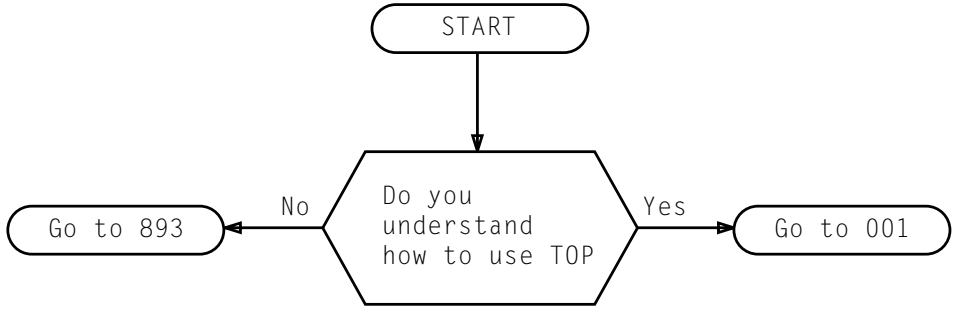
Lucent Technologies
Bell Labs Innovations

Task Oriented Practice (TOP)

4ESS™ Switch
With 1B Processor
Digital Interface Frame – Terminal Interface Equipment



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Developed by Lucent Technologies Network Systems TSVS Information Development

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
+12 Overvoltage Lighted LED — Controller — Clear	TAP-104
+12 Undervoltage Lighted LED — Controller — Clear	TAP-104
+5 Overvoltage Lighted LED — Controller — Clear	TAP-102
+5 Undervoltage Lighted LED — Controller — Clear	TAP-102
+5C Lighted LED — PUB — Clear	TAP-108
+5C Overvoltage Lighted LED — Controller — Clear	TAP-101
+5C Undervoltage Lighted LED — Controller — Clear	TAP-101
−5 Overvoltage Lighted LED — Controller — Clear	TAP-103
−5 Undervoltage Lighted LED — Controller — Clear	TAP-103
44A Overcurrent Lighted LED — Controller — Clear	TAP-111
44B Overcurrent Lighted LED — Controller — Clear	TAP-111
52A Overcurrent Lighted LED — Controller — Clear	TAP-111
52B Overcurrent Lighted LED — Controller — Clear	TAP-111
62A Overcurrent Lighted LED — Controller — Clear	TAP-110
62B Overcurrent Lighted LED — Controller — Clear	TAP-100
70A Overcurrent Lighted LED — Controller — Clear	TAP-100
70B Overcurrent Lighted LED — Controller — Clear	TAP-100
Acceptance	NTP-002
Active Standby Inhibit Cross-Controller Test — Perform	DLP-524
Blown Fuse — F10A — Clear	TAP-112
Blown Fuse — F10B — Clear	TAP-112
Blown Fuse — F11A — Clear	TAP-112
Blown Fuse — F11B — Clear	TAP-112

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Blown Fuse — F12A — Clear	TAP-113
Blown Fuse — F12B — Clear	TAP-113
Circuit Pack — Controller — Replace	DLP-525
Circuit Pack — DIU — Replace	DLP-518
Circuit Pack — PUB — Replace	DLP-525
Circuit Pack — SJ5 — Replace	DLP-516
Circuit Pack — SJ5B — Replace	DLP-516
Circuit Pack — SJ6 — Replace	DLP-516
Circuit Pack — SJ7 — Replace	DLP-516
Circuit Pack — SM — Replace	DLP-518
Circuit Pack — TF1 — Replace	DLP-513
Circuit Pack — TG4 — Replace	DLP-512
Circuit Pack — TG5 — Replace	DLP-512
Circuit Pack — TM59 — Replace	DLP-537
Circuit Pack — TM60 — Replace	DLP-506
Controller Power — Apply	DLP-504
Controller Power — Remove	DLP-502
Demount Tape	DLP-533
Diagnostic Failure — DIF TLP Inhibit — Clear	TAP-118
Diagnostic Failure — Firmware Macro Raw Data Suspect Pack — Clear	TAP-125
Diagnostic Failure — Raw Data Analysis — Clear	TAP-114
Diagnostic Failure — TLP Abort — Clear	TAP-120
Diagnostic Failure — TLP Disc Queue Full — Clear	TAP-119

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Diagnostic Failure — TLP Suspect Pack List — Clear	TAP-115
Diagnostic Failure — TLP Suspected Equipment List Packs — Clear	TAP-126
Diagnostic Failure — TLP Tape Acquisition Error — Clear	TAP-122
Diagnostic Failure — TLP Tape Not Mounted — Clear	TAP-123
Diagnostic Failure — TLP Tape Version X Does Not Match Version Y — Clear	TAP-121
Diagnostic Failure — TLPQUEUE Blockage — Clear	TAP-117
Diagnostic Phases — Digital Interface — Demand	DLP-536
Feedback Control Box — Remove	TAP-129
Filter Capacitor — Side 0 — Replace	NTP-003
Filter Capacitor — Side 1 — Replace	NTP-004
Fuse, Blown — F10A — Clear	TAP-112
Fuse, Blown — F10B — Clear	TAP-112
Fuse, Blown — F11A — Clear	TAP-112
Fuse, Blown — F11B — Clear	TAP-112
Fuse, Blown — F12A — Clear	TAP-113
Fuse, Blown — F12B — Clear	TAP-113
Isolate Filter Circuit — Defective	TAP-128
Lamp — Controller — Replace	DLP-522
Lamp — MM — Replace	DLP-503
Lamp — PUB — Replace	DLP-522
Lamp Test — Controller — Perform	DLP-521
Lamp Test — PUB Power Switch — Perform	DLP-521
Lamp Test — Unit Status Assembly — Perform	DLP-500

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Lighted LED; +12 Overvoltage — Controller — Clear	TAP-104
Lighted LED; +12 Undervoltage — Controller — Clear	TAP-104
Lighted LED; +5 Overvoltage — Controller — Clear	TAP-102
Lighted LED; +5 Undervoltage — Controller — Clear	TAP-102
Lighted LED; +5C — PUB — Clear	TAP-108
Lighted LED; +5C Overvoltage — Controller — Clear	TAP-101
Lighted LED; +5C Undervoltage — Controller — Clear	TAP-101
Lighted LED; —5 Overvoltage — Controller — Clear	TAP-103
Lighted LED; —5 Undervoltage — Controller — Clear	TAP-103
Lighted LED; 44A Overcurrent — Controller — Clear	TAP-111
Lighted LED; 44B Overcurrent — Controller — Clear	TAP-111
Lighted LED; 52A Overcurrent — Controller — Clear	TAP-111
Lighted LED; 52B Overcurrent — Controller — Clear	TAP-111
Lighted LED; 62A Overcurrent — Controller — Clear	TAP-110
Lighted LED; 62B Overcurrent — Controller — Clear	TAP-100
Lighted LED; 70A Overcurrent — Controller — Clear	TAP-100
Lighted LED; 70B Overcurrent — Controller — Clear	TAP-100
Lighted LED; Overvoltage — PUB — Clear	TAP-107
Lighted LED; Undervoltage — PUB — Clear	TAP-107
Manual Test Procedure — Controller — Perform	DLP-519
Manual Test Procedure — PUB — Perform	DLP-520
Mount Tape	DLP-532
Oscilloscope — 485 ***TEKTRONIC**** Oscilloscope — Condition	DLP-517
Overvoltage Lighted LED — PUB — Clear	TAP-107

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FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Power Checks — DIU — Perform	DLP-523
Power; Controller — Apply	DLP-504
Power; Controller — Remove	DLP-502
Power; PUB — Apply	DLP-507
Power; PUB — Remove	DLP-505
Power Switch — Controller — Replace	DLP-538
Power Switch — PUB — Replace	DLP-539
Power Unit — 140A — Replace	DLP-514
Power Unit — 140E — Replace	DLP-508
Power Unit — 140F — Replace	DLP-509
Power Unit — 141C1 or 140L1 — Replace	DLP-510
Power Unit — 245B — Replace	DLP-501
PUB Power — Apply	DLP-507
PUB Power — Remove	DLP-505
Rapid Restore — Faulty Filter Capacitor +140VA.	NTP-005
Rapid Restore — Faulty Filter Capacitor +140VB.	NTP-006
Scope Sync for Signal Tracing Signal Processor Faults — Select	DLP-534
Switch; Power — Controller — Replace	DLP-538
Switch; Power — PUB — Replace	DLP-539
Tape — Demount	DLP-533
Tape — Mount	DLP-532

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

TTY Printout — DGN;DIF a,{CONTR b|IPUB c} PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c}
NULL PACK LIST GENERATED (Consistent Fault) TAP-114

TTY Printout — DGN:DIF a,{CONTR b|IPUB c}PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c}
SUSPECTED FAULTY EQUIPMENT (Consistent Fault)
Code Column Contains a "Power" Reference TAP-114

TTY Printout — DGN:DIF a,{CONTR b|IPUB c}PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c}
SUSPECTED FAULTY EQUIPMENT (Consistent Fault)
Code Column Does Not Contain a "Power" Reference TAP-115

TTY Printout — DGN:DIF a,{CONTR b|IPUB c}PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c}
TLP PROGRAM ABORTED TAP-120

TTY Printout — DGN:DIF a,{CONTR b|IPUB c}PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c}
TLP TAPE ACQUISITION ERROR
MOUNT TAPE WITH FILE ID = f TAP-122

TTY Printout — DGN:DIF a,{CONTR b|IPUB c}PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c} ABORTED TAP-120

TTY Printout — DGN:DIF a,{CONTR b|IPUB c}PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c} SUMMARY DATA
QUEUE ACCESS DENIED:DATA NOT RETAINED:CODE 0001 . . . . . TAP-119

TTY Printout — DGN:DIF a,{CONTR b|IPUB c}PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c} SUMMARY DATA
QUEUE ACCESS DENIED:DATA NOT RETAINED:CODE 0002 . . . . . TAP-117

TTY Printout — DGN:DIF a,{CONTR b|IPUB c}PH d STF
ANALY:TLPFILE:DIF a,{CONTR b|IPUB c} SUMMARY DATA
QUEUE ACCESS DENIED:DATA NOT RETAINED:CODE 0004 . . . . . TAP-118

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

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

ACCEPTANCE PHILOSOPHY

When a Digital Interface system is installed at a site, the installation group does adequate testing to assure that the system is operating properly. Since acceptance tests would only be a duplication of the installation procedures and serve no beneficial purpose, they have been excluded from this volume.

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

		RESPONSIBILITY	
	DANGER: The +140V circuitry can be hazardous; extreme care must be taken to avoid personal injury or service interruptions		
	WARNINGS: 1. An antistatic wrist strap must be worn to prevent electrostatic discharge which could result in damage to circuit packs while working in frame *2. No growth or maintenance activity should be performed during this procedure*		
	NOTES: 1. Appropriate Input/Output manuals must be used if clarification of input message or output message is necessary 2. This procedure must be performed during light traffic periods 3. *4ESS*™ switch operation must be closely monitored while performing this procedure 4. Corrective action must be taken immediately on any activity that may cause any unit to go out of service (OOS) 5. Stability of office must be maintained throughout this procedure		
1	Notify Next Higher Technical Support Group That Filter Capacitor Circuits +140V - Side 0 Are Going To Be Replaced	TELCO	—
2	Ensure *4ESS* Switch Is in Stable Condition	TELCO	DLP-542
3	Ensure 1B Processor and Peripheral Units Are Operating in Normal Duplex Mode	TELCO	DLP-543
	NOTE: Frame vintage will affect part numbers for replacement diodes		
4	Check Office Records/Telephone Equipment Order (TEO) To Confirm That the Following New Equipment Required for Four Filter Circuit Replacements (FCRs) Has Been Inventoried for Each Equipped DIF; and Record It on copy of DLP-545. The Following Must Be Available for Each DIF Requiring All Four Filter Circuit Replacements: • (4) Capacitors - If Replacing Filter Capacitors • (4) Diodes - If Replacing Filter Diodes (Check Equipment for Correct Type) Diode Replacements Original - First - Present 485AB - 828AB - 1N1204A 485A - 828A - 1N1204RA	TELCO/INST	—
	(Continued on Page 2)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: The message STOP:TEST;PUSYS! will change in the future at an unspecified date and will be as follows: STOP:TEST;PERIF!		
5	Disable Peripheral Unit System (PUSYS) Diagnostics During Filter Circuit Replacements. At 1A/1B Maintenance (MTC) Terminal, Enter Message: STOP:TEST;PUSYS! Required Response: OK	TELCO	—
	NOTE: Side 0 (CONTR/IPUB 0) and all odd-numbered DIUs in 1-31 range, plus DIU 0 are powered via +140VA. The CONTR 0 and IPUB 0 will be removed from service and DIF run simplex. Since DIU power is divided with 17 DIUs supplied per +140V source, an alternative +140 volts is required to maintain full DIU service. This is done via cabling power to two DIUs. These will be designated Lower Connection Point (LCP) and Higher Connection Point (HCP) DIUs. DIUs 13 and 29 are recommended for +140VA power backfeed connections		
6	At ABC +140 Power Frame, Locate Spare +140V Fuse Location and Attach Temporary Label To Reserve Location for Replacement Procedures Until All DIFs Are Completed. From Office Drawings, Find +140VA Fuse Assignments For All DIFs Requiring Filter Circuit Replacement. Make Copy of DLP-544 That Is Used To Record Fuse Location(s)	TELCO/INST	—
7	On a Selected DIF or DIF-E1 For +140V Filter Circuit Replacement, Run Diagnostics on Both Controllers. This Filter Circuit Replacement (FCR) DIF Will Be Referred to as FCR DIF. At 1A/1B MTC Terminal, Diagnose DIF Via Restoral; Enter: RST:DIF a,CONTR b! Where a = Member Number (2-31) b = Controller Number (0-1) Response: PF Followed by: DGN:DIF a,CONTR b COMPLETE ATP MSG COMPL RST:DIF a,CONTR b COMPL Repeat This Step for Other Controller of DIF a	TELCO	—
	(Continued on Page 3)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: The LCP and HCP DIUs and both Controllers in FCR DIF must be ATP before continuing these filter circuit replacement procedures on this DIF		
8	Diagnose LCP and HCP DIUs in FCR DIF Selected In Previous Step. At 1A/1B MTC TTY, Enter: **RST:DIF a,DIU c!** a = DIF Member Number (2-31) c = DIU Number (0-33) Response: PF Followed By: **RMV DIF a DIU c COMPL** **DGN DIF a DIU c COMPL ATP** **RST:DIF a,DIU c COMPL**	TELCO	—
	NOTE: The following items are needed at this time to continue procedure: • (1) ABC backfeed fuse-type connector (to connect in front side of ABC) • (2) 50-foot female to male connectors (use for longer ABC to FCR DIF runs) • (1) DIF Power Backfeed Test Set with female connector for cable connection • Cable ties for temporary mounting of Power Feedback Test Set		
9	Run Special Power Backfeed Cables From ABC Spare Fuse Locations (Selected and Labeled in Step 6) FCR DIF (Selected in Step 7) in a Safe Route. Suspend Cable via Cable Ties From Cable Racks. Keep Cable Off Floor Across Aisles. Connect Power Feedback Cables Together But Leave Disconnected From DIF Power Backfeed Test Set Which Is Left in Front of FCR DIF	INST	—
10	Verify That ABC Backfeed Fuse-Type Connector and Associated Pilot Fuses Are Removed From ABC Frame	INST	—
11	At Front of FCR DIF, Use Cable Tie To Suspend DIF Power Backfeed Test Set in Center of Bay 1 (Controller Bay) in Safe Location Near Top of Bay. Verify All Switches on Power Backfeed Test Set Are in **OFF** Position and No Fuses Are Present in Power Backfeed Test Set	INST	—
	NOTE: This Lower Connection Point (LCP) DIU will be referred to as LCP DIU for this DIF having filter circuit replacement. DIU 13 is recommended to be used		
12	At Back of FCR DIF, Remove Protective Covers From DIUs 13 and 14	INST	—
13	Pass Lower DIU (LDIU) "U Pin" Wire, From DIF Power Backfeed Test Set (at Front of DIF) to Near "U" Pin on 141C1 Backplane Connector at Backplane Side of LCP DIU See DLP-547	INST	—
	(Continued on Page 4)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: This Higher Connection Point (HCP) DIU will be referred to as HCP DIU for this DIF having filter circuit replacement. DIU 29 is recommended to be used		
14	At Back of FCR DIF, Remove Protective Cover Plastic Sheet From DIUs 29 and 30	INST	—
15	Pass Higher DIU (HDIU) "U Pin" Wire, From DIF Power Backfeed Test Set (at Front of DIF) to Near "U" Pin on 141C1 Backplane Connector at Backplane Side of LCP DIU. See DLP-547	INST	—
16	At 1A/1B MTC Terminal, Remove LCP DIU From Service by: Enter: **RMV:DIF a,DIU 13!** Where a = Member Number (2-31) Response: **RMV:DIF a DIU 13 COMPL**	TELCO	—
17	At Front of FCR DIF, Power Down LCP DIU 13 Converters (Removed From Service in Previous Step Indicated With Green MM Lamp Lit) and Check Converter Red LED Lighting. Leave Unit Power Switch on This DIU in **ON** Position for Later LED Check. At First Power Unit Converter Switch, Operate to **OFF** Position. Responses: The Converter Red LED Lights. **OS** Lamp on Lower DIUs Unit Status Is Lit. Green **MM** LED is Lit on This Out Of Service (OOS) Unit Switch. If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light. Continue Powering Down All Other Converters for LCP DIU 13 and Check Its Red LED Lighting	TELCO	—
18	At Front of FCR DIF, Operate LCP DIU 13 Unit Power Switch to **OFF** Position. Response: LCP DIU Power Converter Red LEDs Extinguish	INST	—
19	At Front of FCR DIF at LCP DIU 13, Remove DIU Power Fuse **FU** or **FAU** Response: If Newer DIF Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Extinguish	INST	—
20	Complete ABC to DIU +140V Cable Connection By Plugging Male Connector End (Left Unconnected in Step 9) Into DIF Power Backfeed Test Set	INST	—
	(Continued on Page 5)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: Remove plastic insulator via insulated spudger at bottom of plastic insulator. Use of needle nose pliers will stretch this plastic insulator which is to be reused		
21	At Back of FCR DIF, Locate 141C1 Backplane Connector Associated With LCP DIU 13 and Install DIF Power Backfeed Test Set Return Cable to 141C1 Connector. Do This By Removing Plastic Insulator from "U" Pin (Refer to DLP-547) and Sliding DIF Power Backfeed Test Set Connector Onto "U" Pin. Save Removed Plastic Insulator. Repeat Similar Connection for Second Power Backfeed Test Set Return Cable to 141C1 Connector for DIU 14 (Refer to DLP-546)	INST	–
22	At Back of FCR DIF, Locate 141C1 Backplane Connector Associated With HCP DIU 29 and Install DIF Power Backfeed Test Set Return Cable to 141C1 Connector. Do This By Removing Plastic Insulator from "U" Pin and Sliding DIF Power Backfeed Test Set Connector Onto "U" Pin. Save Removed Plastic Insulator. Repeat Similar Connection For Second Power Backfeed Test Set Return Cable to 141C1 Connector for DIU 30 (Refer to DLP-545)	INST	–
23	At Front of ABC Frame (ABC Location Was Labeled in Step 6), Insert Same Size 15 or 20 Ampere Fuse, as Present in ABC for This FCR DIF, in ABC Backfeed Connector-type Connector. Insert Backfeed Fuse Connector Into ABC Fuse Position and Insert Associated Pilot Fuse. Record ABC Location of +140VA Fuse Checked, in DLP-544	INST	–
	NOTE: If LEDs do not light, repeat from Step 20		
24	At Front of FCR DIF, Verify Two Main Power LEDs Are Lit on DIF Power Backfeed Test Set	INST	–
25	At Front of FCR DIF, Install Backfeed Fuse Connector Into LCP DIU 13 **FU** or **FAU** (for Older DIF Frames) Fuse Position	INST	–
26	At Front of FCR DIF, Insert a 5-Amp Green Fuse in LMDIU Fuse Location on DIF Backfeed Control Box	INST	–
27	Momentarily Operate LDIU Test Button/Switch Response: The LDIU Green Test LED Lits (While Switch Is Depressed)	INST	–
	NOTE: +140V to nine lower DIUs is supplied from backfeed cable		
28	Switch LMDIU Power Switch to **ON** Position on DIF Power Backfeed Test Set	INST	–
29	Install Fuse (Removed in Step 19) in LDIU Fuse Position in DIF Power Backfeed Test Set Response: Red LED on Unit Power Switch Is Lit Unit Status **OS** Lamp Remains Lit	INST	–

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
30	At Front of FCR DIF, Switch LCP DIU 13 Unit Power Switch to **ON** Position Response: All LCP DIU 13 Converter Red LEDs Light	TELCO	—
	NOTE: If LCP DIU fails to power up, stop at this point and visually recheck for proper fusing, power cable connections, and LDIU Power Backfeed Test Set positions. Contact support organization if problem cannot be resolved and LCP DIU powered up		
31	Operate All LCP DIU Power Converter Switches to **ON** Position. Response: All LCP DIU 13 Power Converter LEDs Should Extinguish	TELCO	—
32	At 1A/1B MTC Terminal, Restore This LCP DIU to Service by: Enter: **RST:DIF a,DIU 13!** Where a = Member Number (2-31) Response: PF Followed By: **DGN:DIF a,DIU 13 COMPLETE ATP MSG COMPL** **RST:DIF a,DIU b COMPL** Green **MM** LED and **OS** Lamp Extinguish on LCP DIU Green **MM** LED on DIU 32 Lights	TELCO	—
33	At 1A/1B MTC Terminal, Remove HCP DIU From Service by: Enter: **RMV:DIF a,DIU 13!** Where a = Member Number (2-31) Response: **RMV;DIF a DIU 13 COMPL** Green **MM** LED and **OS** Lamp Light on UCP DIU Green **MM** LED on DIU 33 Extinguishes	TELCO	—
34	At Front of FCR DIF, Power Down HCP DIU 29 Converters DIU and Check Converter Red LED Lighting. Leave Unit Power Switch on This DIU in **ON** Position for Later LED Check. At First Power Unit Converter Switch, Operate To **OFF** Position. Response: The Converter Red LED Lights. **OS** Lamp on Higher DIUs Unit Status Is Lit. Green **MM** LED Is Lit on This OOS Unit Switch. If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light. Continue Powering Down All Other Converters For HCP DIU 29 and Check Its Red LED Lighting	TELCO	—
	(Continued on Page 7)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: Red LED may stay dimly lit		
35	At Front of FCR DIF, Operate HCP DIU 29 Unit Power Switch to **OFF** position. Response: HCP DIU 29 Power Converter Red LEDs Extinguish	TELCO	—
36	At Front of FCR DIF at HCP DIU 29, Remove DIU Power Fuse **U** or **FAU** (for Older Vintage DIFs) Response: If Newer DIF Unit Power Switch Red LED Labeled **PWR OFF,** This LED Will Extinguish	INST	—
37	At Front of FCR DIF, Install Backfeed Fuse Connector Into HCP DIU 29 **FU** or **FAU** Fuse Position	INST	—
38	At Front Of FCR DIF, Insert a 5-Amp Green Fuse in HMDIU Fuse Location on DIF Power Backfeed Test Set	INST	—
39	Momentarily Operate HDIU Test Button/Switch Response: The HDIU Green Test LED Lights (While Switch Is Depressed)	INST	—
40	Switch HMDIU Switch to **ON** Position on DIF Power Backfeed Test Set	INST	—
41	Install Fuse (Removed in Step 36) in LDIU Fuse Position in DIF Power Backfeed Test Set Response: Red LED on Unit Power Switch Is Lit Unit Status **OS** Lamp Is Lit	INST	—
42	At Front of FCR DIF, Switch HCP DIU 29s Unit Power Switch to **ON** Position Response: All HCP DIU Converter Red LEDs Light	TELCO	—
	NOTE: If HCP DIU 29 fails to power up, stop at this point and visually recheck for proper fusing, Power Cable connections, and HDIU Power Feedback Test Set switch positions. Contact support organization if problem cannot be resolved and HCP DIU 29 is powered up		
43	Operate All HCP DIU 29 Power Converter Switches to **ON** Position Response: All HCP DIU 29 Power Converter LEDs Should Extinguish	TELCO	—
44	At 1A/1B MTC Terminal, Restore This HCP DIU to Service by: Enter: RST:DIF a,DIU 29! Where a = Member Number (2-31) Response: PF Followed By: DGN:DIF a,DIU 29 COMPLETE ATP MSG COMPL RST:DIF a,DIU 29 COMPL	TELCO	—

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
45	This Is a Safe Stopping Point Between Shifts or Sufficient Time Is Not Available To Complete Filter Circuit Replacement. Contact Next Level of Support of Stopping Point. If Stopping, Execute Step 46. When Returning from Safe Stopping Point, Continue With Step 47; Otherwise, Skip Next Step and Continue	TELCO/INST	—
	NOTE: The message TEST:PUSYS! will change in the future at an unspecified date and will be as follows: TEST:PERIF!		
46	At 1A/1B MTC Terminal, Allow PUSYS by: Enter: TEST:PUSYS! Response: OK	TELCO	—
47	Ensure 1B Processor and Peripheral Unit Are Operating in Normal Mode	TELCO	DLP-543
	NOTE: The message STOP:TEST;PUSYS! will change in the future at an unspecified date and will be as follows: STOP:TEST;PERIF!		
48	Peripheral Unit System (PUSYS) Diagnostics Should Be Disabled During Filter Circuit Replacements. Accomplish This at 1A/1B Maintenance (MTC) Terminal by: Enter: STOP:TEST;PUSYS! Response: OK	TELCO	—
	NOTE: Only one DIF can be simplex at a time during these procedures. All removals of power for controllers and IPUBs will be via ROS and power down. An RMV input message will be avoided during these power removals to allow unrestricted software recoveries		
49	Notify Next Level of Support That DIF x Will Be Running Simplex During Its +140VA (Side 0) Filter Circuit Replacement. (x = DIF Currently Being Changed)	TELCO/INST	—
50	At Front of FCR DIF, Carefully Remove Bottom Metal Kick Plate for Bay 1 (Controller Bay)	INST	—
51	At Front of FCR DIF, Rotate Controller 0 Power Switch to **ROS** Position. Wait for **ACK** Lamp To Momentarily Light and **OS** To Light. After **OS** Lights, Depress Power Switch and Power **OFF** Lamp Lights Response: Controller 0 Power Unit Will Indicate Power Removed	TELCO	—
52	At Front of FCR DIF, Rotate IPUB 0 Power Switch to **ROS** Position. Wait for **ACK** Lamp To Momentarily Light an **OS** To Light. After **OS** Lights, Depress Power Switch and Power **OFF** Lamp Lights Response: IPUB 0 Power Unit Will Indicate Power Removed	TELCO	—

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: Fuses to be removed are for CONTR/IPUB 0 and all odd numbered DIU in 1-31 range, plus DIU 0. Do not remove fuses for Power Feedback cabling which will supply +140VA (for these DIUs) during filter circuit replacements. One pilot and one main fuse will be removed at ABC frame		
53	At Front of ABC Assigned for +140VA and for FCR DIF, Remove Pilot and Main Fuses (Refer to DLP-544 for Fuse Location) Response: The FCR DIF CONTR 0 and IPUB 0 Converter LEDs Extinguish.	TELCO/INST	—
54	With Only CONTR 0 and IPUB 0 Powered Down, Remove (Five) Fuses **F7A**, **F8A**, **F9A**, **F10A** (FAUL) and **F11A** (FAUH)	INST	—
55	Operate 245B (114-013) and 140F (114-103) Power Converter Unit Switches to **OFF**	INST	—
56	Operate 140A (176-025) Power Converter Switch, For IPUB 0, to **OFF**	INST	—
	CAUTION: Adjacent capacitor still has +140 volts present (+140VB for Side 1). Use insulating material around C1B for electric-insulating protection		
57	At Front of FCR DIF, Verify +140 Volts Is Not Present on CONTR/IPUB 0 CIA Capacitor Located at 104-037. Using a Volt/Ohm Meter, Check That + Terminal of This C1A Capacitor Is Near 0 Volts. A Less Than 3-Volt Measurement Is Required on this Capacitor Before Proceeding to Next Step. The Capacitor Discharge May Require a Couple Minutes. Mark Capacitor Wires With Temporary Labels To Help Ensure Correct Removal and Reinstallation in Future Steps	INST	—
58	At Back of FCR DIF, Remove Protective Cover at Bottom of Bay 1 (Controller Bay) To Have Access to Filter Circuits	INST	—
59	At Back of FCR DIF, Verify +140 Volts Is Not Present on DIUs C1A Capacitor. Using Volt/Ohm Meter, Measure Between Diode Heat Sink to Frame Ground for Near 0 Volts. A Less Than 3-Volt Measurement Is Required Before Proceeding to Next Step. Capacitor Discharge May Take a Couple Minutes. Mark Capacitor Wires With Temporary Labels To Help Ensure Correct Removal and Reinstallation in Future Steps	INST	—
	(Continued on Page 10)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: A 12-inch long standard screwdriver will be required. Use tape on screwdriver blade end to hold screws if screwdriver lacks screw holder feature. Also, insulate screwdriver from handle to blade to help prevent any shorting problems		
60	At Front of FCR DIF, Remove Two Wires and Resistor From Across CONTR/IPUB 0 C1A Capacitor. Remove Three Screws Holding C1A Capacitor Mounting Ring Clamp to Frame Unit Metal Plate; Then Remove C1A Capacitor	INST	—
61	Stamp Two New Capacitors (To Replace CONTR/IPUB and DIU Capacitors) With C1A	INST	—
62	Replace CONTR/IPUB C1A Capacitor at 104-037 With a New Capacitor and Record Replacement via Check Mark for This FCR DIF Member Number for CONTR/IPUB 0 in DLP-545	INST	—
63	Reconnect Two Wires With Resistor R1A (Disconnected in Step 60) Across C1A Terminals Correctly (as Marked in Step 57)	INST	—
	CAUTION: Adjacent areas have power still applied. Use insulation material around DIU C1A and diode work area for electrical protection. (Rear view of bay for C1A and Diode area)		
64	At Back of FCR DIF, Remove Two Screws From DIU C1A Capacitor Terminals; Then Remove Two Wires Across This C1A (Located at 108-079) and Verify Label (Attached in Step 59) is Still Present	INST	—
	NOTE: The new C1A capacitor replacement requires same orientation as removed capacitor		
65	At Front of FCR DIF, Remove Three Screws Holding DIU C1A Capacitor Mounting Ring Clamp to Frame Unit Metal Plate. Remember C1A Capacitor Orientation; Then Remove C1A Capacitor	INST	—
66	At Front of FCR DIF, Install a New Capacitor in Place of DIU C1A Capacitor Just Removed and Record This Replacement in DLP-545	INST	—
	NOTE: Remove insulation material around C1B (installed in Step 57) after DIU C1A terminal wires are reconnected		
67	Reconnect Two Wires With Resistor R1A (Disconnected In Step 64) Across C1A Terminals Correctly (as Marked in Step 59)	INST	—
	(Continued on Page 11)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
68	If Replacing Filter Diodes, Continue With This Step; Otherwise, Skip to Step 72. At Back of FCR DIF, Verify +140 Volts Is Not Present on Top Soldered Terminal of Two +140VA Diodes. Using a Volt/Ohm Meter, Check Soldered Diode Terminal to Frame Ground for Near 0 Volts. A Less Than 3-Volt Measurement is Required on These Two Diodes Before Proceeding To Next Step. The Capacitor Discharge May Require a Few Minutes	INST	—
69	At Back of FCR DIF, Remove Four Screws Holding Heat Shield With Two +140VA Diodes and Carefully Bring This Heat Shield Out From Frame	INST	—
	NOTES: 1. The Diode Heat Shield (DIF Rear View) has no WARNING label. The Diode Heat Shield (DIF Rear View) has **WARNING HAZARDOUS VOLTAGE** label on Diode Heat Sink 2. If Single FCR (indicated by S recorded in DLP-545), replace only required CONTR/IPUB or DIU Diode and reinstall heat sink in this Step. Then skip Step 71 or skip to Step 71 NOTE, only if no Diode replacement is indicated		
70	Unsolder Lead From One Diode and Remove Nut-Holding Same Diode. Replace This Diode With New Diode, Apply Thermal Grease and Formica Washer, Tighten Nut, and Solder Lead to Diode. The CR8A Diode New Replacement Is as Follows: Original - First - Present 485AB - 828AB - IN1204A 485A - 828A - IN1204RA	INST	—
	NOTE: Remove insulation material around DIU C1A and Diode work area (installed in Step 64 for electrical protection) after heat sink is reinstalled		
71	Repeat Step 70 For Other Diode and Reinstall Heat Sink	INST	—
72	Reinstall Kick Plate (Base Cover) at Front of FCR DIF and Rear Plastic Cover at Rear of FCR DIF in Bay 1 (Controller Bay)	INST	—
73	At Front of ABC Assigned +140VA For FCR DIF, Reinsert Main and Pilot Fuses (Refer to DLP-544 For Fuse Location) Following Correct Charging Procedures. These Fuses Were Removed in Step 52. Capacitor-Forming Tool ITE 4715 or Equivalent is Required	TELCO/INST	—
74	Insert **F7A**, **F8A**, **F9A**, **F10A**, and **F11A** Fuses (Fuses Were Removed in Step 54) Response: Red LEDs on 245B (114-013), 140F (114-103), and 140A (176-025) Are Lit	INST	—
	(Continued on Page 12)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
75	Operate 245B (114-013), 140F (114-103), and 140A (176-025) Power Switches to **ON**	INST	—
76	At Front Of FCR DIF, Power Up CONTR 0 and IPUB 0 via Their Power Switches	TELCO	—
77	At Front of FCR DIF, Rotate **CONTR 0** Power Switch From **ROS** to **NOR** Position To Return **CONTR 0** to Service Response: Controller 0 Will Run Diagnostics and Return to Service if ATP	TELCO	—
78	At Front of FCR DIF, Rotate IPUB 0 Power Switch From **ROS** to **NOR** Position To Return IPUB 0 to Service Response: Diagnostics on IPUB 0 Will Run and This IPUB Will Be Made Operational, If ATP	TELCO	—
79	Contact Your Support Organization and Notify Them That FCR DIF Member Number Has Completed +140VA Filter Circuit Replacement for Side 0 and Has Been Returned to Duplex Operation	TELCO/INST	—
80	At 1A/1B MTC Terminal, Remove LCP DIU 13 From Service by: Enter: **RMV:DIF a,DIU 13!** Where a = Member Number (2-31) Response: **RMV;DIF a DIU 13 COMPL**	TELCO	—
81	At Front Of FCR DIF, Power Down LCP DIU 13 Converters (Removed From Service in Previous Step) and Then the DIU. At First Power Unit Converter, Switch to **OFF** Position Response: Red LED on Unit Converter Lights. Continue Powering Down All Unit Converters and Check Its Red LED Lighting. Next, Operate Unit Power Switch to **OFF** Position Response: Unit Power **OFF** LED Lights Red. Green **MM** LED Lights (Indicates This DIU Is Removed). If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light	TELCO	—
82	At Front of FCR DIF, Operate **LMDIU** Power Switch on Power Backfeed Test Set to **OFF** Position	INST	—
83	Remove LMDIU and LDIU Fuses From DIF Power Backfeed Test Set	INST	—
84	Remove Power Backfeed Test Set Fuse Plug From LDIU	INST	—
85	Reinstall LDIU Fuse in LCP DIU (Removed in Step 83)	INST	—
	(Continued on Page 13)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
86	At Back of FCR DIF, Locate LCP DIU 141C1 Connector With DIF Power Backfeed Test Set Connector On "U" Pin (Connected In Step 21). Remove Connector From This "U" Pin and Replace Original Plastic Insulator Onto "U" Pin. Repeat Similar Procedure for Removal of Second (DIU 14) 141C1 Connector to DIF Power Backfeed Test Set Connection. Replace Protective Covers for DIUs 13 and 14	TELCO/INST	—
87	At Front of FCR DIF, Switch LCP DIU Unit Power Switch to **ON** Position Response: At Front of FCR DIF, All LDIU Converter Red LEDs Are Lit. If Newer DIF Has a Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light	TELCO	—
88	Operate All LCP DIU Power Converter Switches To **ON** Position Response: All LCP DIU Power Converter LEDs Should Extinguish	TELCO	—
89	At 1A/1B MTC Terminal, Restore LCP DIU to Service by: Enter: **RST:DIF a,DIU 13!** Where a = Member Number (2-31) Response: PF Followed By: **DGN:DIF a,DIU 13 COMPLETE ATP MSG COMPL** **RST:DIF a,DIU b COMPL**	TELCO/INST	—
90	At 1A/1B MTC Terminal, Remove HCP DIU From Service Enter: **RMV:DIF a,DIU 29!** Where a = Member Number (2-31) Response: **RMV;DIF a DIU 29 COMPL**	TELCO	—
91	At Front of FCR DIF, Power Down HCP DIU 29 Converters (Removed From Service in Previous Step) and Then the DIU. At First Power Unit Converter, Switch to **OFF** Position Response: Red LED On Unit Converter Lights Continue Powering Down All Unit Converters and Check Its Red LED Lighting. Next Operate Unit Power Switch to **OFF** Position Response: Unit Power **OFF** LED lights Red. Green **MM** LED Lights (Indicates This DIU Is Removed). If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light	TELCO	—
92	At Front of FCR DIF, Operate HMDIU Power Switch on Power Feedback Test Set to **OFF** Position	TELCO/INST	—
93	Remove HMDIU and HDIU Fuse From DIF Power Backfeed Test Set	TELCO/INST	—
	(Continued on Page 14)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
94	Remove Power Backfeed Test Set Fuse Plug From HDIU	INST	—
95	Reinstall HDIU Fuse in HCP DIU (Removed In Step 93)	INST	—
96	At Back of FCR DIF, Locate HCP DIU 29 151C1 Connector With DIF Power Backfeed Test Set Connector on "U" Pin (Connected In Step 22). Remove Connector From This "U" Pin and Repeat Original Plastic Insulator Onto "U" Pin. Repeat Similar Procedure for Removal of Second (DIU 30) 141C1 Connector to DIF Power Backfeed Test Set Connection. Replace Protective Plastic Covers for DIUs 29 and 30	INST	—
97	At Front of FCR DIF, Switch HCP DIU 29 Unit Power Switch to **ON** Position Response: At Front of FCR DIF, All LDIU Converter Red LEDs Are Lit. If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light	TELCO	—
98	Operate All HCP DIU 29 Power Converter Switches to **ON** Position Response: All HCP DIU 29 Power Converter LEDs Should Extinguish	TELCO	—
99	At 1A/1B MTC Terminal, Restore HCP DIU 29 to Service by: Enter: **RST:DIF a,DIU 29!** Where a = Member Number (2-31) Response: PF Followed By: **DGN:DIF a,DIU 29 COMPLETE ATP MSG COMPL** **RST:DIF a,DIU 29 COMPL**	TELCO	—
100	Remove ABC Fuses for Cabling ITE (Refer to DLP-544 for Fuse Information)	INST	—
101	Check DLP-545 To Ensure Both Side 0 FCRs Were Updated as Completed. If Sufficient Work Shift Time Remains, Go To Step 106. Otherwise, Continue With Next Step	INST	—
102	This is a Safe Stopping Point for Long-Time Break or Shift Change. Notify Next Support Level That Procedure is Being Stopped at This Safe Stopping Point and Perform Steps 103 and 104; Otherwise, Continue With Step 106	TELCO/INST	—
103	At 1A/1B MTC Terminal, Allow PUSYS by Entering: **TEST:PUSYS!** Wait for Response: **OK**	TELCO	—
104	Stop Procedure for Now and Resume at Step 105 When Continuing	TELCO/INST	—
105	Ensure 1B Processor and Peripheral Unit Are Operating in Normal Mode	TELCO	DLP-543
	(Continued on Page 15)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: The message STOP:TEST;PUSYS! will change in the future at an unspecified date and will be as follows: STOP:TEST;PERIF!		
106	Peripheral Unit System (PUSYS) Diagnostics Should Be Disabled During Filter Circuit Replacements. Accomplish This at 1A/1B Maintenance (MTC) Terminal by Entering: STOP:TEST;PUSYS! Wait for Response: OK	TELCO	—
107	At Front of ABC Frame, Remove ABC Backfeed Pilot Fuse. Then Remove ABC Backfeed Fuse Type Connector and Remove Fuse From Backfeed Connector. Check For More DIFs That Require +140VA (Side 0) Filter Circuit Repair/Replacement. If More DIFs, Go To Step 7. Otherwise, Go to Next Step	TELCO/INST	—
108	Check for More DIFs That Require +140VB (Side 1) Filter Circuit Repair/Replacement. If More DIFs Require FCR, Continue With Side 1 Using NTP-004 . Otherwise, Remove ABC Fuses for Cabling ITE (Refer to DLP-544 for This Information) and Remove Cabling ITE Connection to ABC Power Plant (Connected in Step 10). Notify Next Higher Support Group of Completion of +140VA (Side 0) Filter Circuit Replacement	TELCO/INST	—
	NOTE: The message TEST:PUSYS! will change in the future at an unspecified date and will be as follows: TEST:PERIF!		
109	At 1A/1B MTC terminal, Allow PUSYS by Entering: TEST:PUSYS! Wait For Response: OK	TELCO	—

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

		RESPONSIBILITY	
	DANGER: The +140V circuitry can be hazardous; extreme care must be taken to avoid personal injury or service interruptions		
	WARNINGS: 1. An antistatic wrist strap must be worn to prevent electrostatic discharge which could result in damage to circuit packs while working in frame *2. No growth or maintenance activity should be performed during this procedure*		
	NOTES: 1. Appropriate Input/Output manuals must be used if clarification of input message or output message is necessary 2. This procedure must be performed during light traffic periods 3. *4ESS*™ switch operation must be closely monitored while performing this procedure 4. Corrective action must be taken immediately on any activity that may cause any unit to go out of service (OOS) 5. Stability of office must be maintained throughout this procedure		
1	Notify Next Higher Technical Support Group That Filter Capacitor Circuits +140V - Side 1 Are Going To Be Replaced	TELCO	—
2	Ensure *4ESS* Switch Is in Stable Condition	TELCO	DLP-542
3	Ensure 1B Processor and Peripheral Units Are Operating in Normal Duplex Mode	TELCO	DLP-543
	NOTE: Frame vintage will affect part numbers for replacement diodes		
4	Check Office Records/Telephone Equipment Order (TEO) To Confirm That the Following New Equipment Required for Four Filter Circuit Replacements (FCRs) Has Been Inventoried for Each Equipped DIF; and Record It on copy of DLP-545. The Following Must Be Available for Each DIF Requiring All Four Filter Circuit Replacements: • (4) Capacitors - If Replacing Filter Capacitors • (4) Diodes - If Replacing Filter Diodes (Check Equipment for Correct Type) Diode Replacements Original - First - Present 485AB - 828AB - 1N1204A 485A - 828A - 1N1204RA	TELCO/INST	—
	(Continued on Page 2)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: The message STOP:TEST;PUSYS! will change in the future at an unspecified date and will be as follows: STOP:TEST;PERIF!		
5	Disable Peripheral Unit System (PUSYS) Diagnostics During Filter Circuit Replacements. At 1A/1B Maintenance (MTC) Terminal, Enter Message: STOP:TEST;PUSYS! Required Response: OK	TELCO	—
	NOTE: Side 1 (CONTR/IPUB 0) and all even-numbered DIUs in 1-31 range, plus DIU 0 are powered via +140VB. The CONTR 0 and IPUB 0 will be removed from service and DIF run simplex. Since DIU power is divided with 17 DIUs supplied per +140V source, an alternative +140 volts is required to maintain full DIU service. This is done via cabling power to two DIUs. These will be designated Lower Connection Point (LCP) and Higher Connection Point (HCP) DIUs. DIUs 32 and 33 are recommended for +140VB power backfeed connections		
6	At ABC +140 Power Frame, Locate Spare +140V Fuse Location and Attach Temporary Label To Reserve Location for Replacement Procedures Until All DIFs are Completed. From Office Drawings, Find +140VB Fuse Assignments For All DIFs Requiring Filter Circuit Replacement. Make Copy of DLP-544 That Is Used To Record Fuse Location(s)	TELCO/INST	—
7	On a Selected DIF or DIF-E1 For +140V Filter Circuit Replacement, Run Diagnostics on Both Controllers. This Filter Circuit Replacement (FCR) DIF Will Be Referred to as FCR DIF. At 1A/1B MTC Terminal, Diagnose DIF Via Restoral; Enter: RST:DIF a,CONTR b! Where a = Member Number (2-31) b = Controller Number (0-1) Response: PF Followed by: DGN:DIF a,CONTR b COMPLETE ATP MSG COMPL RST:DIF a,CONTR b COMPL Repeat This Step for Other Controller of DIF a	TELCO	—
	(Continued on Page 3)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: The LCP and HCP DIUs and both Controllers in FCR DIF must be ATP before continuing these filter circuit replacement procedures on this DIF		
8	Diagnose LCP and HCP DIUs in FCR DIF Selected In Previous Step. At 1A/1B MTC TTY, Enter: **RST:DIF a,DIU c!** a = DIF Member Number (2-31) c = DIU Number (32-33) Response: PF Followed By: **RMV DIF a DIU c COMPL** **DGN DIF a DIU c COMPL ATP** **RST:DIF a,DIU c COMPL**	TELCO	—
	NOTE: The following items are needed at this time to continue procedure: • (1) ABC backfeed fuse-type connector (to connect in front side of ABC) • (2) 50-foot female to male connectors (use for longer ABC to FCR DIF runs) • (1) DIF Power Backfeed Test Set with female connector for cable connection • Cable ties for temporary mounting of Power Feedback Test Set		
9	Run Special Power Backfeed Cables From ABC Spare Fuse Locations (Selected and Labeled in Step 6) FCR DIF (Selected in Step 7) in a Safe Route. Suspend Cable via Cable Ties From Cable Racks. Keep Cable Off Floor Across Aisles. Connect Power Feedback Cables Together But Leave Disconnected From DIF Power Backfeed Test Set Which Is Left in Front of FCR DIF	INST	—
10	Verify That ABC Fackfeed Fuse-Type Connector and Associated Pilot Fuses Are Removed From ABC Frame	INST	—
11	At Front of FCR DIF, Use Cable Tie To Suspend DIF Power Backfeed Test Set in Center of Bay 1 (Controller Bay) in Safe Location Near Top of Bay. Verify All Switches on Power Backfeed Test Set Are in **OFF** Position and No Fuses Are Present in Power Backfeed Test Set	INST	—
	NOTE: This Lower Connection Point (LCP) DIU will be referred to as LCP DIU for this DIF having filter circuit replacement. DIU 32 is recommended to be used		
12	At Back of FCR DIF, Remove Protective Covers From DIUs 13 and 14	INST	—
13	Pass Lower DIU (LDIU) "U Pin" Wire, From DIF Power Backfeed Test Set (at Front of DIF) to Near "U" Pin on 141C1 Backplane Connector at Backplane Side of LCP DIU See DLP-547	INST	—
	(Continued on Page 4)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: This Higher Connection Point (HCP) DIU will be referred to as HCP DIU for this DIF having filter circuit replacement. DIU 30 is recommended to be used		
14	At Back of FCR DIF, Remove Protective Cover Plastic Sheet From DIUs 29 and 30	INST	—
15	Pass Higher DIU (HDIU) "U Pin" Wire, From DIF Power Backfeed Test Set (at Front of DIF) to Near "U" Pin on 141C1 Backplane Connector at Backplane Side of LCP DIU. See DLP-547	INST	—
16	At 1A/1B MTC Terminal, Remove LCP DIU From Service by: Enter: **RMV:DIF a,DIU 32!** Where a = Member Number (2-31) Response: **RMV:DIF a DIU 32 COMPL**	TELCO	—
17	At Front of FCR DIF, Power Down LCP DIU 32 Converters (Removed From Service in Previous Step Indicated With Green MM Lamp Lit) and Check Converter Red LED Lighting. Leave Unit Power Switch on This DIU in **ON** Position for Later LED Check. At First Power Unit Converter Switch, Operate to **OFF** Position. Responses: The Converter Red LED Lights. **OS** Lamp on Lower DIUs Unit Status Is Lit. Green **MM** LED is Lit on This Out Of Service (OOS) Unit Switch. If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light. Continue Powering Down All Other Converters for LCP DIU 32 and Check Its Red LED Lighting	TELCO	—
18	At Front of FCR DIF, Operate LCP DIU 32 Unit Power Switch to **OFF** Position. Response: LCP DIU Power Converter Red LEDs Extinguish	INST	—
19	At Front of FCR DIF at LCP DIU 32, Remove DIU Power Fuse **FU** or **FAU** Response: If Newer DIF Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Extinguish	INST	—
20	Complete ABC to DIU +140V Cable Connection By Plugging Male Connector End (Left Unconnected in Step 9) Into DIF Power Backfeed Test Set	INST	—
	(Continued on Page 5)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: Remove plastic insulator via insulated spudger at bottom of plastic insulator. Use of needle nose pliers will stretch this plastic insulator which is to be reused		
21	At Back of FCR DIF, Locate 141C1 Backplane Connector Associated With LCP DIU 14 and Install DIF Power Backfeed Test Set Return Cable to 141C1 Connector. Do This By Removing Plastic Insulator from "U" Pin (Refer to DLP-547) and Sliding DIF Power Backfeed Test Set Connector Onto "U" Pin. Save Removed Plastic Insulator. Repeat Similar Connection for Second Power Backfeed Test Set Return Cable to 141C1 Connector for DIU 13 (Refer to DLP-546)	INST	–
22	At Back of FCR DIF, Locate 141C1 Backplane Connector Associated With HCP DIU 30 and Install DIF Power Backfeed Test Set Return Cable to 141C1 Connector. Do This By Removing Plastic Insulator from "U" Pin and Sliding DIF Power Backfeed Test Set Connector Onto "U" Pin. Save Removed Plastic Insulator. Repeat Similar Connection for Second Power Backfeed Test Set Return Cable to 141C1 Connector for DIU 29 (Refer to DLP-545)	INST	–
23	At Front of ABC Frame (ABC Location Was Labeled in Step 6), Insert Same Size 15- or 20-Ampere Fuse, as Present in ABC for This FCR DIF, in ABC Backfeed Connector-type Connector. Insert Backfeed Fuse Connector Into ABC Fuse Position and Insert Associated Pilot Fuse. Record ABC Location, of +140VB Fuse Checked in DLP-544	INST	–
	NOTE: If LEDs do not light, repeat from Step 20		
24	At Front of FCR DIF, Verify Two Main Power LEDs Are Lit on DIF Power Backfeed Test Set	INST	–
25	At Front of FCR DIF, Install Backfeed Fuse Connector Into LCP DIU 32 **FU** or **FAU** (for Older DIF Frames) Fuse Position	INST	–
26	At Front of FCR DIF, Insert a 5-Amp Green Fuse in LMDIU Fuse Location on DIF Backfeed Control Box	INST	–
27	Momentarily Operate LDIU Test Button/Switch Response: The LDIU Green Test LED Lits (While Switch Is Depressed)	INST	–
	NOTE: +140V to nine lower DIUs is supplied from backfeed cable		
28	Switch LMDIU Power Switch to **ON** Position on DIF Power Backfeed Test Set	INST	–
29	Install Fuse (Removed in Step 19) in LDIU Fuse Position in DIF Power Backfeed Test Set Response: Red LED on Unit Power Switch Is Lit Unit Status **OS** Lamp Remains Lit	INST	–

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
30	At Front of FCR DIF, Switch LCP DIU 32 Unit Power Switch to **ON** Position Response: All LCP DIU 13 Converter Red LEDs Light	TELCO	—
	NOTE: If LCP DIU 32 fails to power up, stop at this point and visually recheck for proper fusing, power cable connections, and LDIU Power Backfeed Test Set positions. Contact support organization if problem cannot be resolved and LCP DIU powered up		
31	Operate All LCP DIU 32 Power Converter Switches to **ON** Position. Response: All LCP DIU 32 Power Converter LEDs Should Extinguish	TELCO	—
32	At 1A/1B MTC Terminal, Restore This LCP DIU to Service by: Enter: **RST:DIF a,DIU 32!** Where a = Member Number (2-31) Response: PF Followed By: **DGN:DIF a,DIU 32 COMPLETE ATP MSG COMPL** **RST:DIF a,DIU 32 COMPL** Green **MM** LED and **OS** Lamp Extinguish on LCP DIU Green **MM** LED on DIU 32 Lights	TELCO	—
33	At 1A/1B MTC Terminal, Remove HCP DIU From Service by: Enter: **RMV:DIF a,DIU 33!** Where a = Member Number (2-31) Response: **RMV;DIF a DIU 33 COMPL** Green **MM** LED and **OS** Lamp Light on UCP DIU Green **MM** LED on DIU 33 Extinguishes	TELCO	—
34	At Front of FCR DIF, Power Down HCP DIU 33 Converters DIU and Check Converter Red LED Lighting. Leave Unit Power Switch on This DIU in **ON** Position for Later LED Check. At First Power Unit Converter Switch, Operate To **OFF** Position. Response: The Converter Red LED Lights. **OS** Lamp on Higher DIUs Unit Status Is Lit. Green **MM** LED Is Lit on This OOS Unit Switch. If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light. Continue Powering Down All Other Converters For HCP DIU 33 and Check Its Red LED Lighting	TELCO	—
	(Continued on Page 7)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: Red LED may stay dimly lit		
35	At Front of FCR DIF, Operate HCP DIU 33 Unit Power Switch to **OFF** Position Response: HCP DIU 29 Power Converter Red LEDs Extinguish	TELCO	—
36	At Front of FCR DIF at HCP DIU 33, Remove DIU Power Fuse **U** or **FAU** (for Older Vintage DIFs) Response: If Newer DIF Unit Power Switch Red LED Labeled **PWR OFF,** This LED Will Extinguish	INST	—
37	At Front of FCR DIF, Install Backfeed Fuse Connector Into HCP DIU 33 **FU** or **FAU** Fuse Position	INST	—
38	At Front Of FCR DIF, Insert a 5-Amp Green Fuse in HMDIU Fuse Location on DIF Power Backfeed Test Set	INST	—
39	Momentarily Operate HDIU Test Button/Switch Response: The HDIU Green Test LED Lights (While Switch Is Depressed)	INST	—
40	Switch HMDIU Switch to **ON** Position on DIF Power Backfeed Test Set	INST	—
41	Install Fuse (Removed in Step 36) in LDIU Fuse Position in DIF Power Backfeed Test Set Response: Red LED on Unit Power Switch Is Lit Unit Status **OS** Lamp Is Lit	INST	—
42	At Front of FCR DIF, Switch HCP DIU 33 Unit Power Switch to **ON** Position Response: All HCP DIU Converter Red LEDs Light	TELCO	—
	NOTE: If HCP DIU 29 fails to power up, stop at this point and visually recheck for proper fusing, Power Cable connections, and HDIU Power Feedback Test Set switch positions. Contact support organization if problem cannot be resolved and HCP DIU 29 is powered up		
43	Operate All HCP DIU 33 Power Converter Switches to **ON** Position Response: All HCP DIU 33 Power Converter LEDs Should Extinguish	TELCO	—
44	At 1A/1B MTC Terminal, Restore This HCP DIU to Service by: Enter: RST:DIF a,DIU 33! DGN:DIF a,DIU 33 COMPLETE ATP MSG COMPL Response: PF Followed By: DGN:DIF a,DIU 33 COMPLETE ATP MSG COMPL RST:DIF a,DIU 33 COMPL	TELCO	—

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
45	This is a Safe Stopping Point Between Shifts or Sufficient Time Is Not Available To Complete Filter Circuit Replacement. Contact Next Level of Support of Stopping Point. If Stopping, Execute Step 46. When Returning From Safe Stopping Point, Continue With Step 47; Otherwise, Skip Next Step and Continue	TELCO/INST	—
	NOTE: The message TEST:PUSYS! will change in the future at an unspecified date and will be as follows: TEST:PERIF!		
46	At 1A/1B MTC Terminal, Allow PUSYS by: Enter: TEST:PUSYS! Response: OK	TELCO	—
47	Ensure 1B Processor and Peripheral Unit Are Operating in Normal Mode	TELCO	DLP-543
	NOTE: The message STOP:TEST;PUSYS! will change in the future at an unspecified date and will be as follows: STOP:TEST;PERIF!		
48	Peripheral Unit System (PUSYS) Diagnostics Should Be Disabled During Filter Circuit Replacements. Accomplish This at 1A/1B Maintenance (MTC) Terminal by: Enter: STOP:TEST;PUSYS! Response: OK	TELCO	—
	NOTE: Only one DIF can be simplex at a time during these procedures. All removals of power for controllers and IPUBs will be via ROS and power down. An RMV input message will be avoided during these power removals to allow unrestricted software recoveries		
49	Notify Next Level of Support That DIF x Will Be Running Simplex During Its +140VB (Side 1) Filter Circuit Replacement. (x = DIF Currently Being Changed)	TELCO/INST	—
50	At Front of FCR DIF, Carefully Remove Bottom Metal Kick Plate for Bay 1 (Controller Bay)	INST	—
51	At Front of FCR DIF, Rotate Controller 1 Power Switch to **ROS** Position. Wait for **ACK** Lamp To Momentarily Light and **OS** To Light. After **OS** Lights, Depress Power Switch and Power **OFF** Lamp Lights Response: Controller 1 Power Unit Will Indicate Power Removed	TELCO	—
52	At Front of FCR DIF, Rotate IPUB 1 Power Switch to **ROS** Position. Wait for **ACK** Lamp To Momentarily Light and **OS** To Light. After **OS** Lights, Depress Power Switch and Power **OFF** Lamp Lights Response: IPUB 1 Power Unit Will Indicate Power Removed	TELCO	—

	NOTE: Fuses to be removed are for CONTR/IPUB 1 and all odd numbered DIU in 2-30 range, plus DIUs 32 and 33. Do not remove fuses for Power Feedback cabling which will supply +140VA (for these DIUs) during filter circuit replacements. One pilot and one main fuse will be removed at ABC frame		
53	At Front of ABC Assigned For +140VB, and for FCR DIF, Remove Pilot and Main Fuses (Refer to DLP-544 for Fuse Location) Response: The FCR DIF CONTR 1 and IPUB 1 Converter LEDs Extinguish.	TELCO/INST	—
54	With Only CONTR 1 and IPUB 1 Powered Down, Remove (Five) Fuses **F7B**, **F8B**, **F9B**, **F10B** (FAUH) and **F11B** (FAUH)	INST	—
55	Operate 245B (114-195) and 140F (114-171) Power Converter Unit Switches to **OFF.**	INST	—
56	Operate 140A (176-171) Power Converter Switch, for IPUB 1, to **OFF**	INST	—
	CAUTION: Adjacent capacitor still has +140 volts present (+140VA for Side 0). Use insulating material around C1A for electric-insulating protection		
57	At Front of FCR DIF, Verify +140 Volts Is Not Present on CONTR/IPUB 1 C1B Capacitor Located at 104-073. Using a Volt/Ohm Meter, Check That + Terminal of This C1B Capacitor Is Near 0 Volts. A Less Than 3-Volt Measurement Is Required on this Capacitor Before Proceeding to Next Step. The Capacitor Discharge May Require a Few Minutes. Mark Capacitor Wires With Temporary Labels To Help Ensure Correct Removal and Reinstallation in Future Steps	INST	—
58	At Back of FCR DIF, Remove Protective Cover at Bottom of Bay 1 (Controller Bay) To Have Access to Filter Circuits	INST	—
59	At Back of FCR DIF, Verify +140 Volts Is Not Present on DIUs C1B Capacitor. Using Volt/Ohm Meter, Measure Between Diode Heat Sink to Frame Ground for Near 0 Volts. A Less Than 3-Volt Measurement Is Required Before Proceeding to Next Step. Capacitor Discharge May Take a Couple Minutes. Mark Capacitor Wires With Temporary Labels To Help Ensure Correct Removal and Reinstallation in Future Steps	INST	—
	(Continued on Page 10)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: A 12-inch long standard screwdriver will be required. Use tape on screwdriver blade end to hold screws if screwdriver lacks screw holder feature. Also, insulate screwdriver from handle to blade to help prevent any shorting problems		
60	At Front of FCR DIF, Remove Two Wires and Resistor From Across CONTR/IPUB 1 C1B Capacitor. Remove Three Screws Holding C1B Capacitor-Mounting Ring Clamp to Frame Unit Metal Plate; Then Remove C1B Capacitor	INST	—
61	Stamp Two New Capacitors (To Replace CONTR/IPUB and DIU Capacitors) With C1B	INST	—
62	Replace CONTR/IPUB C1B Capacitor at 104-073 With a New Capacitor and Record Replacement via Check Mark for This FCR DIF Member Number for CONTR/IPUB 1 in DLP-545	INST	—
63	Reconnect Two Wires With Resistor R1B (Disconnected in Step 60) Across C1B Terminals Correctly (as Marked in Step 57)	INST	—
	CAUTION: Adjacent areas have power still applied. Use insulation material around DIU C1B and diode work area for electrical protection. (Rear view of bay for C1B and diode area)		
64	At Back of FCR DIF, Remove Two Screws From DIU C1B Capacitor Terminals; Then Remove Two Wires Across This C1B (Located at 108-207) and Verify Label (Attached in Step 59) Is Still Present	INST	—
	NOTE: The new C1B capacitor replacement requires same orientation as removed capacitor		
65	At Front of FCR DIF, Remove Three Screws Holding DIU C1B Capacitor Mounting Ring Clamp to Frame Unit Metal Plate. Remember C1B Capacitor Orientation; Then Remove C1B Capacitor	INST	—
66	At Front of FCR DIF, Install a New Capacitor in Place of DIU C1B Capacitor Just Removed and Record This Replacement in DLP-545	INST	—
	NOTE: Remove insulation material around C1A (installed in Step 57) after DIU C1B terminal wires are reconnected		
67	Reconnect Two Wires With Resistor R1A (Disconnected In Step 64) Across C1B Terminals Correctly (as Marked in Step 59)	INST	—
	(Continued on Page 11)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
68	If Replacing Filter Diodes, Continue With This Step; Otherwise, Skip to Step 72. At Back of FCR DIF, Verify +140 Volts Is Not Present on Top Soldered Terminal of Two +140VB Diodes. Using a Volt/Ohm Meter, Check Soldered Diode Terminal to Frame Ground for Near 0 Volts. A Less Than 3-Volt Measurement Is Required on These Two Diodes Before Proceeding to Next Step. The Capacitor Discharge May Require a Few Minutes	INST	—
69	At Back of FCR DIF, Remove Four Screws Holding Heat Shield With Two +140VB Diodes and Carefully Bring This Heat Shield Out From Frame	INST	—
	NOTES: 1. The Diode Heat Shield (DIF Rear View) has no WARNING label. The Diode Heat Shield (DIF Rear View) has **WARNING HAZARDOUS VOLTAGE** label on Diode Heat Sink 2. If Single FCR (indicated by S recorded in DLP-545), replace only required CONTR/IPUB or DIU Diode and reinstall heat sink in this Step. Then skip Step 71 or skip to Step 71 NOTE, only if no Diode replacement is indicated		
70	Unsolder Lead From One Diode and Remove Nut-Holding Same Diode. Replace This Diode With New Diode, Apply Thermal Grease and Formica Washer, Tighten Nut, and Solder Lead to Diode. The CR8A Diode New Replacement Is as Follows: Original - First - Present 485AB - 828AB - IN1204A 485A - 828A - IN1204RA	INST	—
	NOTE: Remove insulation material around DIU C1B and Diode work area (installed in Step 64 for electrical protection) after heat sink is reinstalled		
71	Repeat Step 70 For Other Diode and Reinstall Heat Sink	INST	—
72	Reinstall Kick Plate (Base Cover) at Front of FCR DIF and Rear Plastic Cover at Rear of FCR DIF in Bay 1 (Controller Bay)	INST	—
73	At Front of ABC Assigned +140VB For FCR DIF, Reinsert Main and Pilot Fuses (Refer to DLP-544 For Fuse Location) Following Correct Charging Procedures. These Fuses Were Removed in Step 52. Capacitor-Forming Tool ITE 4715 or Equivalent is Required	TELCO/INST	—
74	Insert **F7B**, **F8B**, **F9B, F10B,** and **F11B** Fuses (Fuses Were Removed in Step 54) Response: Red LEDs on 245B (114-195), 140F (114-171), and 140A (176-171) Are Lit	INST	—
	(Continued on Page 12)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
75	Operate 245B (114-195), 140F (114-171), and 140A (176-171) Power Switches to **ON**	INST	—
76	At Front Of FCR DIF, Power Up CONTR 1 and IPUB 1 via Their Power Switches	TELCO	—
77	At Front of FCR DIF, Rotate **CONTR 0** Power Switch From **ROS** to **NOR** Position To Return **CONTR 0** to Service Response: Controller 0 Will Run Diagnostics and Return to Service if ATP	TELCO	—
78	At Front of FCR DIF, Rotate IPUB 0 Power Switch From **ROS** to **NOR** Position To Return IPUB 1 to Service Response: Diagnostics on IPUB 0 Will Run and This IPUB Will Be Made Operational, If ATP	TELCO	—
79	Contact Your Support Organization and Notify Them That FCR DIF Member Number Has Completed +140VB Filter Circuit Replacement for Side 1 and Has Been Returned to Duplex Operation	TELCO/INST	—
80	At 1A/1B MTC Terminal, Remove LCP DIU 32 From Service by: Enter: **RMV:DIF a,DIU 32!** Where a = Member Number (2-31) Response: **RMV;DIF a DIU 32 COMPL**	TELCO	—
81	At Front Of FCR DIF, Power Down LCP DIU 32 Converters (Removed From Service in Previous Step) and Then the DIU. At First Power Unit Converter, Switch to **OFF** Position Response: Red LED on Unit Converter Lights. Continue Powering Down All Unit Converters and Check Its Red LED Lighting. Next, Operate Unit Power Switch to **OFF** Position Response: Unit Power **OFF** LED Lights Red. Green **MM** LED Lights (Indicates This DIU Is Removed). If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light	TELCO	—
82	At Front of FCR DIF, Operate **LMDIU** Power Switch on Power Backfeed Test Set to **OFF** Position	INST	—
83	Remove LMDIU and LDIU Fuses From DIF Power Backfeed Test Set	INST	—
84	Remove Power Backfeed Test Set Fuse Plug From LDIU	INST	—
85	Reinstall LDIU Fuse in LCP DIU 32 (Removed in Step 83)	INST	—
	(Continued on Page 13)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
86	At Back of FCR DIF, Locate LCP DIU 14 141C1 Connector With DIF Power Backfeed Test Set Connector On "U" Pin (Connected In Step 21). Remove Connector From This "U" Pin and Replace Original Plastic Insulator Onto "U" Pin. Repeat Similar Procedure for Removal of Second (DIU 13) 141C1 Connector to DIF Power Backfeed Test Set Connection. Replace Protective Covers for DIUs 13 and 14	TELCO/INST	—
87	At Front of FCR DIF, Switch LCP DIU 32 Unit Power Switch to **ON** Position Response: At Front of FCR DIF, All LDIU Converter Red LEDs Are Lit. If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light	TELCO	—
88	Operate All LCP DIU 32 Power Converter Switches To **ON** Position Response: All LCP DIU Power Converter LEDs Should Extinguish	TELCO	—
89	At 1A/1B MTC Terminal, Restore LCP DIU 32 to Service by: Enter: **RST:DIF a,DIU 32!** Where a = Member Number (2-31) Response: PF Followed By: **DGN:DIF a,DIU 32 COMPLETE ATP MSG COMPL** **RST:DIF a,DIU 32 COMPL**	TELCO/INST	—
90	At 1A/1B MTC Terminal, Remove HCP DIU From Service Enter: **RMV:DIF a,DIU 33!** Where a = Member Number (2-31) Response: **RMV;DIF a DIU 33 COMPL**	TELCO	—
91	At Front of FCR DIF, Power Down HCP DIU 33 Converters (Removed From Service in Previous Step) and Then the DIU. At First Power Unit Converter, Switch to **OFF** Position Response: Red LED On Unit Converter Lights Continue Powering Down All Unit Converters and Check Its Red LED Lighting. Next Operate Unit Power Switch to **OFF** Position Response: Unit Power **OFF** LED lights Red. Green **MM** LED Lights (Indicates This DIU Is Removed). If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light	TELCO	—
92	At Front of FCR DIF, Operate **HMDIU** Power Switch on Power Feedback Test Set to **OFF** Position	TELCO/INST	—
93	Remove HMDIU and HDIU Fuses From DIF Power Backfeed Test Set	TELCO/INST	—
	(Continued on Page 14)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
94	Remove Power Backfeed Test Set Fuse Plug From HDIU	INST	—
95	Reinstall HDIU Fuse in HCP DIU 33 (Removed in Step 93)	INST	—
96	At Back of FCR DIF, Locate HCP DIU 30 151C1 Connector With DIF Power Backfeed Test Set Connector on "U" Pin (Connected In Step 22). Remove Connector From This "U" Pin and Repeat Original Plastic Insulator Onto "U" Pin. Repeat Similar Procedure for Removal of Second (DIU 29) 141C1 Connector to DIF Power Backfeed Test Set Connection. Replace Protective Plastic Covers for DIUs 29 and 30	INST	—
97	At Front of FCR DIF, Switch HCP DIU 33 Unit Power Switch to **ON** Position Response: At Front of FCR DIF, All LDIU Converter Red LEDs Are Lit. If Newer DIF With Unit Power Switch Red LED Labeled **PWR OFF**, This LED Will Light	TELCO	—
98	Operate All HCP DIU 33 Power Converter Switches to **ON** Position Response: All HCP DIU 33 Power Converter LEDs Should Extinguish	TELCO	—
99	At 1A/1B MTC Terminal, Restore HCP DIU 33 to Service by: Enter: RST:DIF a,DIU 33! Where a = Member Number (2-31) Response: PF Followed By: DGN:DIF a,DIU 33 COMPLETE ATP MSG COMPL RST:DIF a,DIU 33 COMPL	TELCO	—
100	Remove ABC Fuses for Cabling ITE (Refer to DLP-544 for Fuse Information)	INST	—
101	Check DLP-545 To Ensure Both Side 1 FCRs Were Updated as Completed. If Sufficient Work Shift Time Remains, Go To Step 106. Otherwise, Continue With Next Step	INST	—
102	This is a Safe Stopping Point for Long-Time Break or Shift Change. Notify Next Support Level That Procedure Is Being Stopped at This Safe Stopping Point and Perform Steps 103 and 104; Otherwise, Continue With Step 106	TELCO/INST	—
103	At 1A/1B MTC Terminal, Allow PUSYS by Entering: TEST:PUSYS! Wait for Response: OK	TELCO	—
104	Stop Procedure for Now and Resume at Step 105 When Continuing	TELCO/INST	—
105	Ensure 1B Processor and Peripheral Unit Are Operating in Normal Mode	TELCO	DLP-543
	(Continued on Page 15)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: The message STOP:TEST;PUSYS! will change in the future at an unspecified date and will be as follows: STOP:TEST;PERIF!		
106	Peripheral Unit System (PUSYS) Diagnostics Should Be Disabled During Filter Circuit Replacements. Accomplish This at 1A/1B Maintenance (MTC) Terminal by Entering: STOP:TEST;PUSYS! Wait for Response: OK	TELCO	—
107	At Front of ABC Frame, Remove ABC Backfeed Pilot Fuse. Then Remove ABC Backfeed Fuse-Type Connector and Remove Fuse From Backfeed Connector. Check for More DIFs That Require +140VB (Side 1) Filter Circuit Repair/Replacement. If More DIFs, Go to Step 7. Otherwise, Go to Next Step	TELCO/INST	—
108	Check for More DIFs That Require +140VA (Side 0) Filter Circuit Repair/Replacement. If More DIFs Require FCR, Continue With Side 0, Using NTP-003 . Otherwise, Remove ABC Fuses for Cabling ITE (Refer to DLP-544 for This Information) and Remove Cabling ITE Connection to ABC Power Plant (Connected in Step 10). Notify Next Higher Support Group of Completion of +140VB (Side 1) Filter Circuit Replacement	TELCO/INST	—
	NOTE: The message TEST:PUSYS! will change in the future at an unspecified date and will be as follows: TEST:PERIF!		
109	At 1A/1B MTC Terminal, Allow PUSYS by Entering: TEST:PUSYS! Wait For Response: OK	TELCO	—

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

		RESPONSIBILITY	
	DANGER: The +140V circuitry can be hazardous. Extreme care must be taken to avoid personal injury or service interruptions		
	WARNING: An antistatic wrist strap must be worn to prevent electrostatic discharge which could result in damage to circuit packs while working in frame		
	NOTES: 1. Appropriate Input/Output manuals must be used if clarification of input message or output message is necessary 2. ***4ESS***™ switch operation must be closely monitored while performing this procedure 3. Corrective action must be taken immediately on any activity that may cause any unit to go out of service (OOS) 4. Stability of office must be maintained throughout this procedure		
1	Notify Next Higher Technical Support Level That Rapid Restoral of DIU +140VA-Side 0 Is Going To Be Executed	TELCO	—
2	Ensure ***4ESS*** Switch Is in Stable Condition	TELCO	—
	NOTE: Side 0 (CONTR/IPUB 0) and all odd numbered DIUs in 1 — 31 range plus DIU 0 are powered via +140VA. Since DIU power is divided with 17 DIUs supplied per +140V source, an alternative +140 volts are required to maintain full DIU service. This is done via Cabling DIF Backfeed Control Box (ITE 7082) to two DIUs. DIUs 13 and 29 are recommended for +140VA return connections.		
3	At ABC +140 Power Frame, Locate Spare +140V Fuse Location and Attach Temporary Label to Reserve Location	TELCO	—
	(Continued on Page 2)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: The following items are needed at this time to continue procedure; the first three items are contained in ITE 7082 kit: • (1) ABC backfeed fuse-type connector (to connect in front side of ABC) • (2) 50-foot female to male connectors (use for longer ABC to affected DIF runs) • (1) DIF Feedback Control Box with female connector for cable connection • Step-stool or Ladder • Insulated spudger		
4	Run Special Cables From ABC Spare Fuse Locations (Selected and Labeled in Step 3) to Affected DIF in a Safe Route and Secure. Connect Cables Together But Leave Disconnected From DIF Feedback Control Box Which Is Left in Front of Affected DIF	TELCO	—
5	Verify That ABC Feedback Fuse and Associated Pilot Fuse Are Removed From ABC Frame	TELCO	—
	NOTE: The DIF Backfeed Control Box will be hung on the cable rack with the "U" hook on back of unit. Prior to being hung, the cover and cables inside the cover must be removed from the Backfeed Control Box. Install the fuse-ended wires of the cable into fuse holders on each side of Backfeed Control Box. This is a precautionary measure to avoid fuse ends from inadvertent contact with DIF frame		
6	At Front of Affected DIF, Mount DIF Feedback Control Box on Cable Rack in Center of Bay 1 (Controller Bay). Verify All Switches on this Feedback Control Box Are in **OFF** Position and **No Fuses** Are Present in Feedback Control Box (Refer to DLP-546)	TELCO	—
7	At Back of Affected DIF, Remove Protective Cover Plastic Sheets From DIUs 13-14 and 29-30	TELCO	—
8	Pass DIU 13 and DIU 14 "RTN" Wires, From DIF Feedback Control Box (at Front of DIF) to Rear of Frame Through to Backplane Adjacent to Unit Power Switch 12. Repeat for DIU 29 and DIU 30, Using Area Adjacent to Unit Power Switch 27	TELCO	—
9	At Rear of Affected DIF, Locate 141C1 Backplane "Terminal U" (Refer to DLP-547) Associated With DIUs 13-14 and DIUs 29-30; and Remove Plastic Insulator Sleeve Via Insulated Spudger at Bottom of Plastic Insulator. Save Plastic Insulator Sleeve for Reuse	TELCO	—
10	Connect Black Wires to "Terminal U" on 141C1 Backplane Connector at Backplane Side of DIUs (Refer to DLP-547)	TELCO	—

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
11	Remove Fuses **F7A**, **F8A**, **F9A**, **F10A** (FAUL), and **F11A** (FAUH)	TELCO	—
12	Operate All Unit Power Switches to **OFF** Position on All Odd-Numbered DIUs, and DIU 0	TELCO	—
13	At Front of DIF at DIU 13 and DIU 29, Remove DIU Power Fuse **FU** (**FAU** in Older DIF Units)	TELCO	—
14	Complete ABC to DIU +140V Cable Connection by Plugging Male Connector End Into DIF Backfeed Control Box	TELCO	—
15	At Front of ABC Frame, Insert Same Size 15- or 20-Ampere Fuse (as Present in ABC for This Affected DIF) Into ABC Backfeed Connector-type Connector. Insert Backfeed Fuse Connector Into ABC Fuse Position and Insert Associated Pilot Fuse	TELCO	—
16	At Front of Affected DIF, Verify Two Main Power LEDs Are Lighted on DIF Backfeed Control Box	TELCO	—
17	At Front of Affected DIF, Remove Fuse Connector From Side of Box; Install Backfeed Fuse Connector Into DIU 14 and DIU 30 **FU** (**FAU** for Older DIF Frames) Fuse Position	TELCO	—
18	At Front of Affected DIF, Insert a 5-Amp Green Fuse Into LMDIU and HMDIU Fuse Locations on DIF Backfeed Control Box	TELCO	—
19	Switch **LMDIU** and **HMDIU** Power Switches to **ON** Position on DIF Backfeed Control Box. LEDs Should Light on All ODD DIUs Except 13 and 29	TELCO	—
20	Install Fuse **FU** or **FAU** (Removed Earlier) in LDIU and HDIU Fuse Positions in DIF Backfeed Control Box. LEDs Should Light on DIUs 13 and 29	TELCO	—
21	At Front of Affected DIF, Switch all ODD DIUs and DIU 0 Unit Power Switches to **ON** Position	TELCO	—
22	At 1A/1B MTC Terminal, Restore Service-Degraded DIUs to Service by: Enter: RST:DIF a,DIU 99;UCL! Where a = Member Number (2-31)	TELCO	—
23	Restore Any Remaining DIUs on This DIF That Are Out-of-Service by Using Normal Restoral Input Message at MTC Terminal: Enter: RST:DIF a,DIU c! Where a = DIF Number c = DIU Number	TELCO	—

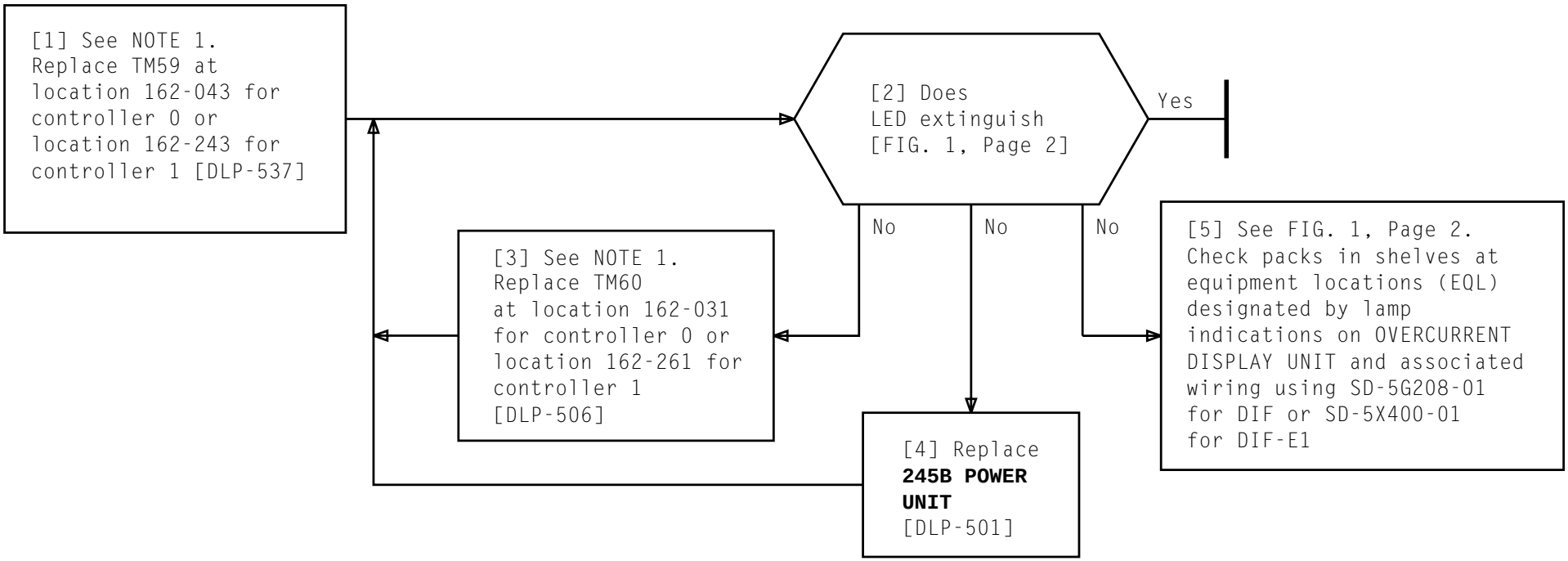
DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO

		RESPONSIBILITY	
	DANGER: The +140V circuitry can be hazardous. Extreme care must be taken to avoid personal injury or service interruptions		
	WARNING: An antistatic wrist strap must be worn to prevent electrostatic discharge which could result in damage to circuit packs while working in frame		
	NOTES: 1. Appropriate Input/Output manuals must be used if clarification of input message or output message is necessary 2. ***4ESS***™ switch operation must be closely monitored while performing this procedure 3. Corrective action must be taken immediately on any activity that may cause any unit to go out of service (OOS) 4. Stability of office must be maintained throughout this procedure		
1	Notify Next Higher Technical Support Level That Rapid Restoral of DIU +140VB-Side 1 Is Going To Be Executed	TELCO	—
2	Ensure ***4ESS*** Switch Is in Stable Condition	TELCO	—
	NOTE: Side 1 (CONTR/IPUB 1) and all odd-numbered DIUs in 1-33 range plus DIU 0 are powered via +140VB. Since DIU power is divided with 17 DIUs supplied per +140V source, an alternative +140 volts are required to maintain full DIU service. This is done via Cabling DIF Backfeed Control Box (ITE 7082) to two DIUs. These will be designated Lower Connection Point (LCP) and Higher Connection Point (HCP) DIUs. DIUs 14 and 30 are recommended for +140VB return connections		
3	At ABC +140 Power Frame, Locate Spare +140V Fuse Location and Attach Temporary Label to Reserve Location	TELCO	—
	(Continued on Page 2)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
	NOTE: The following items are needed at this time to continue procedure; the first three items are contained in ITE 7082 kit: • (1) ABC backfeed fuse-type connector (to connect in front side of ABC) • (2) 50-foot female to male connectors (use for longer ABC to affected DIF runs) • (1) DIF Backfeed Control Box (ITE 7082) with female connector for cable connection • Step-Stool or Ladder • Insulated Spudger		
4	Run Special Cables From ABC Spare Fuse Locations (Selected and Labeled in Step 3) to Affected DIF in a Safe Route and Secure. Connect Cables Together But Leave Disconnected From DIF Backfeed Control Box Which Is Mounted in Front of Affected DIF	TELCO	—
5	Verify That ABC Feedback Fuse and Associated Pilot Fuse Are Removed From ABC Frame	TELCO	—
	NOTE: The DIF Backfeed Control Box will be hung on the Cable Rack with the "U" hook on back of unit. Prior to being hung, the cover and cables inside the cover must be removed from the Backfeed Control Box. This is a precautionary measure to avoid fuse ends from inadvertent contact with DIF frame		
6	At Front of Affected DIF, Mount DIF Backfeed Control Box (ITE 7082) on Cable Rack in Center of Bay 1 (Controller Bay). Verify All Switches on This Backfeed Control Box Are in **OFF** Position and No Fuses Are Present in Backfeed Control Box (Refer to DLP-546)	TELCO	—
7	At Back of Affected DIF, Remove Protective Cover Plastic Sheets From DIUs 13-14 and 29-30	TELCO	—
8	Pass DIU 13 and DIU 14 "RTN" Wires, From DIF Backfeed Control Box (at Front of DIF) to Rear of Frame Through Blackplane Ajacent to Unit Power Switch 12. Repeat for DIUs 29 and 30, Using Area Adjacent to Unit Power Switch 27	TELCO	—
9	At Rear of Affected DIF, Locate 141C1 Backplane "Terminal U" (Refer to DLP-547) Associated With DIUs 29-30 and DIUs 13-14. Remove Plastic Insulator Sleeve Via Insulated Spudger at Bottom of Plastic Insulator. Save Plastic Insulator Sleeve for Reuse	TELCO	—
	(Continued on Page 3)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
10	Connect Black Wires to "Terminal U" on 141C1 Backplane Connector at Backplane Side of DIUs (See DLP-547)	TELCO	—
11	Remove Fuses **F7B**, **F8B**, **F9B**, **F10B** (FBUL), and **F11B** (FBUH), This Is for Side 1	TELCO	—
12	Operate all Unit Power Switches to **OFF** Position on all Even-Numbered DIUs and DIU 33	TELCO	—
13	At Front of DIF at DIU 14 and DIU 30, Remove DIU Power Fuse **FU** (**FAU** in Older DIF Units)	TELCO	—
14	Complete ABC to DIU +140V Cable Connection by Plugging Male Connector End Into DIF Backfeed Control Box	TELCO	—
15	At Front of ABC Frame, Insert Same Size 15- or 20-Ampere Fuse, as Present in ABC for This Affected DIF, Into ABC Backfeed Connector-Type Connector. Insert Backfeed Fuse Connector Into ABC Fuse Position and Insert Associated Pilot Fuse	TELCO	—
16	At Front of Affected DIF, Verify Two Main Power LEDs Are Lit on DIF Backfeed Control Box	TELCO	—
17	At Front of Affected DIF, Remove Fuse Connector From Side of Box, and Install Backfeed Fuse Connector Into DIU 14 and DIU 30 **FU** (**FAU** for Older DIF Frames) Fuse Position	TELCO	—
18	At Front of Affected DIF, Insert a 5-Amp Green Fuse in LMDIU and HMDIU Fuse Locations on DIF Backfeed Control Box	TELCO	—
19	Switch LMDIU and HMDIU Power Switches to **ON** Position on DIF Backfeed Control Box. LEDs Should Light on All EVEN DIUs and 33 Except 14 and 30	TELCO	—
20	Install Fuses **FU** or **FAU** (Removed Earlier) in LDIU and HDIU Fuse Positions in DIF Backfeed Control Box. LEDs Should Light on DIUs 14 and 30	TELCO	—
21	At Front of Affected DIF, Switch All EVEN DIUs and DIU 33 Unit Power Switches to **ON** Position	TELCO	—
22	At 1A/1B MTC Terminal, Restore Service-Degraded DIUs to Service by: Enter: **RST:DIF a,DIU 99:UCL!** Where a = Member Number (2-31)	TELCO	—
	(Continued on Page 4)		

DO THE ITEMS BELOW IN THE ORDER LISTED . . . . . FOR DETAILS, GO TO			
23	Restore any Remaining DIUs on This DIF That Are Out-of Service by Using Normal Restoral Input Message at MTC Terminal: Enter: RST:DIF a,DIU c! Where a = DIF Number c = DIU Number	TELCO	—



NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only.
If indicator is from Controller 1, use items that denote Controller 1 only

CLEAR OVERCURRENT FAILURES ASSOCIATED WITH 70A, 70B, AND/OR 62B CONTROLLER ASSEMBLIES

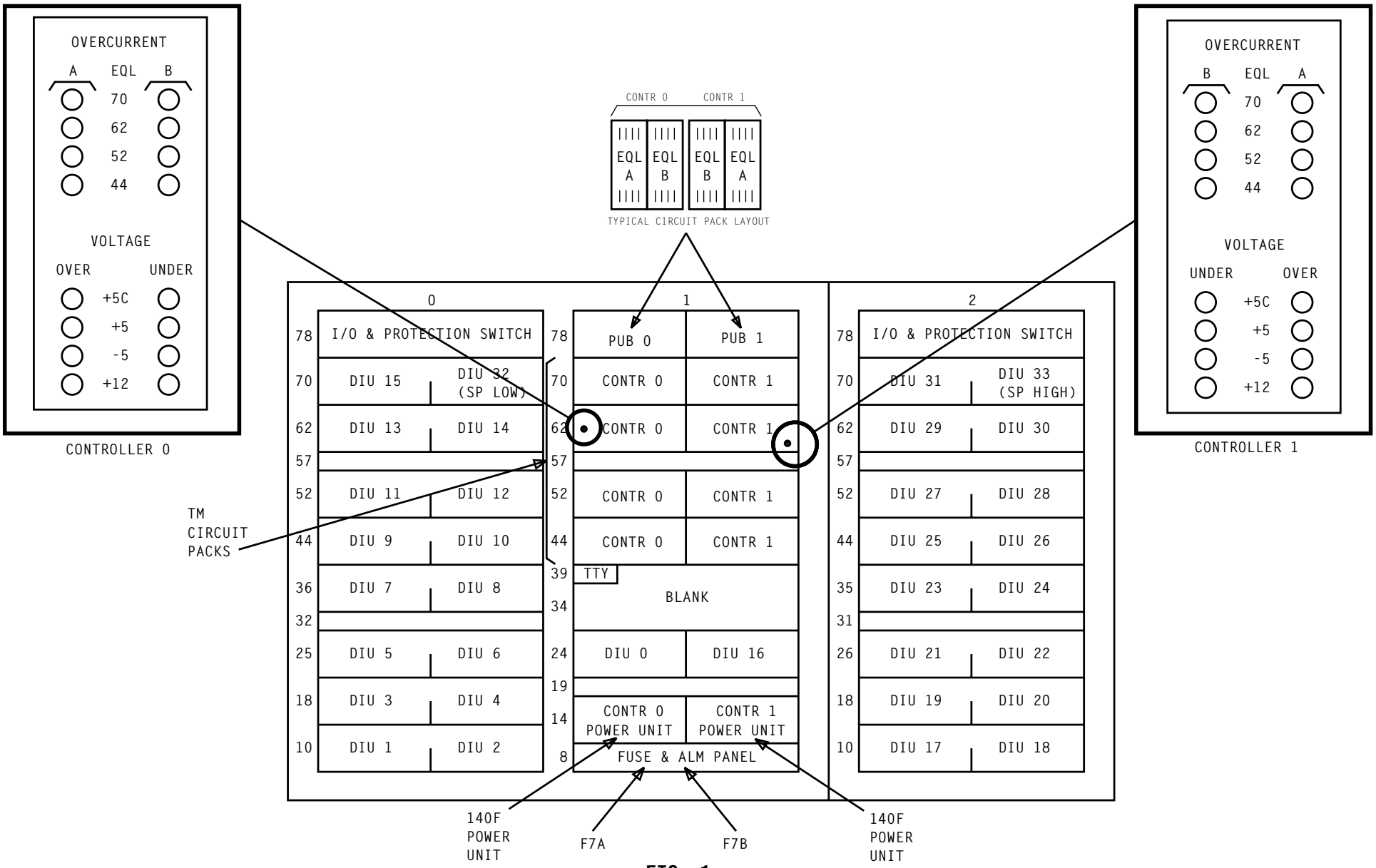


FIG. 1

CLEAR OVERCURRENT FAILURES ASSOCIATED WITH 70A, 70B, AND/OR 62B CONTROLLER ASSEMBLIES

[1] See NOTE 1. Remove power from digital interface controller (0 or 1) [DLP-502]

[2] See NOTE 1. Inspect **F3A** fuse for controller 0 or **F3B** fuse for controller 1 and replace as necessary

[3] Apply power to digital interface controller that was powered down in Step 1 [DLP-504]

AND

[4] Does **+5C-UNDERVOLTAGE** or **+5C-OVERVOLTAGE** LED extinguish [FIG. 1, Page 2]

Yes

No

No

No

[5] See NOTE 1. Replace TM59 at location 162-037 for controller 0 or location 162-249 for controller 1 [FIG. 1, Page 2] [DLP-537]

[6] See NOTE 1. Replace TM60 at location 162-031 for controller 0 or location 162-261 for controller 1 [DLP-506]

[7] Check for circuitry problems using SD-5G208-01 for DIF or SD-5X400-01 for DIF-E1

NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only.
If indicator is from Controller 1, use items that denote Controller 1 only

CLEAR +5C UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER

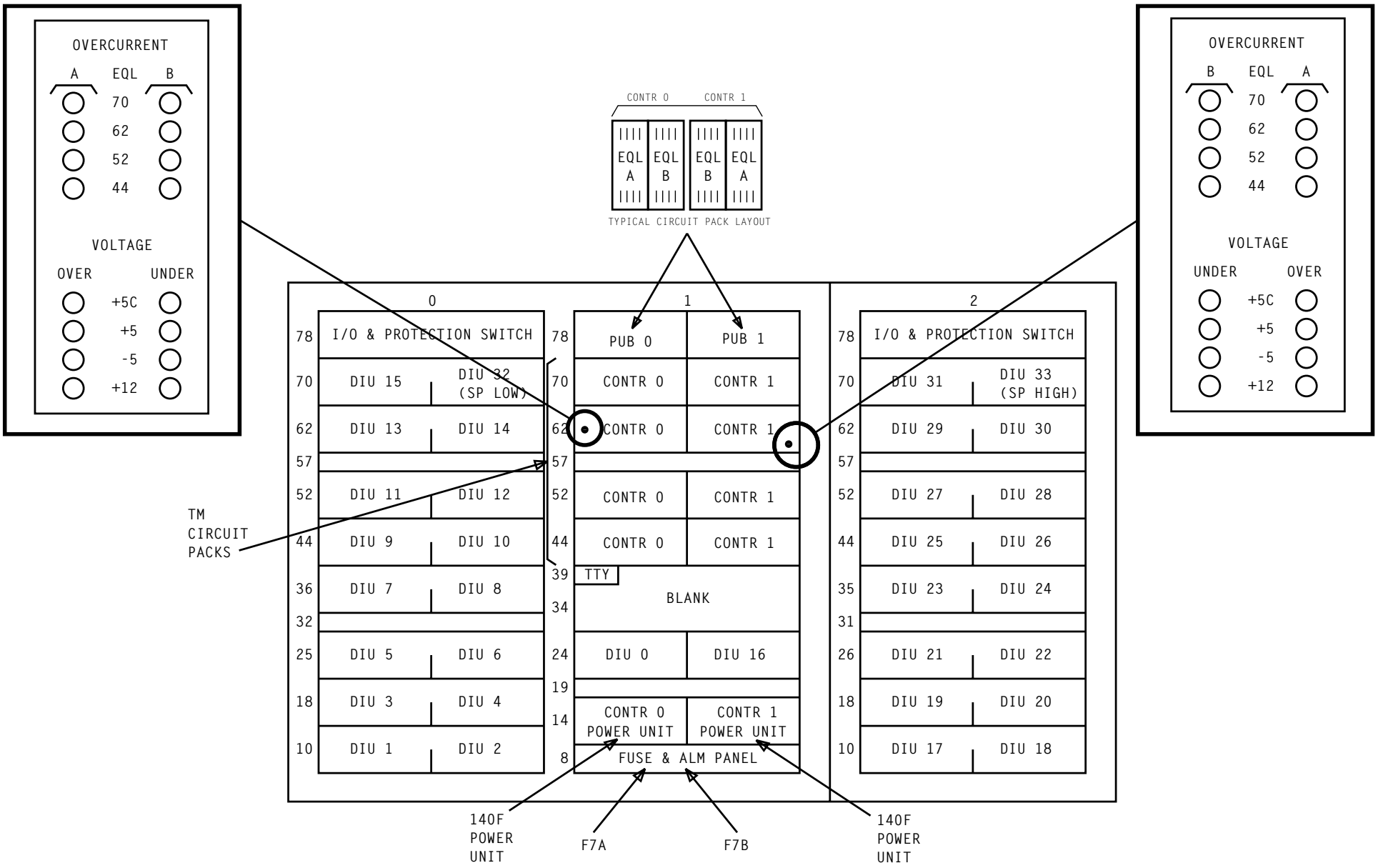


FIG. 1

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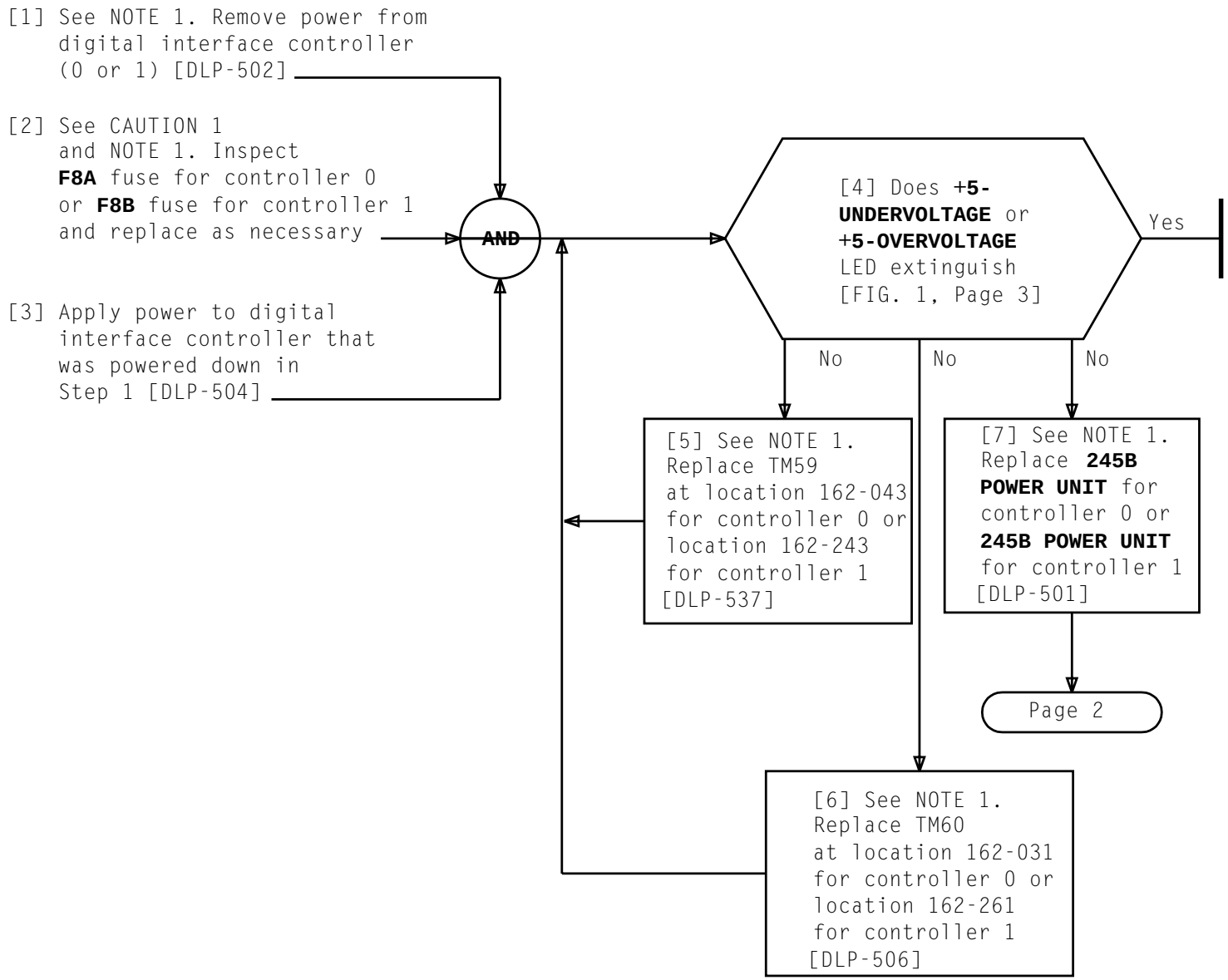
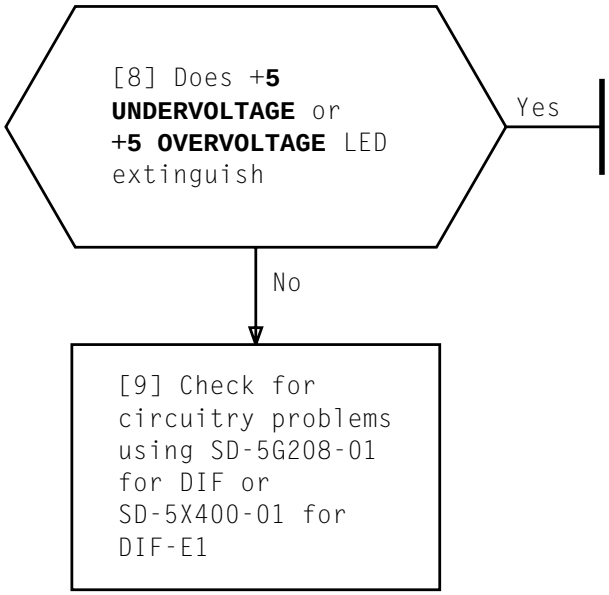
CLEAR +5C UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER

CLEAR +5 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER



NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only. If indicator is from Controller 1, use items that denote Controller 1 only

CAUTION 1
Power Switch on **245B POWER UNIT** *must be in* **OFF** *position when* **F8A** *or* **F8B** *fuse is inserted to prevent mate controller from being powered down*



CLEAR +5 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER

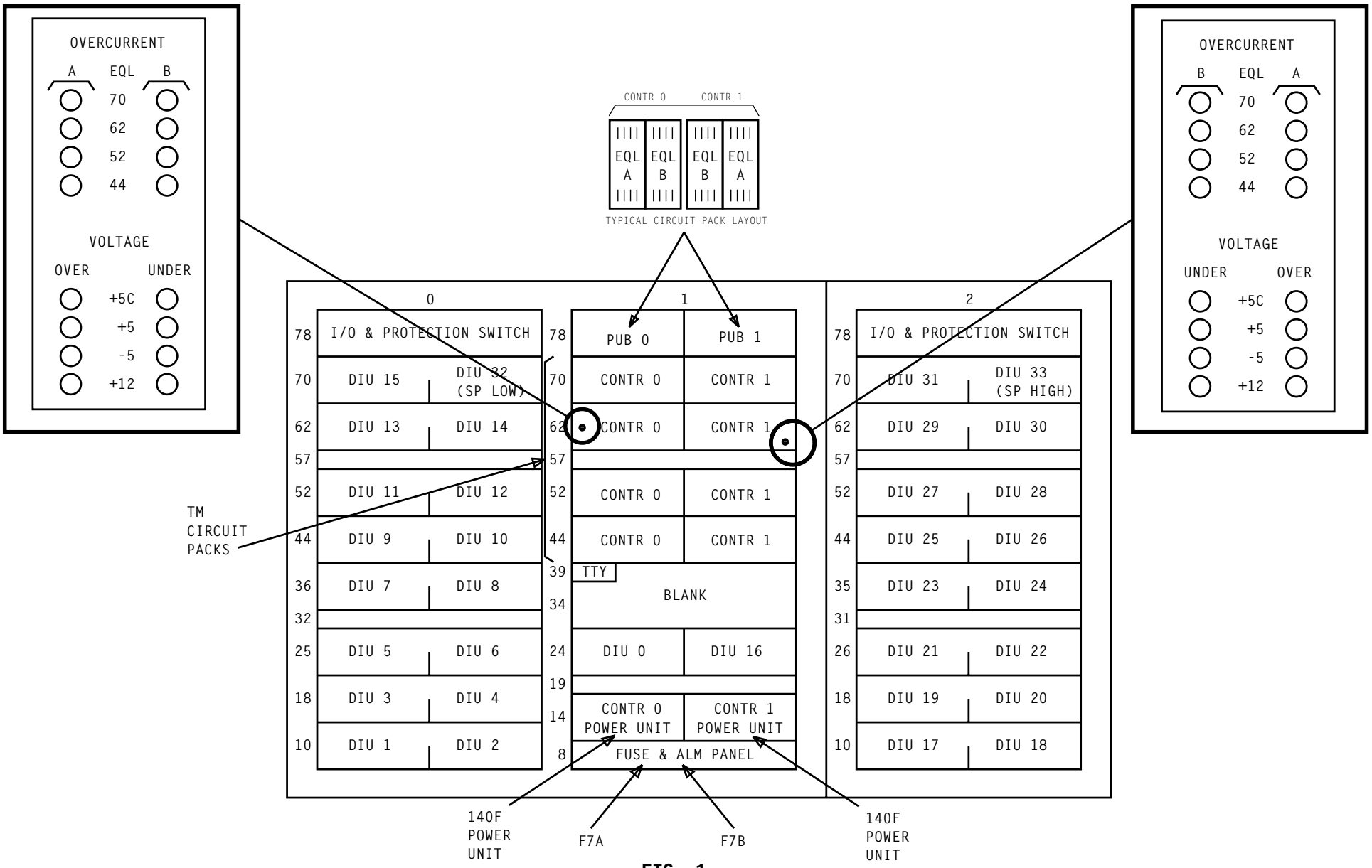
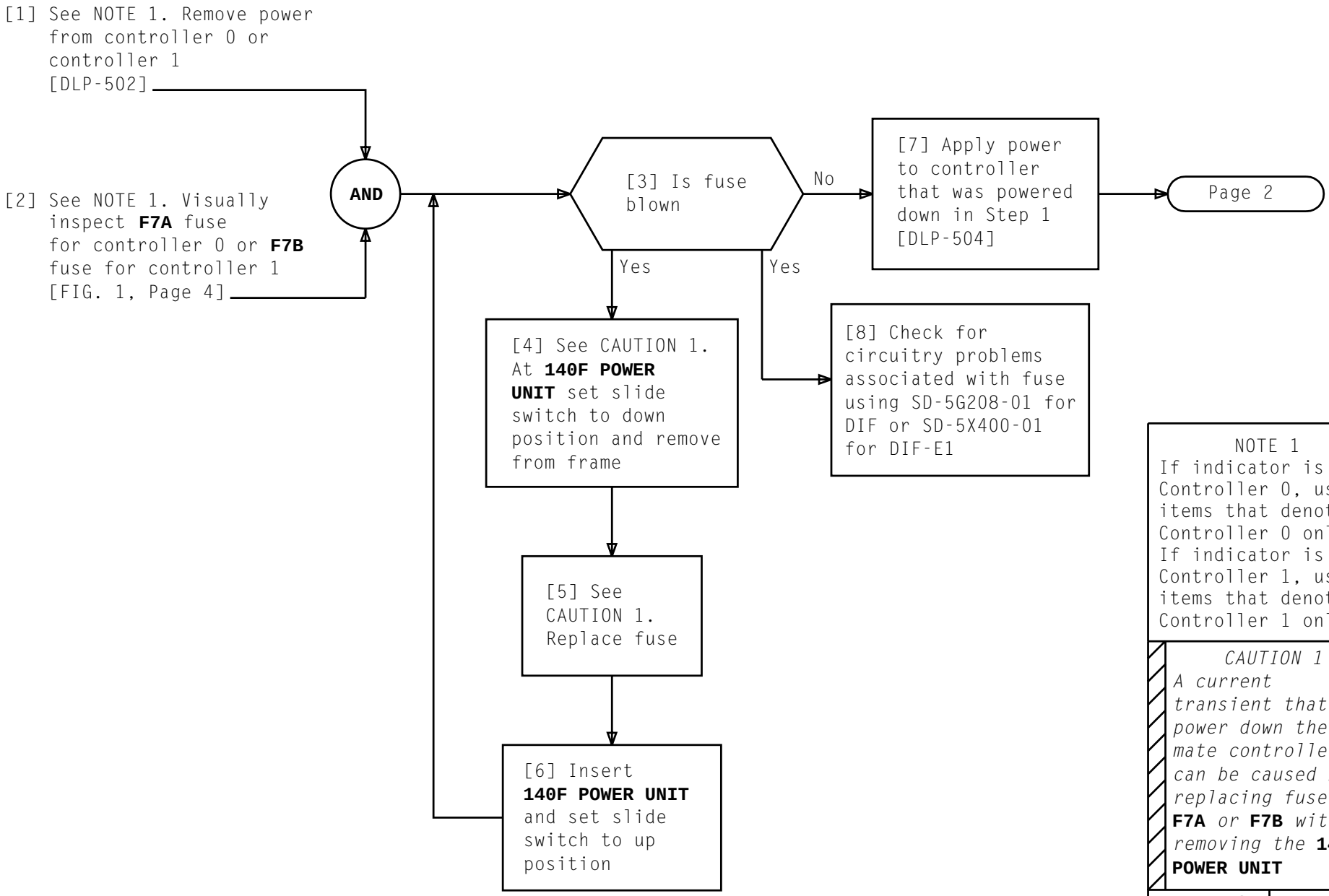


FIG. 1

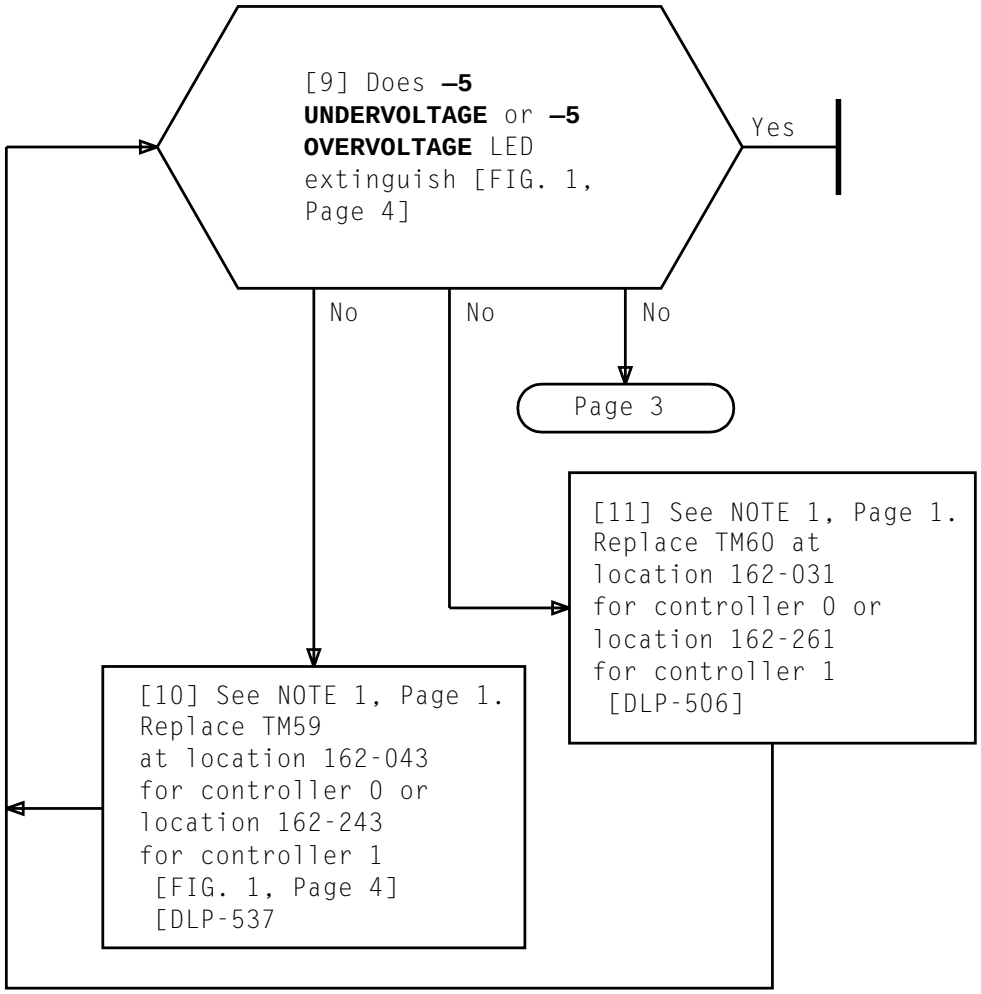
CLEAR +5 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER



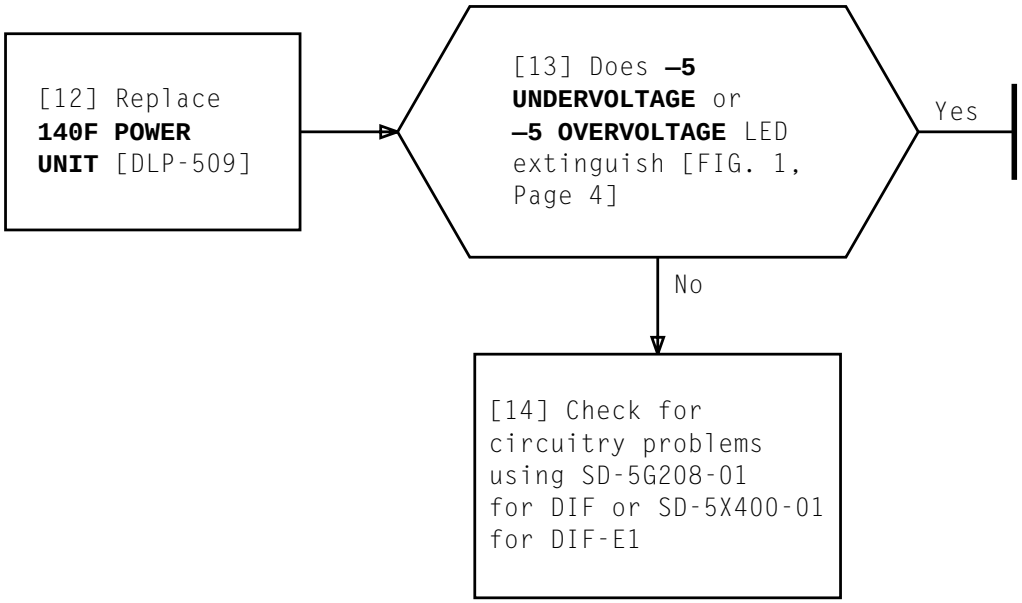
NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only.
If indicator is from Controller 1, use items that denote Controller 1 only

CAUTION 1
A current transient that may power down the mate controller can be caused by replacing fuse **F7A** *or* **F7B** *without removing the* **140F POWER UNIT**

CLEAR –5 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER



CLEAR —5 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER



CLEAR –5 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER

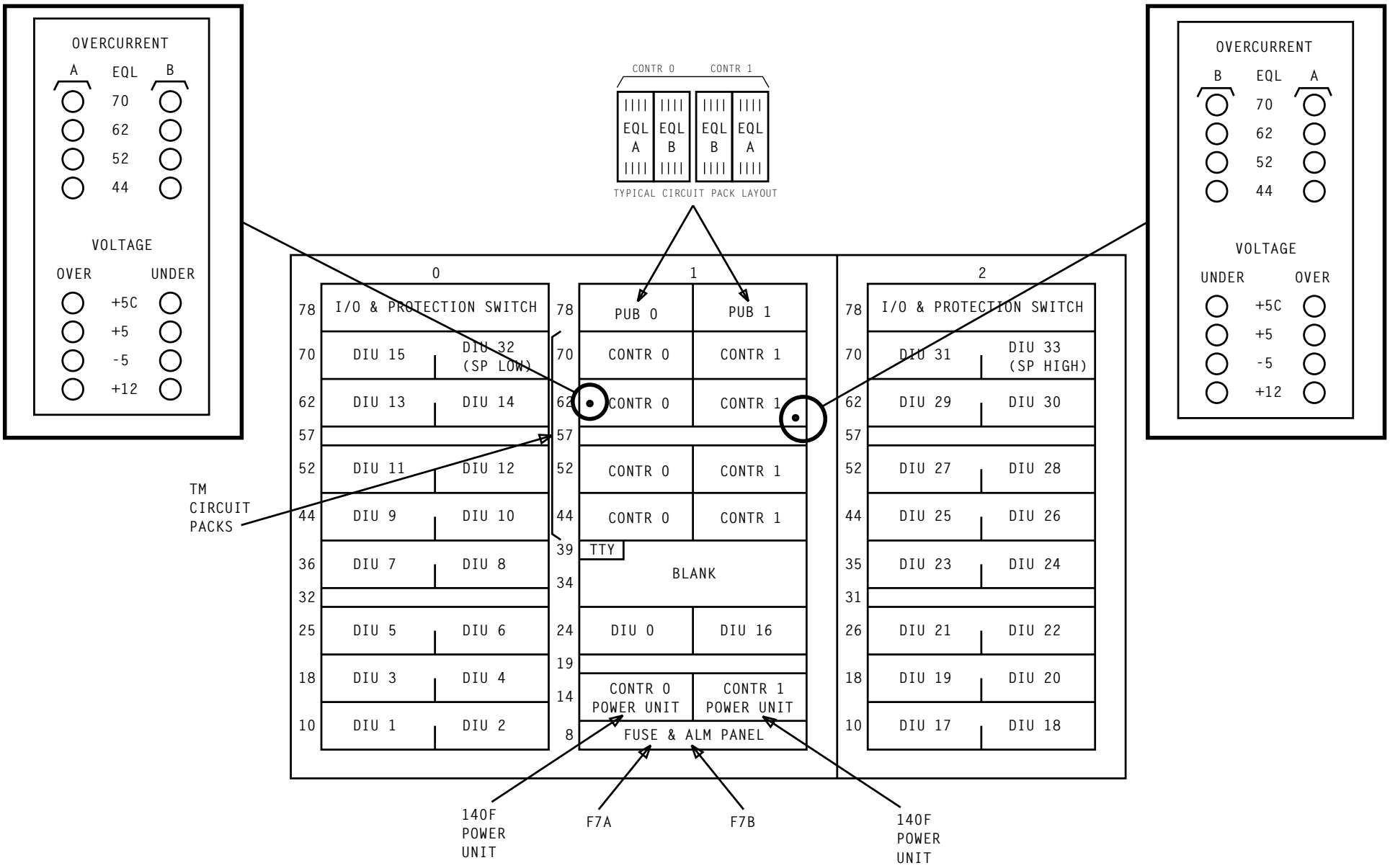
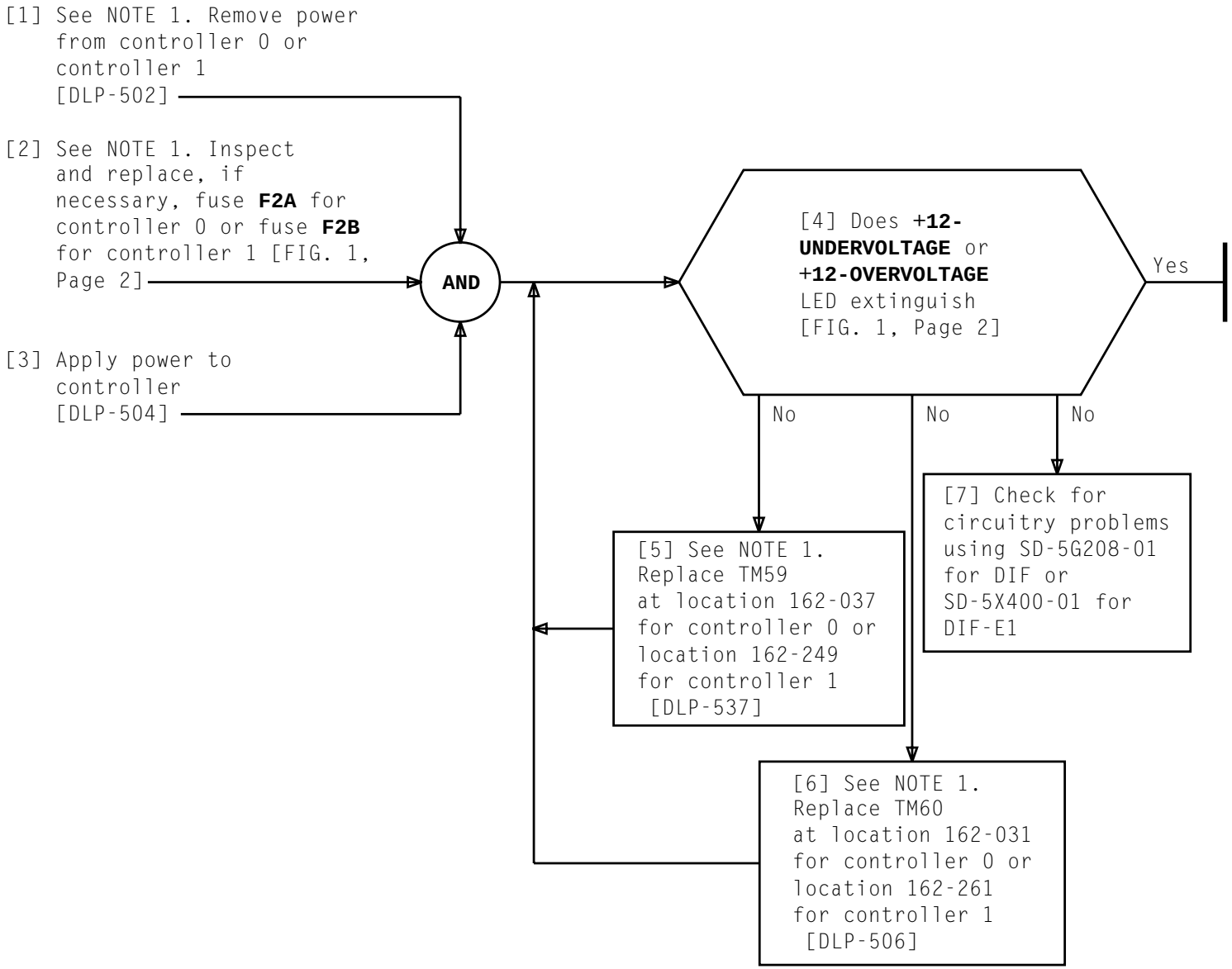


FIG. 1

CLEAR –5 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER



NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only.
If indicator is from Controller 1, use items that denote Controller 1 only

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CLEAR +12 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER

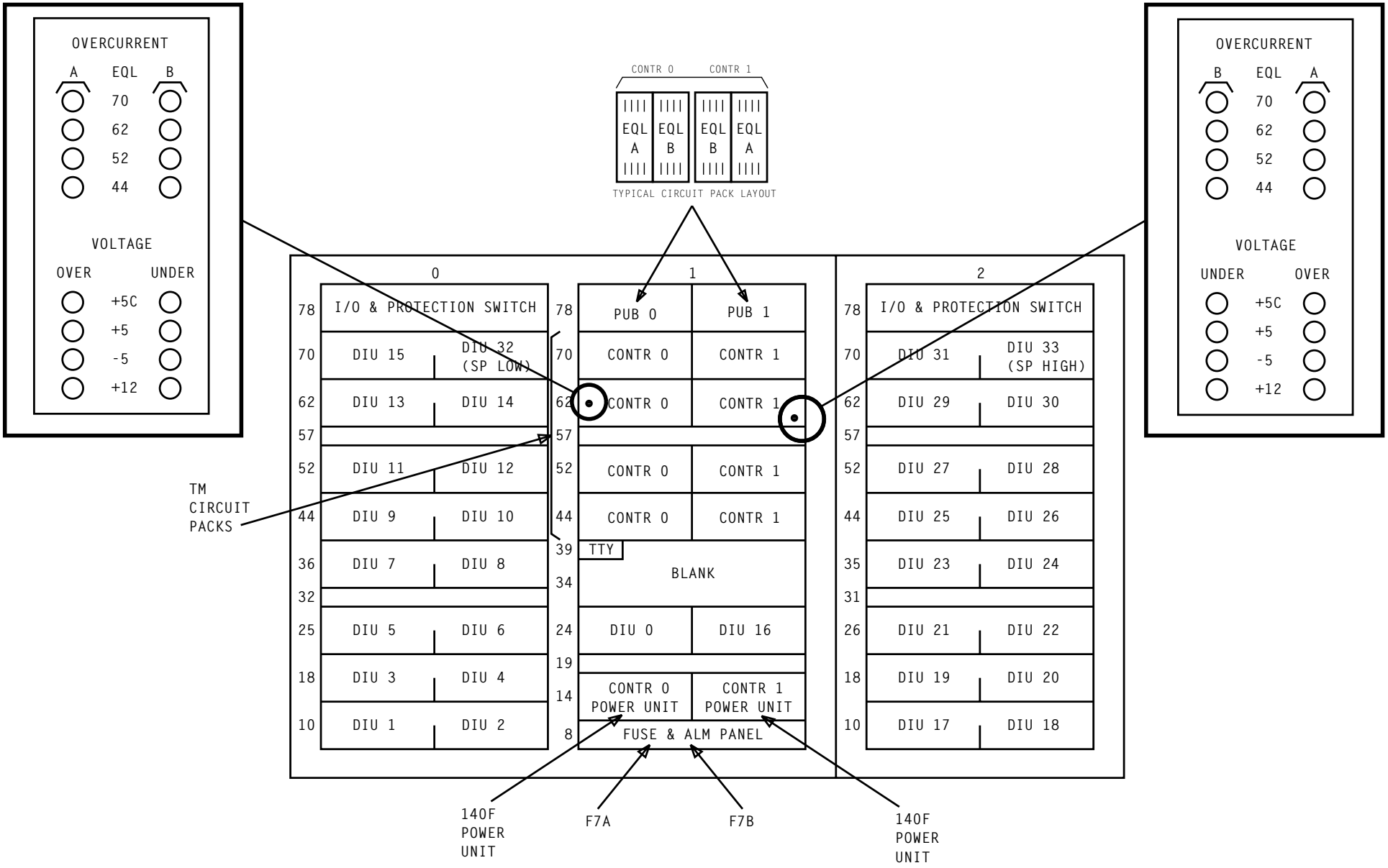
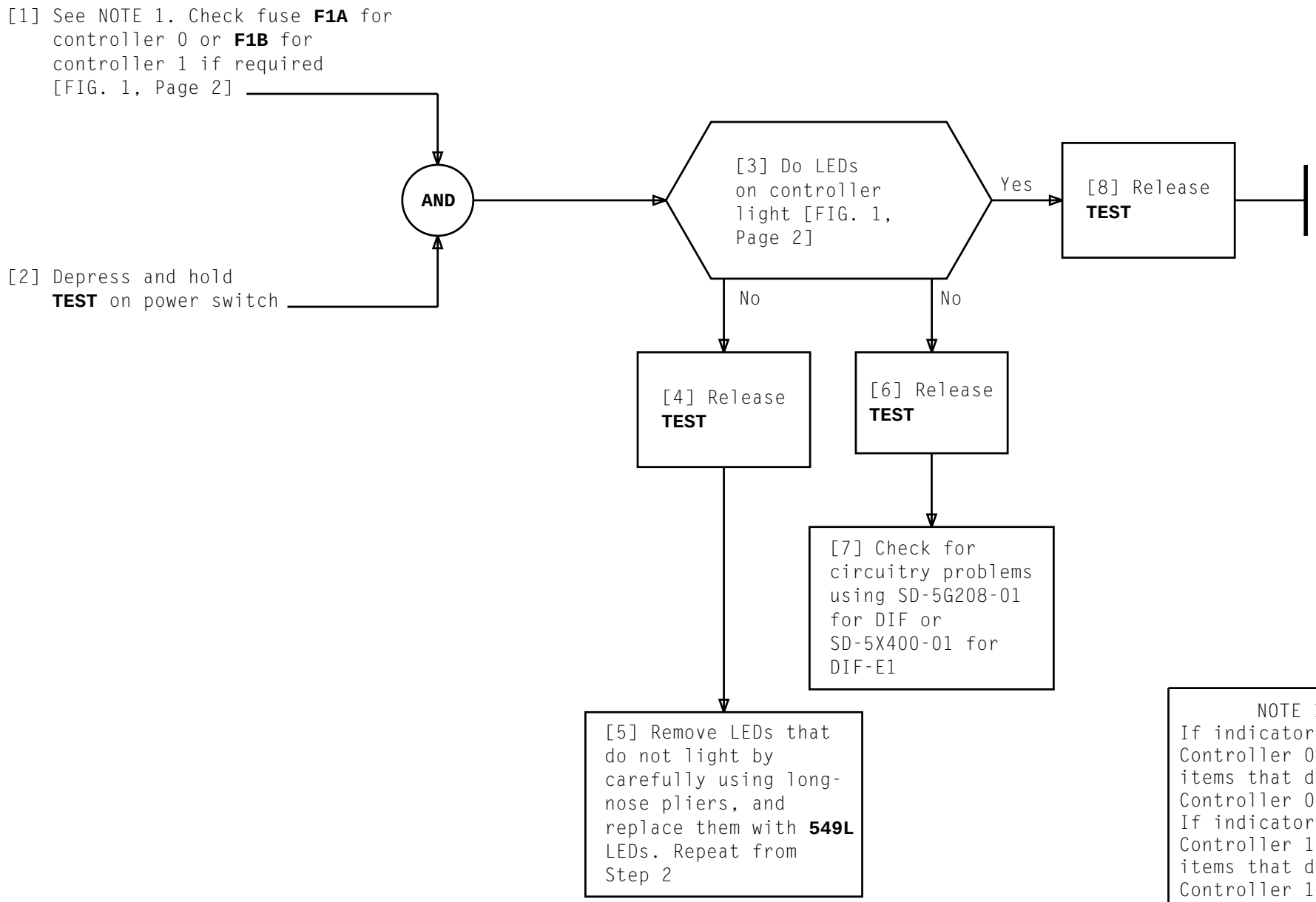


FIG. 1

CLEAR +12 UNDERVOLTAGE OR OVERVOLTAGE FAILURE IN CONTROLLER

CLEAR PROBLEMS IN VOLTAGE AND CURRENT LED CIRCUITRY OF CONTROLLER



NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only. If indicator is from Controller 1, use items that denote Controller 1 only

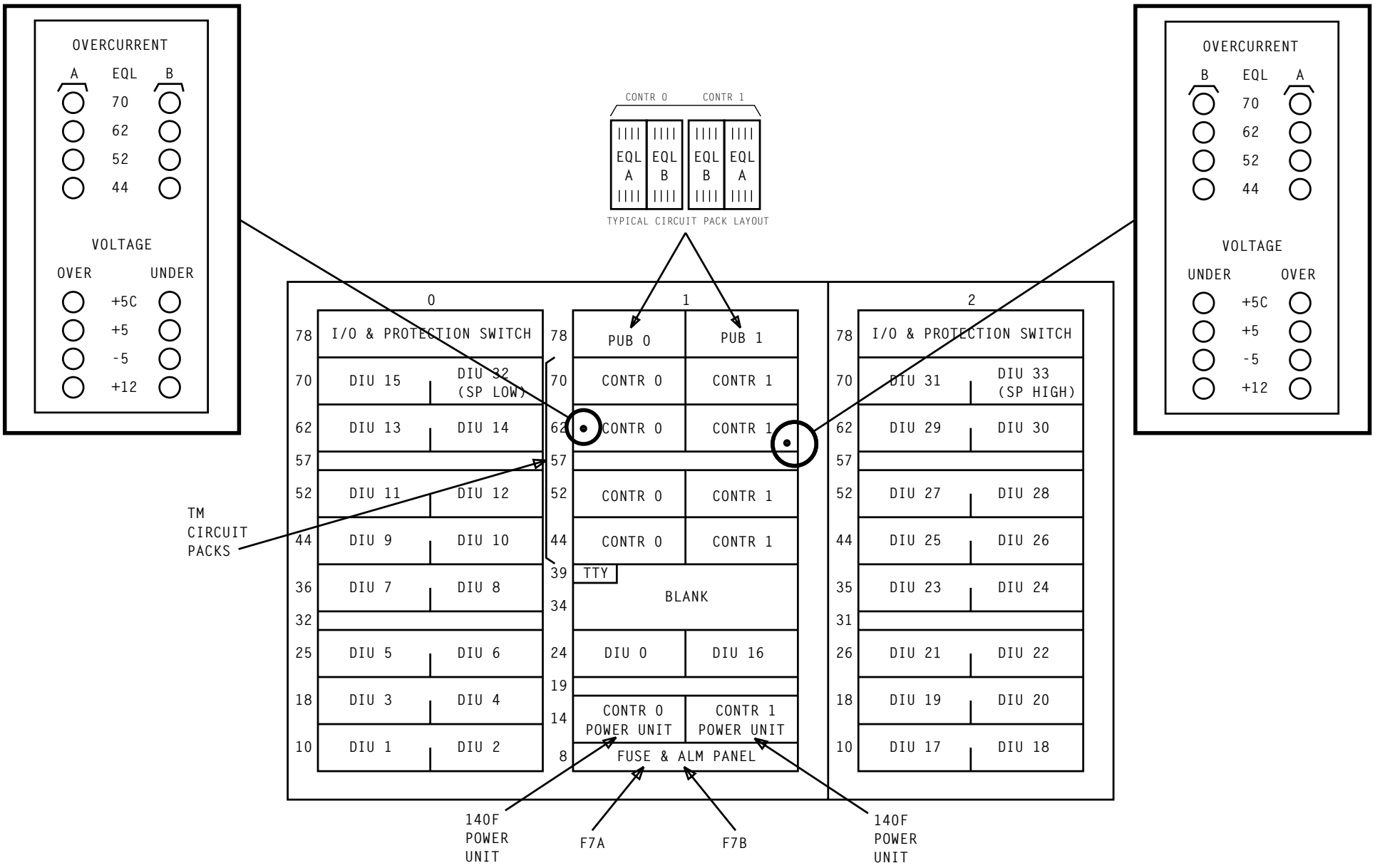
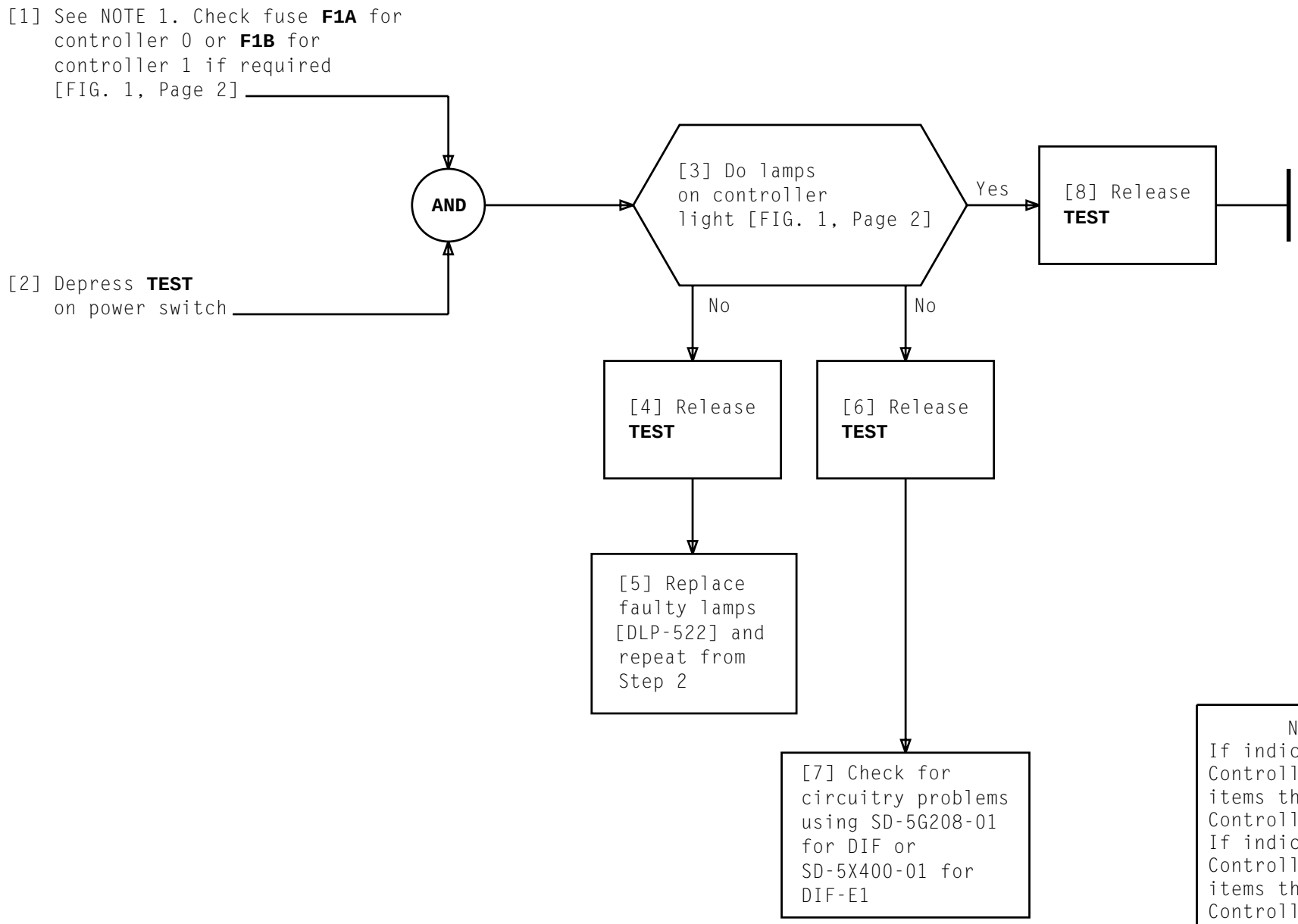


FIG. 1

CLEAR PROBLEMS IN VOLTAGE AND CURRENT LED CIRCUITRY OF CONTROLLER



NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only.
If indicator is from Controller 1, use items that denote Controller 1 only

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CLEAR PROBLEMS WITH LAMP CIRCUITRY OF CONTROLLER POWER SWITCH

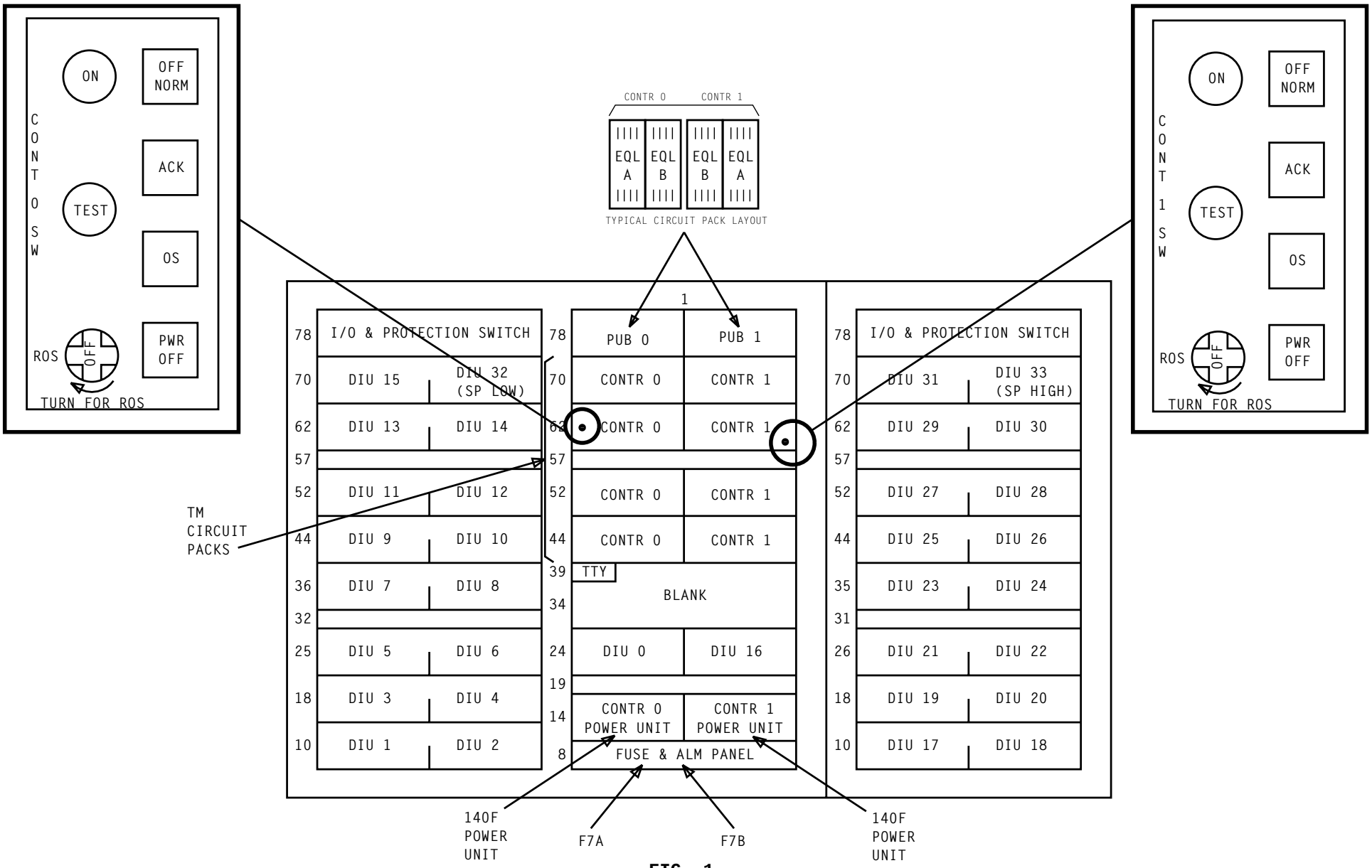

FIG. 1

CLEAR PROBLEMS WITH LAMP CIRCUITRY OF CONTROLLER POWER SWITCH

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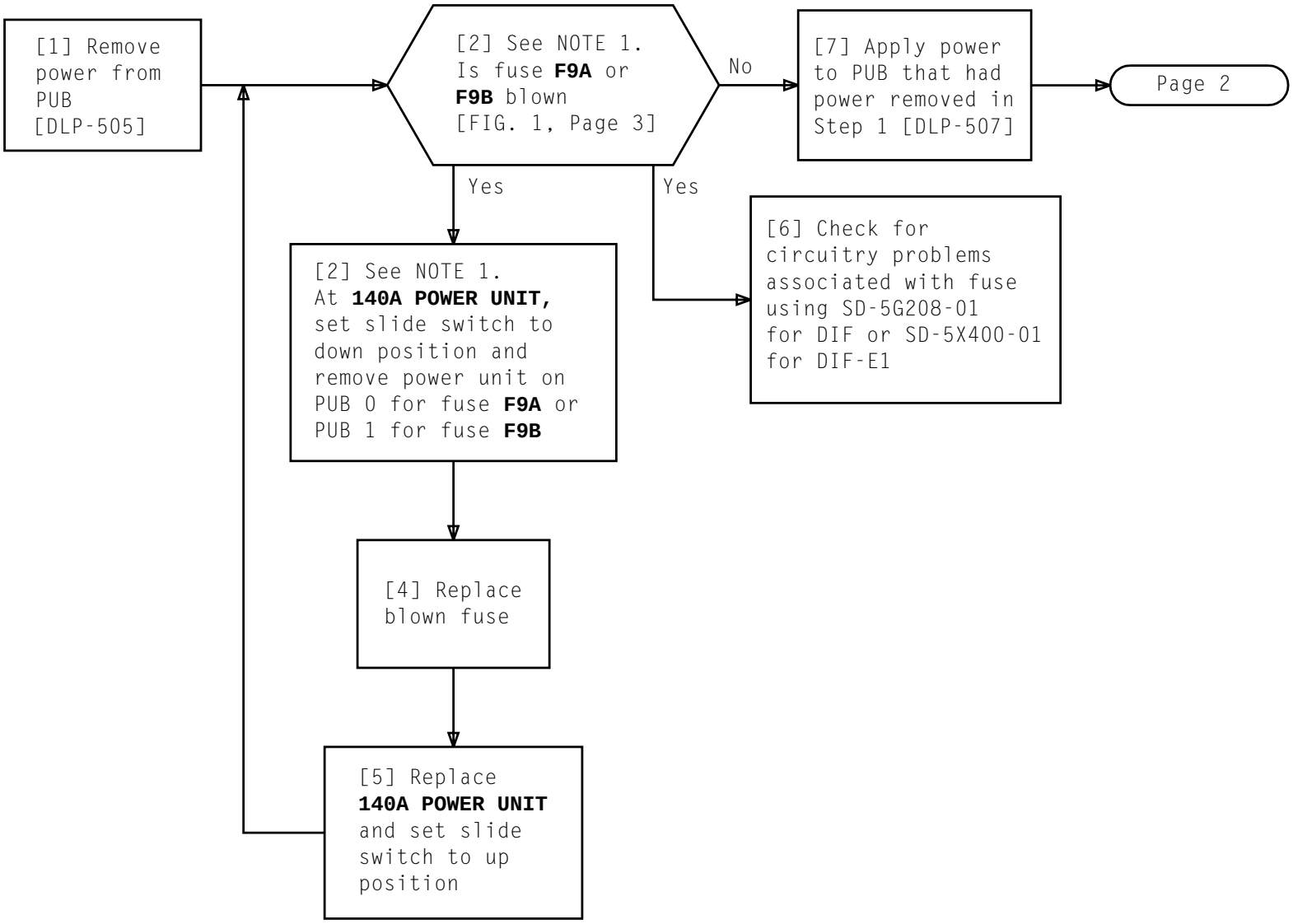
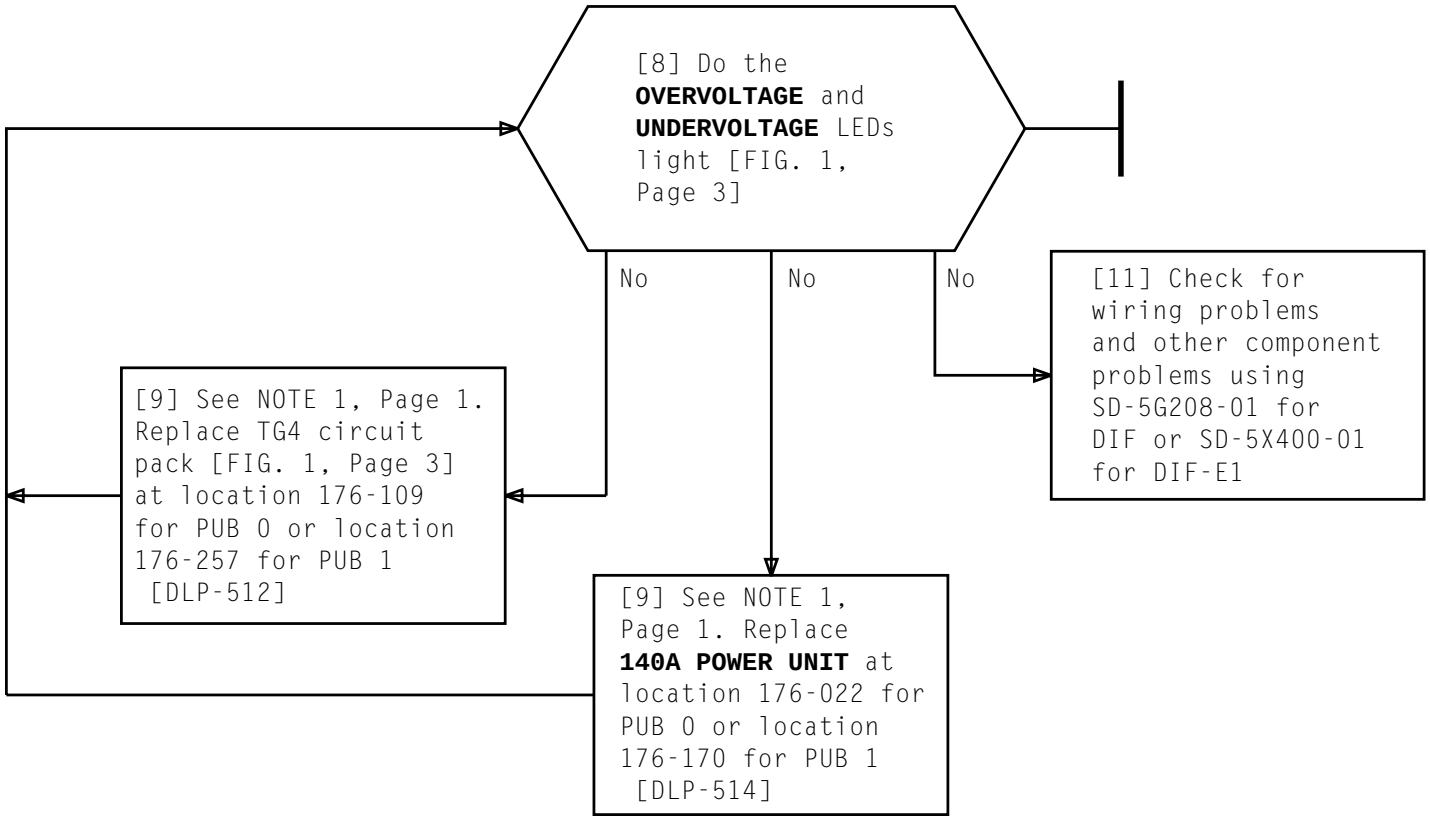


NOTE 1
If indicator is from **PUB 0**, use items that denote **PUB 0** only. If indicator is from **PUB 1**, use items that denote **PUB** 1 only

CLEAR PROBLEMS WITH OVERVOLTAGE AND UNDERVOLTAGE LED CIRCUITRY OF PERIPHERAL UNIT BUS (PUB)



CLEAR PROBLEMS WITH OVERVOLTAGE AND UNDERVOLTAGE LED CIRCUITRY OF PERIPHERAL UNIT BUS (PUB)

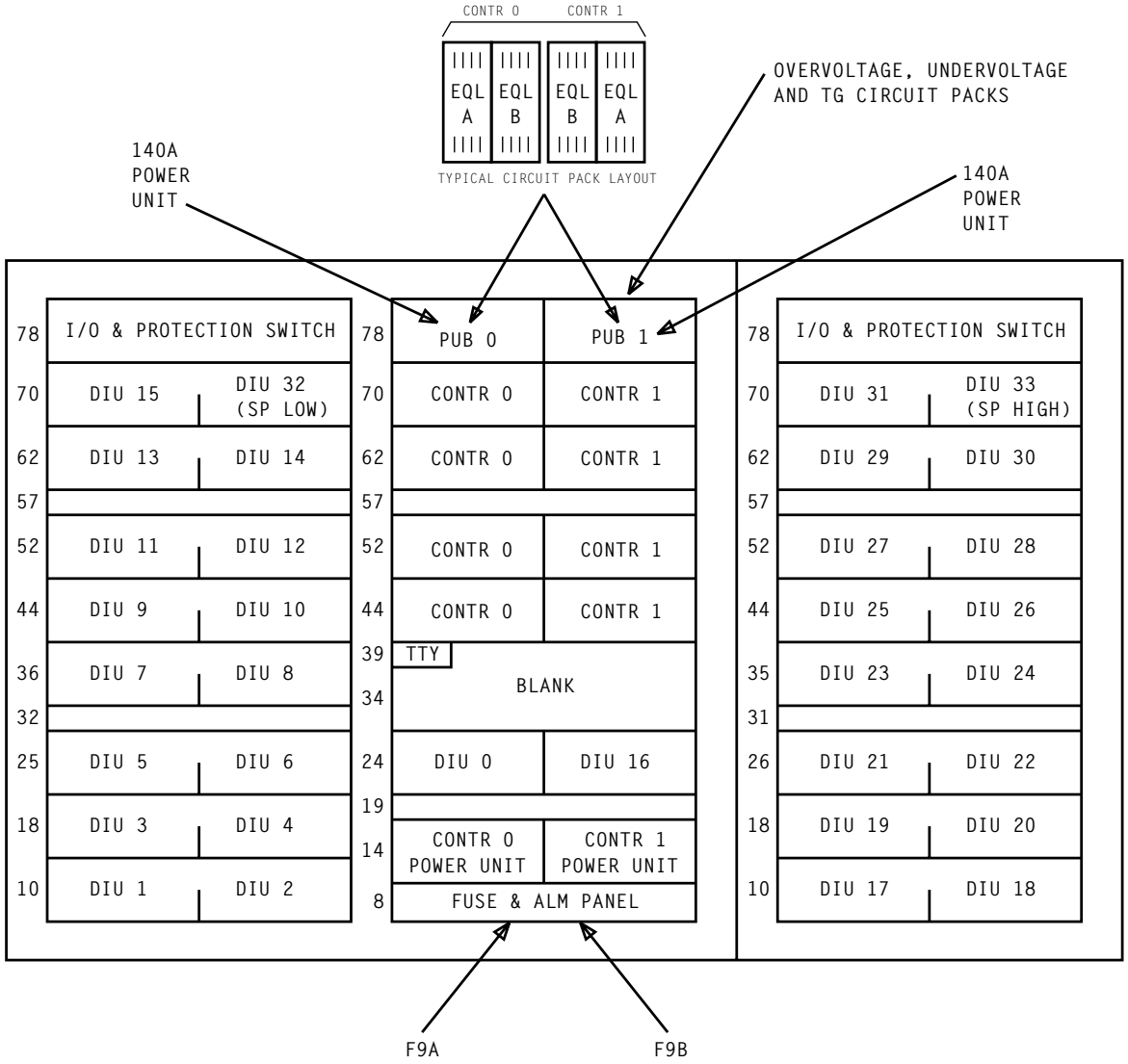
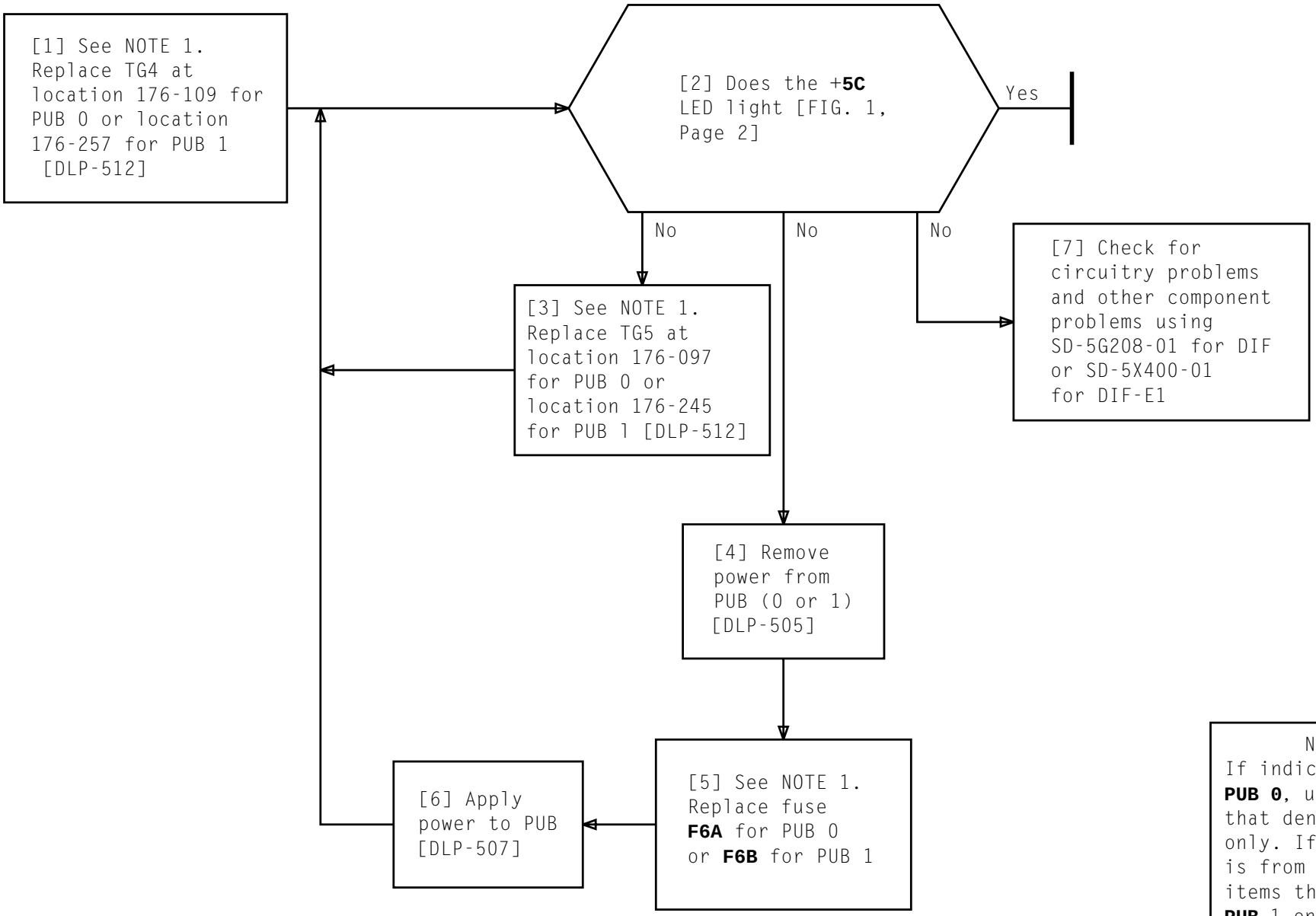


FIG. 1

CLEAR PROBLEMS WITH OVERVOLTAGE AND UNDERVOLTAGE LED CIRCUITRY OF PERIPHERAL UNIT BUS (PUB)



NOTE 1
If indicator is from **PUB 0**, use items that denote **PUB 0** only. If indicator is from **PUB 1**, use items that denote **PUB** 1 only

CLEAR PROBLEMS WITH +5C LED CIRCUITRY ON PERIPHERAL UNIT BUS (PUB)

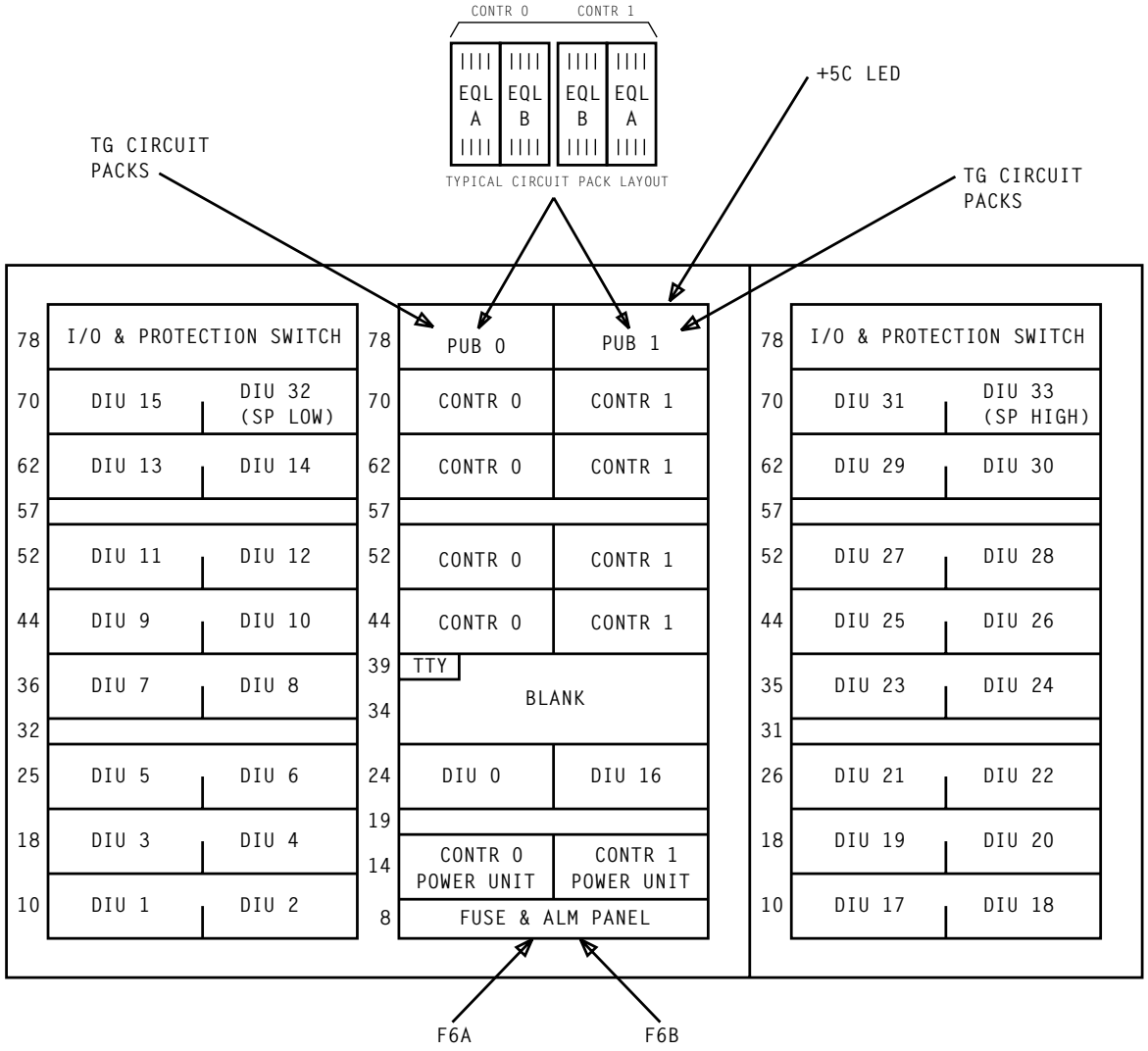
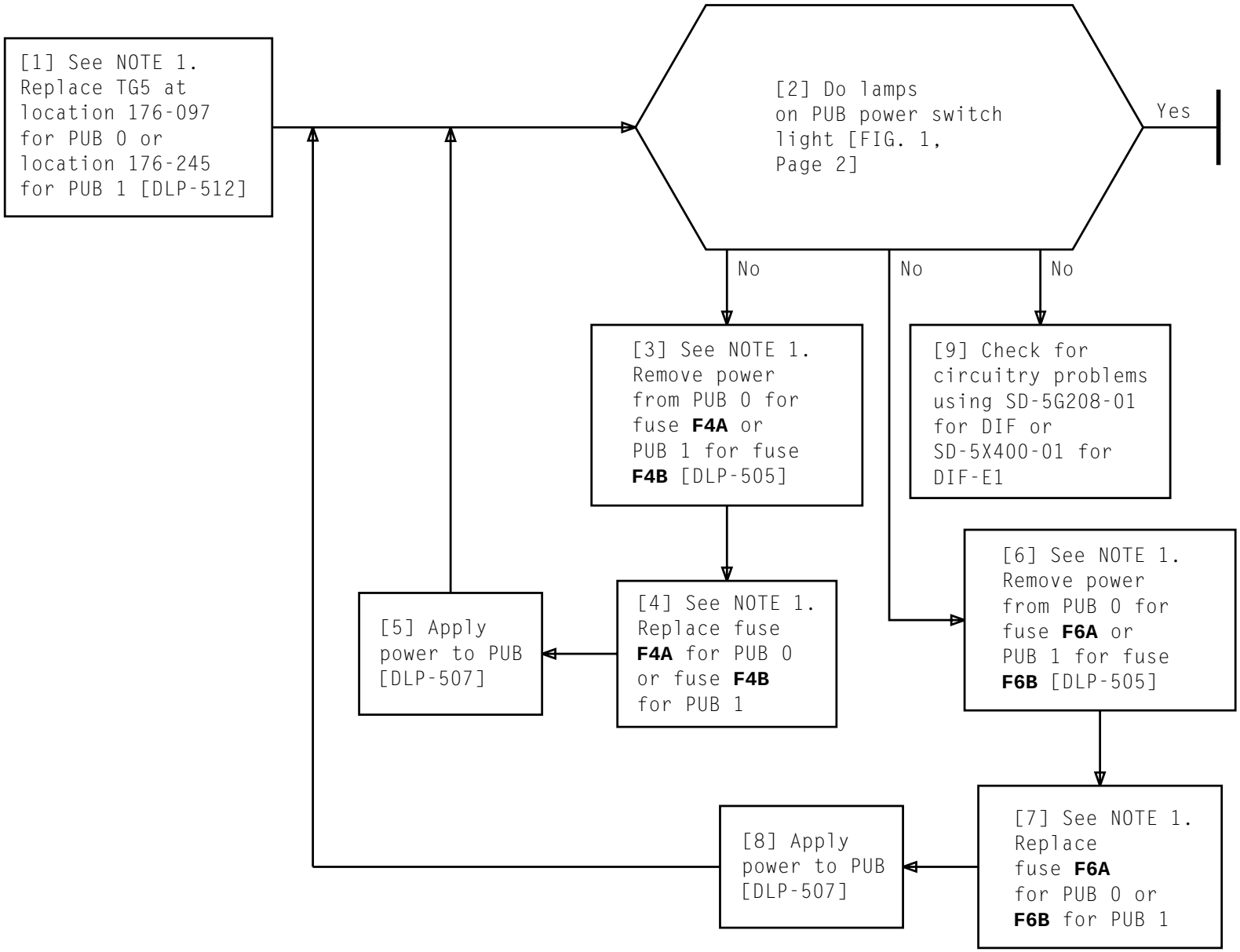


FIG. 1

CLEAR PROBLEMS WITH +5C LED CIRCUITRY ON PERIPHERAL UNIT BUS (PUB)



NOTE 1
If indicator is from **PUB 0**, use items that denote **PUB 0** only. If indicator is from **PUB 1**, use items that denote **PUB** 1 only

CLEAR PROBLEMS IN LAMP CIRCUITRY OF POWER SWITCH FOR PERIPHERAL UNIT BUS (PUB)

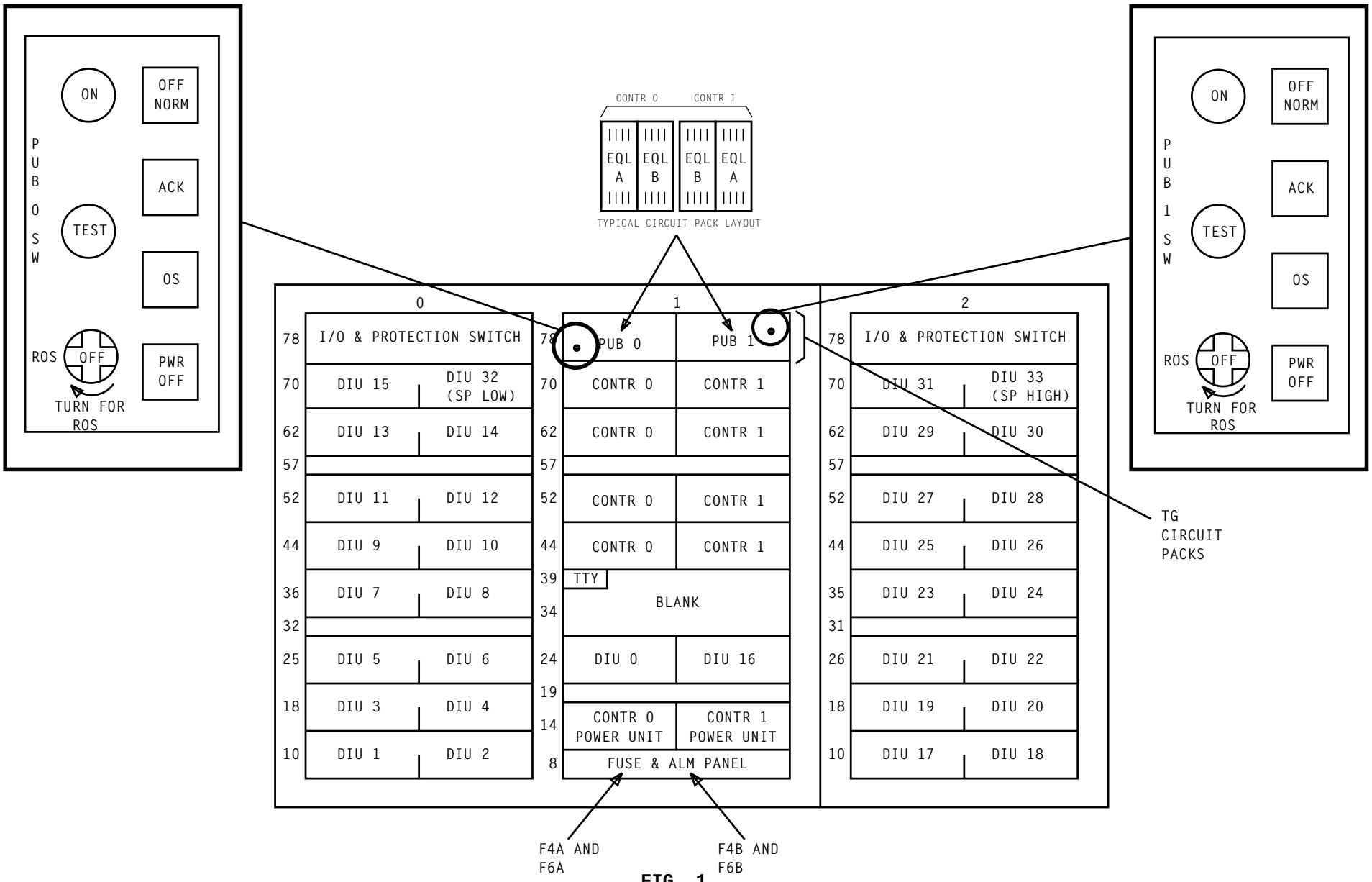
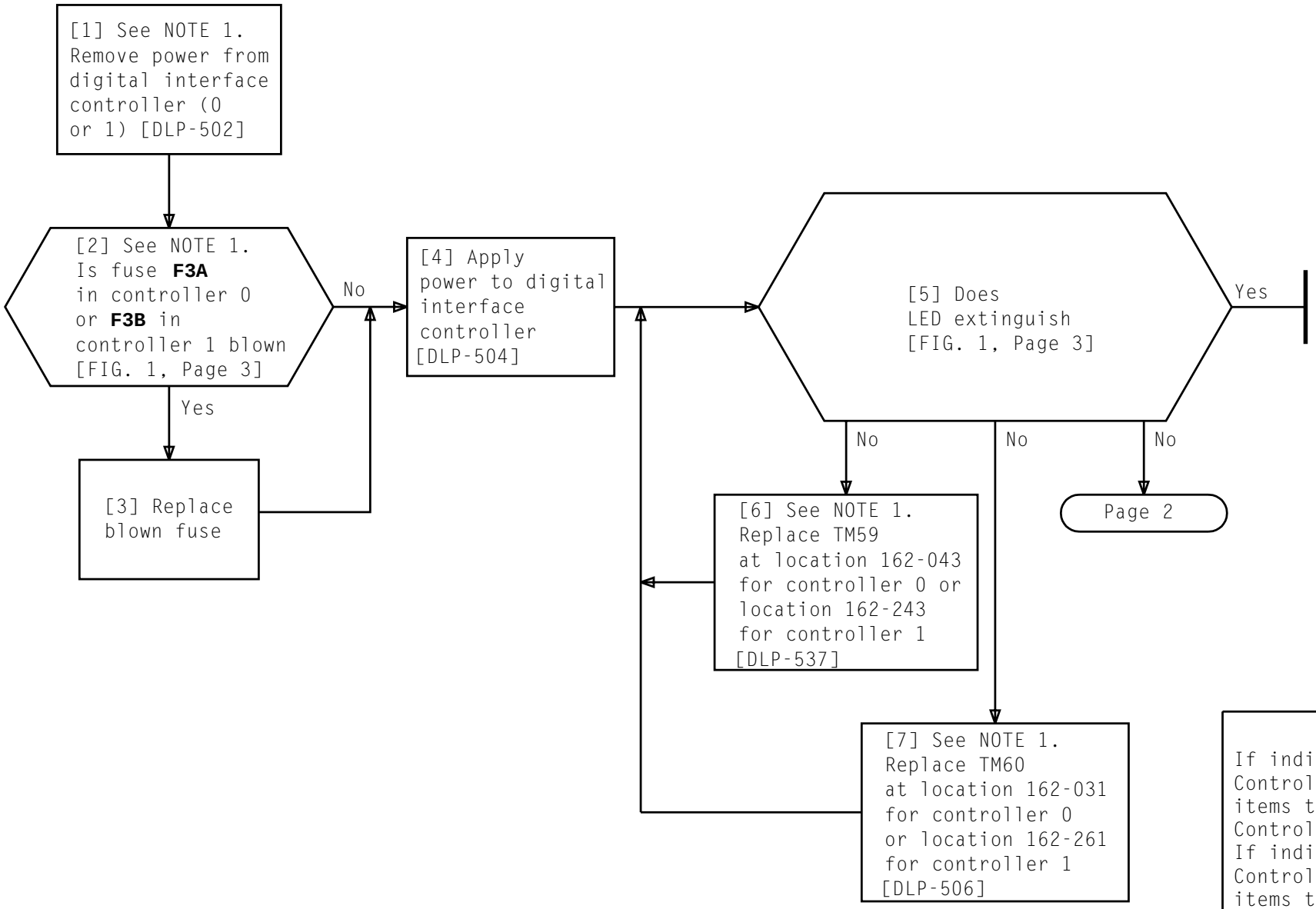


FIG. 1

CLEAR PROBLEMS IN LAMP CIRCUITRY OF POWER SWITCH FOR PERIPHERAL UNIT BUS (PUB)



NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only.
If indicator is from Controller 1, use items that denote Controller 1 only

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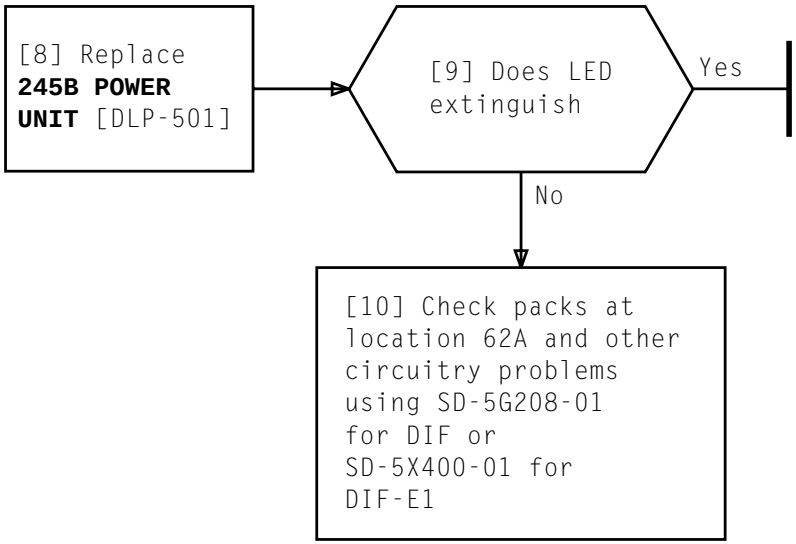
CLEAR OVERCURRENT FAILURES ASSOCIATED WITH 62A CONTROLLER ASSEMBLY



CLEAR OVERCURRENT FAILURES ASSOCIATED WITH 62A CONTROLLER ASSEMBLY

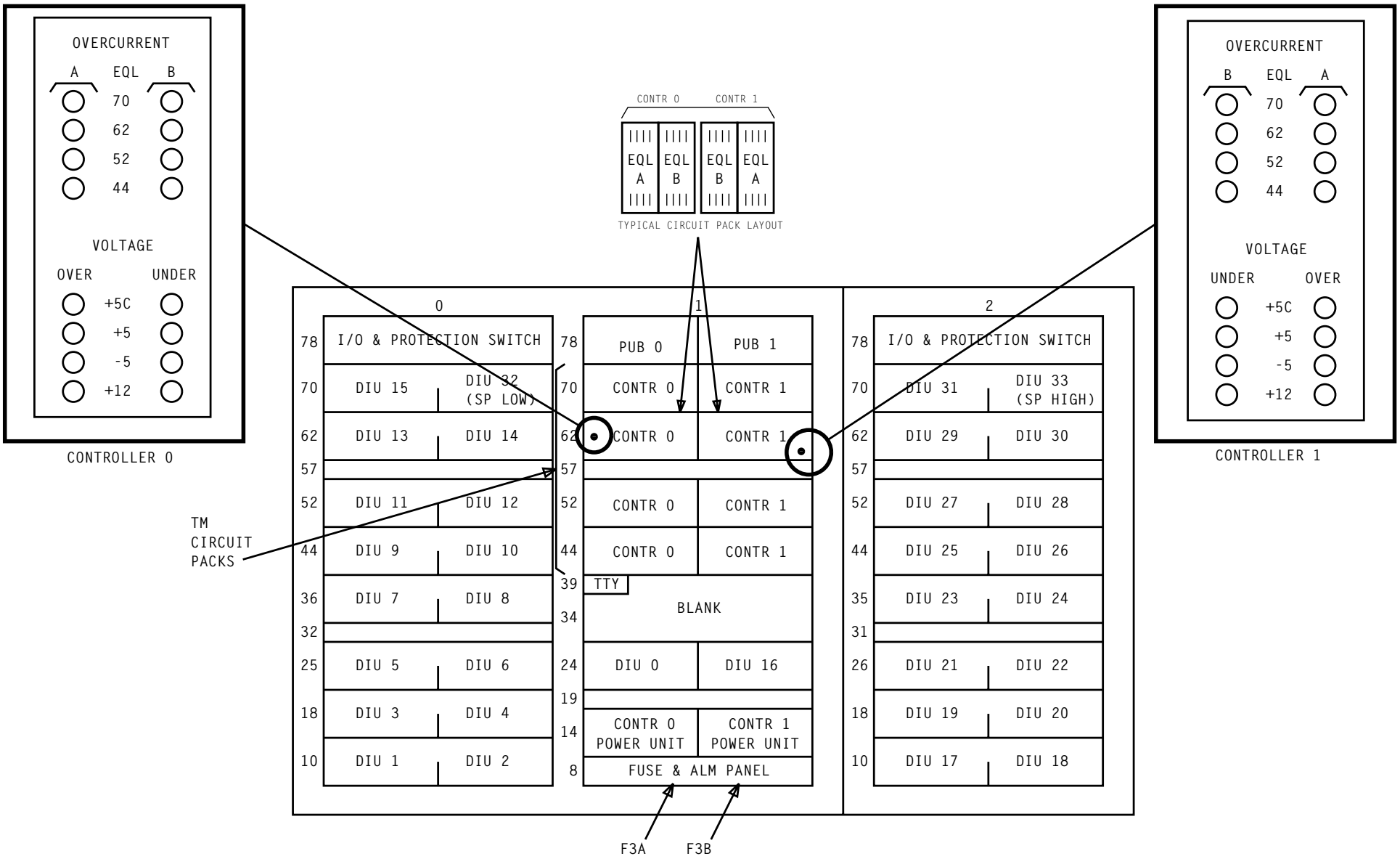
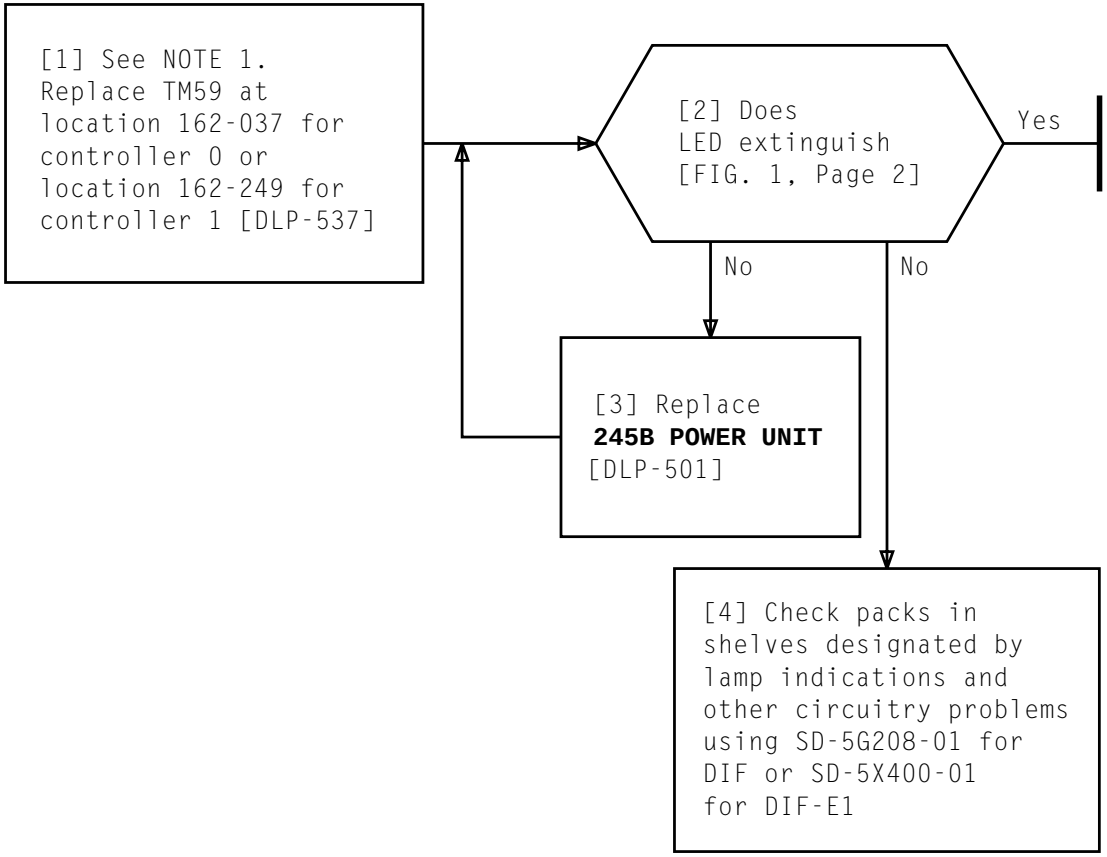


FIG. 1

CLEAR OVERCURRENT FAILURES ASSOCIATED WITH 62A CONTROLLER ASSEMBLY



NOTE 1
If indicator is from Controller 0, use items that denote Controller 0 only.
If indicator is from Controller 1, use items that denote Controller 1 only

CLEAR OVERCURRENT FAILURES ASSOCIATED WITH THE 52A, 52B, 44A, AND/OR 44B CONTROLLER ASSEMBLY

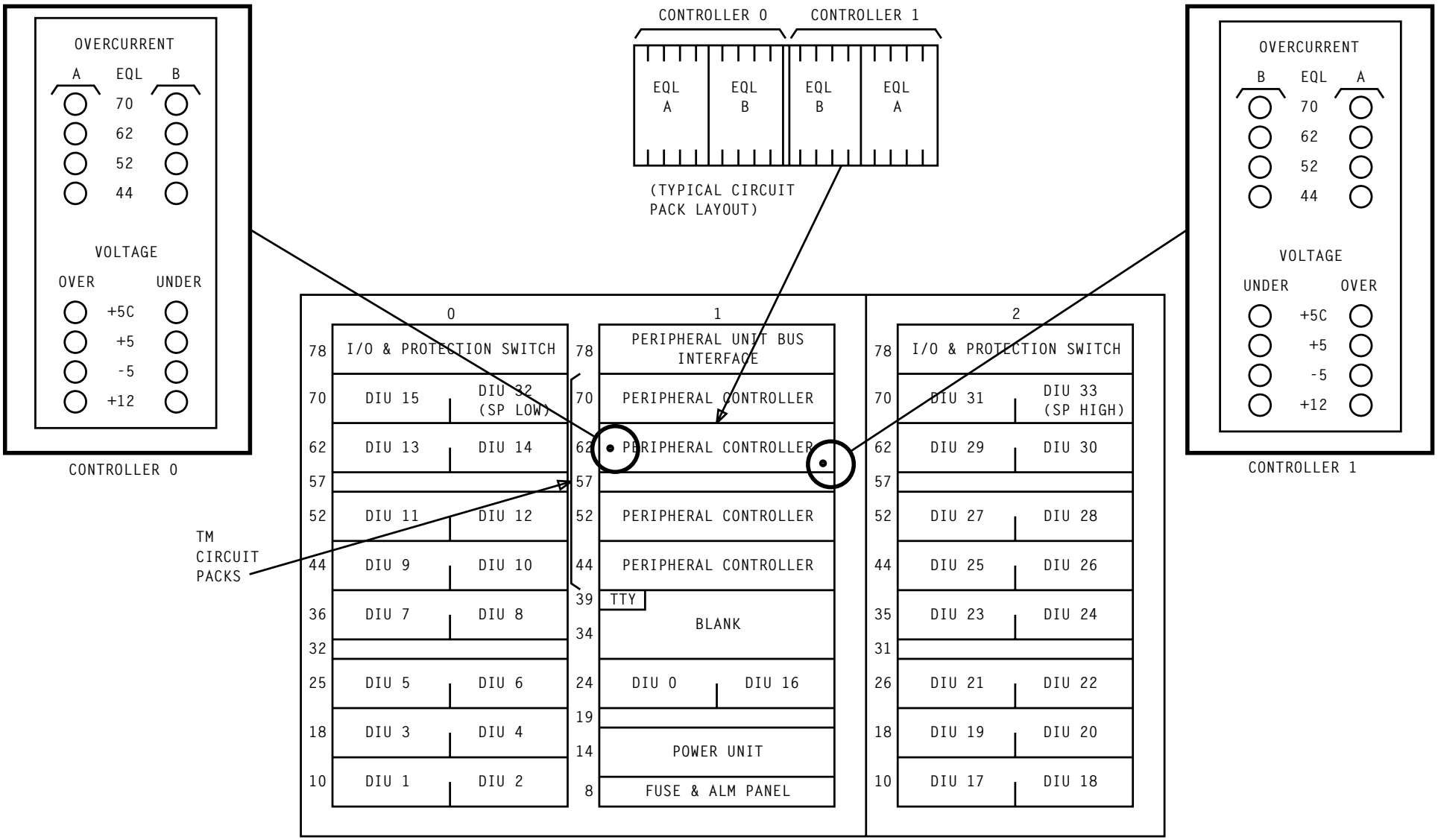
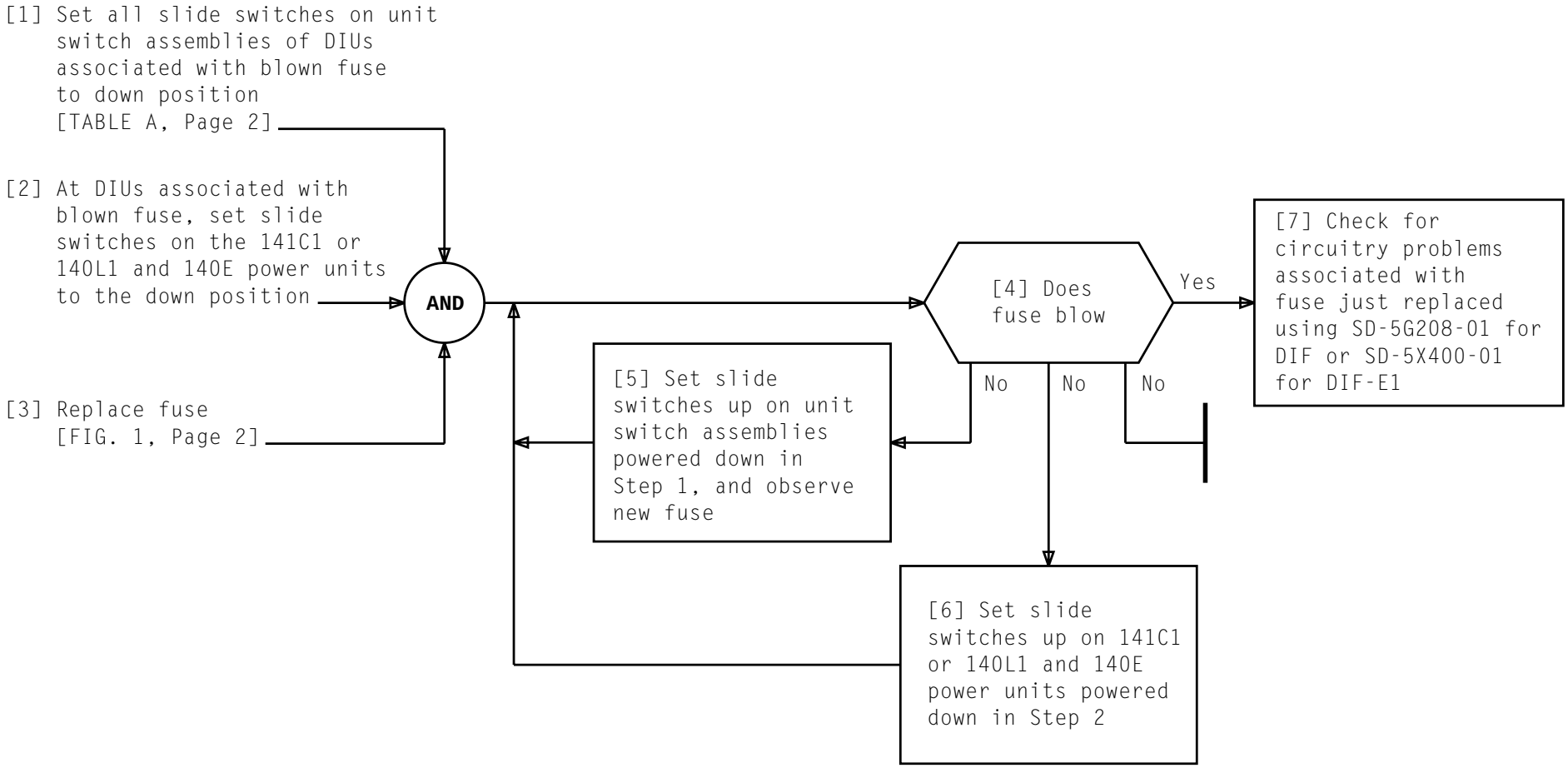


FIG. 1

CLEAR OVERCURRENT FAILURES ASSOCIATED WITH THE 52A, 52B, 44A, AND/OR 44B CONTROLLER ASSEMBLY



CLEAR FUSE PROBLEMS IN THE 140-VOLT CIRCUITRY OF THE DIGITAL INTERFACE UNITS

TABLE A	
FUSE	**WIRING PROBLEM**
FAUL (**F10A**)	Between **F10A** and DIUs 0, 1, 3, 5, 7, 9, 11, 13, and 15
FAUH (**F11A**)	Between **F11A** fuse and DIUs 17, 19, 21, 23, 25, 27, 29, and 31
FBUL (**F10B**)	Between **F10B** fuse and DIUs 2, 4, 6, 8, 10, 12, 14, and 32
FBUH (**F11B**)	Between **F11B** fuse and DIUs 16, 18, 20, 22, 24, 26, 28, 30, and 33

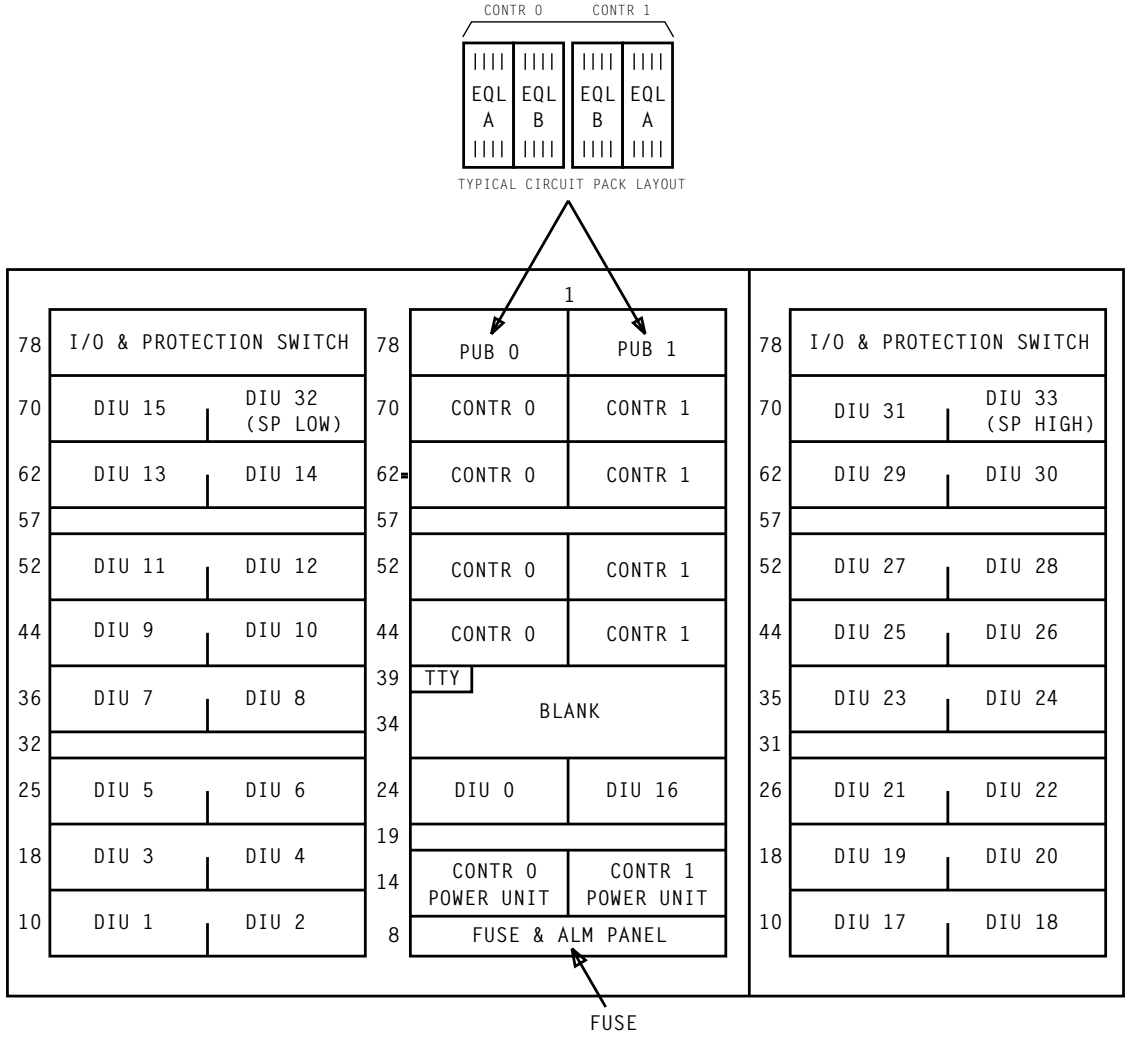
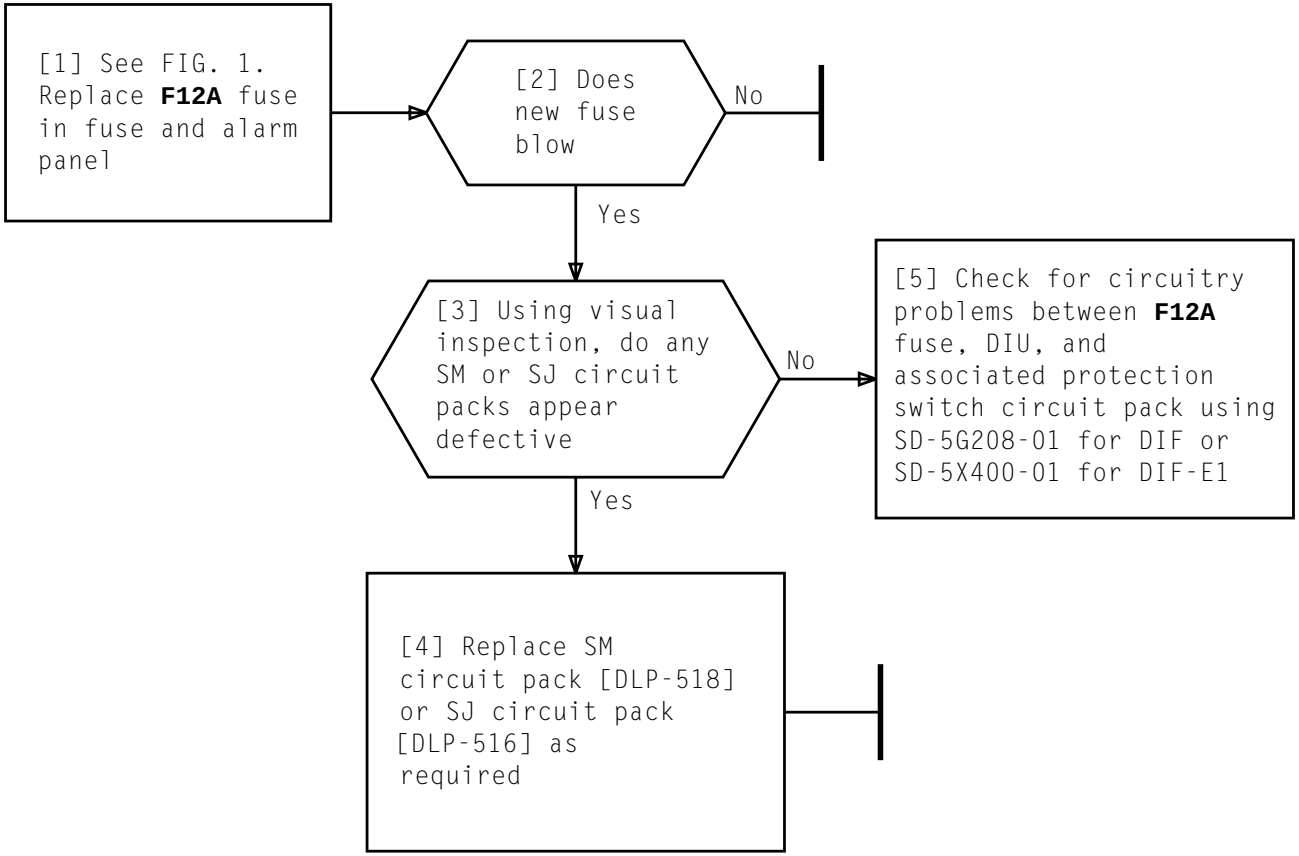


FIG. 1

CLEAR FUSE PROBLEMS IN THE 140-VOLT CIRCUITRY OF THE DIGITAL INTERFACE UNITS



CLEAR FA24/FB24 (F12A) FUSE PROBLEMS ON +24V CIRCUITRY

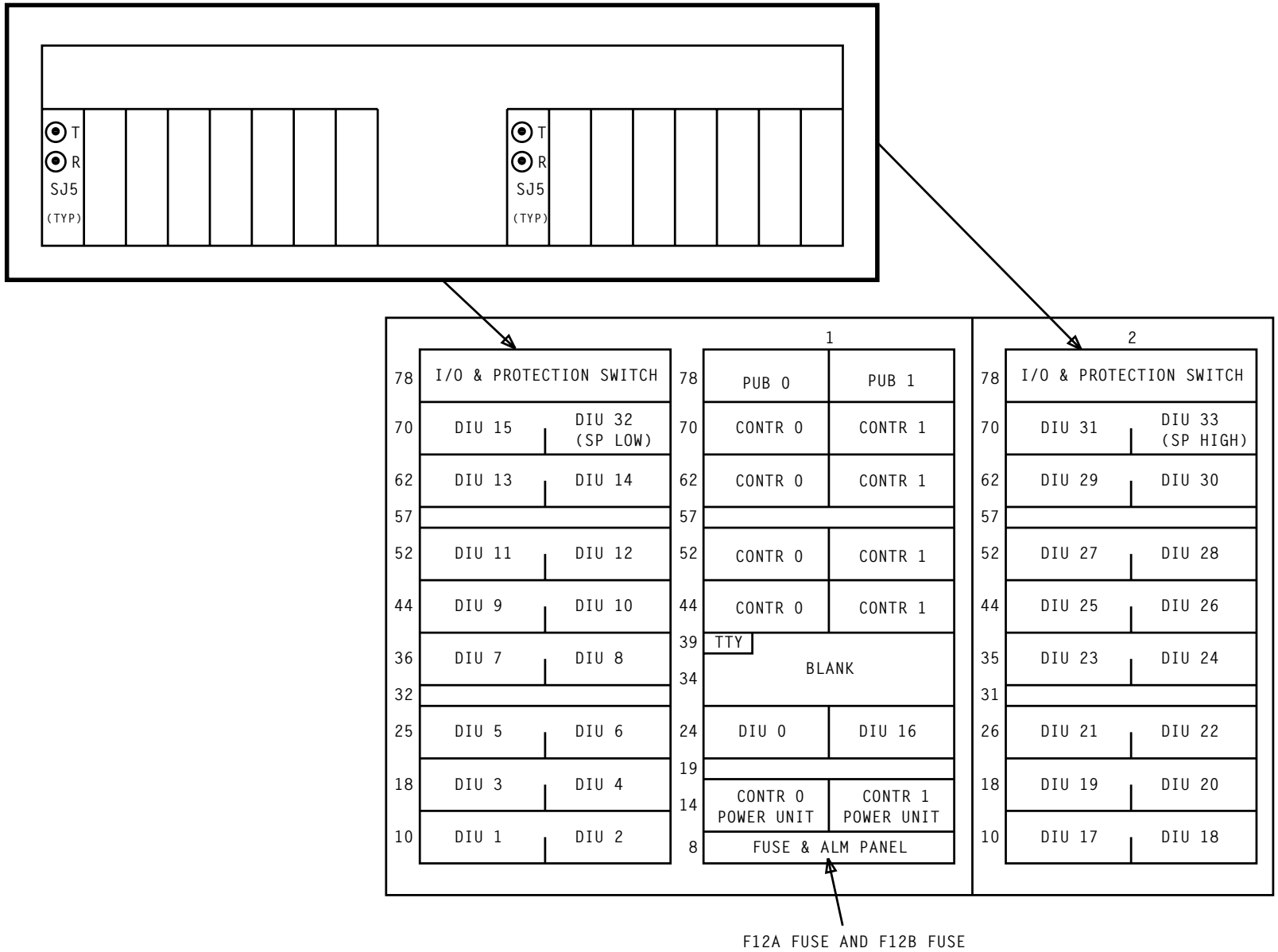
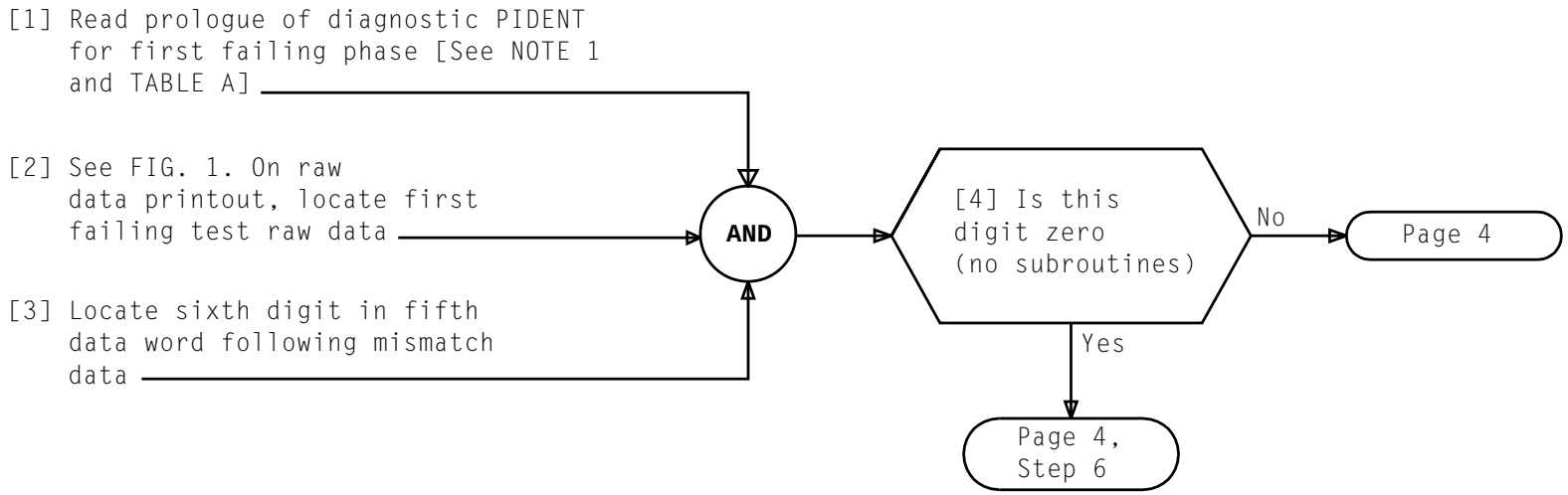


FIG. 1

CLEAR FA24/FB24 (F12A) FUSE PROBLEMS IN +24V CIRCUITRY

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. Use 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, use procedure to clear diagnostic failure by looping over first failing test and signal tracing to locate fault.



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

NOTE 1

PIDENT is PUDG DCXX for DIF and PUDG DEXX for DIF-E1 (XX = phase number). Subroutines are in PUDGDCGR (4A423) for DIF and PUDGDEGR for DIF-E1

TABLE A CONTROLLER DIAGNOSTIC PSUEDO-PHASES (NOTE 1)					
PHASE	**DIF-E1(D) (PSEUDO-)PHASE**	**DIF-E1(MF) PSEUDO-PHASE**	**DIF-E1 (MF/ 4S/CSDC/IADC)**	**DIF-E1 (DTMF/ 4S/CSDC/IADC)**	**DESCRIPTION**
4	4	34	50	47	Change EXEC version number
8	31	43	51	48	Remove MAP opcode tests, add new opcode tests
11	11	35	35	35	Remove MAP tests, add unique DIF-E1(MF) hardware access tests
14	14	37	37	37	Remove test of firmware error bit in MPESR
15	15	38	38	38	Change MP-DIU interface test
16	16	36	36	36	Replace MAP tests with new E-shadow and Frogger tests
17	17	46	46	46	Change expected result from SP hardware exercises
18	32	44	44	49	Change SP-EXEC interface test, add MF report tests
19	19	39	53	53	Remove MAP tests. Test new ESCAN Reg
20	33	45	54	54	Remove MAP opcodes test, add new MF opcode tests
21	21	40	40	40	Remove MAP tests
23	23	41	41	41	Remove MAP tests
29	29	42	42	42	Replace long MAP memory test with long M and PCIS memory test
30	30				Delete phase 30 for DIF-E1(MF) since MAP is removed

Note 1: The PSEUDO-PHASES are used to reference the PIDENT. For example, phase 4 PIDENT for DIF-E1(MF) is PUDGDE34. All other phases not included in this table are unchanged.

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

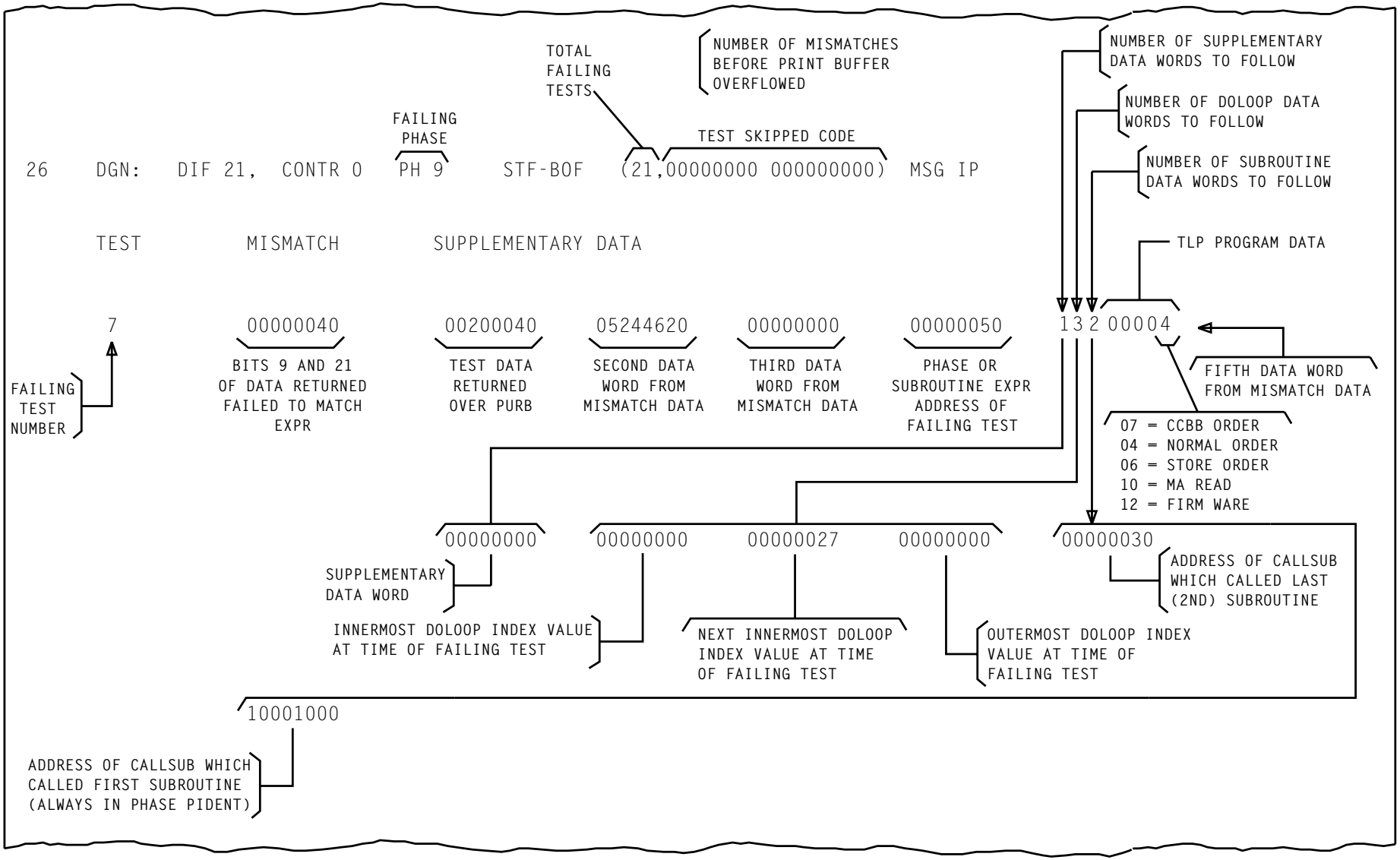
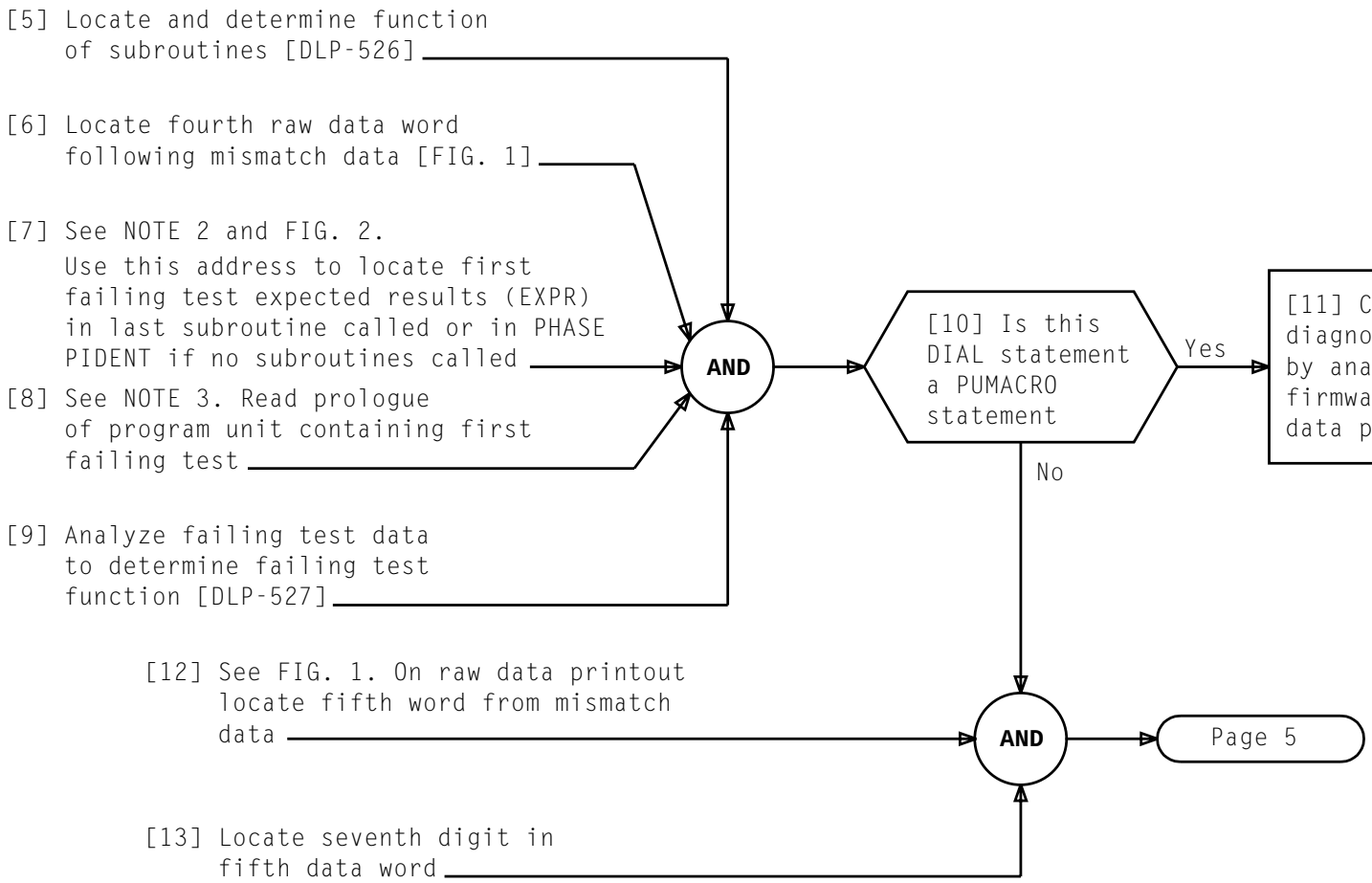


FIG. 1 — Example of DIF Raw Data Printout

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



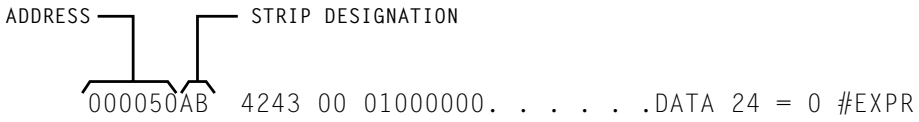
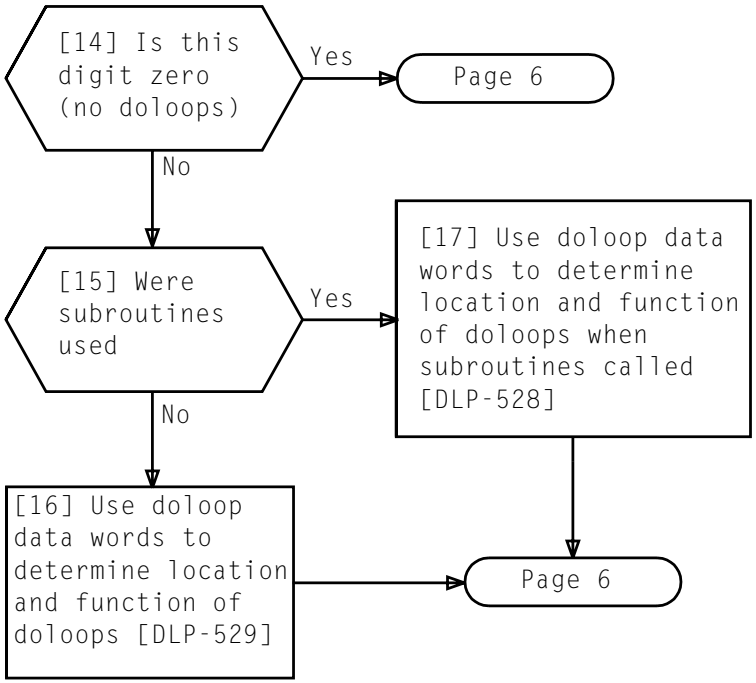


FIG. 2 — Example of EXPR Data in Listing

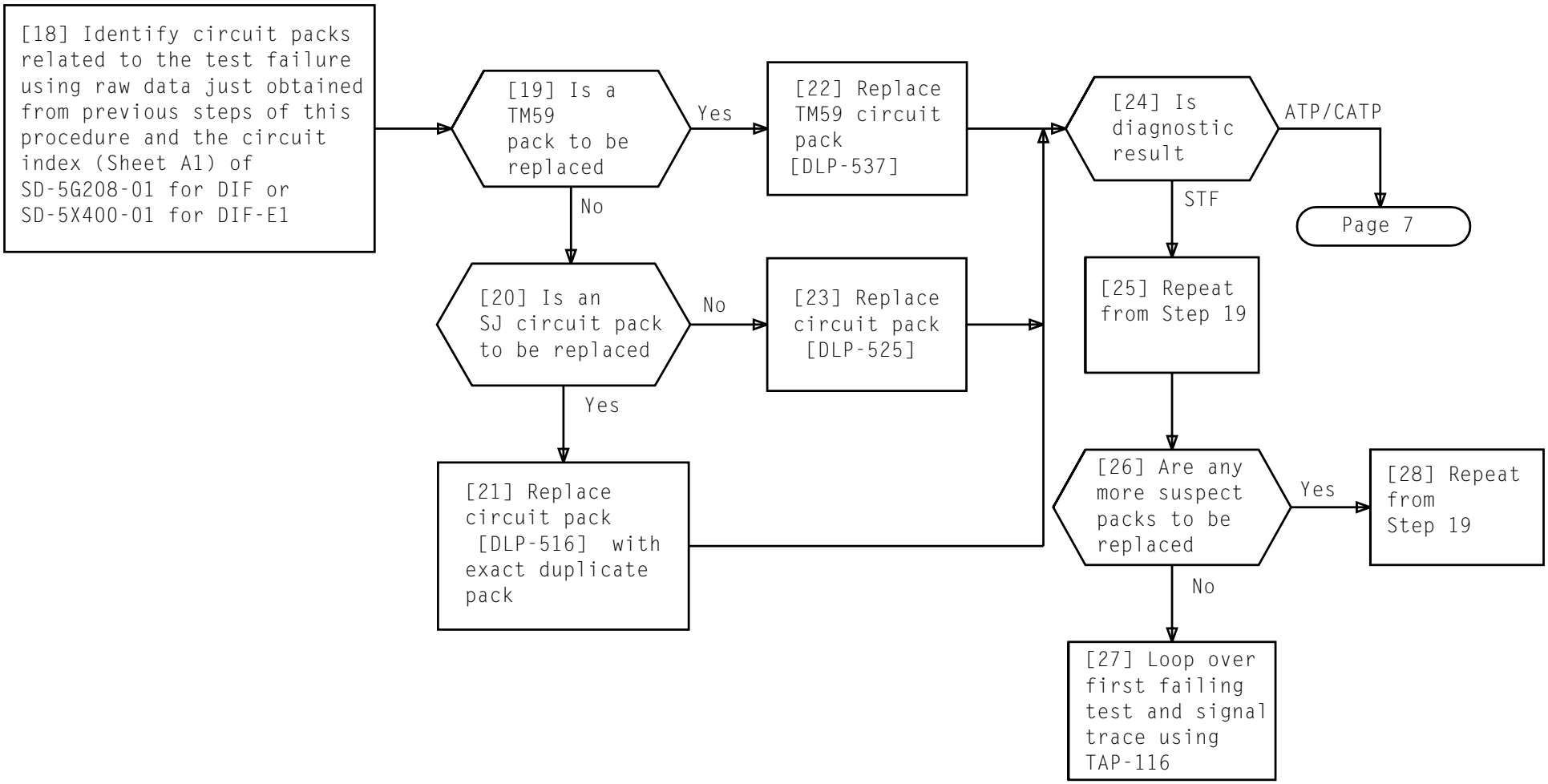
NOTES

2. Phase PIDENT may consist of more than one strip with this address appearing in more than one strip. EXPR data for your test is required from address
3. Program unit name is indicated in upper left of each listing page

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

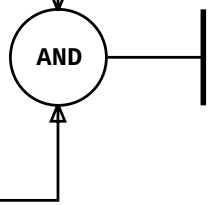


CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS



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

[29] Type in
RST:DIF a,{CONTR b|IPUB c}!
a = DIF frame member number
b = controller member number
c = IPUB member number

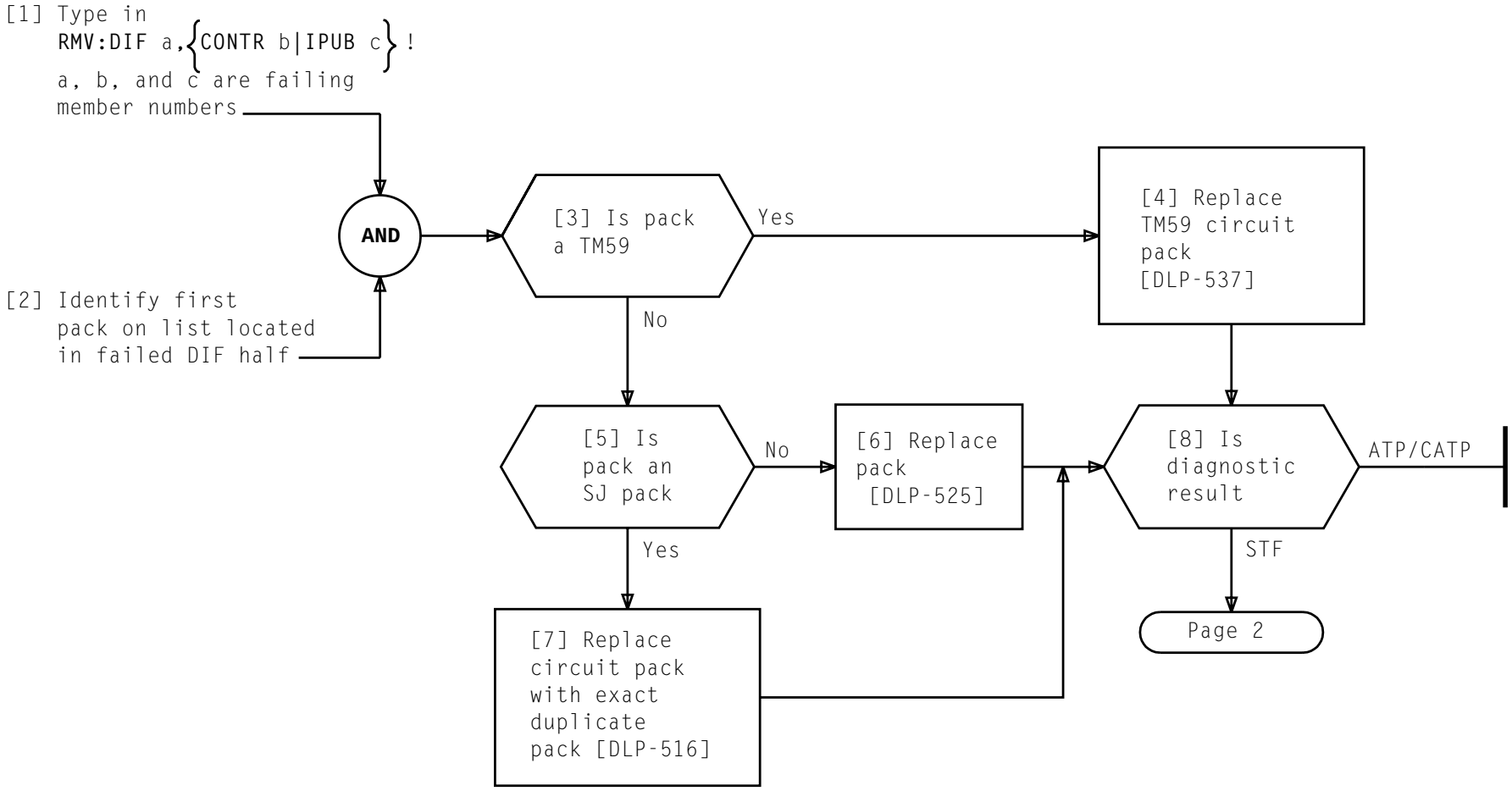


[30] Ensure system responds "completed"
for frames restored to service

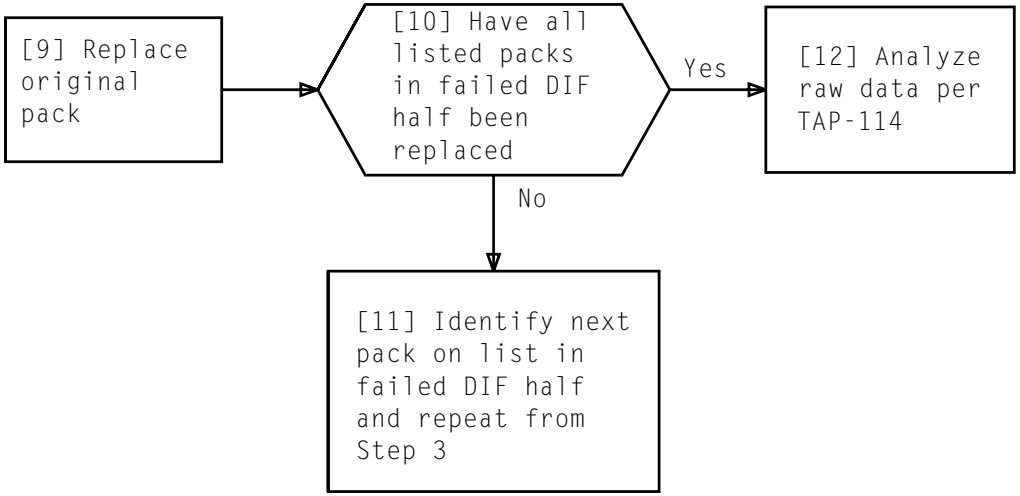
CLEAR DIAGNOSTIC FAILURE BY ANALYZING RAW DATA AND REPLACING ANY SUSPECT PACKS

SUMMARY

Replace all listed packs located in failed DIF frame half beginning with first pack listed. After each pack replacement, check diagnostic results to determine if trouble was cleared.



CLEAR DIAGNOSTIC FAILURE OR IPUB DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST



CLEAR DIAGNOSTIC FAILURE OR IPUB DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST

SUMMARY

Type in TABLE A messages. Verify first failing test raw data printed twice. Resend last TABLE A message with RPT option deleted for infinite loop. Set up scope. If SYNC option is used, attach external sweep trigger to terminal indicated in TABLE B. Using raw data analysis information, SDs, and circuit pack SDs, signal trace path of failing bits to isolate and clear fault.

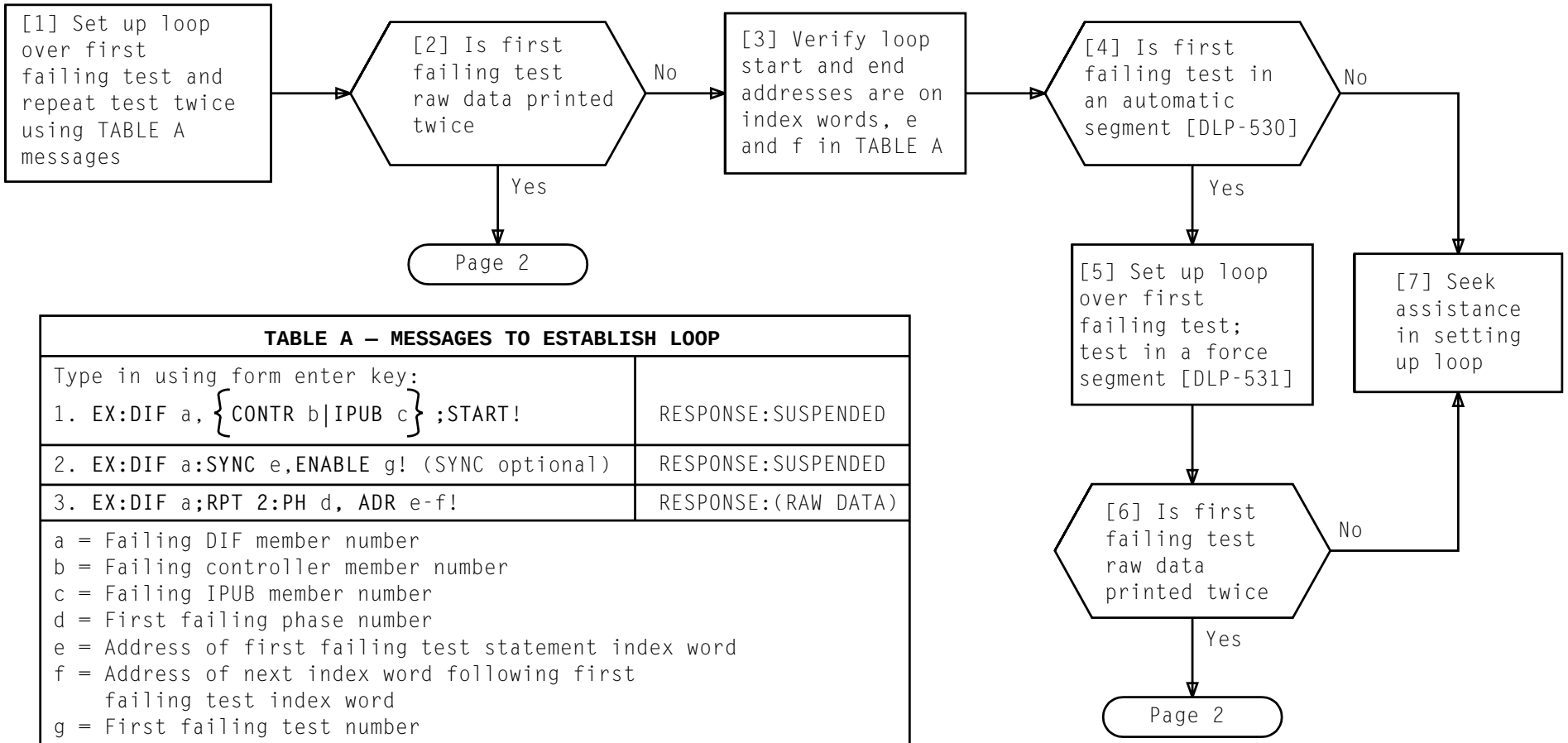


TABLE A — MESSAGES TO ESTABLISH LOOP

Type in using form enter key:	
1. EX:DIF a, {CONTR b|IPUB c} ;START!	RESPONSE:SUSPENDED
2. EX:DIF a:SYNC e,ENABLE g! (SYNC optional)	RESPONSE:SUSPENDED
3. EX:DIF a;RPT 2:PH d, ADR e-f!	RESPONSE:(RAW DATA)

a = Failing DIF 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 IN CC RESIDENT DIAGNOSTIC

[8] Set up infinite loop by typing in **EX:DIF a:PH d,ADR e-f!** See TABLE A for a, d, e, and f. Response is **"Looping started"**

[9] Was SYNC option used [TABLE A]

No

[13] Set up scope

[14] See NOTE 1. Using analysis of F level interrupts per raw data analysis information, SDs, and circuit pack SDs, signal trace path of failing bits to isolate and clear fault

Yes

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

[11] Connect external sweep trigger to terminals indicated in TABLE B

AND

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

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

Yes

Page 3

No

[16] Any mate packs on TLP list

No

Yes

[17] See CAUTION 1. Are mate packs to be replaced

No

Yes

[18] Obtain assistance per local office practice

TABLE B	
PUB 0	**PUB 1**
CONTR 0 170-025-210	CONTR 0 170-025-010
CONTR 1 170-261-210	CONTR 1 170-261-010

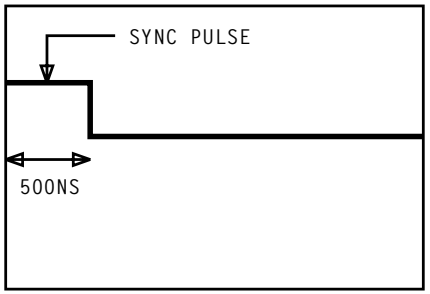
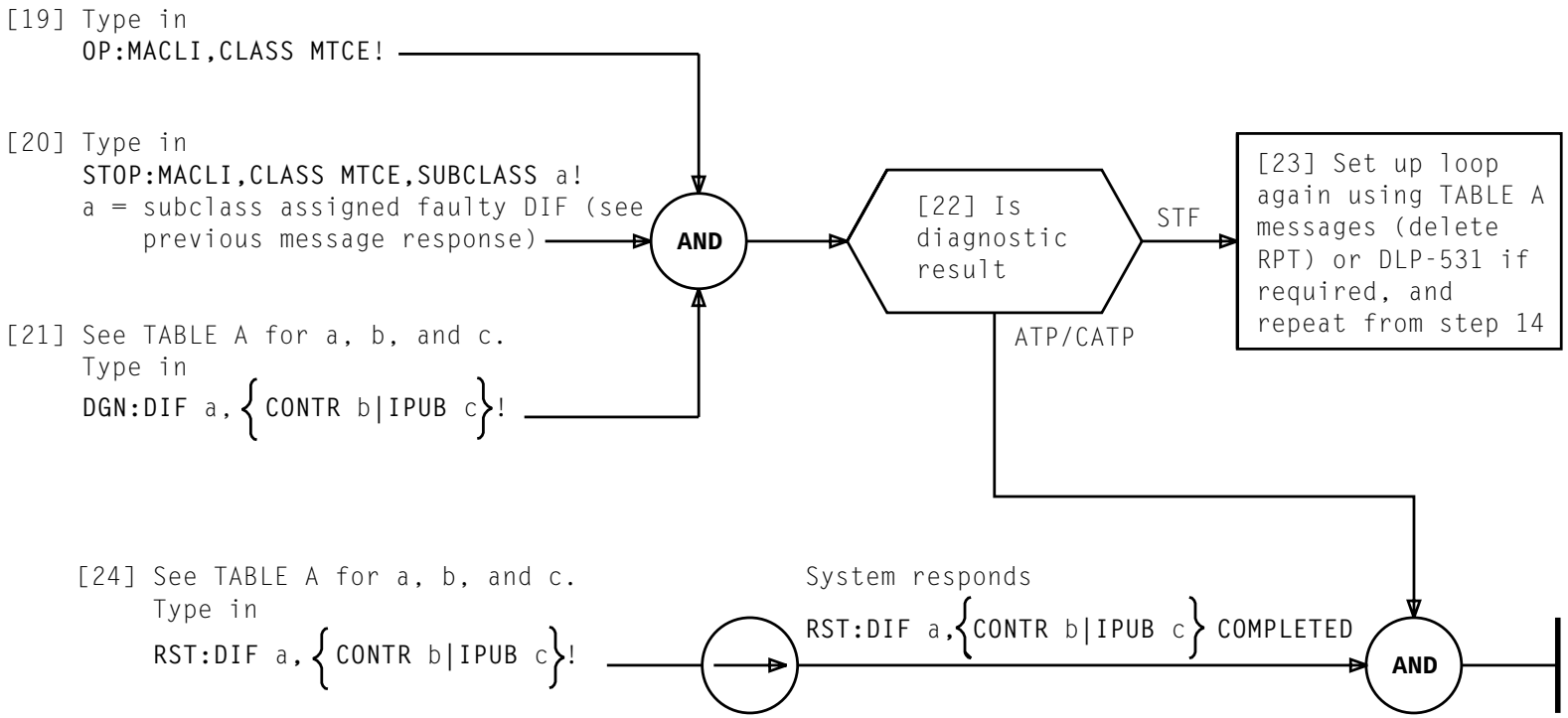


FIG. 1 – Sync Pulse Display

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

CAUTION 1
Service degrading condition can be caused by mate pack replacement

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



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

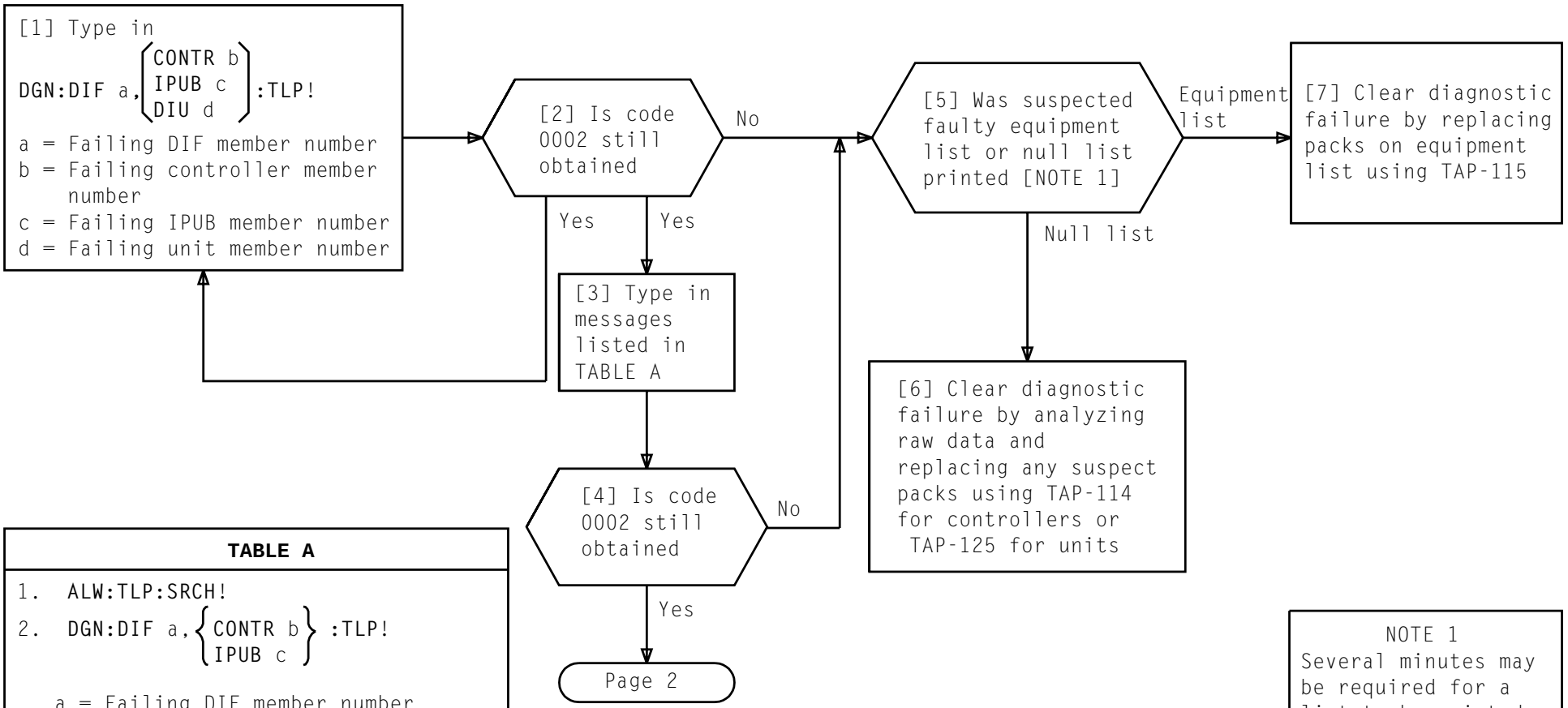


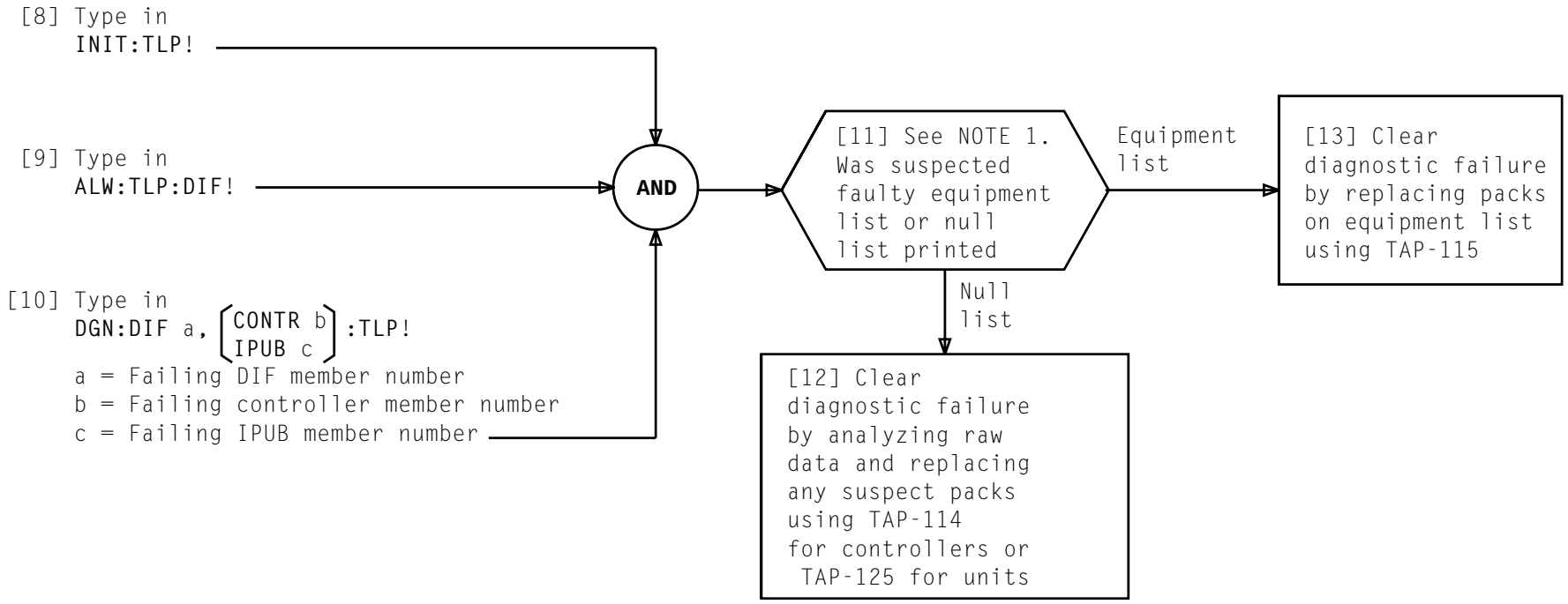
TABLE A

1. ALW:TLP:SRCH!
2. DGN:DIF a, { CONTR b / IPUB c } :TLP!

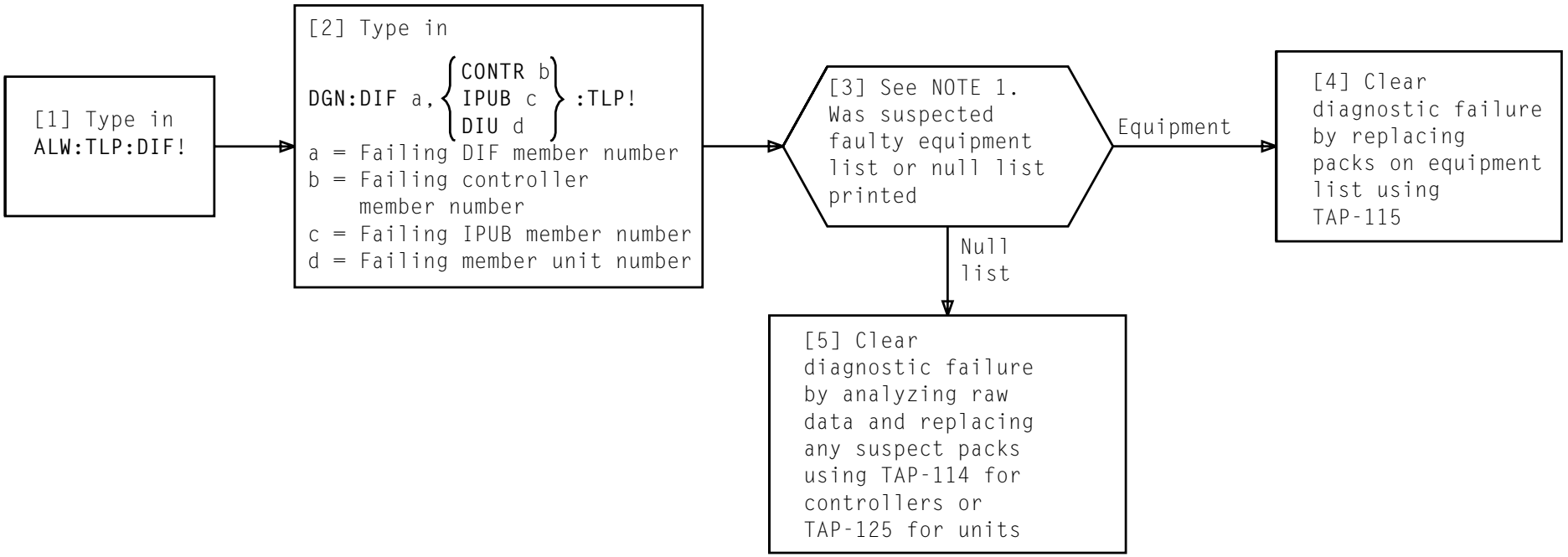
a = Failing DIF member number
b = Failing controller member number
c = Failing IPUB member number

NOTE 1
Several minutes may be required for a list to be printed. The status of your file may be monitored by typing in OP:TLPQUEUE;ALL! The TLP file currently being processed is indicated by an asterisk in priority column

CLEAR DIAGNOSTIC FAILURE, TLPQUEUE BLOCKAGE

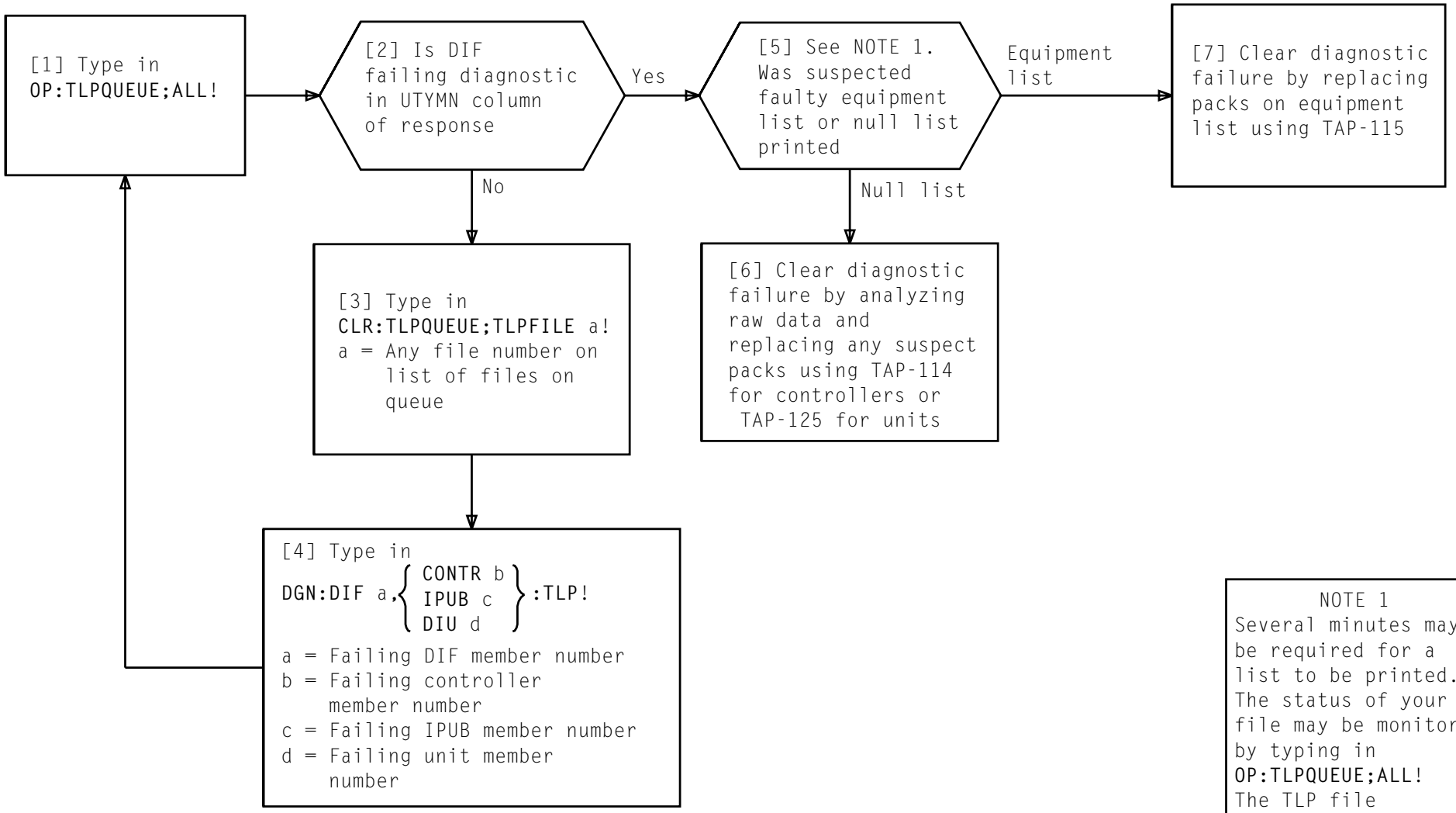


CLEAR DIAGNOSTIC FAILURE, — TLPQUEUE BLOCKAGE



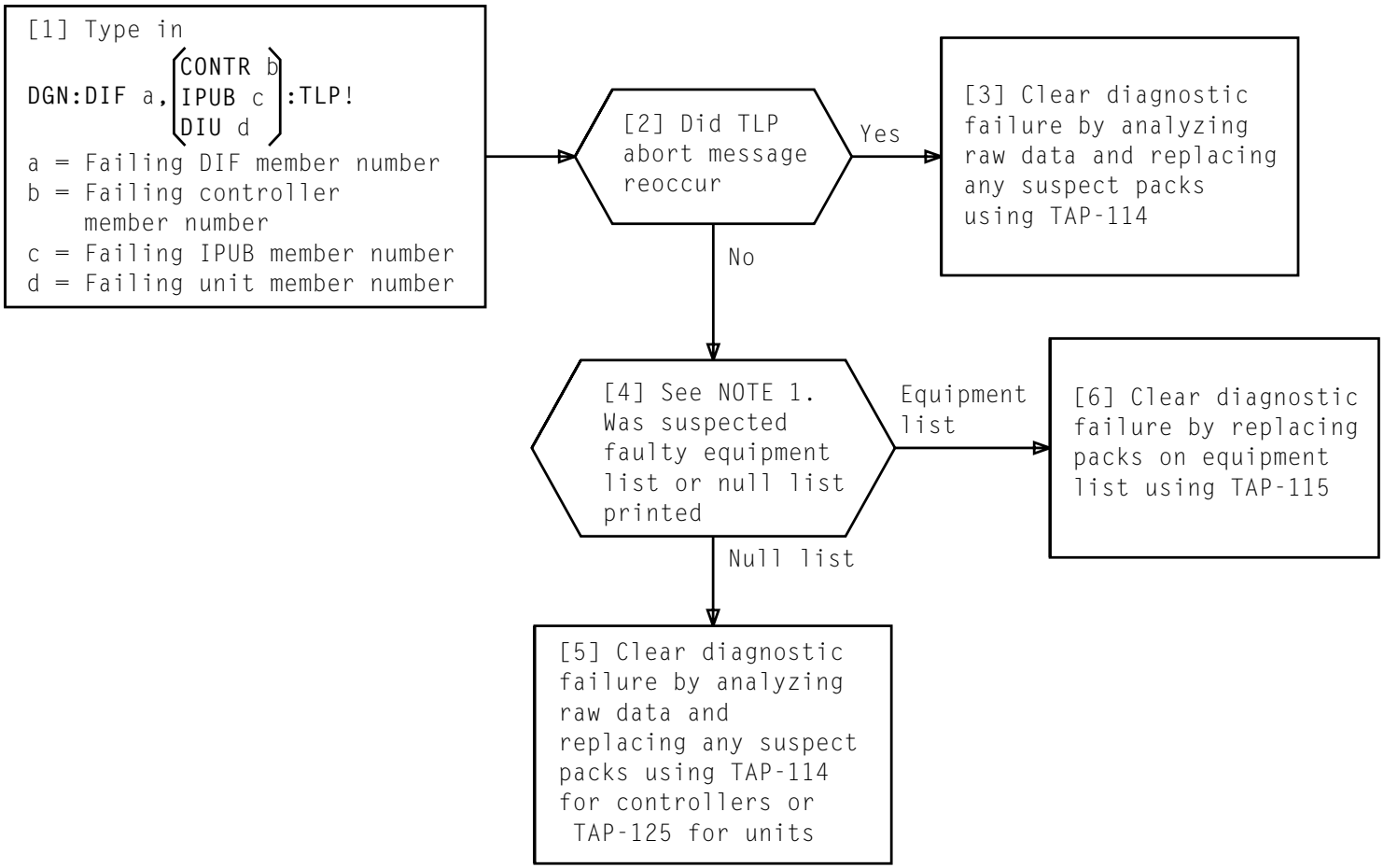
NOTE 1
Several minutes may be required for a list to be printed. The status of your file may be monitored by typing in
OP:TLPQUEUE;ALL!
The TLP file currently being processed is indicated by an asterisk in priority column.

CLEAR DIAGNOSTIC FAILURE, REMOVE DIF TLP INHIBIT



NOTE 1
Several minutes may be required for a list to be printed. The status of your file may be monitored by typing in
OP:TLPQUEUE;ALL!
The TLP file currently being processed is indicated by an asterisk in priority column

CLEAR DIAGNOSTIC FAILURE — TLP DISK QUEUE FULL



NOTE 1
Several minutes may be required for a list to be printed. The status of your file may be monitored by typing in
OP:TLPQUEUE;ALL!
The TLP file currently being processed is indicated by an asterisk in priority column

CLEAR DIAGNOSTIC FAILURE — TLP ABORT

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

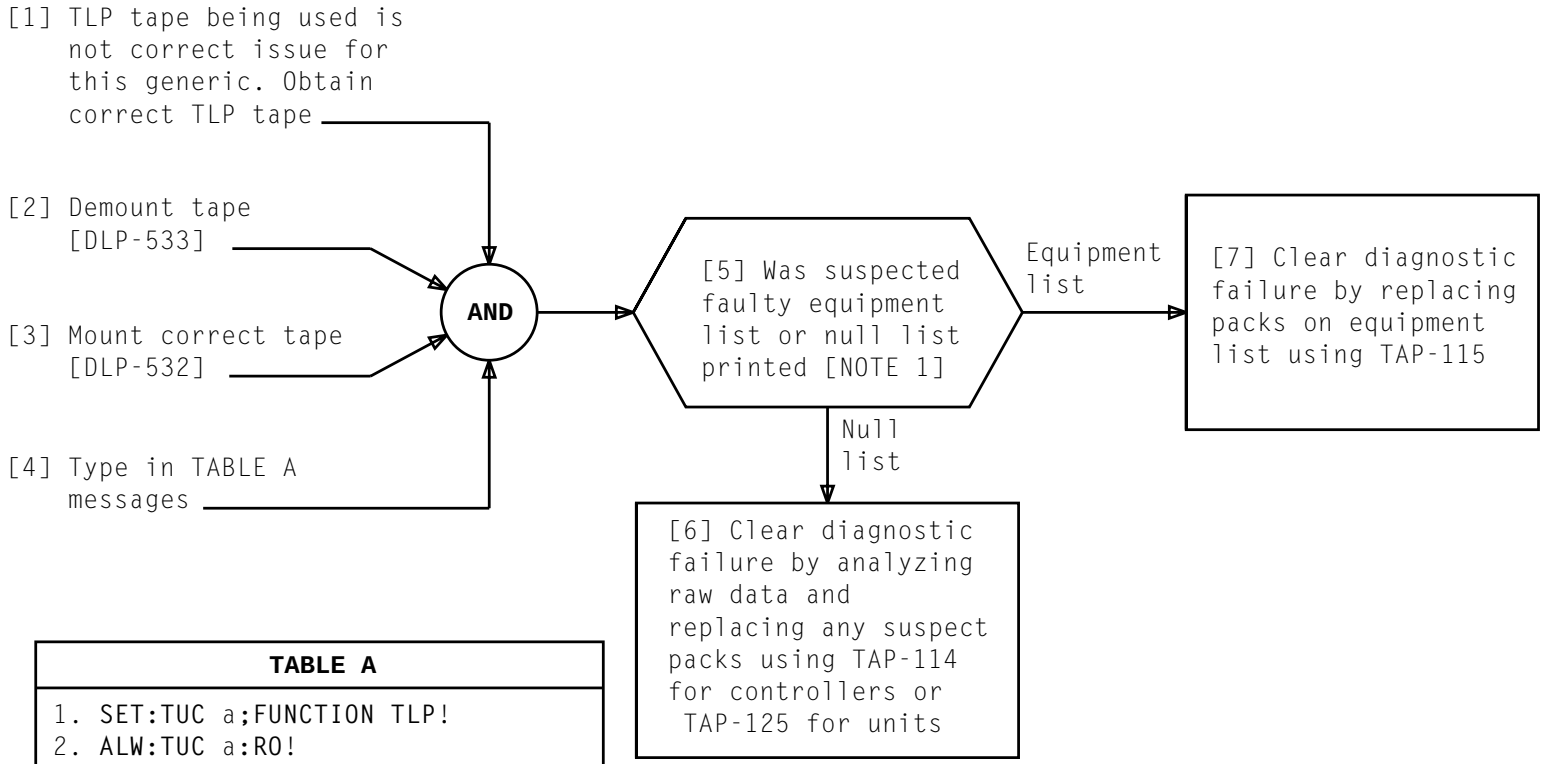


TABLE A

1. SET:TUC a;FUNCTION TLP!
2. ALW:TUC a:RO!
3. ALW:TLP:SRCH,DIF!
4. DGN:DIF b,{CONTR c / IPUB d / DIU e} :TLP!

   a = Member number of TUC with TLP tape mounted
   b = Failing DIF member number
   c = Failing controller member number
   d = Failing IPUB member number
   e = Failing unit member number

NOTE 1
Several minutes may be required for a list to be printed. The status of your file may be monitored by typing in OP:TLPQUEUE;ALL! The TLP file currently being processed is indicated by an asterisk in priority column

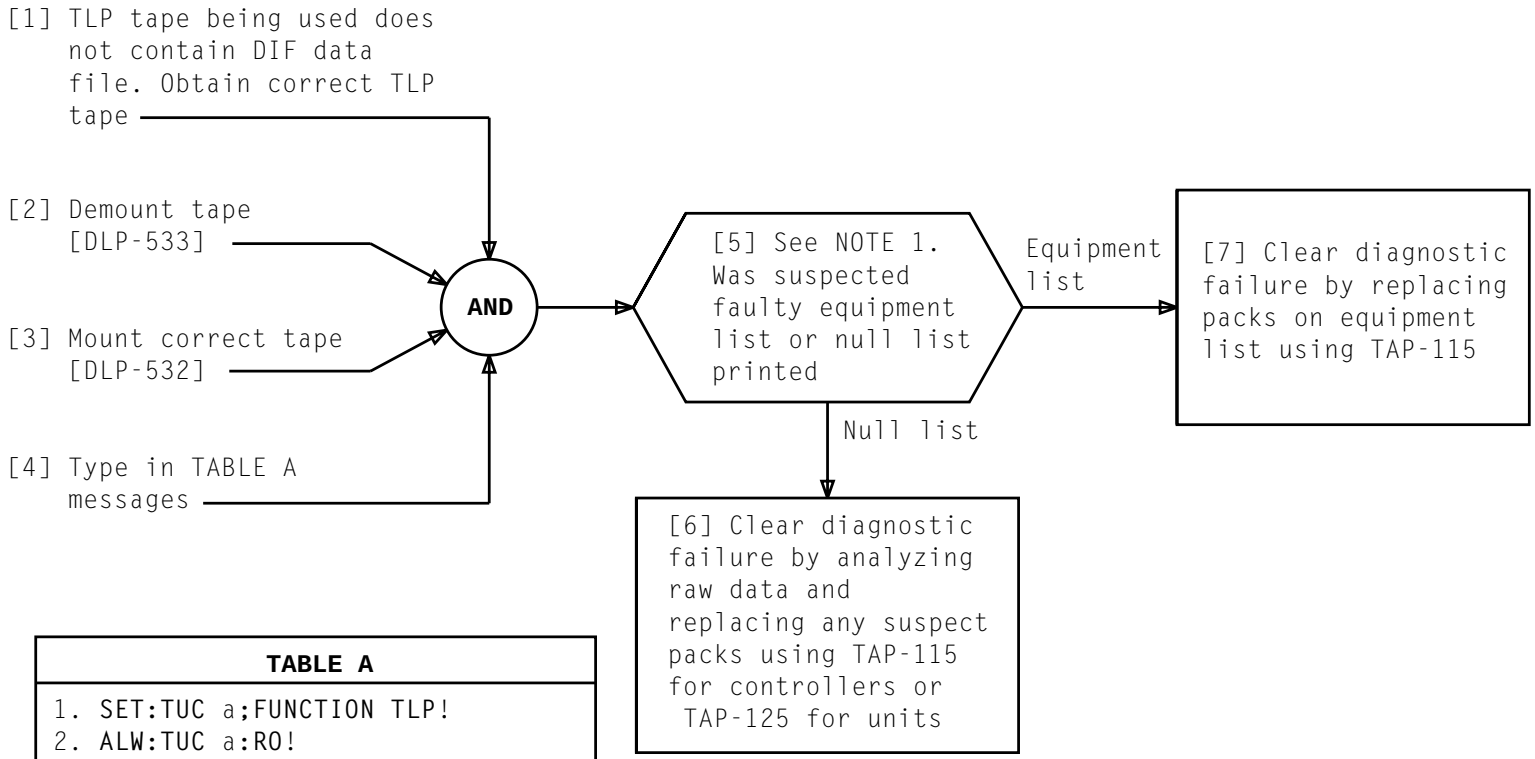


TABLE A

1. SET:TUC a;FUNCTION TLP!
2. ALW:TUC a:RO!
3. ALW:TLP:SRCH,DIF!
4. DGN:DIF b,{CONTR c / IPUB d / DIU e}:TLP!

a = Member number of TUC with TLP tape mounted
b = Failing DIF member number
c = Failing controller member number
d = Failing IPUB member number
e = Failing unit member number

NOTE 1
Several minutes may be required for a list to be printed. The status of your file may be monitored by typing in OP:TLPQUEUE;ALL! The TLP file currently being processed is indicated by an asterisk in priority column

CLEAR DIAGNOSTIC FAILURE — TLP TAPE AQUISITION ERROR

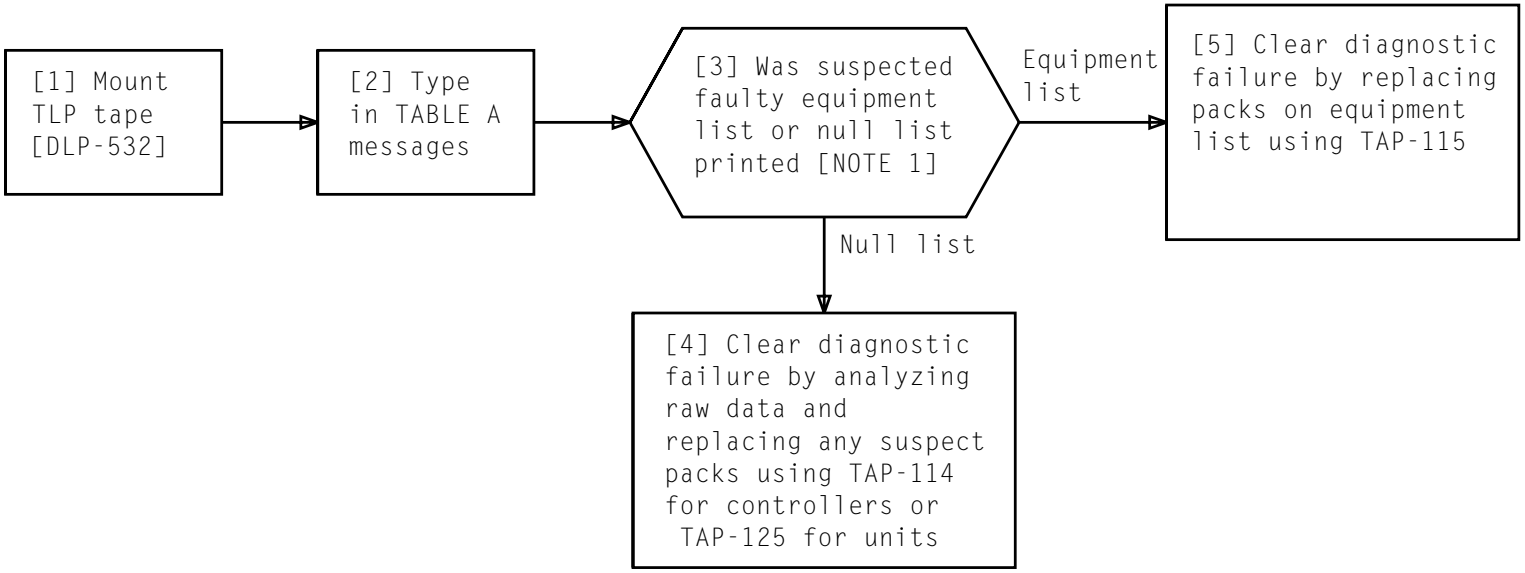


TABLE A

1. SET:TUC a;FUNCTION TLP!
2. ALW:TUC a:RO!
3. ALW:TLP:SRCH,DIF!
4. DGN:DIF b, { CONTR c / IPUB d / DIU e } :TLP!

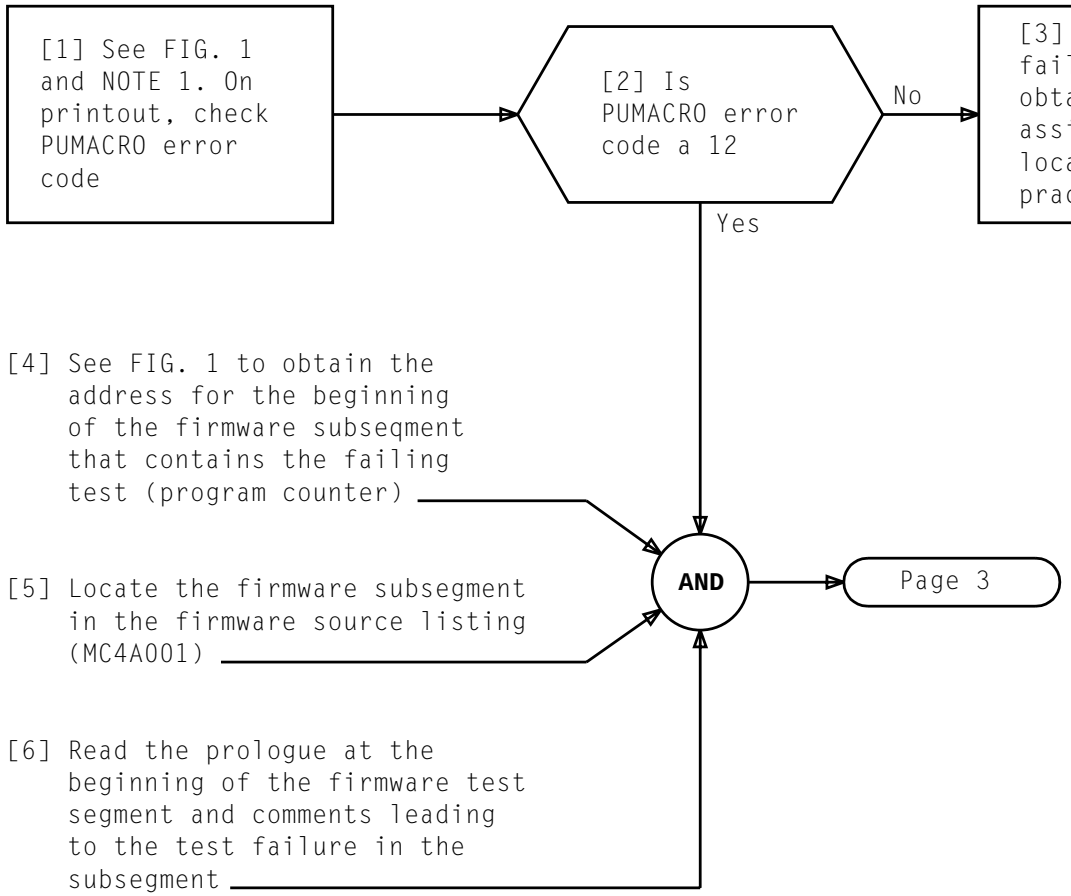
a = Member number of TUC with TLP tape mounted
b = Failing DIF member number
c = Failing controller member number
d = Failing IPUB member number
e = Failing unit member number

NOTE 1
Several minutes may be required for a list to be printed. The status of your file may be monitored by typing in OP:TLPQUEUE;ALL! The TLP file currently being processed is indicated by an asterisk in priority column

CLEAR DIAGNOSTIC FAILURE — TLP TAPE NOT MOUNTED

SUMMARY

A suspected circuit pack list is obtained by reading the associated DIAL and firmware prologues along with the raw data printout. The suspected circuit packs are replaced one at a time until the trouble is cleared. If the trouble persists, it may be cleared by looping on the first failing test.



NOTES

1. If PUMACRO error code in fifth data word firm mismatch data is other than 12, error occurred in transmitting data to PUMACRO task routine.

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

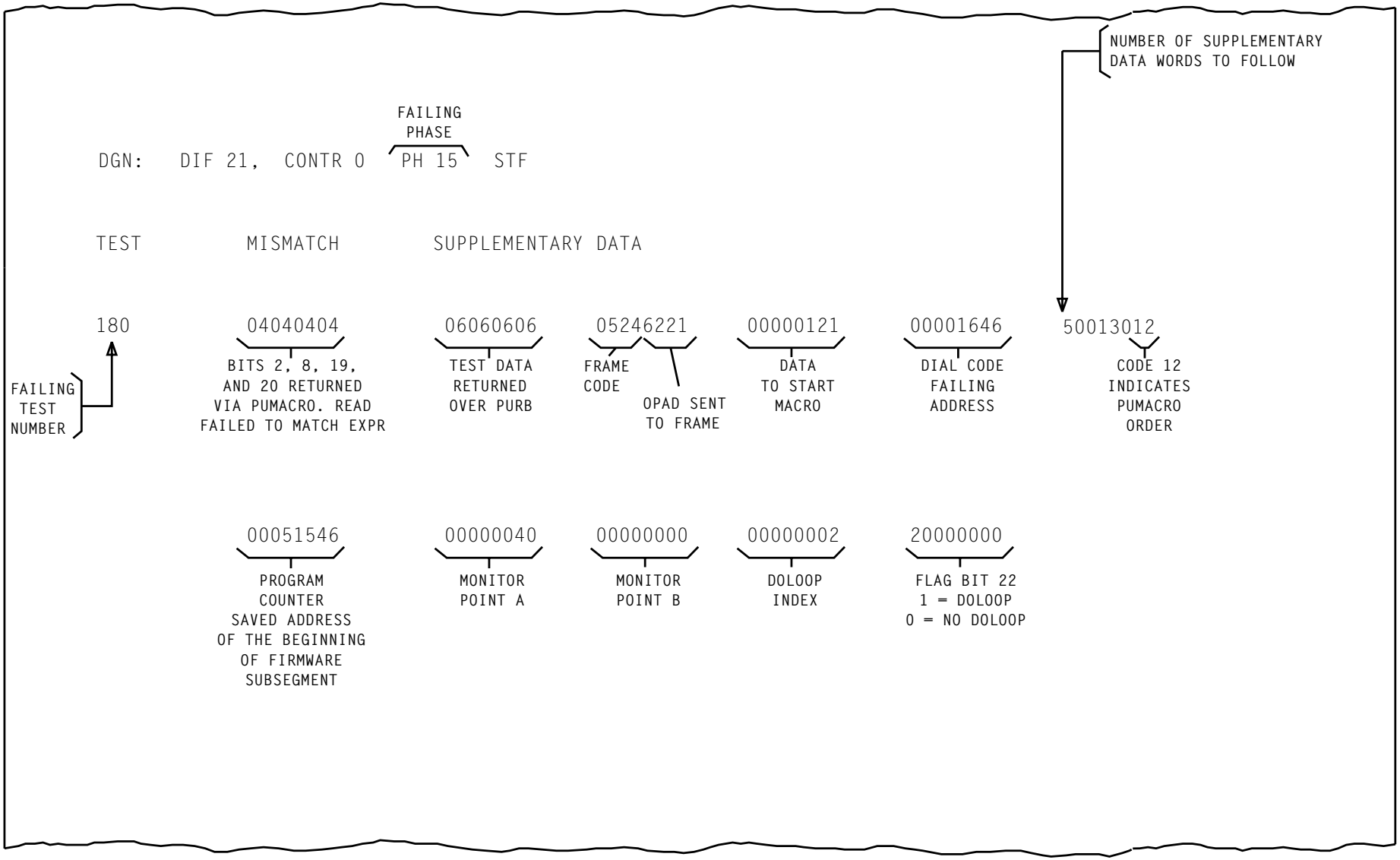
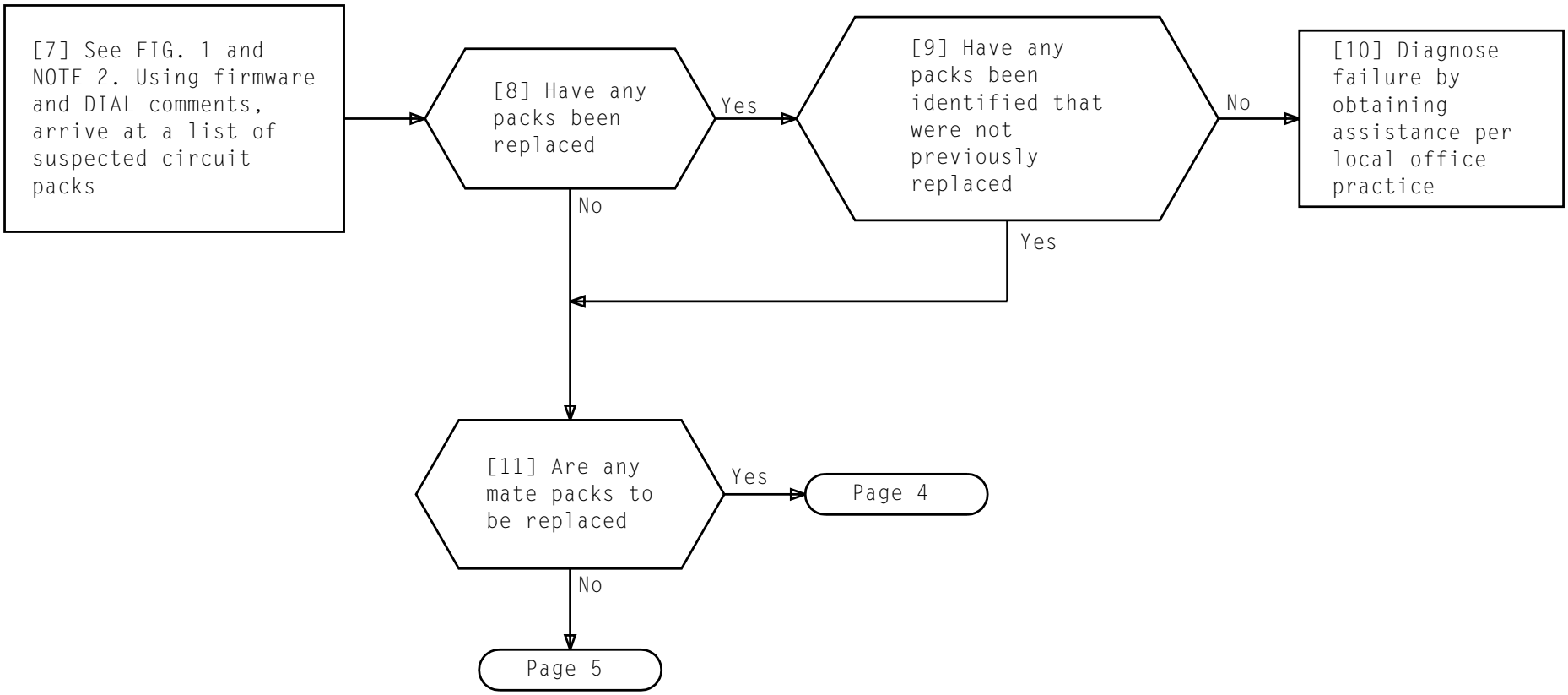


FIG. 1 – Example of DIF PUMACRO Raw Data Printout

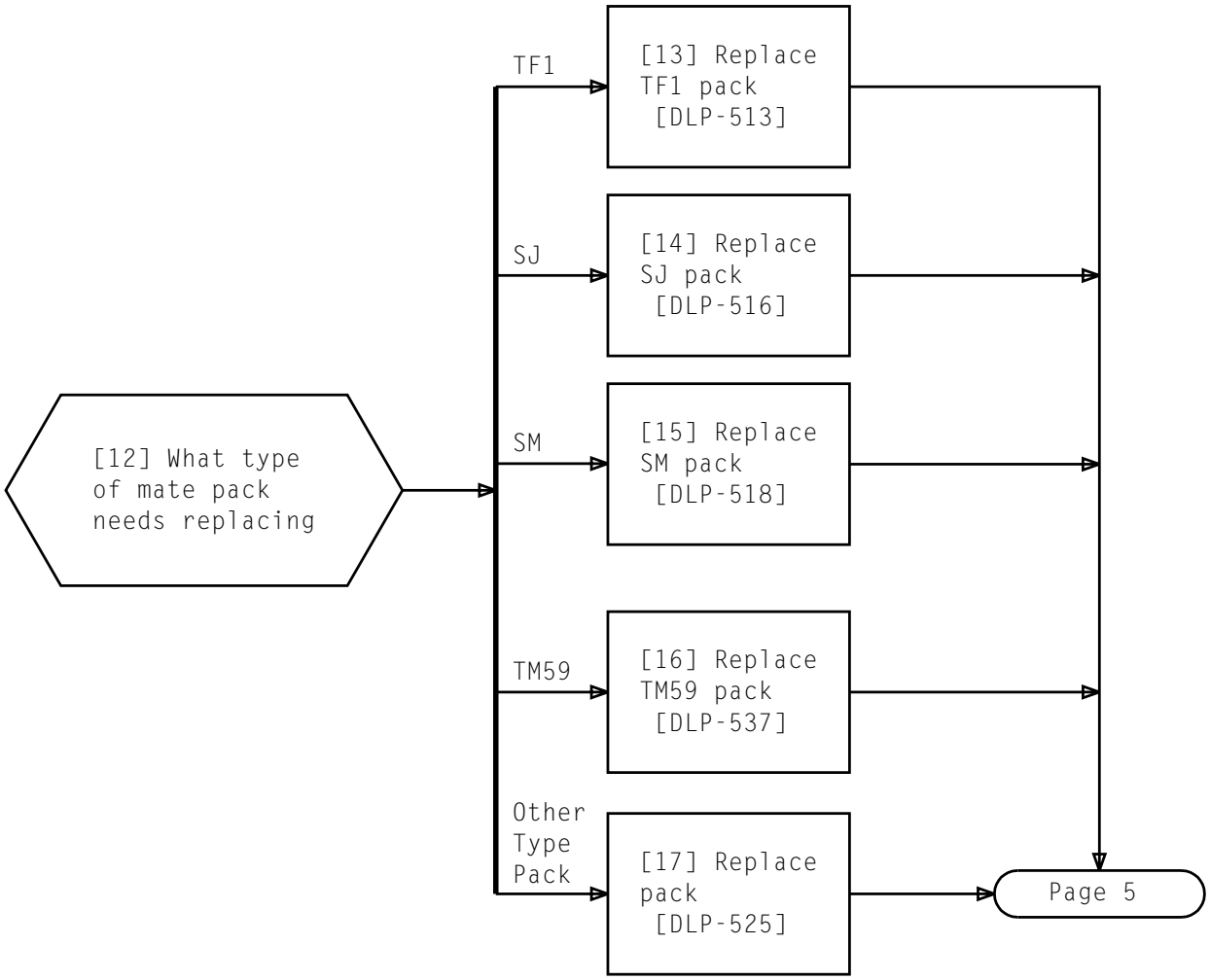
CLEAR DIAGNOSTIC FAILURE BY ANALYZING FIRMWARE MACRO RAW DATA AND REPLACING ANY SUSPECT PACKS



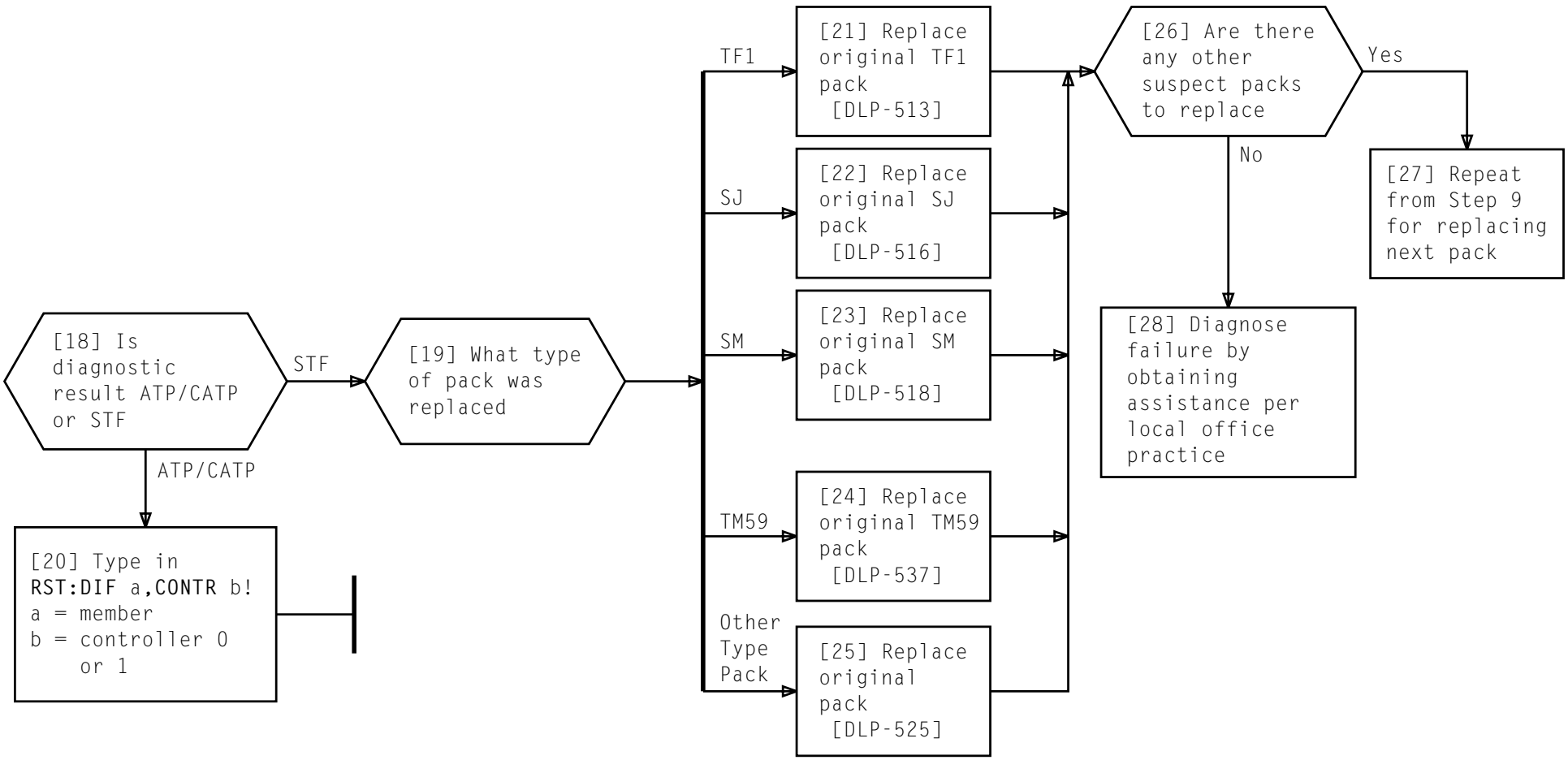
NOTE

2. The "Hardware Being Tested" list in the DIAL listing prologue is useful in identifying circuit function versus circuit packs

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



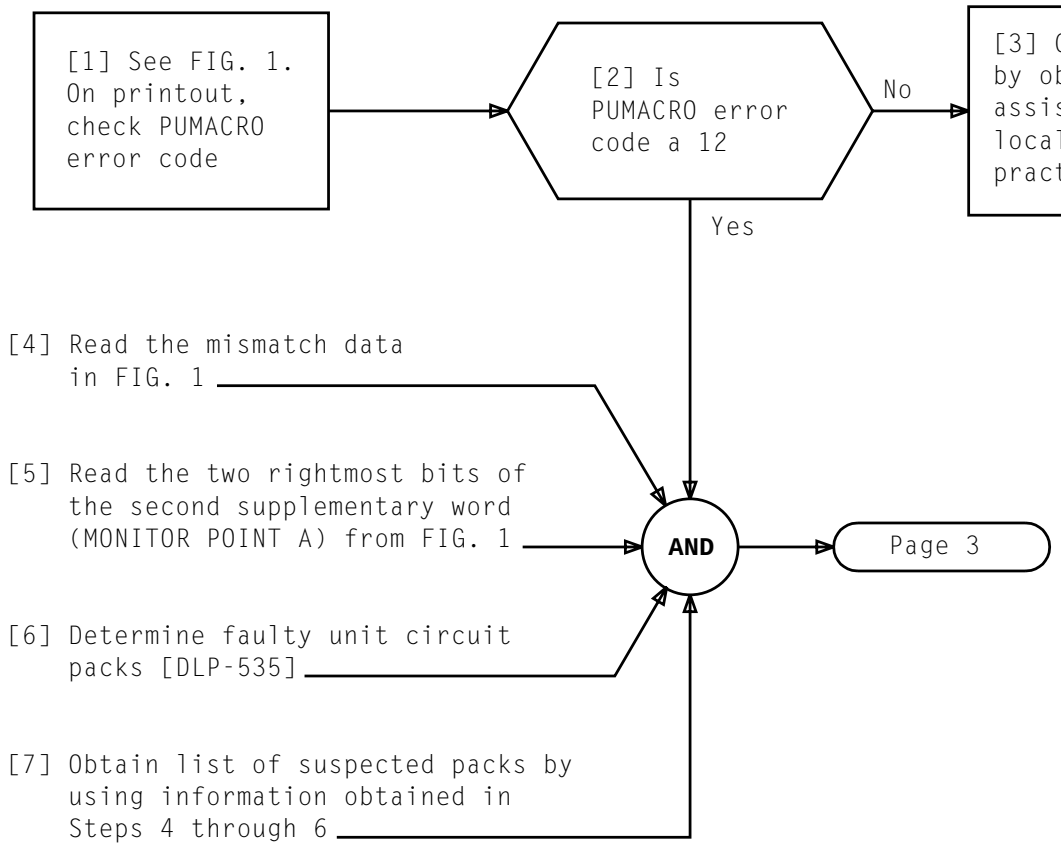
CLEAR DIAGNOSTIC FAILURE BY ANALYZING FIRMWARE MACRO RAW DATA AND REPLACING ANY SUSPECT PACKS



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

SUMMARY

Read the mismatch bits and the error source identifier code from the raw data printout. Use the raw data information to derive a weighted list of suspected circuits. Replace the packs one at a time until the trouble is cleared. For persistent troubles, loop on the first failing test to resolve the trouble.



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

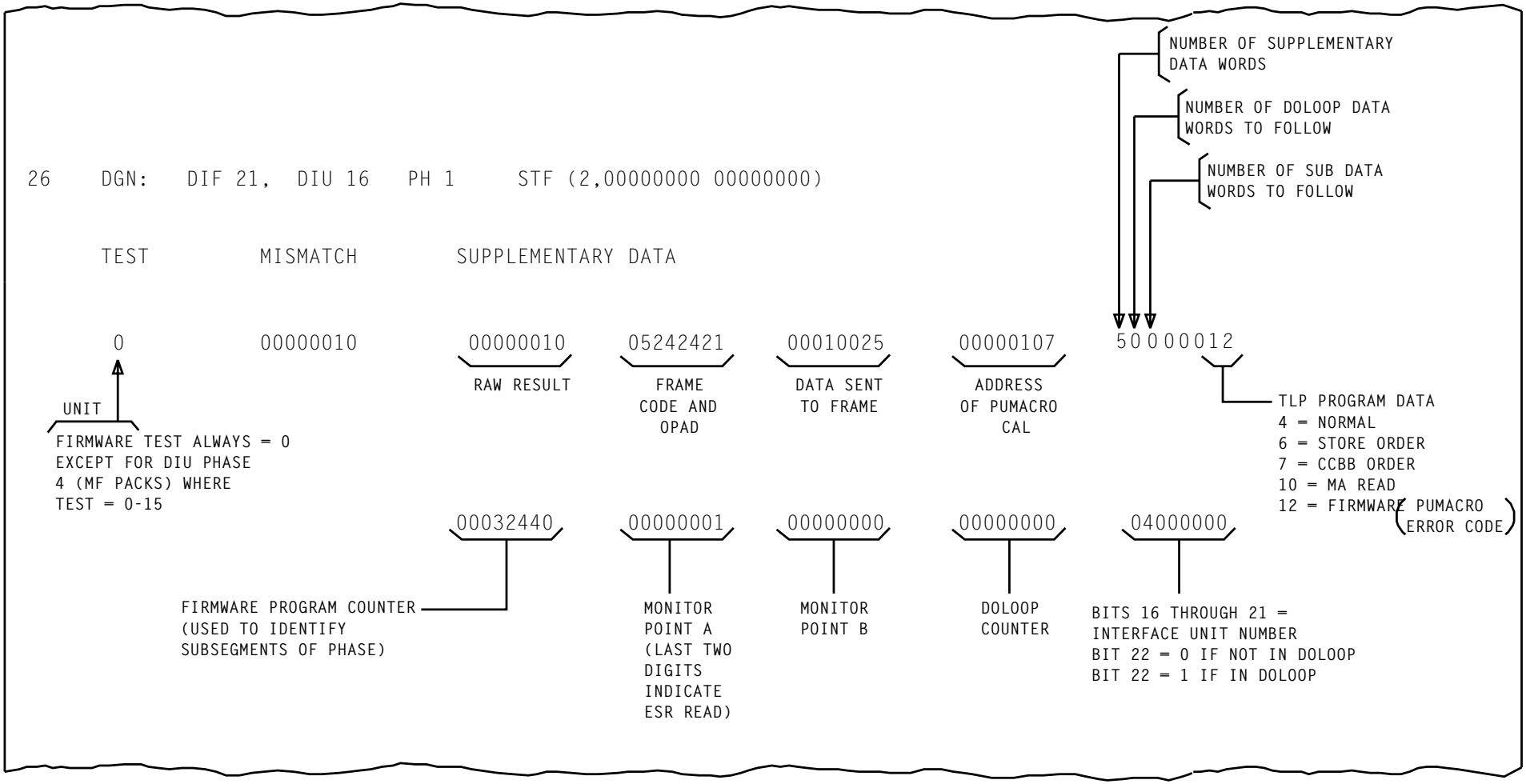
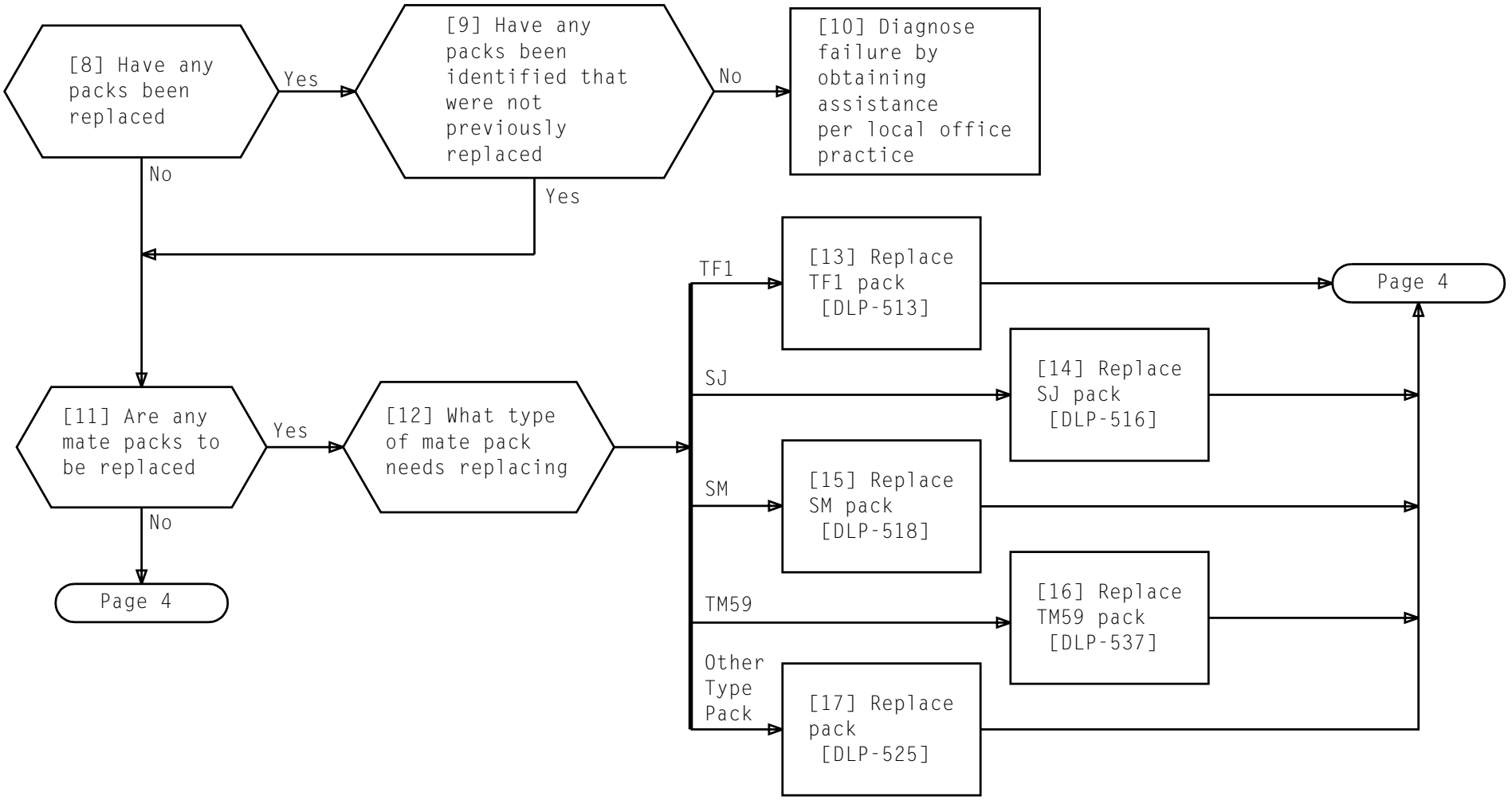
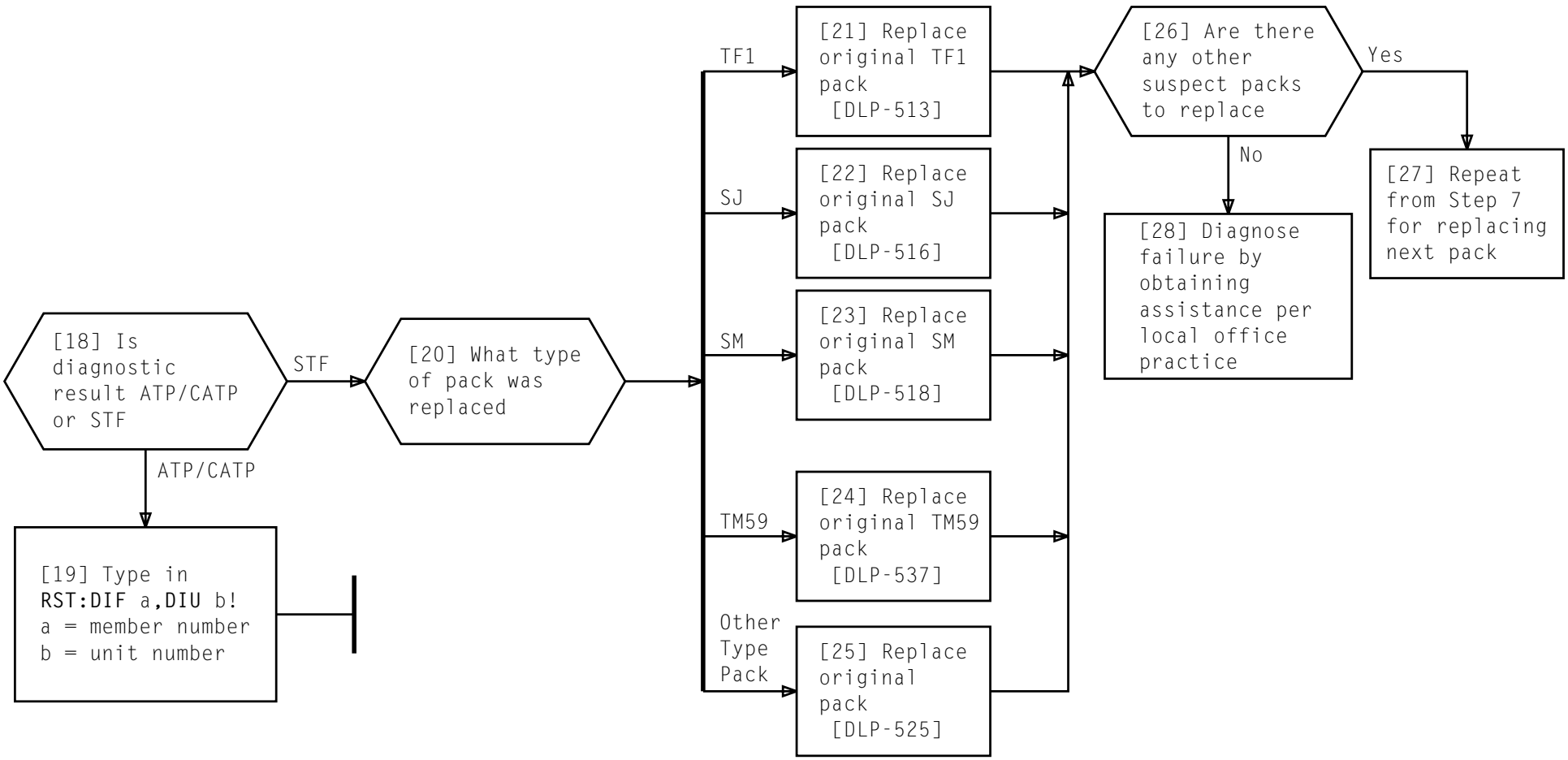


FIG. 1 – Example of DIF Firmware Raw Data

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



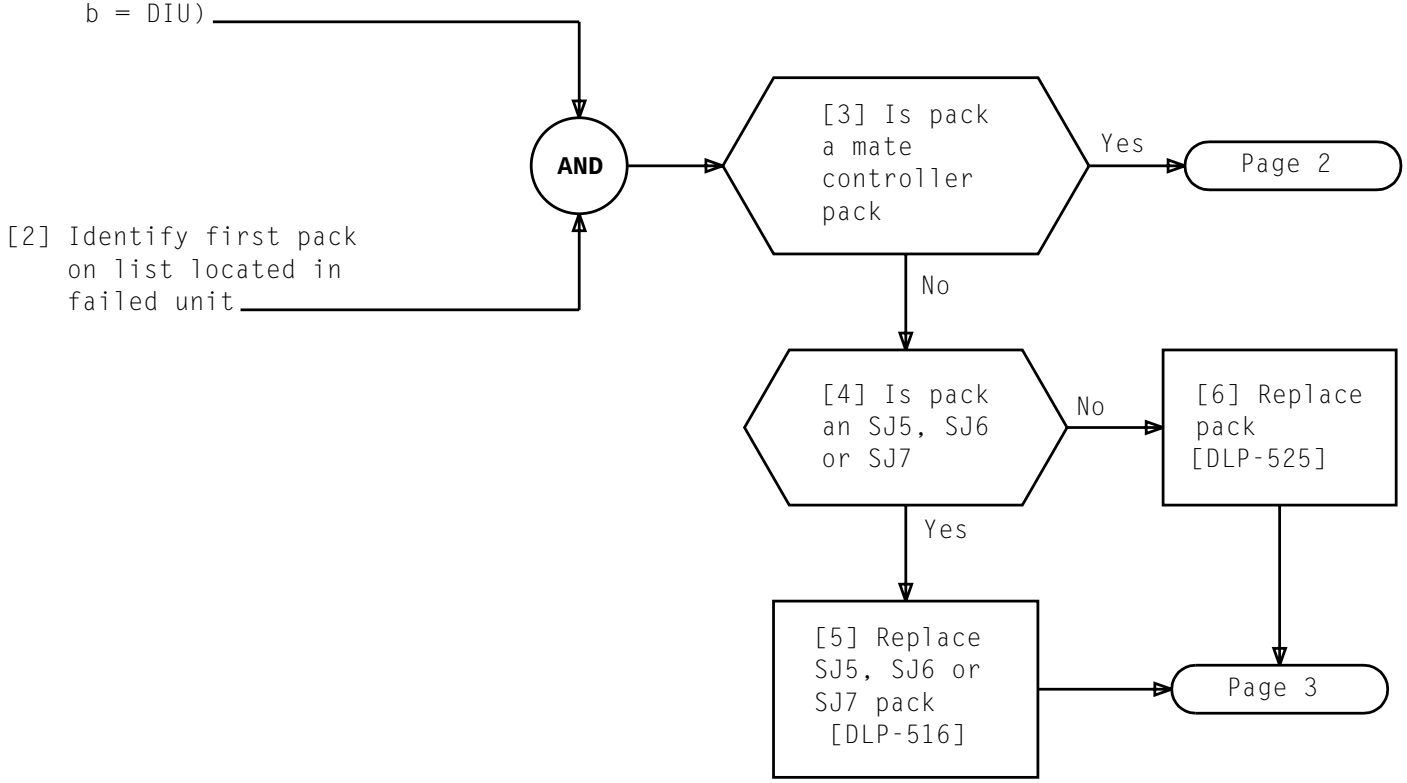
CLEAR DIAGNOSTIC FAILURE BY ANALYZING UNIT FIRMWARE MACRO RAW DATA AND REPLACING ANY SUSPECT PACKS



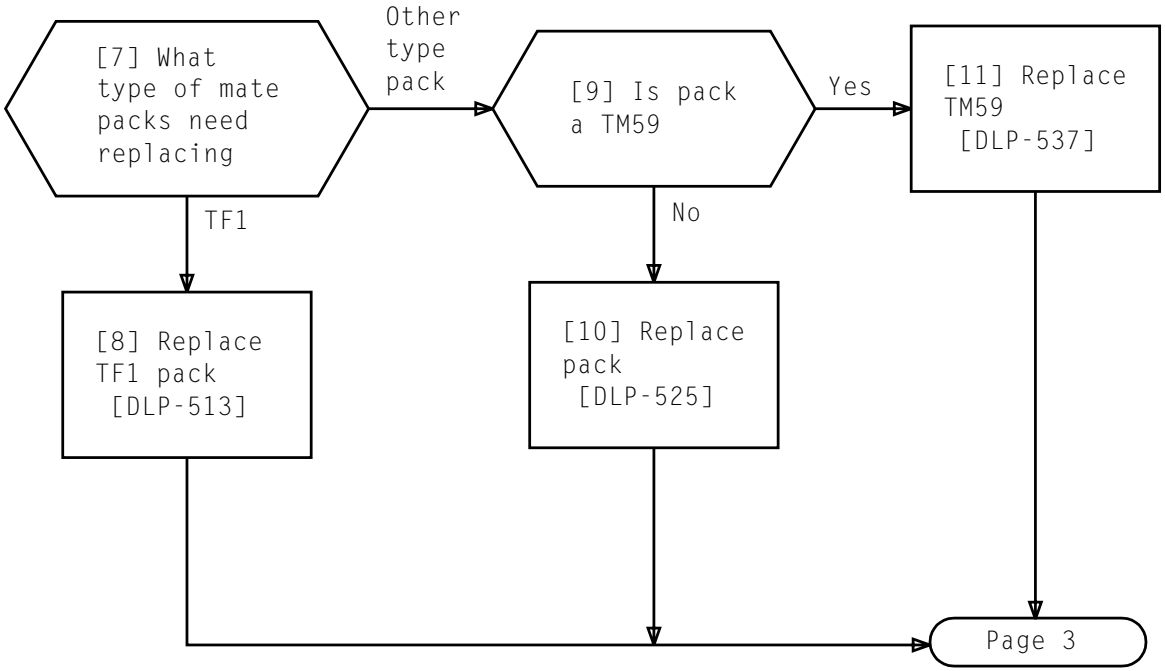
CLEAR DIAGNOSTIC FAILURE BY ANALYZING UNIT FIRMWARE MACRO RAW DATA AND REPLACING ANY SUSPECT PACKS

SUMMARY

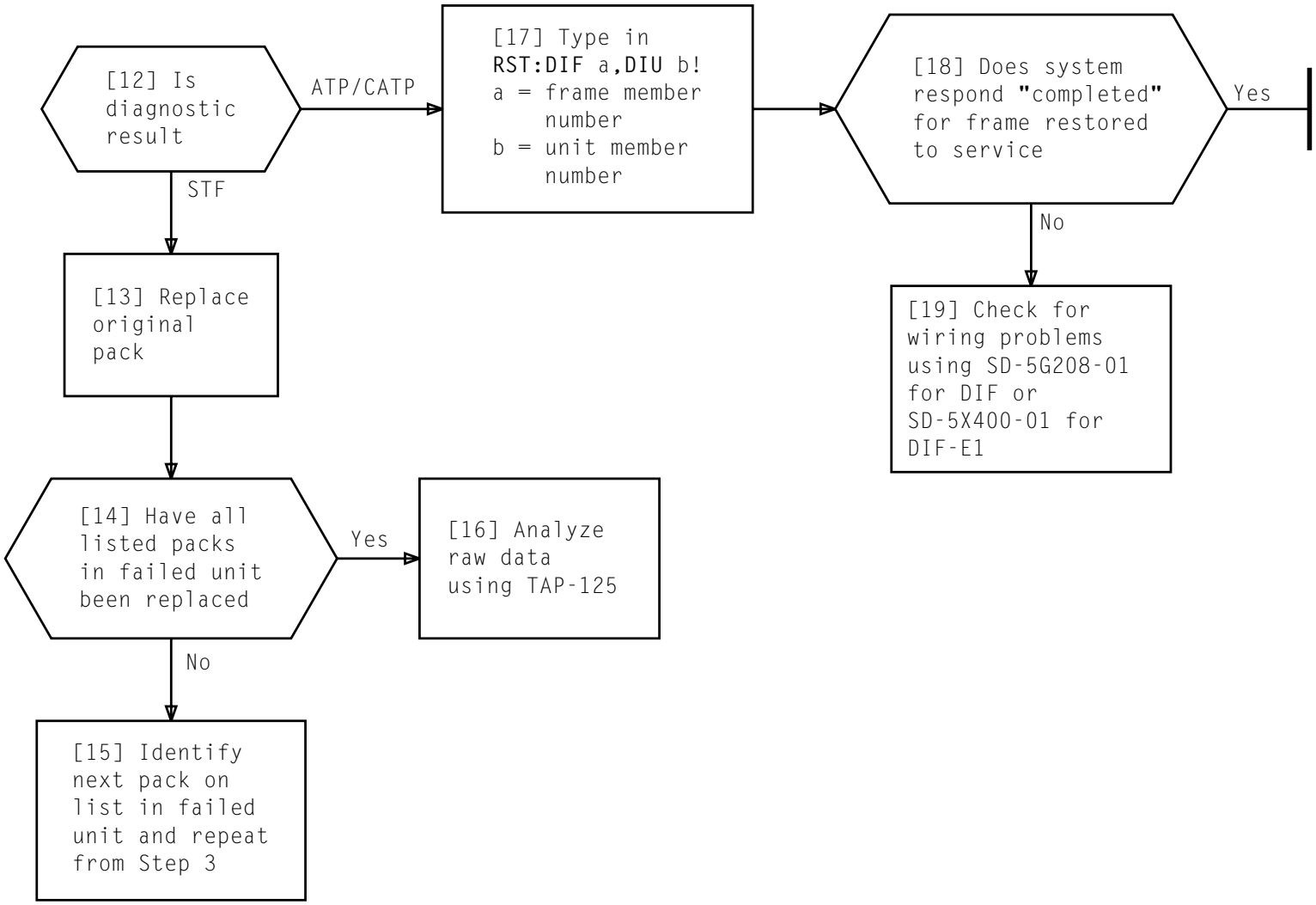
Replace all listed packs located in failed unit beginning with first pack listed. After each pack replacement, check diagnostic results to determine if trouble was cleared.



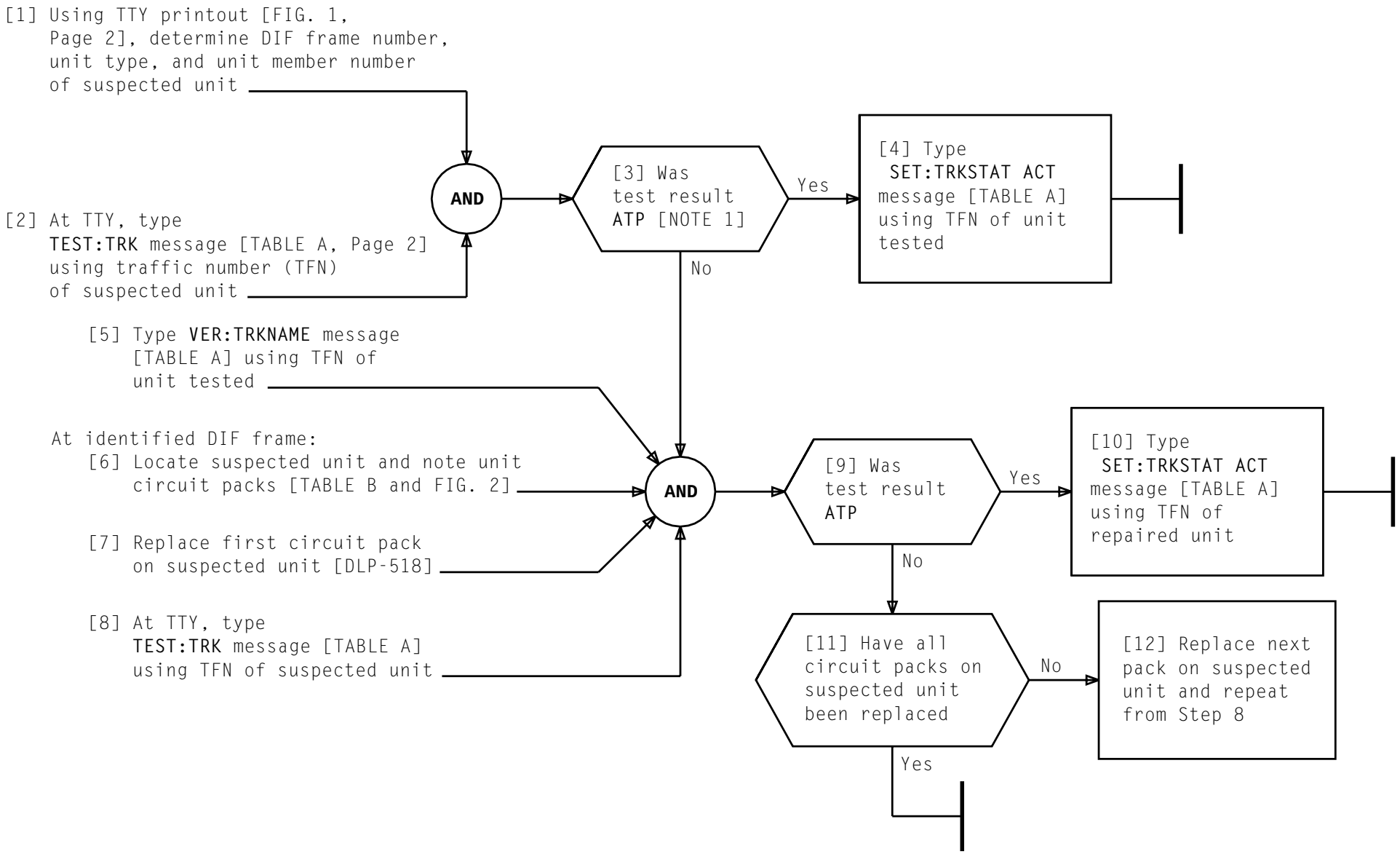
CLEAR DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST



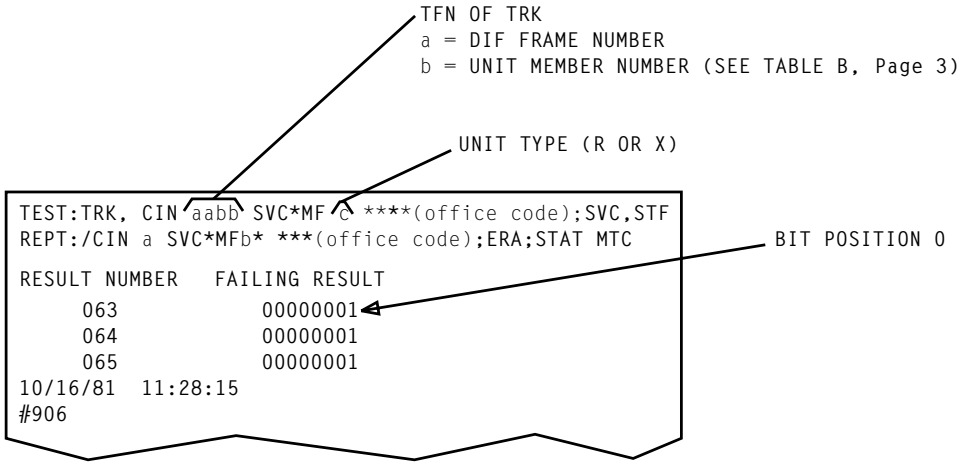
CLEAR DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST



CLEAR DIAGNOSTIC FAILURE BY REPLACING PACKS ON TLP SUSPECTED EQUIPMENT LIST



CLEAR RECEIVER OR TRANSMITTER TROUBLE (MF SERVICE CIRCUITS)



NOTE: RESULT NUMBERS ARE GREATER THAN 100 FOR DIGITAL CIRCUITS AND LESS THAN 100 FOR ANALOG CIRCUITS.

FIG. 1 — Sample Printout of Failing Test Results (MFS Frame Number, Unit Type and Member Identification)

TABLE A	
INPUT MESSAGES	**VARIABLES**
TEST:TRK, CIN a SVC*MFb****;SVC:PALL!	a = TFN of TRK b = Unit type (R or X)
VER:TRKNAME, CIN a SVC*MFb****!	a = TFN of TRK b = Unit type (R or X)
SET:TRKSTAT ACT, CIN a SVC*MFb****!	a = TFN of TRK b = Unit type (R or X)

NOTE 1
Functional tests may fail during unusual system load even though service circuit hardware is good. Therefore, tests will likely pass when rerun (under more normal conditions)

CLEAR RECEIVER OR TRANSMITTER TROUBLE (MF SERVICE CIRCUITS)

TABLE B		
DIU	**DG**	**b (UNIT MEMBER NUMBER)**
1	1	00 - 03
	2	04 - 07
	3	08 - 11
	4	12 - 15
18	1	16 - 19
	2	20 - 23
	3	24 - 27
	4	28 - 31
9	1	32 - 35
	2	36 - 39
	3	40 - 43
	4	44 - 47
26	1	48 - 51
	2	52 - 55
	3	56 - 59
	4	60 - 63

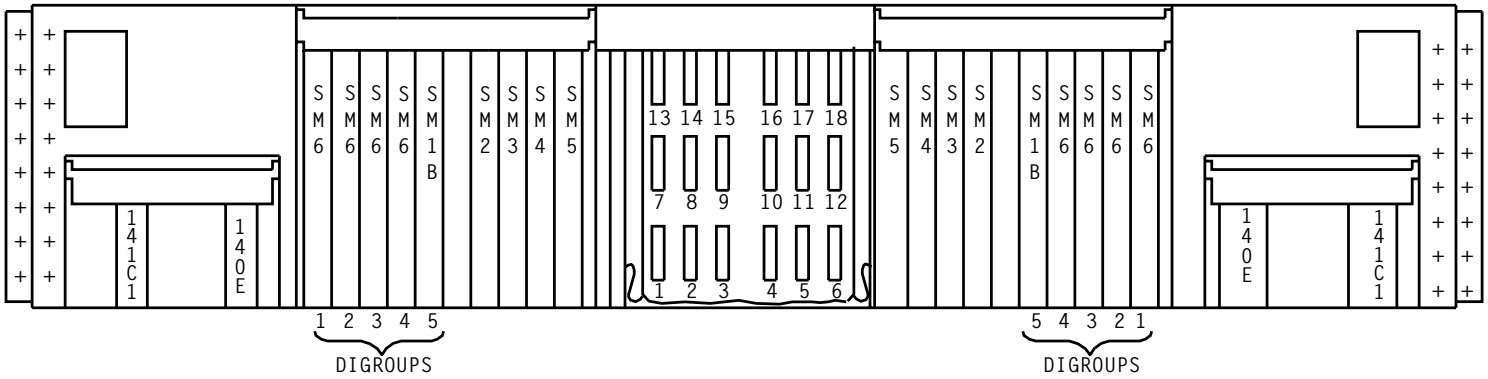
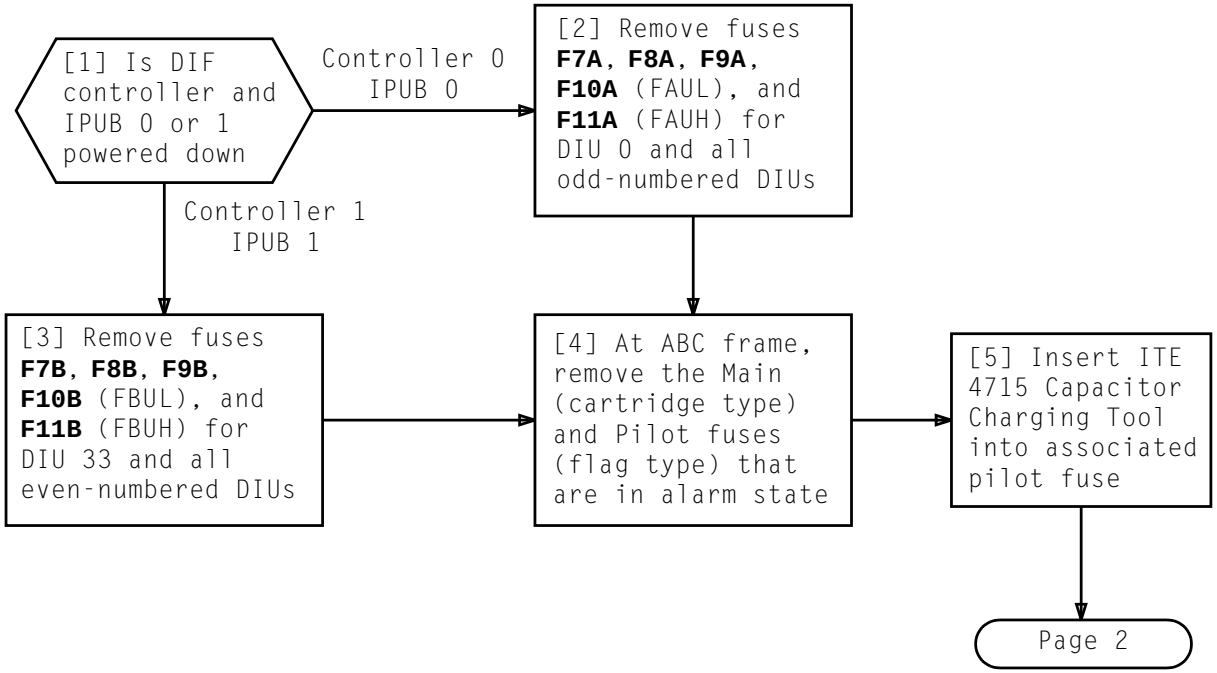
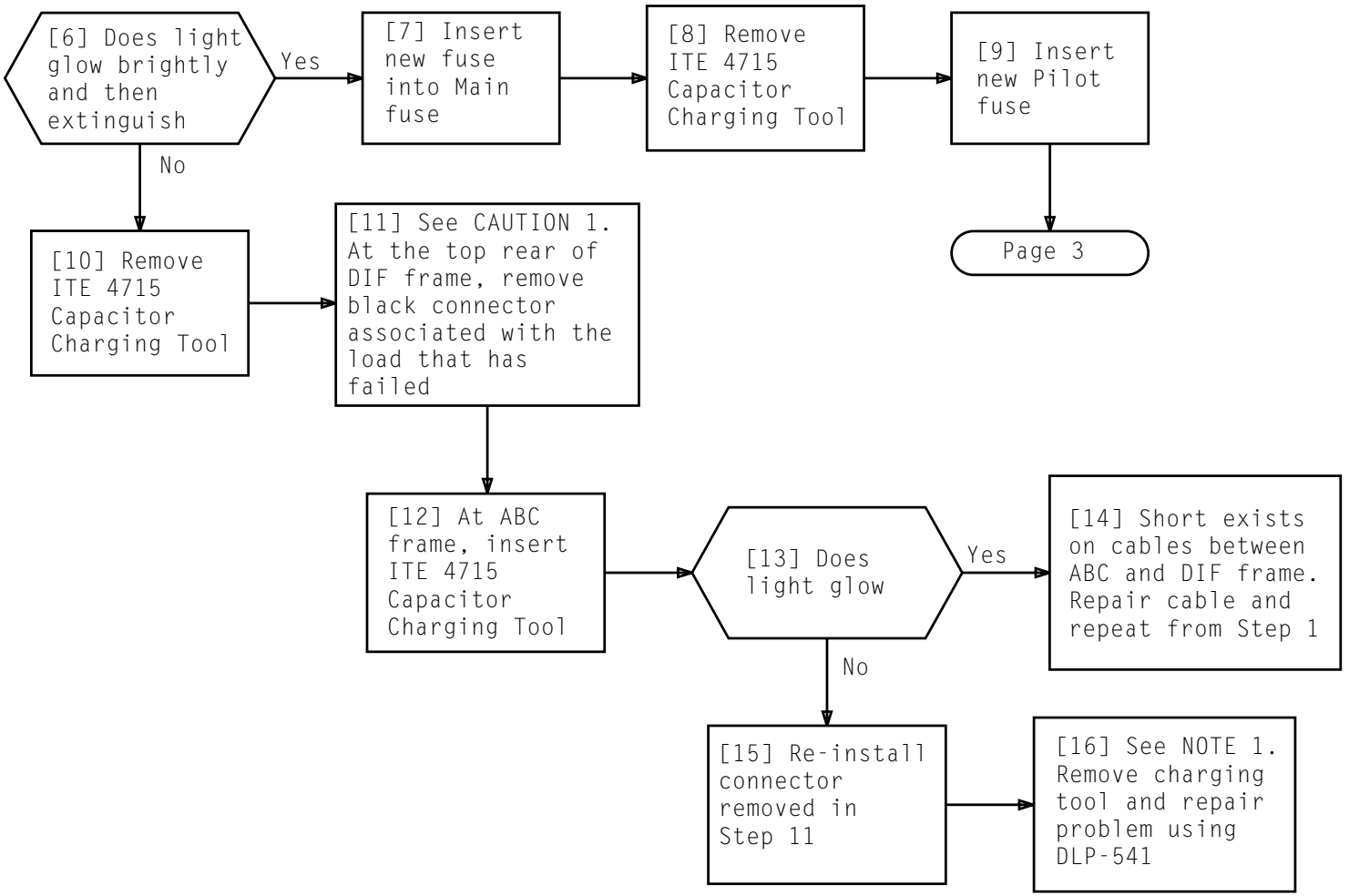


FIG. 2 – MF Pack Location (Digroup Positions)

CLEAR RECEIVER OR TRANSMITTER TROUBLE (MF SERVICE CIRCUITS)



ISOLATE DEFECTIVE FILTER CIRCUIT — DIGITAL INTERFACE FRAME (DIF/DIF-E)

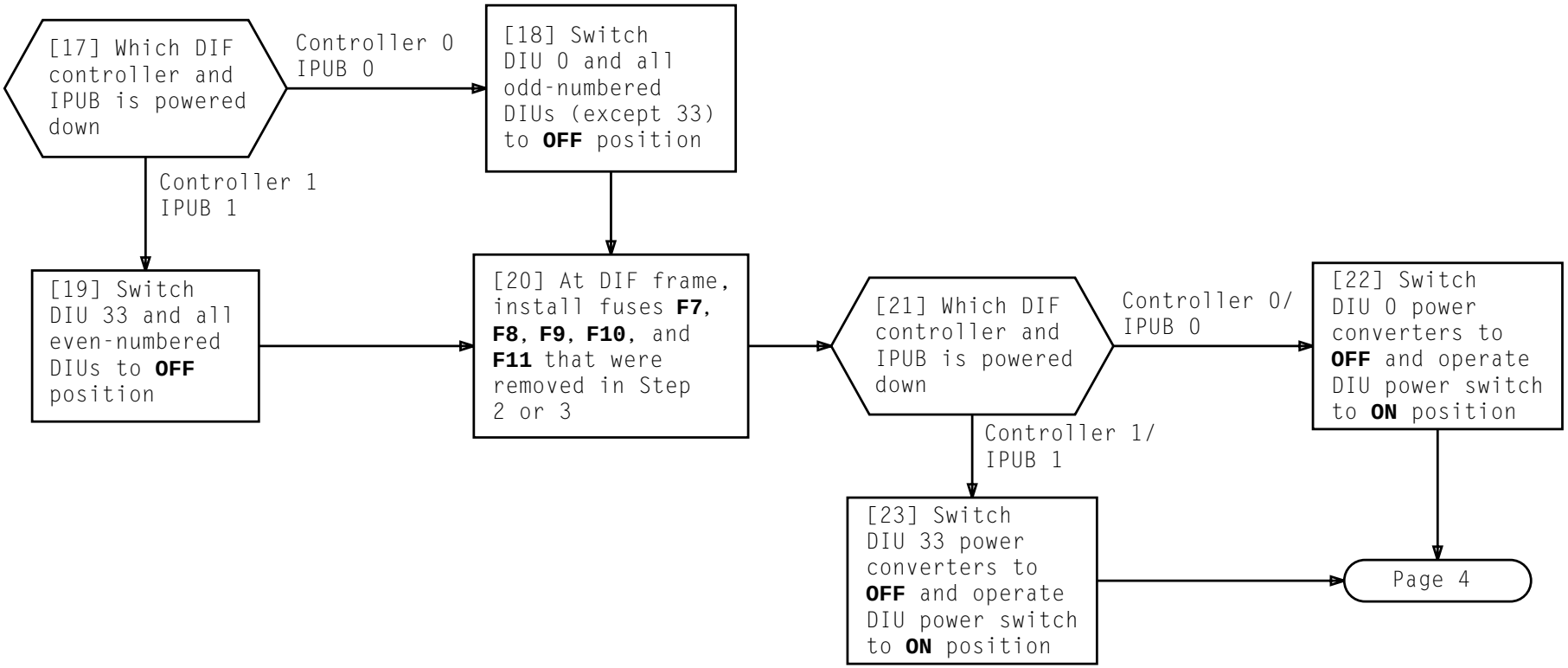


ISOLATE DEFECTIVE FILTER CIRCUIT — DIGITAL INTERFACE FRAME (DIF/DIF-E)

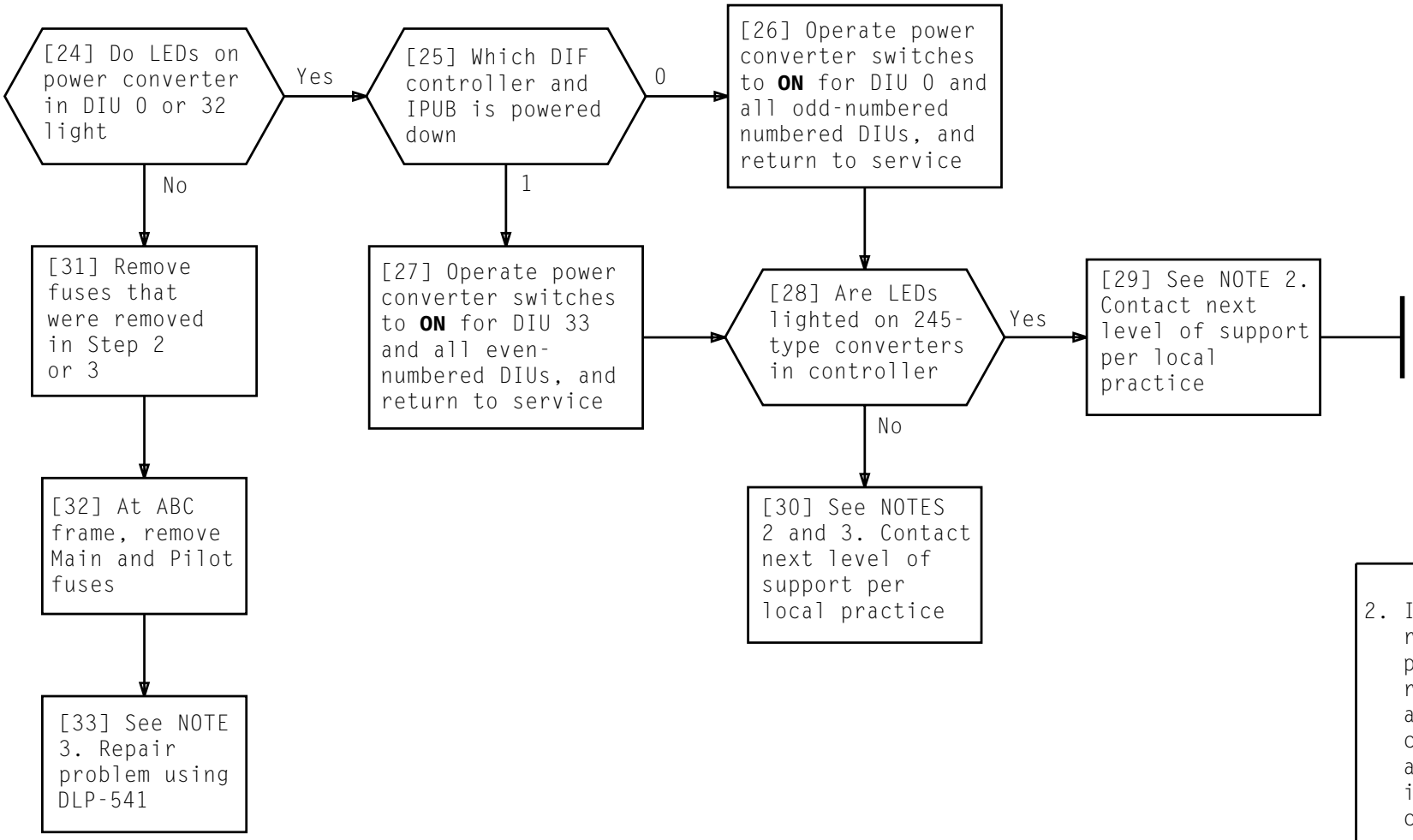
NOTE 1

If you have reached this step, the initial indicator is a shorted capacitor in the filter circuit

CAUTION 1
Removal of wrong power connector will duplex fail DIF



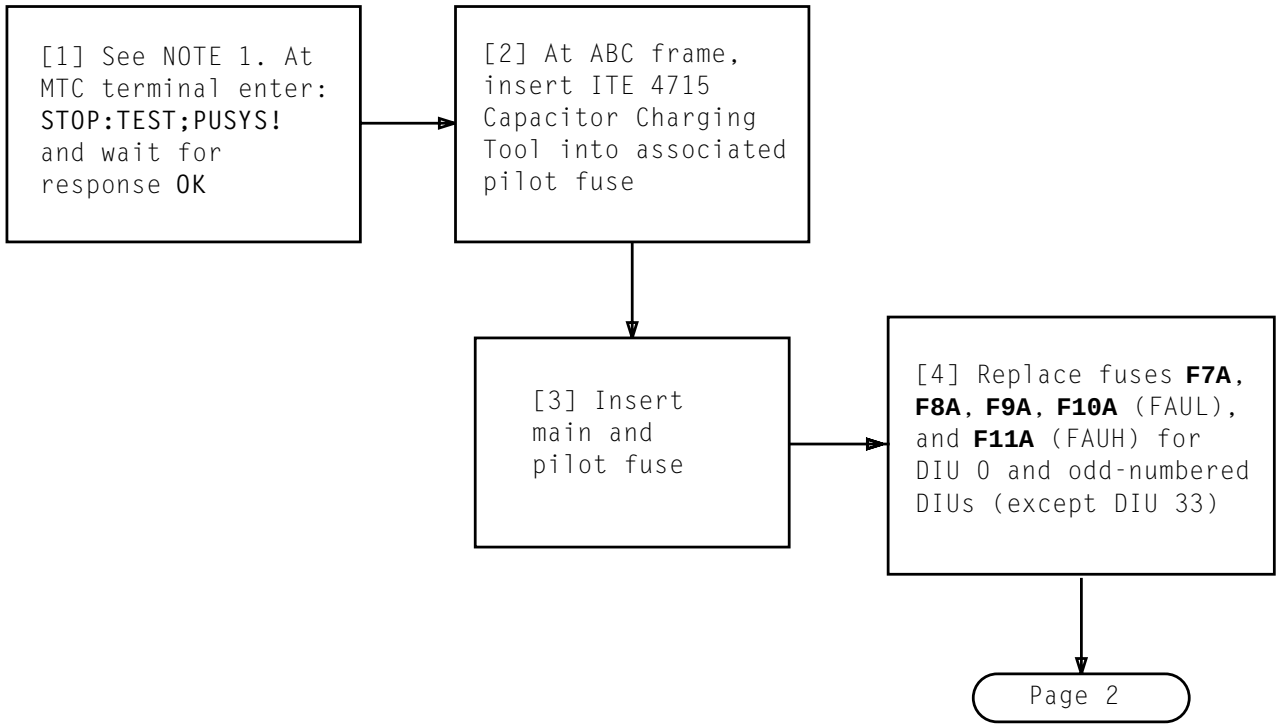
ISOLATE DEFECTIVE FILTER CIRCUIT — DIGITAL INTERFACE FRAME (DIF/DIF-E)



NOTES

2. If you have reached this point without replacement of any filter circuit components, there are damaged parts in the filter circuitry. It is recommended that replacement be done at the earliest convenient time.
3. This indicates the existence of an open diode

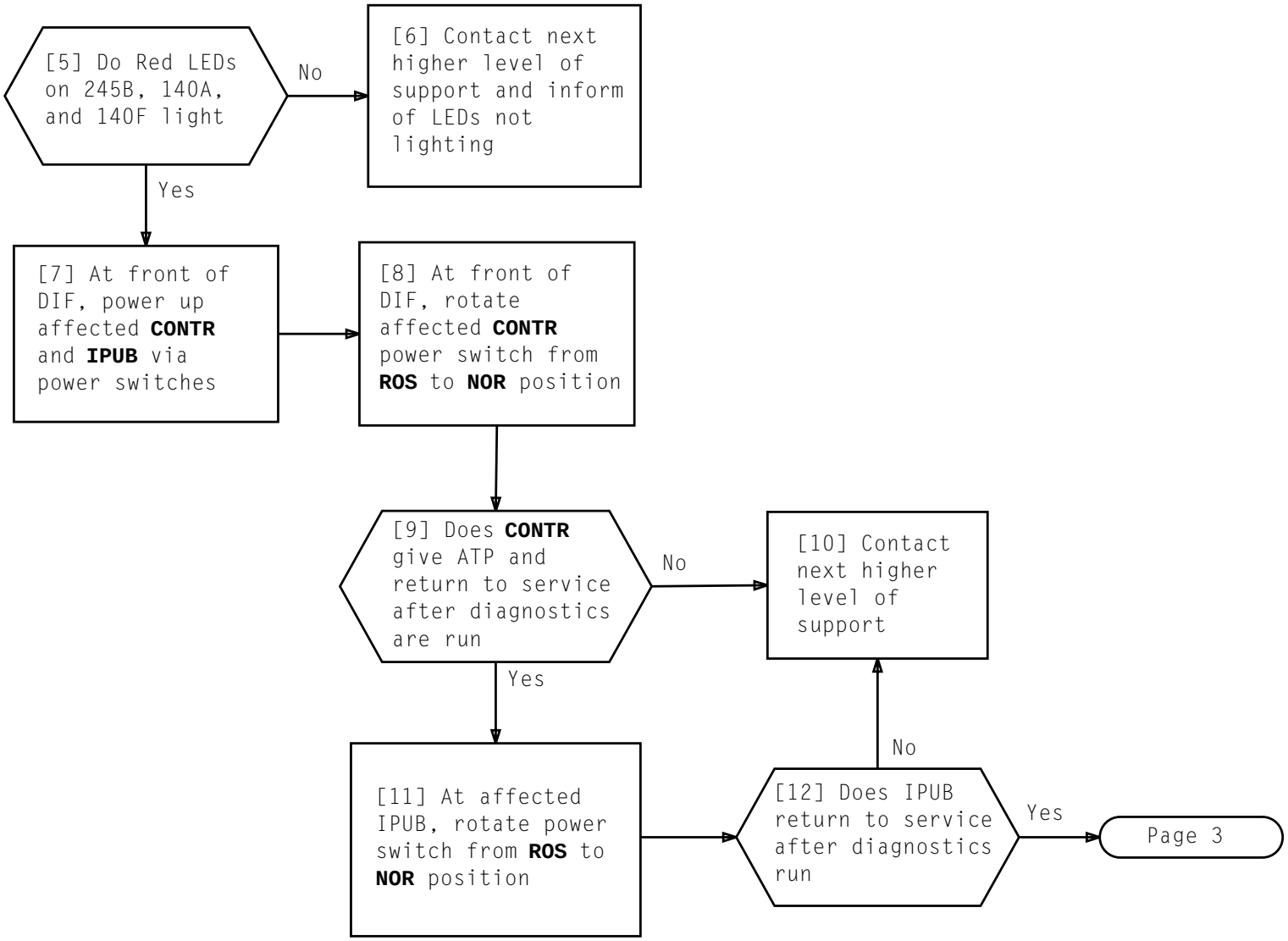
ISOLATE DEFECTIVE FILTER CIRCUIT — DIGITAL INTERFACE FRAME (DIF/DIF-E)



NOTE 1

It is assumed that +140V filter capacitor replacement has been completed

REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VA



REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VA

[13] At 1A/1B MTC, remove DIU 13 from service by entering: **RMV:DIF a,DIU 13!** (a = DIF member number)

[14] At front of affected DIF, power down DIU 13 converter and insure Red LED on unit lights

[15] Continue powering down DIU 13 unit converters and insure Red LED lights on unit converters in frame bay

AND

[16] See NOTE 2. Operate unit power switch to **OFF** position

OFF LED lights Red
Green **MM** LED lights

[17] At front of DIF, operate LMDIU power switch on Backfeed Control Box to **OFF** position

[18] Remove LMDIU and LDIU fuses from Backfeed Control Box

[19] Remove Backfeed Control Box fuse plug from LDIU in DIU 13 and return to box

[20] Reinstall LDIU fuse in DIU 13

AND

Page 4

NOTE 2

If newer DIF with unit power switch, Red LED labeled **PWR OFF** will light

REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VA

[21] At back of DIF, locate DIU 13 141C1 connector with DIF Backfeed Control Box connector on "U terminal". Remove RTN wire and replace original plastic insulation sleeve on U terminal

[22] At back of DIF, locate DIU 14 141C1 connector with DIF Backfeed Control Box connector on "U terminal". Remove RTN wire and replace original plastic insulation sleeve on U terminal

[23] Carefully remove cable to front of DIF frame to Backfeed Control Box and secure

[24] At front of DIF, switch DIU 13 unit power switch to **ON** position

All DIU 13 converter Red LEDs light

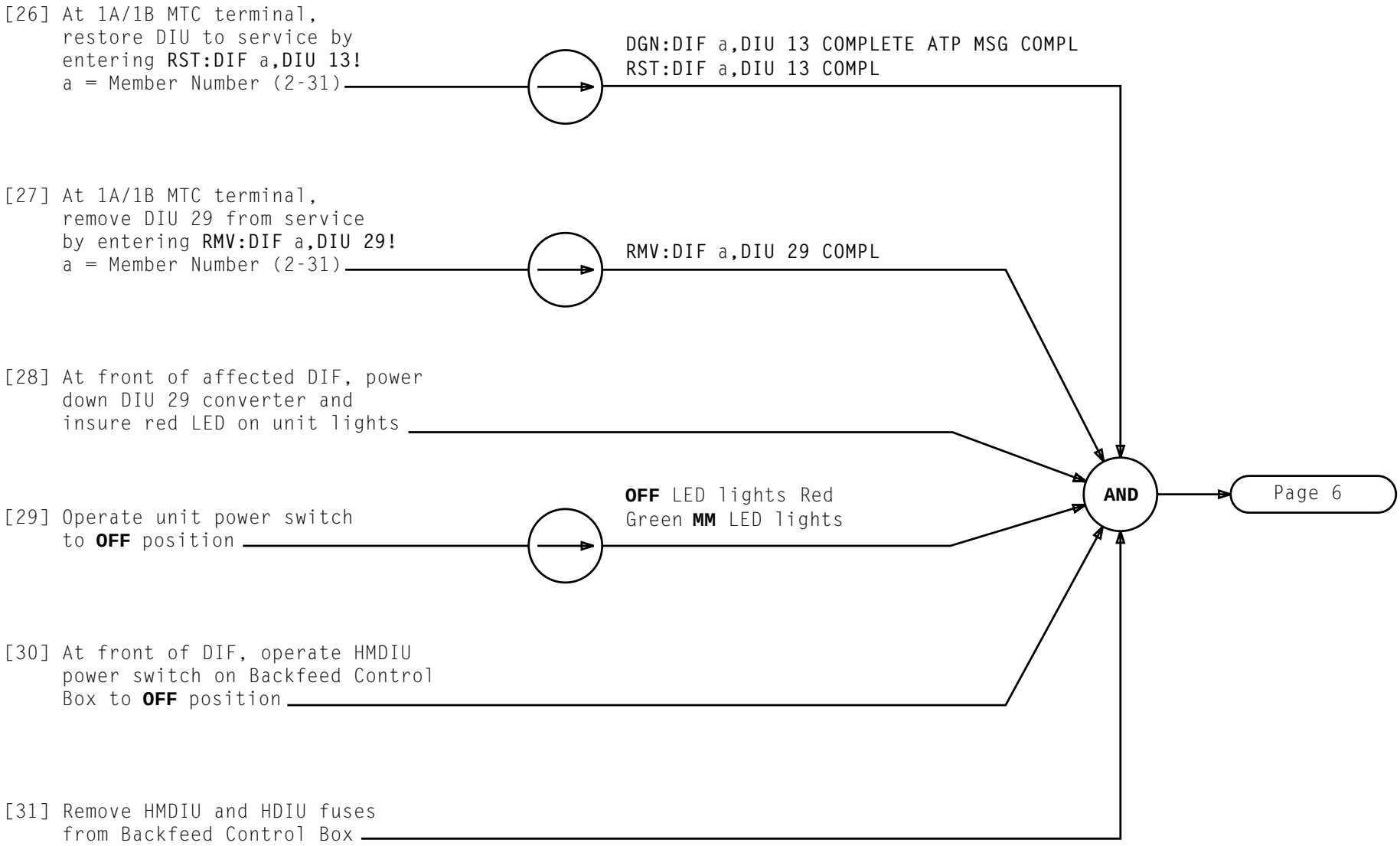
[25] Operate all DIU 13 power converter switches to **ON** position

All DIU 13 converter Red LEDs extinguish

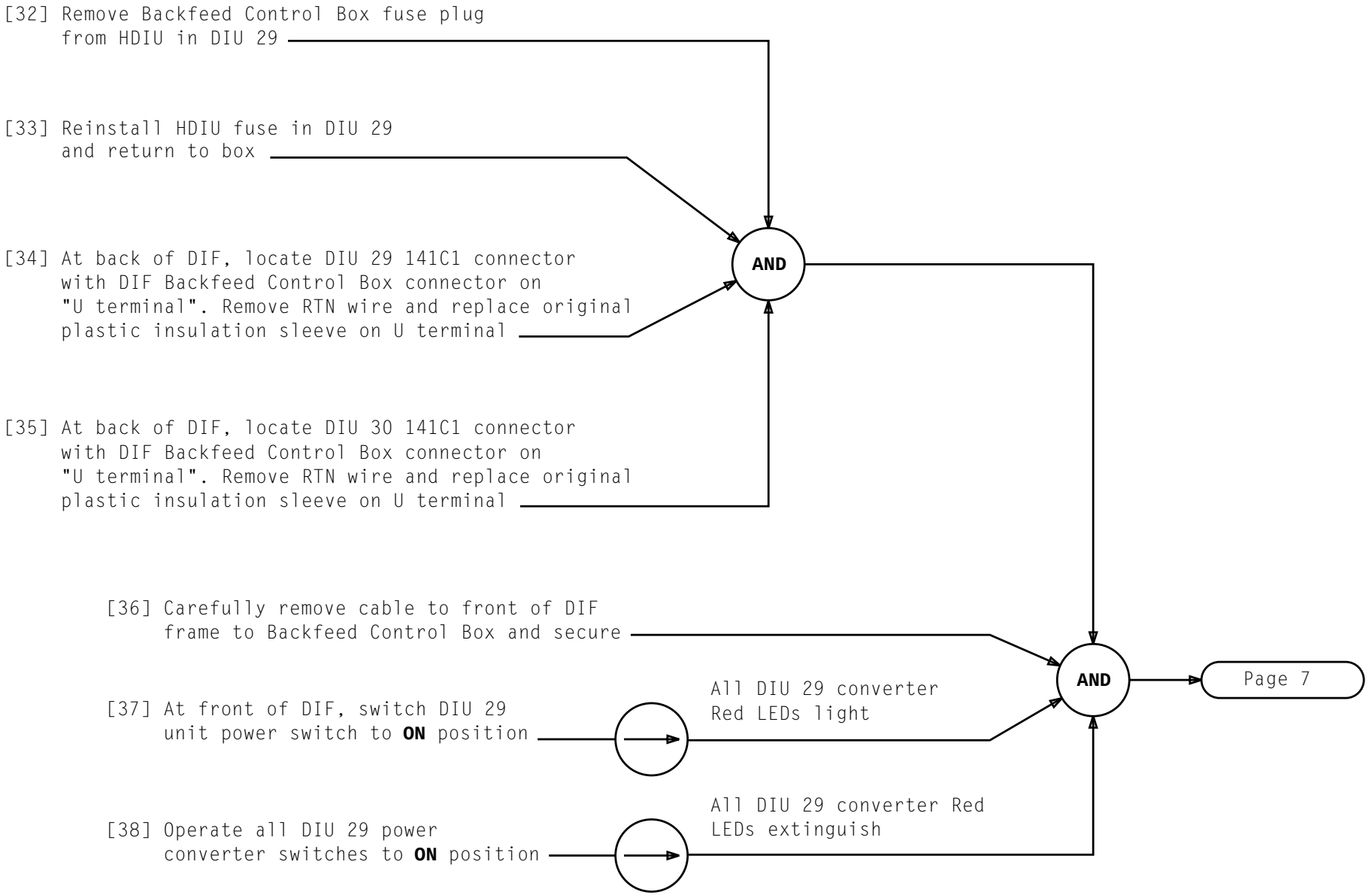
AND

Page 5

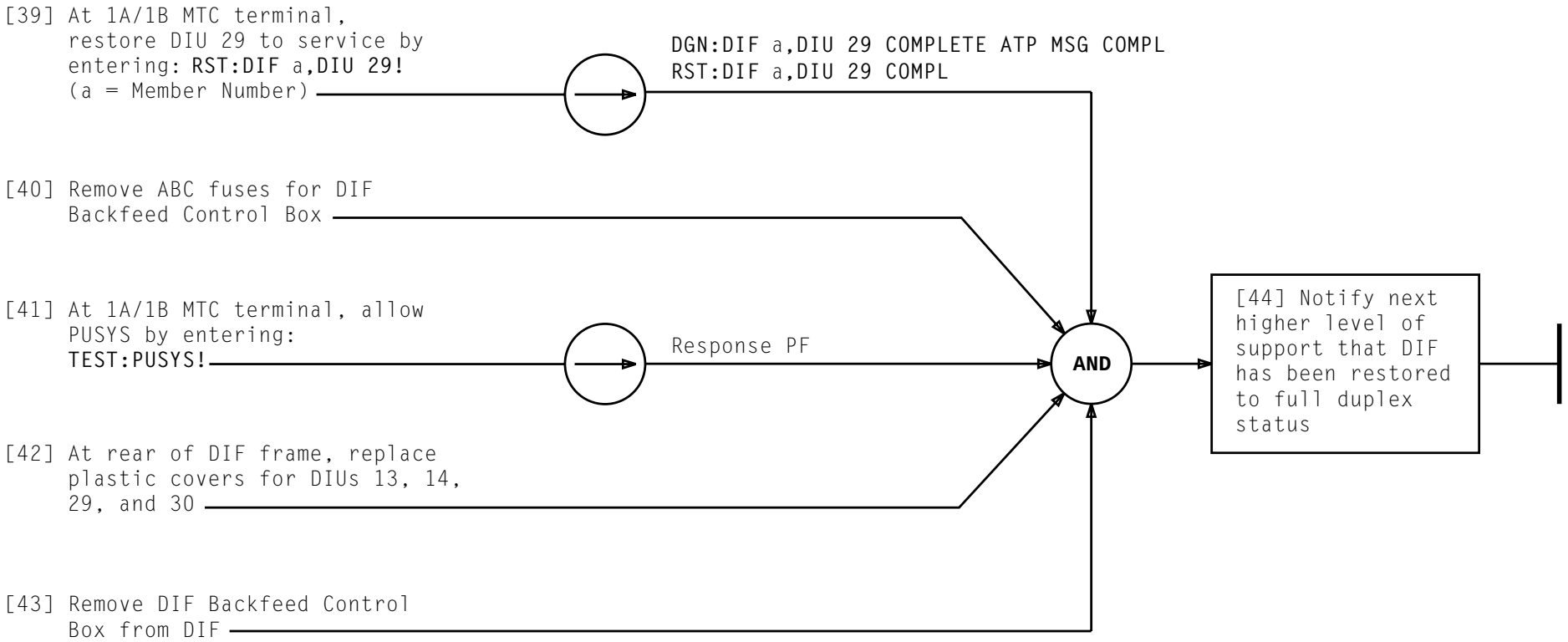
REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VA



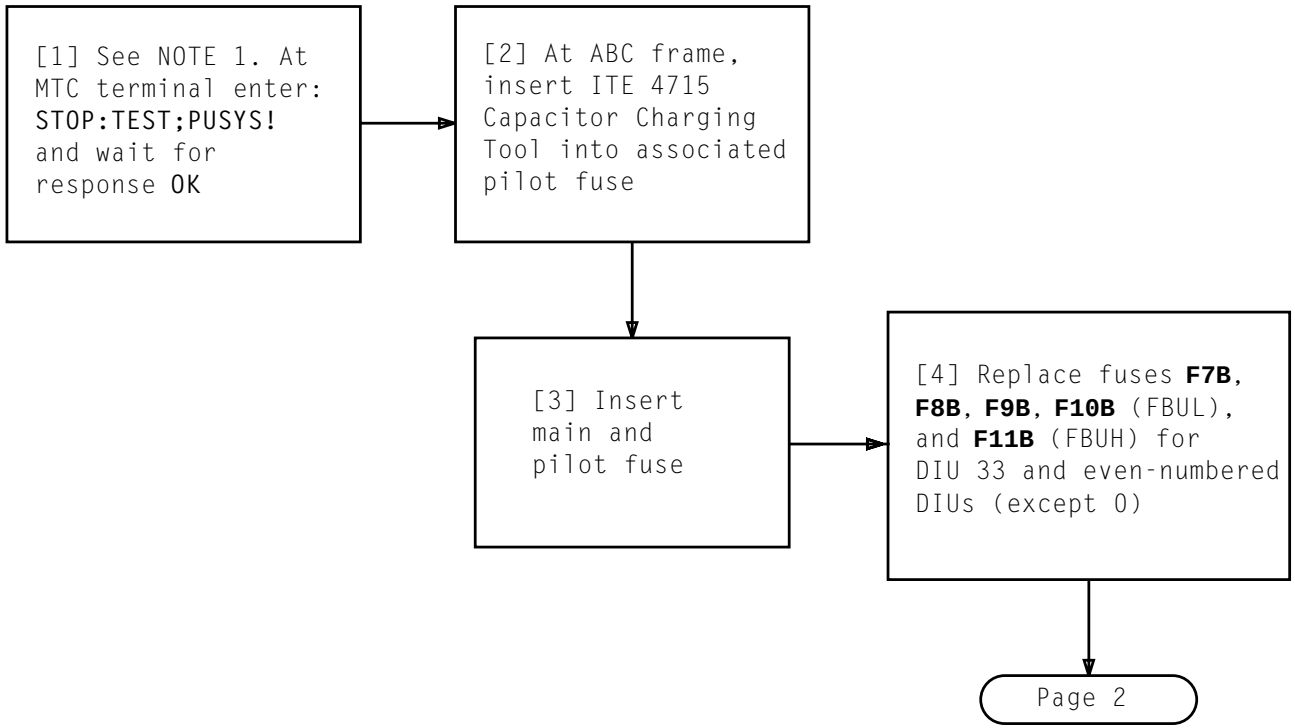
REMOVE DIF BACKFEED CONTROL BOX – DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VA



REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VA



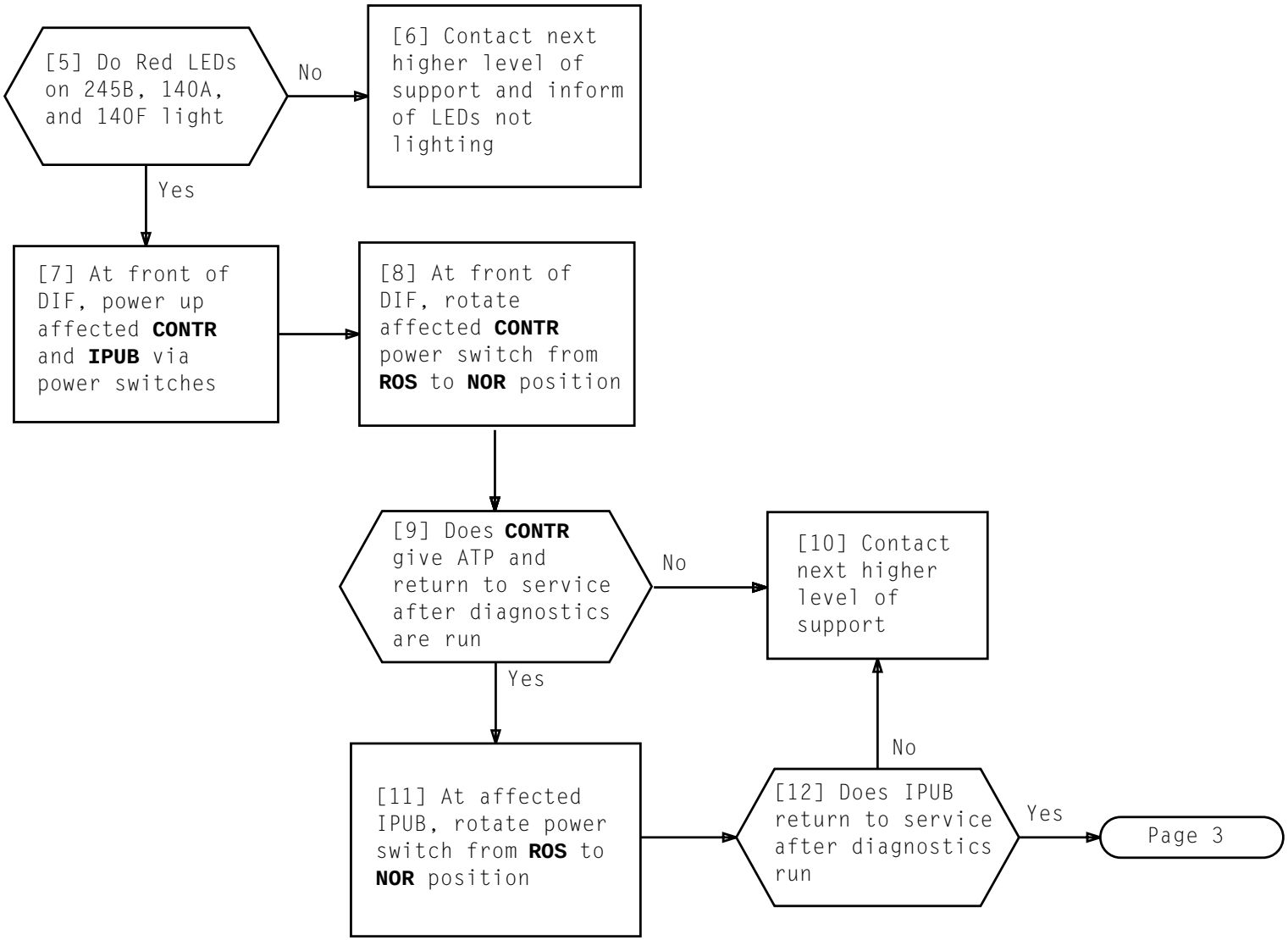
REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VA



NOTE 1

It is assumed that +140V filter capacitor replacement has been completed

REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VB



REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VB

[13] At 1A/1B MTC, remove DIU 14 from service by entering: **RMV:DIF a,DIU 14!** (a = DIF member number)

[14] At front of affected DIF, power down DIU 14 converter and insure Red LED on unit lights

[15] Continue powering down DIU 14 unit converters and insure Red LED lights on unit converters in frame bay

AND

[16] See NOTE 2. Operate unit power switch to **OFF** position

OFF LED lights Red
Green **MM** LED lights

[17] At front of DIF, operate LMDIU power switch on Backfeed Control Box to **OFF** position

[18] Remove LMDIU and LDIU fuses from Backfeed Control Box

[19] Remove Backfeed Control Box fuse plug from LDIU in DIU 14 and return to box

[20] Reinstall LDIU fuse in DIU 14

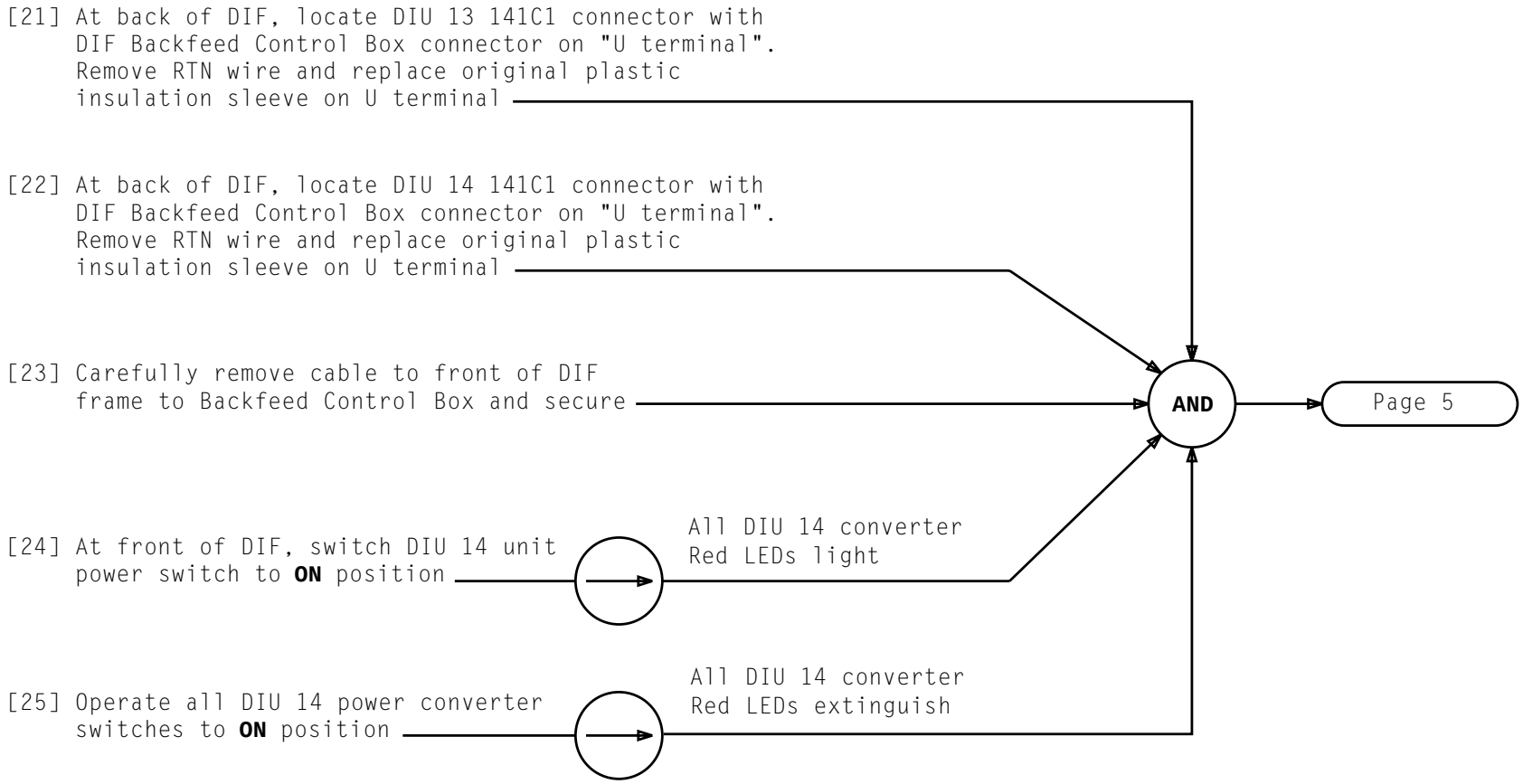
AND

Page 4

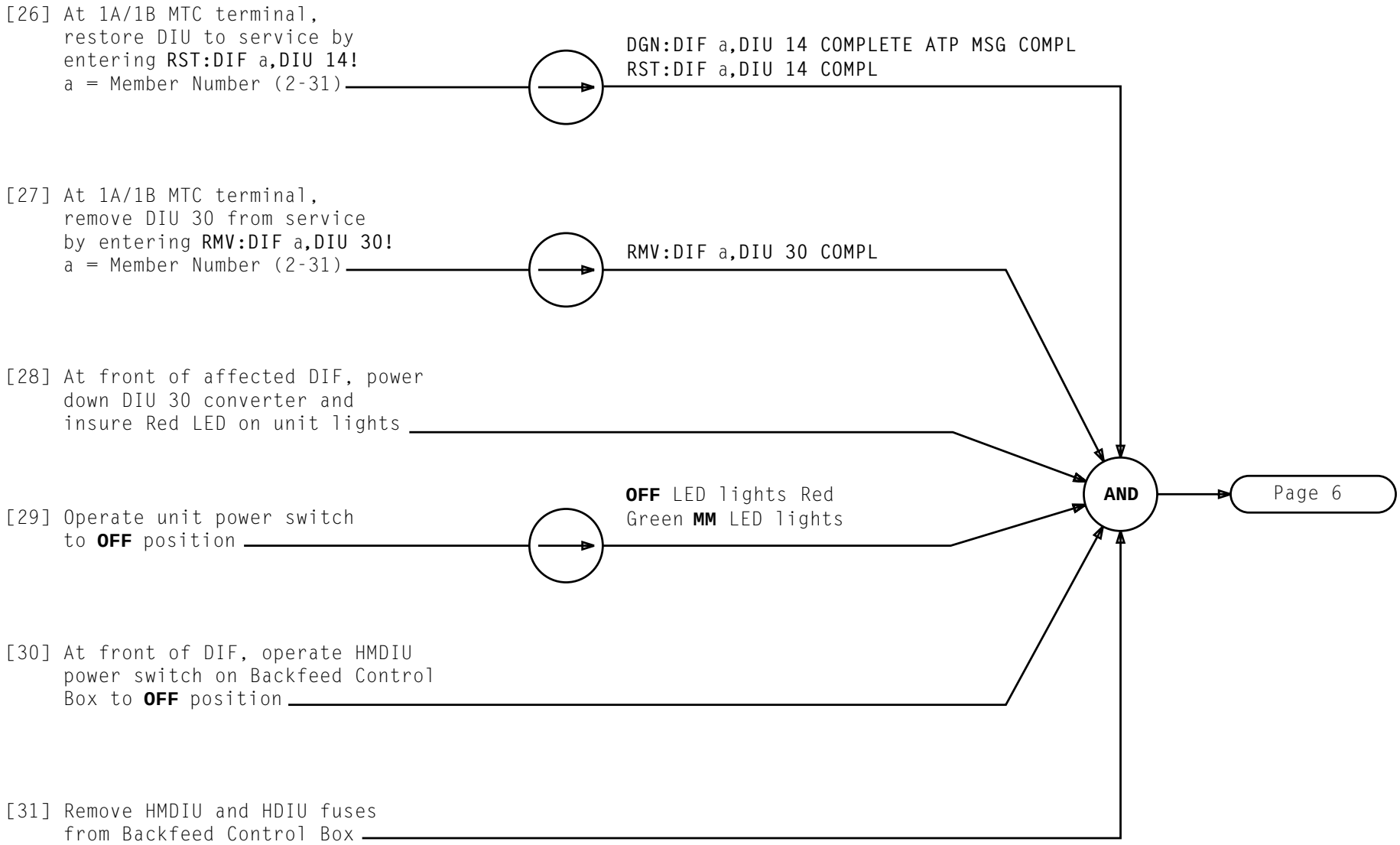
NOTE 2

If newer DIF with unit power switch, Red LED labeled **PWR OFF** will light

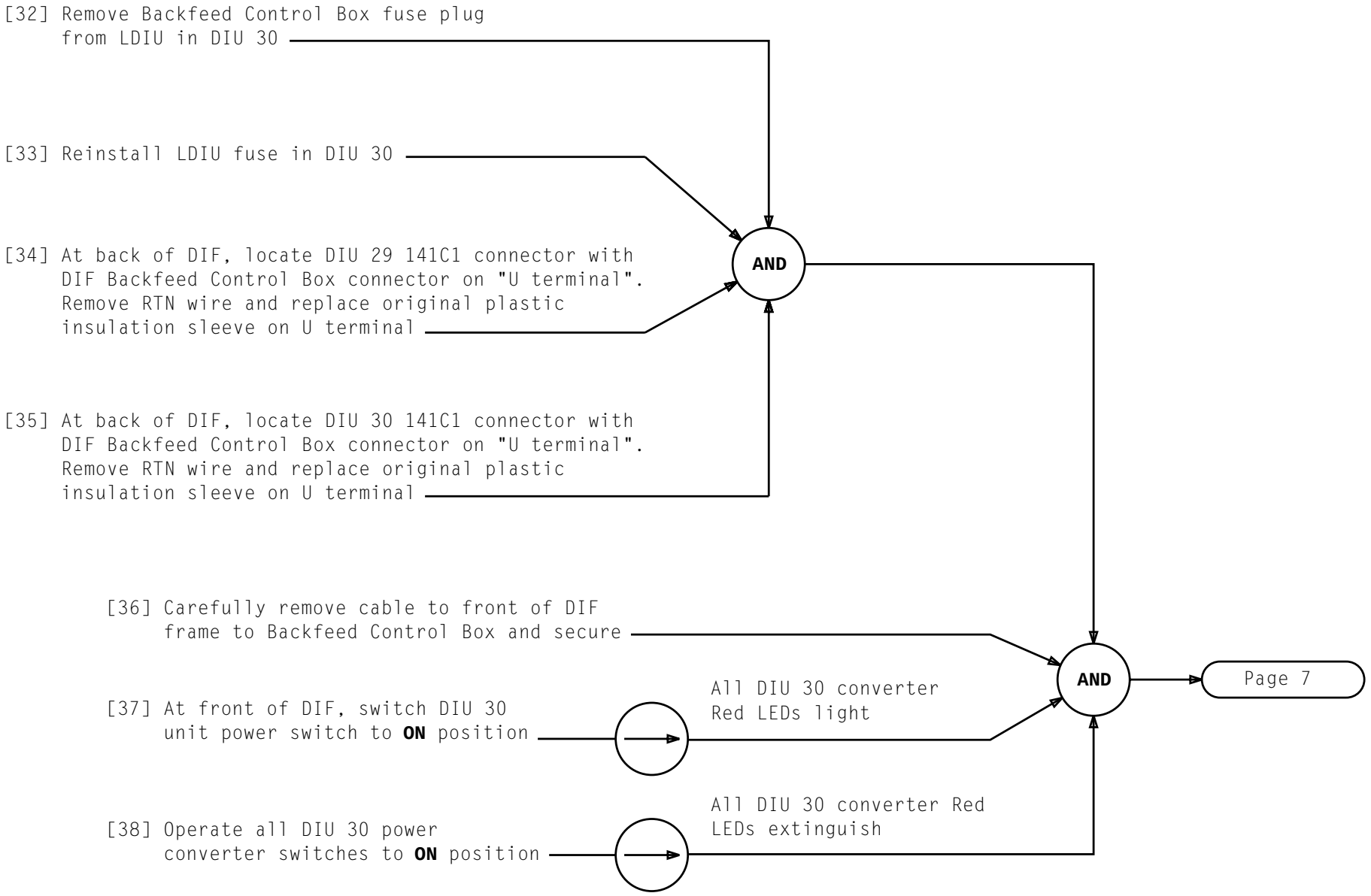
REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VB



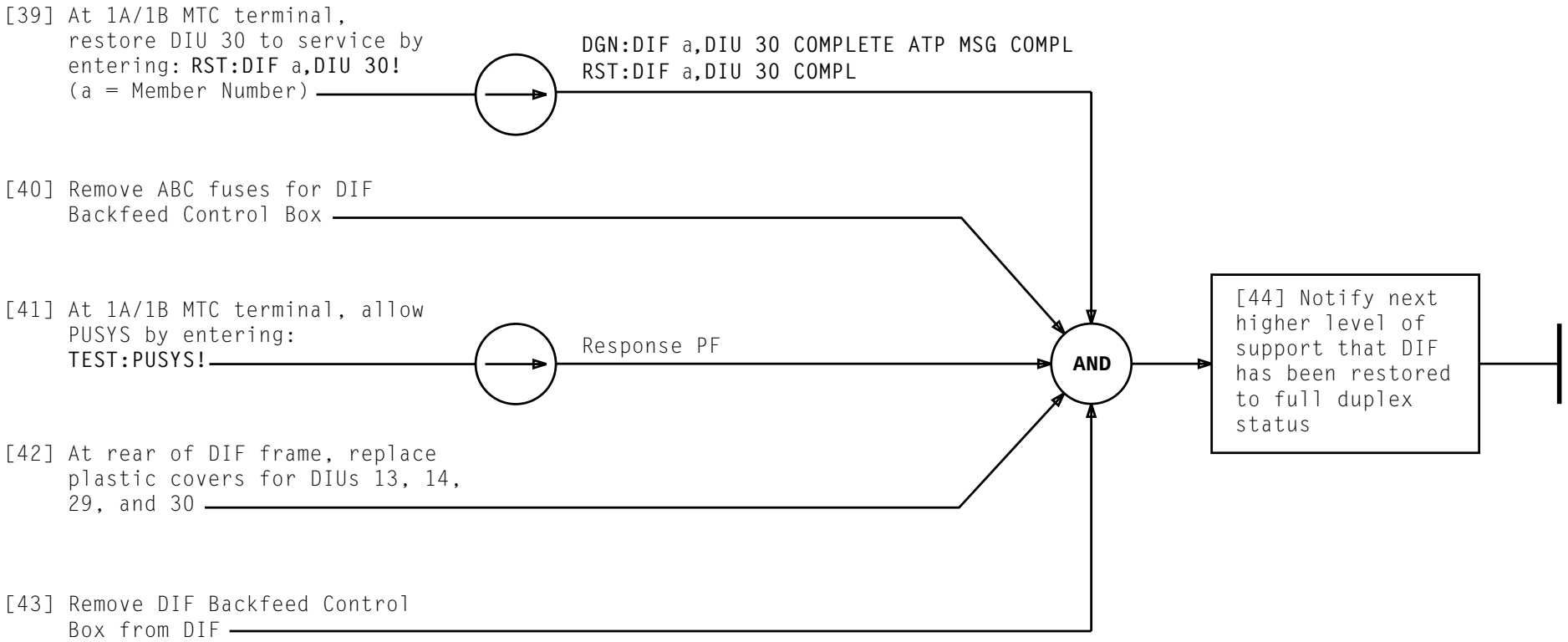
REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VB



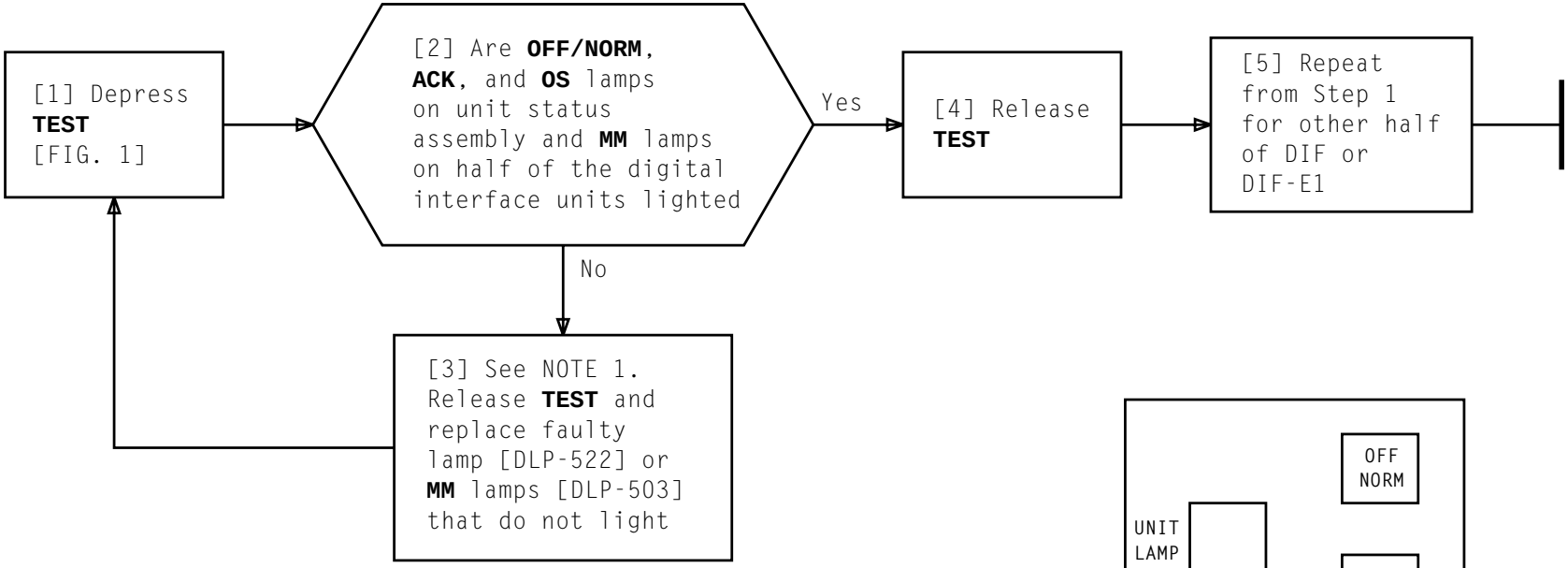
REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VB



REMOVE DIF BACKFEED CONTROL BOX – DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VB



REMOVE DIF BACKFEED CONTROL BOX — DIGITAL INTERFACE FRAME (DIF/DIF-E) +140VB



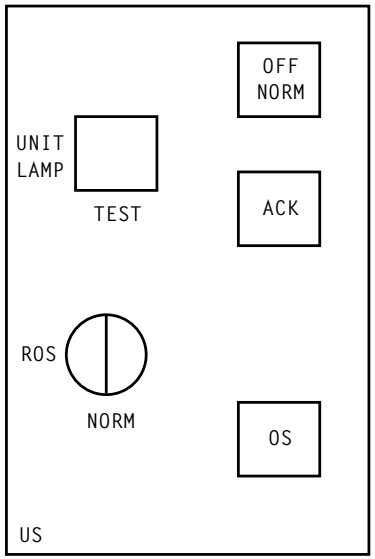


FIG. 1

NOTE 1
The **MM** lamp can be installed in the **MM** socket in two different positions

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PERFORM LAMP TEST ON UNIT STATUS ASSEMBLY

[1] Remove power from digital interface controller with faulty **245B POWER UNIT** [DLP-502] if not already off

[2] If controller 0 is powered down in Step 1, remove F8A fuse; or if controller 1 is powered down, remove F8B fuse

[3] Set lever at left to **OFF** (down)

[4] Grasp left side of power unit and pull gently while rotating the extended key in a CCW direction until power unit starts to slide easily [FIG. 1]

[5] Using both hands, grasp **245B POWER UNIT** and remove from frame

AND

Page 2

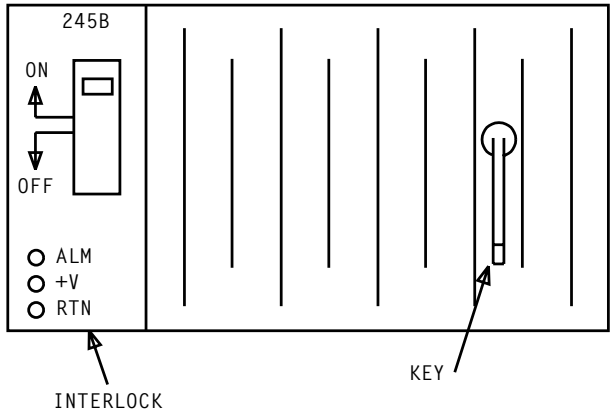


FIG. 1

REPLACE 245B POWER UNIT

[6] On replacement power unit, set lever at left to **OFF** (down position)

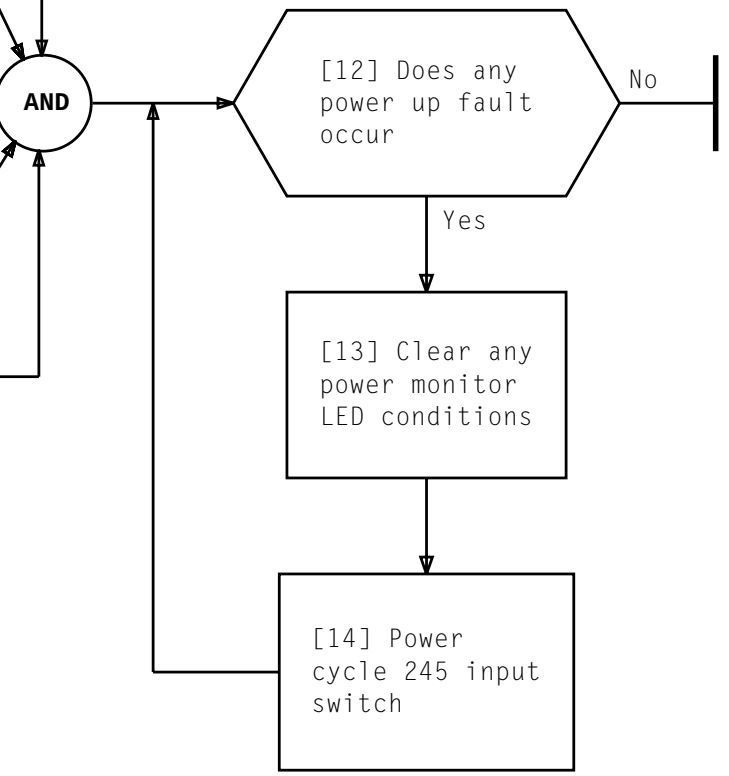
[7] Slide replacement **245B POWER UNIT** into position as well as possible without using force

[8] Using the palm of the left hand, exert moderate force on the left side of replacement **245B POWER UNIT** while turning the key in a CW direction

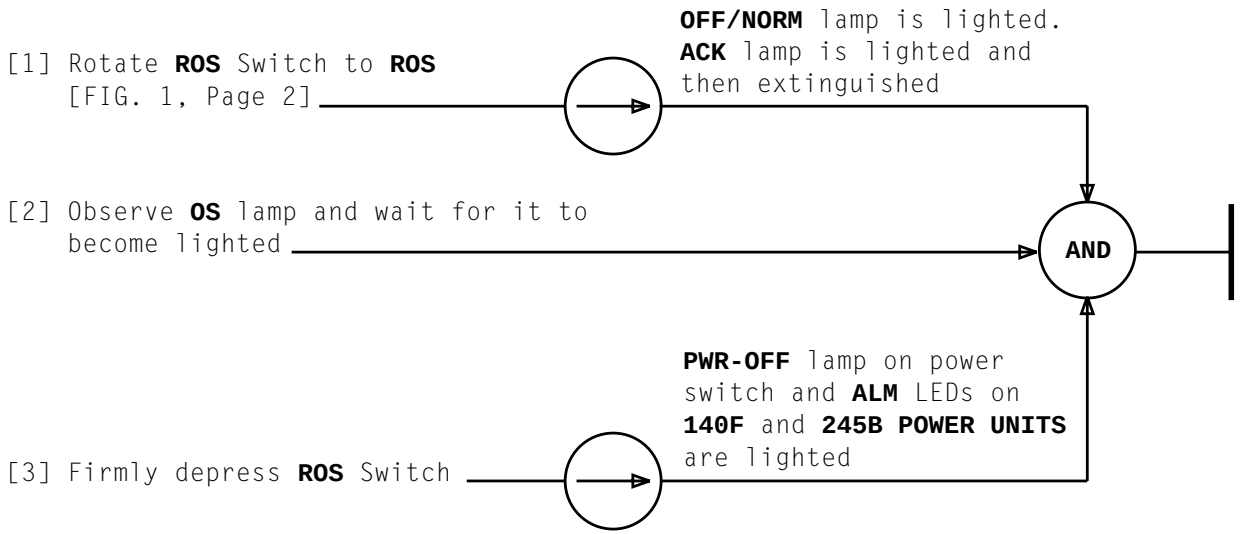
[9] Replace fuse F8A for controller 0 or fuse F8B for controller 1

[10] Set lever at left to **ON** and assure that mechanical interlock protrudes at lower left front corner of power unit

[11] Apply power to digital interface controller [DLP-504]



REPLACE 245B POWER UNIT



REMOVE POWER FROM DIGITAL INTERFACE CONTROLLER (DIC)

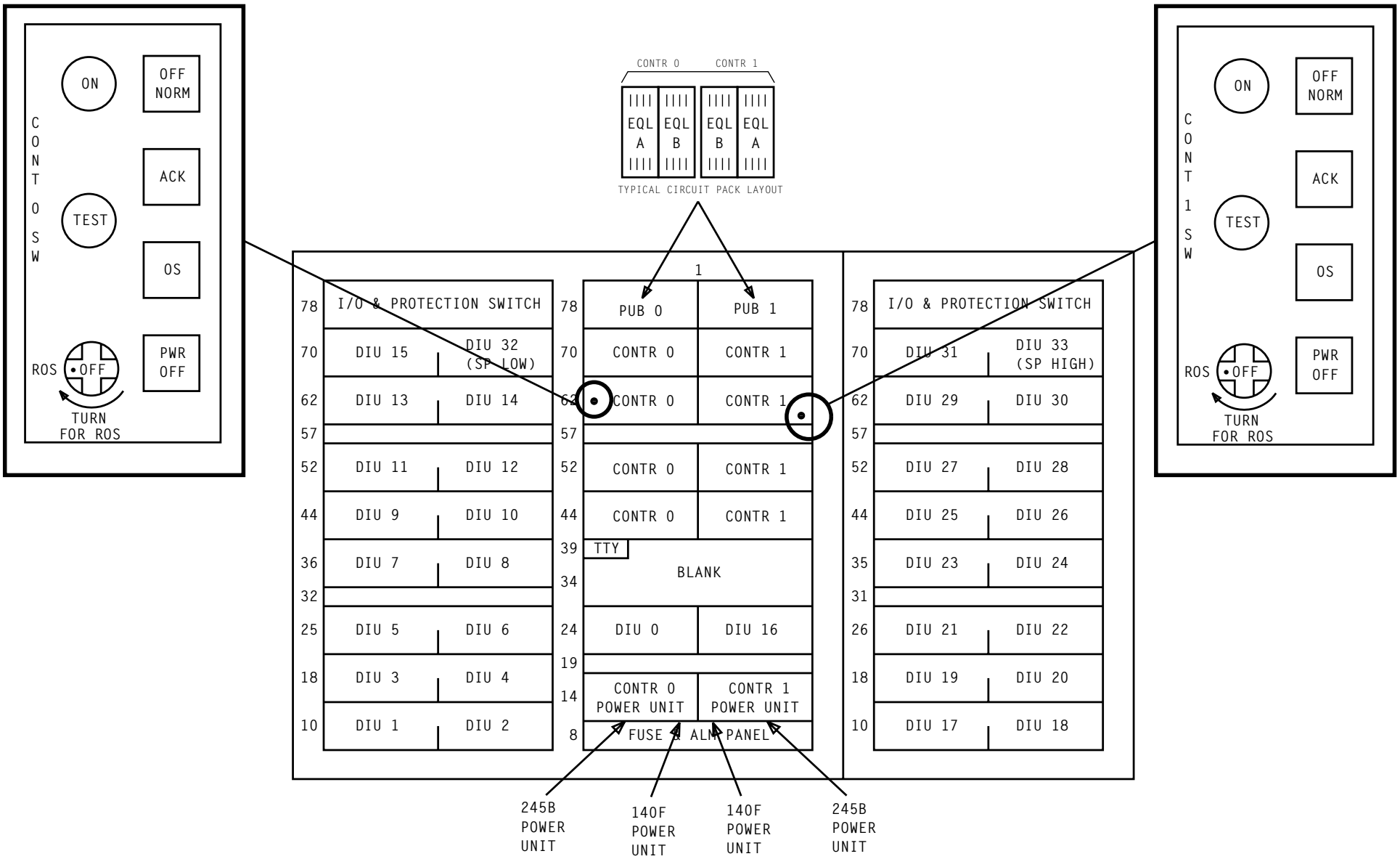


FIG. 1

REMOVE POWER FROM DIGITAL INTERFACE CONTROLLER (DIC)

[1] See NOTE 1. Remove **MM** LED lamp by grasping with finger tips and pulling straight out [FIG. 1]

[2] Install new **MM** LED lamp

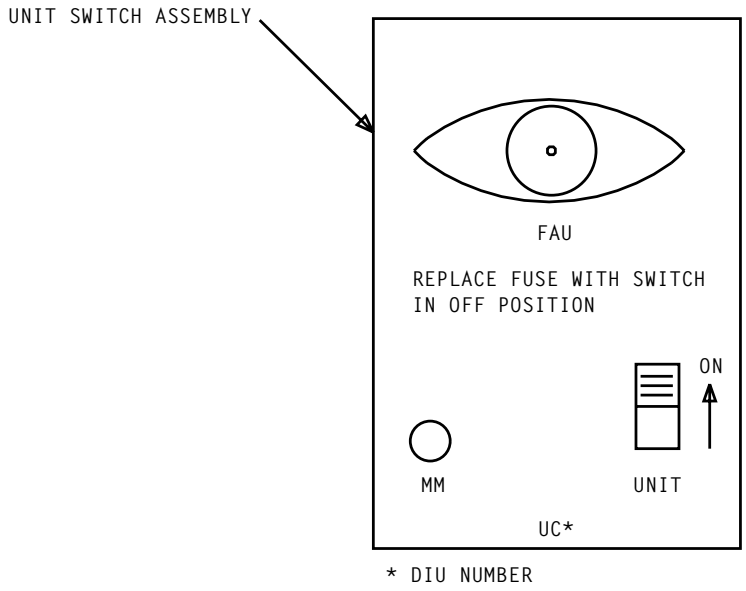
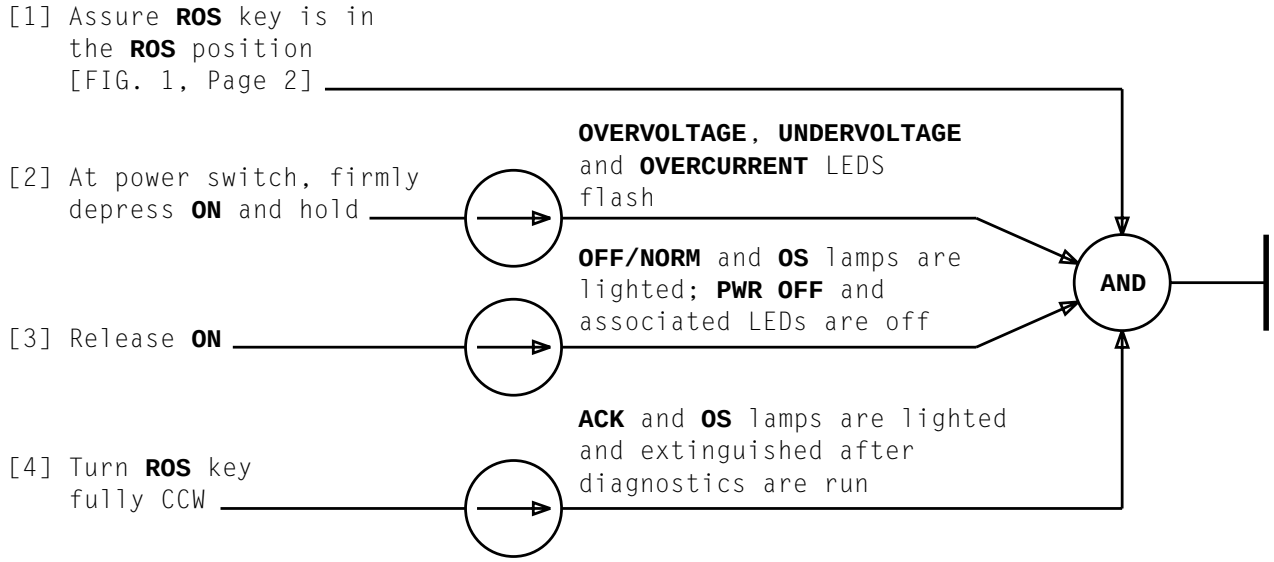


FIG. 1

NOTE 1
Lamp can be inserted 180° from the way it should be installed, but does not operate. Therefore; care should be taken to assure that new lamp is inserted in the same position as the one that was removed

REPLACE MM LAMP ON DIGITAL INTERFACE UNIT (DIU)



APPLY POWER TO THE DIGITAL INTERFACE CONTROLLER (DIC)

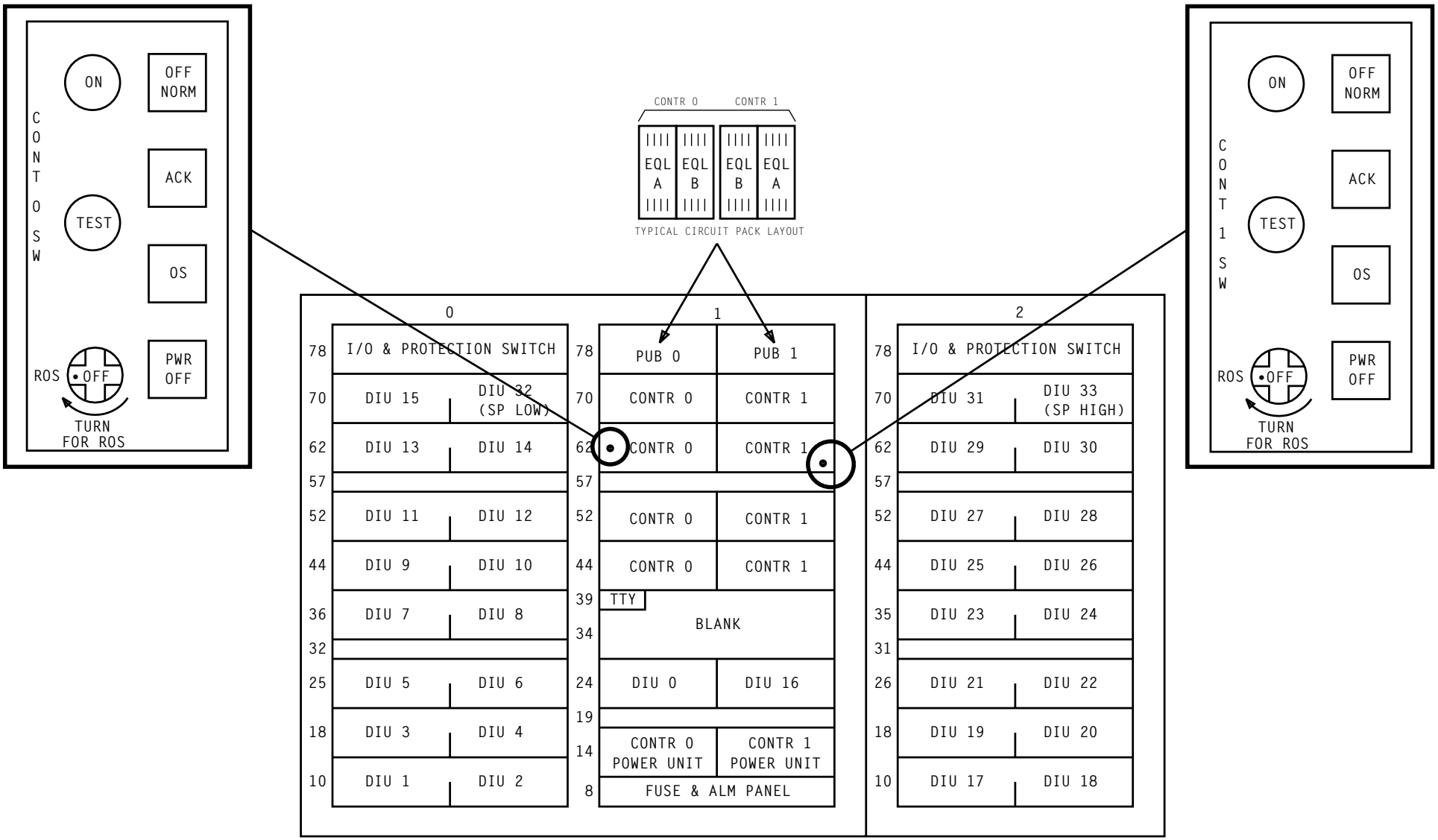
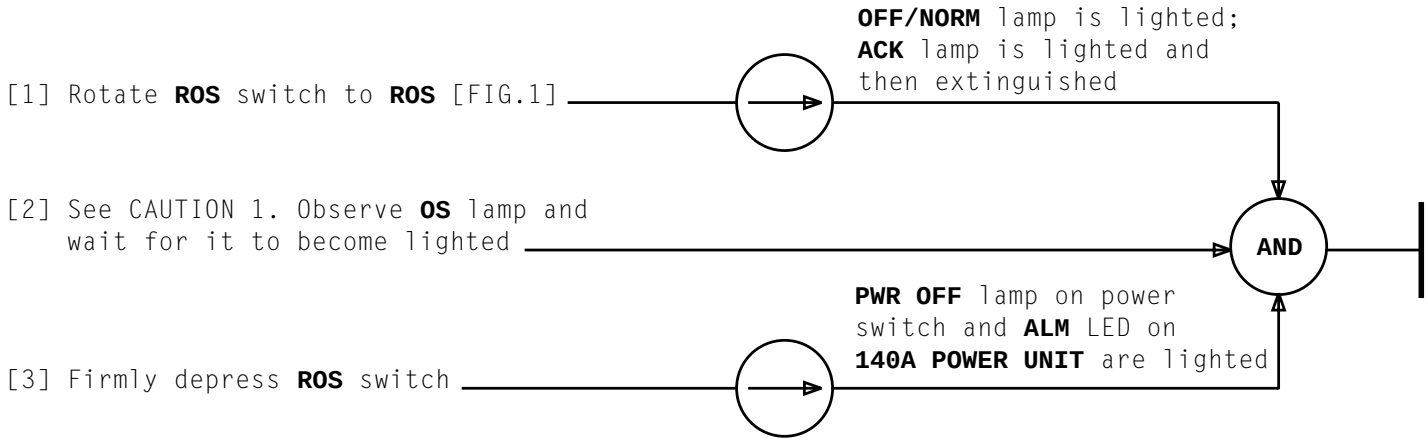


FIG. 1

APPLY POWER TO THE DIGITAL INTERFACE CONTROLLER (DIC)



CAUTION 1
Service degrading condition is caused by removal of power before **OS** *lamp illuminated*

REMOVE POWER FROM THE DIGITAL INTERFACE (DIF) PERIPHERAL UNIT BUS (PUB)

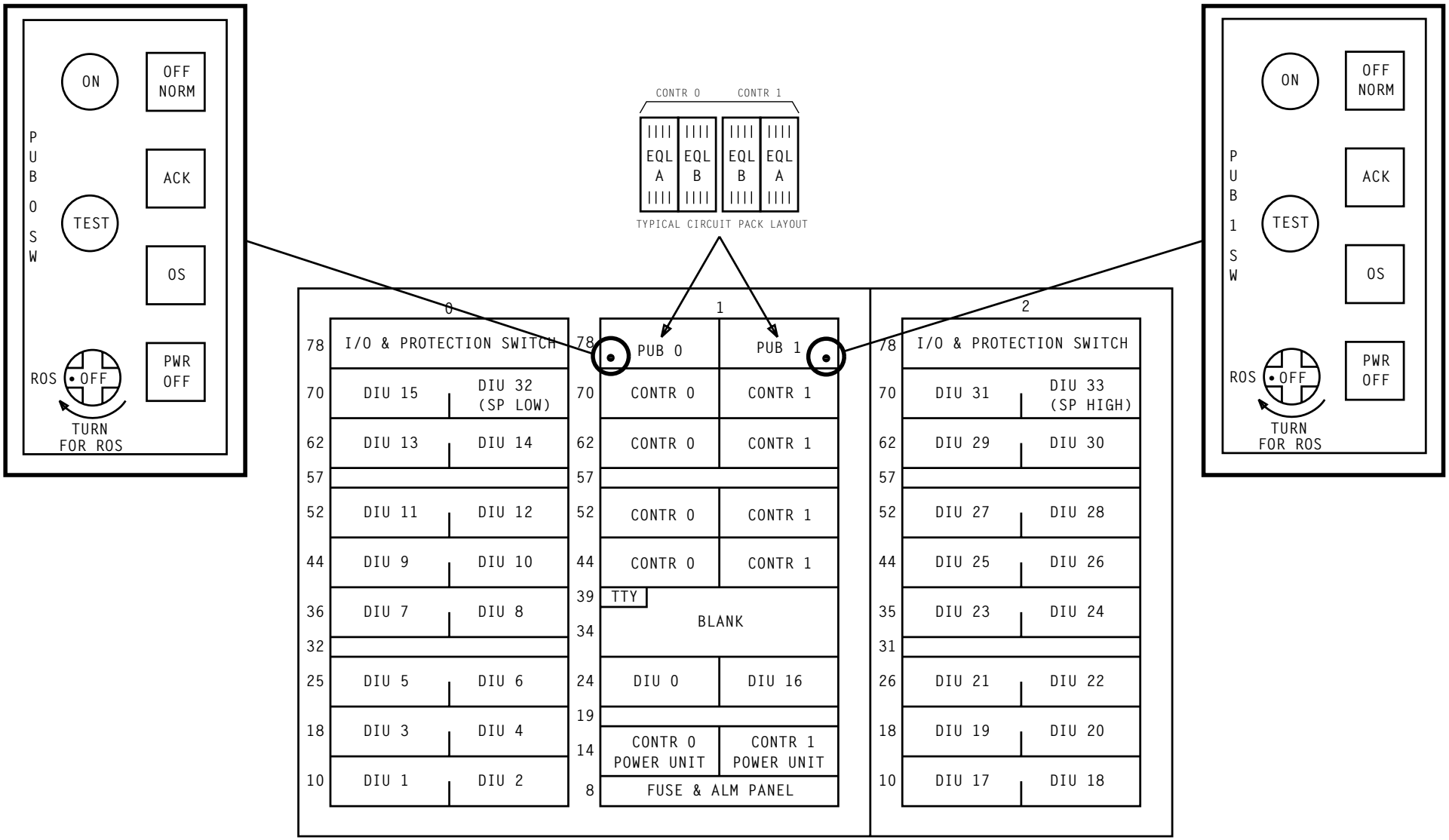


FIG. 1

REMOVE POWER FROM THE DIGITAL INTERFACE (DIF) PERIPHERAL UNIT BUS (PUB)

[1] Remove power from faulty digital interface controller [DLP-502]

[2] See FIG. 1. Grasp latch and pull down while pulling circuit pack out

[3] Install new circuit pack by pushing into slot with latch down until circuit pack hits stop

[4] Lift latch and push top of circuit pack until latch is flush against the circuit pack edge

[5] Apply power to digital interface controller powered down in Step 1 [DLP-504]

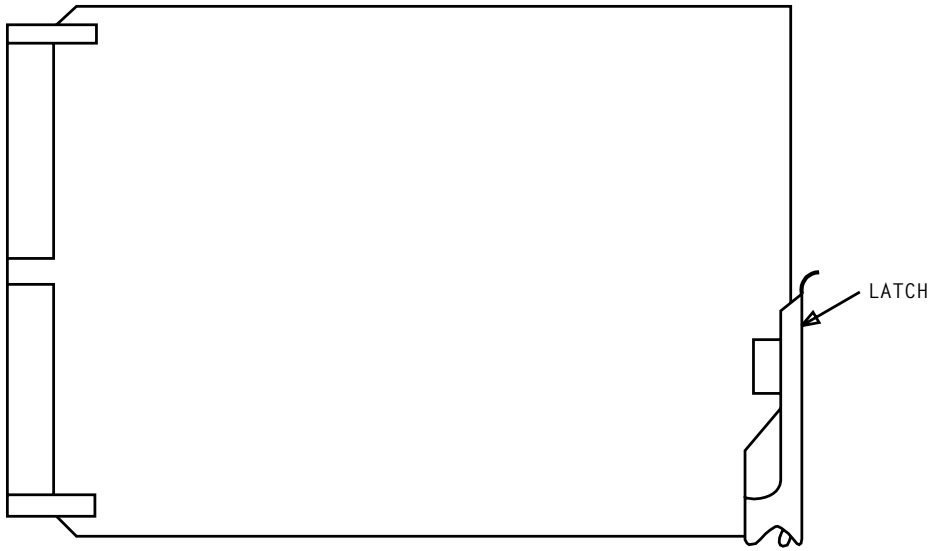
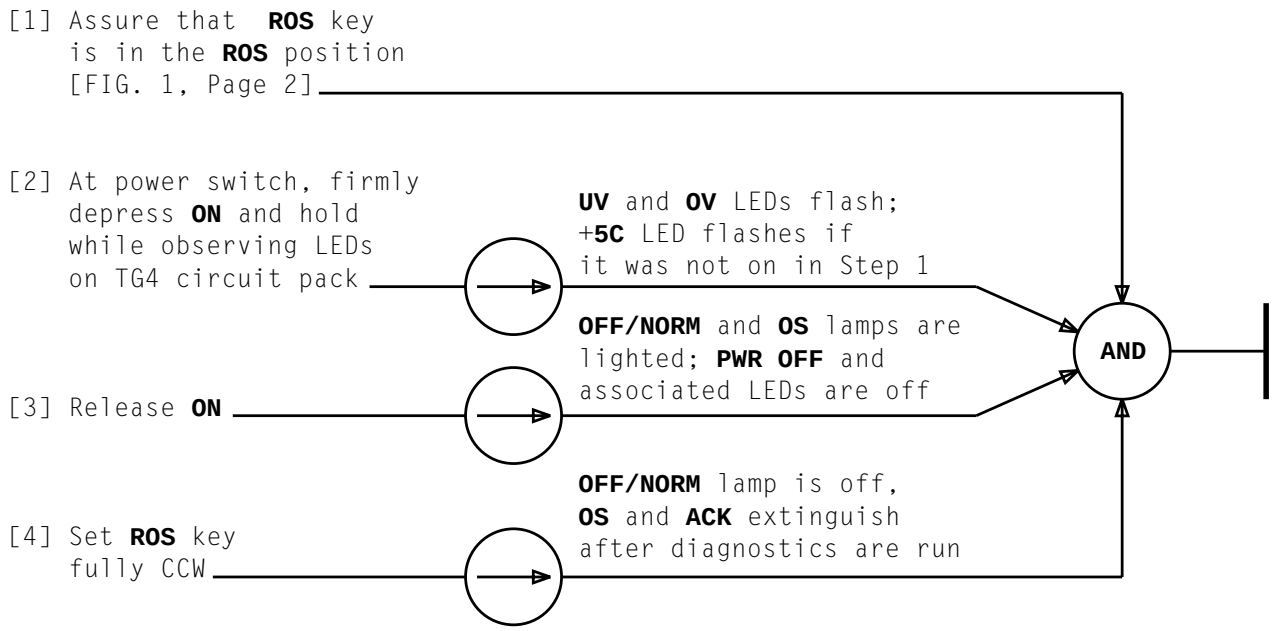


FIG. 1 – Circuit Pack

REPLACE TM60 CIRCUIT PACK IN DIGITAL INTERFACE CONTROLLER (DIC)



APPLY POWER TO THE PERIPHERAL UNIT BUS

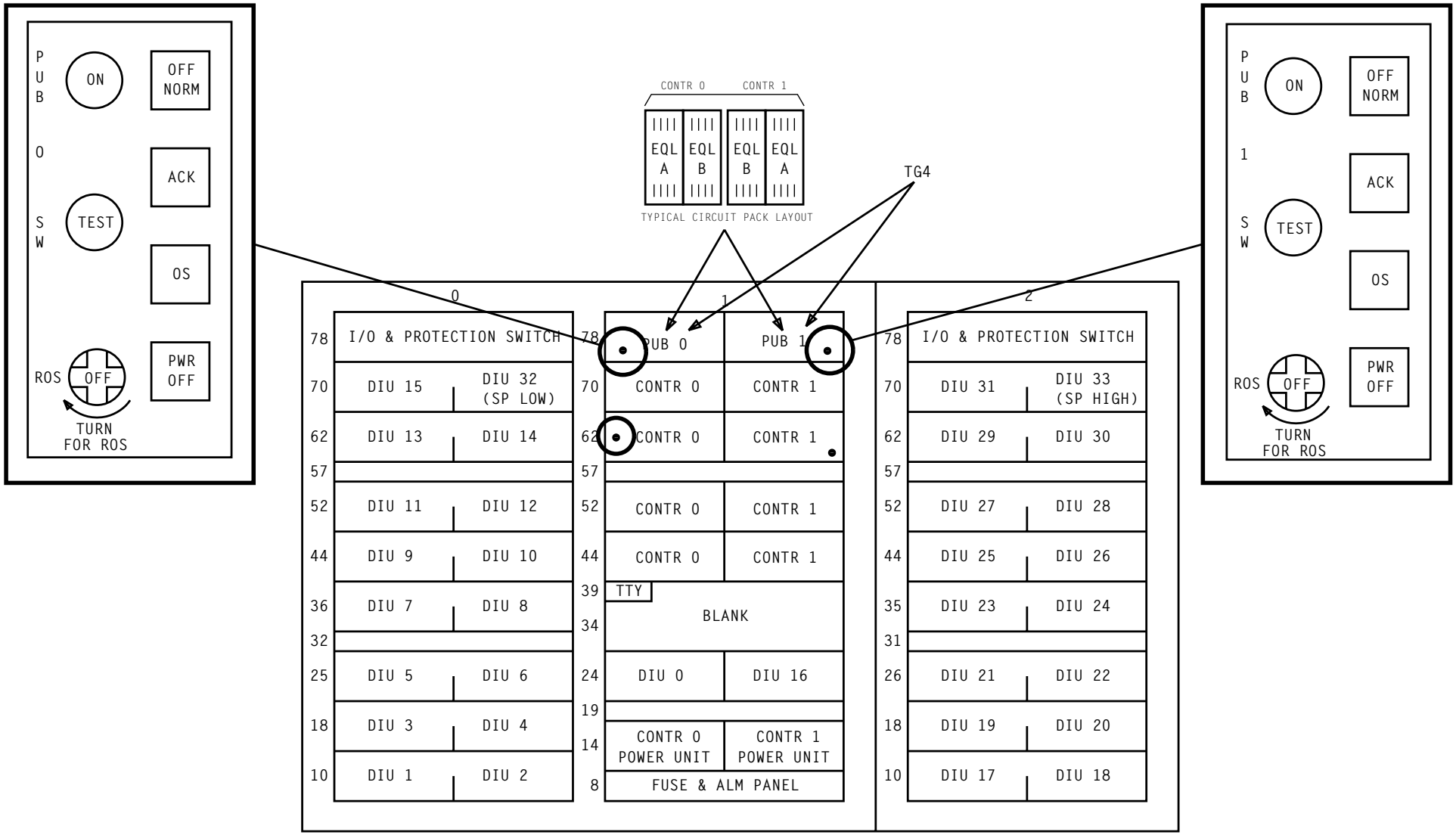
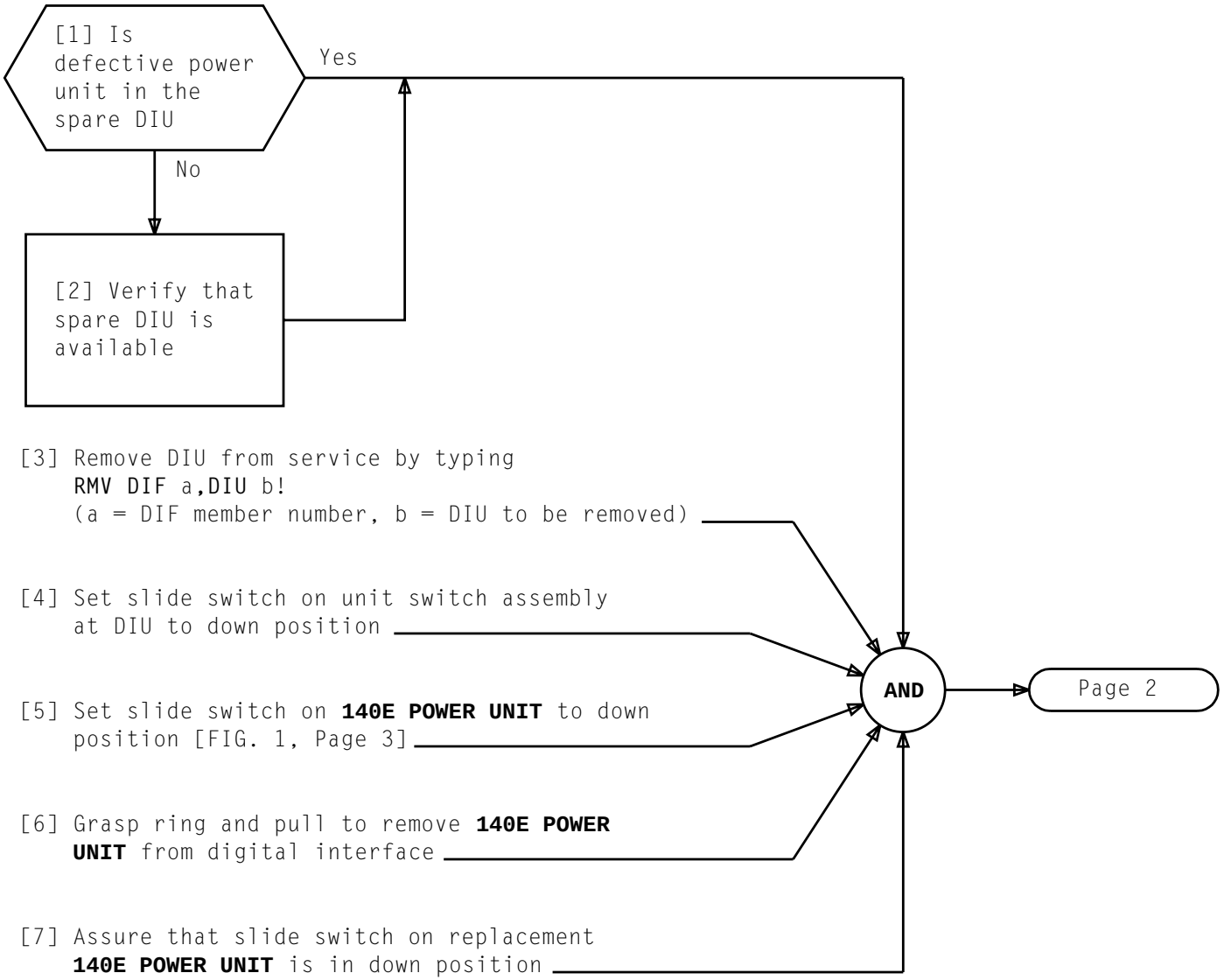


FIG. 1

APPLY POWER TO THE PERIPHERAL UNIT BUS



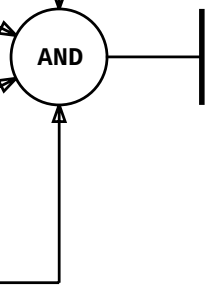
REPLACE 140E POWER UNIT

[8] Install replacement **140E POWER UNIT** by sliding toward backplane in slot until connector engages

[9] Set slide switch to up position on **140E POWER UNIT**

[10] Set slide switch at unit switch assembly to **ON**

[11] Restore DIU to service by typing
RST:DIF a,DIU b!
(a = DIF member number, b = DIU to be restored)



REPLACE 140E POWER UNIT

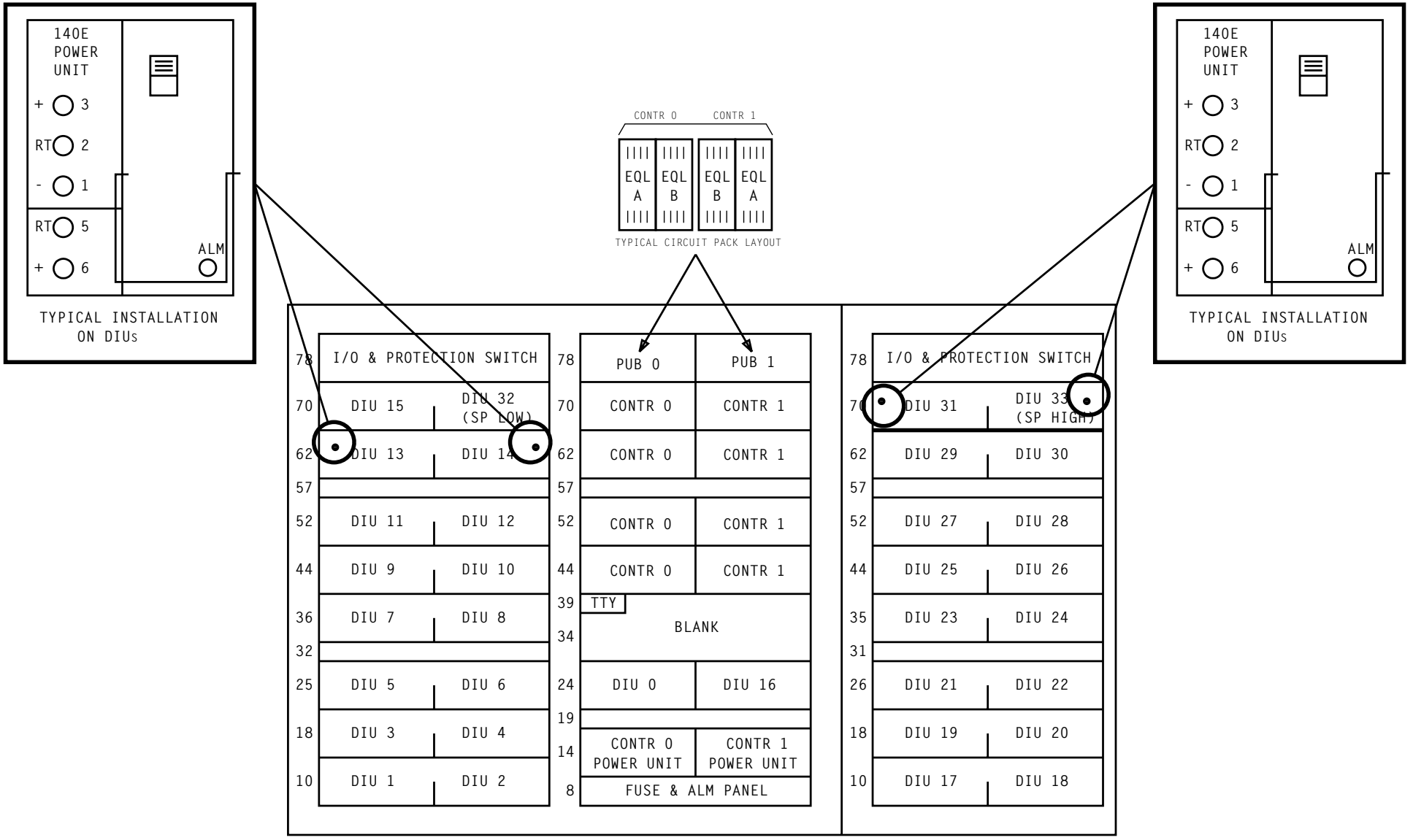


FIG. 1

REPLACE 140E POWER UNIT

[1] Remove power from digital interface controller [DLP-502]

At **140F POWER UNIT**:

[2] Set slide switch to down position

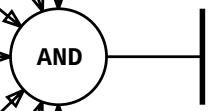
[3] Grasp ring and pull unit from digital interface

[4] Assure that slide switch on replacement **140F POWER UNIT** is in down position

[5] Install replacement **140F POWER UNIT** by sliding toward backplane in slot until connector engages

[6] Set slide switch to up position

[7] Apply power to digital interface controller [DLP-504]



REPLACE 140F POWER UNIT

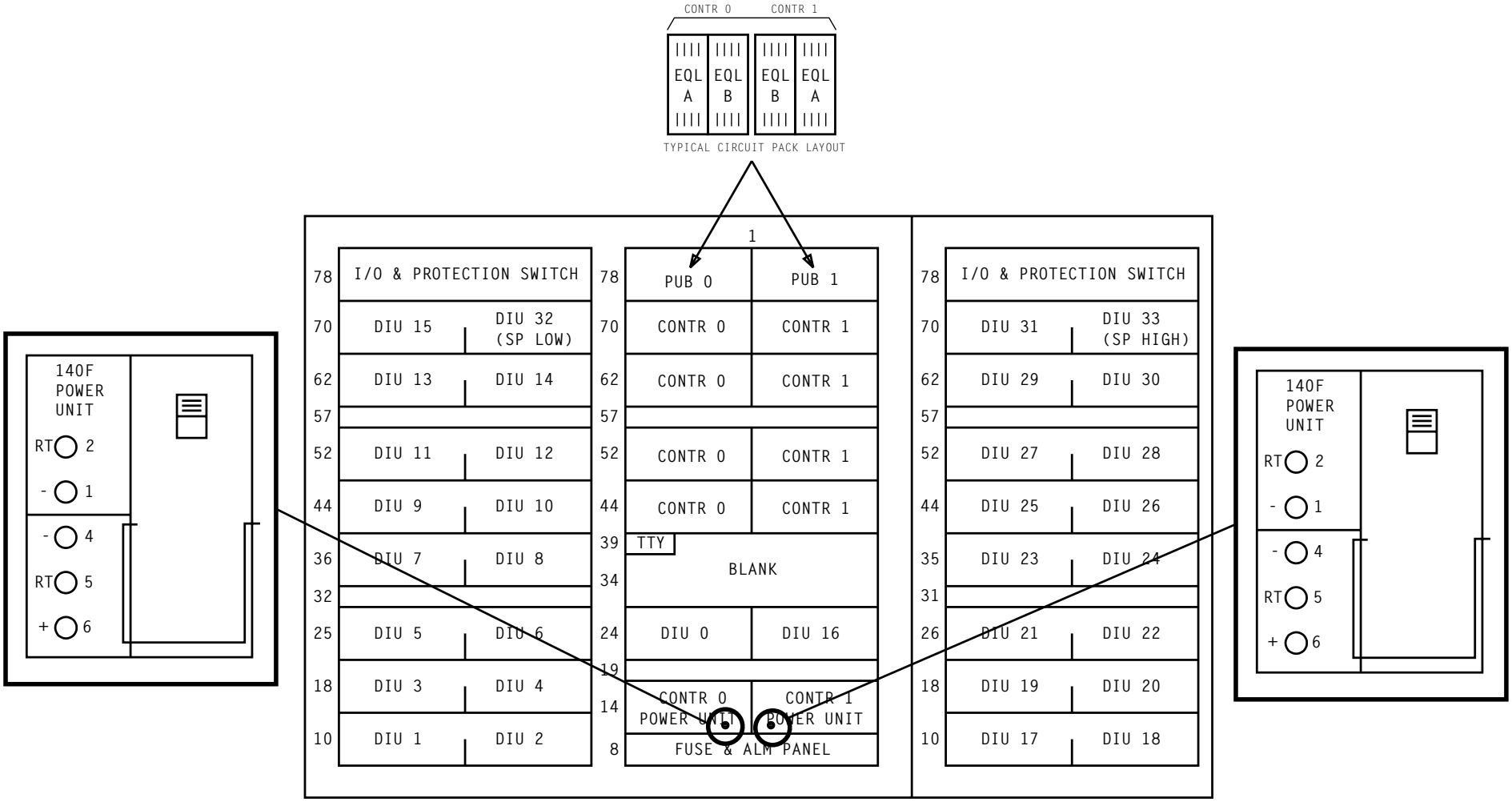


FIG. 1

REPLACE 140F POWER UNIT

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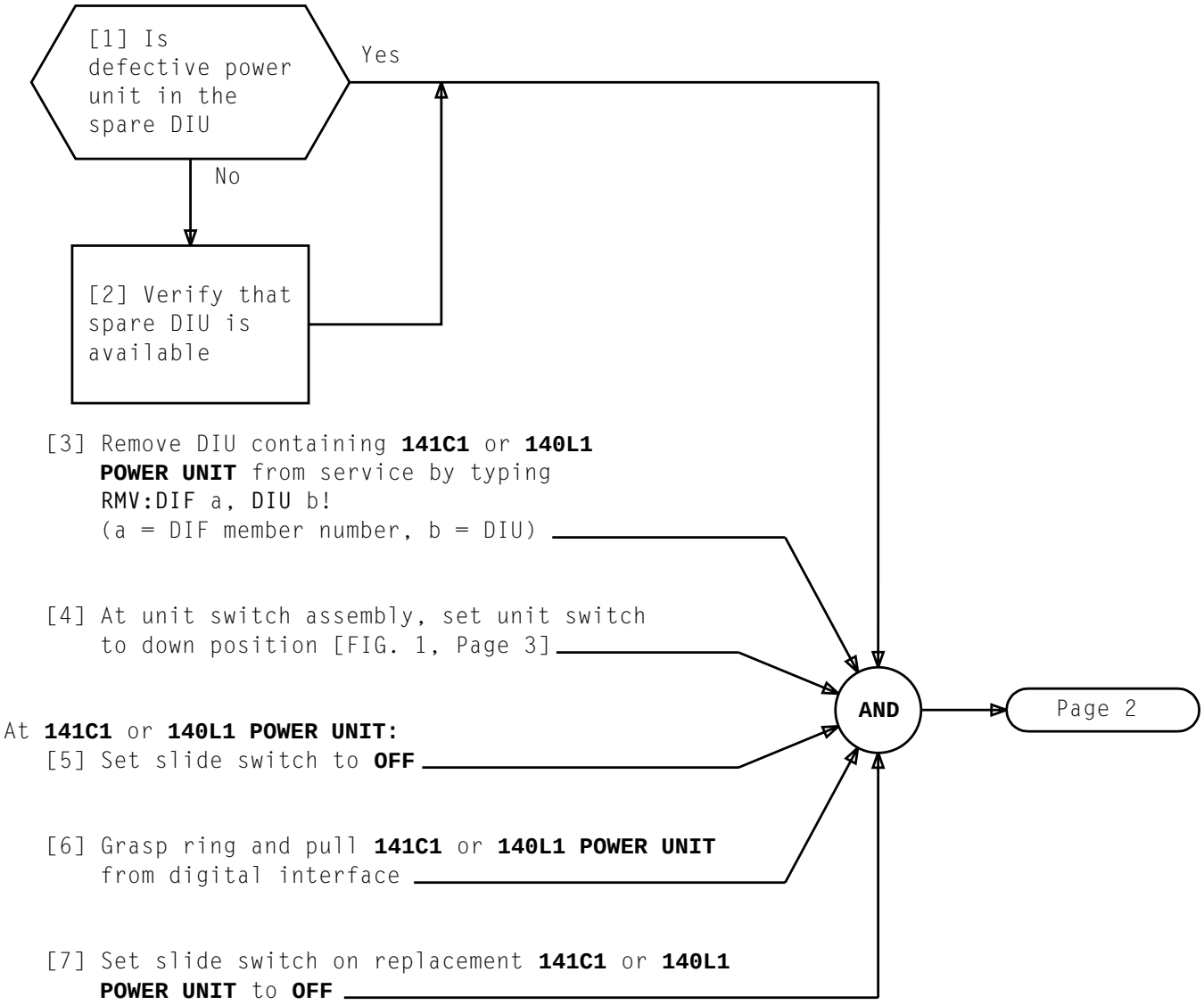


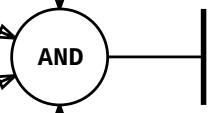
REPLACE 141C1 OR 140L1 POWER UNIT

[8] Install replacement **141C1** or **140L1 POWER UNIT** by sliding toward backplane in slot until connector engages

[9] Set slide switch on **141C1** or **140L1 POWER UNIT** to up position

[10] At unit switch assembly, set unit switch to up position

[11] Restore DIU to service by typing
RST:DIF a,DIU b!
(a = DIF member number, b = DIU)



REPLACE 141C1 OR 140L1 POWER UNIT

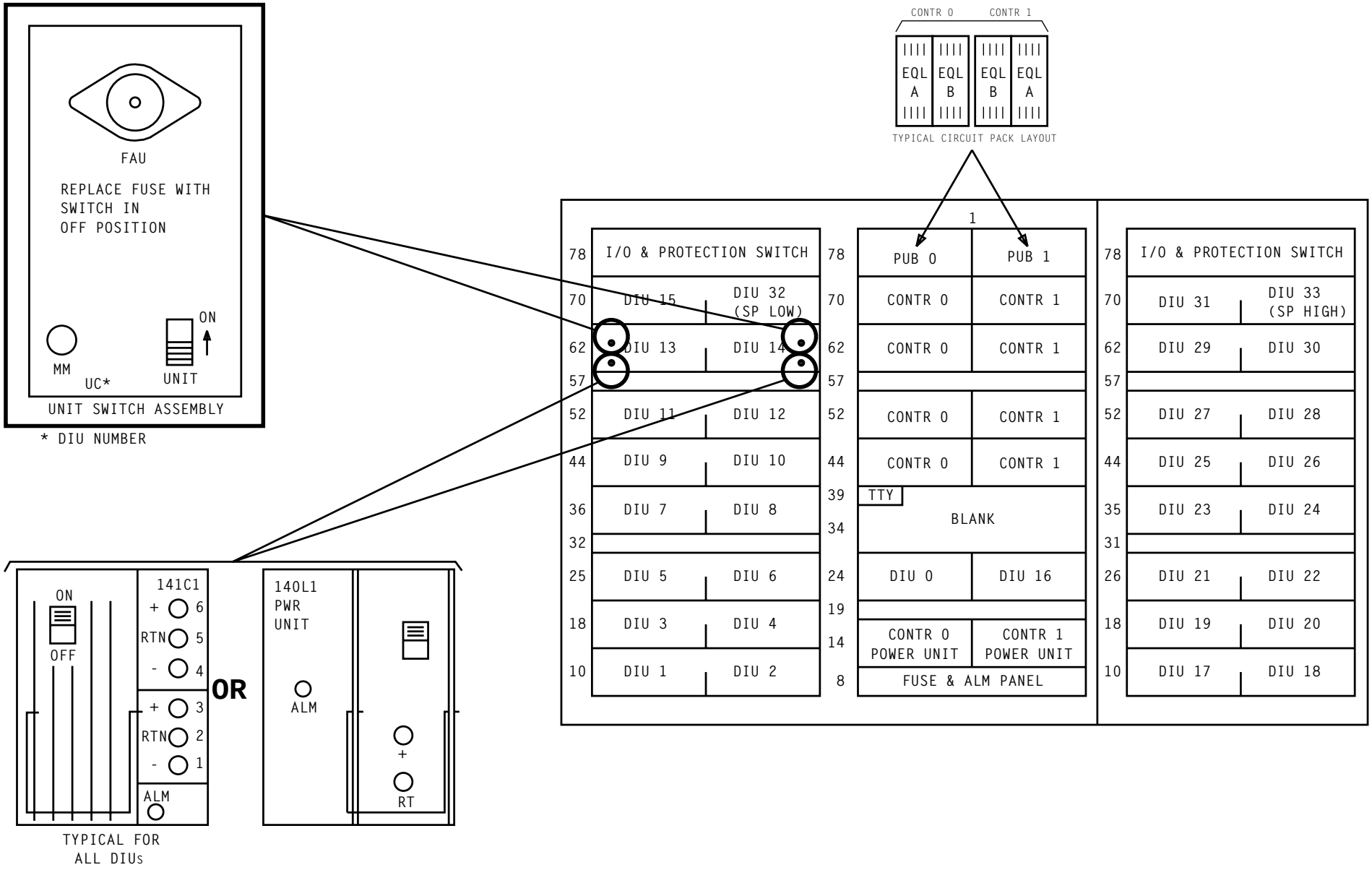


FIG. 1

REPLACE 141C1 OR 140L1 POWER UNIT

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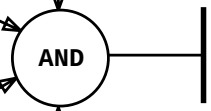
[1] Connect black test lead to **COMMON** and red test lead to **V** pin jacks on multimeter

[2] Connect power cord to 120 Vac source and depress **POWER ON-OFF** pushbutton key

[3] See WARNING 1. Depress **RANGE 20** pushbutton key

[4] Depress **FUNCTION DCV** pushbutton key



WARNING 1
The range and function switches should always be placed in the proper position before connecting the test lead probe to the circuit under test to prevent possible damage to the multimeter circuitry

CONDITION FLUKE 8000A DIGITAL MULTIMETER TO MEASURE DC VOLTAGE

[1] Remove power from digital interface peripheral unit bus [DLP-505]

[2] At **140A POWER UNIT**, set slide switch to down position

[3] Grasp latch and pull down while pulling circuit pack out [FIG. 1]

[4] Pull latch down on new circuit pack

AND

[5] Slide circuit pack into the vacant slot where circuit pack was removed

[6] Lift latch while pushing top of circuit pack until latch locks

+5C LED on TG4 circuit pack is lighted

AND

[7] At **140A POWER UNIT**, set slide switch to up position

[8] Apply power to PUB [DLP-507]

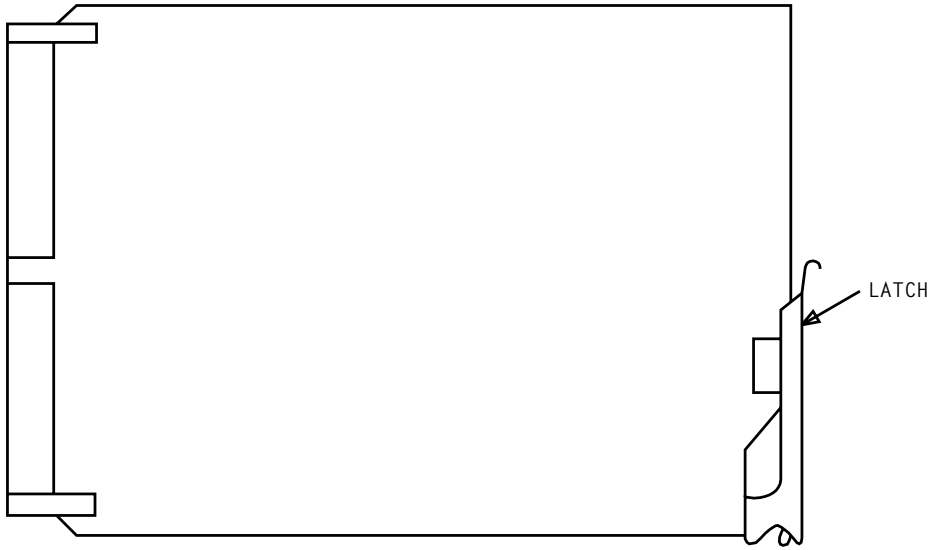
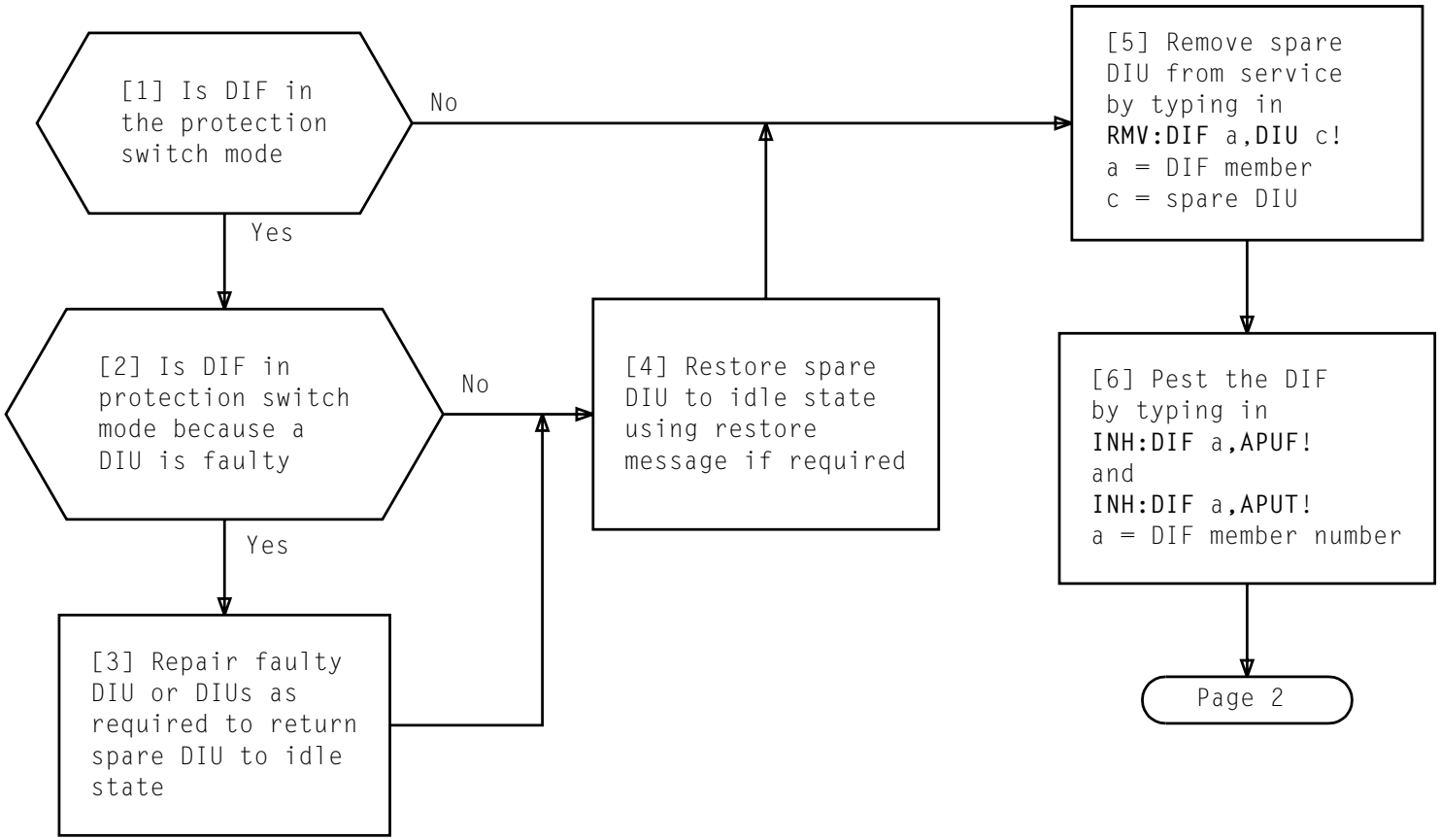


FIG. 1 – Circuit Pack

REPLACE TG4 OR TG5 CIRCUIT PACK IN PERIPHERAL UNIT BUS (PUB)



REPLACE CIRCUIT PACK TF1 IN DIGITAL INTERFACE

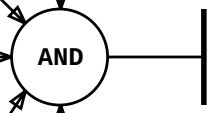
[7] Power down spare DIU by setting slide switch at unit switch assembly to down position

[8] Replace TF1 circuit pack [FIG. 1, Page 3]

[9] Set slide switch at unit switch assembly of spare DIU to up position

[10] Remove DIF pests by typing in
ALW:DIF a,**APUF**! and
ALW:DIF a,**APUT**!
(a = DIF member number)

[11] Restore spare DIU to service by typing in
RST:DIF a,**DIU** c!
(a = DIF member, c = spare DIU)



REPLACE CIRCUIT PACK TF1 IN DIGITAL INTERFACE

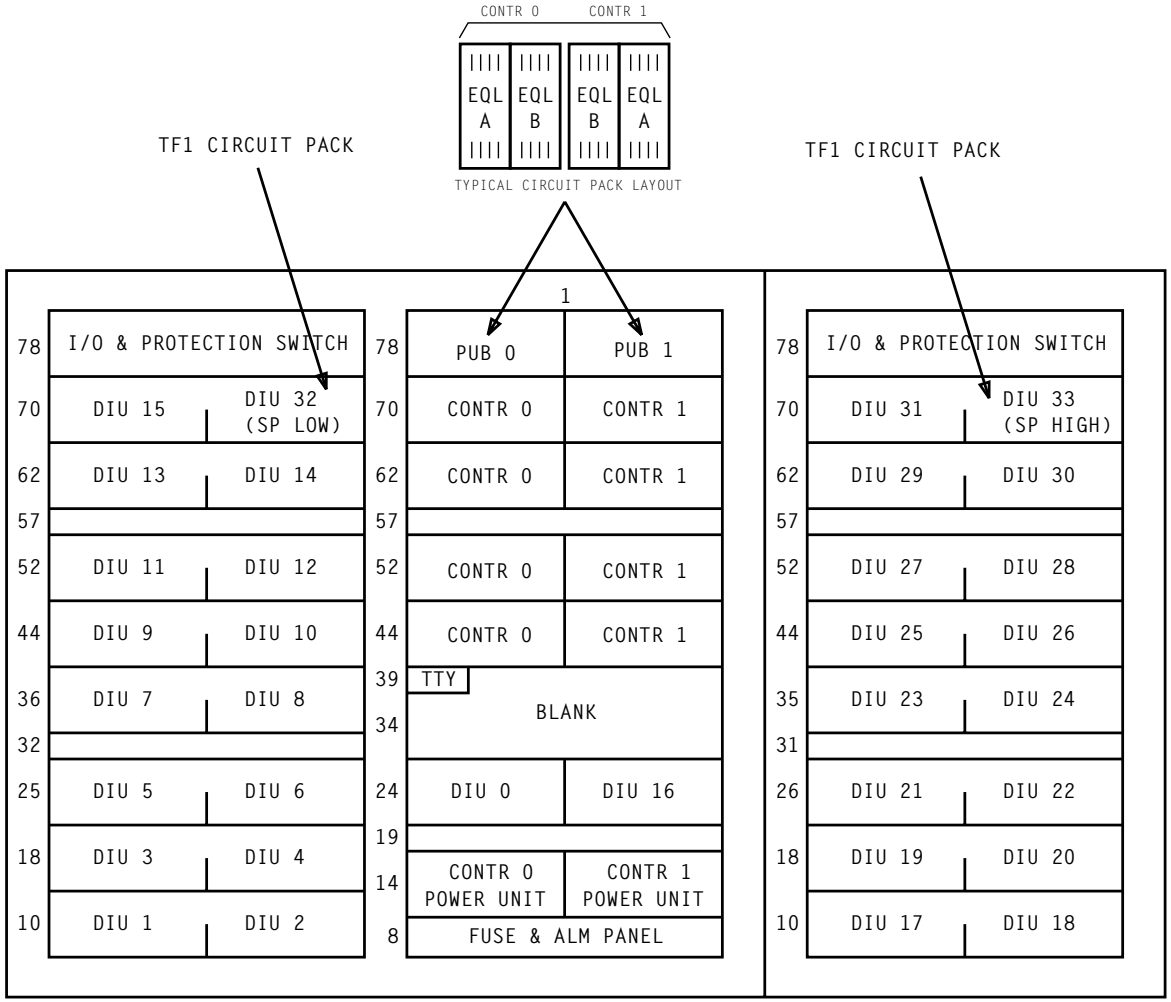
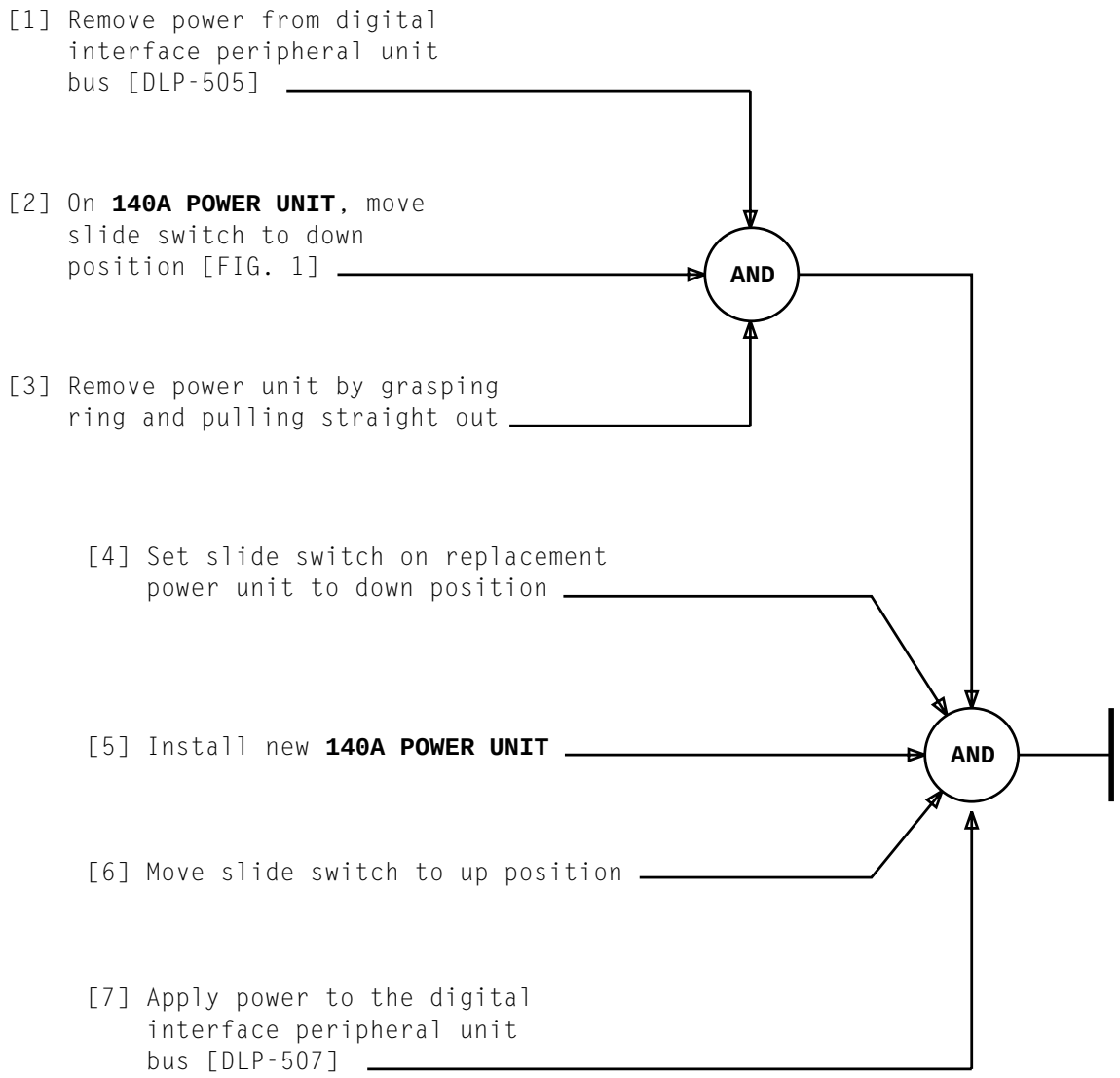


FIG. 1

REPLACE CIRCUIT PACK TF1 IN DIGITAL INTERFACE



REPLACE 140A POWER UNIT

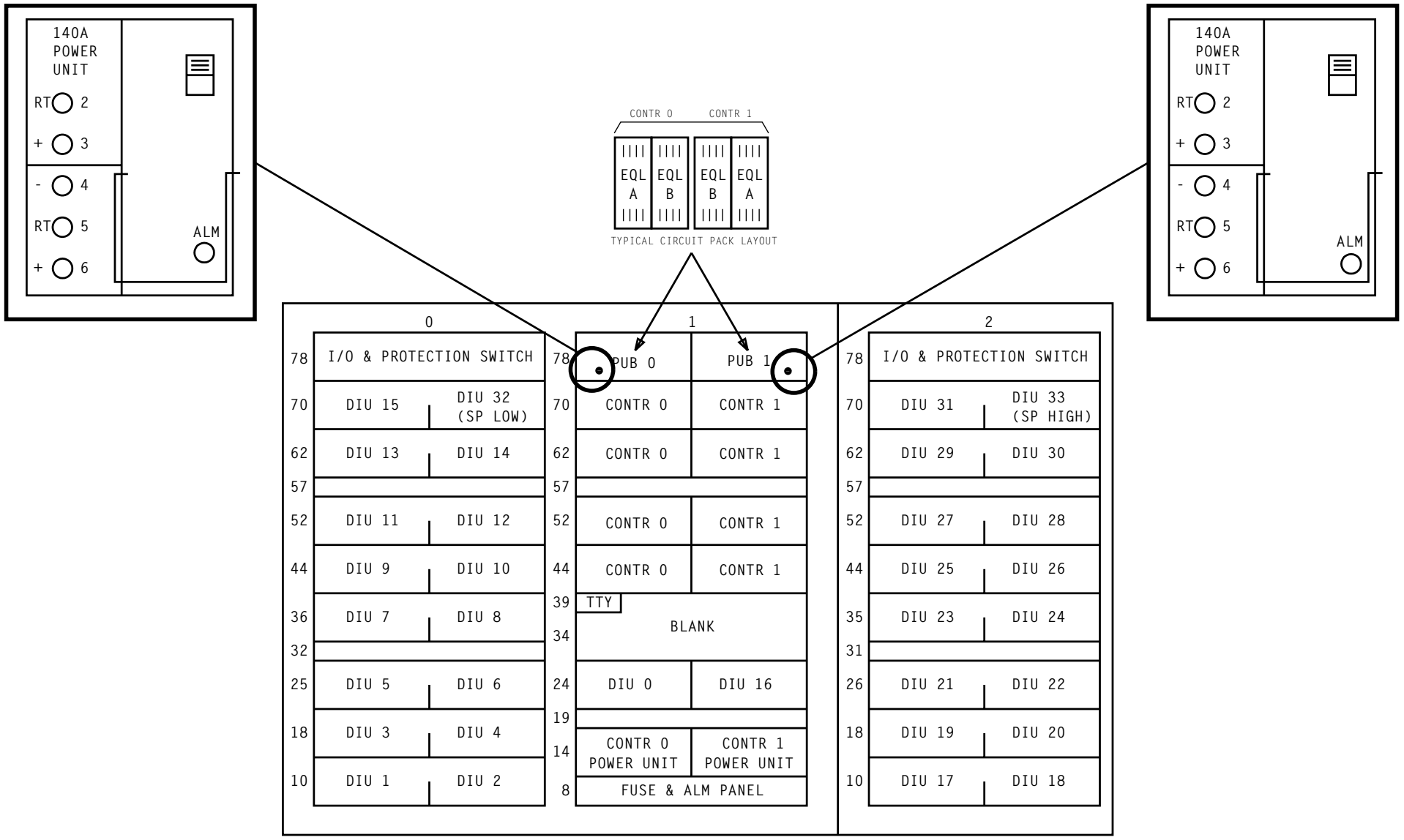


FIG. 1

REPLACE 140A POWER UNIT

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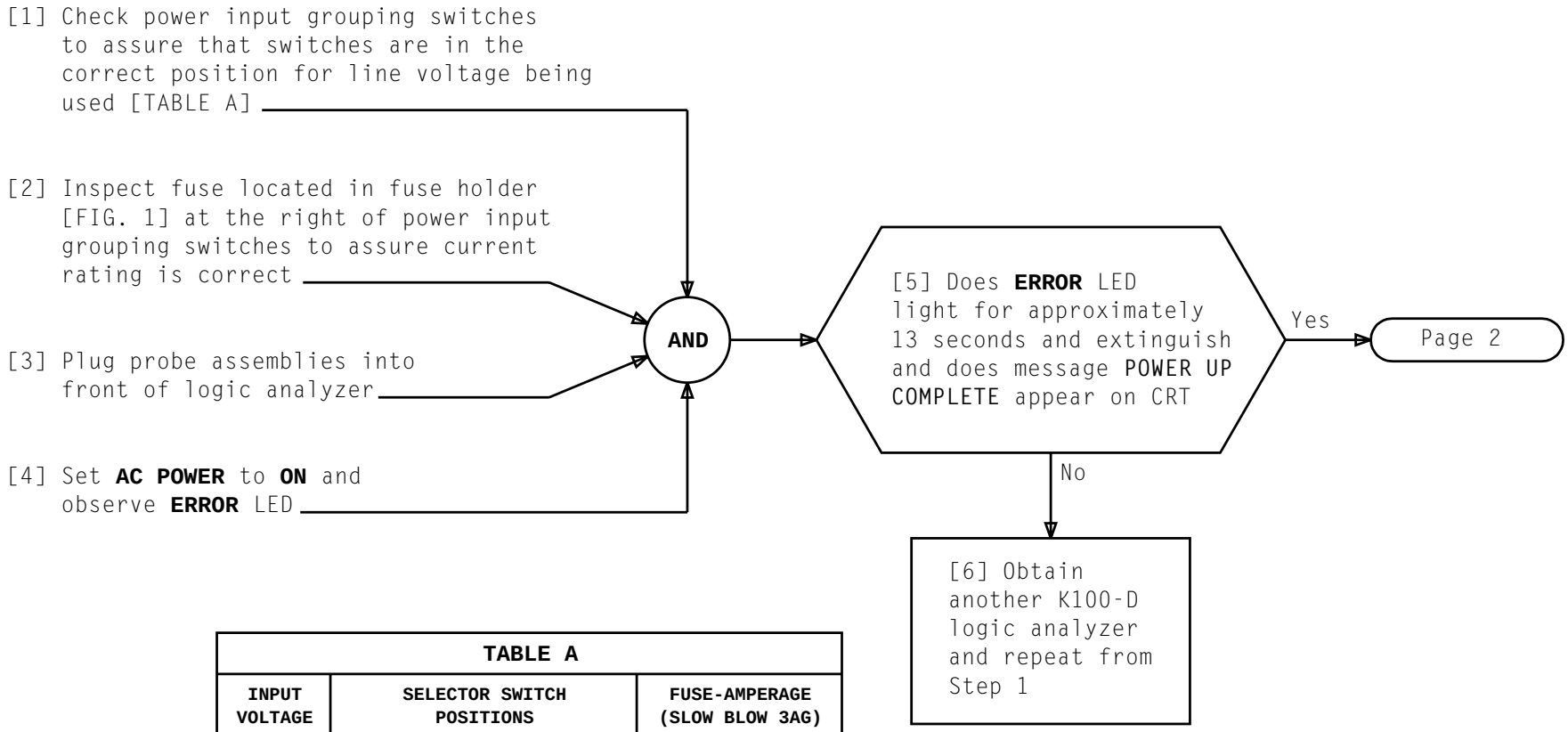


TABLE A

INPUT VOLTAGE	SELECTOR SWITCH POSITIONS	FUSE-AMPERAGE (SLOW BLOW 3AG)
100	Both switches IN	5
120	Left switch IN and right switch OUT	5
220	Left switch OUT and right switch IN	2.5
240	Left switch OUT and right switch OUT	2.5

CONDITION K100-D DIGITAL LOGIC ANALYZER FOR CHECKING FIRMWARE IN DIGITAL INTERFACE (DIF)

[7] Allow the **K100-D DIGITAL LOGIC ANALYZER** to warm up for approximately 10 minutes to assure that thermal stability has been reached

AND

[8] Attach the flying leads or spring loaded hook tips to the channel probe podlets as required [FIG. 2]

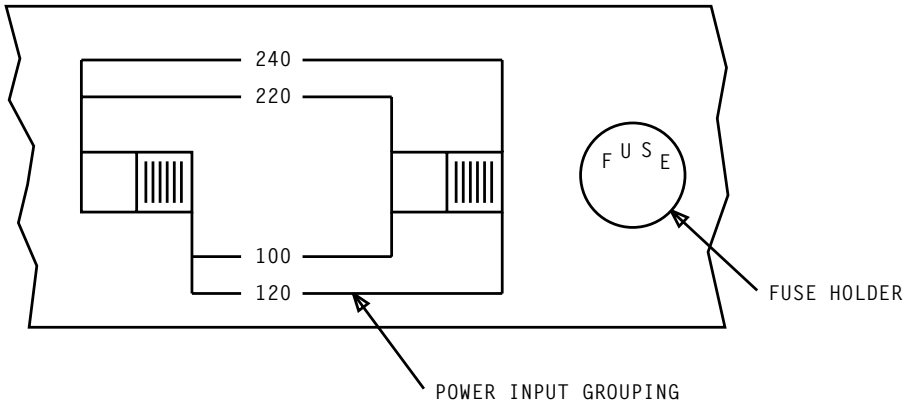


FIG. 1

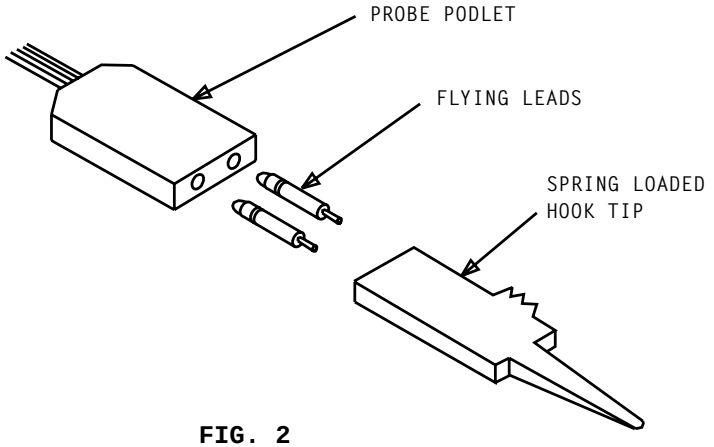


FIG. 2

CONDITION K100-D DIGITAL LOGIC ANALYZER FOR CHECKING FIRMWARE IN DIGITAL INTERFACE (DIF)

[1] See CAUTION 1; see FIG. 2, Page 6.
Type **SET:TRKSTAT MTC.DSA,TSN a:NUM 120,STAT ACT!**
(a = TSN [NOTE 1])

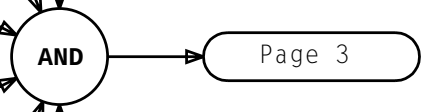
[2] Type
OP:TRKSTAT,TSN a,SUM:NUM 120,STAT TRAF<OOSI>!
(a = TSN [NOTE 1])

[3] Remove DIU associated with SJ pack
by typing **RMV:DIF a, DIU b!** [TABLE A]
(a = DIF member number, b = DIU)

[4] Using masking tape, make up labels
to designate upper cable on SJ circuit
pack as T and lower cable as R, if
not already marked

[5] If EST is used in office, pest
EST associated with DIF by typing in
INH:EST a,APUF! and **INH:EST a,APUT!**
a = EST member number

[6] Pest the DIF by typing in
INH:DIF a,APUF! and
INH:DIF a,APUT!
a = DIF member number



REPLACE CIRCUIT PACK SJ5, SJ5B, SJ6, OR SJ7 IN DIGITAL INTERFACE (DIF)

NOTE 1
Trunk TSN is derived from DIF and DIU numbers

CAUTION 1
BLMS may occur during this procedure, causing service to be degraded

TABLE A			
DIU	CIRCUIT PACK SJ5, SJ5B, SJ6, OR SJ7 LOCATION		
	BAY	INCHES ABOVE FLOOR	NUMBER OF 1/8 INCH INCREMENTS FROM LEFT EDGE OF BACK PLATE (FRONT SIDE)
0	0	77	013
1			027
2			041
3			055
4			073
5			087
6			101
7			115
8			177
9			191
10			205
11			219
12			237
13			251
14			265
15			279
16	2		013
17			027
18			041
19			055
20			073
21			087
22			101
23			115
24			177
25			191
26			205
27			219
28			237
29			251
30			265
31			279

REPLACE CIRCUIT PACK SJ5, SJ5B, SJ6, OR SJ7 IN DIGITAL INTERFACE (DIF)

[7] Pest TSI controller 0 by typing in
INH:TSI a**,CONTR 0,SPEC!**
a = TSI member number

[8] Pest TSI controller 1 by typing in
INH:TSI a**,CONTR 1,SPEC!**
a = TSI member number

[9] Assure that all pests are set by typing in **OP:PERIFINH!**

[10] Simultaneously, set slide switch of unit switch assembly on DIU associated with SJ pack [TABLE A, Page 2] and slide switch of unit switch assembly on protection spare (DIU 32 for DIUs 0 through 15, and DIU 33 for DIUs 16 through 31) to down position

[11] Remove cables at front of SJ circuit pack

[12] See NOTE 2. Replace faulty circuit pack with one of exact type or SJ5B (Figure 1)

[13] See FIG. 1. On circuit pack, reinstall cables which were removed in Step 11

AND

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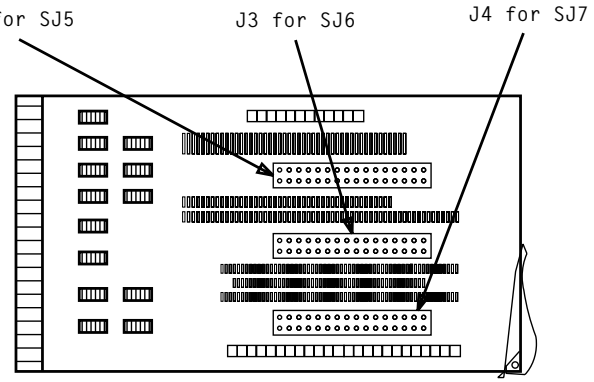


FIG. 1 – Sample of SJ5B Pack

NOTE 2
SJ5B can replace the SJ5, SJ6, or SJ7 circuit pack depending upon cable lengths being used

REPLACE CIRCUIT PACK SJ5, SJ5B, SJ6, OR SJ7 IN DIGITAL INTERFACE (DIF)

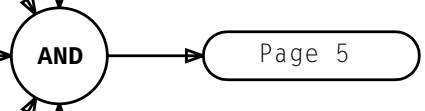
[14] Restore power to DIUs that were powered down in Step 10 by setting slide switches on DIUs to up position

[15] Remove TSI controller 1 pest by typing in
ALW:TSI a,**CONTR 1,SPEC!**
a = TSI member number

[16] Remove TSI controller 0 pest by typing in
ALW:TSI a,**CONTR 0,SPEC!**
a = TSI member number

[17] Remove DIF pest by typing in
ALW:DIF a,**APUF!** and
ALW:DIF a,**APUT!**
a = DIF member number

[18] Remove EST pest if required by typing in
ALW:EST a,**APUF!** and
ALW:EST a,**APUT!**
a = EST member number



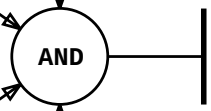
REPLACE CIRCUIT PACK SJ5, SJ5B, SJ6, OR SJ7 IN DIGITAL INTERFACE (DIF)

[19] Assure that all pests are out
by typing **OP:PERIFINH!**

[20] Restore spare DIU by typing:
RST:DIF a,**DIU** b!
(a = DIF number,
b = DIU)

[21] Restore DIU removed in Step 3
to service by typing:
RST:DIF a,**DIU** b!
(a = DIF member number, b = DIU)

[22] Turn up trunks for service that
were removed in Step 1 as
required



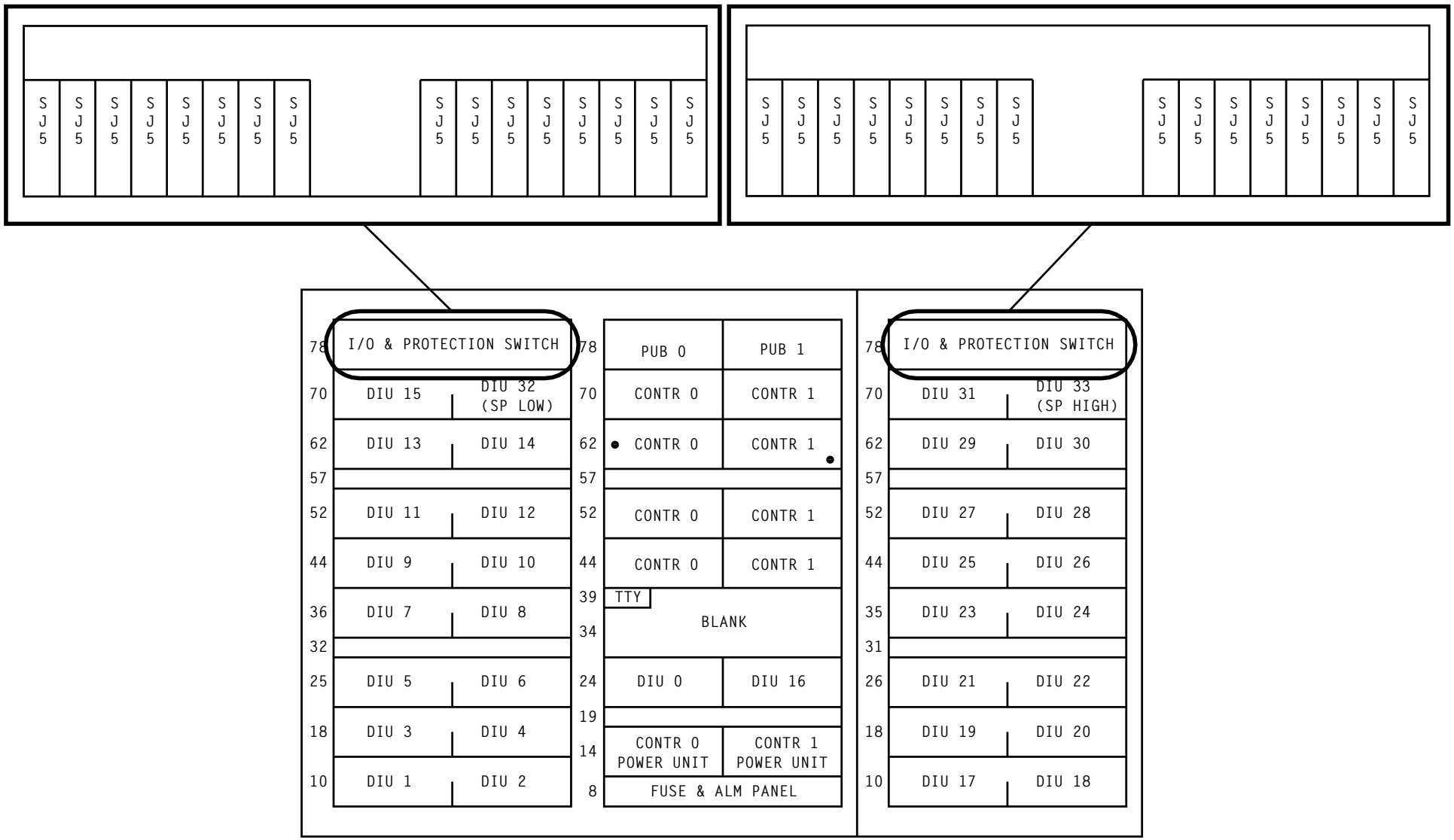
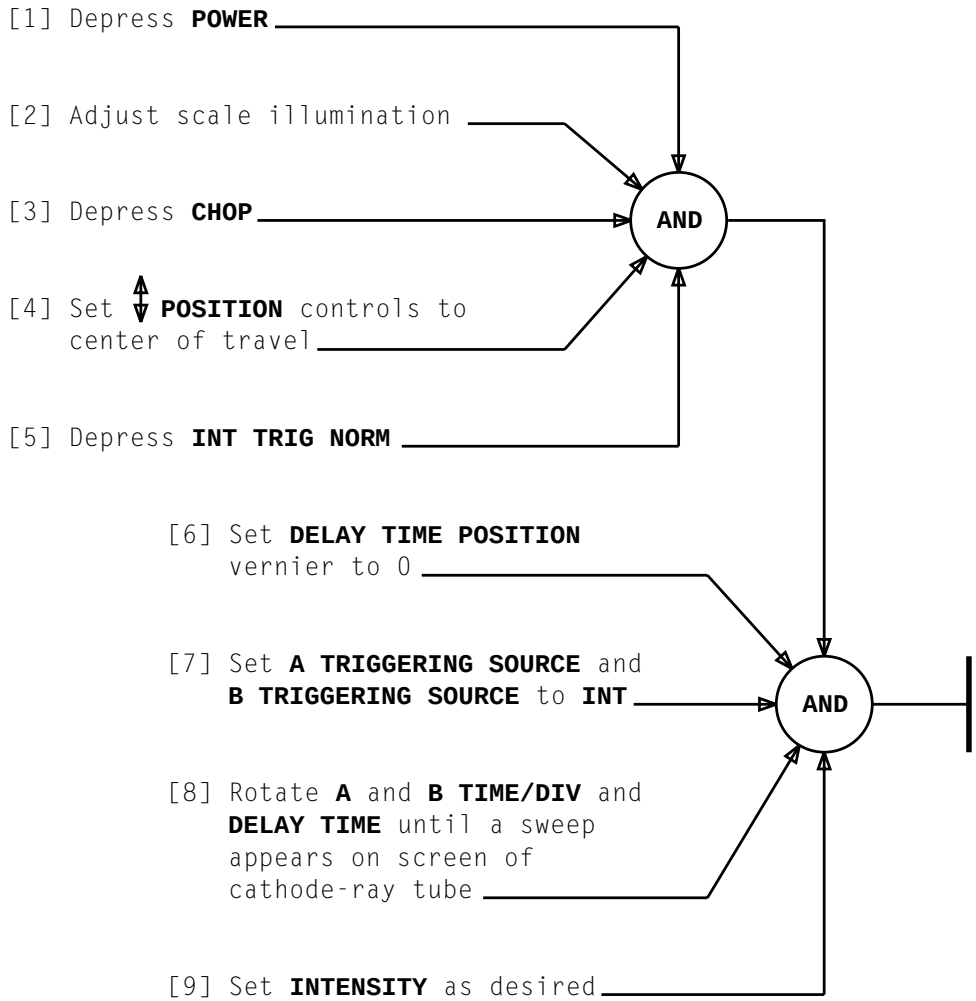


FIG. 2

REPLACE CIRCUIT PACK SJ5, SJ5B, SJ6, OR SJ7 IN DIGITAL INTERFACE (DIF)



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REPLACE DEFECTIVE SM CIRCUIT PACK

[1] Is defective circuit pack in the spare DIU

Yes

No

[2] Verify that spare DIU is available

[3] At TTY type in
RMV:DIF a,**DIU** d!
a = member number
d = DIU with SM circuit pack to be changed

[4] At unit switch assembly of DIU, set slide switch to down position [FIG. 1]

[5] Pull latch down on circuit pack while pulling circuit pack out

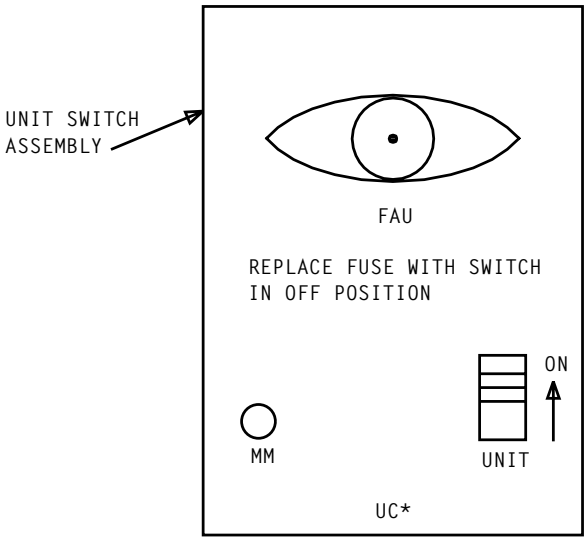
[6] [See NOTE 1] Install good circuit pack by pushing it into slot and lifting latch when circuit pack reaches stop

AND

[7] At unit switch assembly, set slide switch to up position

[8] Restore DIU to service by typing in
RST:DIF a,**DIU** b!
(a = DIF, b = DIU)
[NOTE 2]

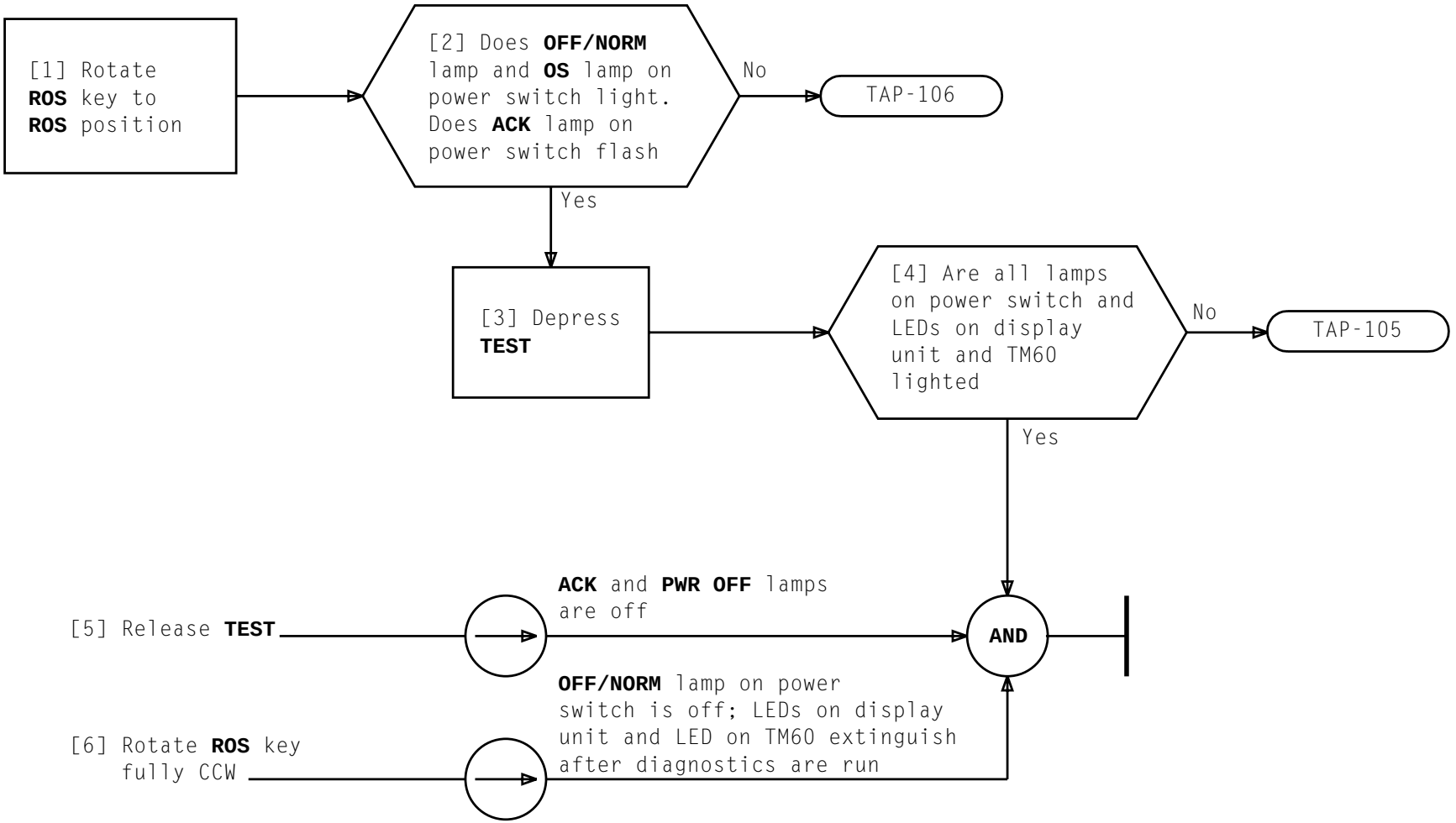
AND



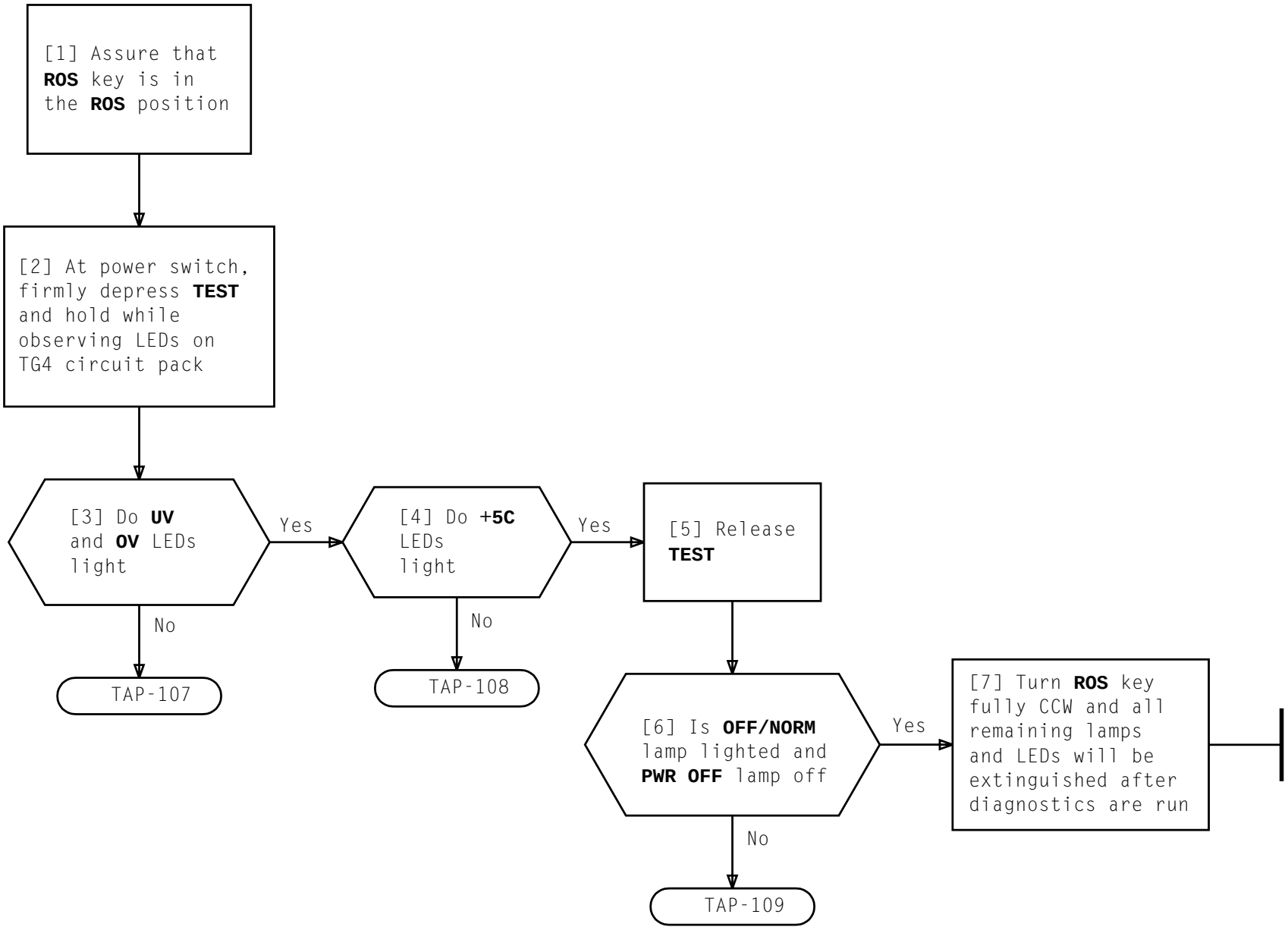
* DIU NUMBER

FIG. 1

NOTE 1
1. An SM1 circuit pack may be used to replace an SM1B circuit pack and vice versa
2. Restore on MF unit takes 22 minutes (approx.)



PERFORM MANUAL TEST PROCEDURE FOR DIGITAL INTERFACE CONTROLLER (DIC)



PERFORM MANUAL TEST PROCEDURE FOR PERIPHERAL UNIT BUS (PUB)

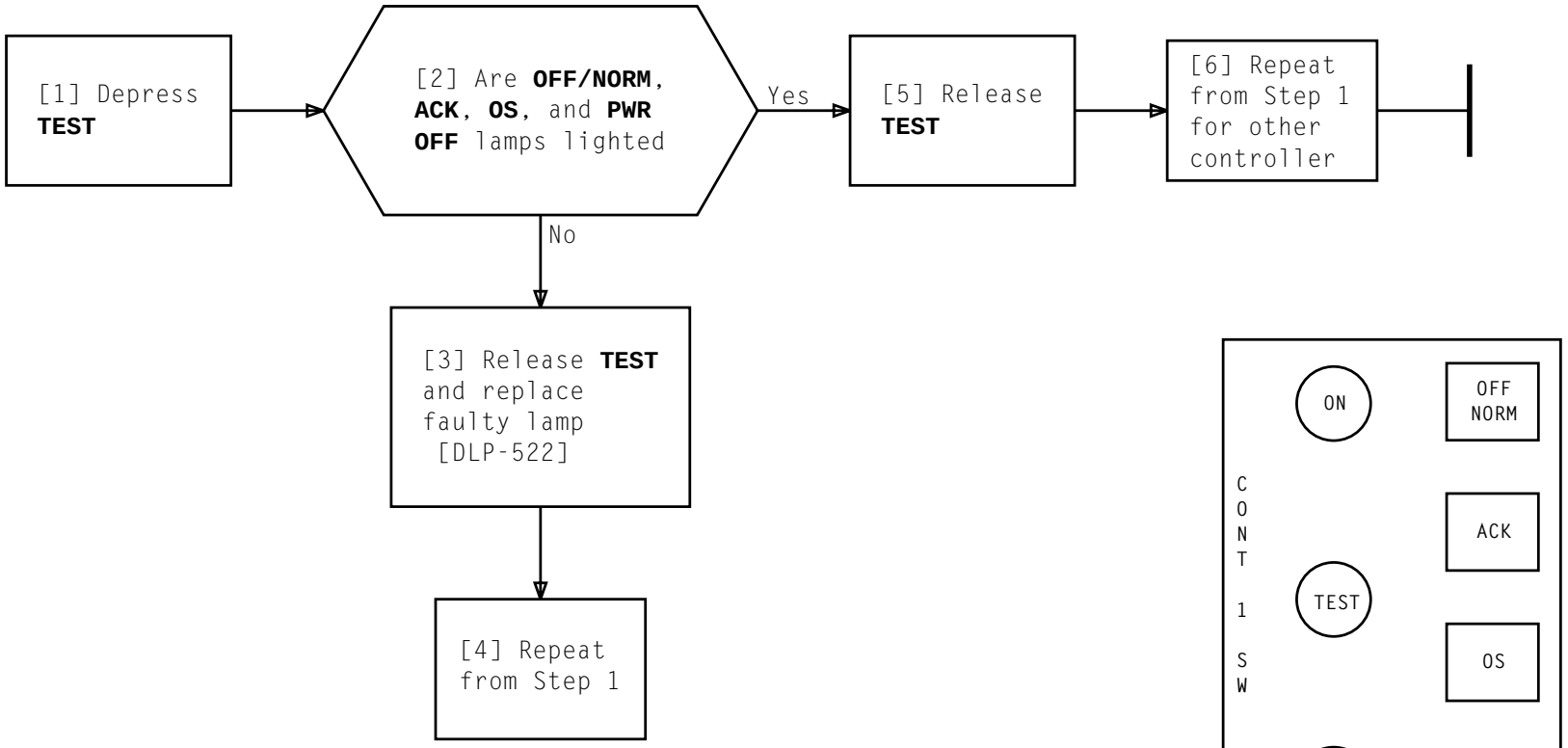


FIG. 1

PERFORM LAMP TEST ON CONTROLLER AND PERIPHERAL UNIT BUS (PUB) POWER SWITCH

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[1] Remove plastic cap at power switch by wiggling and pulling with fingers

[2] Pull base of lamp (A) from plastic cap (B) [FIG. 1]

[3] Install a new bulb (**GE 387** or equivalent) in plastic cap

[4] Reinstall plastic cap in diagnostic switch by pressing over vacant socket

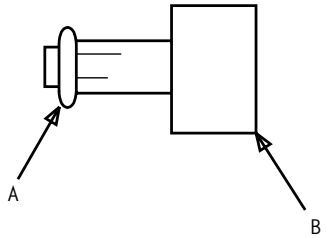
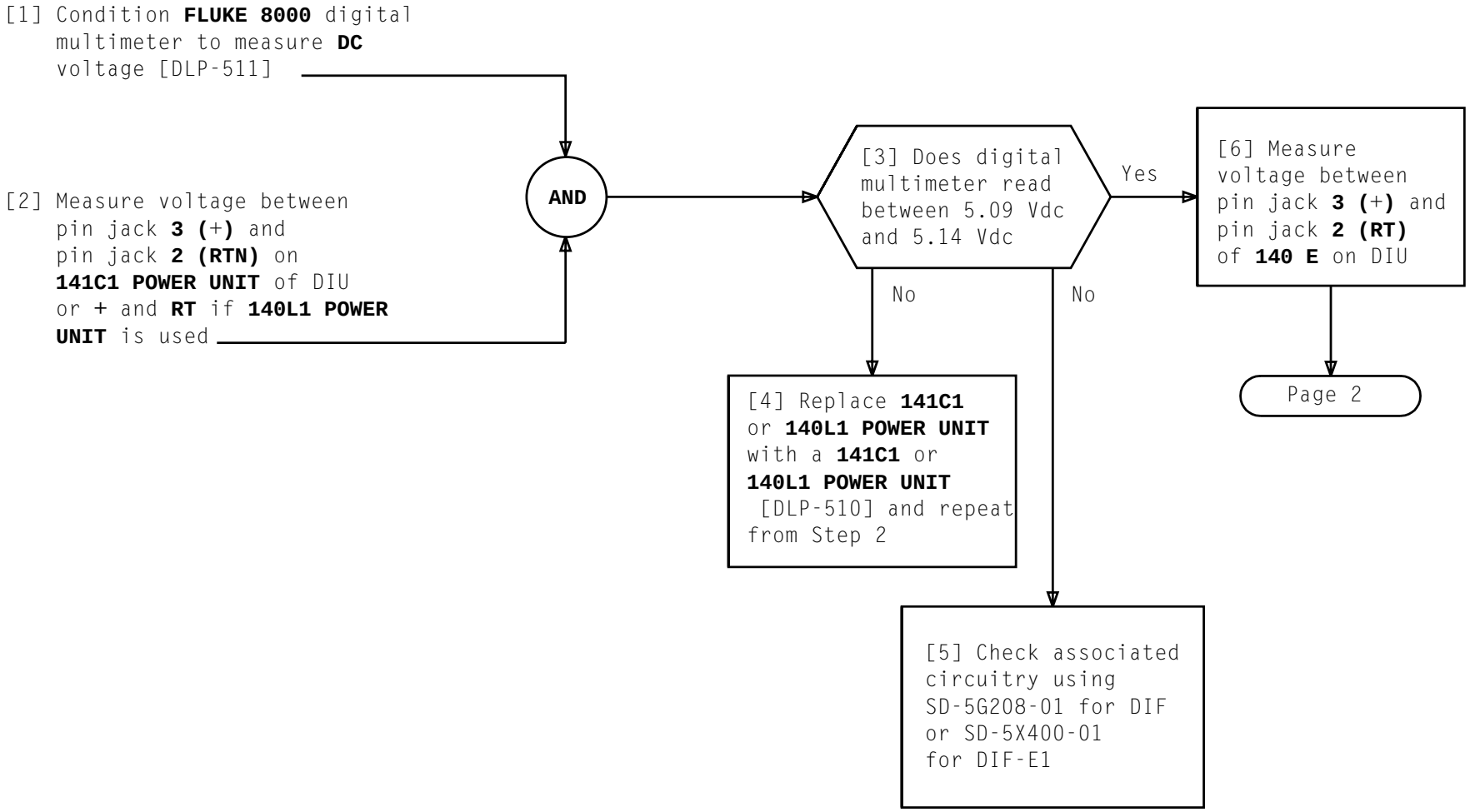
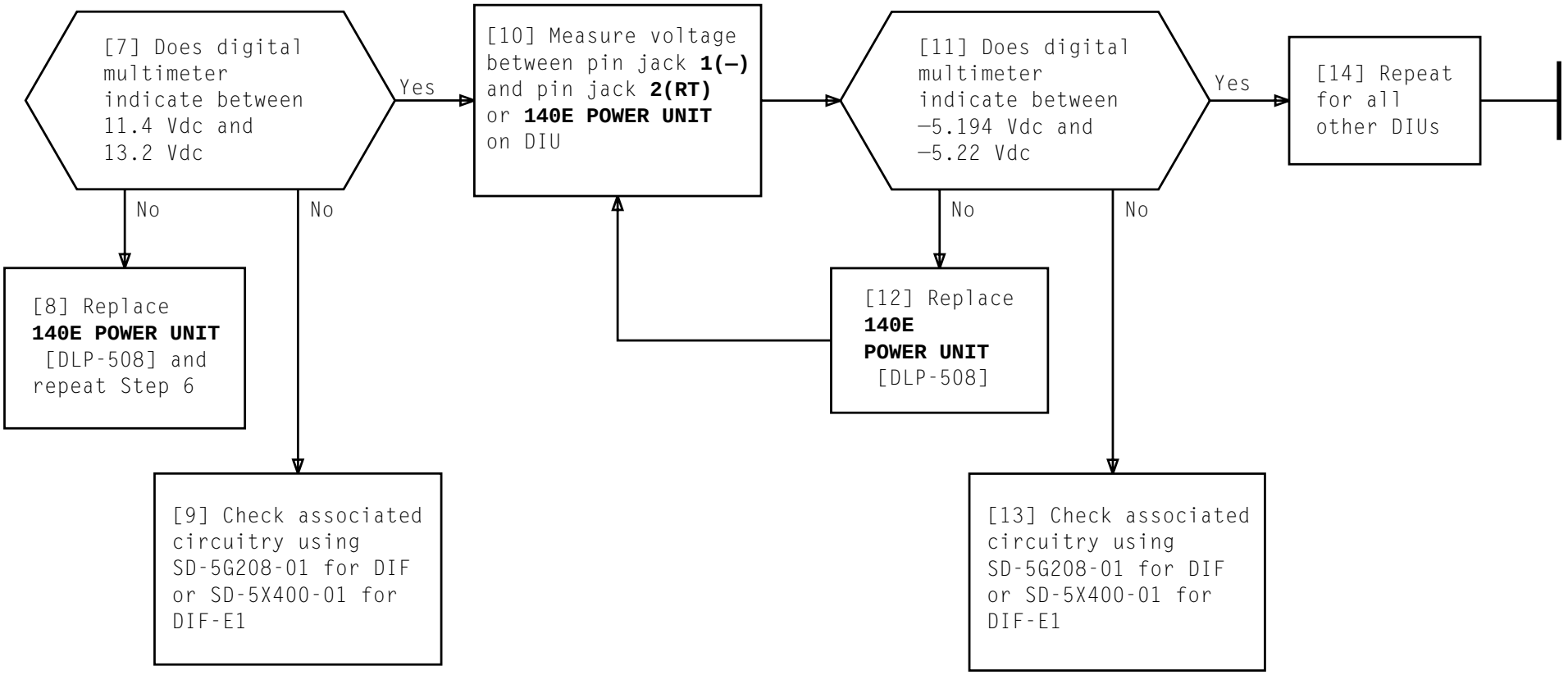


FIG. 1

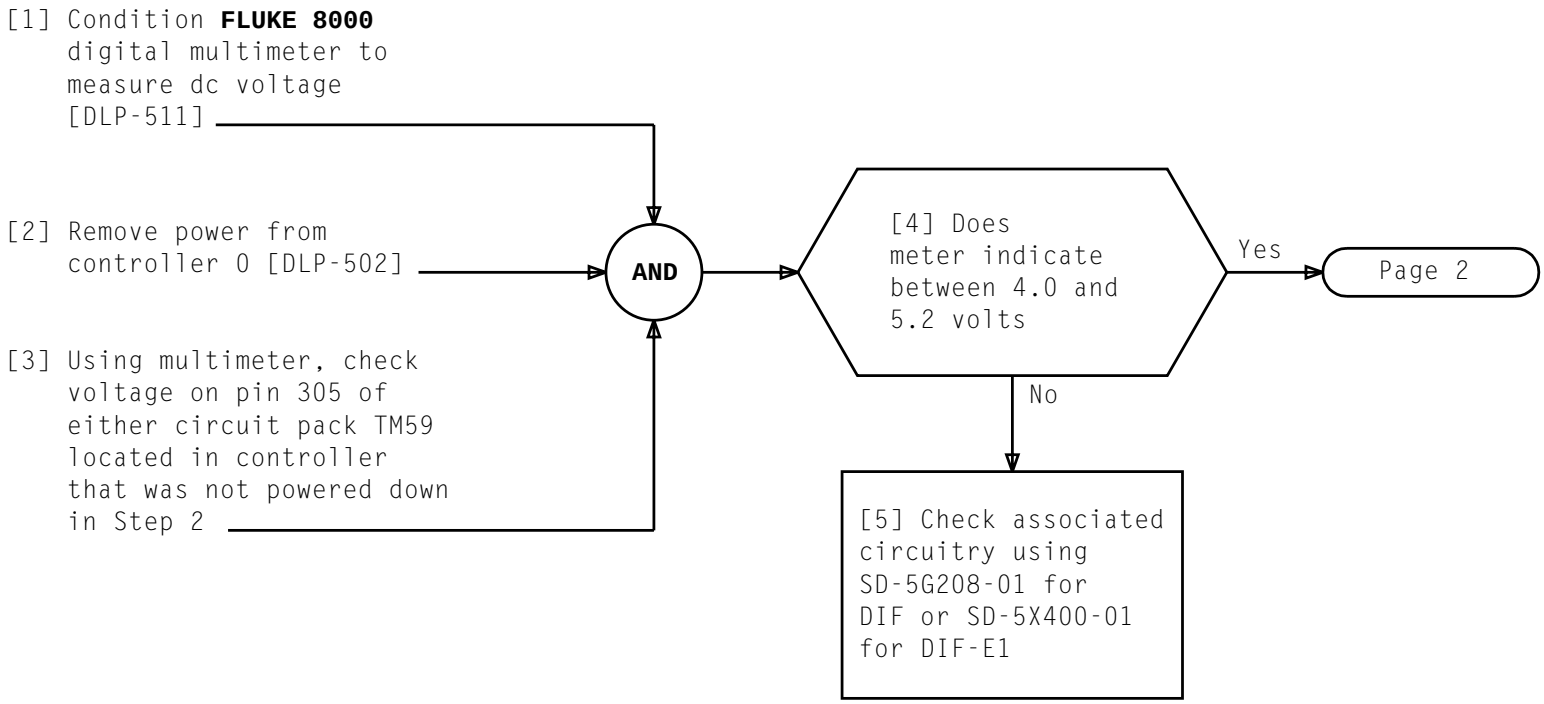
REPLACE FAULTY LAMP



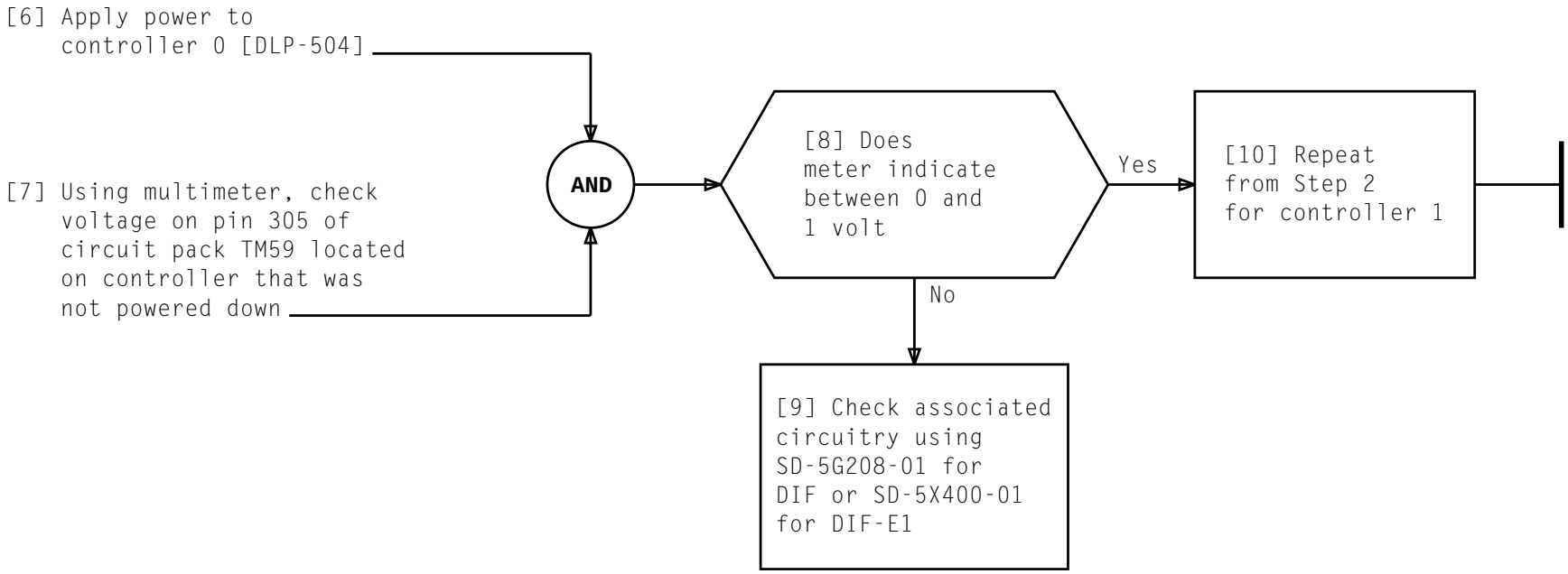
PERFORM POWER CHECKS ON DIGITAL INTERFACE UNIT (DIU) POWER UNITS



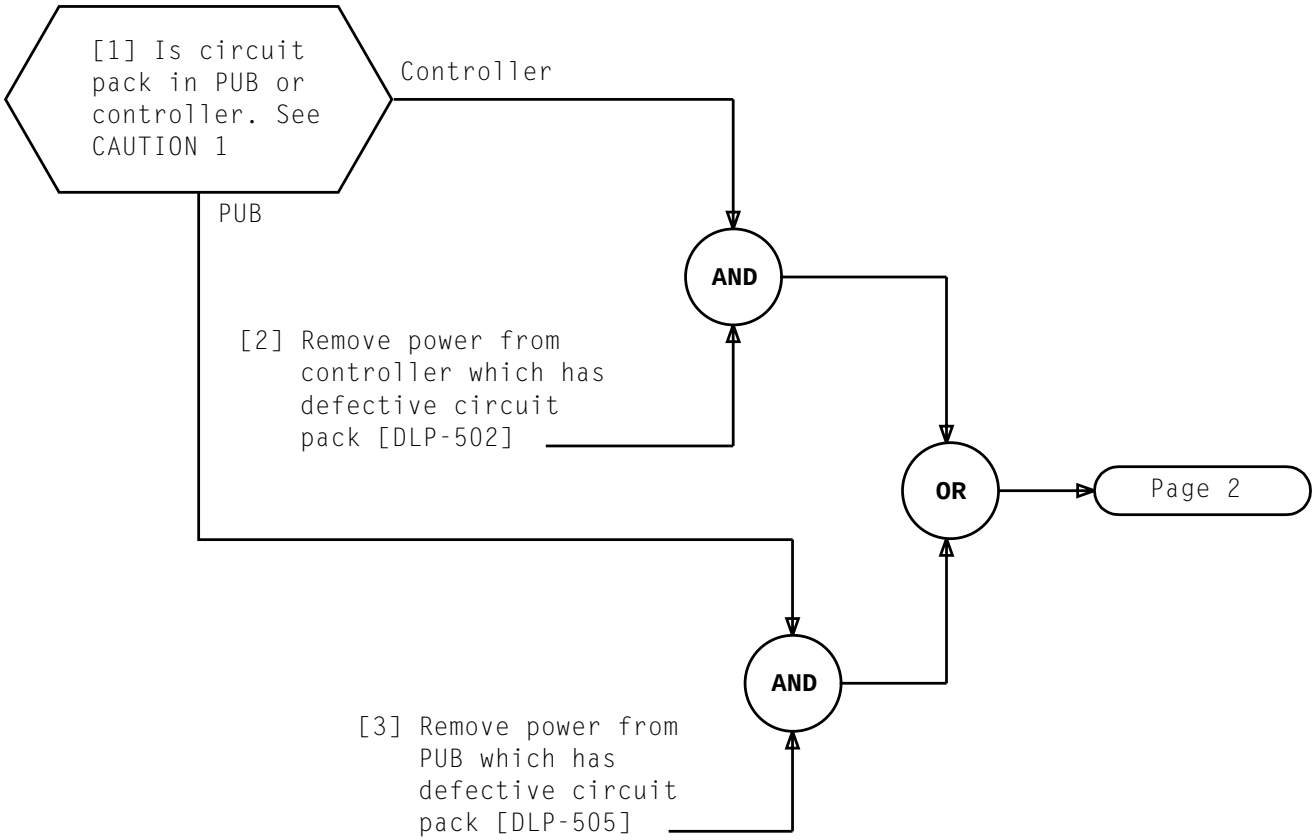
PERFORM POWER CHECKS ON DIGITAL INTERFACE UNIT (DIU) POWER UNITS



PERFORM ACTIVE STANDBY INHIBIT CROSS-CONTROLLER TEST

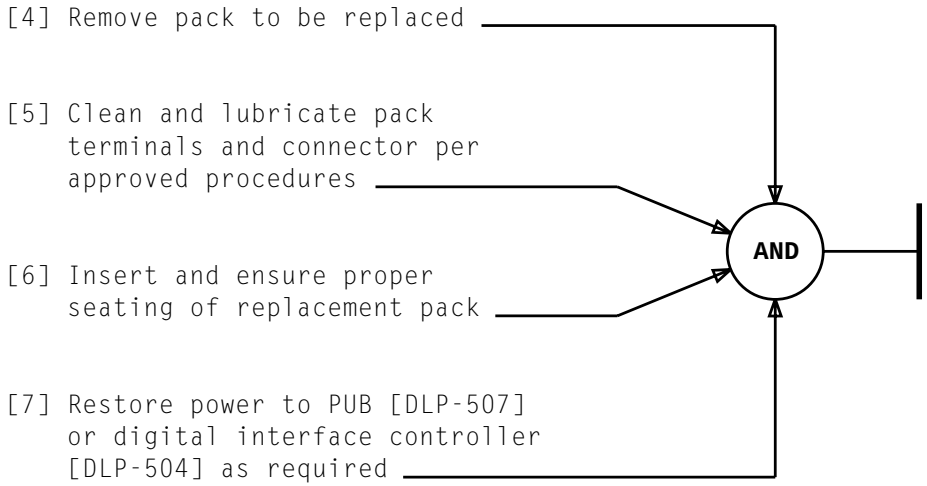


PERFORM ACTIVE STANDBY INHIBIT CROSS-CONTROLLER TEST



CAUTION 1
Service interruptions can be caused by using this procedure to change a TM59 circuit pack, TM60 circuit pack, TF1 circuit pack, TG4 circuit pack, TG5 circuit pack, SM circuit pack, or SJ circuit pack

REPLACE PACK



REPLACE PACK

1. See FIG. 1. 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 in Step 2

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. Obtain failing test in last subroutine after all subroutines have been located. Otherwise, proceed to Step 11

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

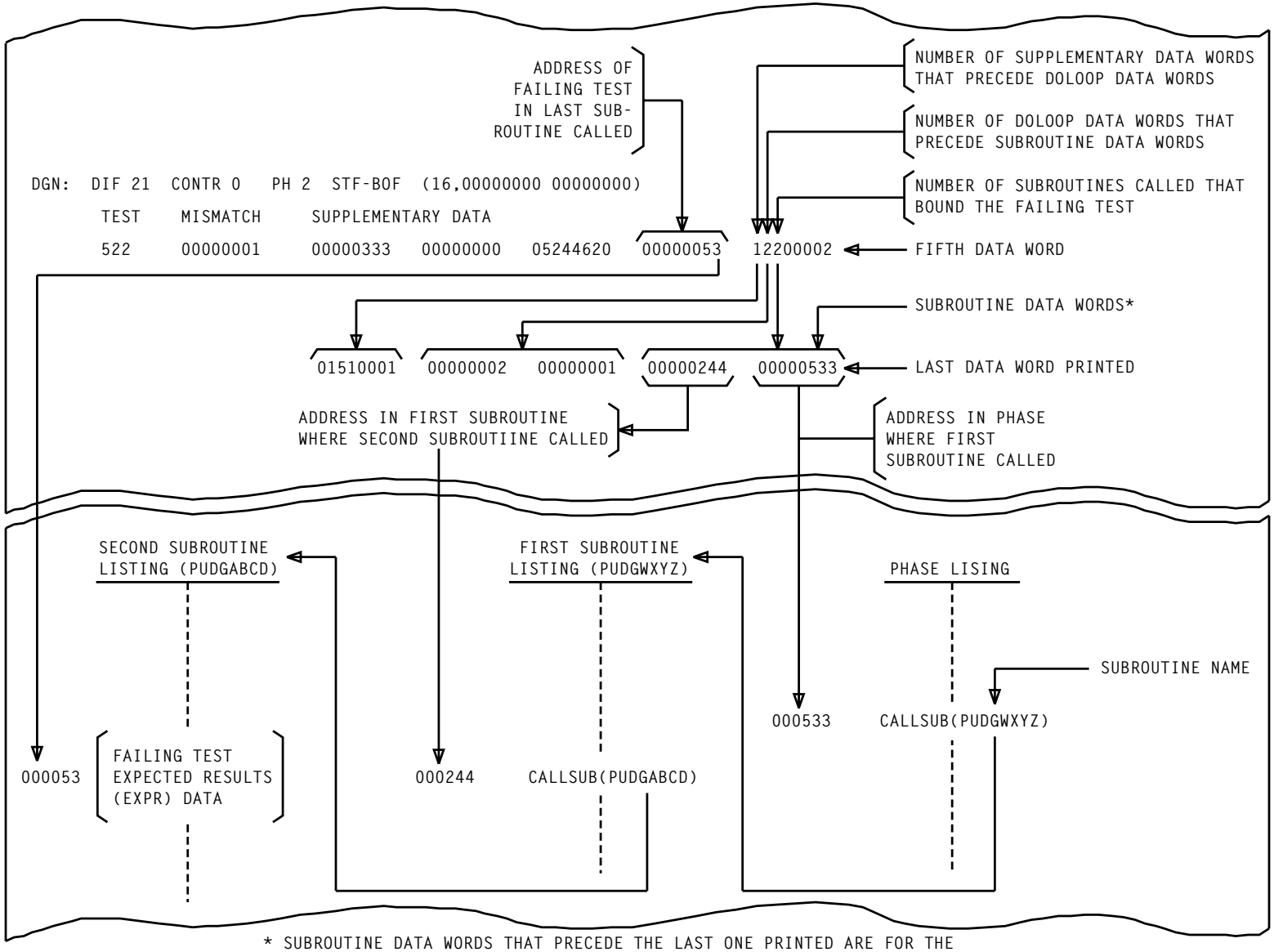
In subroutine located in step 8:

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

13. Repeat from Step 3

End of procedure

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

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

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, locate failing **DIAL** statement and use description column to determine meaning of data contained in second and third raw data words following mismatch data

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

   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

End of procedure

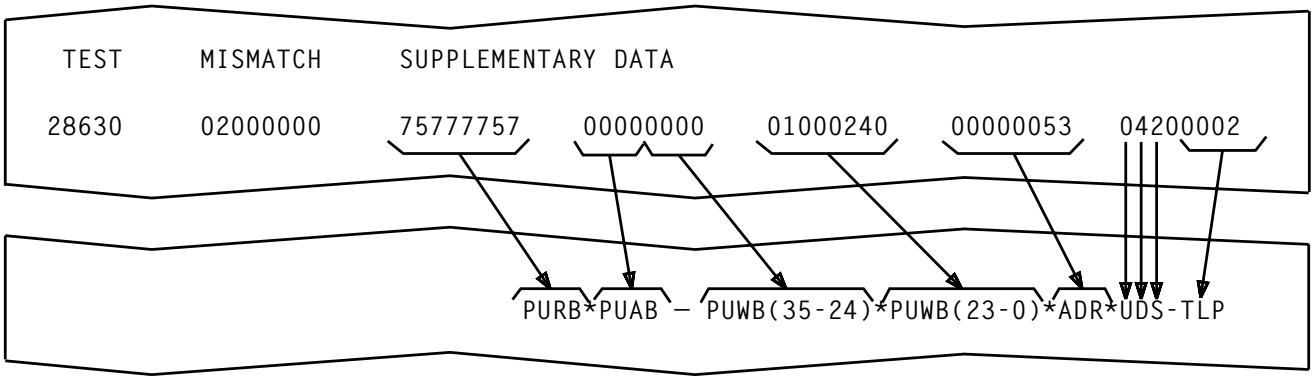


FIG. 1 — Example of Raw Data Printout Relationship to Asterisk Line at Failing Test

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 pluse point address
PUDROP PUDROPI	Standard PUB format†
PULSE	A = B = 0, C = CC pulse point address
PULSI	Same as PLOP statement

DIAL TEST STATEMENT	DESCRIPTION*
PUOP PUOPI	Standard PUB format†
PUOPBBR PUOPIBBR	PUOP part: standard PUB format† BBR part: A = B = 0, C = buffer bus address
SCANI	A(bits 11-2) = SP K code B = SP OP code 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

* 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 point address	VER:SPMTXPK:SDP,MDN O'a! a = SD point address
Scan point address	VER:SPMTXPK:SCP,MSN O'a! a = scan point address

SUMMARY

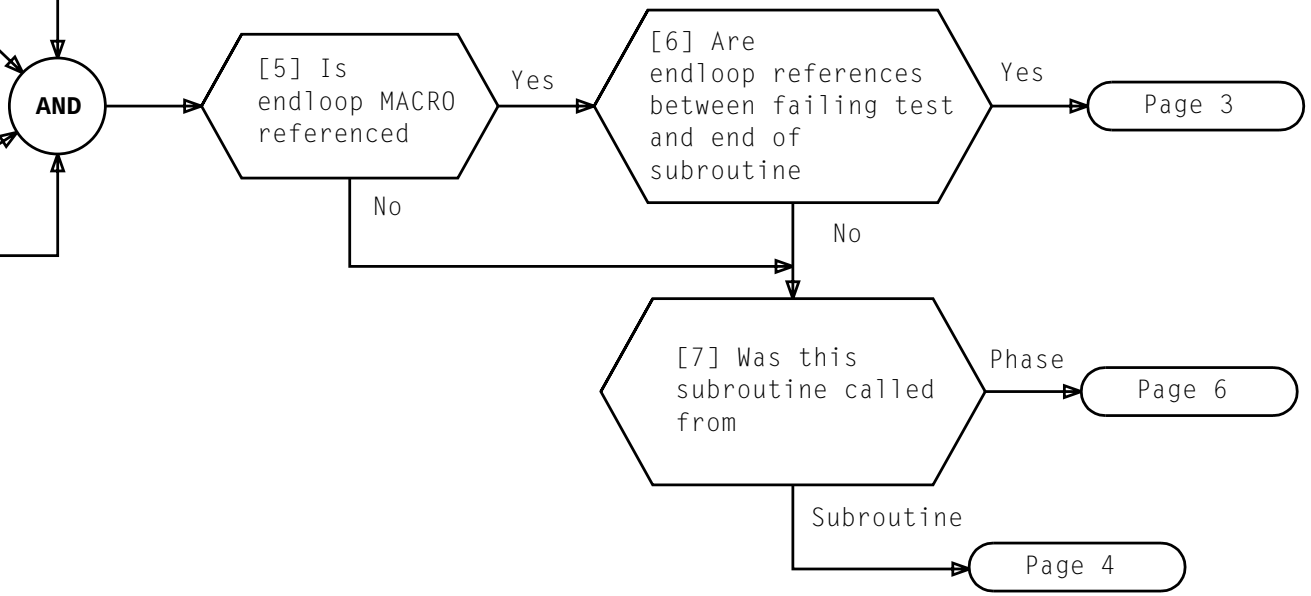
Locate failing test in last subroutine called. Look past failing test for endloop statements. For each endloop statement located in the subroutine, use endloop label variable to identify the location of the associated doloop statements. Locate each doloop statement. Obtain doloop index values from raw data printout and determine their meaning for each doloop [FIG. 1]. 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.

[1] Refer to FIG. 1, page 2, and DIAL statement definitions in Section 234-180-020 as necessary

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

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

[4] Locate subroutine PIDENT reference section



DETERMINE FUNCTION AND LOCATION OF DOLOOPS — SUBROUTINES CALLED

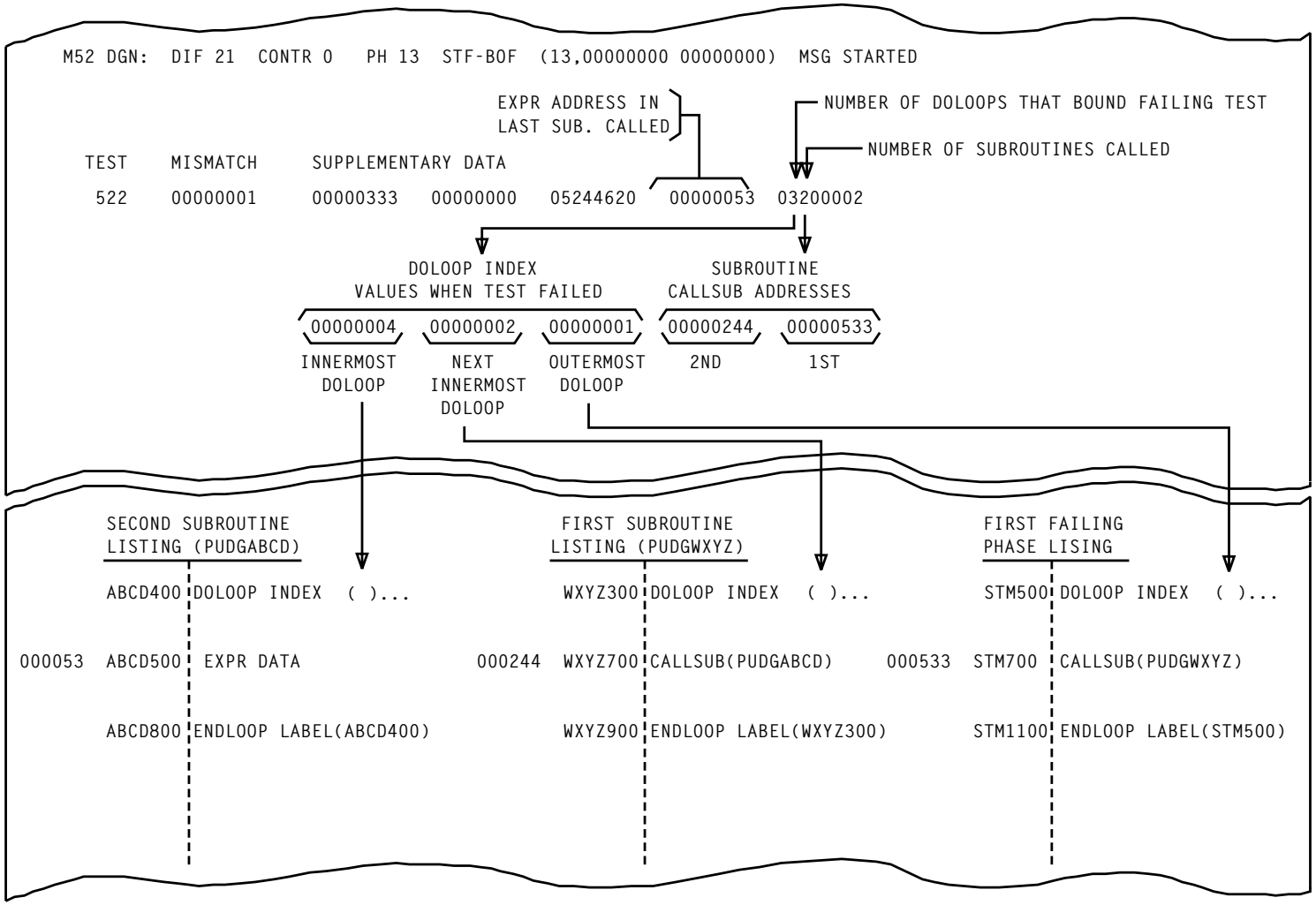
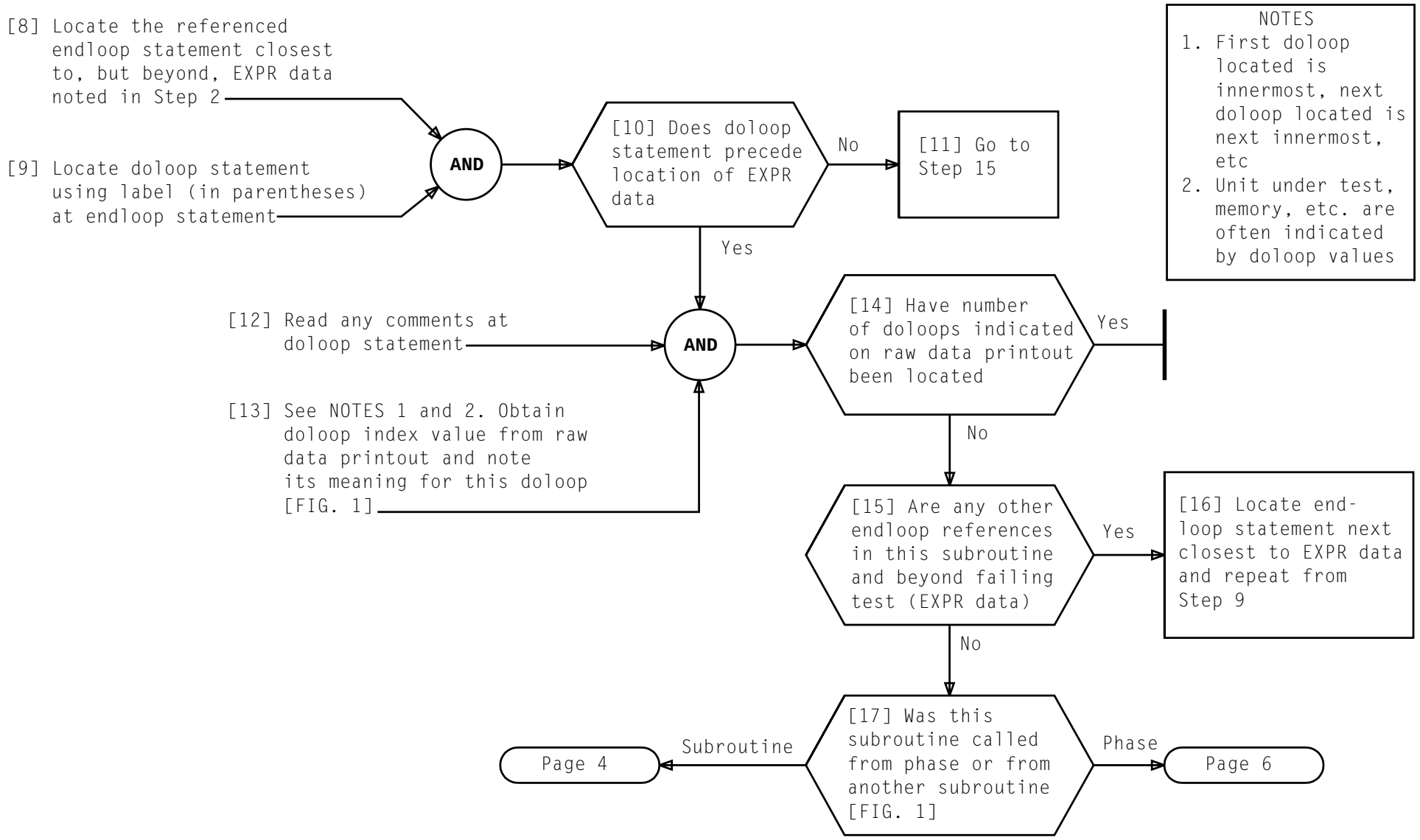
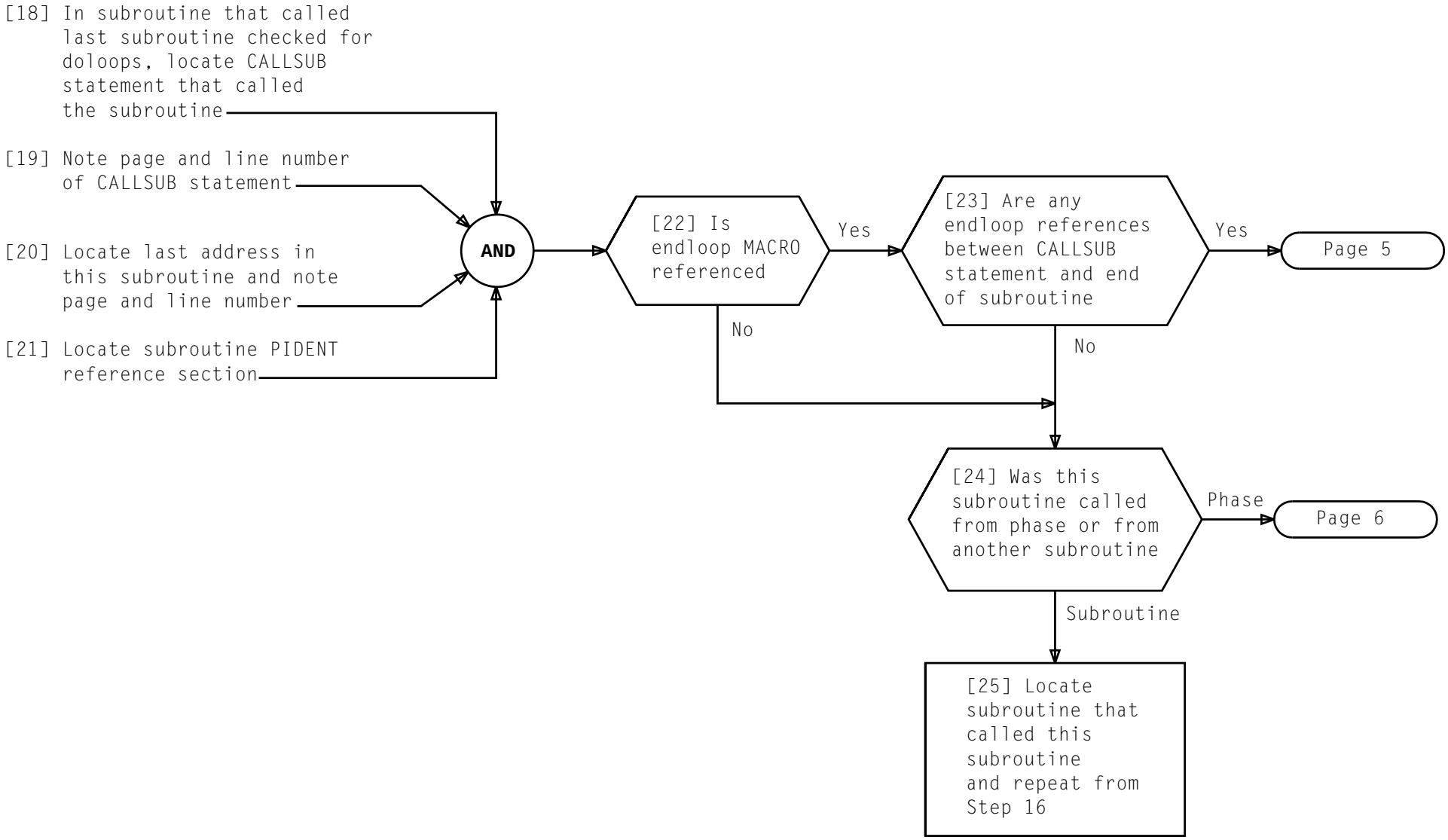


FIG. 1 – Example of Doloop Raw Data Relationship to Listings When Subroutines Called

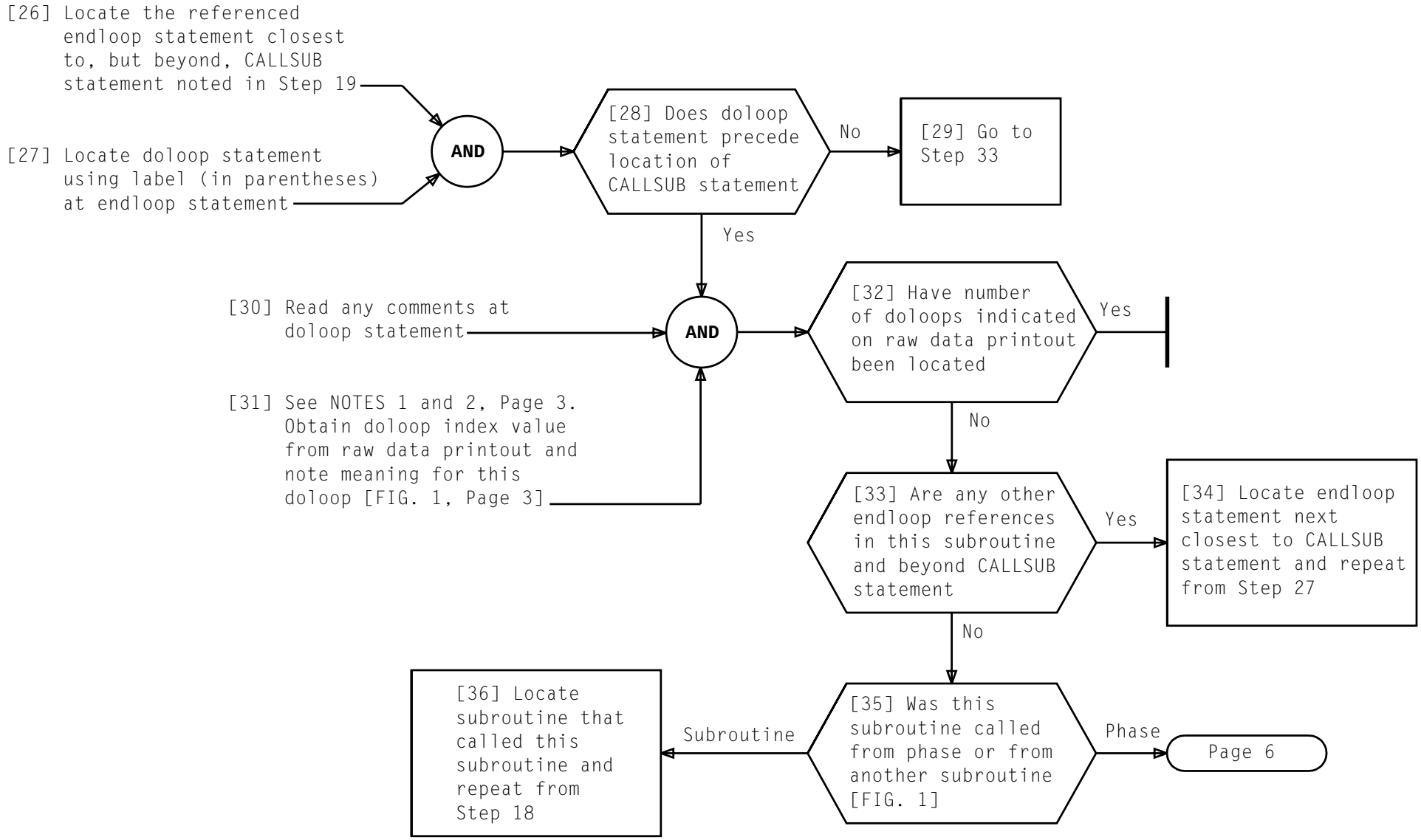
DETERMINE FUNCTION AND LOCATION OF DOLOOPS – SUBROUTINES CALLED



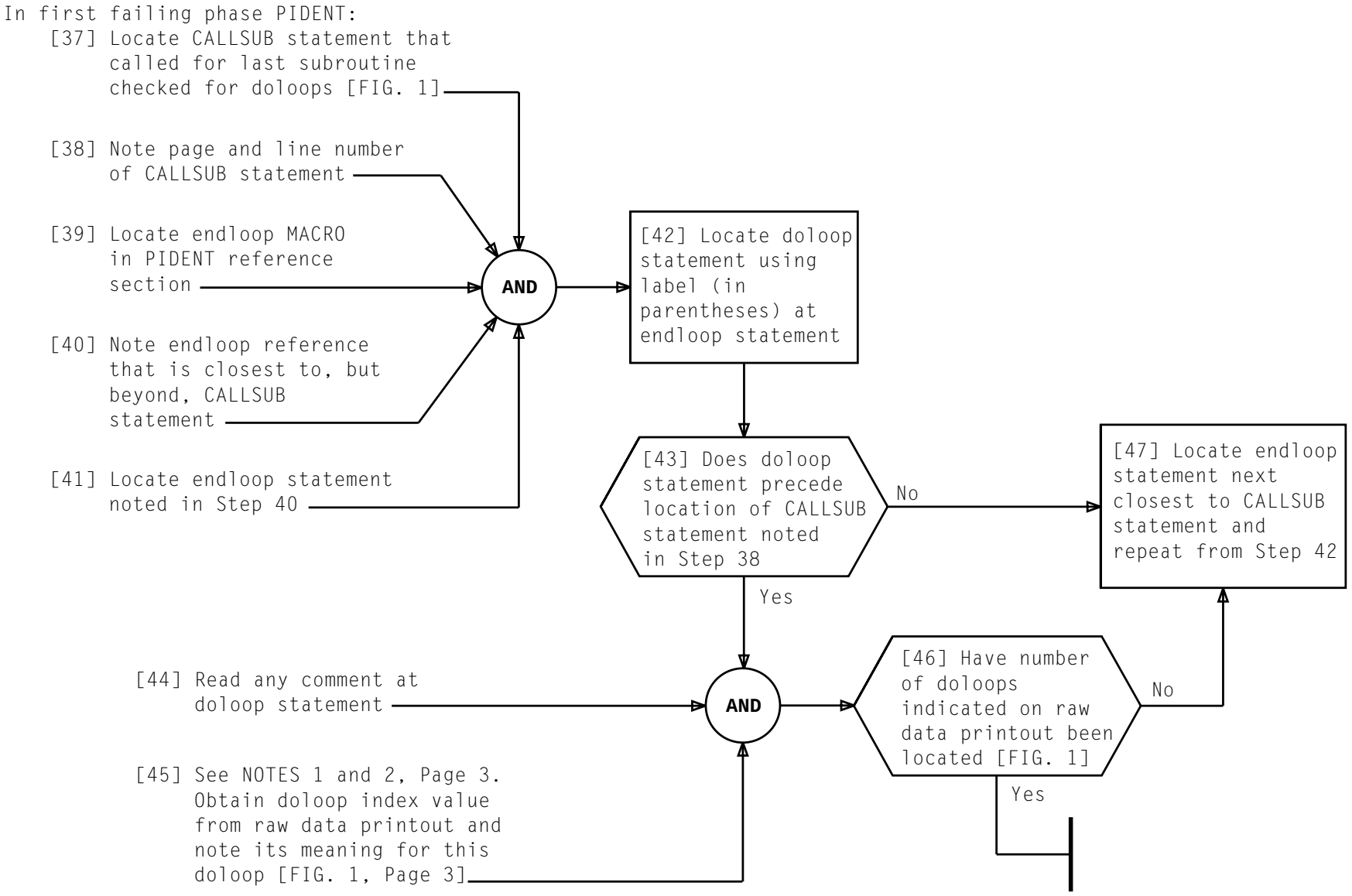
DETERMINE FUNCTION AND LOCATION OF DOLOOPS — SUBROUTINES CALLED



DETERMINE FUNCTION AND LOCATION OF DOLOOPS — SUBROUTINES CALLED

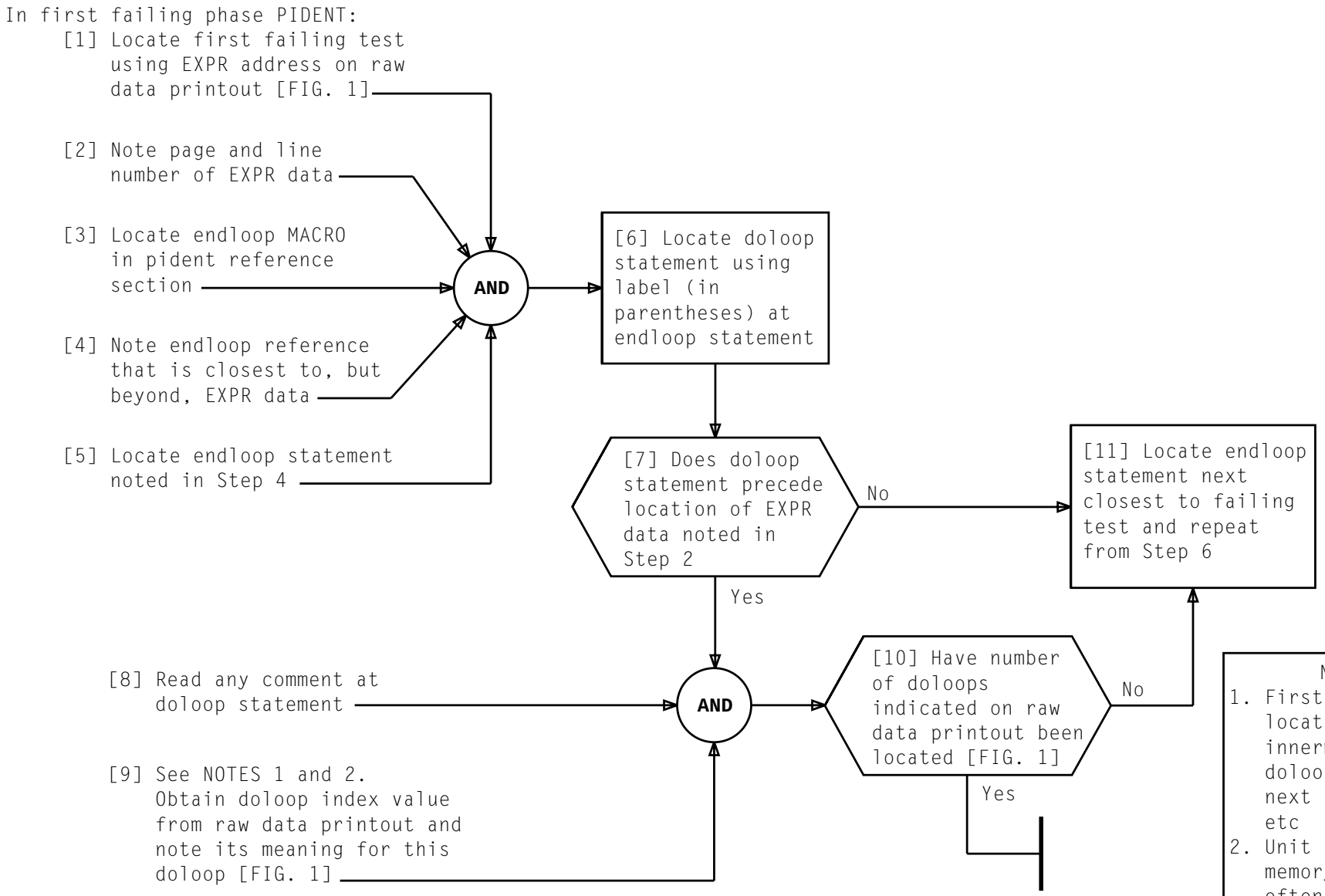


DETERMINE FUNCTION AND LOCATION OF DOLOOPS — SUBROUTINES CALLED



DETERMINE FUNCTION AND LOCATION OF DOLOOPS — SUBROUTINES CALLED

DETERMINE FUNCTION AND LOCATION DOLOOPS — NO SUBROUTINES CALLED



NOTES
1. First doloop located is innermost, next doloop located is next innermost, etc
2. Unit under test, memory, etc are often indicated by doloop values

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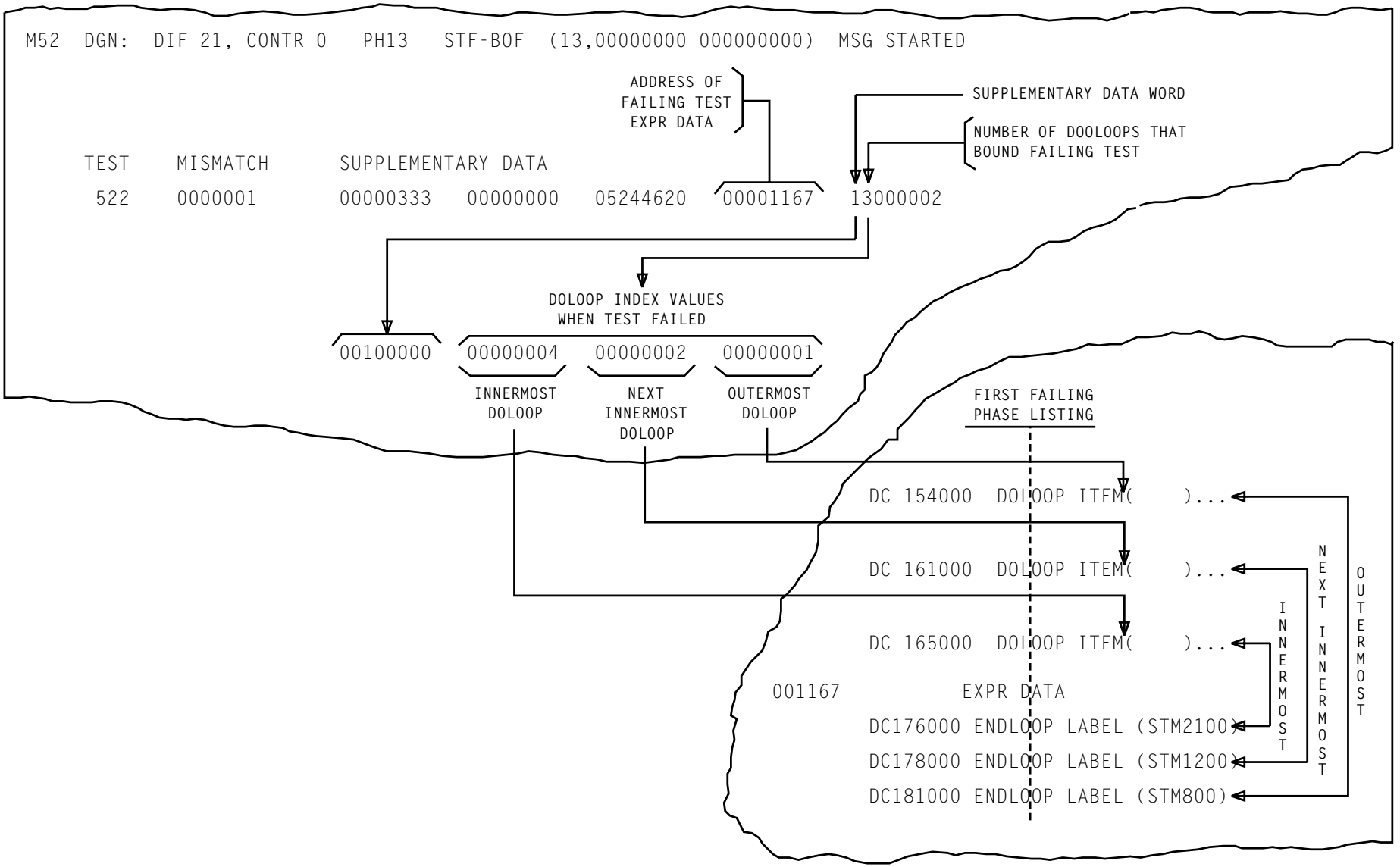
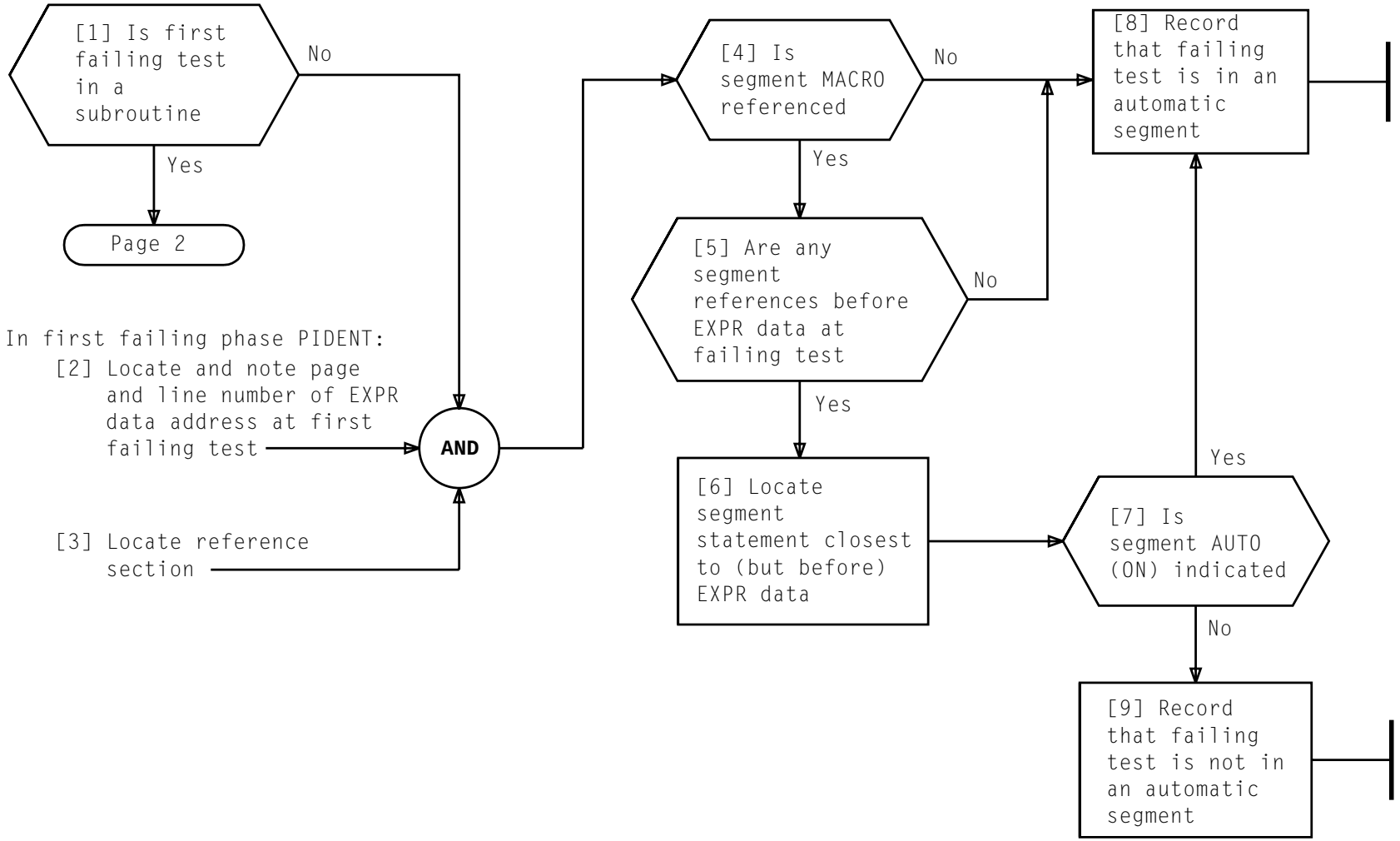


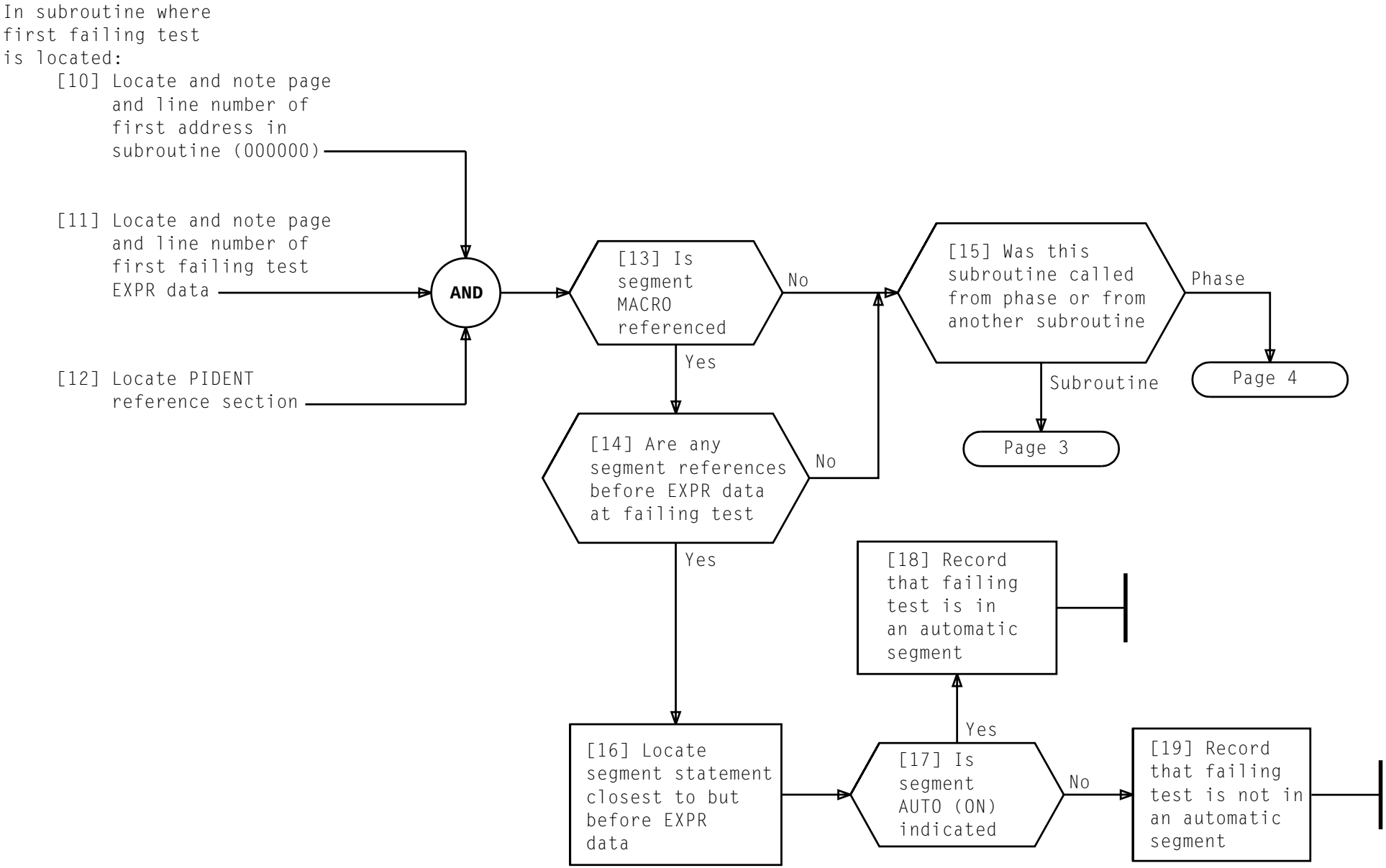
FIG. 1 – Example of Raw Data Doloop Word Relationship to Phase Listing

DETERMINE LOCATION AND FUNCTION OF DOLOOPS – NO SUBROUTINES CALLED

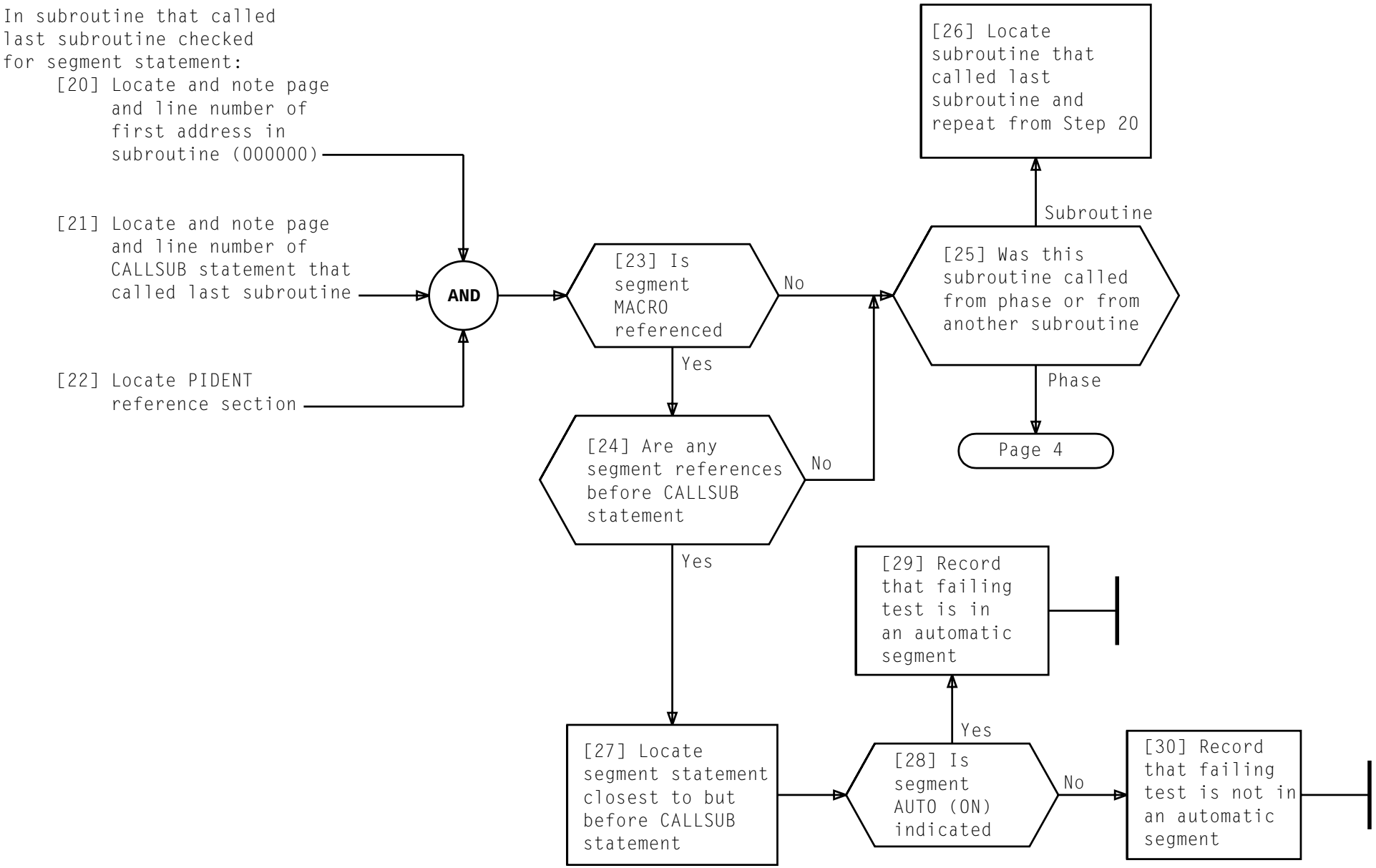
SUMMARY
Locate first segment statement before first failing test. If segment statement has AUTO (ON) indicated, the failing test is in an automatic segment. If AUTO (ON) is not indicated, the failing test is not in an automatic segment. If no segment statement is found before the first failing test,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



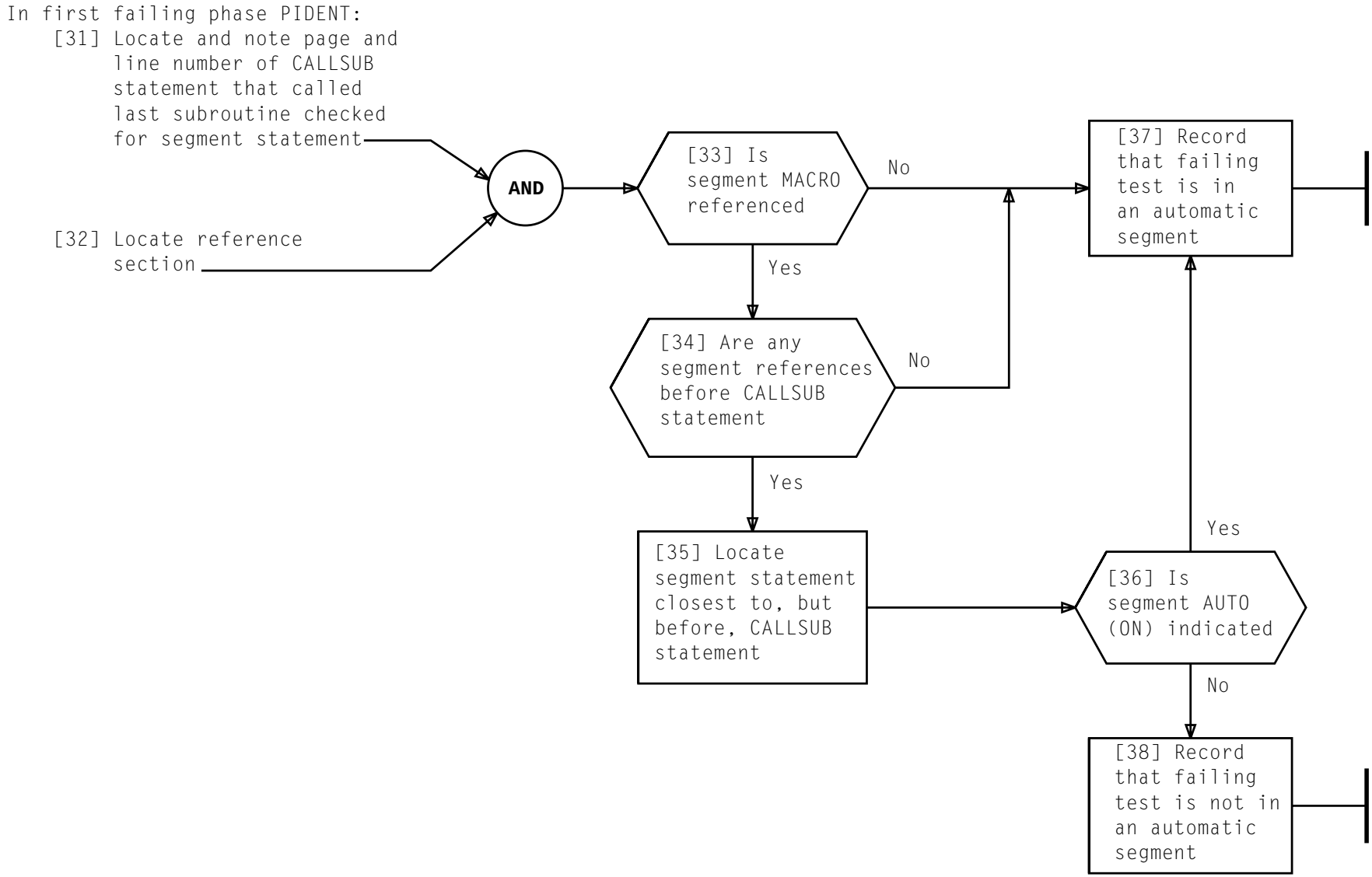
DETERMINE IF FAILING TEST IS IN AN AUTOMATIC SEGMENT



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

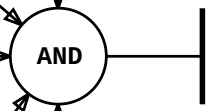
[1] Locate segment statement that
determined failing test was not
in an automatic segment

[2] Note segment statement index
word address for later use
(loop-start address)

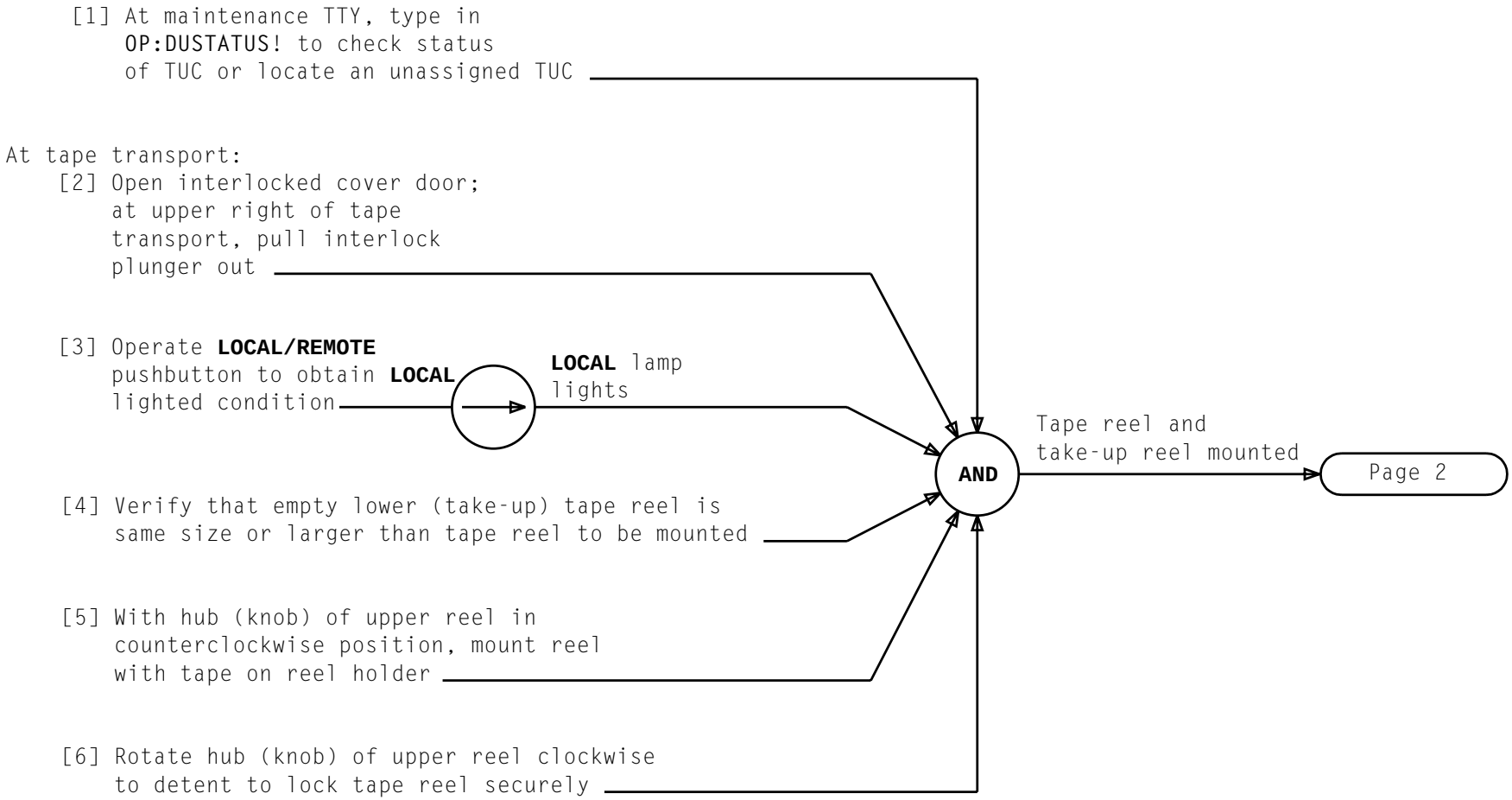
[3] Locate first segment statement
after first failing test

[4] Note index word address of DIAL
statement that follows segment
statement located in Step 3
(loop-end address)

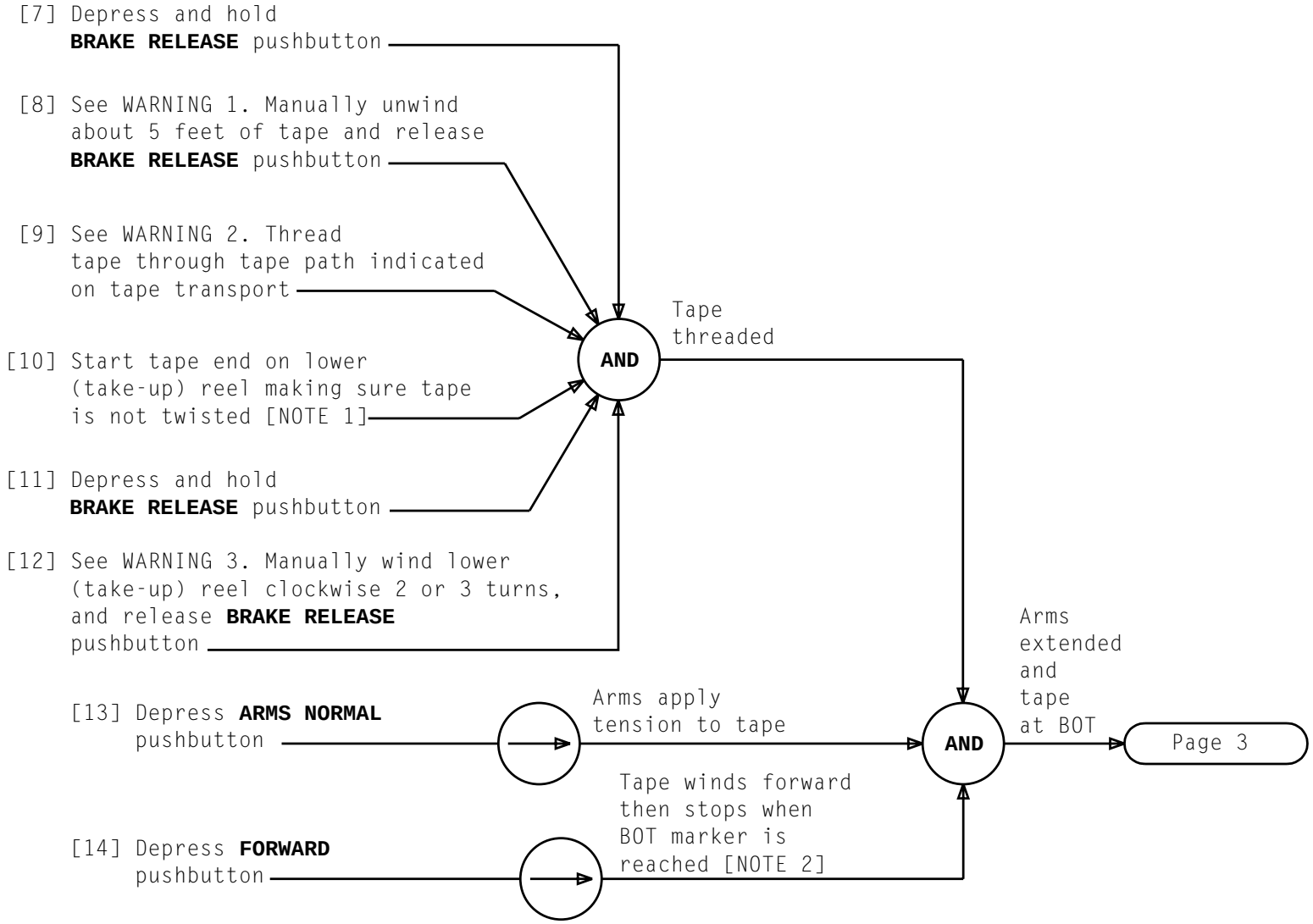
[5] Type in **EX:DIF** a**;RPT 2:PH** b**,ADR** c-d!
a = failing DIF member number
b = first failing phase
c = loop-start address (Step 2)
d = loop-end address (Step 4)



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



MOUNT TAPE ON TAPE TRANSPORT



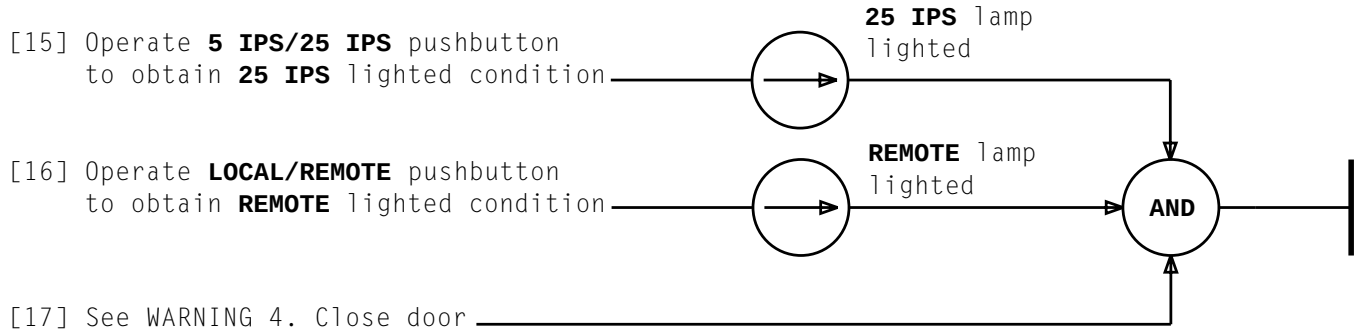
NOTES

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

WARNINGS

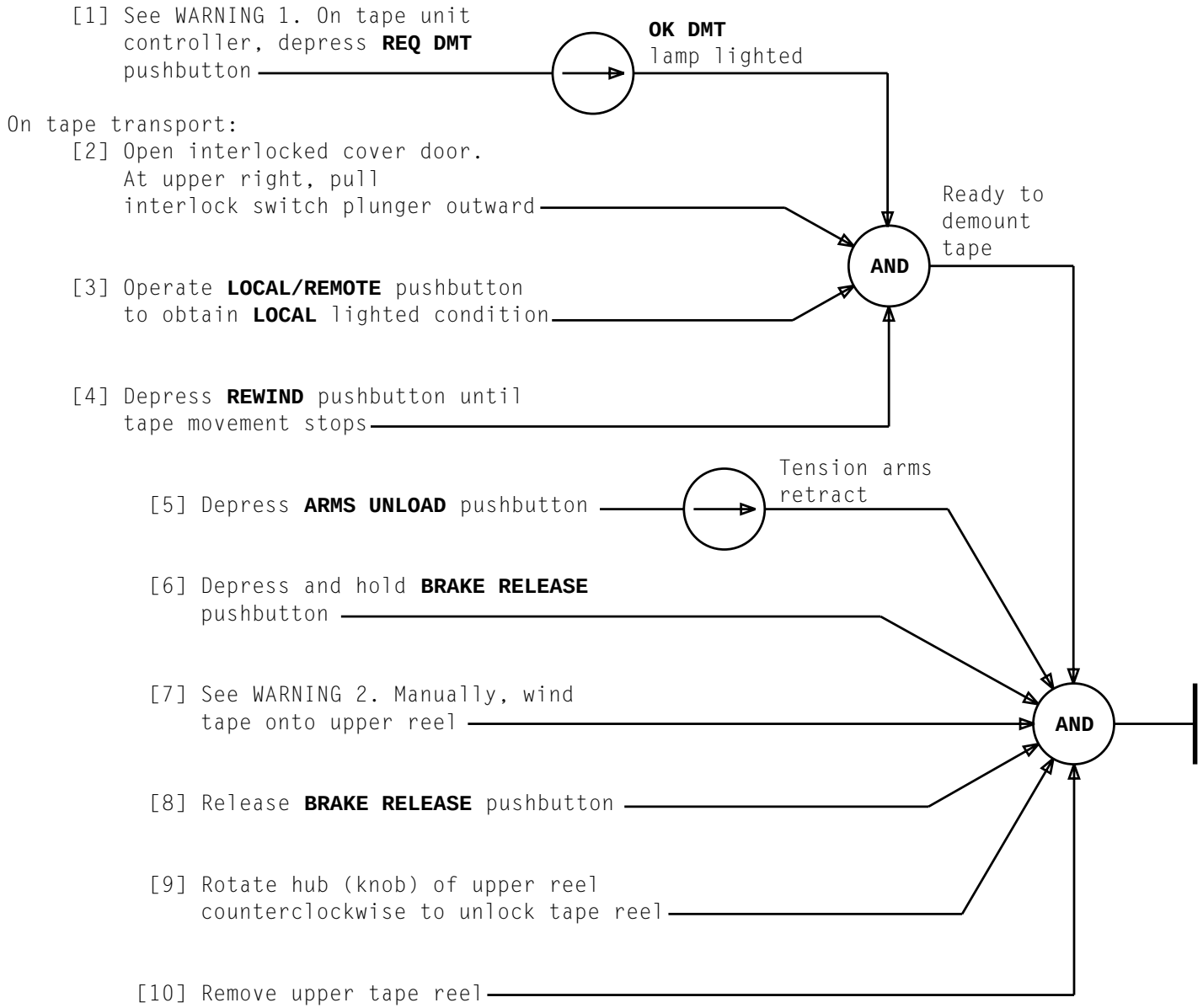
1. *Contamination of tape by contact with floor will damage tape heads*
2. *Do not touch tape head surfaces; body oils will contaminate tape*
3. *If tape is not properly aligned along rollers and guides or is too loose, it may be damaged*

MOUNT TAPE ON TAPE TRANSPORT



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

MOUNT TAPE ON TAPE TRANSPORT



WARNINGS

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

DEMOUNT TAPE FROM TAPE TRANSPORT

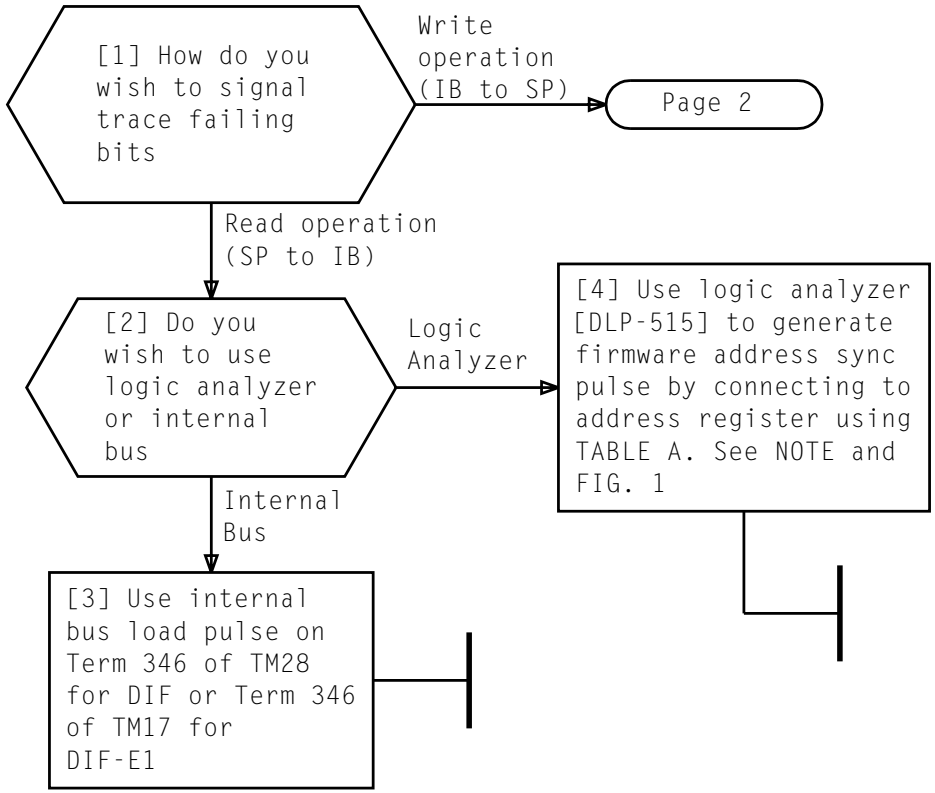
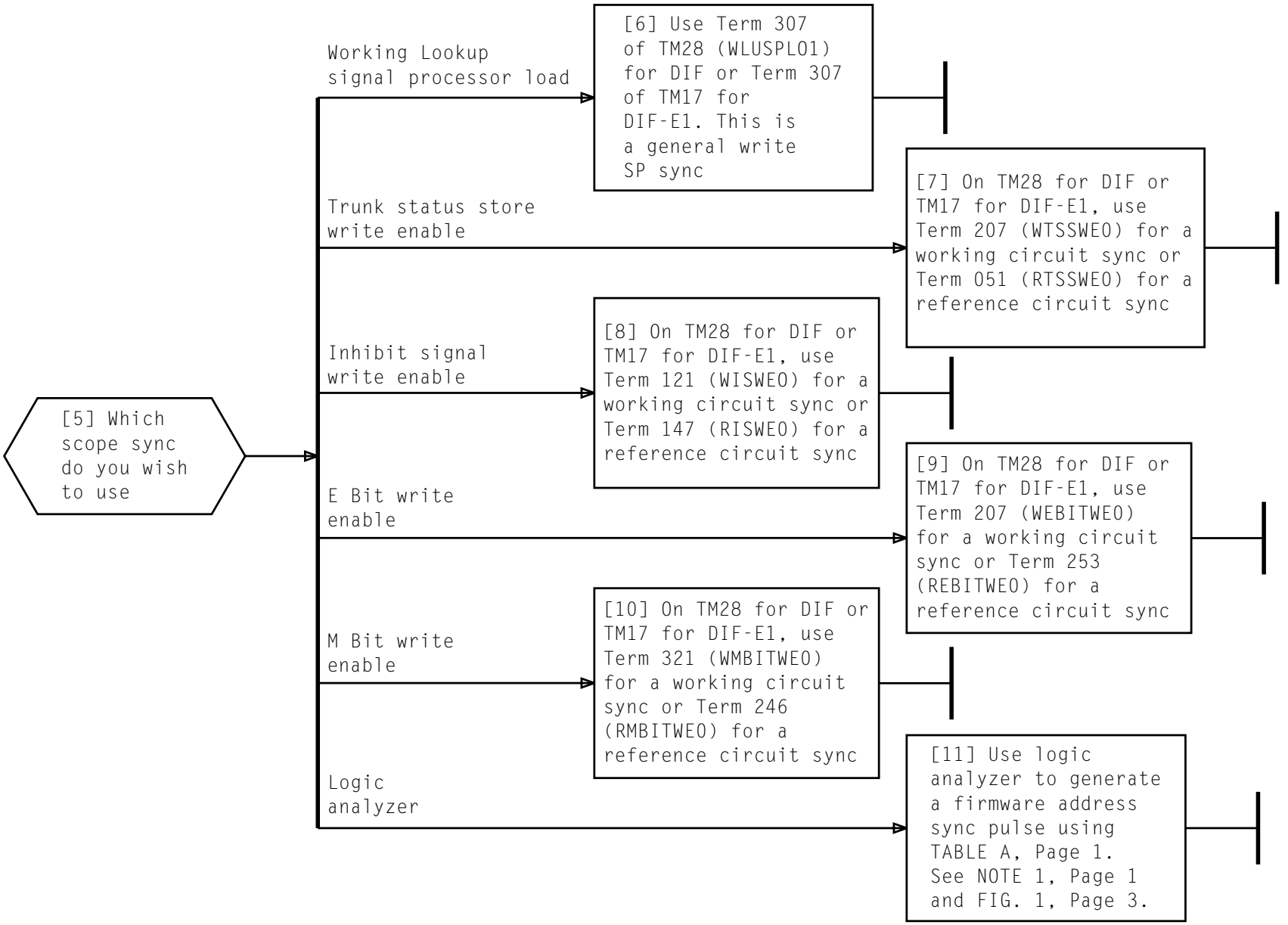


TABLE A
MEMORY ADDRESS REGISTER

CHANNEL NO.	BIT NUMBER	PIN ON SOCKET OF TM42 FOR DIF OR TM366 FOR DIF-E1(D)
16	0	310
15	1	210
14	2	309
13	3	209
12	4	218
11	5	317
10	6	217
9	7	316
8	8	304
7	9	204
6	10	303
5	11	203
4	12	308
3	13	208
2	14	307
1	15	207
EXT CLOCK	—	351

NOTE 1
The starting address for a firmware loop is the first address of the firmware subsegment that contains the first failing test (program counter). The first supplementary word of the firmwave raw data printout should be noted.

SELECT SCOPE SYNC FOR SIGNAL TRACING SIGNAL PROCESSOR FAULTS



SELECT SCOPE SYNC FOR SIGNAL TRACING SIGNAL PROCESSING FAULTS

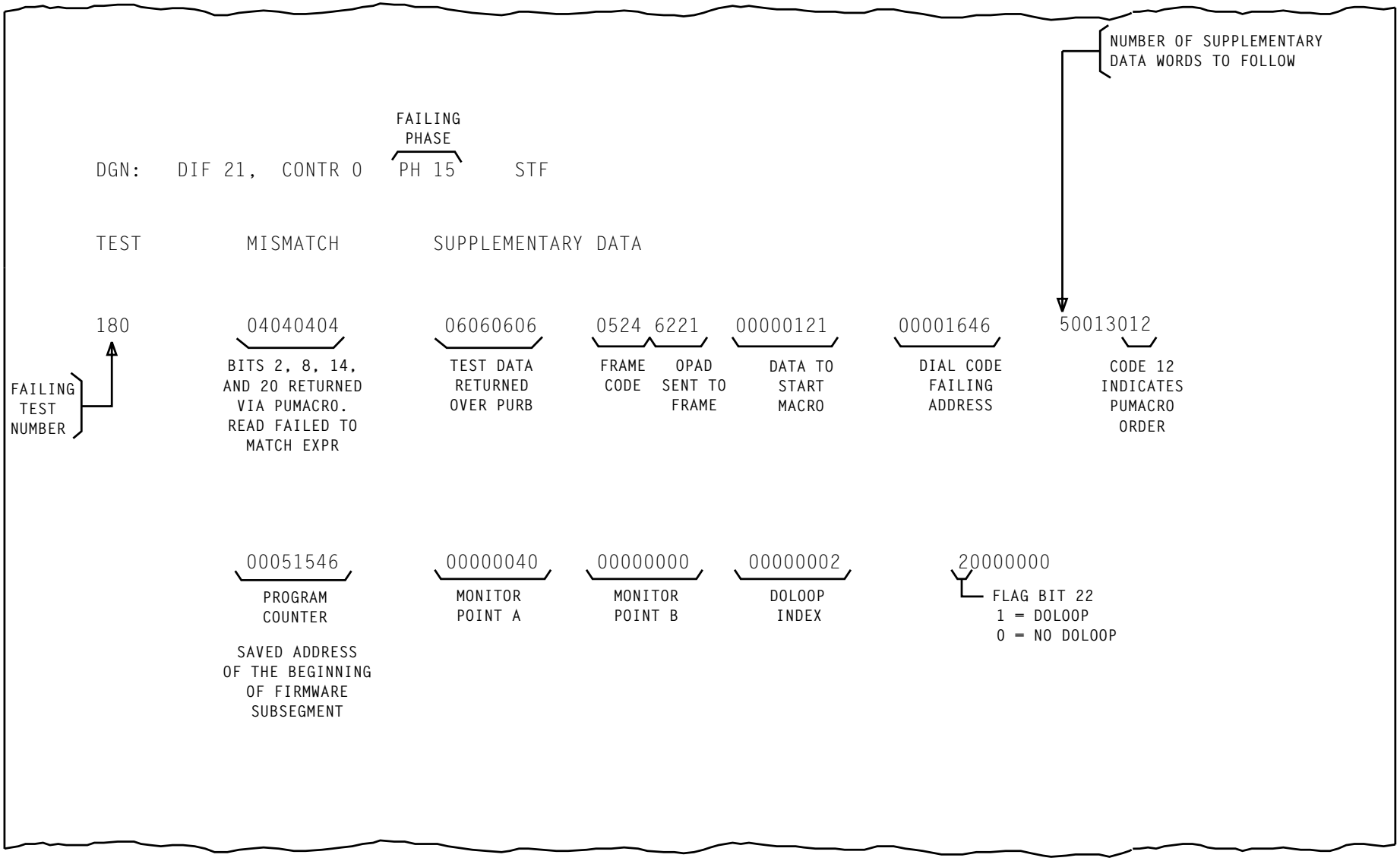


FIG. 1 — Example of DIF PUMACRO Raw Data Printout

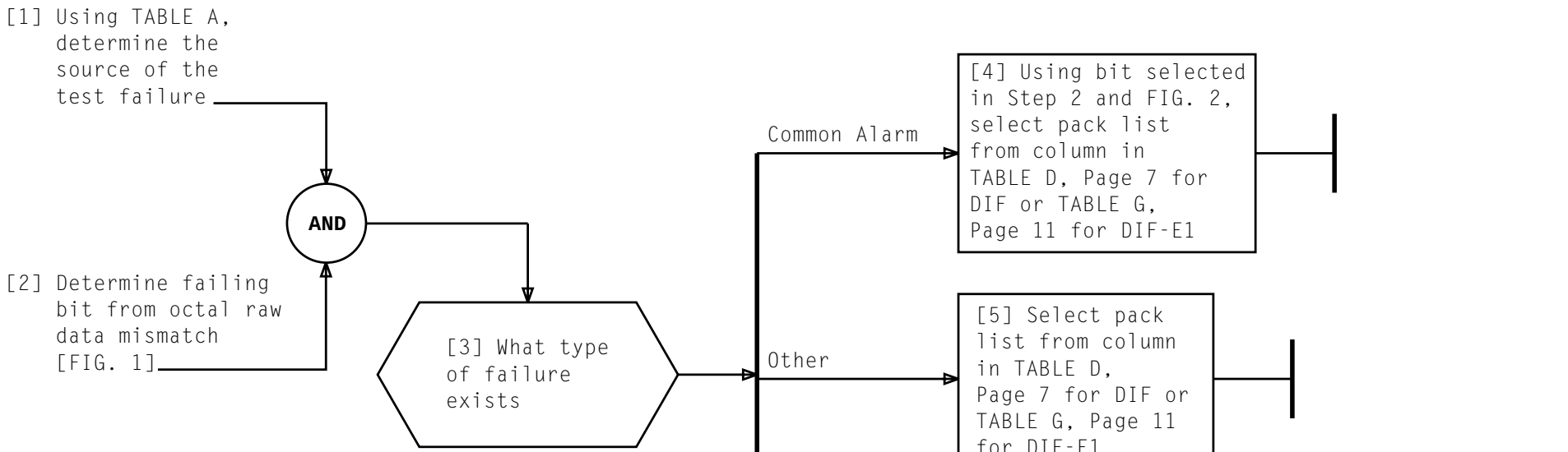


TABLE A

ESR IDENTIFICATION

SECOND SUPPLEMENTARY DATA WORD	ERROR SOURCE
00000000	Common Alarm
01	Digroup 1 Alarm
02	Digroup 2 Alarm
03	Digroup 3 Alarm
04	Digroup 4 Alarm
05	Digroup 5 Alarm
06	LUSP Summary
07	Digroup Alarm Summary
10	Digroup Report Summary
11	Common Summary

DETERMINE FAULTY UNIT CIRCUIT PACKS

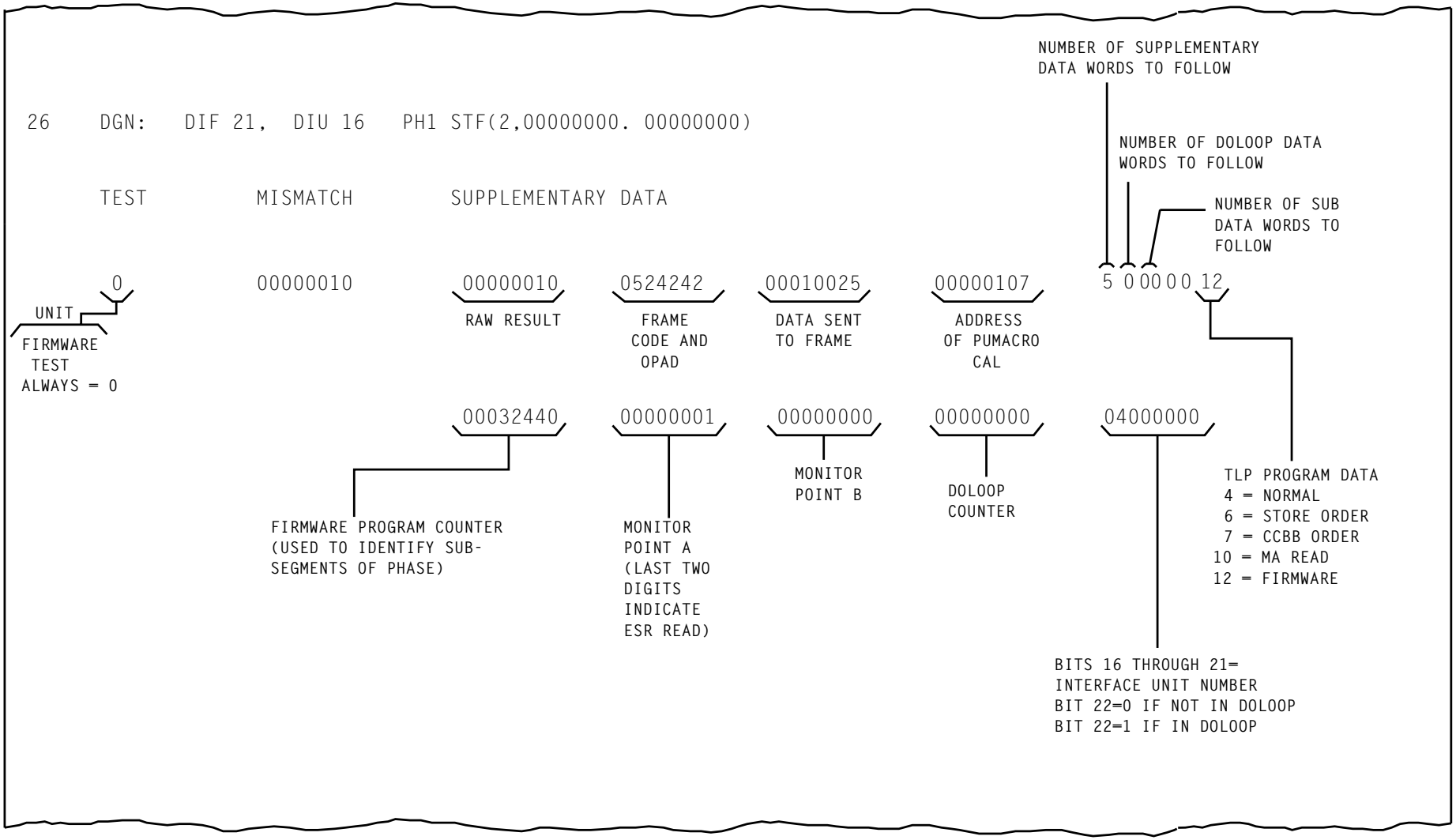
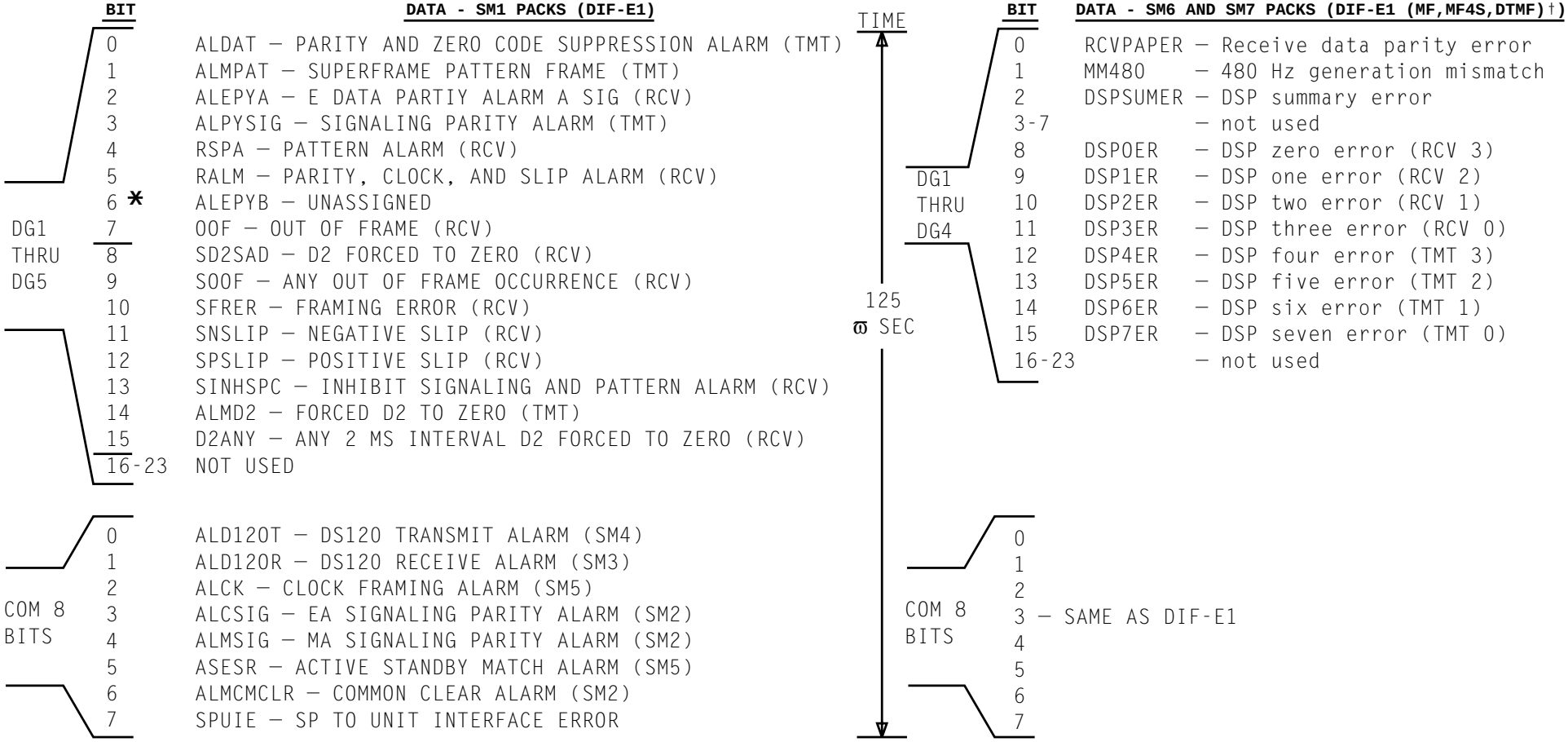


FIG. 1 – Example of DIF FIRMWARE Raw Data



* Wired to ground on digroup backplane

† The service packs (SM6 and SM7) may be used in DIUs 1, 9, 18 and 26.

FIG. 2 — CONTENTS OF ESR (SHEET 1 of 2)

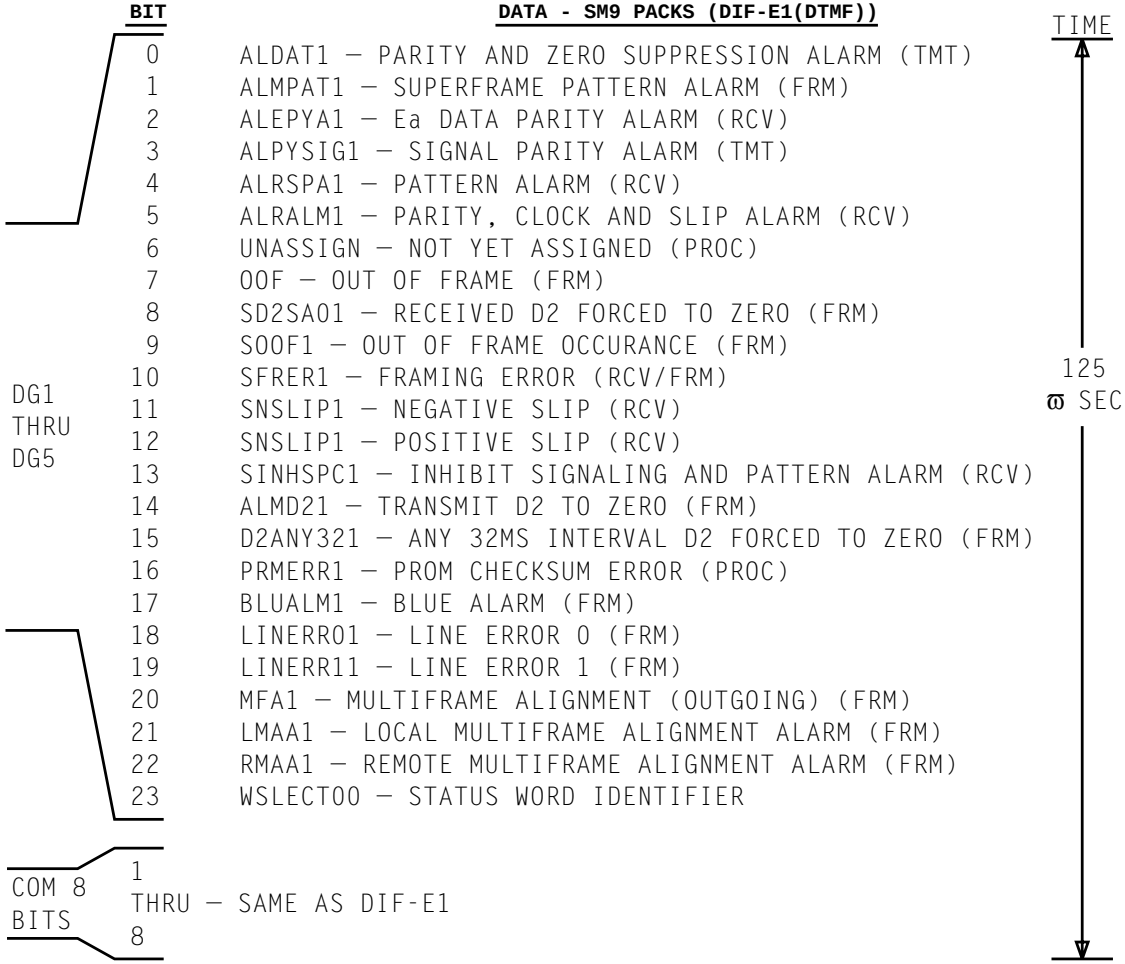


FIG. 2 — CONTENTS OF ESR (SHEET 2 of 2)

DETERMINE FAULTY UNIT CIRCUIT PACKS

TABLE B

PACK IDENTIFICATION – DIF

ALARM BIT 0

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM3	SM3	SM3	SM3	SM3
SM4	SM4	SM4	SM4	SM4
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

ALARM BIT 1

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43
TM20	TM20	TM20	TM20	TM20

ALARM BIT 2

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM1 OR SM9 (POS 2-5)	SM1 OR SM9 (POS 1, 3-5)	SM1 OR SM9 (POS 1, 2, 4, 5)	SM1 OR SM9 (POS 1-3, 5)	SM1 OR SM9 (POS 1-4)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

ALARM BIT 3

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

ALARM BIT 4

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

ALARM BIT 5

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

TABLE B (Contd)

PACK IDENTIFICATION — DIF

ALARM BIT 6

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM43	TM43	TM43	TM43	TM43

ALARM BIT 7

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

TABLE C

PACK IDENTIFICATION — DIF

REPORT BIT 8

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM1 OR SM9 (POS 2 -5)	SM1 OR SM9 (POS 1, 3-5)	SM1 OR SM9 (POS 1, 2, 4, 5)	SM1 OR SM9 (POS 1, 3, 5)	SM1 OR SM9 (POS 1 -4)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
SM3	SM3	SM3	SM3	SM3
SM4	SM4	SM4	SM4	SM4
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

REPORT BIT 9

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

TABLE C (Contd)

PACK IDENTIFICATION – DIF

REPORT BIT 10

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

REPORT BIT 11

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

REPORT BIT 12

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

REPORT BIT 13

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

REPORT BIT 14

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM2	SM2	SM2	SM2	SM2
SM3	SM3	SM3	SM3	SM3
SM5	SM5	SM5	SM5	SM5
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

REPORT BIT 15

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1 OR SM9 (POS 1)	SM1 OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1 OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM1 OR SM9 (POS 2-5)	SM1 OR SM9 (POS 1, 3-5)	SM1 OR SM9 (POS 1, 2, 4, 5)	SM1 OR SM9 (POS 1-3, 5)	SM1 OR SM9 (POS 1-4
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
SM3	SM3	SM3	SM3	SM3
SM4	SM4	SM4	SM4	SM4
TM38	TM38	TM38	TM38	TM38
TM43	TM43	TM43	TM43	TM43

TABLE D COMMON ALARM AND SUMMARY BIT											
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**LUSP SUMMARY**	**DIGROUP ALM SUMMARY**	**DIGROUP RPT SUMMARY**	**COMMON SUMMARY**
SM4	SM3	SM5	SM2	SM2	SM5	SM2	SM2	SM2	SM1 OR SM9 (ALL)	SM1 OR SM9 (ALL)	SM2
SM5	SM5	SM2	SM5	SM5	SM2	SM5	SM5	SM1 OR SM9 (ALL)	SM5	SM5	SM5
SM1 OR SM9 (ALL)	SM2		SM1 OR SM9 (ALL)	TM38	TM38	TM38	TM43	SM5	SM2	SM2	SM4
SM3	SM4		TM38	TM43	TM43	TM43		TM38	SM3	SM3	SM3
SM2	TM38	TM38	TM43	TM31	TM60			TM29	SM4	SM4	SM1 OR SM9 (ALL)
TM38	TM43	TM43						TM43	TM38	TM38	TM38
TM43	TF1	TM22						TM31	TM43	TM43	TM43
TM22	SJ5	TM20						TF1	TF1	TF1	TM29
TF1		TM60						SJ5	SJ5	SJ5	TF1
SJ5											SJ5

TABLE E

PACK IDENTIFICATION — DIF-E1

ALARM BIT 0

DIGROUP

1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM3	SM3	SM3	SM3	SM3
SM4	SM4	SM4	SM4	SM4
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

ALARM BIT 1

DIGROUP

1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19
TM20	TM20	TM20	TM20	TM20

ALARM BIT 2

DIGROUP

1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM1 OR SM9 (POS 2-5)	SM1 OR SM9 (POS 1, 3-5)	SM1 OR SM9 (POS 1, 2, 4, 5)	SM1 OR SM9 (POS 1-3, 5)	SM1 OR SM9 (POS 1-4)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

ALARM BIT 3

DIGROUP

1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

ALARM BIT 4

DIGROUP

1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

ALARM BIT 5

DIGROUP

1	2	3 *	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1 OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

* SM6 packs may be used
in MF DIUs 1, 9, 18 and 26

TABLE E (Contd)

PACK IDENTIFICATION — DIF-E1

ALARM BIT 6

DIGROUP 1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM19	TM19	TM19	TM19	TM19

ALARM BIT 7

DIGROUP 1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

* SM6 and SM7 service circuit packs may be used in DIUs 1, 9, 18 and 26

TABLE F

PACK IDENTIFICATION — DIF-E1

REPORT BIT 8

DIGROUP 1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM1 OR SM9 (POS 2 -5)	SM1 OR SM9 (POS 1, 3-5)	SM1 OR SM9 (POS 1, 2, 4, 5)	SM1 OR SM9 (POS 1, 3, 5)	SM1 OR SM9 (POS 1 -4)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
SM3	SM3	SM3	SM3	SM3
SM4	SM4	SM4	SM4	SM4
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

REPORT BIT 9

DIGROUP 1	2	3	4	5
SM1* OR SM9 (POS 1)	SM1* OR SM9 (POS 2)	SM1* OR SM9 (POS 3)	SM1* OR SM9 (POS 4)	SM1 OR SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

* SM6 and SM7 service circuit packs may be used in DIUs 1, 9, 18 and 26

DETERMINE FAULTY UNIT CIRCUIT PACKS

TABLE F (Contd)
PACK IDENTIFICATION — DIF-E1

REPORT BIT 10

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1* or SM9 (POS 1)	SM1* or SM9 (POS 2)	SM1* or SM9 (POS 3)	SM1* or SM9 (POS 4)	SM1 or SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

REPORT BIT 12

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1* or SM9 (POS 1)	SM1* or SM9 (POS 2)	SM1* or SM9 (POS 3)	SM1* or SM9 (POS 4)	SM1 or SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

REPORT BIT 14

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1* or SM9 (POS 1)	SM1* or SM9 (POS 2)	SM1* or SM9 (POS 3)	SM1* or SM9 (POS 4)	SM1 or SM9 (POS 5)
SM2	SM2	SM2	SM2	SM2
SM3	SM3	SM3	SM3	SM3
SM5	SM5	SM5	SM5	SM5
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

REPORT BIT 11

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1* or SM9 (POS 1)	SM1* or SM9 (POS 2)	SM1* or SM9 (POS 3)	SM1* or SM9 (POS 4)	SM1 or SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

REPORT BIT 13

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1* or SM9 (POS 1)	SM1* or SM9 (POS 2)	SM1* or SM9 (POS 3)	SM1* or SM9 (POS 4)	SM1 or SM9 (POS 5)
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19
TF1	TF1	TF1	TF1	TF1
SJ5	SJ5	SJ5	SJ5	SJ5

REPORT BIT 15

DIGROUP 1	DIGROUP 2	DIGROUP 3	DIGROUP 4	DIGROUP 5
SM1* or SM9 (POS 1)	SM1* or SM9 (POS 2)	SM1* or SM9 (POS 3)	SM1* or SM9 (POS 4)	SM1 or SM9 (POS 5)
SM1 (POS 2-5)	SM1 (POS 1, 3-5)	SM1 (POS 1, 2, 4, 5)	SM1 (POS 1-3, 5)	SM1 (POS 1 -4
SM5	SM5	SM5	SM5	SM5
SM2	SM2	SM2	SM2	SM2
SM3	SM3	SM3	SM3	SM3
SM4	SM4	SM4	SM4	SM4
TM38	TM38	TM38	TM38	TM38
TM19	TM19	TM19	TM19	TM19

* SM6 and SM7 Service Circuit packs may be used in DIUs 1, 9, 18 and 26

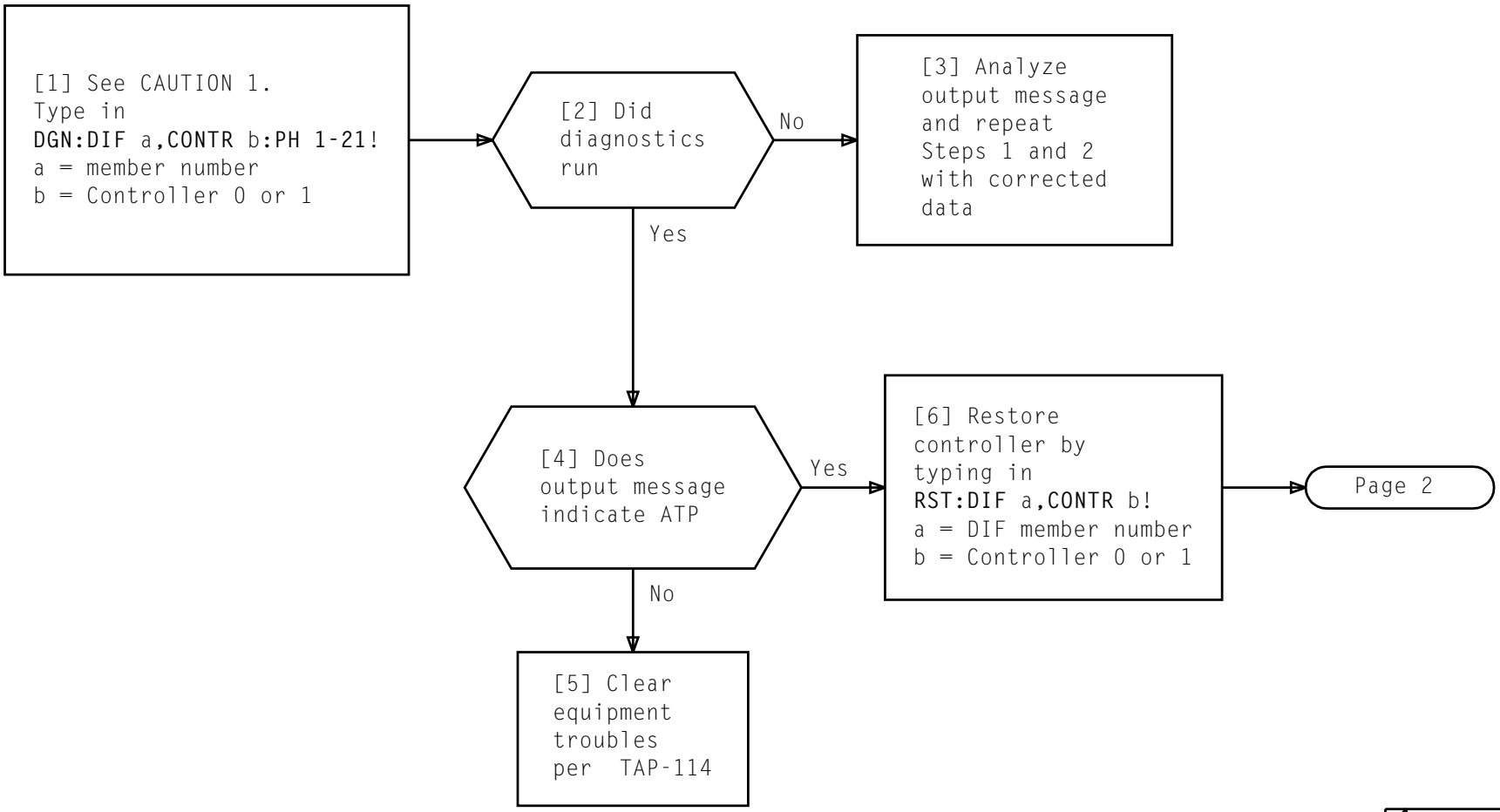
DETERMINE FAULTY UNIT CIRCUIT PACKS

TABLE G
COMMON ALARM AND SUMMARY BIT

0	1	2	3	4	5	6	7	LUSP SUMMARY	DIGROUP ALM SUMMARY	DIGROUP RPT SUMMARY	COMMON SUMMARY
SM4	SM3	SM5	SM2	SM2	SM5	SM2	SM2	SM2	SM1* or SM9 (ALL)	SM1* or SM9 (ALL)	SM2
SM5	SM5	SM2	SM5	SM5	SM2	SM5	SM5	SM1* or SM9 (ALL)	SM5	SM5	SM5
SM1* or SM9 (ALL)	SM2		SM1* or SM9 (ALL)	TM38	TM38	TM38	TM19	SM5	SM2	SM2	SM4
SM3	SM4		TM38	TM19	TM19	TM19		TM38	SM3	SM3	SM3
SM2	TM38	TM38	TM19	TM5	TM60			TM362	SM4	SM4	SM1* or SM9 (ALL)
TM38	TM19	TM19						TM19	TM38	TM38	TM38
TM19	TF1	TM22						TM5	TM19	TM19	TM19
TM22	SJ5	TM20						TF1	TF1	TF1	TM362†
TF1		TM60						SJ5	SJ5	SJ5	TF1
SJ5											SJ5

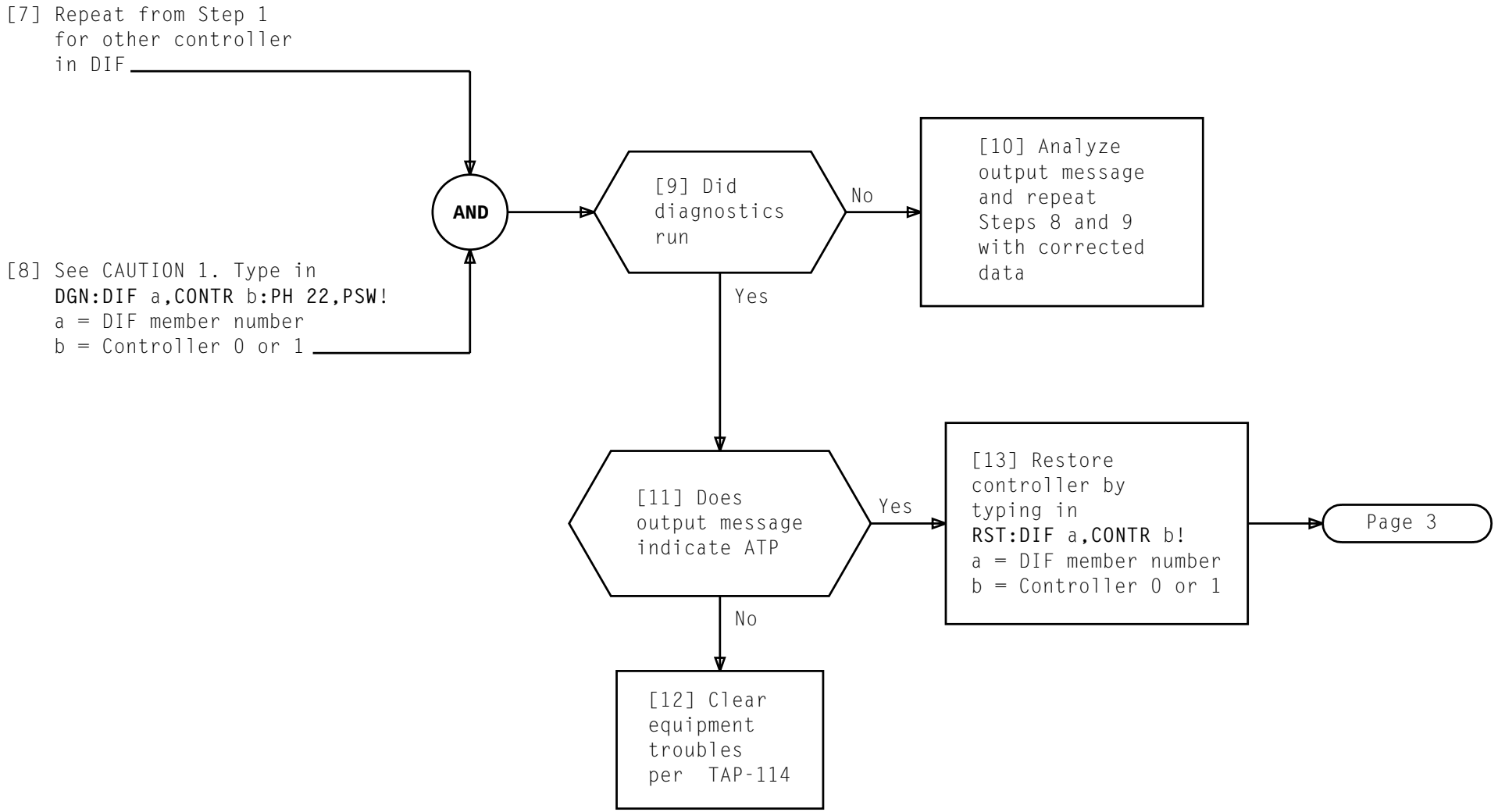
* SM6 and SM7 Service circuit packs may be used in DIUs 1, 9, 18 and 26

† TM362 is used for DIF-E1 and DIF-E1(D)
TM376 is used for DIF-E1(MF)
TM377 is used for DIF-E1(MF4S) and DIF-E1(DTMF)

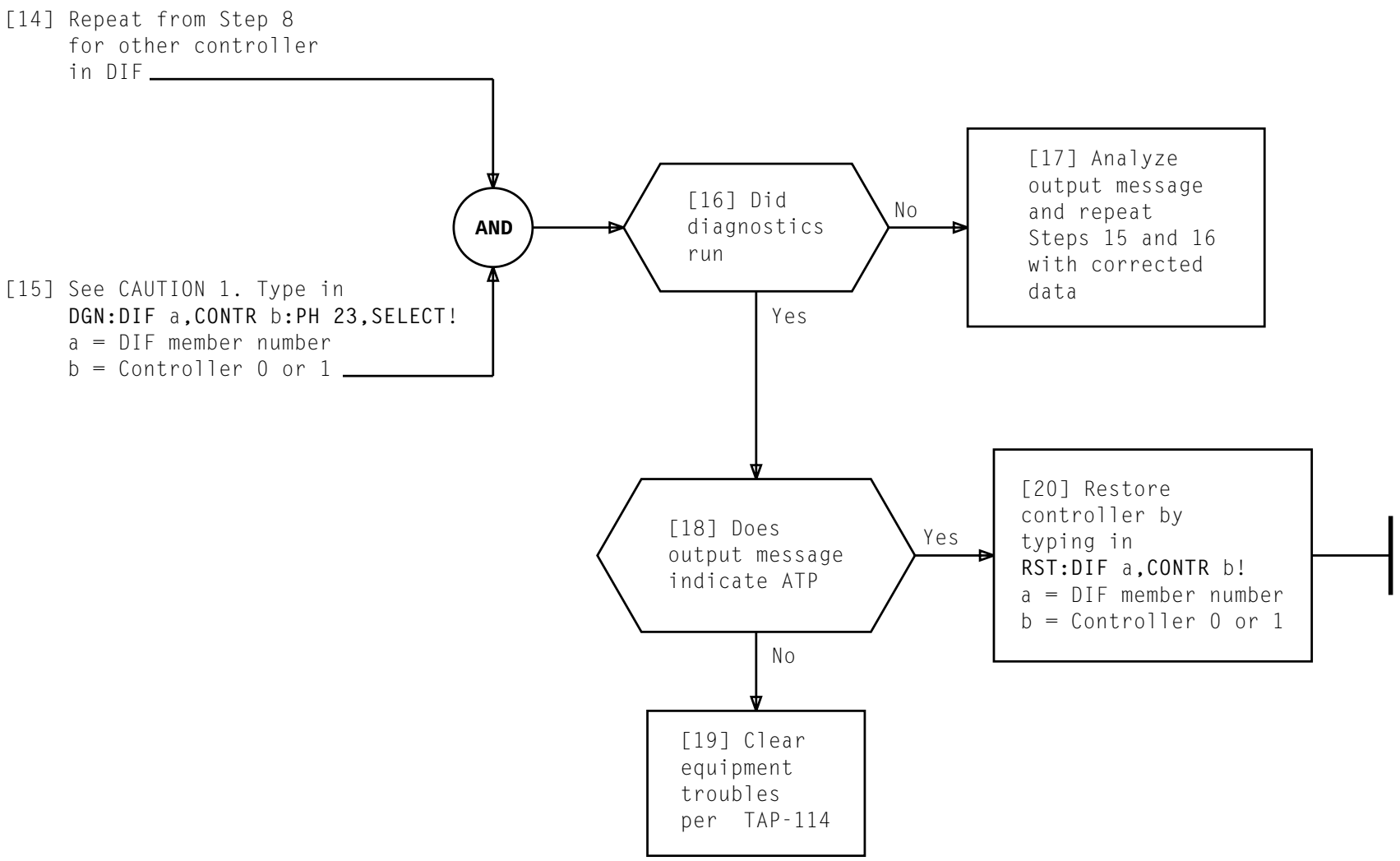


CAUTION 1
DIF demand phases should be used only during light traffic periods so that glitches which could degrade service can be minimized

DEMAND DIGITAL INTERFACE (DIF) DIAGNOSTIC PHASES



DEMAND DIGITAL INTERFACE (DIF) DIAGNOSTIC PHASES



DEMAND DIGITAL INTERFACE (DIF) DIAGNOSTIC PHASES

[1] Remove power from digital interface controller [DLP-502] that contains faulty TM59 circuit pack

[2] Remove **F3A** fuse if controller 0 is powered down in Step 1 or fuse **F3B** if controller 1 is powered down in Step 1

[3] See FIG. 1. Grasp latch and pull down while pulling circuit pack out

[4] Install new circuit pack by pushing into slot with latch down until circuit pack hits stop

[5] Lift latch while pushing gently on pack until latch is flush against the circuit pack edge

[6] Reinstall fuse removed in Step 2

[7] Apply power to digital interface controller [DLP-504]

AND

AND

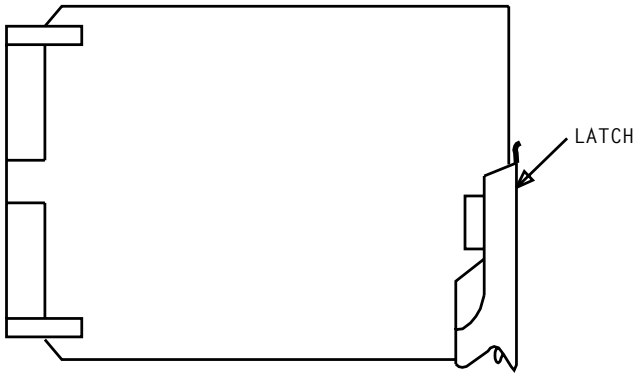
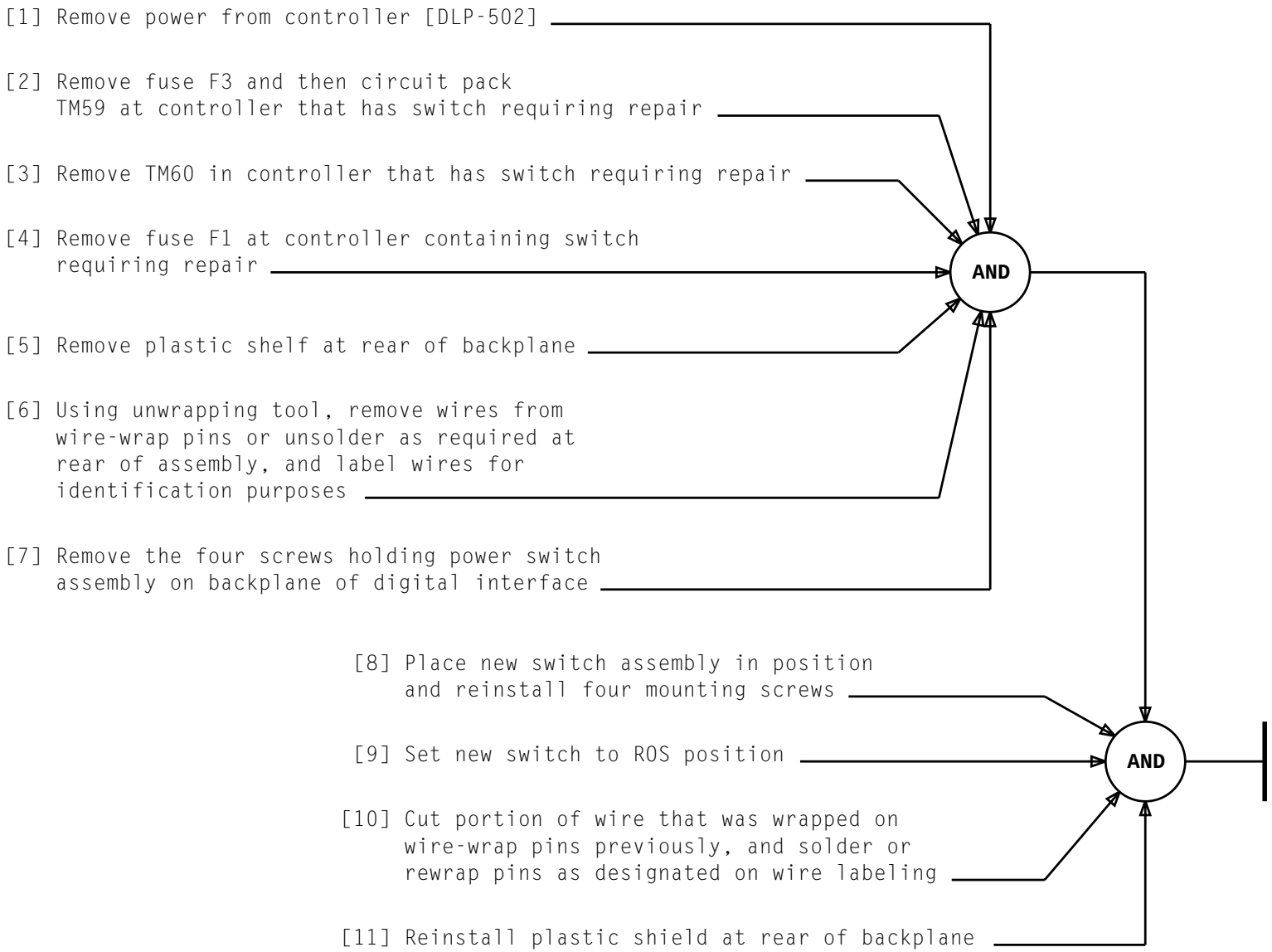


FIG. 1 – Circuit Pack

REPLACE TM59 CIRCUIT PACK IN DIGITAL INTERFACE CONTROLLER (DIC)



REPLACE CONTROLLER POWER SWITCH ASSEMBLY

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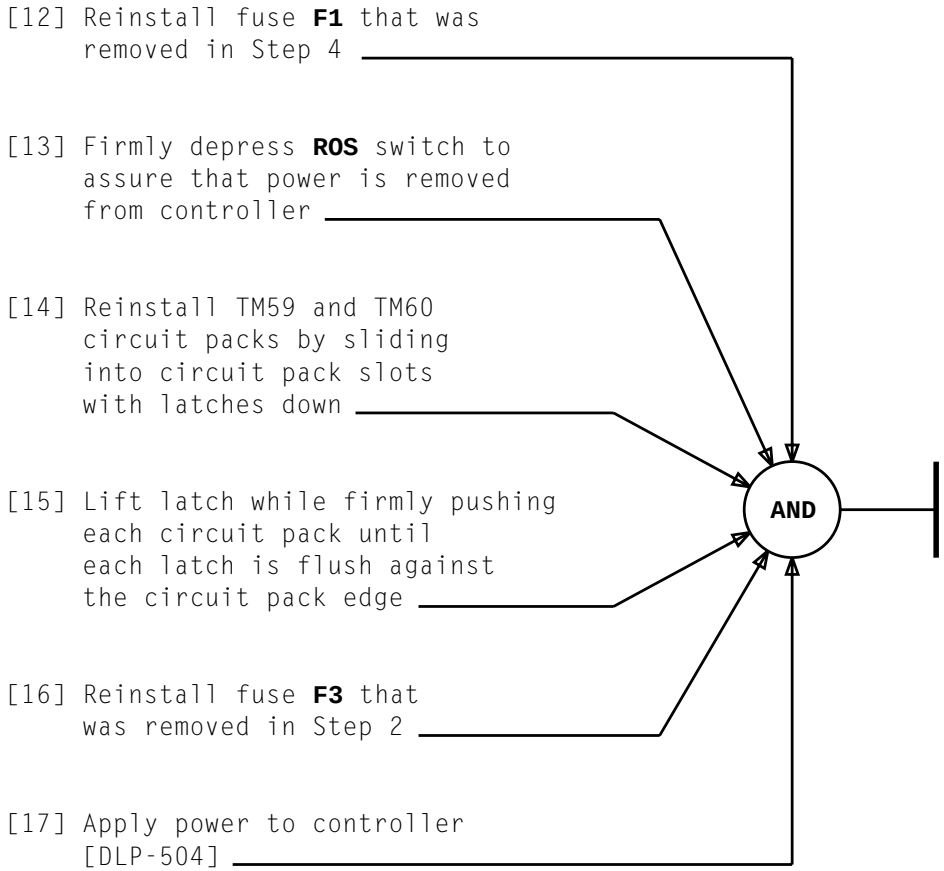
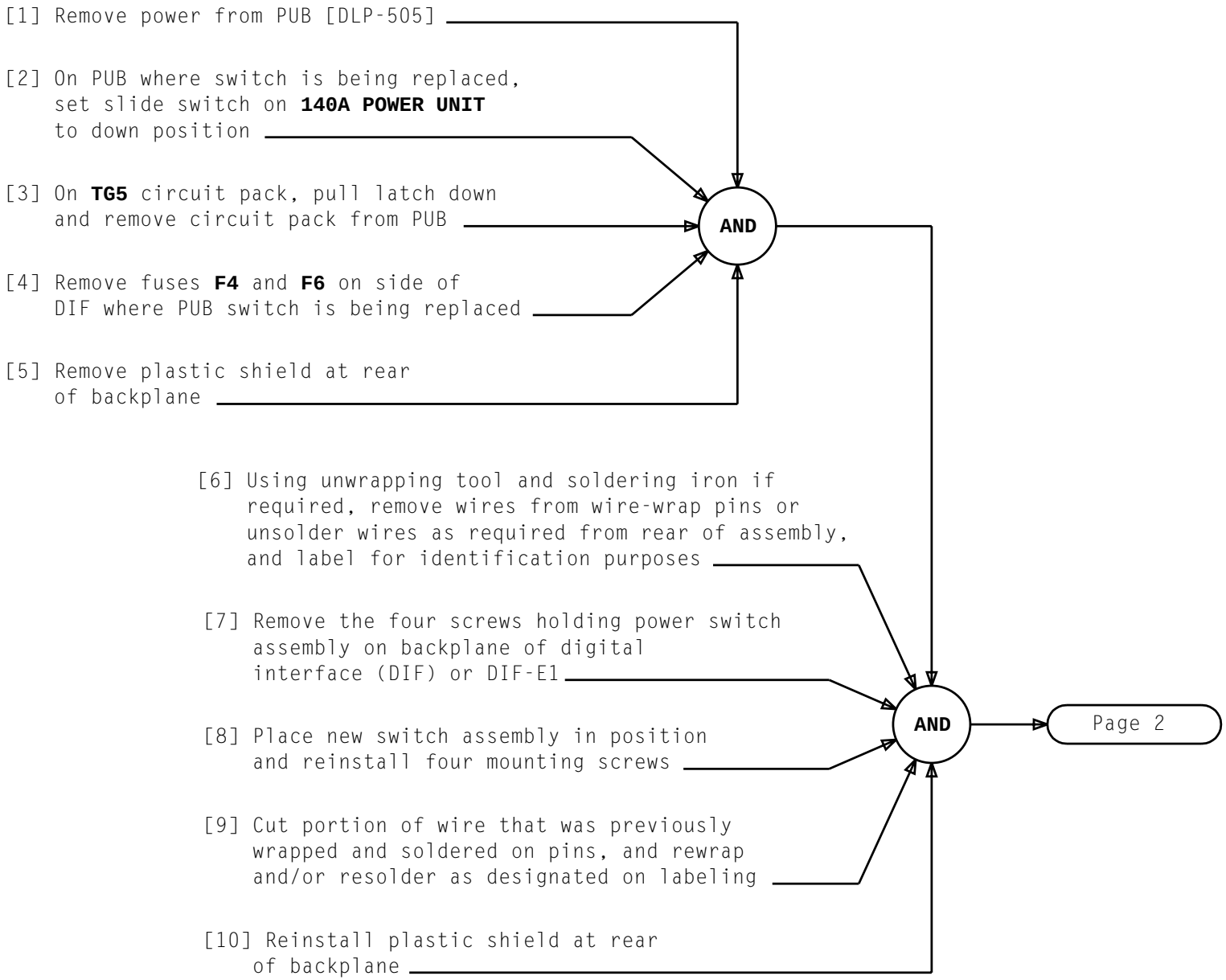


REPLACE CONTROLLER POWER SWITCH ASSEMBLY



REPLACE POWER SWITCH ASSEMBLY ON PERIPHERAL UNIT BUS (PUB)

[11] Set **ROS** key on new PUB power switch to **ROS**

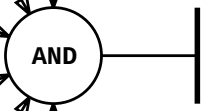
[12] Firmly depress **ROS** key on new PUB switch assembly

[13] Reinstall fuses **F4** and **F6** that were removed in Step 4

[14] Reinstall **TG5** circuit pack that was removed in Step 3

[15] Set slide switch to up position on **140A POWER UNIT** that was powered down in Step 2

[16] Apply power to PUB [DLP-507]



REPLACE POWER SWITCH ASSEMBLY ON PERIPHERAL UNIT BUS (PUB)

1. Define error using PMDs [TABLE A]

End of procedure

TABLE A

PMD-001	APUF (Duplex) no error found
PMD-002	PUF (Duplex) no error found; ASWF set in active only
PMD-003	PUF (Duplex) no error found; ASWF set in mate only
PMD-004	PUF (Duplex) no error found
PMD-005	(Duplex) no CC PUF or APUF error source found
PMD-011	Clock error in active only; hit-timed and clock error still present
PMD-012	Clock error in active only; hit-timed and clock error is gone
PMD-014	Clock error in mate only; hit-timed and clock error is still present
PMD-015	Clock error in mate only; hit-timed and clock error is gone
PMD-017	Clock error in both controllers; hit-timed and clock error in active only
PMD-021	Clock error in both controllers; hit-timed and clock error in mate only
PMD-025	Clock error in both controllers; hit-timed and clock error in both controllers
PMD-026	Clock error in both controllers; hit-timed and error is gone in both
PMD-030	Unique error in active only; pested mismatch and hit-timed; then error in active only
PMD-031	Unique error in active only; pested mismatch and hit-timed; then error in mate only
PMD-032	Unique error in active only; pested mismatch and hit-timed; then error in both controllers
PMD-033	Unique error in active only; pested mismatch and hit-timed; then error is gone
PMD-034	Unique error in mate only; pested mismatch and hit-timed; then error in active only
PMD-035	Unique error in mate only; pested mismatch and hit-timed; then error in mate only
PMD-036	Unique error in mate only; pested mismatch and hit-timed; then error in both controllers
PMD-037	Unique error in mate only; pested mismatch and hit-timed; then error was gone
PMD-040	Unique error in both controllers; pested mismatch and hit-timed; then error was inactive only
PMD-041	Unique error in both controllers; pested mismatch and hit-timed; then error in standby only
PMD-042	Unique error in both controllers; pested mismatch and hit-timed; then error in both controllers
PMD-043	Unique error in both controllers; pested mismatch and hit-timed; then error is gone
PMD-044	Mismatch found in active only
PMD-045	Mismatch found in mate only
PMD-046	Mismatch found in both controllers
PMD-047	Firmware detected errors found in both controllers
PMD-050	Firmware detected errors in active controller
PMD-051	Firmware detected errors in standby controller
PMD-054	Microprocessor in both controllers has detected a normal buffer overflow

DEFINE PMD DICTIONARY NODES

TABLE A (Contd)

PMD-056	Microprocessor in both controllers has detected a normal maintenance buffer overflow
PMD-060	Microprocessor in both controllers has detected an invalid macro
PMD-061	Microprocessor in both controllers has detected a task table overflow
PMD-062	Microprocessor in both controllers has detected an error condition
PMD-064	Microprocessor in both controllers has detected an invalid macro
PMD-065	Microprocessor in both controllers has detected a task table overflow
PMD-066	Microprocessor in both controllers has detected an error condition
PMD-070	The peripheral order was no good
PMD-071	Unique error in active controller; retry the order and active still has unique error
PMD-072	Unique error in active controller; retry the order and active has no error
PMD-073	Unique error in mate controller; retry the order and mate still has unique error
PMD-074	Unique error in mate controller; retry the order and mate has no error
PMD-075	T1 line mismatch in active only
PMD-076	T1 line mismatch in standby only
PMD-077	T1 line mismatch in both controllers
PMD-100	Low frequency clock mismatch in active only
PMD-101	Low frequency clock mismatch in standby only
PMD-102	Low frequency clock mismatch in both controllers
PMD-103	Highest priority mismatch found in active only; reset divorce in mate and retry order; order fails in active only
PMD-104	Highest priority mismatch found in active only; reset divorce in mate and retry order; order fails in mate only
PMD-105	Highest priority mismatch found in active only; reset divorce in mate and retry order; order fails in both controllers
PMD-106	Highest priority mismatch found in active only; reset divorce in mate and retry order; order passes in both controllers
PMD-107	Highest priority mismatch found in standby only; reset divorce in active and retry order; order fails in active only
PMD-110	Highest priority mismatch found in mate only; reset divorce in active and retry order; order fails in mate only
PMD-111	Highest priority mismatch found in standby only; reset divorce in active and retry order; order fails in both controllers
PMD-112	Highest priority mismatch found in standby only; reset divorce in active and retry order; order passes in both controllers
PMD-113	Highest priority mismatch found in both controllers; retry order; order fails in active only
PMD-114	Highest priority mismatch found in both controllers; retry order; order fails in mate only
PMD-115	Highest priority mismatch found in both controllers; retry order; order fails in both controllers

TABLE A (Contd)

PMD-116	Highest priority mismatch found in both controllers; retry order; order passes in both controllers
PMD-117	Firmware detected errors in active controller
PMD-120	Unique error in active controller during a "buffer read" order
PMD-121	Unique error in mate controller during a "buffer read" order
PMD-122	Highest priority mismatch found only in active controller during a "buffer read" order
PMD-123	Highest priority mismatch found only in mate controller during a "buffer read" order
PMD-124	Highest priority mismatch found in both controllers during a "buffer read" order
PMD-125	Firmware detected errors in standby controller
PMD-130	APUF (simplex); no error found
PMD-131	PUF (simplex); no error found
PMD-132	(Simplex); no CC PUF or APUF error source found
PMD-141	Clock error found; hit-timed and clock error was still present
PMD-142	Clock error found; hit-timed and clock error was gone
PMD-150	Unique error found; pested mismatch and hit-timed; error was still present
PMD-151	Unique error found; pested mismatch and hit-timed; error was gone
PMD-152	Mismatch found in T1 line, low frequency clock, internal reply register or LUSP M-bit (DIF-E1 only)
PMD-153	Firmware detected errors
PMD-154	Microprocessor has detected a normal maintenance buffer overflow
PMD-156	Microprocessor has detected a normal maintenance buffer overflow
PMD-160	Microprocessor has detected an invalid macro
PMD-161	Microprocessor has detected a task table overflow
PMD-162	Microprocessor has detected an error condition
PMD-164	Microprocessor has detected an invalid macro
PMD-165	Microprocessor has detected a task table overflow
PMD-166	Microprocessor has detected an error condition
PMD-170	Peripheral order was no good
PMD-171	Unique error found; retry the order; unique error was still present
PMD-172	Unique error found; retry the order; unique error was gone
PMD-173	T1 line mismatch found
PMD-174	Low frequency clock mismatch found
PMD-175	"Sequencer", "internal bus", "reply register", or "LUSP M-bit" (DIF-E1) mismatch found
PMD-176	Firmware detected errors
PMD-177	Unique error found during a "buffer read" order
PMD-200	CONSISTENCY CHECK — HARD LOM STB — DGN INAPUT set in ACT and STB, IAS zero in STB
PMD-201	CONSISTENCY CHECK — HARD LOM ACT — DGN INAPUT set in ACT, reset in STB, IAS zero in STB
PMD-202	CONSISTENCY CHECK — HARD LOM STB — DGN INAPUT set in ACT, reset in STB, IAS nonzero in STB

TABLE A (Contd)	
PMD-203 CONSISTENCY CHECK — TRANSIENT LOM STB — DGN INAPUT reset in ACT and STB	PMD-240 INTERJECT FILTER — DIU Restore DIU — Cleanup Consistency check passes, common alarm, DS120 line error
PMD-204 CONSISTENCY CHECK — HARD LOM STB — DGN INAPUT reset in ACT, set in STB, IAS zero in STB	PMD-241 INTERJECT FILTER — DIU Force DIU — DGN — Cleanup Consistency check passes, common alarm
PMD-205 CONSISTENCY CHECK — HARD LOM ACT — DGN INAPUT reset in ACT, set in STB, IAS nonzero in STB	PMD-242 INTERJECT FILTER — HARD LOM ACT — DGN Multiple DIU's alarming
PMD-206 CONSISTENCY CHECK — TRPF TRANSIENT Force STB INAPUT reset in ACT, simplex frame, INTJ from O/S contr	PMD-301 BASE FILTER — DIU Force Digroup — DGN DIU BLM, Digroup failure
PMD-207 INTERJECT FILTER — SOFTWARE No Action Consistency check passes, normal DB overflow	PMD-302 BASE FILTER — DIU Force DIU — DGN BLM, routine diagnostic failure, implicates DIU
PMD-210 INTERJECT FILTER — HARD LOM ACT — DGN Consistency check passes, duplex frame, DB overflow, but pointers are inconsistent	PMD-303 INVALID
PMD-211 INTERJECT FILTER — HARD Restore ACT Consistency check passes, simplex frame, DB overflow, but pointers are inconsistent	PMD-304 BASE FILTER — DIU Force Digroup — DGN DIU BLM, routine diagnostic failure, implicates digroup
PMD-215 INTERJECT FILTER — HARD LOM ACT — DGN Force DIU if I/S else Restore SUBJ Consistency check passes, duplex frame, PSW audit failure	PMD-305 BASE FILTER — HARD Hit Time BLM, illegitimate report, duplex frame
PMD-216 INTERJECT FILTER — HARD Restore ACT Force DIU if I/S else Restore SUBJ Consistency check passes, simplex frame, PSW audit failure	PMD-306 BASE FILTER — HARD Hit Time BLM, illegitimate report, simplex frame
PMD-217 INTERJECT FILTER — TRANSIENT LOM ACT — DGN Consistency check passes, duplex frame, but no sources found	PMD-307 BASE FILTER — DIU Force DIU — DGN BLM, illegitimate report from spare DIU — not PSW
PMD-220 INTERJECT FILTER — TRANSIENT Restore ACT — Force STB Consistency check passes, simplex frame, but no sources found	PMD-330 RAM errors found in standby only or in both controllers (DIF-E1 only)
PMD-221 INTERJECT FILTER — TRANSIENT Restore ACT — Audit 27 DB overflow from DIF out of polling range	PMD-331 RAM errors found in active controller only and standby may have F/W errors (DIF-E1 only)
	PMD-340 Firmware detected errors in active controller with RAM errors (DIF-E1 only)
	PMD-341 Firmware detected errors in standby controller with RAM errors (DIF-E1 only)

TABLE A (Contd)	
PMD-350	Firmware detected errors found and RAM errors (DIF-E1 only — APUF)
PMD-360	Firmware detected errors found and RAM errors (DIF-E1 only — PUF)
PMD-373	Hardware access test failure
PMD-374	Interrupt from a growth frame
PMD-375	Interrupt from an unequipped frame
PMD-377	Interrupt from a duplex failed frame

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 the following 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-5X400-01 or SD-5A208-02, and solder.

[1] At ABC frame, insure that ITE 4715 or equivalent Capacitor Charging Tool and fuses have been removed

[2] See NOTE 1. At affected DIF/DIF-E frame, remove kickplate from front of bay and remove plastic cover from rear of frame at vertical level 10

[3] See FIGURES 1 and 2. Locate and mark leads of +140V capacitors associated with controller and DIUs being repaired (C1As=DIU 0 and all odd DIUs-CIBs=DIU 33, and all Even DIUs)

[4] Mark polarity of capacitor leads to ensure correct removal or replacement in later steps

[5] At rear of bay, mark polarity of diode leads to ensure correct polarity for removal or replacement

[6] Install insulating material around unit filter capacitor area for protection of components using various voltages

AND

Page 2

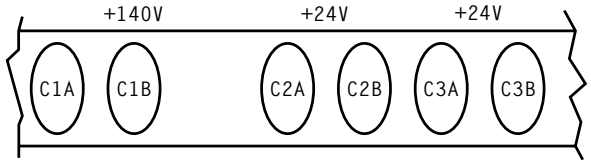


Figure 1 - Example of Capacitors DIF Bay (Front View)

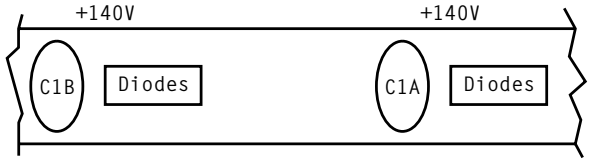


Figure 2 - Example of Capacitors and Diodes (Rear View) DIF Bay

NOTE 1
Capacitors for Controllers and IPUBs 0/1 are located in kickplate area (front). For DIU capacitors are located in vertical 10 (rear of bay)

*Trademark of Phillips Screw Company

REPLACE FILTER CAPACITOR AND DIODE – DIGITAL INTERFACE FRAME (DIF/DIF-E)

[7] See CAUTION 1. Using a voltmeter, check for presence of +140V on "+" (plus) lead of two +140 filter capacitors in circuit affected (near zero volts expected)

[8] Is +140V present on all capacitors
C1As = Cont/IPUB 0/DIU 0 and Odd DIUs
or
C1Bs = Cont/IPUB 1/DIUs 32-33 and Even DIUs

Yes

[9] Abort procedure and contact next level of support per local practice

No

[10] See FIG. 3 and NOTE 2. Remove negative leads on capacitors and insulate leads (isolate capacitors and diodes)

[11] See NOTE 3. Using VOM set to ohms scale, check both capacitors in circuit for shorts (expect high resistance > 1.5M)

Page 3

TABLE A

Capacitor	Location	Diode	Location
C1A	103-043	CR7A	108-055RA
C1A	110-079	CR8A	108-055RB
C1B	103-079	CR7B	108-171RA
C1B	110-213	CR8B	108-171RB

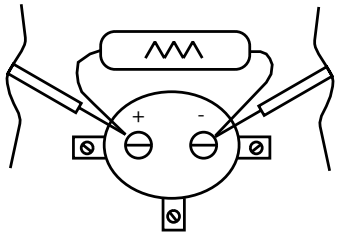


Figure 3 - Example of Filter Capacitor

NOTES

2. A 12-inch standard screwdriver with insulation from handle to blade should be used to prevent shorting
3. A shorted capacitor in some cases will cause associated diode to open. It is recommended that diode be replaced at this time

CAUTION 1
Other circuits in area use +140V and +24V. Care must be used to avoid shorting components of circuitry in area

REPLACE FILTER CAPACITOR AND DIODE — DIGITAL INTERFACE FRAME (DIF/DIF-E)

[12] See TABLE A, Page 2. Is either capacitor shorted

No

[19] See NOTES 3, 4, and FIG. 4. Using VOM set to ohms scale, check diodes to see if bad (100K or open depending on polarity)

[20] Is either diode bad

No

Page 4

Yes

[13] Remove "+" lead from capacitor and insulate

[14] Note the orientation of capacitor and remove three screws from capacitor-retaining ring

[15] Stamp proper identification on new capacitor being installed

[16] Remove defective capacitor from retaining ring and replace orienting new capacitor properly

[17] Carefully place new capacitor in unit and replace three retaining ring screws

[18] Reconnect "+" lead to capacitor and repeat from Step 11

Yes

[21] Unsolder leads from shorted diode and insulate

[22] Replace diode insuring proper polarity and solder leads

[23] Repeat from Step 19

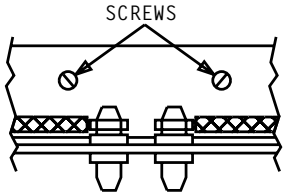
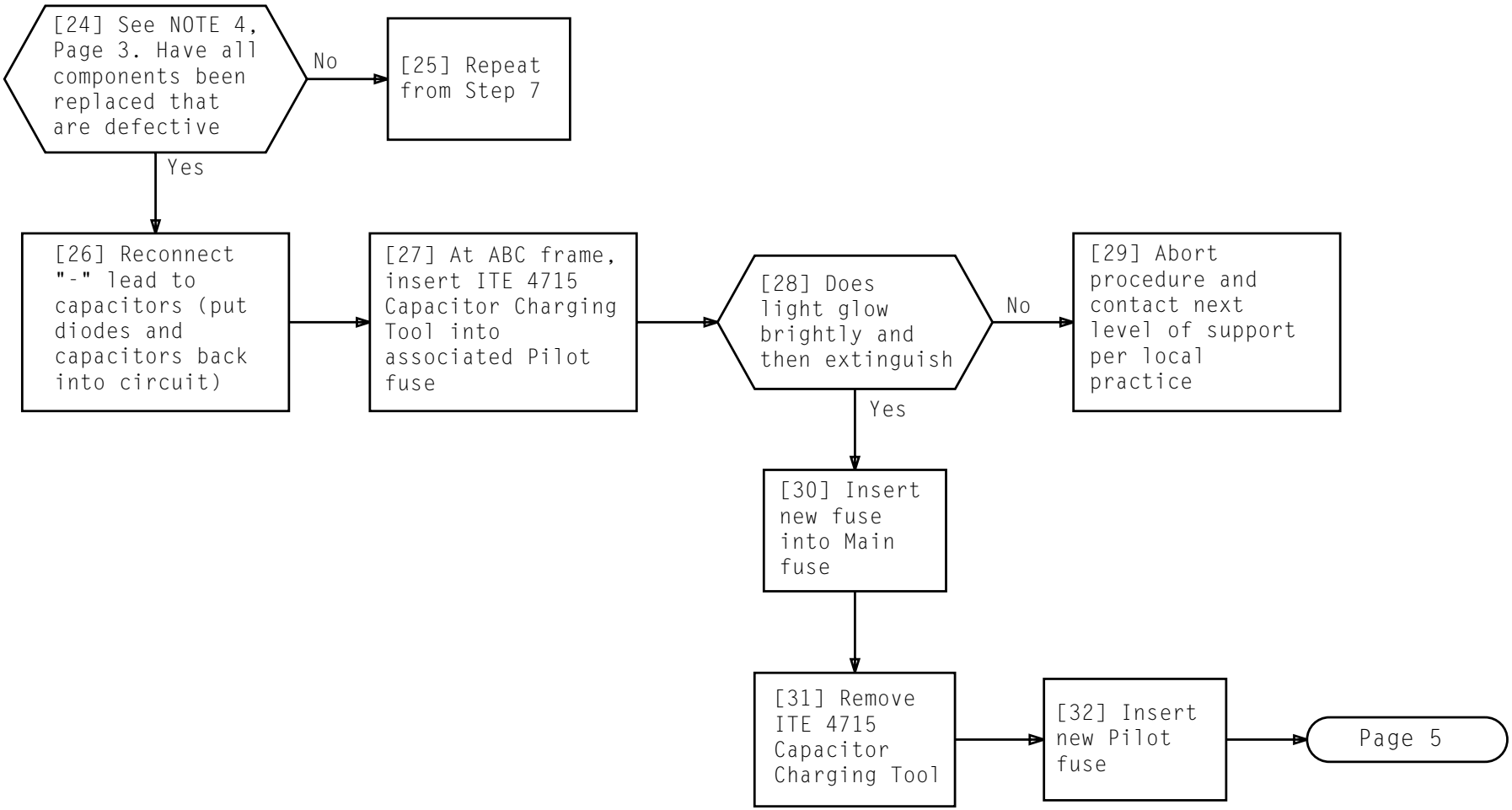


Figure 4 - Example of Diode Assembly Sample

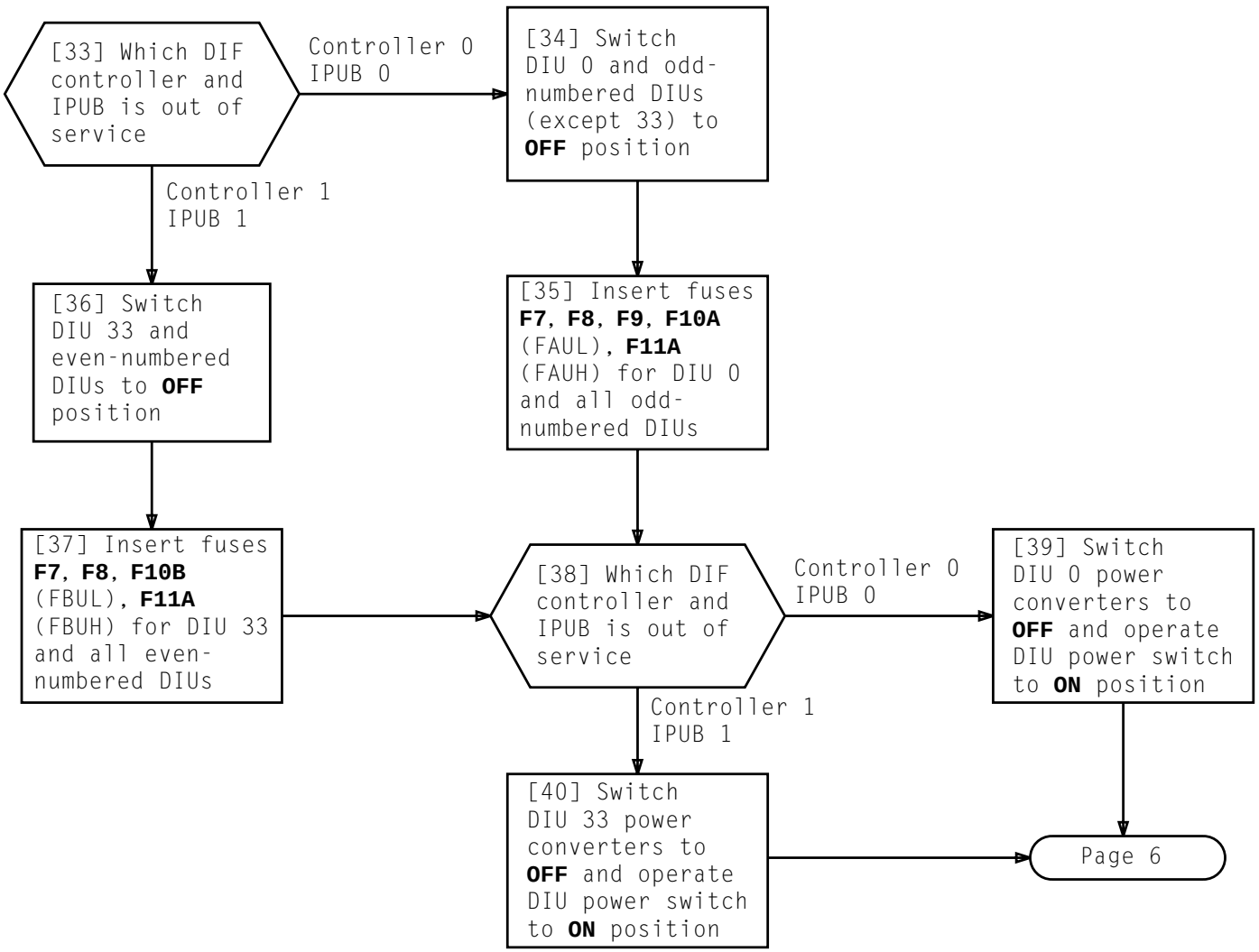
NOTE 4

If you have reached this point without replacing any of the filter circuitry, problems are intermittent and it is recommended to replace filter capacitor circuitry at this time to avoid further equipment damage

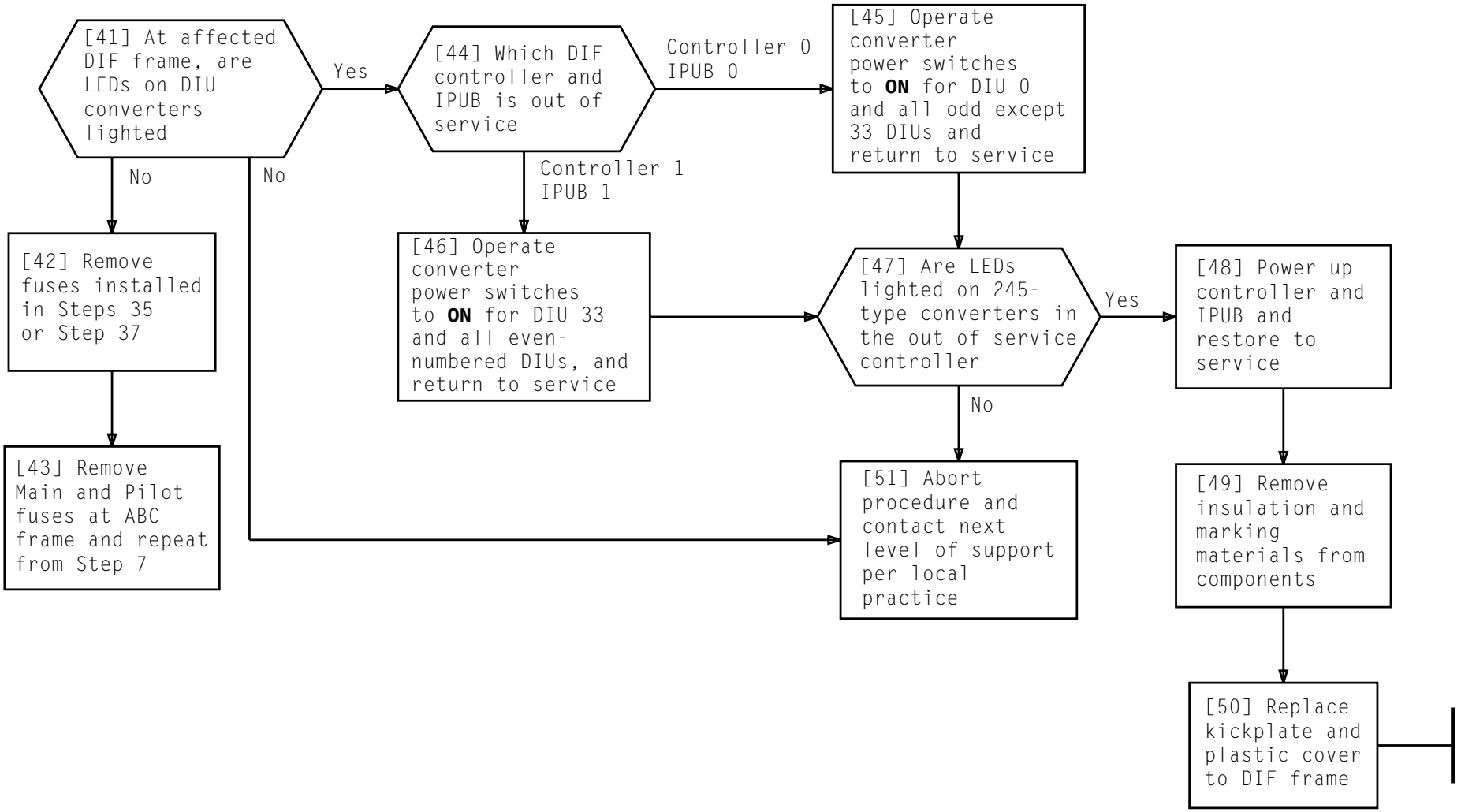
REPLACE FILTER CAPACITOR AND DIODE – DIGITAL INTERFACE FRAME (DIF/DIF-E)



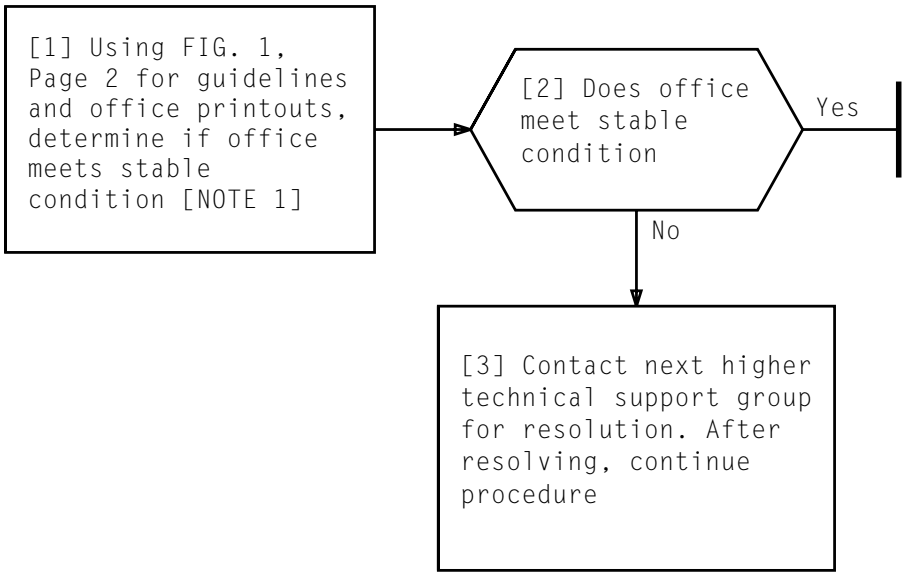
REPLACE FILTER CAPACITOR AND DIODE – DIGITAL INTERFACE FRAME (DIF/DIF-E)



REPLACE FILTER CAPACITOR AND DIODE – DIGITAL INTERFACE FRAME (DIF/DIF-E)



REPLACE FILTER CAPACITOR AND DIODE — DIGITAL INTERFACE FRAME (DIF/DIF-E)



NOTE 1
FIG. 1 is based on 7-day rolling average for all per-day measures; all other measures are as indicated. All resolved troubles are discounted from measures

DETERMINE IF OFFICE IS STABLE

- INTERRUPTS

1B PROCESSOR	≤ 1 PER MEMBER NUMBER PER DAY ≤ 3 PER DAY TOTAL
TMS, NC, PUB, IO, CCIS	≤ 2 PER MEMBER NUMBER PER DAY ≤ 4 PER DAY TOTAL
PERIPHERY, PER OPERATIONAL SP CORE (SP, DT, TSI) OR DIF (DIF, TSI COMPLEX) (THE ALLOWABLE DAILY INTERRUPT COUNT SHALL NOT EXCEED 25, REGARDLESS OF OFFICE SIZE)	≤ 3 PER DAY
PBFRs	≤ 1 PER DAY

- INTERJECTS — ≤ 2 PER MEMBER NUMBER PER DAY
≤ 5 PER DAY TOTAL

- BASE LEVEL
  ANALYZED, CORRECTED AND/OR UNDERSTOOD

- PHASES/DUPLEX FAILURES

DIRECTED PHASE 1	≤ 1 IN 2 WEEKS
SYSTEM PHASE 1	≤ 1 IN 1 WEEK
PHASE 2 OR 3	≤ 1 IN 4 WEEKS
DT, VIF, OR EST	≤ 1 IN 4 WEEKS
TGR/TER LINK PAIR	≤ 1 IN 2 WEEKS

- OUT-OF-SERVICE UNITS

NUMBER OUT-OF-SERVICE	≤ 5 AT ANYTIME

CRITICAL UNITS:

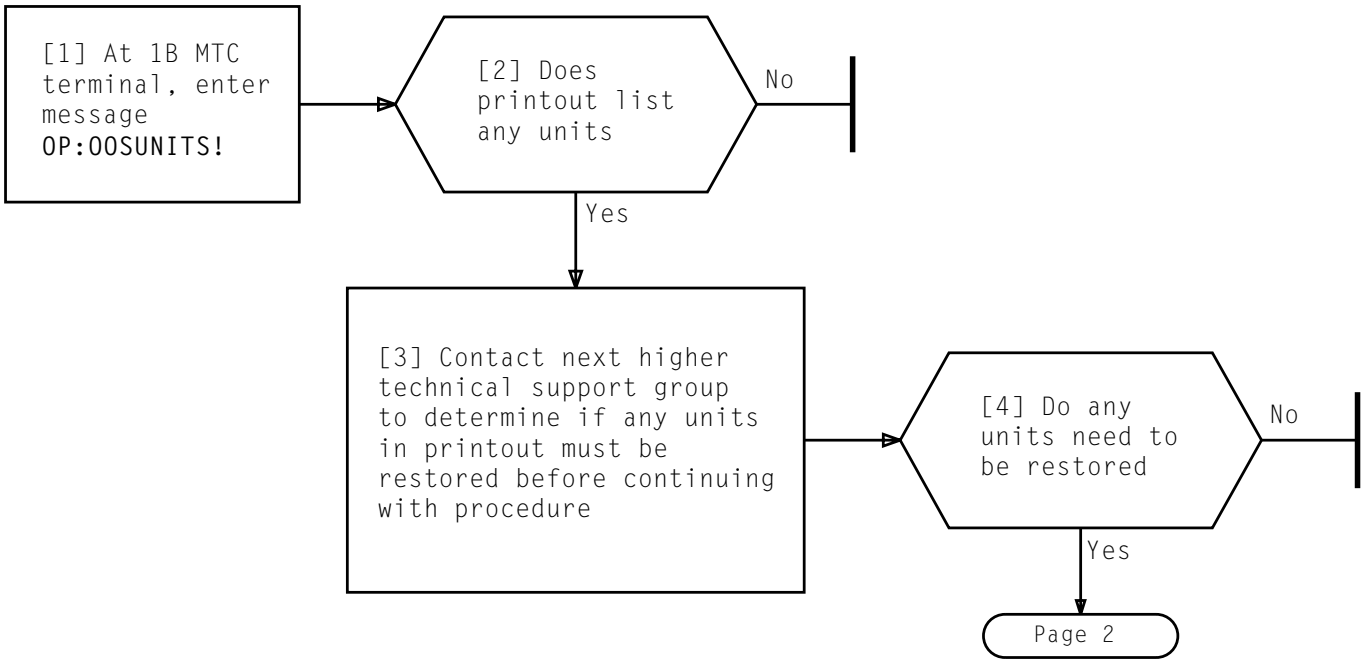
CC	DIF	PS	TMSP
CS	LN	PUB	TSI
CU	NCLK	SP	

- 3B COMPUTER

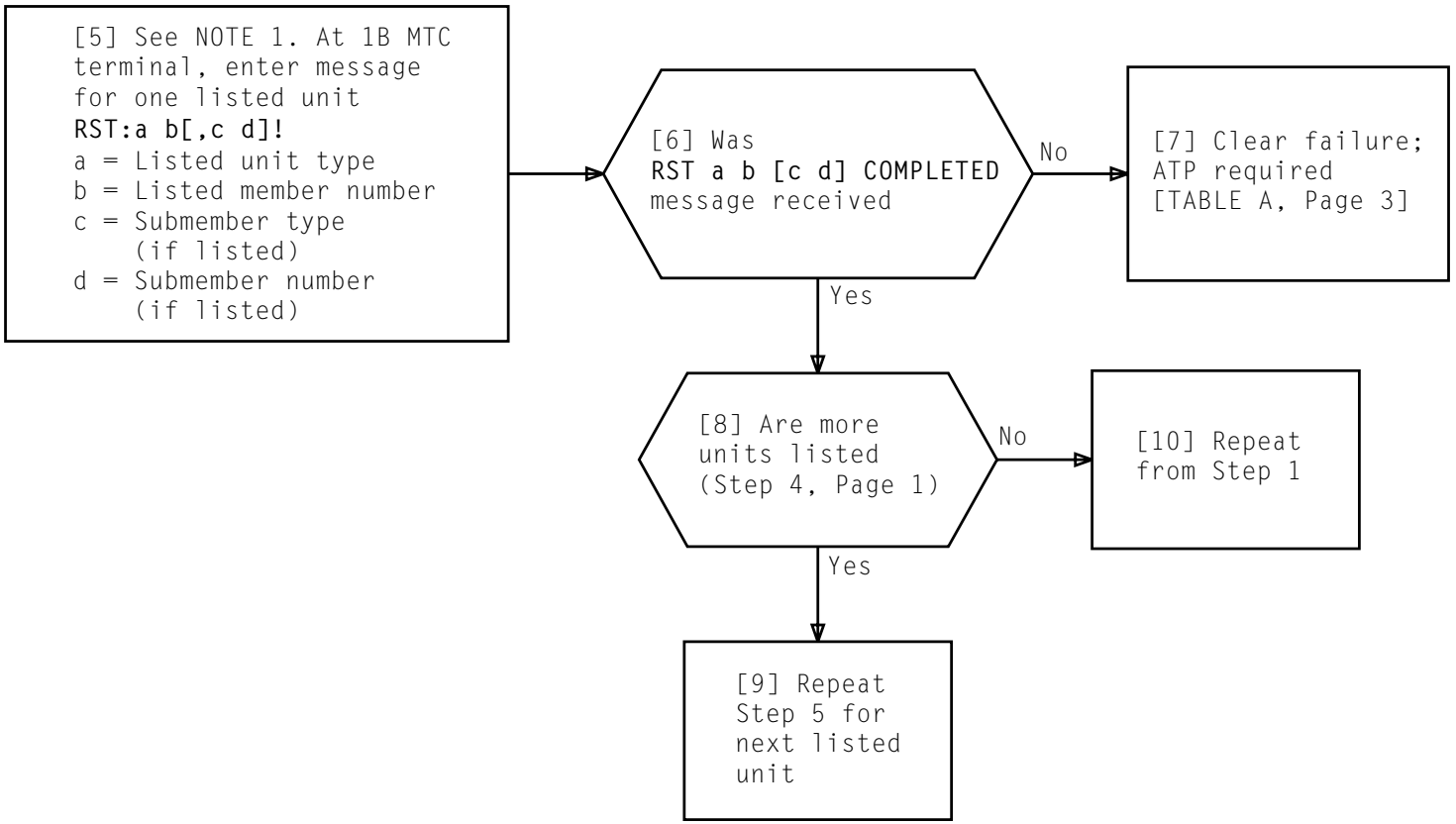
INTERRUPTS	≤ 3 PER DAY
PHASE 1	≤ 1 IN 4 WEEKS
PHASE 2 OR 3	≤ 1 IN 4 WEEKS
CNI RING INIT	≤ 1 IN 2 WEEKS
CNI RING TRANSPORT ERRORS	≤ 2 PER DAY
DLNE ERRORS	≤ 1 PER DAY

FIG. 1 - Office Stability Guidelines

DETERMINE IF OFFICE IS STABLE



ENSURE ALL UNITS ARE IN-SERVICE



NOTE 1
Variables c and d are only to be used if submember is listed

ENSURE ALL UNITS ARE IN-SERVICE

TABLE A			
UNIT TYPE	**TROUBLE-CLEARING VOLUME**	**UNIT TYPE**	**TROUBLE-CLEARING VOLUME**
1B Processor	234-351-004	MFS	234-151-041
3B Computer Model 1	254-301-812 254-301-813	MISC A, B, C	234-151-043
		NCLK	234-151-013
3B Computer Model 2/3	254-302-812	PCDF J5A007B	234-351-025
ADS (TUC and DUS)	234-351-010	PCDF J5A007C	234-351-026
API	234-351-016	PUBB	234-151-015
AUB	234-351-010	SCS	234-151-077
CNI	234-151-120	SP1	234-151-031
DIF	234-151-055	SP2	234-151-032
DT	234-151-045	TGR	234-151-033
EST	234-151-050	TMS	234-151-011
IO J5A006A	234-351-020	TSI	234-151-012
IO J5A006C	234-351-021	VIF	234-151-025
IO J5A006D	234-351-022	XTSI	234-351-011

ENSURE ALL UNITS ARE IN-SERVICE

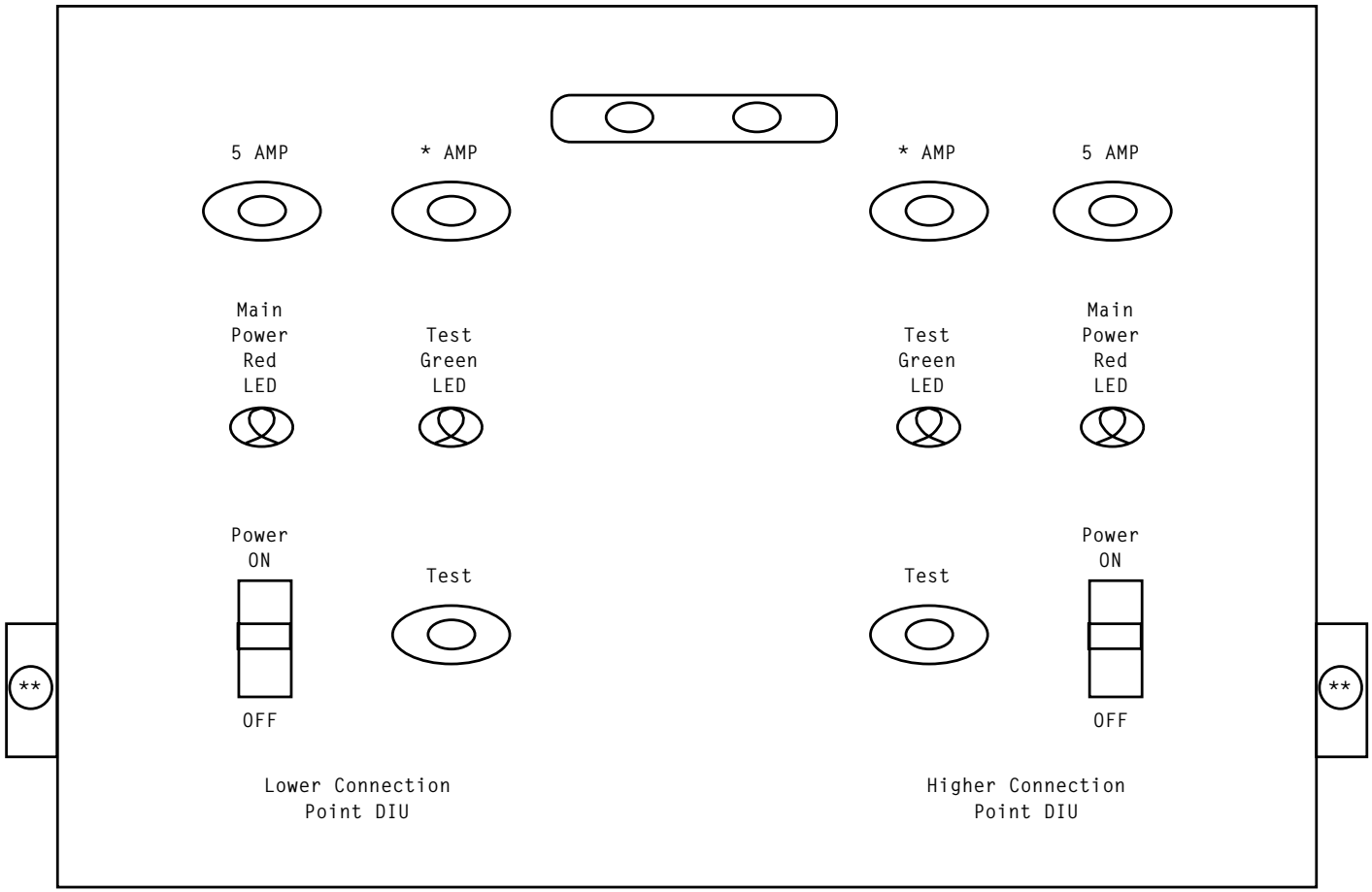
DIF FUSE ASSIGNMENTS

RECORD OF ABC FRAME FUSE LOCATIONS AND DIU DESIGNATIONS (NOTE)							
+140V A SIDE 0				+140V B SIDE 1			
DIF MEMBER NUMBER	ABS FUSE LOCATION	LOWER DIU NUMBER	HIGHER DIU NUMBER	DIF MEMBER NUMBER	ABS FUSE LOCATION	LOWER DIU NUMBER	HIGHER DIU NUMBER
2	____	____	____	2	____	____	____
3	____	____	____	3	____	____	____
4	____	____	____	4	____	____	____
5	____	____	____	5	____	____	____
6	____	____	____	6	____	____	____
7	____	____	____	7	____	____	____
8	____	____	____	8	____	____	____
9	____	____	____	9	____	____	____
10	____	____	____	10	____	____	____
11	____	____	____	11	____	____	____
12	____	____	____	12	____	____	____
13	____	____	____	13	____	____	____
14	____	____	____	14	____	____	____
15	____	____	____	15	____	____	____
16	____	____	____	16	____	____	____
17	____	____	____	17	____	____	____
18	____	____	____	18	____	____	____
19	____	____	____	19	____	____	____
20	____	____	____	20	____	____	____
21	____	____	____	21	____	____	____
22	____	____	____	22	____	____	____
23	____	____	____	23	____	____	____
24	____	____	____	24	____	____	____
25	____	____	____	25	____	____	____
26	____	____	____	26	____	____	____
27	____	____	____	27	____	____	____
28	____	____	____	28	____	____	____
29	____	____	____	29	____	____	____
30	____	____	____	30	____	____	____
31	____	____	____	31	____	____	____

NOTE: Designated DIUs for ITE connections for Side 0 are 15 and 32; for Side 1 they are 31 and 33

RECORD INVENTORY AND FILTER CIRCUIT REPLACEMENT									
+140V A SIDE 0					+140V B SIDE 1				
DIF MEMBER NUMBER	COMPLETED MATERIAL INVENTORY	CONTR 0 OR IPUB 0	ODD DIUs AND DIU 0	COMPLETION DATE	DIF MEMBER NUMBER	COMPLETED MATERIAL INVENTORY	CONTR 1 OR IPUB 1	EVEN DIUs PLUS 32 & 33	COMPLETION DATE
2	____	____	____	____	2	____	____	____	____
3	____	____	____	____	3	____	____	____	____
4	____	____	____	____	4	____	____	____	____
5	____	____	____	____	5	____	____	____	____
6	____	____	____	____	6	____	____	____	____
7	____	____	____	____	7	____	____	____	____
8	____	____	____	____	8	____	____	____	____
9	____	____	____	____	9	____	____	____	____
10	____	____	____	____	10	____	____	____	____
11	____	____	____	____	11	____	____	____	____
12	____	____	____	____	12	____	____	____	____
13	____	____	____	____	13	____	____	____	____
14	____	____	____	____	14	____	____	____	____
15	____	____	____	____	15	____	____	____	____
16	____	____	____	____	16	____	____	____	____
17	____	____	____	____	17	____	____	____	____
18	____	____	____	____	18	____	____	____	____
19	____	____	____	____	19	____	____	____	____
20	____	____	____	____	20	____	____	____	____
21	____	____	____	____	21	____	____	____	____
22	____	____	____	____	22	____	____	____	____
23	____	____	____	____	23	____	____	____	____
24	____	____	____	____	24	____	____	____	____
25	____	____	____	____	25	____	____	____	____
26	____	____	____	____	26	____	____	____	____
27	____	____	____	____	27	____	____	____	____
28	____	____	____	____	28	____	____	____	____
29	____	____	____	____	29	____	____	____	____
30	____	____	____	____	30	____	____	____	____
31	____	____	____	____	31	____	____	____	____

INVENTORY FOR +140V FILTER CAPACITOR CIRCUITS



Legend:

*AMP - Depends on Vintage

(**) - Fuse Connector/Cable Holders

+140V DIF FEEDBACK CONTROL BOX

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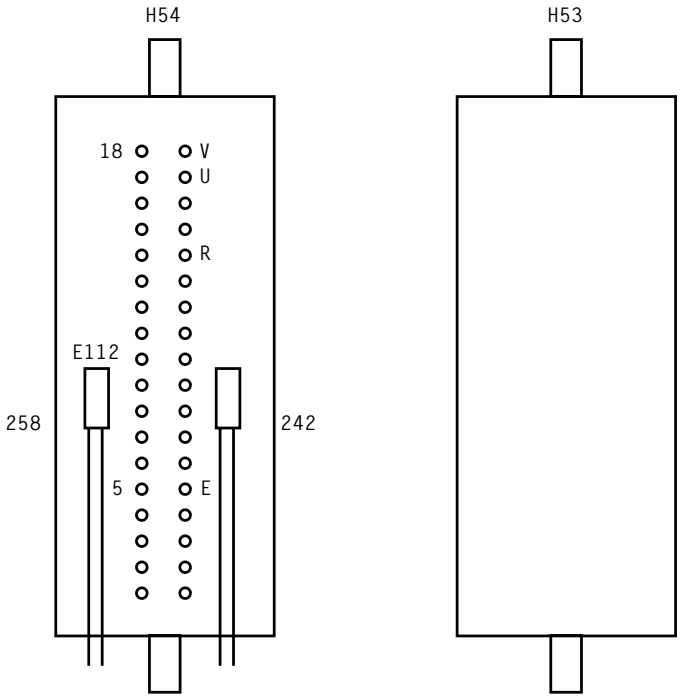
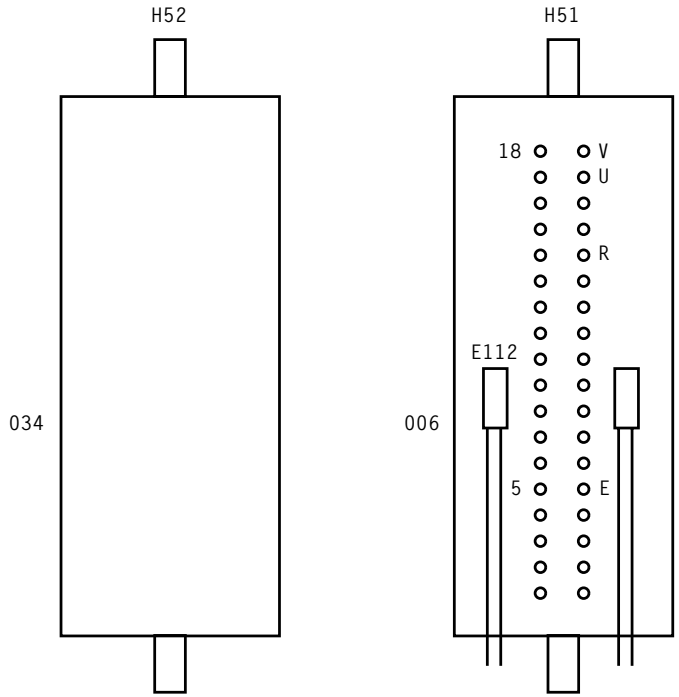


EVEN DIU (Left Side of Bay 0 or 2 Backplane View)



ODD DIU (Right Side of Bay 0 or 2 Backplane View)

EVEN AND ODD DIU 14C1 BACKPLANE CONNECTOR LAYOUTS

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234-151-055	DLP
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[1] Notify next Technical Support level that DIF x will be running simplex during filter circuit repair which is about to occur

[2] At front of affected DIF, carefully remove metal kickplate for BAY 1 (Controller Bay)

[3] Remove affected DIF; rotate the Controller 0 power switch to **ROS** position

[4] Operate 245B (114-013) and 140F (114-103) power converter unit switches to **OFF** position

[5] At back of DIF, remove protective plastic cover to access filter circuits

[6] See CAUTION 1. Install insulating material around **C1B** capacitor

[7] At front of affected DIF, mark capacitor wires of **C1A** capacitor with temporary labels to ensure correct polarity for reinstallaion

AND

[8] See CAUTION 1. At **CIA** capacitor (104-037), check **"+"** terminal voltage near 0 volts

[9] Is voltage measured less than 3 volts

Yes → Page 2

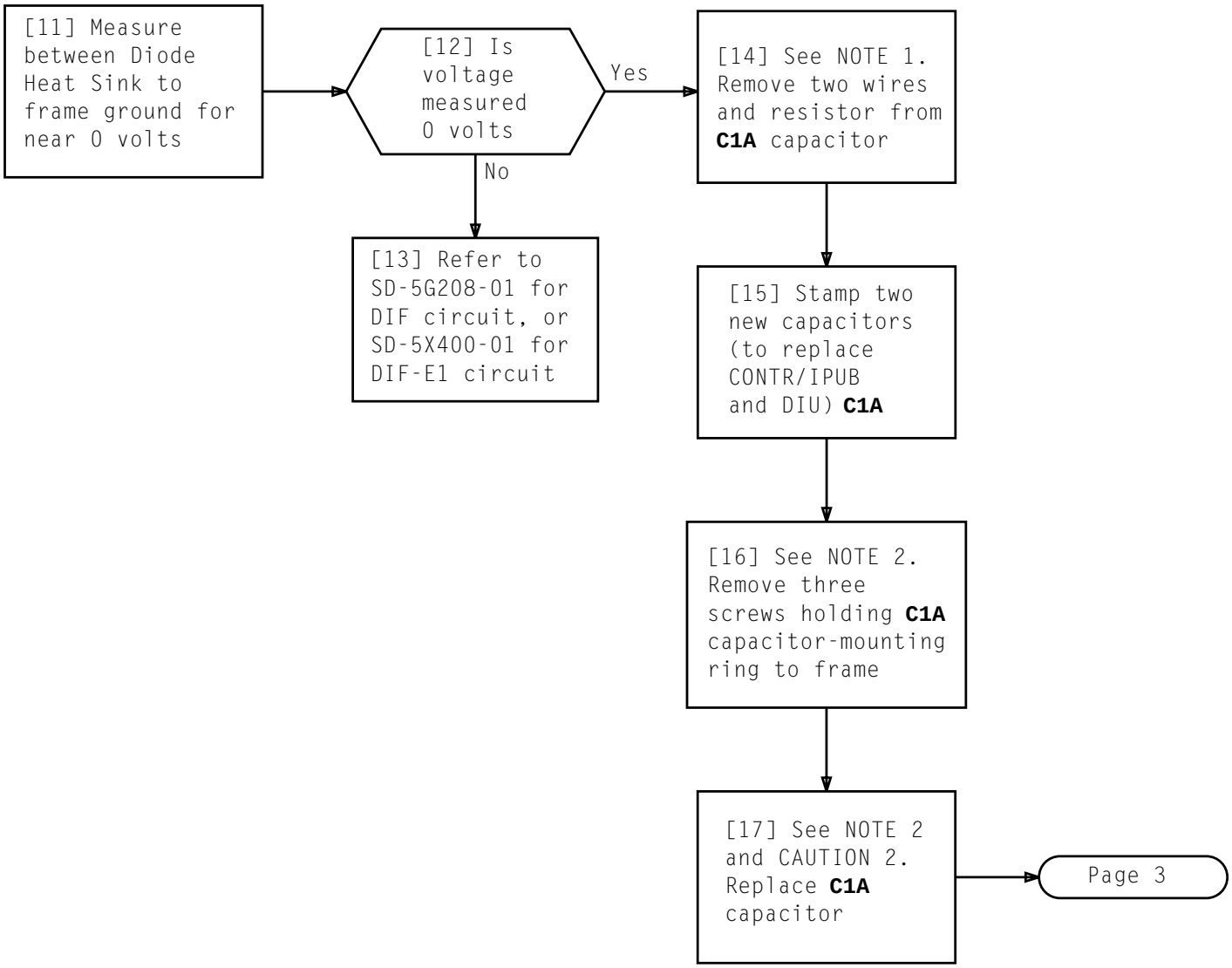
No

[10] Refer to SD-5G208-01 for DIF circuit, or SD-5X400-01 for DIF-E1 circuit

CAUTION 1

Adjacent capacitor still has +140 volts present (+140VB for side 1)

REPAIR +140VA FILTER CIRCUIT WITH DIF BACKFEED CONTROL BOX INSTALLED FOR RAPID RESTORAL +140VA CIRCUIT



NOTES

1. A 12-inch standard screwdriver with insulation is required
2. Replacement capacitor must be oriented in same manner as one that was removed

CAUTION 2

Adjacent areas have power applied. Use insulation around exposed areas

REPAIR +140VA FILTER CIRCUIT WITH DIF BACKFEED CONTROL BOX INSTALLED FOR RAPID RESTORAL +140VA CIRCUIT

[18] Record change of capacitor on copy of DLP-545 for DIF CONTR/IPUB 0

[19] See NOTE 3. Install new capacitor and mounting ring to frame using three screws removed in Step 16

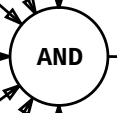
[20] Reconnect two wires with resistor R1A across **C1A** terminals (disconnected in Step 14)

[21] See CAUTION 3. At back of associated DIF, insure labels are on wires. Remove two screws from DIU **C1A** capacitor terminals

[22] Remove resistor R1A from DIU **C1A** capacitor

[23] See NOTE 3. Remove three screws from mounting ring and frame

[24] Replace DIU **C1A** capacitor



[25] Remount new capacitor to ring clamp and frame with three screws removed in Step 23

Page 4

NOTE 3

Orientation of original capacitor must be used for replacement capacitor

CAUTION 3

Adjacent areas have power applied. Use insulation around exposed areas

REPAIR +140VA FILTER CIRCUIT WITH DIF BACKFEED CONTROL BOX INSTALLED FOR RAPID RESTORAL +140VA CIRCUIT

[26] Recored replacement of DIU **C1A** capacitor using DLP-545

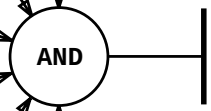
[27] See CAUTION 4. Reconnect two wires (removed in Step 21) along with resistor R1A (removed in Step 22)

[28] Remove insulation installed earlier to protect adjacent areas of Filter Capacitor Circuitry

[29] Reinstall kickplate (base cover) at front of affected DIF

[30] Reinstall plastic cover at rear of affected DIF Controller Bay

[31] Notify next higher level of support that capacitor replacement for +140VA has been completed



CAUTION 4

+ 140V is present on equipment in adjacent areas

REPAIR +140VA FILTER CIRCUIT WITH DIF BACKFEED CONTROL BOX INSTALLED FOR RAPID RESTORAL +140VA CIRCUIT

[1] Notify next level of support that DIF x will be running simplex during filter circuit repair which is about to occur

[2] At front of affected DIF, carefully remove metal kickplate for BAY 1 (Controller Bay)

[3] Remove affected DIF; rotate the Controller 0 power switch to **ROS** position

[4] Operate 245B (114-195) and 140F (114-171) power converter unit switches to **OFF** position

[5] At back of DIF, remove protective plastic cover to access filter circuits

[6] See CAUTION 1. Install insulating material around **C1A** capacitor

[7] At front of affected DIF, mark capacitor wires of **C1B** capacitor with temporary labels to ensure correct polarity for reinstallaion

AND

[8] See CAUTION 1. At **C1B** capacitor (104-073), check **"+"** terminal voltage near 0 volts

[9] Is voltage measured less than 3 volts

Yes → Page 2

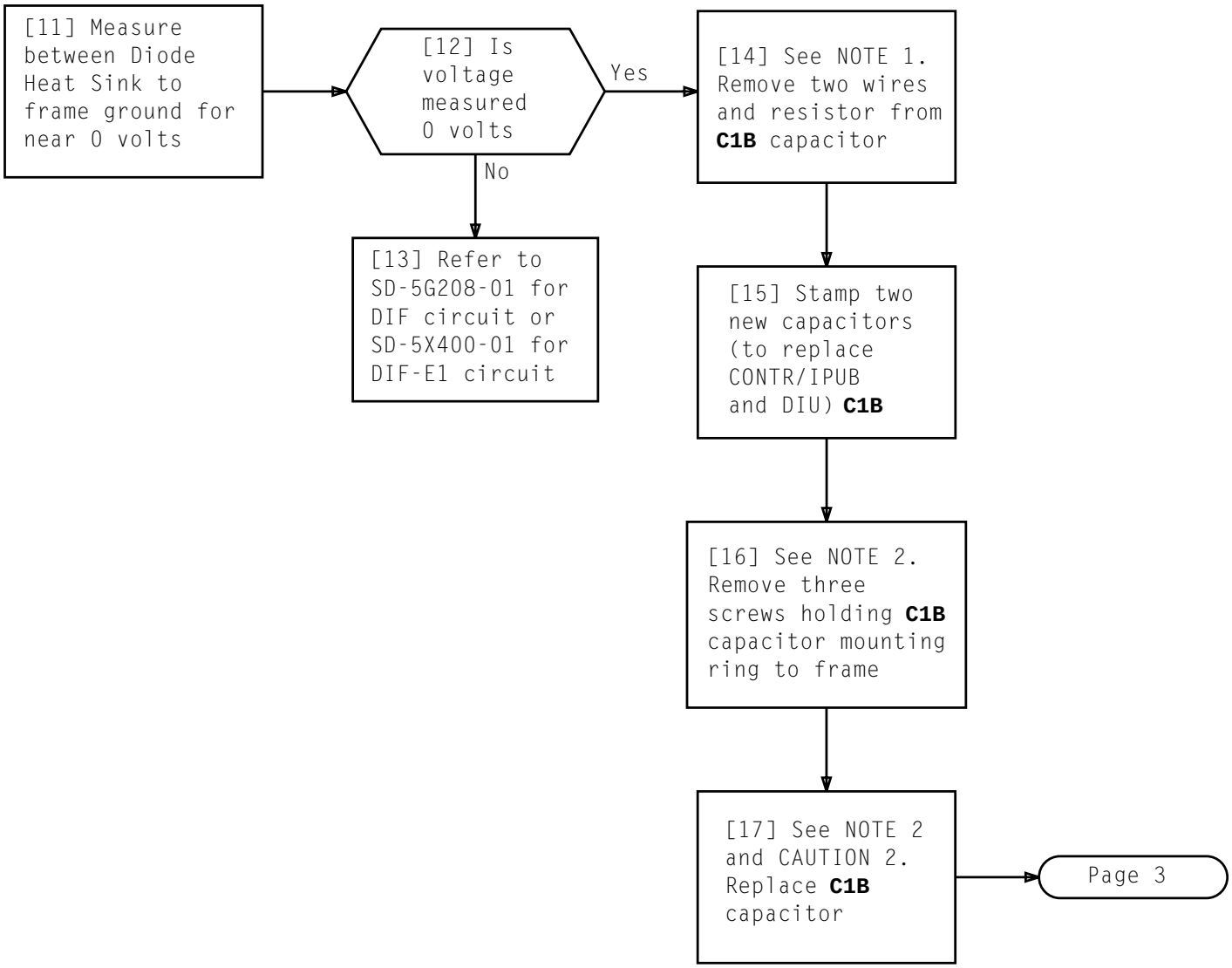
No

[10] Refer to SD-5G208-01 for DIF circuit, or SD-5X400-01 for DIF-E1 circuit

CAUTION 1

Adjacent capacitor still has +140 volts present (+140VB for side 0)

REPAIR +140VB FILTER CIRCUIT WITH DIF BACKFEED CONTROL BOX INSTALLED FOR RAPID RESTORAL +140VB CIRCUIT



NOTES

1. A 12 inch standard screwdriver with insulation is required
2. Replacement capacitor must be oriented in same manner as one that was removed

CAUTION 2

Adjacent areas have power applied. Use insulation around exposed areas

REPAIR +140VB FILTER CIRCUIT WITH DIF BACKFEED CONTROL BOX INSTALLED FOR RAPID RESTORAL +140VB CIRCUIT

[18] Record change of capacitor on copy of DLP-545 for DIF CONTR/IPUB 1

[19] See NOTE 3. Install new capacitor and mounting ring to frame using three screws removed in Step 16

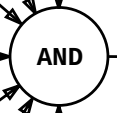
[20] Reconnect two wires with resistor R1A across **C1B** terminals (disconnected in Step 14)

[21] See CAUTION 3. At back of associated DIF, insure labels are on wires. Remove two screws from DIU **C1B** capacitor terminals

[22] Remove resistor R1B from DIU **C1B** capacitor

[23] See NOTE 3. Remove three screws from mounting ring and frame

[24] Replace DIU **C1B** capacitor



[25] Remount new capacitor to ring clamp and frame with three screws removed in Step 23

Page 4

NOTE 3

Orientation of original capacitor must be used for replacement capacitor

CAUTION 3

Adjacent areas have power applied. Use insulation around exposed areas

REPAIR +140VB FILTER CIRCUIT WITH DIF BACKFEED CONTROL BOX INSTALLED FOR RAPID RESTORAL +140VB CIRCUIT

[26] Recored replacement of DIU **C1B** capacitor using DLP-545

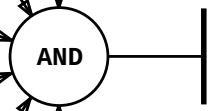
[27] See CAUTION 4. Reconnect two wires (removed in Step 21) along with resistor R1B (removed in Step 22)

[28] Remove insulation installed earlier to protect adjacent areas of Filter Capacitor Circuitry

[29] Reinstall kickplate (base cover) at front of affected DIF

[30] Reinstall plastic cover at rear of affected DIF Controller Bay

[31] Notify next level of support that capacitor replacement for +140VB has been completed



CAUTION 4

+ 140V is present on equipment in adjacent areas

REPAIR +140VB FILTER CIRCUIT WITH DIF BACKFEED CONTROL BOX INSTALLED FOR RAPID RESTORAL +140VB CIRCUIT

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 the following 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-5X400-01 or SD-5A208-02, and solder. Execution of this procedure is done only during light traffic hours. It is assumed that sufficient time is available to complete procedure prior to busy shift hours.

[1] At ABC frame, insure that ITE 4715 or equivalent Capacitor Charging Tool and fuses have been removed

[2] See NOTE 1. At affected DIF/DIF-E frame, remove kickplate from front of bay and remove plastic cover from rear of frame at vertical level 10

[3] See FIGURES 1 and 2. Locate and mark leads of +140V capacitors associated with controller and DIUs being repaired (C1As=DIU 0 and all odd DIUs-CIBs=DIU 33, and all Even DIUs)

[4] Mark polarity of capacitor leads to ensure correct removal or replacement in later steps

[5] At rear of bay, mark polarity of diode leads to ensure correct polarity for removal or replacement in later steps

[6] Install insulating material around unit filter capacitor area for protection of components using various voltages

AND

Page 2

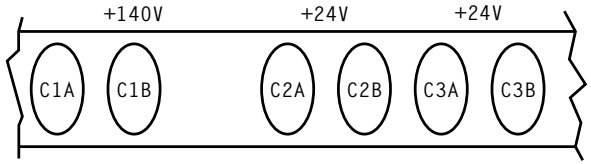


Figure 1 - Example of Capacitors DIF Bay (Front View)

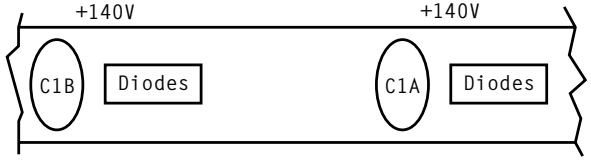


Figure 2 - Example of Capacitors and Diodes (Rear View) DIF Bay

NOTE 1
Capacitors for Controllers and IPUBs 0/1 are located in kickplate area (front). For DIU capacitors are located in vertical 10 (rear of bay)

*Trademark of Phillips Screw Company

REPLACE FILTER CAPACITOR AND DIODE WITH BACKFEED CONTROL BOX INSTALLED +140 VOLT ABC CIRCUITS A OR B

[7] See CAUTION. Using a voltmeter, check for presence of +140V on "+" (plus) lead of two +140V filter capacitors in circuit affected (near zero volts expected)

[8] See TABLE A. Is +140V present on all capacitors
C1As = Cont/IPUB 0/DIU 0 and odd DIUs
or
C1Bs = Cont/IPUB 1/DIUs 32-33 and even DIUs

Yes

[9] Abort procedure and contact next level of support per local practice

No

[10] See Figure. 3 and NOTE 2. Remove negative leads on capacitors and insulate leads (isolates capacitors and diodes)

[11] See NOTE 3 and TABLE A. Using VOM set to ohms scale, check both capacitors in circuit for shorts (expect high resistance > 1.5M)

Page 3

TABLE A

Capacitor	Location	Diode	Location
C1A	103-043	CR7A	108-055RA
C1A	110-079	CR8A	108-055RB
C1B	103-079	CR7B	108-171RA
C1B	110-213	CR8B	108-171RB

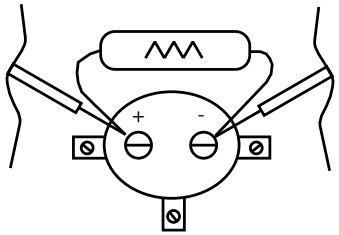


Figure 3 - Filter Capacitor Sample

NOTES
2. A 12-inch standard screwdriver with insulation from handle to blade should be used to prevent shorting
3. A shorted capacitor in some cases will cause associated diode to open - It is necessary that diode be replaced at this time to prevent later service problems

CAUTION
Other circuits in area use +140V and +24V. Care must be used to avoid shorting components of circuitry in area

REPLACE FILTER CAPACITOR AND DIODE WITH BACKFEED CONTROL BOX INSTALLED +140 VOLT ABC CIRCUITS A OR B

[12] See TABLE A, Page 2. Is either capacitor shorted

No

[19] See NOTES 3, 4, and FIG. 4. Using VOM, set to ohms scale check diodes to see if bad (100K or open depending on polarity)

[20] Is either diode bad

No

Page 4

Yes

[13] Remove "+" lead from capacitor and insulate

[14] Note the orientation of capacitor and remove three screws from capacitor retaining ring

[15] Stamp proper identification on new capacitor being installed

[16] Remove defective capacitor from retaining ring and replace orienting new capacitor properly

[17] Carefully place new capacitor in unit and replace three retaining ring screws

[18] Reconnect "+" lead to capacitor and repeat from Step 11

Yes

[21] Unsolder leads from shorted diode and insulate

[22] Replace diode insuring proper polarity and solder leads

[23] Repeat from Step 19

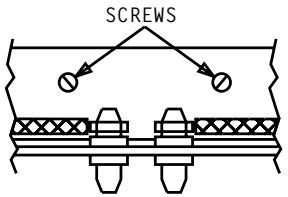
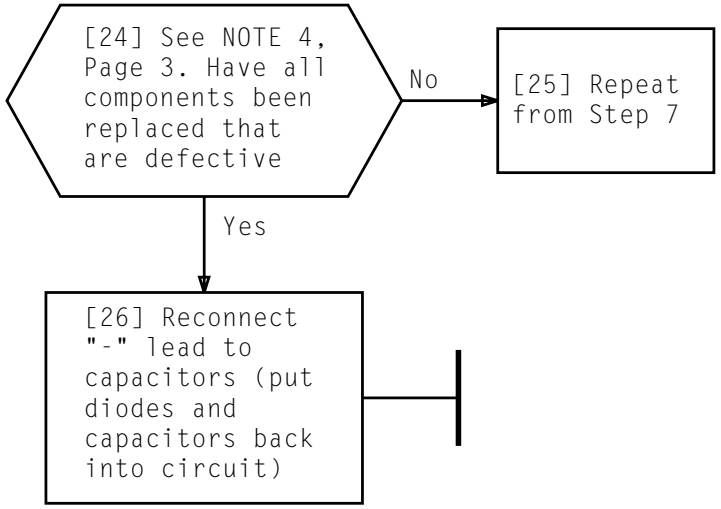


Figure 4 - Diode Assembly Sample

NOTE 4

If you have reached this point without replacing any of the filter circuitry problems are intermittent and it is recommended to replace filter capacitor circuitry at this time to avoid further equipment damage

REPLACE FILTER CAPACITOR AND DIODE WITH BACKFEED CONTROL BOX INSTALLED +140 VOLT ABC CIRCUITS A OR B



REPLACE FILTER CAPACITOR AND DIODE WITH BACKFEED CONTROL BOX INSTALLED +140 VOLT ABC CIRCUITS A OR B

[1] Is defective power switch in the spare DIU

Yes

No

[2] Verify that spare DIU is available

[3] Remove DIU from service using message:
RMV:DIF a,DIU b!
a = DIF member number
b = DIU with power switch to be changed

RMV:DIF a, DIU b COMPLETE

[4] See FIG. 1. At power switch assembly, set slide switch to down position

[5] Verify that MM light on affected power switch assembly to be replaced is lit

AND

Page 2

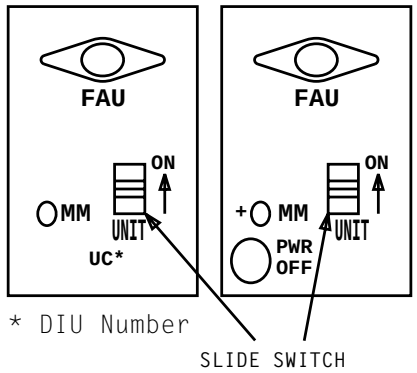


Figure 1 - Example of Unit Switch Assembly

REPLACE DIU POWER SWITCH

[6] Remove plastic shield at rear of backplane

[7] See DANGER. Unplug connector from rear of power switch assembly

[8] Carefully remove four screws that hold power switch assembly to backplane of digital interface

[9] Remove power switch assembly and install new assembly and connector bracket, if one is being used, using four screws removed in previous step

[10] See FIG. 1, Page 1. At power switch assembly of DIU, set slide switch to down position

[11] Plug connector on rear of power switch assembly

AND

[12] Reinstall plastic sheild at rear of backplane

[13] At power switch assembly set slide switch to up position

[14] See NOTE. Restore unit to service by typing:
RST:DIF a,DIU b!
a = member number
b = DIU with power switch that was changed

AND

NOTE
Restoral on MF type unit takes approximately 22 minutes

DANGER
+140 Volts is present on connector

REPLACE DIU POWER SWITCH

ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE
TPG-000		• TAP-128		DLP-532							
• IXL-001		• TAP-129		DLP-533							
NTP-002		• TAP-130		DLP-534							
• NTP-003		DLP-500		DLP-535							
• NTP-004		• DLP-501		DLP-536							
• NTP-005		• DLP-502		DLP-537							
• NTP-006		DLP-503		DLP-538							
• TAP-100		• DLP-504		DLP-539							
• TAP-101		• DLP-505		DLP-540							
• TAP-102		DLP-506		• DLP-541							
• TAP-103		• DLP-507		• DLP-542							
• TAP-104		• DLP-508		• DLP-543							
• TAP-105		• DLP-509		• DLP-544							
• TAP-106		DLP-510		• DLP-545							
• TAP-107		DLP-511		• DLP-546							
• TAP-108		DLP-512		• DLP-547							
• TAP-109		• DLP-513		• DLP-548							
• TAP-110		• DLP-514		• DLP-549							
• TAP-111		DLP-515		• DLP-550							
TAP-112		• DLP-516		• DLP-551							
• TAP-113		DLP-517		• CKL-891							
TAP-114		• DLP-518		TNG-893							
TAP-115		DLP-519									
TAP-116		DLP-520									
TAP-117		DLP-521									
TAP-118		DLP-522									
TAP-119		DLP-523									
TAP-120		DLP-524									
TAP-121		DLP-525									
TAP-122		DLP-526									
TAP-123		DLP-527									
TAP-124		DLP-528									
TAP-125		DLP-529									
TAP-126		DLP-530									
☐ TAP-127		DLP-531									

• REVISED OR ADDED ITEM ☐ CANCELED ITEM

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CHECKLIST

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