER EQUIPAGE

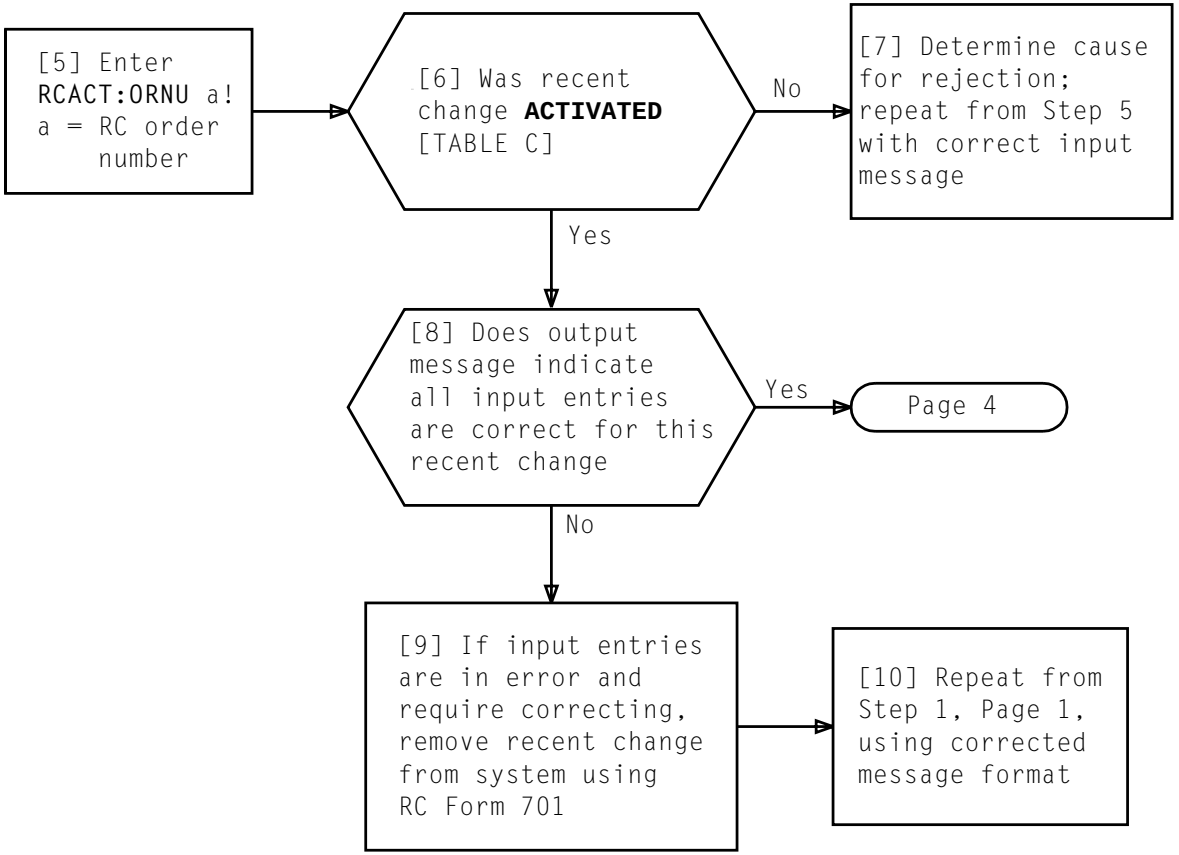


TABLE C

```
RC ORNU b ACTIVATED
RC:UTYPE;CHG;OPT(EQP,GROW),BUF:   UTYN a,
ORNU b,
                          OLD  NEW
MEMN c,          ME    (----, ----),
                          OLD  NEW
SUBMEM d,        SME   (  e ,  e  ),
REMARKS----------------------------!
```

a = Unit type = VIF, DT, TGR, EST, TSI, DIF, or SP

b = RC order number

c = Member number of growth associated frame

d = Submember name
- = VIUEQ(0 to 6) (for VIU 0-6)
- = DTUEQ(0 to 7) (for DTU 0-7)
- = TMGRP(0 to 15) (for TGR 0-15)
- = ESEQ(0 to 14) (for ESU 0-14)
- = TOPRTEQ(0 to 6) (for SPC 0, Ports 0-6)
- = T1PRTEQ(0 to 6) (for SPC 1, Ports 0-6)
- = SP2EQ1 (for DT Interface Unit 1)
- = DIUEQ(0 to 31) (for DIU 0-31)
- = DIUSPQA (for Spare DIU 32)
- = DIUSPQB (for Spare DIU 33)
- = Entered submember equipage

e = Entered submember equipage

RECENT CHANGE AND VERIFY SUBMEMBER EQUIPAGE

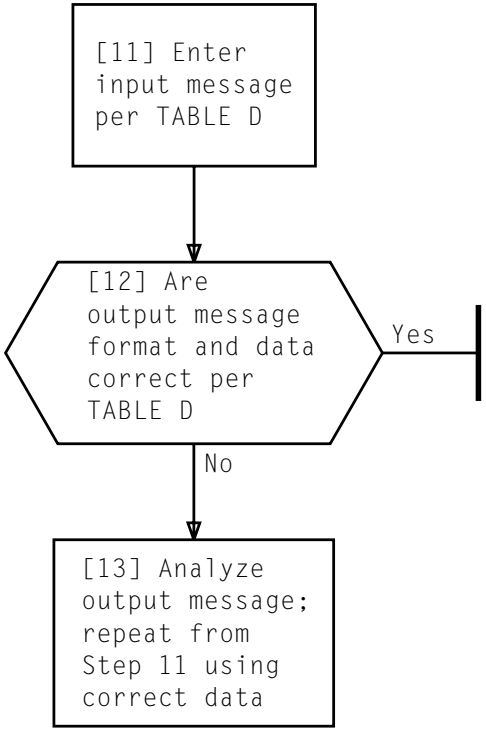


TABLE D

INPUT MESSAGE	OUTPUT MESSAGE
VER:UTYPE:b c,SME f!	VER:UTMN;OPT(SME),CUR: FLN a, UTYN b, MEMN c, ME d, SUBMEM f, SME e,

a = Floor location number
b = Unit Type = VIF, DT, TGR, TSI, EST, DIF, or SP
c = Member number of growth associated frame
d = GROW, SGRO, or OPER
e = Entered submember equipage
f = SME index number

VIF/DT UNIT	INDEX NO.	TGR TERMINAL UNIT	INDEX NO.	TSI PORT	INDEX NO.	EST UNIT	INDEX NO.	DIF UNIT	INDEX NO.	DIF UNIT	INDEX NO.
VIU-0	09	0	32	SPC 0-0	56	0	128	0	143	17	160
1	10	1	33	1	57	1	129	1	144	18	161
2	11	2	34	2	58	2	130	2	145	19	162
3	12	3	35	3	59	3	131	3	146	20	163
4	13	4	36	4	60	4	132	4	147	21	164
5	14	5	37	5	61	5	133	5	148	22	165
6	15	6	38	6	62	6	134	6	149	23	166
DTU-0	110	7	39	SPC 1-0	63	7	135	7	150	24	167
1	111	8	40	1	64	8	136	8	151	25	168
2	112	9	41	2	65	9	137	9	152	26	169
3	113	10	42	3	66	10	138	10	153	27	170
4	114	11	43	4	67	11	139	11	154	28	171
5	115	12	44	5	68	12	140	12	155	29	172
6	116	13	45	6	69	13	141	13	156	30	173
7	117	14	46	**SP2 DT INTERFACE UNIT**		14	142	14	157	31	174
		15	47					15	158	32	175
				0	120			16	159	33	176
				1	121						

RECENT CHANGE AND VERIFY SUBMEMBER EQUIPAGE

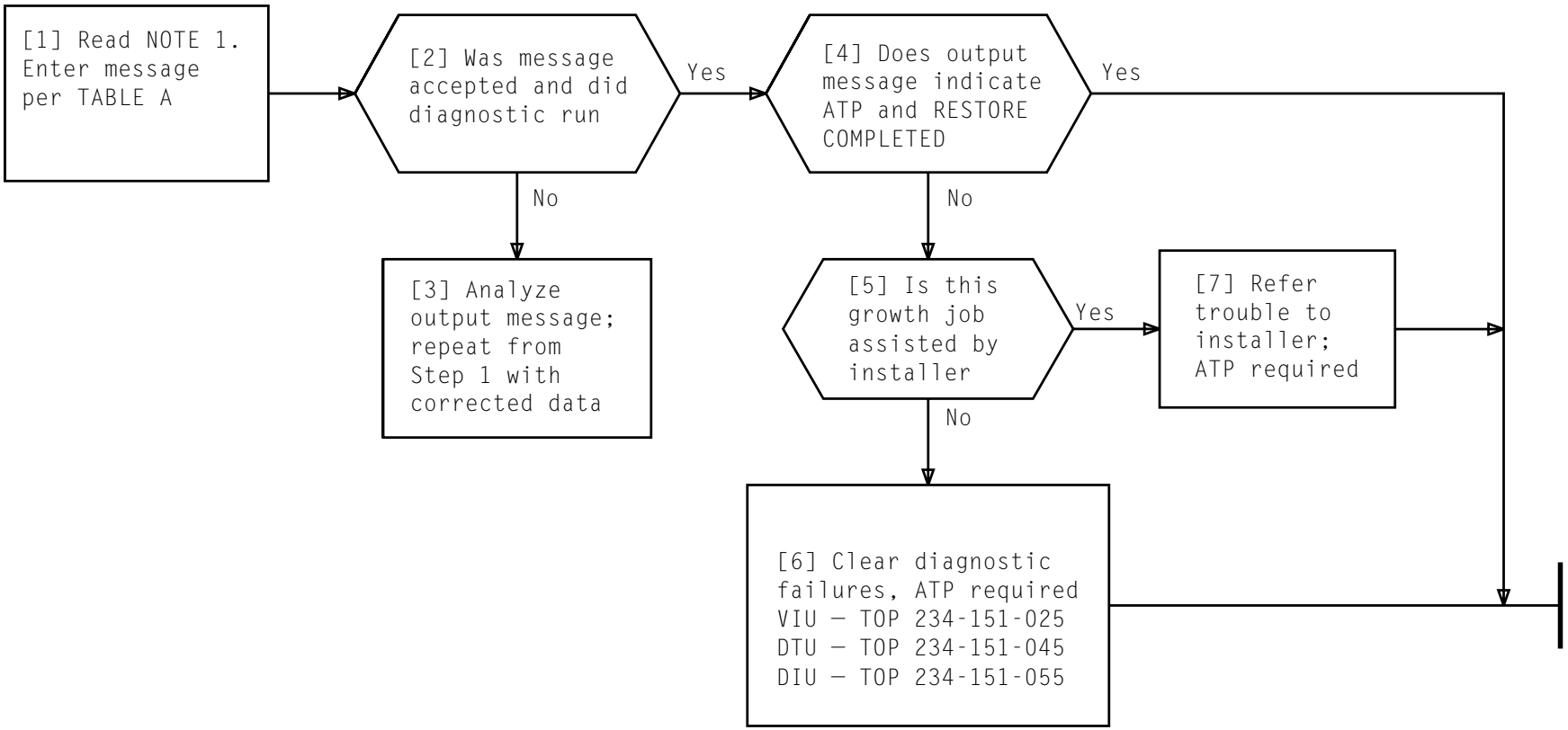


TABLE A
RST:a b,c d!
a = Unit type = VIF or DT or DIF b = Member number of growth associated frame c = Submember type = VIU or DTU or DIU d = Submember number of growth unit

NOTE 1
Restore input message will cause diagnostic to be run and VIU/DTU/DIU to be restored, if ATP

RESTORE VIU/DTU/DIU

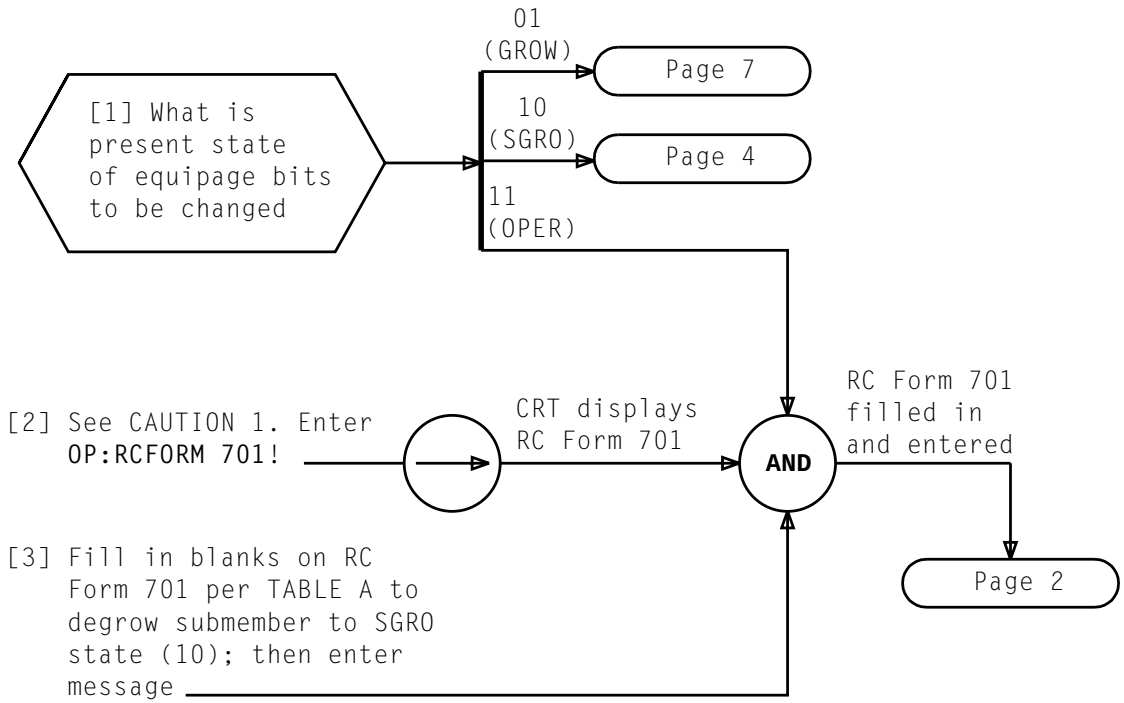
SUMMARY

Call up RC Form 701 on CRT. Using TTY, fill in blank fields on form to degrow state of submember equipage (SME) from OPER to SGRO and/or from SGRO to GROW and/or from GROW to UNEQ. Using assigned order numbers, activate each recent change; then verify completion of each change of state.

TABLE A

```
RC:UTYPE,CHG;OPT(EQP,DEGROW),TST:          UTYN a,

ORNU b,
                          OLD    NEW
MEMN c,           ME    (----, ----),

                          OLD    NEW
SUBMEM d,         SME   (  e ,   e ),

REMARKS--------------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
= TOPRTEQ(0 to 6) (for SPC 0, Ports 0-6)
= T1PRTEQ(0 to 6) (for SPC 1, Ports 0-6)
= VIUEQ(0 to 6) (for VIU 0-6)
= DTUEQ(0 to 7) (for DTU 0-7)
= ESEQ(0 to 14) (for ESU 0-14)
= TMGRP(0 to 15) (for Terminal Units 0-15)
= DIUEQ(0 to 31) (for DIU 0-31)
= DIUSPQA (for Spare DIU 32)
= DIUSPQB (for Spare DIU 33)
0PER, SGRO



CAUTION 1

Calling up RC form will cause all CRT data to be cleared

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)

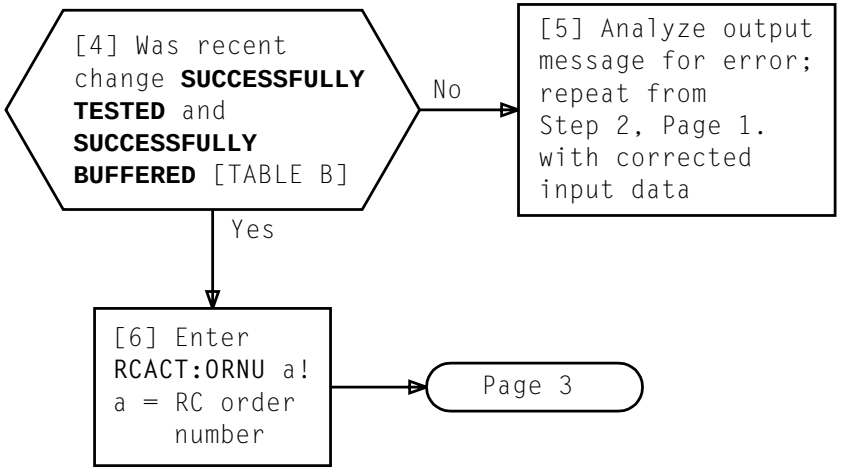


TABLE B

```
RC ORNU b SUCCESSFULLY TESTED

RC ORNU b SUCCESSFULLY BUFFERED

RC:UTYPE,CHG;OPT(EQP,DEGROW),BUF:        UTYN a,

ORNU b,
                          OLD   NEW
MEMN c,          ME    (----, ----),

                          OLD   NEW
SUBMEM d,        SME   (OPER, SGRO),

REMARKS--------------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
= TOPRTEQ(0 to 6) (for SPC 0 Ports 0-6)
= T1PRTEQ(0 to 6) (for SPC 1 Ports 0-6)
= VIUEQ(0 to 6) (for VIU 0-6)
= DTUEQ(0 to 7) (for DTU 0-7)
= ESEQ(0 to 14) (for ESU 0-14)
= TMGRP(0 to 15) (for Terminal Units 0-15)
= DIUEQ(0 to 31) (for DIU 0-31)
= DIUSPQA (for Spare DIU 32)
= DIUSPQB (for Spare DIU 33)

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)

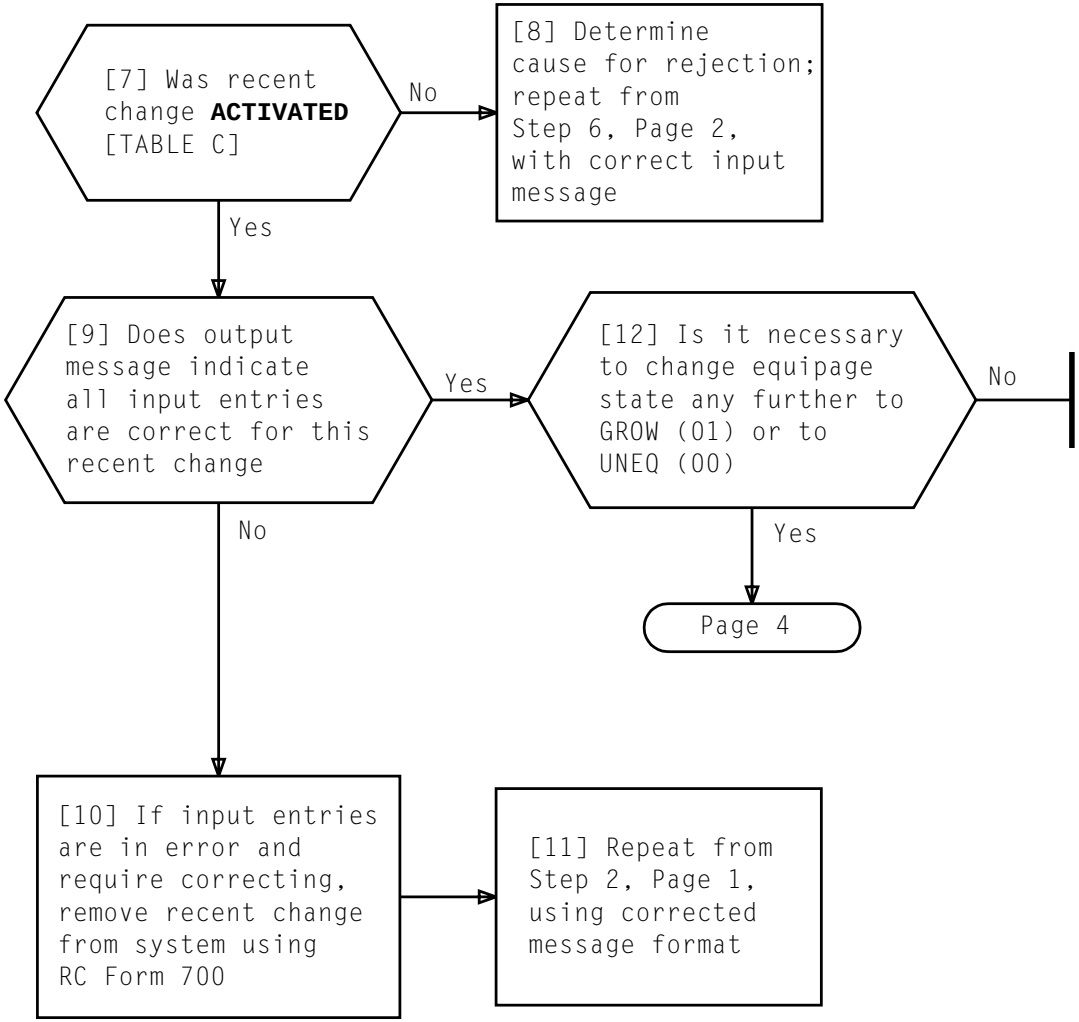


TABLE C

```
RC ORNU b ACTIVATED
RC:UTYPE,CHG;OPT(EQP,GROW),BUF:        UTYN a,

ORNU b,
                          OLD   NEW
MEMN c,          ME    (----, ----),

                          OLD   NEW
SUBMEM d,        SME   (OPER, SGRO),

REMARKS---------------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
= TOPRTEQ(0 to 6) (for SPC 0, Ports 0-6)
= T1PRTEQ(0 to 6) (for SPC 1, Ports 0-6)
= VIUEQ(0 to 6) (for VIU 0-6)
= DTUEQ(0 to 7) (for DTU 0-7)
= ESEQ(0 to 14) (for ESU 0-14)
= TMGRP(0 to 15) (for Terminal Units 0-15)
= DIUEQ(0 to 31) (for DIU 0-31)
= DIUSPQA (for Spare DIU 32)
= DIUSPQB (for Spare DIU 33)

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)

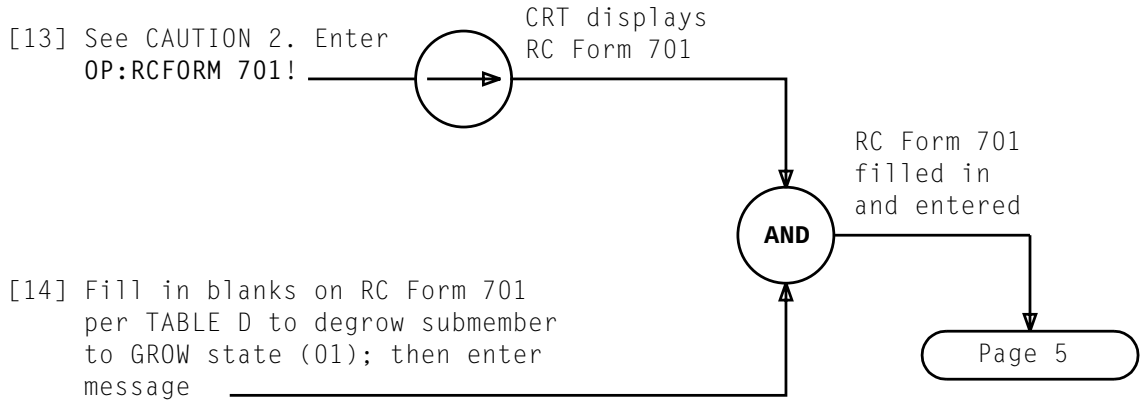


TABLE D

```
RC:UTYPE;CHG;OPT(EQP,DEGROW),TST:        UTYN a,

ORNU b,
                          OLD  NEW
MEMN c,          ME    (----, ----),

                          OLD  NEW
SUBMEM d,        SME   (  e ,   e ),

REMARKS------------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
- = TOPRTEQ(0 to 6) (for SPC 0 Ports 0-6)
- = T1PRTEQ(0 to 6) (for SPC 1 Ports 0-6)
- = VIUEQ(0 to 6) (for VIU 0-6)
- = DTUEQ(0 to 7) (for DTU 0-7)
- = ESEQ(0 to 14) (for ESU 0-14)
- = TMGRP(0 to 15) (for Terminal Units 0-15)
- = DIUEQ(0 to 31) (for DIU 0-31)
- = DIUSPQA (for Spare DIU 32)
- = DIUSPQB (for Spare DIU 33)

SGRO, GROW

CAUTION 2
Calling up RC form will cause all CRT data to be cleared

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)

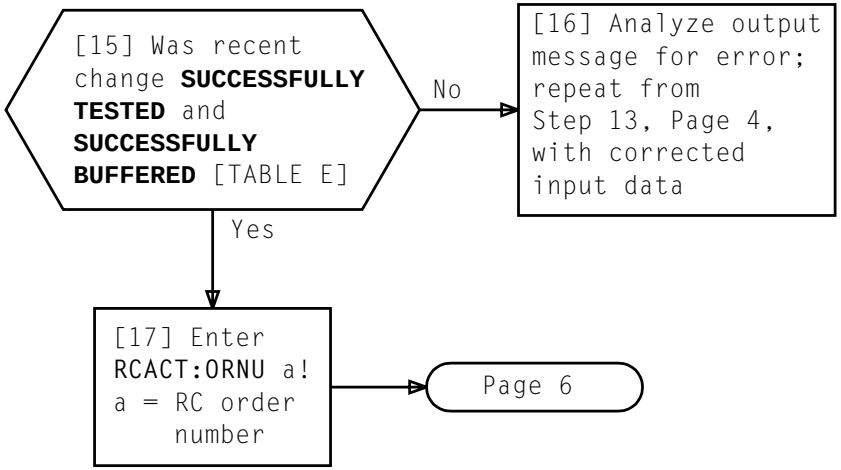


TABLE E

```
RC ORNU b SUCCESSFULLY TESTED

RC ORNU b SUCCESSFULLY BUFFERED

RC:UTYPE,CHG;OPT(EQP,DEGROW),BUF:        UTYN a,

ORNU b,
                          OLD   NEW
MEMN c,          ME    (----, ----),

                          OLD   NEW
SUBMEM d,        SME   (SGRO, GROW),

REMARKS--------------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
= TOPRTEQ(0 to 6) (for SPC 0 Ports 0-6)
= T1PRTEQ(0 to 6) (for SPC 1 Ports 0-6)
= VIUEQ(0 to 6) (for VIU 0-6)
= DTUEQ(0 to 7) (for DTU 0-7)
= ESEQ(0 to 14) (for ESU 0-14)
= TMGRP(0 to 15) (for Terminal Units 0-15)
= DIUEQ(0 to 31) (for DIU 0-31)
= DIUSPQA (for Spare DIU 32)
= DIUSPQB (for Spare DIU 33)

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)

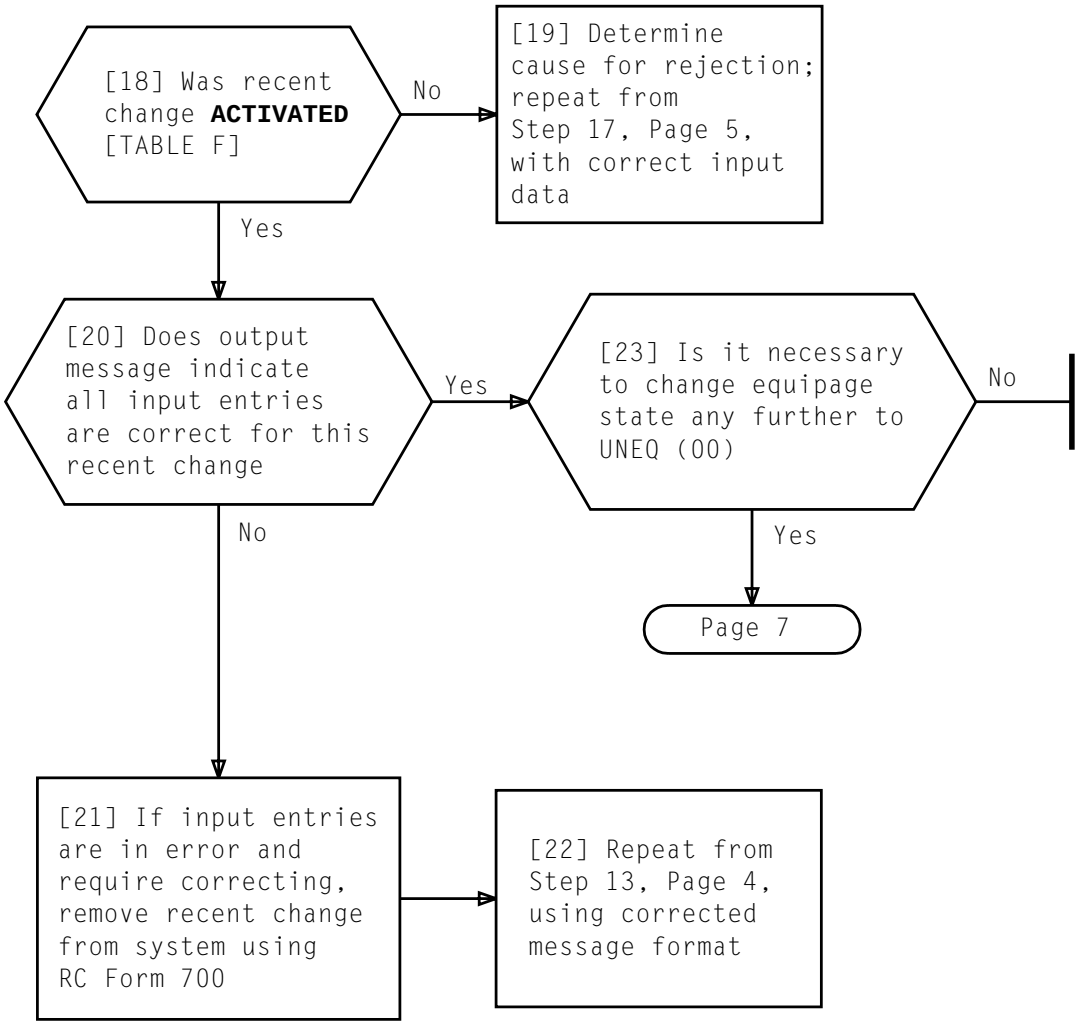


TABLE F

```
RC ORNU b ACTIVATED
RC:UTYPE,CHG;OPT(EQP,GROW),BUF:          UTYN a,

ORNU b,
                          OLD    NEW
MEMN c,          ME    (----, ----),

                          OLD    NEW
SUBMEM d,        SME   (SGRO, GROW),

REMARKS--------------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
= TOPRTEQ(0 to 6) (for SPC 0 Ports 0-6)
= T1PRTEQ(0 to 6) (for SPC 1 Ports 0-6)
= VIUEQ(0 to 6) (for VIU 0-6)
= DTUEQ(0 to 7) (for DTU 0-7)
= ESEQ(0 to 14) (for ESU 0-14)
= TMGRP(0 to 15) (for Terminal Units 0-15)
= DIUEQ(0 to 31) (for DIU 0-31)
= DIUSPQA (for Spare DIU 32)
= DIUSPQB (for Spare DIU 33)

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)

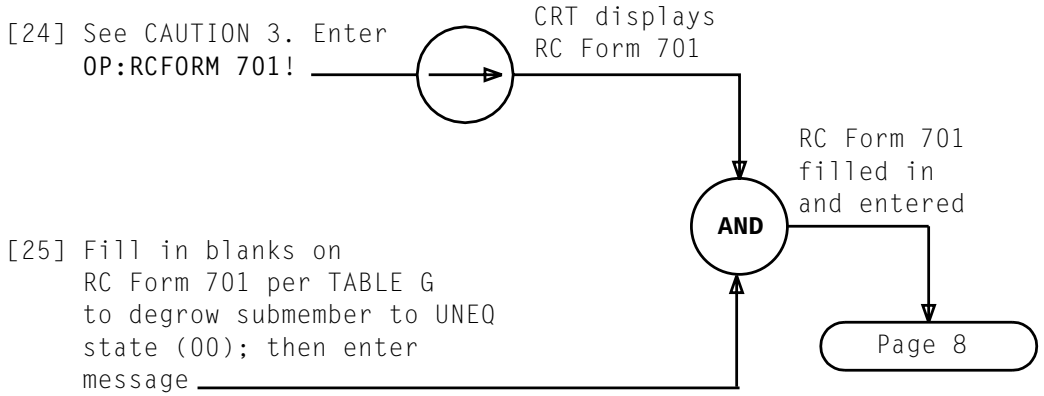


TABLE G

```
RC:UTYPE;CHG;OPT(EQP,DEGROW),TST:        UTYN a,

ORNU b,
                          OLD  NEW
MEMN c,          ME    (----, ----),

                          OLD  NEW
SUBMEM d,        SME   (  e ,   e ),

REMARKS-----------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
- = TOPRTEQ(0 to 6) (for SPC 0, Ports 0-6)
- = T1PRTEQ(0 to 6) (for SPC 1, Ports 0-6)
- = VIUEQ(0 to 6) (for VIU 0-6)
- = DTUEQ(0 to 7) (for DTU 0-7)
- = ESEQ(0 to 14) (for ESU 0-14)
- = TMGRP(0 to 15) (for Terminal Units 0-15)
- = DIUEQ(0 to 31) (for DIU 0-31)
- = DIUSPQA (for Spare DIU 32)
- = DIUSPQB (for Spare DIU 33)

e = GROW, UNEQ

CAUTION 3
Calling up RC form will cause all CRT data to be cleared

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)

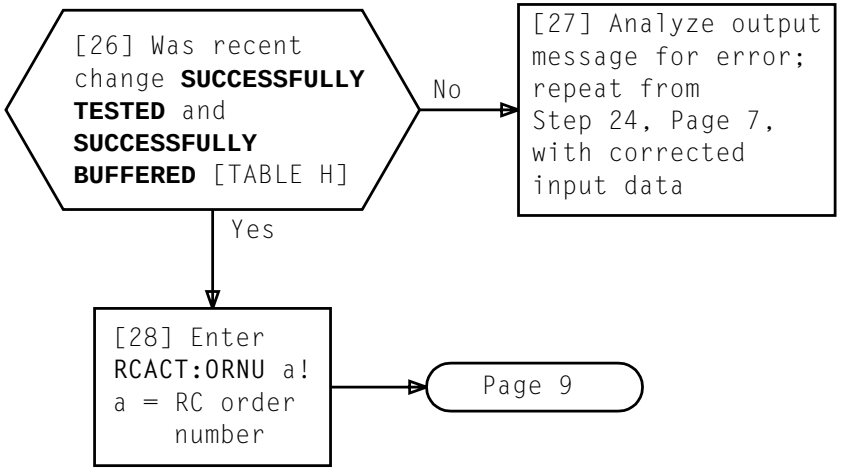


TABLE H

```
RC ORNU b SUCCESSFULLY TESTED

RC ORNU b SUCCESSFULLY BUFFERED

RC:UTYPE,CHG;OPT(EQP,DEGROW),BUF:        UTYN a,

ORNU b,
                          OLD   NEW
MEMN c,          ME    (----, ----),

                          OLD   NEW
SUBMEM d,        SME   (GROW, UNEQ),

REMARKS--------------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
= TOPRTEQ(0 to 6) (for SPC 0, Ports 0-6)
= T1PRTEQ(0 to 6) (for SPC 1, Ports 0-6)
= VIUEQ(0 to 6) (for VIU 0-6)
= DTUEQ(0 to 7) (for DTU 0-7)
= ESEQ(0 to 14) (for ESU 0-14)
= TMGRP(0 to 15) (for Terminal Units 0-15)
= DIUEQ(0 to 31) (for DIU 0-31)
= DIUSPQA (for Spare DIU 32)
= DIUSPQB (for Spare DIU 33)

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)

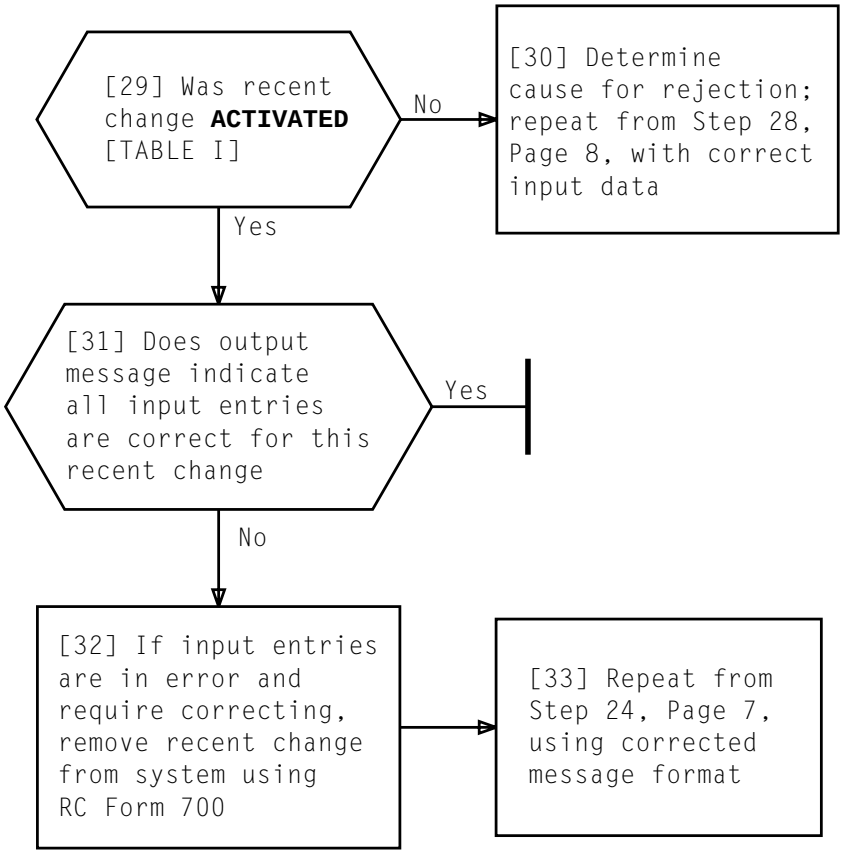
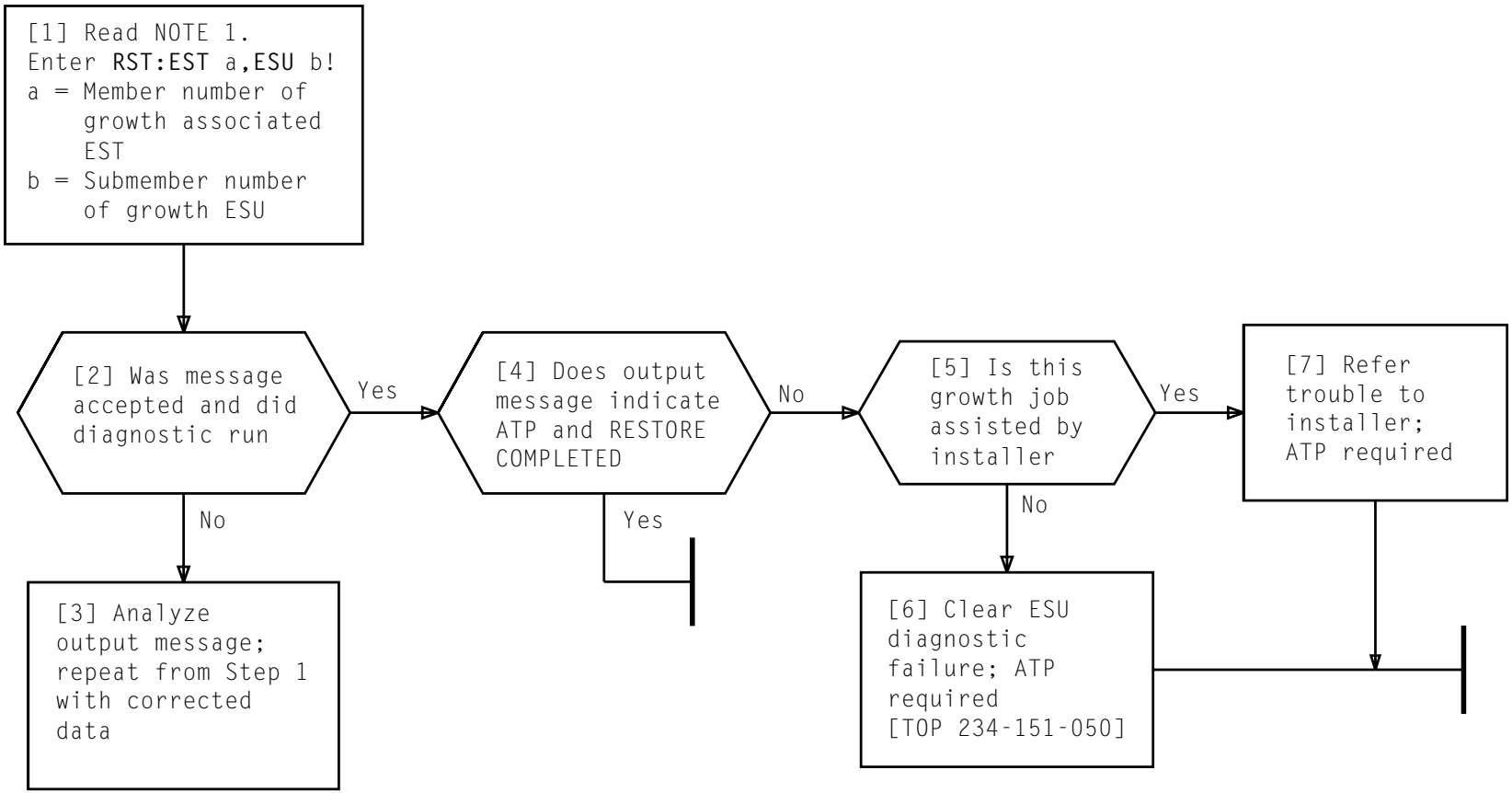


TABLE I

```
RC ORNU b ACTIVATED
RC:UTYPE,CHG;OPT(EQP,GROW),BUF:        UTYN a,

ORNU b,
                          OLD   NEW
MEMN c,          ME    (----, ----),

                          OLD   NEW
SUBMEM d,        SME   (GROW, UNEQ),

REMARKS--------------------------------!
```

a = Unit type = VIF, DT, TSI, TGR, EST, or DIF
b = RC order number
c = Member number of degrowth frame
d = Submember name
- = TOPRTEQ(0 to 6) (for SPC 0, Ports 0-6)
- = T1PRTEQ(0 to 6) (for SPC 1, Ports 0-6)
- = VIUEQ(0 to 6) (for VIU 0-6)
- = DTUEQ(0 to 7) (for DTU 0-7)
- = ESEQ(0 to 14) (for ESU 0-14)
- = TMGRP(0 to 15) (for Terminal Units 0-15)
- = DIUEQ(0 to 31) (for DIU 0-31)
- = DIUSPQA (for Spare DIU 32)
- = DIUSPQB (for Spare DIU 33)

RECENT CHANGE SUBMEMBER EQUIPAGE USING RC FORM 701 (DEGROW)



NOTE 1
Restore input message will cause diagnostic to be run and ESU to be restored, if ATP

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RESTORE GROWTH ESU

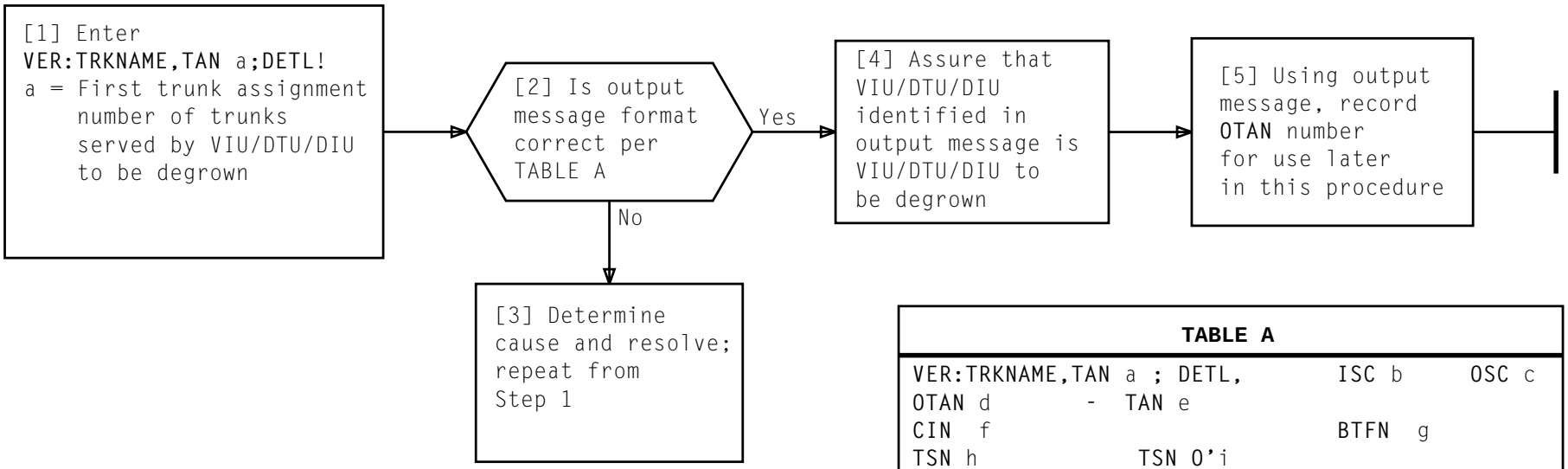


TABLE A

VER:TRKNAME,TAN a ; DETL, ISC b OSC c
OTAN d - TAN e
CIN f BTFN g
TSN h TSN O'i
j
•
•
•

a = Decimal TAN
b = Incoming signaling characteristics
c = Outgoing signaling characteristics
d = Octal trunk assignment number
e = Decimal TAN
f = Circuit identification name
g = Base traffic number of TSG
h = Decimal TSN
i = Octal TSN
j = Operational VIF and VIU that trunk is assigned to

VERIFY TAN TO VIU/DTU/DIU ASSIGNMENT

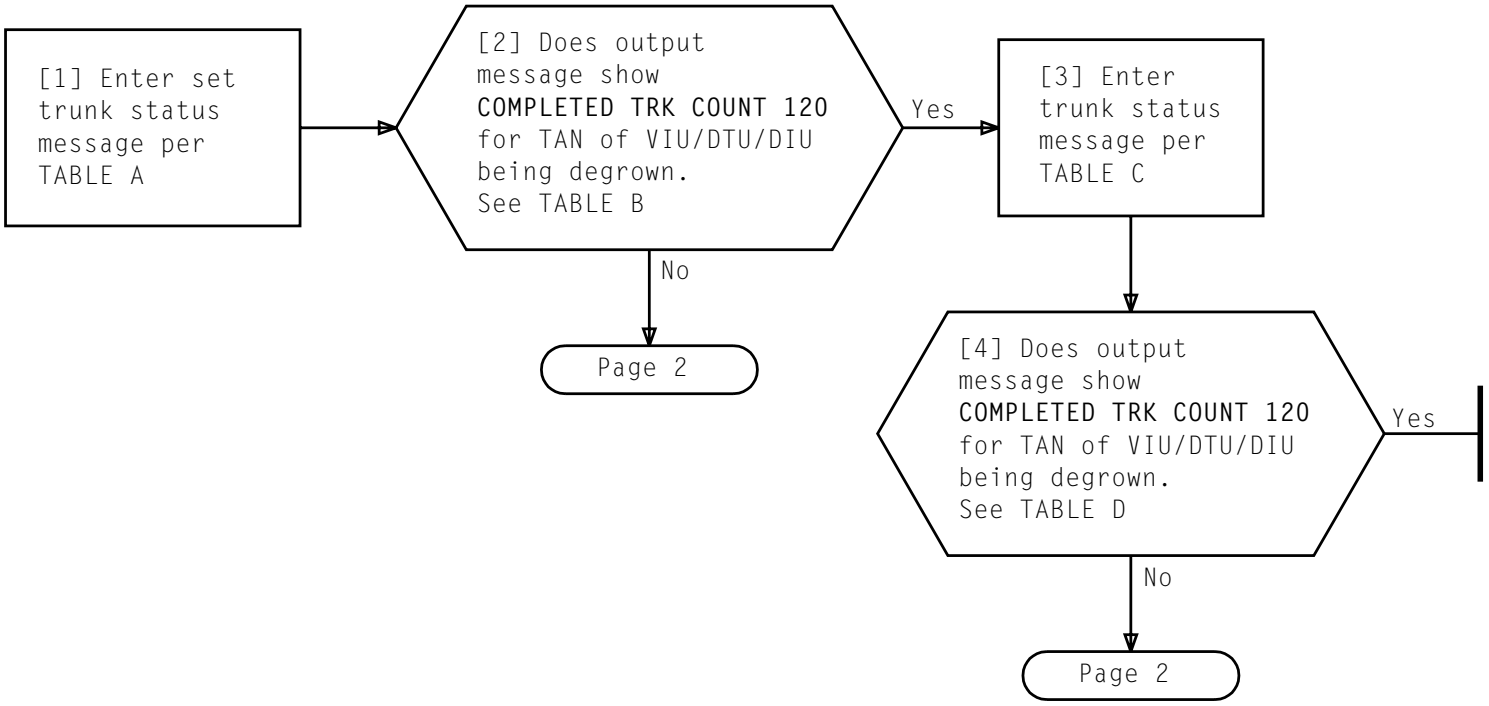


TABLE A
SET:TRKSTAT CAD.DSA,OTAN a;SUM:NUM 120!
a = Octal trunk assignment number (previously recorded)

TABLE B
SET:TRKSTAT OTAN a NUM,SUM COMPLETED TRK COUNT 120
a = First octal trunk assignment number of trunks assigned to VIU/DTU/DIU being degrown

TABLE C
OP:TRKSTAT,OTAN a;SUM:NUM 120!
a = First octal trunk assignment number of trunks assigned to VIU/DTU/DIU being degrown

TABLE D
OP:TRKSTAT OTAN a NUM,SUM COMPLETED TRK COUNT 120
a = First octal trunk assignment number of trunks assigned to VIU/DTU/DIU being degrown

CHANGE DEGROWTH VIU/DTU/DIU TRUNKS TO CIRCUIT ADMINISTRATION DISABLED STATE AND VERIFY

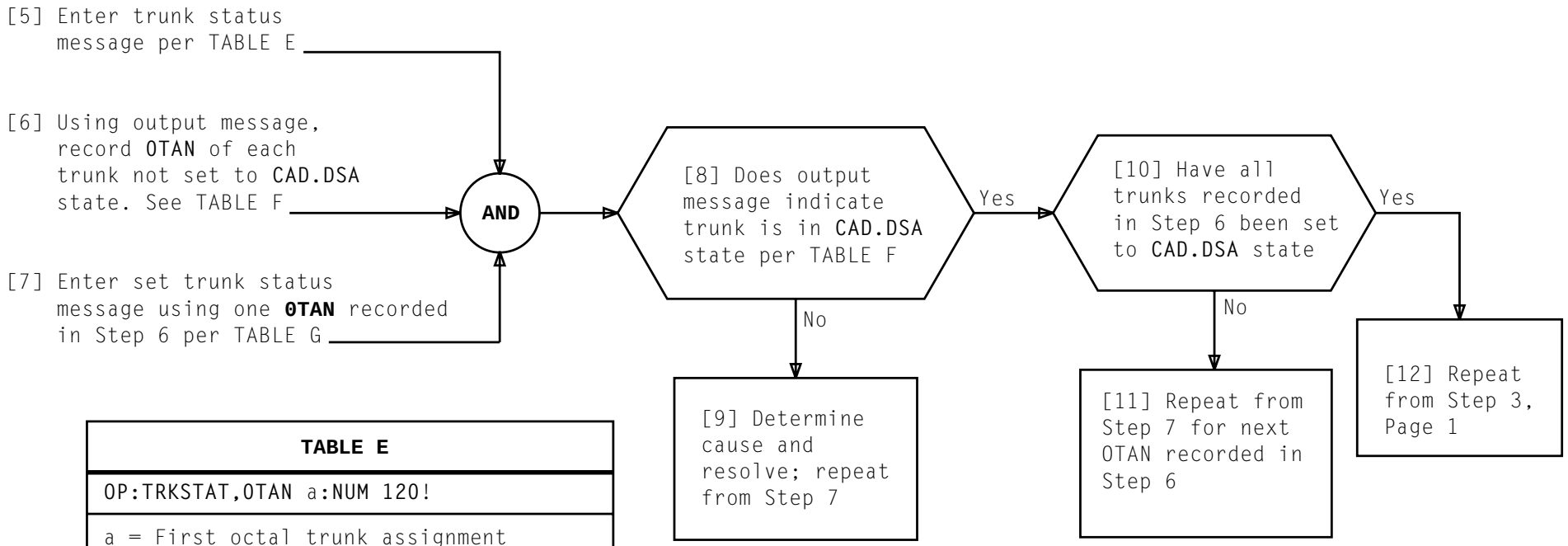
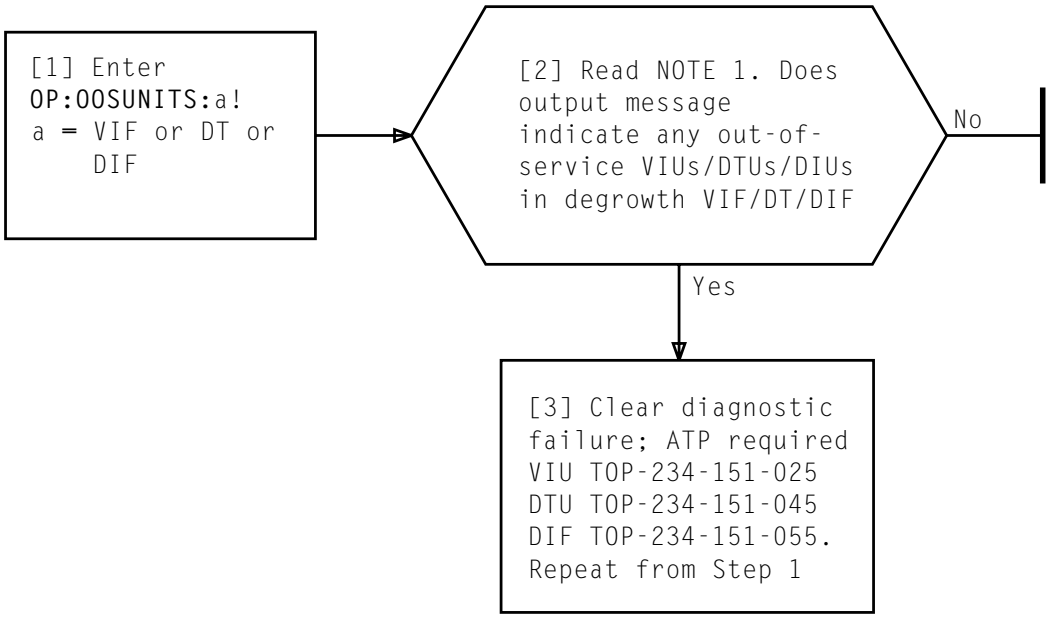


TABLE E
OP:TRKSTAT,OTAN a:NUM 120!
a = First octal trunk assignment number of VIU/DTU/DIU being degrown

TABLE F
OP:TRKSTAT CAD.DSA <a> TRAF <b> ,OTAN c • • • OP:TRKSTAT ,OTAN d NUM COMPLETED TRK COUNT 120
a = Maintenance control status b = State of trunk c = Trunk assignment number d = First trunk assignment number of trunks

TABLE G
SET:TRKSTAT CAD.DSA,OTAN a!
a = Octal trunk assignment number

CHANGE DEGROWTH VIU/DTU/DIU TRUNKS TO CIRCUIT ADMINISTRATION DISABLED STATE AND VERIFY



VERIFY THAT SPARE VIU/DTU/DIU IS AVAILABLE

NOTE 1
The spare VIU/DTU/DIU must not be protection switched in the spare position

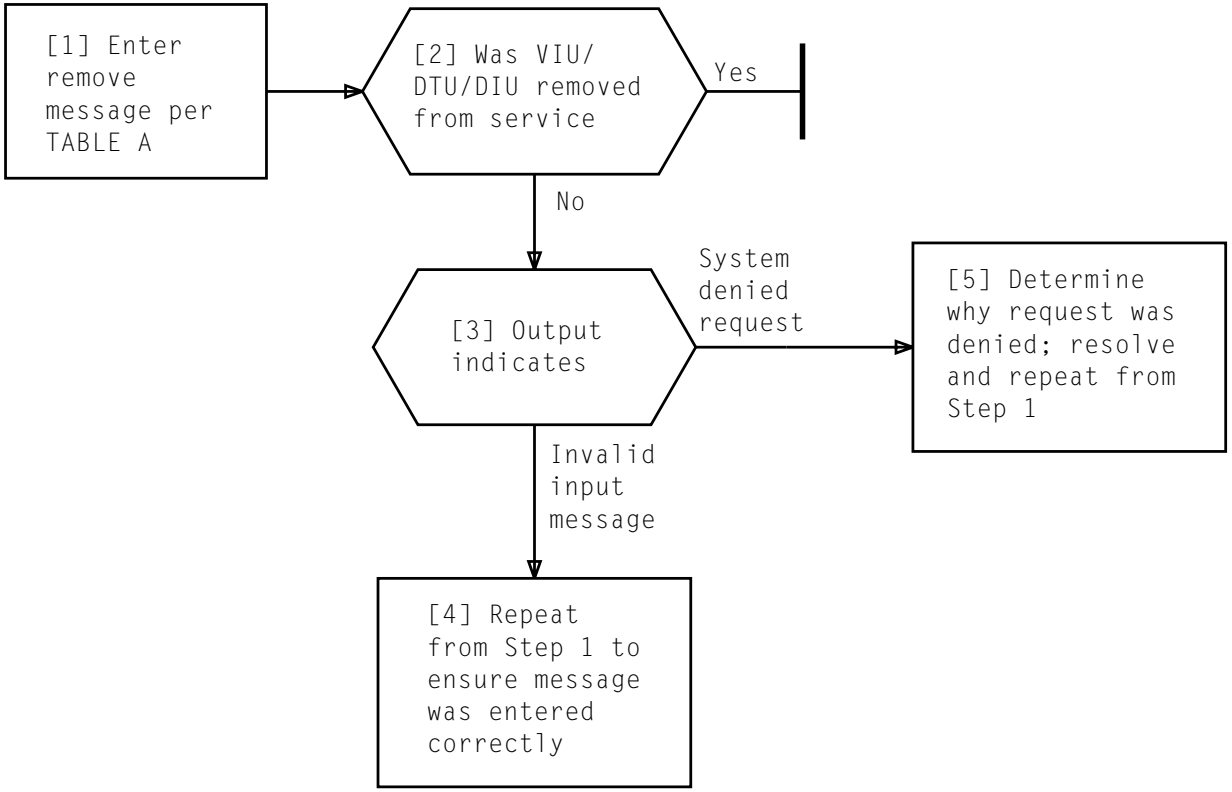
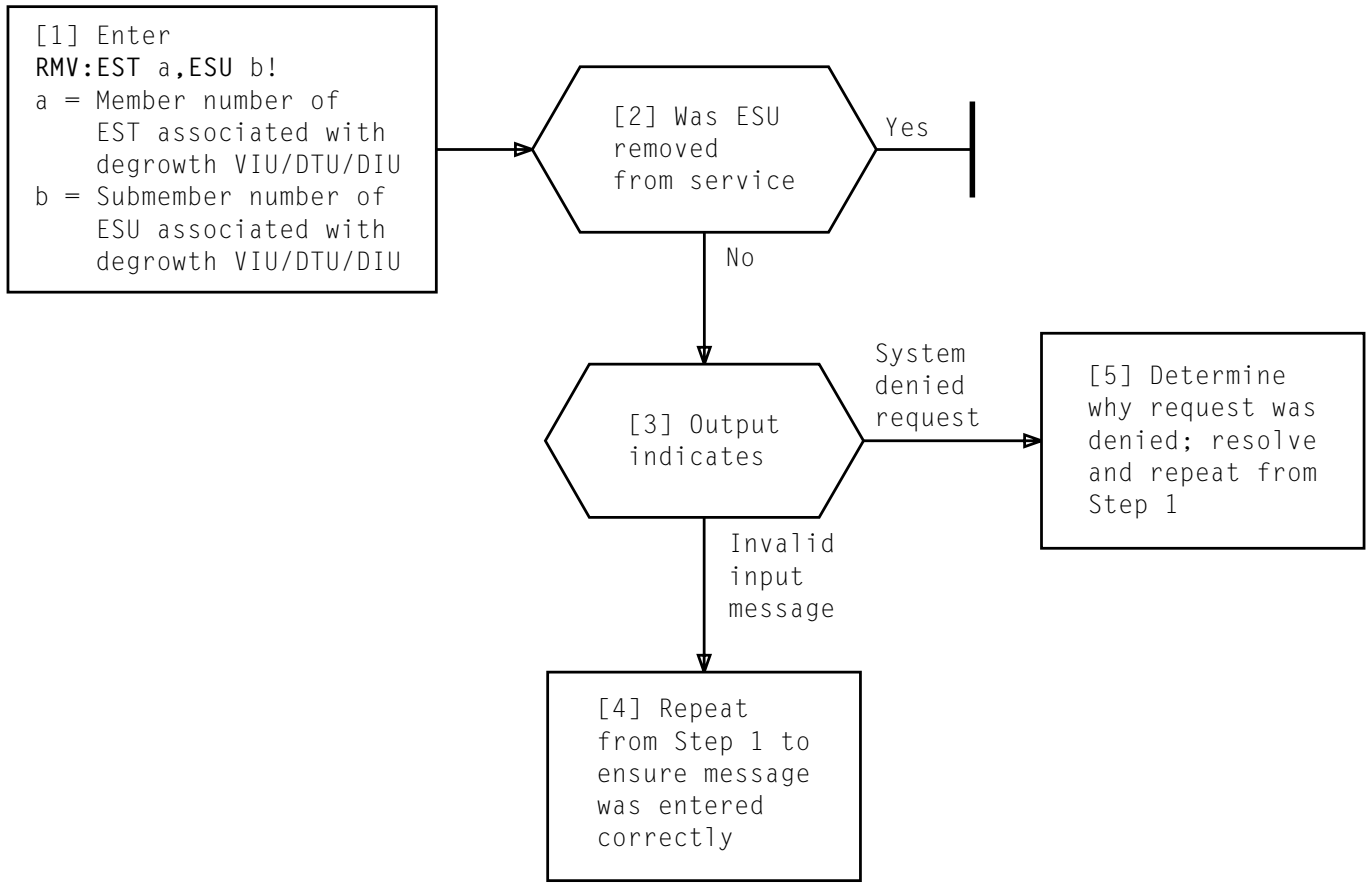
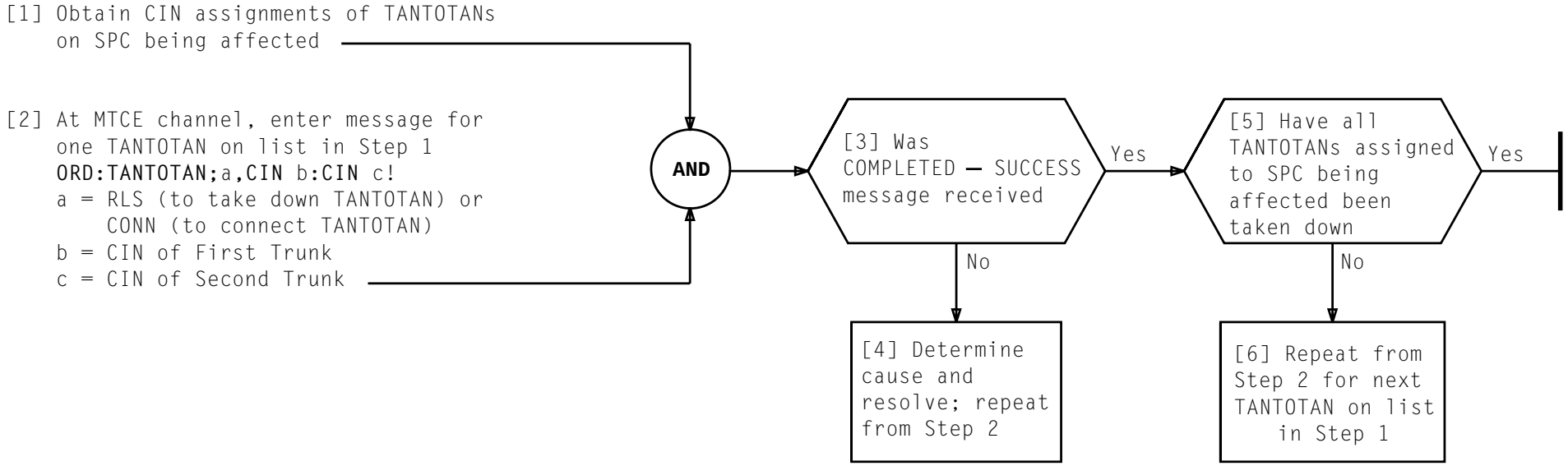


TABLE A
RMV:a b,c d!
a = VIF or DT or DIF b = Member number of degrowth associated VIF/DT/DIF c = VIU or DTU or DIU d = Submember number of degrowth VIU/DTU/DIU

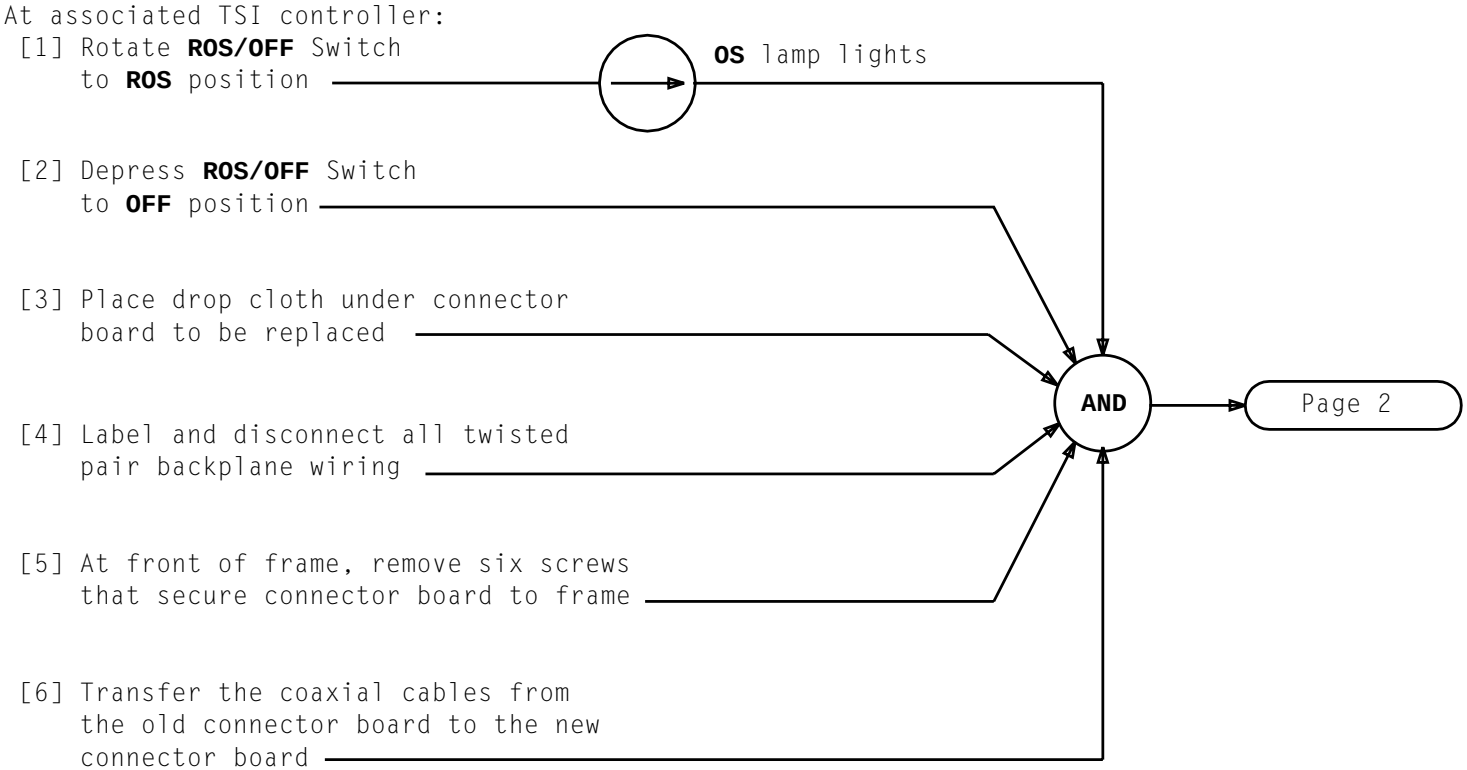
REMOVE DEGROWTH VIU/DTU/DIU FROM SERVICE



REMOVE ESU FROM SERVICE



TAKE DOWN OR CONNECT TANTOTAN CONNECTIONS



REPLACE DS-120 CONNECTOR BOARD

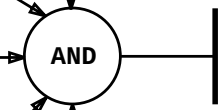
[7] Secure new connector board to frame using six screws

[8] Connect all backplane wires that were disconnected in Step 4. Strip back wires and rewrap. If the wires will not reach or break during rewrap, run a new twisted pair to replace defective wire

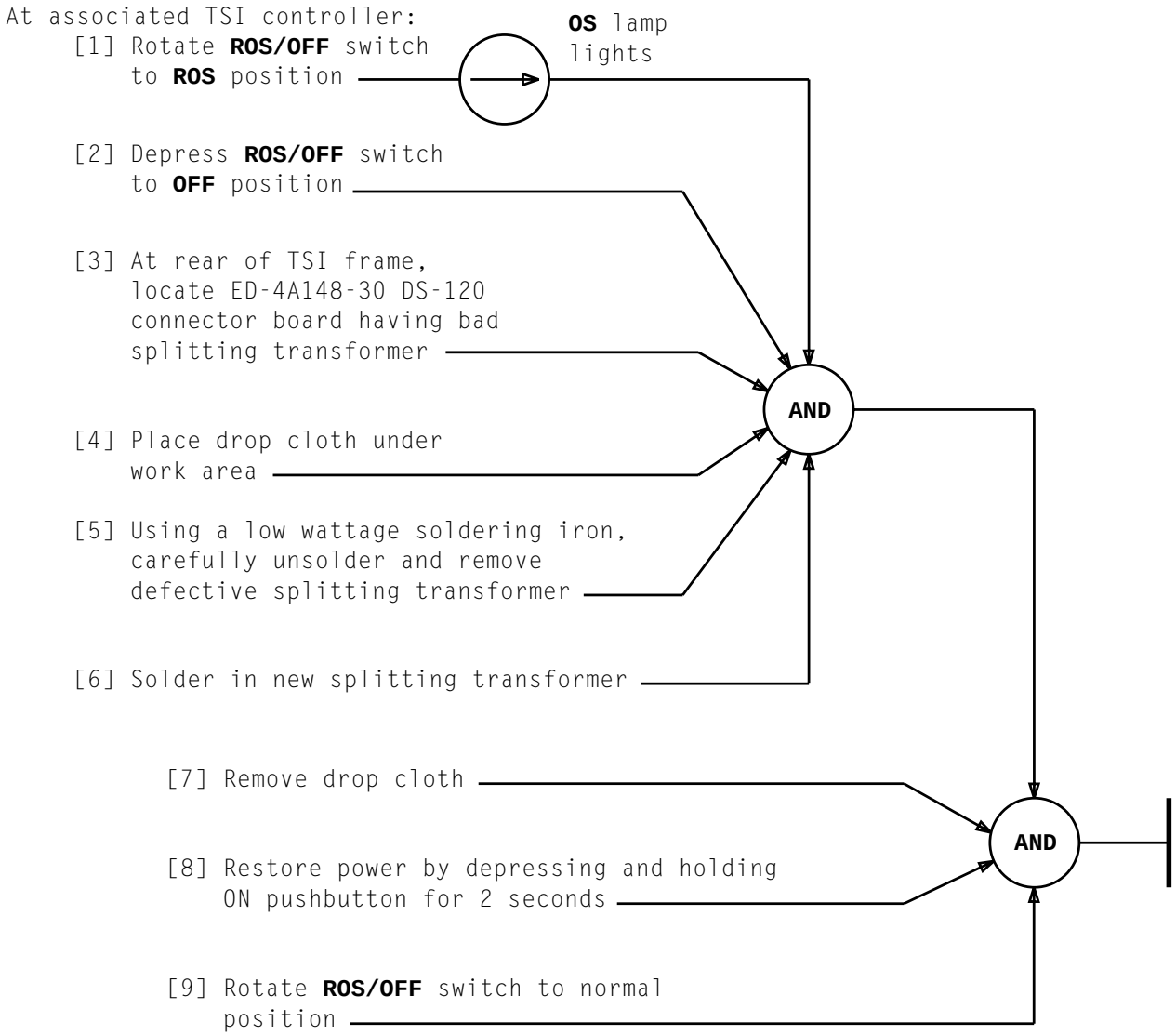
[9] Remove drop cloth

[10] Restore power by depressing and holding **ON** pushbutton for 2 seconds

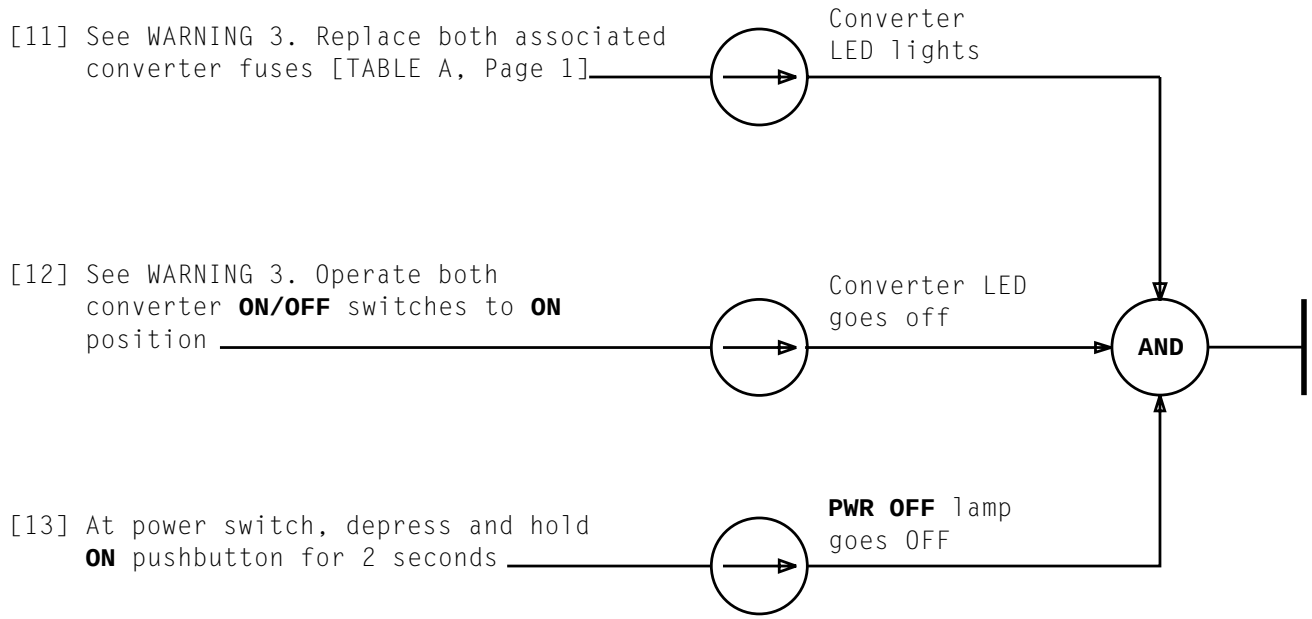
[11] Rotate **ROS/OFF** switch to normal position



REPLACE DS-120 CONNECTOR BOARD



REPLACE SPLITTING TRANSFORMER



WARNING 3
Current surge could damage converters if fuses are not replaced before turning converters to ON position

REPLACE BULK CONVERTER (245C WITH 245C)

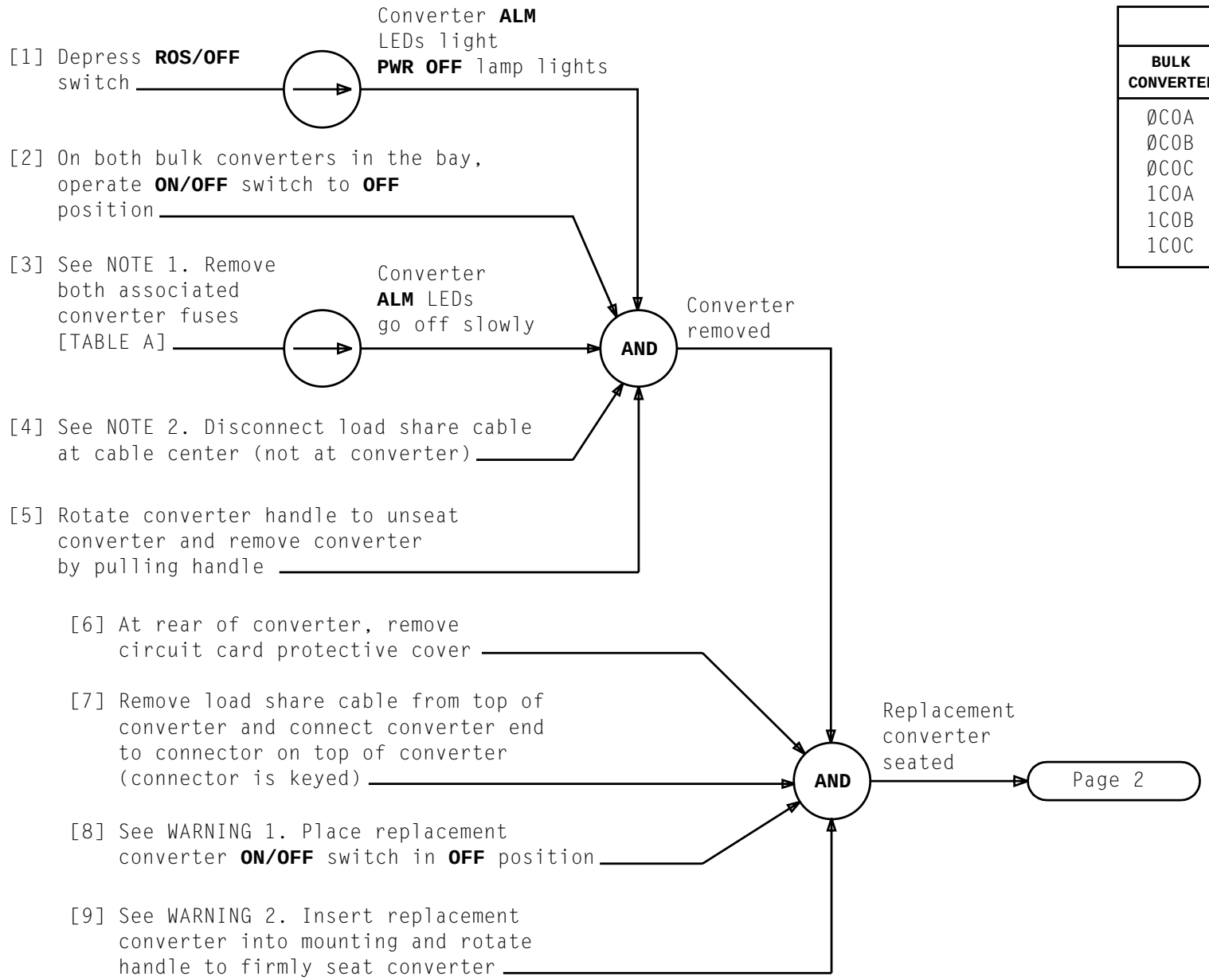


TABLE A			
BULK CONVERTER	**LOCATION**	**FUSE**	**LOCATION**
ØCOA	0-14-12	**ØA0A**	0-07-08
ØCOB	0-14-36	**ØA0B**	0-07-09
ØCOC	0-14-60	**ØA0C**	0-07-10
1COA	1-14-12	**1A0A**	1-07-08
1COB	1-14-36	**1A0B**	1-07-09
1COC	1-14-60	**1A0C**	1-07-10

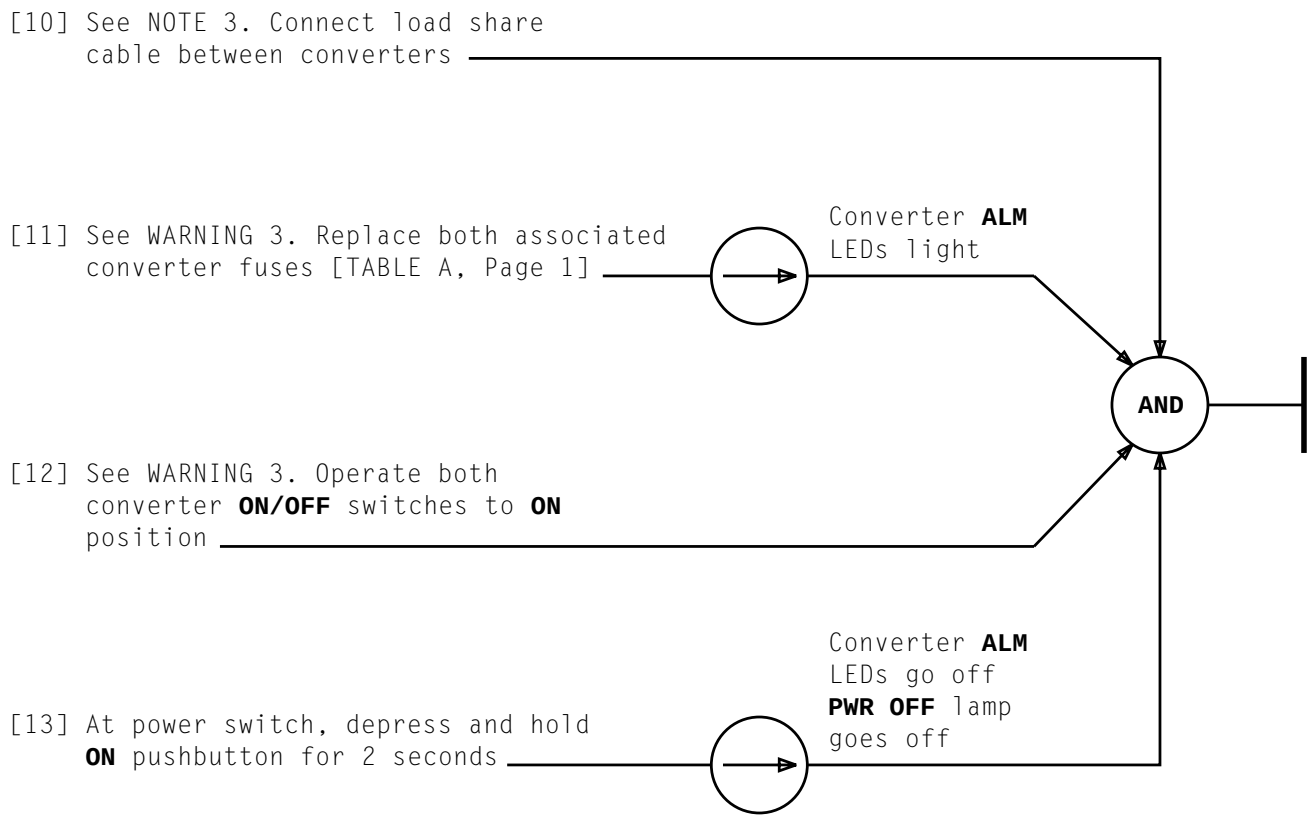
NOTES

1. Allow converter **ALM** LEDs to go off completely before proceeding
2. Load share cable should be returned with defective converter

WARNINGS

1. *Failure to have ON/OFF switch in OFF position could result in damage to unit*
2. *Improper seating of unit may cause damage to converter*

REPLACE BULK CONVERTER (245C WITH 245C)



NOTE 3
245C converters will not start unless load share cable is connected

WARNING 3
Current surge could damage converters if fuses are not replaced before turning converters to ON position

REPLACE BULK CONVERTER (245C WITH 245C)

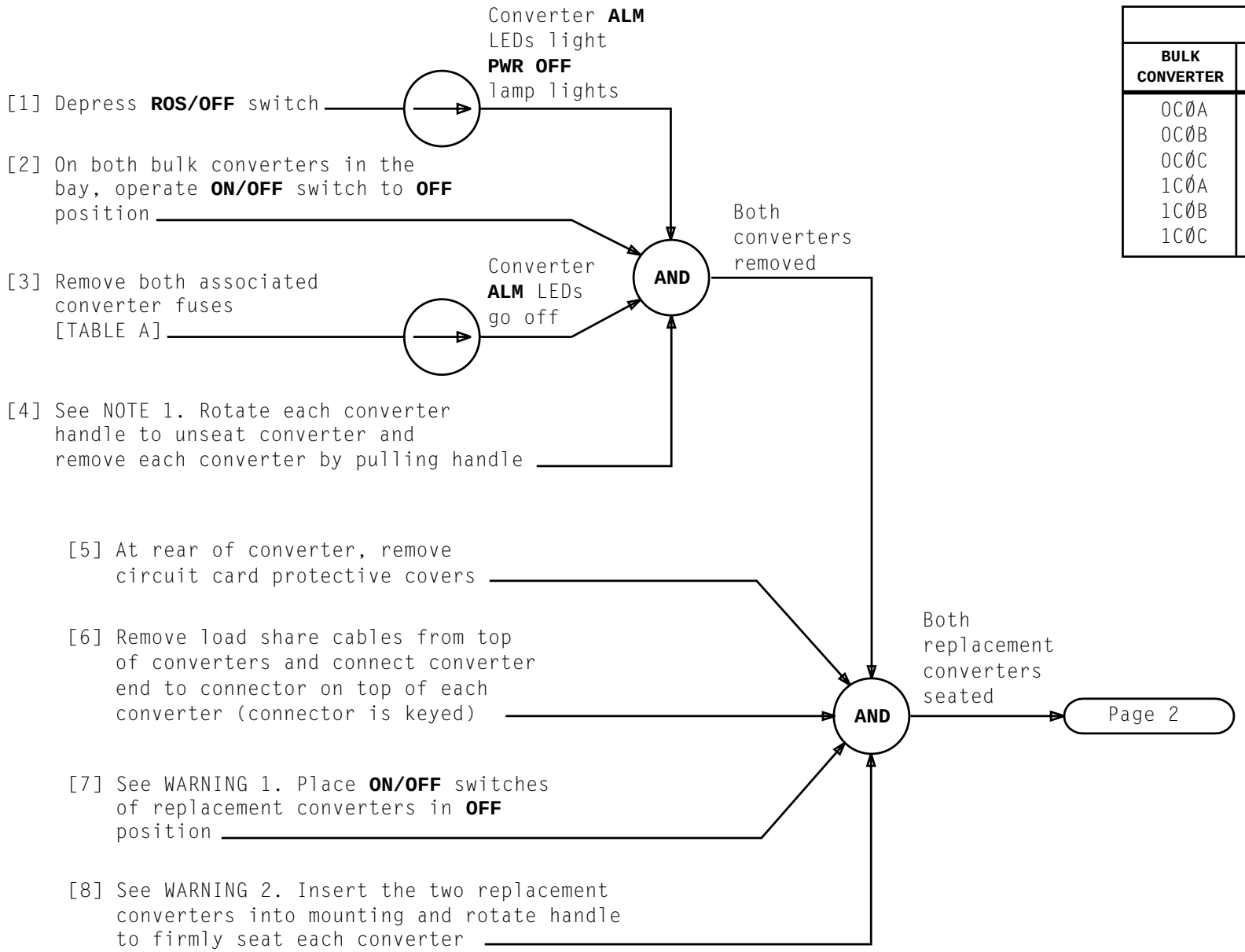


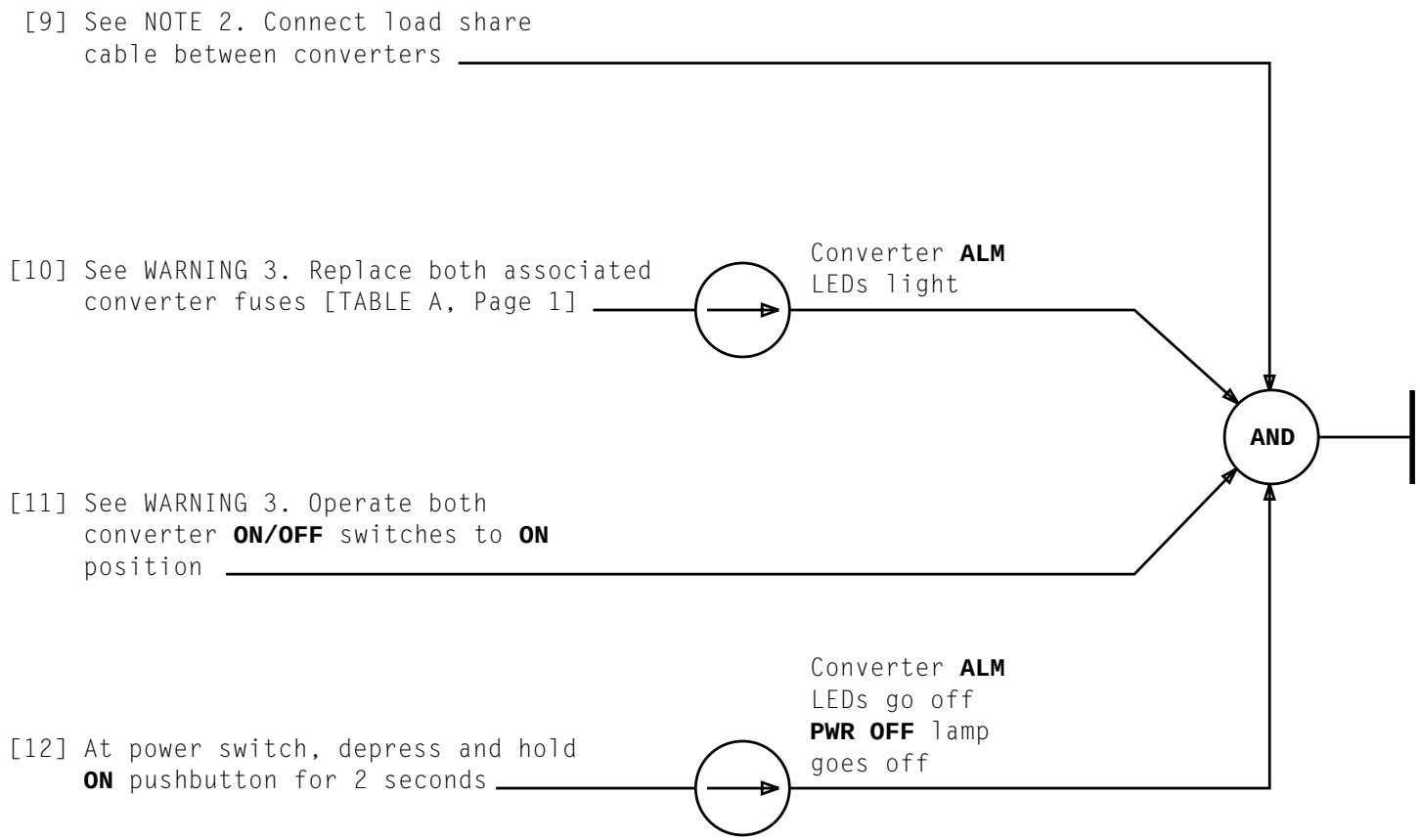
TABLE A			
BULK CONVERTER	**LOCATION**	**FUSE**	**LOCATION**
0CØA	0-14-12	**0AØA**	0-07-08
0CØB	0-14-36	**0AØB**	0-07-09
0CØC	0-14-60	**0AØC**	0-07-10
1CØA	1-14-12	**1AØA**	1-07-08
1CØB	1-14-36	**1AØB**	1-07-09
1CØC	1-14-60	**1AØC**	1-07-10

NOTE 1
245A and 245C converters cannot be mixed in the same bay of a TSI

WARNINGS

1. *Failure to have* **ON/OFF** *switch in* **OFF** *position could result in damage to unit*
2. *Improper seating of unit may cause damage to connector*

REPLACE BULK CONVERTER (245A WITH 245C) STANDARD SPC (TWO 245A CONVERTERS IN BAY)



NOTE 2
245C converters will not start unless load share cable is connected

WARNING 3
Current surge could damage converters if fuses are not replaced before turning converters to ON position

REPLACE BULK CONVERTER (245A WITH 245C) STANDARD SPC (TWO 245A CONVERTERS IN BAY)

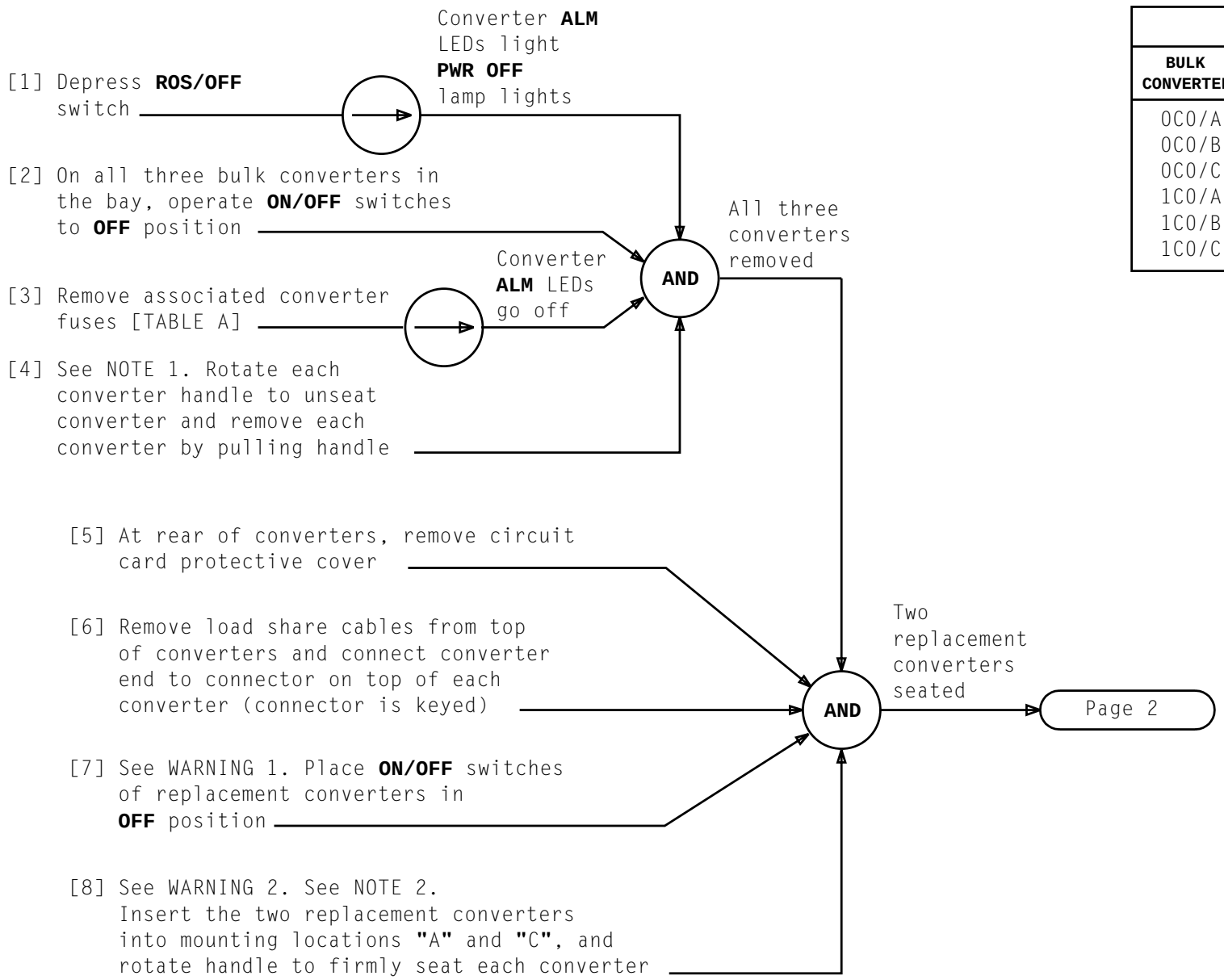


TABLE A

BULK CONVERTER	LOCATION	FUSE	LOCATION
0C0/A	0-14-12	**0A0/A**	0-07-08
0C0/B	0-14-36	**0A0/B**	0-07-09
0C0/C	0-14-60	**0A0/C**	0-07-10
1C0/A	1-14-12	**1A0/A**	1-07-08
1C0/B	1-14-36	**1A0/B**	1-07-09
1C0/C	1-14-60	**1A0/C**	1-07-10

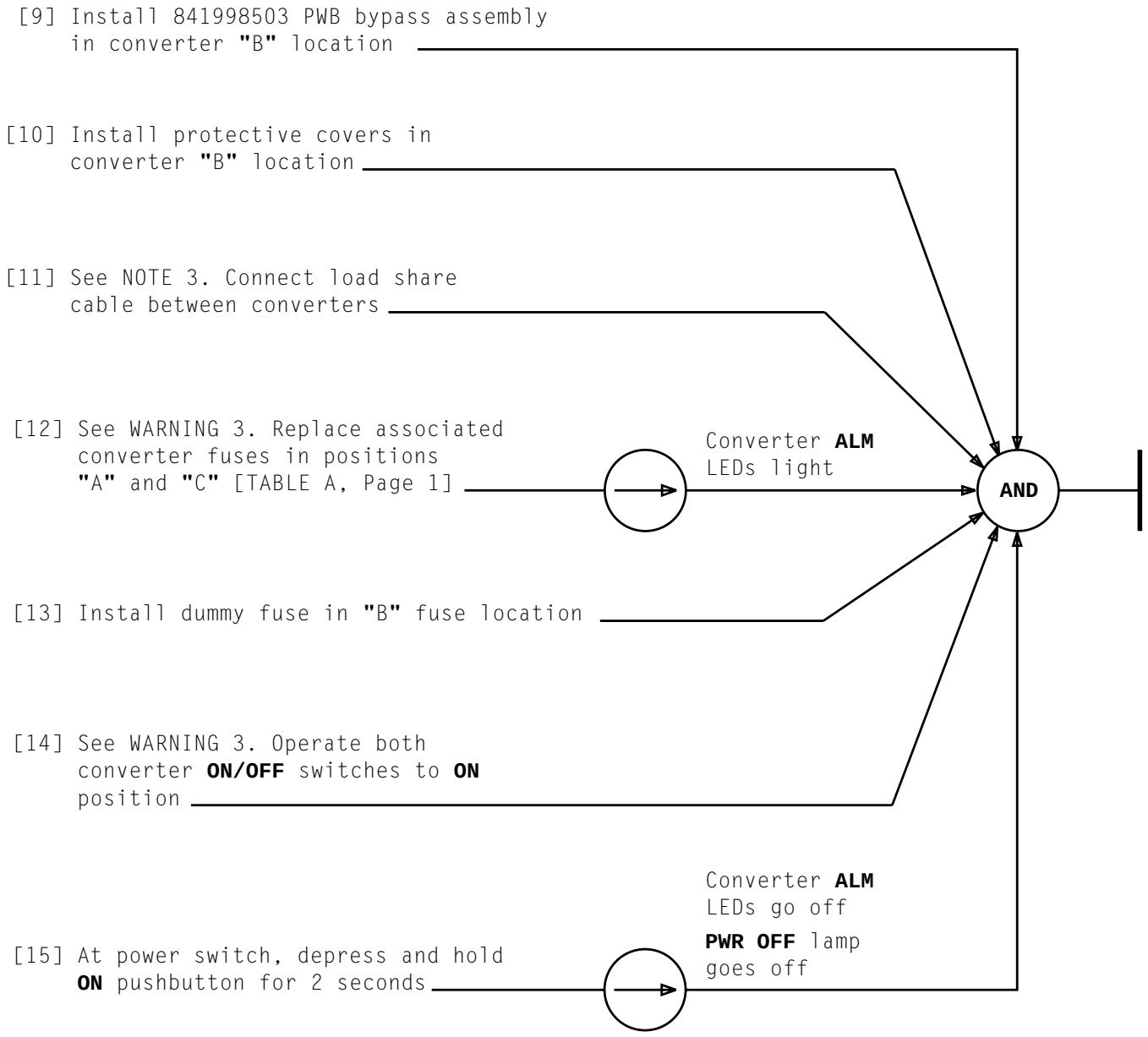
NOTES

1. 245A and 245C converters cannot be mixed in the same bay of a TSI
2. In this application, two 245C converters replace three 245A converters

WARNINGS

1. *Failure to have ON/OFF switch in OFF position could result in damage to unit*
2. *Improper seating of unit may cause damage to converter*

REPLACE BULK CONVERTER (245A WITH 245C) WIDEBAND SPC (THREE 245A CONVERTERS IN BAY)



REPLACE BULK CONVERTER (245A WITH 245C) WIDEBAND SPC (THREE 245A CONVERTERS IN BAY)

NOTES

3. The 245C converters will not start unless the load share cable is connected

WARNING 3
Current surge could damage converters if fuses are not replaced before turning converters to ON position

REPLACE BULK CONVERTER (245C WITH 245A) STANDARD SPC (NO FA1816 AND FA1817 IN BAY)

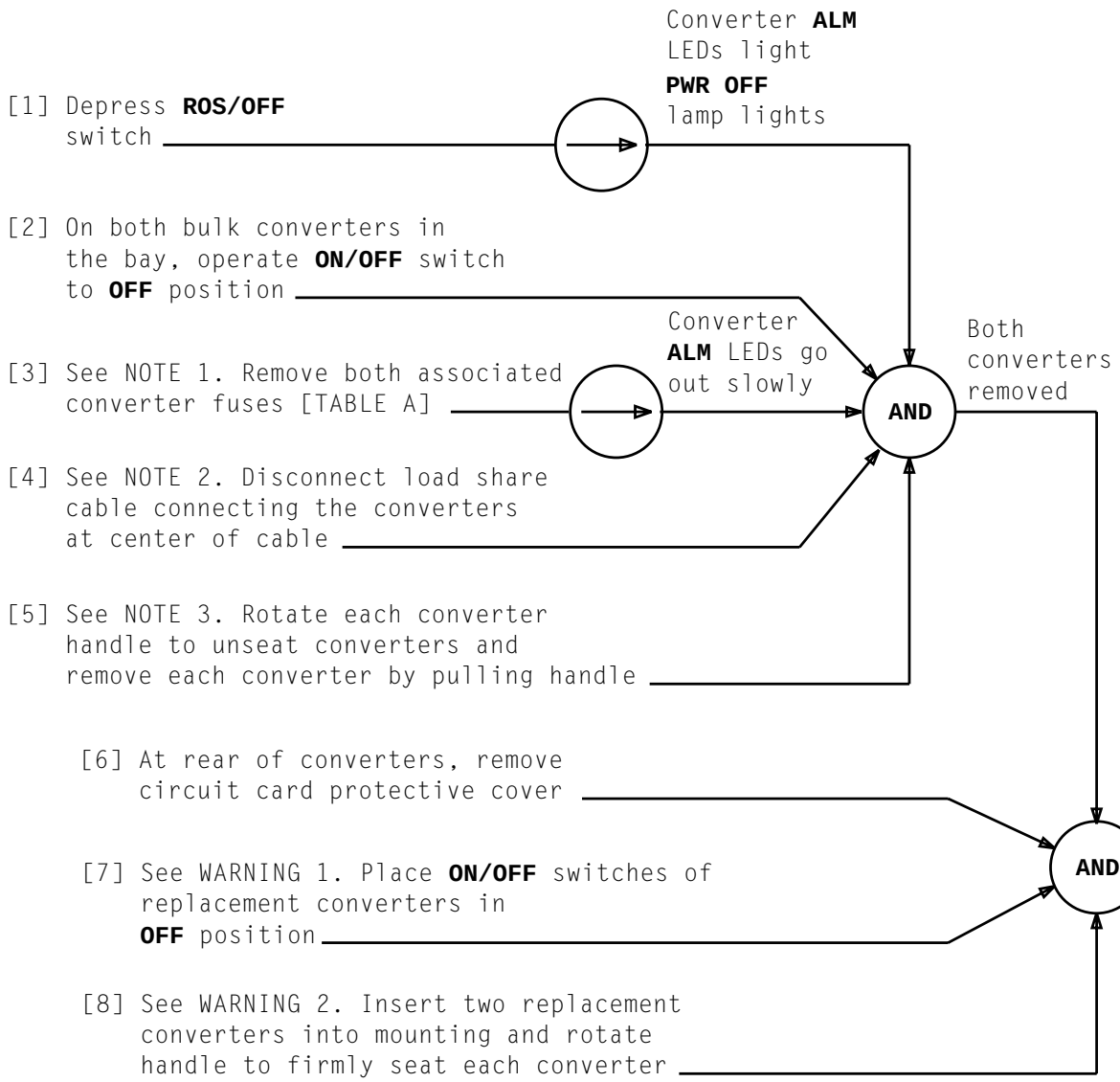


TABLE A

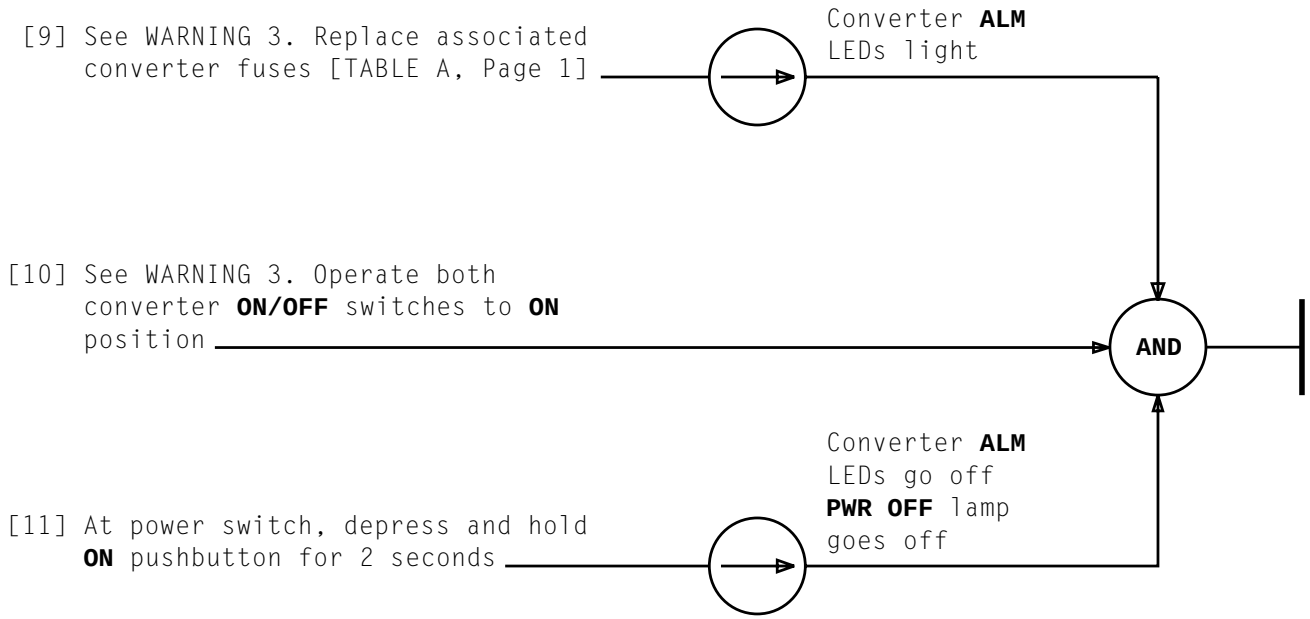
BULK CONVERTER	LOCATION	FUSE	LOCATION
0CO/A	0-14-12	**0A0/A**	0-07-08
0CO/B	0-14-36	**0A0/B**	0-07-09
0CO/C	0-14-60	**0A0/C**	0-07-10
1CO/A	1-14-12	**1A0/A**	1-07-08
1CO/B	1-14-36	**1A0/B**	1-07-09
1CO/C	1-14-60	**1A0/C**	1-07-10

NOTES

1. Allow converter **ALM** LEDs to go out completely before proceeding
2. Load share cable should be returned with defective converter
3. 245A and 245C converters cannot be mixed in same bay of a TSI

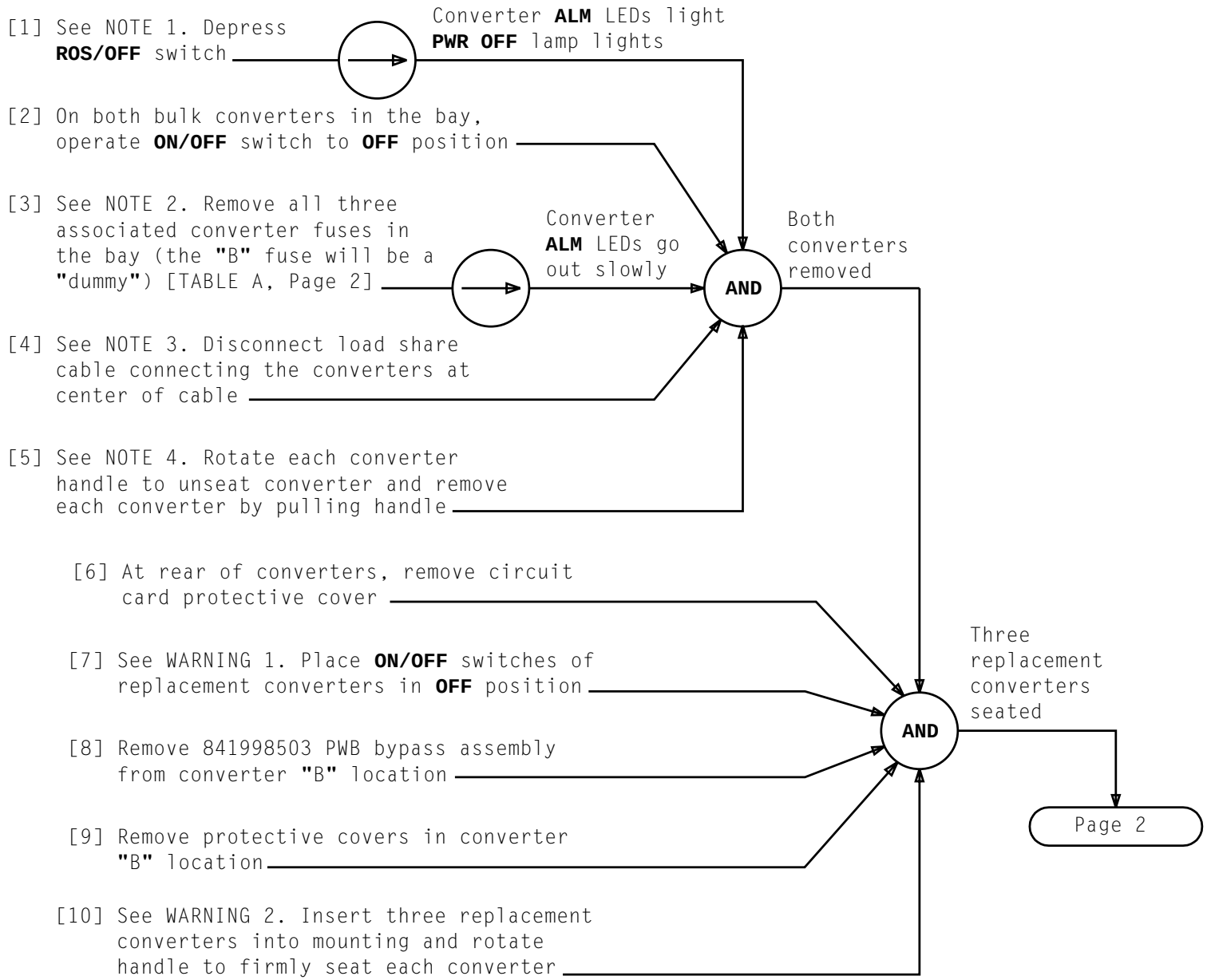
WARNINGS

1. *Failure to have ON/OFF switch in OFF position could result in damage to unit*
2. *Improper seating of unit may cause damage to converter*



WARNING 3
Current surge could damage converters if fuses are not replaced before turning converters to ON position

REPLACE BULK CONVERTER (245C WITH 245A) STANDARD SPC (NO FA1816 AND FA1817 IN BAY)



NOTES

1. In this application, three 245A converters replace two 245C converters. If the center converter position is not wired to accept a converter, this procedure cannot be performed
2. Allow converter **ALM** LEDs to go out completely before proceeding
3. Load share cable should be returned with defective converter
4. 245A and 245C converters cannot be mixed in the same bay of a TSI

WARNINGS

1. *Failure to have ON/OFF switch in OFF position could result in damage to unit*
2. *Improper seating of unit may cause damage to converter*

REPLACE BULK CONVERTER (245C WITH 245A) WIDEBAND SPC (BAY CONTAINS FA1816 AND FA1817)

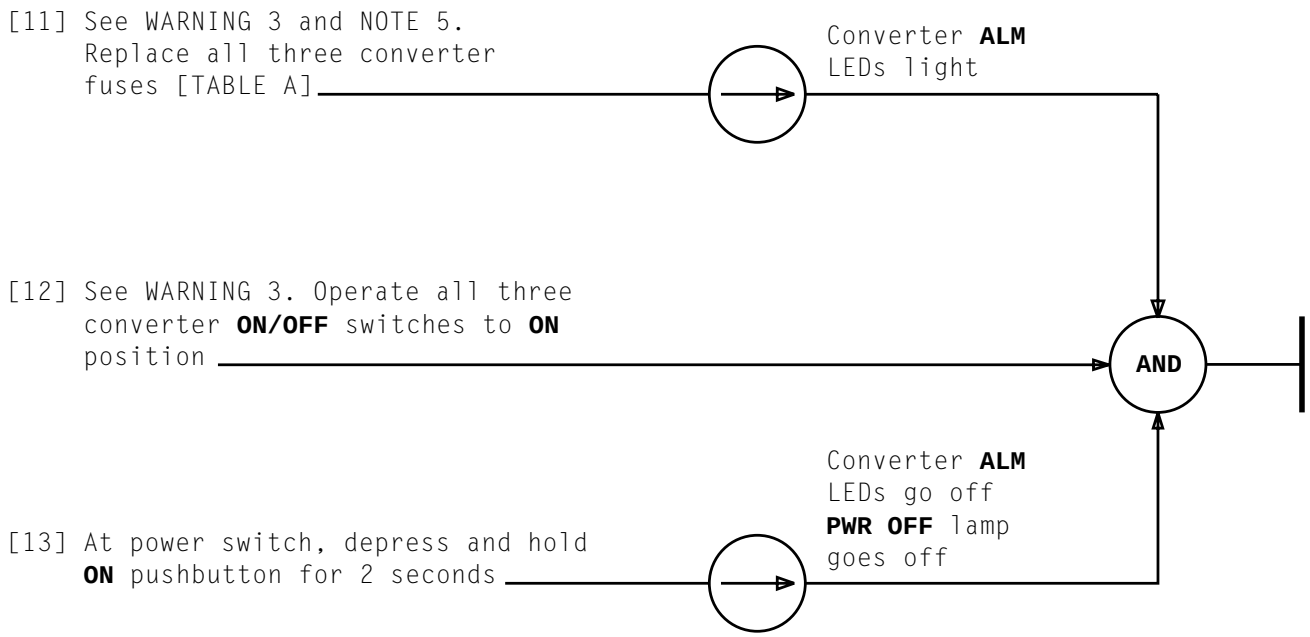


TABLE A			
BULK CONVERTER	**LOCATION**	**FUSE**	**LOCATION**
0C0/A	0-14-12	**0A0/A**	0-07-08
0C0/B	0-14-36	**0A0/B**	0-07-09
0C0/C	0-14-60	**0A0/C**	0-07-10
1C0/A	1-14-12	**1A0/A**	1-07-08
1C0/B	1-14-36	**1A0/B**	1-07-09
1C0/C	1-14-60	**1A0/C**	1-07-10

NOTE 5
The "B" fuse position previously had a "dummy" fuse which must be replaced with a fuse of the same type used in the "A" and "C" positions

WARNING 3
Current surge could damage converters if fuses are not replaced before turning converters to ON position

REPLACE BULK CONVERTER (245C WITH 245A) WIDEBAND SPC (BAY CONTAINS FA1816 AND FA1817)

SUMMARY

If the office has no spare capacitors or diodes available, Do Not execute this procedure, and notify next level of support per local practice. Prior to performing this procedure technician must procure materials to perform this replacement procedure: stencil kit, digital VOM, plastic/ rubber sheets or equivalent insulating material, electrical tape, screwdrivers (standard and *Phillips**), needlenose pliers, trouble light, soldering iron, markers for leads, SD-4A083-01 and solder.

[1] See CAUTION 1. On affected TSI, remove front kickplate and check for presence of +140V on "+" (plus) lead of all +140V filter capacitors

[2] Is +140V present on all capacitors

No

Yes

[3] Abort procedure and notify next level of support per local practice

[4] Mark leads of capacitors and and diodes to ensure correct removal/replacement in later steps

[5] See NOTE 1, Figures 1, and 2 and TABLE A. Remove the "-" post on capacitors and insulate leads (isolates capacitors and diodes)

[6] Using VOM on ohms scale, determine which capacitor is possibly shorted (expect a high resistance > 1.5 M)

Page 2

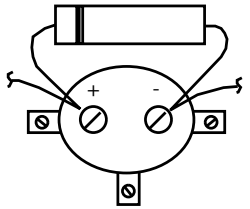


Figure 1 - Capacitor Sample

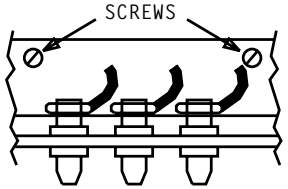


Figure 2 - Diode Sample

NOTE 1

A 12-inch standard screwdriver with insulation from handle to blade should be used to prevent shorting

CAUTION 1

Other components use +24V, caution must be taken to avoid shorting of surrounding circuitry.

***Trademark of Phillips Screw Company**

REPLACE FILTER CAPACITOR AND DIODE TIME SLOT INTERCHANGE (TSI) FRAME

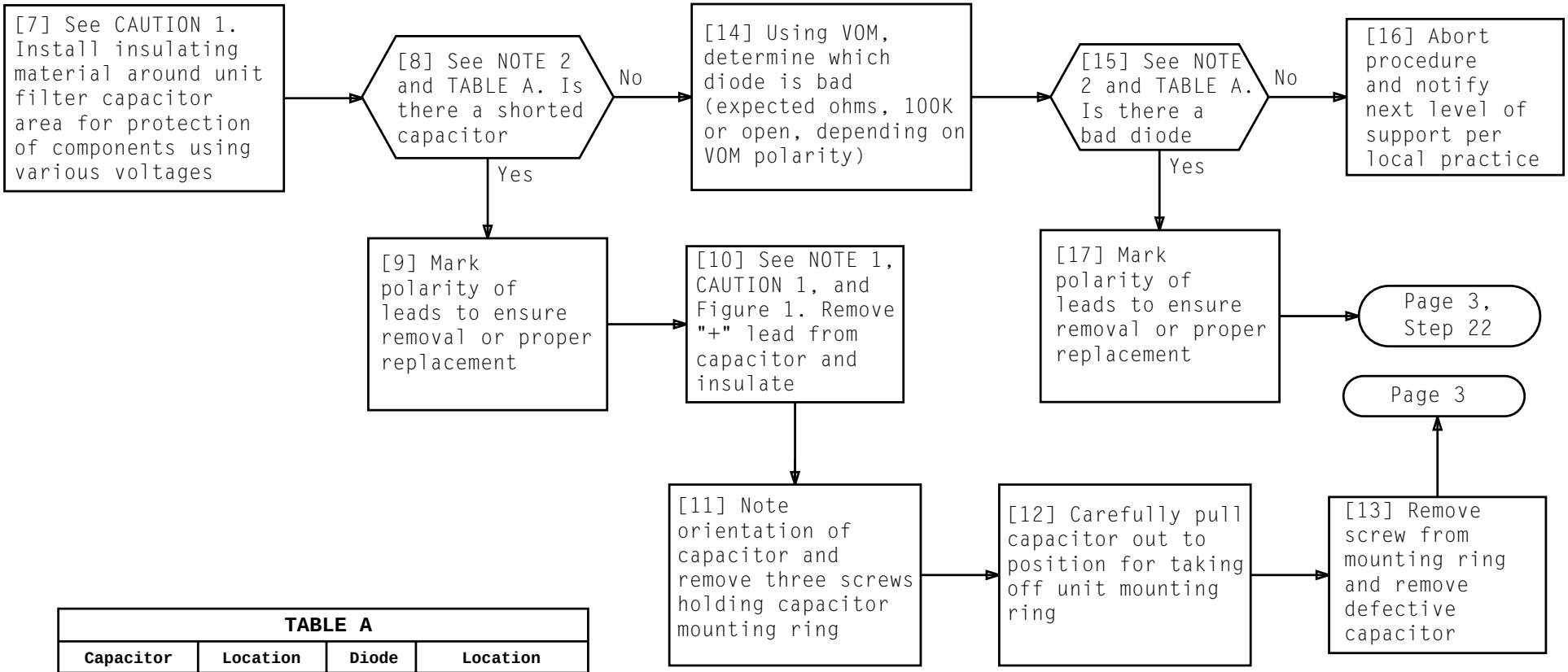


TABLE A			
Capacitor	**Location**	**Diode**	**Location**
C1	x03-17	CR3	x07-17RA
C2*	x03-26	CR2	x07-19RA
C3	x03-35	CR1	x07-21RA

* Capacitor C2 and Diode CR2 are optional depending on vintage of TSI Frame
x = 0 or 1 depending on controller

NOTE 2
Regardless of which filter circuit component is defective, the associated diode or capacitor must be replaced to prevent further circuit damage or failure. Use SD-4A083-01 for component association

REPLACE FILTER CAPACITOR AND DIODE TIME SLOT INTERCHANGE (TSI) FRAME

[18] Stamp proper identification on new capacitor being installed

[19] Properly orient new capacitor and secure in unit mounting ring

[20] Carefully place new capacitor in unit and replace three mounting ring screws

[21] Reconnect leads and resistor to capacitor and ensure polarity as observed earlier

AND

Capacitor replaced

[22] At rear of frame place insulation material around working area

[23] See Figure 3 and Table A (Page 2). Remove screws from diode mounting plate and carefully pull plate away from frame

[24] Mark leads of associated or defective diode and note polarities if not done in Step 4, Page 1

AND

Page 4

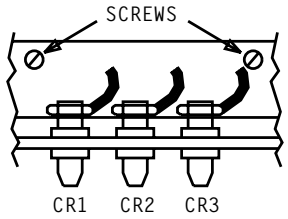
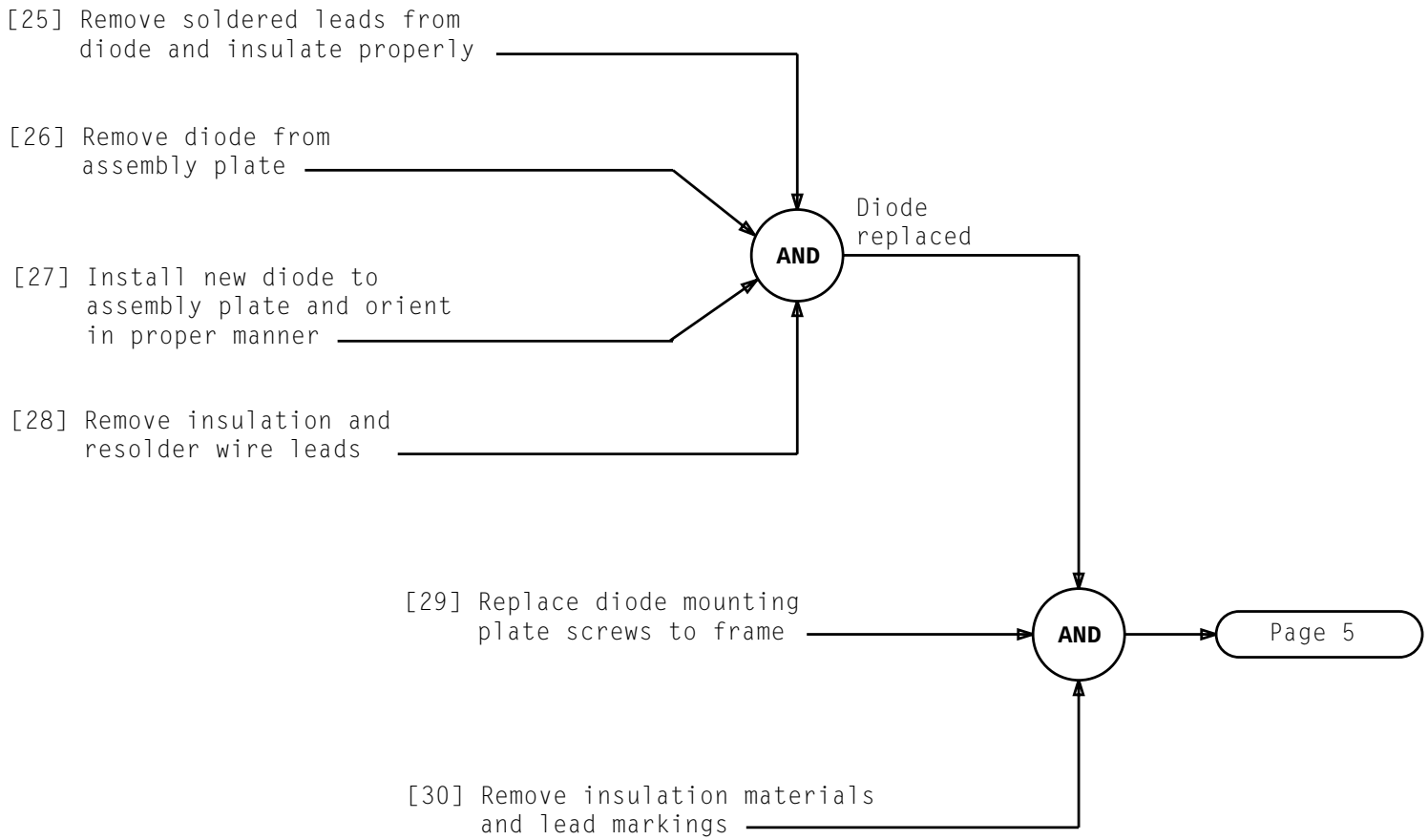
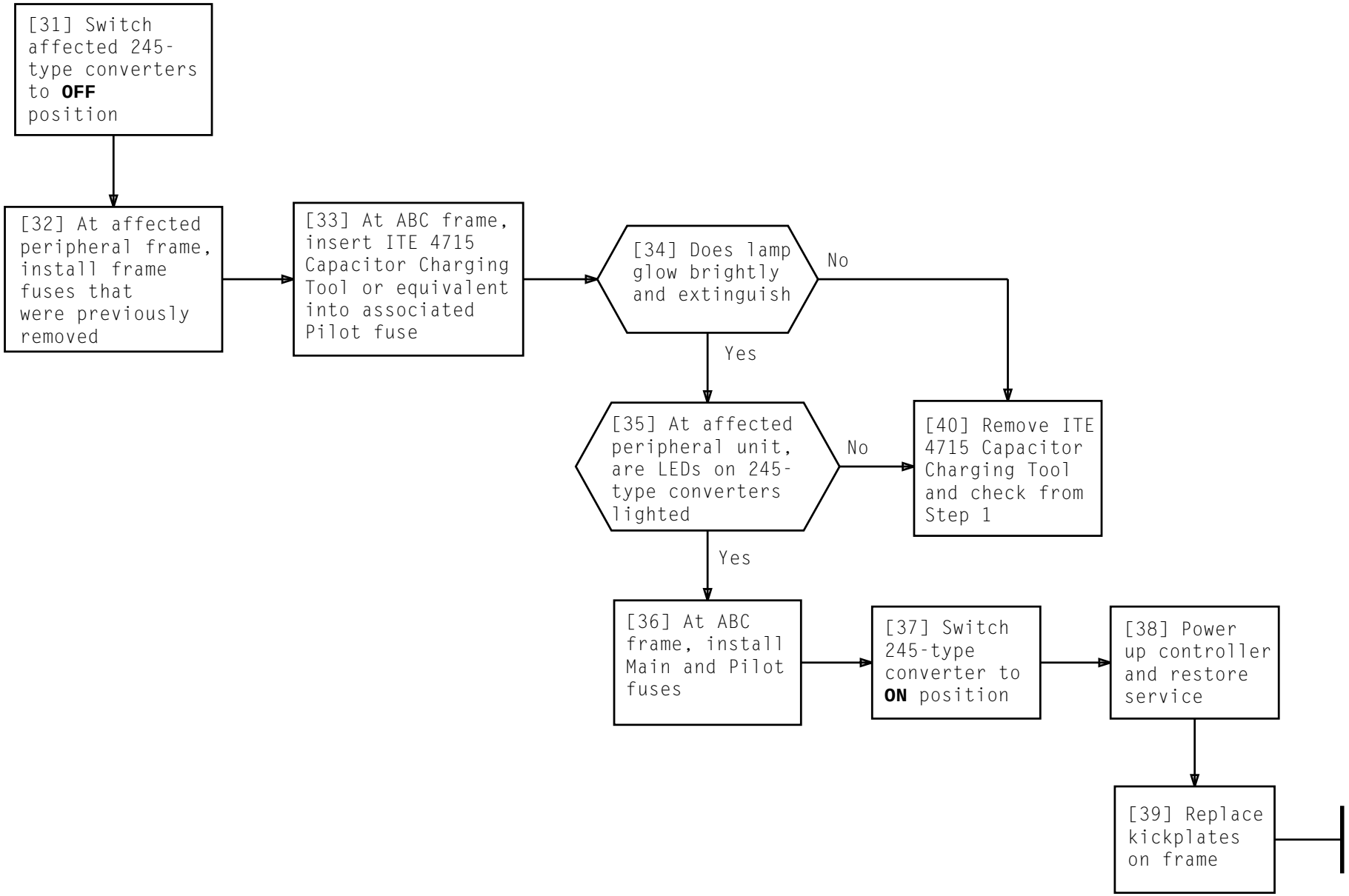


Figure 3 - Diode Sample

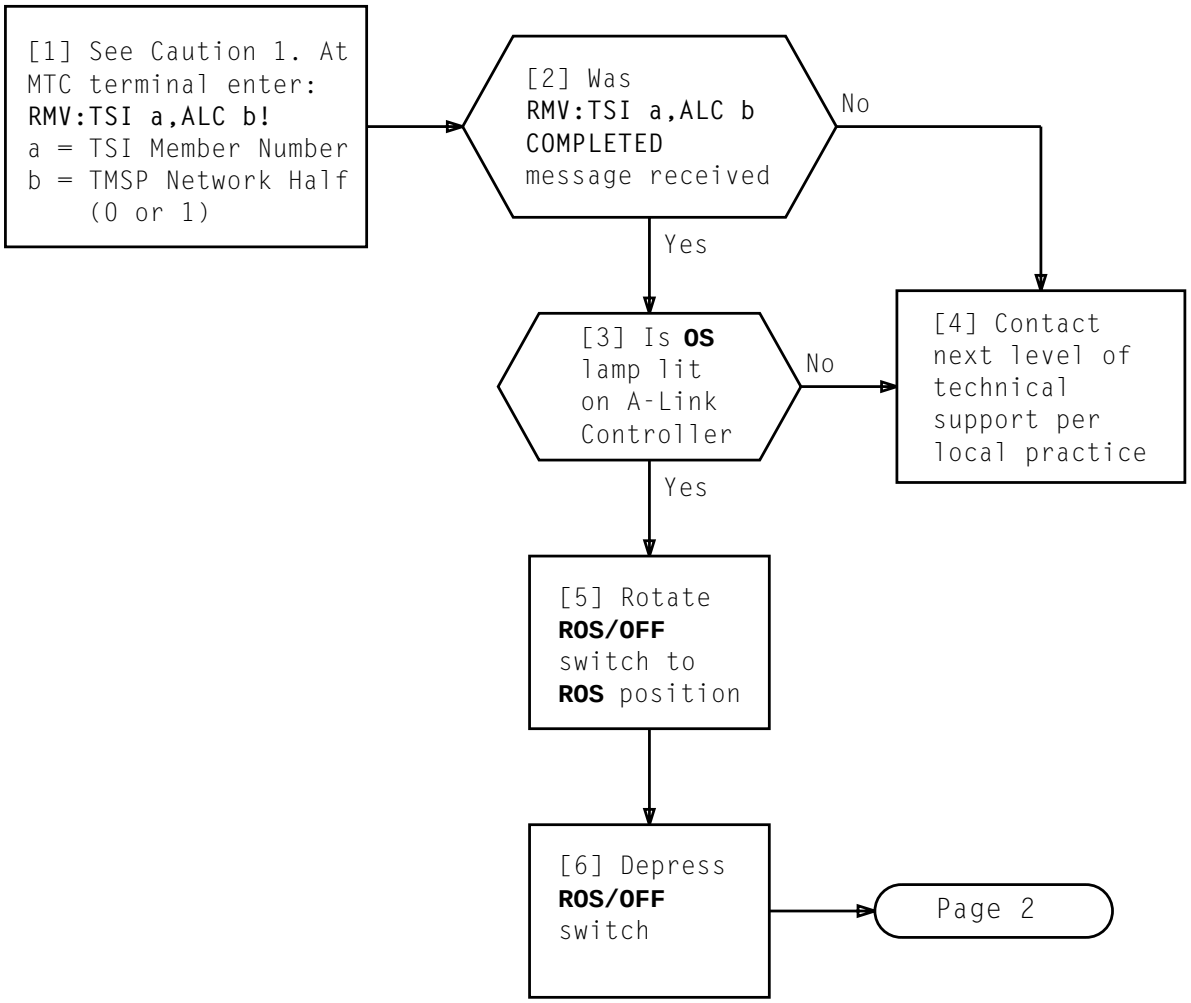
REPLACE FILTER CAPACITOR AND DIODE TIME SLOT INTERCHANGE (TSI) FRAME



REPLACE FILTER CAPACITOR AND DIODE TIME SLOT INTERCHANGE (TSI) FRAME



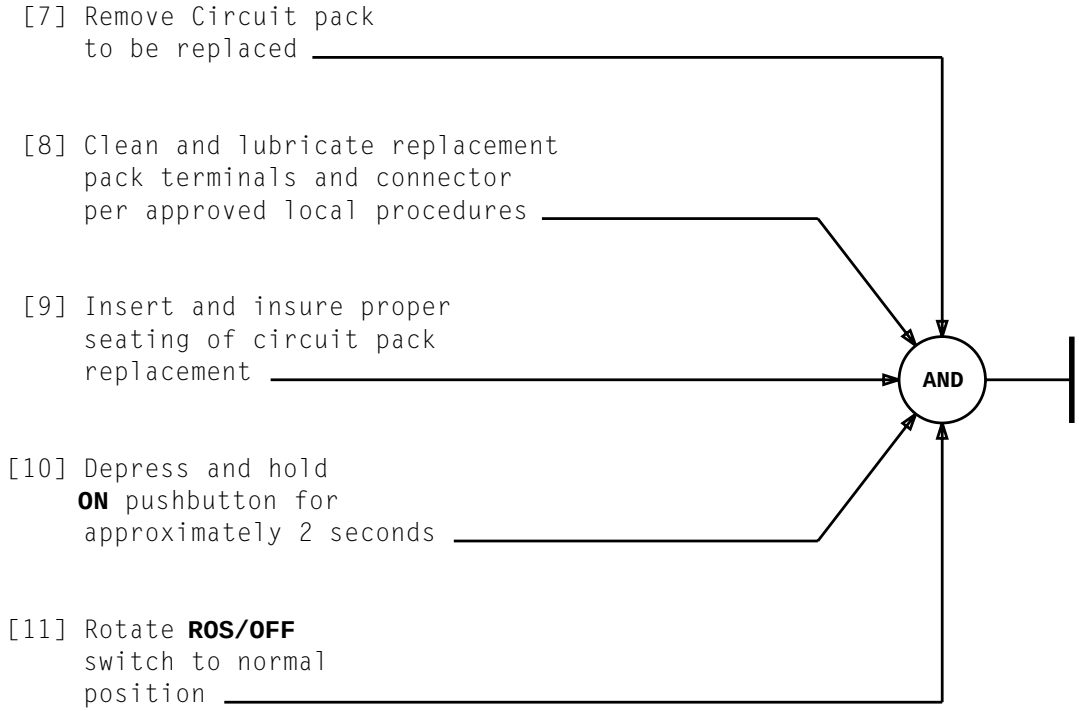
REPLACE FILTER CAPACITOR AND DIODE TIME SLOT INTERCHANGE (TSI) FRAME



CAUTION 1

A-Link Controllers are the Network Half 0 or 1 associated with **TMSP** *Controllers 0 or 1 not* **TSI** *Controllers 0 or 1*

REPLACE CIRCUIT PACK — TIME SLOT INTERCHANGE (TSI) FRAME A-LINK CONTROLLER



REPLACE CIRCUIT PACK – TIME SLOT INTERCHANGE (TSI) FRAME A-LINK CONTROLLER

ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE
TPG-000		ISD-121		DLP-514		• DLP-549					
• IXL-001		ISD-122		DLP-515		• CKL-891					
NTP-002		TAP-123		DLP-516		TNG-893					
• NTP-003		TAP-124		DLP-517							
NTP-004		TAP-125		DLP-518							
NTP-005		TAD-126		DLP-519							
• NTP-006		TAP-127		DLP-520							
• NTP-007		TAP-128		DLP-521							
• NTP-008		TAP-129		DLP-522							
NTP-009		TAP-130		DLP-523							
NTP-010		TAP-131		DLP-524							
NTP-011		TAP-132		DLP-525							
NTP-012		TAP-133		DLP-526							
• NTP-013		• TAP-134		DLP-527							
• TAD-100		• TAD-135		• DLP-528							
• TAP-101		• TAD-136		• DLP-529							
• TAP-102		• TAD-137		• DLP-530							
ISD-103		• TAD-138		• DLP-531							
• TAP-104		• TAD-139		• DLP-532							
TAP-105		• TAD-140		• DLP-533							
TAP-106		• TAD-141		• DLP-534							
TAP-107		DLP-500		• DLP-535							
TAP-108		DLP-501		• DLP-536							
ISD-109		DLP-502		• DLP-537							
ISD-110		DLP-503		• DLP-538							
ISD-111		DLP-504		• DLP-539							
ISD-112		DLP-505		• DLP-540							
ISD-113		DLP-506		• DLP-541							
ISD-114		DLP-507		• DLP-542							
ISD-115		DLP-508		• DLP-543							
TAP-116		DLP-509		• DLP-544							
ISD-117		DLP-510		• DLP-545							
ISD-118		DLP-511		• DLP-546							
ISD-119		DLP-512		• DLP-547							
ISD-120		DLP-513		• DLP-548							

• REVISED OR ADDED ITEM ☐ CANCELED ITEM

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CHECKLIST

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