

Task Oriented Practice
(TOP)

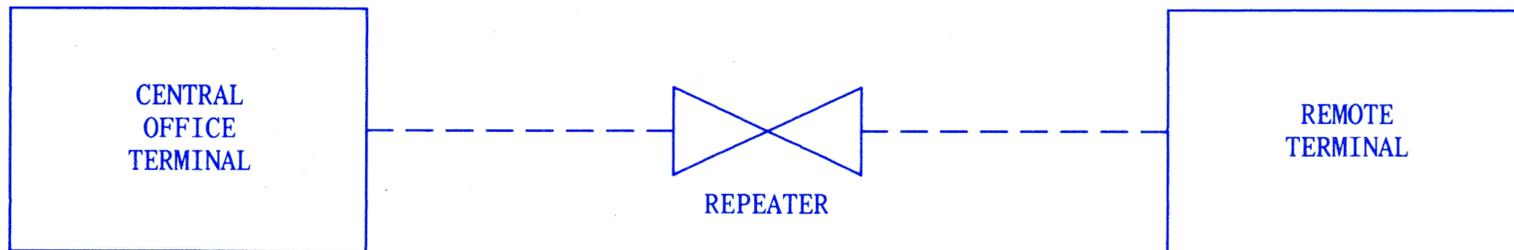
"SLC*" -40 SUBSCRIBER LOOP CARRIER SYSTEM

ROUTINE TASK LIST	001
ACCEPTANCE TASK LIST	030
COMPANY ORDER LIST	050
TROUBLE INDICATOR LIST	095

TOP Comments Hot Line (1)-800-334-0404
8:00 a.m. — 4:00 p.m. Eastern Time
Monday through Friday
In North Carolina call 919-727-3167

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**SUBSCRIBER LOOP CARRIER – 40 SYSTEM
TOP DOCUMENTATION PLAN
ONE VOLUME**



BELL SYSTEM PRACTICES
AT&TCo Provisional

Task Oriented Practice
(TOP)

"SLC*" -40 SUBSCRIBER LOOP CARRIER SYSTEM

NOTE

Before using TOP for the first time,
complete the TOP-USER Plant Training
Course-PTC No. 278.

A short version of PTC No. 278 is in
the back of this volume.

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

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Issue 1	MAR 1981
363-201-400	TPG
TITLE PAGE	

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RTP-003		TAP-127		DLP-532		DLP-567					
ATL-030		TAP-128		DLP-533		DLP-568					
ATP-031		TAP-129		DLP-534		DLP-569					
ATP-032		DLP-500		DLP-535		DLP-570					
COL-050		DLP-501		DLP-536		DLP-571					
COP-051		DLP-502		DLP-537		DLP-572					
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TAP-101		DLP-506		DLP-541		DLP-576					
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TAP-103		DLP-508		DLP-543		DLP-578					
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TAP-111		DLP-516		DLP-551							
TAP-112		DLP-517		DLP-552							
TAP-113		DLP-518		DLP-553							
TAP-114		DLP-519		DLP-554							
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TAP-119		DLP-524		DLP-559							
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● REVISED OR ADDED ITEM

□ CANCELED ITEM

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CKL

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000

CHECKLIST

ROUTINE TASKS	PROCEDURE NUMBER	
Perform Spare Line Tests	RTP-002	
Perform Remote Terminal Cabinet Tests	RTP-003	
ROUTINE TASK LIST – SLC-40 CARRIER SYSTEM	Issue 1	MAR 1981
	363-201-400	RTL
	PAGE 1 of 1	001

ITEM	SUBTASKS	PROCEDURE NUMBER
	NOTE: This test should be made during periods of light traffic on system being tested because of audible clicks during switching of digital line. No alarm lamps should be lighted at the COT prior to this test. If spare line option is used, the spare line must be idle	-
1	Obtain Support Apparatus Listed Below: At Central Office Terminal (COT): • 1 - Dummy Plug At Remote Terminal (RT): • 1 - 1014A Hand Test Set, or Equivalent	-
2	Dispatch Personnel to Remote Terminal to Assist in Monitoring Test Call	-
3	Have RT Personnel Establish a Test Call From RT Cross-Connect Terminal	-
4	Perform Transfer-to-Spare Line Tests While Monitoring Test Call	DLP-500
5	Verify Operation of SPLT (Spare-Line-Trouble) Alarm, Using a Dummy Plug in S1-OUT Jack on COT Jack Panel for System Being Tested	DLP-501
6	Release Test Call and Restore System to Normal	-
PERFORM SPARE LINE TESTS		Issue 1 MAR 1981
		363-201-400 RTP
		PAGE 1 of 1 002

ITEM	SUBTASKS	PROCEDURE NUMBER
1	Obtain Support Apparatus Listed Below: <ul style="list-style-type: none"> • 1 – KS-14510 Volt-Ohm-Milliammeter (VOM) or Equivalent • 1 – 70-Type Defective Fuse • 1 – 9/16-Inch Taped (Insulated) Open-End Wrench • 1 – 216 Type Tool or 7/16-Inch Wrench • 1 – Bucket of Clean Tap Water • 1 – Container of Distilled or Approved Water • 1 – Bulb and Tube-Type Dispenser •*1 – Pair of Rubber Gloves, Approved for Use in Handling Batteries •*1 – Rubberized Fabric or Plastic Apron •*1 – Set of Splash-Type Eye Protectors (Goggles) •†1 – KS-21527 List 2 Eye Wash Rinse • 1 – Stiff, Narrow, Plastic Toothbrush • KS-19094 L2 Anti-Seize Compound (Grease) • Clean Cloths • Nonmetallic Waste Container • Spray Can of Freon 	–
	<p style="text-align: center;"><i>Danger: The safety apparel designated by * should be worn at all times when working with batteries. Items designated by † should be readily available when working with the batteries to minimize the consequences of any accident with the electrolyte</i></p>	
2	Visually Inspect Exterior of RT Cabinet for Any Signs of Physical Damage	–
3	If Cabinet is Dusty or Dirty, Wipe it Clean With a Clean Cloth, Moistened in Water if Necessary	–
4	Check Padlock Located on Commercial ac Fuse Box for Proper Operation	–
5	Inspect Crossarm Structure for Damage or Loose Hardware	–

PERFORM REMOTE TERMINAL CABINET TESTS

ITEM	SUBTASKS	PROCEDURE NUMBER																		
6	Inspect Bonding and Grounding of Cable Sheath and RT Cabinet	DLP-502																		
7	Inspect Gaskets, Vents, Drains, and Access Holes on RT Cabinet	-																		
8	Check All Cabinet Locking Mechanisms for Proper Operation	-																		
9	Establish a Talking Circuit With COT Location Per Local Procedures	-																		
10	Verify Proper Operation of RT MN Alarm Lamp at COT Indicating an Open RT Cabinet Door	DLP-503																		
11	Measure Battery Voltage at KE9 CIRCUIT PACK Between Test Jacks BN(-) and BG(+) . Repeat With BC Fuse (on RT Power Panel) Removed. Note Alarm Lamp Indicators. See TABLE A for Requirements. <u>Reinsert BC Fuse</u> <table border="1" data-bbox="636 548 1346 760"> <thead> <tr> <th colspan="4" data-bbox="636 548 1346 589">TABLE A</th> </tr> <tr> <th data-bbox="636 589 716 672" rowspan="2">BC FUSE</th> <th data-bbox="716 589 1016 672" rowspan="2">BATTERY VOLTAGE (ON KE9 CIRCUIT PACK)</th> <th colspan="2" data-bbox="1016 589 1346 630">ALARM INDICATORS LIGHTED</th> </tr> <tr> <th data-bbox="1016 630 1182 672">COT (KE12)</th> <th data-bbox="1182 630 1346 672">RT (KE15)</th> </tr> </thead> <tbody> <tr> <td data-bbox="636 672 716 721">In</td> <td data-bbox="716 672 1016 721">40 to 46 volts dc</td> <td data-bbox="1016 672 1182 721">-</td> <td data-bbox="1182 672 1346 721">-</td> </tr> <tr> <td data-bbox="636 721 716 760">Out</td> <td data-bbox="716 721 1016 760">36 to 42 volts dc</td> <td data-bbox="1016 721 1182 760">RT MN</td> <td data-bbox="1182 721 1346 760">AC</td> </tr> </tbody> </table>	TABLE A				BC FUSE	BATTERY VOLTAGE (ON KE9 CIRCUIT PACK)	ALARM INDICATORS LIGHTED		COT (KE12)	RT (KE15)	In	40 to 46 volts dc	-	-	Out	36 to 42 volts dc	RT MN	AC	DLP-504
TABLE A																				
BC FUSE	BATTERY VOLTAGE (ON KE9 CIRCUIT PACK)	ALARM INDICATORS LIGHTED																		
		COT (KE12)	RT (KE15)																	
In	40 to 46 volts dc	-	-																	
Out	36 to 42 volts dc	RT MN	AC																	
12	Remove BF Fuse From RT Power Panel	-																		
	<i>Danger: Allow 15 minutes to elapse after removing BF fuse to allow dissipation of hydrogen and oxygen gases in the battery compartment before starting Step 13</i>																			
13	From a distance of Two Inches, Direct a Several-Second Spray of Freon Against Low-Temperature Alarm Sensor (LOW TEMP ALM) on Side of Battery Compartment. Repeat Until Sensor is Frosty. Verify That TEMP/SPL LOCK Lamp at RT is Lighted. Have COT Verify RT MN Lamp is Lighted	-																		
14	Verify Battery Heater Panel Operation	DLP-505																		

ITEM	SUBTASKS	PROCEDURE NUMBER
	<p>Danger: If electrolyte or battery top residue gets on or in:</p> <ul style="list-style-type: none"> • Eyes—Wash eyes immediately and repeatedly with eye wash solution. Services of a hospital or physician are required as quickly as possible • Skin – Flush affected area immediately with water or eye wash solution. Seek medical help if required • Clothing or tools – Flush affected area immediately with water • Cabinet surfaces – Blot up using clean, damp wiping cloth. Dispose of cloth in nonmetallic waste container • Electronic apparatus – Replace 	
	<p>Danger: Batteries are capable of generating high currents if a short is placed across its terminals (dropped wrench, for instance). Extreme care should be exercised when working with or near batteries</p>	
15	Visually Inspect Battery Cells for Correct Electrolyte Level, Cracks or Leaks, Terminal Corrosion, and Worn or Broken Cable Ties	-
16	Fill Battery Cells Up to Upper Electrolyte Level Line Using Distilled or Approved Water	-
17	Soak and Clean Battery Vent Caps in a Bucket of Water	-
18	Clean Residue or Corrosion From Battery Cell Terminals, if Needed	DLP-506
19	Measure Voltage Across Each Pair of Battery Cells. Cell Voltage Must be at Least 2.4 Volts dc	DLP-507
20	Measure Voltage Across Entire Battery String. Battery String Voltage Must be at Least 36 Volts dc	DLP-508
21	Replace BF Fuse on RT Power Panel	-
22	Apply KS-19094-L2 Anti-Seize Compound to Each Door Hinge. If Anti-seize Compound is not Available, Apply Light Oil (3 in 1, for example) Followed by Automotive-Type Grease to Each Hinge	-
23	Work Cabinet Door Sections to Ensure Doors Work Freely	-
24	Remove All Test Equipment and Materials	-
25	Firmly Secure RT Cabinet Doors	-

PERFORM REMOTE TERMINAL CABINET TESTS

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ACCEPTANCE TASKS	PROCEDURE NUMBER
Accept Central Office Terminal	ATP-031
Accept Frame-Mounted Remote Terminal	ATP-032
ACCEPTANCE TASK LIST – SLC-40 CARRIER SYSTEM	Issue 1 MAR 1981
	363-201-400 ATL
	PAGE 1 of 1 030

ITEM	SUBTASKS	PROCEDURE NUMBER
1	Perform Overall Visual Inspection of Central Office Terminal	DLP-509
2	Check Central Office Terminal Fuse Panel and Office Alarms	DLP-510
ACCEPT SLC-40 CENTRAL OFFICE TERMINAL		Issue 1
		MAR 1981
		363-201-400
		ATP
		PAGE 1 of 1 031

ITEM	SUBTASKS	PROCEDURE NUMBER
1	Check Frame-Mounted Remote Terminal Wiring Options	DLP-583

ACCEPT SLC-40 FRAME-MOUNTED REMOTE TERMINAL

Issue 1 MAR 1981

363-201-400 ATP

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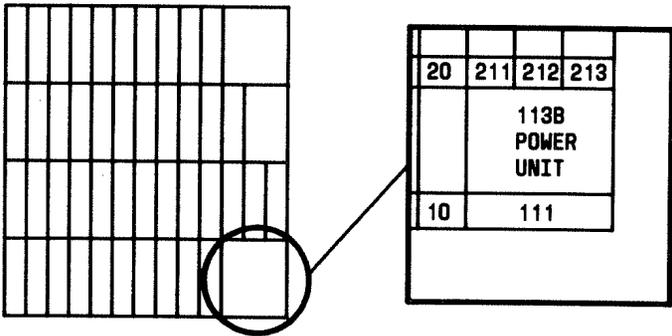
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COMPANY ORDER TASKS	PROCEDURE NUMBER
ENGINEERING WORK ORDERS	
Establish SLC*-40 Carrier System	COP-051
SERVICE ORDERS	
Perform Service Cutover Procedures	COP-052
<p>* Trademark of Western Electric</p>	
COMPANY ORDER LIST – SLC-40 CARRIER SYSTEM	Issue 1 MAR 1981
	363-201-400 COL
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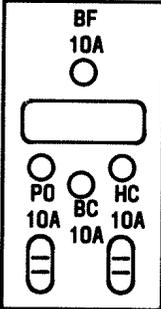
ITEM	SUBTASKS	PROCEDURE NUMBER																	
1	Obtain Support Apparatus Listed Below at Central Office Terminal: <ul style="list-style-type: none"> • 1-70-Type "Defective" Fuse (blown) • 1-KS-14510 Volt-Ohm-Milliammeter (VOM) or equivalent • 4-P3-Type Patch Cords with 310-Type Plugs (P3BH Cords are Recommended) • 1-1014B Hand Test Set • 5-310-Type Dummy Plugs 	-																	
CENTRAL OFFICE TERMINAL TURN-UP TESTS																			
2	Unpack and Inspect Each Plug-in Unit to be Used																		
3	With power switch in OFF position, Install 113B Power Unit into Slot 111 and Operate Power Switch to ON Position <div style="text-align: center; margin-top: 20px;">  </div>	DLP-511																	
4	Measure Voltages on 113B Power Unit [TABLE A] <div style="text-align: center; margin-top: 20px;"> <table border="1" data-bbox="394 1003 802 1276"> <thead> <tr> <th colspan="3" data-bbox="394 1003 802 1052">TABLE A</th> </tr> <tr> <th colspan="2" data-bbox="394 1052 575 1089">TEST POINTS</th> <th data-bbox="575 1052 802 1089" rowspan="2">REQUIREMENT (Vdc)</th> </tr> <tr> <th data-bbox="394 1089 478 1166">FROM (+)</th> <th data-bbox="478 1089 575 1166">TO (-)</th> </tr> </thead> <tbody> <tr> <td data-bbox="394 1166 478 1203">BG</td> <td data-bbox="478 1166 575 1203">BN</td> <td data-bbox="575 1166 802 1203">45 to 53</td> </tr> <tr> <td data-bbox="394 1203 478 1240">+5</td> <td data-bbox="478 1203 575 1240">CG</td> <td data-bbox="575 1203 802 1240">4.5 to 5.5</td> </tr> <tr> <td data-bbox="394 1240 478 1276">CG</td> <td data-bbox="478 1240 575 1276">-8</td> <td data-bbox="575 1240 802 1276">7 to 9</td> </tr> </tbody> </table> </div>	TABLE A			TEST POINTS		REQUIREMENT (Vdc)	FROM (+)	TO (-)	BG	BN	45 to 53	+5	CG	4.5 to 5.5	CG	-8	7 to 9	DLP-512
TABLE A																			
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FROM (+)	TO (-)																		
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+5	CG	4.5 to 5.5																	
CG	-8	7 to 9																	
ESTABLISH SLC-40 CARRIER SYSTEM		<table border="1" style="width: 100%; text-align: center;"> <tr> <td data-bbox="1661 1317 1818 1365">Issue 1</td> <td data-bbox="1818 1317 2003 1365">MAR 1981</td> </tr> <tr> <td data-bbox="1661 1365 1902 1403">363-201-400</td> <td data-bbox="1902 1365 2003 1403">COP</td> </tr> <tr> <td data-bbox="1661 1403 1902 1450">PAGE 1 of 16</td> <td data-bbox="1902 1403 2003 1450">051</td> </tr> </table>	Issue 1	MAR 1981	363-201-400	COP	PAGE 1 of 16	051											
Issue 1	MAR 1981																		
363-201-400	COP																		
PAGE 1 of 16	051																		

ITEM	SUBTASKS	PROCEDURE NUMBER																											
5	If Using T1/Outstate or M1-Type Multiplexer Interface, Proceed to Item 9, Otherwise Continue With Item 6																												
6	Install 70-Type Fuse for Powering Line Power Unit per TABLE B (Observe Color Code) <table border="1" data-bbox="621 399 953 659" style="margin: 10px auto;"> <thead> <tr> <th colspan="2" data-bbox="621 399 953 448">TABLE B</th> </tr> <tr> <th data-bbox="621 448 779 513">FOR SYSTEM POSITION</th> <th data-bbox="779 448 953 513">FUSE HOLDER DESIGNATION</th> </tr> </thead> <tbody> <tr> <td data-bbox="621 513 779 553">1</td> <td data-bbox="779 513 953 553">F1C</td> </tr> <tr> <td data-bbox="621 553 779 594">2</td> <td data-bbox="779 553 953 594">F4C</td> </tr> <tr> <td data-bbox="621 594 779 634">3</td> <td data-bbox="779 594 953 634">F7C</td> </tr> <tr> <td data-bbox="621 634 779 659">4</td> <td data-bbox="779 634 953 659">F10C</td> </tr> </tbody> </table>	TABLE B		FOR SYSTEM POSITION	FUSE HOLDER DESIGNATION	1	F1C	2	F4C	3	F7C	4	F10C	DLP-513															
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1	F1C																												
2	F4C																												
3	F7C																												
4	F10C																												
7	With Power Switch in OFF Position Install Line Power Unit That You Have Into Slot 411 Using A or B Below and Operate Power Switch to ON Position	-																											
	A. 114A or 250() Power Unit	DLP-514																											
	B. 209() or 238() Power Unit (Using 1 and 2 Below)	-																											
	1. Install Good 70F Fuse(s) for Powering ±130V Line Power Unit per TABLE C <table border="1" data-bbox="548 902 1058 1227" style="margin: 10px auto;"> <thead> <tr> <th colspan="4" data-bbox="548 902 1058 951">TABLE C</th> </tr> <tr> <th data-bbox="548 951 674 1081" rowspan="2">FOR EQUIPPED SYSTEM POSITION</th> <th colspan="3" data-bbox="674 951 1058 984">FUSE HOLDER DESIGNATION</th> </tr> <tr> <th data-bbox="674 984 852 1081">209A OR 238A</th> <th data-bbox="852 984 968 1081">209B OR 238B</th> <th data-bbox="968 984 1058 1081">209C OR 238C</th> </tr> </thead> <tbody> <tr> <td data-bbox="548 1081 674 1122">1</td> <td data-bbox="674 1081 852 1122">F1A, F1B</td> <td data-bbox="852 1081 968 1122">F1A</td> <td data-bbox="968 1081 1058 1122">F1B</td> </tr> <tr> <td data-bbox="548 1122 674 1162">2</td> <td data-bbox="674 1122 852 1162">F4A, F4B</td> <td data-bbox="852 1122 968 1162">F4A</td> <td data-bbox="968 1122 1058 1162">F4B</td> </tr> <tr> <td data-bbox="548 1162 674 1203">3</td> <td data-bbox="674 1162 852 1203">F7A, F7B</td> <td data-bbox="852 1162 968 1203">F7A</td> <td data-bbox="968 1162 1058 1203">F7B</td> </tr> <tr> <td data-bbox="548 1203 674 1227">4</td> <td data-bbox="674 1203 852 1227">F10A, F10B</td> <td data-bbox="852 1203 968 1227">F10A</td> <td data-bbox="968 1203 1058 1227">F10B</td> </tr> </tbody> </table>	TABLE C				FOR EQUIPPED SYSTEM POSITION	FUSE HOLDER DESIGNATION			209A OR 238A	209B OR 238B	209C OR 238C	1	F1A, F1B	F1A	F1B	2	F4A, F4B	F4A	F4B	3	F7A, F7B	F7A	F7B	4	F10A, F10B	F10A	F10B	DLP-515
	TABLE C																												
FOR EQUIPPED SYSTEM POSITION	FUSE HOLDER DESIGNATION																												
	209A OR 238A	209B OR 238B	209C OR 238C																										
1	F1A, F1B	F1A	F1B																										
2	F4A, F4B	F4A	F4B																										
3	F7A, F7B	F7A	F7B																										
4	F10A, F10B	F10A	F10B																										
2. Install 209() or 238() Power Unit into Slot 411	DLP-516																												
8	Measure Voltages on Line Power Unit That You Have (Ignore meter fluctuations) Then Operate Power Switch to OFF Position	-																											
	A. 114A or 250() Power Unit (Test Points and Requirements are in TABLE D)	DLP-517																											
ESTABLISH SLC-40 CARRIER SYSTEM		Issue 1 MAR 1981																											
		363-201-400 COP																											
		PAGE 2 of 16 051																											

ITEM	SUBTASKS	PROCEDURE NUMBER																																																								
8 (Contd)	<p style="text-align: center;">TABLE D</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">TEST POINTS</th> <th>114A REQUIREMENT (Vdc)</th> <th>250() REQUIREMENT (Vdc)</th> </tr> <tr> <th>FROM (+)</th> <th>TO (-)</th> <td></td> <td></td> </tr> </thead> <tbody> <tr> <td>BG</td> <td>BN</td> <td>45 to 53</td> <td>45 to 53</td> </tr> <tr> <td>LP</td> <td>LG</td> <td>100 to 160</td> <td>120 to 150</td> </tr> <tr> <td>LG</td> <td>LN</td> <td>0 to 60</td> <td>120 to 150</td> </tr> </tbody> </table> <p style="text-align: center;">B. 209() or 238() Power Unit (Test Points and Requirements are in TABLE E)</p> <p style="text-align: center;">TABLE E</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">TEST POINTS</th> <th colspan="2">REQUIREMENTS (Vdc)</th> </tr> <tr> <th>FROM (+)</th> <th>TO (-)</th> <th>209A/238A</th> <th>209B/238B</th> </tr> </thead> <tbody> <tr> <td>BP</td> <td>BN</td> <td>240 to 280</td> <td>165 to 195</td> </tr> <tr> <td>LP</td> <td>LG</td> <td>120 to 140</td> <td>120 to 140</td> </tr> <tr> <td>LG</td> <td>LN</td> <td>120 to 140</td> <td>42 to 53</td> </tr> <tr> <td></td> <td></td> <th colspan="2">209C/238C</th> </tr> <tr> <td>BG</td> <td>BN</td> <td>120 to 140</td> <td></td> </tr> <tr> <td>LP</td> <td>LG</td> <td>0</td> <td></td> </tr> <tr> <td>LG</td> <td>LN</td> <td>120 to 140</td> <td></td> </tr> </tbody> </table>	TEST POINTS		114A REQUIREMENT (Vdc)	250() REQUIREMENT (Vdc)	FROM (+)	TO (-)			BG	BN	45 to 53	45 to 53	LP	LG	100 to 160	120 to 150	LG	LN	0 to 60	120 to 150	TEST POINTS		REQUIREMENTS (Vdc)		FROM (+)	TO (-)	209A/238A	209B/238B	BP	BN	240 to 280	165 to 195	LP	LG	120 to 140	120 to 140	LG	LN	120 to 140	42 to 53			209C/238C		BG	BN	120 to 140		LP	LG	0		LG	LN	120 to 140		DLP-518
TEST POINTS		114A REQUIREMENT (Vdc)	250() REQUIREMENT (Vdc)																																																							
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9	<p>Install 70-Type Fuse per TABLE F (Observe Color Code)</p> <p style="text-align: center;">TABLE F</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>FOR SYSTEM POSITION</th> <th>FUSE HOLDER DESIGNATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>F3C</td> </tr> <tr> <td>2</td> <td>F6C</td> </tr> <tr> <td>3</td> <td>F9C</td> </tr> <tr> <td>4</td> <td>F12C</td> </tr> </tbody> </table>	FOR SYSTEM POSITION	FUSE HOLDER DESIGNATION	1	F3C	2	F6C	3	F9C	4	F12C	DLP-519																																														
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ITEM	SUBTASKS	PROCEDURE NUMBER						
16	Prepare a Test Line (Temporary Subscriber Line Circuit and Call Number) per Local Procedures	-						
17	At MDF, Temporarily Connect Test Line to Tip and Ring of Channel 18	-						
18	At MDF, With MON-TALK Switch in MON Position, Connect 1014B Handset Across Tip and Ring of Channel 18	-						
19	Perform 8-Channel Loop-Around Test	DLP-524						
20	Perform Central Office Terminal Final SYS OUT State Test	-						
	A. For Systems Equipped With KE21	DLP-525						
	B. For Systems Equipped With KE31A	DLP-526						
21	Obtain Support Apparatus Listed Below For Use at Remote Terminal: <ul style="list-style-type: none"> • 1 - KS-14510 Volt-Ohm-Milliammeter (VOM) or Equivalent • 1 - 70-Type "Defective" Fuse (Blown) • 4 - 310-Type Dummy Plugs 	-						
	REMOTE TERMINAL TURN-UP TESTS							
22	If Remote Terminal is to be Frame-Mounted, go to Item 54. Otherwise Continue with Item 23	-						
23	Obtain the Additional Support Apparatus Listed Below For Use in Installing Batteries <ul style="list-style-type: none"> • 1 - 117-Volt Extension Lamp and Cord (Bell System-Approved) • 1 - 9/16-Inch Taped (Insulated) Wrench • 1 - Container of Distilled Water or Approved Water (Container Must be Suitable for Pouring) •*1 - Pair of Rubber Gloves (Approved for Use in Handling Batteries) •*1 - Rubberized Fabric or Plastic Apron •*1 - Set of Splash-Type Eye Protectors (Goggles) •†1 - KS-21527 List 2 Eye Wash Rinse •†1 - Bucket of Clean Tap Water •†1 - Nonmetallic Waste Container • - Wiping Cloths (as Required) 	-						
ESTABLISH SLC-40 CARRIER SYSTEM		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Issue 1</td> <td style="text-align: center;">MAR 1981</td> </tr> <tr> <td style="text-align: center;">363-201-400</td> <td style="text-align: center;">COP</td> </tr> <tr> <td style="text-align: center;">PAGE 5 of 16</td> <td style="text-align: center;">051</td> </tr> </table>	Issue 1	MAR 1981	363-201-400	COP	PAGE 5 of 16	051
Issue 1	MAR 1981							
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ITEM	SUBTASKS	PROCEDURE NUMBER
	<p>NOTE: The safety apparel designated by * should be worn at all times when working with the batteries. The items designated by † should be readily available when working with the batteries to minimize the consequences of any accident with the electrolyte.</p> <p><i>Danger: The battery electrolyte and top residue are highly corrosive to skin and clothing. The safety apparel (*) must be worn and the first aid items (†) must be on hand before starting work on the batteries. The batteries generate small quantities of hydrogen and oxygen which are normally vented from the cabinet. Smoking and open flames should be limited to areas well away from the cabinet.</i></p>	
24	Review Safety and First Aid Procedures	DLP-527
25	Prepare Commercial AC Power For Use at RT	DLP-528
26	<p>Visually Inspect Each Cell For Excess Residue Buildup and Electrolyte Levels Requirement: Each Cell is Free of Excess Residue and Electrolyte Level is at Upper Colored Line on Cell Cases</p>	DLP-529
27	Hand-tighten All Vent Caps on Cells	-
28	<p>Measure Voltage Across Battery Cell Pairs Requirement: VOM Indicates at Least 2.4 Vdc For Each Pair of Cells</p>	DLP-507
29	Install and Connect Batteries in RT Cabinet	DLP-530
30	<p>Measure Total Battery Voltage of Each Shelf (5 Pairs of Cells) Requirement: 12 to 14 Vdc</p>	DLP-531
31	<p>Measure Total Battery Voltage Across Total Battery String Requirement: At Least 36 Vdc</p>	DLP-508
32	<p>Remove Antileak Shipping Devices From Gas Vents on Top of Each Cell NOTE: The Antileak Shipping Devices May be Either Plastic Covers Over Vent Caps or a Plastic Film Under Each Vent Cap <i>Danger 1: Electrolyte may Spray From Cells When Antileak Shipping Devices Are Removed</i> <i>Danger 2: Cells may Burst Due to Gas Buildup if Antileak Shipping Devices Are Not Removed</i></p>	-

ITEM	SUBTASKS	PROCEDURE NUMBER						
33	Leave Battery Compartment Door Open For at Least 15 Minutes After Removing Antileak Shipping Devices <i>Danger: If Spare Cells Were Received, These Cells Must be Vented by Removing the Antileak Shipping Devices for 3 to 4 Hours Before Storing</i>	-						
34	Install 10-Ampere Fuses (Three Total) in Positions BC , BF , and HC on RT Power Panel NOTE: Fuses Are Shipped in a Bag Attached to the RT Power Panel <div style="text-align: center; margin: 10px 0;">  </div>	-						
35	Set Power Switch on External Power Panel to ON Position Requirement: Fuses Installed in Item 34 do not Operate (blow)	-						
36	Verify Battery Heater Panel Operation	DLP-505						
37	Close and Secure Rear Compartment Door and Release Locking Mechanisms to Access Front Cabinet Apparatus Shelves	-						
38	Verify All Fuses in KU1 Circuit Pack Are in Place and Undamaged	-						
39	Plug KU1 Circuit Pack into Slot 011	-						
40	Plug KE9 Circuit Pack into Slot 012	-						
41	Measure Voltage Between Test Jacks BG(+) and BN(-) on Faceplate of KE9 Circuit Pack Requirement: 40 to 46 Vdc	DLP-532						
42	With Power Switch in OFF Position Install 113B Power Unit into Slot 111 at RT Then Operate Power Switch to ON Position Requirement: Fuses on KU1 Circuit Pack do not Operate (blow)	DLP-533						
ESTABLISH SLC-40 CARRIER SYSTEM		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Issue 1</td> <td style="padding: 2px;">MAR 1981</td> </tr> <tr> <td style="padding: 2px;">363-201-400</td> <td style="padding: 2px;">COP</td> </tr> <tr> <td style="padding: 2px;">PAGE 7 of 16</td> <td style="padding: 2px; font-size: 1.2em;">051</td> </tr> </table>	Issue 1	MAR 1981	363-201-400	COP	PAGE 7 of 16	051
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ITEM	SUBTASKS	PROCEDURE NUMBER																								
43	Measure Voltages on 113B Power Unit at RT Cabinet <table border="1" data-bbox="915 347 1268 618" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3" data-bbox="915 347 1268 396">TABLE H</th> </tr> <tr> <th colspan="2" data-bbox="915 396 1083 428">TEST POINTS</th> <th data-bbox="1083 396 1268 428">REQUIREMENT</th> </tr> <tr> <th data-bbox="915 428 999 505">FROM (+)</th> <th data-bbox="999 428 1083 505">TO (-)</th> <th data-bbox="1083 428 1268 505">(Vdc)</th> </tr> </thead> <tbody> <tr> <td data-bbox="915 505 999 537">BG</td> <td data-bbox="999 505 1083 537">BN</td> <td data-bbox="1083 505 1268 537">40 to 46</td> </tr> <tr> <td data-bbox="915 537 999 570">+5</td> <td data-bbox="999 537 1083 570">CG</td> <td data-bbox="1083 537 1268 570">4.5 to 5.5</td> </tr> <tr> <td data-bbox="915 570 999 618">CG</td> <td data-bbox="999 570 1083 618">-8</td> <td data-bbox="1083 570 1268 618">7 to 9</td> </tr> </tbody> </table>	TABLE H			TEST POINTS		REQUIREMENT	FROM (+)	TO (-)	(Vdc)	BG	BN	40 to 46	+5	CG	4.5 to 5.5	CG	-8	7 to 9	DLP-534						
TABLE H																										
TEST POINTS		REQUIREMENT																								
FROM (+)	TO (-)	(Vdc)																								
BG	BN	40 to 46																								
+5	CG	4.5 to 5.5																								
CG	-8	7 to 9																								
44	Plug KW1B Circuit Pack into Slot 014, then Plug KE10 Circuit Pack into Slot 013 Requirement: Fuses on KU1 Circuit Pack do not Operate (blow)	DLP-535																								
45	If Work Order Specifies a KE11, Go to Item 49. Otherwise Continue With Item 46	-																								
46	Install 114A or 250() Power Unit into Slot 411 Requirement: No Fuses Operate	DLP-514																								
47	Measure Voltages on 114A or 250() Power Unit According to TABLE I <table border="1" data-bbox="821 932 1352 1203" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="4" data-bbox="821 932 1352 980">TABLE I</th> </tr> <tr> <th colspan="2" data-bbox="821 980 989 1013">TEST POINTS</th> <th data-bbox="989 980 1167 1013">114A</th> <th data-bbox="1167 980 1352 1013">250()</th> </tr> <tr> <th data-bbox="821 1013 905 1089">FROM (+)</th> <th data-bbox="905 1013 989 1089">TO (-)</th> <th data-bbox="989 1013 1167 1089">REQUIREMENT (Vdc)</th> <th data-bbox="1167 1013 1352 1089">REQUIREMENT (Vdc)</th> </tr> </thead> <tbody> <tr> <td data-bbox="821 1089 905 1122">BG</td> <td data-bbox="905 1089 989 1122">BN</td> <td data-bbox="989 1089 1167 1122">40 to 46</td> <td data-bbox="1167 1089 1352 1122">40 to 46</td> </tr> <tr> <td data-bbox="821 1122 905 1154">LP</td> <td data-bbox="905 1122 989 1154">LG</td> <td data-bbox="989 1122 1167 1154">100 to 160</td> <td data-bbox="1167 1122 1352 1154">120 to 150</td> </tr> <tr> <td data-bbox="821 1154 905 1203">LG</td> <td data-bbox="905 1154 989 1203">LN</td> <td data-bbox="989 1154 1167 1203">0 to 60</td> <td data-bbox="1167 1154 1352 1203">120 to 150</td> </tr> </tbody> </table>	TABLE I				TEST POINTS		114A	250()	FROM (+)	TO (-)	REQUIREMENT (Vdc)	REQUIREMENT (Vdc)	BG	BN	40 to 46	40 to 46	LP	LG	100 to 160	120 to 150	LG	LN	0 to 60	120 to 150	DLP-536
TABLE I																										
TEST POINTS		114A	250()																							
FROM (+)	TO (-)	REQUIREMENT (Vdc)	REQUIREMENT (Vdc)																							
BG	BN	40 to 46	40 to 46																							
LP	LG	100 to 160	120 to 150																							
LG	LN	0 to 60	120 to 150																							
48	Set Power Switch on 114A or 250() Power Unit to OFF position NOTE: The Power Unit Switch Should be Left in the OFF position Until Power is Required on Digital Line	-																								
49	If Work Order Specifies a KE11 Circuit Pack, Plug the KE11 Unit into Slot 411	-																								
50	Open Rear Compartment of Cabinet and Remove Fuse BC From RT Power Panel	-																								
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ITEM	SUBTASKS	PROCEDURE NUMBER																				
51	Measure Voltages Between Test Jacks BG(+) and BN(-) on Faceplate of KE9 Circuit Pack Requirement: At Least 33 Volts	DLP-537																				
52	Reinsert Fuse BC into RT Power Panel	-																				
53	Proceed to Item 75																					
54	On RT Frame, Verify Appropriate ac Fuses are in Place, Circuit Breakers are ON and -48V Supply is ON	-																				
55	Measure -48V Supply Between Terminals -48 RTN(+) and -48V(-) on Connector Block TB901 Requirement: Between 45 and 53 Volts dc	DLP-538																				
56	Verify RT Frame Assembly and Associated Power and Connecting Cables Have Been Properly Installed and Terminated	-																				
57	Unpack and Inspect Each Plug-in Circuit Pack, including Power Units, to be Used in the Remote Terminal According to the Work Order <i>Warning: Avoid Touching any of the Components on the Circuit Packs</i>	-																				
58	If KE34A RT Line Interface Unit is to be Used, Equip it With a 983-Type Equalizer. The Proper Equalizer Type is Determined From TABLE J When the Dressed Cable Length is Known <table border="1" data-bbox="737 776 1356 1016" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="4" data-bbox="737 776 1356 824">TABLE J</th> </tr> <tr> <th colspan="4" data-bbox="737 824 1356 873">983-TYPE EQUALIZERS</th> </tr> </thead> <tbody> <tr> <td data-bbox="737 873 909 922">CABLE LENGTH</td> <td data-bbox="909 873 1026 922">0-220'</td> <td data-bbox="1026 873 1199 922">220' -440'</td> <td data-bbox="1199 873 1356 922">440' -660'</td> </tr> <tr> <td data-bbox="737 922 909 971">CABLE LOSS</td> <td data-bbox="909 922 1026 971">0-1 dB</td> <td data-bbox="1026 922 1199 971">1-2 dB</td> <td data-bbox="1199 922 1356 971">2-3 dB</td> </tr> <tr> <td data-bbox="737 971 909 1016">USE CODE</td> <td data-bbox="909 971 1026 1016">A</td> <td data-bbox="1026 971 1199 1016">B</td> <td data-bbox="1199 971 1356 1016">C</td> </tr> </tbody> </table>	TABLE J				983-TYPE EQUALIZERS				CABLE LENGTH	0-220'	220' -440'	440' -660'	CABLE LOSS	0-1 dB	1-2 dB	2-3 dB	USE CODE	A	B	C	-
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CABLE LOSS	0-1 dB	1-2 dB	2-3 dB																			
USE CODE	A	B	C																			
59	Remove the Plastic Jack Protectors From Each Circuit Pack	-																				
60	Place, But do not Plug in, Each Circuit Pack in the Slot Where it Belongs	DLP-539																				
61	Locate Sector of Fuse, Filter, and Jack Panel Which Serves the System Being Installed	-																				
62	Insert 70C Fuses (six total) in Positions TA , TB , HV , LV , SA , and SB on FF&J Panel NOTE: The Fuses Are Shipped in a Bag Attached to the FF&J Panel Requirement: None of the Fuses Operate (Blow)	DLP-540																				
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ITEM	SUBTASKS	PROCEDURE NUMBER																		
63	If One of the Two Systems of the RT Frame Assembly has Previously Been Installed and Tested, Proceed to Item 67; Otherwise, Continue With Item 64	-																		
64	Insert 70C Fuse in Position RS Located in SYS 1 Sector of FF&J Panel Requirement: The Fuse Does Not Operate (Blow)	DLP-541																		
65	Plug KW2 Circuit Pack into Slot 901 Requirement: The RS Fuse on FF&J Panel and the +48 RNG Fuse on KW2 do not Operate (Blow)	DLP-542																		
66	Measure Voltage Between Test Jacks +48 RNG (+) and CG(-) on Faceplate of KW2 Requirement: Between 43 and 55 Volts dc	DLP-543																		
67	With Power Switch in OFF Position, Plug 113B Power Unit into 111 or 511 Depending on Which System is Being Installed, Then Set Power Switch to ON Position Requirement: Fuse LV on FF&J Panel Does Not Operate (Blow)	DLP-544																		
68	Measure Voltages on 113B Power Unit According to TABLE K <table border="1" data-bbox="865 764 1251 1024" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3" data-bbox="865 764 1251 813">TABLE K</th> </tr> <tr> <th colspan="2" data-bbox="865 813 1058 846">TEST POINTS</th> <th data-bbox="1058 813 1251 846">REQUIREMENT</th> </tr> <tr> <th data-bbox="865 846 961 911">FROM (+)</th> <th data-bbox="961 846 1058 911">TO (-)</th> <th data-bbox="1058 846 1251 911">(Vdc)</th> </tr> </thead> <tbody> <tr> <td data-bbox="865 911 961 943">BG</td> <td data-bbox="961 911 1058 943">BN</td> <td data-bbox="1058 911 1251 943">45 to 53</td> </tr> <tr> <td data-bbox="865 943 961 976">+5</td> <td data-bbox="961 943 1058 976">CG</td> <td data-bbox="1058 943 1251 976">4.5 to 5.5</td> </tr> <tr> <td data-bbox="865 976 961 1024">CG</td> <td data-bbox="961 976 1058 1024">-8</td> <td data-bbox="1058 976 1251 1024">7 to 9</td> </tr> </tbody> </table>	TABLE K			TEST POINTS		REQUIREMENT	FROM (+)	TO (-)	(Vdc)	BG	BN	45 to 53	+5	CG	4.5 to 5.5	CG	-8	7 to 9	DLP-512
TABLE K																				
TEST POINTS		REQUIREMENT																		
FROM (+)	TO (-)	(Vdc)																		
BG	BN	45 to 53																		
+5	CG	4.5 to 5.5																		
CG	-8	7 to 9																		
69	If Work Order Specifies KE11 Circuit Pack, Proceed to Item 73. Otherwise, Continue With Item 70	-																		
70	With Power Switch in OFF Position, Plug 114A or 250() Power Unit into Slot 411 or 811 Depending on Which System is Being Installed, Then Set Power Switch to ON Position Requirement: No Fuses Operate	DLP-514																		

ITEM	SUBTASKS	PROCEDURE NUMBER																												
71	Measure Voltages on 114A or 250() Power Unit According to TABLE L NOTE: Disregard Minor Oscillation of Meter Reading <div data-bbox="743 289 1304 548" style="margin: 10px auto; border: 1px solid black; text-align: center;"> <table border="1"> <thead> <tr> <th colspan="4">TABLE L</th> </tr> <tr> <th colspan="2">TEST POINTS</th> <th>114A</th> <th>250()</th> </tr> <tr> <th>FROM</th> <th>TO</th> <th>REQUIREMENTS</th> <th>REQUIREMENTS</th> </tr> <tr> <th>(+)</th> <th>(-)</th> <th>(Vdc)</th> <th>(Vdc)</th> </tr> </thead> <tbody> <tr> <td>BG</td> <td>BN</td> <td>45 to 53</td> <td>45 to 53</td> </tr> <tr> <td>LP</td> <td>LG</td> <td>100 to 160</td> <td>120 to 150</td> </tr> <tr> <td>LG</td> <td>LN</td> <td>0 to 60</td> <td>120 to 150</td> </tr> </tbody> </table> </div>	TABLE L				TEST POINTS		114A	250()	FROM	TO	REQUIREMENTS	REQUIREMENTS	(+)	(-)	(Vdc)	(Vdc)	BG	BN	45 to 53	45 to 53	LP	LG	100 to 160	120 to 150	LG	LN	0 to 60	120 to 150	DLP-517
TABLE L																														
TEST POINTS		114A	250()																											
FROM	TO	REQUIREMENTS	REQUIREMENTS																											
(+)	(-)	(Vdc)	(Vdc)																											
BG	BN	45 to 53	45 to 53																											
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72	Set Power Switch on 114A or 250() Power Unit to OFF Position NOTE: The Power Unit Switch Should be Left in the OFF Position Until Power is Required on Digital Line	-																												
73	If Work Order Specifies KE11 Circuit Pack, Plug the KE11 Unit into Slot 411 or 811 Depending on Which System is Being Installed	-																												
74	Insert 310-Type Dummy Plugs in MAIN SIDE 1 and MAIN SIDE 2 Jacks on FF&J Panel of System Under Test	-																												
75	With Power Switch on 113B in OFF Position, Plug KE15 Circuit Pack into Slot 311 (or Slot 711 for RT Frame Upper System) and Set Power Switch on 113B to ON position Requirement: After 5 Seconds, Lamps on KE15 will be as Follows (Ignore all Others) Lighted: SYS OUT, CLK/ERR, FR/MPX Off: RNG, BAT, AC	DLP-545																												
76	In the Order Given, Plug the Following Circuit Packs into the Designated Slots () For System Under Test KE24 or KE34A (312 or 712), KE16 or KE26 (211 or 611), KF11 or KF3 (213 or 613) and KF2 or KF4 (212 or 612) Requirement: Lamps on KE15 will be as Follows (Ignore all Others) Lighted: SYS OUT, CLK/ERR, FR/MPX Off: RNG, BAT, AC	DLP-546																												
77	Check Operation of SPL LOCK Key on KE15	DLP-547																												
78	If Installing Frame-Mounted RT, Proceed to Item 84. Otherwise, Continue With Item 79	-																												
79	If TEMP/SPL LOCK Lamp is Lighted, Verify Heater Panel is Warm to the Touch	DLP-505																												
ESTABLISH SLC-40 CARRIER SYSTEM		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Issue 1</td> <td style="padding: 2px;">MAR 1981</td> </tr> <tr> <td style="padding: 2px;">363-201-400</td> <td style="padding: 2px;">COP</td> </tr> <tr> <td style="padding: 2px;">PAGE 11 of 16</td> <td style="padding: 2px; font-size: 1.2em;">051</td> </tr> </table>	Issue 1	MAR 1981	363-201-400	COP	PAGE 11 of 16	051																						
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ITEM	SUBTASKS	PROCEDURE NUMBER
80	If System Being Installed is to be Priority (odd-numbered) System of Shared Spare Line Configuration, Plug KE20 into Slot 015	-
81	If System Being Installed is to be Non-Priority (even-numbered) System with J1C049AA Channel Bank at COT, Plug KE30 Into Slot 015	-
	NOTE: If Shared Spare Digital Line Option is <u>not</u> Being Used or if COT is Equipped with J1C049AF Channel Bank, Slot 015 is Left Empty	
82	Remove Fuse BC From RT Power Panel Requirement: AC Lamp on KE15 Lights	DLP-548
83	Proceed to Item 85	-
84	Remove Dummy Plugs From MAIN SIDE 1 and MAIN SIDE 2 Jacks at RT of System Under Test	-
	DIGITAL LINE POWERING TESTS	
	NOTE: Before Attempting Digital Line Powering Tests (Items 85 through 105), the Digital Line Preservice Tests of Section 363-201-215 Must Have Been Completed. If T1/OS or M1-Type Multiplexer Powers the Line, the T1/OS Tests Should be Completed Before Proceeding to Item 106	
85	Obtain Support Apparatus Listed Below: At Central Office Terminal (COT) • 1 - KS-14510 Volt-Ohm-Milliammeter (VOM) or equivalent At Remote Terminal (RT) • 1 - KS-14510 Volt-Ohm-Milliammeter (VOM) or equivalent	-
86	Dispatch Personnel to Remote Terminal (RT)	-
87	If Digital Line is to be Powered from <u>both</u> Central Office Terminal and Remote Terminal, go to Item 96. Otherwise, if Digital Line is to be Powered from Central Office Terminal Only, Continue with Item 88	
88	Prepare Central Office Terminal for Line Powering	DLP-549
89	Request RT Personnel to Prepare Remote Terminal for Line Powering (Line Power From COT only)	DLP-550
90	Remove all Patch Cords and Dummy Plugs from COT Jack Panel and Reinsert KE21 Circuit Pack in COT Channel Bank	-
91	Turn on Line Power Unit at COT	-
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ITEM	SUBTASKS	PROCEDURE NUMBER								
92	Perform Line Current Test on KE21 Circuit Pack per TABLE M NOTE: I TEST button must be depressed for valid reading <table border="1" data-bbox="785 297 1306 505"> <thead> <tr> <th colspan="2" data-bbox="785 297 1306 337">TABLE M</th> </tr> <tr> <th data-bbox="785 337 1060 410">TYPE OF LINE POWER UNIT AT COT</th> <th data-bbox="1060 337 1306 410">KE21 CIRCUIT PACK I TEST VOLTAGE</th> </tr> </thead> <tbody> <tr> <td data-bbox="785 410 1060 456">114A or 209-Type</td> <td data-bbox="1060 410 1306 456">1.3 to 1.5 Vdc</td> </tr> <tr> <td data-bbox="785 456 1060 505">250 or 238-Type</td> <td data-bbox="1060 456 1306 505">0.5 to 0.7 Vdc</td> </tr> </tbody> </table>	TABLE M		TYPE OF LINE POWER UNIT AT COT	KE21 CIRCUIT PACK I TEST VOLTAGE	114A or 209-Type	1.3 to 1.5 Vdc	250 or 238-Type	0.5 to 0.7 Vdc	DLP-551
TABLE M										
TYPE OF LINE POWER UNIT AT COT	KE21 CIRCUIT PACK I TEST VOLTAGE									
114A or 209-Type	1.3 to 1.5 Vdc									
250 or 238-Type	0.5 to 0.7 Vdc									
93	Measure and Record, for Future Reference, Line Voltage on POWER UNIT (LP and LN Test Jacks), (290 Vdc Maximum)	DLP-552								
94	Request RT Personnel to Perform Line Current Test on KE24 Circuit Pack per TABLE N NOTE: I TEST button must be depressed for valid reading <table border="1" data-bbox="785 727 1306 935"> <thead> <tr> <th colspan="2" data-bbox="785 727 1306 768">TABLE N</th> </tr> <tr> <th data-bbox="785 768 1060 841">TYPE OF LINE POWER UNIT AT COT</th> <th data-bbox="1060 768 1306 841">KE24 CIRCUIT PACK I TEST VOLTAGE</th> </tr> </thead> <tbody> <tr> <td data-bbox="785 841 1060 886">114A or 209-Type</td> <td data-bbox="1060 841 1306 886">1.3 to 1.5 Vdc</td> </tr> <tr> <td data-bbox="785 886 1060 935">250 or 238-Type</td> <td data-bbox="1060 886 1306 935">0.5 to 0.7 Vdc</td> </tr> </tbody> </table>	TABLE N		TYPE OF LINE POWER UNIT AT COT	KE24 CIRCUIT PACK I TEST VOLTAGE	114A or 209-Type	1.3 to 1.5 Vdc	250 or 238-Type	0.5 to 0.7 Vdc	DLP-553
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250 or 238-Type	0.5 to 0.7 Vdc									
95	Digital Line Powering Tests (Line Power From COT Only) are Complete. Go to Item 106									
96	Prepare Central Office Terminal for Line Powering	DLP-549								
97	Request RT Personnel to Prepare Remote Terminal for Line Powering (Line Power From COT and RT)	DLP-554								
98	Remove all Patch Cords and Dummy Plugs from COT Jack Panel and Reinsert KE21 Circuit Pack in COT Channel Bank	-								
99	Turn On Line Power Unit at COT	-								
ESTABLISH SLC-40 CARRIER SYSTEM		Issue 1 MAR 1981								
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ITEM	SUBTASKS	PROCEDURE NUMBER								
100	Perform Line Current Test on KE21 Circuit Pack per TABLE O NOTE: I TEST button must be depressed for valid reading <table border="1" data-bbox="829 349 1354 560"> <thead> <tr> <th colspan="2">TABLE O</th> </tr> <tr> <th>TYPE OF LINE POWER UNIT AT COT</th> <th>KE21 CIRCUIT PACK I TEST VOLTAGE</th> </tr> </thead> <tbody> <tr> <td>114A or 209-Type</td> <td>1.3 to 1.5 Vdc</td> </tr> <tr> <td>250 or 238-Type</td> <td>0.5 to 0.7 Vdc</td> </tr> </tbody> </table>	TABLE O		TYPE OF LINE POWER UNIT AT COT	KE21 CIRCUIT PACK I TEST VOLTAGE	114A or 209-Type	1.3 to 1.5 Vdc	250 or 238-Type	0.5 to 0.7 Vdc	DLP-551
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102	Request RT Personnel to Reinsert KE24 Circuit Pack in RT Channel Bank	-								
103	Request RT Personnel to Turn On RT Line POWER UNIT	-								
104	Request RT Personnel to Perform Line Current Test on KE24 Circuit Pack per TABLE P NOTE: I TEST button must be depressed for valid reading <table border="1" data-bbox="819 828 1344 1031"> <thead> <tr> <th colspan="2">TABLE P</th> </tr> <tr> <th>TYPE OF LINE POWER UNIT AT RT</th> <th>KE24 CIRCUIT PACK I TEST VOLTAGE</th> </tr> </thead> <tbody> <tr> <td>114A-Type</td> <td>1.3 to 1.5 Vdc</td> </tr> <tr> <td>250-Type</td> <td>0.5 to 0.7 Vdc</td> </tr> </tbody> </table>	TABLE P		TYPE OF LINE POWER UNIT AT RT	KE24 CIRCUIT PACK I TEST VOLTAGE	114A-Type	1.3 to 1.5 Vdc	250-Type	0.5 to 0.7 Vdc	DLP-553
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TYPE OF LINE POWER UNIT AT RT	KE24 CIRCUIT PACK I TEST VOLTAGE									
114A-Type	1.3 to 1.5 Vdc									
250-Type	0.5 to 0.7 Vdc									
105	Request RT Personnel to Measure and Record, for Future Reference, Line Voltage on POWER UNIT (LP and LN Test Jacks), (290 Vdc Maximum)	DLP-555								
TERMINAL-TO-TERMINAL TESTS										
106	Perform System Framing Tests	DLP-556								
107	If COT is Equipped With KE31A , Proceed to Item 109. Otherwise Continue With Item 108	-								
108	Perform Preliminary System Major Functions Tests	DLP-557								
109	Perform Receive Multiplex Tests	DLP-558								
110	If System is Equipped With a Spare Line, Continue With Item 111; Otherwise Proceed to Item 112	-								
ESTABLISH SLC-40 CARRIER SYSTEM		<table border="1"> <tr> <td>Issue 1</td> <td>MAR 1981</td> </tr> <tr> <td>363-201-400</td> <td>COP</td> </tr> <tr> <td>PAGE 14 of 16</td> <td>051</td> </tr> </table>	Issue 1	MAR 1981	363-201-400	COP	PAGE 14 of 16	051		
Issue 1	MAR 1981									
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ITEM	SUBTASKS	PROCEDURE NUMBER
111	Check Spare Line Switching for Faulty Main Line	DLP-559
112	Perform System Major Functions Tests For Type of RT That You Have:	-
	A. Cabinet-Mounted Remote Terminal	DLP-560
	B. Frame-Mounted Remote Terminal	DLP-561
113	Perform System Minor Functions Tests For Type of RT That You Have:	-
	A. Cabinet-Mounted Remote Terminal	DLP-562
	B. Frame-Mounted Remote Terminal	DLP-563
114	Perform Manual Retry of Spare Line (If Equipped With Spare Line)	DLP-564
115	Perform Automatic Retry of Spare Line (If Equipped With Spare Line)	DLP-565
116	Perform Verification of Final SYS OUT state	DLP-566
TERMINAL-TO-TERMINAL CHANNEL TESTS		
117	Obtain Support Apparatus Listed Below for Type of Service Being Equipped: Single Party - At RT: • 1 - 500-Type Telephone Set Party-Line (ONI) - At RT: • 1 - 500-Type Telephone Set • 1 - KS-14510 VOM or equivalent Two-Party (ANI) - At RT: • 2 - 500-Type Telephone Sets Coin - At COT: • 1 - KS-21838 Extractor Tool At RT: • 1 - KS-21838 Extractor Tool • Nickel, dime, and quarter in change	-

ITEM	SUBTASKS	PROCEDURE NUMBER																																												
118	Perform Terminal-To-Terminal Channel Tests at Remote Terminal for Type of Service Being Equipped:																																													
	A. Single Party -	DLP-567																																												
	B. Party-Line (ONI) - TABLE Q Shows VOM Test Points (on test telephone cord connecting block at RT) and VOM Voltage Requirements for RT Talk Battery and Ringing <table border="1" data-bbox="546 438 1711 885" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5" data-bbox="546 438 1711 479">TABLE Q</th> </tr> <tr> <th data-bbox="546 479 934 592" rowspan="2">TEST</th> <th colspan="2" data-bbox="934 479 1302 527">VOM TEST POINTS</th> <th colspan="2" data-bbox="1302 479 1711 527">VOM REQUIREMENTS</th> </tr> <tr> <th data-bbox="934 527 1123 592">POSITIVE (+) TEST LEAD</th> <th data-bbox="1123 527 1302 592">NEGATIVE (-) TEST LEAD</th> <th data-bbox="1302 527 1491 592">FRAME-MOUNTED RT (Vdc)</th> <th data-bbox="1491 527 1711 592">CABINET-MOUNTED RT (Vdc)</th> </tr> </thead> <tbody> <tr> <td data-bbox="546 592 934 641">Talk Bat.</td> <td data-bbox="934 592 1123 641">Ground</td> <td data-bbox="1123 592 1302 641">Ring</td> <td data-bbox="1302 592 1491 641">45 to 53</td> <td data-bbox="1491 592 1711 641">30 to 60</td> </tr> <tr> <td data-bbox="546 641 934 690">Neg. Ringing on Rng Pty</td> <td data-bbox="934 641 1123 690">Ground</td> <td data-bbox="1123 641 1302 690">Ring</td> <td data-bbox="1302 641 1491 690">42 to 53</td> <td data-bbox="1491 641 1711 690">25 to 80</td> </tr> <tr> <td data-bbox="546 690 934 738">Neg. Ringing on Tip Pty</td> <td data-bbox="934 690 1123 738">Ground</td> <td data-bbox="1123 690 1302 738">Tip</td> <td data-bbox="1302 690 1491 738">42 to 53</td> <td data-bbox="1491 690 1711 738">25 to 80</td> </tr> <tr> <td data-bbox="546 738 934 787">*Pos. Ringing on Rng Pty</td> <td data-bbox="934 738 1123 787">Ring</td> <td data-bbox="1123 738 1302 787">Ground</td> <td data-bbox="1302 738 1491 787">42 to 53</td> <td data-bbox="1491 738 1711 787">25 to 80</td> </tr> <tr> <td data-bbox="546 787 934 836">*Pos. Ringing on Tip Pty</td> <td data-bbox="934 787 1123 836">Tip</td> <td data-bbox="1123 787 1302 836">Ground</td> <td data-bbox="1302 787 1491 836">42 to 53</td> <td data-bbox="1491 787 1711 836">25 to 80</td> </tr> <tr> <td colspan="5" data-bbox="546 836 1711 885">* If CO is equipped</td> </tr> </tbody> </table>	TABLE Q					TEST	VOM TEST POINTS		VOM REQUIREMENTS		POSITIVE (+) TEST LEAD	NEGATIVE (-) TEST LEAD	FRAME-MOUNTED RT (Vdc)	CABINET-MOUNTED RT (Vdc)	Talk Bat.	Ground	Ring	45 to 53	30 to 60	Neg. Ringing on Rng Pty	Ground	Ring	42 to 53	25 to 80	Neg. Ringing on Tip Pty	Ground	Tip	42 to 53	25 to 80	*Pos. Ringing on Rng Pty	Ring	Ground	42 to 53	25 to 80	*Pos. Ringing on Tip Pty	Tip	Ground	42 to 53	25 to 80	* If CO is equipped					DLP-568
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	C. Two-Party (ANI) - TABLE R Shows Resistance-to-Ground Test Voltages (on Tip side of Line) Requirements Made at Central Office Test Desk or No. 3 Test Cabinet (Test Position) <table border="1" data-bbox="861 982 1375 1201" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" data-bbox="861 982 1375 1031">TABLE R</th> </tr> <tr> <th data-bbox="861 1031 1123 1104">PHONE OFF-HOOK AT RT</th> <th data-bbox="1123 1031 1375 1104">TEST VOLTAGE REQUIREMENTS</th> </tr> </thead> <tbody> <tr> <td data-bbox="861 1104 1123 1153">Ring Test Phone</td> <td data-bbox="1123 1104 1375 1153">Less Than 3 Vdc</td> </tr> <tr> <td data-bbox="861 1153 1123 1201">Tip Test Phone</td> <td data-bbox="1123 1153 1375 1201">At Least 95 Vdc</td> </tr> </tbody> </table>	TABLE R		PHONE OFF-HOOK AT RT	TEST VOLTAGE REQUIREMENTS	Ring Test Phone	Less Than 3 Vdc	Tip Test Phone	At Least 95 Vdc	DLP-569																																				
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	D. Coin-Dial Tone First (DFT) or Coin First (CF) Mode	DLP-570																																												

ITEM	SUBTASKS	PROCEDURE NUMBER
1	Obtain Support Apparatus Listed Below: <ul style="list-style-type: none"> • 1 - 1013B Hand Test Set or Equivalent • 1 - Looping Cord 	
2	Perform Service Cutover Procedures <i>Caution: This method must not be used if excessive induction is present on the pairs. Induction is excessive if the ac voltage between the ring side and ground on a working but idle line (measured from the CO) exceeds 10 volts (72 dBrn Ng, 3-kHz FLAT as measured by a 3-type noise set). Where induction is excessive, cutover must be a coordinated transfer at each end of the system</i>	DLP-571
PEFORM SERVICE CUTOVER PROCEDURES		Issue 1
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TROUBLE INDICATOR	MAY ALSO BE REPORTED AS	PROCEDURE NUMBER
Maintenance Philosophy		TAD-100
Automatic Devices		
Major Alarm Lamp Lighted and Blown Fuse(s) on F&ALM PNL at COT		TAP-101
Major Alarm Lamp Lighted and SYS OUT Alarm Lamp Lighted at COT		TAP-102
Major Alarm Lamp Lighted and RT MJ Alarm Lamp Lighted at COT		TAP-103
Major Alarm Lamp Lighted at COT		TAP-117
Minor Alarm Lamp Lighted and RT MN Alarm Lamp Lighted at COT		TAP-104
Minor Alarm Lamp Lighted and SPL Alarm Lamp Lighted at COT		TAP-105
Minor Alarm Lamp Lighted and SPLT Alarm Lamp Lighted at COT		TAP-106
Trouble Reports		
Trouble on One or More Channels		TAP-113

GENERAL

The SLC*-40 Submember Loop Carrier System is a digital subscriber carrier system providing 40 full-time speech channels, when fully equipped, between a central office terminal (COT) and a remote terminal (RT) using a T1-type digital line. In the SLC-40 system all carrier-derived channels are full-time channels (no concentration) and no traffic administration is required. Each channel corresponds to one line assignment, thereby easing administration and maintenance. The SLC-40 system is available in two basic configurations: cabinet-mounted RT or frame-mounted RT. The frame-mounted systems may also interface with T1/OS or M1-type multiplexers such as microwave radio.

TROUBLE ANALYSIS

Trouble procedures in this document involve replacing suspected plug-in units. Except for fuses, the plug-in unit is the smallest replaceable item considered in the trouble clearing procedures. Assumptions made in trouble clearing are:

- (1) Only one trouble is addressed at a time
- (2) Replacement units are in good working condition
- (3) Test equipment is in good working condition
- (4) Latest generation of circuit packs are used
(TABLE A, Page 2 gives cross-reference of old to new circuit packs)

TROUBLE-LOCATING PROCEDURES

Trouble on a SLC-40 system will be indicated by major and minor alarms at the central office terminal (COT) or by subscriber reports. The trouble will be one of two

* Trademark of Western Electric

MAINTENANCE PHILOSOPHY

categories: system troubles or per-line troubles. System troubles affect several channels or the entire system and always cause an alarm. Per-line troubles affect one or more channels, do not cause an alarm, and are detected by subscriber reports.

A major alarm indicates that subscribers on the system are out of service. A minor alarm indicates that future interruption of service is possible. Major (red) and minor (white) alarm lamps are located on the SLC-40 bay fuse and alarm panel. System status alarms are located on maintenance units KE12 at the COT and KE15 at the RT. The alarm lamps listed on the Trouble Indicator List (TIL-095) are ranked according to priority. Therefore, if more than one alarm lamp is lighted on KE12, follow the procedures for the first lighted lamp listed on TIL-095.

CONCLUSION

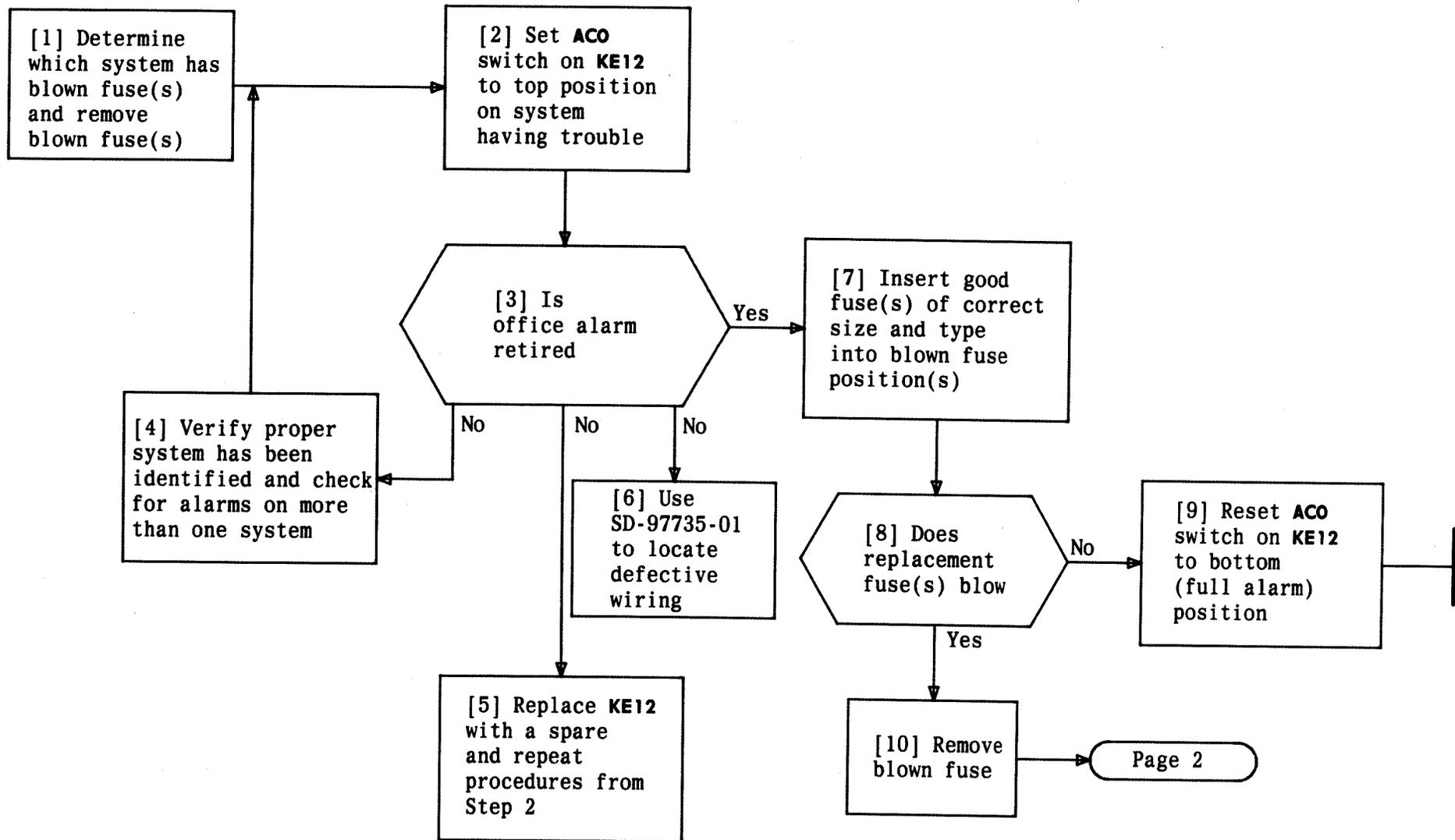
Whenever the procedures of this volume do not locate the trouble, an obscure trouble or multiple trouble is assumed to exist. The necessary SDs, CDs, etc, should be available to assist in locating an obscure wiring problem when the procedures of this volume do not locate the trouble.

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TABLE A				
LISTS OF SUPERSEDED CODES AND REPLACING NEW CODES				
CENTRAL OFFICE TERMINAL		REMOTE TERMINAL FRAME		
OLD CODE	NEW CODE	OLD CODES	NEW CODE	
J1C049AA	J1C049AF*	KE5	KE15	
J1C049AB	J1C049AD*	KE6	KE16	
J1C049AC	J1C049AE*	KF1	KF11	
KE1	KE21*	KE4	KE24¶	
KE2	KE12*	113A	113B	
KE3	KE13*	KE18	KE18B	
KF1	KF11*	KE28	KE28B	
113A	113B	KE48	KE48B	
KE7,KE17	KE17B			
KE27	KE27B			
KE47	KE47B			
REMOTE TERMINAL CABINET		T1/OUTSTATE OR M1-TYPE MULTIPLEXER INTERFACE		
OLD CODES	NEW CODE	NEW CODE	USED INSTEAD OF	USED AT
33A,33B	33C	KE31A	KE21	COT
KE4	KE24†	KE34A	KE24	RT
KE5	KE15	KE23	KE13	COT
KE6	KE16	KE26	KE16	RT
KF1	KF11	KF3	KF11	COT and RT
113A	113B	KF4	KF2	COT and RT
KW1	KW1B			
LE1‡	LE2‡			
KE8,KE18	KE18B			
KE28	KE28B			
KE48	KE48B			

* New code always a substitute for the old code, but old code may not necessarily be a substitute for new code.
† Required for low power digital lines.
‡ Required only with 33A cabinet.
§ The KE8 circuit pack has been excluded from RT frame.
¶ Required for low power digital lines.

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REPAIR MAJOR ALARM CAUSED BY BLOWN FUSE

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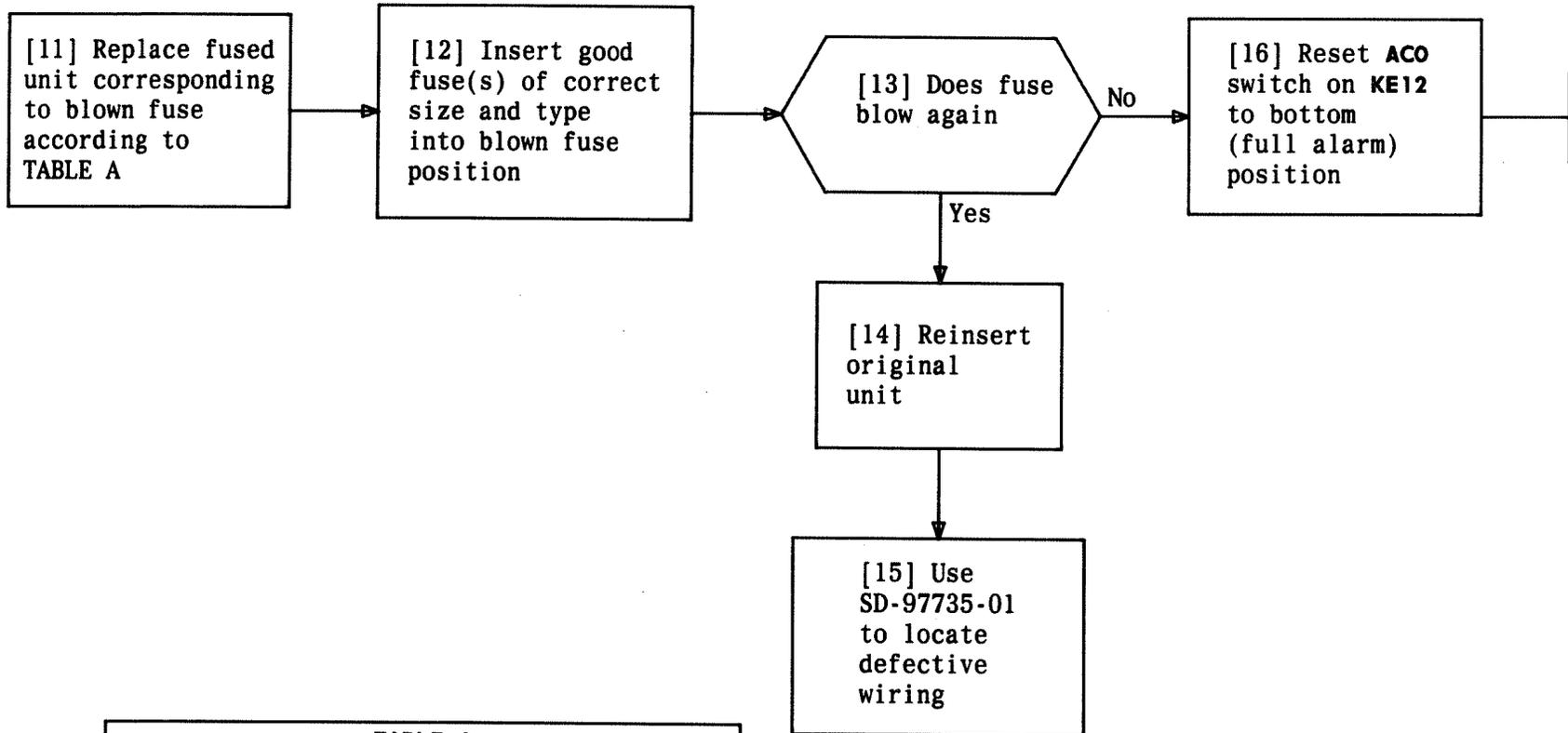
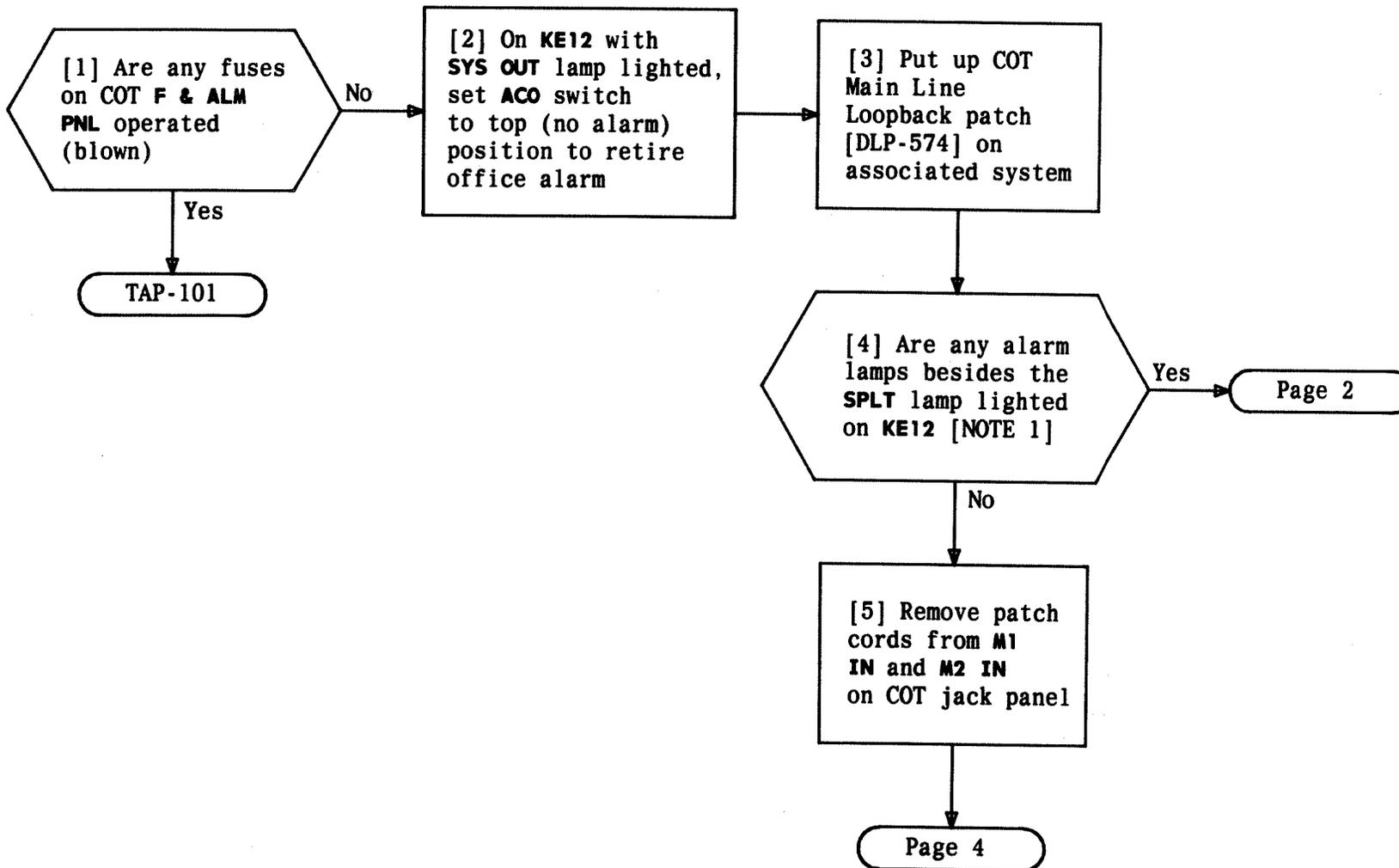


TABLE A	
BLOWN FUSE(S)	CORRESPONDING UNITS
F1C, F4C, F7C, F10C	114A, 209B, 238B, 250A
F2C, F5C, F8C, F11C	113B
F3C, F6C, F9C, F12C	KE12, KE21 or KE31A
F1A, F4A, F7A, F10A	209A, 209B, 238A, 238B
F1B, F4B, F7B, F10B	209A, 209C, 238A, 238C

REPAIR MAJOR ALARM CAUSED BY BLOWN FUSE

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NOTE 1	
Four minutes may be required for SPL lamp to extinguish, if lighted	
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CLEAR SYS OUT ALARM

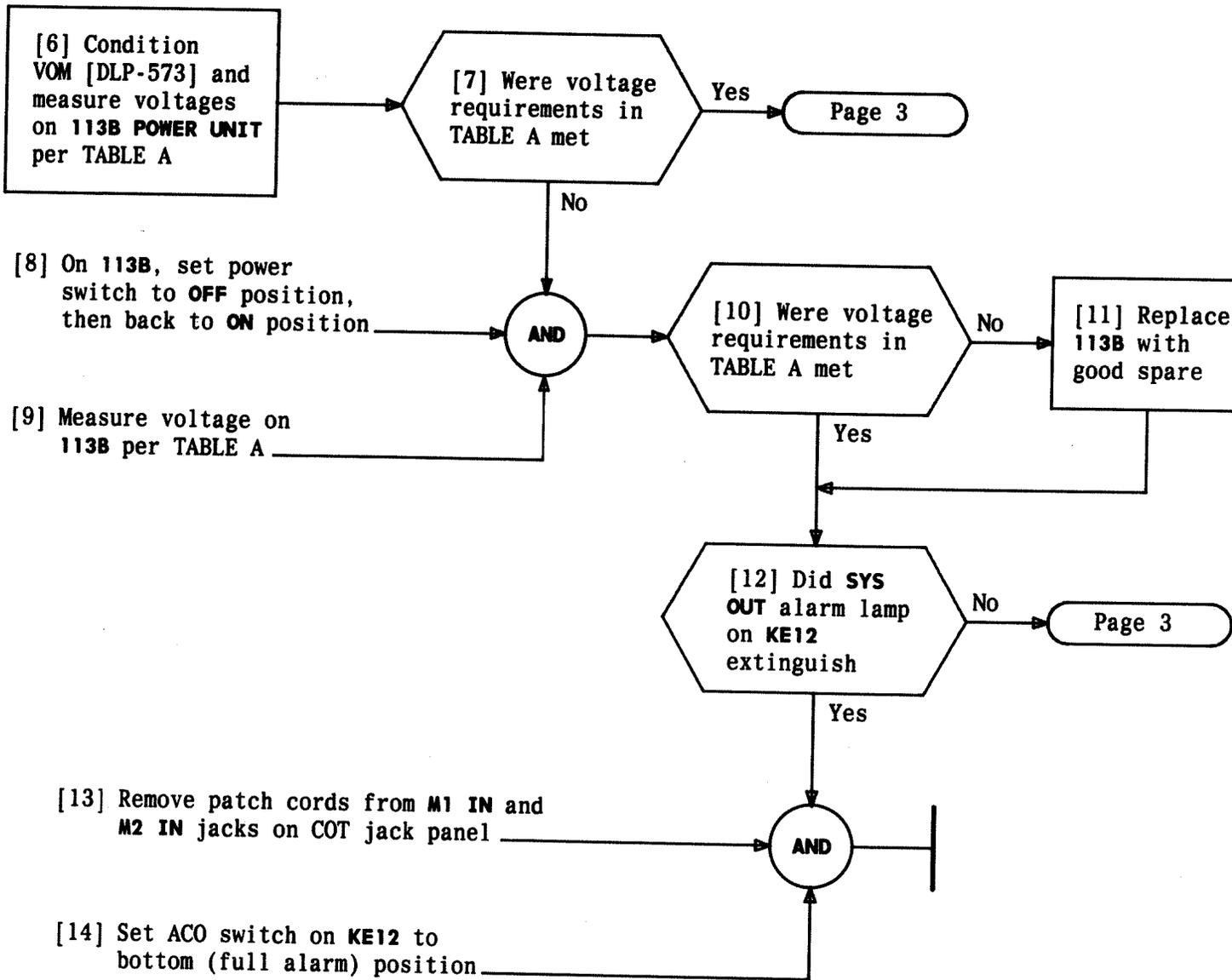
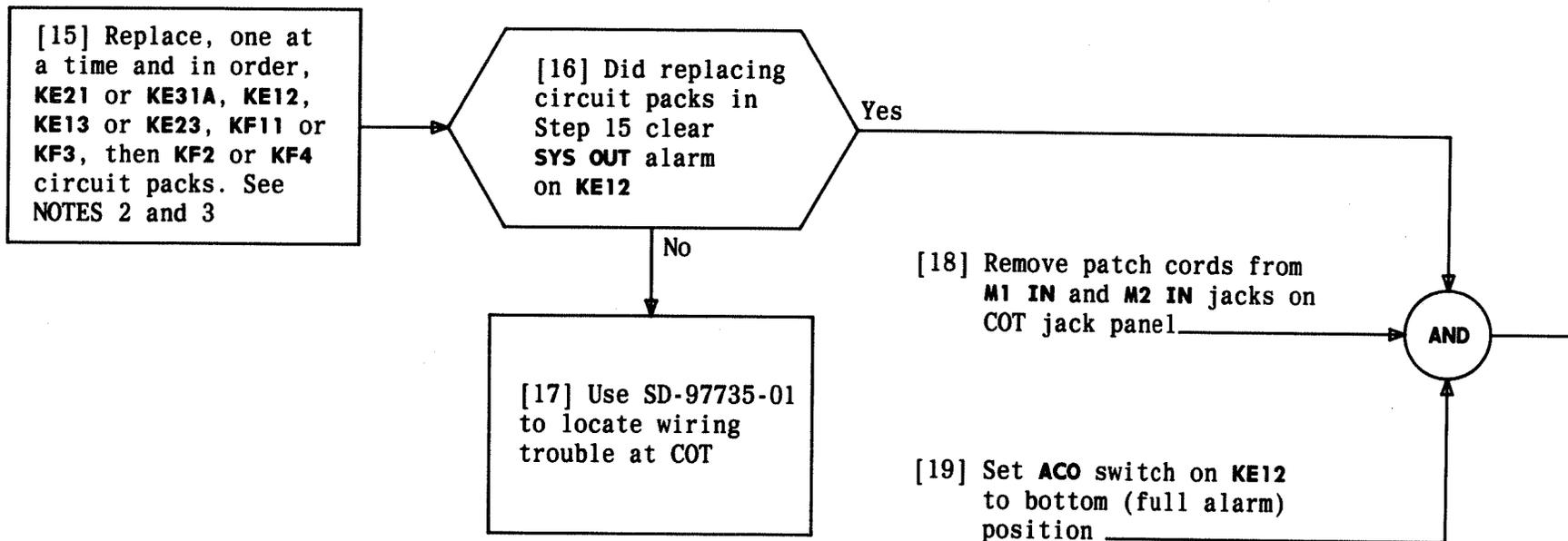


TABLE A 113B TEST REQUIREMENTS		
TEST POINTS		REQUIREMENTS (VOLTS DC)
+ FROM	- TO	
BG	BN	45 to 53
+5	CG	4.5 to 5.5
CG	-8	7 to 9

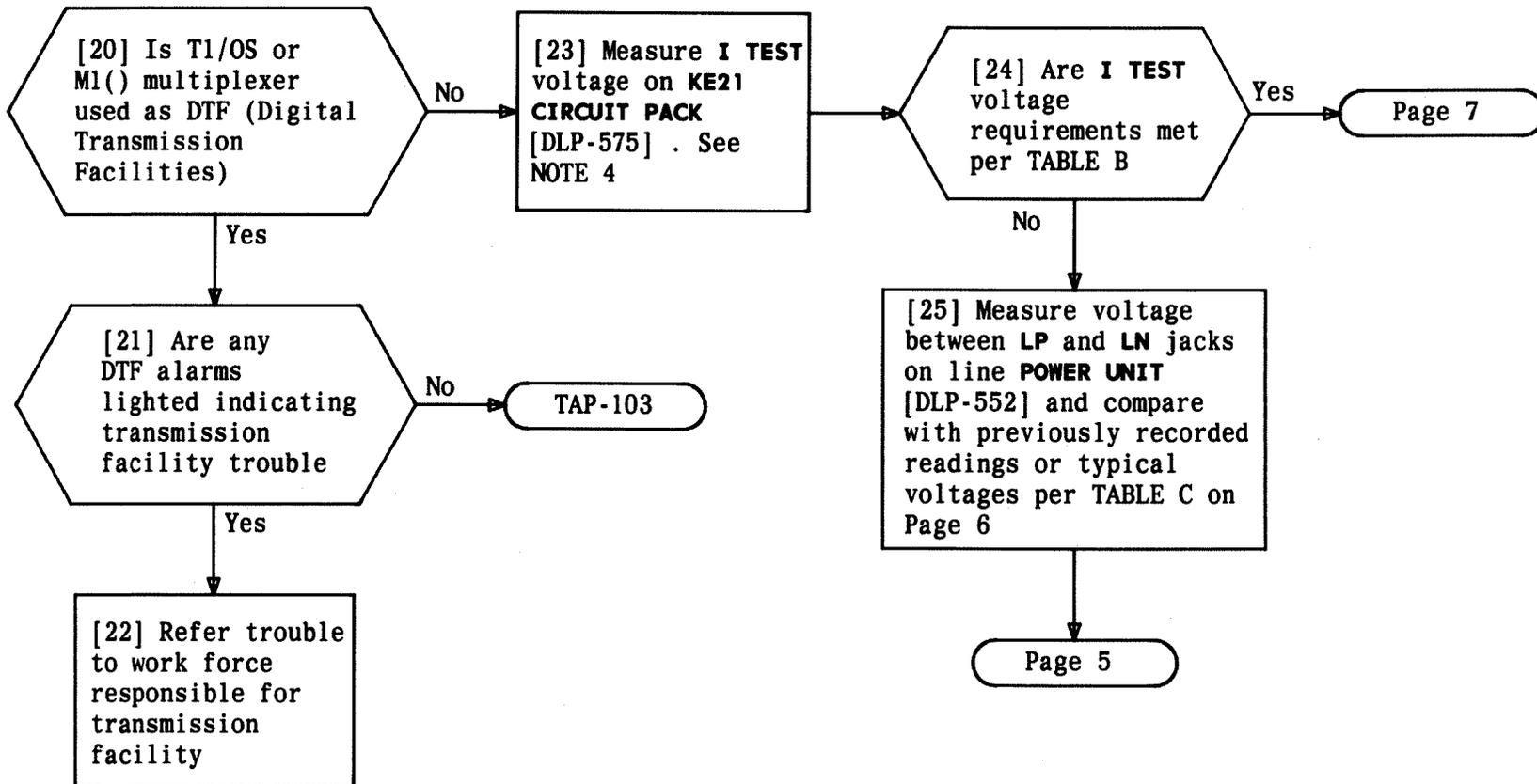
CLEAR SYS OUT ALARM

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NOTES	
2. When trouble is cleared, the old circuit packs should be replaced, one at a time, until the defective circuit pack(s) are identified and replaced	
3. Correct 983() equalizer should be installed on replacement KE31A CIRCUIT PACK	
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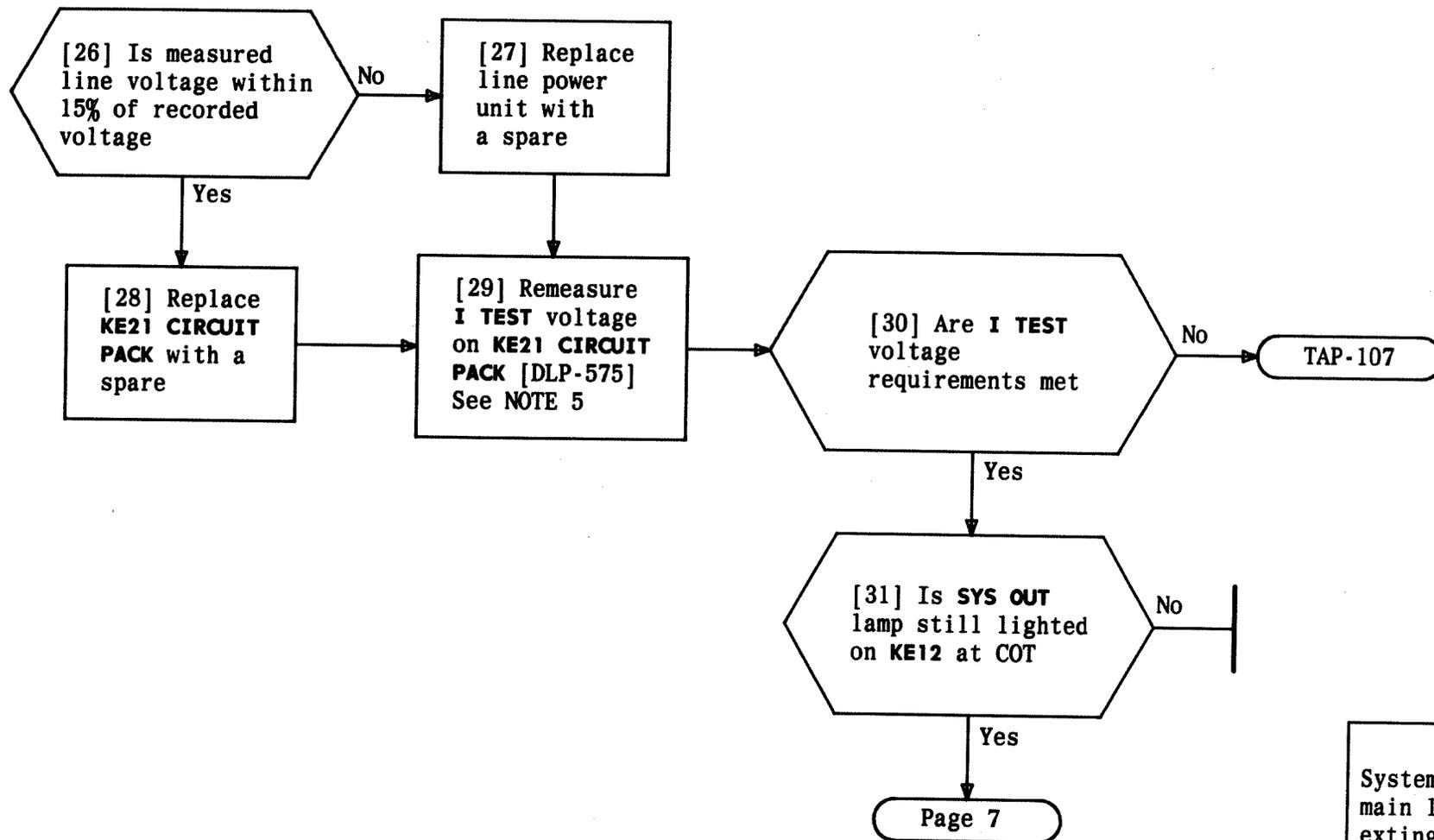
CLEAR SYS OUT ALARM



TYPE OF LINE POWER UNIT AT COT	KE21 CIRCUIT PACK I TEST VOLTAGE
114A or 209-Type	1.3 to 1.5 Vdc
250 or 238-Type	0.5 to 0.7 Vdc

NOTE 4	
System must be on main line (SPL lamp extinguished) before I TEST current can be measured. A 10-minute settling time may be required to ensure that both COT and RT are on the main line	
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CLEAR SYS OUT ALARM



NOTE 5	
System must be on main line (SPL lamp extinguished) before I Test current can be measured. A 10-minute settling time may be required to ensure that both COT and RT are on the main line	
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CLEAR SYS OUT ALARM

TABLE C		
NUMBER OF LINE REPEATERS POWERED FROM COT	TEST POINTS LP (+) TO LN (-), VOLTS DC TYPICAL VALUES ONLY, NOT REQUIREMENTS*	
	STANDARD POWER REPEATERS 114A OR 209() POWER UNIT	LOW POWER REPEATERS 250() OR 238() POWER UNIT
2	-	30
3	70	45
4	95	60
5	120	75
6	145	90
7	170	105
8	195	120
9	220	135
10	245	150
11	270	165
12	-	175
13	-	190
14	-	205
15	-	220
16	-	235
17	-	250

* The actual meter indications may vary significantly from the typical values depending on the specific digital line makeup; however, in no case should any voltage exceed 290 Vdc

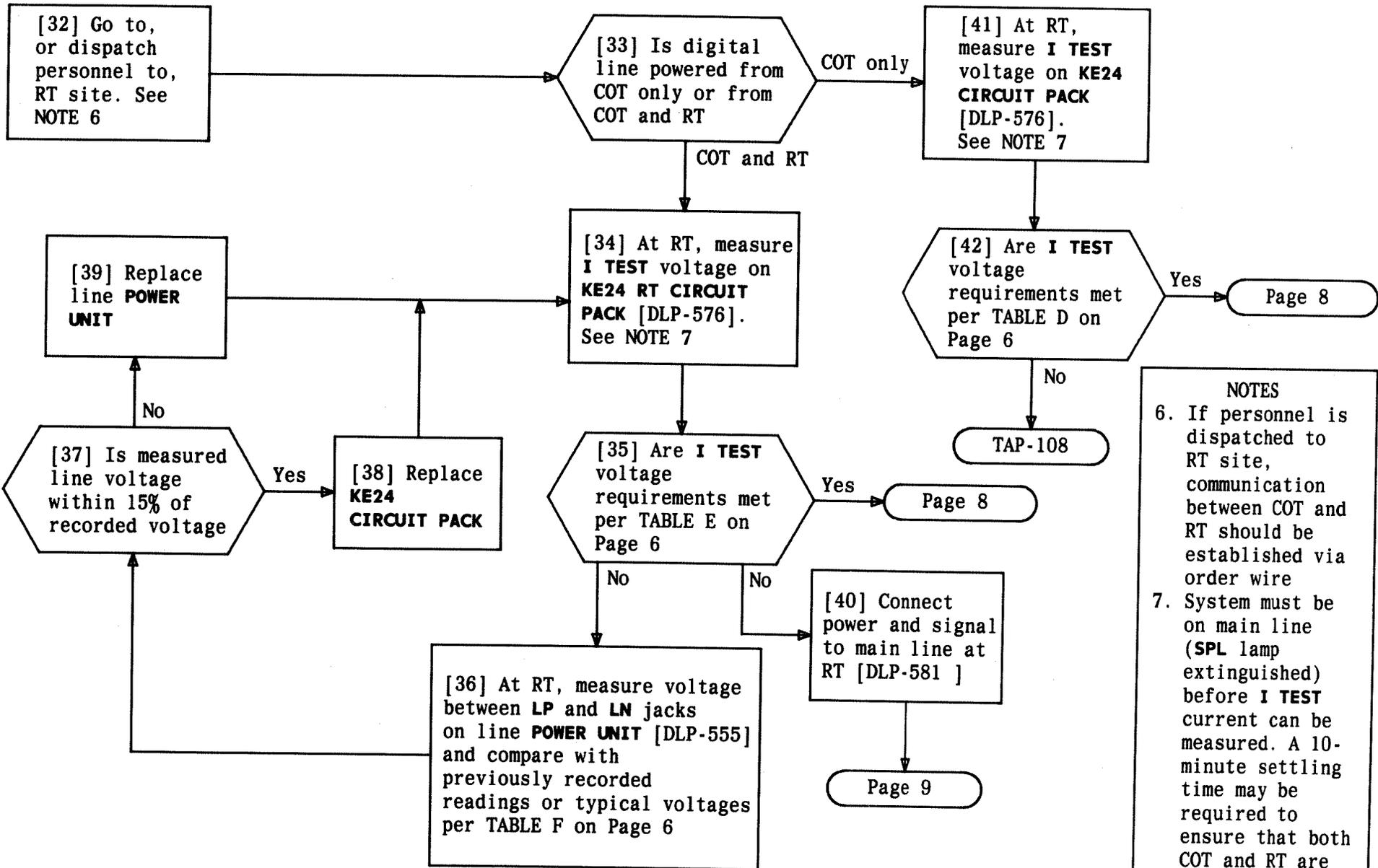
TABLE D	
TYPE OF LINE POWER UNIT AT COT	KE24 CIRCUIT PACK I TEST VOLTAGE
114A or 209 type	1.3 to 1.5 Vdc
250 or 238 type	0.5 to 0.7 Vdc

TABLE E	
TYPE OF LINE POWER UNIT AT RT	KE24 CIRCUIT PACK I TEST VOLTAGE
114A Type	1.3 to 1.5 Vdc
250() Type	0.5 to 0.7 Vdc

TABLE F		
NUMBER OF LINE REPEATERS POWERED FROM RT	TEST POINTS LP (+) TO LN (-), VOLTS DC TYPICAL VALUES ONLY, NOT REQUIREMENTS*	
	STANDARD POWER REPEATERS 114A POWER UNIT	LOW POWER REPEATERS 250() POWER UNIT
1	-	20
2	-	35
3	70	50
4	95	65
5	120	80
6	145	95
7	170	110
8	195	125
9	220	140
10	245	155
11	270	170
12	-	180
13	-	195
14	-	210
15	-	225
16	-	240
17	-	255

* The actual meter indications may vary significantly from the typical values depending on the specific digital line makeup; however, in no case should any voltage exceed 290 Vdc

CLEAR SYS OUT ALARM



NOTES

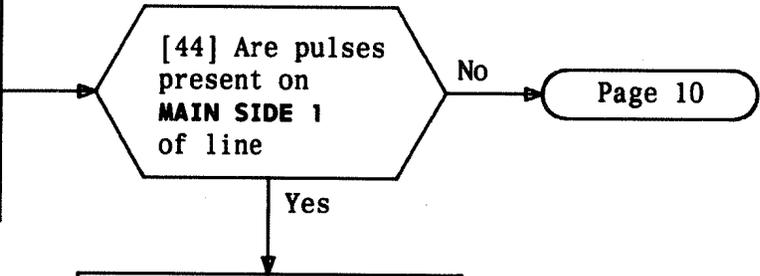
6. If personnel is dispatched to RT site, communication between COT and RT should be established via order wire

7. System must be on main line (SPL lamp extinguished) before I TEST current can be measured. A 10-minute settling time may be required to ensure that both COT and RT are on the main line

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CLEAR SYS OUT ALARM

[43] See DANGER 1. At RT, perform Bridged Pulse Test [DLP-577] on MAIN SIDE 1. Connect patch cord as shown in FIG. 1



[45] See DANGER 1. At RT, perform Bridged Error Test [DLP-577] on MAIN SIDE 2. Connect patch cord as shown in FIG. 2

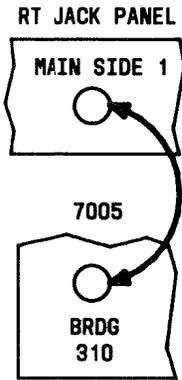
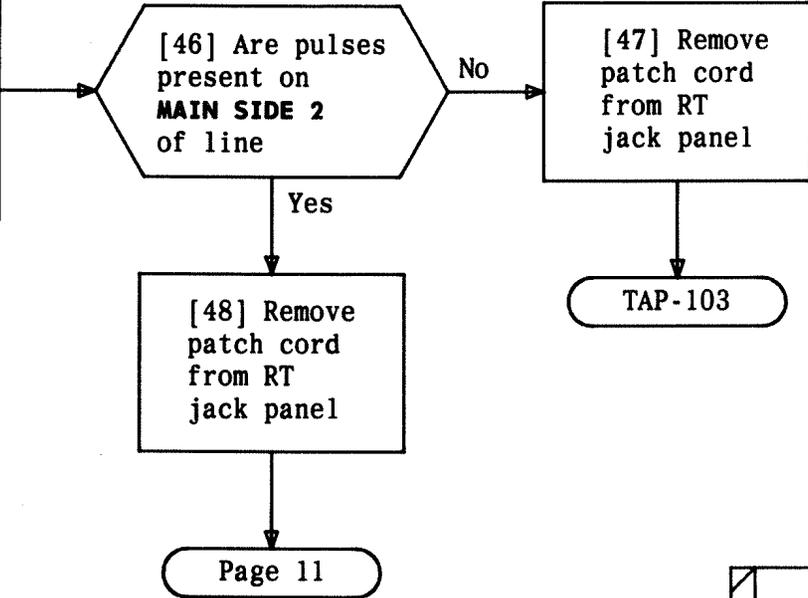


FIG. 1

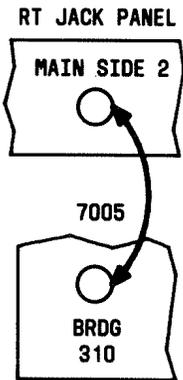
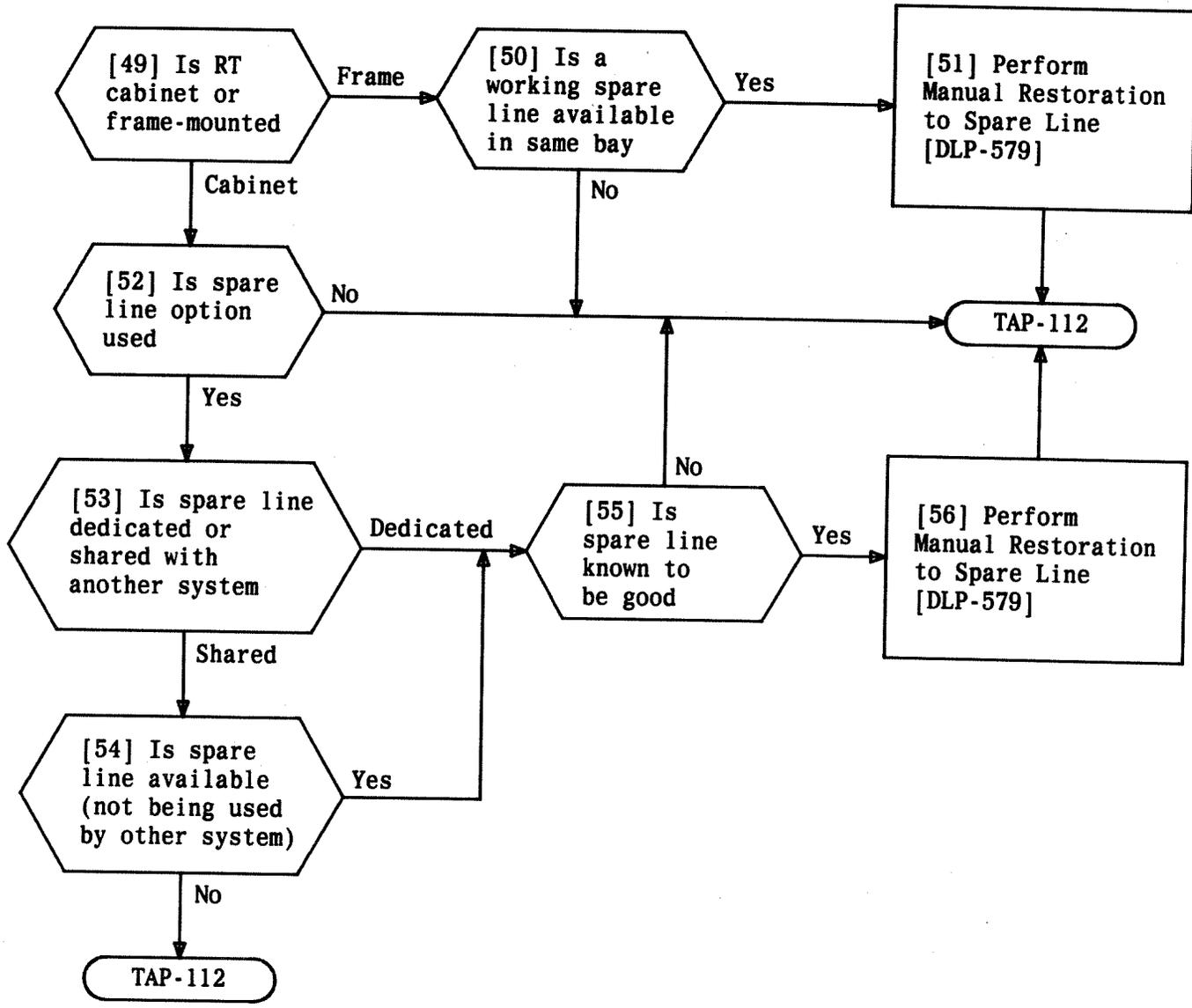


FIG. 2

DANGER 1
Voltages to 300 volts exist on the RT test jacks appearances. Patch cords should be connected to RT test jacks last

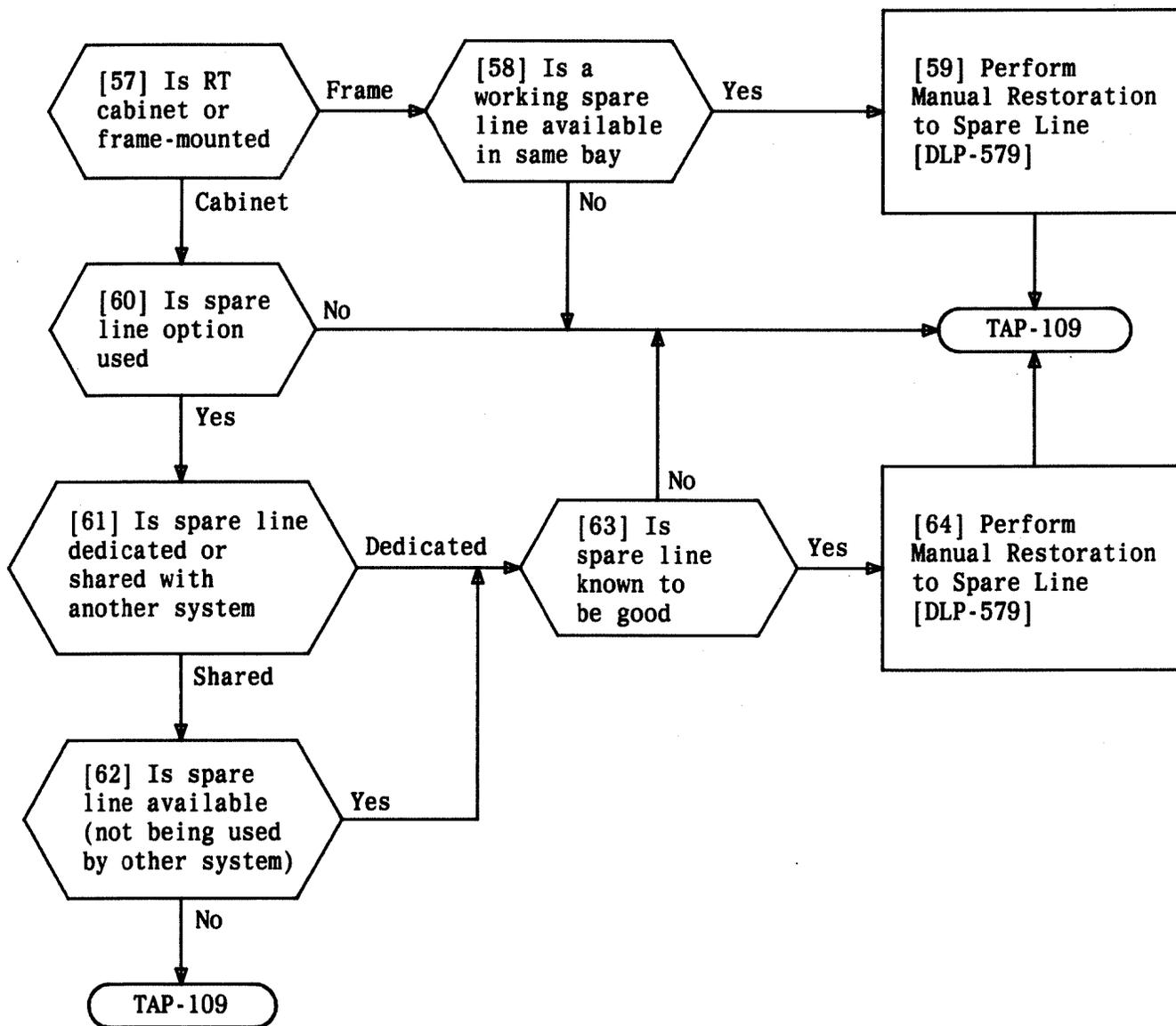
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CLEAR SYS OUT ALARM



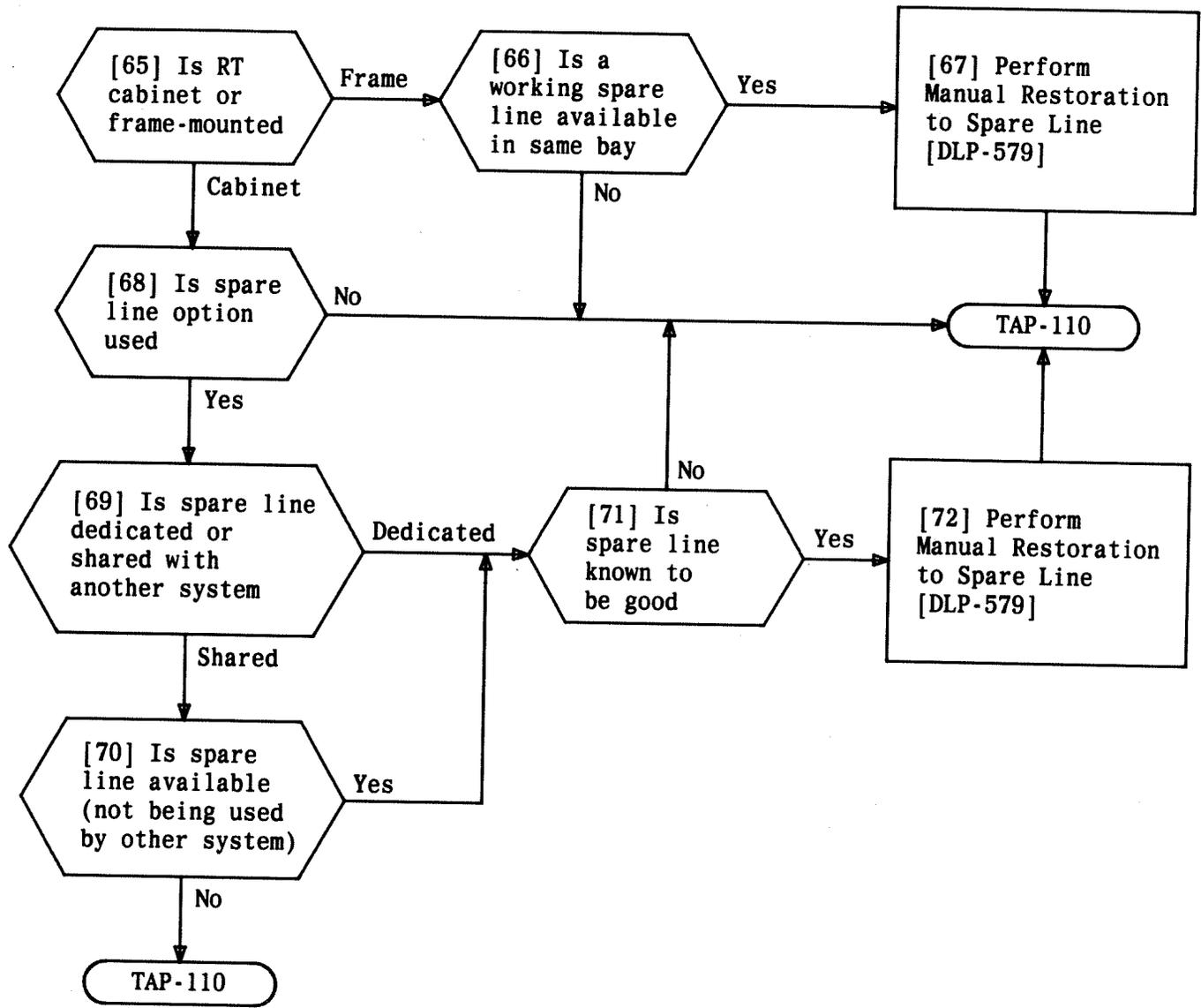
CLEAR SYS OUT ALARM

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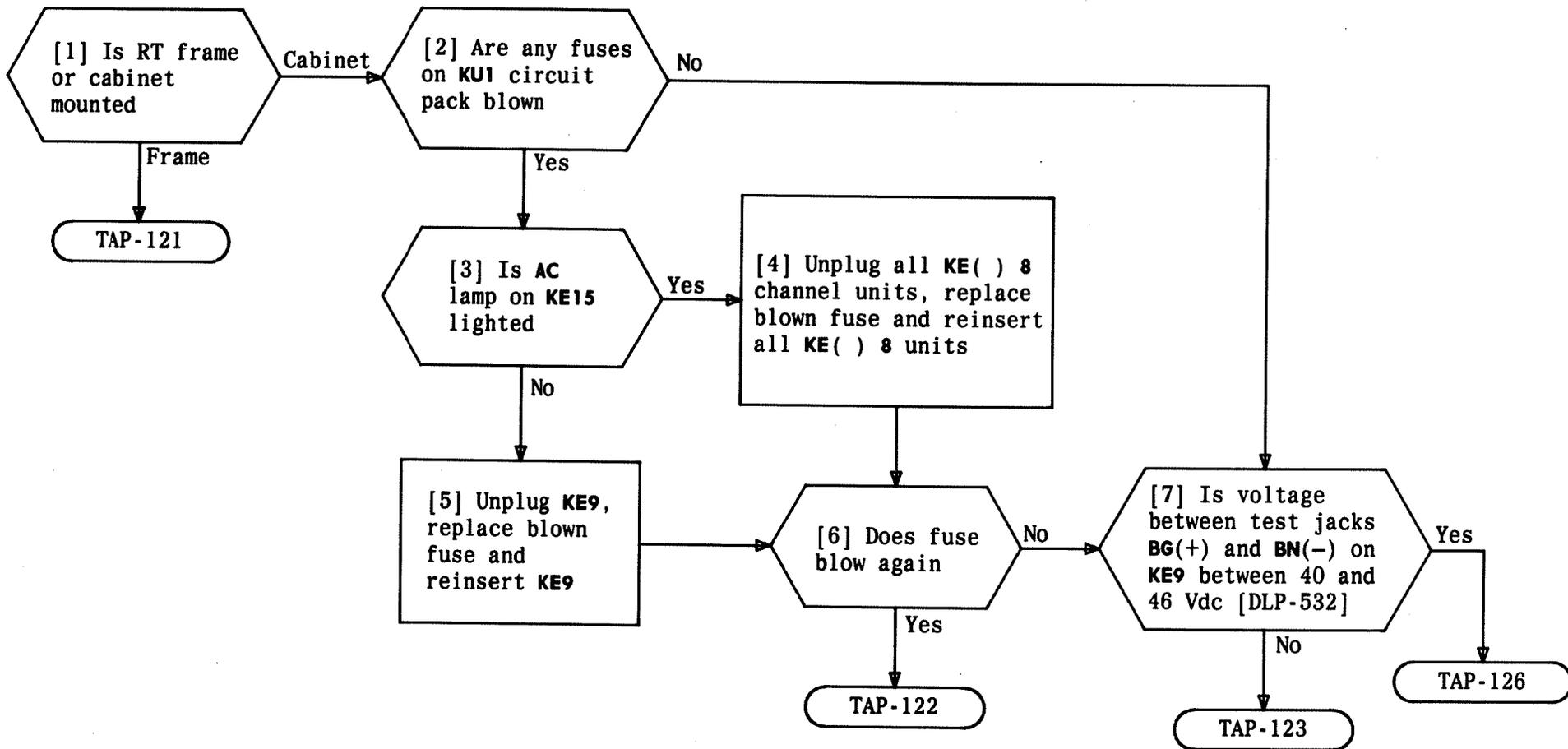
CLEAR SYS OUT ALARM

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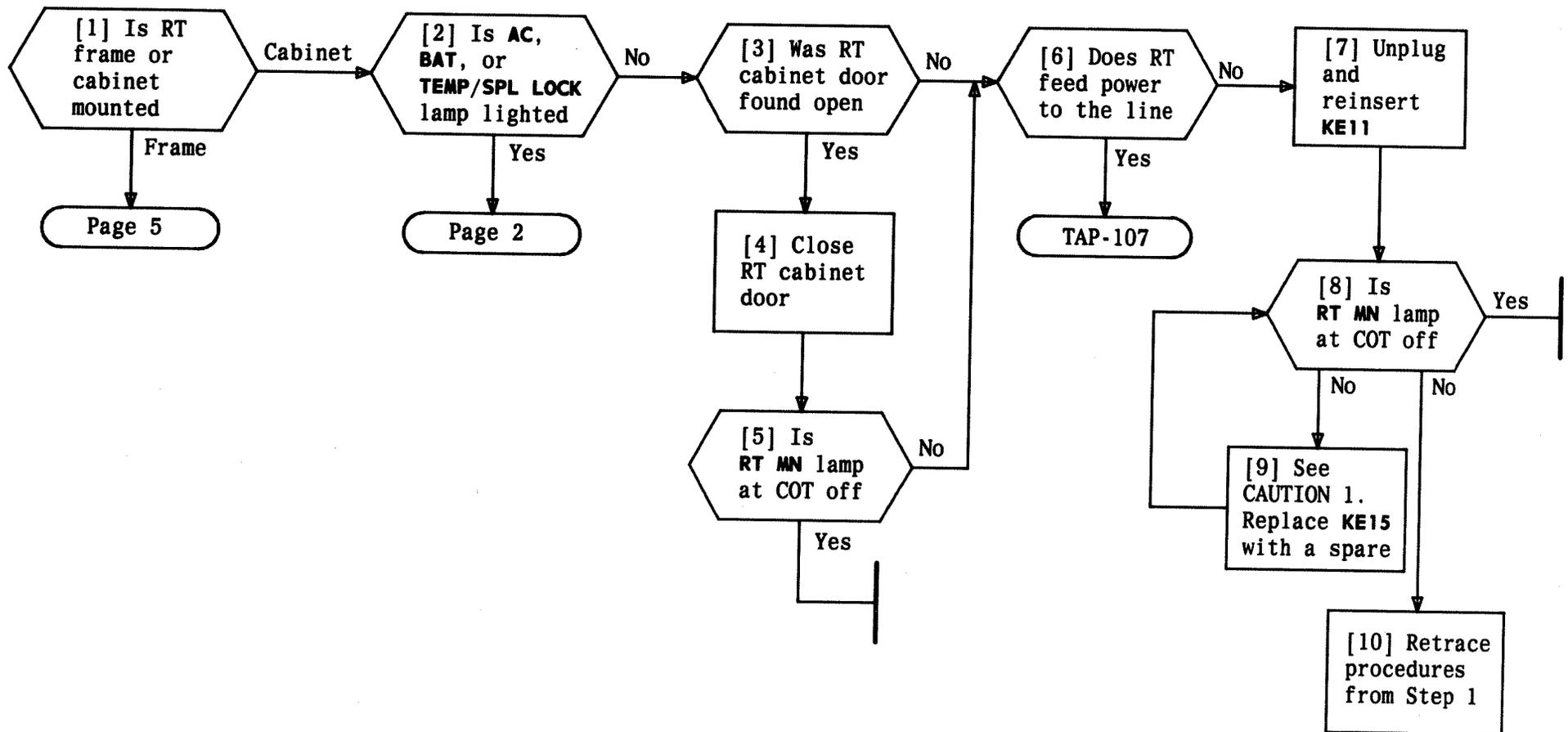
CLEAR SYS OUT ALARM

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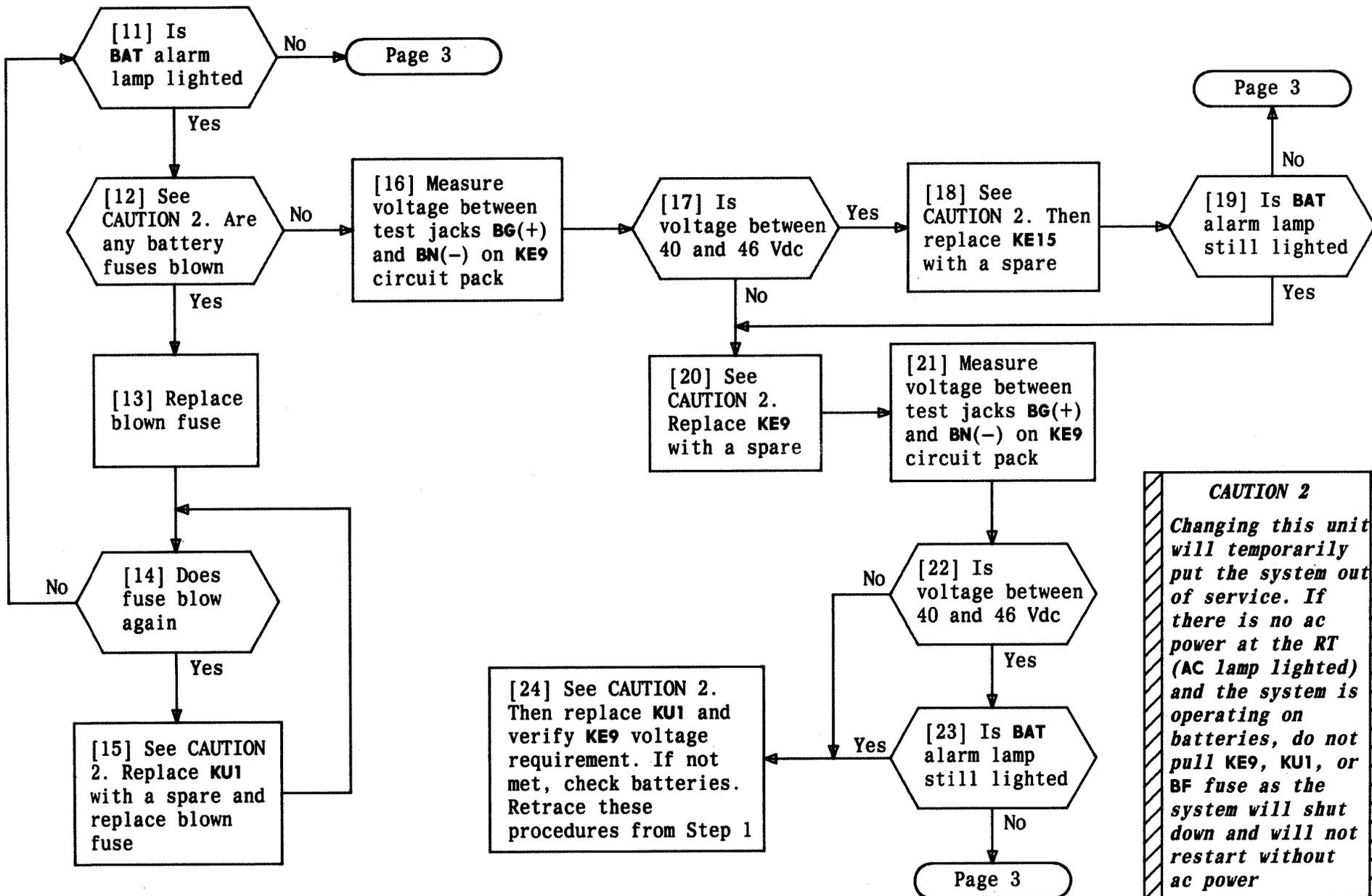
CLEAR REMOTE TERMINAL MAJOR ALARM

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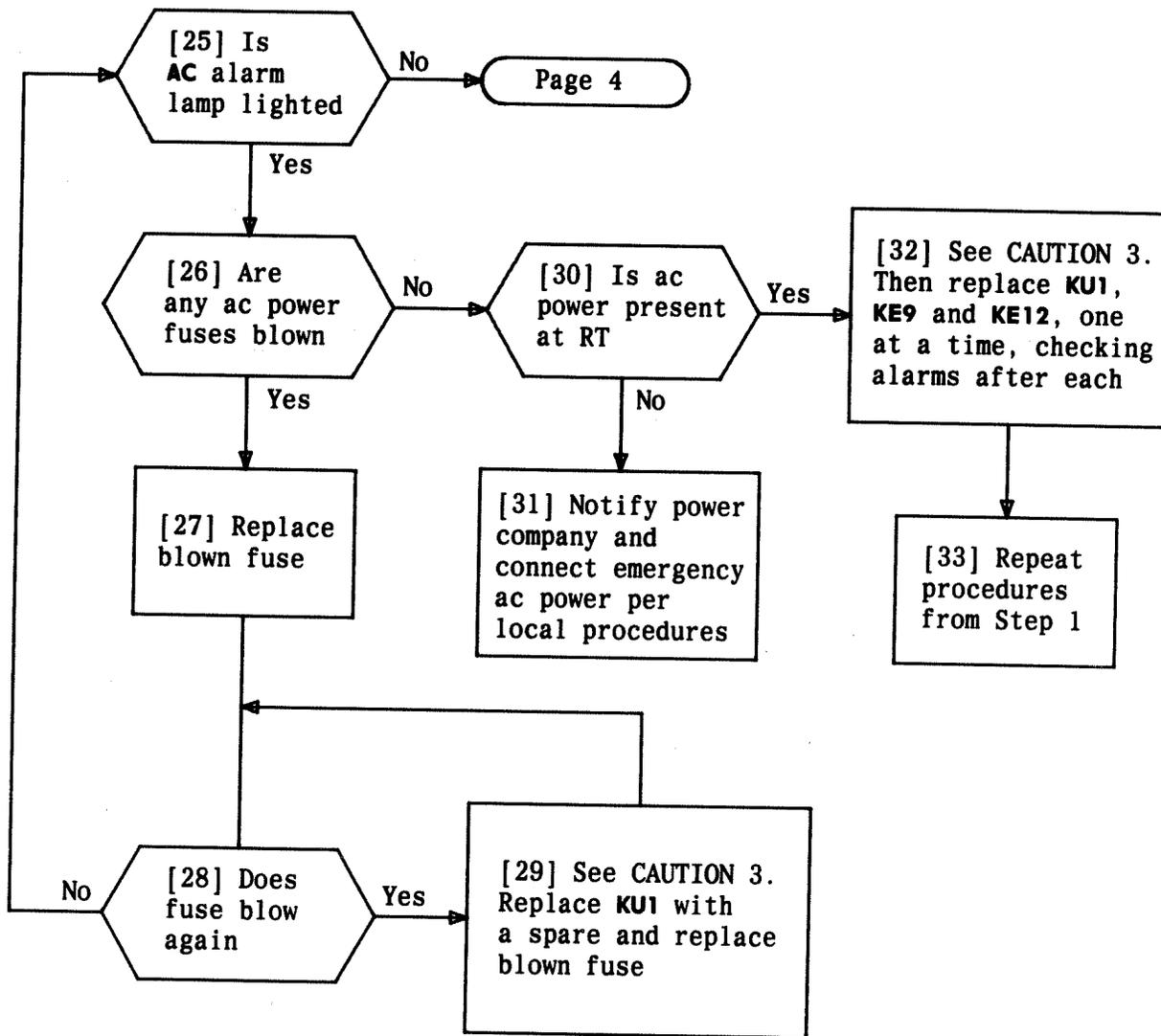
CAUTION 1	
<i>Changing this unit will temporarily put the system out of service</i>	
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CLEAR REMOTE TERMINAL MINOR ALARM



CAUTION 2
Changing this unit will temporarily put the system out of service. If there is no ac power at the RT (AC lamp lighted) and the system is operating on batteries, do not pull KE9, KU1, or BF fuse as the system will shut down and will not restart without ac power

CLEAR REMOTE TERMINAL MINOR ALARM

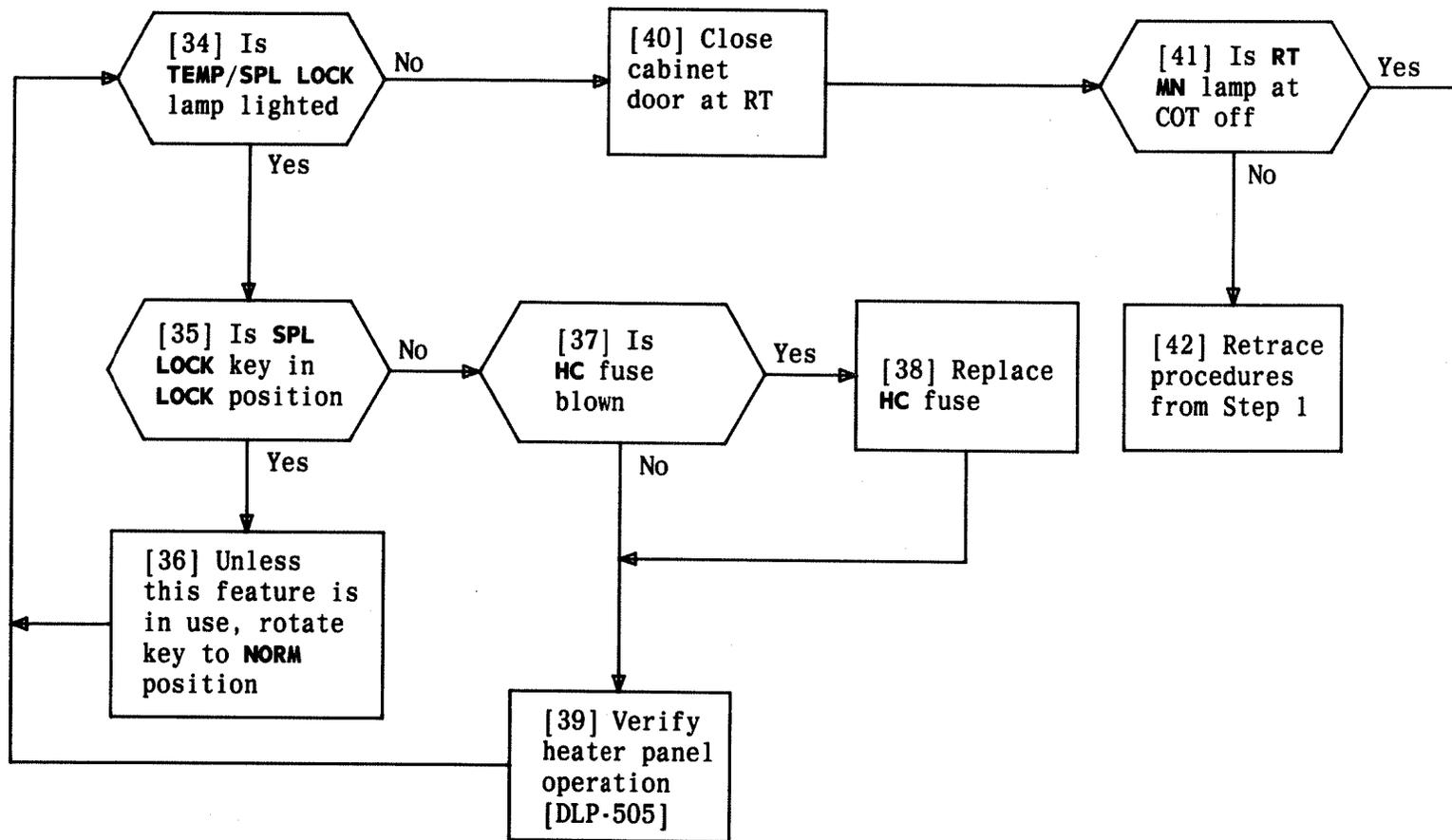


CAUTION 3

Changing this unit will temporarily put the system out of service. If there is no ac power at the RT (AC lamp lighted) and the system is operating on batteries, do not pull KE9, KU1, or BF fuse as the system will shut down and will not restart without ac power

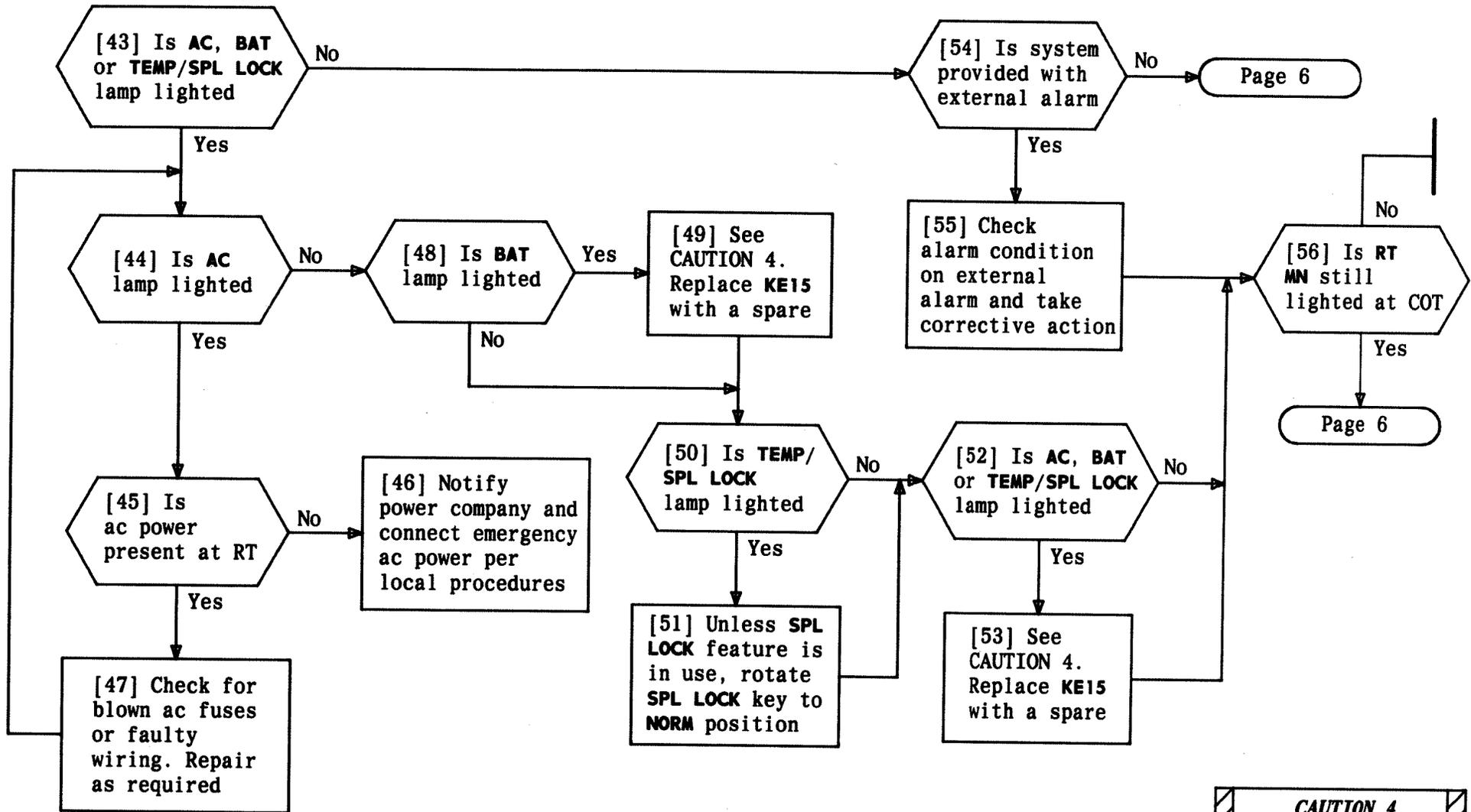
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CLEAR REMOTE TERMINAL MINOR ALARM



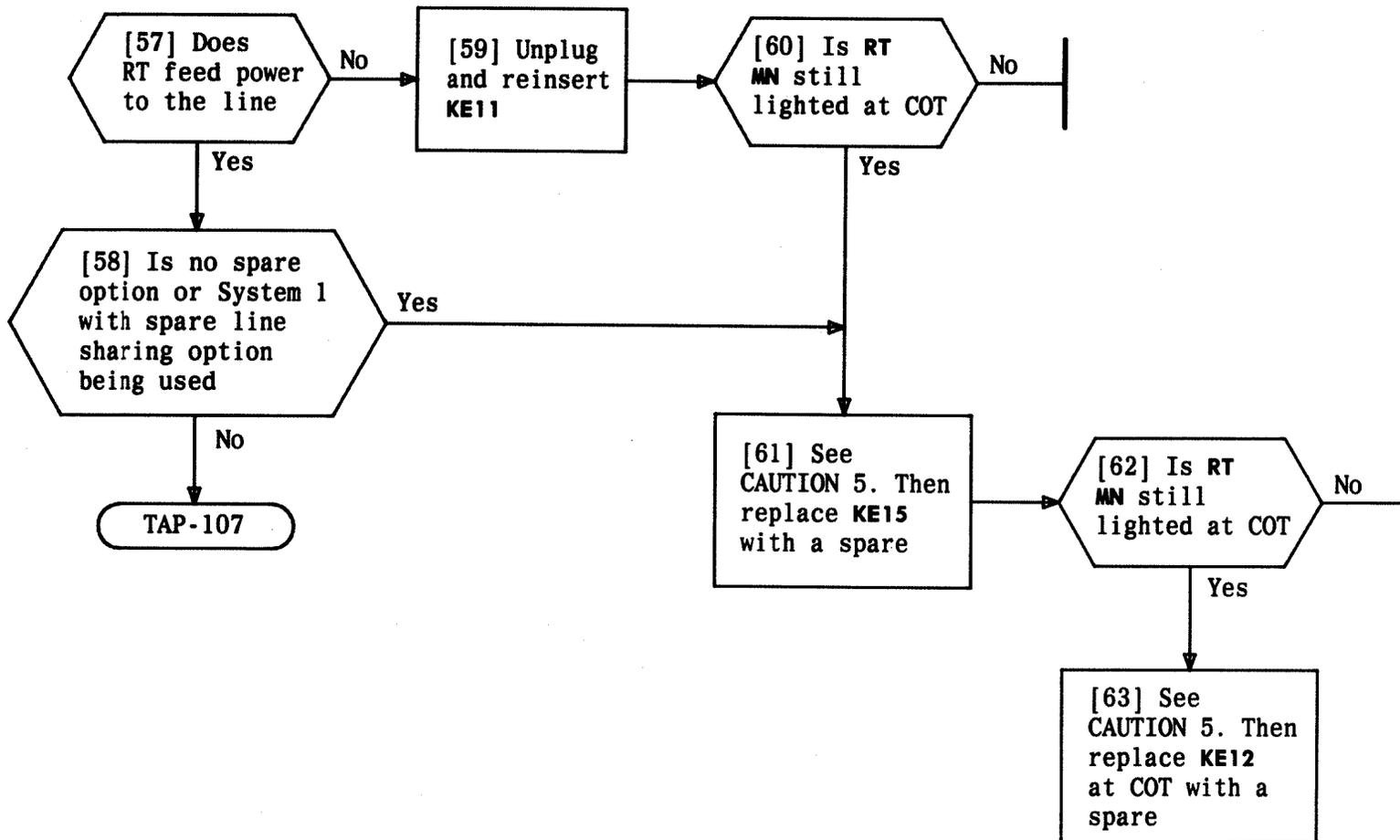
CLEAR REMOTE TERMINAL MINOR ALARM

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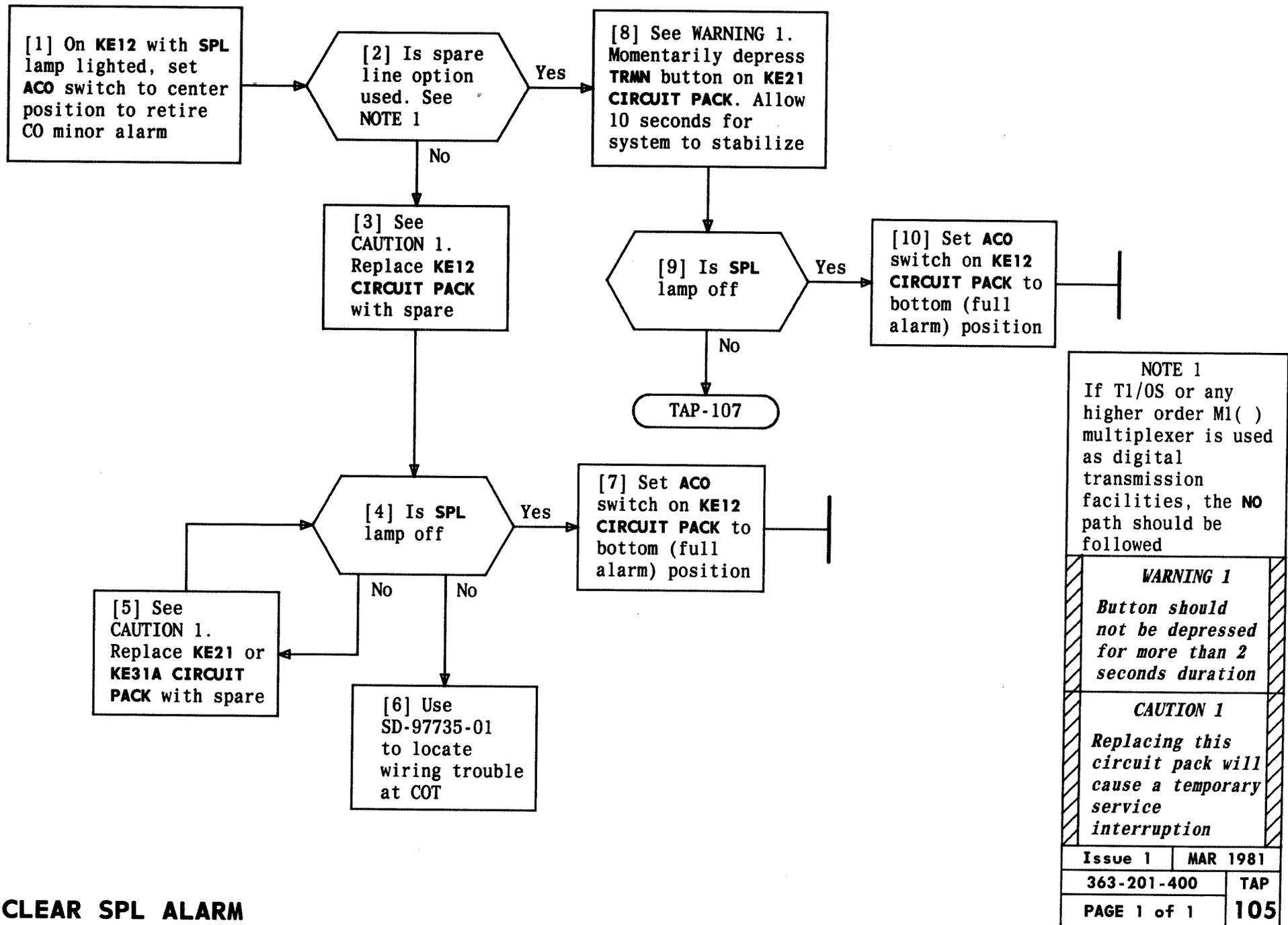
CAUTION 4	
<i>Changing this unit will temporarily put the system out of service</i>	
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CLEAR REMOTE TERMINAL MINOR ALARM

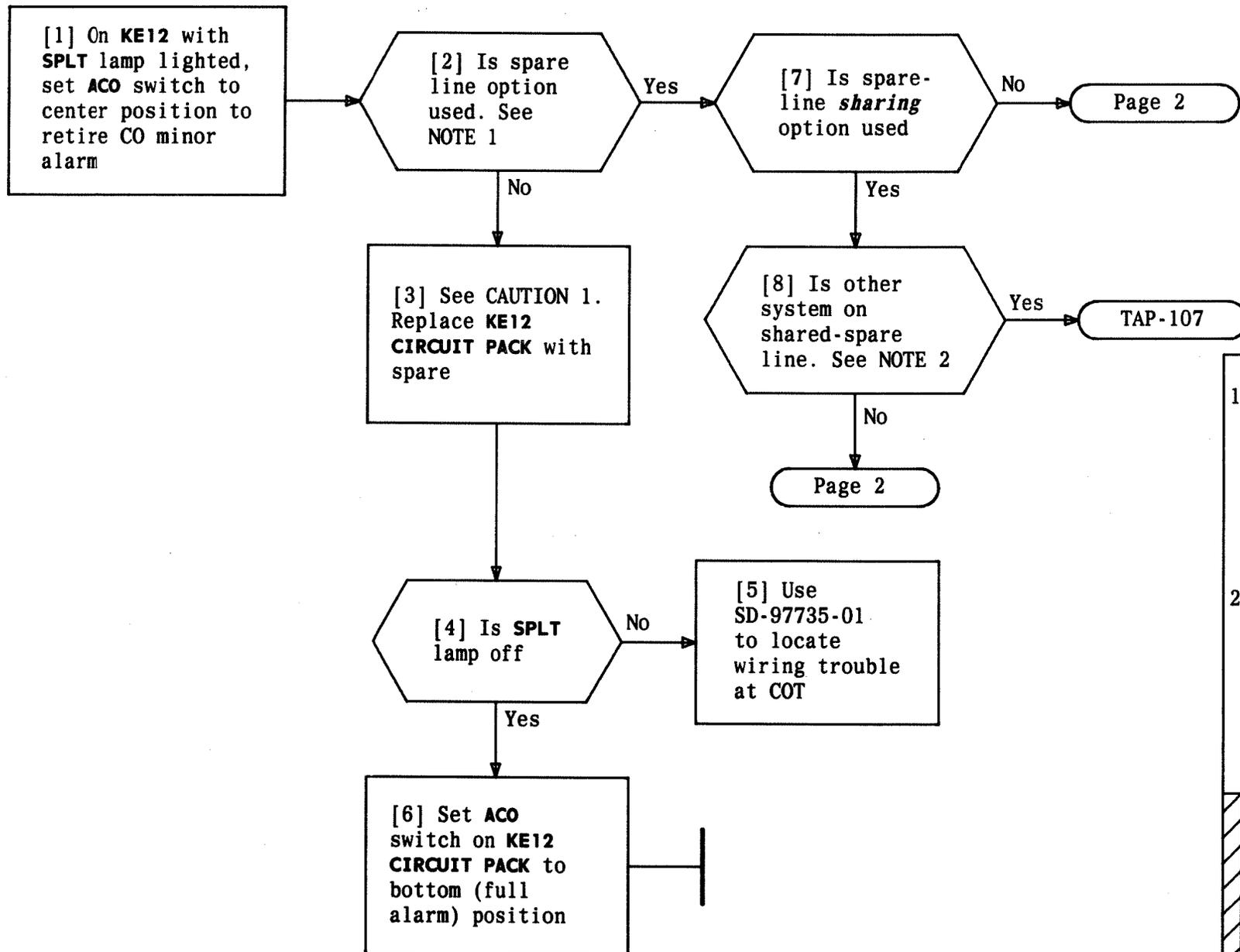


CAUTION 5 <i>Changing this unit will temporarily put the system out of service</i>	
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CLEAR REMOTE TERMINAL MINOR ALARM



CLEAR SPL ALARM



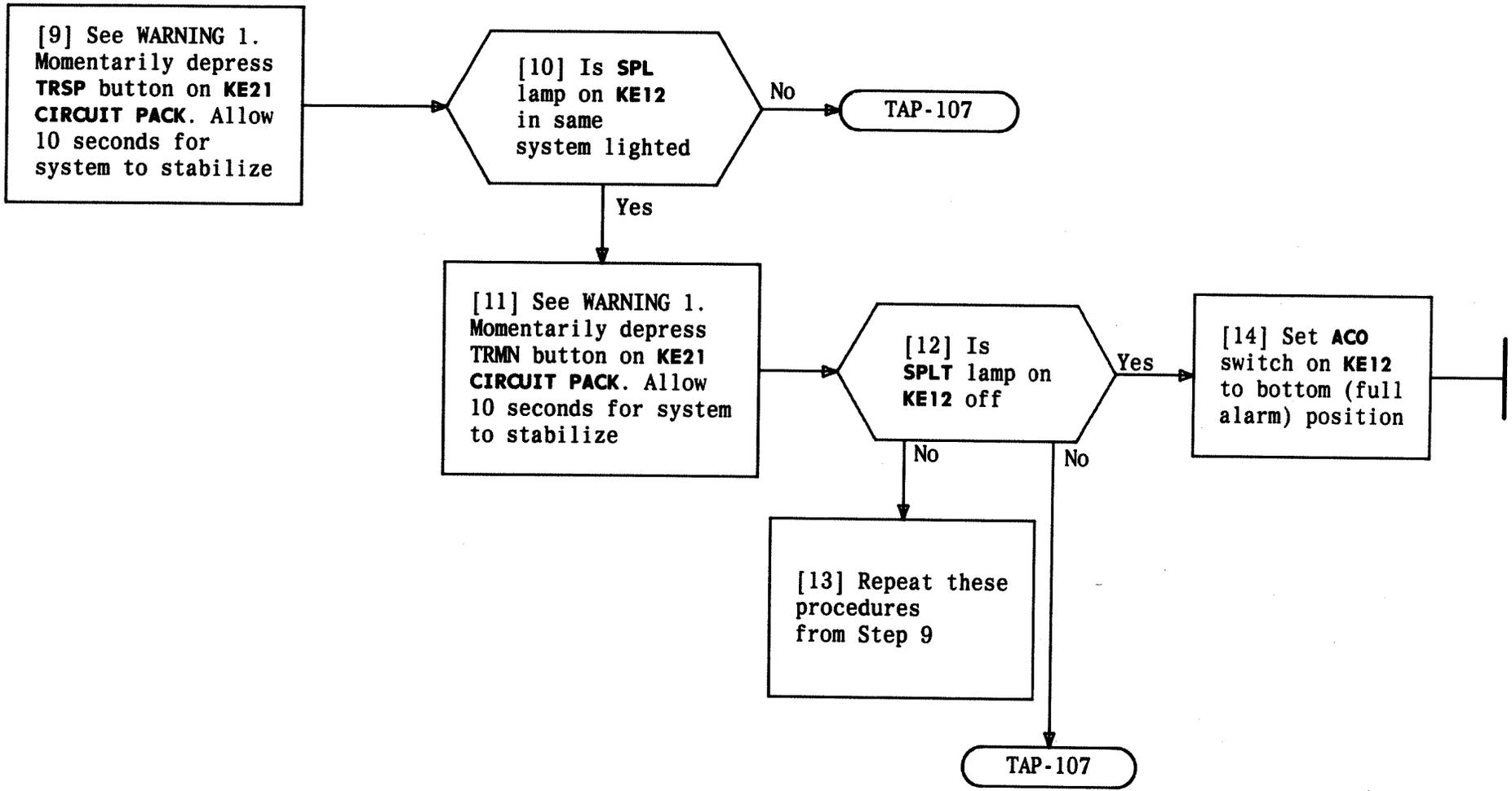
NOTES

1. If T1/OS or any higher order M1() multiplexer is used as digital transmission facilities, the **NO** path should be followed
2. If other system is on spare line, its main line may be in trouble. TAP-105 can be used to clear SPL alarm on other system

CAUTION 1
Replacing this circuit pack will cause a temporary service interruption

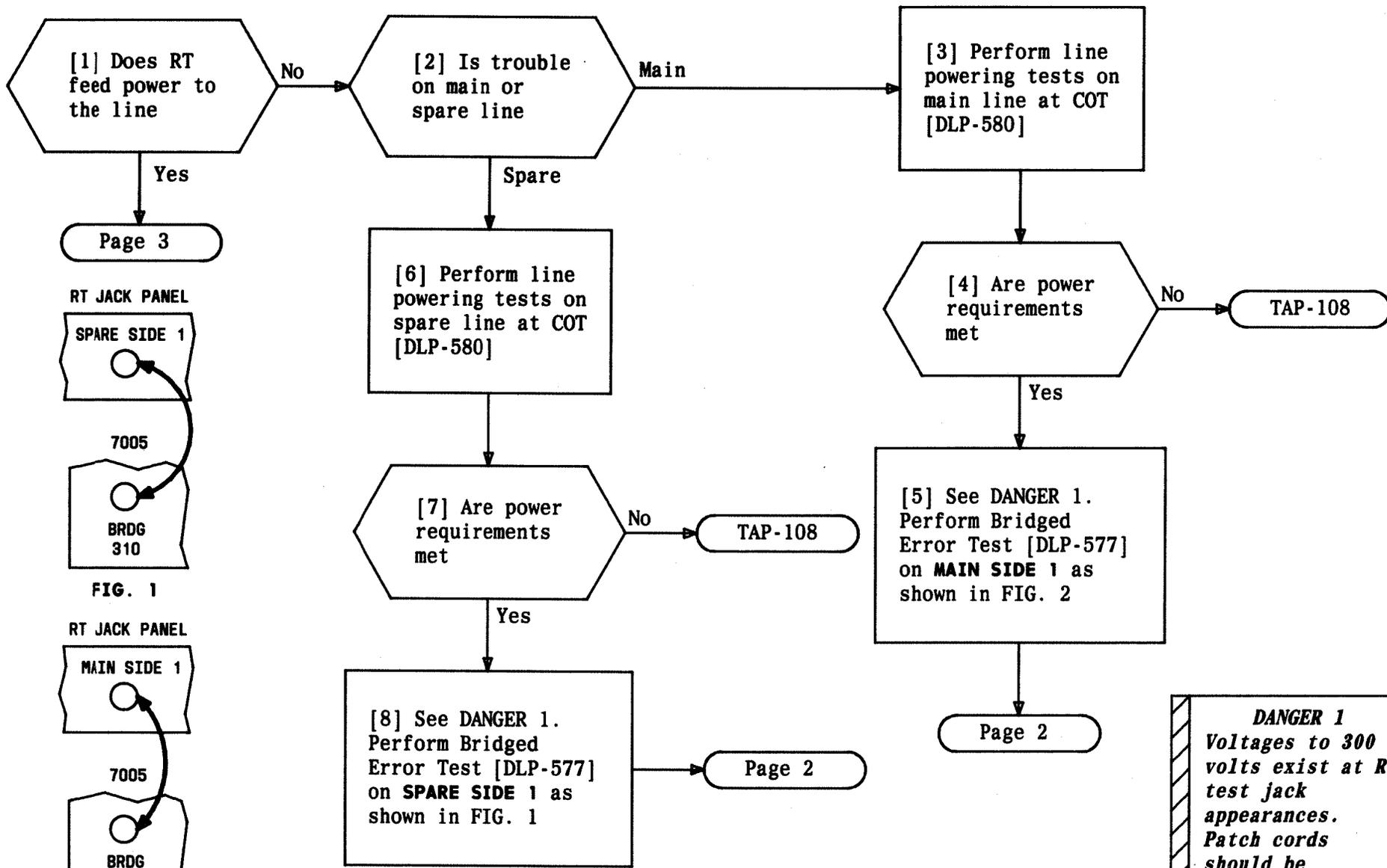
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CLEAR SPLIT ALARM



CLEAR SPT ALARM

WARNING 1 <i>Buttons should not be depressed for more than 2 seconds duration</i>	
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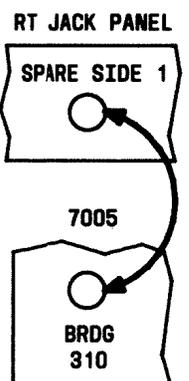


FIG. 1

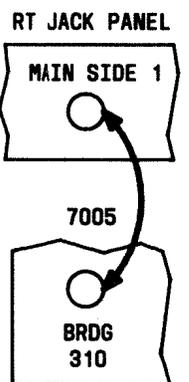
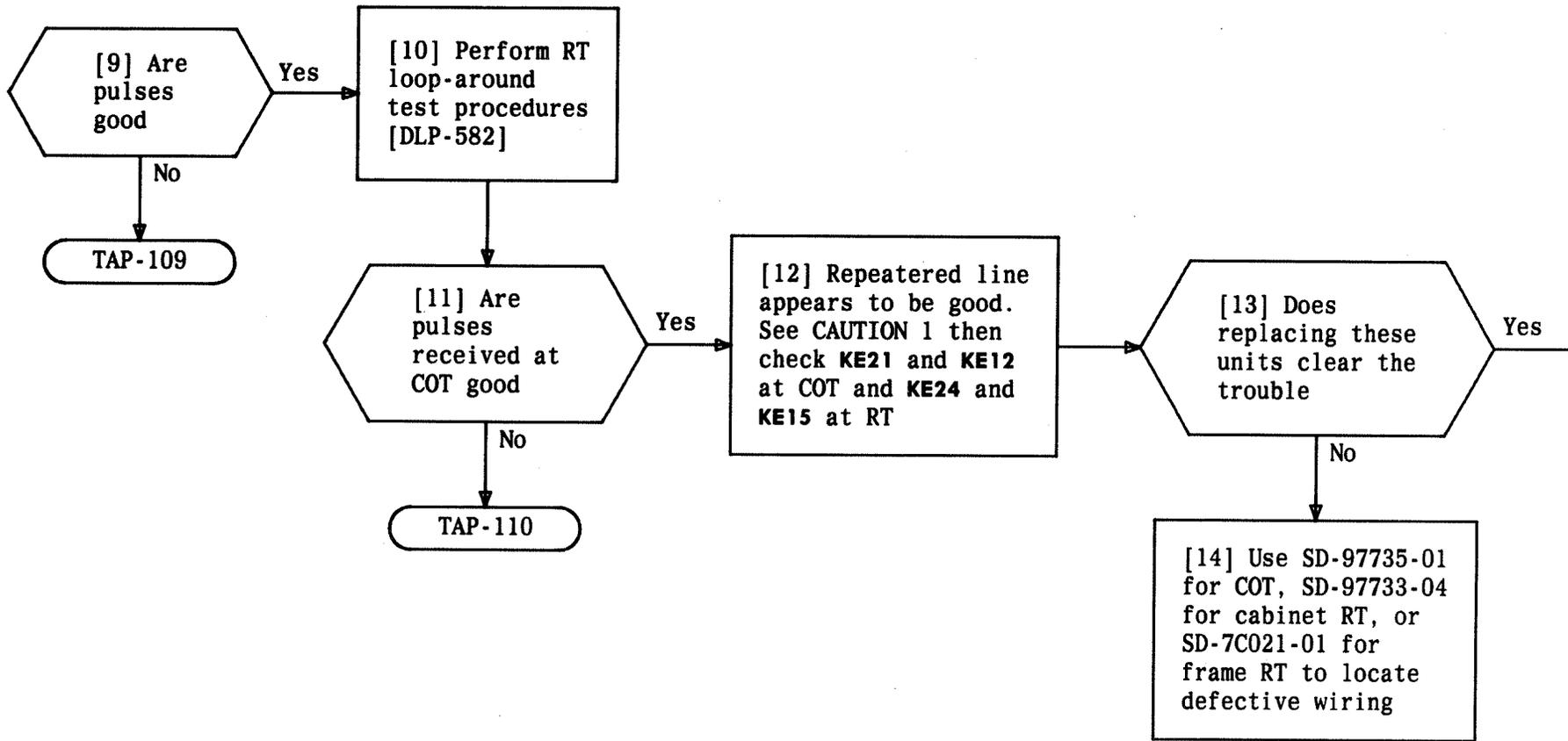


FIG. 2

DANGER 1
 Voltages to 300 volts exist at RT test jack appearances. Patch cords should be connected to RT test jacks last

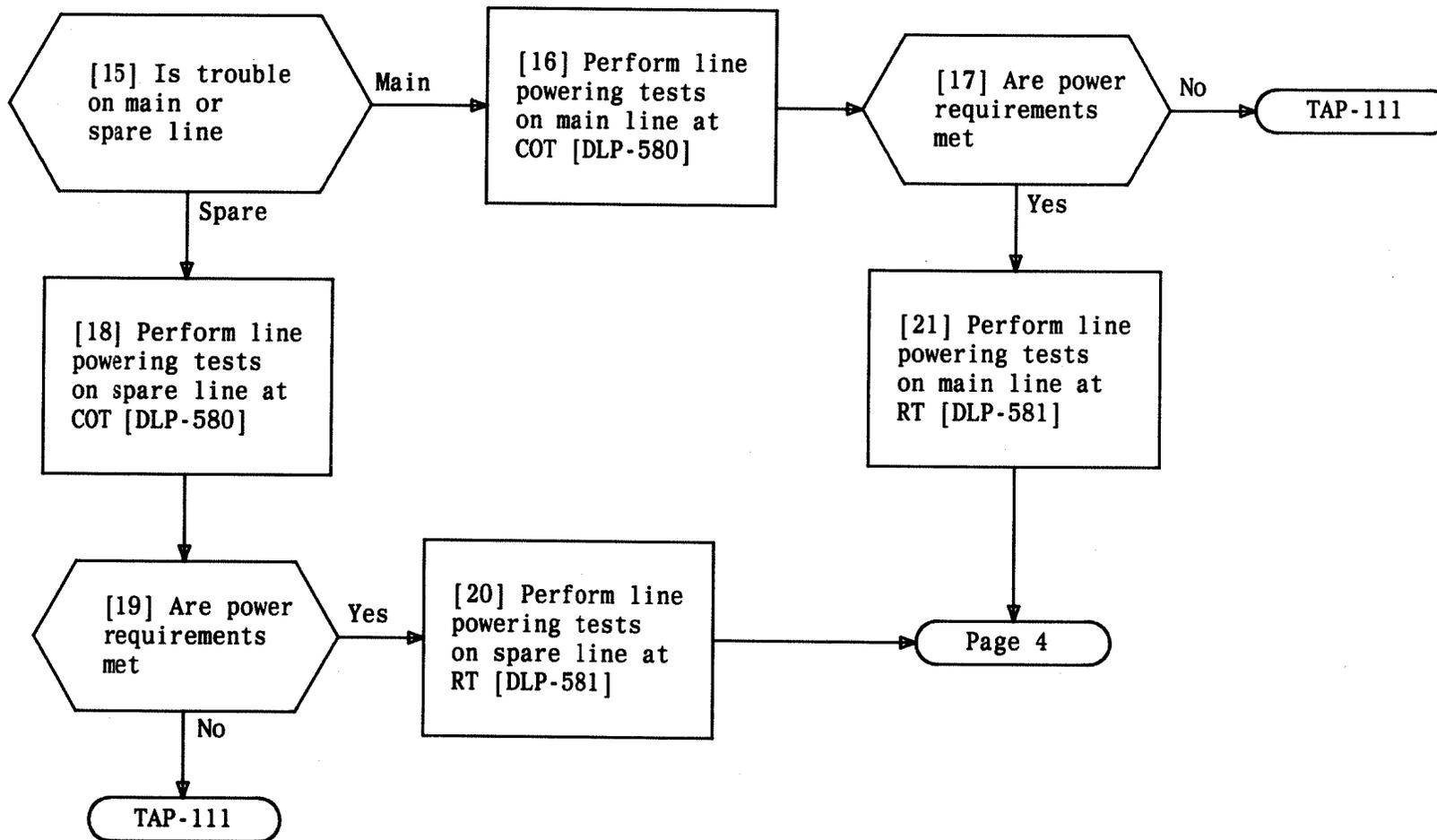
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PERFORM REPEATERED LINE TROUBLE TESTS



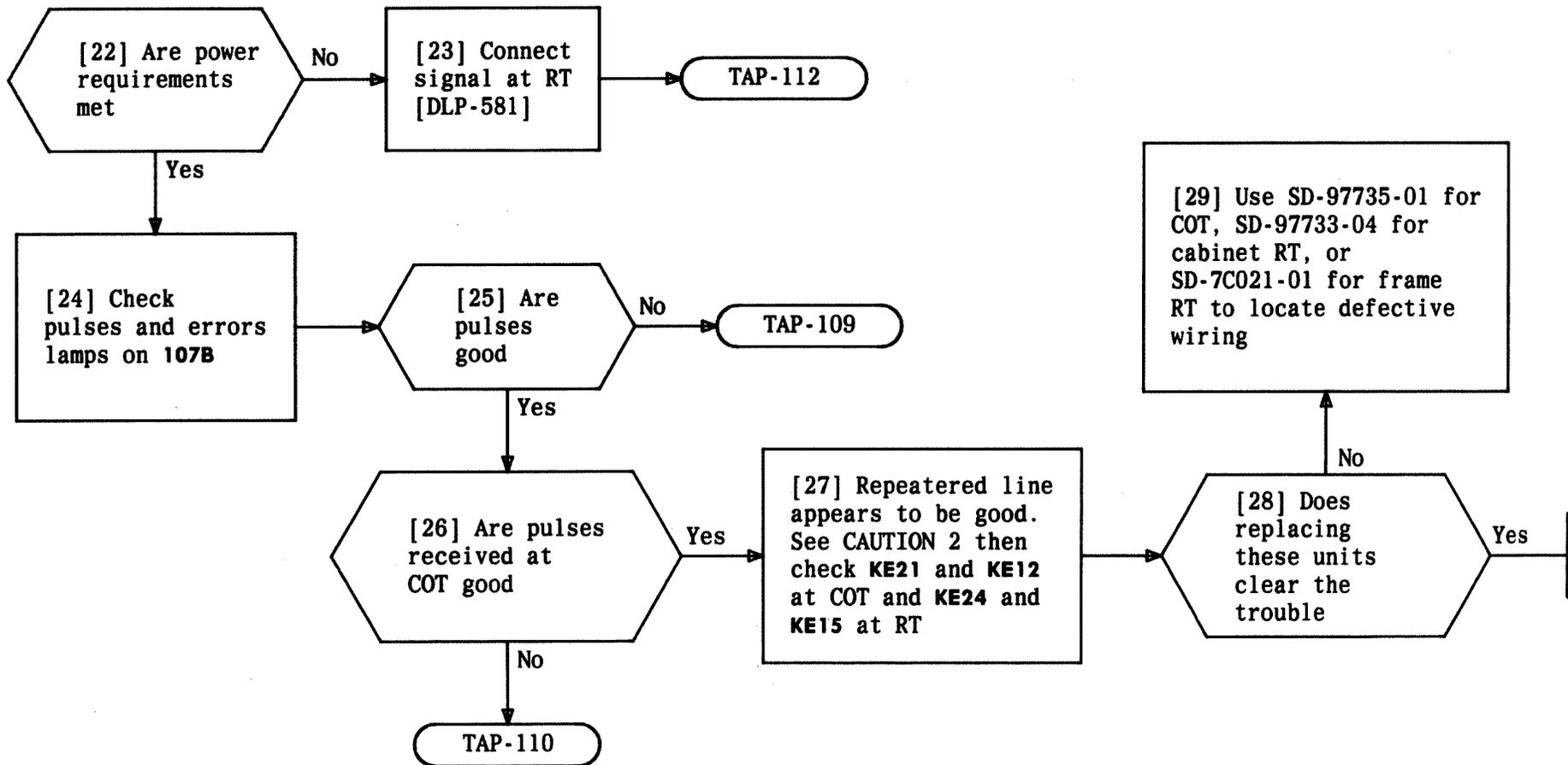
CAUTION 1 <i>Changing these units will temporarily put the system out of service</i>	
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PERFORM REPEATERED LINE TROUBLE TESTS



PERFORM REPEATERED LINE TROUBLE TESTS

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CAUTION 2 <i>Changing these units will temporarily put the system out of service</i>	
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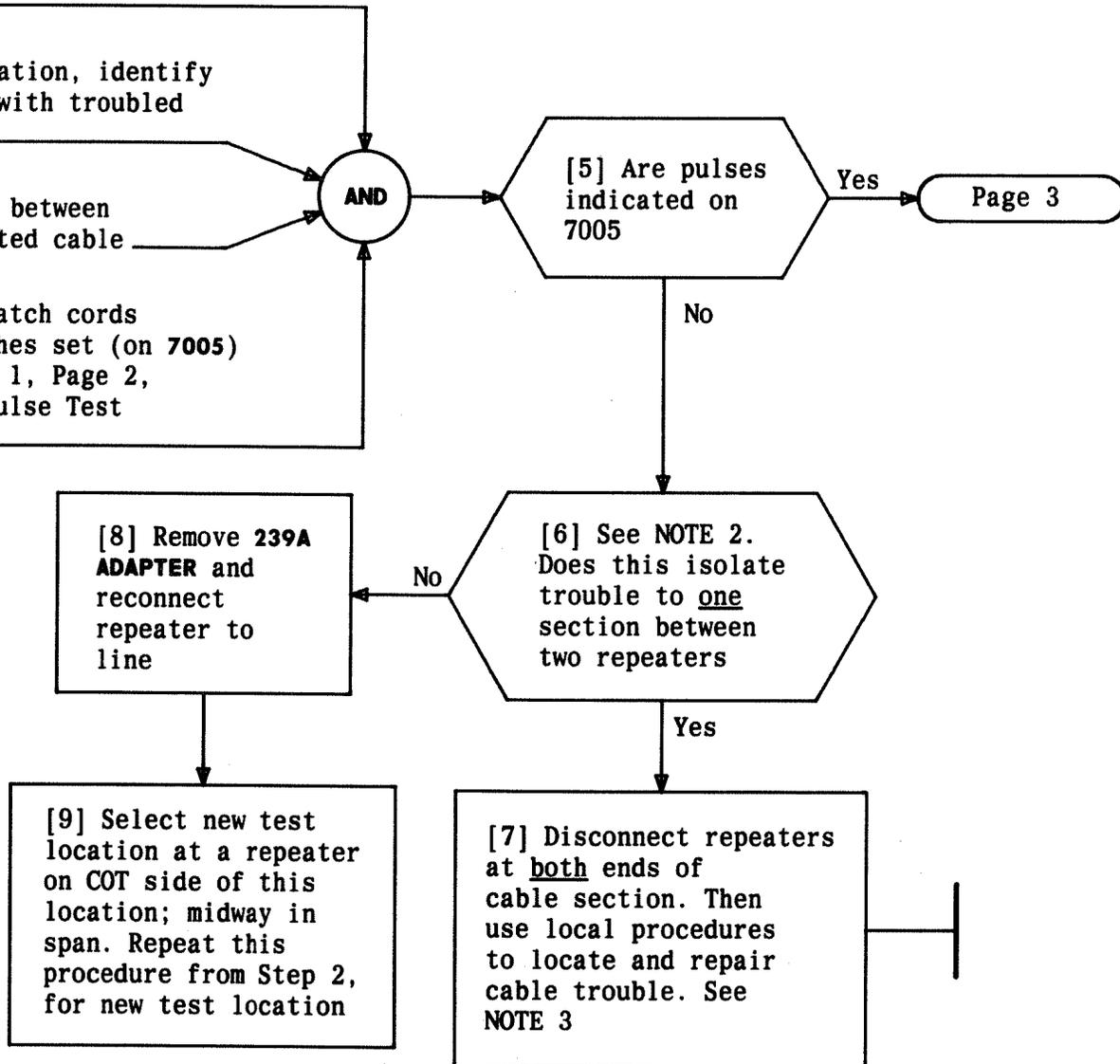
PERFORM REPEATERED LINE TROUBLE TESTS

[1] See NOTE 1. Select as initial test location the repeater halfway between COT and RT. Go to this location.

[2] At selected test location, identify repeater associated with troubled system.

[3] Connect 239A ADAPTER between repeater and associated cable.

[4] See DANGER 1. With patch cords connected, and switches set (on 7005) as indicated in FIG. 1, Page 2, perform Terminated Pulse Test [DLP-578].



NOTES

1. This procedure is designed to locate an open loop or repeater after trouble has been isolated to the digital line powering loop. Standard cable trouble procedures should be used to clear opens, crosses, and grounds
2. Trouble is on COT side of this location
3. When trouble is cleared, repeaters should be reconnected, and all patch cords, test equipment, and test connections should be removed

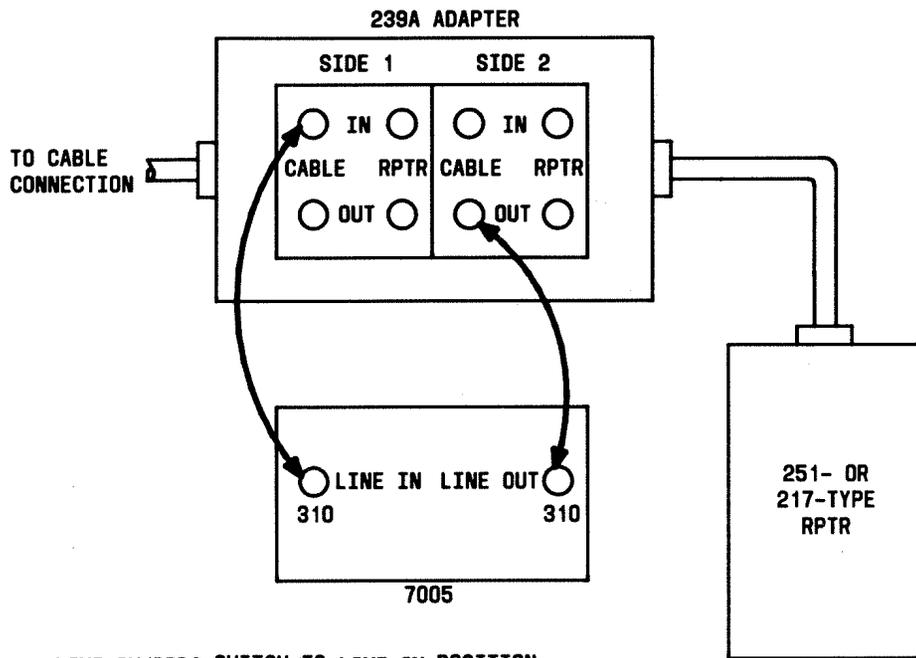
DANGER 1
Voltages to 300 volts exist at 239A ADAPTER test jacks. Patch cords should be connected to 239A last

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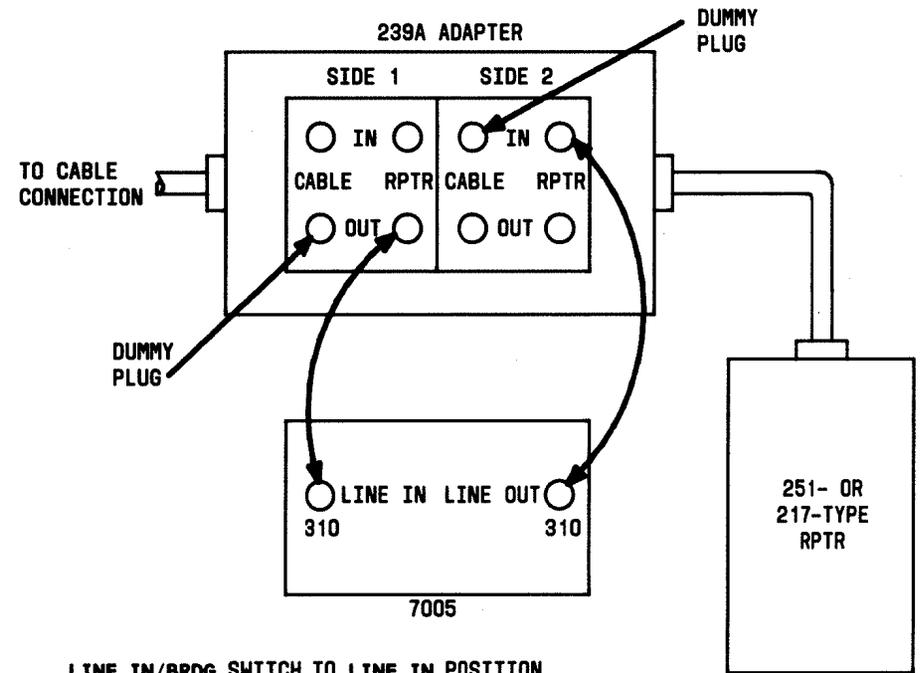
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**CLEAR REPEATERED LINE POWERING TROUBLE
 (LINE POWERED FROM COT ONLY)**



LINE IN/BRDG SWITCH TO LINE IN POSITION
 TERM/NORMAL SWITCH TO TERM POSITION

FIG. 1



LINE IN/BRDG SWITCH TO LINE IN POSITION
 TERM/NORMAL SWITCH TO TERM POSITION

FIG. 2

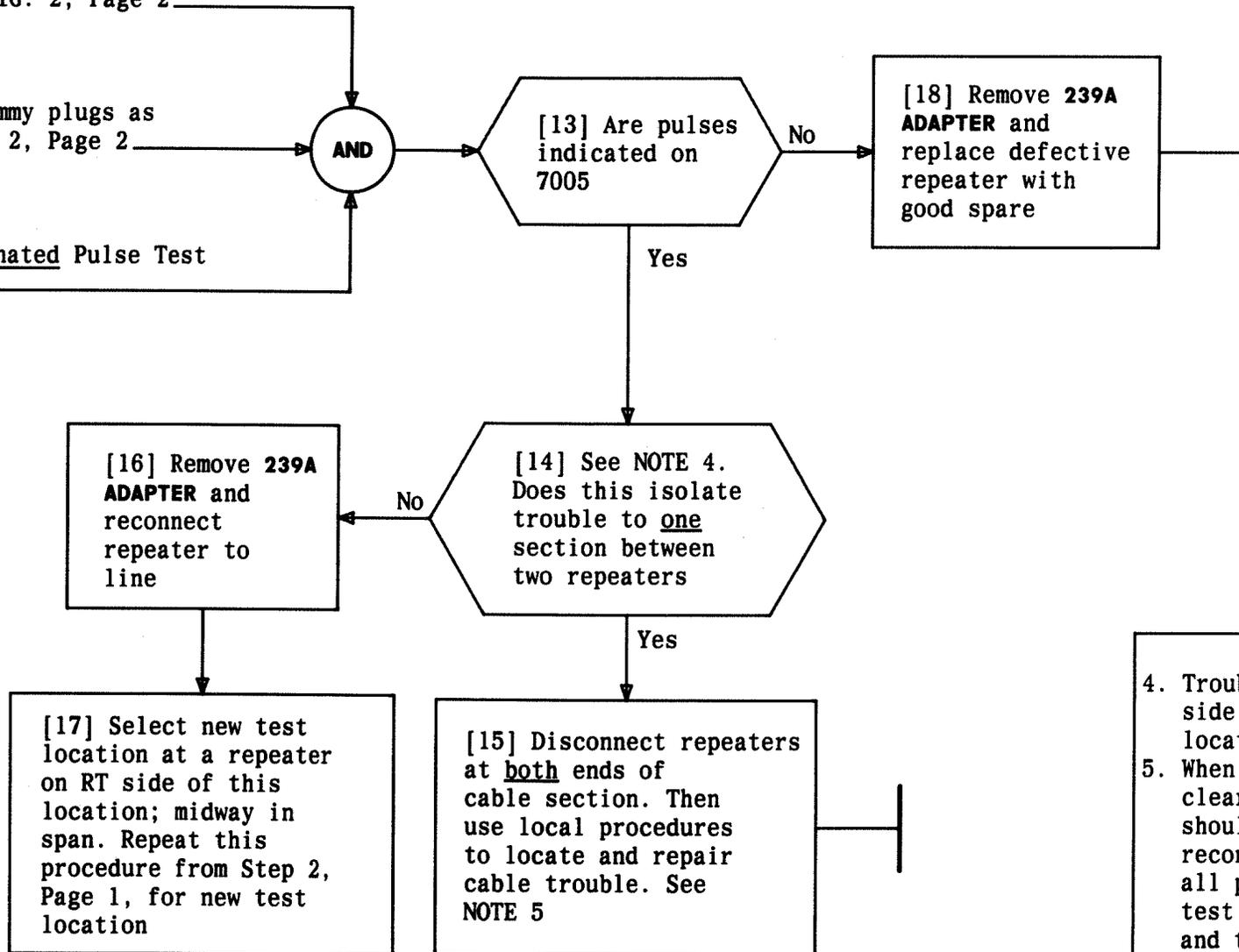
**CLEAR REPEATERED LINE POWERING TROUBLE
 (LINE POWERED FROM COT ONLY)**

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[10] Disconnect patch cords from 239A ADAPTER and reconnect as shown in FIG. 2, Page 2

[11] Insert two dummy plugs as shown in FIG. 2, Page 2

[12] Perform Terminated Pulse Test [DLP-578]



NOTES	
4. Trouble is on RT side of this location	
5. When trouble is cleared, repeaters should be reconnected, and all patch cords, test equipment, and test connections should be removed	
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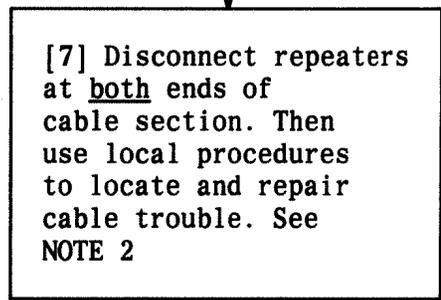
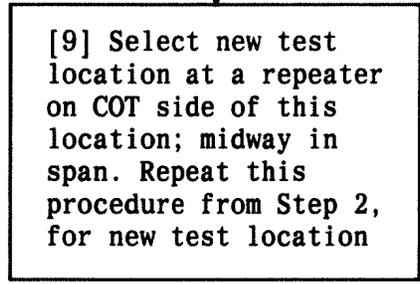
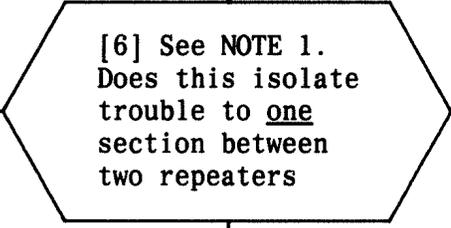
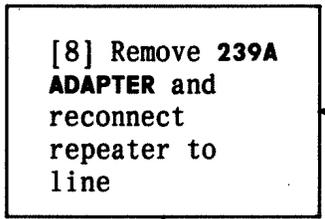
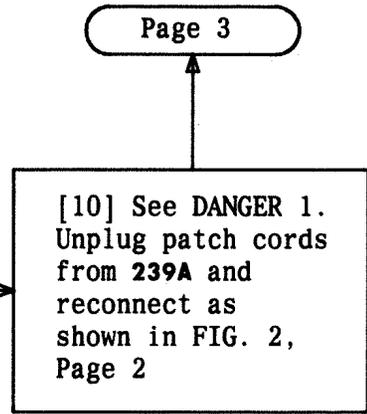
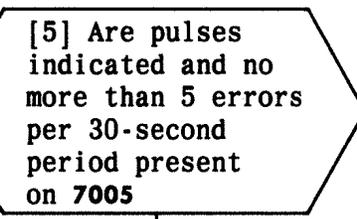
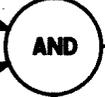
**CLEAR REPEATERED LINE POWERING TROUBLE
(LINE POWERED FROM COT ONLY)**

[1] Select as initial test location the repeater halfway between COT and RT. Go to this location

[2] At selected test location, identify repeater associated with troubled system

[3] Connect **239A ADAPTER** between repeater and associated cable

[4] See DANGER 1. With patch cords connected, and switches set (on **7005**) as indicated in FIG. 1, Page 2, perform Terminated Pulse Error Test [DLP-578]



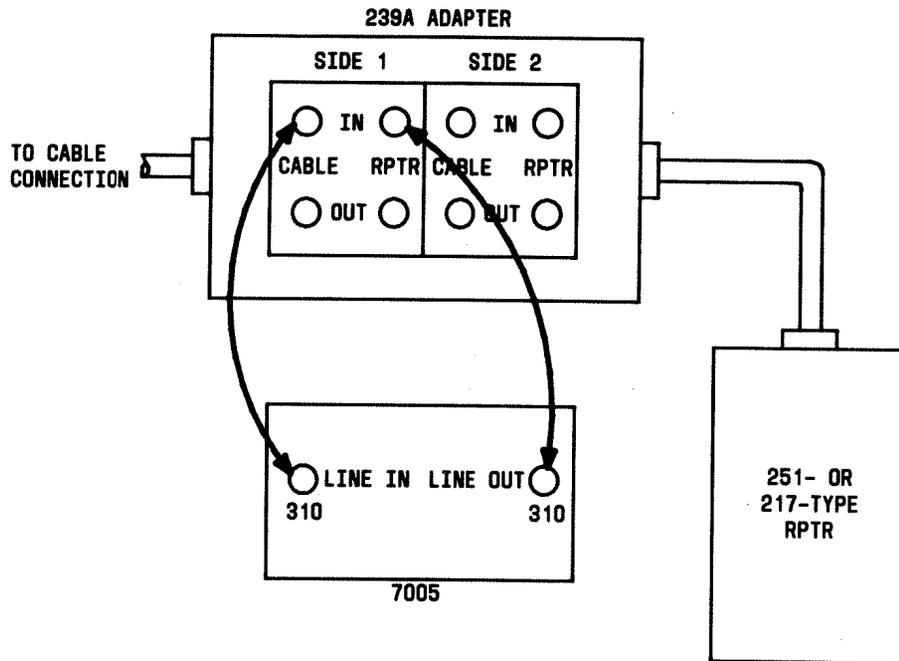
NOTES

1. Trouble is on COT side of this location
2. When trouble is cleared, repeaters should be reconnected, and all patch cords, test equipment, and test connections should be removed

DANGER 1
Voltages to 300 volts exist at 239A ADAPTER test jacks. Patch cords should be connected to 239A last

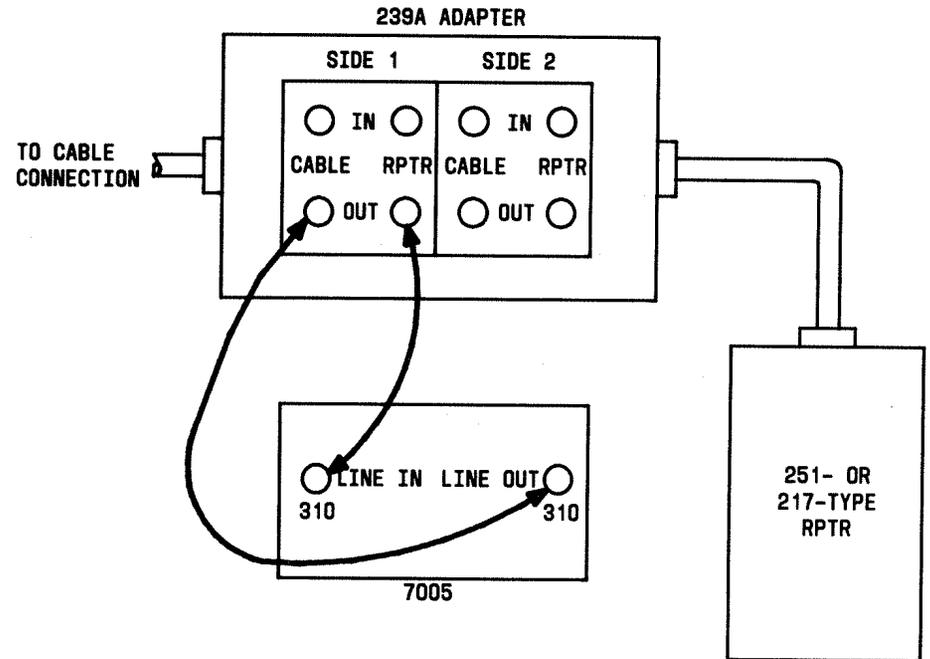
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CLEAR REPEATERED LINE SIGNAL TROUBLE ON SIDE 1



LINE IN/BRDG SWITCH TO LINE IN POSITION
TERM/NORMAL SWITCH TO TERM POSITION

FIG. 1

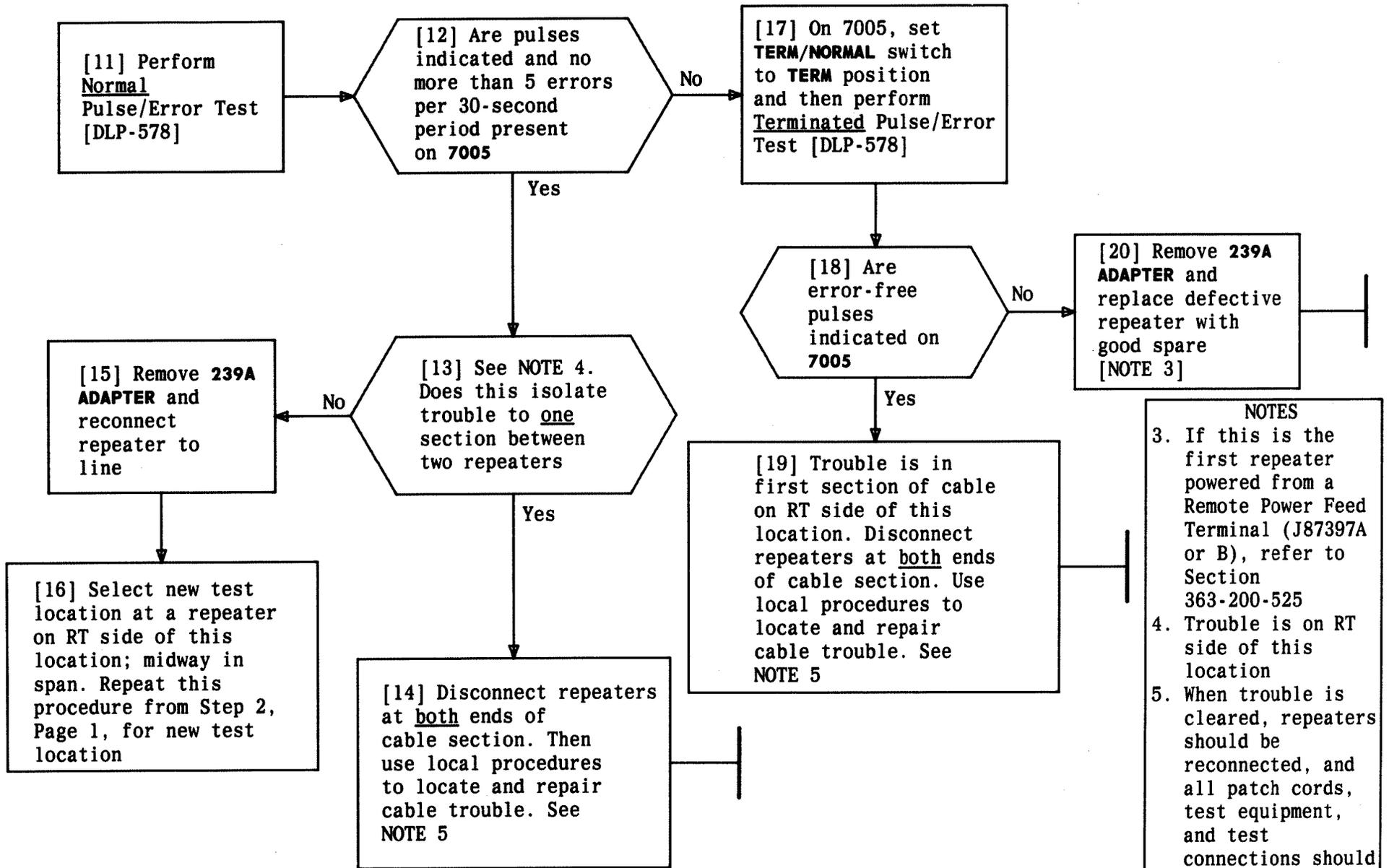


LINE IN/BRDG SWITCH TO LINE IN POSITION
TERM/NORMAL SWITCH TO NORMAL POSITION

FIG. 2

CLEAR REPEATERED LINE SIGNAL TROUBLE ON SIDE 1

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- NOTES**
3. If this is the first repeater powered from a Remote Power Feed Terminal (J87397A or B), refer to Section 363-200-525
 4. Trouble is on RT side of this location
 5. When trouble is cleared, repeaters should be reconnected, and all patch cords, test equipment, and test connections should be removed

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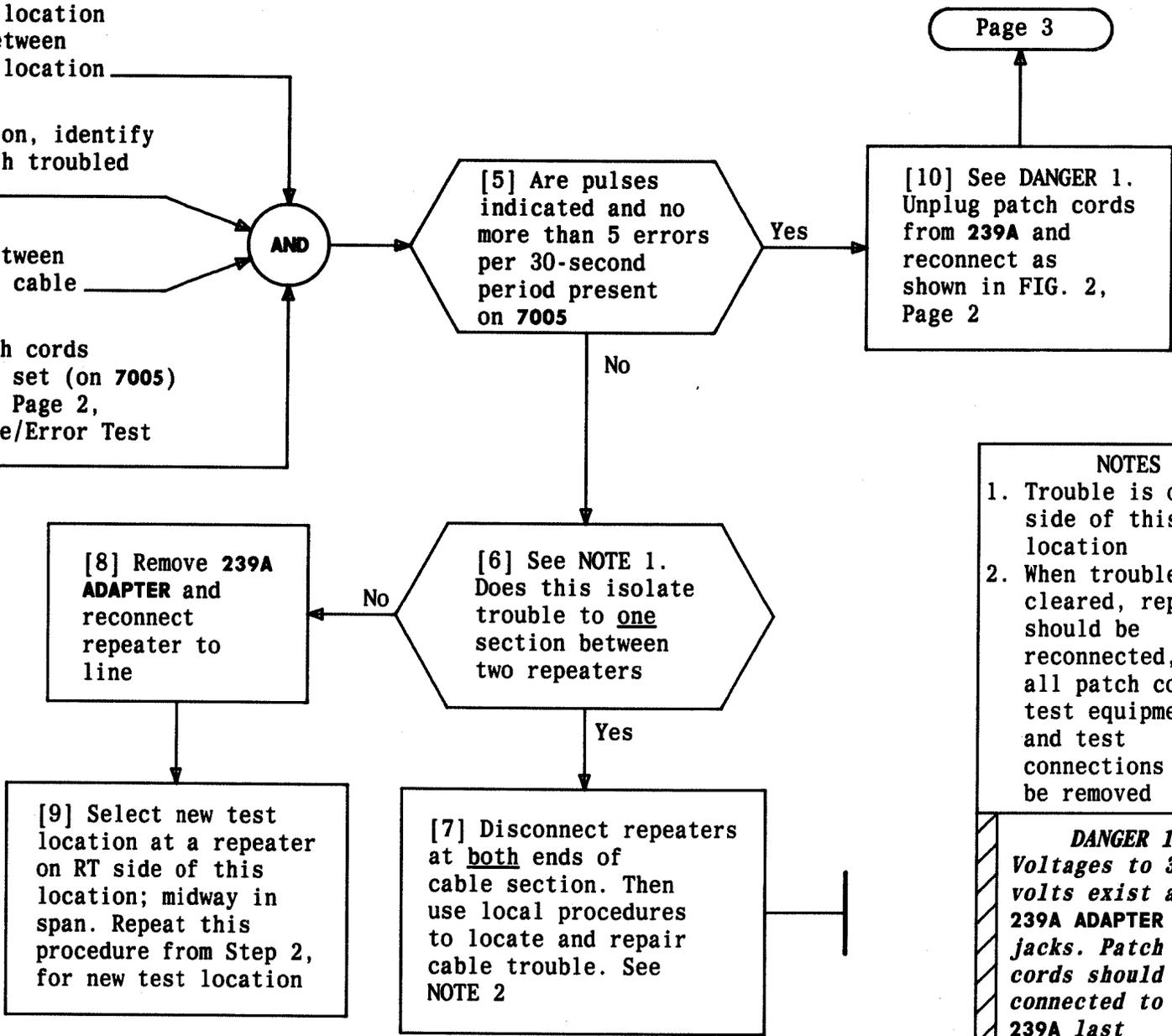
CLEAR REPEATERED LINE SIGNAL TROUBLE ON SIDE 1

[1] Select as initial test location the repeater halfway between COT and RT. Go to this location

[2] At selected test location, identify repeater associated with troubled system

[3] Connect **239A ADAPTER** between repeater and associated cable

[4] See DANGER 1. With patch cords connected, and switches set (on 7005) as indicated in FIG. 1, Page 2, perform Terminated Pulse/Error Test [DLP-578]



Page 3

[10] See DANGER 1. Unplug patch cords from 239A and reconnect as shown in FIG. 2, Page 2

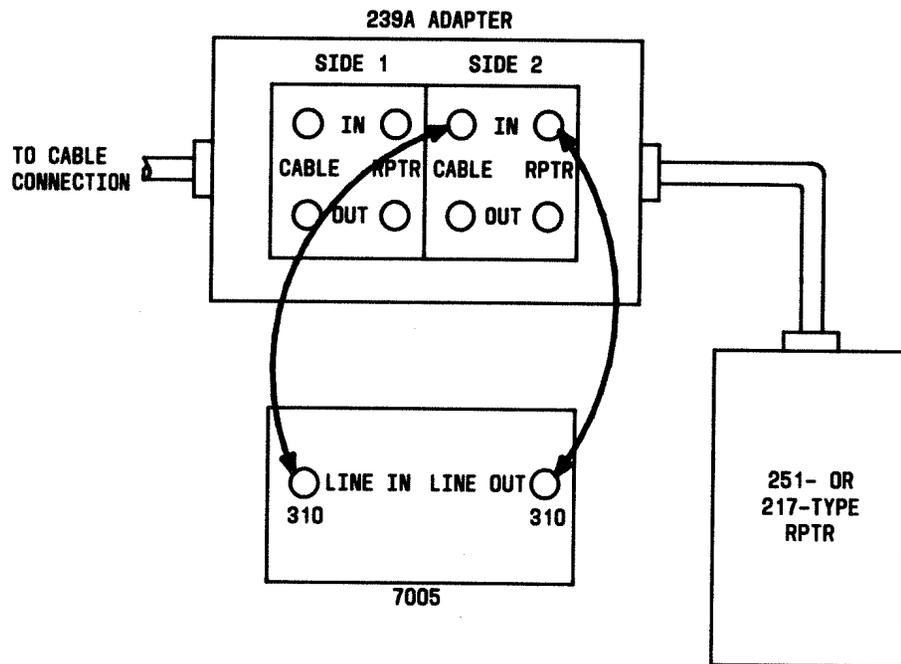
NOTES

1. Trouble is on RT side of this location
2. When trouble is cleared, repeaters should be reconnected, and all patch cords, test equipment, and test connections should be removed

DANGER 1
Voltages to 300 volts exist at 239A ADAPTER test jacks. Patch cords should be connected to 239A last

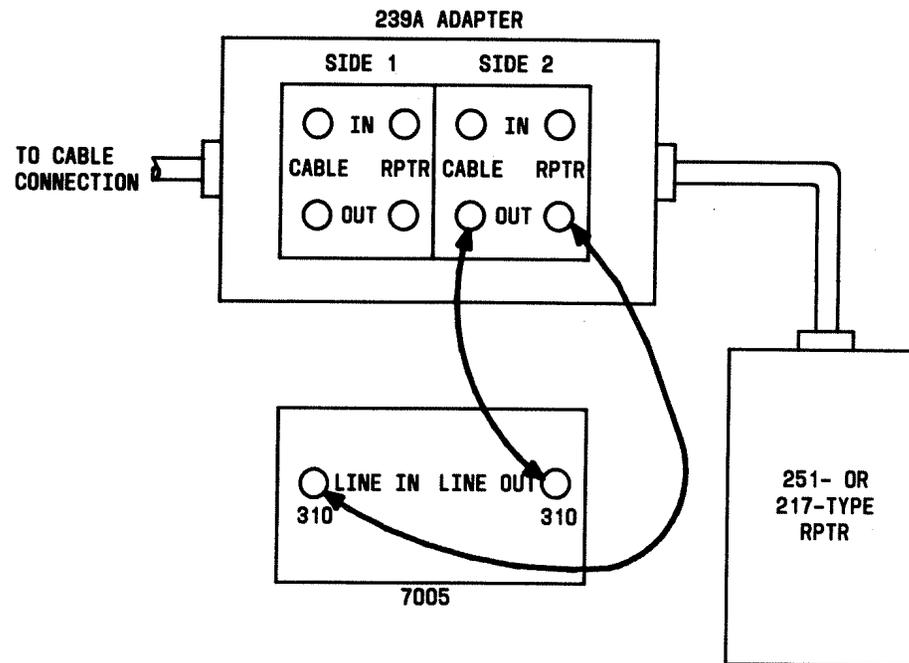
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CLEAR REPEATERED LINE SIGNAL TROUBLE ON SIDE 2



LINE IN/BRDG SWITCH TO LINE IN POSITION
 TERM/NORMAL SWITCH TO TERM POSITION

FIG. 1

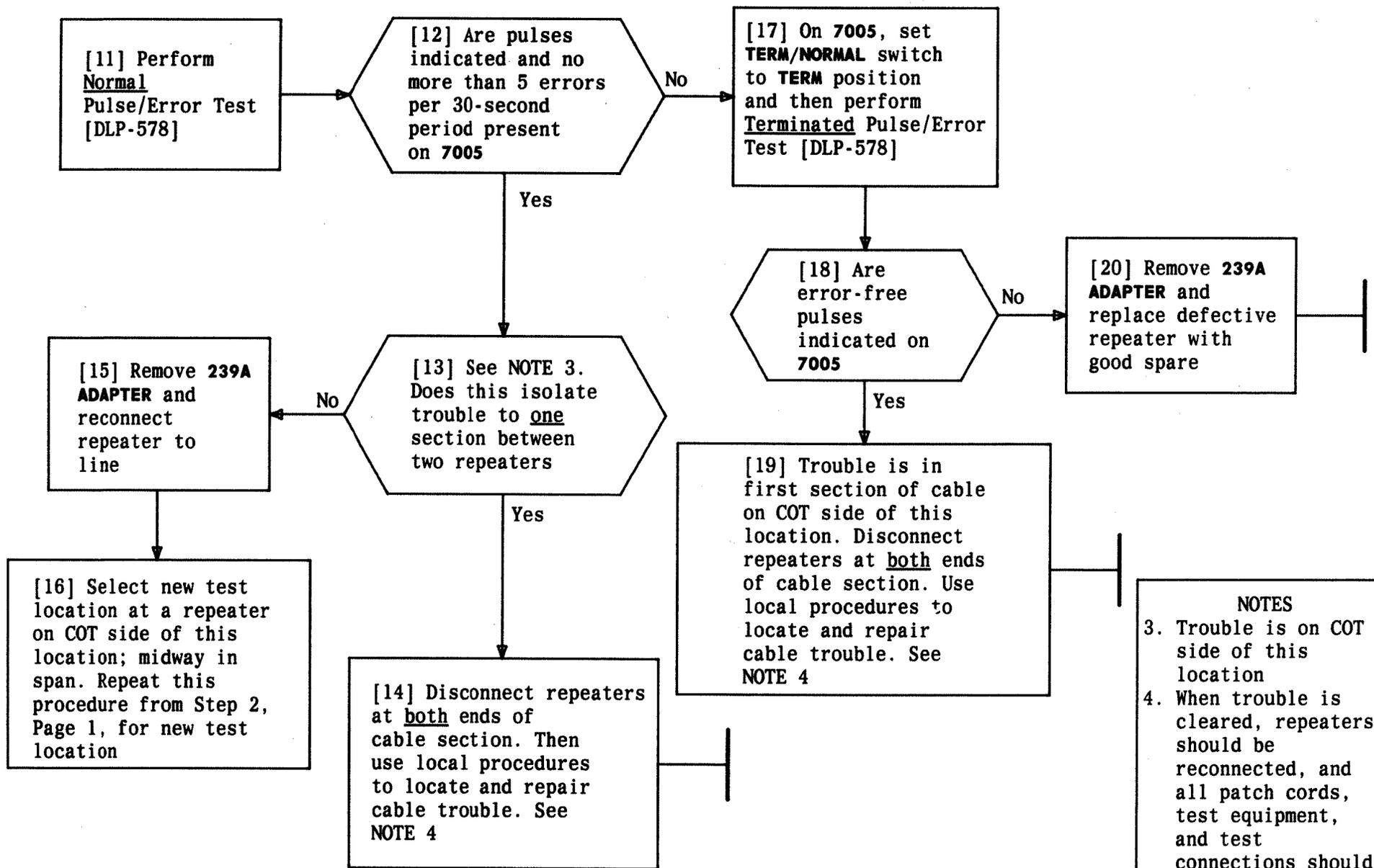


LINE IN/BRDG SWITCH TO LINE IN POSITION
 TERM/NORMAL SWITCH TO NORMAL POSITION

FIG. 2

CLEAR REPEATERED LINE SIGNAL TROUBLE ON SIDE 2

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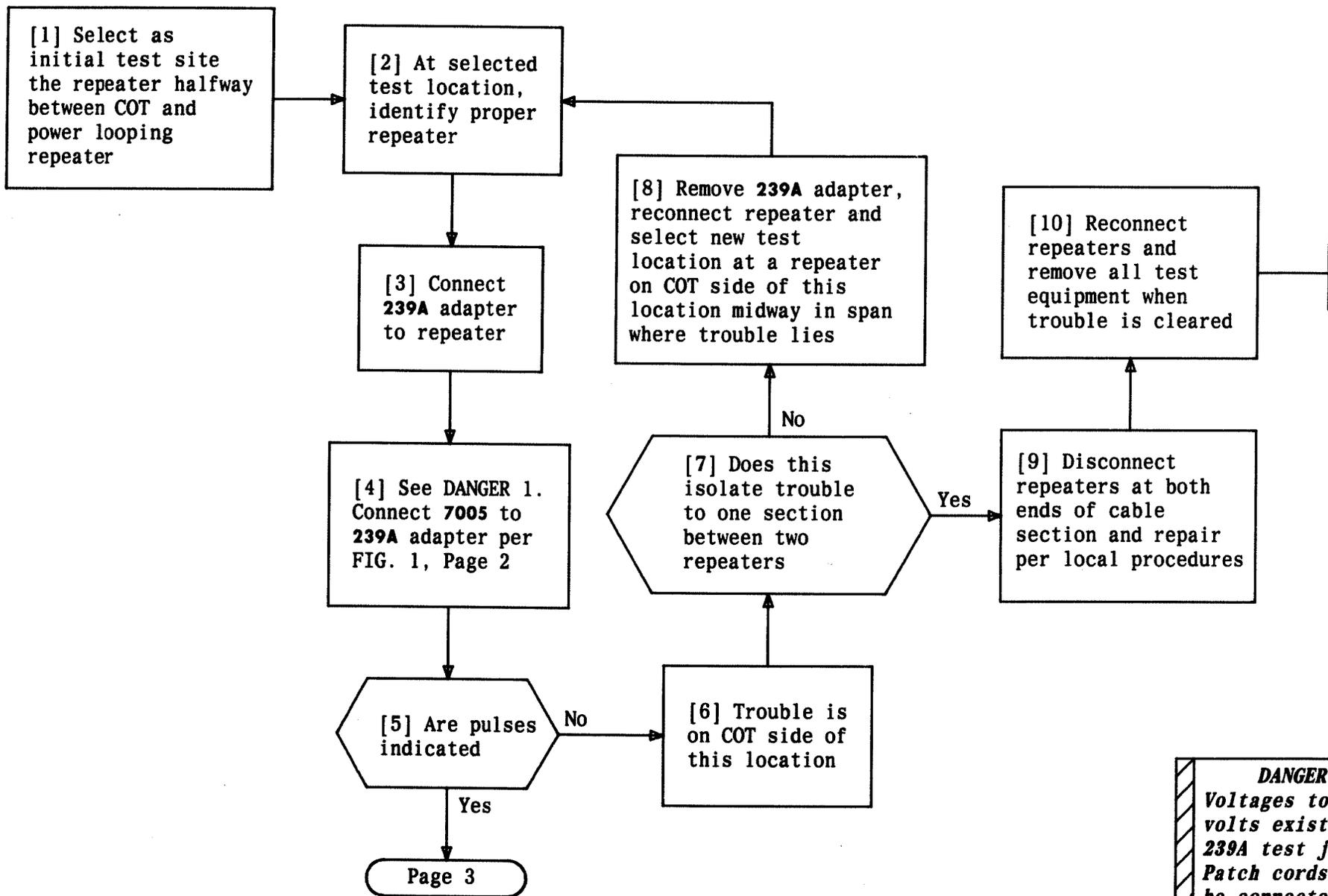
NOTES

3. Trouble is on COT side of this location

4. When trouble is cleared, repeaters should be reconnected, and all patch cords, test equipment, and test connections should be removed

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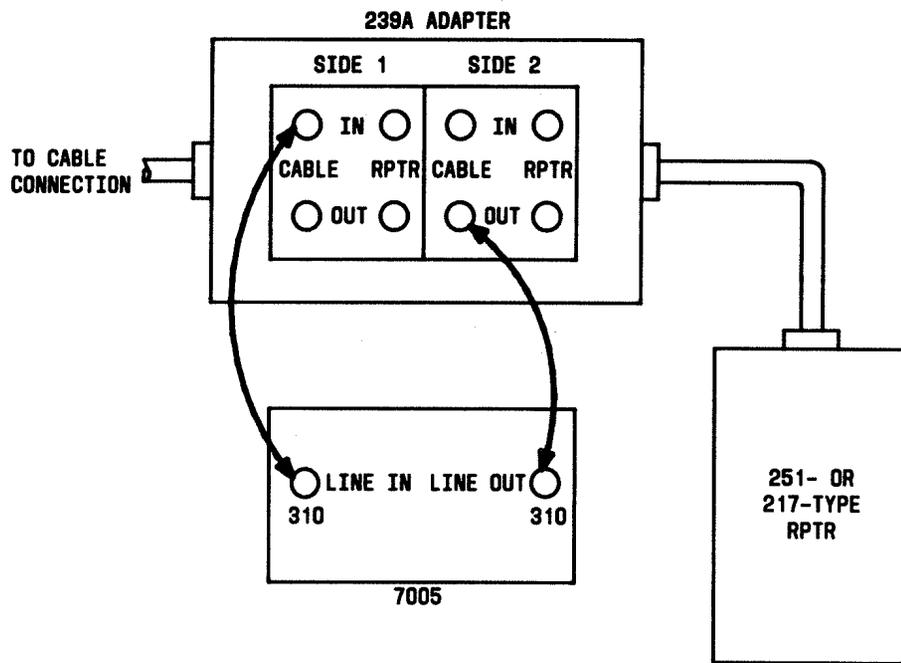
CLEAR REPEATERED LINE SIGNAL TROUBLE ON SIDE 2



DANGER 1
 Voltages to 300 volts exist at 239A test jacks. Patch cords should be connected to 239A adapter last

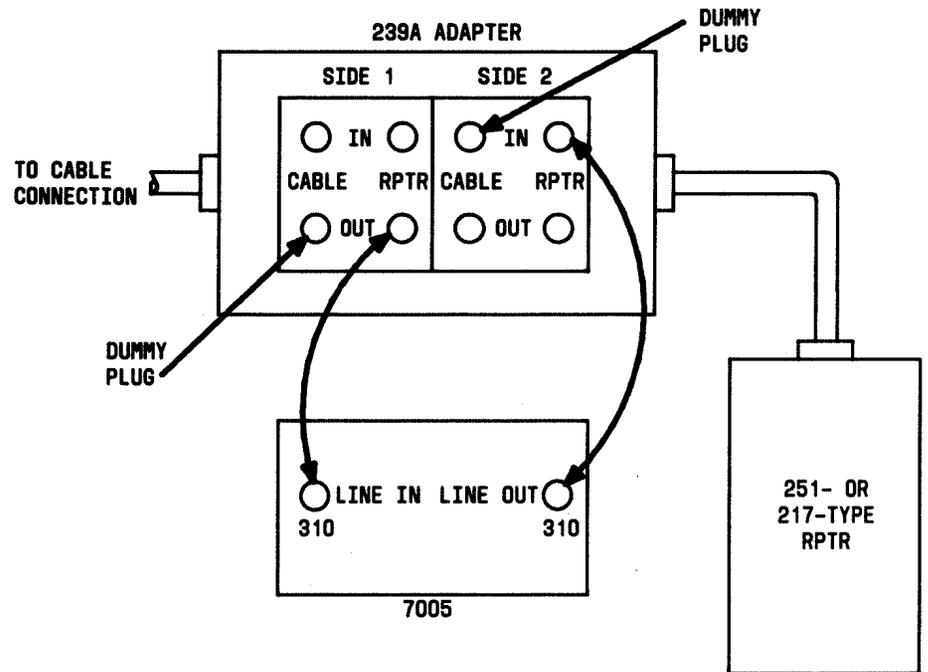
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CLEAR REPEATERED LINE POWERING TROUBLE – COT POWER LOOP



LINE IN/BRDG SWITCH TO LINE IN POSITION
 TERM/NORMAL SWITCH TO TERM POSITION

FIG. 1

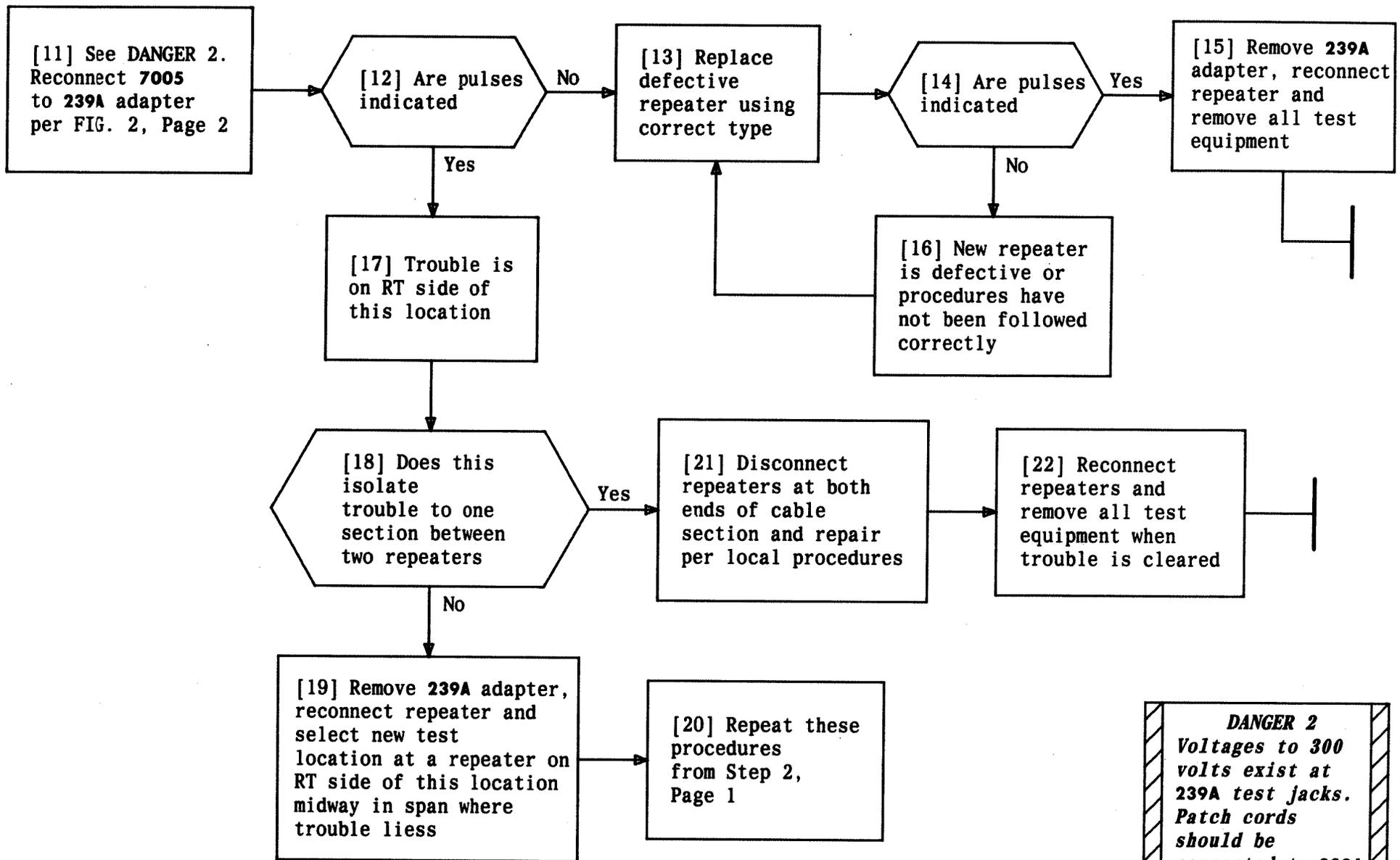


LINE IN/BRDG SWITCH TO LINE IN POSITION
 TERM/NORMAL SWITCH TO TERM POSITION

FIG. 2

CLEAR REPEATERED LINE POWERING TROUBLE – COT POWER LOOP

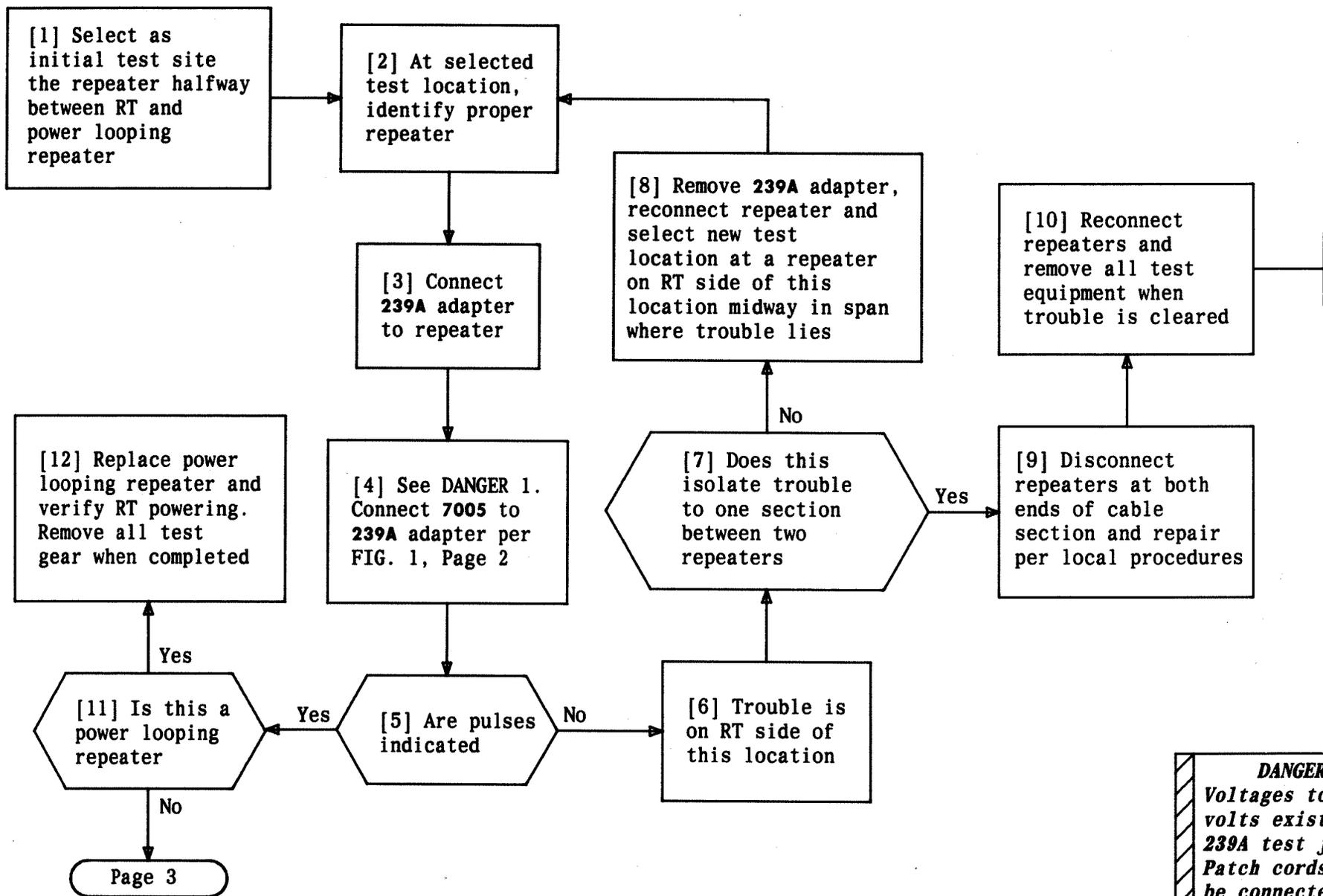
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DANGER 2
*Voltages to 300
 volts exist at
 239A test jacks.
 Patch cords
 should be
 connected to 239A
 adapter last*

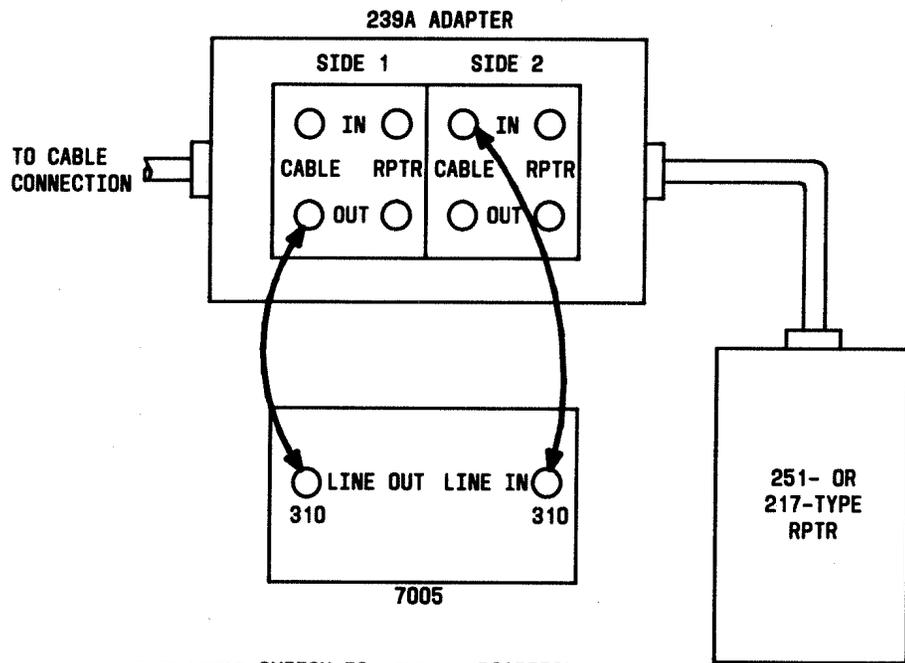
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CLEAR REPEATERED LINE POWERING TROUBLE – COT POWER LOOP



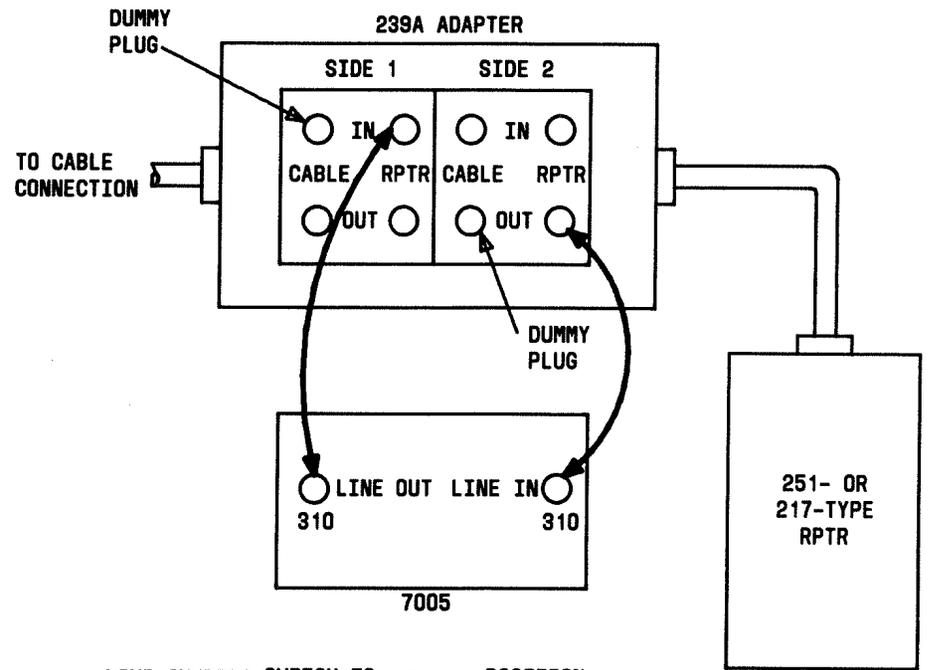
DANGER 1	
<i>Voltages to 300 volts exist at 239A test jacks. Patch cords should be connected to 239A adapter last</i>	
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CLEAR REPEATERED LINE POWERING TROUBLE – RT POWER LOOP



LINE IN/BRDG SWITCH TO LINE IN POSITION
 TERM/NORMAL SWITCH TO TERM POSITION

FIG. 1

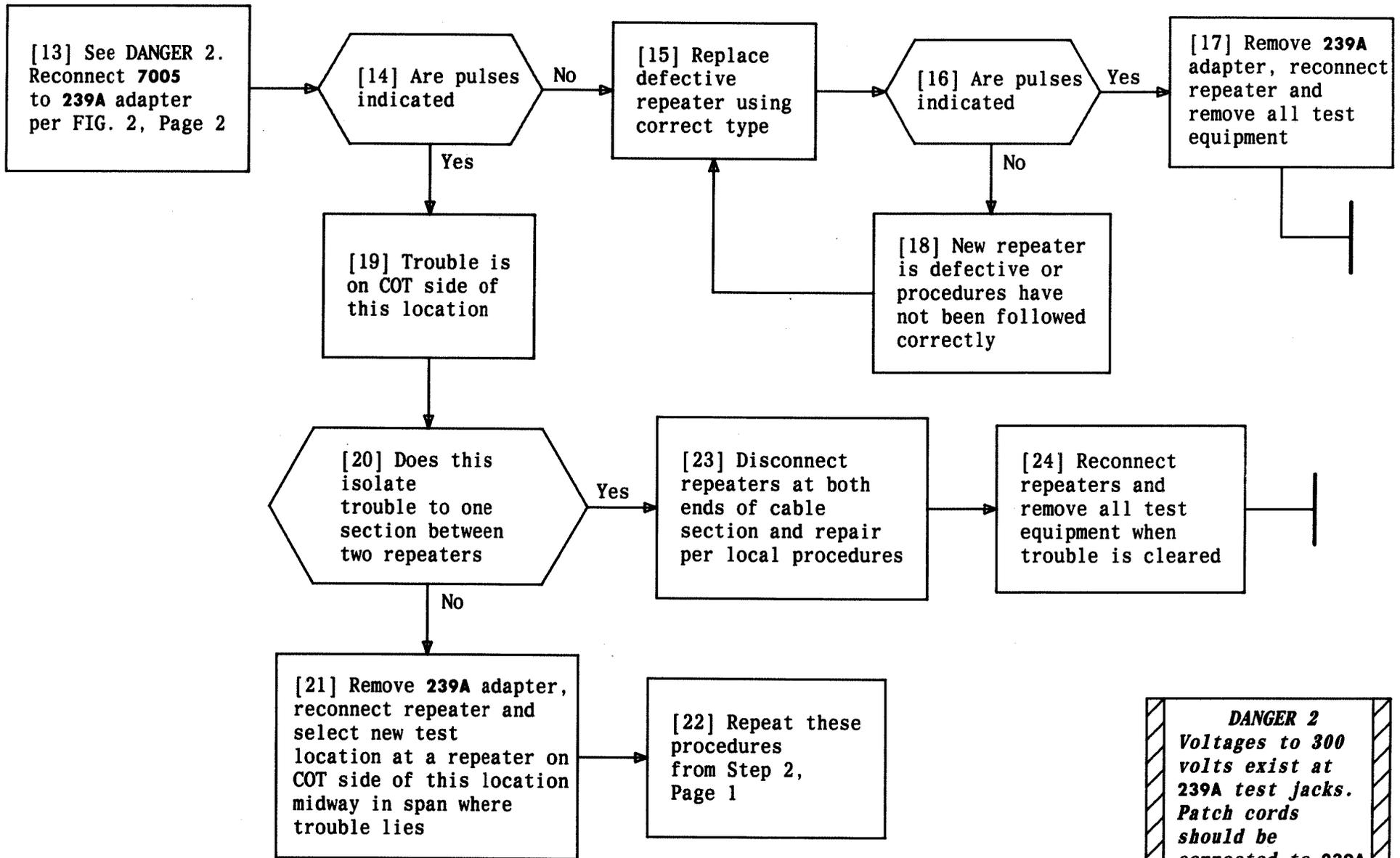


LINE IN/BRDG SWITCH TO LINE IN POSITION
 TERM/NORMAL SWITCH TO TERM POSITION

FIG. 2

CLEAR REPEATERED LINE POWERING TROUBLE – RT POWER LOOP

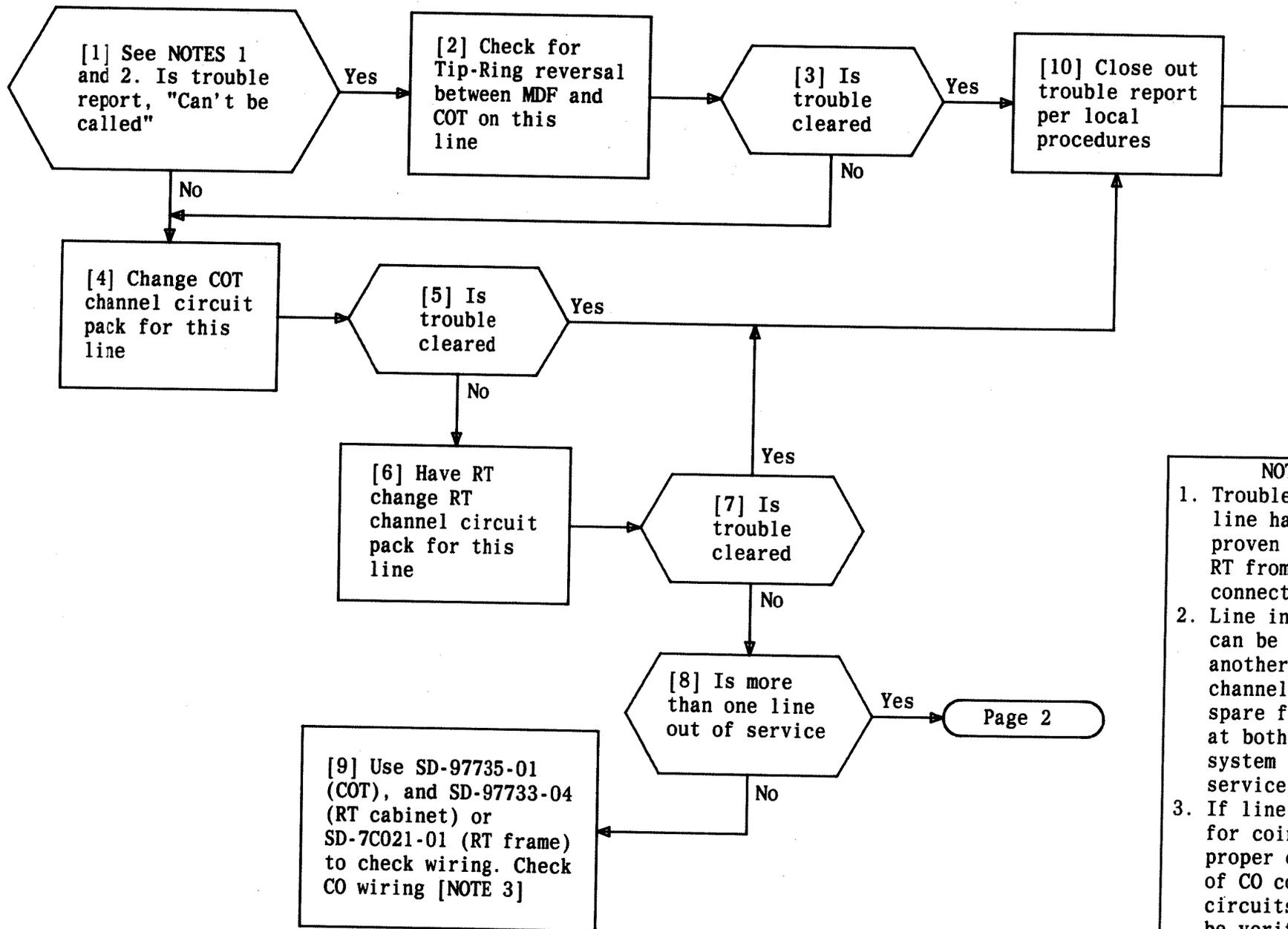
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DANGER 2
*Voltages to 300
 volts exist at
 239A test jacks.
 Patch cords
 should be
 connected to 239A
 adapter last*

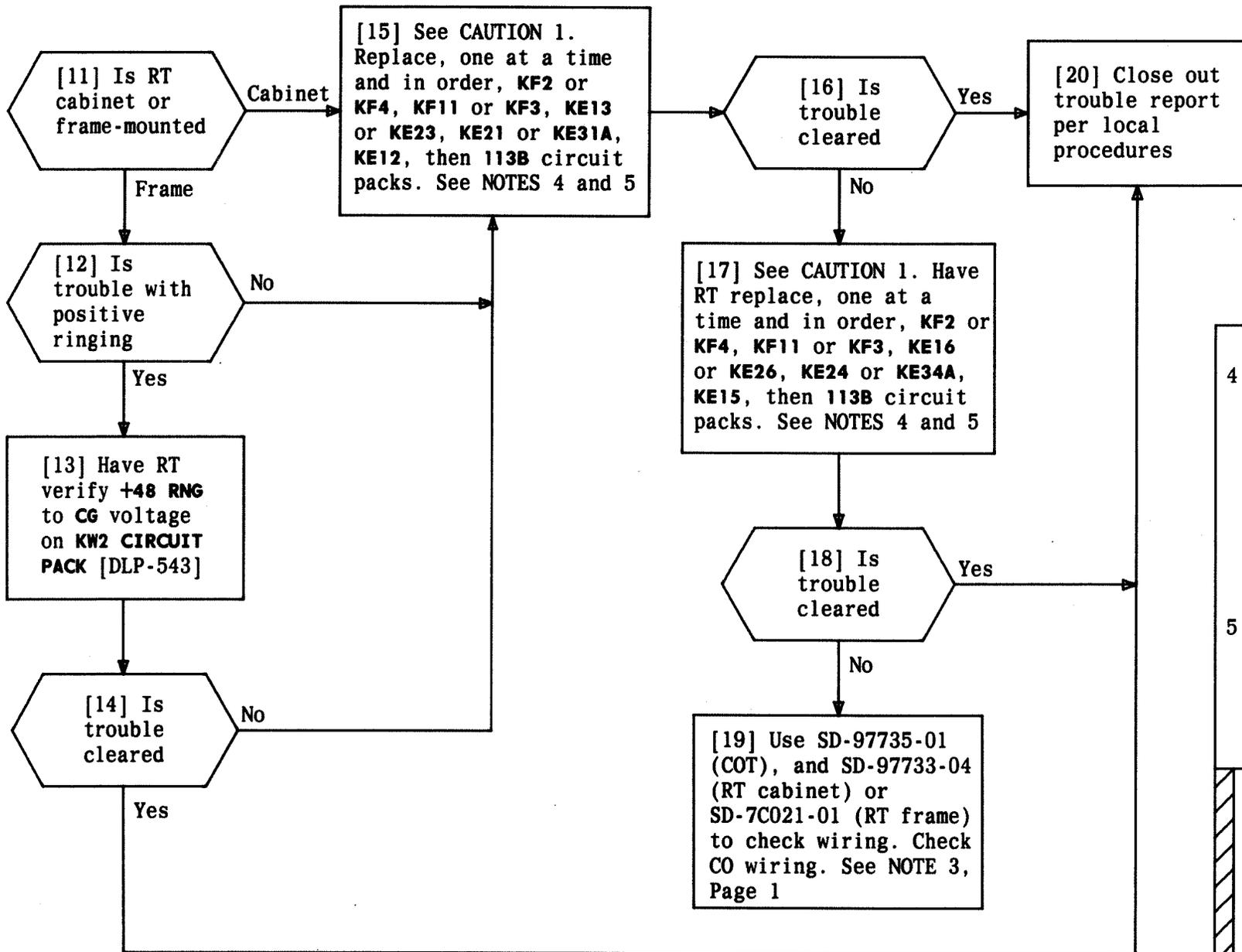
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CLEAR REPEATERED LINE POWERING TROUBLE – RT POWER LOOP



NOTES	
1. Trouble on this line has been proven towards RT from cross-connect facility	
2. Line in trouble can be put on another spare channel or other spare facilities at both ends of system to restore service	
3. If line is used for coin service, proper operation of CO coin circuits should be verified	
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CLEAR CUSTOMER REPORTED CHANNEL TROUBLE



NOTES

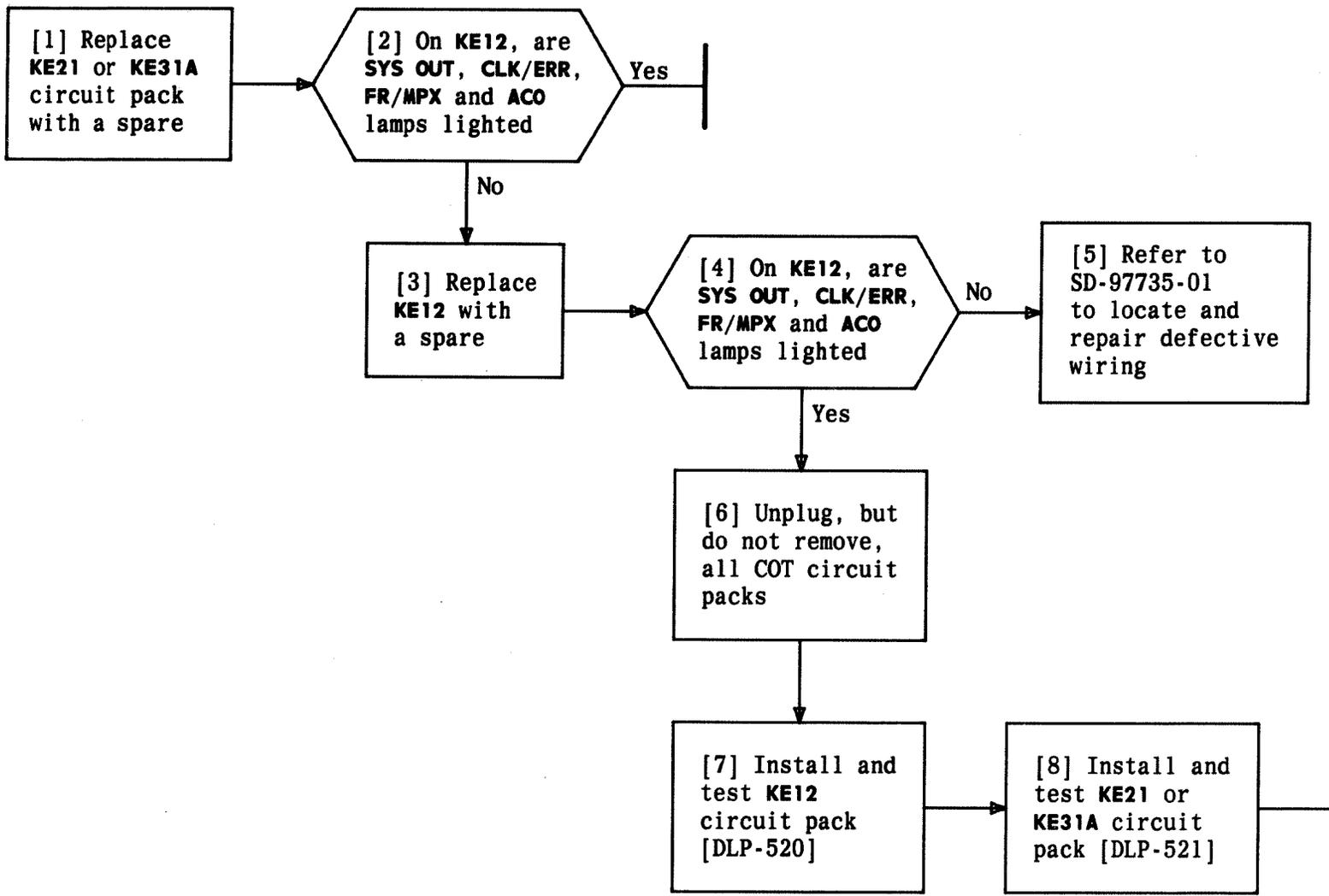
4. When trouble is cleared, the old circuit packs should be replaced, one at a time, until the defective circuit pack(s) are identified and replaced

5. Correct 938() equalizer should be installed on replacement KE31A or KE34A CIRCUIT PACKS

CAUTION 1
Unplugging these circuit packs will cause a service interruption on working channels

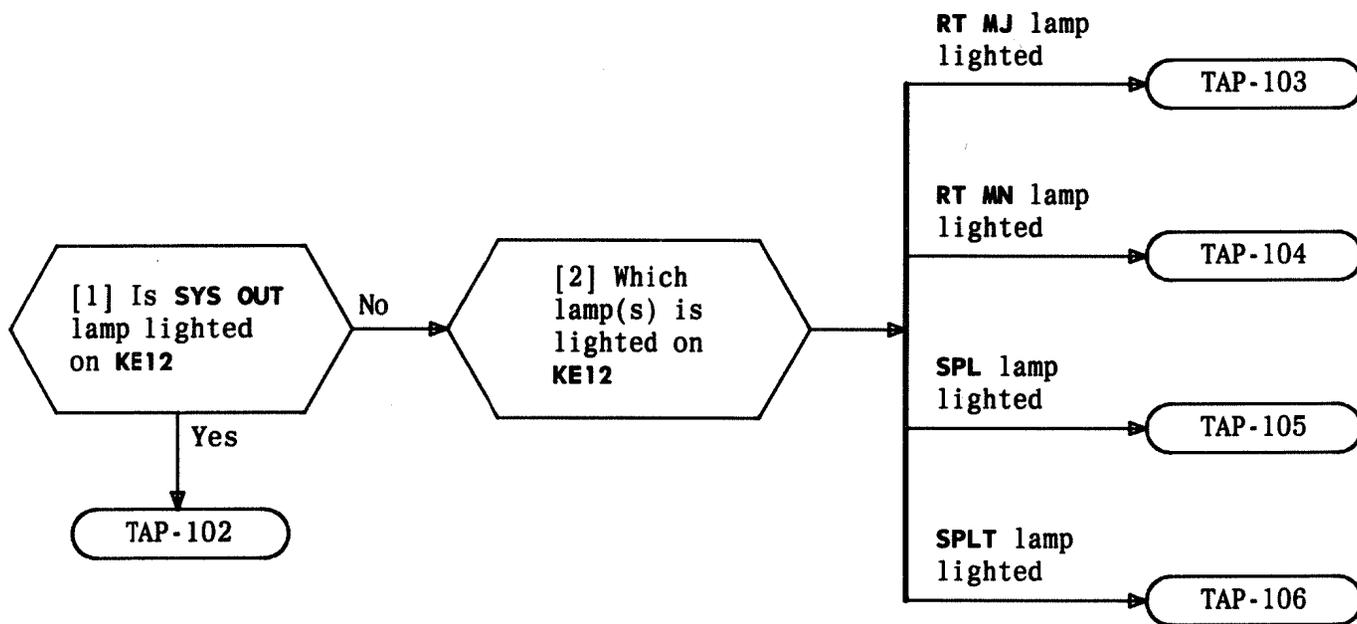
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CLEAR CUSTOMER REPORTED CHANNEL TROUBLE



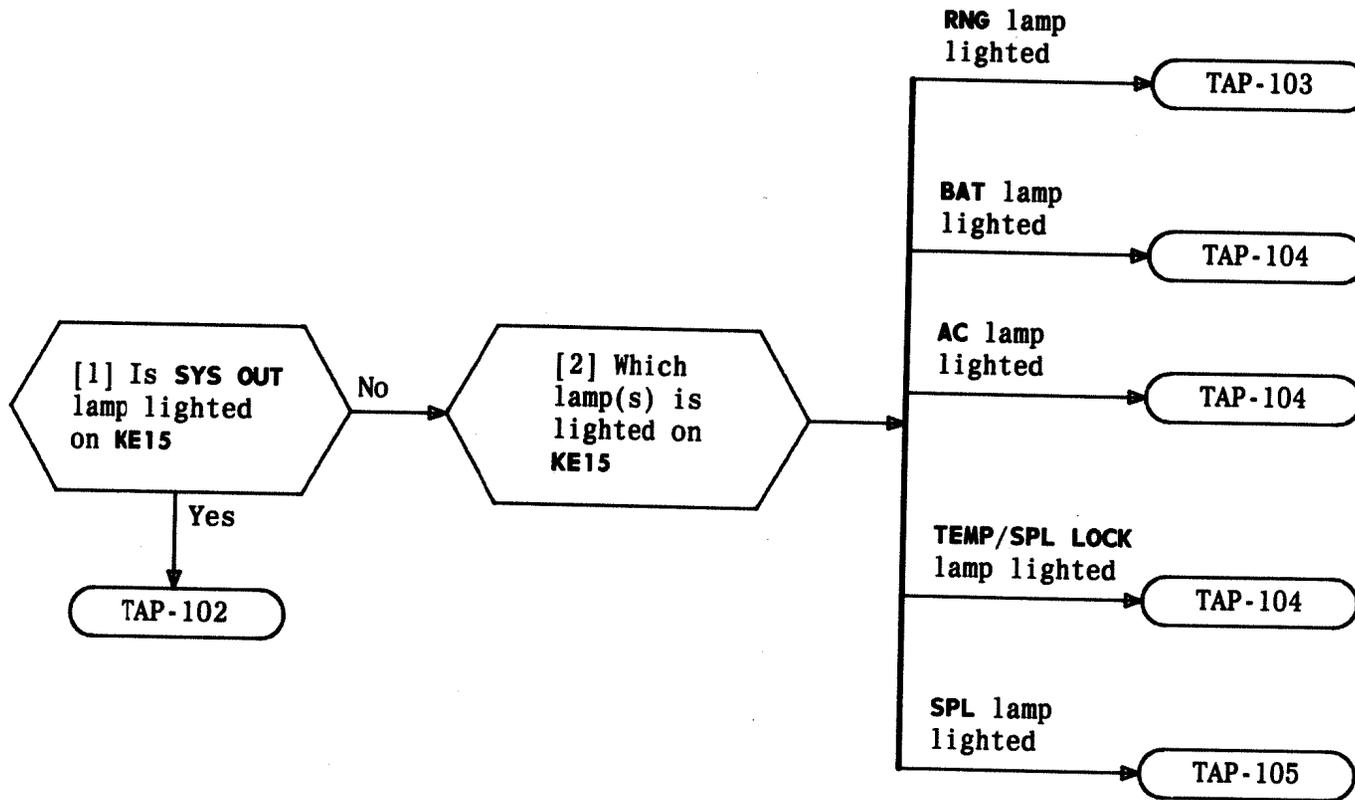
**CLEAR KE12 LAMP TROUBLE WHEN INSTALLING
CENTRAL OFFICE MULTIPLEX UNITS**

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ISOLATE PROCEDURES FOR ALARM LAMPS ON KE12

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ISOLATE PROCEDURES FOR ALARM LAMPS ON KE15

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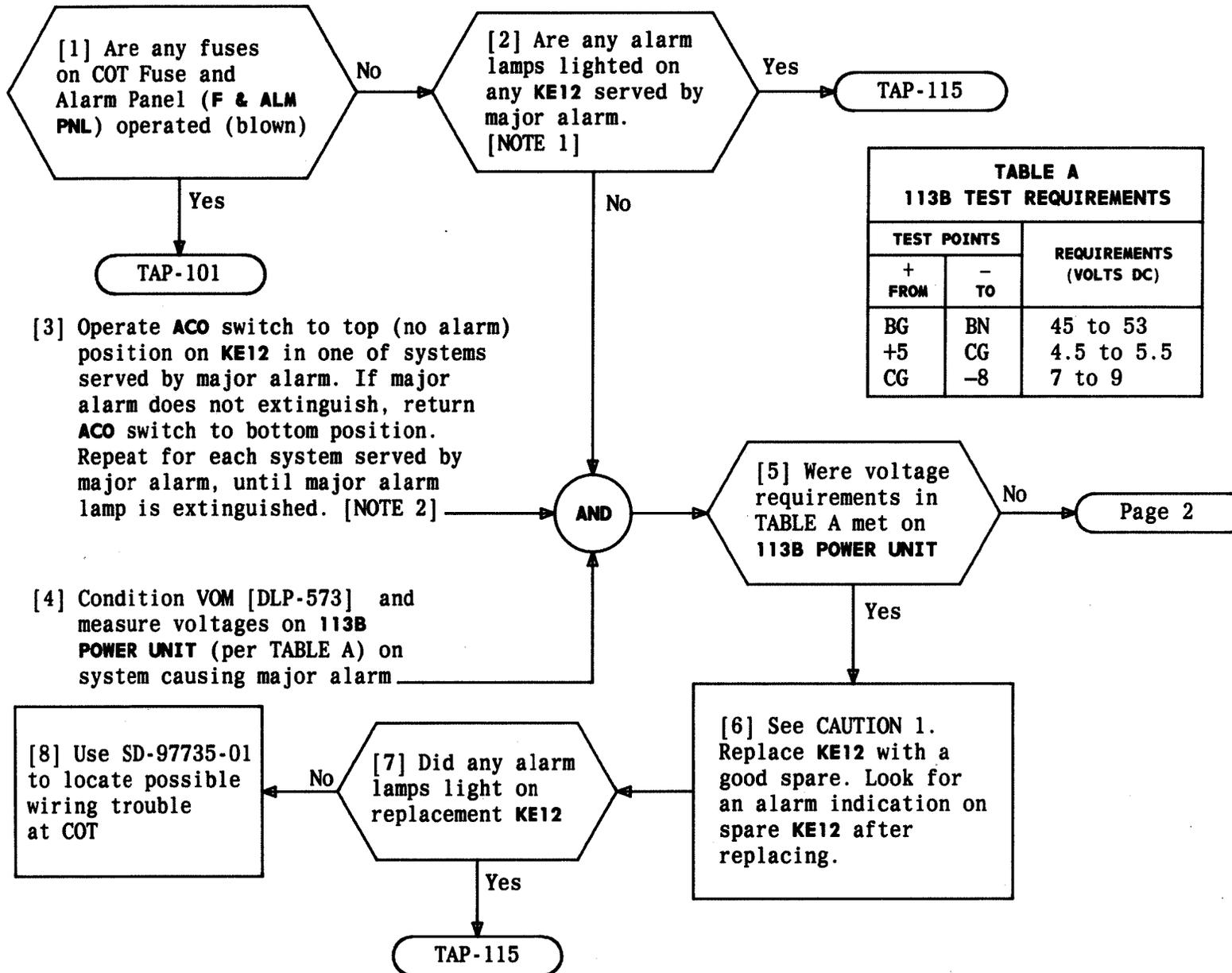


TABLE A
113B TEST REQUIREMENTS

TEST POINTS		REQUIREMENTS (VOLTS DC)
+ FROM	- TO	
BG	BN	45 to 53
+5	CG	4.5 to 5.5
CG	-8	7 to 9

NOTES

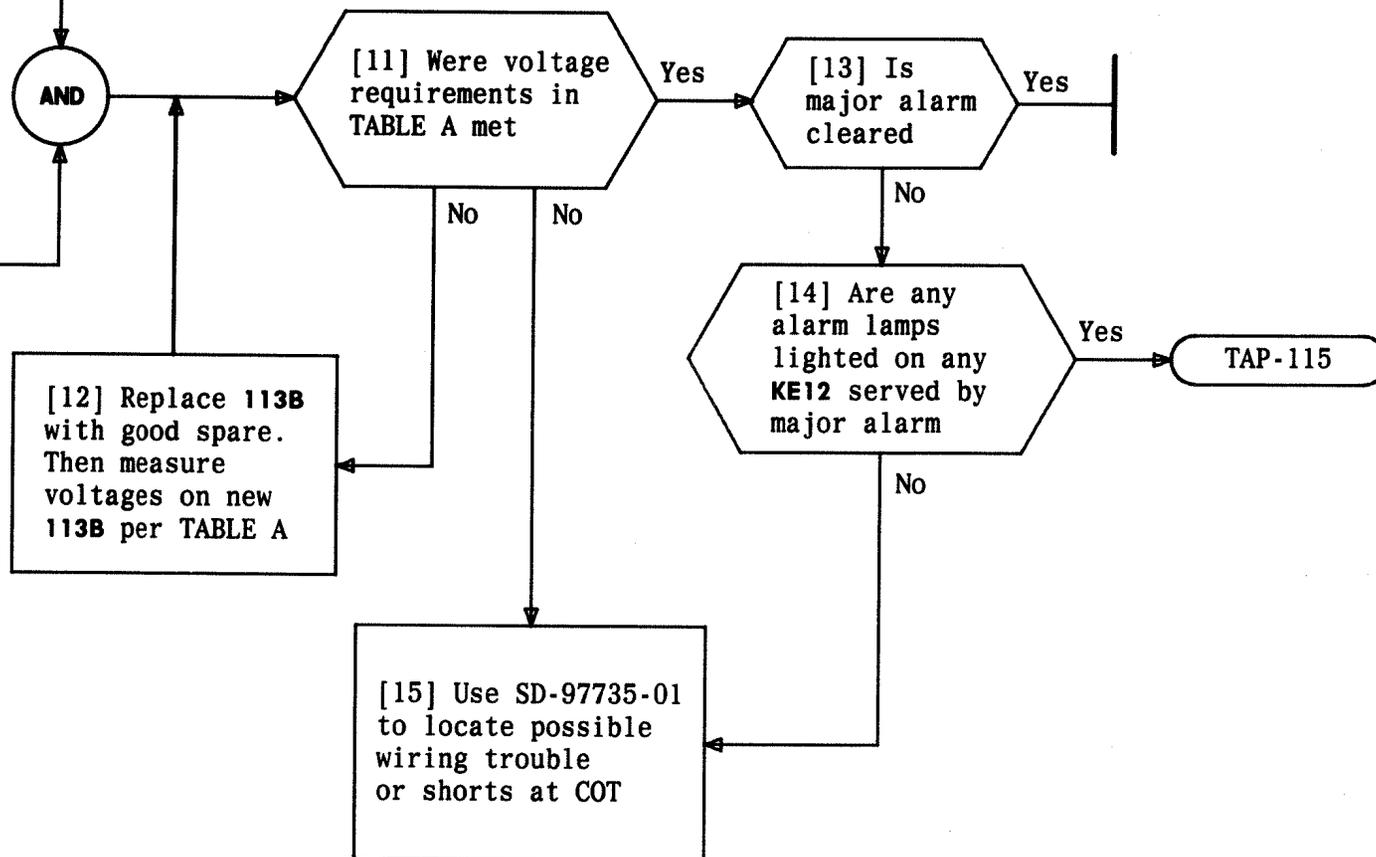
- Up to four systems may be served by one Fuse and Alarm Panel with major alarm condition
- ACO switch that extinguishes major alarm is in system causing major alarm. This ACO switch should be left in top (no alarm) position

CAUTION 1
*Unplugging KE12
CIRCUIT PACK
from a working
system will
interrupt service*

CLEAR MAJOR ALARM AT COT

[9] On 113B not meeting requirements in TABLE A, set power switch to OFF position, then back to ON position

[10] Measure voltages on 113B per TABLE A, Page 1



CLEAR MAJOR ALARM AT COT

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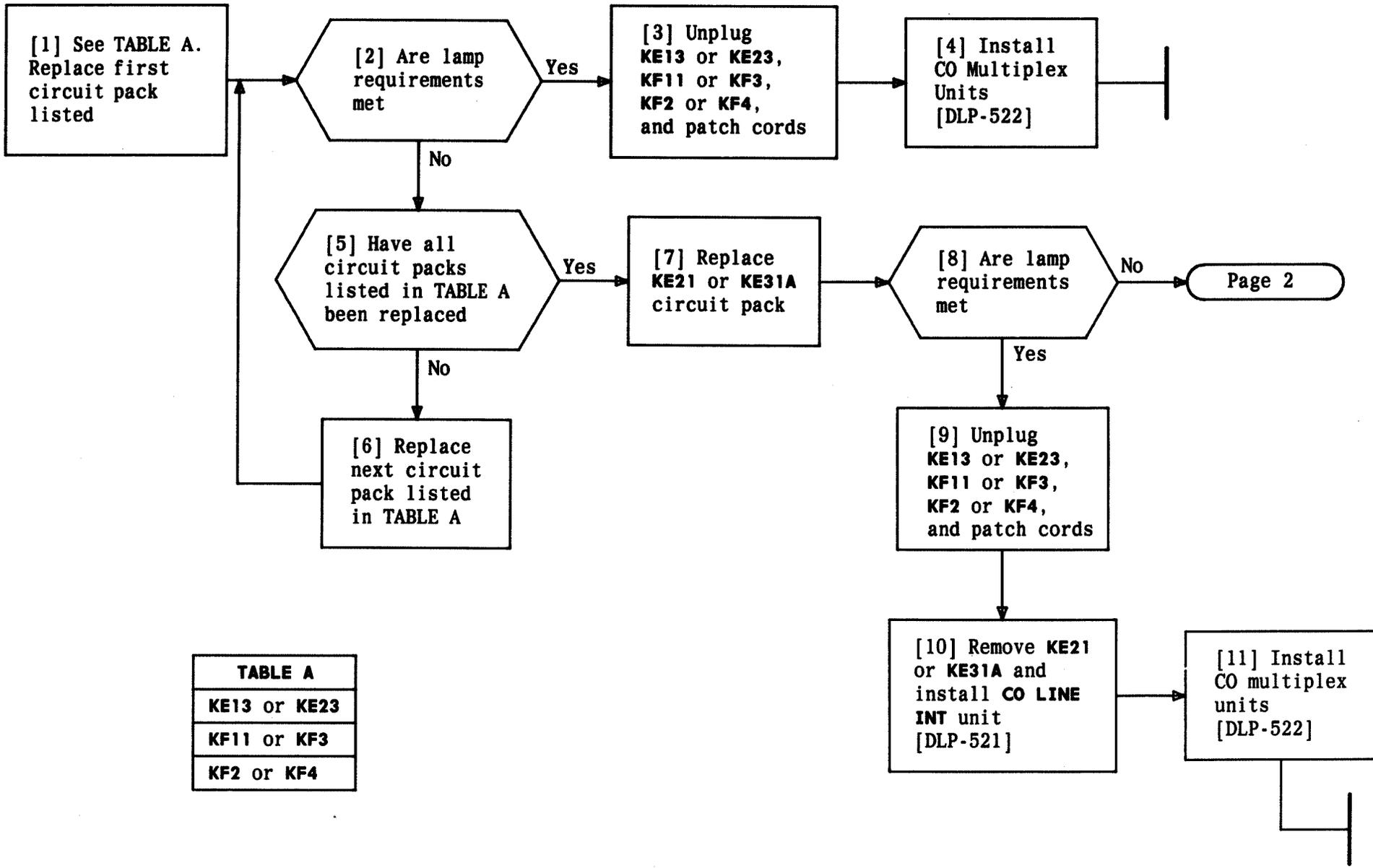
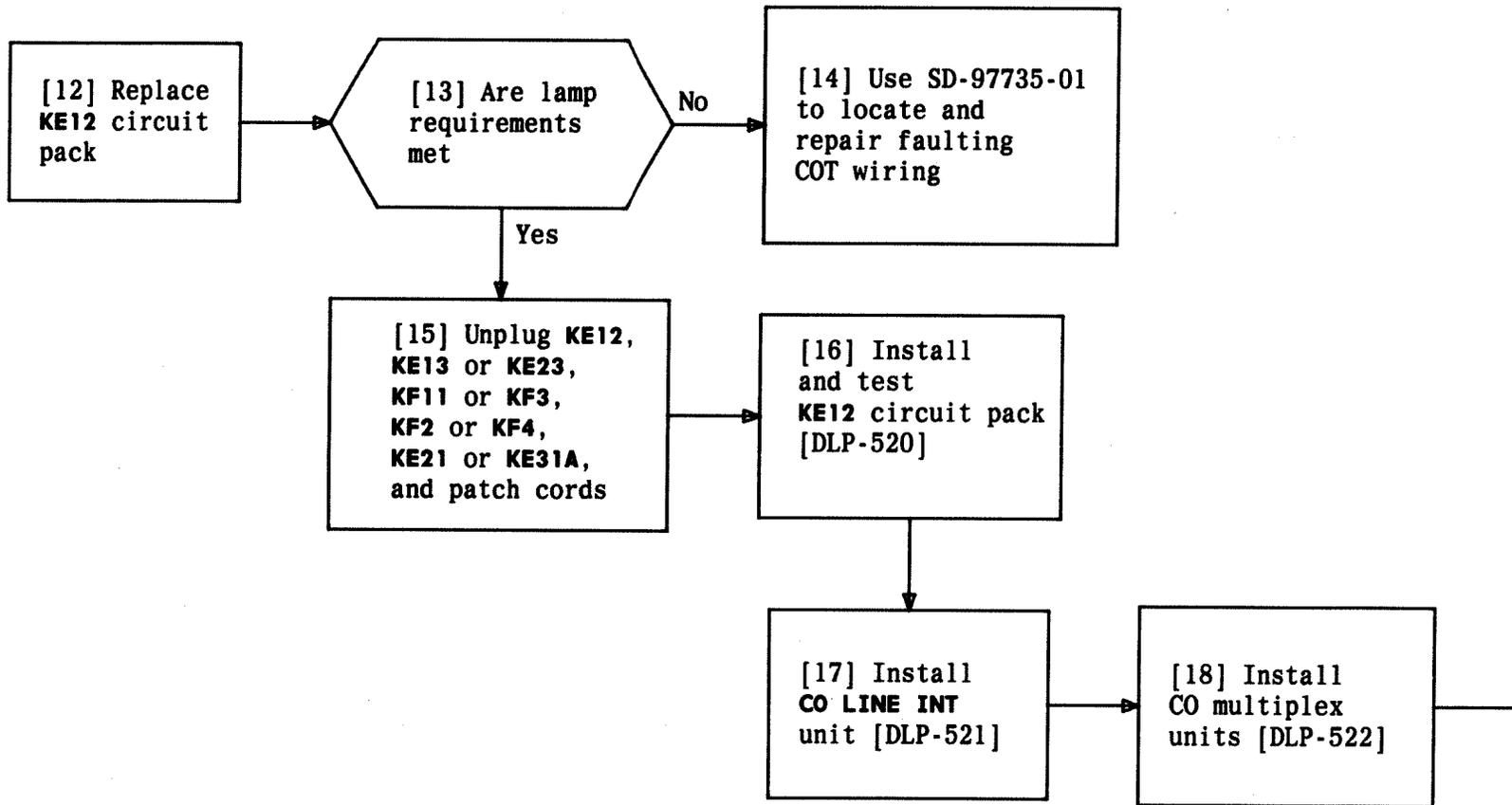


TABLE A
KE13 or KE23
KF11 or KF3
KF2 or KF4

**CLEAR KE12 LAMP TROUBLE WHEN CHECKING
CENTRAL OFFICE ALARMS FOR LINE SWITCHING**

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**CLEAR KE12 LAMP TROUBLE WHEN CHECKING
CENTRAL OFFICE ALARMS FOR LINE SWITCHING**

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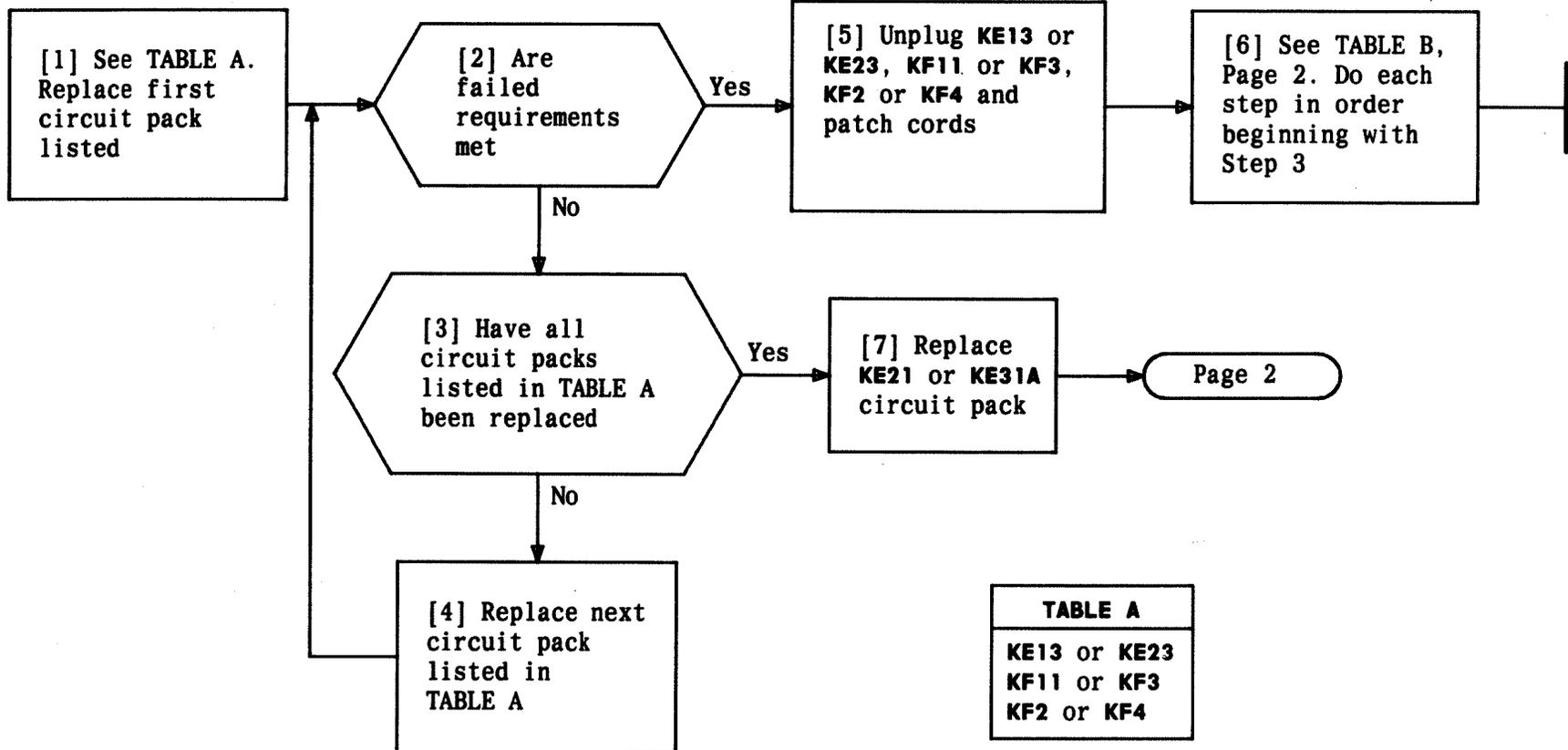


TABLE A
KE13 or KE23
KF11 or KF3
KF2 or KF4

CLEAR 8-CHANNEL LOOP AROUND TROUBLE

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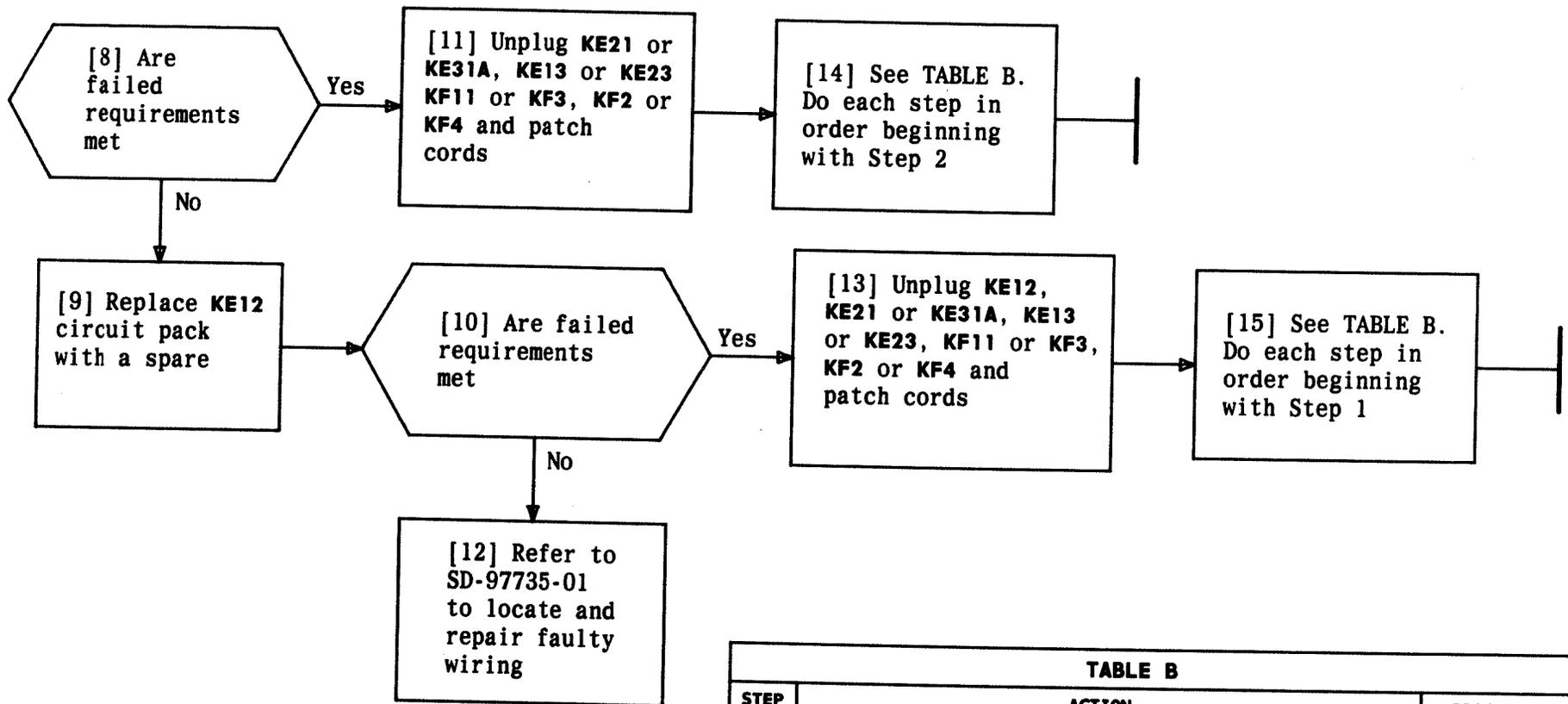


TABLE B		
STEP	ACTION	PROCEDURE
1	Install and Test CO MAINT UNIT (KE12)	DLP-520
2	Install CO LINE INT (KE21 or KE31A)	DLP-521
3	Install Central office Multiplex Units	DLP-522
4	Check CO Alarms for Digital Line Switching	DLP-523

CLEAR 8-CHANNEL LOOP AROUND TROUBLE

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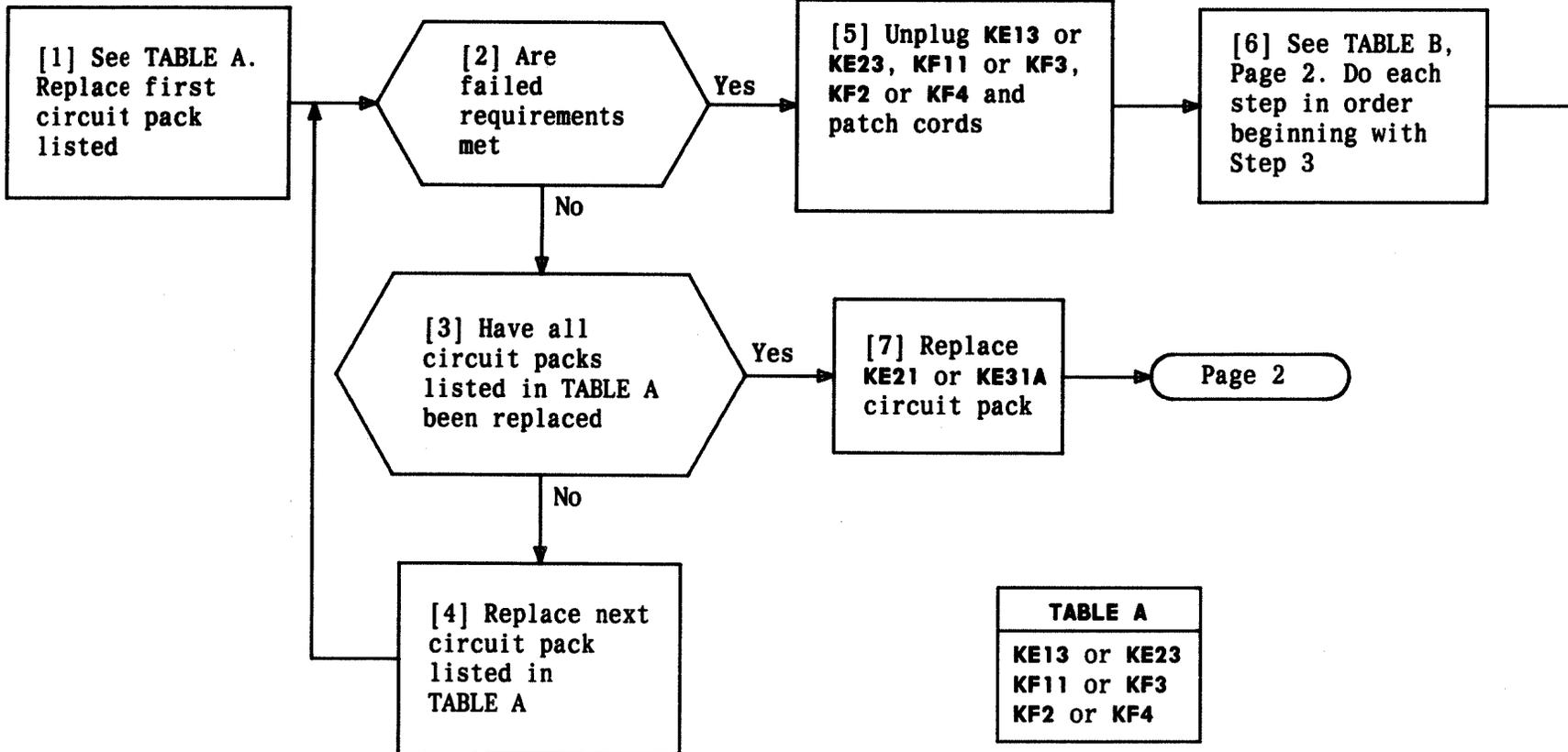


TABLE A
KE13 or KE23
KF11 or KF3
KF2 or KF4

CLEAR COT FINAL SYS OUT STATE TEST TROUBLE

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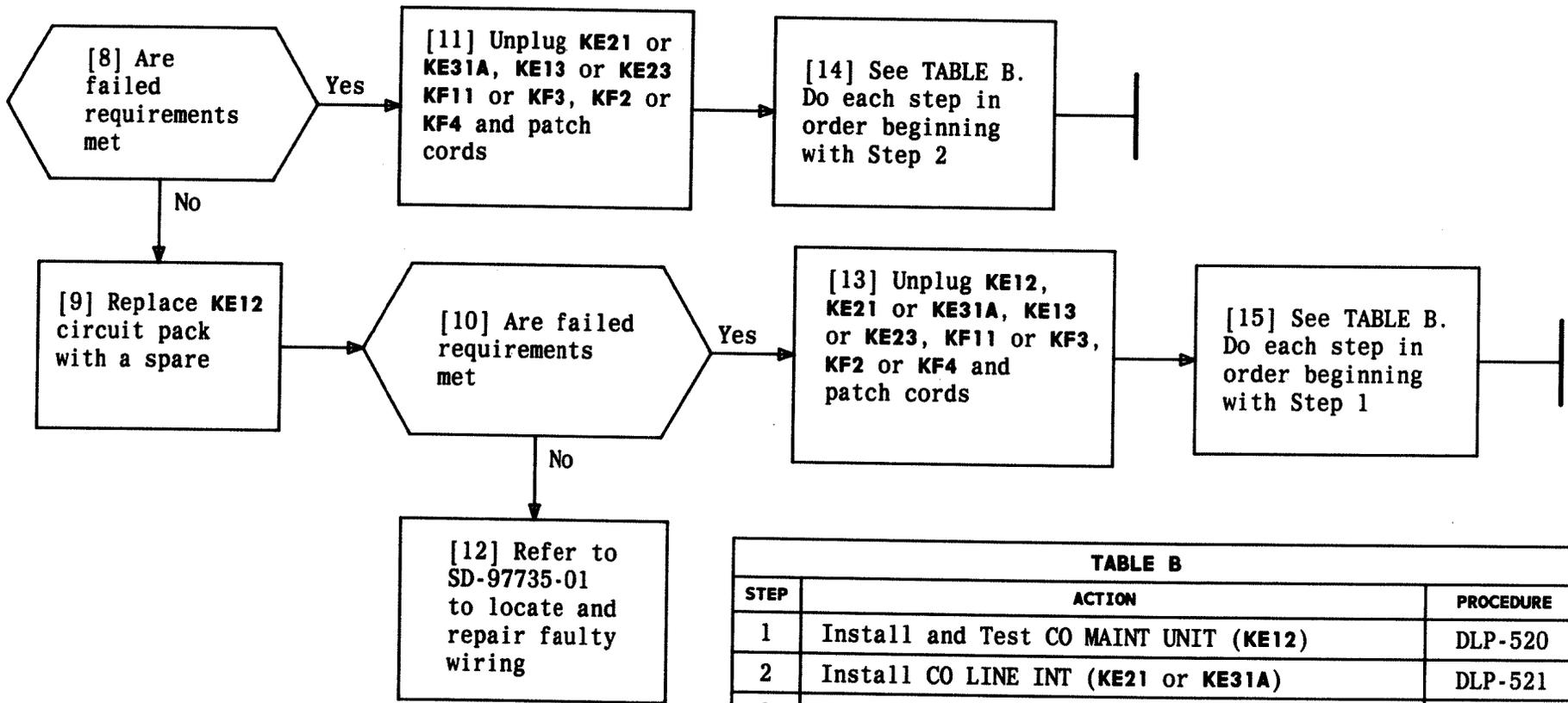
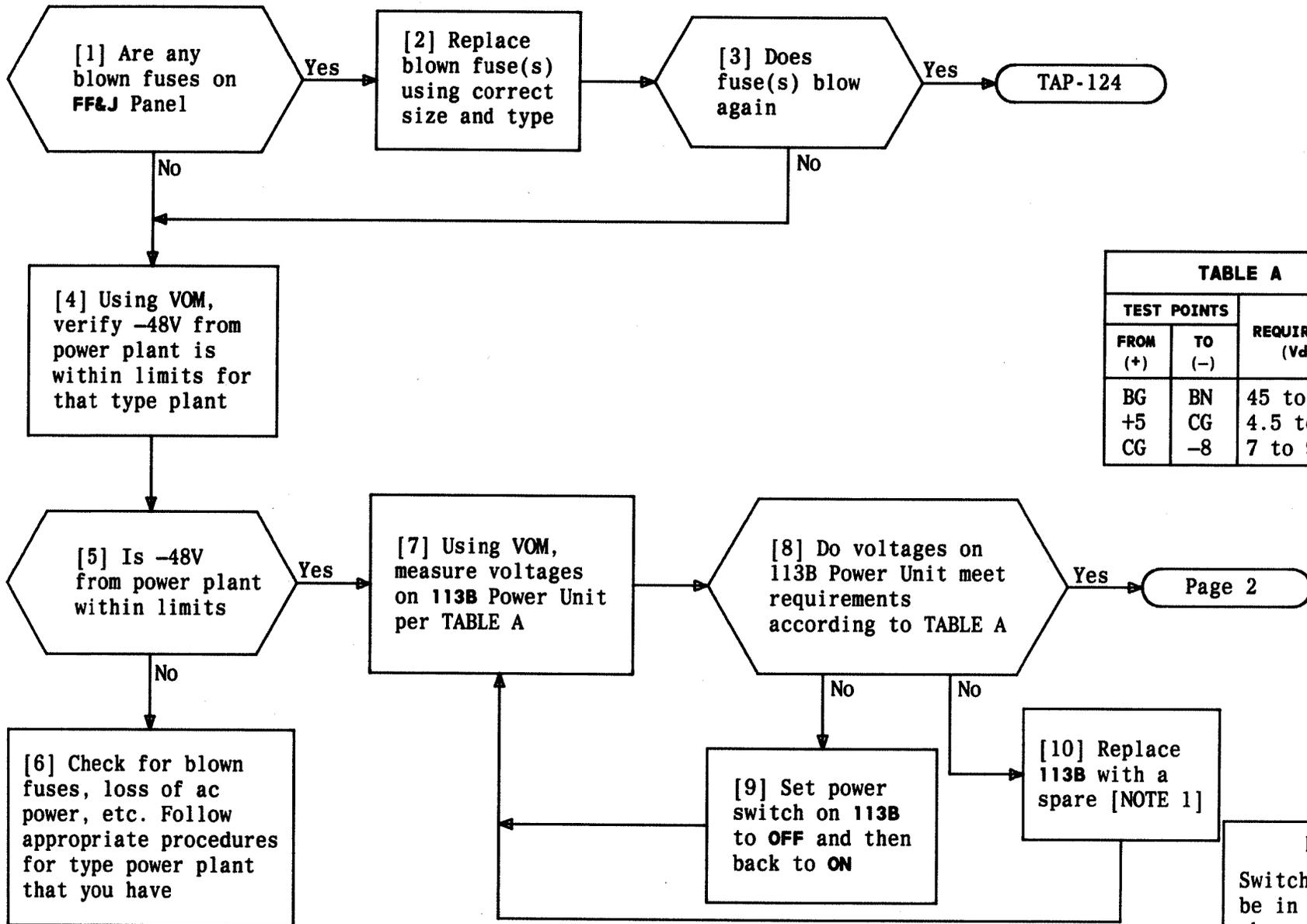


TABLE B		
STEP	ACTION	PROCEDURE
1	Install and Test CO MAINT UNIT (KE12)	DLP-520
2	Install CO LINE INT (KE21 or KE31A)	DLP-521
3	Install Central office Multiplex Units	DLP-522
4	Check CO Alarms for Digital Line Switching	DLP-523
5	Connect Test Line to Tip and Ring of Chan. 18	-
6	Connect 1014B Handset Across Tip and Ring of Chan. 18 with MON-TALK switch in MON	-
7	Perform 8-Channel Loop-Around Test	DLP-524

CLEAR COT FINAL SYS OUT STATE TEST TROUBLE

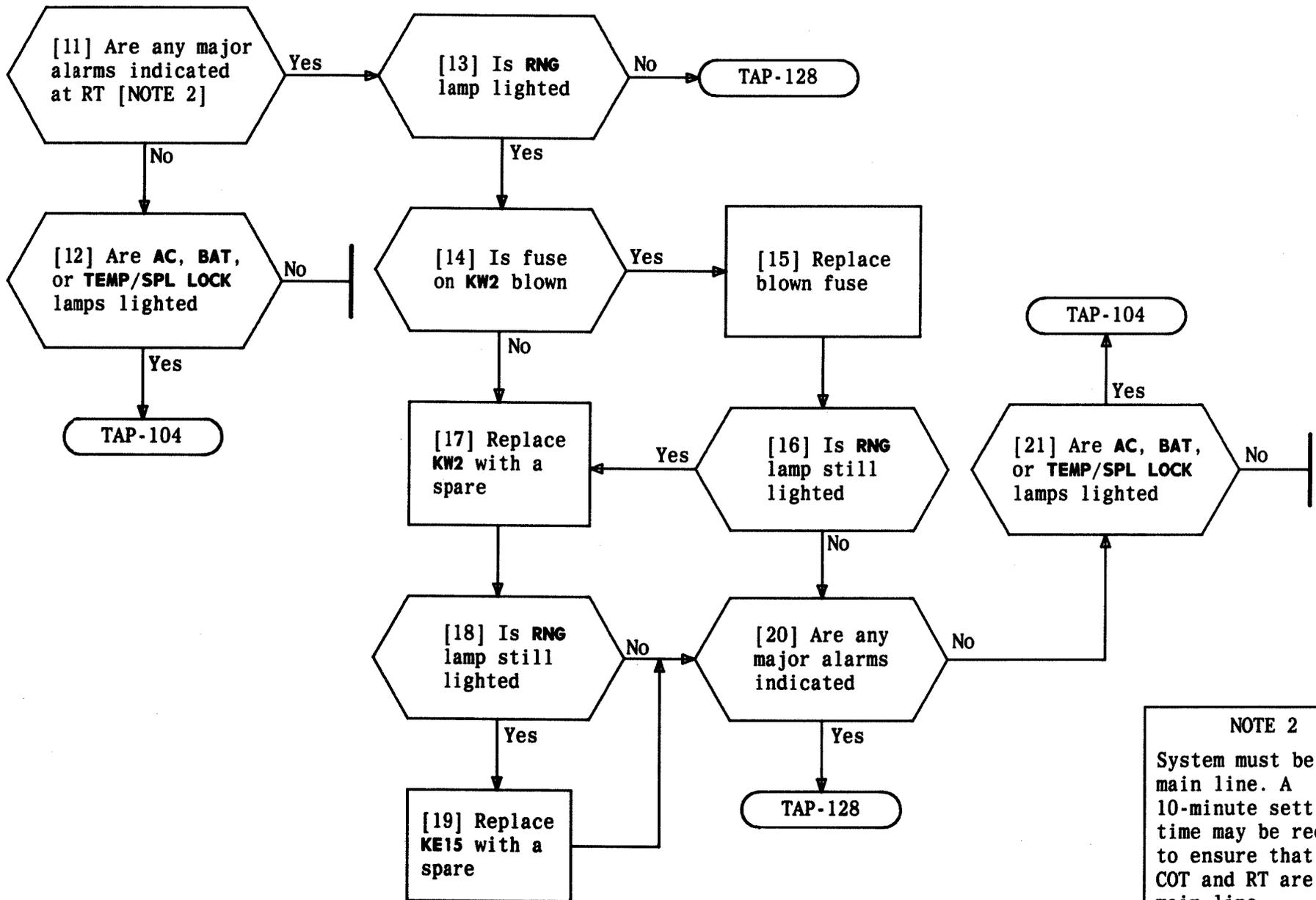
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TEST POINTS		REQUIREMENT (Vdc)
FROM (+)	TO (-)	
BG	BN	45 to 53
+5	CG	4.5 to 5.5
CG	-8	7 to 9

NOTE 1		
Switch on 113B must be in OFF position when removing or replacing unit		
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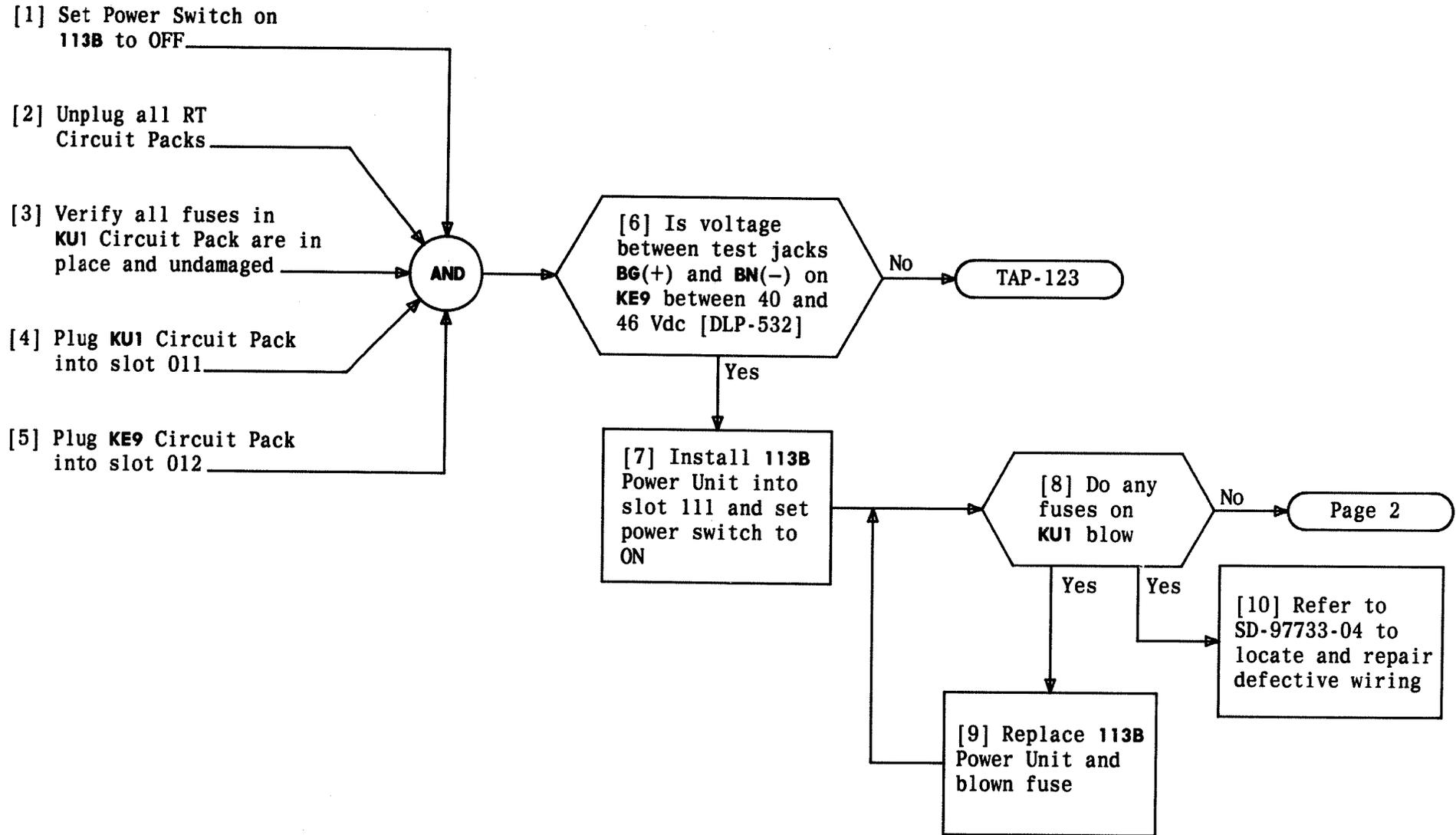
CLEAR REMOTE TERMINAL MAJOR ALARM (FRAME-MOUNTED)



NOTE 2
 System must be on main line. A 10-minute settling time may be required to ensure that both COT and RT are on main line

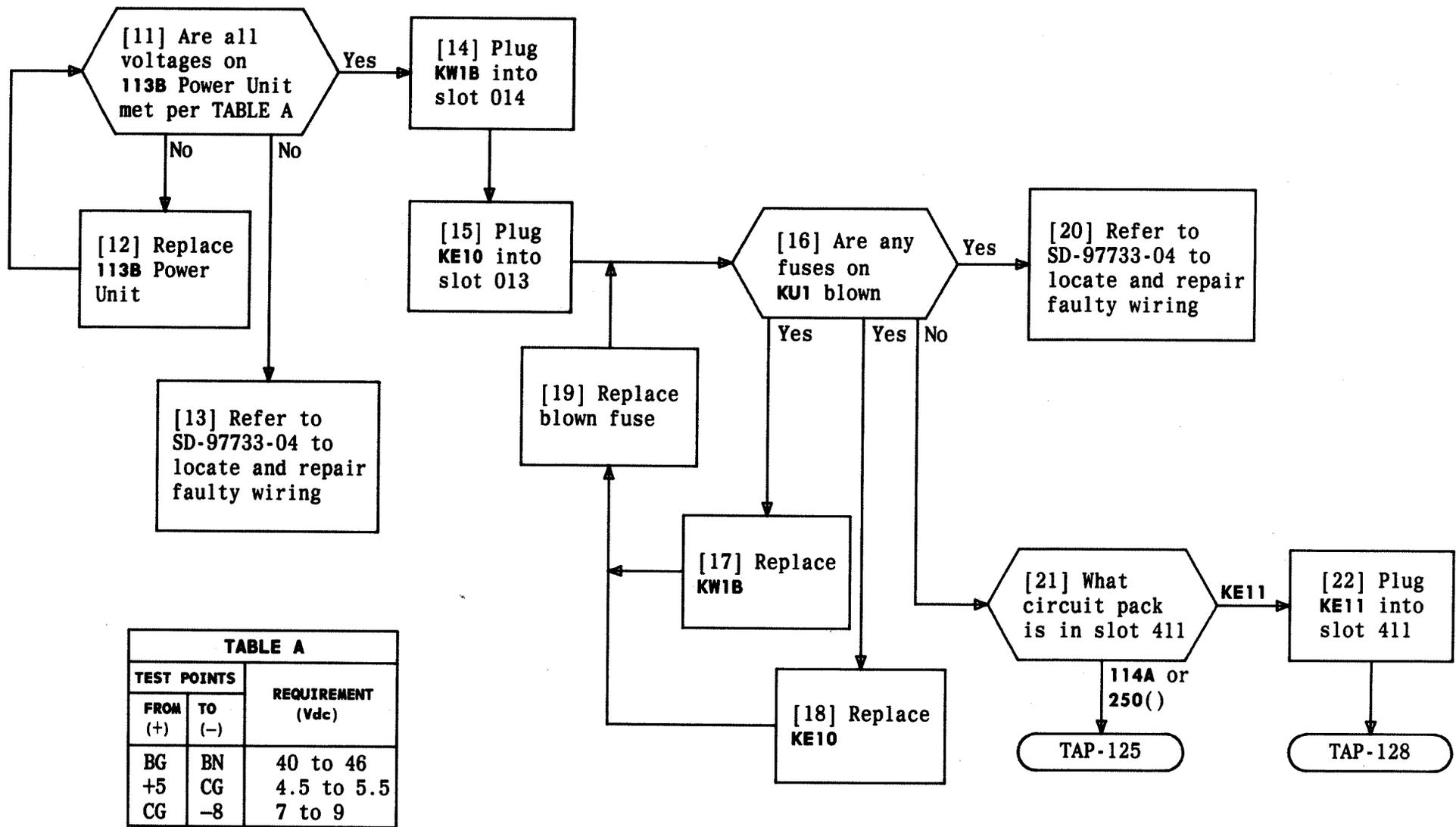
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CLEAR REMOTE TERMINAL MAJOR ALARM (FRAME-MOUNTED)



REPAIR RT CABINET BLOWN FUSE CONDITION

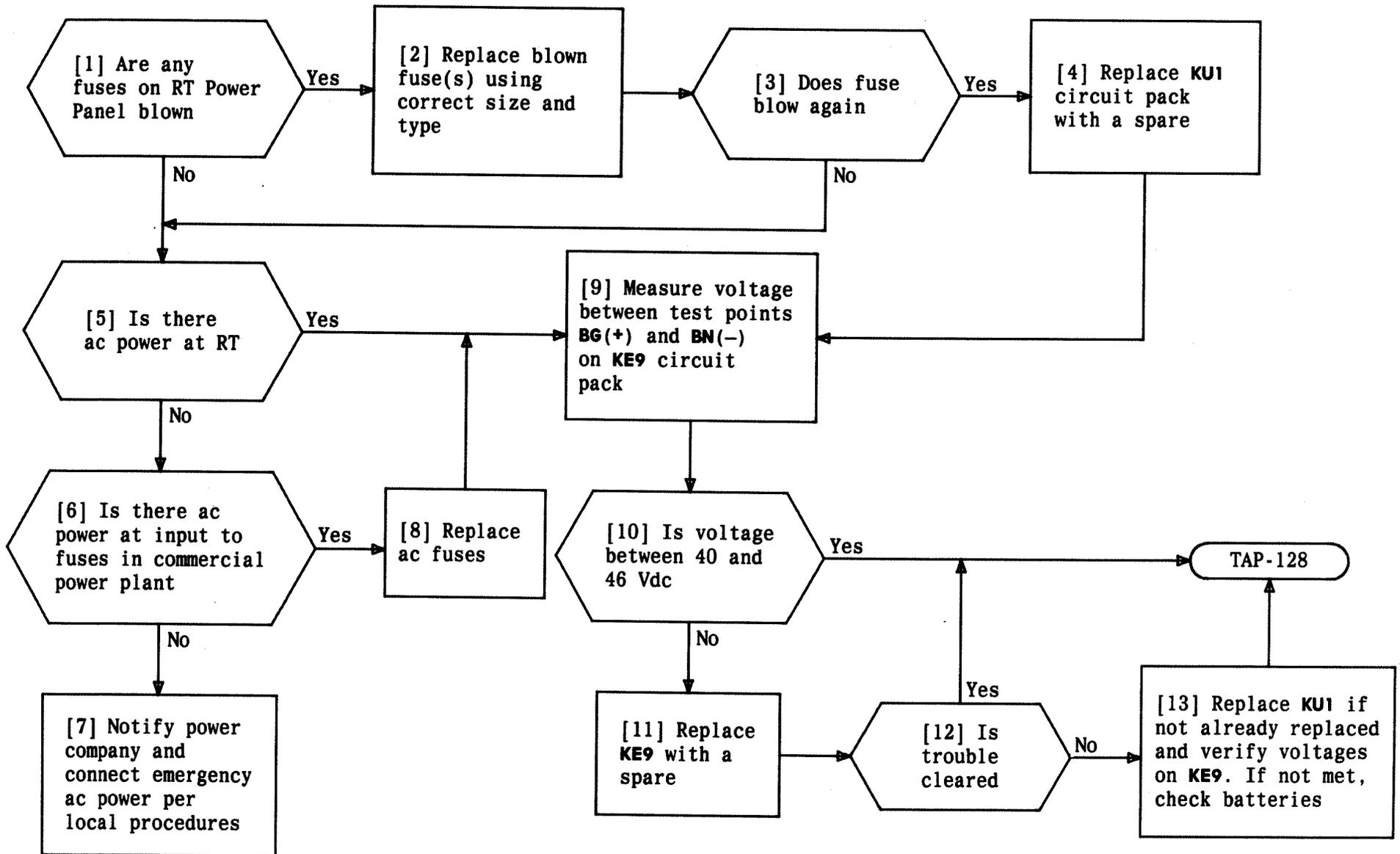
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TEST POINTS		REQUIREMENT (Vdc)
FROM (+)	TO (-)	
BG	BN	40 to 46
+5	CG	4.5 to 5.5
CG	-8	7 to 9

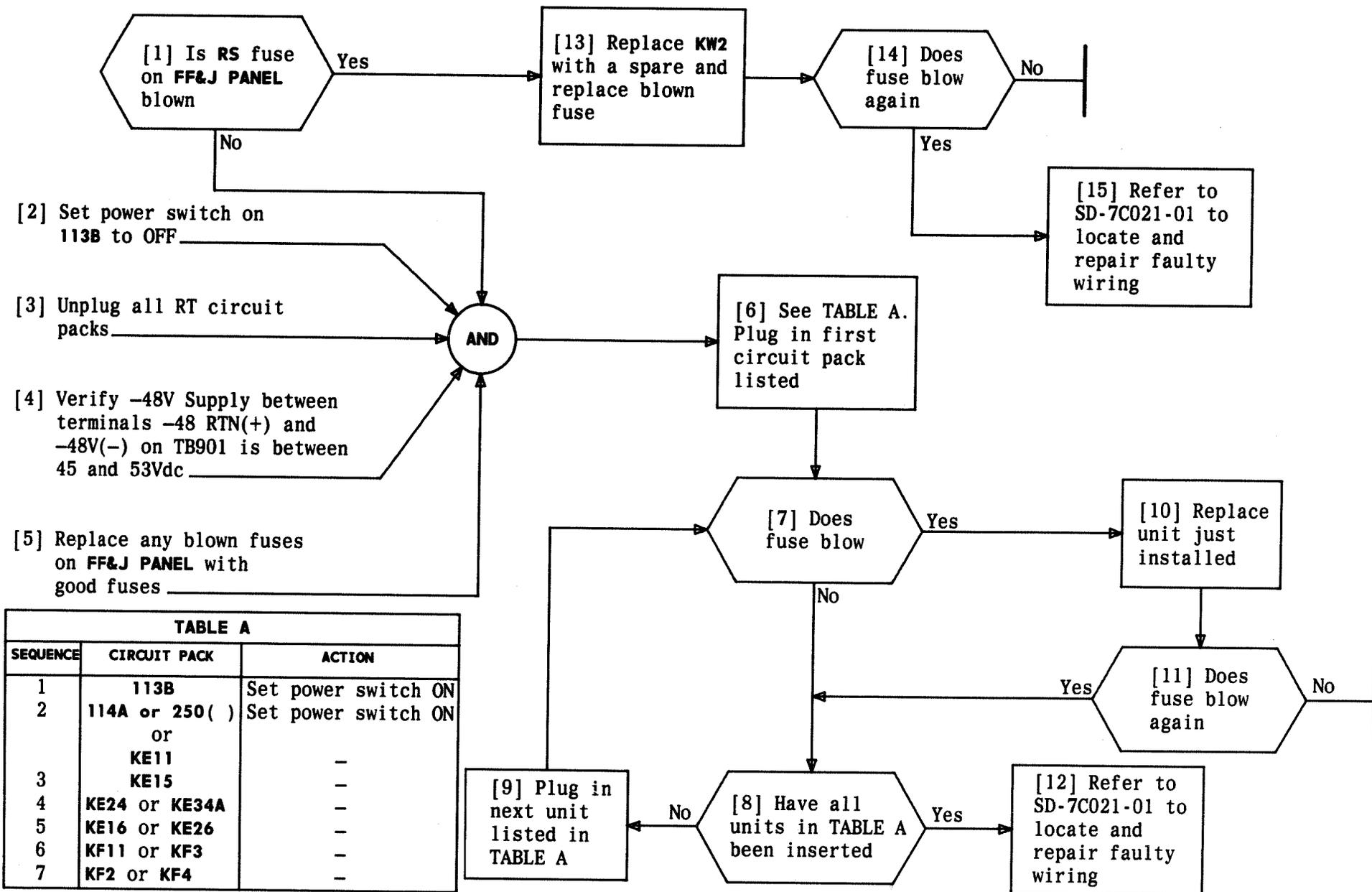
REPAIR RT CABINET BLOWN FUSE CONDITION

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REPAIR RT CABINET POWER TROUBLE

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REPAIR RT FRAME BLOWN FUSE CONDITION

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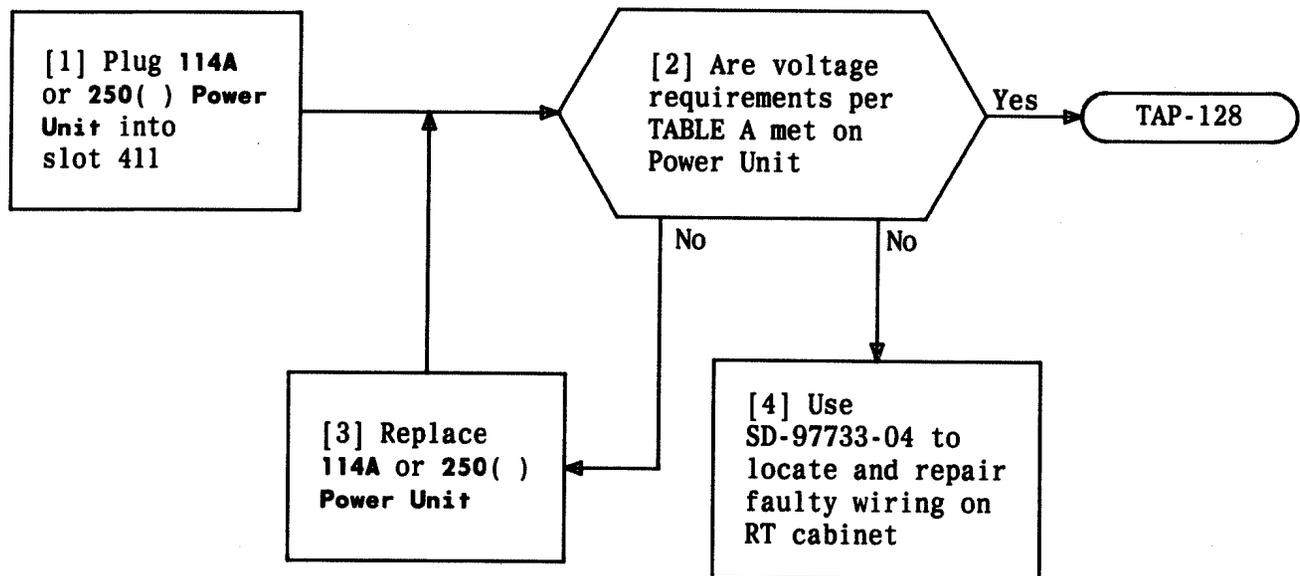
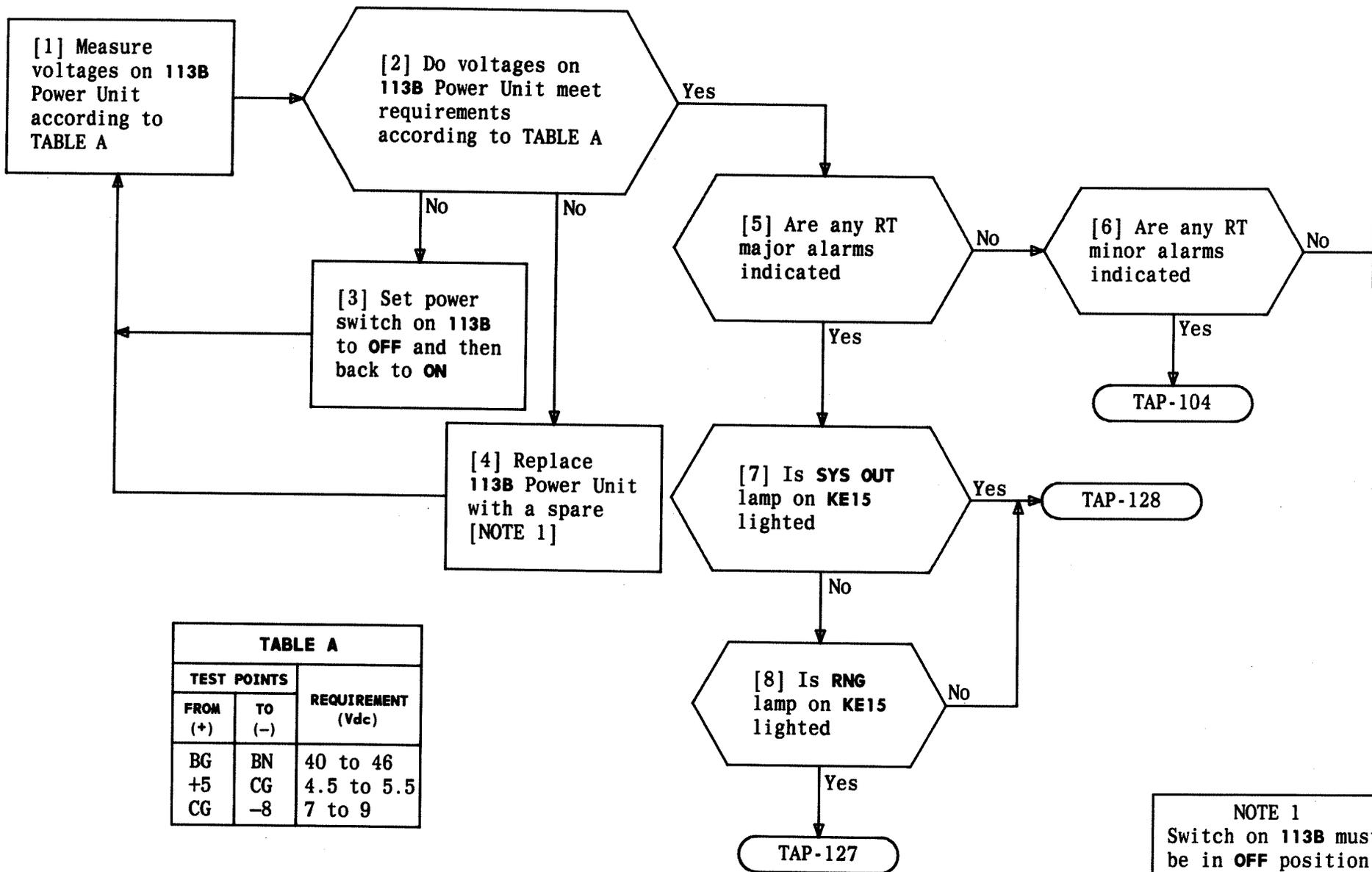


TABLE A			
TEST POINTS		REQUIREMENTS (Vdc)	
FROM (+)	TO (-)	114A POWER UNIT	250() POWER UNIT
BG	BN	40 to 46	40 to 46
LP	LG	100 to 160	120 to 150
LG	LN	0 to 60	120 to 150

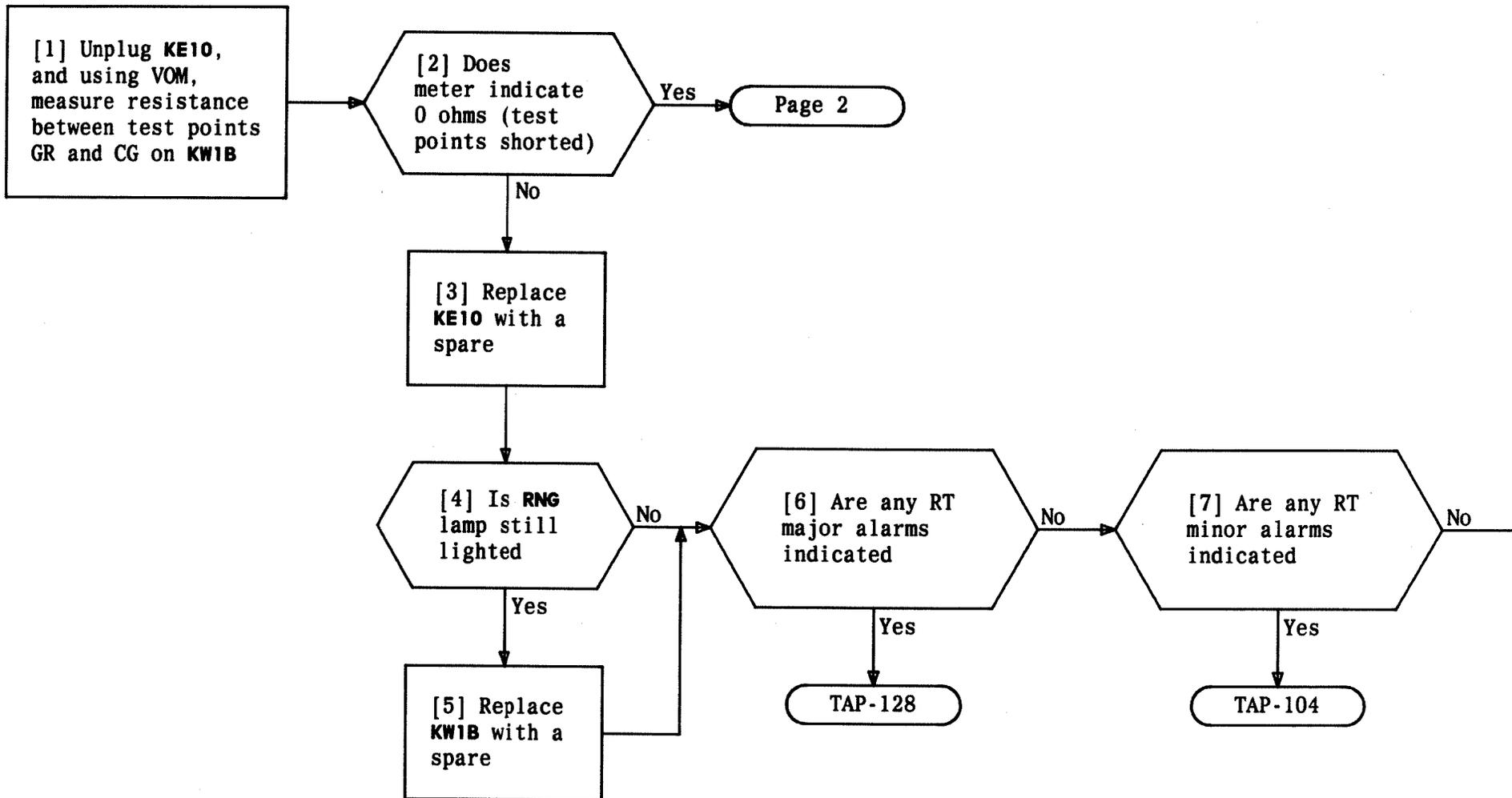
CHECK LINE POWER UNIT FOR TROUBLE



TEST POINTS		REQUIREMENT (Vdc)
FROM (+)	TO (-)	
BG	BN	40 to 46
+5	CG	4.5 to 5.5
CG	-8	7 to 9

NOTE 1	
Switch on 113B must be in OFF position when removing or replacing unit	
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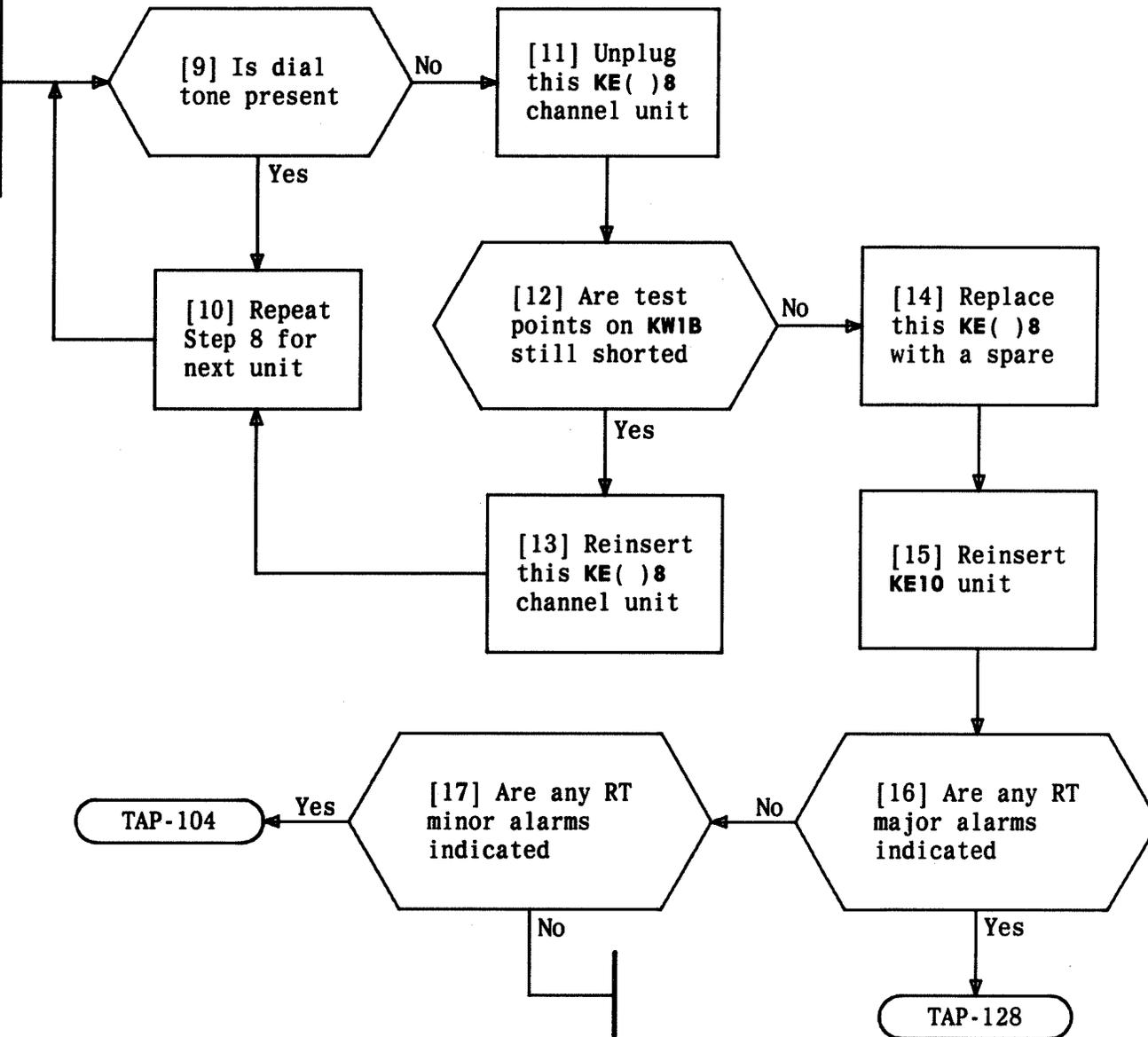
CHECK 113B POWER UNIT FOR TROUBLE IN RT CABINET



CLEAR RNG ALARM AT RT CABINET

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[8] Leaving VOM test leads in place, monitor at RT cross-connect terminal and attempt to pull dial tone on first KE()8() channel unit



CLEAR RNG ALARM AT RT CABINET

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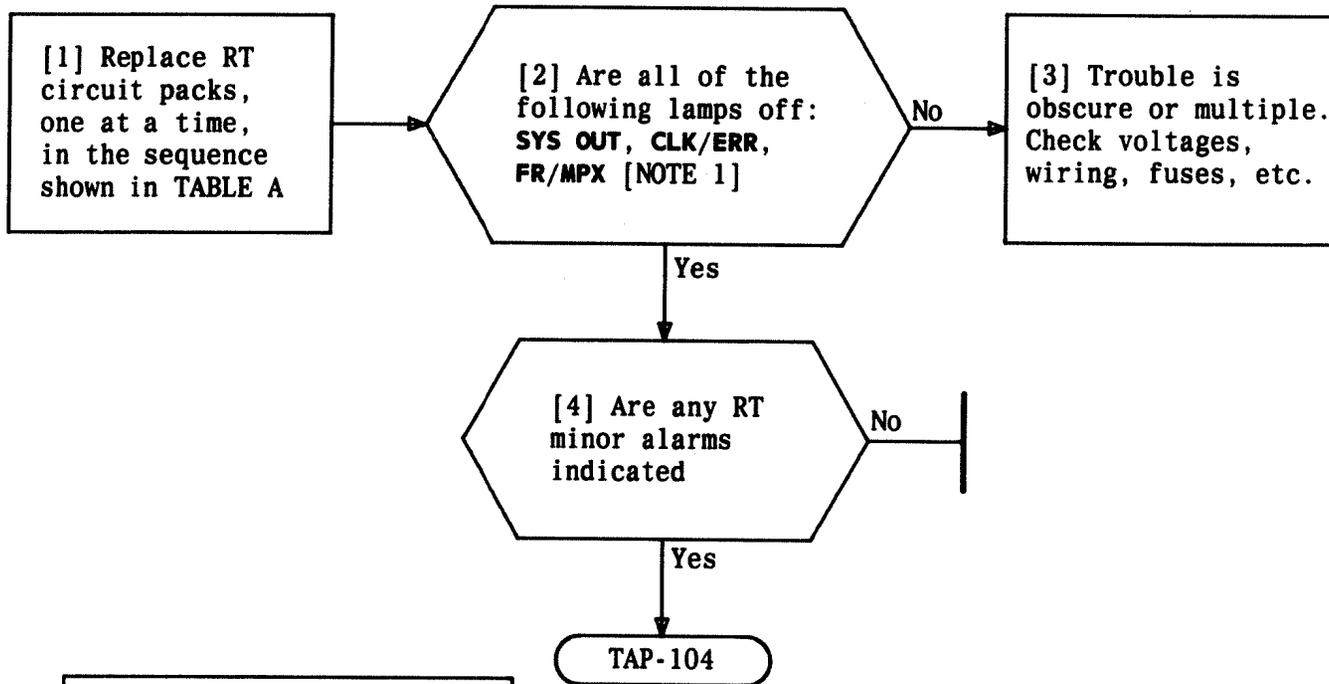


TABLE A	
SEQUENCE†	CIRCUIT PACK
1	KE24 or KE34A*
2	KE15
3	KE16 or KE26
4	KF11 or KF3
5	KF2 or KF4

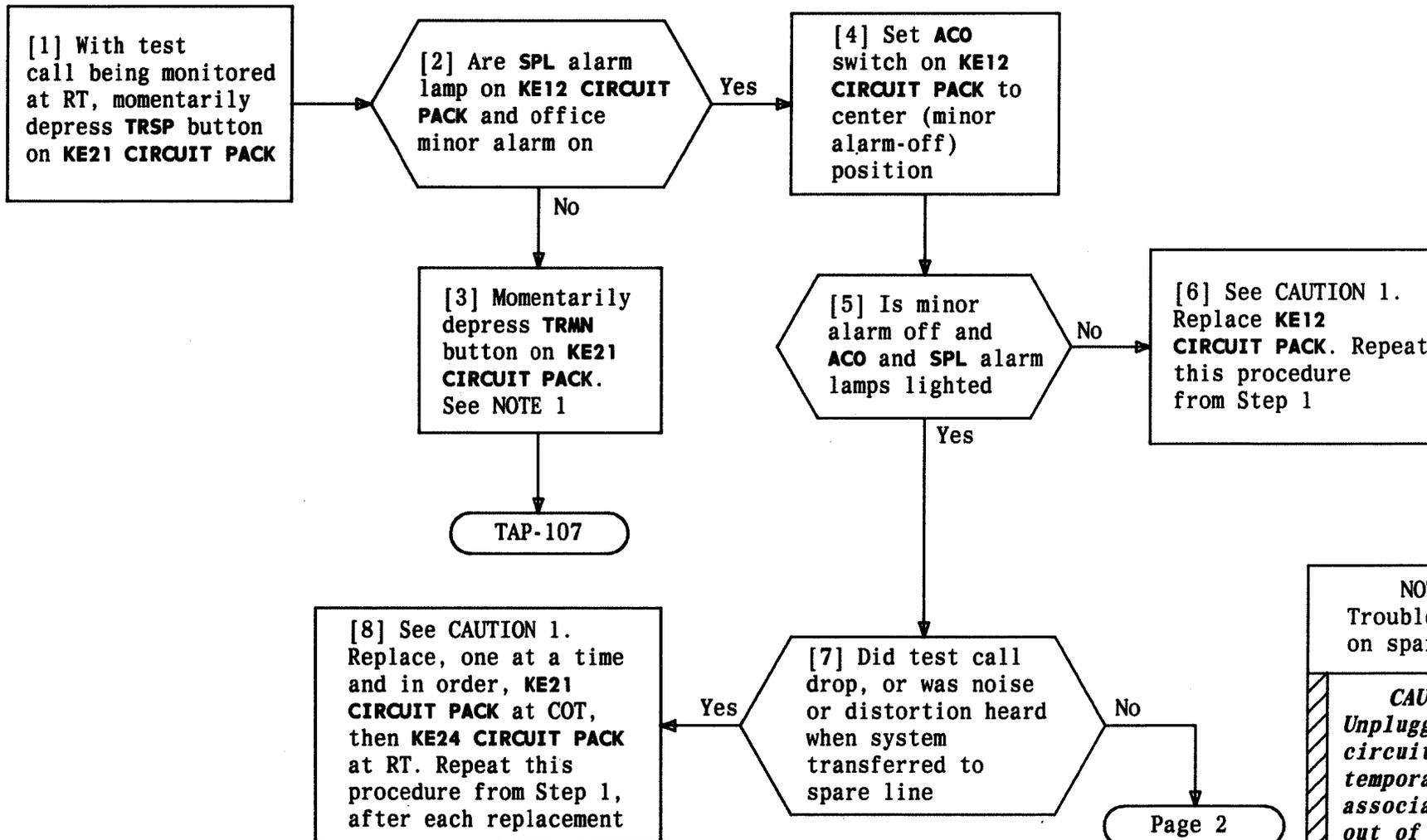
* Requires correct 983()-equalizer (remove and save equalizer from any unit being returned)
 † Alarm lamps should be checked after replacing each unit

NOTE 1	
System must be on main line. A 10-minute settling time may be required to ensure that both COT and RT are on main line	
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LOCATE DEFECTIVE RT CIRCUIT PACK

SUMMARY

With test call being monitored, transfer to spare line and then back to main line. Verify proper operation of **SPL** and **ACO** alarm lamps, office minor alarm during test. No distortion or noise should be heard during transfer.

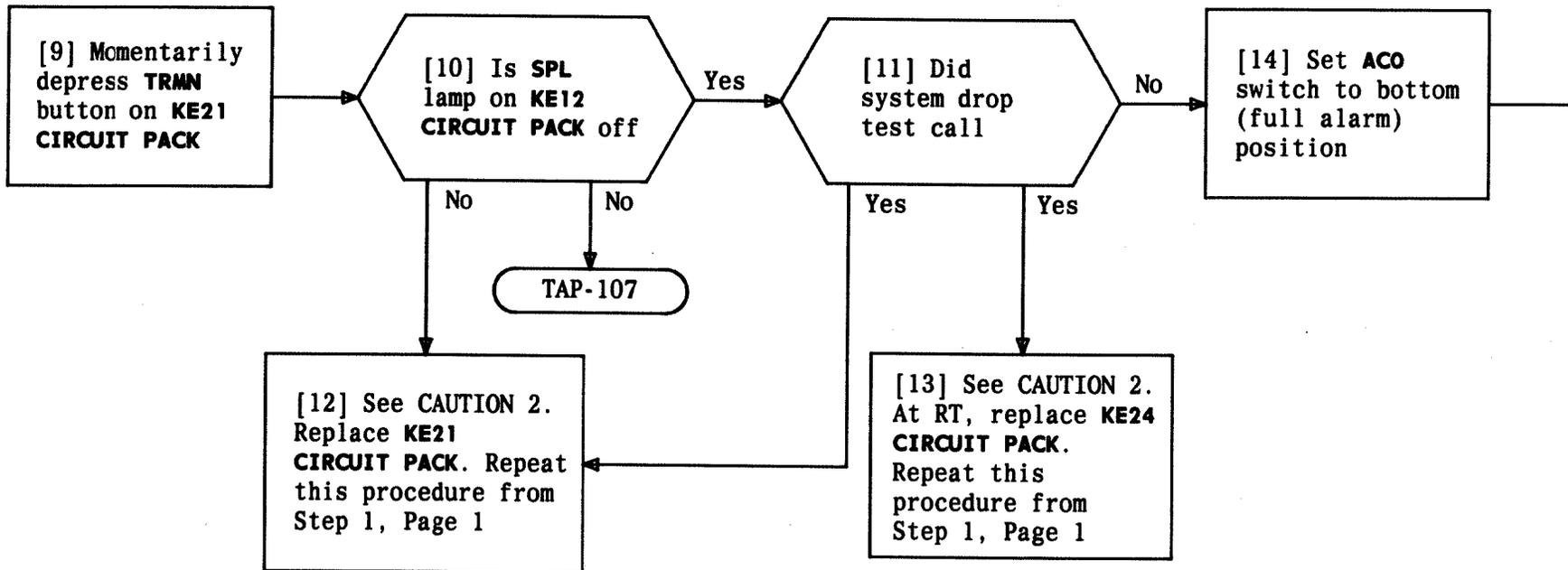


NOTE 1
Trouble may be on spare line

CAUTION 1
Unplugging this circuit pack will temporarily put associated system out of service

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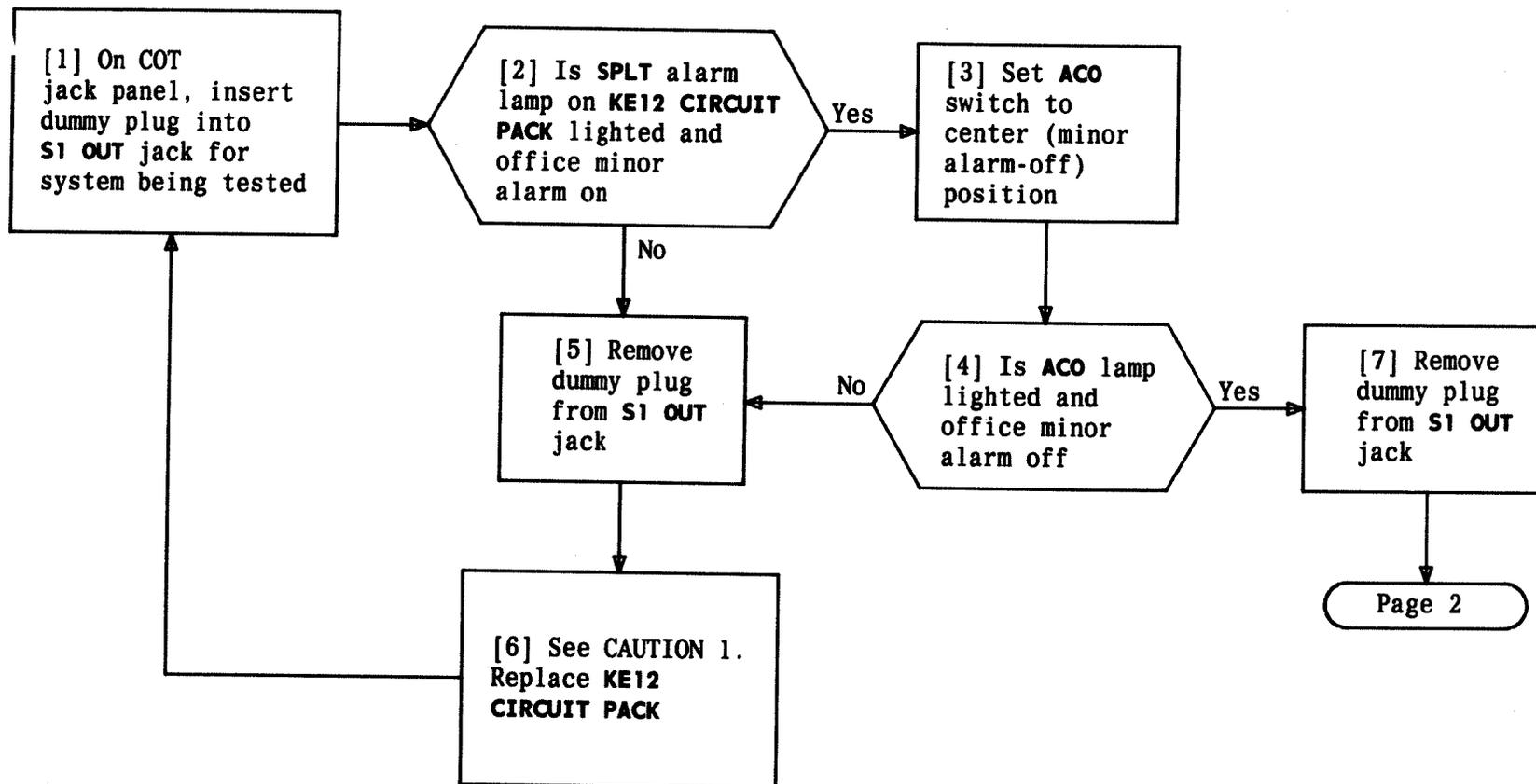
PERFORM TRANSFER-TO- SPARE LINE TESTS



CAUTION 2
Unplugging this circuit pack will temporarily put associated system out of service

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PERFORM TRANSFER-TO-SPARE LINE TESTS



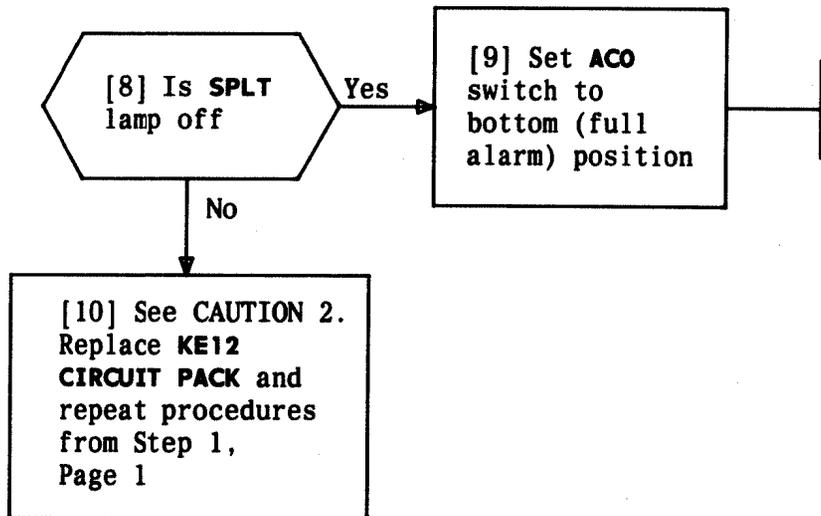
CAUTION 1
Unplugging KE12 CIRCUIT PACK will temporarily put associated system out of service

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VERIFY OPERATION OF SPLIT ALARM



VERIFY OPERATION OF SPLT ALARM

CAUTION 2 <i>Unplugging KE12 CIRCUIT PACK will temporarily put associated system out of service</i>	
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[1] See WARNING 1 and NOTE 1.
 Locate ground bracket and bond clamp in rear of RT cabinet next to battery compartment
 [FIG. 1]

[2] Verify bond clamp is securely installed in cable sheath [FIG. 2]. Verify ground bracket is securely attached to RT cabinet

[3] Using a 216-type tool or 7/16-inch wrench, verify nut on bond clamp is tight

[4] Outside of RT cabinet, locate where ground wire connects to D ground rod or power company ground rod. See FIG. 3 for example of pole-mounted RT cabinet

[5] Verify all ground rod connections are secure

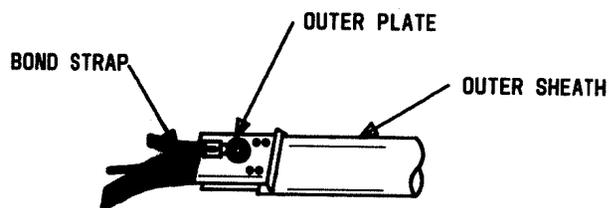


FIG. 2

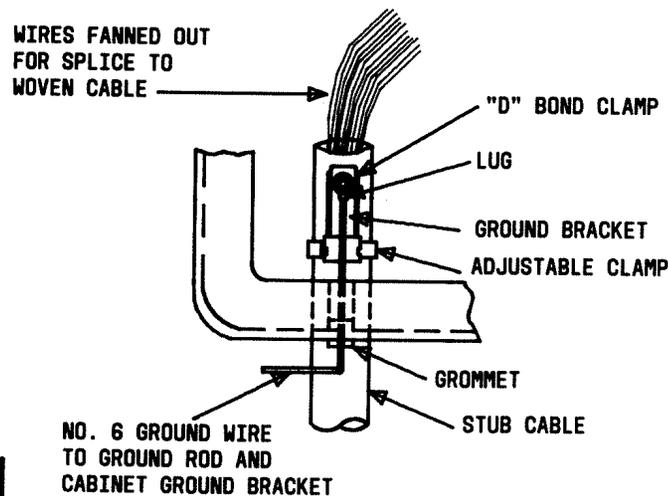


FIG. 1

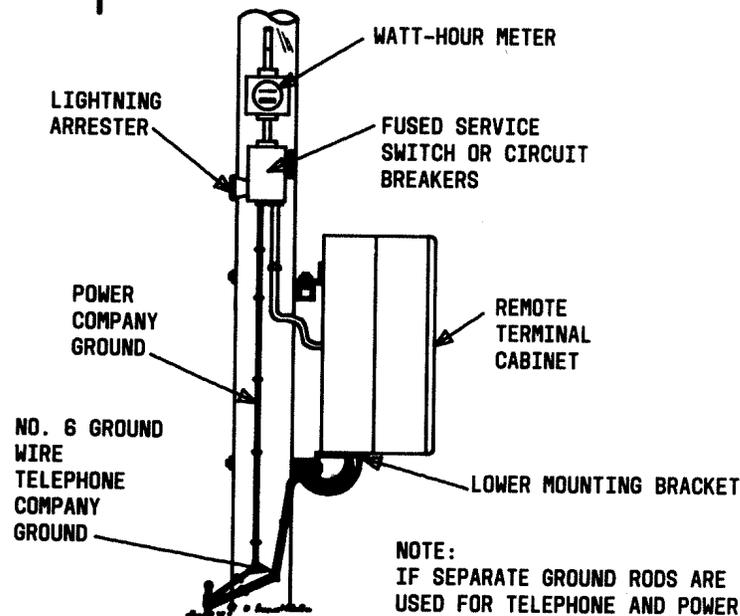


FIG. 3

NOTE:
 IF SEPARATE GROUND RODS ARE USED FOR TELEPHONE AND POWER GROUNDS, THE GROUND RODS MUST BE BONDED TOGETHER USING NO. 6 GROUND WIRE

NOTE 1
 Proper installation the bond clamp is vital. It establishes shield continuity and provides electrical protection which allows the installation to meet transmission objectives

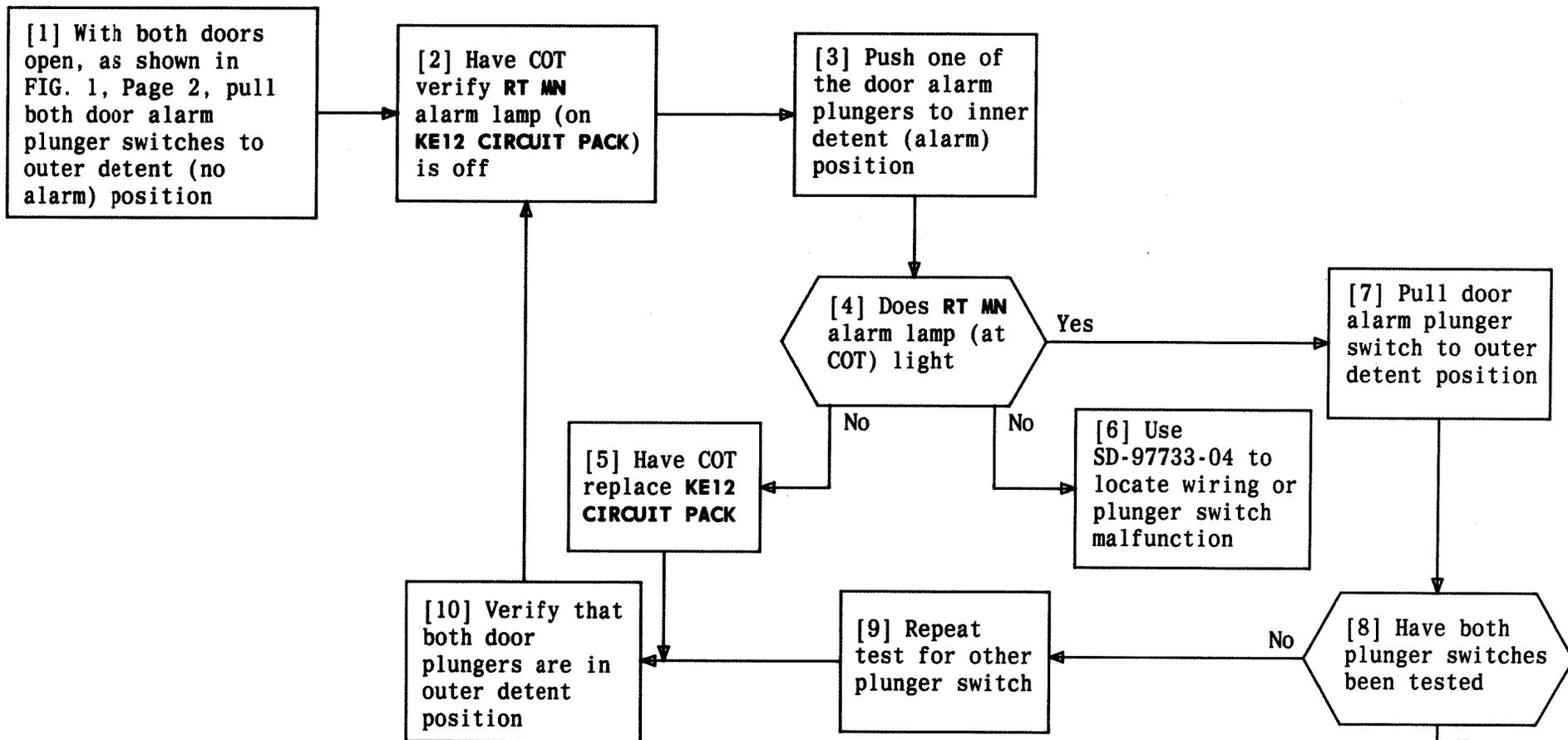
WARNING 1
Sheath continuity must be maintained at all times. If bond strap is removed from bond clamp, use of a temporary bond will be necessary

INSPECT BONDING AND GROUNDING OF CABLE SHEATH AND RT CABINET

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SUMMARY

With both door alarm plunger switches pulled to the outer detent (no alarm) position, push each one, one at a time, to the inner detent (alarm) position and then all the way in (closed door position). Have COT verify that RT MN alarm lamp lights only when plunger(s) are in the alarm position.



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**VERIFY OPERATION OF RT MN ALARM LAMP (AT COT)
INDICATING OPEN RT CABINET DOOR**

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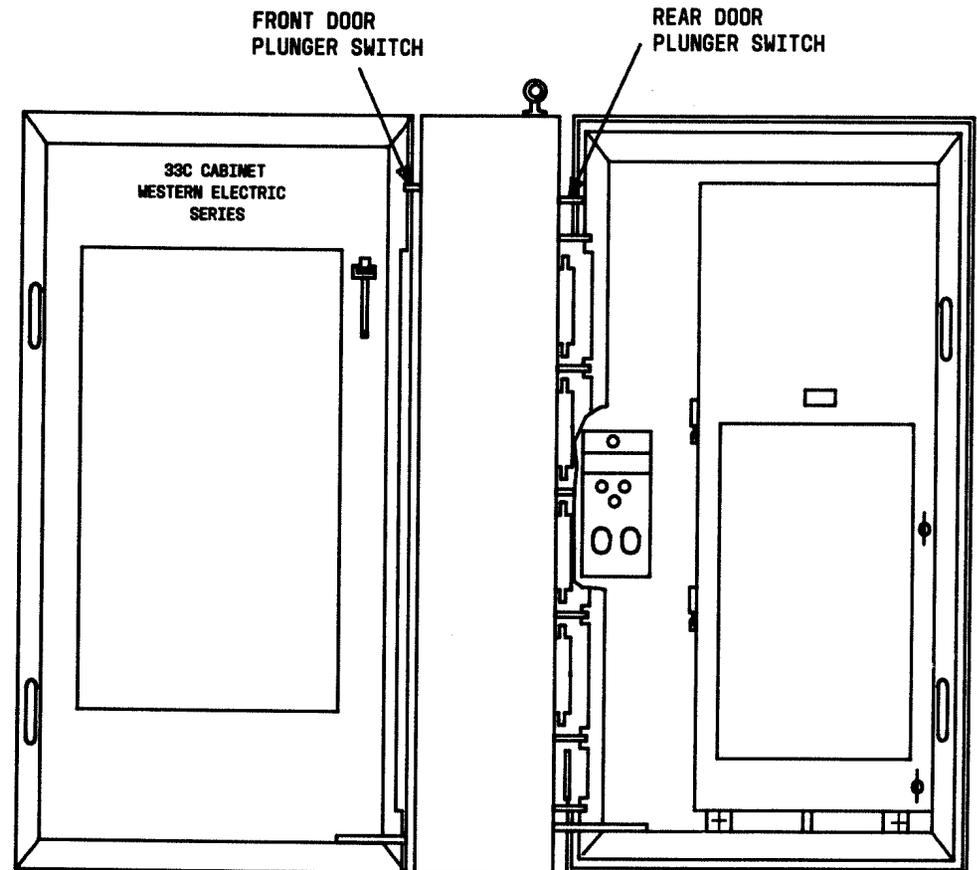
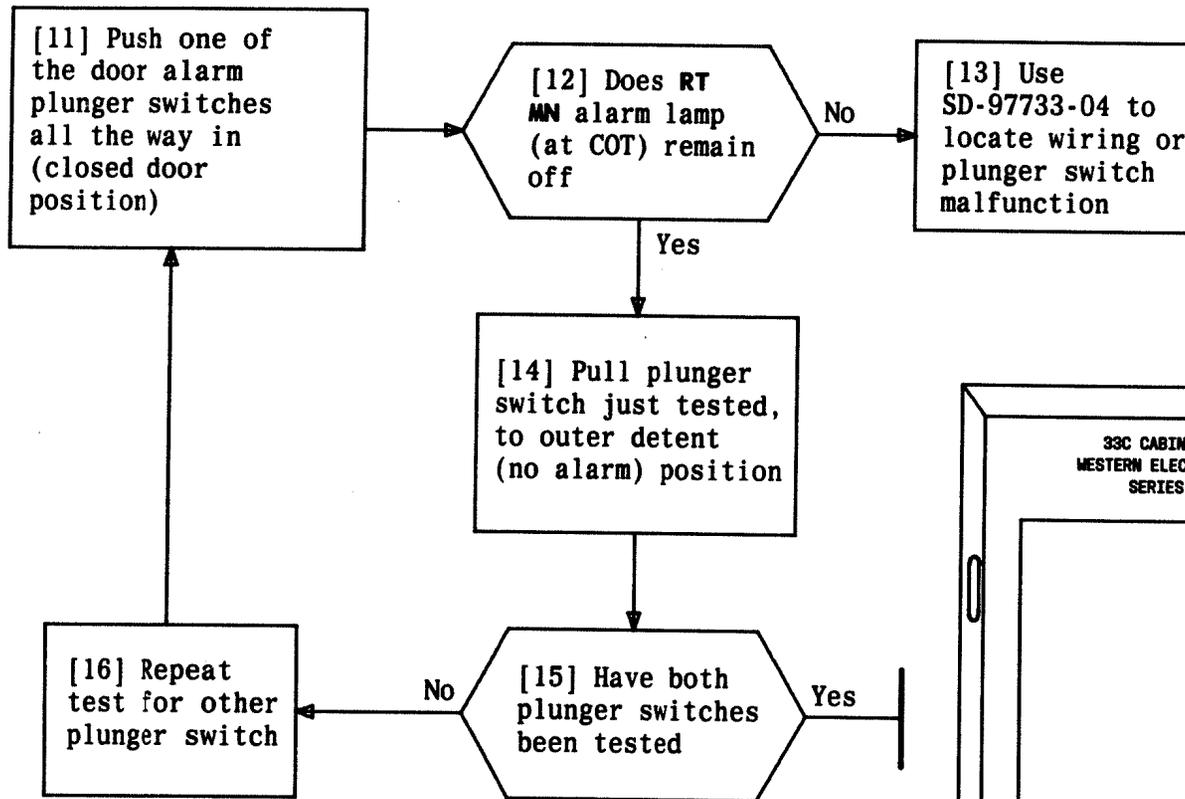


FIG. 1

**VERIFY OPERATION OF RT MN ALARM LAMP (AT COT)
INDICATING OPEN RT CABINET DOOR**

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SUMMARY

Measure battery voltage at **KE9 CIRCUIT PACK BG (+)** and **BN(-)** test jacks. Measured voltage should be between 40 to 46 Vdc. Remove **BC** (battery charger) fuse on RT power panel. Verify **AC** alarm lamp is lighted and have **COT** verify **RT MN** alarm lamp is lighted. **KE9** voltage measurement with **BC** fuse removed should be between 36 and 42 Vdc. Reinsert **BC** fuse.

[1] Get **KS-14510 Volt-Ohm-Milliammeter (VOM)**, or equivalent

[2] Condition **VOM [DLP-573]** and set selector switch to **DC VOLTS-60** position

[3] Insert **VOM** positive (+) lead into **BG** test jack on **KE9 CIRCUIT PACK** (slot 012 in **RT** cabinet channel bank assembly). See **FIG. 1**

[4] Insert **VOM** negative (-) lead into **BN** test jack on **KE9 CIRCUIT PACK**

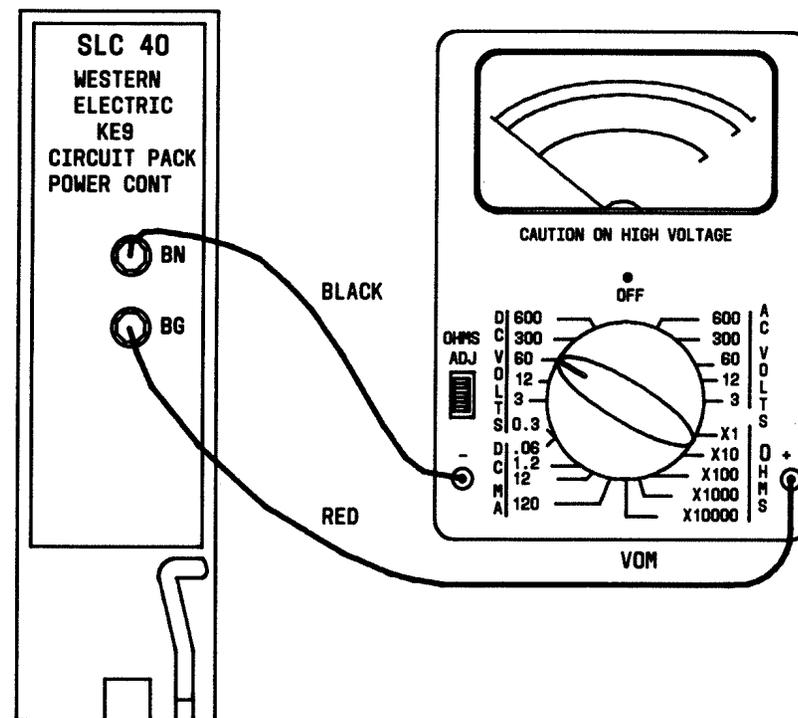
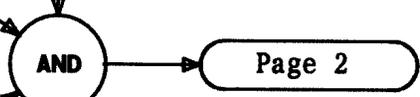
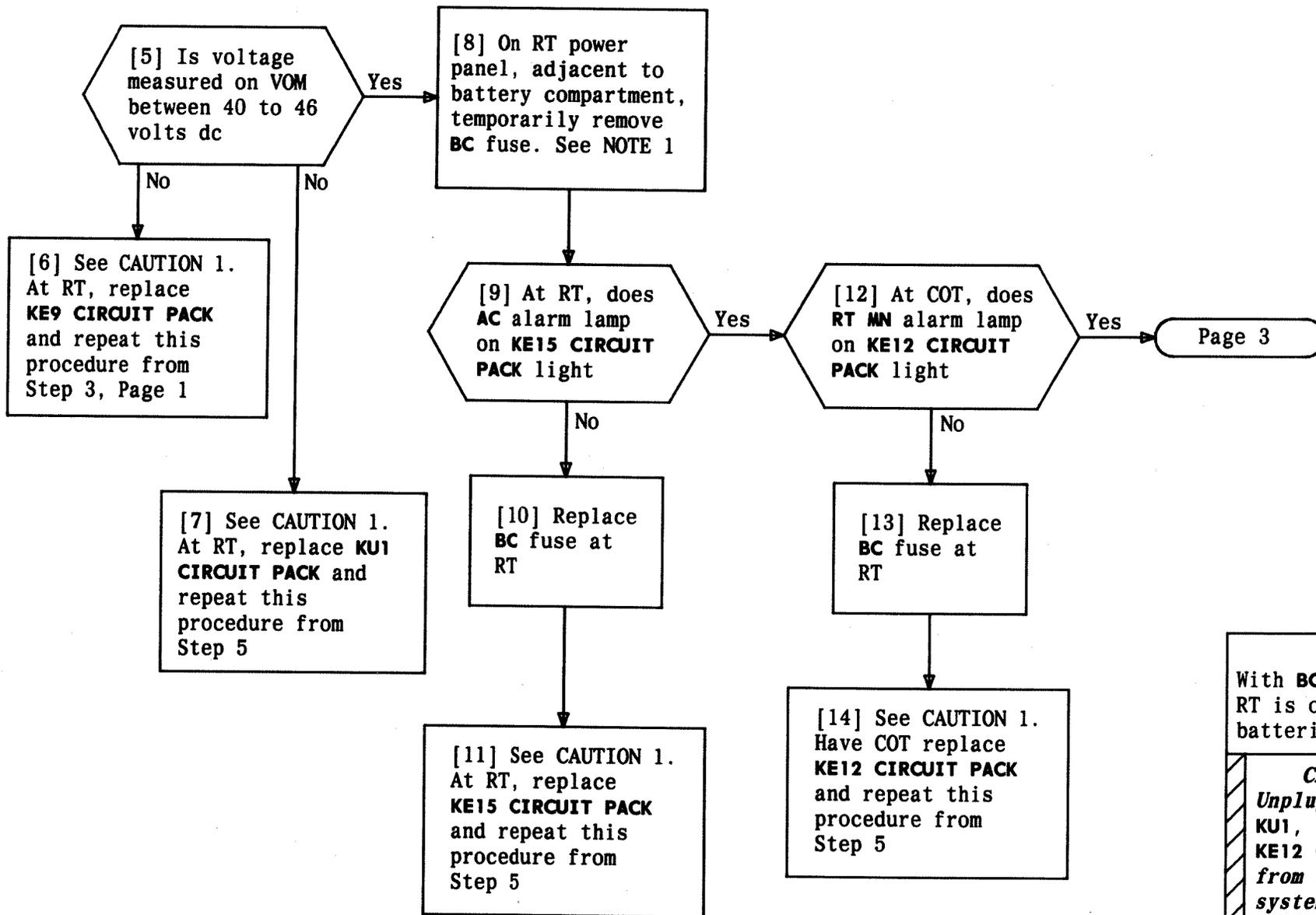


FIG. 1

MEASURE BATTERY VOLTAGE AT KE9 CIRCUIT PACK

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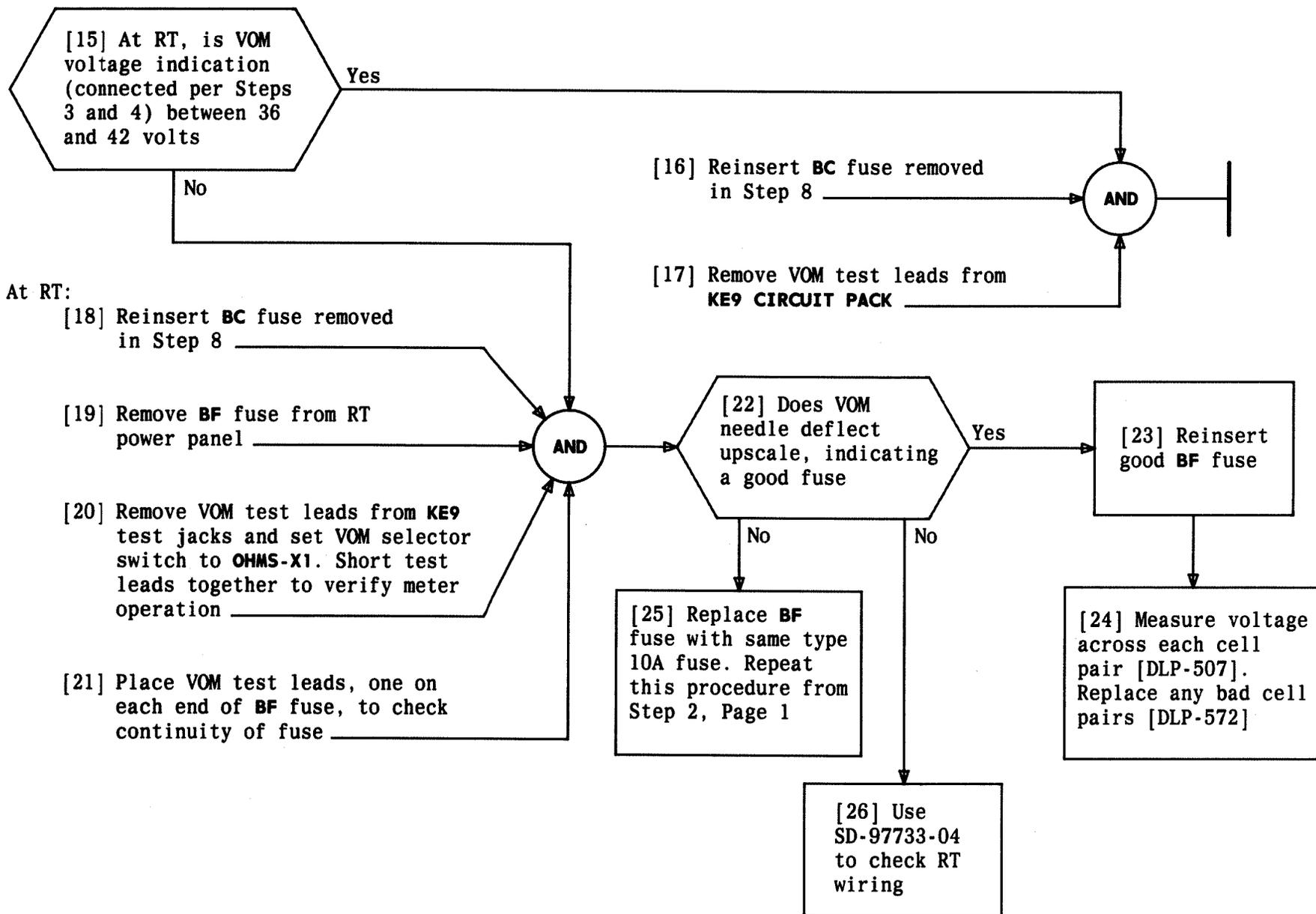


NOTE 1
With BC fuse removed, RT is operating on batteries

CAUTION 1
Unplugging KE9, KU1, KE15, or KE12 CIRCUIT PACK from working system will cause service interruption

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MEASURE BATTERY VOLTAGE AT KE9 CIRCUIT PACK



MEASURE BATTERY VOLTAGE AT KE9 CIRCUIT PACK

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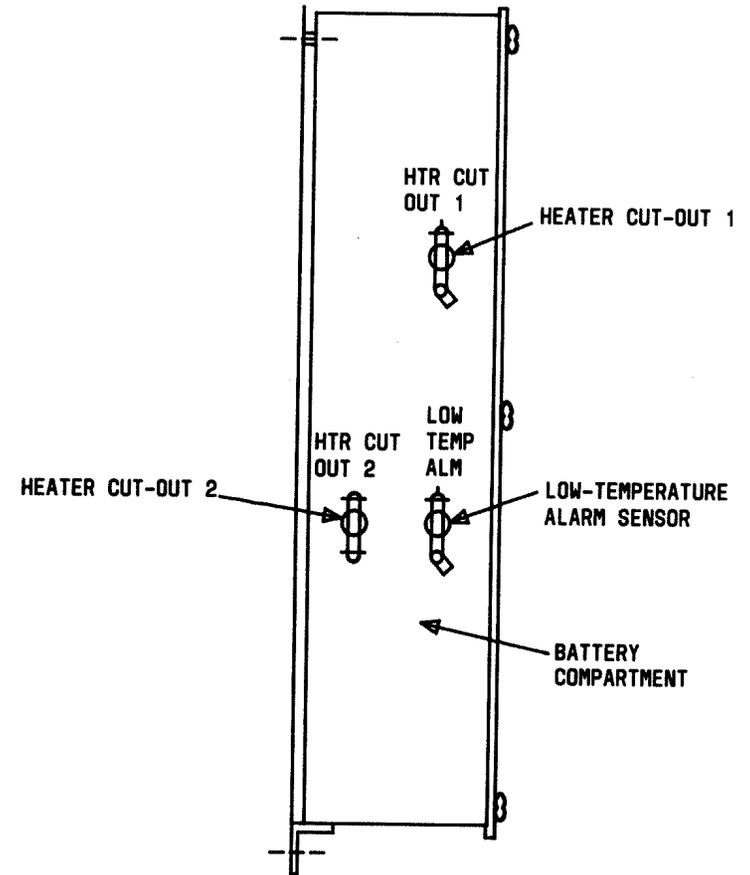
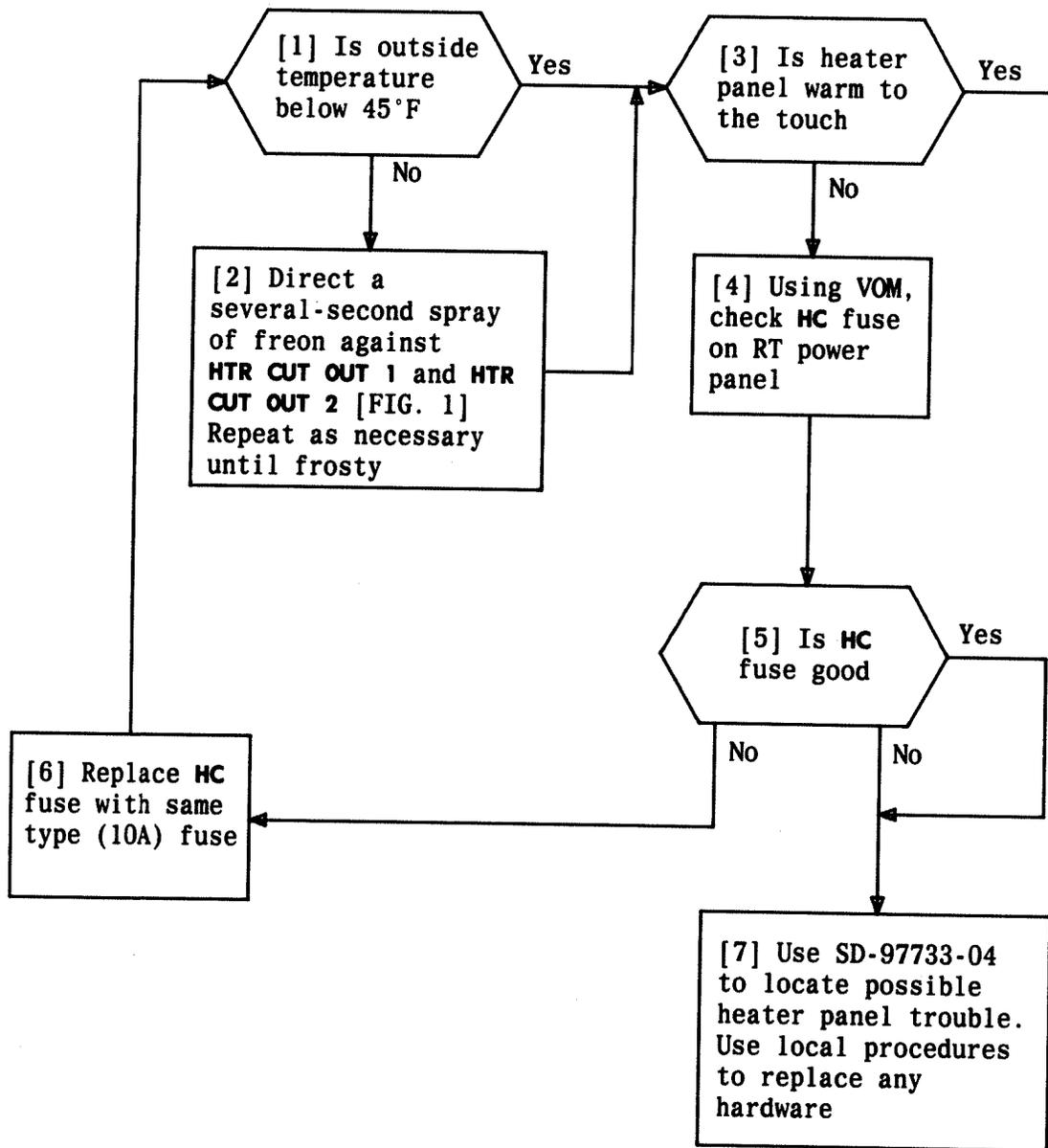


FIG. 1

VERIFY BATTERY HEATER PANEL OPERATION

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[1] Verify **BF** fuse (on RT power panel) is removed

[2] See **DANGER 1**. Using taped (insulated) wrench, remove one of corroded cell pairs

[3] Referring to FIG. 1, remove lower nut and washer from one of front battery terminals

[4] Clean terminal with toothbrush and replace washer and nut on clean terminal. Hand-tighten. Using the taped wrench, tighten lower terminal nut until firm

[5] Repeat Steps 2 and 3 for other front terminal

[6] Remove upper and lower terminal nuts, washer, and tie bar from one of rear battery terminals. Leave other end of tie bar connected to other rear terminal

[7] Clean terminal with toothbrush. Replace washers, nuts, and tie bar on clean terminal. Hand tighten

[8] Repeat Steps 5 and 6 for other rear terminal

[9] Using taped wrench, further tighten all rear nuts until firm

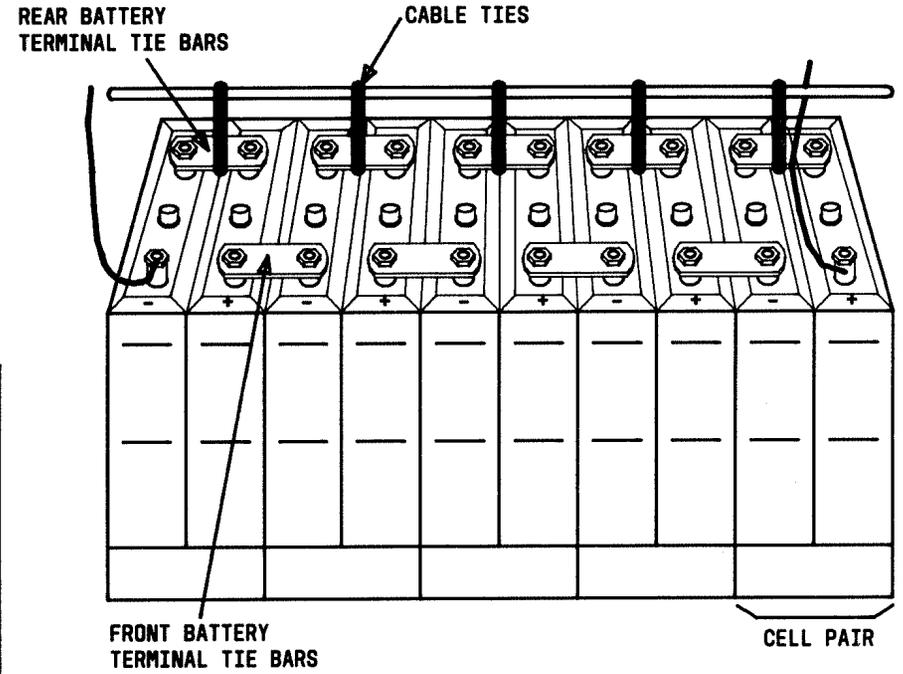
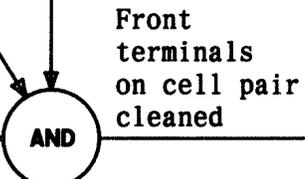


FIG. 1

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DANGER 1
Note polarity location of cell pair. Cell pair must be replaced exactly as removed

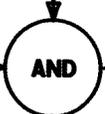
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CLEAN RESIDUE OR CORROSION FROM BATTERY CELL TERMINALS

[10] Replace cell pair exactly as removed,
with respect to polarity _____

[11] Replace front battery tie bars, washers,
and nuts. Hand-tighten _____

[12] Using taped wrench, further tighten
terminal front terminal nuts until firm _____



Cell pair
replaced

[13] Is any other
cell pair
moderately to heavily
corroded

No

Yes

[14] Repeat this
procedure from
Step 1, Page 1
for cell pair
affected

CLEAN RESIDUE OR CORROSION FROM BATTERY CELL TERMINALS

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[1] Verify **BF** fuse is removed from RT power panel

[2] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent

[3] Condition VOM [DLP-573] and set selector switch to **DC VOLTS - 3** position

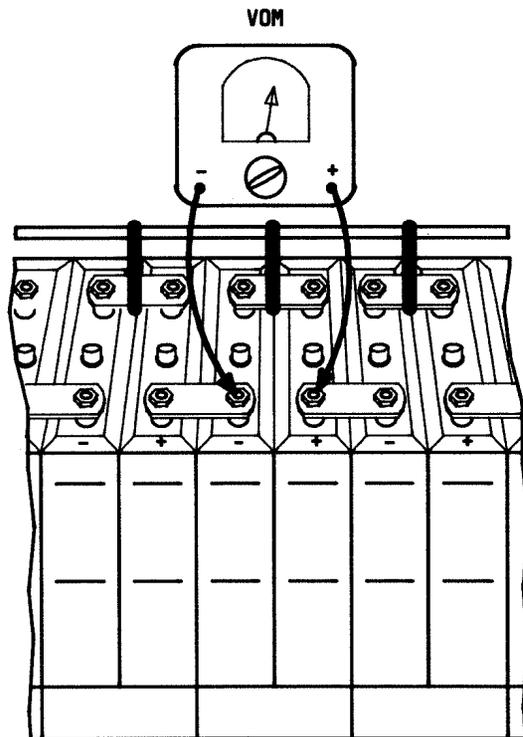


FIG. 1

AND

[4] See **WARNING 1**. Place VOM positive (+) test lead on positive (+) terminal and negative (-) test lead on negative (-) terminal of cell pair to be measured [FIG. 1]

[5] Does VOM indicate at least 2.4 volts dc

No

Yes

[7] Have all cell pair voltages been measured

Yes

No

[8] Repeat Steps 4 through 7 for next pair

[6] Replace any bad cell pair(s) [DLP-572] or wiring

WARNING 1

VOM may be damaged if incorrect scale is used, or if correct test lead polarity is not observed

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MEASURE VOLTAGE ACROSS BATTERY CELL PAIRS

[1] See DANGER 1. Verify
BF fuse is removed
from RT power panel

[2] Get KS-14510 Volt-Ohm-
Milliammeter (VOM),
or equivalent

[3] Condition VOM [DLP-573]
and set selector switch
to DC VOLTS-60 position

[4] See WARNING 1. Place VOM
positive (red) lead on
positive (+) terminal of
last cell of battery
string [FIG. 1]

[5] Place VOM negative (black)
lead on negative (-)
terminal of first cell of
battery string

AND

[6] Is VOM
indication
at least
36 volts dc

Yes

No

[7] Referring to
FIG. 1, verify
all battery cell
pairs are connected
correctly
(series-aiding)

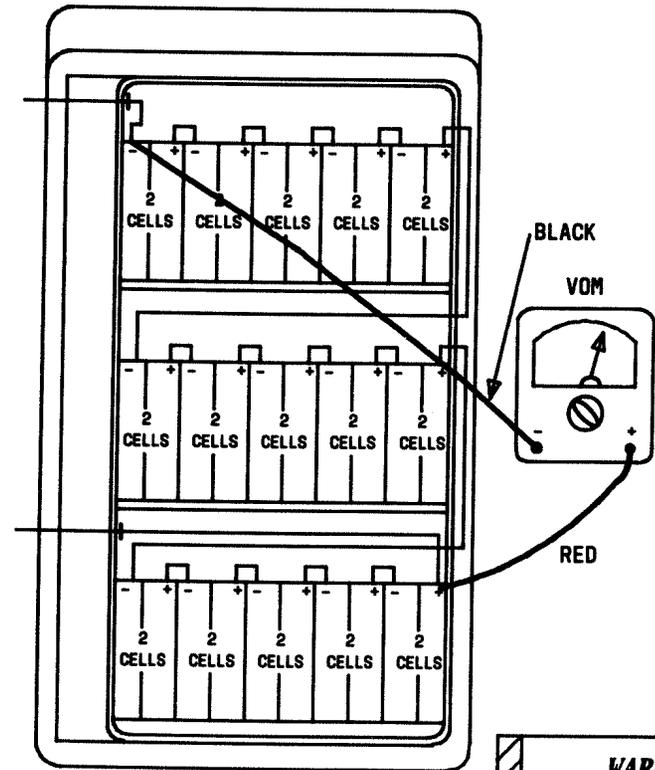


FIG. 1

BLACK

VOM

RED

WARNING 1
VOM may be
damaged if
incorrect scale
is used, or if
correct test
lead-polarity is
not observed

DANGER 1
Extreme care
should be
exercised when
working with or
near batteries

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MEASURE VOLTAGE ACROSS BATTERY STRING

[1] Verify that no plug-in units are installed (remove any that are installed)

At rear of Central Office Terminal:

[2] Verify that there is no broken or damaged equipment (connectors, wiring, backplane wiring board, etc.)

[3] Verify that there are no bent, broken or crossed terminals on backplane

[4] Verify that all cabling and wiring is terminated and tied into forms

[5] Determine COT wiring options to be used from Engineering Work Order or from TABLE A

[6] Using TABLES B through J, Page 2, verify that all options to be used are installed and that all options not to be used are removed

AND

Page 3

**TABLE A
COT OPTIONS**

OPTIONS	FUNCTIONS
"Z"	Spare line sharing of one spare for two SLC-40 systems – must be specified for both systems
"Y"	Dedicated spare line – must be specified for all systems having a dedicated spare line
"W"	Must be specified for COTs that interface with frame-mounted or 33C cabinet RTs, T1/OS or Digital Multiplexer Configurations
"U"	Use for spare line sharing – must be specified for priority system – 1 and 3
"V"	Use for no spare, T1/OS and Digital Multiplexer Configurations
"Q"	Use for Digital Multiplexer Configurations
"X"	Use for ±130 volt battery (209/238 line power units)
"R"	Use to specify fault locate

PERFORM OVERALL VISUAL INSPECTION OF SLC-40 CENTRAL OFFICE TERMINAL

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TABLE B "Z" OPTION SYSTEMS 1 & 2 OR 3 & 4			
FROM: JACK PANEL		TO: RELAY	
SYSTEM 1(3)	SYSTEM 2(4)	ASS. 1 & 2(3 & 4)	
TSA(TSC) -3B -4B -9B -10B	TSB(TSD) -3A -4A -9A -10A -13B -14B -15A -15B	BT1-M BR1-M BT2-M BR2-M BT1-F BR1-F BT2-F BR2-F BT1-B BR1-B BT2-B BR2-B	
FROM: CHANNEL BANK			
TB3-10B -11B -3A		TB3-3A	1 2 S1(S3) S2(S4)
FROM: F & A PANEL TSA GRD 4		GRD 5	

TABLE C "Y" OPTION SYSTEMS 1 OR 3	
ON: JACK PANEL	
TSA(TSC) -3B -4B -9B -10B	TSA(TSC) -13B -14B -15A -15B

TABLE D "Y" OPTION SYSTEMS 2 OR 4	
ON: JACK PANEL	
TSB(TSD) -3A -4A -9A -10A	TSB(TSD) -13B -14B -15A -15B

TABLE E "W" OPTION (SYSTEMS 1, 2, 3, OR 4)	
ON: CHANNEL BANK	
TB3-2A	TB3-3B

TABLE F "U" OPTION SYSTEMS 1 OR 3 ONLY	
ON: CHANNEL BANK	
TB3-1A	TB3-1B

TABLE G "V" OPTION SYSTEMS 1, 2, 3, OR 4	
ON: JACK PANEL	
TSA (TSC) } -9B (TSB) (TSD)	TSA (TSC) } -10B (TSB) (TSD)
ON: CHANNEL BANK	
TB3-1A	TB3-2B

TABLE H "Q" OPTION SYSTEMS 1, 2, 3, OR 4	
ON: CHANNEL BANK	
J212-13 J212-5	J211-18 J212-14

TABLE J "R" OPTION SYSTEMS 1, 2, 3, OR 4	
FROM: JACK PANEL	TO: MDF*
TSA (TSC) } (TSB) (TSD) } -11B	T OF FAULT LOCATE PAIR R
} -12B	
*MAIN DISTRIBUTION FRAME	

TABLE I "X" OPTION SYSTEMS 1, 2, 3, OR 4	
FROM: CHANNEL BANK	TO: FUSE & ALARM PANEL
TB3-4A -5A -6A	TSG-RES2(-) } (2) -RES2(+) } SYS. 1 (3) -RES1 } (4) (TSD)
-4B	TSC (TSE) } +130V (TSF) }
-5B	} -130V

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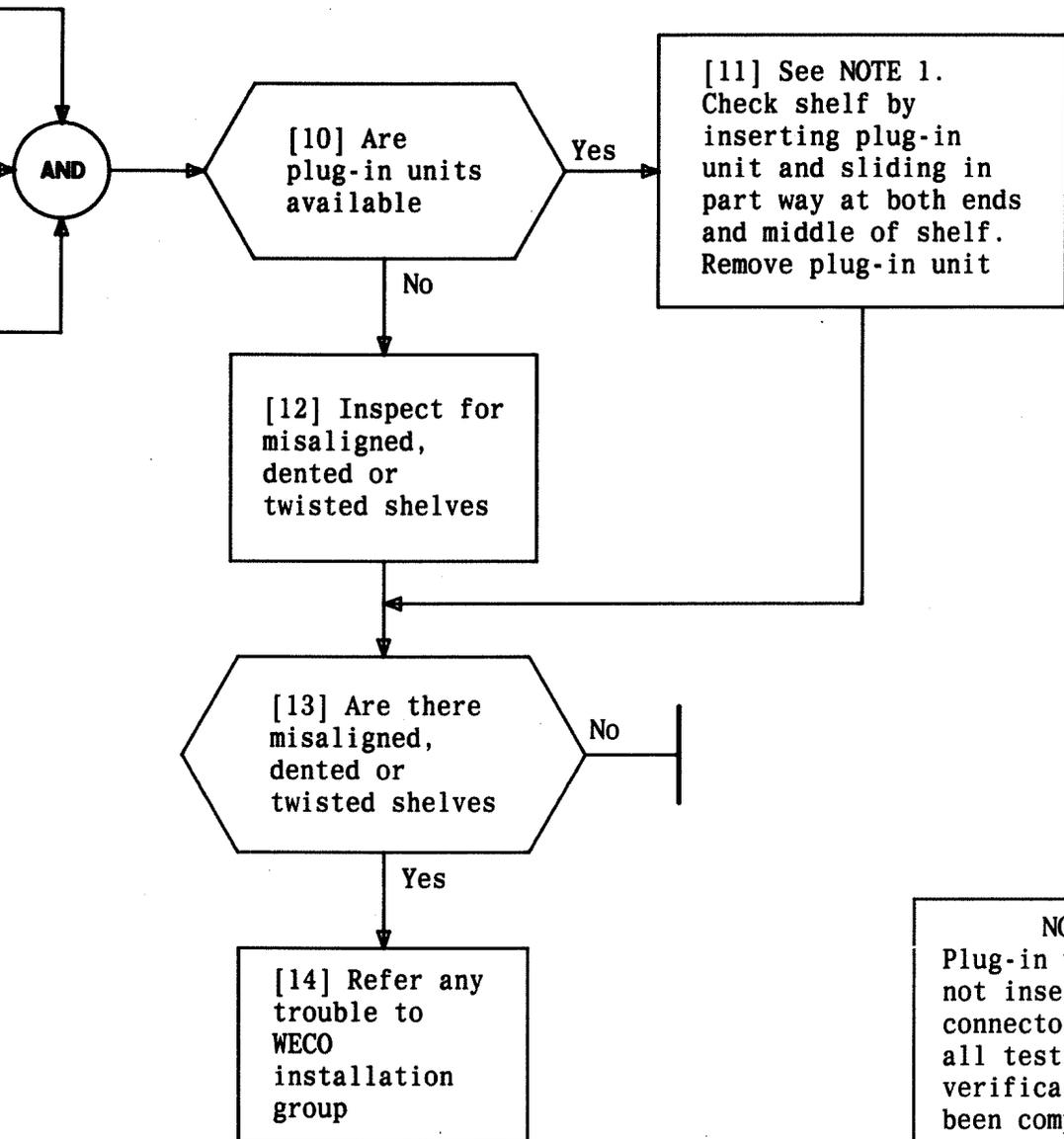
PERFORM OVERALL VISUAL INSPECTION OF SLC-40 CENTRAL OFFICE TERMINAL

At front of central office terminal:

[7] Verify that there is no broken or damaged equipment

[8] Verify that there are no loose shelves and that they are free of debris

[9] Verify that there are no bent or misaligned contacts on front of connectors



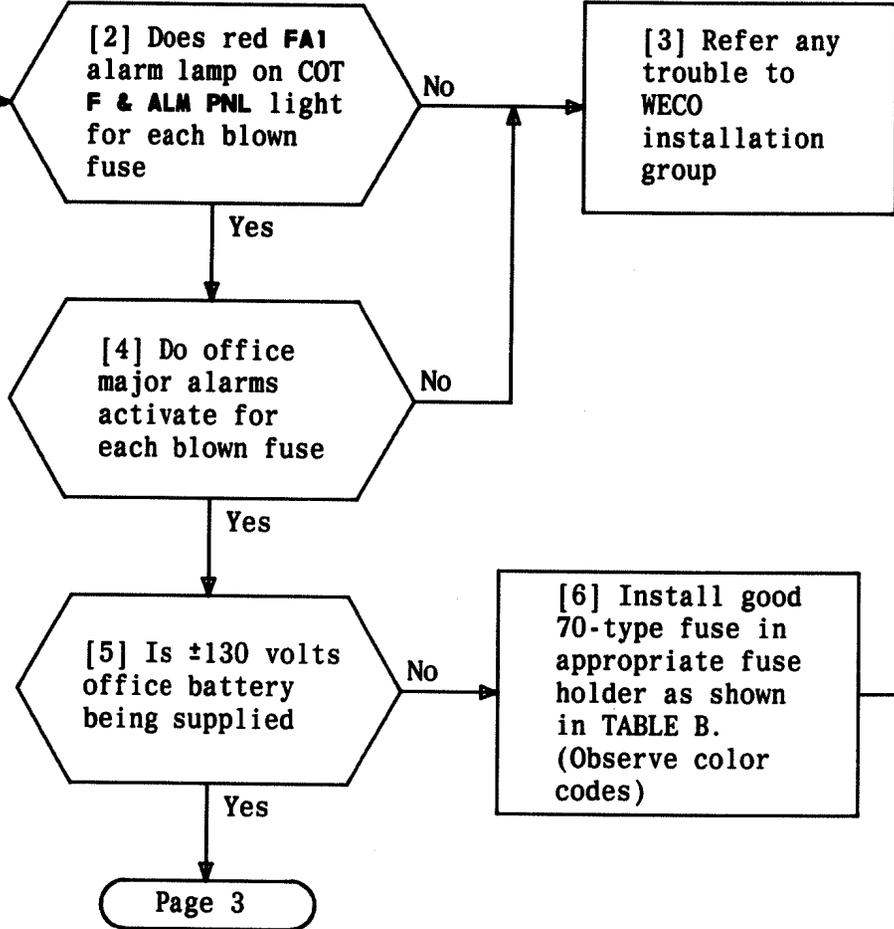
NOTE 1
Plug-in units are not inserted into connectors until all tests and verifications have been completed

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PERFORM OVERALL VISUAL INSPECTION OF SLC-40 CENTRAL OFFICE TERMINAL

[1] Insert blown 70-type fuse into appropriate fuse holders (one at a time) on COT F & ALM PNL as indicated in TABLE A [FIG. 1, Page 2]

For System Position	Fuse Holder Designations
1	F1C, F2C, F3C
2	F4C, F5C, F6C
3	F7C, F8C, F9C
4	F10C, F11C, F12C



For System Position	Fuse Holder Designations
1	F2C
2	F5C
3	F8C
4	F11C

CHECK CENTRAL OFFICE TERMINAL FUSE PANEL AND OFFICE ALARMS

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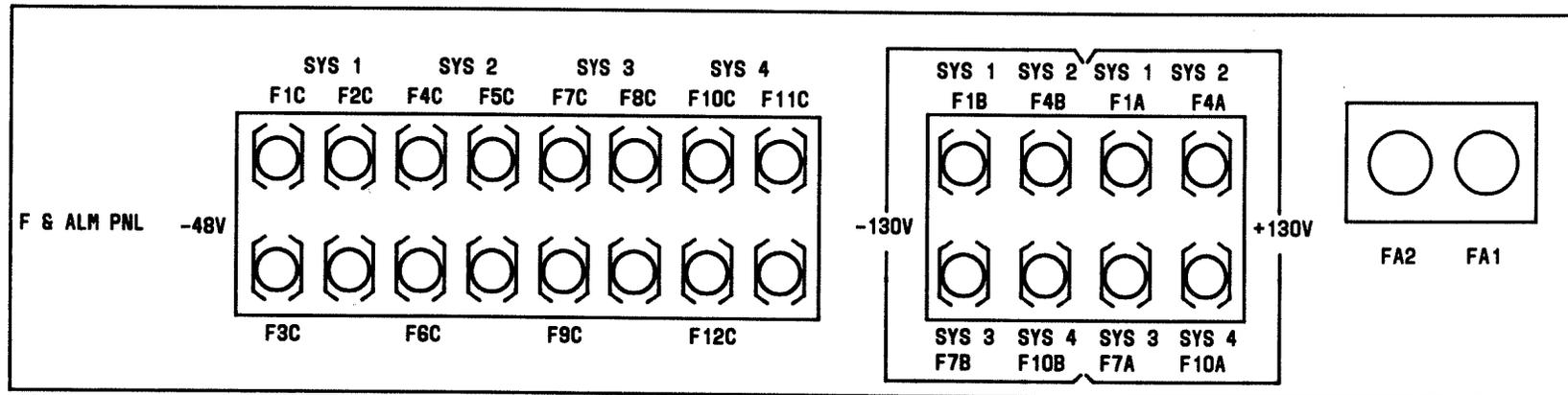
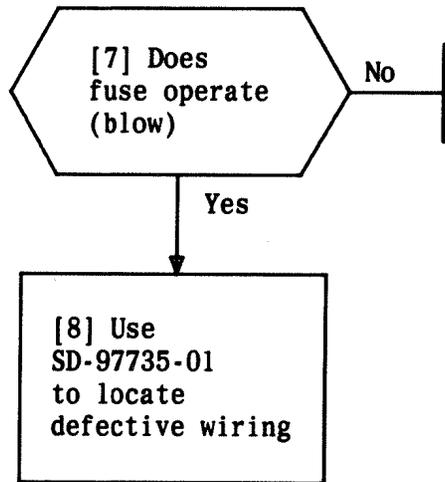
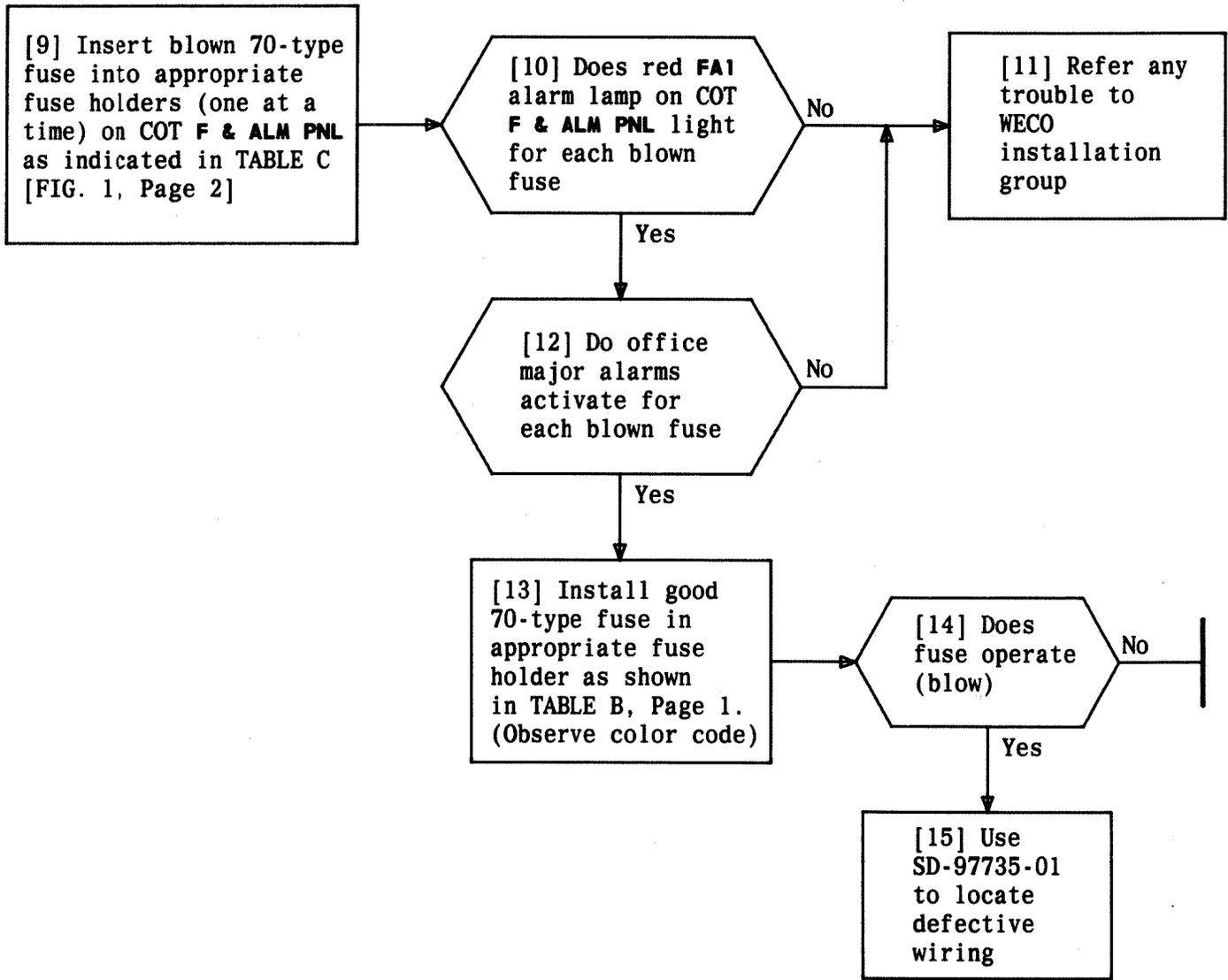


FIG. 1

CHECK CENTRAL OFFICE TERMINAL FUSE PANEL AND OFFICE ALARMS

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For System Position	Fuse Holder Designation
1	F1A, F1B
2	F4A, F4B
3	F7A, F7B
4	F10A, F10B

CHECK CENTRAL OFFICE TERMINAL FUSE PANEL AND OFFICE ALARMS

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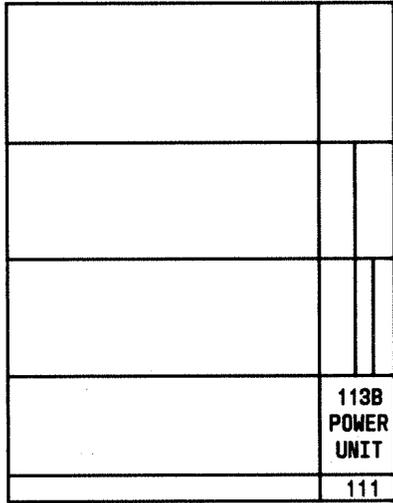
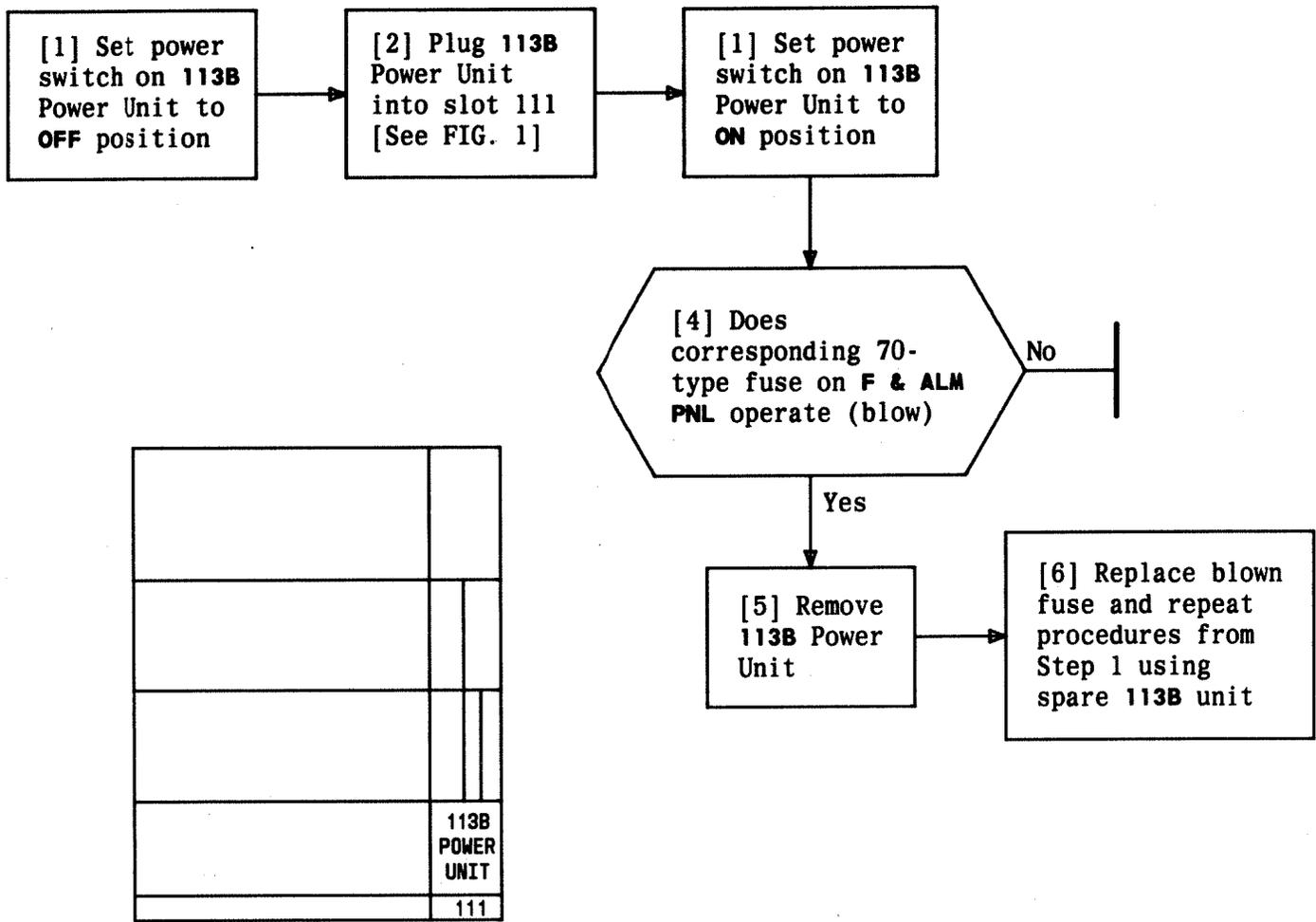
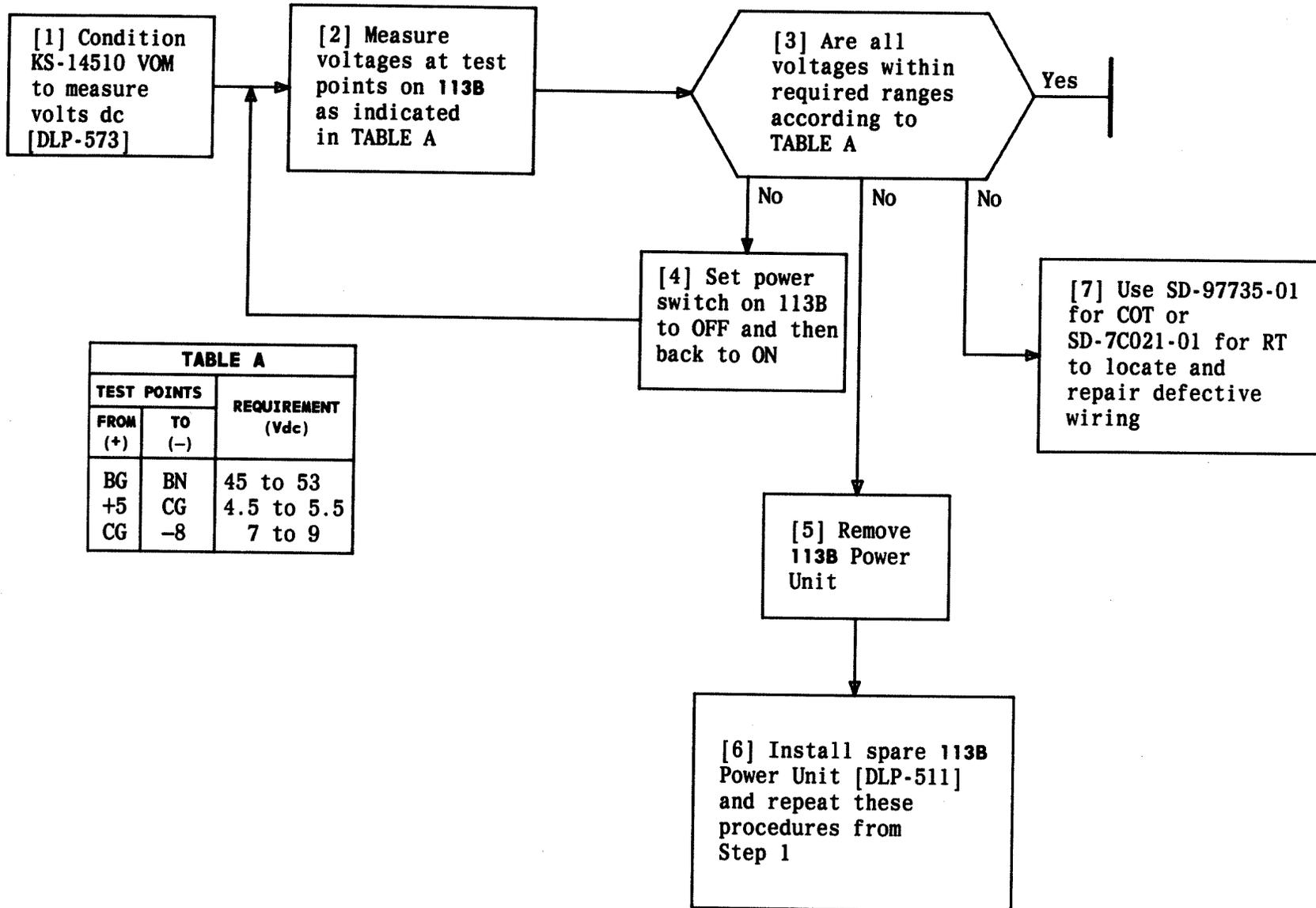


FIG. 1

INSTALL 113B POWER UNIT INTO SLOT 111 AT COT

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TEST POINTS		REQUIREMENT (Vdc)
FROM (+)	TO (-)	
BG	BN	45 to 53
+5	CG	4.5 to 5.5
CG	-8	7 to 9

MEASURE VOLTAGES ON 113B POWER UNIT

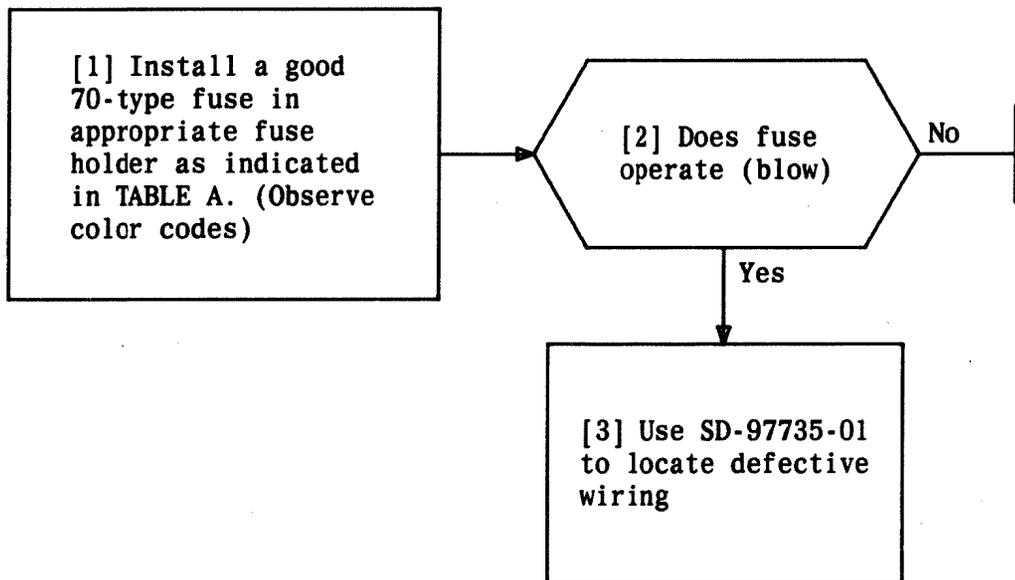


TABLE A	
For System Position	Fuse Holder Designation
1	F1C
2	F4C
3	F7C
4	F10C

INSTALL 70-TYPE FUSE FOR POWERING LINE POWER UNIT

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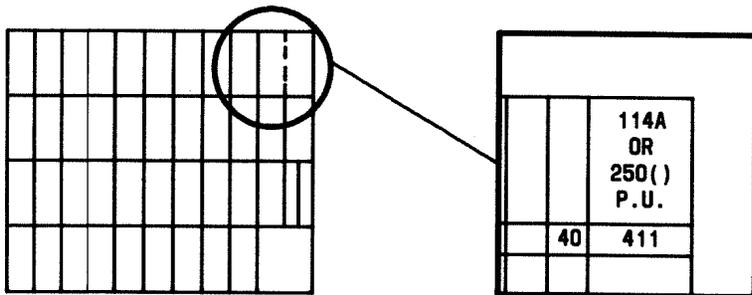
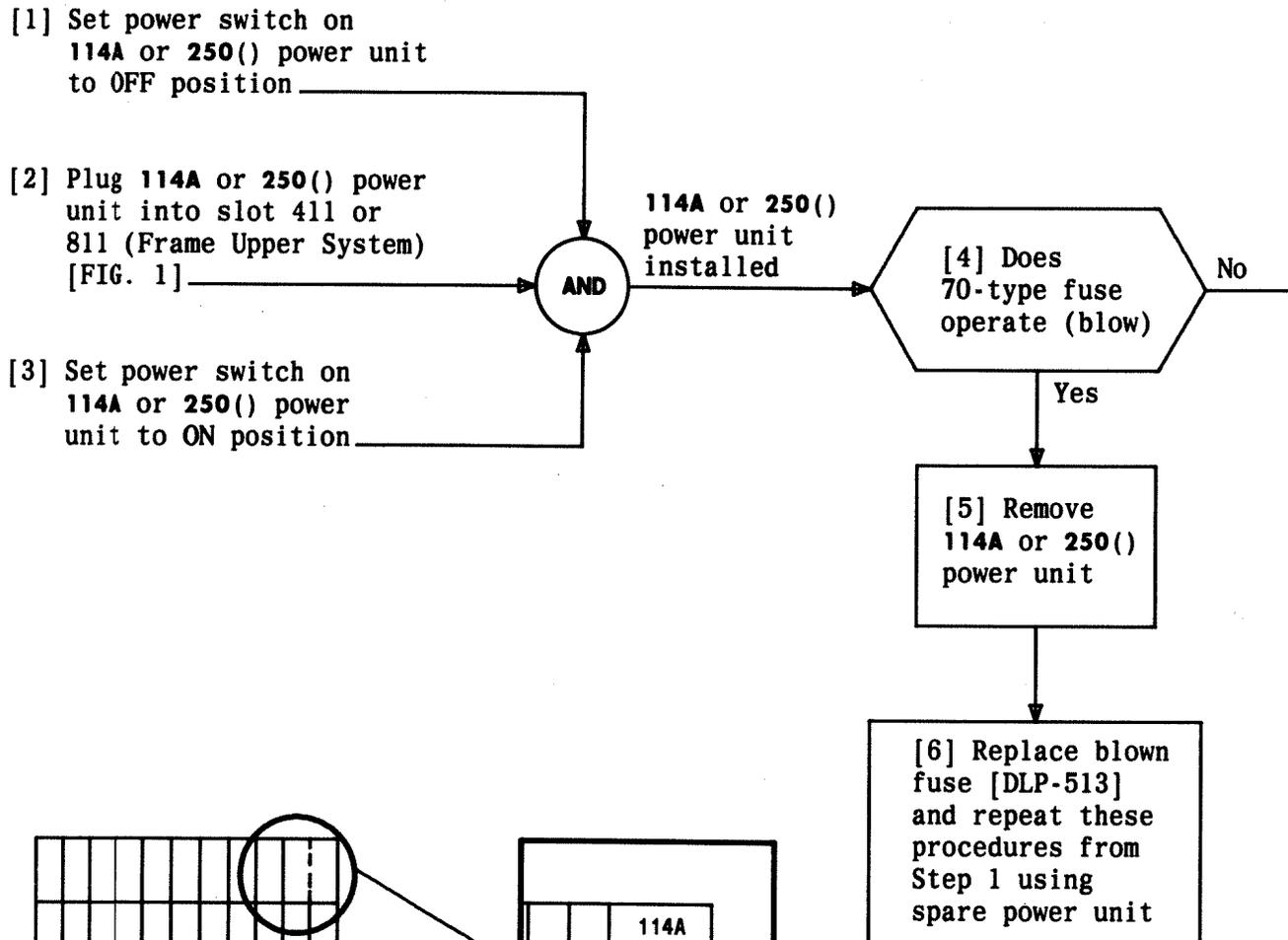


FIG. 1

INSTALL 114A OR 250() POWER UNIT

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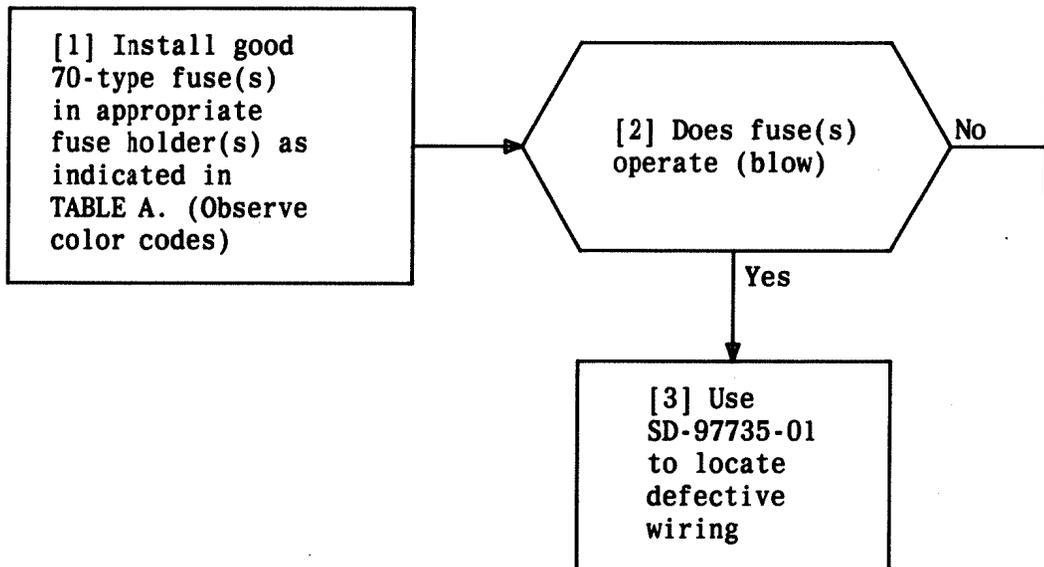


TABLE A			
For Equipped System Position	Fuse Holder Designation		
	209A 238A	209A 238B	209C 238C
1	F1A, F1B	F1A	F1B
2	F4A, F4B	F4A	F4B
3	F7A, F7B	F7A	F7B
4	F10A, F10B	F10A	F10B

INSTALL 70-TYPE FUSE(S) FOR POWERING ±130V LINE POWER UNIT

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[1] Set power switch on
209() or 238() power unit
to OFF position

[2] Plug 209() or 238() power
unit into slot 411
[FIG. 1]

[3] Set power switch on
209() or 238() power
unit to ON position

209() or 238()
power unit
installed

AND

[4] Does
70-type fuse(s)
operate (blow)

No

Yes

Yes

[5] Remove
209() or 238()
power unit

[7] Use
SD-97733-04
to locate
defective
wiring

[6] Replace blown
fuse(s) [DLP-515]
and repeat these
procedures from
Step 1

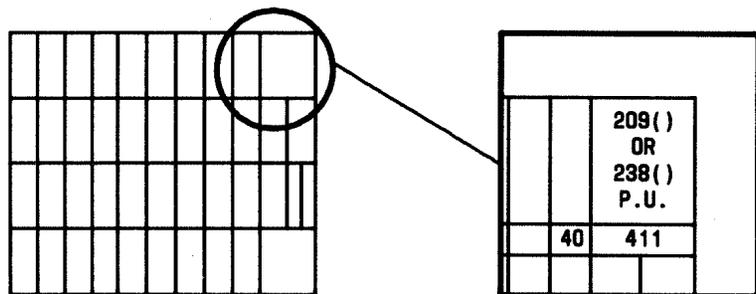
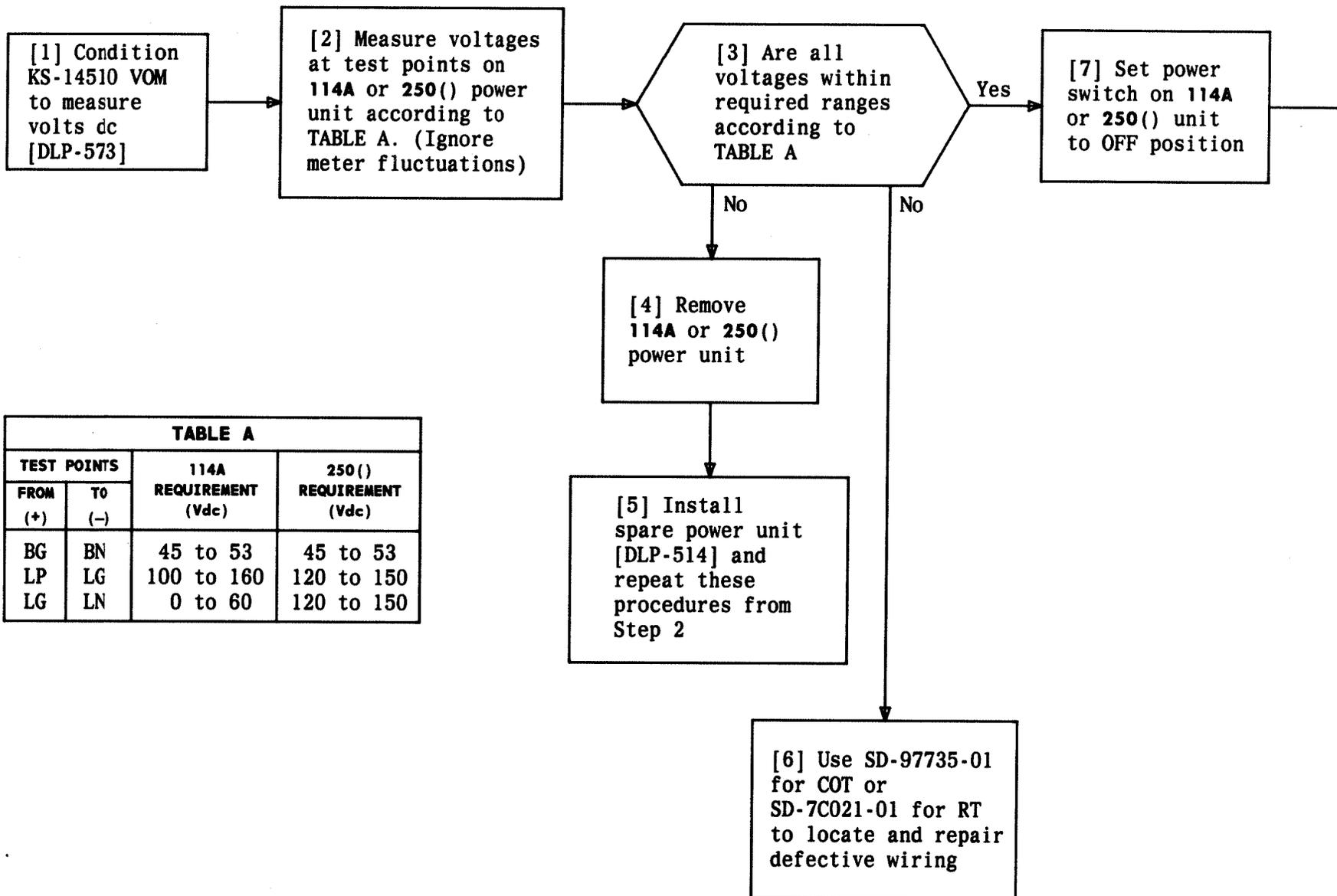


FIG. 1

INSTALL 209() OR 238() POWER UNIT

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TEST POINTS		114A REQUIREMENT (Vdc)	250() REQUIREMENT (Vdc)
FROM (+)	TO (-)		
BG	BN	45 to 53	45 to 53
LP	LG	100 to 160	120 to 150
LG	LN	0 to 60	120 to 150

MEASURE VOLTAGES ON 114A OR 250() POWER UNIT AT COT

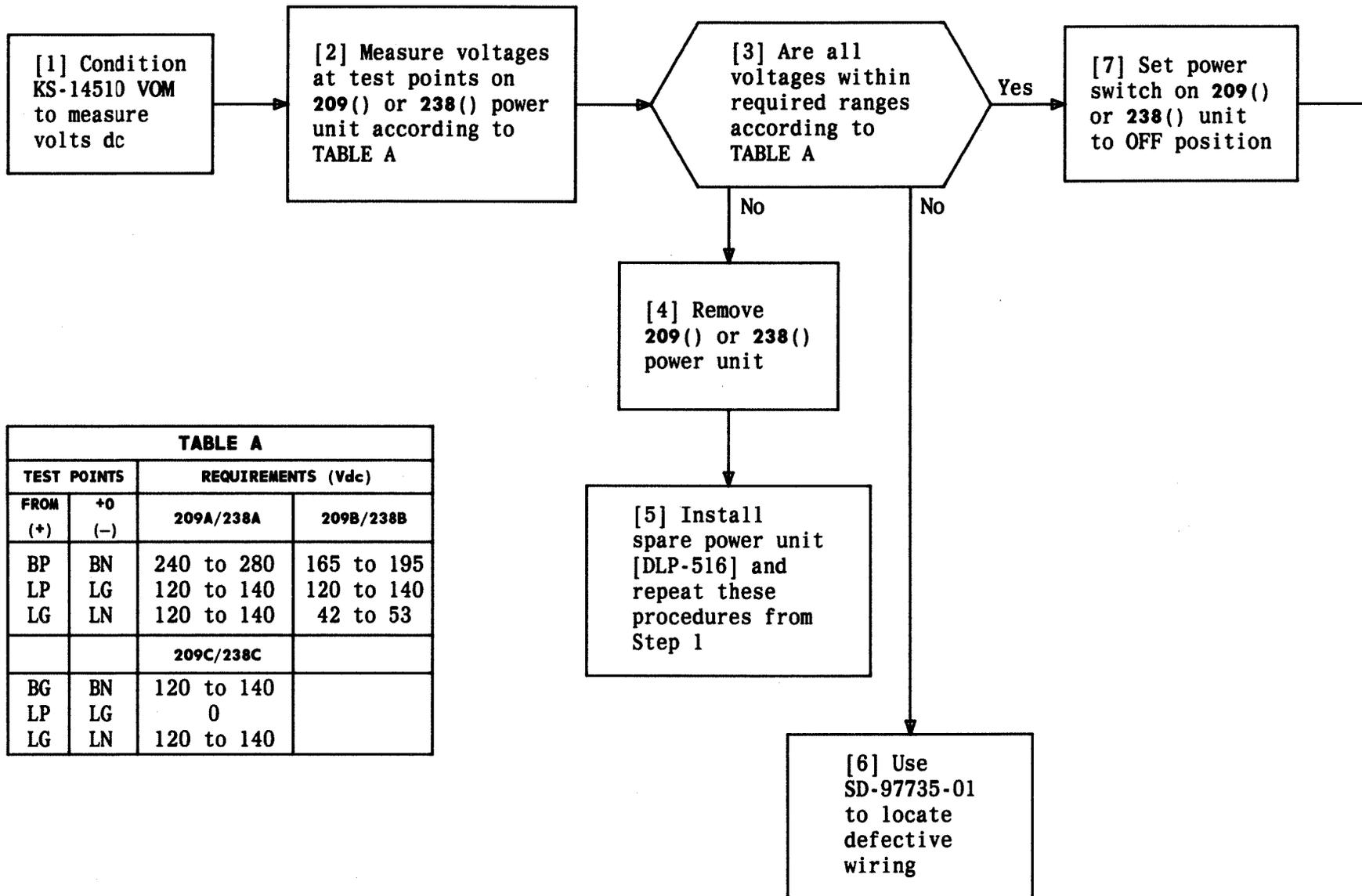


TABLE A			
TEST POINTS		REQUIREMENTS (Vdc)	
FROM (+)	+0 (-)	209A/238A	209B/238B
BP	BN	240 to 280	165 to 195
LP	LG	120 to 140	120 to 140
LG	LN	120 to 140	42 to 53
		209C/238C	
BG	BN	120 to 140	
LP	LG	0	
LG	LN	120 to 140	

MEASURE VOLTAGES ON 209() OR 238() POWER UNIT

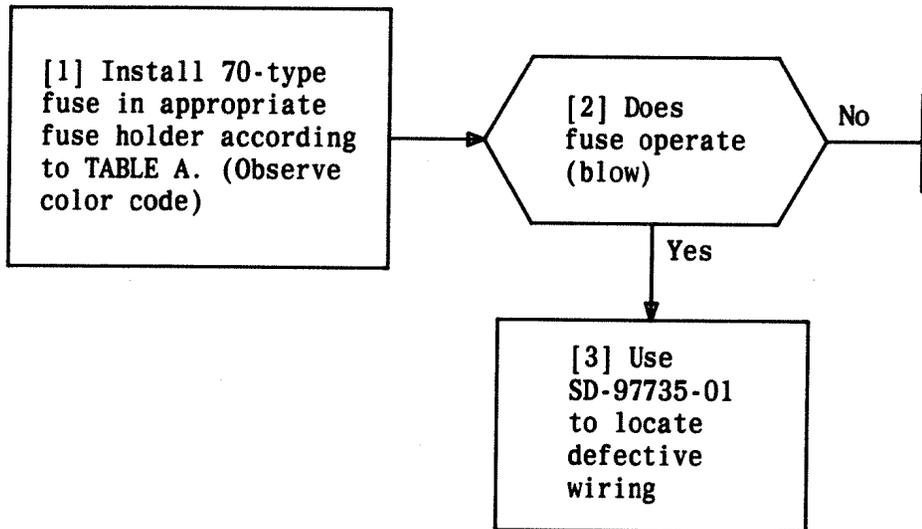
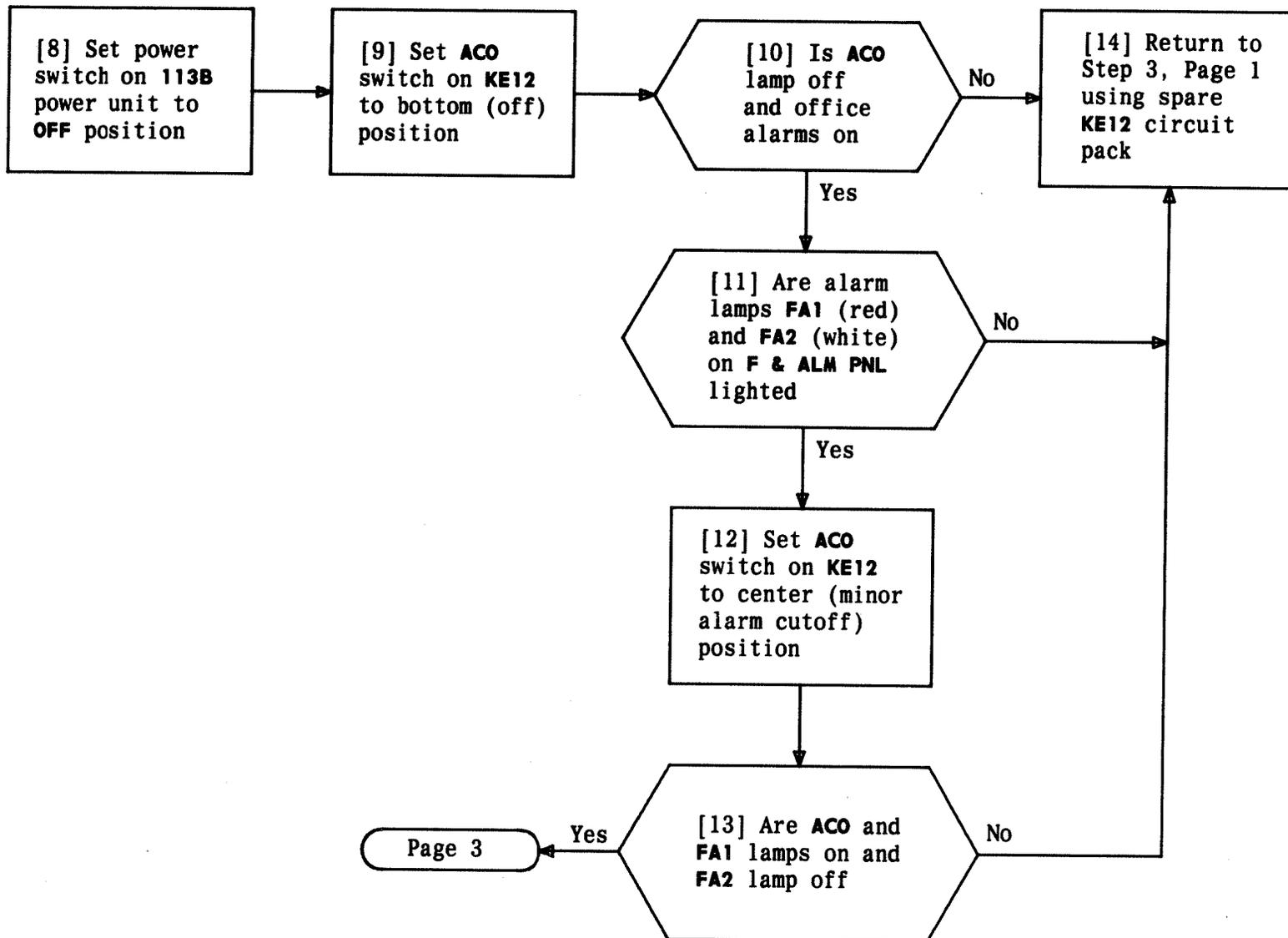


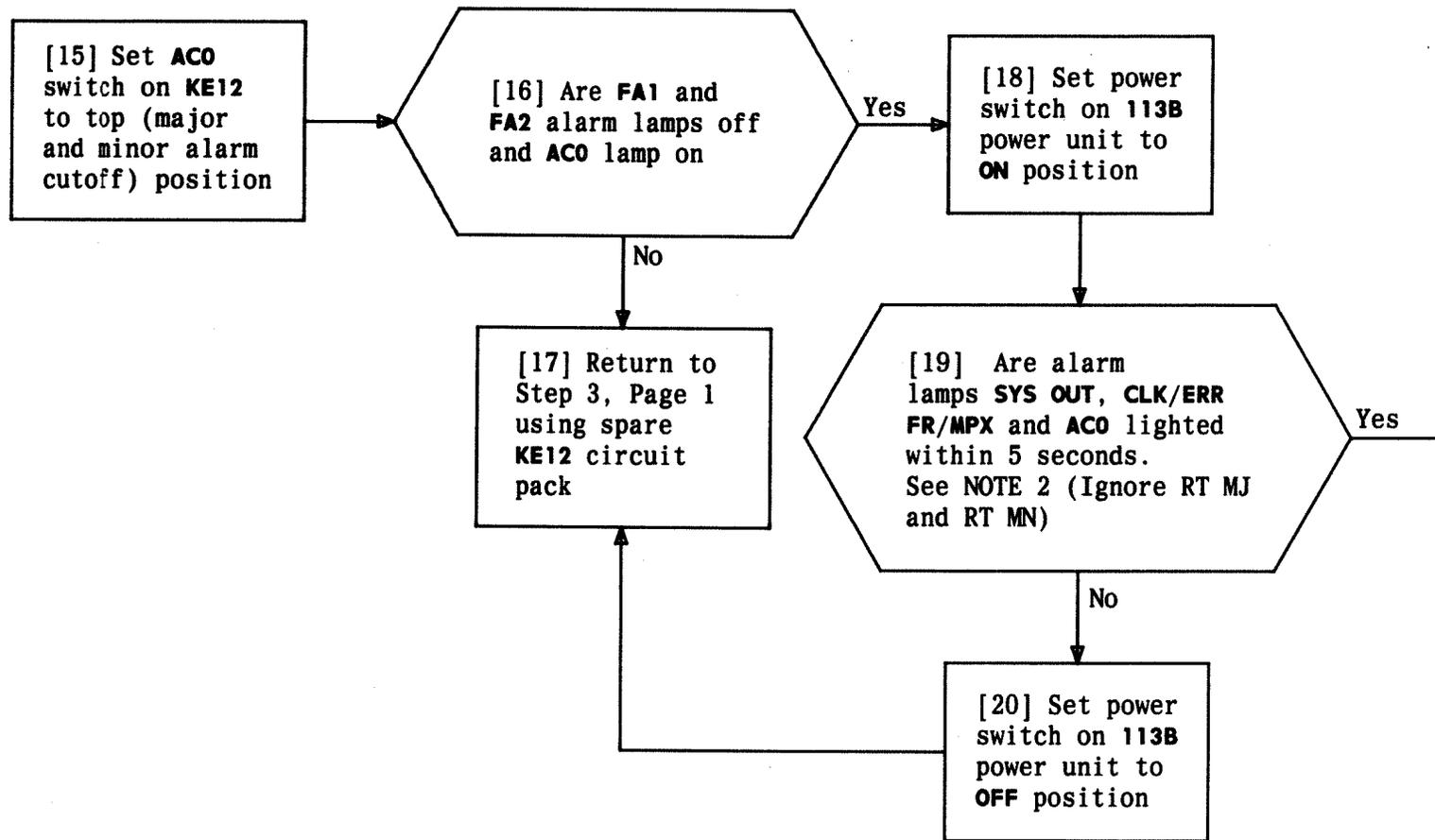
TABLE A	
FOR SYSTEM POSITION	FUSE HOLDER DESIGNATION
1	F3C
2	F6C
3	F9C
4	F12C

INSTALL 70-TYPE FUSE FOR POWERING LINE INTERFACE UNIT



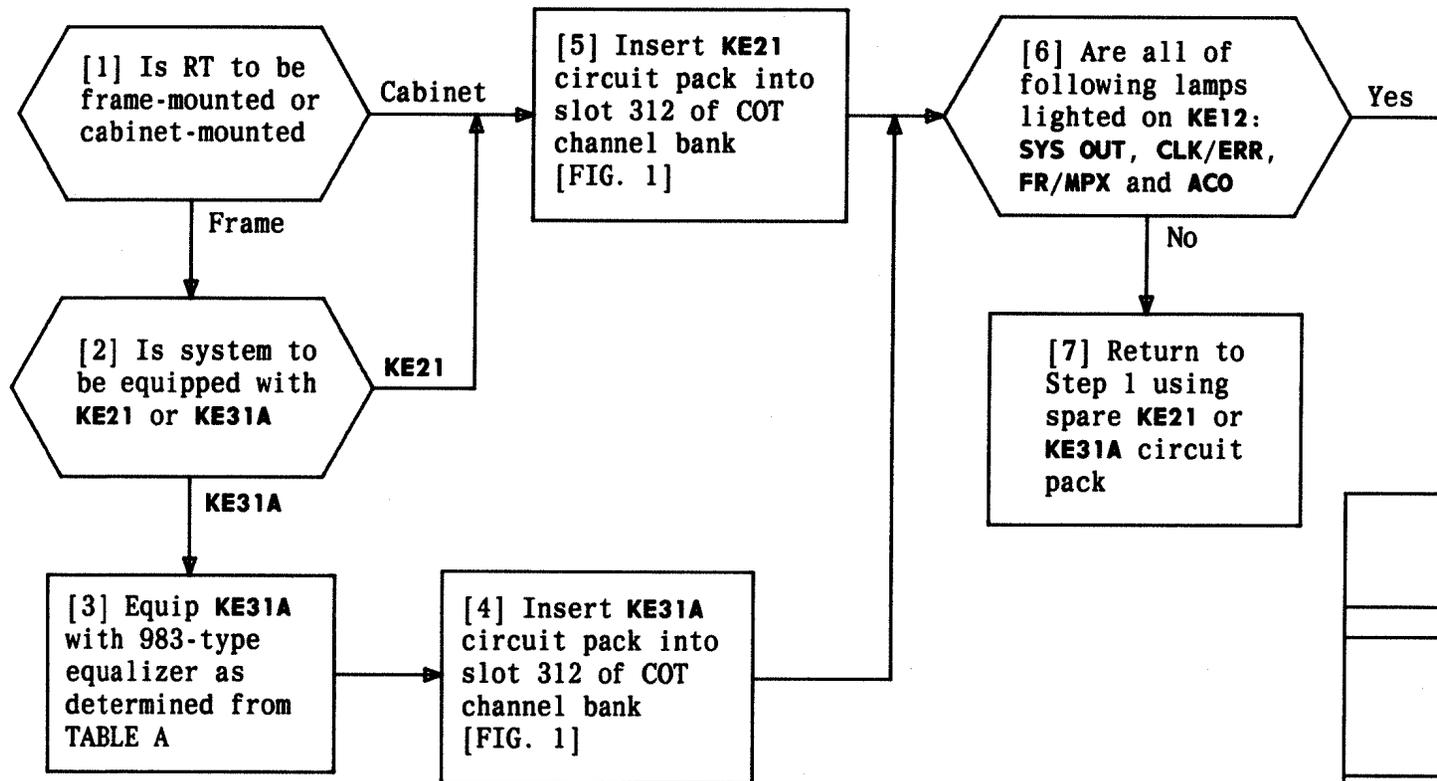
**INSTALL AND TEST CENTRAL OFFICE MAINTENANCE
(CO MAINT) UNIT (KE12)**

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NOTE 2	
If shared spare line option is <u>not</u> being used, SPLT lamp will also be lighted	
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**INSTALL AND TEST CENTRAL OFFICE MAINTENANCE
(CO MAINT) UNIT (KE12)**



		KE 21 OR KE 31A	
		312	

TABLE A			
983-TYPE EQUALIZERS			
Cable Length	0-220'	220' -440'	440' -660'
Cable Loss	0-1 dB	1-2 dB	2-3 dB
Use Code	A	B	C

FIG. 1

**INSTALL CENTRAL OFFICE LINE INTERFACE (CO LINE INT) UNIT
(KE21 OR KE31A)**

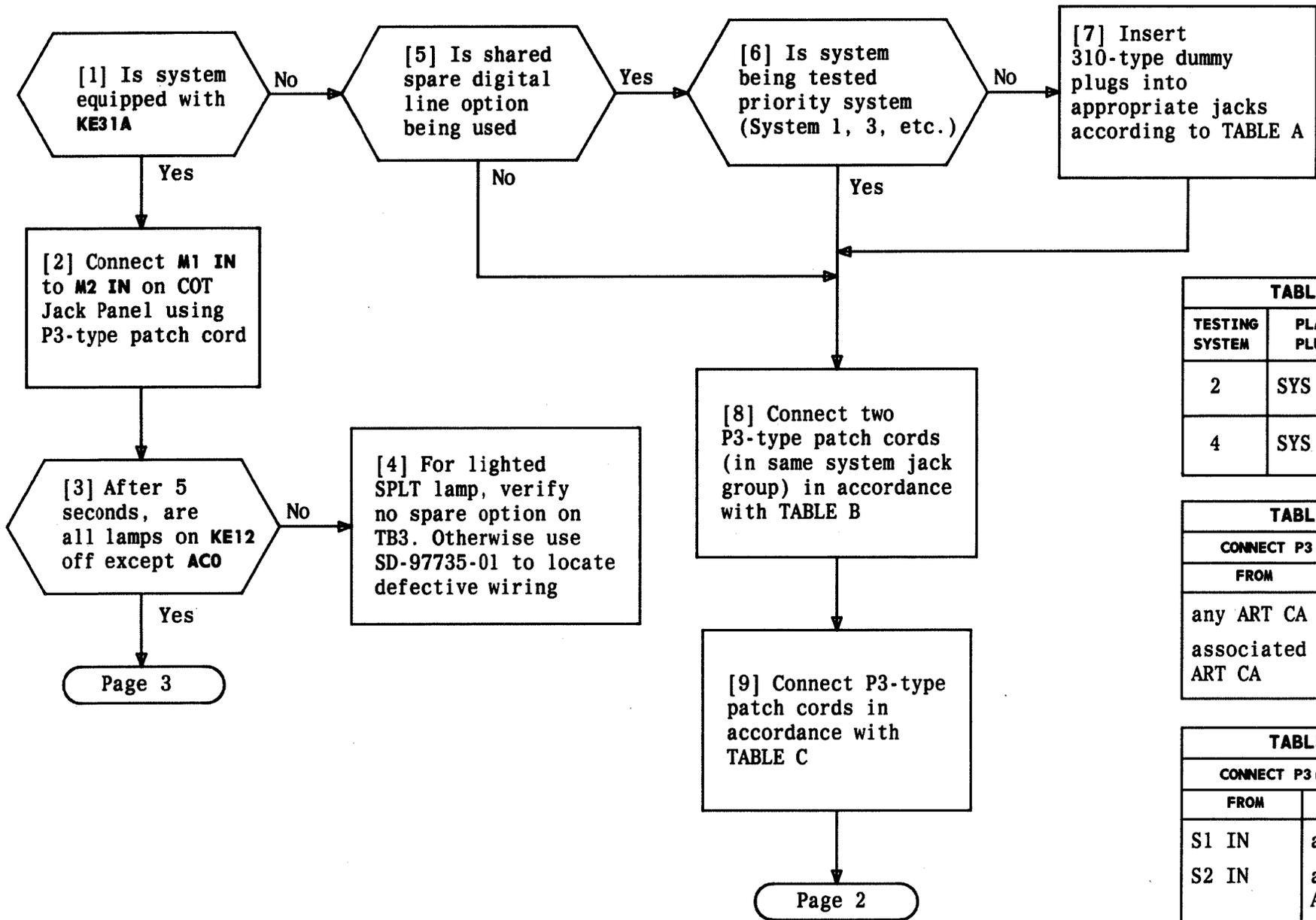


TABLE A

TESTING SYSTEM	PLACE DUMMY PLUGS IN JACKS
2	SYS 1 S1 OUT S2 OUT
4	SYS 3 S1 OUT S2 OUT

TABLE B

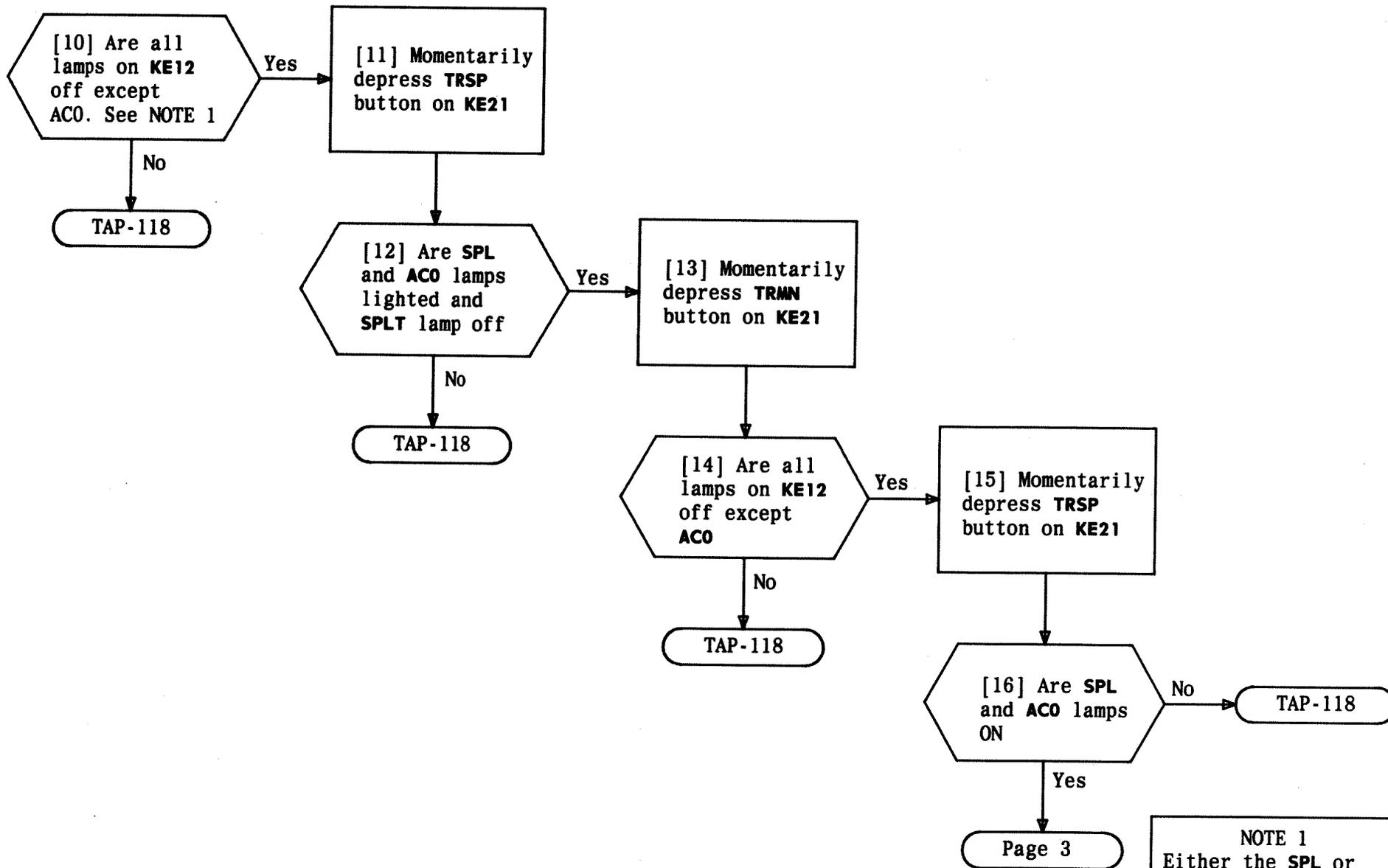
CONNECT P3() CORDS	
FROM	TO
any ART CA associated ART CA	M1 IN M2 IN

TABLE C

CONNECT P3() CORDS	
FROM	TO
S1 IN S2 IN	any ART CA associated ART CA

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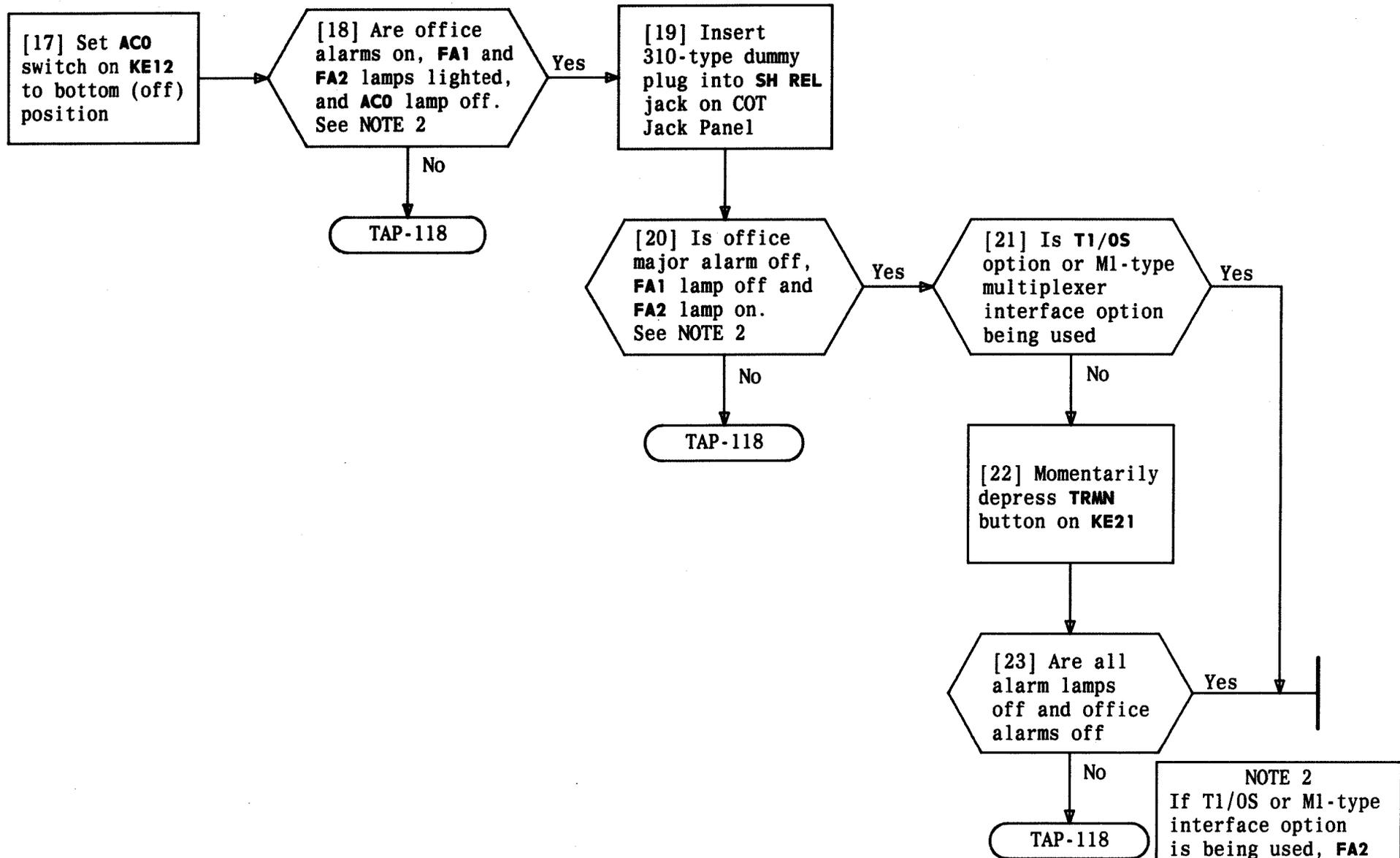
CHECK CENTRAL OFFICE ALARMS FOR DIGITAL LINE SWITCHING



NOTE 1
 Either the **SPL** or **SPLT** alarm lamp may also be lighted

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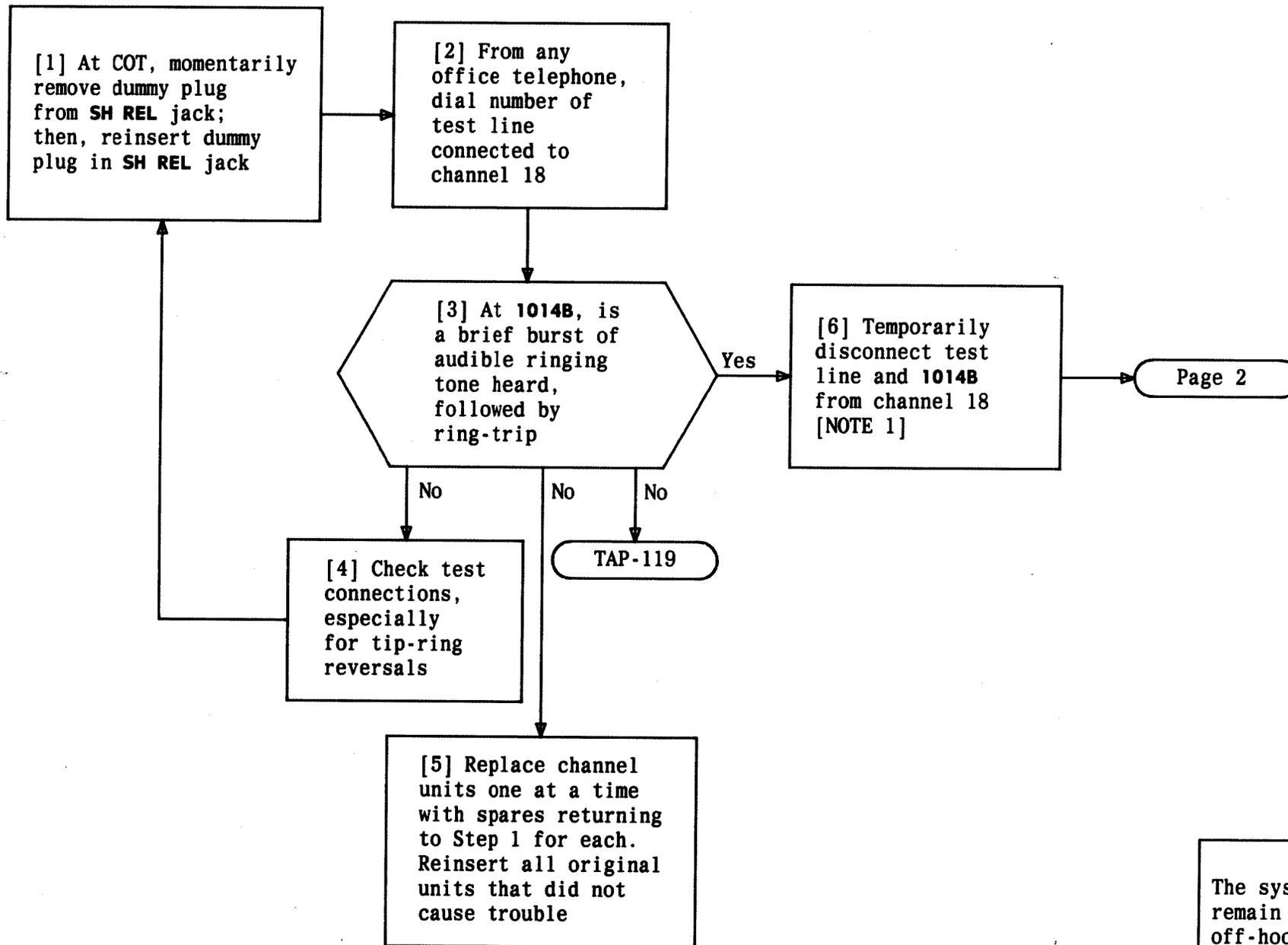
CHECK CENTRAL OFFICE ALARMS FOR DIGITAL LINE SWITCHING



NOTE 2
 If T1/OS or M1-type interface option is being used, FA2 lamp (minor alarm) will not be on

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CHECK CENTRAL OFFICE ALARMS FOR DIGITAL LINE SWITCHING



PERFORM 8-CHANNEL LOOP-AROUND TEST

NOTE 1		
The system will remain in an off-hook condition		
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[7] Connect test line to 1014B and, with MON-TALK switch in TALK position, dial number for milliwatt supply

[8] When 1000-Hz tone is returned, reconnect test line and 1014B to channel 18. See NOTE 2

[9] Operate 1014B MON-TALK switch to MON position and note level and pitch of 1000-Hz tone

[10] Transfer test clips of 1014B to bridge across tip and ring associated with channel 3. Note level and pitch of 1000-Hz tone

AND

[11] Is level and pitch of 1000-Hz tone the same as in Step 9 [NOTE 3]

Yes

Page 3

No

[12] Replace channel units 3 and 18 one at a time returning to Step 1 for each

NOTES

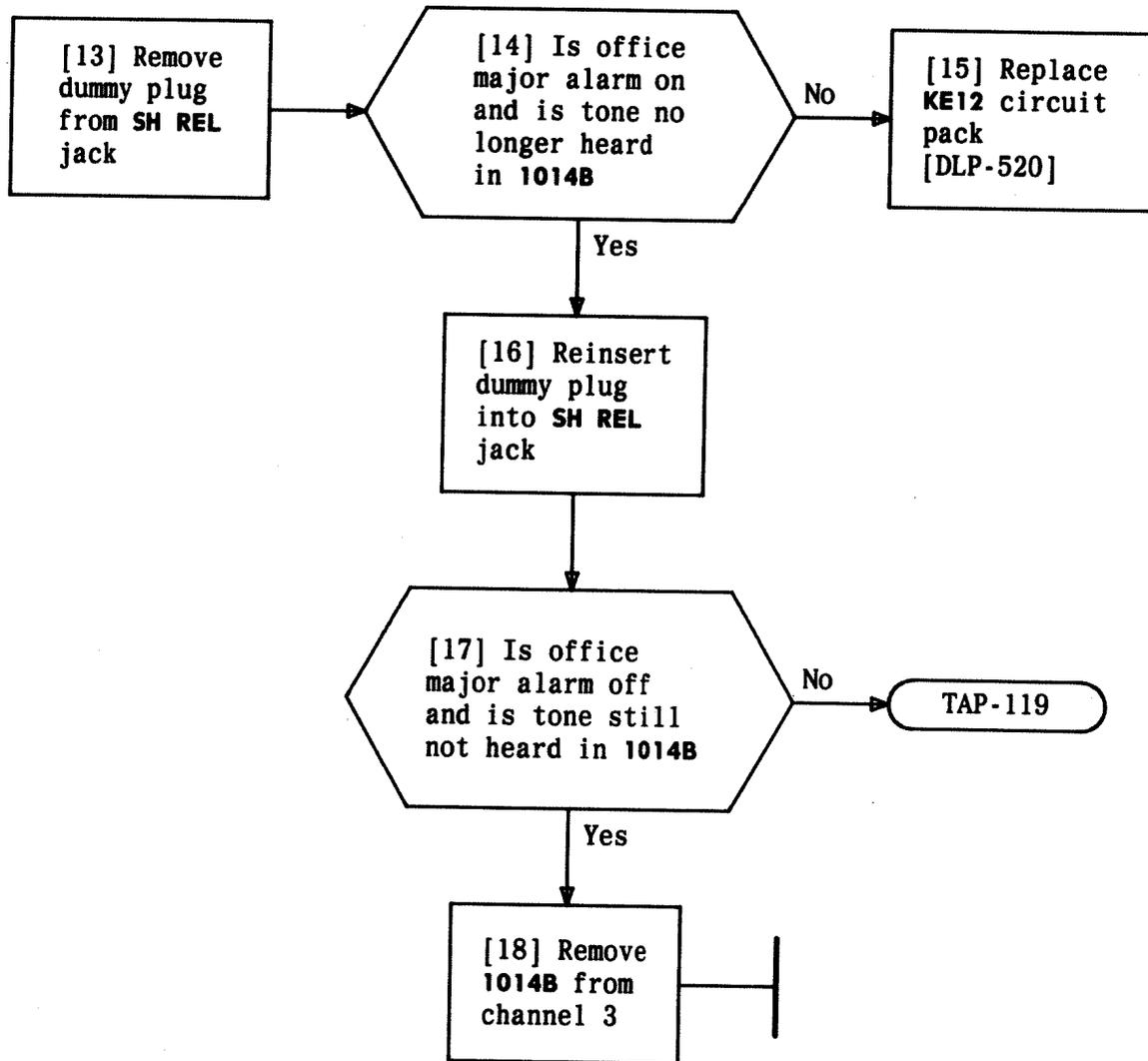
2. Do not remove 1014B while making connections or call will be dropped
3. The tone level may be slightly lower than that heard in Step 9 with no distortion and no additional tones

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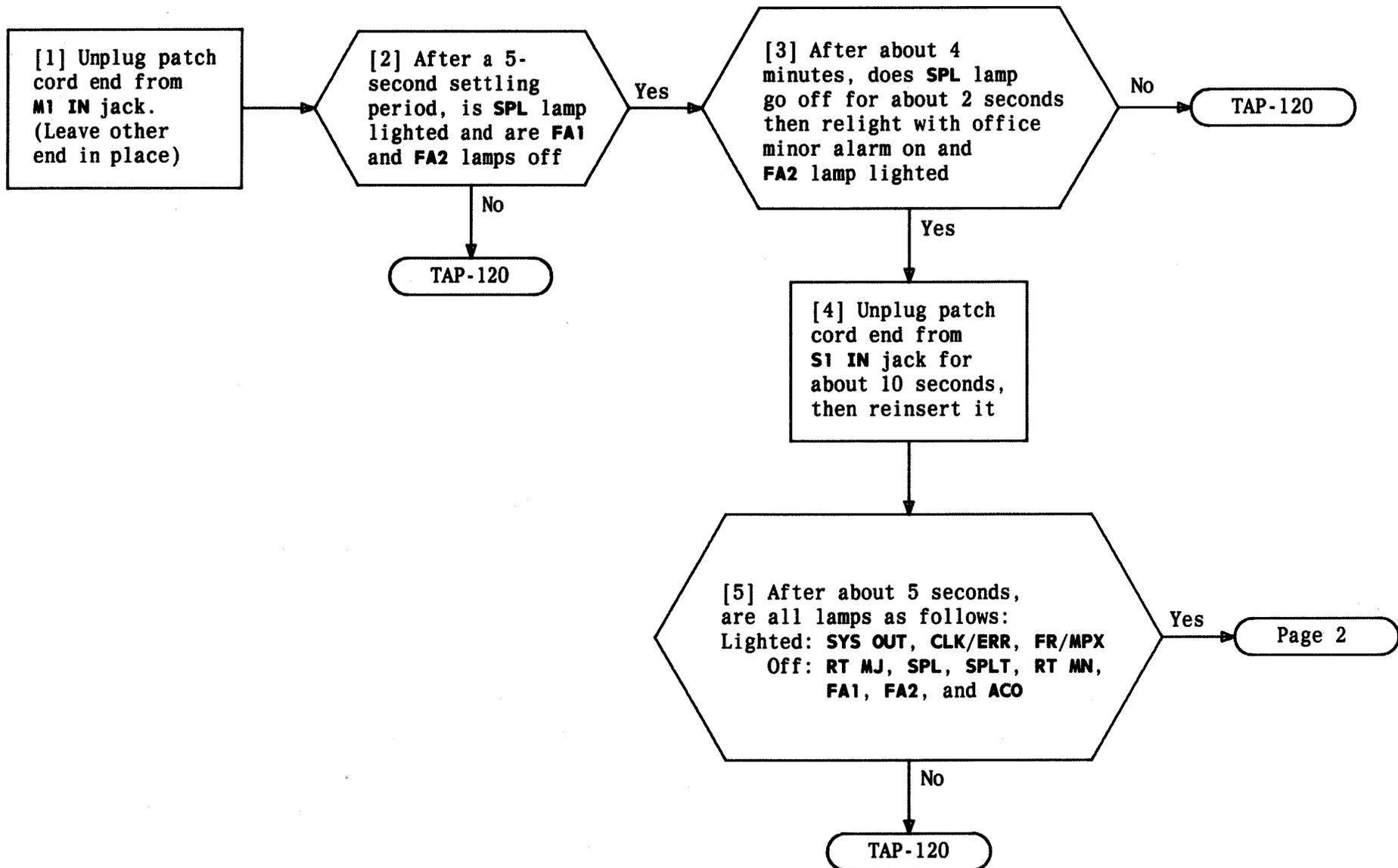
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PERFORM 8-CHANNEL LOOP-AROUND TEST



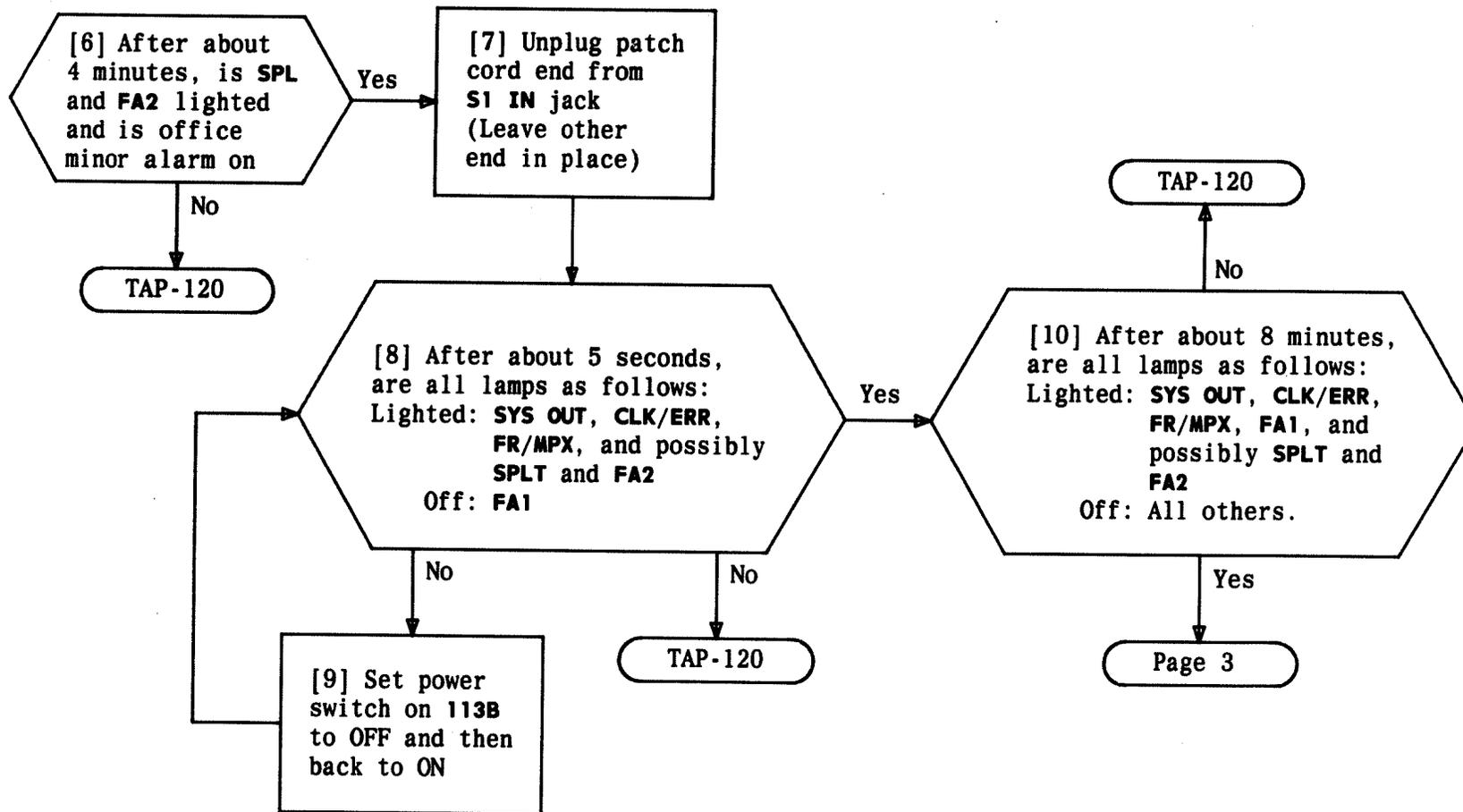
PERFORM 8-CHANNEL LOOP-AROUND TEST

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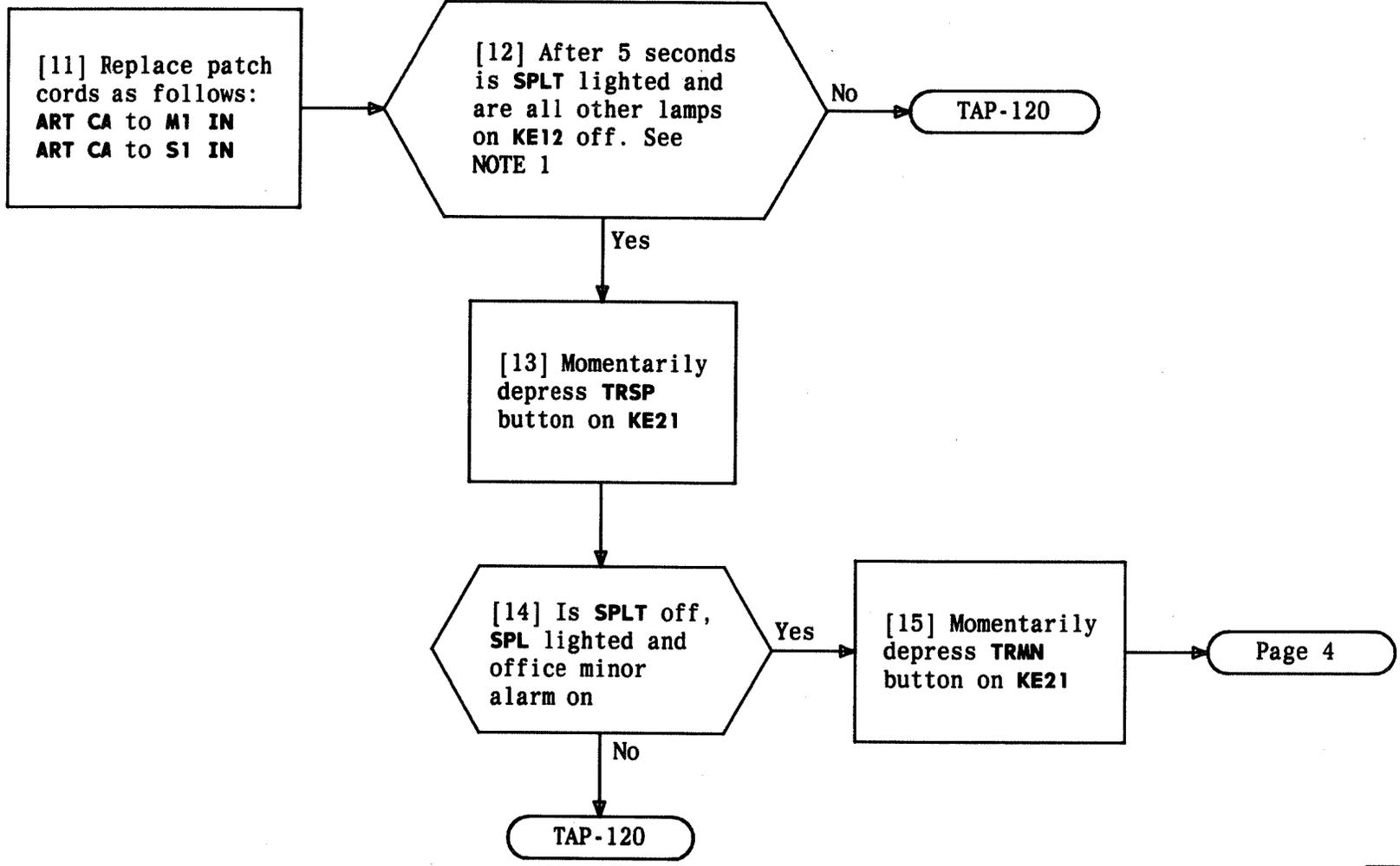
**PERFORM CENTRAL OFFICE TERMINAL FINAL SYS OUT
STATE TESTS FOR SYSTEMS EQUIPPED WITH KE21**

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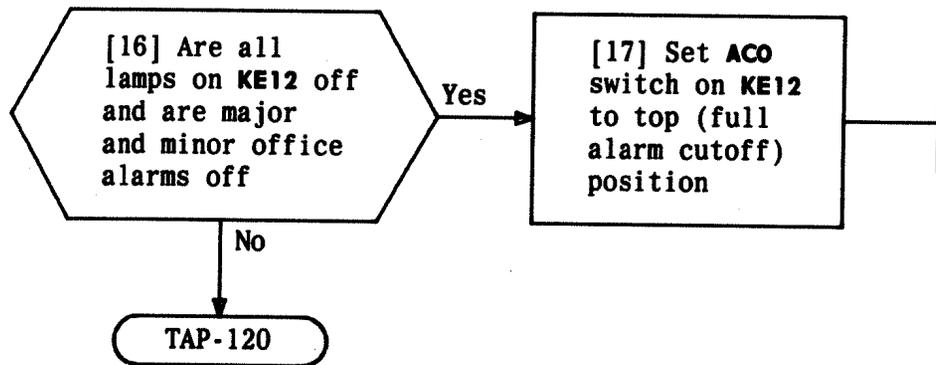
PERFORM CENTRAL OFFICE TERMINAL FINAL SYS OUT STATE TESTS FOR SYSTEMS EQUIPPED WITH KE21

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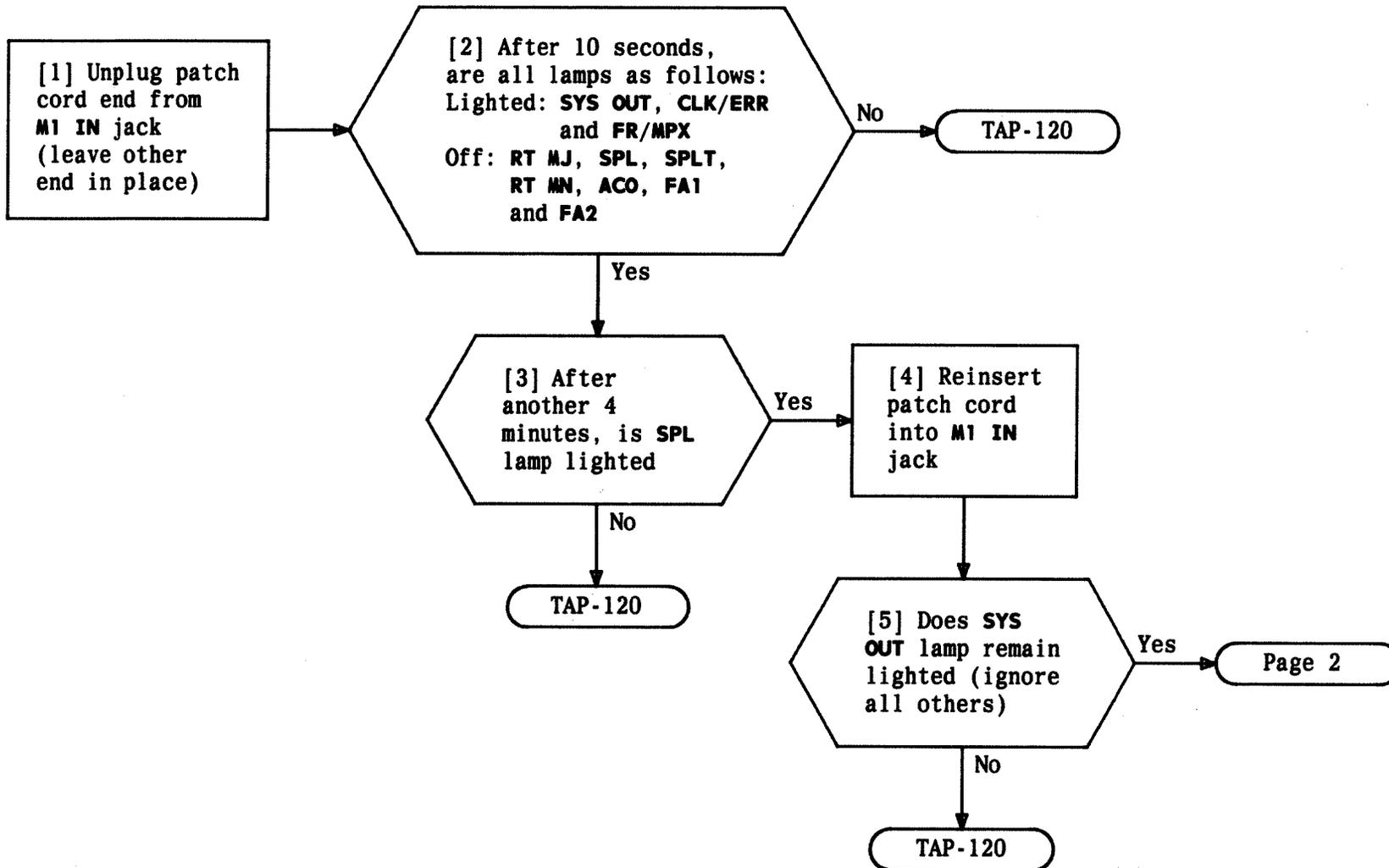
NOTE 1	
SPLT will be off if equipped with no spare option. FA2 and minor alarm should be ignored	
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PERFORM CENTRAL OFFICE TERMINAL FINAL SYS OUT STATE TESTS FOR SYSTEMS EQUIPPED WITH KE21



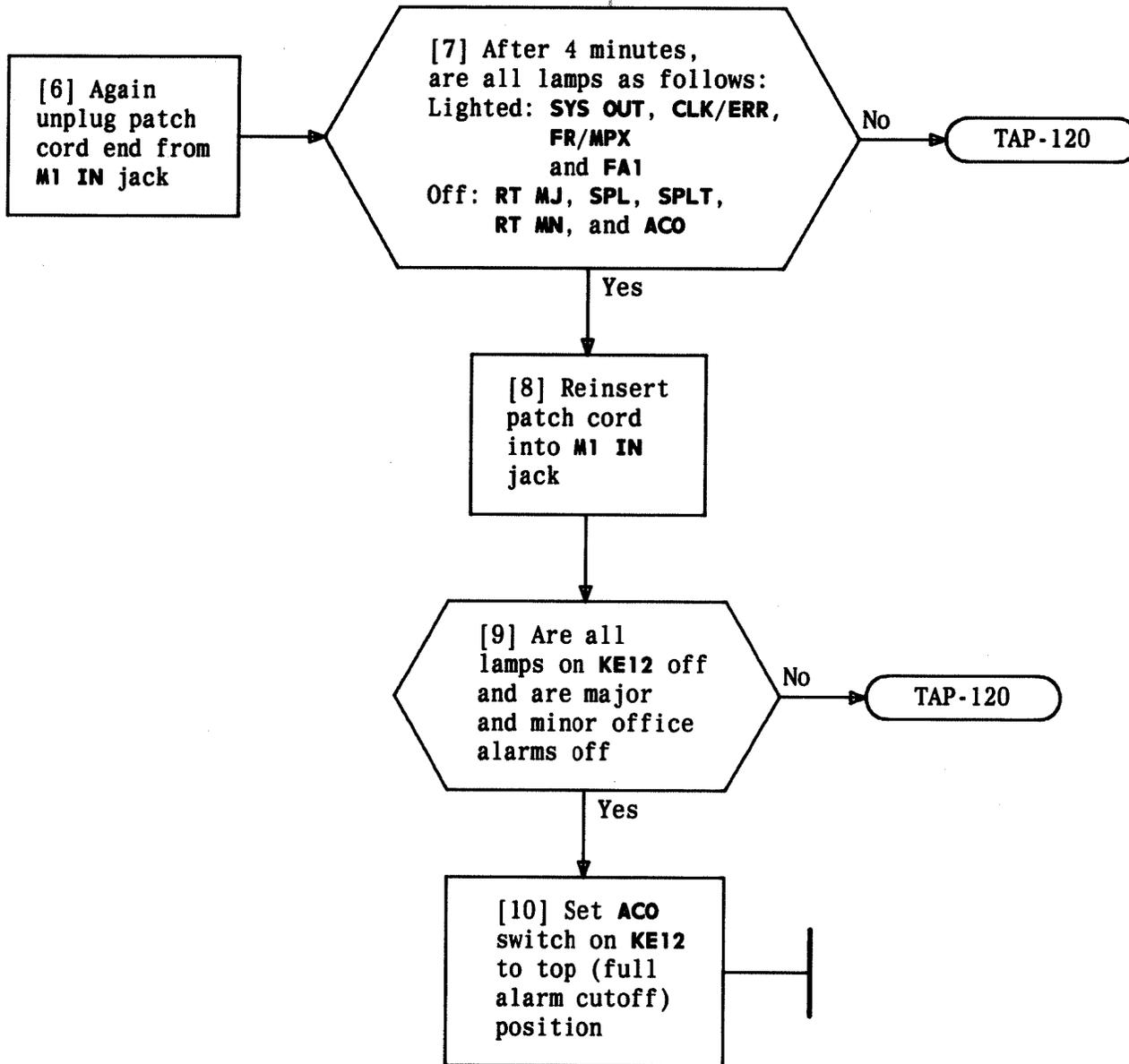
**PERFORM CENTRAL OFFICE TERMINAL FINAL SYS OUT
STATE TESTS FOR SYSTEMS EQUIPPED WITH KE21**

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PERFORM CENTRAL OFFICE TERMINAL FINAL SYS OUT STATE TESTS FOR SYSTEMS EQUIPPED WITH KE31A

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PERFORM CENTRAL OFFICE TERMINAL FINAL SYS OUT STATE TESTS FOR SYSTEMS EQUIPPED WITH KE31A

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If the electrolyte or battery top residue accidentally gets on or in:

- The Eyes – Wash the eyes immediately and repeatedly with clean water or the eye wash rinse. The services of a hospital or physician are then required as quickly as possible
- The Skin – Flush the affected area immediately with water
- Clothing or Tools – Flush the affected area immediately with water
- Cabinet Surfaces – Blot up using clean, damp, wiping cloth. Dispose of cloth in nonmetallic waste container
- Electronic Apparatus – Replace

REVIEW SAFETY AND FIRST AID PROCEDURES

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[1] Verify that switch on external (commercial) power is set to OFF position

[2] Release door lock mechanisms on 33C cabinet to access rear compartment

[3] Install 10-amp fuse for convenience outlets in PO fuse holder position [FIG. 1]

[4] Plug Bell System approved 117-volt lamp and extension cord into one of two convenience outlets on power panel [FIG. 1]

AND

[5] Set switch on external power panel to ON position

[6] Does PO fuse operate (blow)

[8] Refer trouble to construction personnel or power company personnel

[7] Does 117-volt lamp light

[9] Set switch on external power panel to OFF and remove 117-volt lamp from outlet

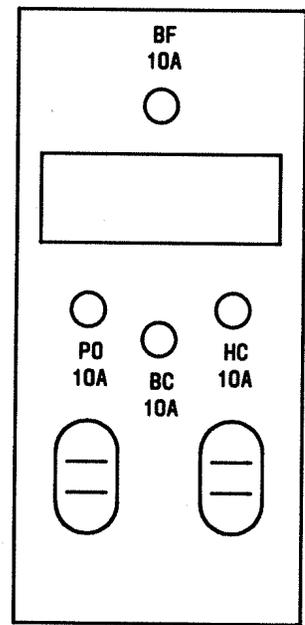


FIG. 1

PREPARE COMMERCIAL AC POWER FOR USE AT RT

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[1] Remove batteries from shipping containers and place on level surface

[2] Visually inspect each cell for damage or residue buildup

AND

[3] Are all cells free from damage and excess residue buildup

No

[4] Replace defective cells in shipping containers and obtain spare cells

Yes

[5] Visually inspect electrolyte level in each cell

No

[6] Is electrolyte level at upper colored line on each cell case

Yes

[7] See DANGER 1. Remove vent cap(s) and antileak shipping devices and add approved water. DO NOT EXCEED UPPER LINE

DANGER 1
Electrolyte may spray from cells when antileak shipping devices are removed

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VISUALLY INSPECT EACH CELL FOR EXCESS RESIDUE BUILDUP AND ELECTROLYTE LEVELS

[1] Verify factory-installed tie bars on each pair of cells connect a positive and a negative terminal

[2] Tighten factory-installed tie bars using 9/16-inch taped open-end wrench. DO NOT OVERTIGHTEN

[3] Place batteries on shelves in back compartment of cabinet (five 2-cell batteries per shelf) [FIG. 1]. Start from right side of each shelf, top shelf first. See NOTE 1

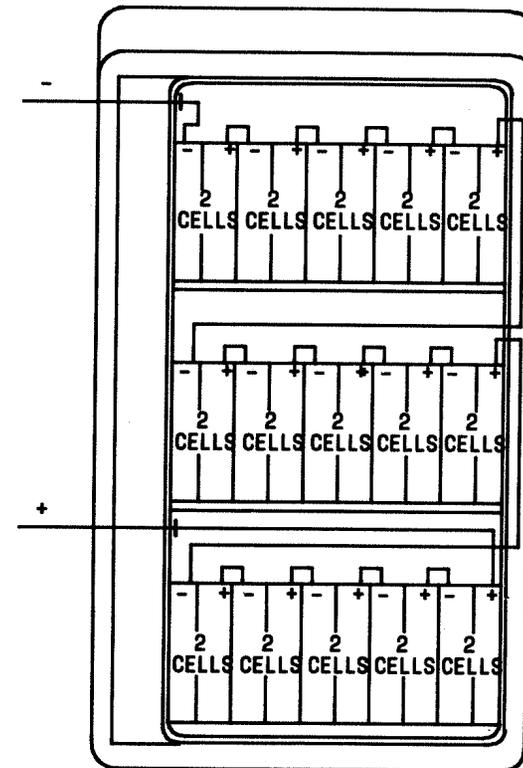
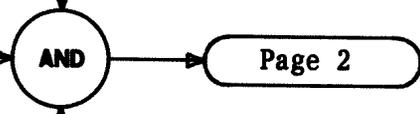


FIG. 1

NOTE 1

Cells should be oriented so that factory-installed tie bars are at back and right front terminal of each pair of cells is the positive terminal

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INSTALL AND CONNECT BATTERIES IN RT CABINET

[4] Using tie bars shipped with batteries, series-connect batteries on each shelf as shown in FIG. 2

[5] Tighten front terminal nuts using 9/16-inch taped open-end wrench. DO NOT OVERTIGHTEN

[6] Working from right to left and top to bottom, connect ends of preformed battery cables to battery terminals as shown in FIG. 1, Page 1

[7] Tighten terminal nuts using 9/16-inch taped open-end wrench. DO NOT OVERTIGHTEN

[8] Fasten batteries to back of cabinet using cable ties as shown in FIG. 2

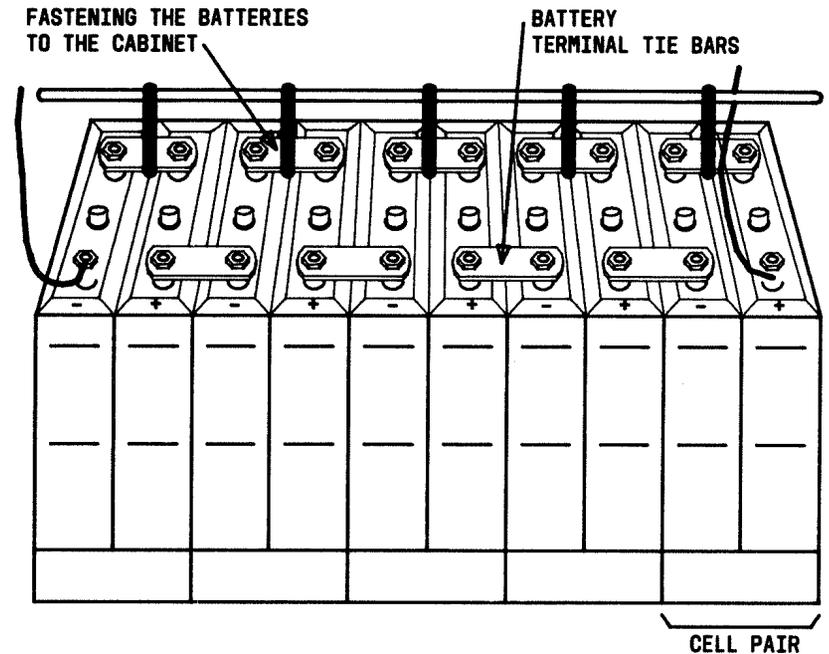
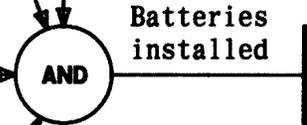


FIG. 2

INSTALL AND CONNECT BATTERIES IN RT CABINET

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[1] Obtain KS-14510 VOM or equivalent

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS 60 position

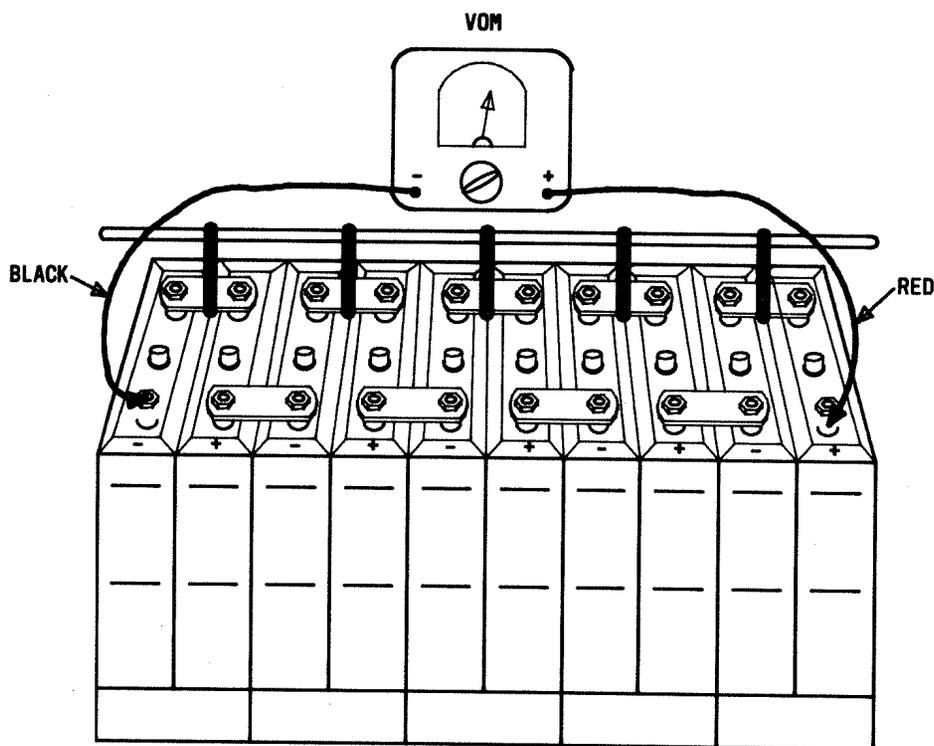


FIG. 1

[3] See WARNING 1. Place VOM positive (red) lead on positive (+) terminal of battery on right side and place negative (black) lead on negative (-) terminal of battery on left side [FIG. 1]

[4] Does VOM indicate between 12 and 14 Vdc

[5] Verify cells are oriented properly and series-connected properly

[6] Have all shelf voltages been measured

[7] Repeat for next shelf

WARNING 1
VOM may be damaged if incorrect scale is used, or if correct test lead polarity is not observed

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MEASURE BATTERY VOLTAGE OF EACH SHELF (5 PAIRS OF CELLS)

[1] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS-60 position

[3] Insert VOM positive (+) test lead into BG jack on KE9 CIRCUIT PACK (slot 012 in RT cabinet channel bank assembly)

[4] Insert VOM negative (-) test lead into BN jack on KE9 CIRCUIT PACK

AND

VOM test leads inserted into KE9 CIRCUIT PACK test jacks

[5] Is voltage measured on VOM between 40 to 46 volts dc

Yes

[8] Remove VOM test leads from KE9

No

No

[6] Check fuses on RT Power Panel. Replace any blown fuses

[7] Replace KUI and KE9 circuit packs one at a time repeating procedures from Step 3 for each. Reinsert original nondefective units

MEASURE BATTERY VOLTAGE AT KE9 CIRCUIT PACK (BC FUSE INSTALLED)

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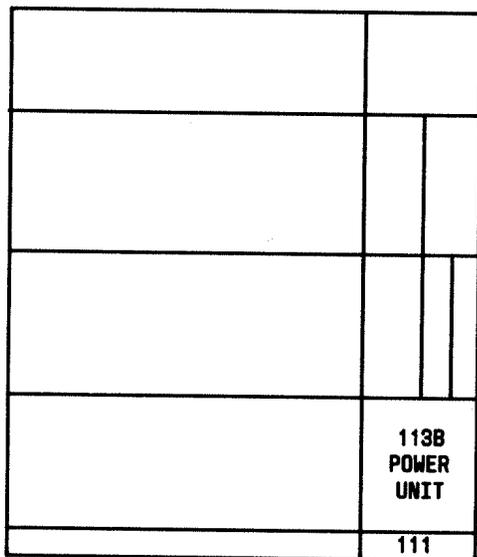
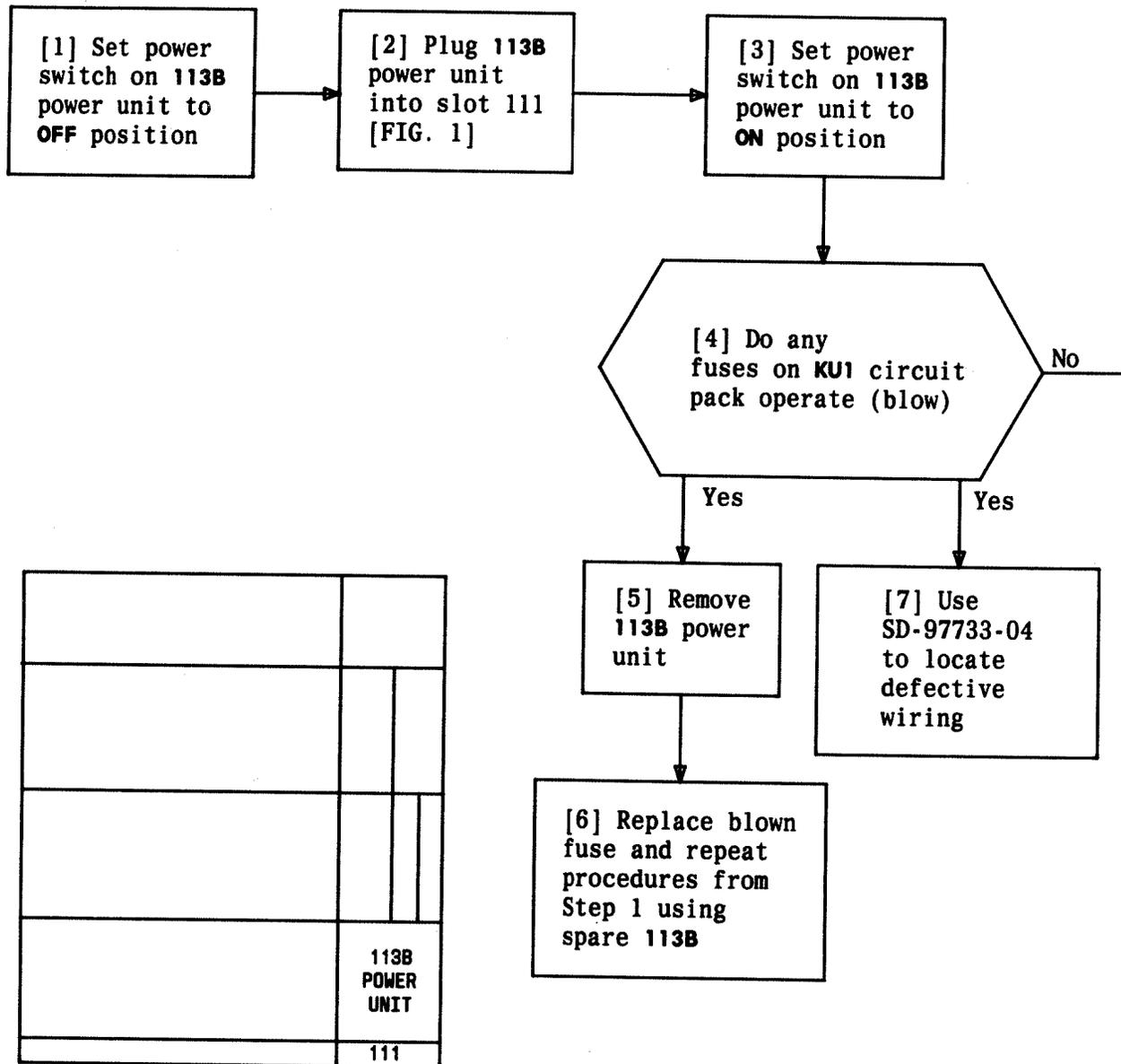


FIG. 1

INSTALL 113B POWER UNIT INTO SLOT 111 AT RT CABINET

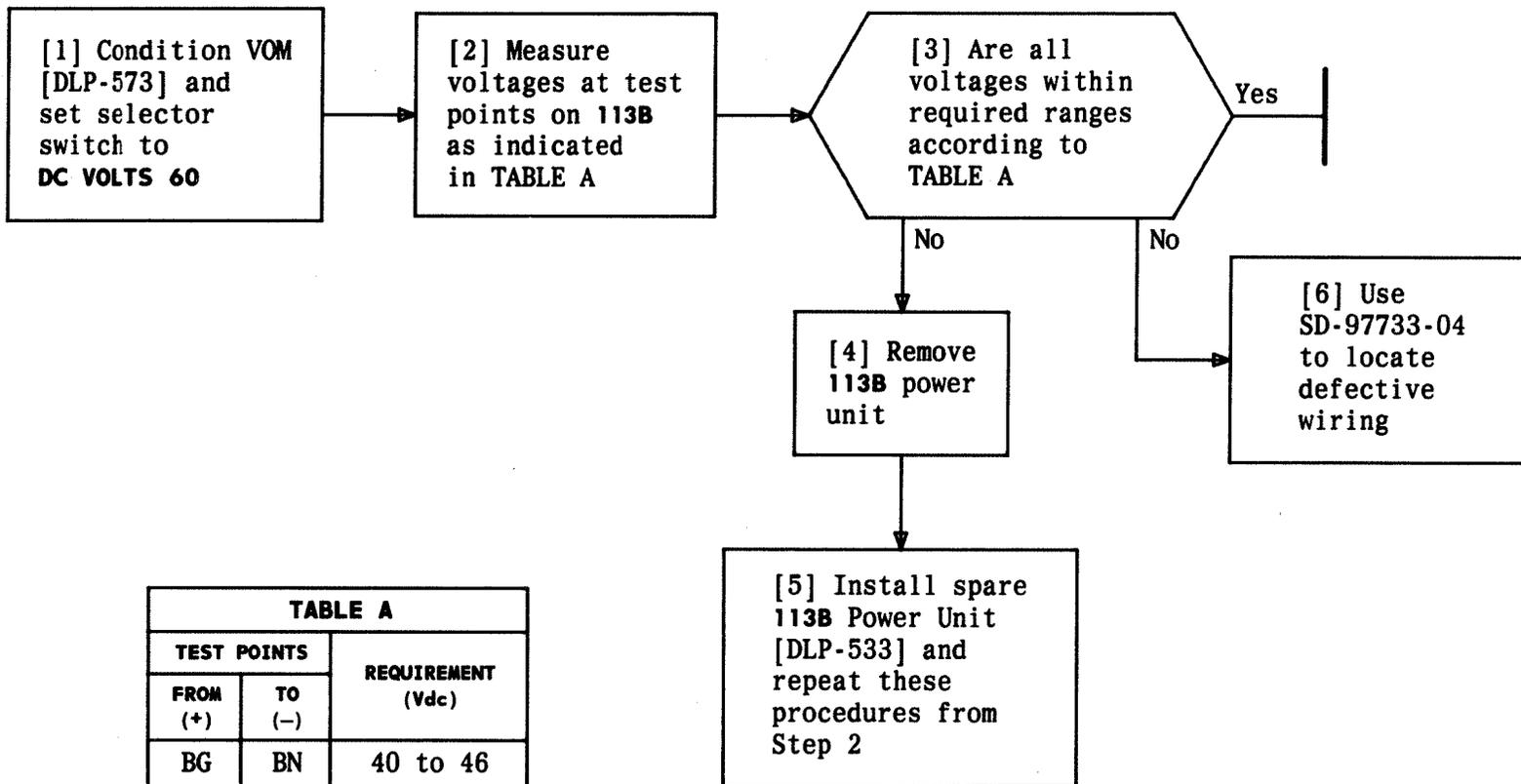


TABLE A		
TEST POINTS		REQUIREMENT (Vdc)
FROM (+)	TO (-)	
BG	BN	40 to 46
+5	CG	4.5 to 5.5
CG	-8	7 to 9

MEASURE VOLTAGES ON 113B POWER UNIT AT RT CABINET

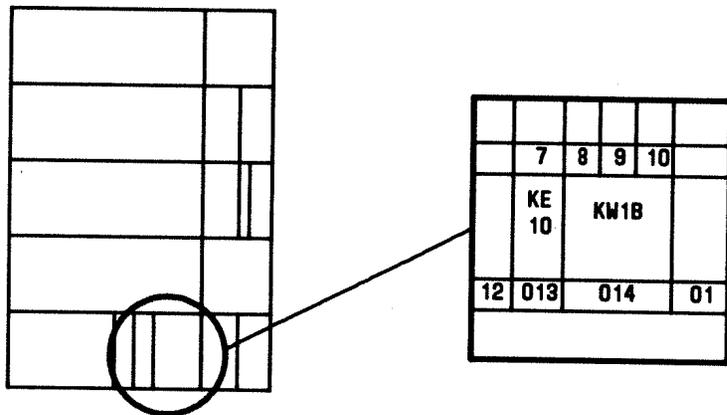
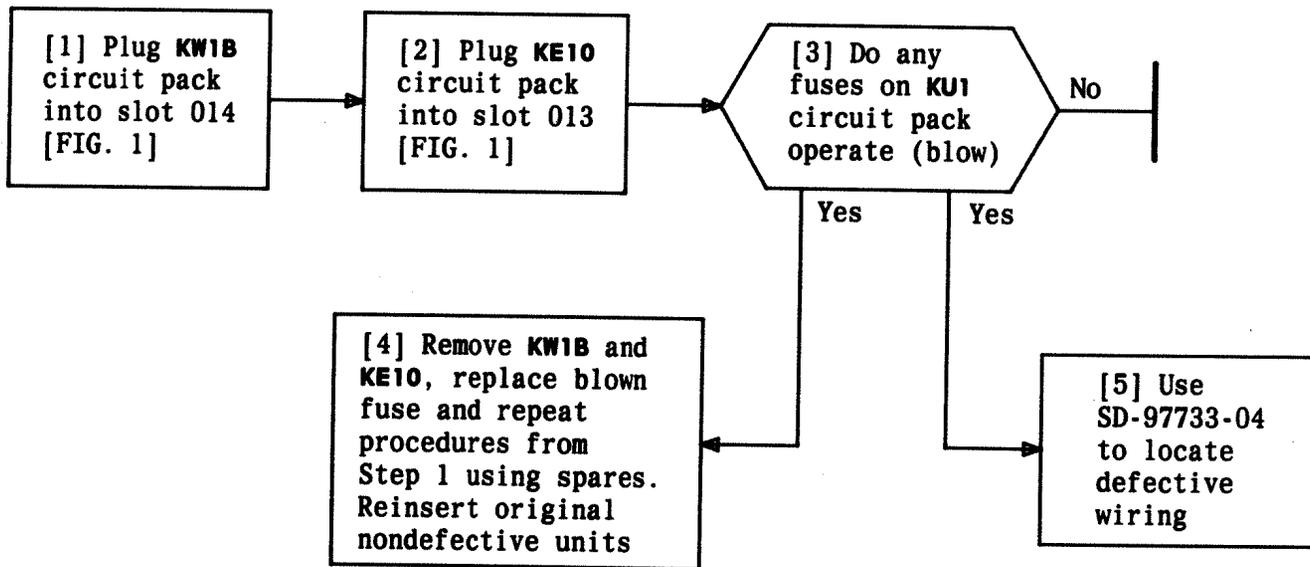
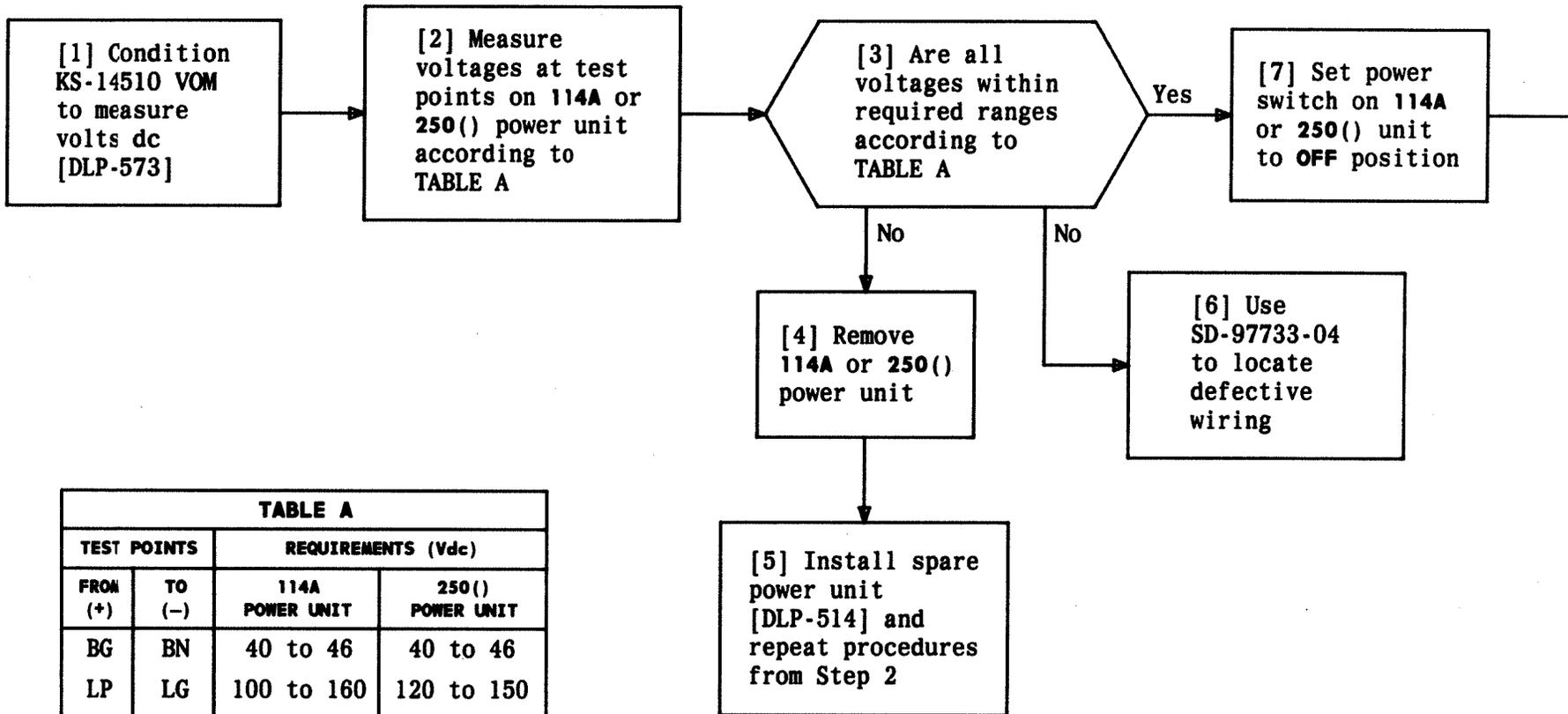


FIG. 1

INSTALL KW1B AND KE10 CIRCUIT PACKS

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TEST POINTS		REQUIREMENTS (Vdc)	
FROM (+)	TO (-)	114A POWER UNIT	250() POWER UNIT
BG	BN	40 to 46	40 to 46
LP	LG	100 to 160	120 to 150
LG	LN	0 to 60	120 to 150

MEASURE VOLTAGES ON 114A OR 250() POWER UNIT AT RT

[1] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS 60 position

[3] Insert VOM positive (+) lead into BG jack on KE9 circuit pack (slot 012 in RT cabinet channel bank assembly)

[4] Insert VOM negative (-) lead into BN jack on KE9

VOM leads inserted into KE9 test jacks

AND

[5] Does VOM indicate at least 33 Vdc

Yes

[7] Remove test leads from KE9

No

[6] Trouble is in KU1, KE9, BF fuse, batteries or wiring. Replace or repair as required and return to Step 3.

MEASURE BATTERY VOLTAGE AT KE9 CIRCUIT PACK (BC FUSE REMOVED)

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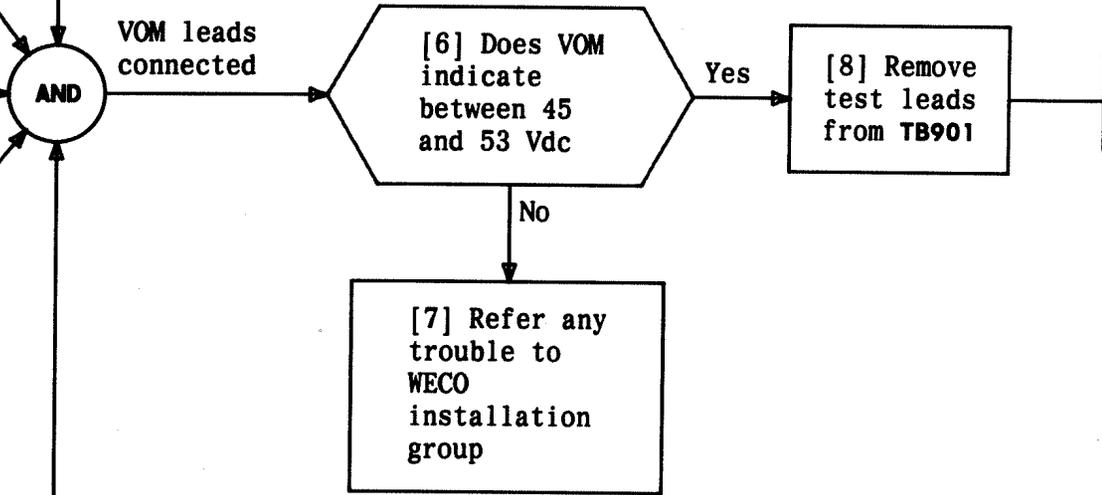
[1] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS 60 position

[3] Remove plastic shield from rear of FF&J panel

[4] Connect VOM positive (red) lead to test jack -48 RTN on TB901 located on the back of Fuse, Filter, and Jack Panel [FIG. 1, Page 2]

[5] Connect VOM negative (black) lead to test jack -48V on TB901 [FIG. 1, Page 2]



MEASURE -48V SUPPLY FOR RT FRAME

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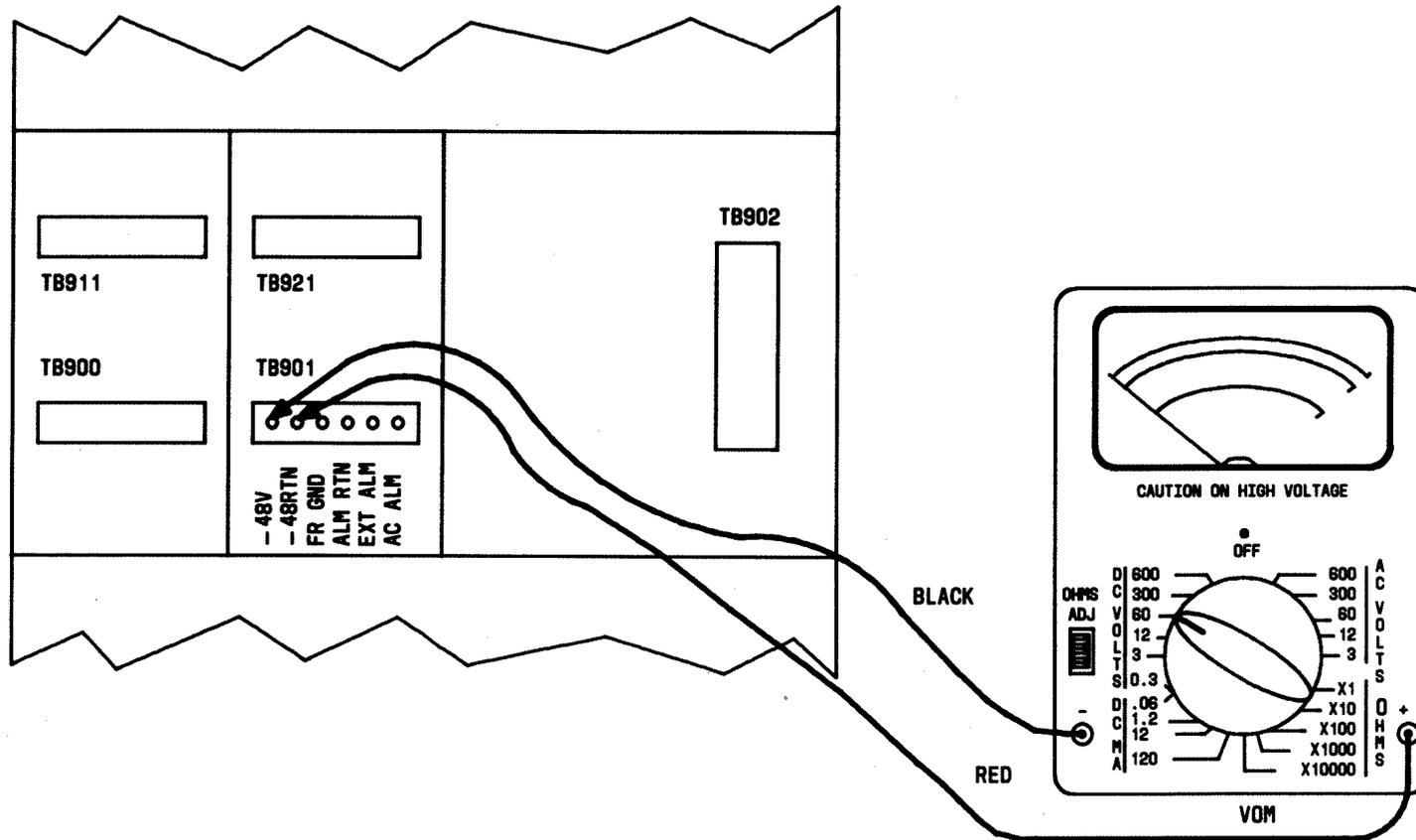


FIG. 1

MEASURE -48V SUPPLY FOR RT FRAME

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1. Place, but do not plug in, each circuit pack where it belongs according to FIG. 1 and FIG. 2, Page 2

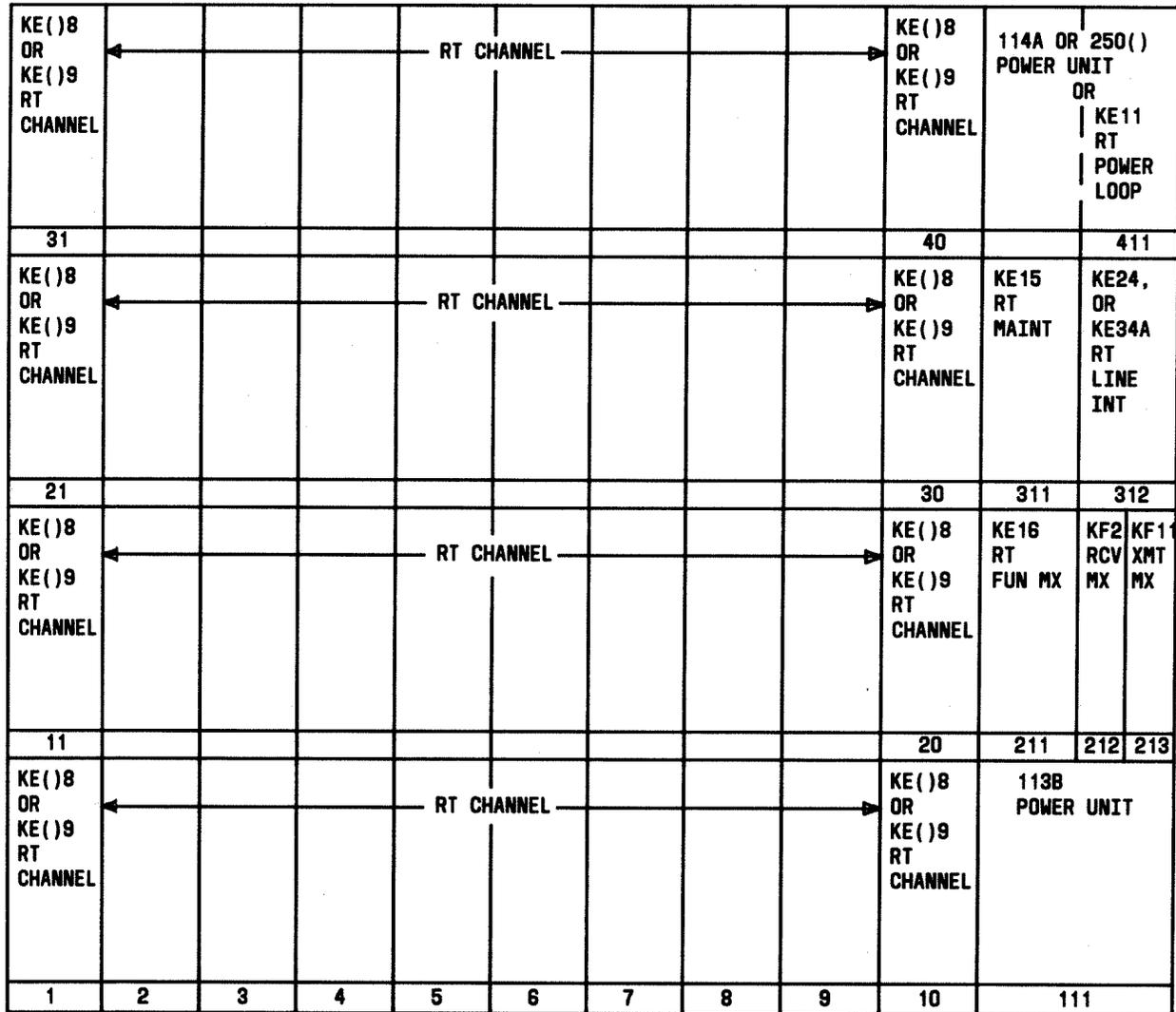


FIG. 1 - RT Frame (Lower System) - Circuit Pack Locations Shown

PLACE, BUT DO NOT PLUG IN, EACH CIRCUIT PACK IN THE SLOT WHERE IT BELONGS

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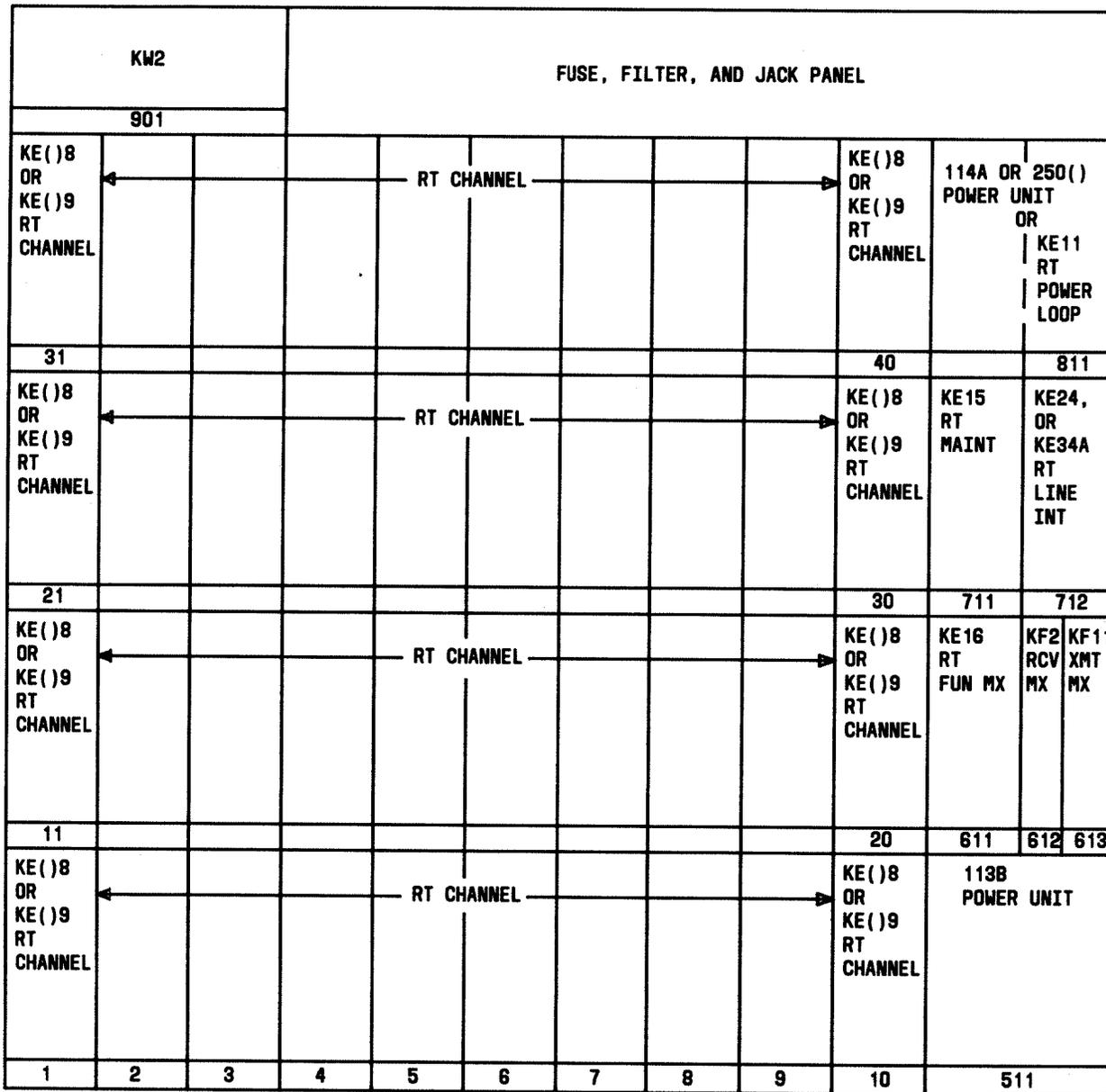


FIG. 2 - RT Frame (Upper System) - Circuit Pack Locations Shown

PLACE, BUT DO NOT PLUG IN, EACH CIRCUIT PACK IN THE SLOT WHERE IT BELONGS

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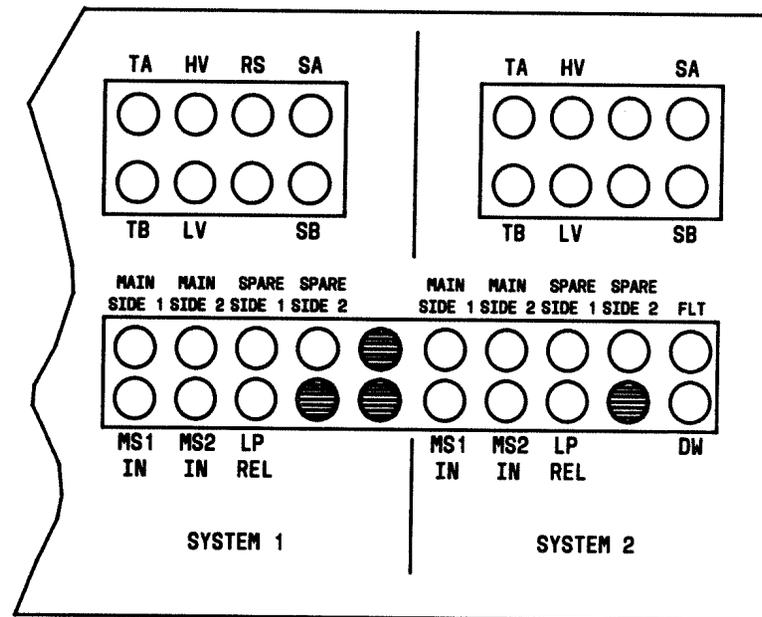
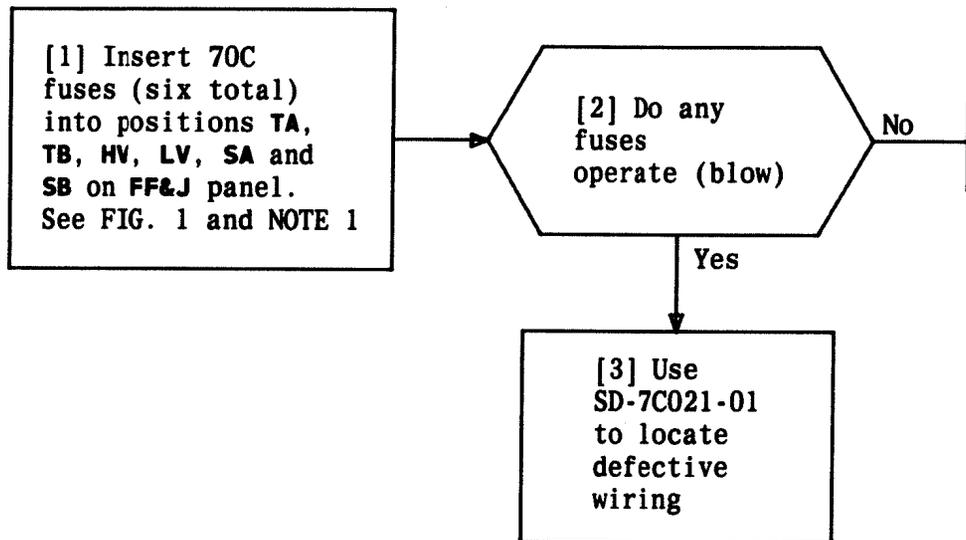
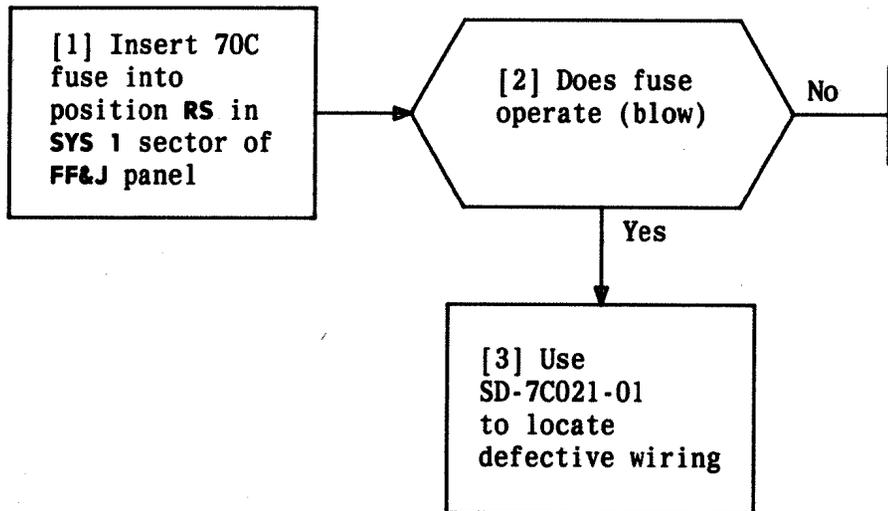


FIG. 1

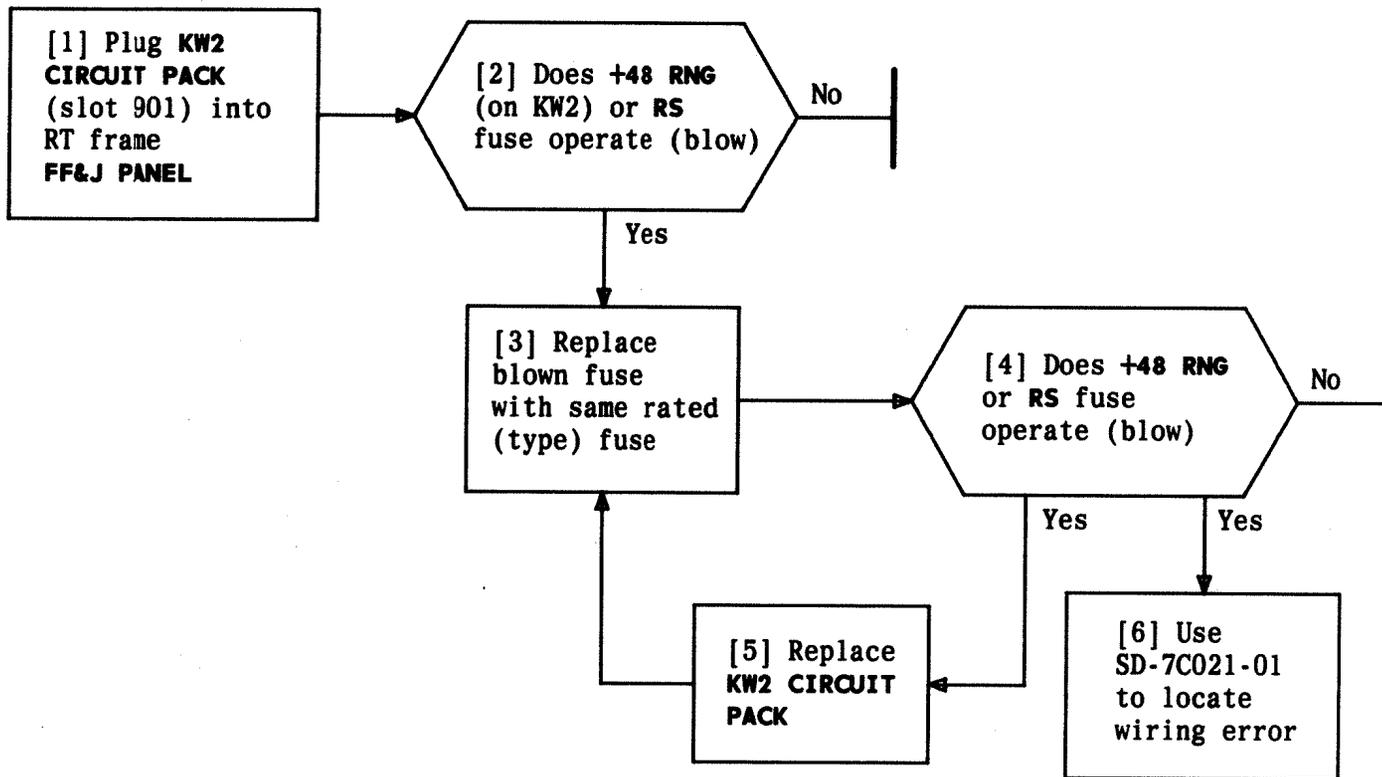
NOTE 1	
Fuses are shipped in a bag attached to the FF&J panel	
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INSERT FUSES TA, TB, HV, LV, SA, AND SB IN FF&J PANEL



INSERT 70C FUSE IN POSITION RS LOCATED IN SYS 1 SECTOR OF FF&J PANEL

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PLUG KW2 CIRCUIT PACK INTO SLOT 901 OF RT FRAME

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[1] Get KS-14510 volt-ohm-milliammeter (VOM), or equivalent

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS-60 position

[3] Insert VOM positive (red) test lead into +48 RNG jack and negative (black) test lead into CG jack on KW2 CIRCUIT PACK [FIG. 1]

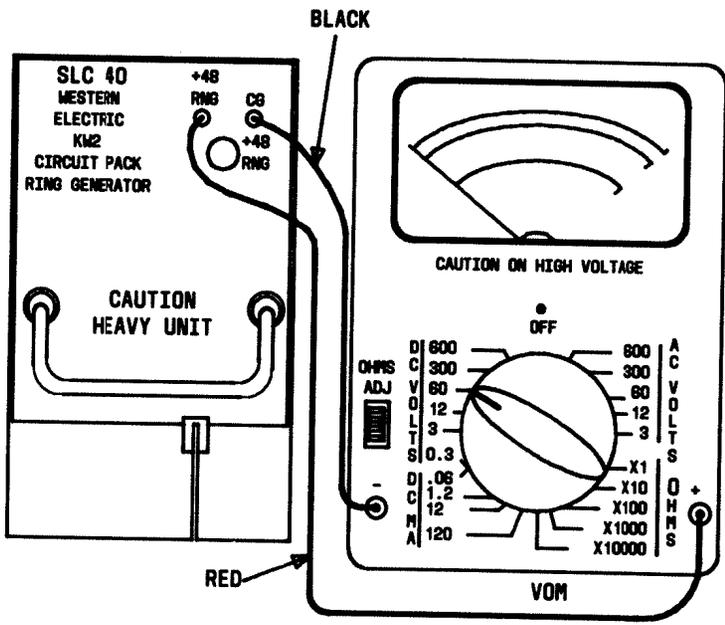
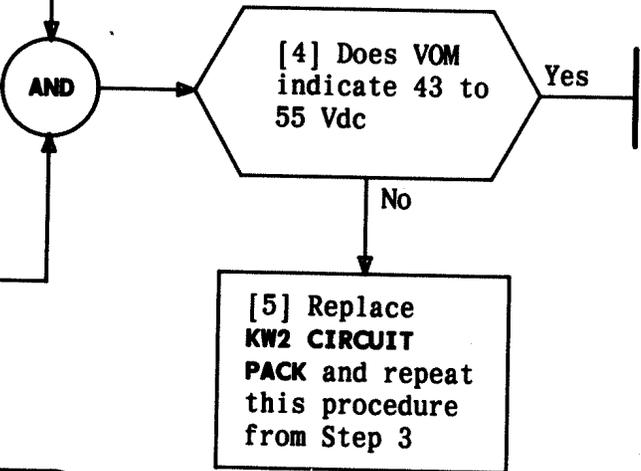
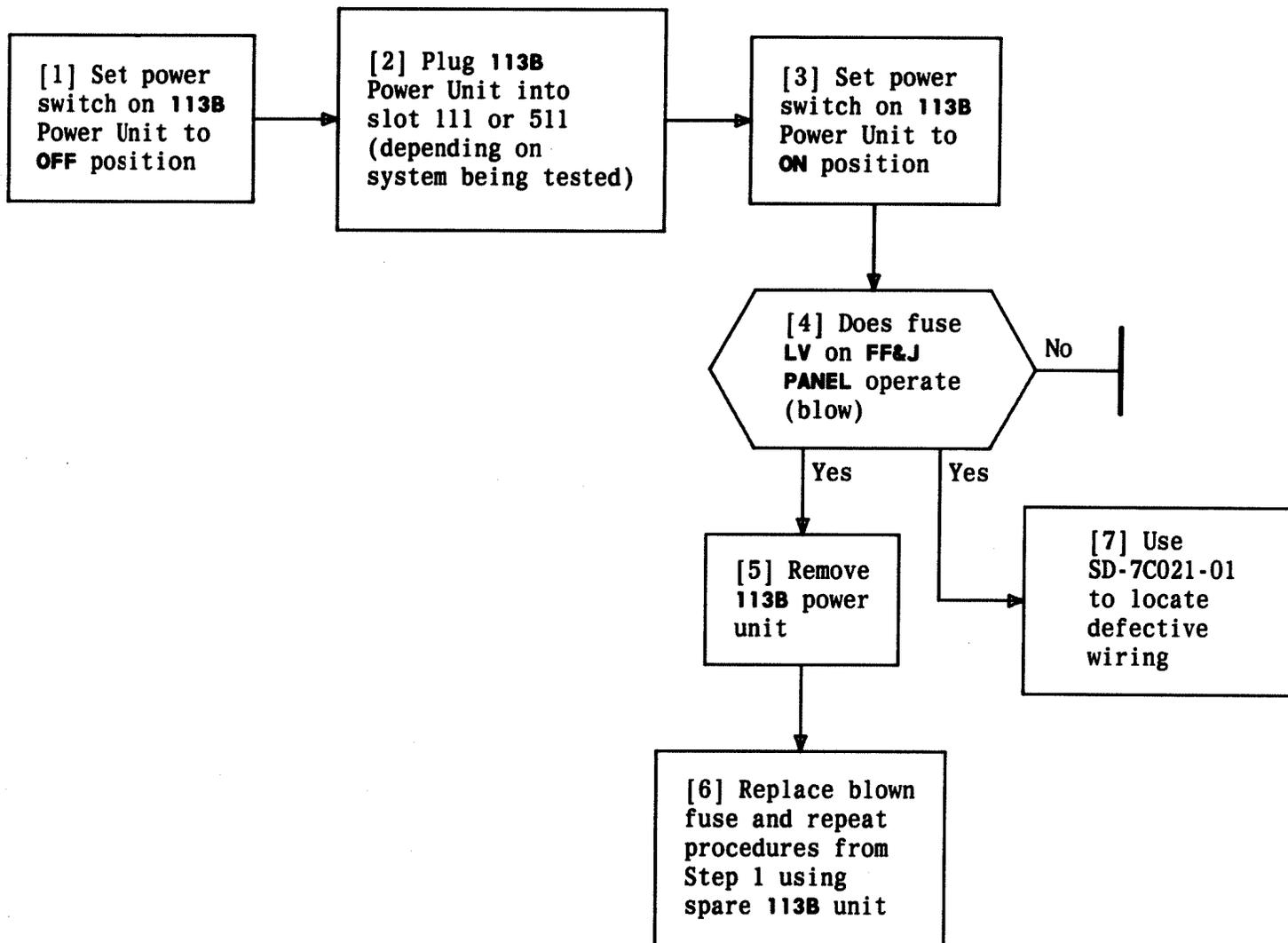


FIG. 1

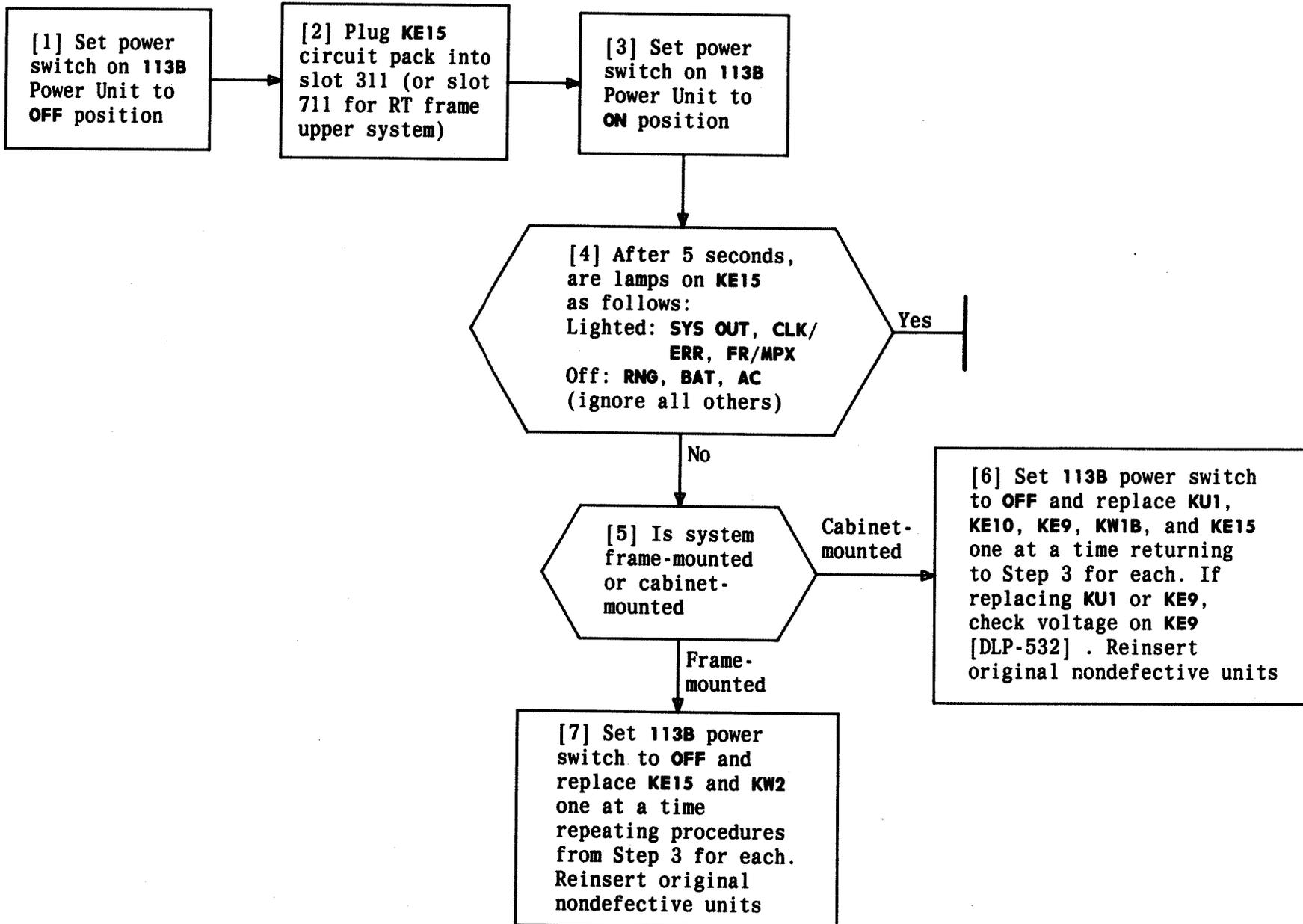
MEASURE VOLTAGE BETWEEN TEST JACKS +48 RNG AND CG ON KW2 CIRCUIT PACK

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INSTALL 113B POWER UNIT AT RT FRAME

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INSTALL KE15 CIRCUIT PACK

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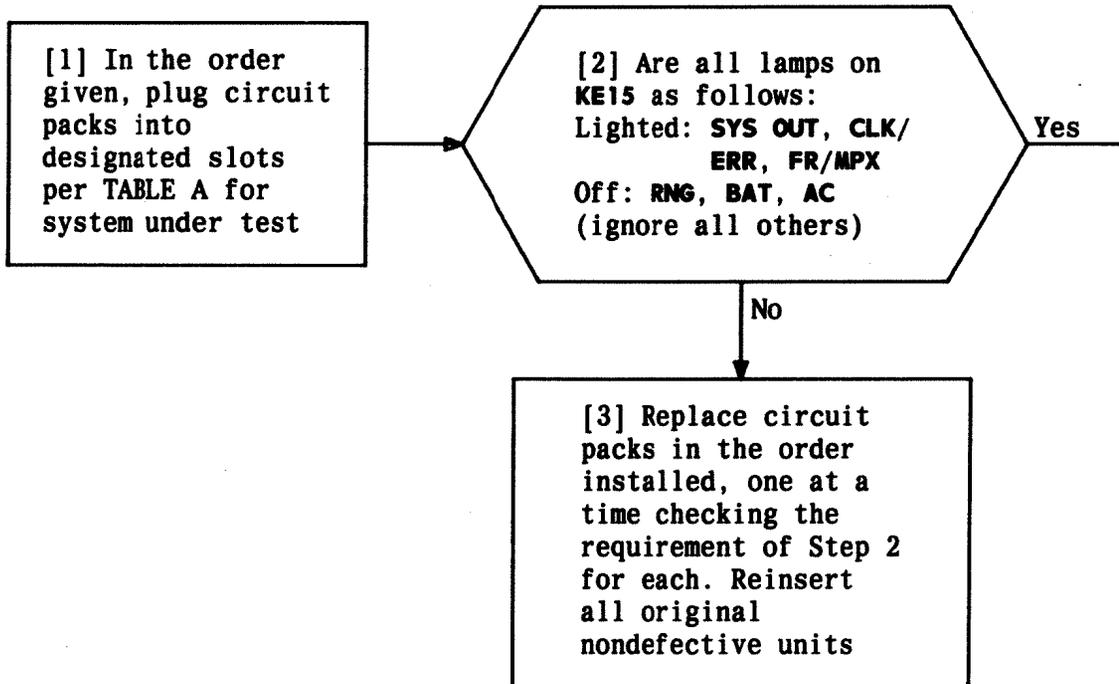
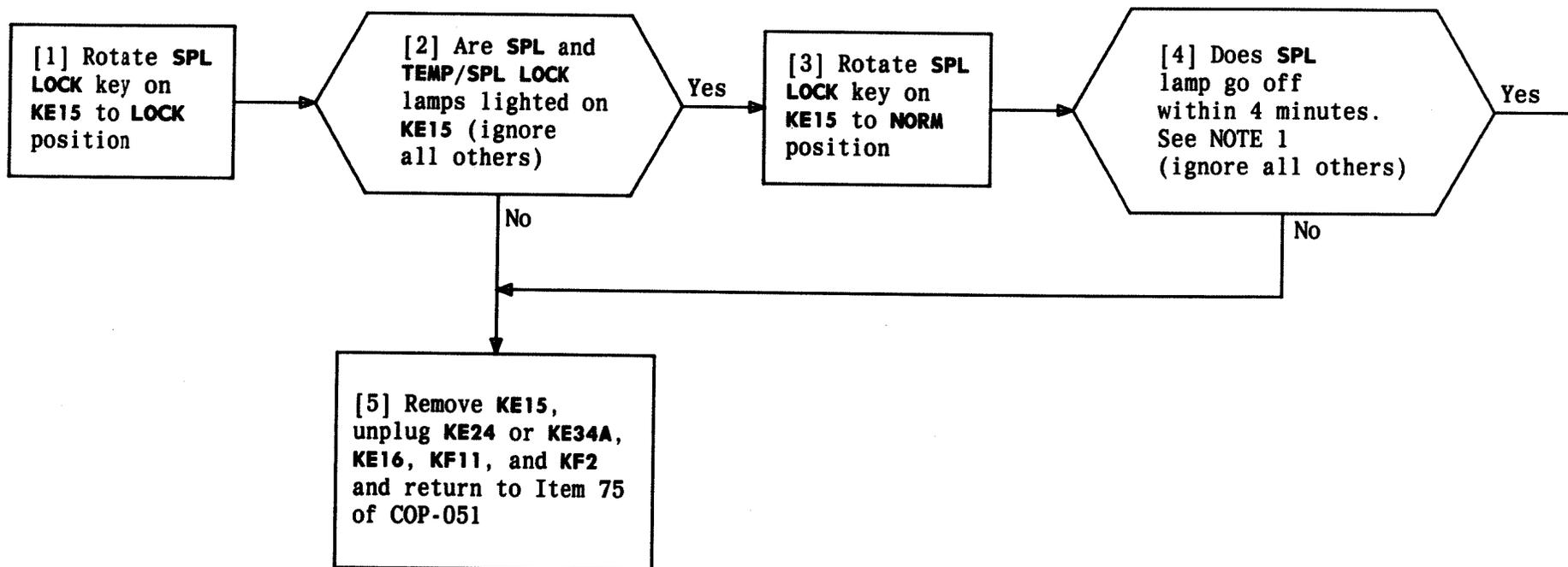


TABLE A		
CIRCUIT PACKS	DESIGNATED SLOTS	
	CABINET OR FRAME LOWER SYSTEM	FRAME UPPER SYSTEM
KE24/KE34A	312	712
KE16/KE26	211	611
KF11/KF3	213	613
KF2/KF4	212	612

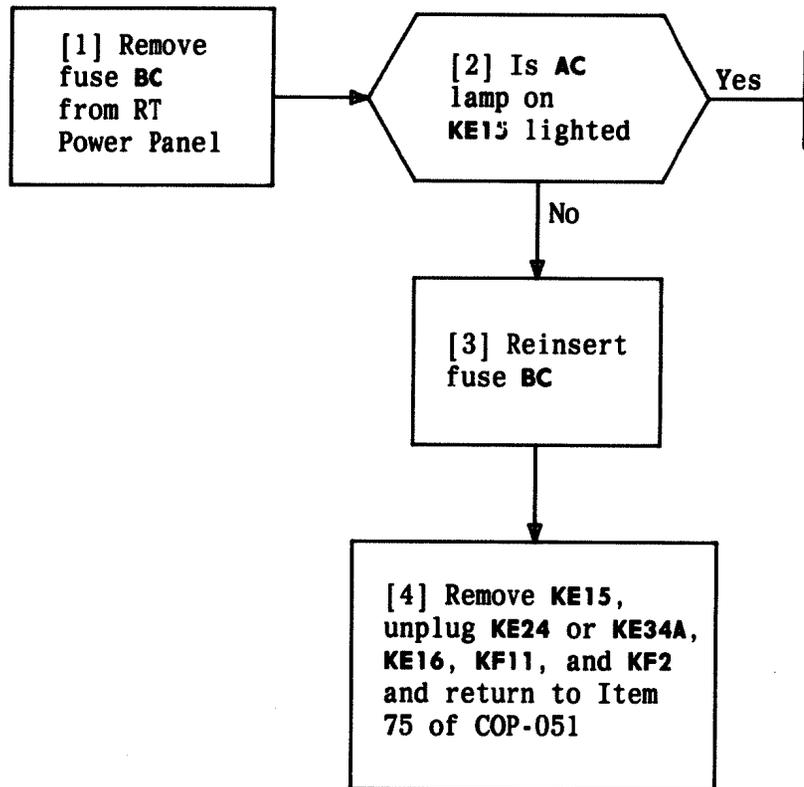
INSTALL KE24 OR KE34A, KE16 OR KE26, KF11 OR KF3 AND KF2 OR KF4 UNITS

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NOTE 1		
TEMP/SPL LOCK lamp will also be off in frame-mounted RT and may be off in cabinet-mounted RT		
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CHECK OPERATION OF SPL LOCK KEY ON KE15



REMOVE FUSE BC FROM RT POWER PANEL

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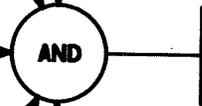
[1] Establish communication between Remote Terminal (RT) and Central Office Terminal (COT) via order wire _____

[2] Verify that power switch on line power unit (slot 411) in COT channel bank assembly [FIG. 1] is in OFF position _____

[3] On KE12 (slot 311), verify that ACO switch is in top position (major and minor alarm cutoff position) _____

[4] Unplug, but do not remove KE21 CIRCUIT PACK (slot 312) from channel bank assembly _____

[5] Verify that MDF jumpers for carrier pairs are connected in accordance with work order or cut-sheet, and that carbon blocks and heat coils are installed at MDF protectors. See NOTE 1 _____



KE()7B										KE()7B	POWER UNIT		
31	32	33	34	35	36	37	38	39	40		411		
KE()7B										KE()7B	KE12	KE21	
21	22	23	24	25	26	27	28	29	30	311	312		
KE()7B										KE()7B	KE13	KF2	KF1
11	12	13	14	15	16	17	18	19	20	211	212	213	
KE()7B										KE()7B			113B
1	2	3	4	5	6	7	8	9	10				111

FIG. 1

NOTE 1

If shared spare line option is used, spare lines are connected to test jacks of non-priority system (2, 4, etc)

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PREPARE CENTRAL OFFICE TERMINAL FOR LINE POWERING

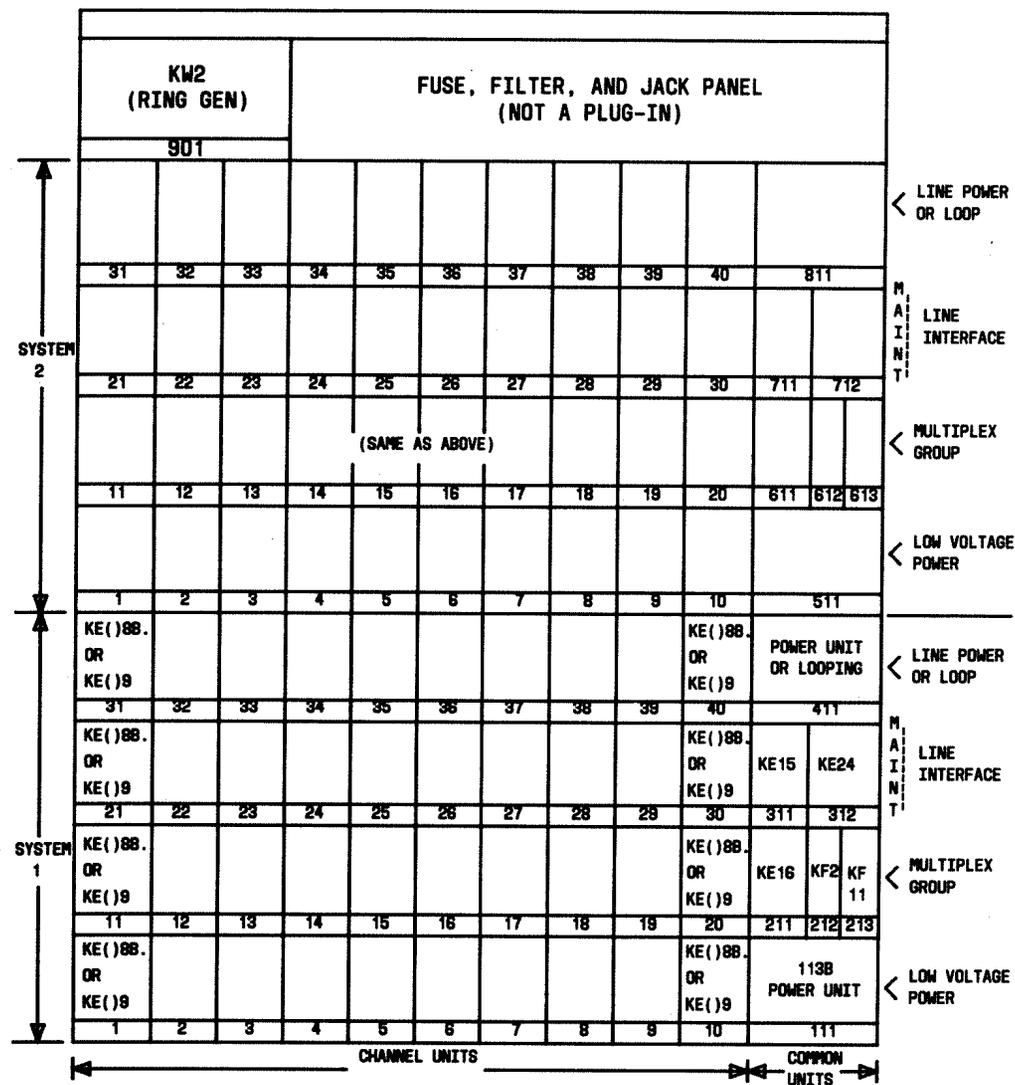
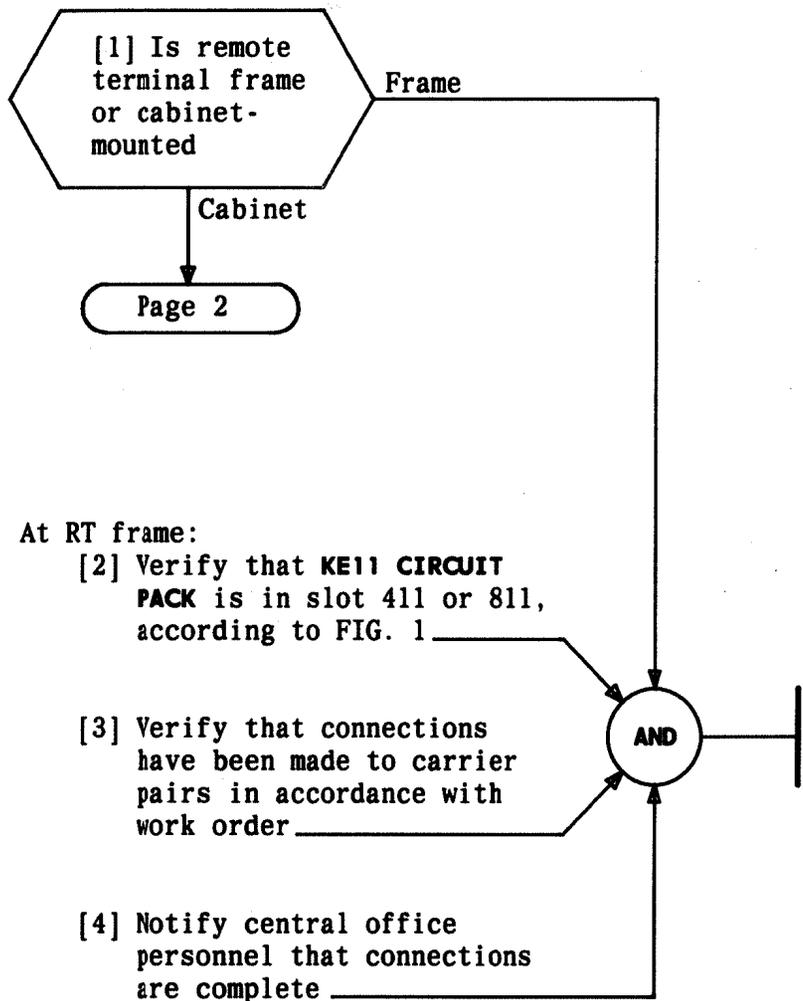


FIG. 1

**PREPARE REMOTE TERMINAL FOR LINE POWERING
(LINE POWER FROM COT ONLY)**

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At RT cabinet:

[5] Replace fuses BC and BF
[on RT power panel, FIG. 2],
in that order

[6] Verify that external ac
power switch is in ON
position

[7] Verify that KE11 CIRCUIT
PACK is in slot 411 in RT
channel bank [FIG. 3]

[8] Verify that connections
have been made to carrier
pairs in accordance with
work order. See
NOTE 1

[9] Notify central office
personnel that
connections are
complete

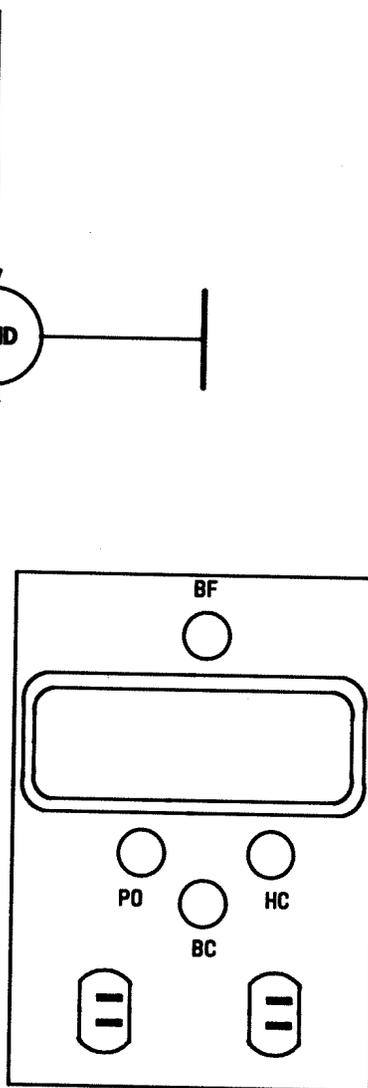


FIG. 2

**PREPARE REMOTE TERMINAL FOR LINE POWERING
(LINE POWER FROM COT ONLY)**

KE() 88 RT CHANNEL										KE() 88 RT CHANNEL	KE11 RT POWER LOOP		
31										40		411	
KE() 88 RT CHANNEL										KE() 88 RT CHANNEL	KE15 RT MAINT	KE24 RT LINE INT	
21										30	311	312	
KE() 88 RT CHANNEL										KE() 88 RT CHANNEL	KE16 RT FUN MX	KF2 RCV MX	KF11 XMT MX
11										20	211	212	213
KE() 88 RT CHANNEL										KE() 88 RT CHANNEL	113-TYPE POWER UNIT		
	1	2	3	4	5	6	7	8	9	10	111		
	KU1 BATTERY CHARGE					KE9 POWER CONT	KE10 RING CONT	KW1 OR KW1B RING GENERATOR			KE20 OR KE30 OR EMPTY	NO UNIT	
	011					012	013	014			015		

FIG. 3

NOTE 1	
Section 640-250-215 contains installation procedures for 33C RT cabinet	
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[1] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent _____

[2] Condition VOM [DLP-573] and set selector switch to **DC VOLTS-3** position _____

[3] Insert VOM positive (+) lead into **I TEST +** jack on **KE21 CIRCUIT PACK** _____

[4] Insert VOM negative (-) lead into **I TEST -** jack on **KE21 CIRCUIT PACK** _____

[5] Read Steps 6 through 8, Page 2 before performing this step. Momentarily depress the **I TEST** button on **KE21 CIRCUIT PACK** while observing voltage indication on VOM. See NOTE 1 _____

VOM test leads inserted into **I TEST** test jacks and **I TEST** button depressed

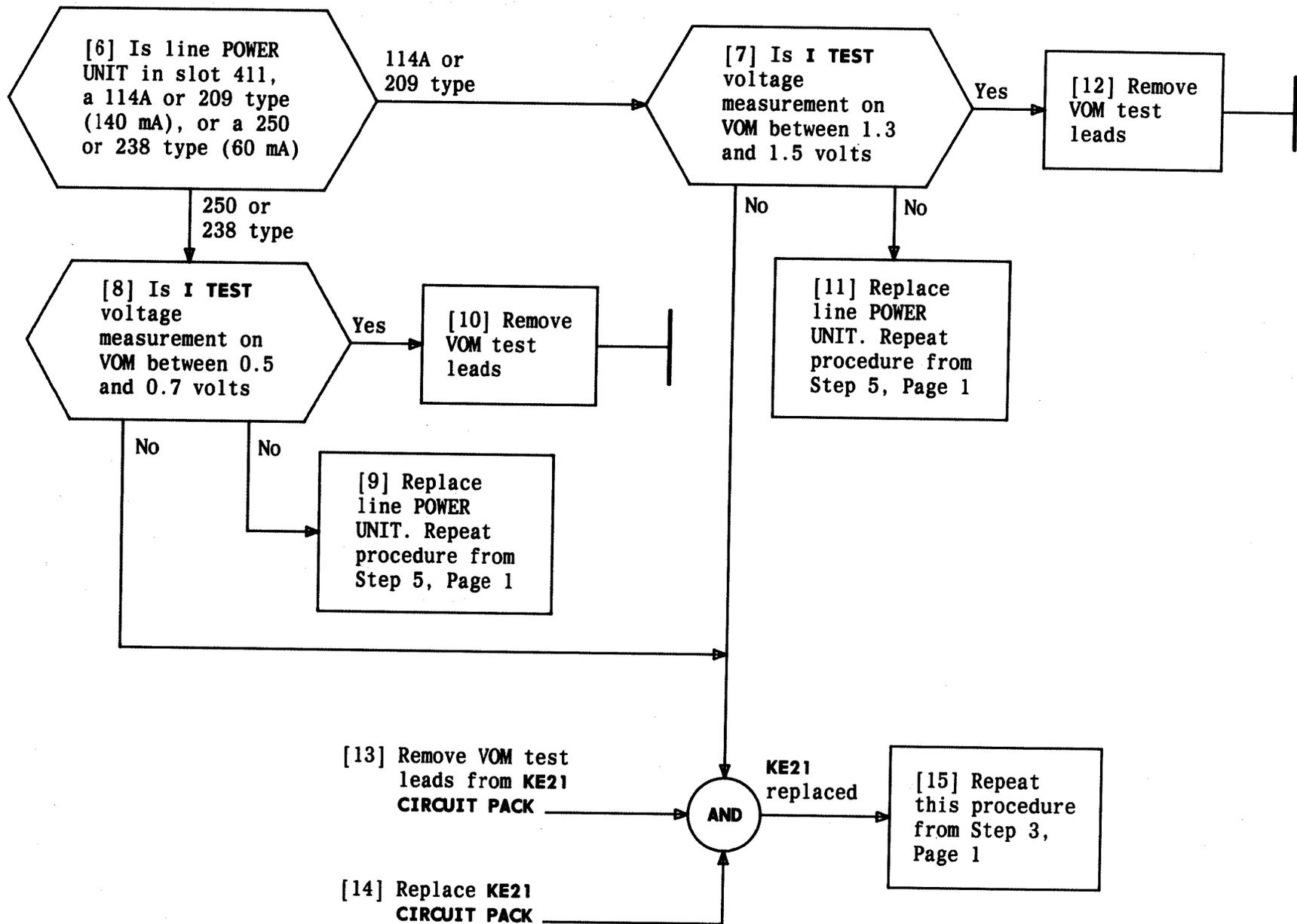
AND

Page 2

NOTE 1
SPL lamp on **KE12 CIRCUIT PACK** (slot 311) must be extinguished before voltage measurement can be made. Up to 4 minutes may be required for SPL lamp to extinguish

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PERFORM LINE CURRENT TEST ON KE21 CIRCUIT PACK AT COT



PERFORM LINE CURRENT TEST ON KE21 CIRCUIT PACK AT COT

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[1] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent _____

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS -300 position _____

[3] On line POWER UNIT (slot 411), insert VOM positive (+) lead into LP test jack _____

[4] On line POWER UNIT, insert VOM negative (-) lead into LN test jack _____

[5] Note line-voltage measured on VOM. See TABLE A for *typical* voltages (depending on number of repeaters being powered). See NOTE 1 _____

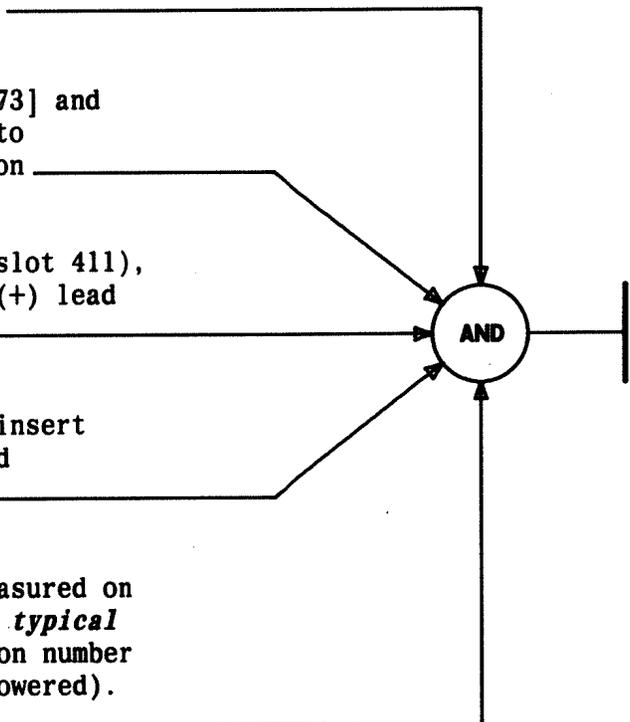
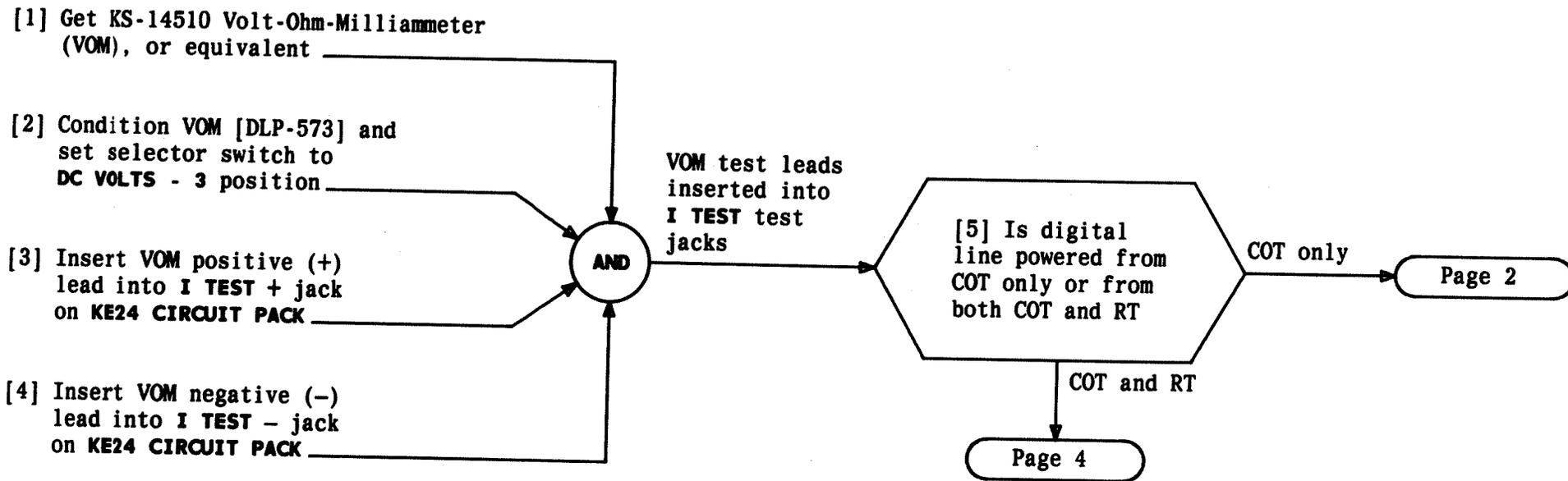


TABLE A		
NUMBER OF LINE REPEATERS POWERED FROM COT	TEST POINTS LP(+) TO LN(-), VOLTS DC TYPICAL VALUES ONLY, NOT REQUIREMENTS	
	STANDARD POWER REPEATERS 114A or 209() POWER UNIT	LOW POWER REPEATERS 250() OR 238() POWER UNIT
2	-	30
3	70	45
4	95	60
5	120	75
6	145	90
7	170	105
8	195	120
9	220	135
10	245	150
11	270	165
12	-	175
13	-	190
14	-	205
15	-	220
16	-	235
17	-	250

NOTE 1
Actual meter indications may vary significantly from typical values depending on specific digital line makeup; however in no case should any voltages exceed 290 Vdc. KE24, used in the RT, should *not* be counted as an additional repeater

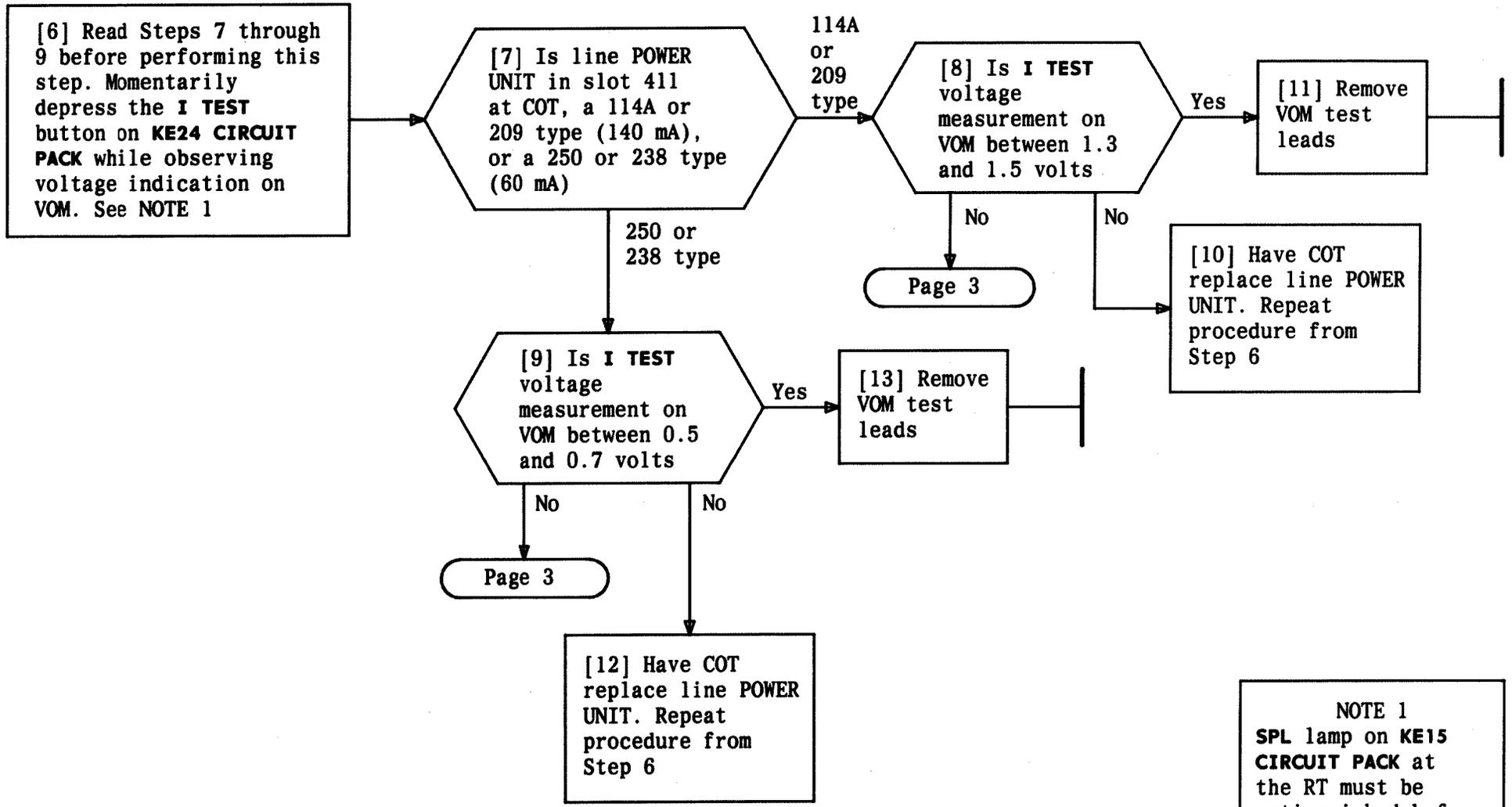
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MEASURE LINE VOLTAGE ON POWER UNIT AT COT



PERFORM LINE CURRENT TEST ON KE24 CIRCUIT PACK AT RT

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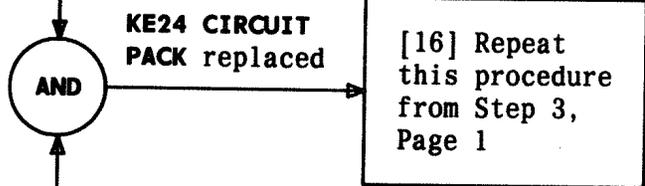
NOTE 1
 SPL lamp on KE15 CIRCUIT PACK at the RT must be extinguished before voltage measurement can be made. Up to 4 minutes may be required for SPL lamp to extinguish

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PERFORM LINE CURRENT TEST ON KE24 CIRCUIT PACK AT RT

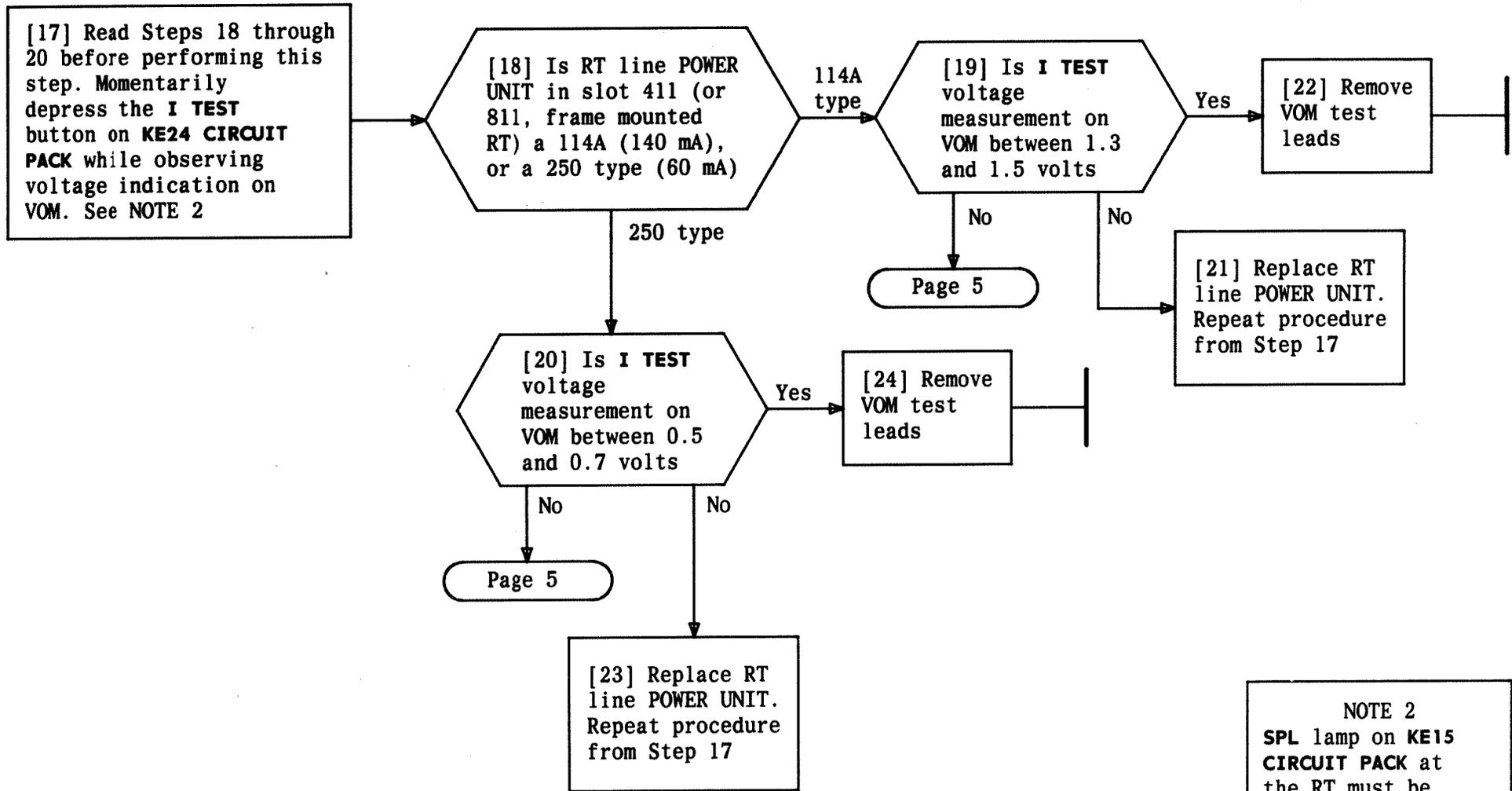
[14] Remove VOM test leads from KE24
CIRCUIT PACK test jacks

[15] Replace KE24 CIRCUIT PACK



PERFORM LINE CURRENT TEST ON KE24 CIRCUIT PACK AT RT

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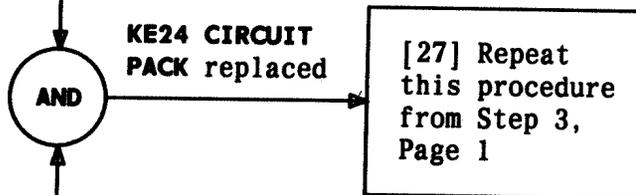
NOTE 2
SPL lamp on KE15 CIRCUIT PACK at the RT must be extinguished before voltage measurement can be made. Up to 4 minutes may be required for **SPL lamp** to extinguish

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PERFORM LINE CURRENT TEST ON KE24 CIRCUIT PACK AT RT

[25] Remove VOM test leads from KE24
CIRCUIT PACK test jacks

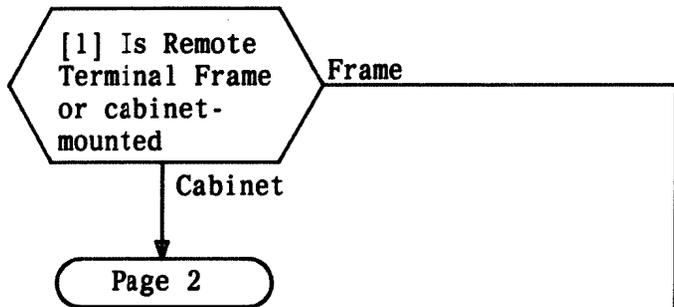
[26] Replace KE24 CIRCUIT PACK



[27] Repeat
this procedure
from Step 3,
Page 1

PERFORM LINE CURRENT TEST ON KE24 CIRCUIT PACK AT RT

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At RT frame:

[2] Verify that power switch on RT line POWER UNIT (slot 411 or 811, FIG. 1) is in the OFF position

[3] Unplug, but do not remove, KE24 CIRCUIT PACK (slot 312) from RT channel bank assembly

[4] Verify that connections have been made to carrier pairs in accordance with work order

[5] Notify central office personnel that connections are complete

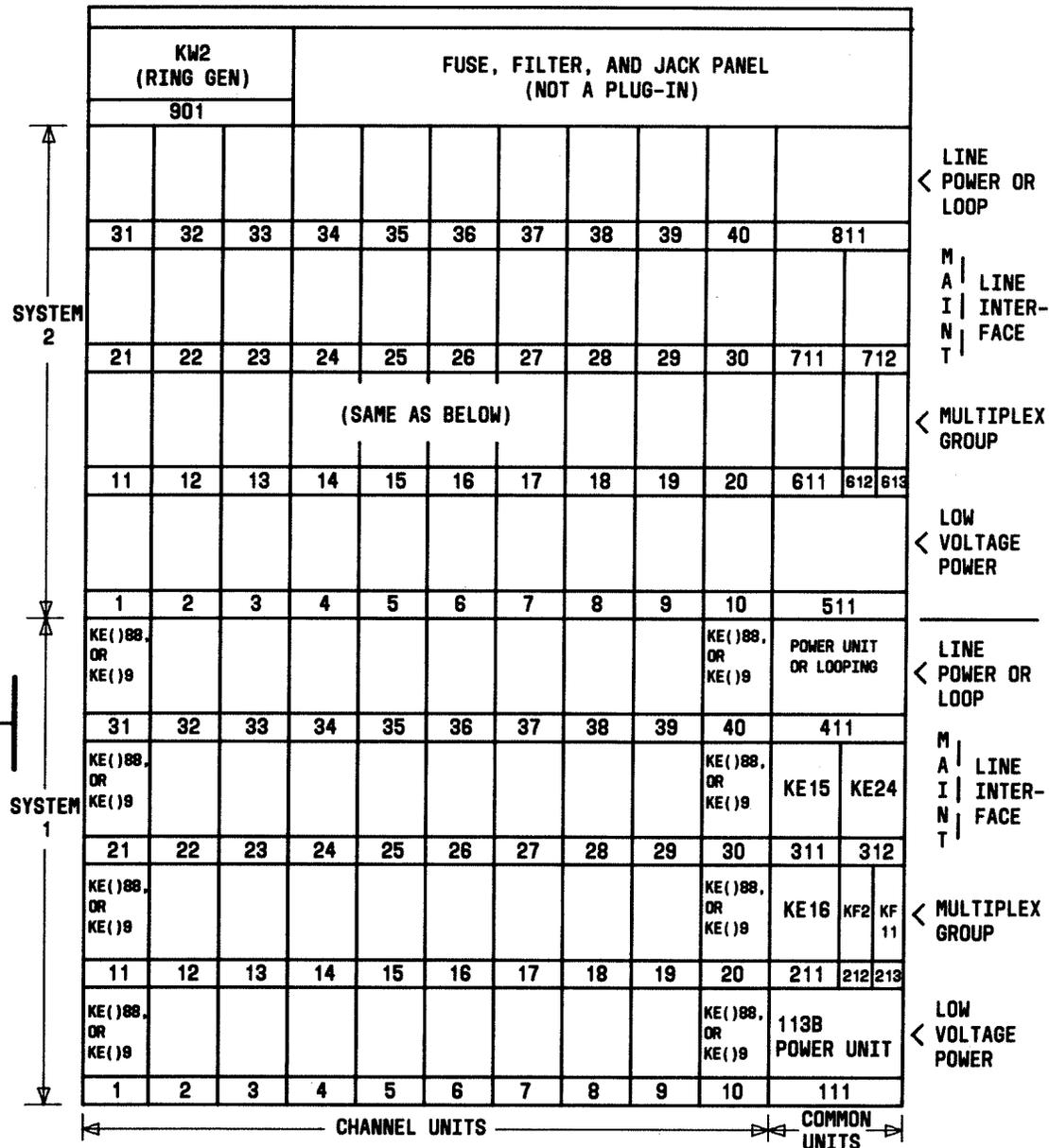
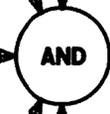


FIG. 1

**PREPARE REMOTE TERMINAL FOR LINE POWERING
(LINE POWER FROM BOTH COT AND RT)**

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At RT cabinet:

- [6] Replace fuses BC and BF [on RT power panel, FIG. 2], in that order
- [7] Verify that external ac power switch is in ON position
- [8] Verify that power switch on RT line POWER UNIT [slot 411, FIG. 3] is in OFF position
- [9] Unplug, but do not remove, the KE24 CIRCUIT PACK [slot 312] from RT channel bank assembly
- [10] Verify that connections have been made to carrier pairs in accordance with work order. See NOTE 1
- [11] Notify central office personnel that connections are complete

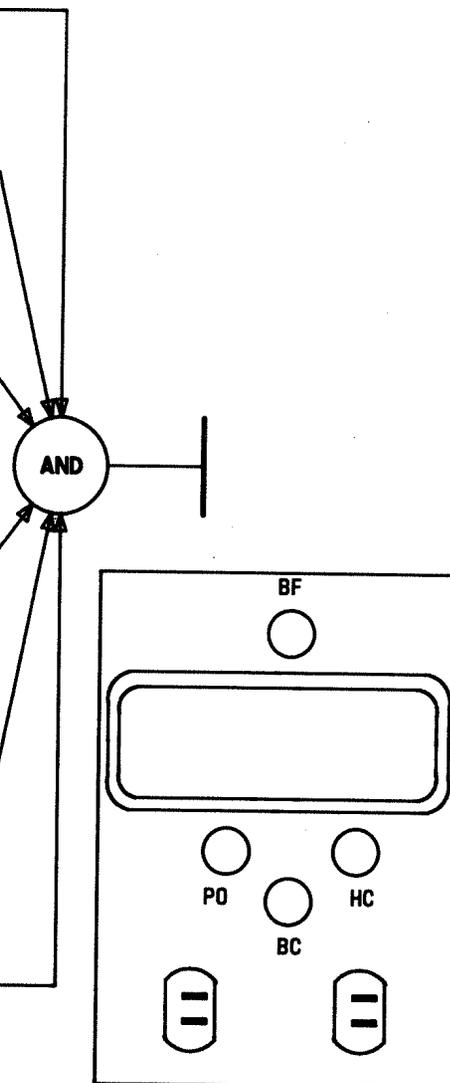


FIG. 2

KE() 8 RT CHANNEL										KE() 8 RT CHANNEL	114A OR 250() POWER UNIT		
31										40		411	
KE() 8 RT CHANNEL										KE() 8 RT CHANNEL	KE15 RT MAINT	KE24 RT LINE INT	
21										30	311	312	
KE() 8 RT CHANNEL										KE() 8 RT CHANNEL	KE16 RT FUMX	KF2 RCV MX	KF11 XMT MX
11										20	211	212 213	
KE() 8 RT CHANNEL										KE() 8 RT CHANNEL	113-TYPE POWER UNIT		
1	2	3	4	5	6	7	8	9	10	111			
KU1 BATTERY CHARGER						KE9 POWER CONT	KE10 RING CONT	KW1 OR KW1B RING GENERATOR			KE20 OR KE30 OR EMPTY	NO UNIT	
011						012	013	014			015		

FIG. 3

NOTE 1	
Section 640-250-215 contains installation procedures for 33C RT cabinet	
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**PREPARE REMOTE TERMINAL FOR LINE POWERING
(LINE POWER FROM BOTH COT AND RT)**

[1] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent.

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS -300 position.

[3] On line POWER UNIT, insert VOM positive (+) test lead into LP test jack.

[4] On line POWER UNIT, insert VOM negative (-) test lead into LN test jack.

[5] Record for future reference, line - voltage measured with VOM. See TABLE A for typical voltages (depending on number of repeaters being powered). See NOTE 1.

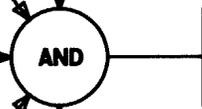
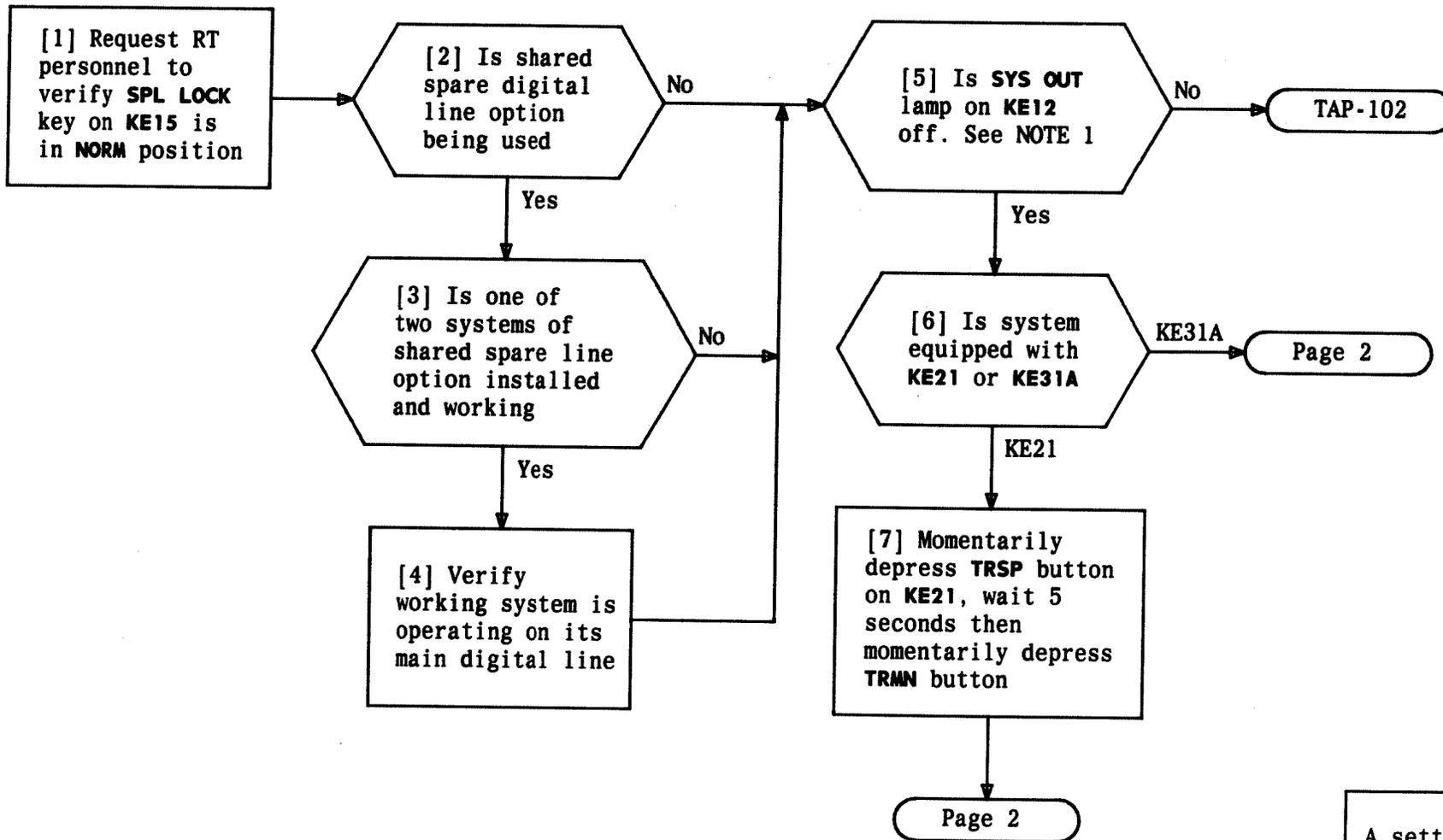


TABLE A RT POWER LOOP		
NUMBER OF LINE REPEATERS POWERED FROM RT	TEST POINTS LP(+) TO LN(-), VOLTS DC TYPICAL VALUES ONLY, NOT REQUIREMENTS	
	STANDARD POWER REPEATERS 114A POWER UNIT	LOW POWER REPEATERS 250() POWER UNIT
1	-	20
2	-	35
3	70	50
4	95	65
5	120	80
6	145	95
7	170	110
8	195	125
9	220	140
10	245	155
11	270	170
12	-	180
13	-	195
14	-	210
15	-	225
16	-	240
17	-	255

NOTE 1
Actual meter indications may vary significantly from typical values depending on specific digital line makeup; however in no case should any voltages exceed 290 Vdc. KE24, used in the RT, should not be counted as an additional repeater.

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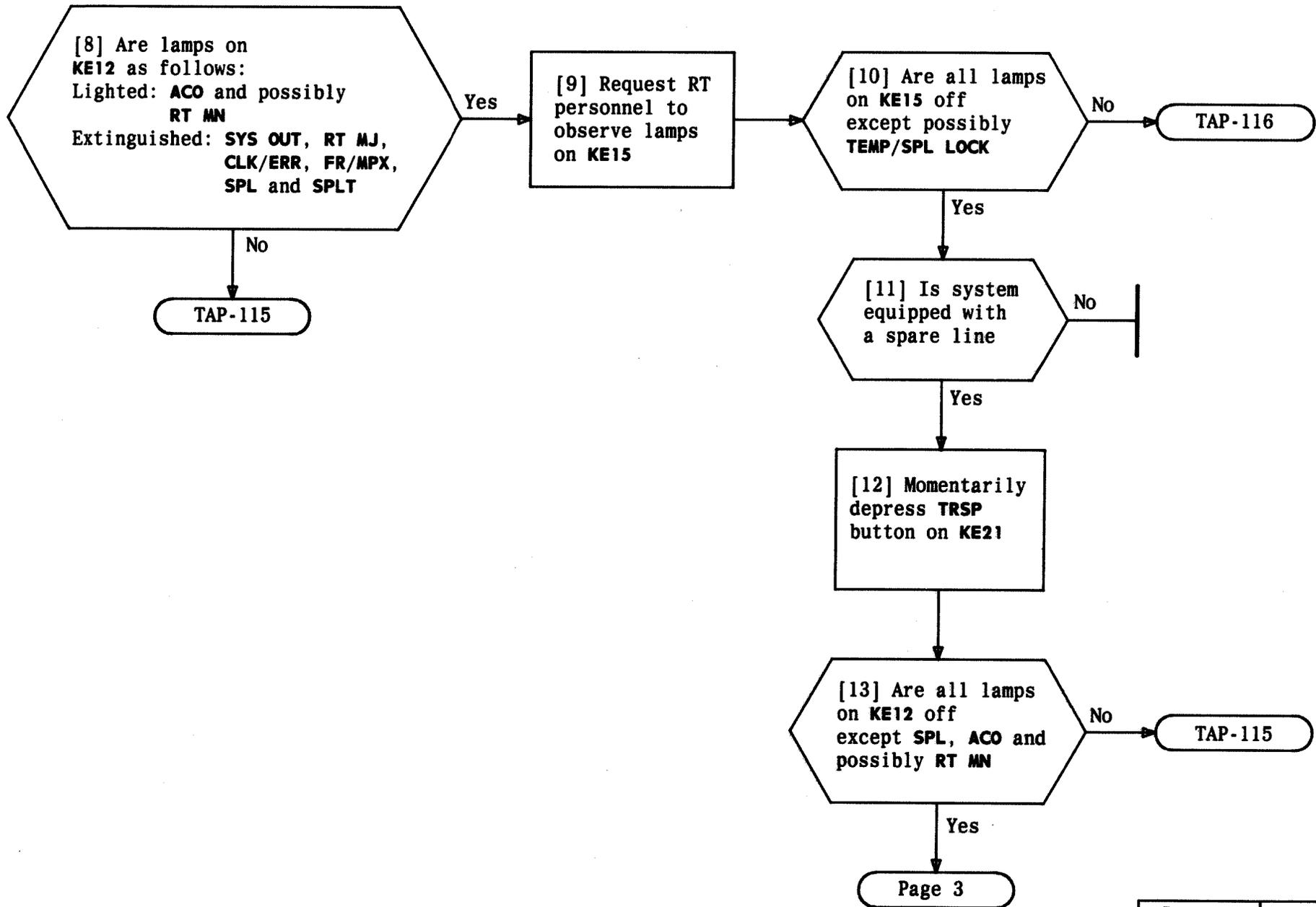
MEASURE LINE VOLTAGE ON POWER UNIT AT RT

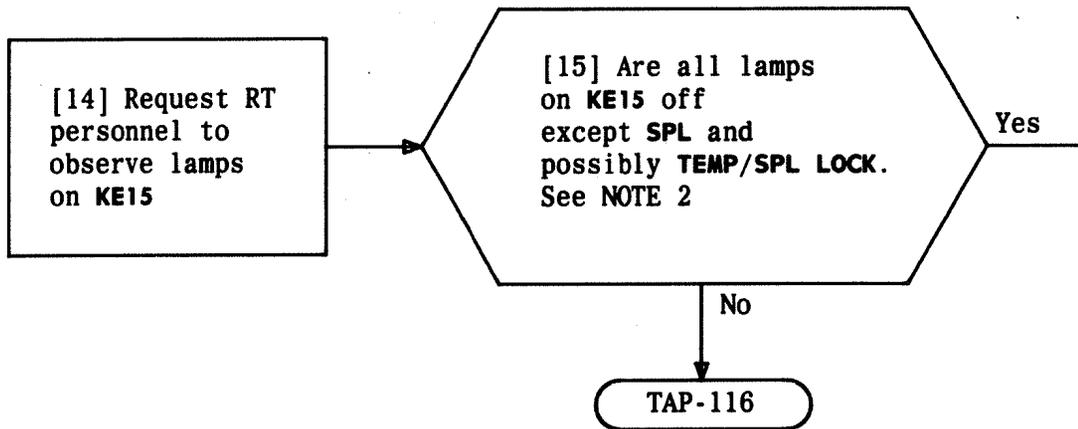


NOTE 1
 A settling time of 10 minutes may be required before **SYS OUT** lamp is extinguished due to two terminals attempting to work on opposite digital lines

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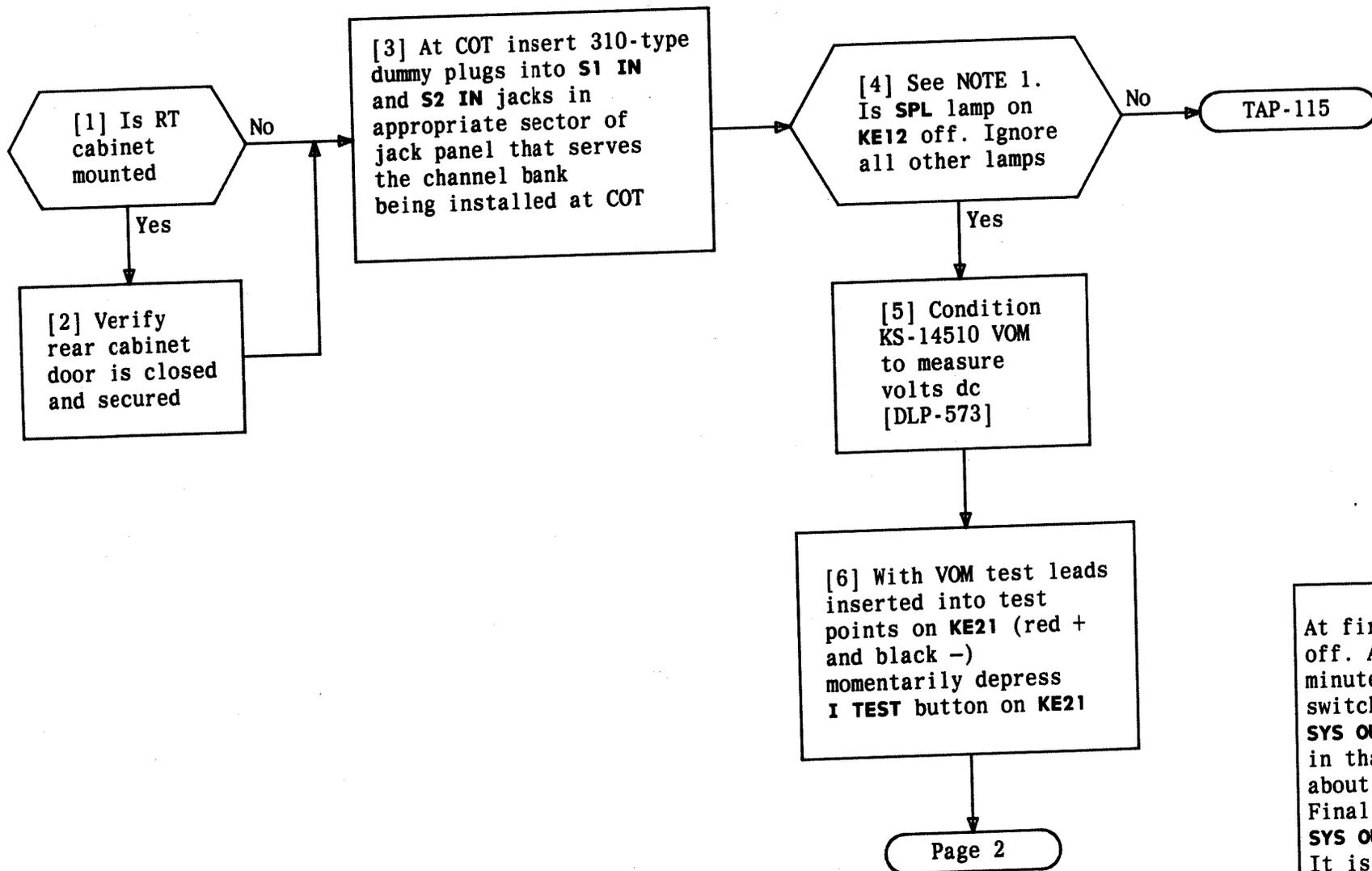
PERFORM SYSTEM FRAMING TESTS





NOTE 2		
TEMP/SPL LOCK lamp may be lighted because cabinet door is open and outside temperature is cold		
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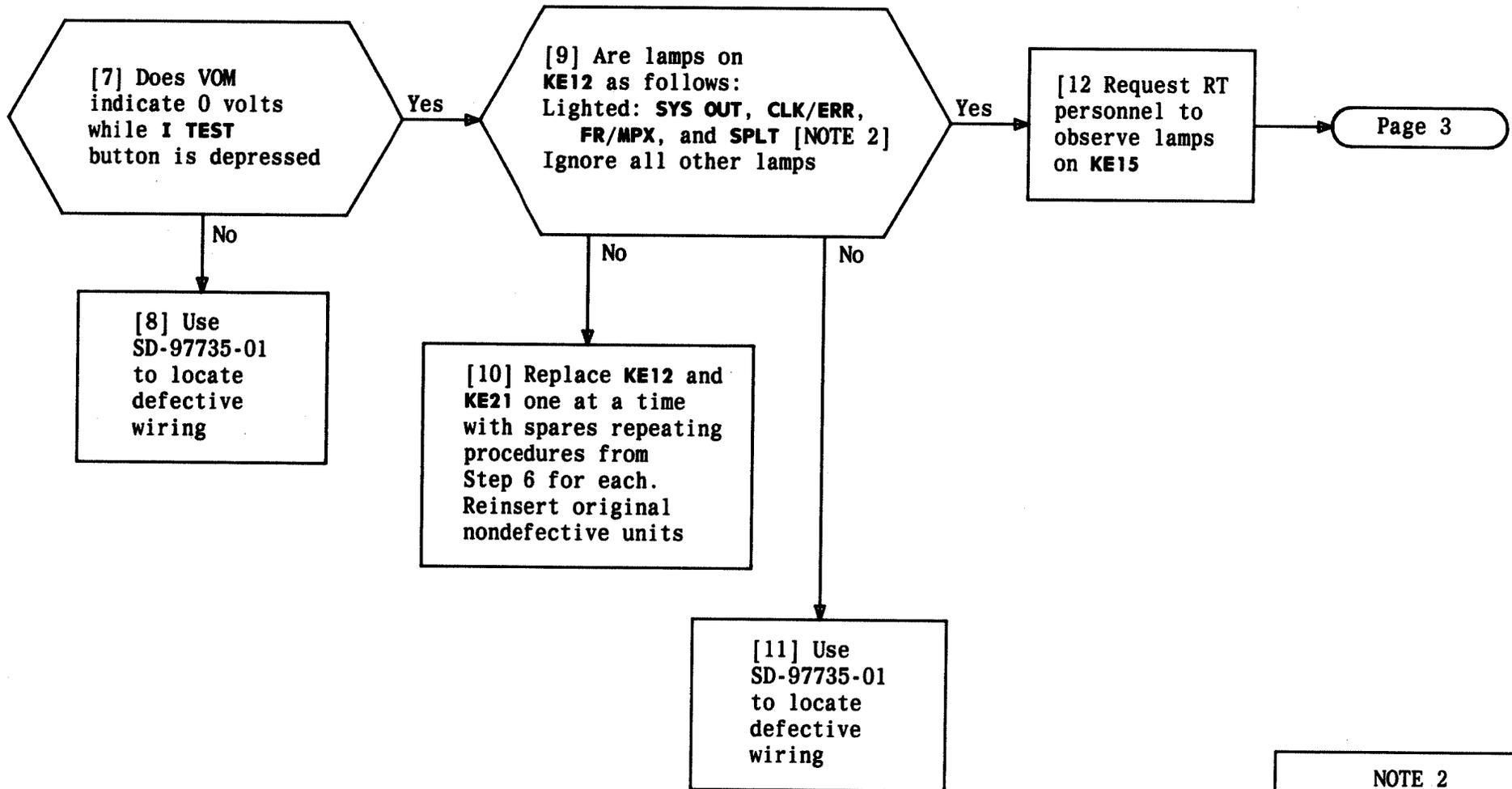
PERFORM SYSTEM FRAMING TESTS



NOTE 1
 At first **SPL** will be off. After about 4 minutes, system will switch to **SPL** and **SYS OUT** and remain in that state for about 4 minutes. Final state will be **SYS OUT** on main line. It is not necessary to wait until this happens but **SPL must be extinguished before continuing**

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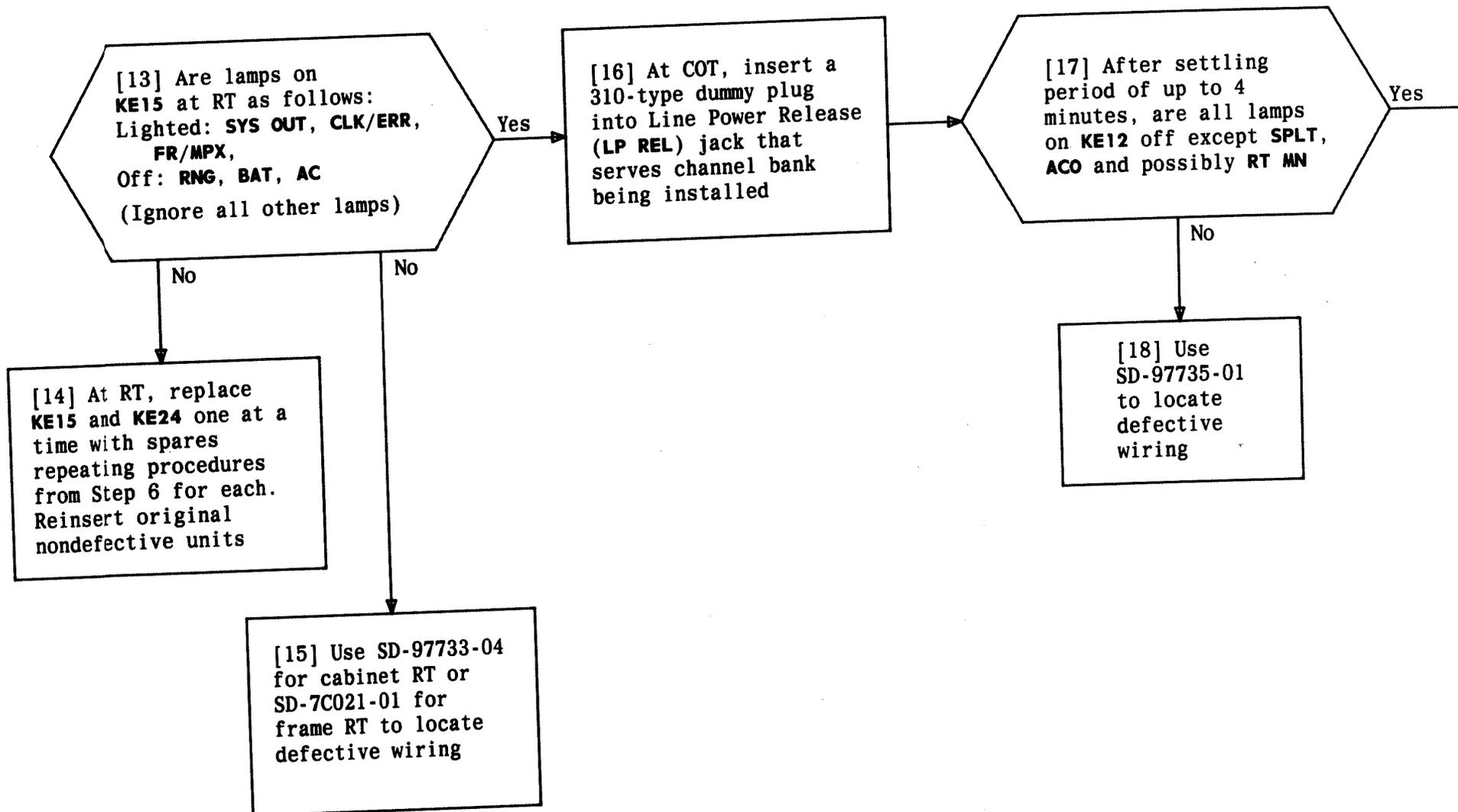
PERFORM PRELIMINARY MAJOR FUNCTIONS TESTS



NOTE 2
 SPLT will not be lighted on priority system (system 1, 3, etc) of shared spare line option nor will it be lighted for no spare option

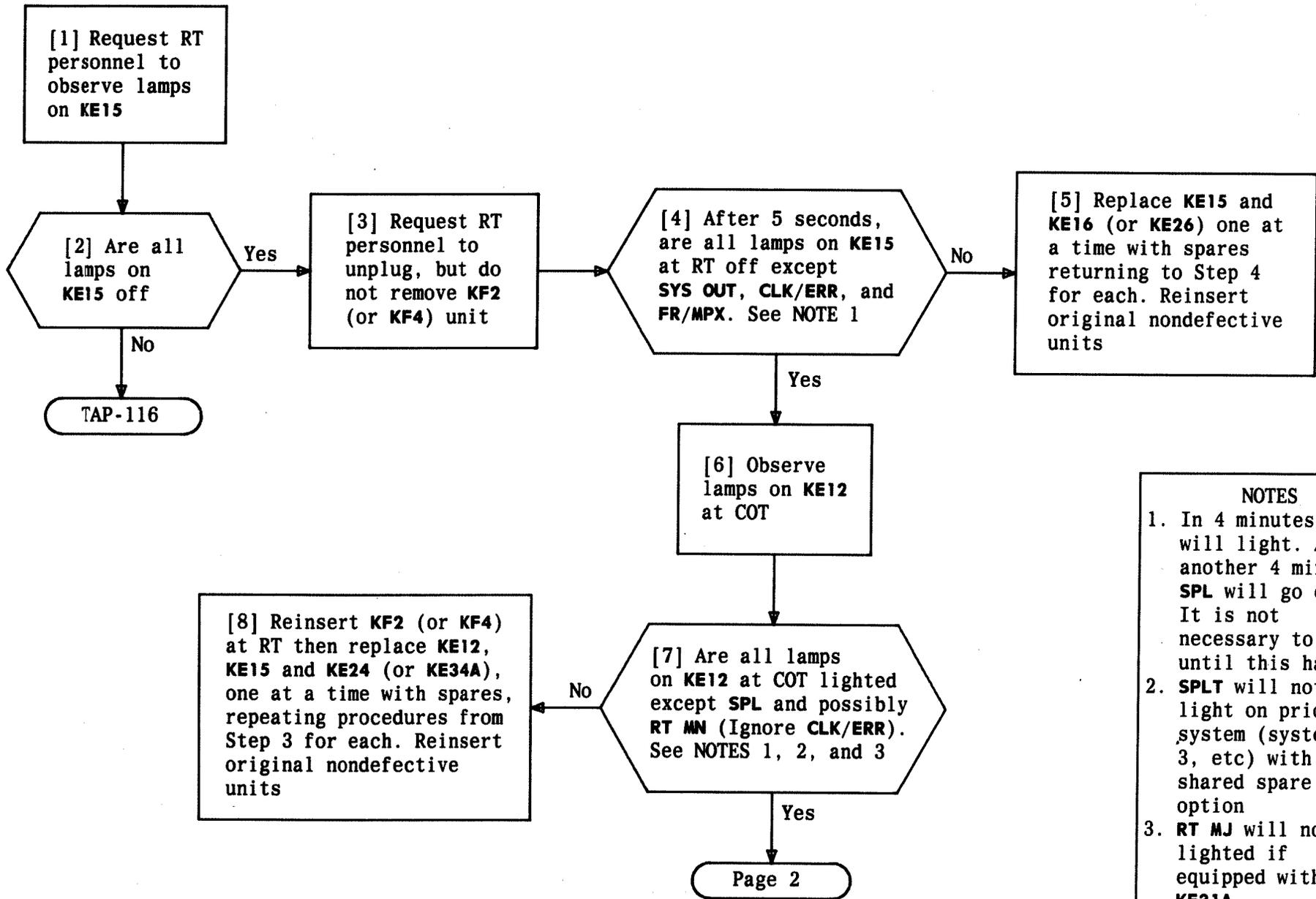
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PERFORM PRELIMINARY MAJOR FUNCTIONS TESTS



PERFORM PRELIMINARY MAJOR FUNCTIONS TESTS

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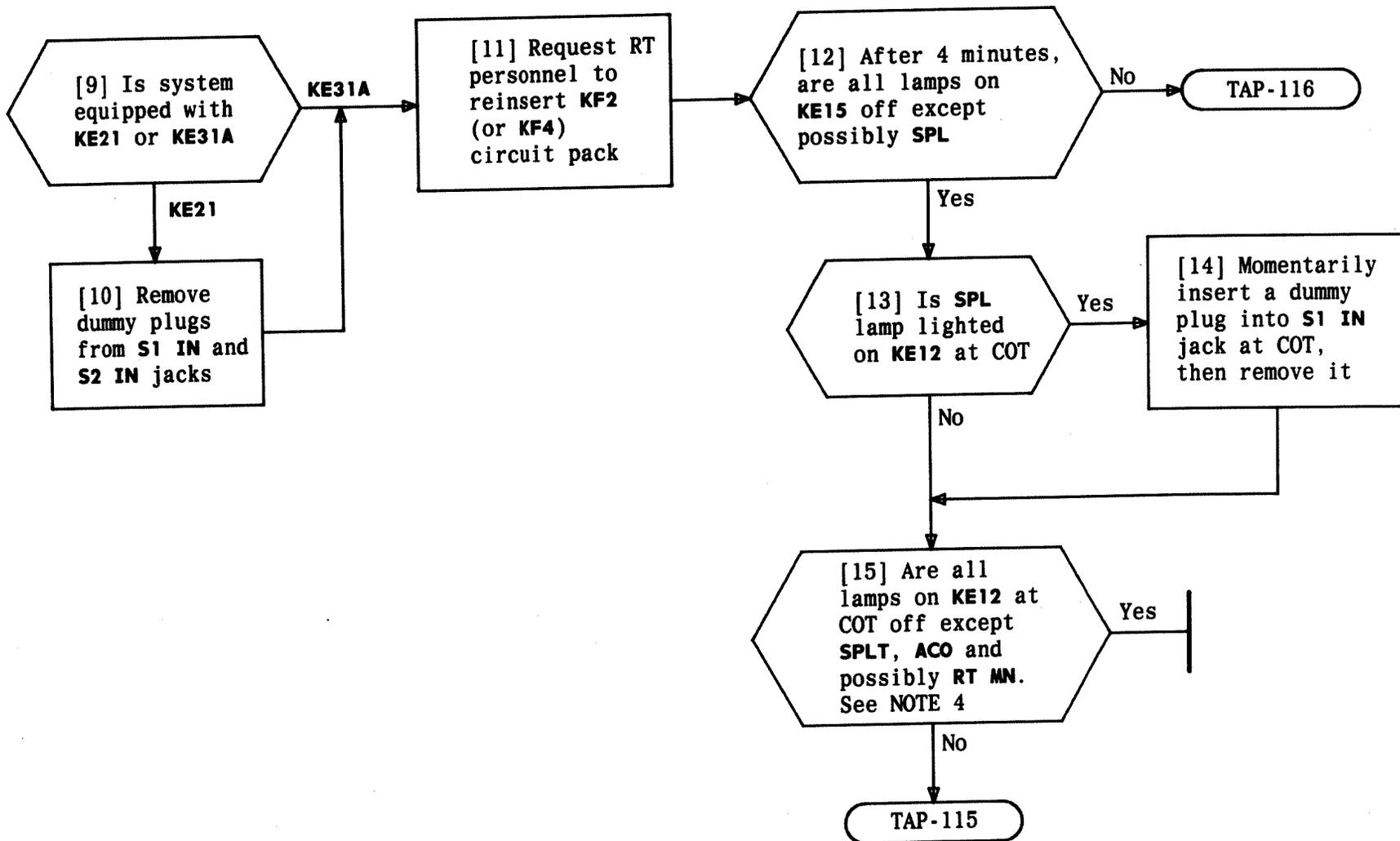


NOTES

- In 4 minutes, SPL will light. After another 4 minutes SPL will go off. It is not necessary to wait until this happens
- SPLT will not light on priority system (system 1, 3, etc) with shared spare line option
- RT MJ will not be lighted if equipped with KE31A

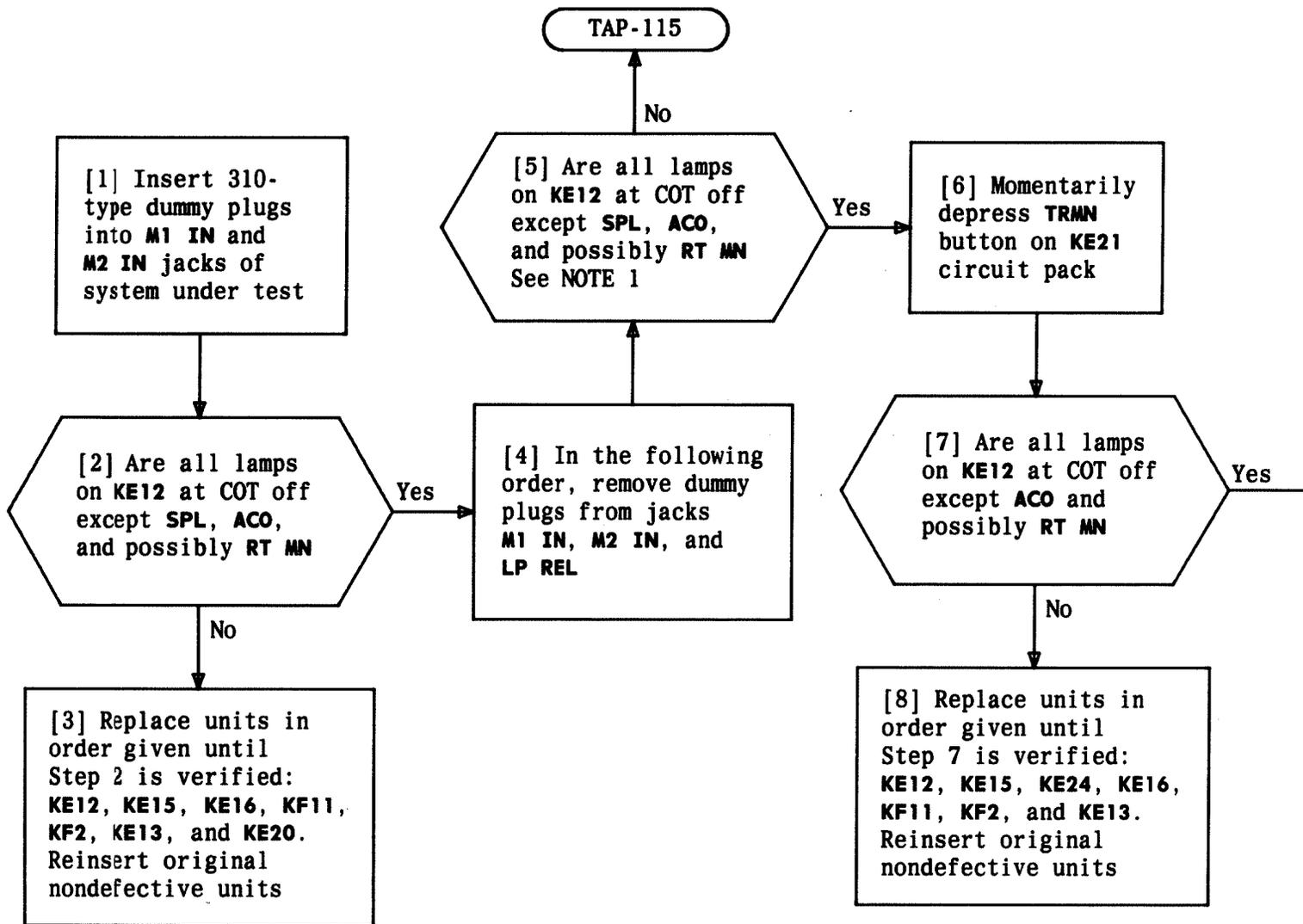
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PERFORM RECEIVE MULTIPLEXER TESTS



NOTE 4		
SPLT will not light if equipped for no spare option		
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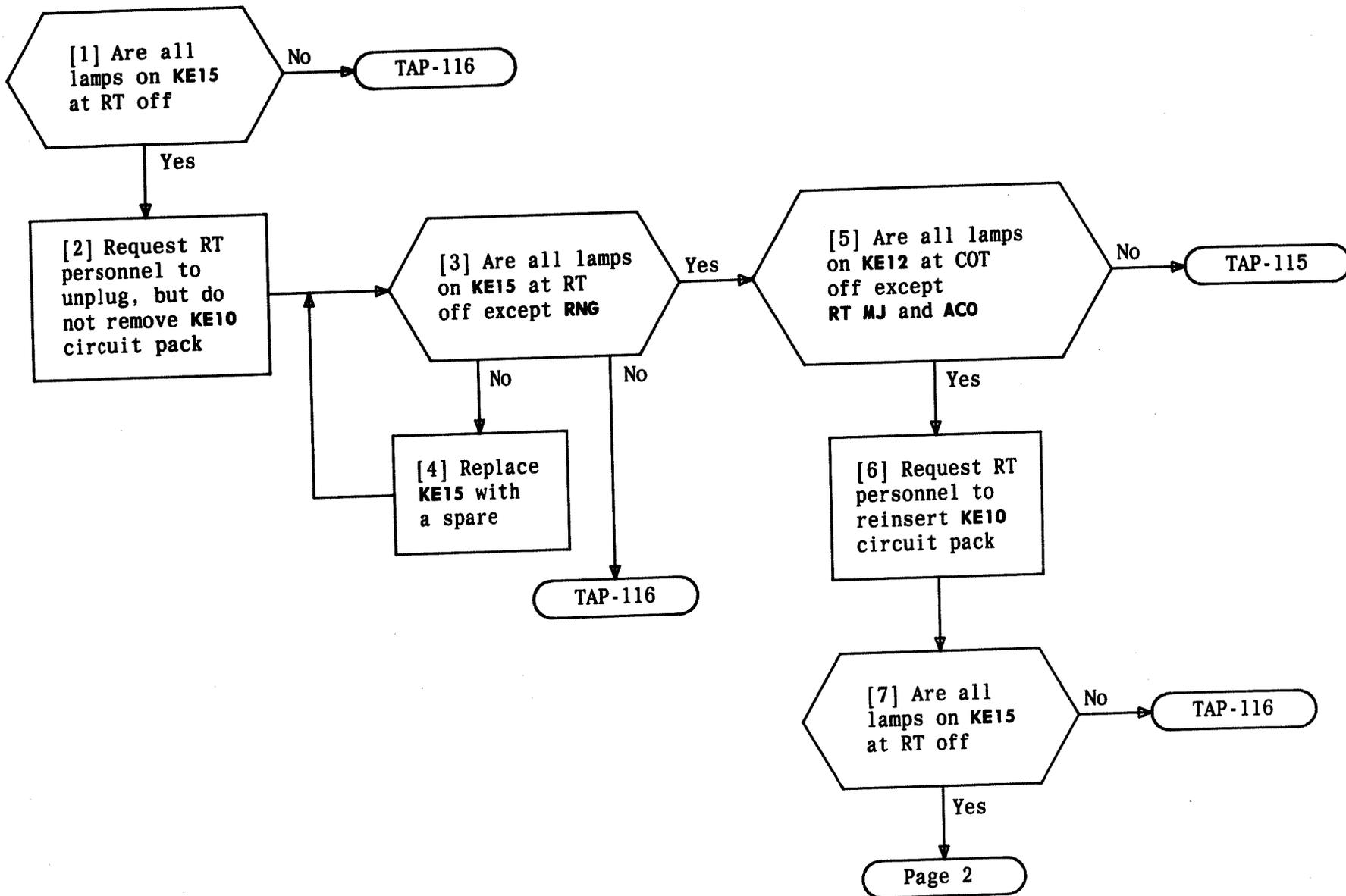
PERFORM RECEIVE MULTIPLEXER TESTS



NOTE 1
 After 4 minutes, system will switch to main line. SPL lamp will then be extinguished. It is not necessary to wait until this happens

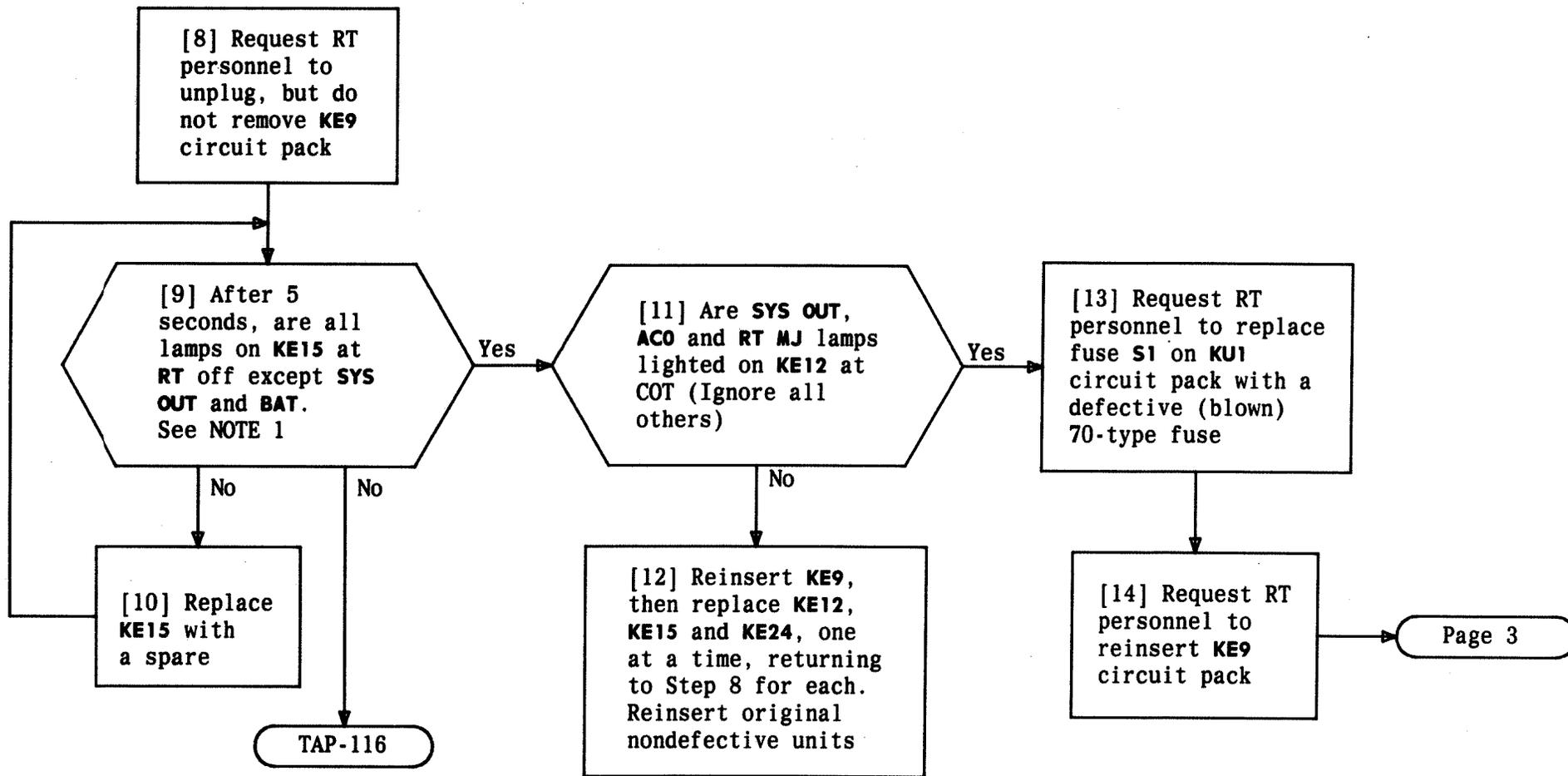
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CHECK SPARE LINE SWITCHING FOR FAULTY MAIN LINE



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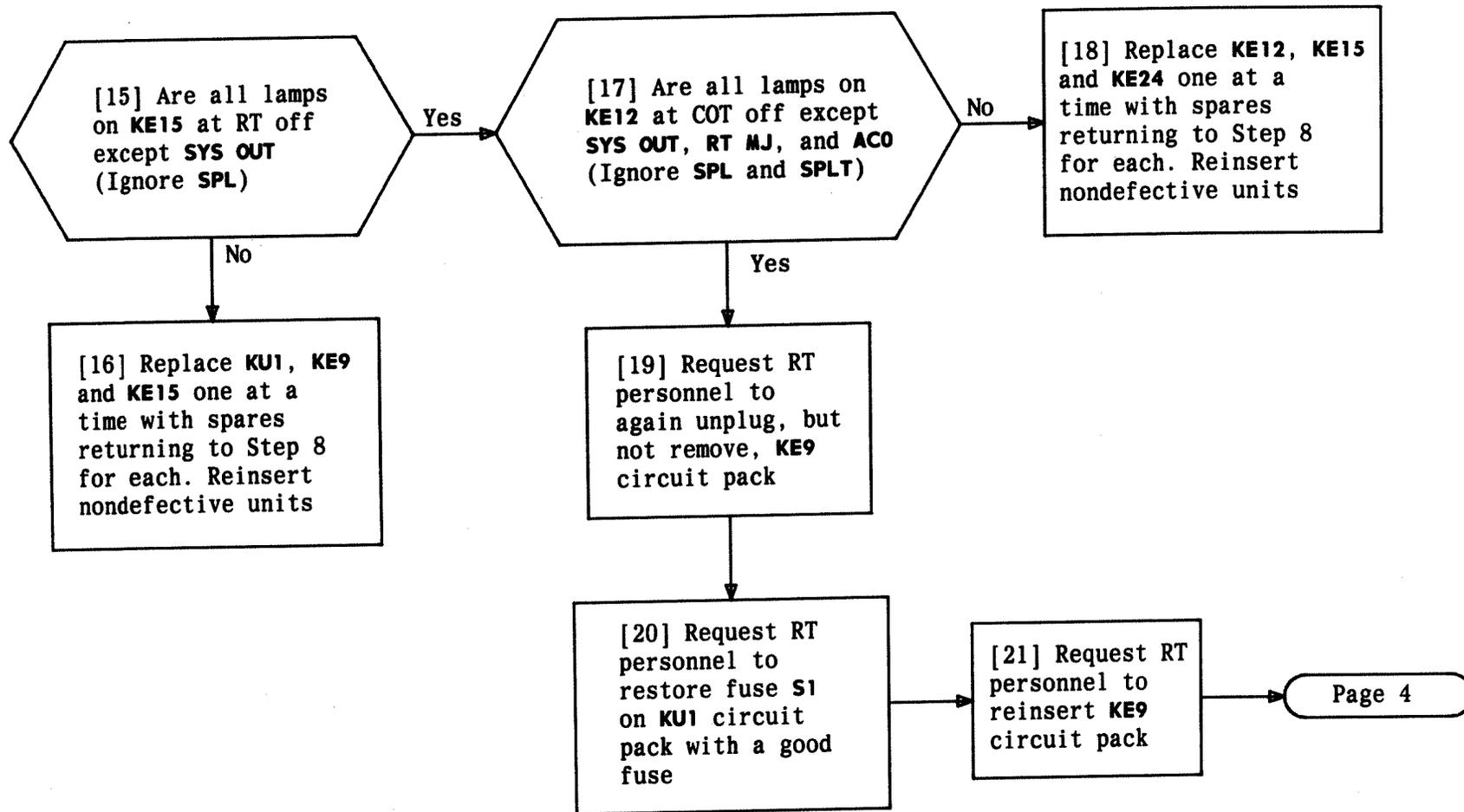
PERFORM SYSTEM MAJOR FUNCTIONS TESTS FOR CABINET RT



NOTE 1
 If KE9 remains unplugged for 4 minutes or more, SPL may be lighted

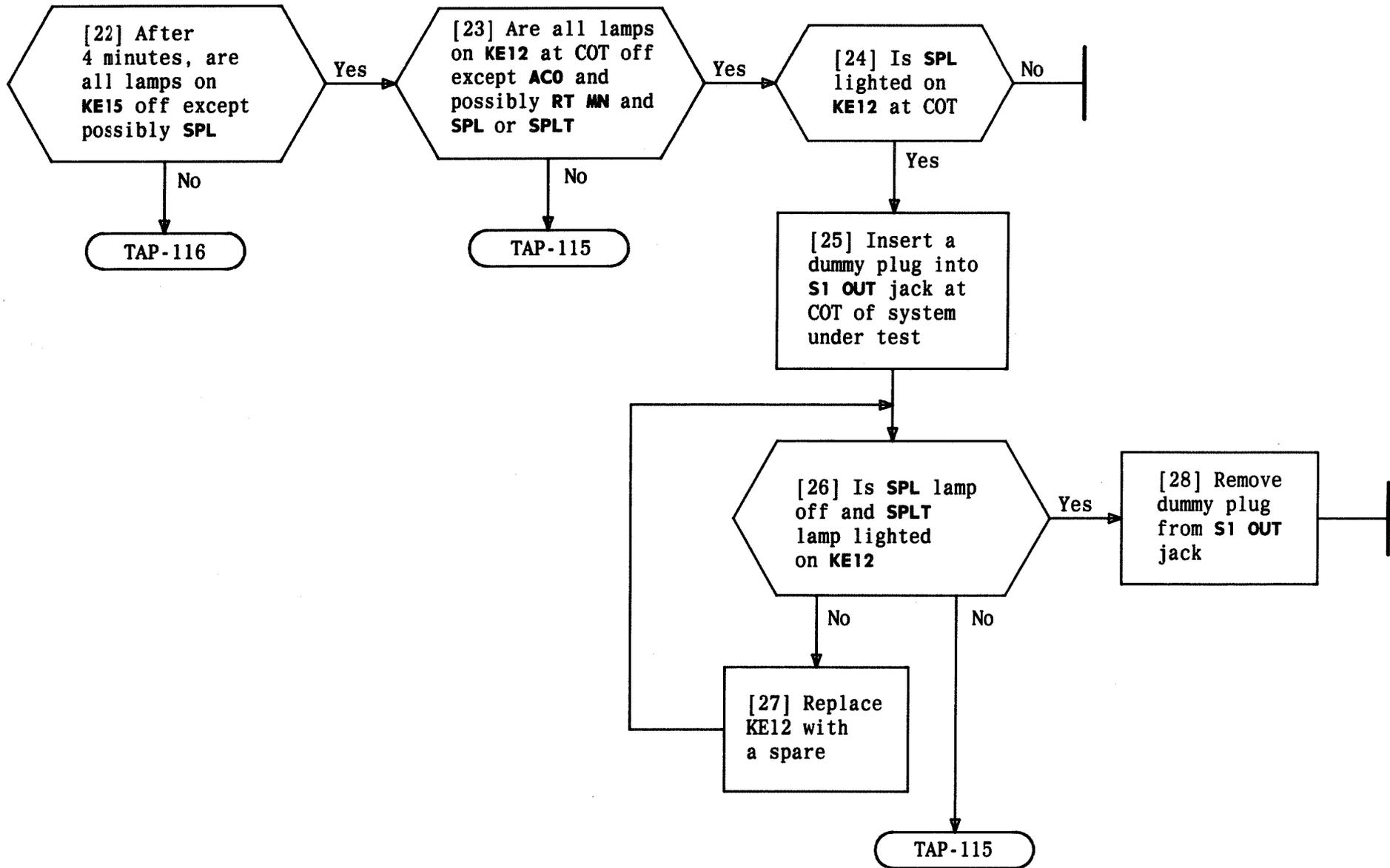
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PERFORM SYSTEM MAJOR FUNCTIONS TESTS FOR CABINET RT



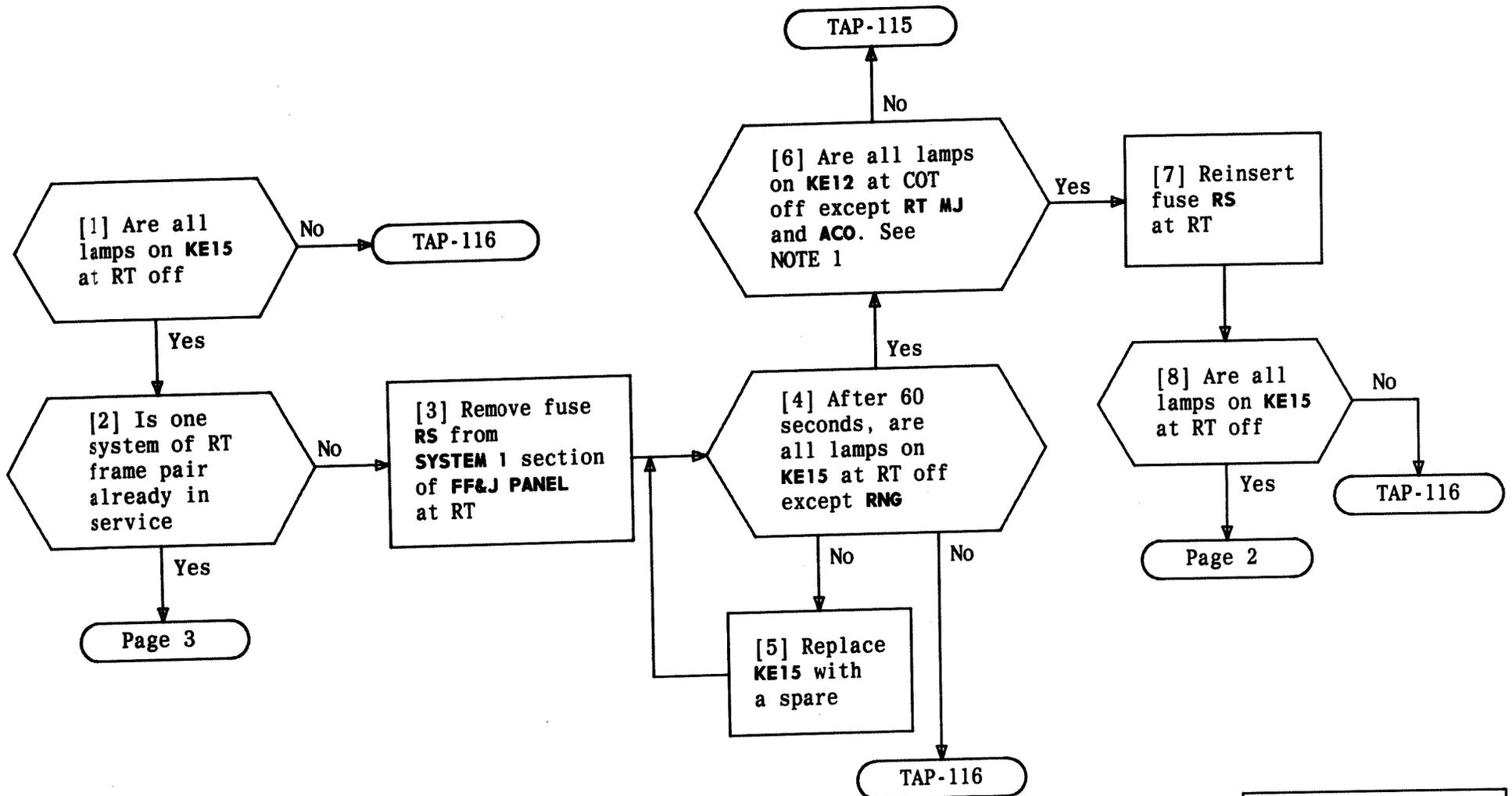
PERFORM SYSTEM MAJOR FUNCTIONS TESTS FOR CABINET RT

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PERFORM SYSTEM MAJOR FUNCTIONS TESTS FOR CABINET RT

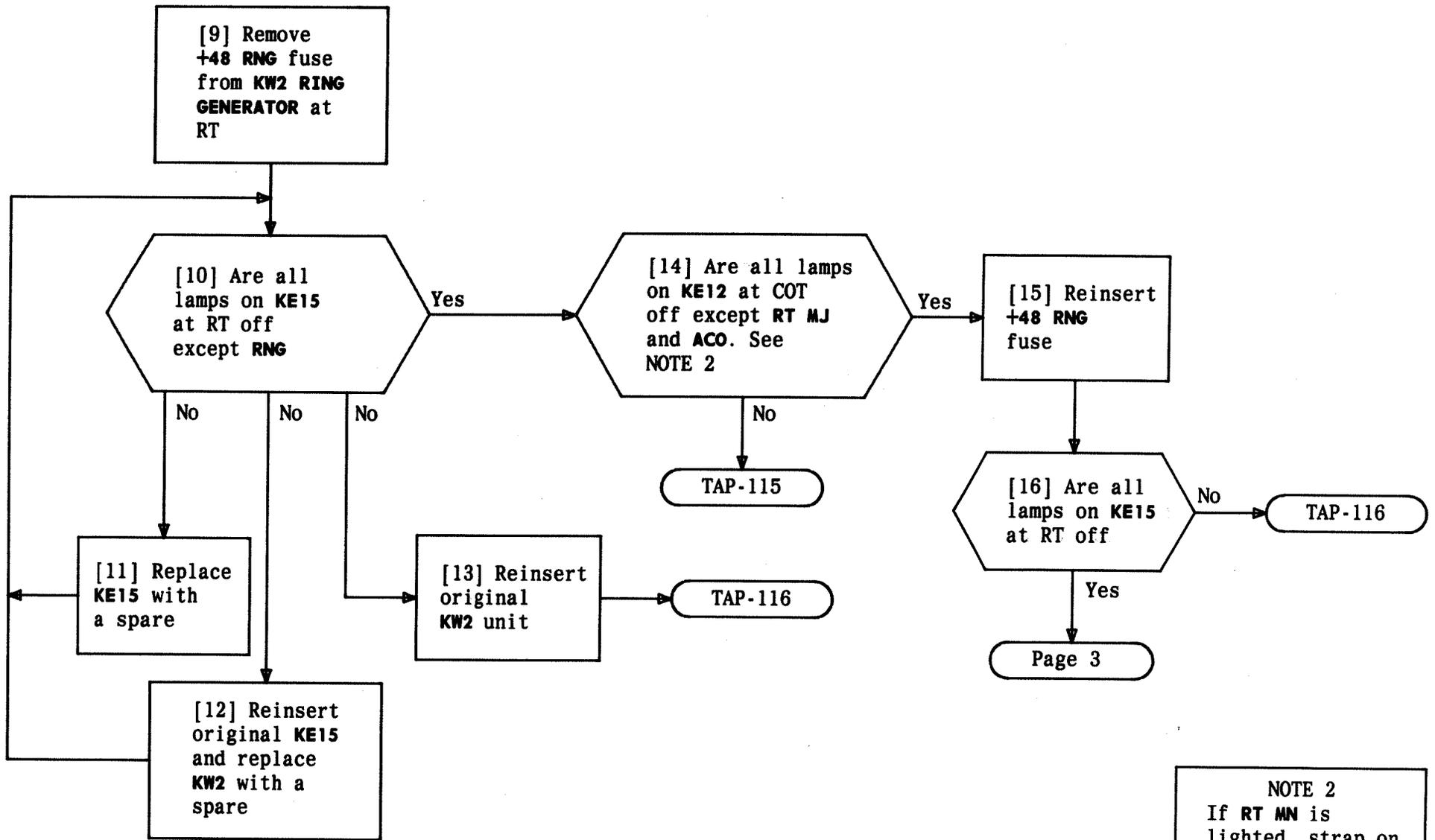
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NOTE 1
 If RT MN is lighted, strap on TB3 (option W) may be missing [SD-7C021-01]

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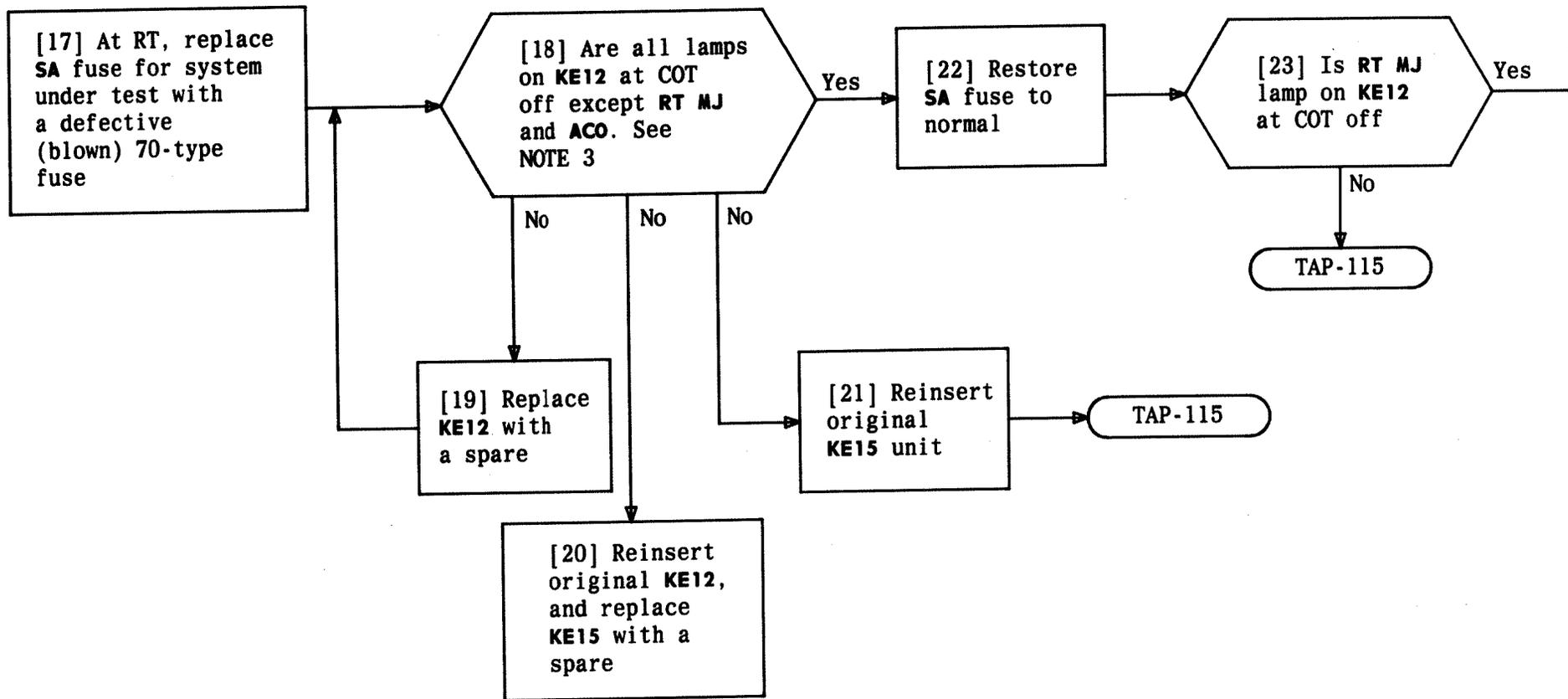
PERFORM SYSTEM MAJOR FUNCTIONS TESTS FOR FRAME RT



NOTE 2
 If RT MN is lighted, strap on TB3 (option W) may be missing [SD-7C021-01]

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PERFORM SYSTEM MAJOR FUNCTIONS TESTS FOR FRAME RT



NOTE 3		
If RT MN is lighted, strap on TB3 (option W) may be missing [SD-7C021-01]		
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PERFORM SYSTEM MAJOR FUNCTIONS TESTS FOR FRAME RT

At RT:

[1] Locate front door alarm plunger switch

[2] Momentarily depress and release plunger switch

AND

[3] Are ACO, SPLT, and RT MN lighted on KE12 at COT

No

[4] Trouble is in KE12, KE15, plunger switch or wiring. Replace or repair as required and return to Step 1

Yes

[5] Manually push in door alarm plunger switch to closed-door position

[6] Is RT MN lamp on KE12 at COT off

No

Yes

[7] Pull door alarm plunger switch to outer detent position

No

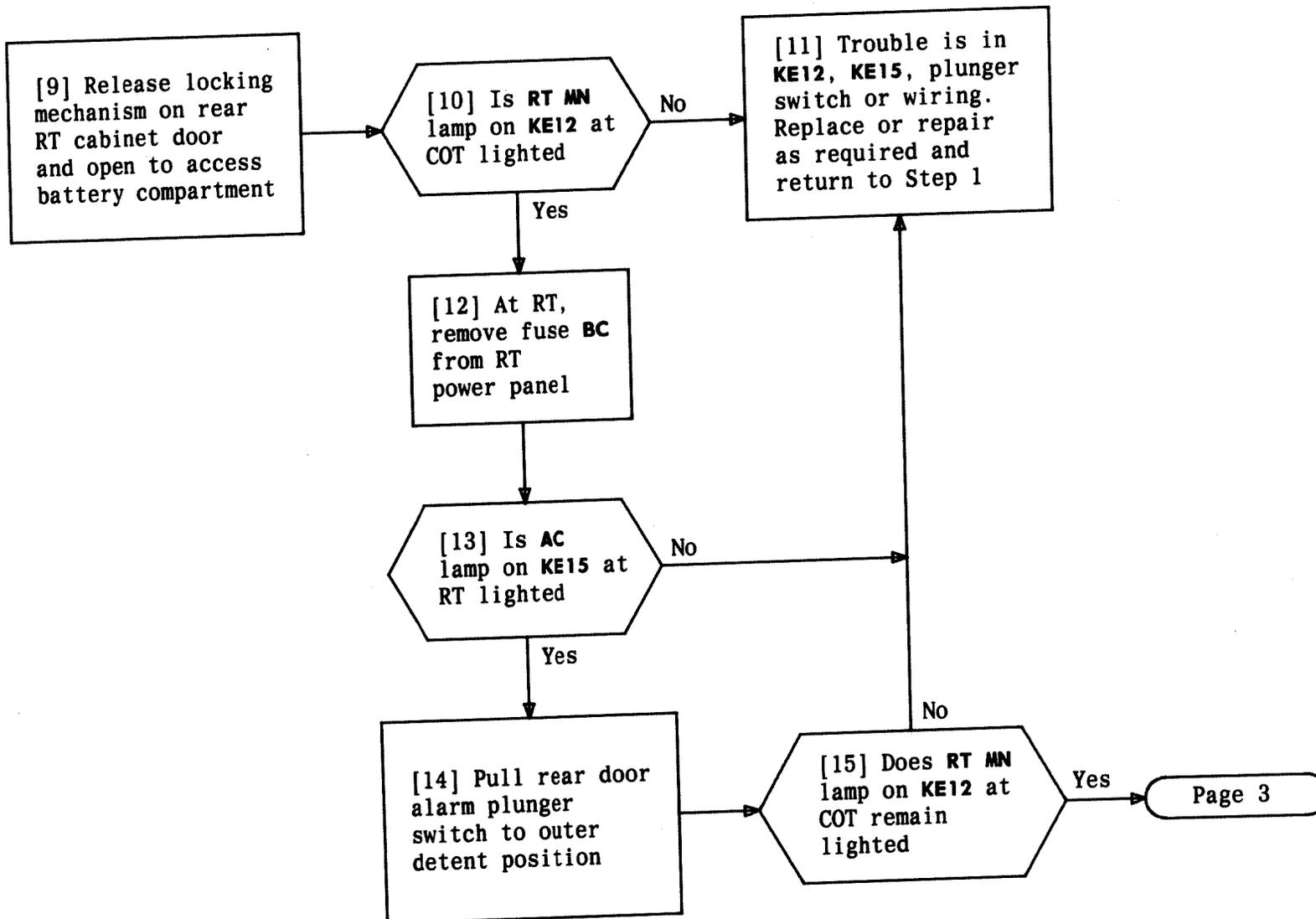
[8] Does RT MN lamp on KE12 at COT remain off

Yes

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PERFORM SYSTEM MINOR FUNCTIONS TESTS (CABINET RT)



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PERFORM SYSTEM MINOR FUNCTIONS TESTS (CABINET RT)

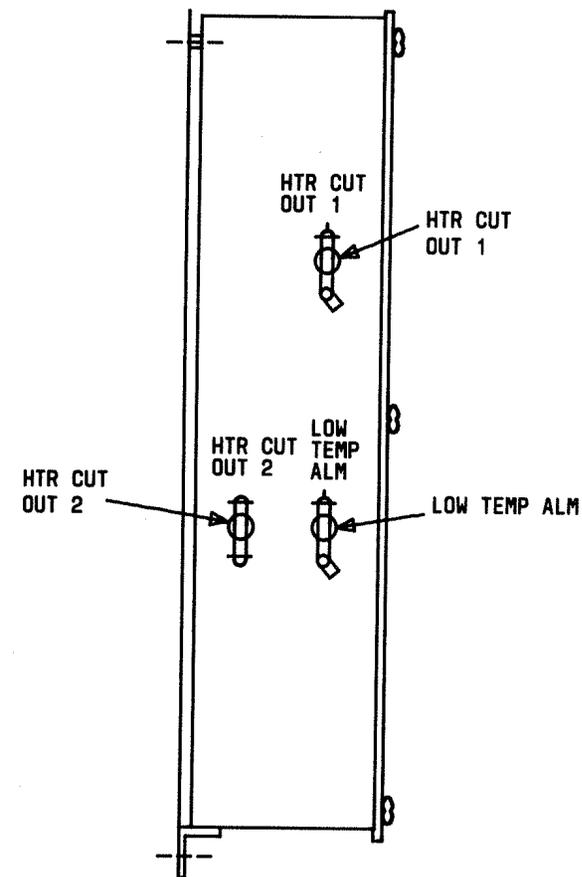
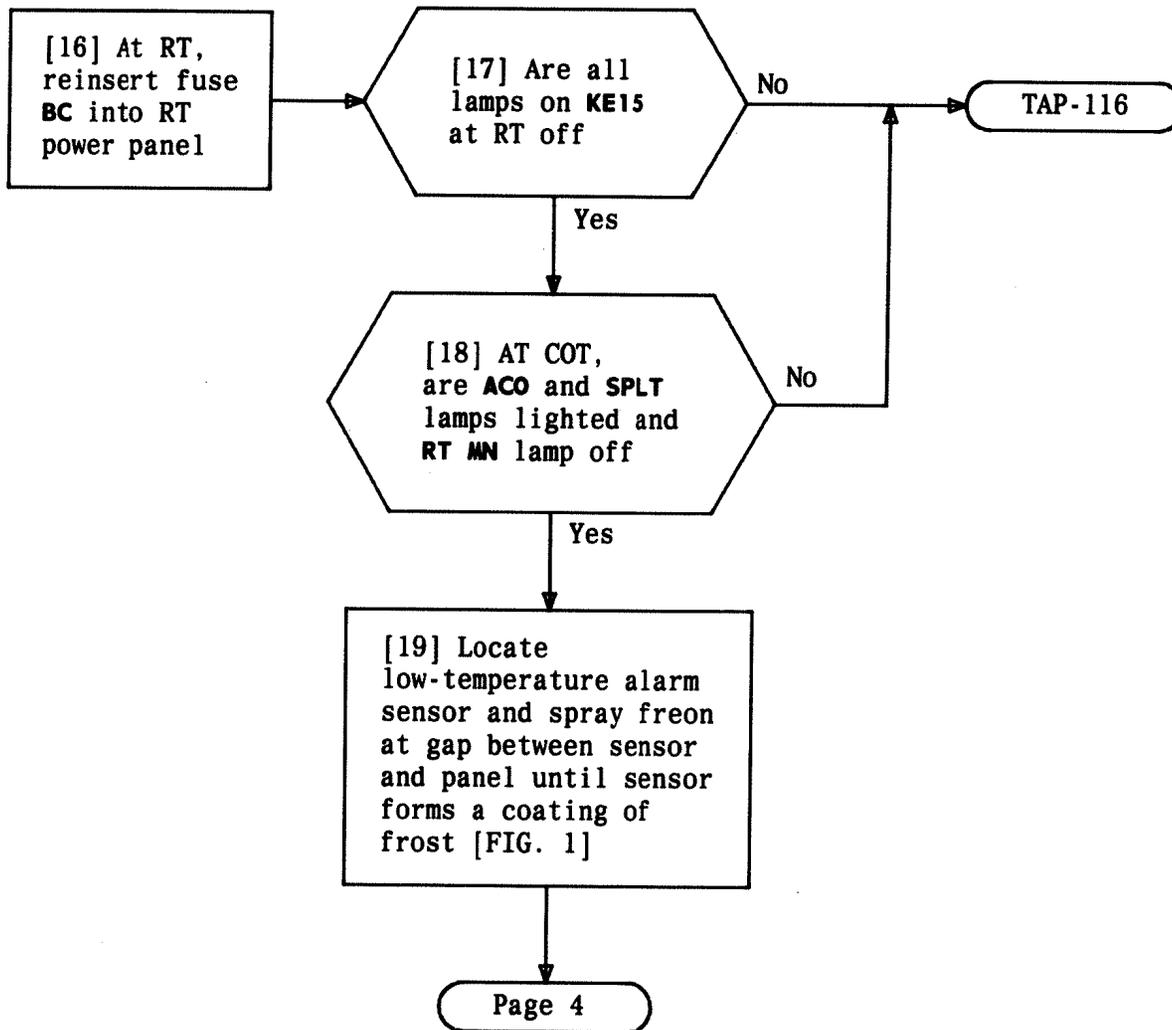
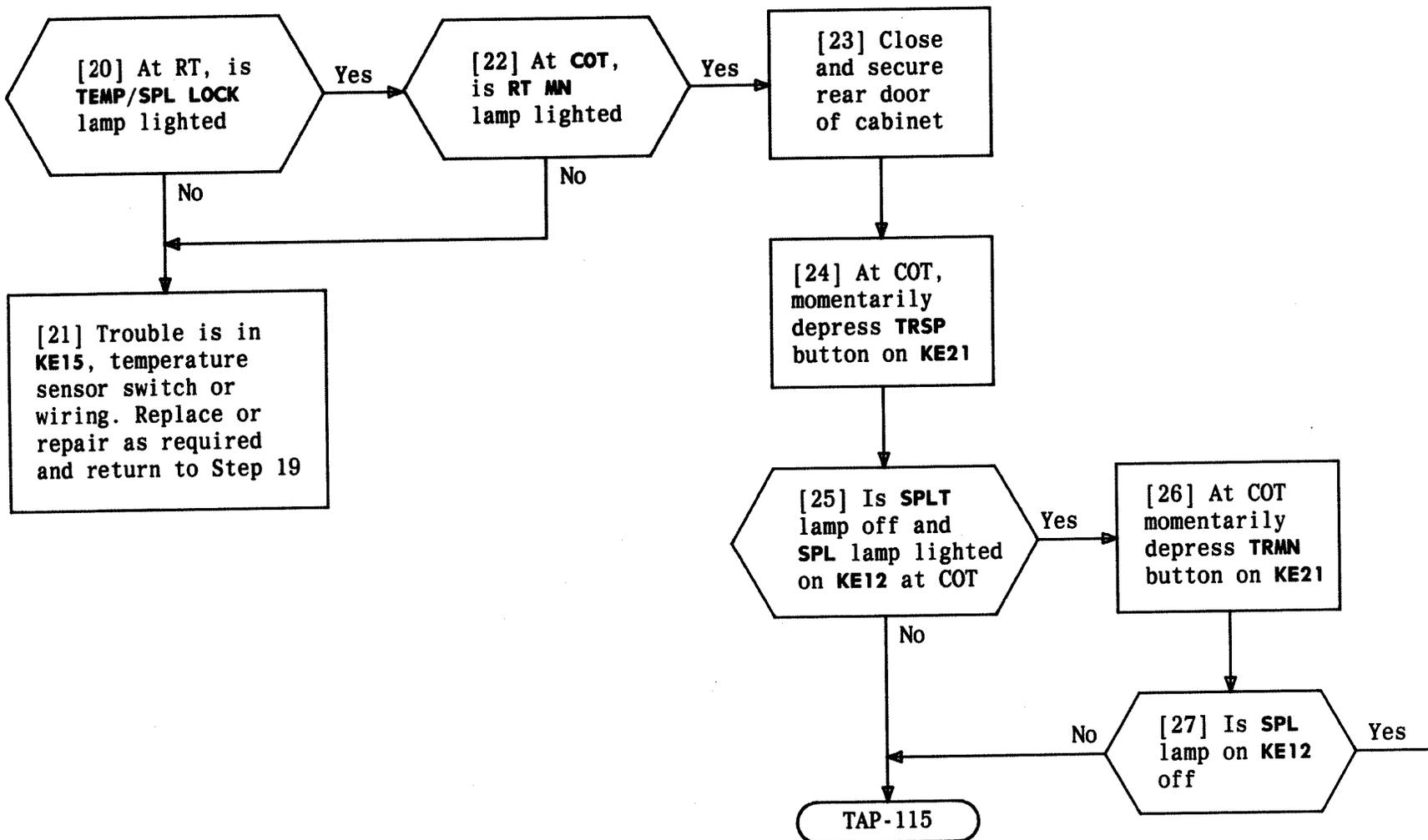


FIG. 1

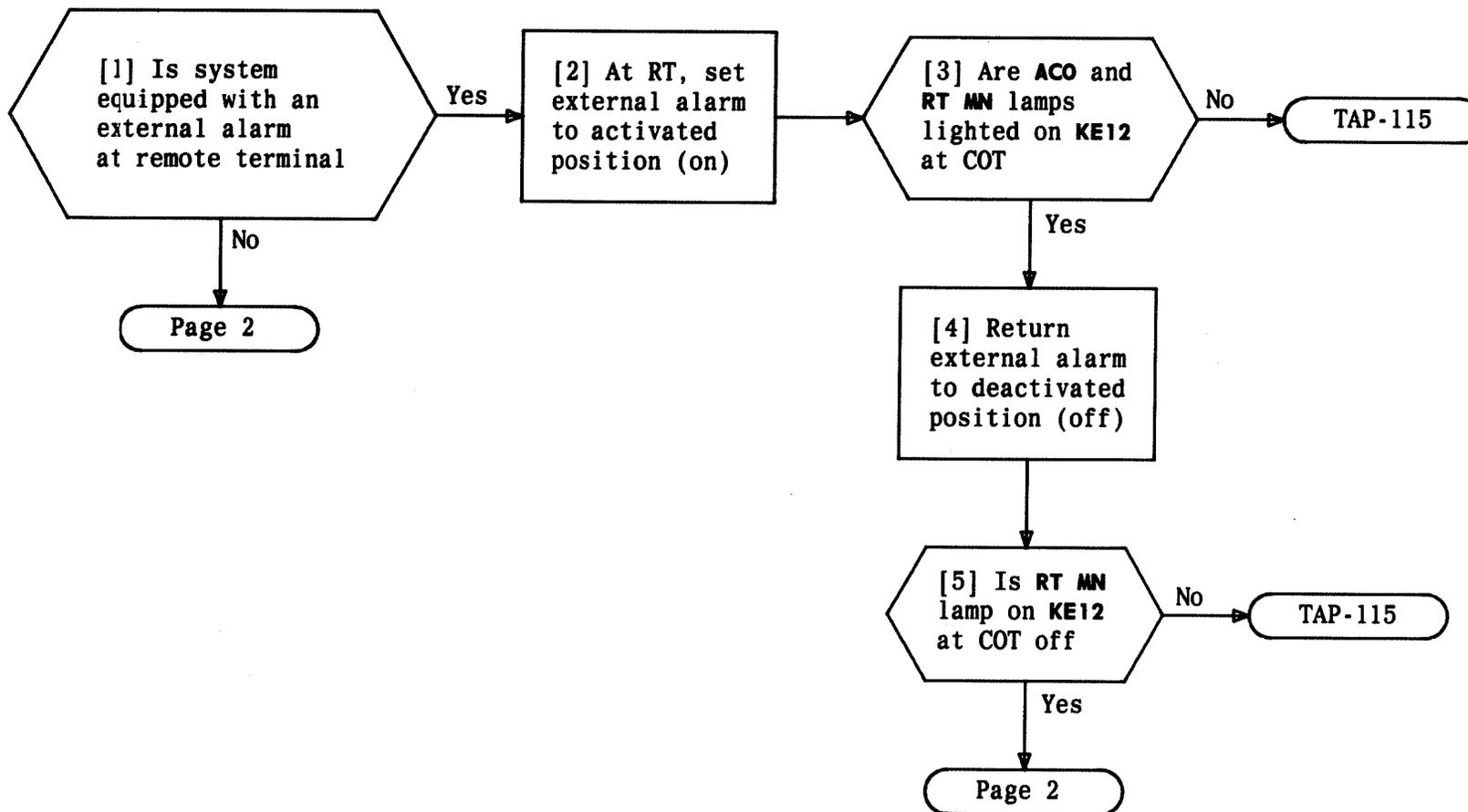
PERFORM SYSTEM MINOR FUNCTIONS TESTS (CABINET RT)

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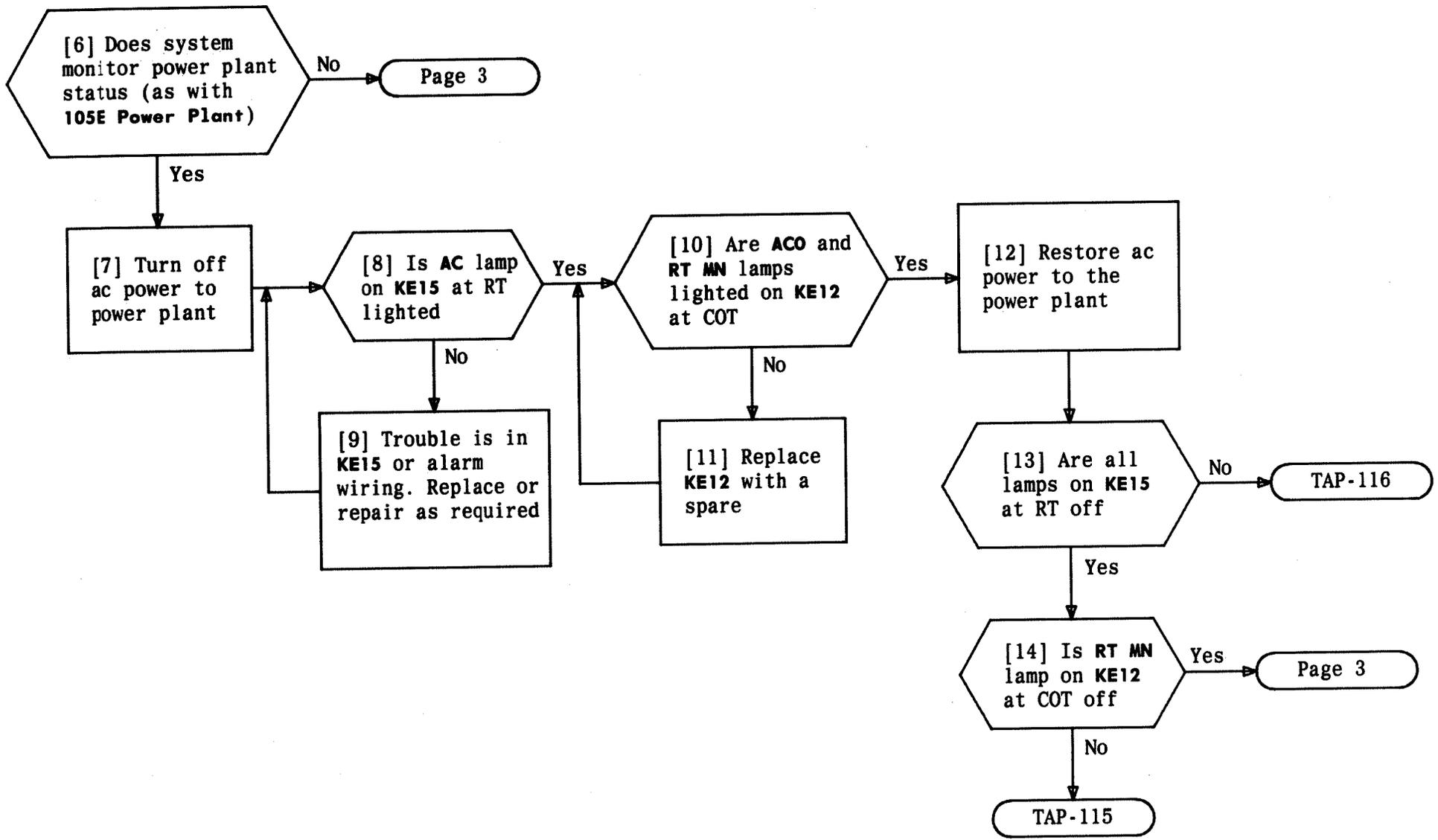
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PERFORM SYSTEM MINOR FUNCTIONS TESTS (CABINET RT)



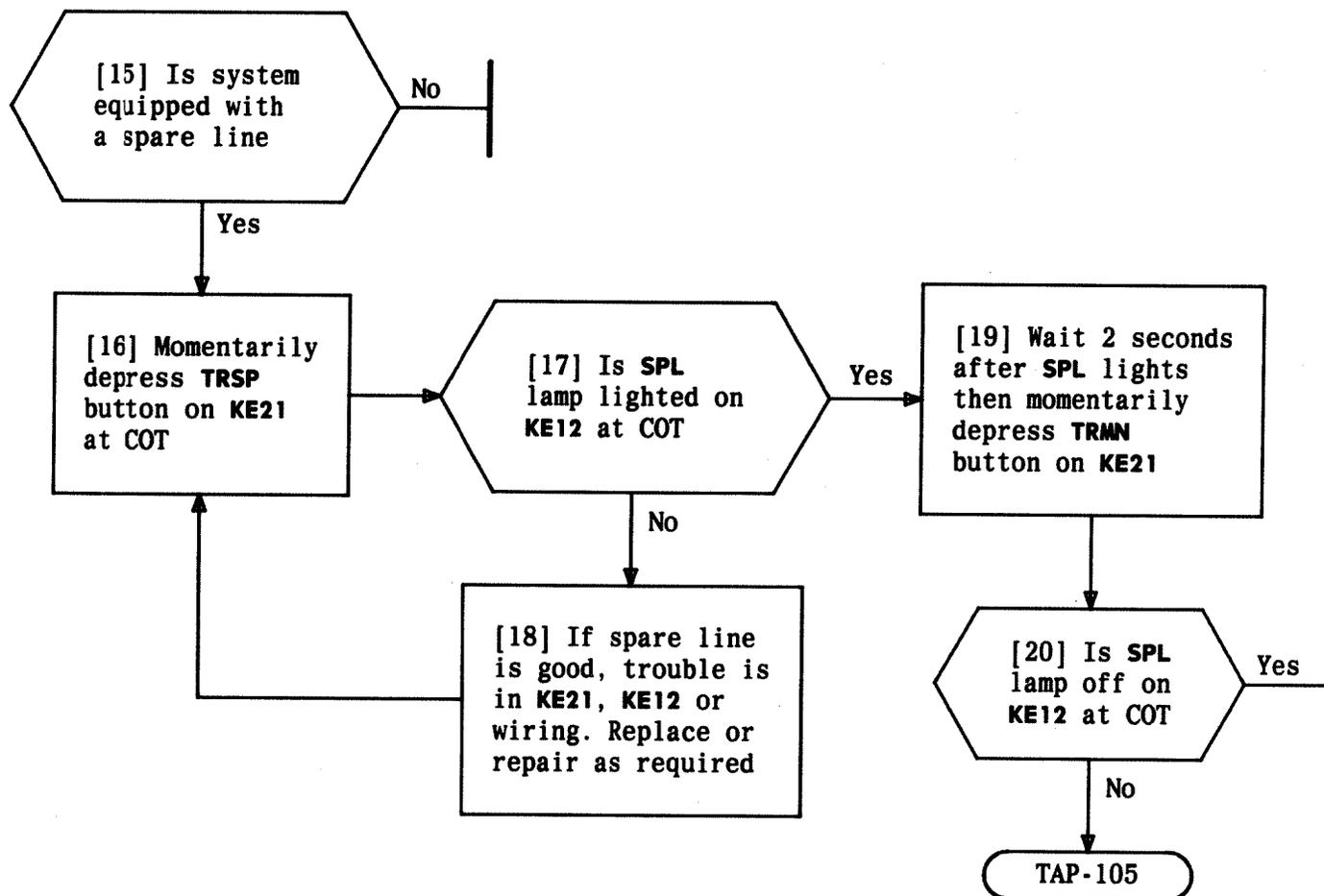
PERFORM SYSTEM MINOR FUNCTIONS TESTS (FRAME RT)

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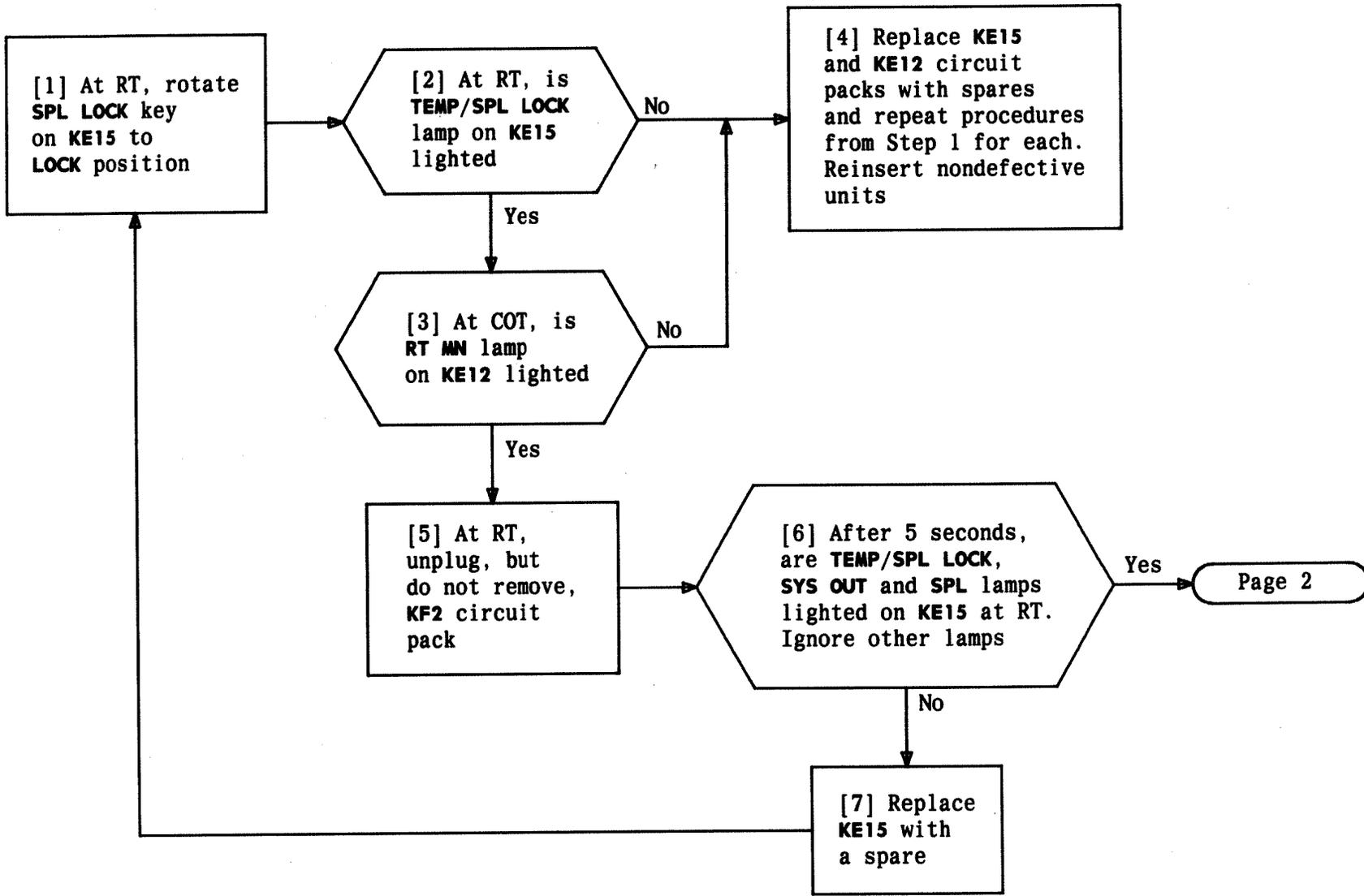
PERFORM SYSTEM MINOR FUNCTIONS TESTS (FRAME RT)

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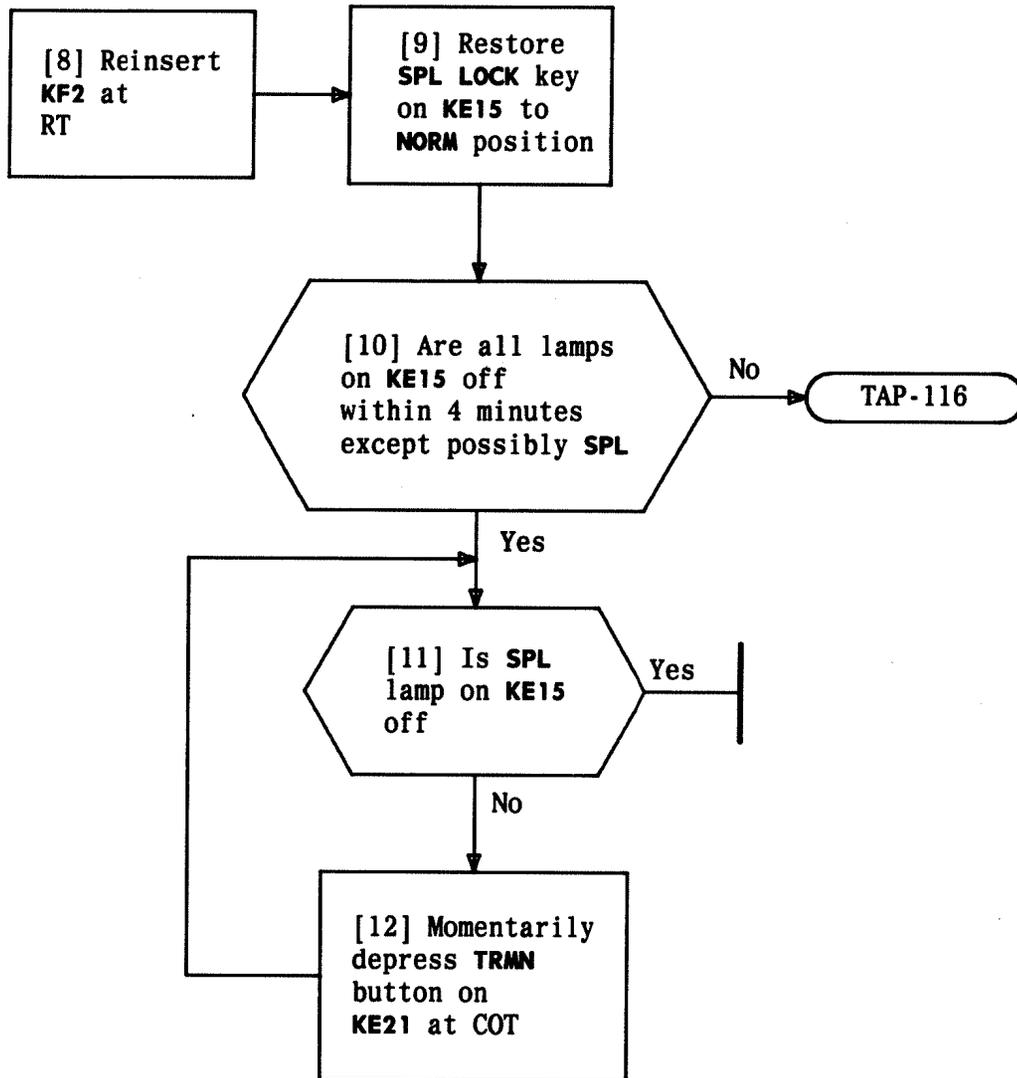
PERFORM SYSTEM MINOR FUNCTIONS TESTS (FRAME RT)

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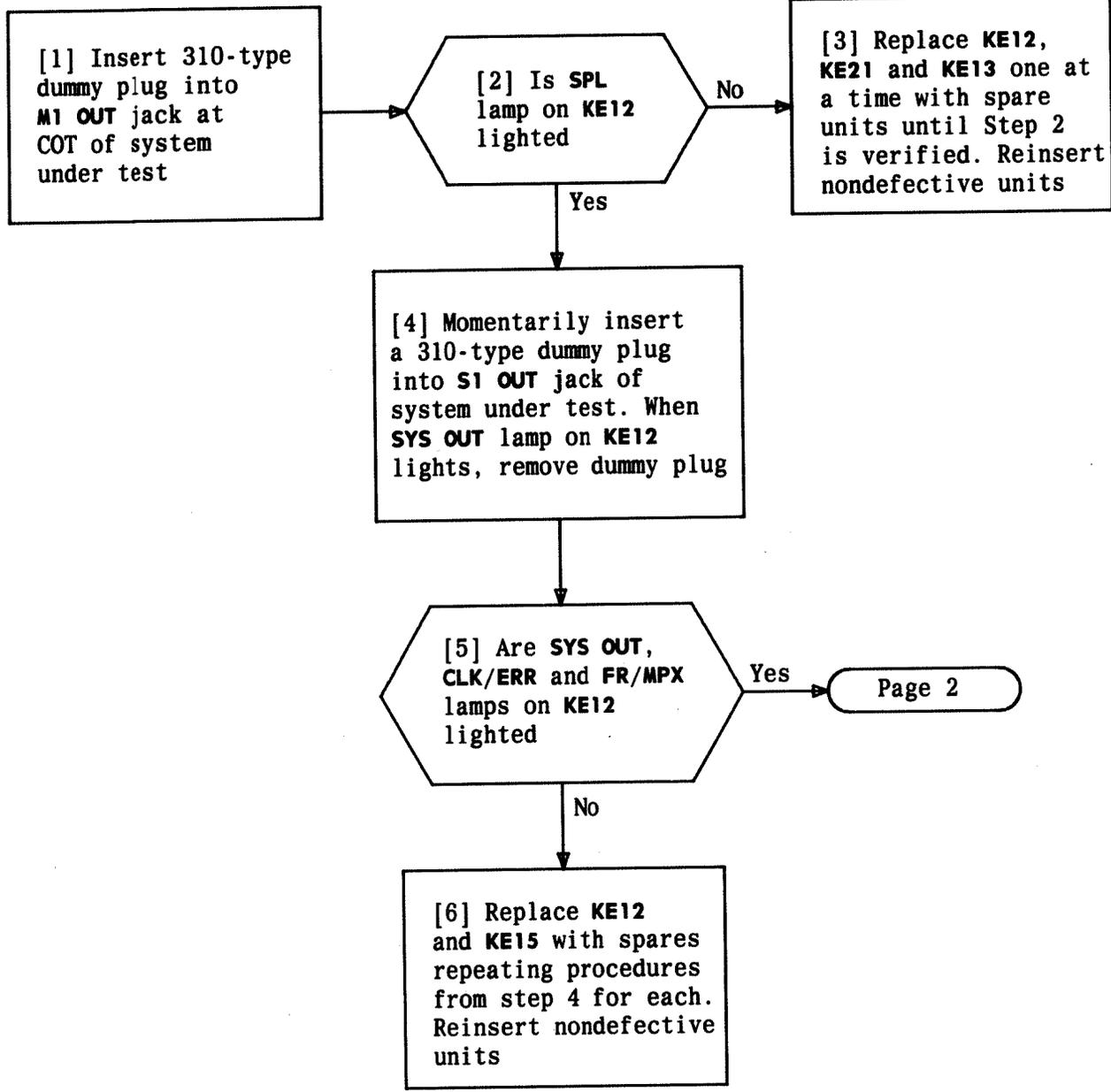
PERFORM MANUAL RETRY OF SPARE LINE

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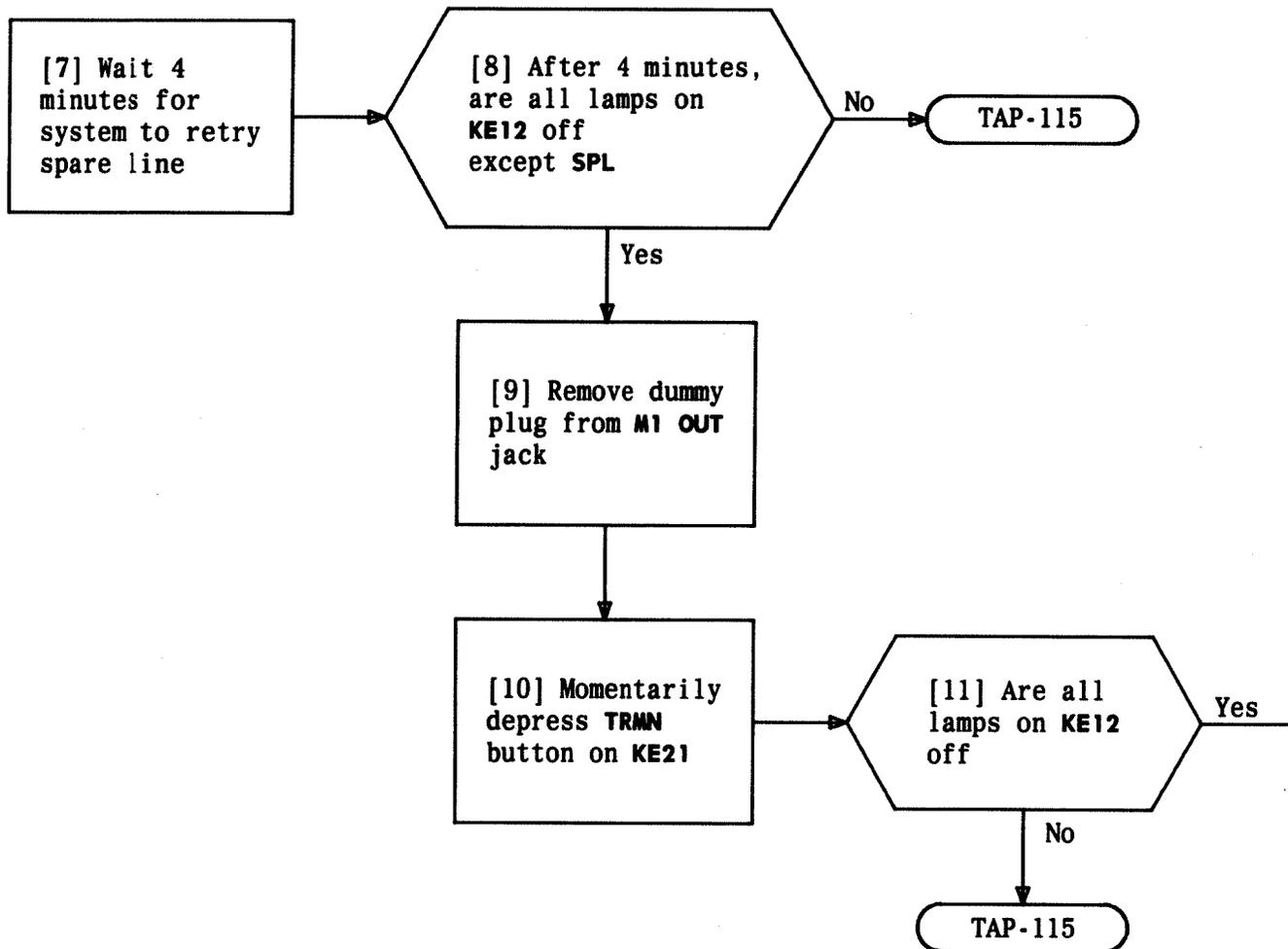
PERFORM MANUAL RETRY OF SPARE LINE

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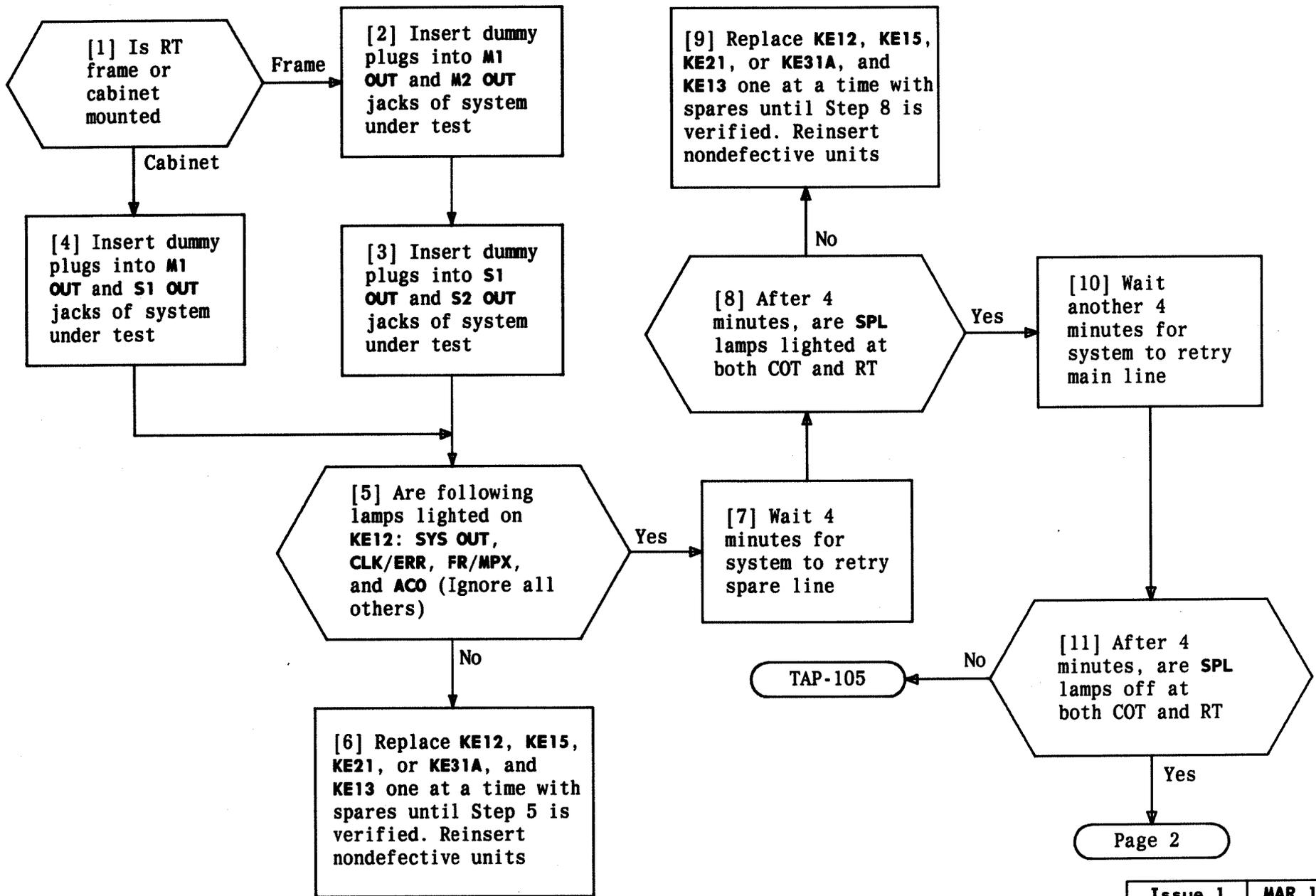
PERFORM AUTOMATIC RETRY OF SPARE LINE

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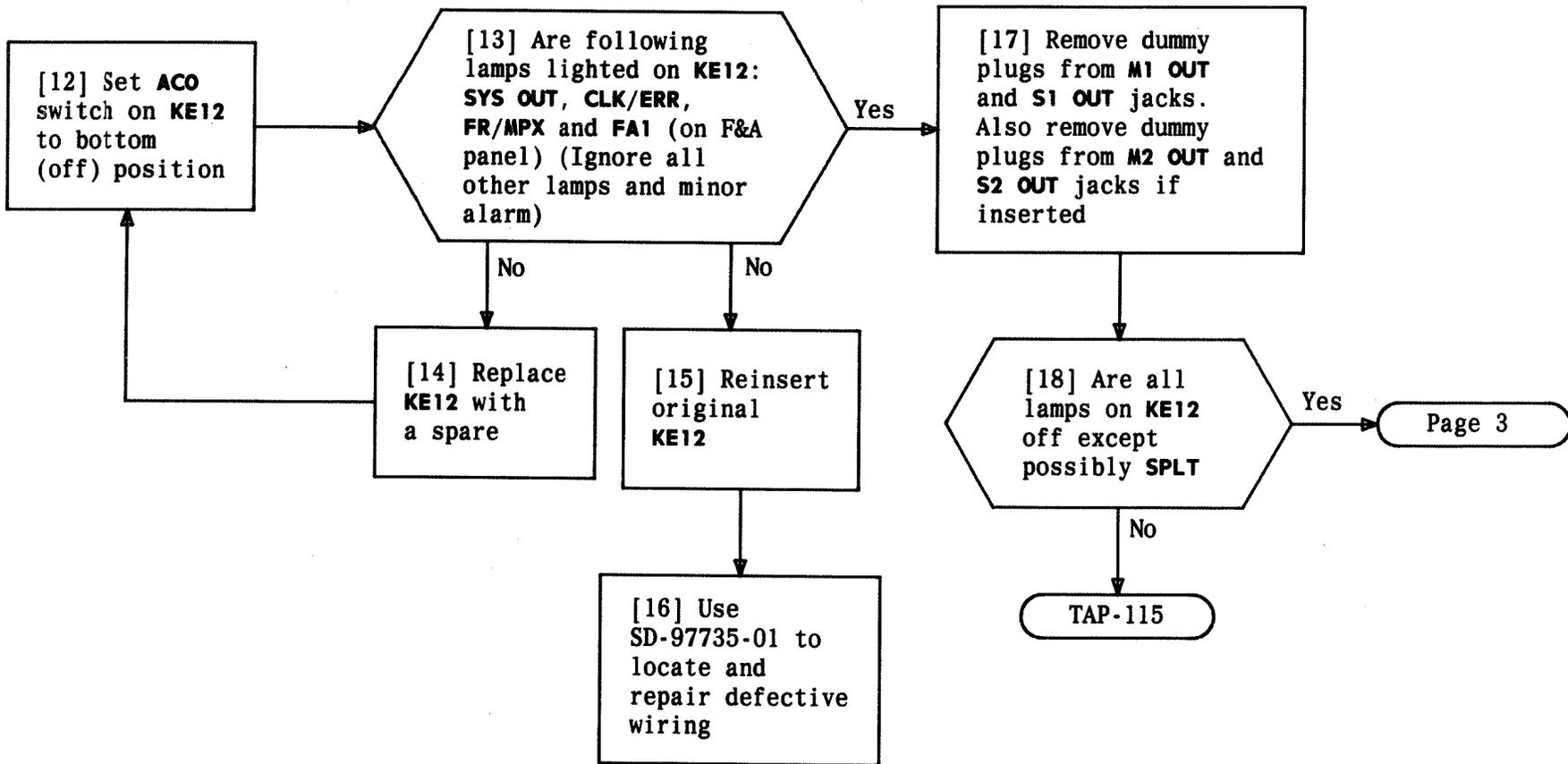
PERFORM AUTOMATIC RETRY OF SPARE LINE

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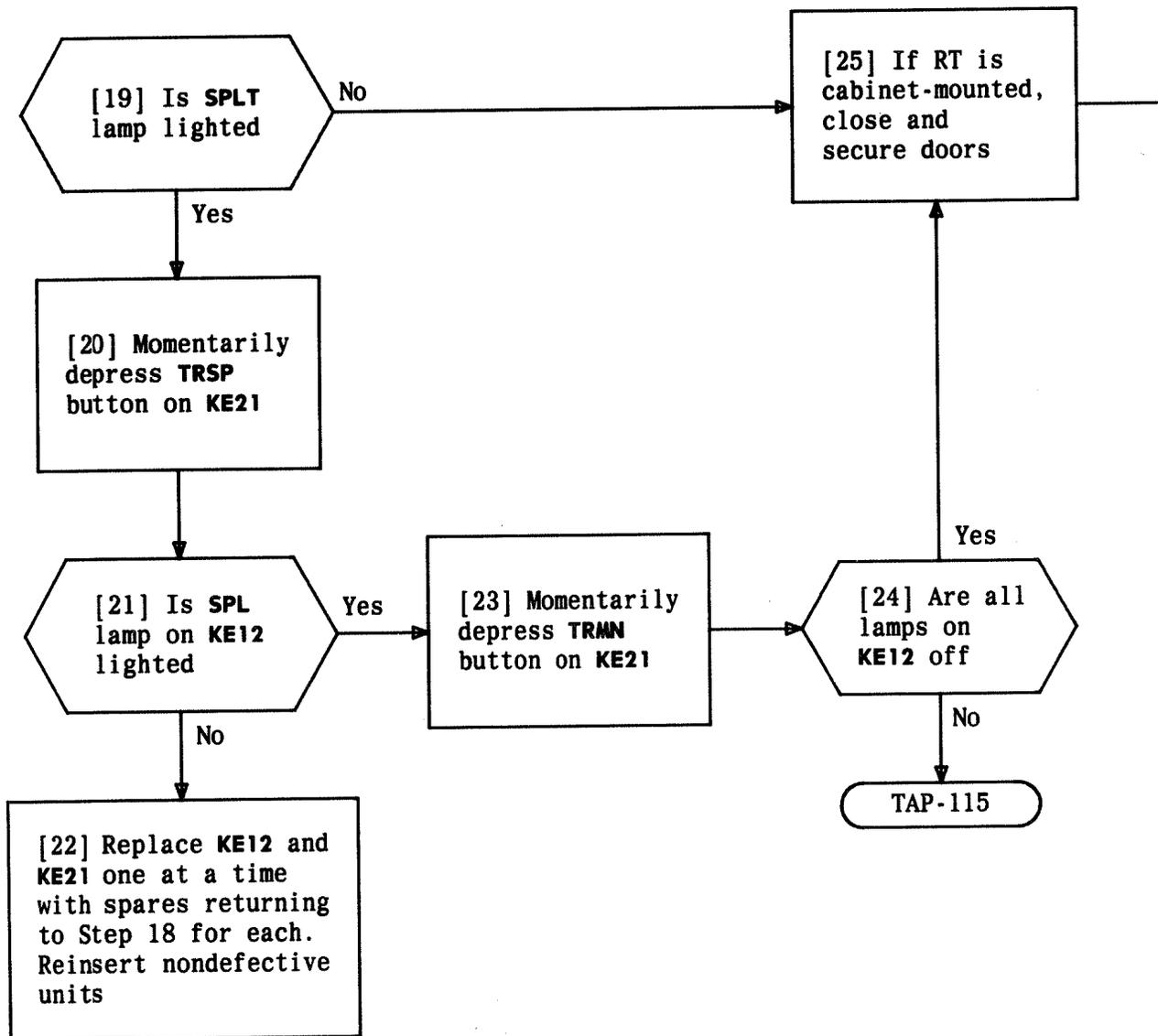
PERFORM VERIFICATION OF FINAL SYS OUT STATE

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PERFORM VERIFICATION OF FINAL SYS OUT STATE

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PERFORM VERIFICATION OF FINAL SYS OUT STATE

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SUMMARY

Have COT install a **KE17B CIRCUIT PACK** and use a test line to connect unassigned subscriber line and call number to channel being tested. At RT, install appropriate channel unit [TABLE A]. Connect a test telephone set (connected for bridged ringing) to channel being tested. Perform talking, dialing, ringing and ring-trip tests. Repeat for each channel being equipped in single party mode.

TABLE A				
CONFIGURATION	CABINET SYSTEM	FRAME SYSTEM		
SERVICE RANGE	0-900 OHMS	0-900 OHMS	901-1600 OHMS	1601-2800 OHMS
RT CHANNEL UNIT	KE18B	KE18B	KE19	KE19
RANGE EXTENDER				5A

- [1] Establish communication between Remote Terminal (RT) and Central Office Terminal (COT) via order wire

Have COT Personnel:

- [2] Select a channel for testing and plug in a **KE17B CIRCUIT PACK** into slot corresponding to channel being equipped

- [3] At selected channel appearance on MDF, connect a temporary call number and subscriber line circuit test line

At RT:

- [4] Plug a **KE18B** or **KE19 CIRCUIT PACK** [TABLE A] into slot corresponding to channel selected in Step 2
- [5] At cross-connecting terminal adjacent to RT, temporarily connect a test telephone to terminals associated with selected channel. See NOTE 1



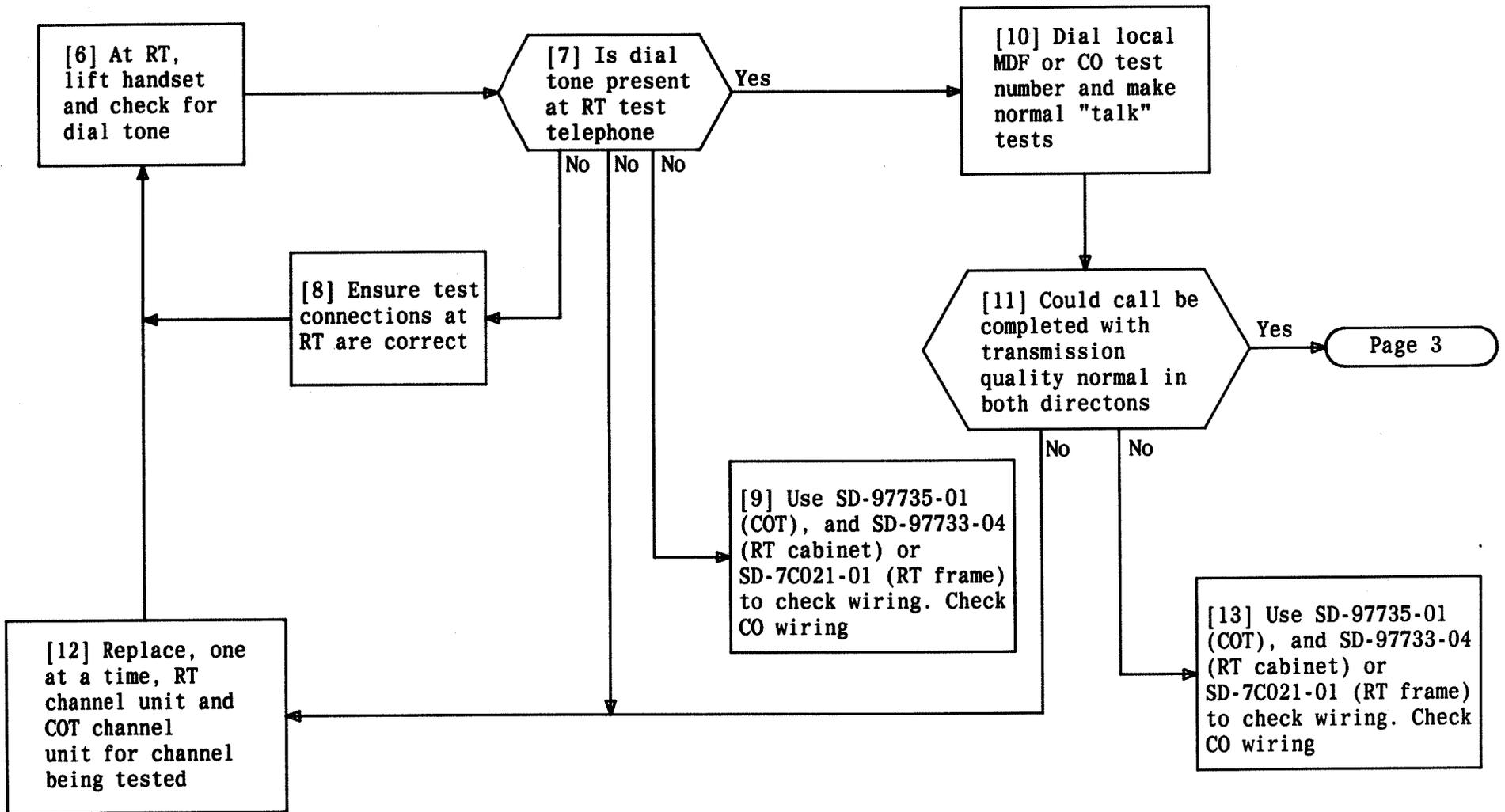
Channel units installed, CO test line and RT test telephone connected

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NOTE 1
Test telephone should be connected for bridged ringing

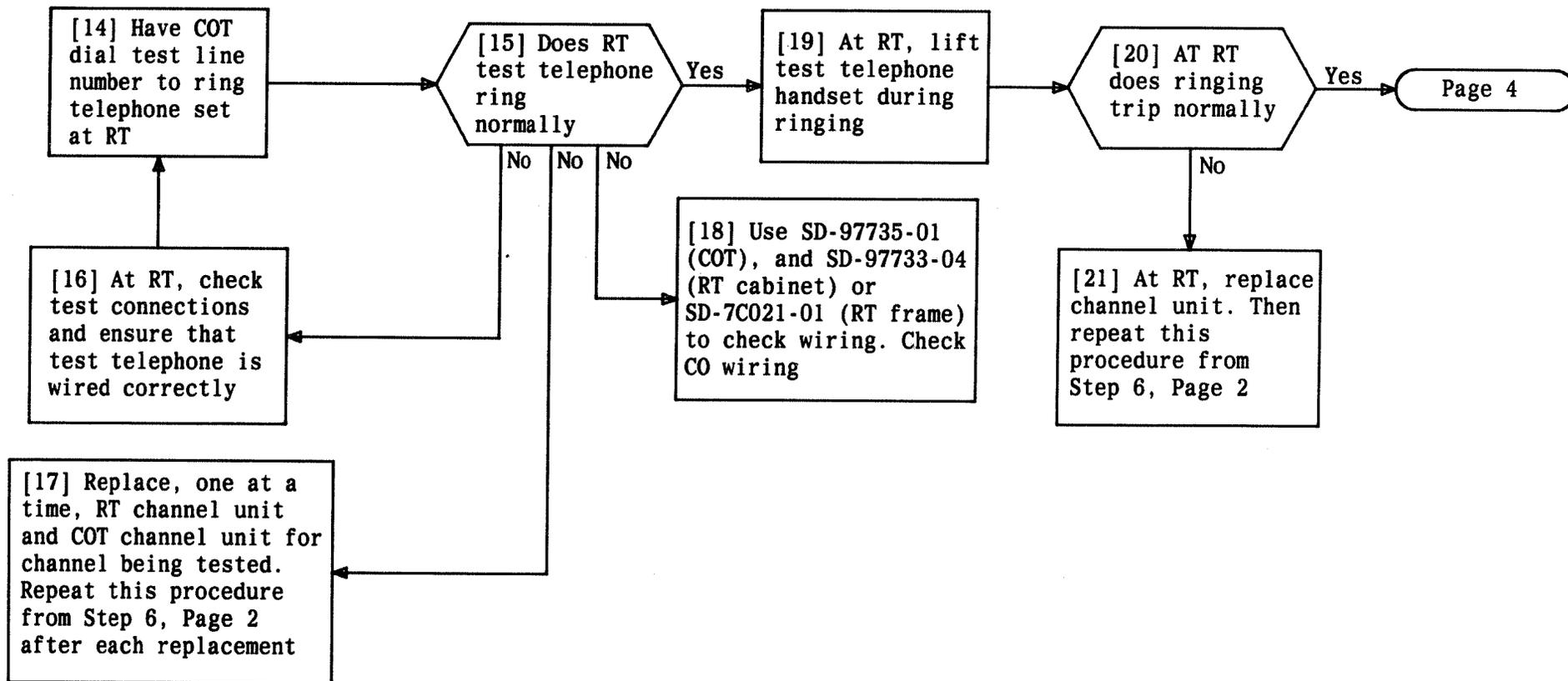
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PERFORM TERMINAL-TO-TERMINAL SINGLE-PARTY CHANNEL TESTS



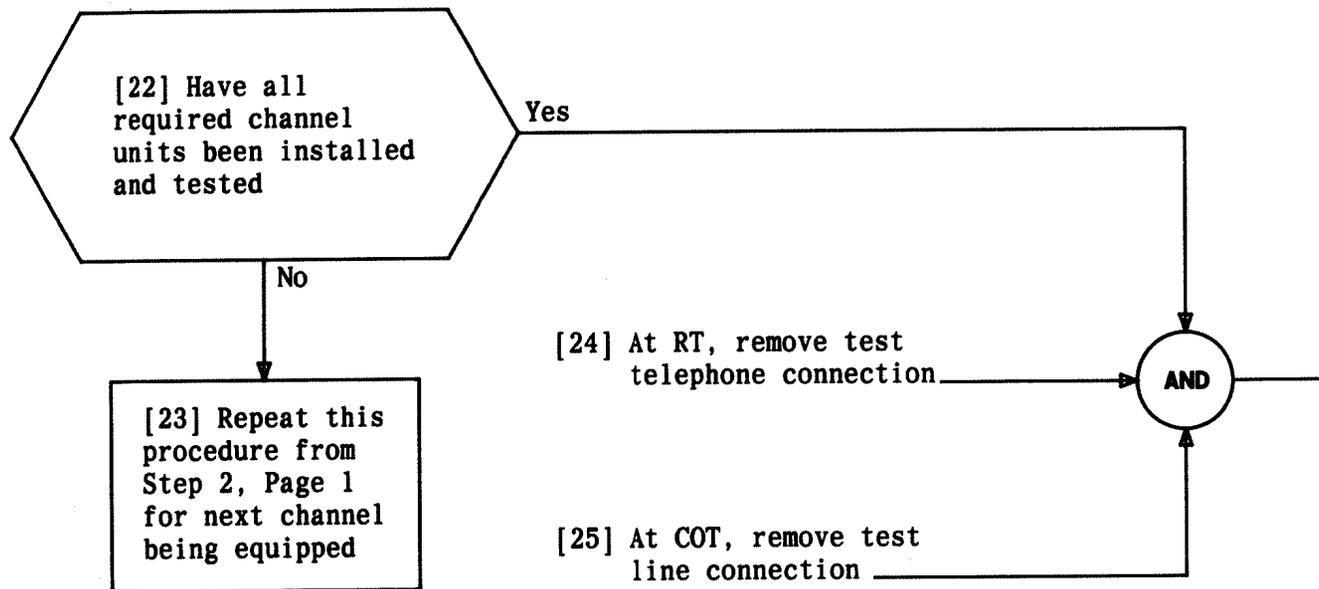
PERFORM TERMINAL-TO-TERMINAL SINGLE-PARTY CHANNEL TESTS

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PERFORM TERMINAL-TO-TERMINAL SINGLE-PARTY CHANNEL TESTS

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PERFORM TERMINAL-TO-TERMINAL SINGLE-PARTY CHANNEL TESTS

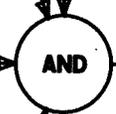
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SUMMARY

Have COT install a **KE47B CIRCUIT PACK** and use test line to connect unassigned subscriber line and call number to channel being equipped. At RT, install appropriate channel unit [TABLE A]. Connect a test telephone set (connected for bridged ringing) to channel being equipped. Use VOM (negative test lead on ring conductor and positive lead

grounded) to measure talk battery voltage on ring conductor. VOM should indicate 30 to 60 Vdc if RT is cabinet-mounted, or 45 to 53 Vdc if frame-mounted. Perform negative ringing (and positive ringing test if CO is equipped), talking, and dialing tests. After all required channel units are installed, make reverting call test (per local procedures) from test telephone on any one channel.

- [1] Establish communication between Remote Terminal (RT) and Central Office Terminal (COT) via order wire
- Have COT Personnel:
- [2] Select a channel for testing and plug in a **KE47B CIRCUIT PACK** into slot corresponding to channel being equipped
- [3] At selected channel appearance on MDF, connect a temporary call number and subscriber line circuit (ring party) test line
- At RT:
- [4] Plug a **KE48B** or **KE49 CIRCUIT PACK** [TABLE A] into slot corresponding to channel selected in Step 2
- [5] At cross-connecting terminal adjacent to RT, temporarily connect a test telephone set to terminals associated with selected channel. See NOTE 1



Channel units installed CO test line and RT test telephone connected

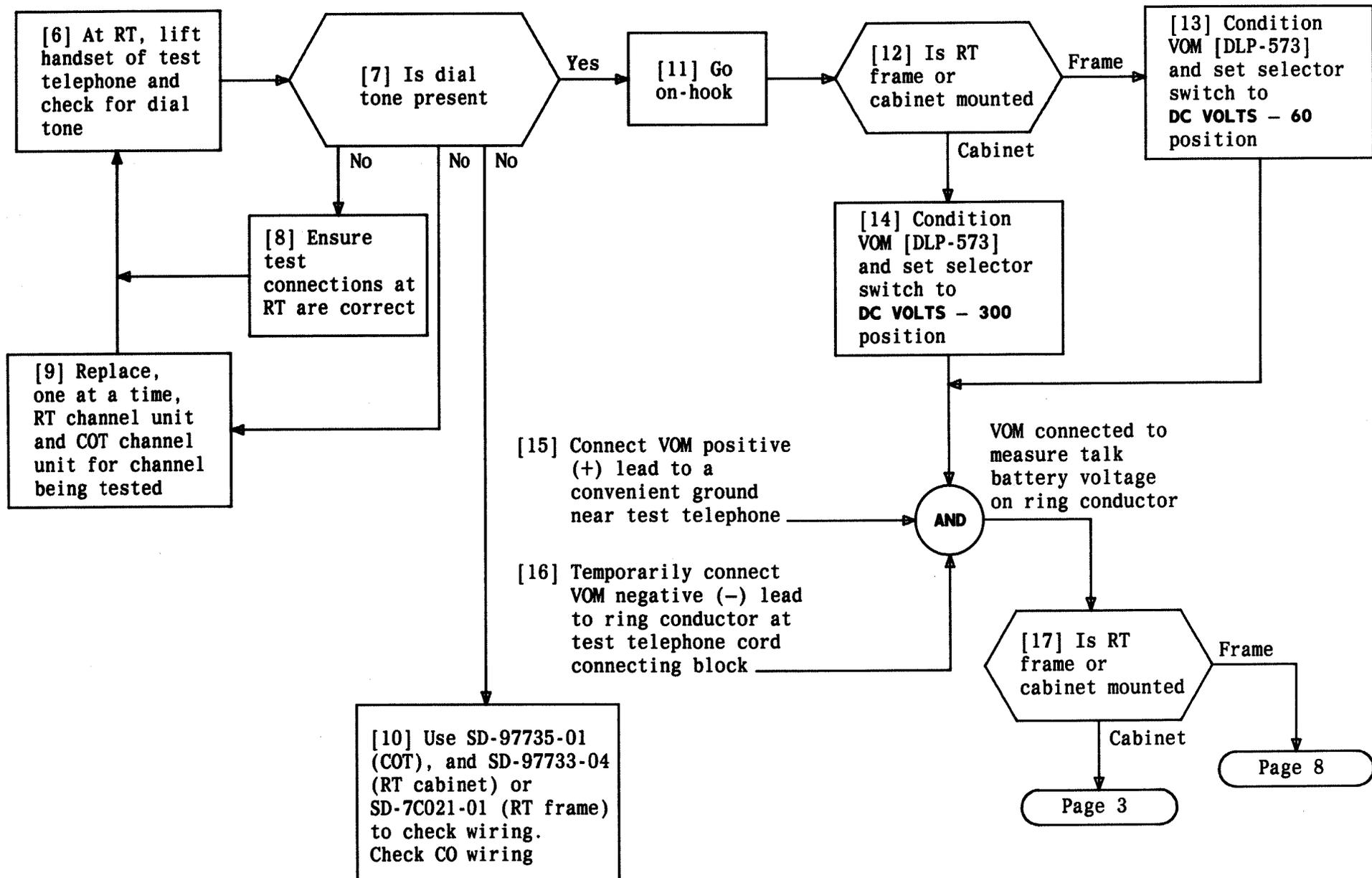
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TABLE A				
CONFIGURATION	CABINET SYSTEM	FRAME SYSTEM		
		0-900 ohms	901-1600 ohms	1601-2800 ohms
Service Range	0-900 ohms	0-900 ohms	901-1600 ohms	1601-2800 ohms
RT Channel Unit	KE48B	KE48B	KE49	KE49
Range Extender				5A

NOTE 1
Test telephone should be connected for bridged ringing

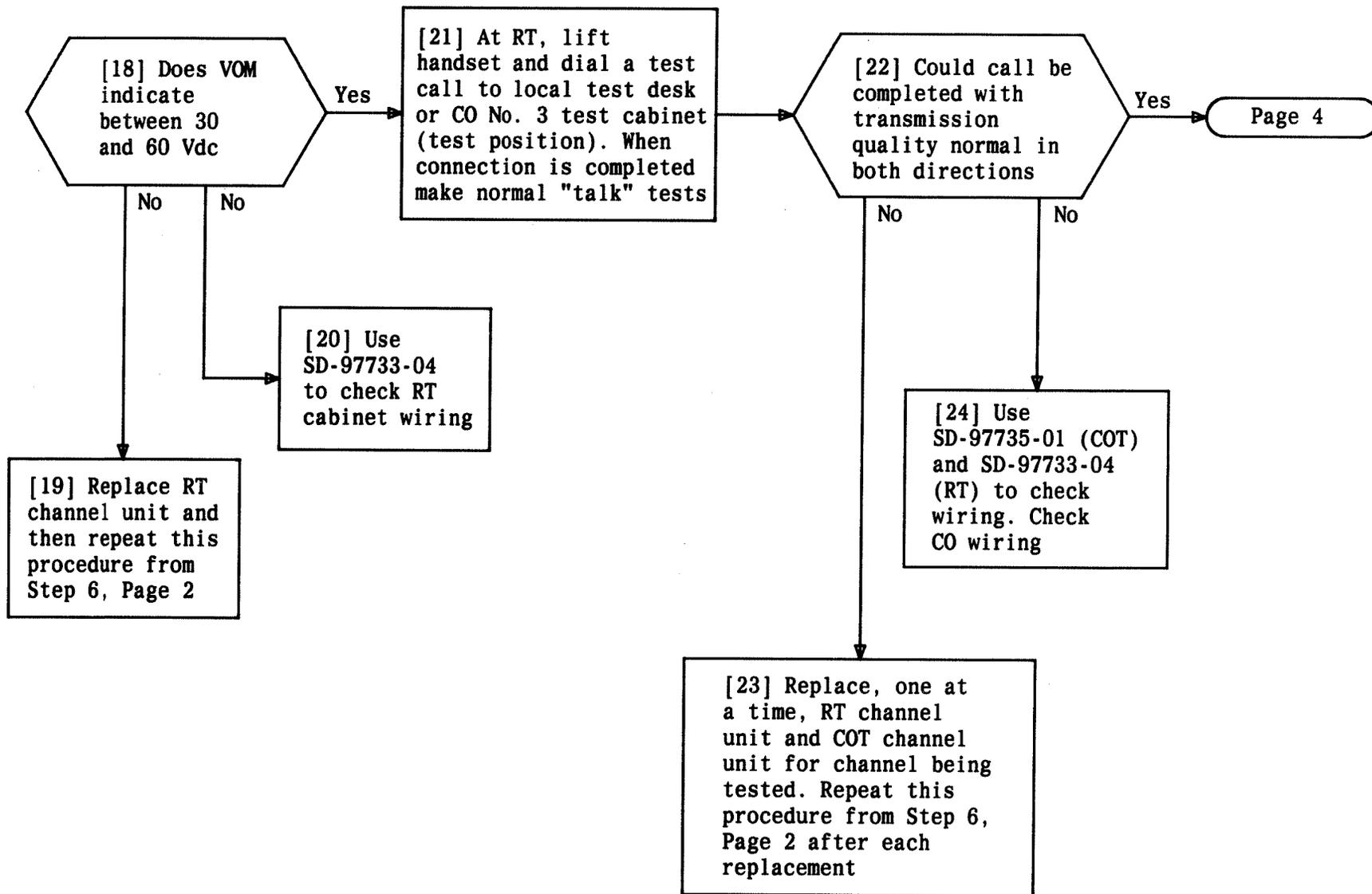
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PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS



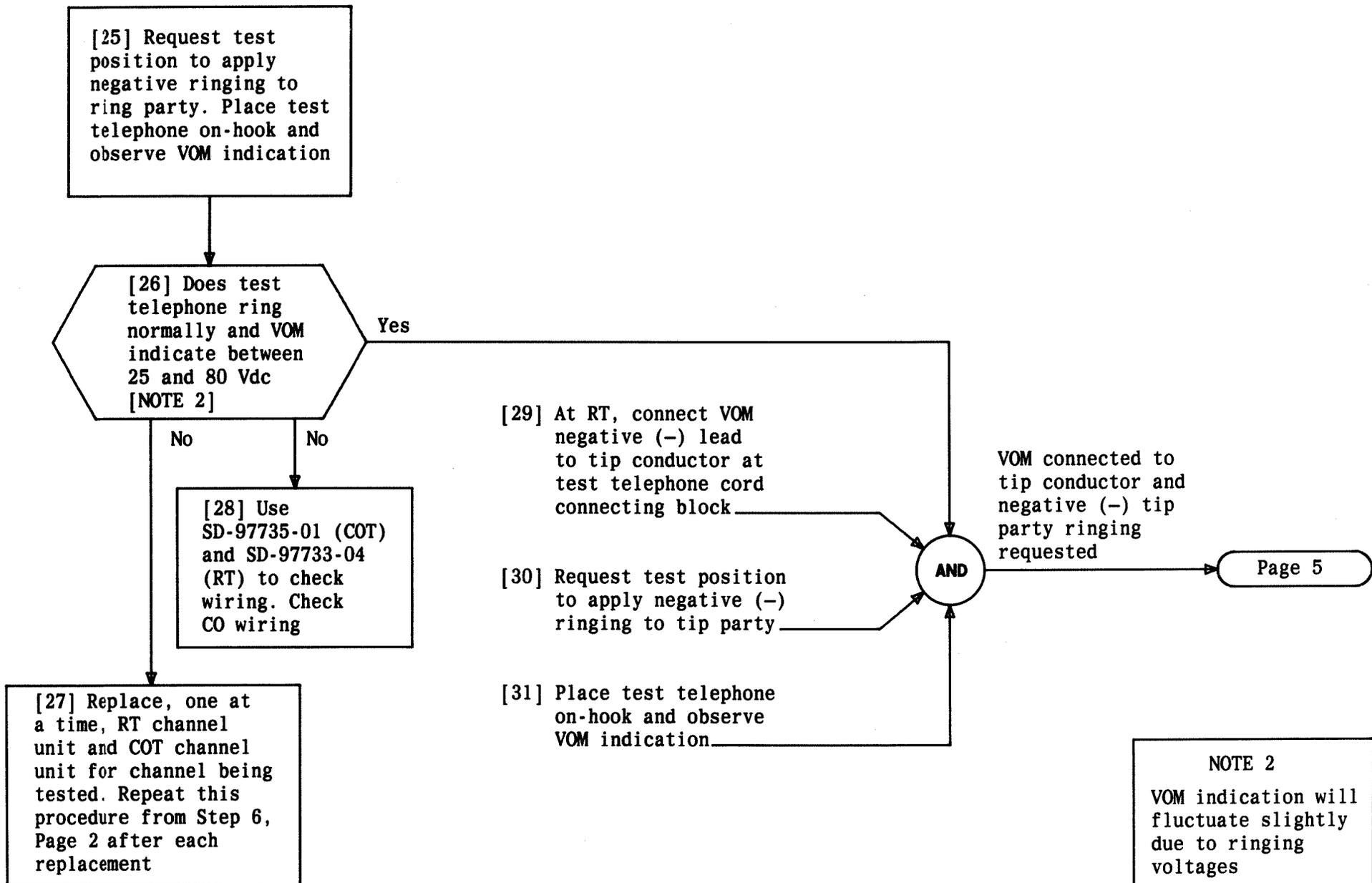
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PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS



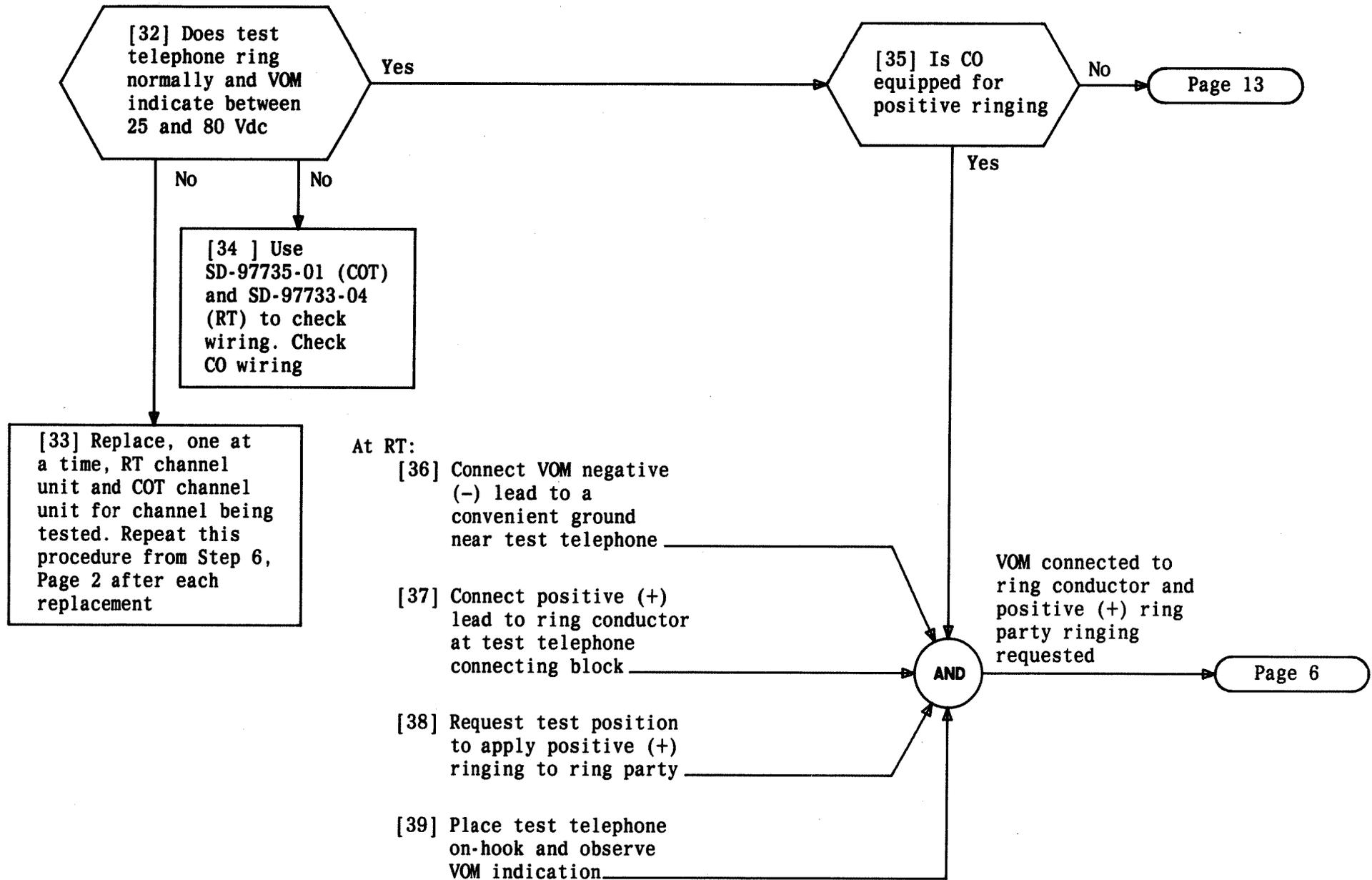
PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS

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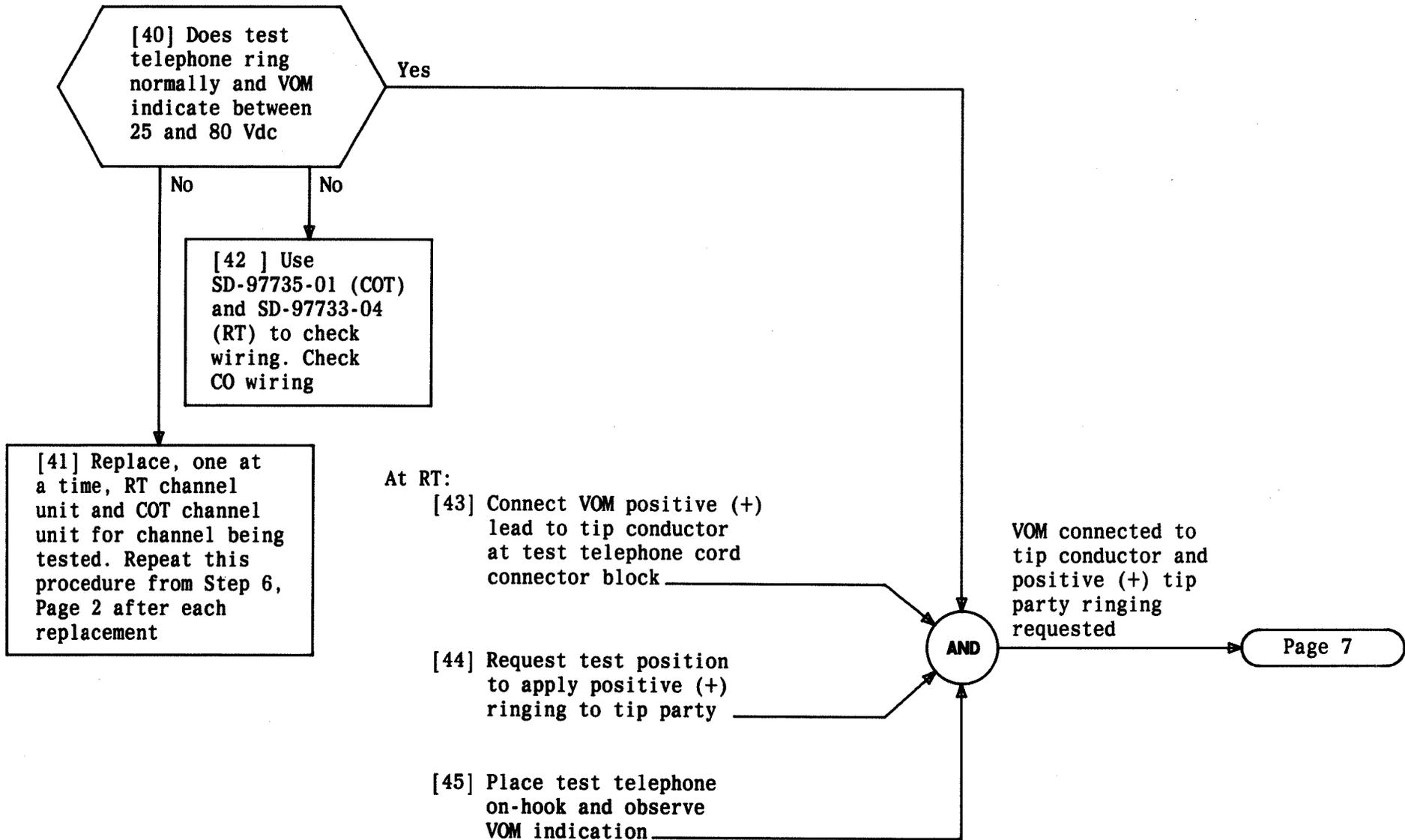
NOTE 2	
VOM indication will fluctuate slightly due to ringing voltages	
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PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS



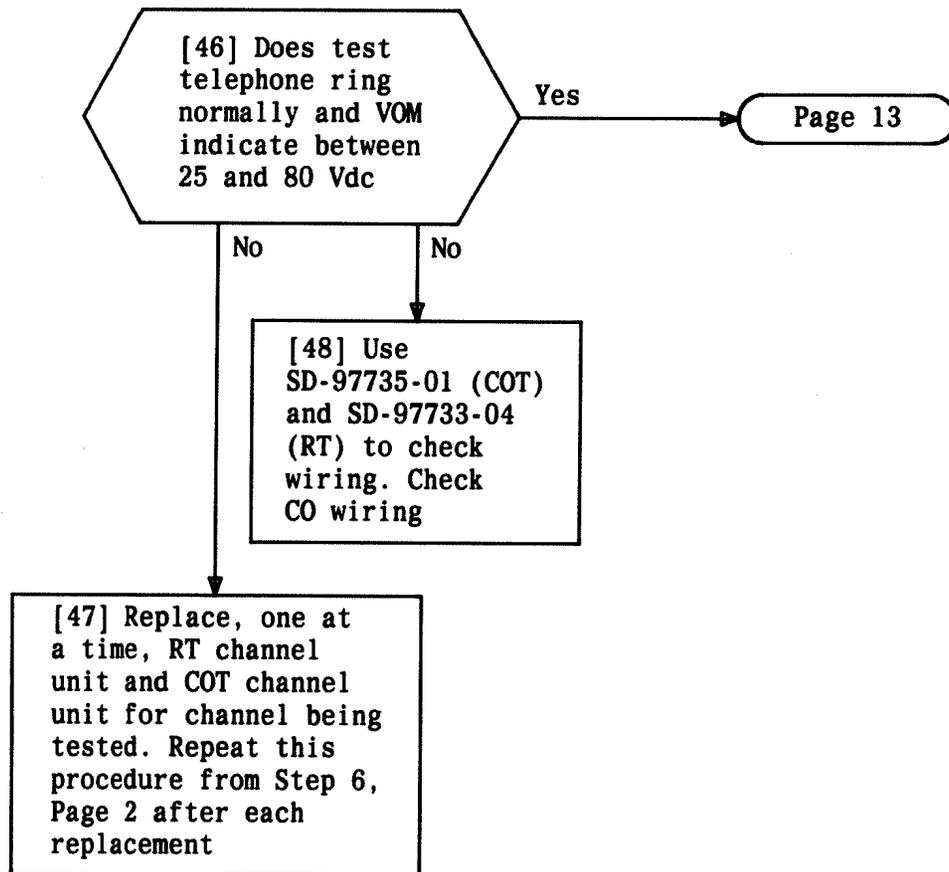
PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS

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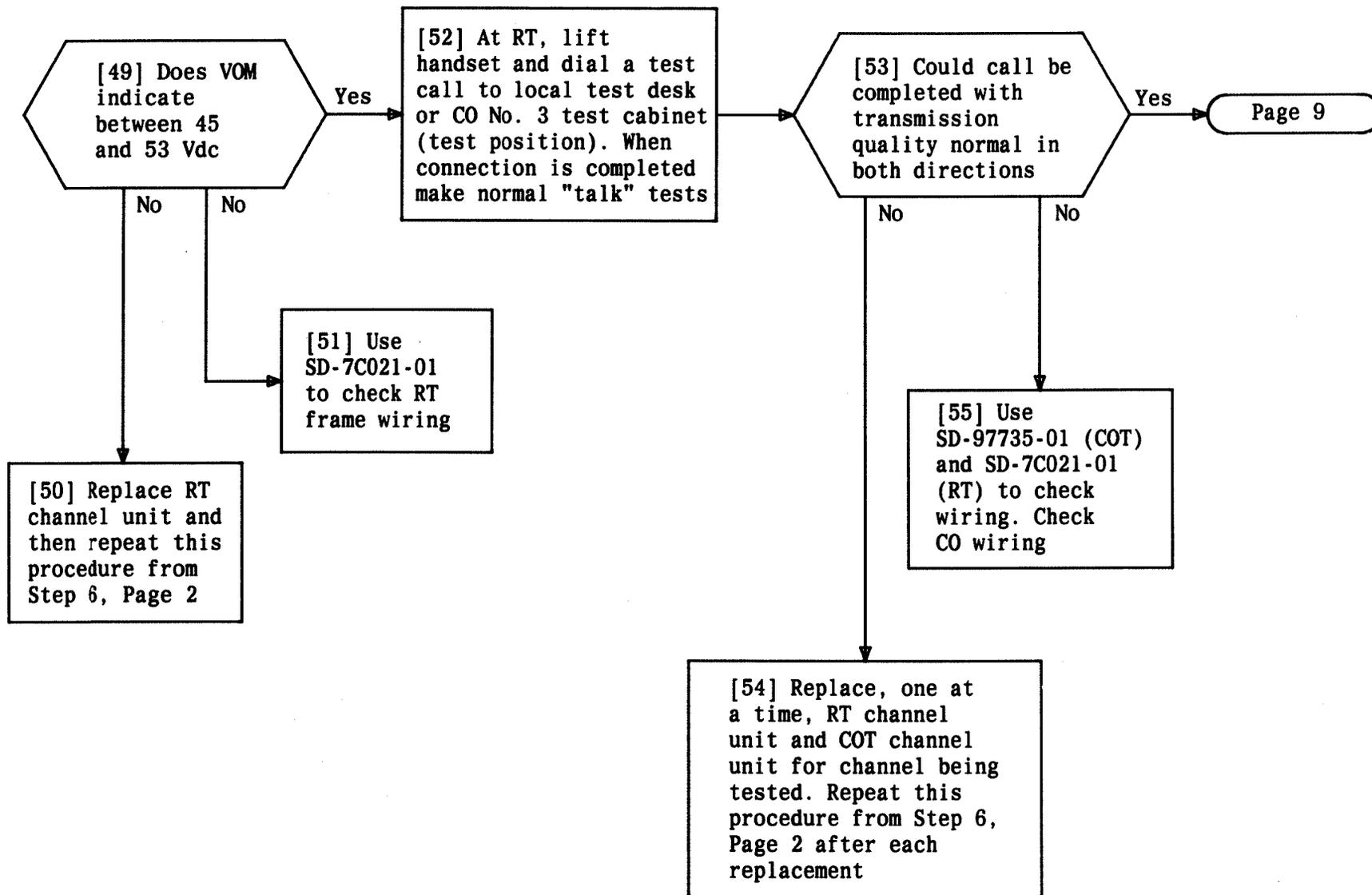
PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS

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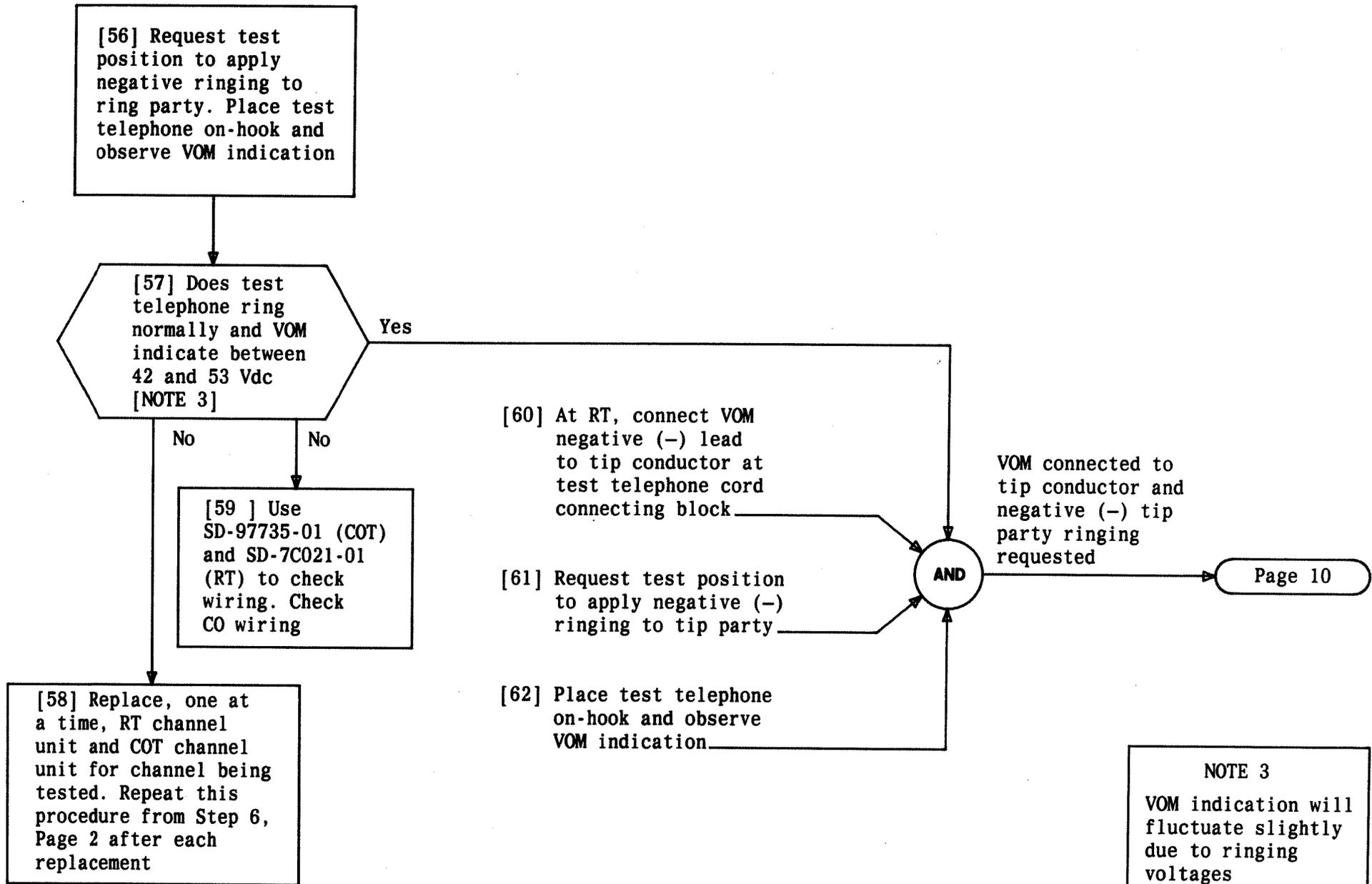
PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS

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PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS

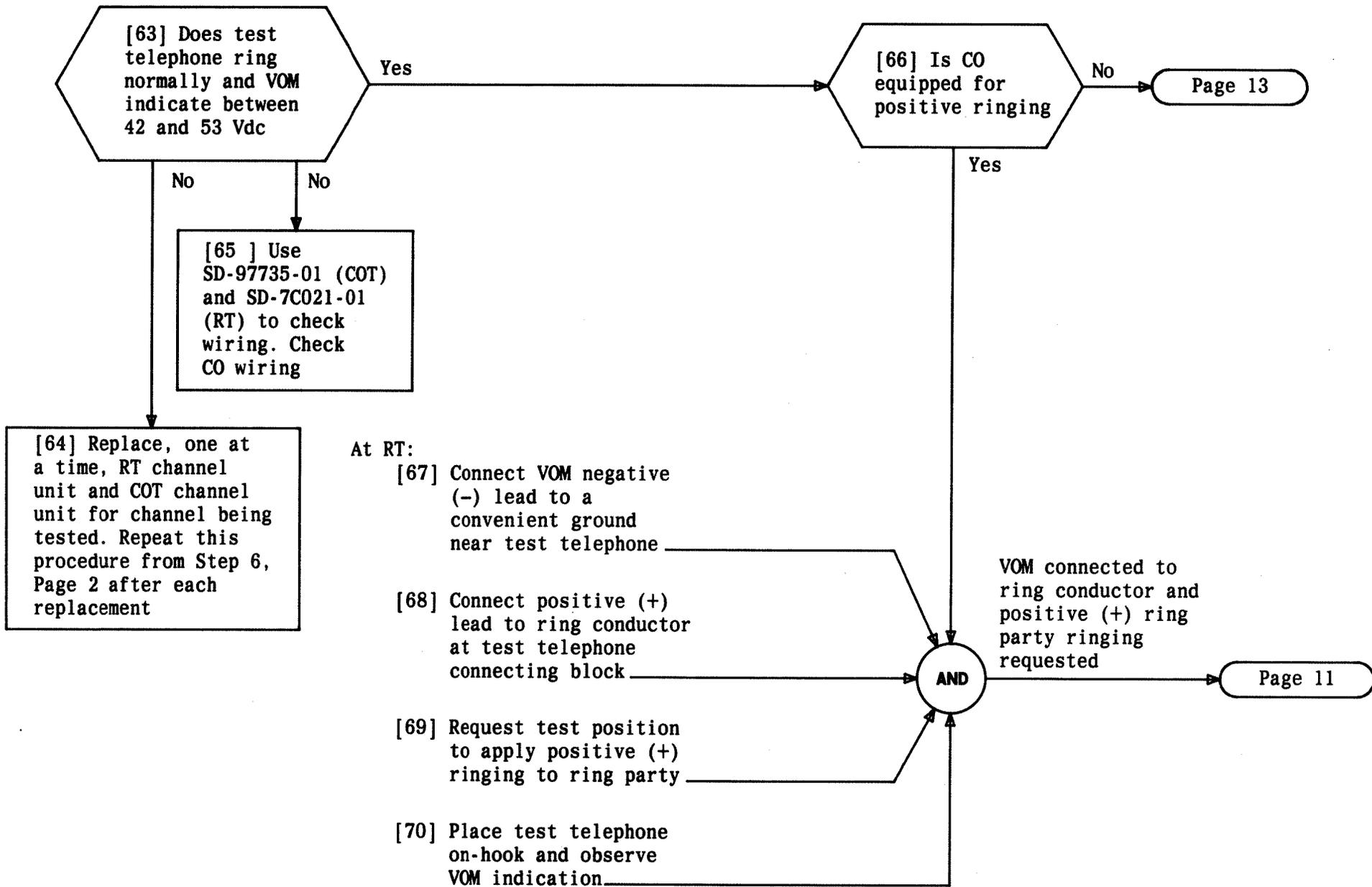
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NOTE 3
 VOM indication will fluctuate slightly due to ringing voltages

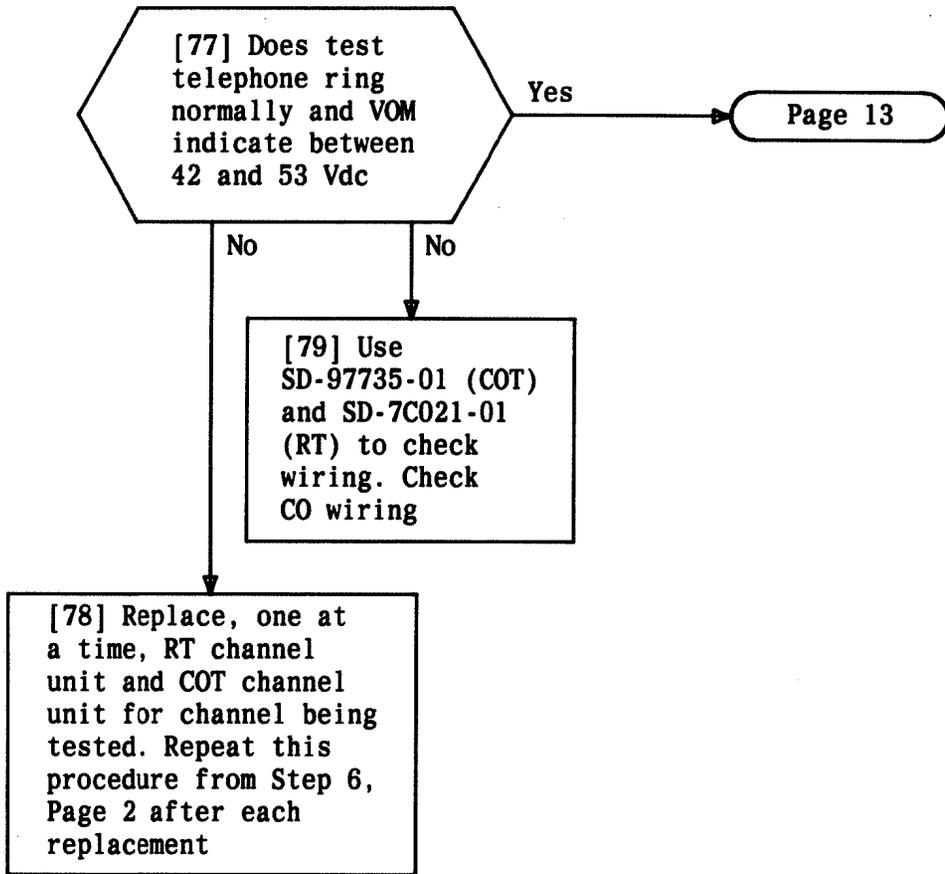
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PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS



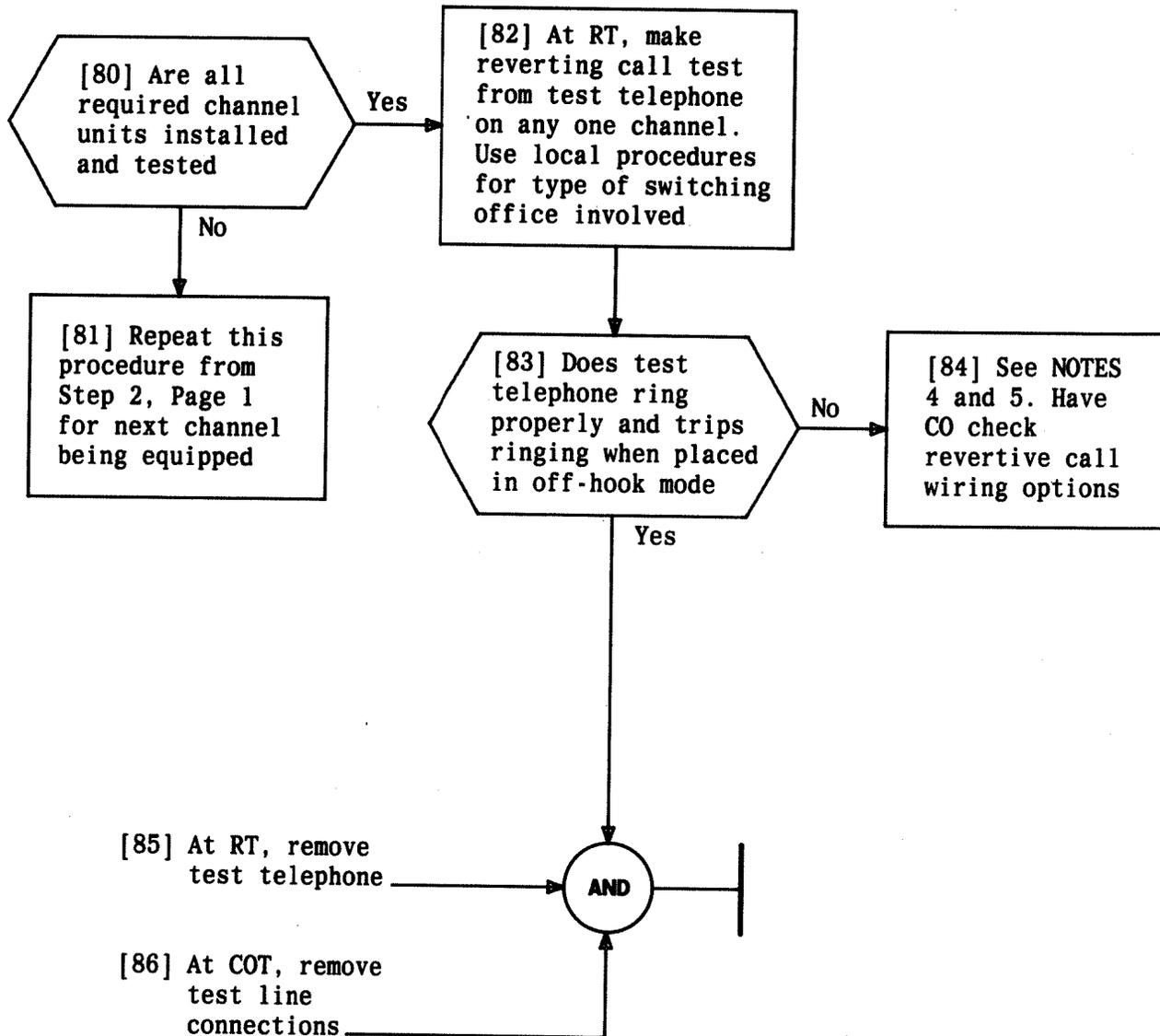
PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS

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PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS

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NOTES

4. For step-by-step offices it may be necessary to modify reverting call selectors, such as SD-31762-01 and SD-31831-01, to eliminate a simultaneous ringing condition on both tip and ring when used with KE47B channel unit

5. No. 5 crossbar reverting call trunk circuits, SD-26068-01 and SD-26068-05, require option "S" to ground called party's side of line while calling party is being rung

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PERFORM TERMINAL-TO-TERMINAL PARTY-LINE (ONI) CHANNEL TESTS

SUMMARY

Have COT install a **KE27B CIRCUIT PACK** and use test line to connect unassigned subscriber line and call number to channel being equipped. At RT, install appropriate channel unit [TABLE A]. Connect two test telephones to cross-connecting terminal at RT associated with the channel being

equipped. One set should be wired as the ring party, and the other set as the tip party (both sets wired for ANI). Perform talking, dialing, ringing, ring-trip, and resistance-to-ground tests. After all channel units are installed, make reverting call test (per local procedures) from one of the test telephones on any one channel.

- [1] Establish communication between Remote Terminal (RT) and Central Office Terminal (COT) via order wire _____

Have COT Personnel:

- [2] Select a channel for testing and plug in a **KE27B CIRCUIT PACK** into slot corresponding to channel being equipped _____

- [3] At selected channel appearance on MDF, connect temporary call numbers and subscriber line circuit test line [NOTE 1] _____

At RT:

- [4] Plug a **KE28B** or **KE29 CIRCUIT PACK** [TABLE A] into slot corresponding to channel selected in Step 2 _____

- [5] At cross-connecting terminal adjacent to RT, temporarily connect jumpers from terminals associated with channel under test to connecting blocks of tip and ring test telephones [NOTE 2] _____

Channel units installed, CO test lines, and tip and ring RT test telephones connected

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TABLE A

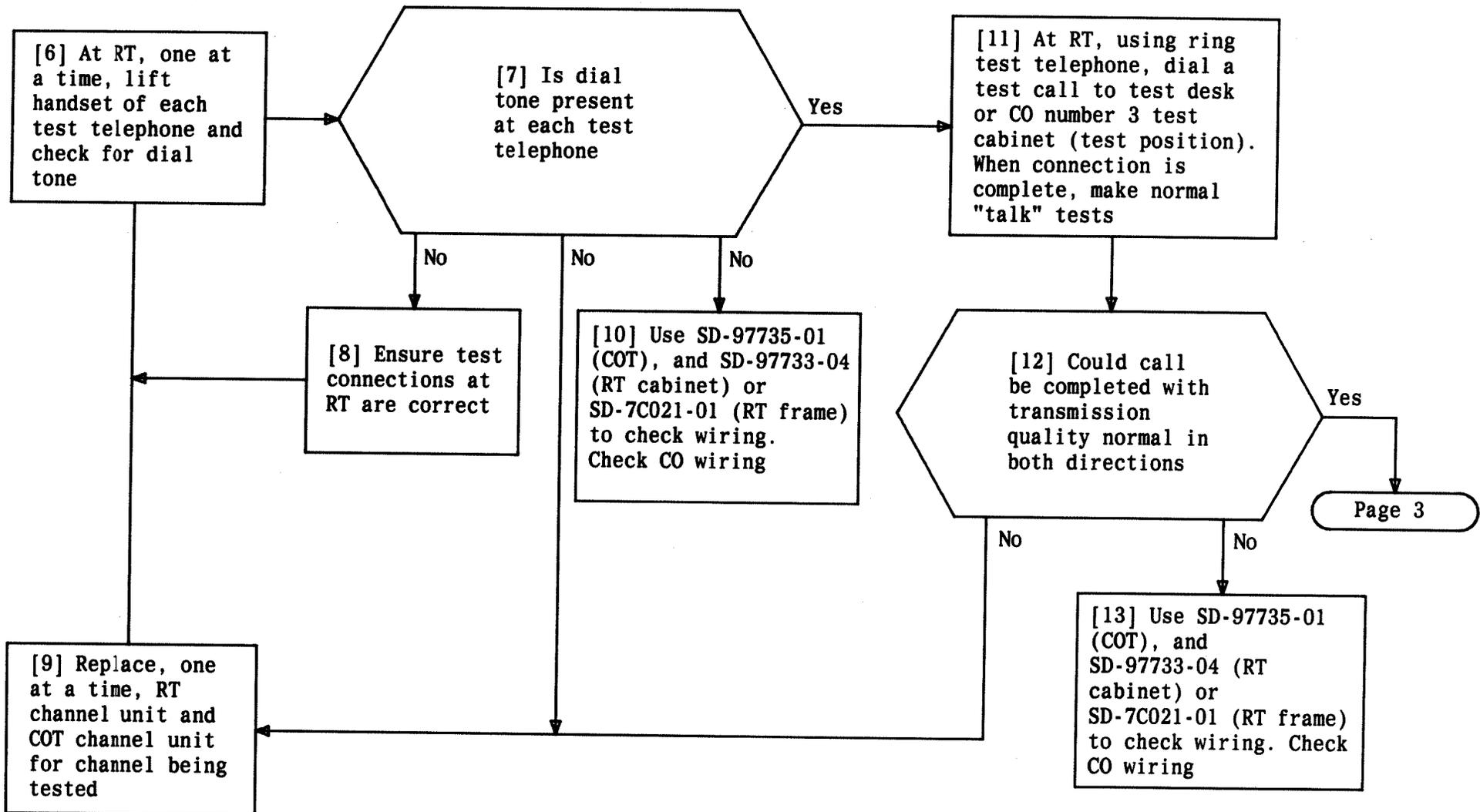
CONFIGURATION	CABINET SYSTEM	FRAME SYSTEM		
		0-900 OHMS	901-1600 OHMS	1601-2800 OHMS
SERVICE RANGE	0-900 OHMS	0-900 OHMS	901-1600 OHMS	1601-2800 OHMS
RT CHANNEL UNIT	KE28B	KE28B	KE29	KE29
RANGE EXTENDER				5A

NOTES

- 1. First call number should be connected for ring party ANI and second call number should be connected for tip party ANI
- 2. One test telephone must be wired as a ring party (Ring Test Telephone) and the other must be wired as a tip party (Tip Test Telephone). Both sets should be wired for ANI. Ringer connections for various types of ringers and service arrangements may be found in Section 500-114-100

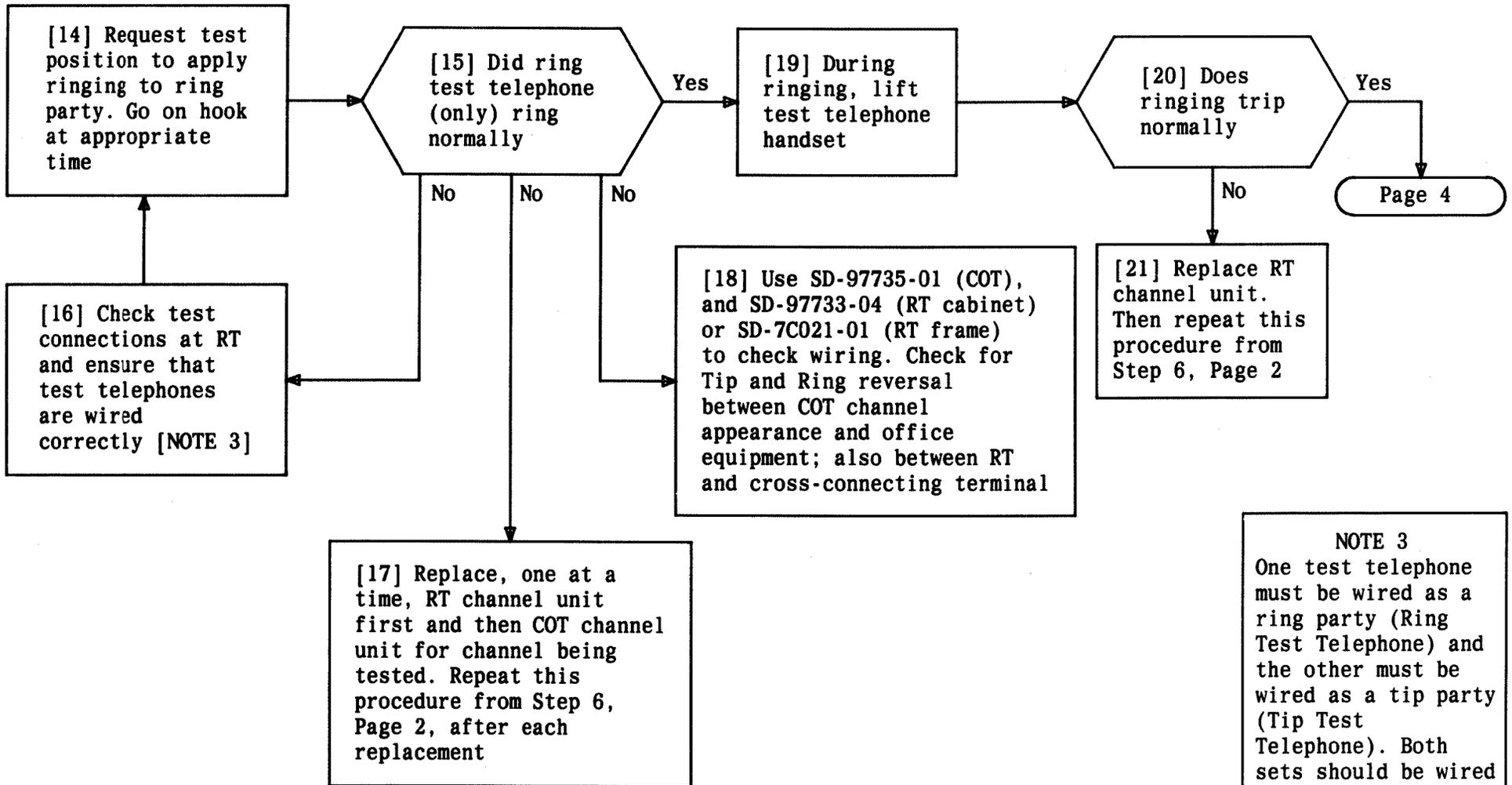
PERFORM TERMINAL-TO-TERMINAL TWO-PARTY (ANI) CHANNEL TESTS

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PERFORM TERMINAL-TO-TERMINAL TWO-PARTY (ANI) CHANNEL TESTS

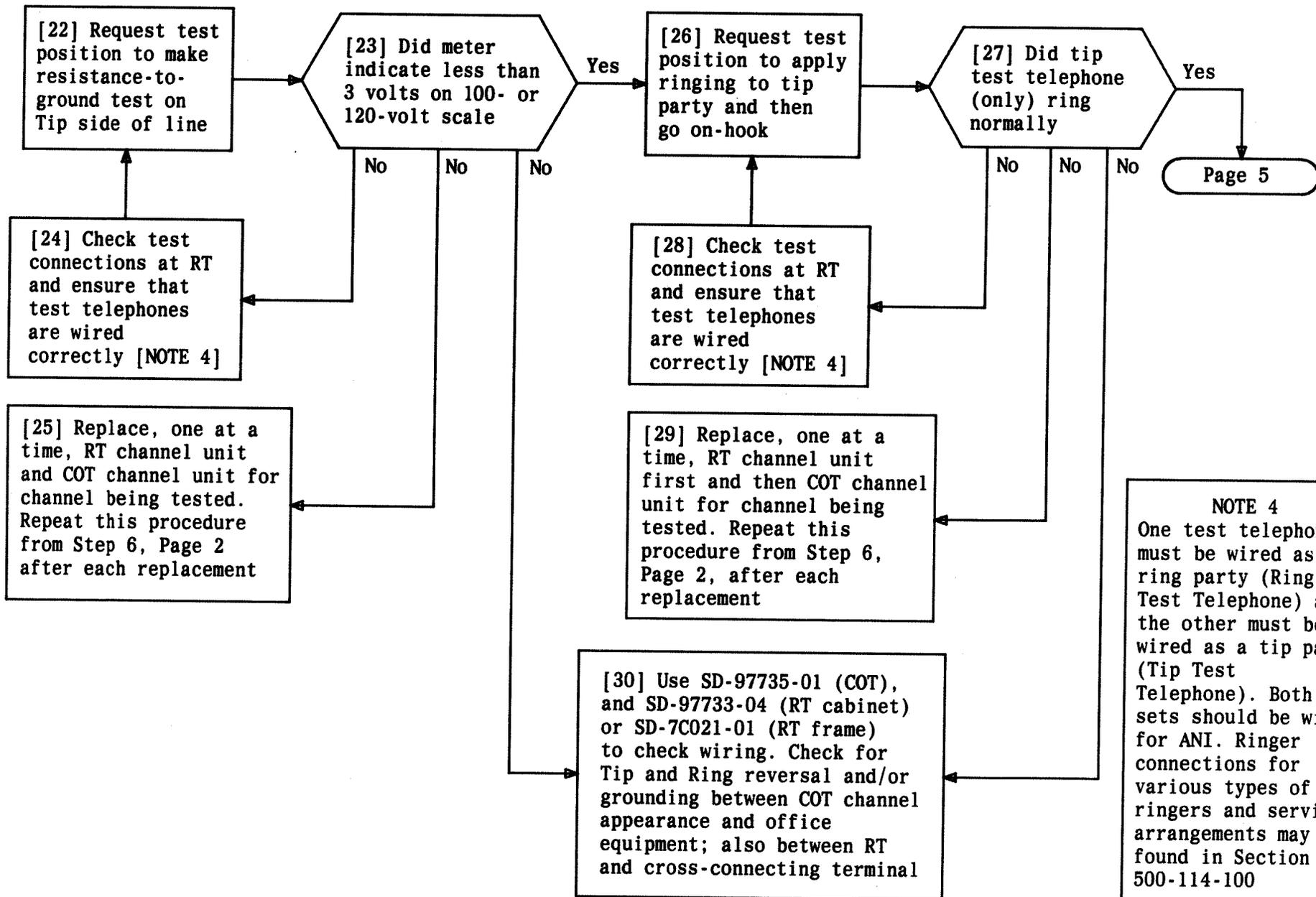
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NOTE 3
 One test telephone must be wired as a ring party (Ring Test Telephone) and the other must be wired as a tip party (Tip Test Telephone). Both sets should be wired for ANI. Ringer connections for various types of ringers and service arrangements may be found in Section 500-114-100

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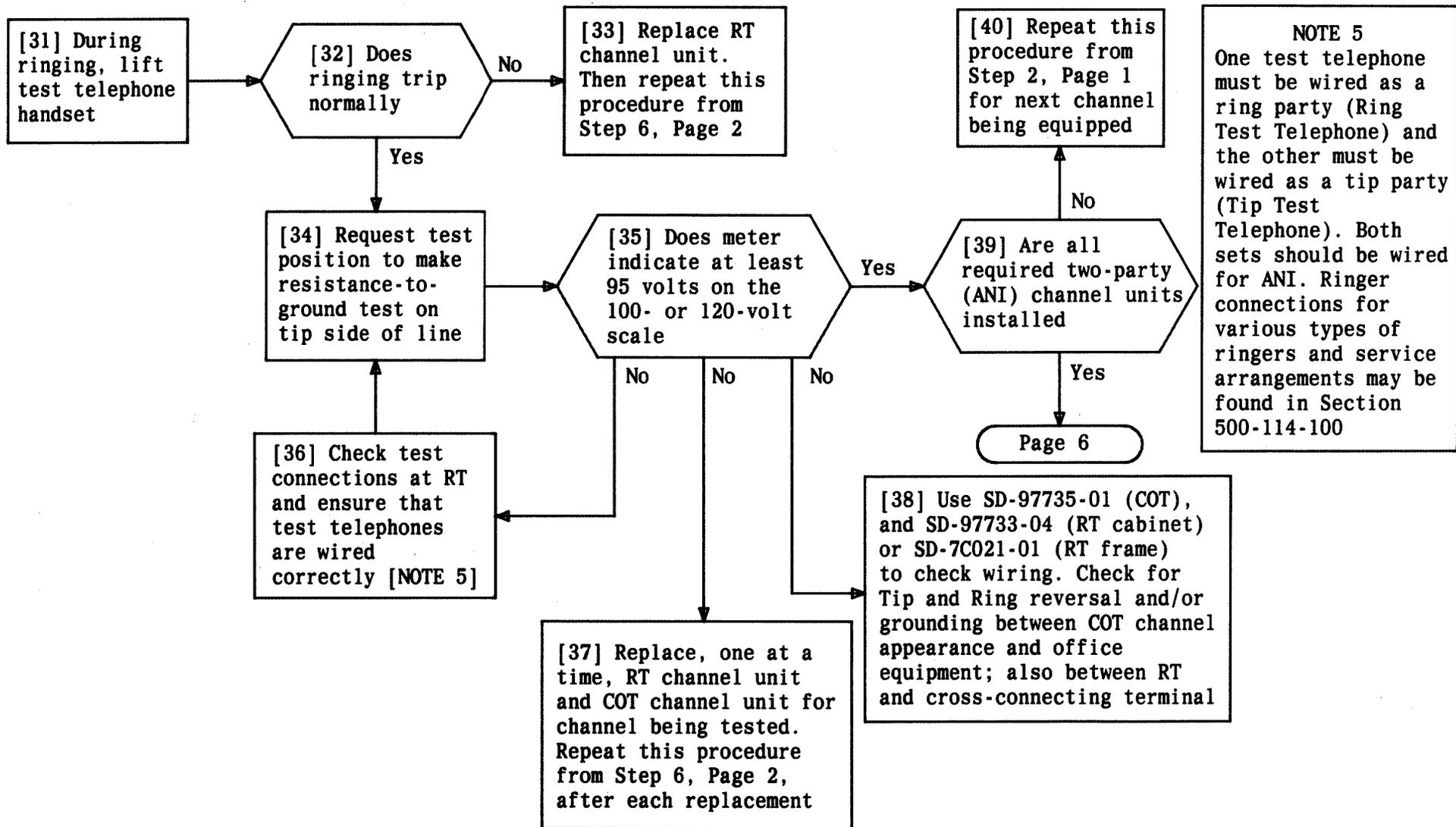
PERFORM TERMINAL-TO-TERMINAL TWO-PARTY (ANI) CHANNEL TESTS



NOTE 4
 One test telephone must be wired as a ring party (Ring Test Telephone) and the other must be wired as a tip party (Tip Test Telephone). Both sets should be wired for ANI. Ringer connections for various types of ringers and service arrangements may be found in Section 500-114-100

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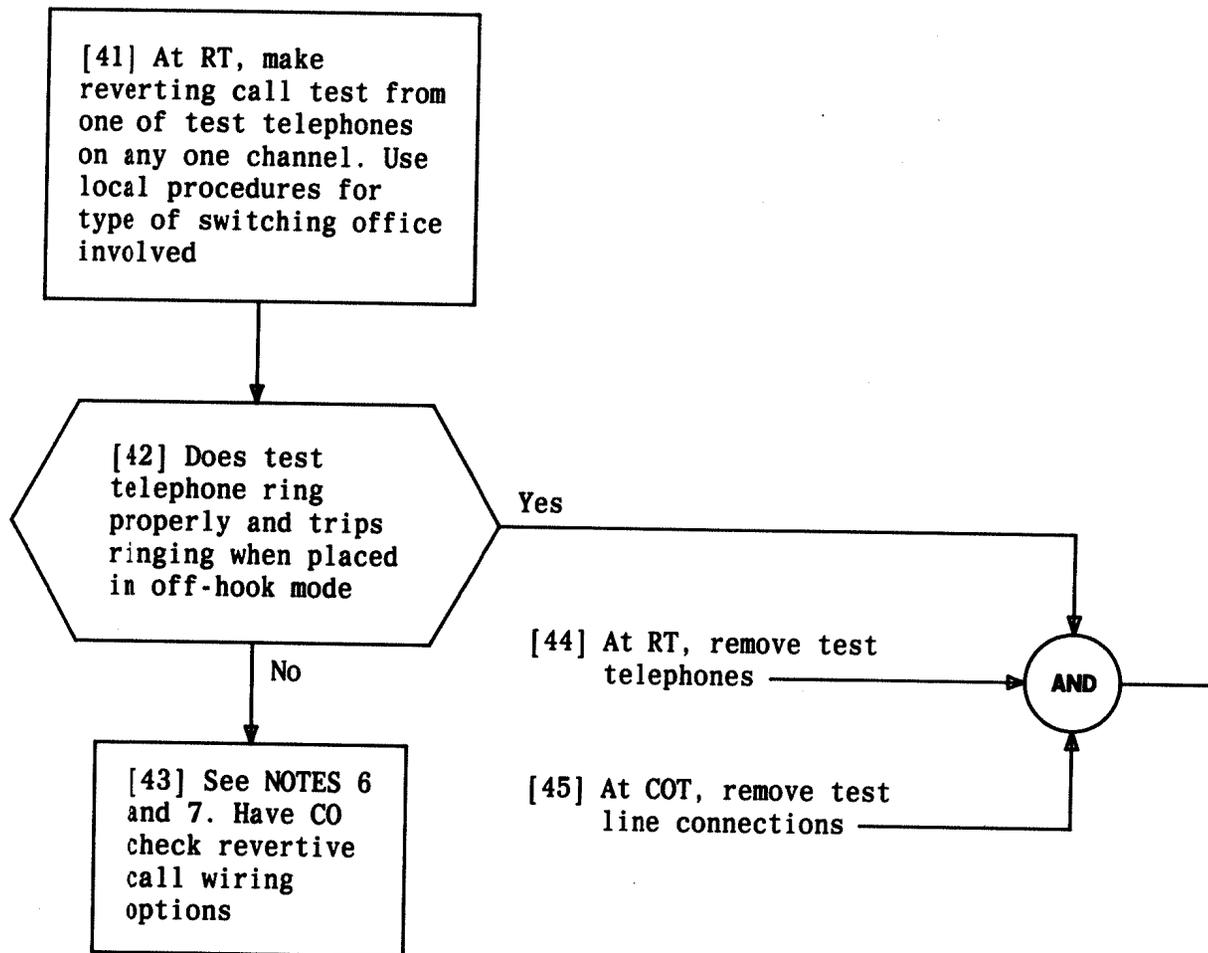
PERFORM TERMINAL-TO-TERMINAL TWO-PARTY (ANI) CHANNEL TESTS



NOTE 5
 One test telephone must be wired as a ring party (Ring Test Telephone) and the other must be wired as a tip party (Tip Test Telephone). Both sets should be wired for ANI. Ringer connections for various types of ringers and service arrangements may be found in Section 500-114-100

PERFORM TERMINAL-TO-TERMINAL TWO-PARTY (ANI) CHANNEL TESTS

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NOTES

6. For step-by-step offices it may be necessary to modify reverting call selectors, such as SD-31762-01 and SD-31831-01, to eliminate a simultaneous ringing condition on both tip and ring when used with KE27B channel unit

7. No. 5 crossbar reverting call trunk circuits, SD-26068-01 and SD-26068-05, require option "S" to ground called party's side of line while calling party is being rung

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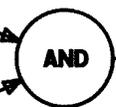
PERFORM TERMINAL-TO-TERMINAL TWO-PARTY (ANI) CHANNEL TESTS

SUMMARY

Have COT install a **KE37 CIRCUIT PACK** (with option plugs installed for correct type of service, TABLE A) and use a test line to connect the coin line circuit test line to channel being equipped. At RT, install a **KE38(KE39 901 to 1600 ohms service range) CIRCUIT PACK** (with option plugs installed for correct type of service, TABLE A). At cross-

connecting terminal next to RT, connect channel to be tested to coin phone circuit. Perform dial-tone tests, coin collect and return tests. Have operator identify and return coins. Have operator call you at coin phone to verify ringing and perform "talk" tests. Repeat for each coin channel to be equipped.

- [1] See NOTE 1. Determine type of service required for channel being equipped [TABLE A]
- [2] Establish communication between Remote Terminal (RT) and Central Office Terminal (COT) via order wire



[3] Have COT verify that KE37 channel pack option plugs indicate correct type of service required [FIG. 1]

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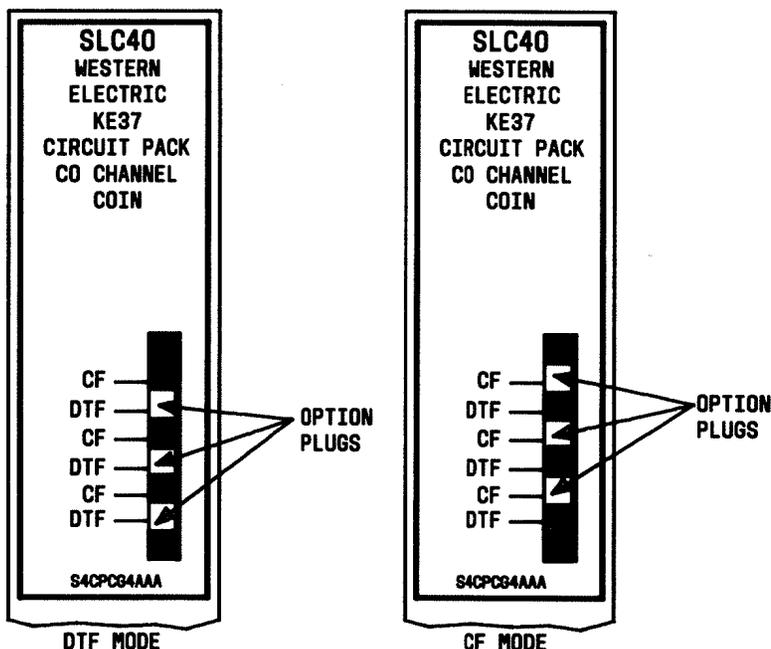


FIG. 1

* Trademark of Western Electric

TABLE A	
SERVICE REQUIRED	OPTION
Dial tone first	DTF
Coin first	CF
Manual post pay	DTF
Single party (DTF mode)	DTF

NOTE 1

Before performing this procedure, coin phone set must be correctly wired for service desired (Coin First or Dial Tone First) and be operating correctly. This procedure *does not* verify correct operation of coin phone set, only SLC*-40 channel functions. Section 506-900-503 can be referred to for coin maintenance procedures

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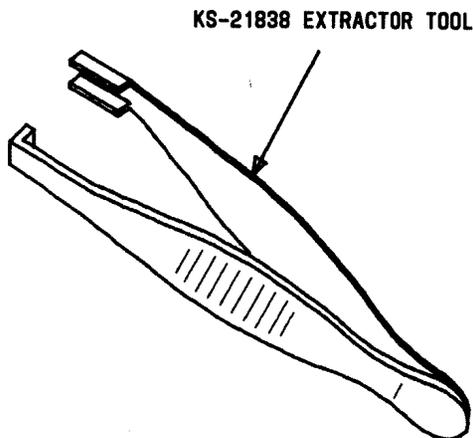
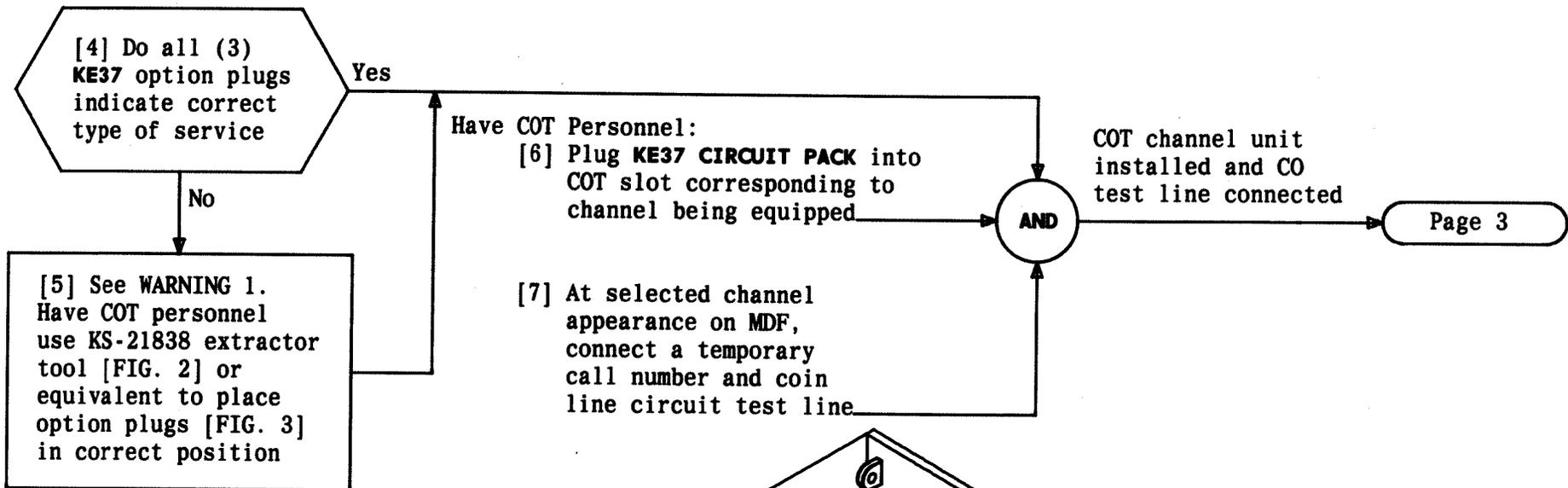


FIG. 2

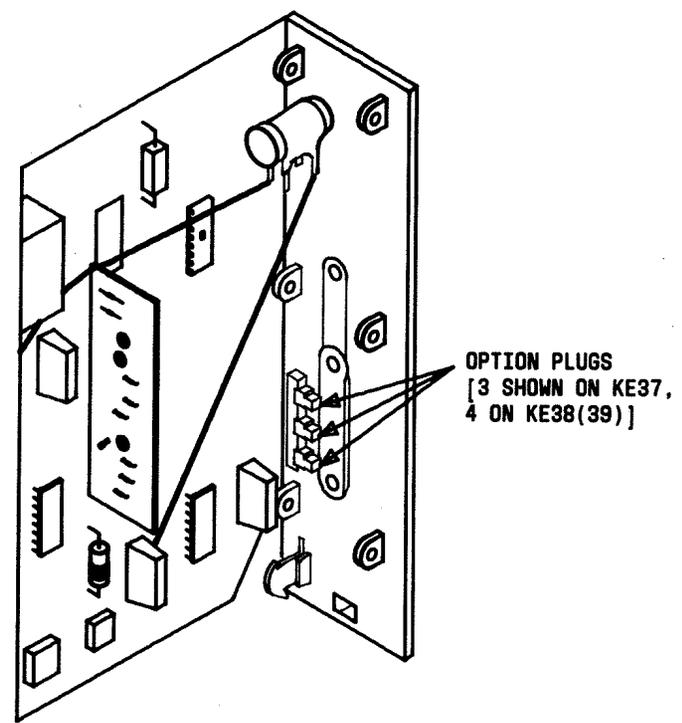


FIG. 3

WARNING 1
 White plugs must be inserted or removed carefully (in a straight line) to avoid damage to the socket plug assembly

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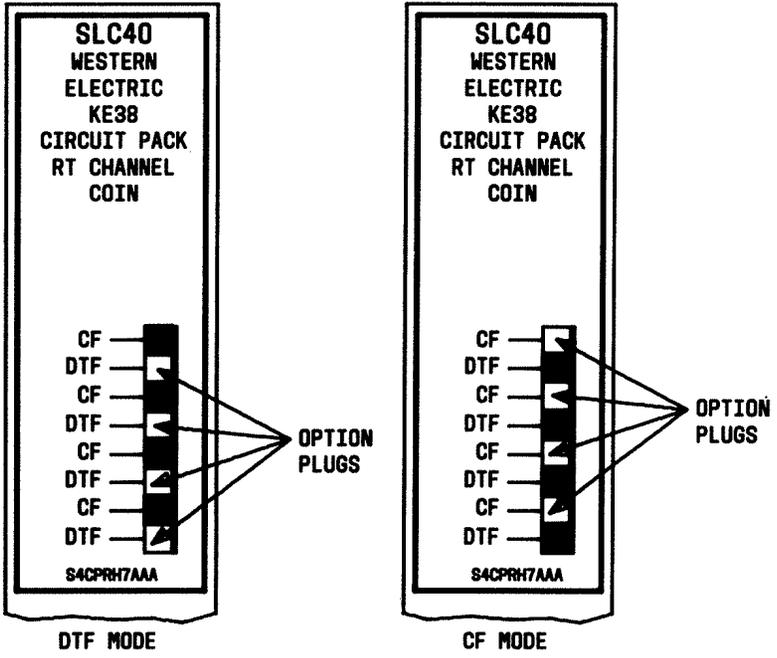
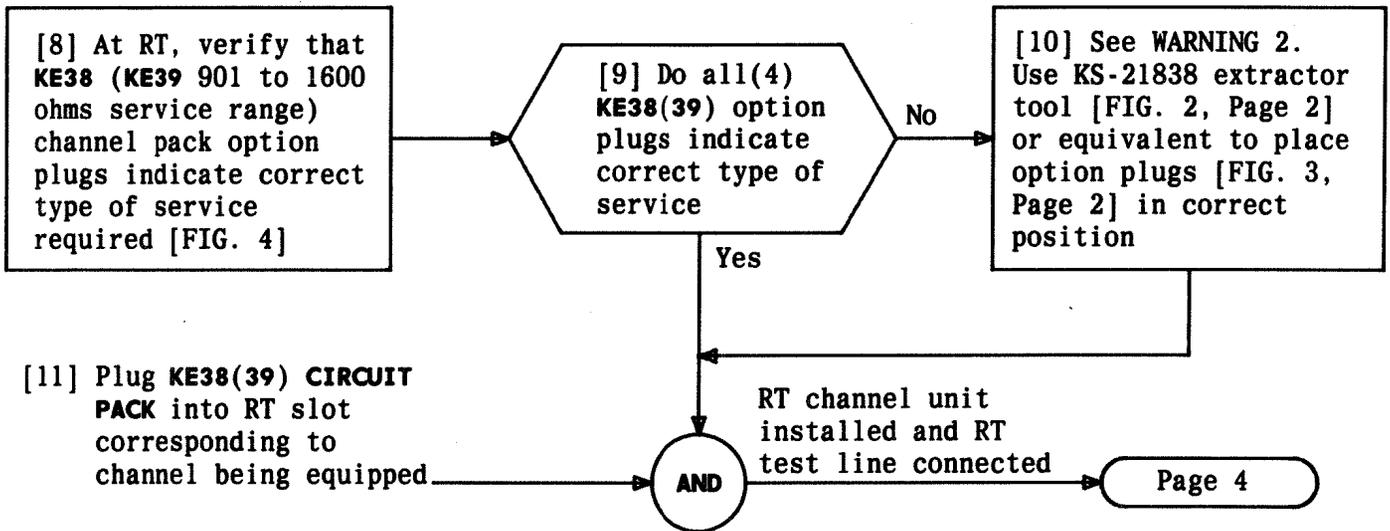
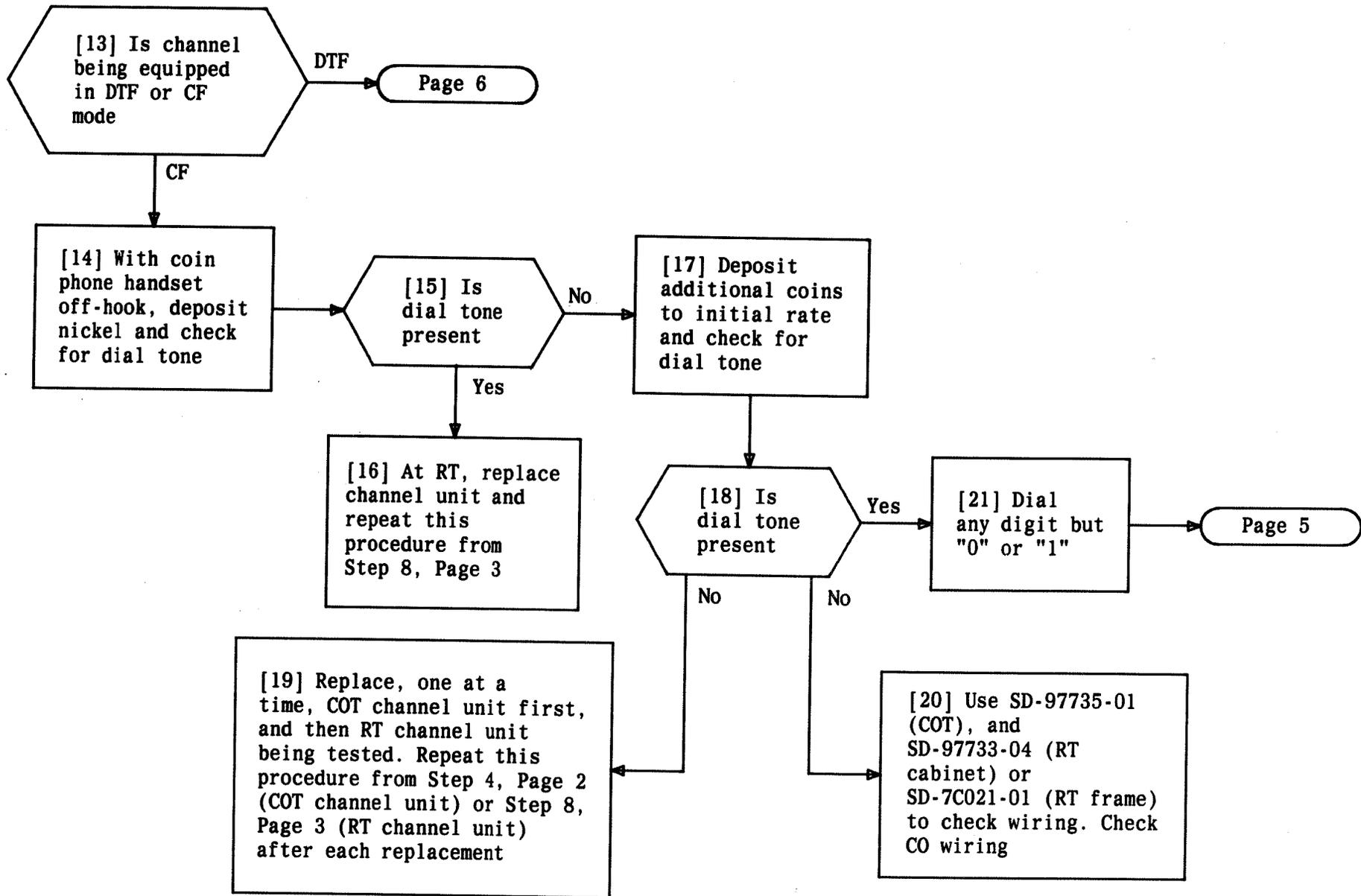


FIG. 4

WARNING 2
White plugs must be inserted or removed carefully (in a straight line) to avoid damage to the socket plug assembly

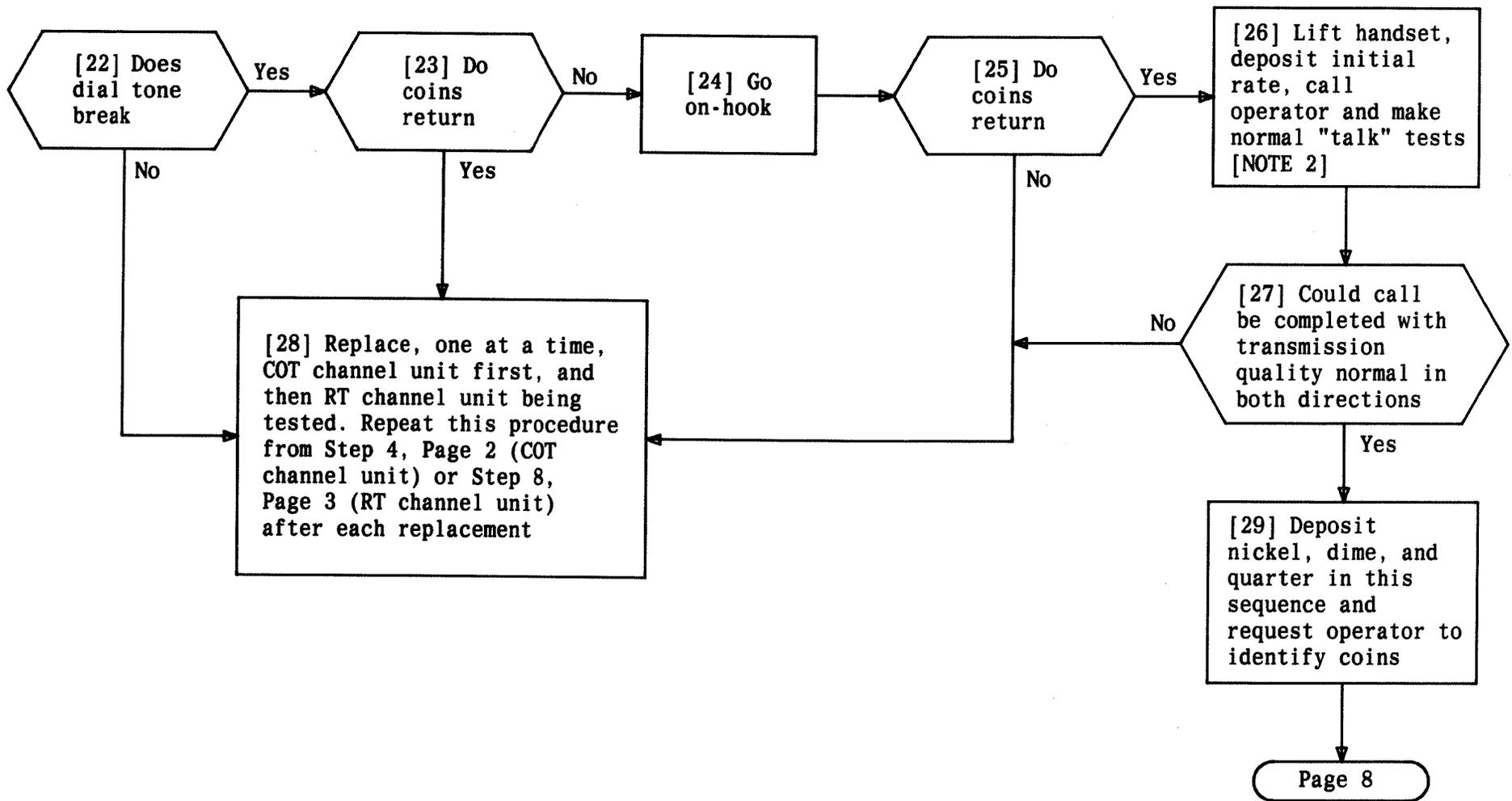
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PERFORM TERMINAL-TO-TERMINAL COIN CHANNEL TESTS

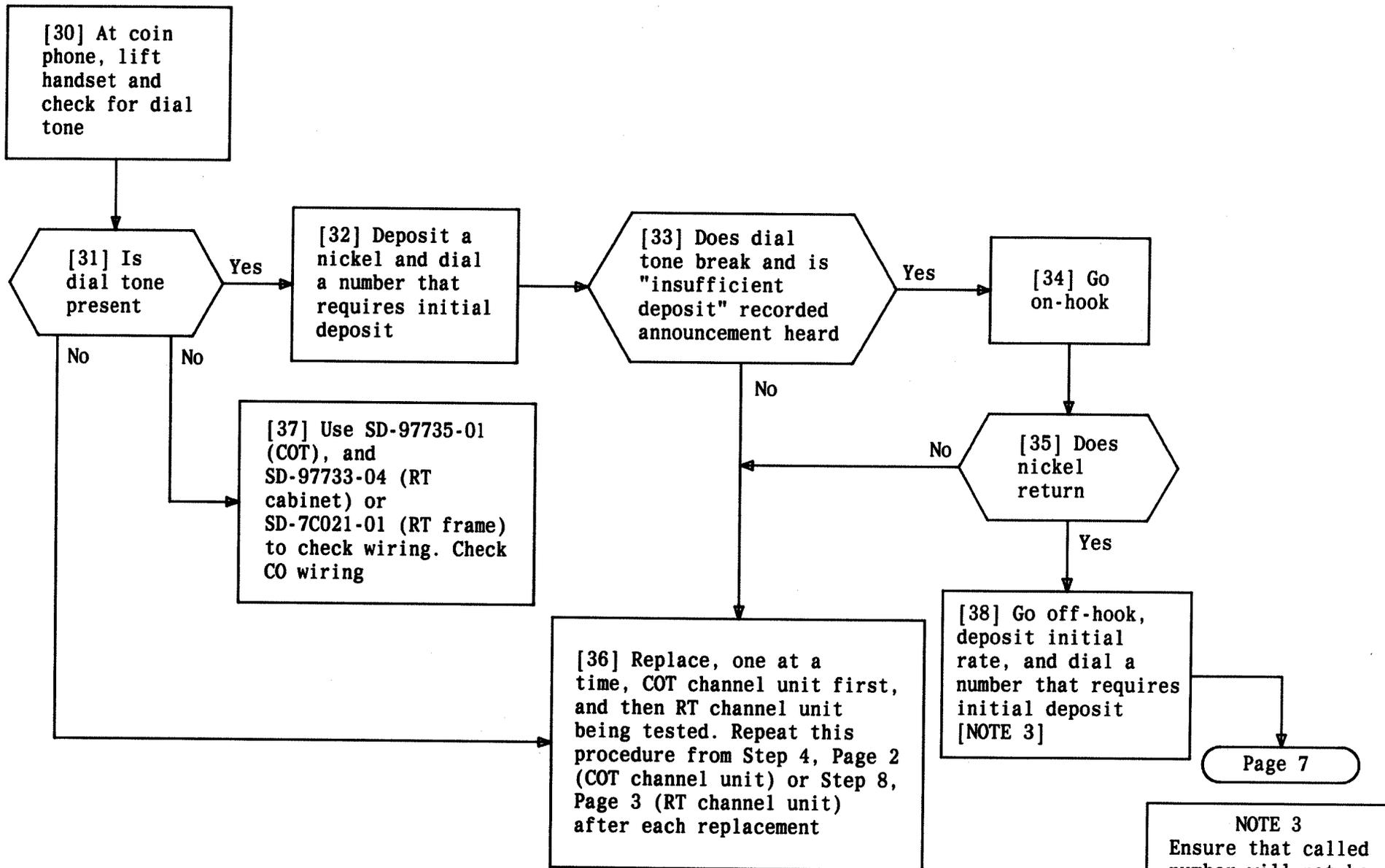
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NOTE 2
 If deposit is not automatically refunded when operator answers, request coins be returned

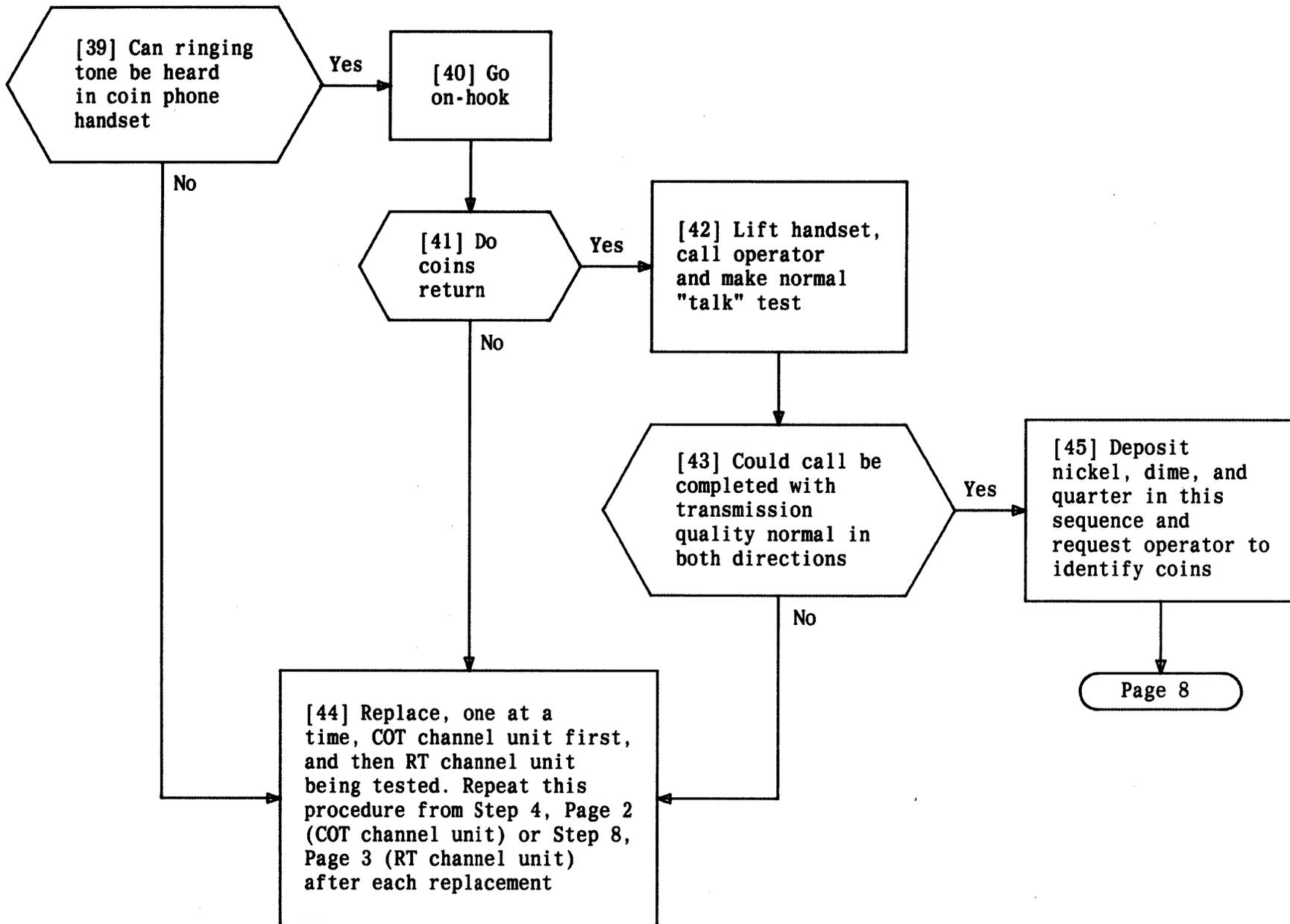
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PERFORM TERMINAL-TO-TERMINAL COIN CHANNEL TESTS



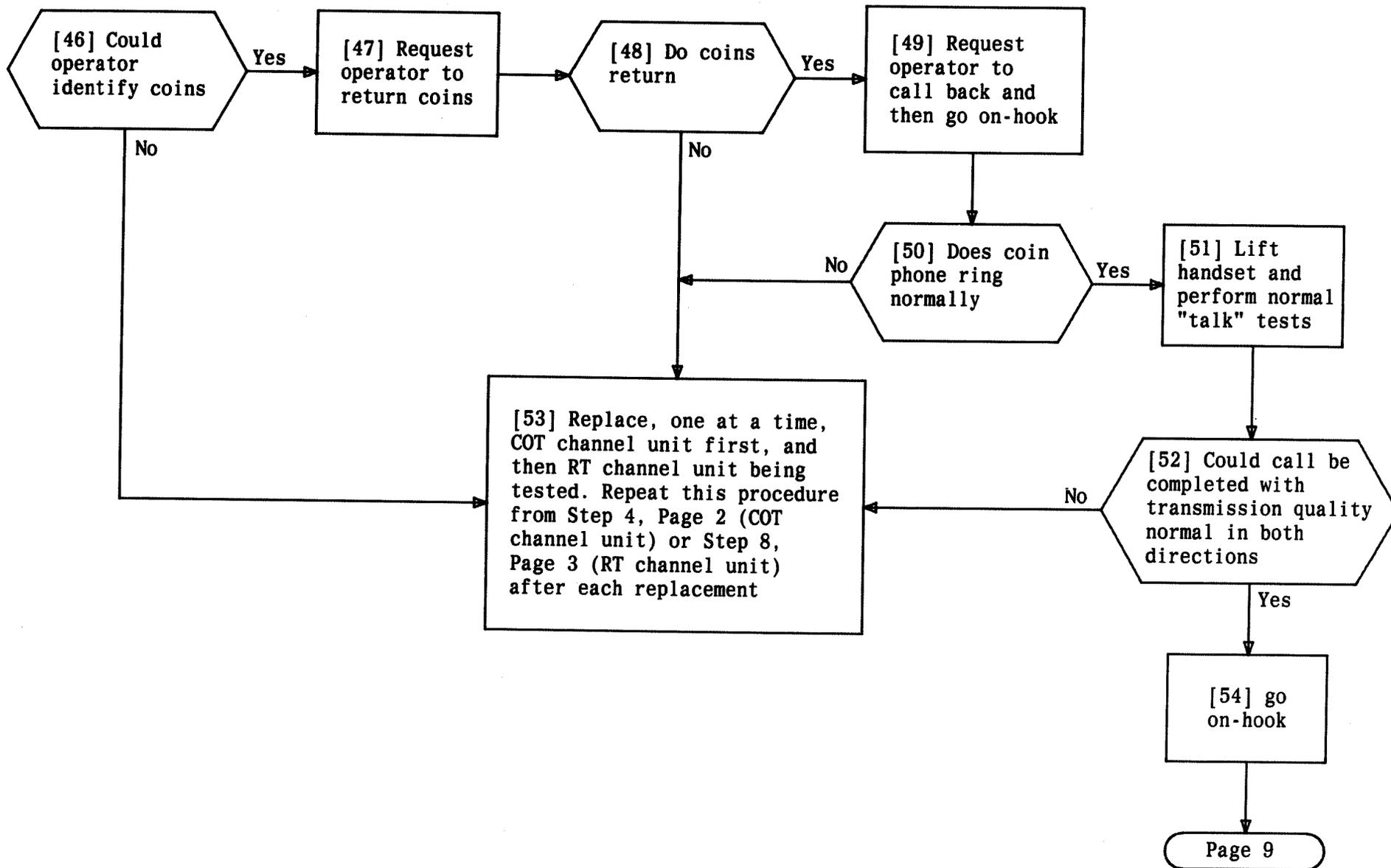
PERFORM TERMINAL-TO-TERMINAL COIN CHANNEL TESTS

NOTE 3	
Ensure that called number will not be answered	
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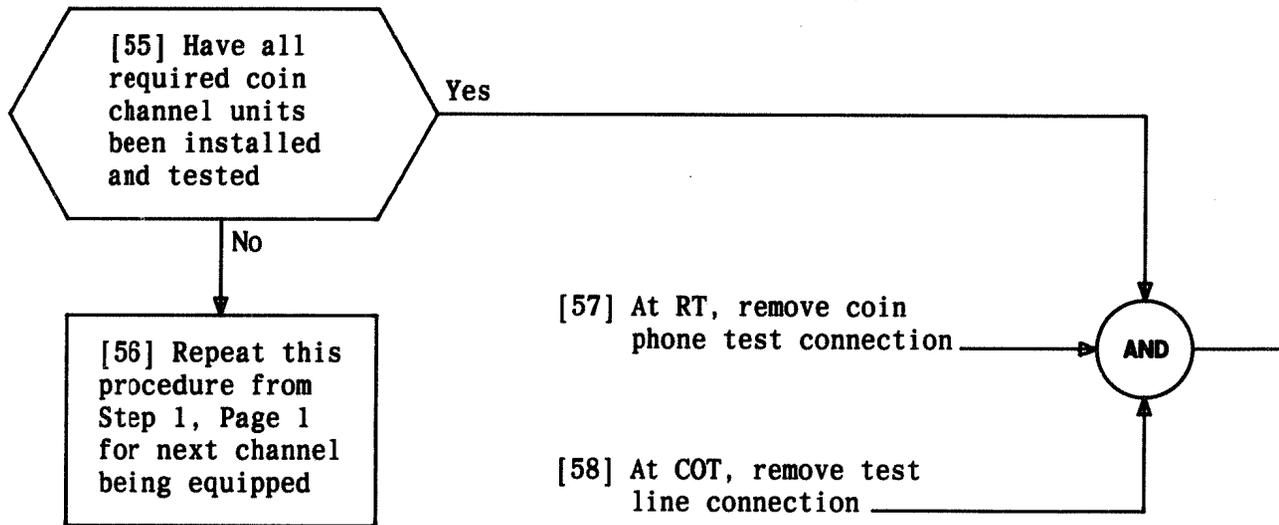
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PERFORM TERMINAL-TO-TERMINAL COIN CHANNEL TESTS

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[1] Verify that the specified number of channel units are in place at both terminals

[2] Verify terminal-to-terminal channel tests have been successfully completed

[3] Verify required jumpers per work order or cut-sheet have been completed at central office and half-tapped or bridged to specified SLC*-40 channels

[4] In cross-connect terminal adjacent to RT, locate terminals associated with distribution side (FROM-count) of pair to be transferred to SLC-40

[5] Locate terminal associated with feeder side (TO-count). This is the pair from associated SLC-40 channel

[6] Connect one lead of 1013B handset to a convenient ground

Channels ready to be cutover

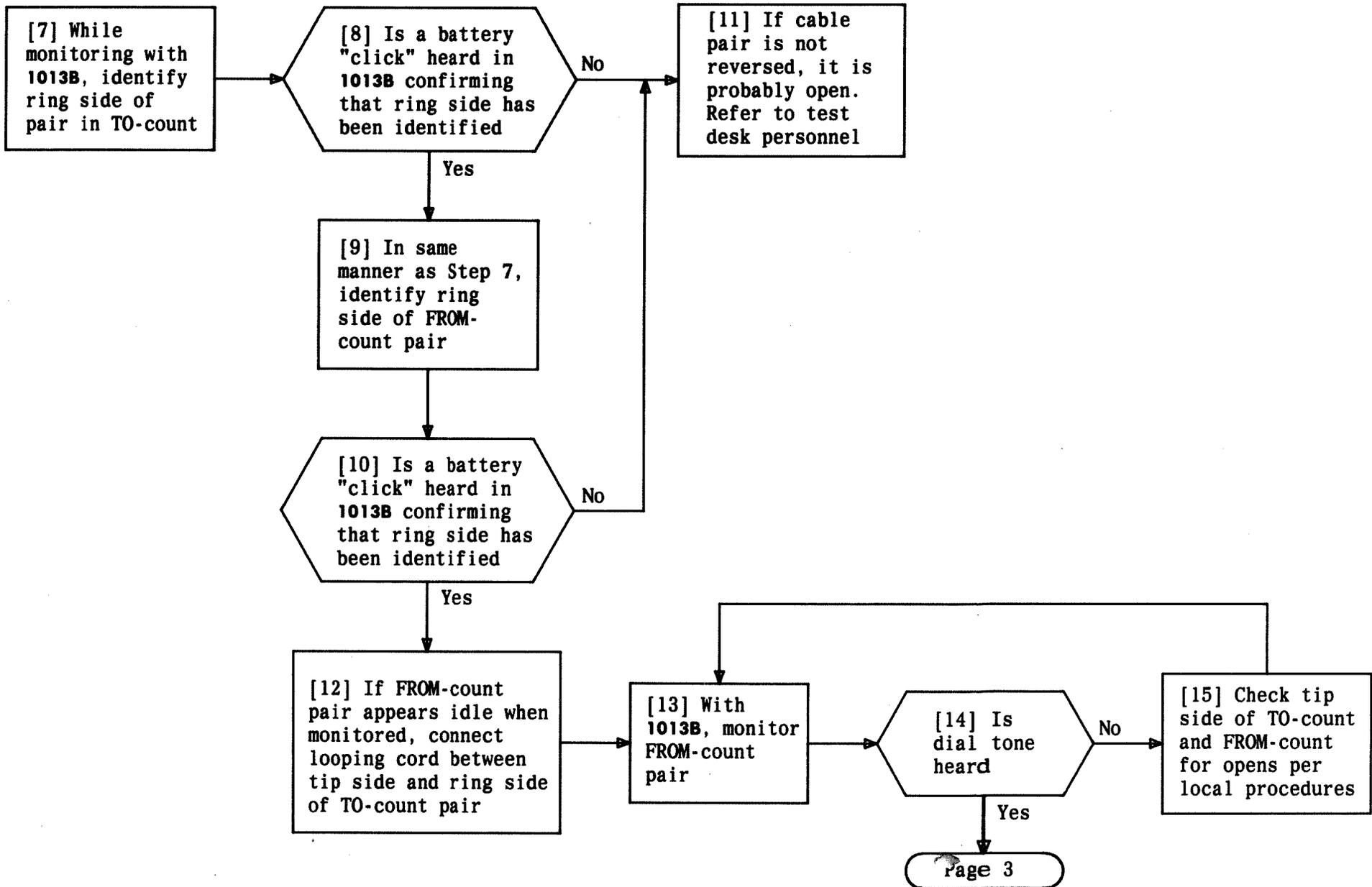


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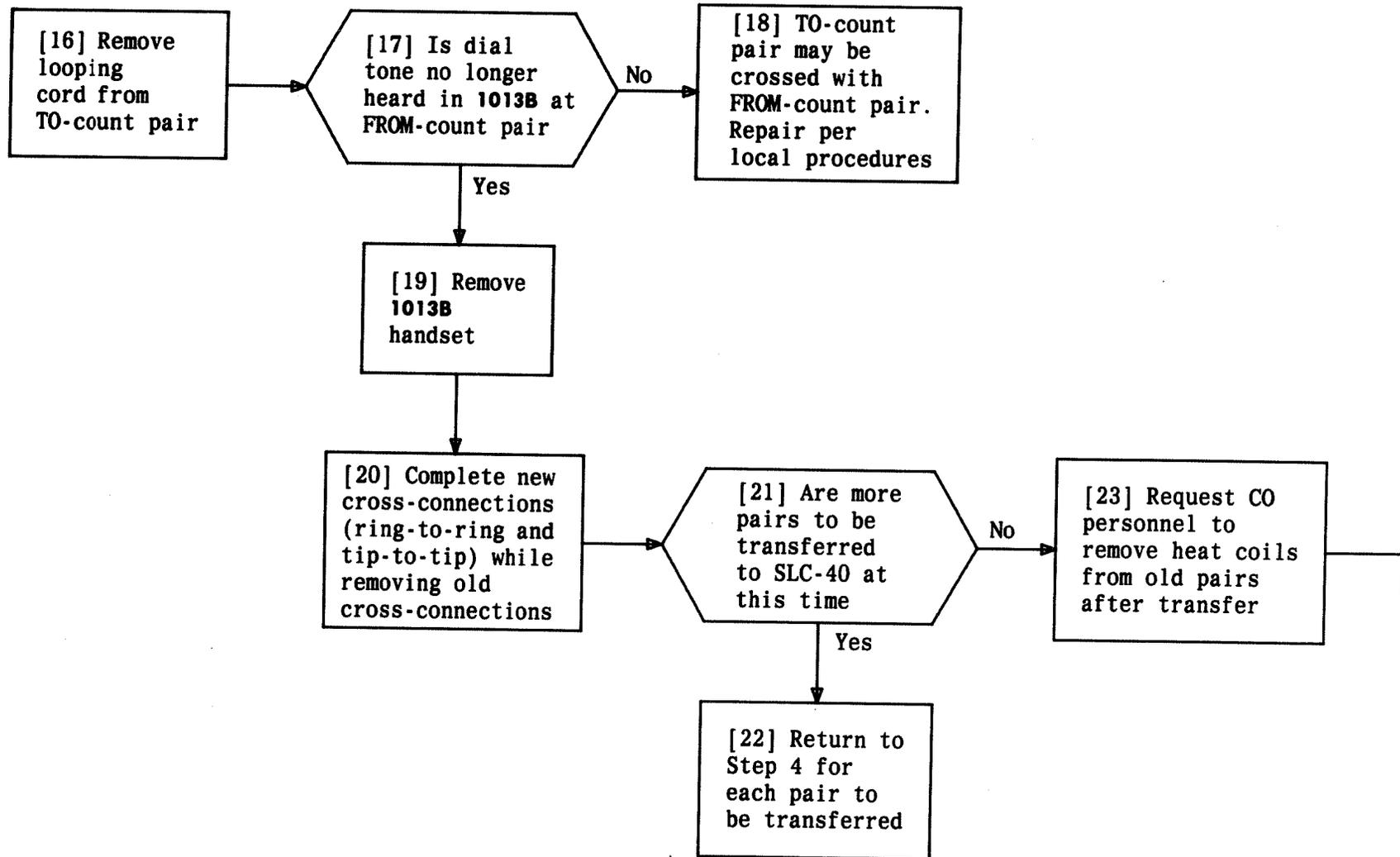
PERFORM SERVICE CUTOVER PROCEDURES

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PERFORM SERVICE CUTOVER PROCEDURES

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PERFORM SERVICE CUTOVER PROCEDURES

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[1] Verify **BF** fuse on RT power panel is removed

[2] Remove cable tie holding rear terminal tie bar of battery to be removed [FIG. 1]

[3] Remove front tie bars from cell pair terminals to be replaced, using 9/16-inch **taped** wrench

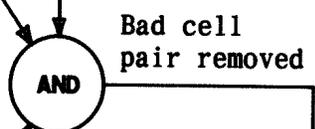
[4] Lift cell pair out of battery compartment, keeping battery level as to not spill electrolyte

[5] Get new cell pair

[6] Install new cell pair **observing correct polarity**

[7] Replace front tie bars, washers, and nuts; hand-tighten. Using 9/16-inch **taped** wrench, further tighten terminal nuts until firm. Check rear terminal nuts for tightness

[8] Put new cable tie on rear tie bar



Bad cell pair removed

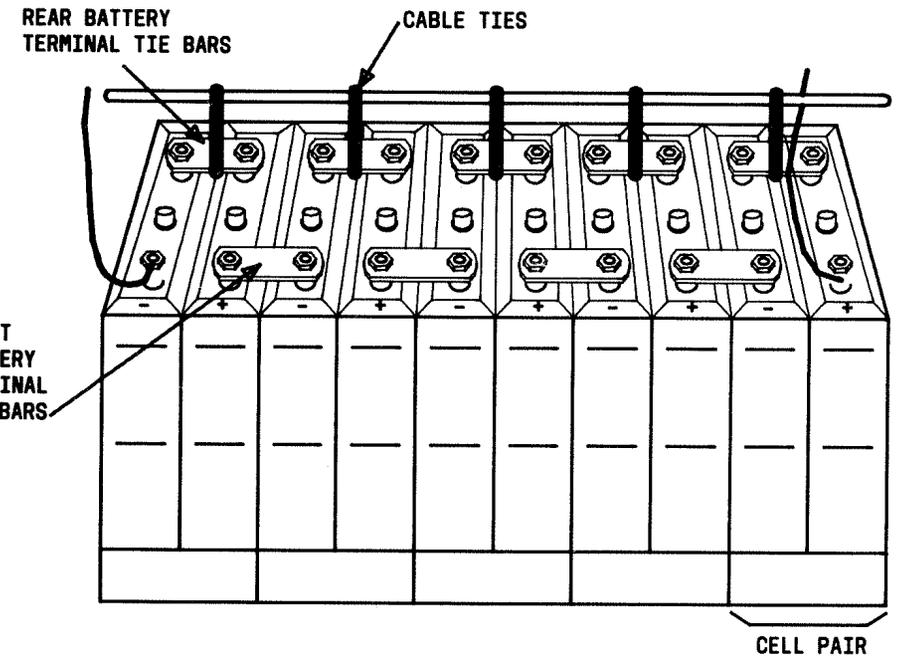
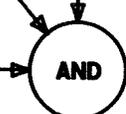


FIG. 1

[9] Dispose of bad cell pair per local procedure

REPLACE BAD BATTERY CELL PAIR

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[1] Place VOM on horizontal with face of meter up [NOTE 1]

[2] Set function switch to OFF position [FIG. 1, Page 2]

[3] Adjust meter zero screw [FIG. 1] until meter indicator aligns with 0 volts mark at left of scale

[4] Insert plug of red test lead into (+) jack per FIG. 1

[5] Insert plug of black test lead into (-) jack per FIG. 1

[6] See WARNING 1. Set function switch to parameter to be measured (DC VOLTS, OHMS, etc) and scale having a value higher than value to be measured [EXAMPLE 1]

AND

[7] Is resistance to be measured

No

Yes

Page 3

NOTE 1

Meter should not be placed on or near a magnetic surface or location where magnetic field will influence meter movement

EXAMPLE 1

If 48 volts dc is to be measured, function switch is set to 60 range of the DC VOLTS parameter

WARNING 1

If voltage or current value to be measured is in doubt, function switch should be set to highest range and decreased step-by-step for on-scale indication at time of measurement. This prevents driving indicator against its stop

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CONDITION KS-14510 METER (VOM) FOR MEASUREMENT

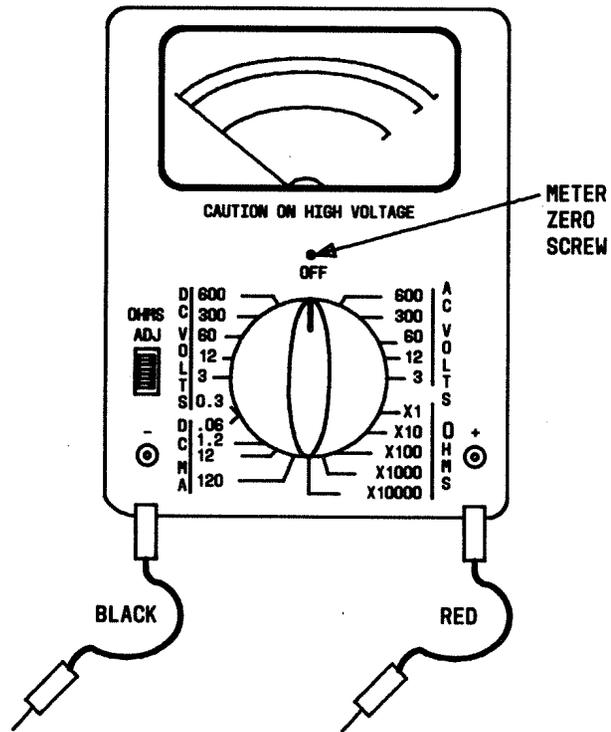
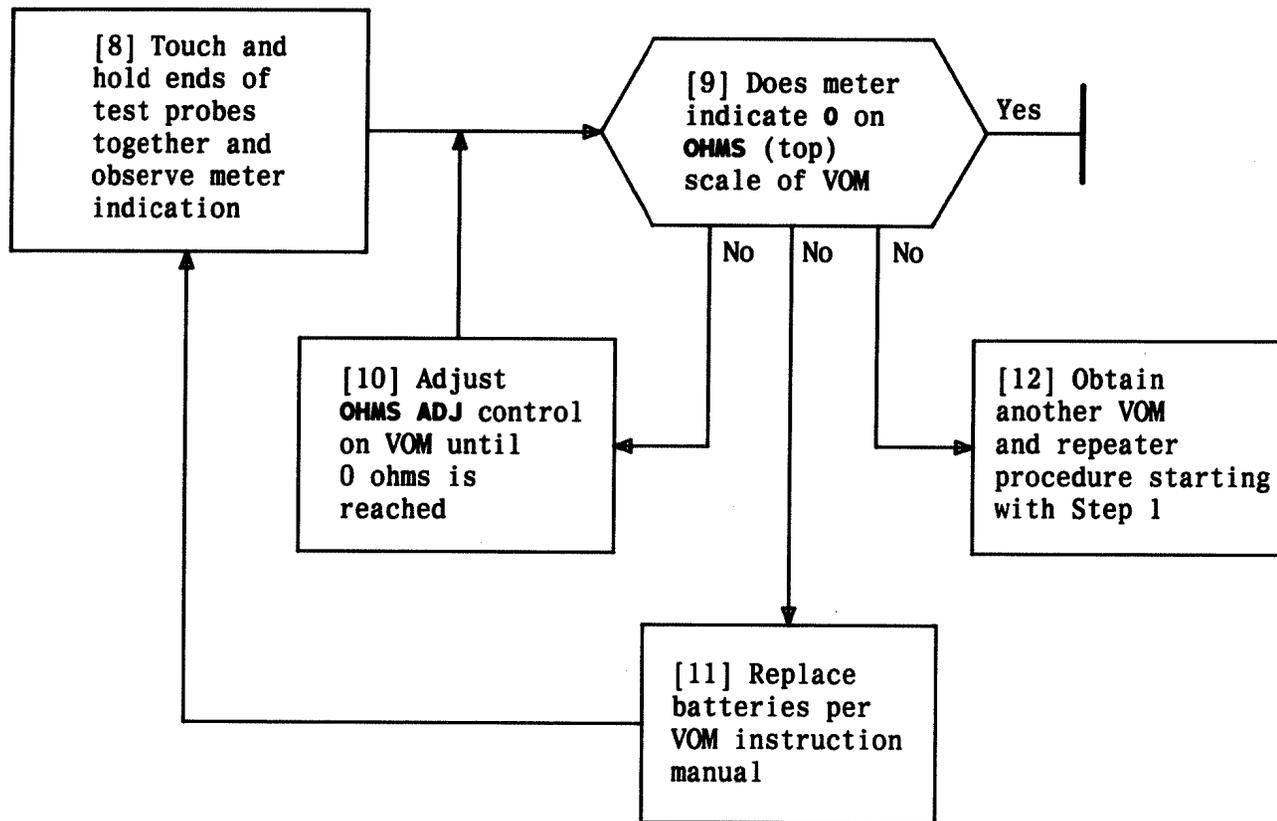


FIG. 1

CONDITION KS-14510 METER (VOM) FOR MEASUREMENT

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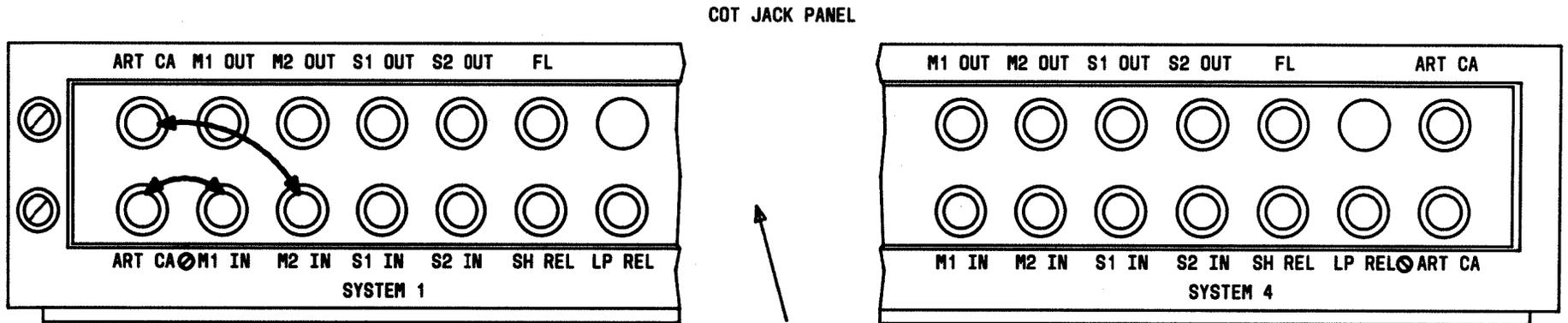
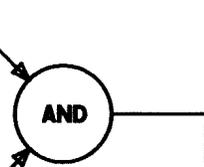


CONDITION KS-14510 METER (VOM) FOR MEASUREMENT

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[1] See CAUTION 1. On COT jack panel and using P3-type patch cord, place patch from M1 IN of system involved to any ART CA

[2] Place second patch from M2 IN of same system to associated ART CA used in Step 1. See FIG. 1



ANY ONE OF FOUR SYSTEMS CAN BE USED WITH ANY ART CA (ARTIFICIAL CABLE) PAIR

SYSTEMS 2 AND 3

FIG. 1

CAUTION 1
System involved must not be in service on main line or service will be interrupted

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PUT UP COT MAIN LINE LOOPBACK PATCH

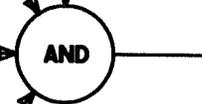
[1] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent _____

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS - 3 position _____

[3] See NOTE 1. Insert VOM positive (+) lead into I TEST + jack on KE21 CIRCUIT PACK _____

[4] Insert VOM negative (-) lead into I TEST - jack _____

[5] See NOTE 2. Press I TEST button and note reading _____



NOTES

1. System must be on main line (SPL lamp extinguished) before I TEST current can be measured. A 10-minute settling time may be required to ensure that both COT and RT are on the main line
2. I TEST button should not be held more than 1 minute or reading may be inaccurate

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MEASURE I TEST VOLTAGE ON KE21 CIRCUIT PACK AT COT

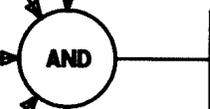
[1] Get KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent _____

[2] Condition VOM [DLP-573] and set selector switch to DC VOLTS - 3 position _____

[3] See NOTE 1. Insert VOM positive (+) lead into I TEST + jack on KE24 CIRCUIT PACK _____

[4] Insert VOM negative (-) lead into I TEST - jack _____

[5] See NOTE 2. Press I TEST button and note reading _____



NOTES

1. System must be on main line (SPL lamp extinguished) before I TEST current can be measured. A 10-minute settling time may be required to ensure that both COT and RT are on the main line
2. I TEST button should not be held more than 1 minute or reading may be inaccurate

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MEASURE I TEST VOLTAGE ON KE24 CIRCUIT PACK AT RT

[1] Get 7005 T1 Bridging Error Detector

[2] After removing cover, operate BATT CK switch and note battery meter reading [FIG. 1, Page 2]



[3] Does meter indicate in white or red sector while BATT CK switch is pushed

Red

[4] Replace batteries per 7005 instruction manual. Repeat procedures from Step 2

[5] See DANGER 1. Insert one end of patch cord into BRDG 310 jack

[6] Insert other end of patch cord into appropriate test jack on system being tested

[7] Set LINE IN/BRDG switch to BRDG position (ignore TERM/NORMAL switch)

[8] Operate PULSES switch and note whether or not a "P" appears on Pulses/Errors indicator window [NOTE 1]

[9] Operate ERRORS switch and note whether or not an "E" appears on Pulses/Errors indicator window [NOTE 2]



White

PERFORM BRIDGED PULSE/ERROR TEST USING 7005 T1 BRIDGING ERROR DETECTOR

NOTES

1. If "P" appears on display window, pulses are present on line
2. An "E" flashes on display window for each bipolar violation

DANGER 1

Voltages to 300 volts exist on the RT test jacks appearances. Patch cords should be connected to RT test jacks last

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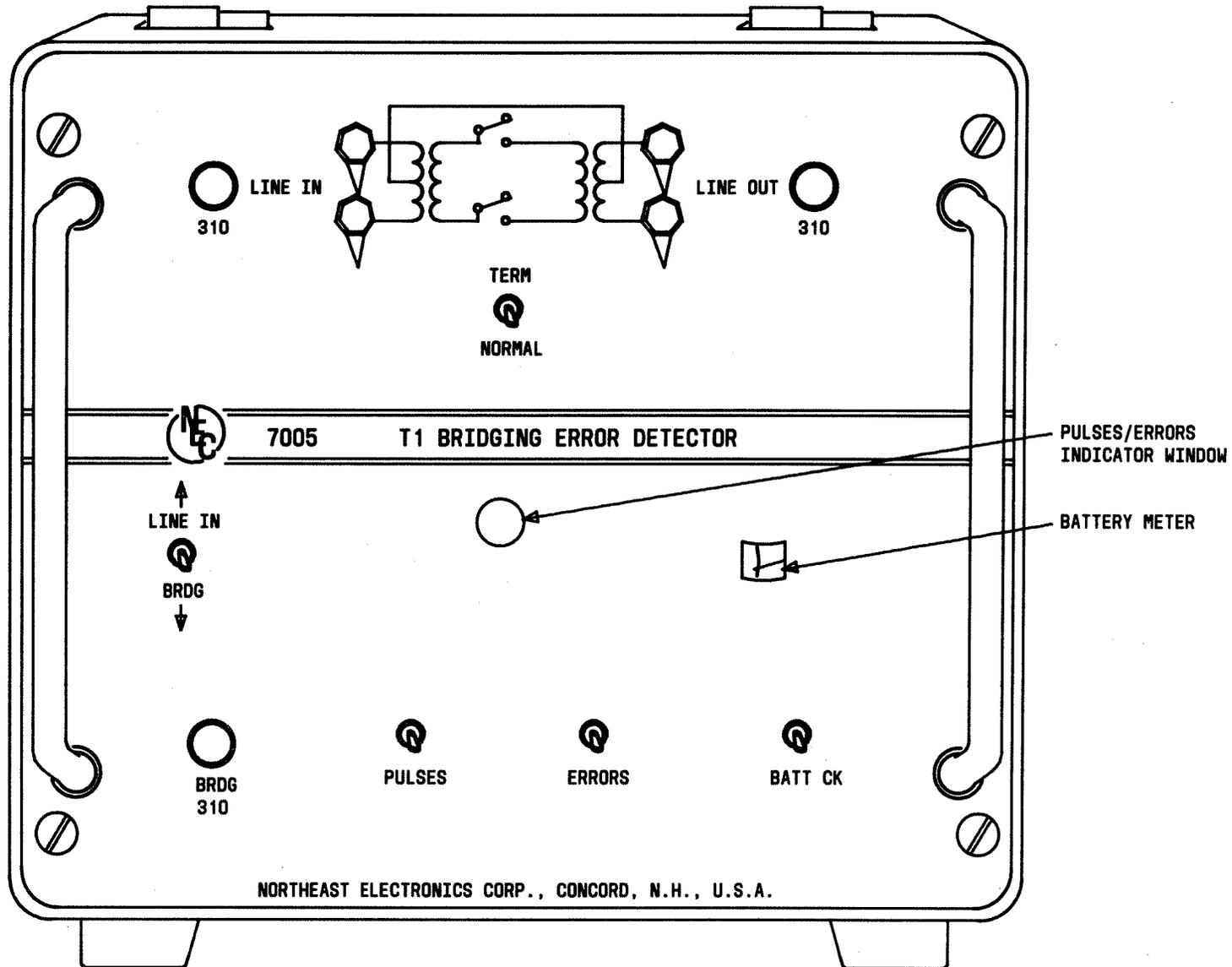


FIG. 1

PERFORM BRIDGED PULSE/ERROR TEST USING 7005 T1 BRIDGING ERROR DETECTOR

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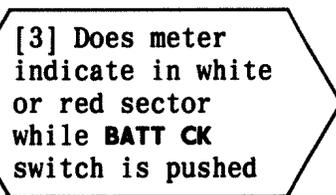
[1] Get 7005 T1 Bridging Error Detector

[2] After removing cover, operate BATT CK switch and note battery meter reading [FIG. 1]

[5] See DANGER 1. Insert a patch cord into LINE IN 310 jack and a second patch cord into LINE OUT 310 jack

[6] Insert other end of patch cords into appropriate test jacks on 239A ADAPTER

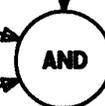
[7] Set LINE IN/BRDG switch to LINE IN position



Red

[4] Replace batteries per 7005 instruction manual. Repeat procedure from Step 2

White



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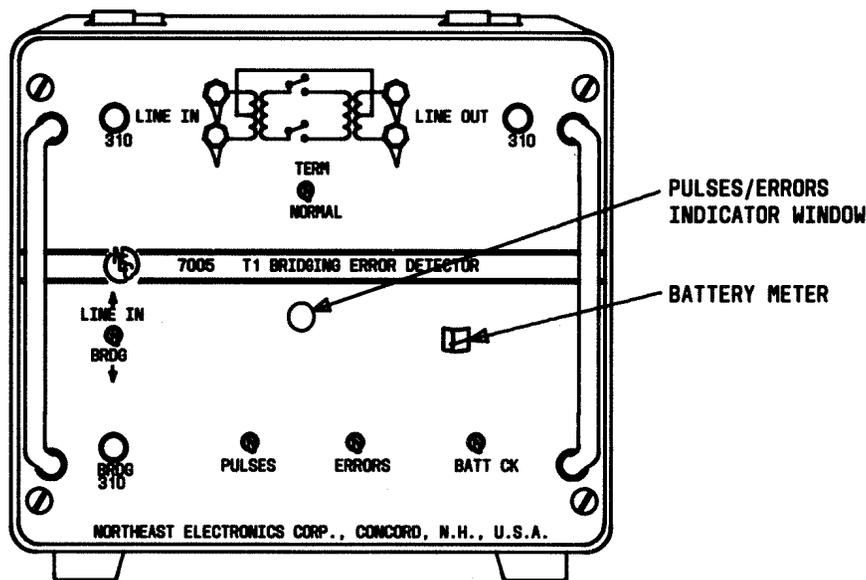
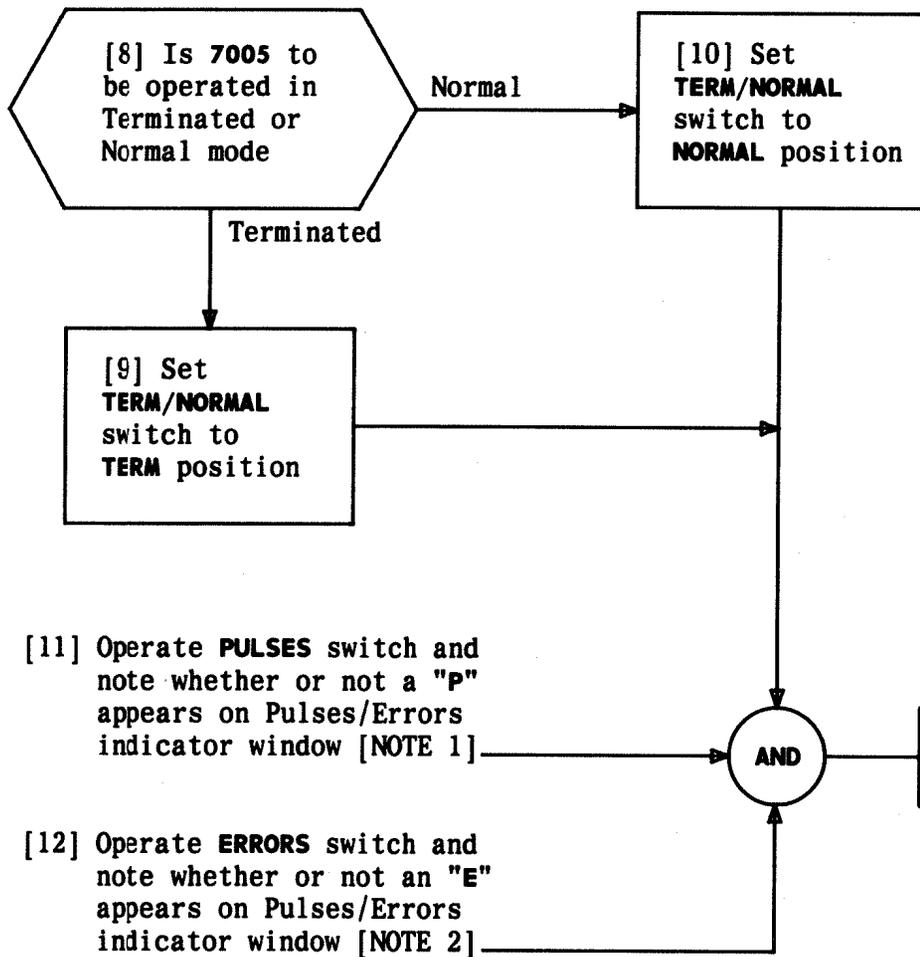


FIG. 1

DANGER 1
Voltages to 300 volts exist at the 239A ADAPTER test jacks. Patch cords should be connected to the 239A last

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PERFORM PULSE/ERROR TEST USING 7005 T1 BRIDGING ERROR DETECTOR



NOTES

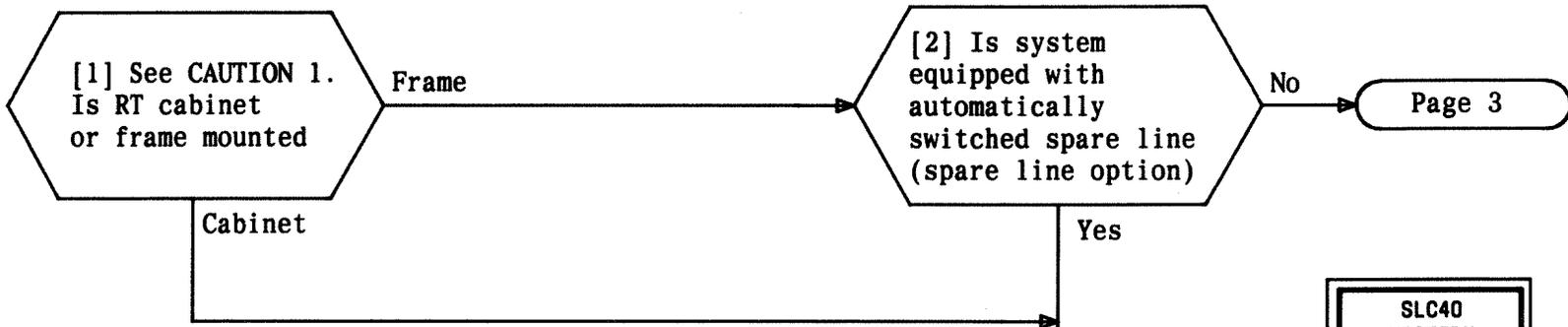
1. If "P" appears on display window, pulses are present on line
2. An "E" flashes on display window for each bipolar violation

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PERFORM PULSE/ERROR TEST USING 7005 T1 BRIDGING ERROR DETECTOR



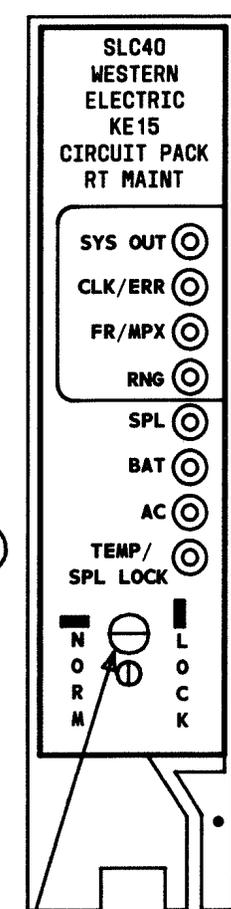
- [3] Have RT personnel operate, on KE15 CIRCUIT PACK, SPL LOCK key to LOCK position [FIG. 1]
- At COT:
 [4] On COT jack panel, using P3-type patch cord, place patch for system involved from M1 IN to any ART CA
- [5] Using another patch cord, place patch (for same system) from M2 IN to associated ART CA
- [6] Remove both patch cords at the same time from M1 IN and M2 IN jacks on COT jack panel [NOTE 1]

SPL and TEMP/SPL LOCK lamps light at RT

All lamps extinguish except SPLT lamp

AND

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SPL LOCK KEY (SHOWN IN NORM POSITION)

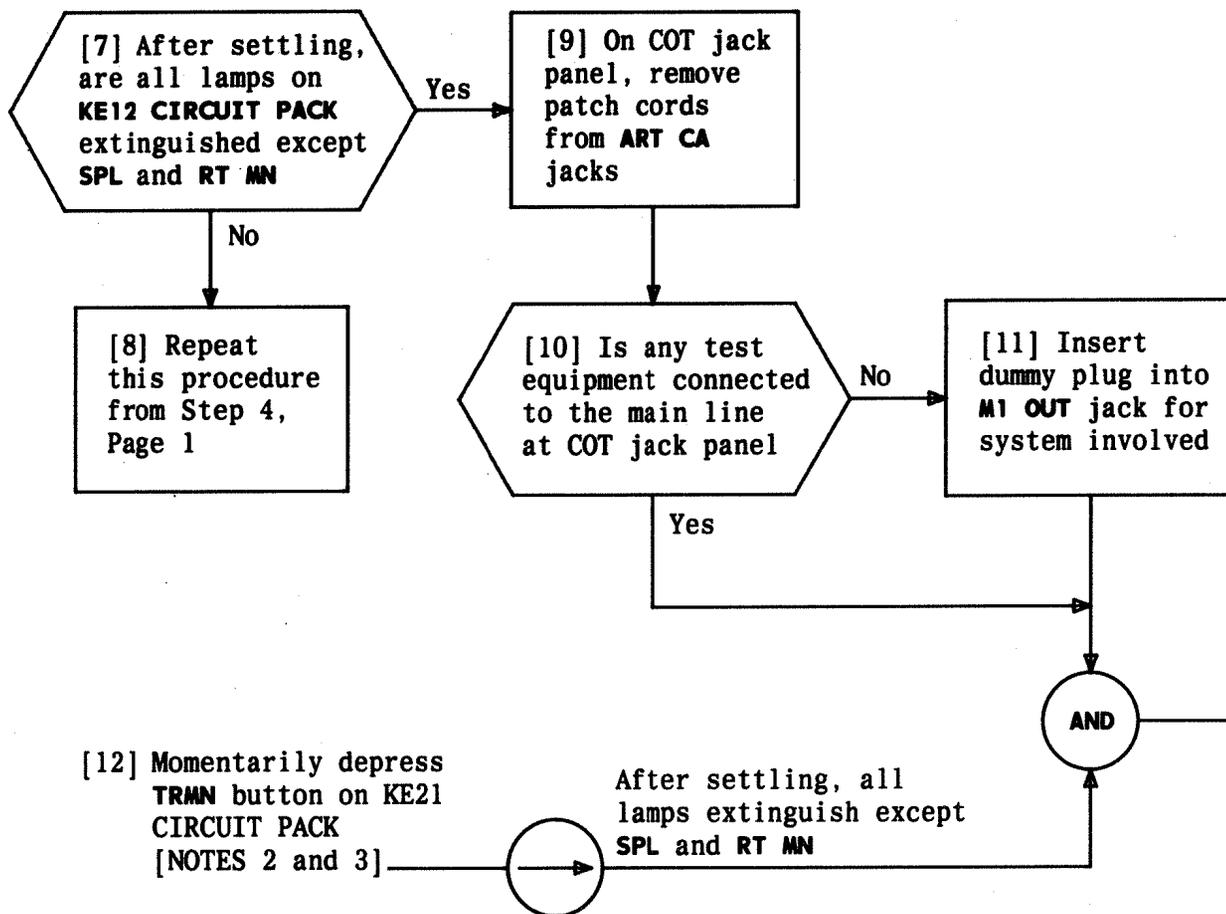
FIG. 1

NOTE 1
 The two cords must be removed within 2 seconds of one another, or the system will fail to work on the spare line

CAUTION 1
 This procedure is to be used only if the system is in the SYS OUT state and the spare line is not being used by any other system

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PERFORM MANUAL RESTORATION TO THE SPARE LINE



NOTES

2. This step prevents an automatic retry of the main line at a later time
3. When the main line has been repaired, all test equipment or dummy plugs should be removed from the COT jack panel and the **SPL LOCK** key restored to the **NORM** position at the RT

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PERFORM MANUAL RESTORATION TO THE SPARE LINE

At COT:

[13] Verify that there are no patch cords or dummy plugs connected to LP REL and SH REL jack on COT jack panel.

[14] At donar system (system with spare line to be used), operate ACO switch on KE12 CIRCUIT PACK to center (major alarm only) position.

[15] On COT jack panel, using P3-type patch cords, place patch from M1 IN on system to be restored to S1 OUT on donar system.

[16] Place second patch from M2 IN on system to be restored to S2 OUT on donar system.

COT patch connections established

AND

Have personnel at RT:

[17] Locate jacks for spare line of donar system and jacks for main line of system to be restored on RT FF & J PANEL.

[18] See NOTE 4. Using P3-type patch cord, place patch from MS1 IN of system being restored to SPARE SIDE 1 of donar system.

[19] Place second patch from MS2 IN of system being restored, to SPARE SIDE 2 of donar system.

[20] Place 310-type dummy plug in LP REL jack of system being restored.

RT patch connections established

AND

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NOTE 4

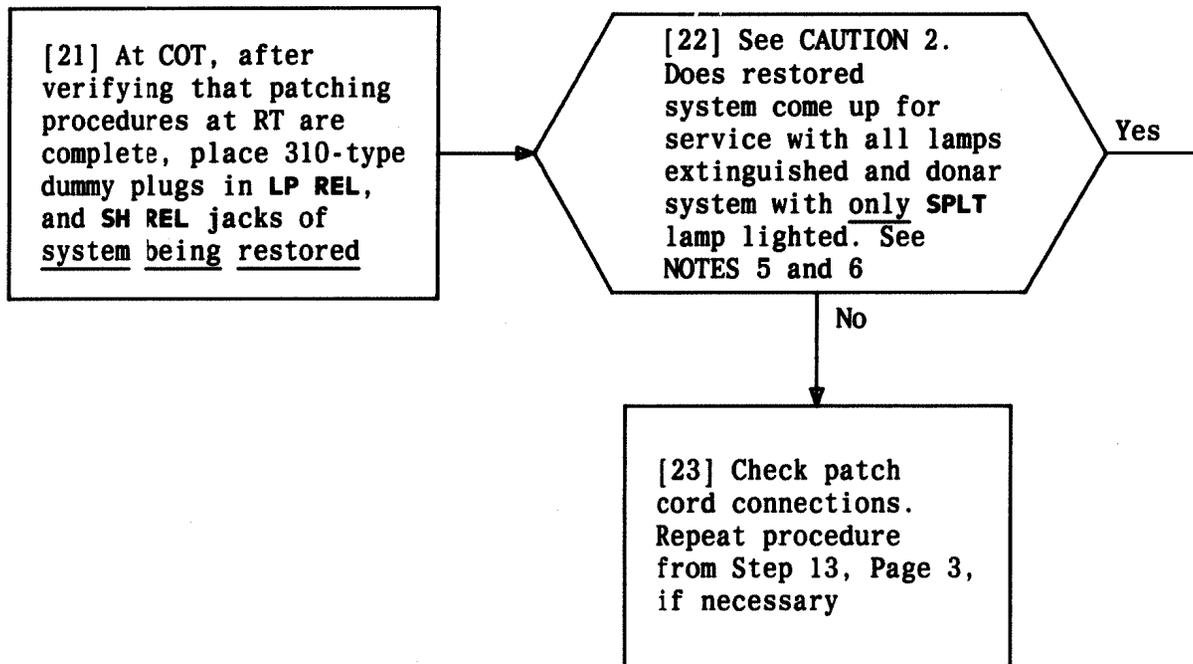
Connections in Steps 18 and 19 must be performed in the given order

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PERFORM MANUAL RESTORATION TO THE SPARE LINE



NOTES

5. The restored system may require a 10-minute settling period to ensure that both COT and RT are on the spare line

6. After trouble has been cleared, patch cord connections and dummy plugs should be removed in reverse order of their connection.

CAUTION 2
Removal of the patch cords in NOTE 6 will momentarily interrupt service

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PERFORM MANUAL RESTORATION TO THE SPARE LINE

[1] Verify AC ON/OFF switch on 107B is in OFF position

[2] Set LINE CURRENT switch on 107B for type repeaters that you have per TABLE A

[3] See DANGERS 1 and 2. Using special patch cord furnished with 107B, make patch cord connection per TABLE B

[4] Plug 107B power cord into 117-Vac 60-Hz outlet

[5] Set 107B meter switch to V OUT (0-320V) position

TABLE A	
REPEATER TYPE	LINE CURRENT SWITCH SETTING
Standard Power 208-, 209-, 217-Type [114A or 209() Power Unit in COT]	140 mA
Low Power 238, 239, 251-Type [250() or 238() Power Unit in COT]	60 mA

107B Connected

[6] Set 107B ON/OFF switch to ON position

[7] Is OUTPUT ON lamp lighted and does meter indicate between 20 and 270 volts

Yes → Page 2

No
[8] Verify proper operation of 107B per 107B manual and recheck test connections

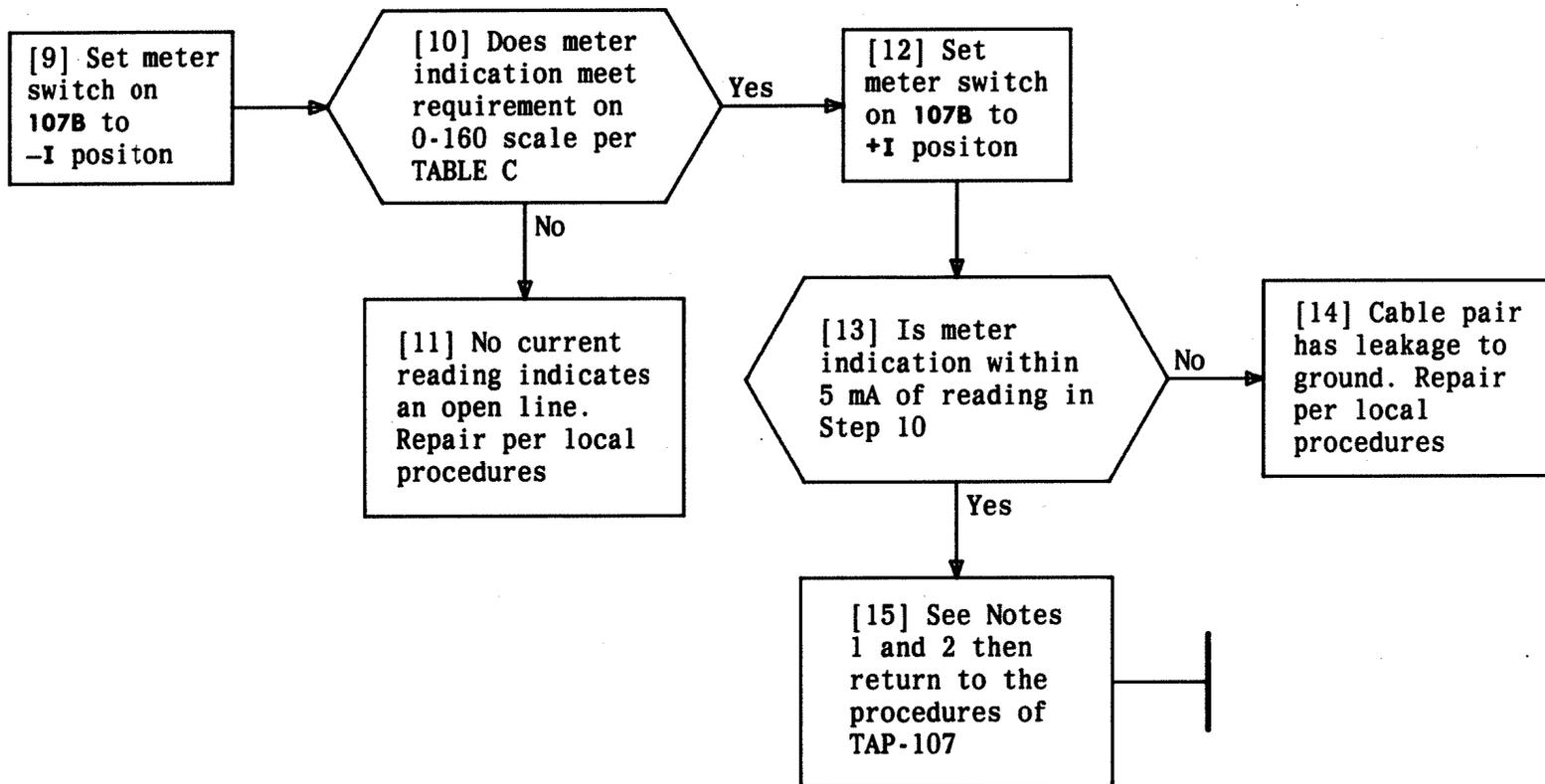
TABLE B		
PATCH CORD CONNECTION (one cord)		
DIGITAL LINE	FROM	TO
MAIN LINE	107B LSO	M1 OUT
	107B LSI	M2 OUT
SPARE LINE*	107B LSO	S1 OUT
	107B LSI	S2 OUT

* SPL lamp on KE12 must be OFF. If spare line sharing is used, the spare line for system 1 and 2 appears at system 2, etc.

DANGERS

- The 107B must produce a high dc voltage (± 135 volts to ground) to power repeated line under test. It is designed to prevent high voltages on patch cords until connections have been made to both 107B jacks and COT test jacks. The double patch cord supplied with 107B must be used to make connections. Use of substitute cords defeat safety features and may prevent 107B from powering line under test.
- Patch cord should always be connected to COT test jacks LAST.

CONNECT POWER AND SIGNAL TO DIGITAL LINE AT COT



- NOTES**
1. The 107B contains a quasi-random signal source which is now connected to transmit out on the line and a pulse-error detector which monitors the incoming signal
 2. The test equipment and test connections must be removed when trouble is cleared, in reverse order in which they were established. Connections at RT should be removed before removing test connections at COT

REPEATER TYPE	REQUIREMENT
Standard Power 208-, 209-, 217-Type [114A or 209() Power Unit in COT]	130 to 150 mA
Low Power 238, 239, 251-Type [250() or 238() Power Unit in COT]	50 to 70 mA

CONNECT POWER AND SIGNAL TO DIGITAL LINE AT COT

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- [1] Verify AC ON/OFF switch on 107B is in OFF position.
- [2] Set LINE CURRENT switch on 107B for type repeaters that you have per TABLE A.
- [3] Using P3-type patch cord, connect one end to 107B RECEIVE DSI jack first then the other end to 107B FL SIG jack.
- [4] See DANGERS 1 and 2. Using special patch cord furnished with 107B, make patch cord connection per TABLE B.
- [5] Plug 107B power cord into 117-Volt 60-Hz outlet.
- [6] Set 107B meter switch to V OUT (0-320V) position.

TABLE B		
PATCH CORD CONNECTION (one cord)		
DIGITAL LINE	FROM	TO
MAIN LINE	107B LSI 107B LSO	MAIN SIDE 1 MAIN SIDE 2
SPARE LINE*	107B LSI 107B LSO	SPARE SIDE 1 SPARE SIDE 2

* SPL lamp on KE15 must be OFF. If spare line sharing is used, the spare line for systems 1 and 2 appears at system 2, etc.

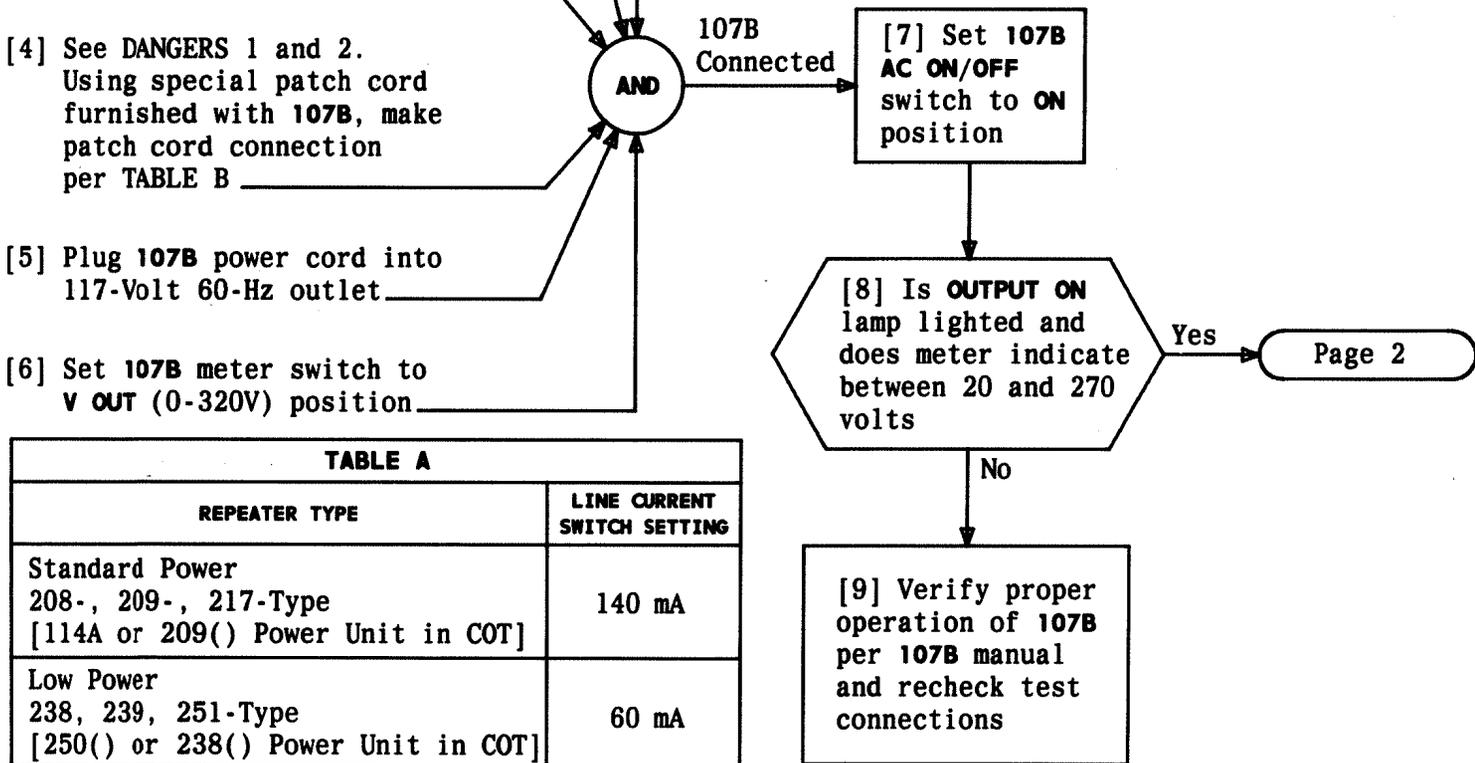
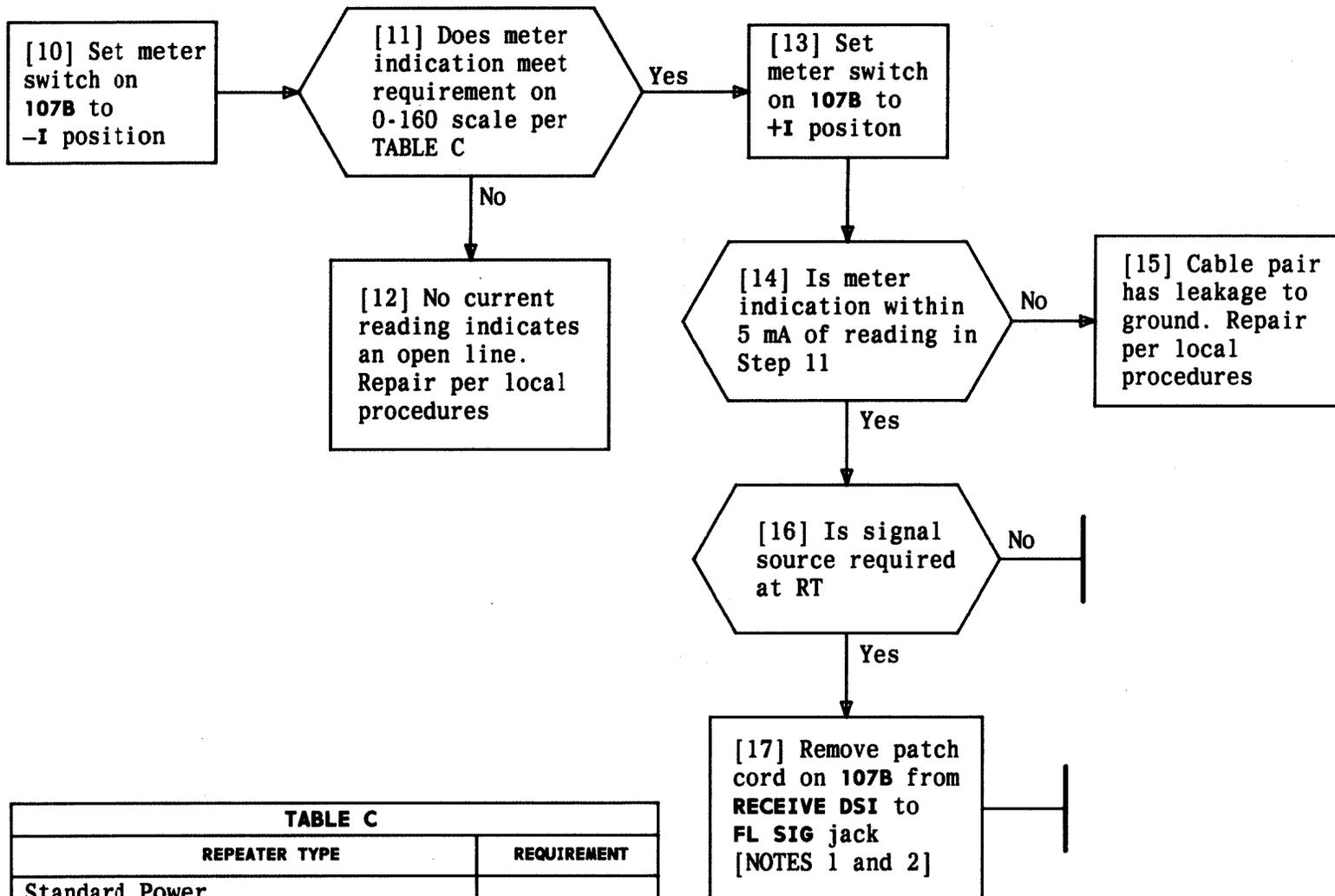


TABLE A	
REPEATER TYPE	LINE CURRENT SWITCH SETTING
Standard Power 208-, 209-, 217-Type [114A or 209() Power Unit in COT]	140 mA
Low Power 238, 239, 251-Type [250() or 238() Power Unit in COT]	60 mA

DANGERS

1. The 107B must produce a high dc voltage (± 135 volts to ground) to power repeatered line under test. It is designed to prevent high voltages on patch cords until connections have been made to both 107B jacks and RT test jacks. The double patch cord supplied with 107B must be used to make connections. Use of substitute cords defeat safety features and may prevent 107B from powering line under test.
2. Patch cord should always be connected to RT test jacks LAST.

CONNECT POWER AND SIGNAL TO DIGITAL LINE AT RT



REPEATER TYPE	REQUIREMENT
Standard Power 208-, 209-, 217-Type [114A or 209() Power Unit in COT]	130 to 150 mA
Low Power 238, 239, 251-Type [250() or 238() Power Unit in COT]	50 to 70 mA

NOTES

1. The 107B contains a quasi-random signal source which is now connected to transmit out on the line and a pulse-error detector which monitors the incoming signal
2. The test equipment and test connections must be removed when trouble is cleared, in reverse order in which they were established. Connections at RT should be removed before removing test connections at COT

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CONNECT POWER AND SIGNAL TO DIGITAL LINE AT RT

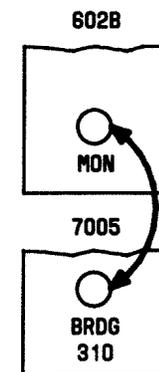
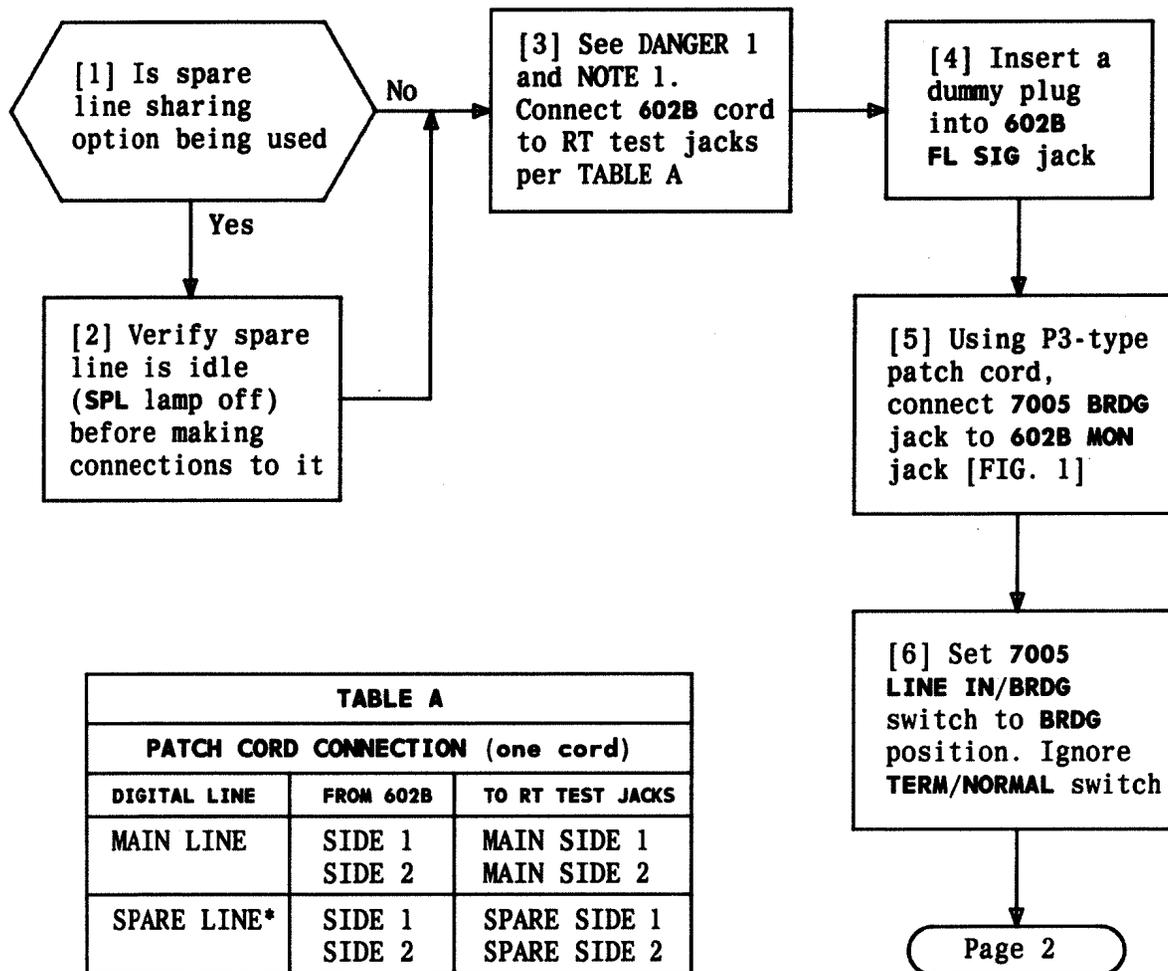


FIG. 1

TABLE A		
PATCH CORD CONNECTION (one cord)		
DIGITAL LINE	FROM 602B	TO RT TEST JACKS
MAIN LINE	SIDE 1	MAIN SIDE 1
	SIDE 2	MAIN SIDE 2
SPARE LINE*	SIDE 1	SPARE SIDE 1
	SIDE 2	SPARE SIDE 2

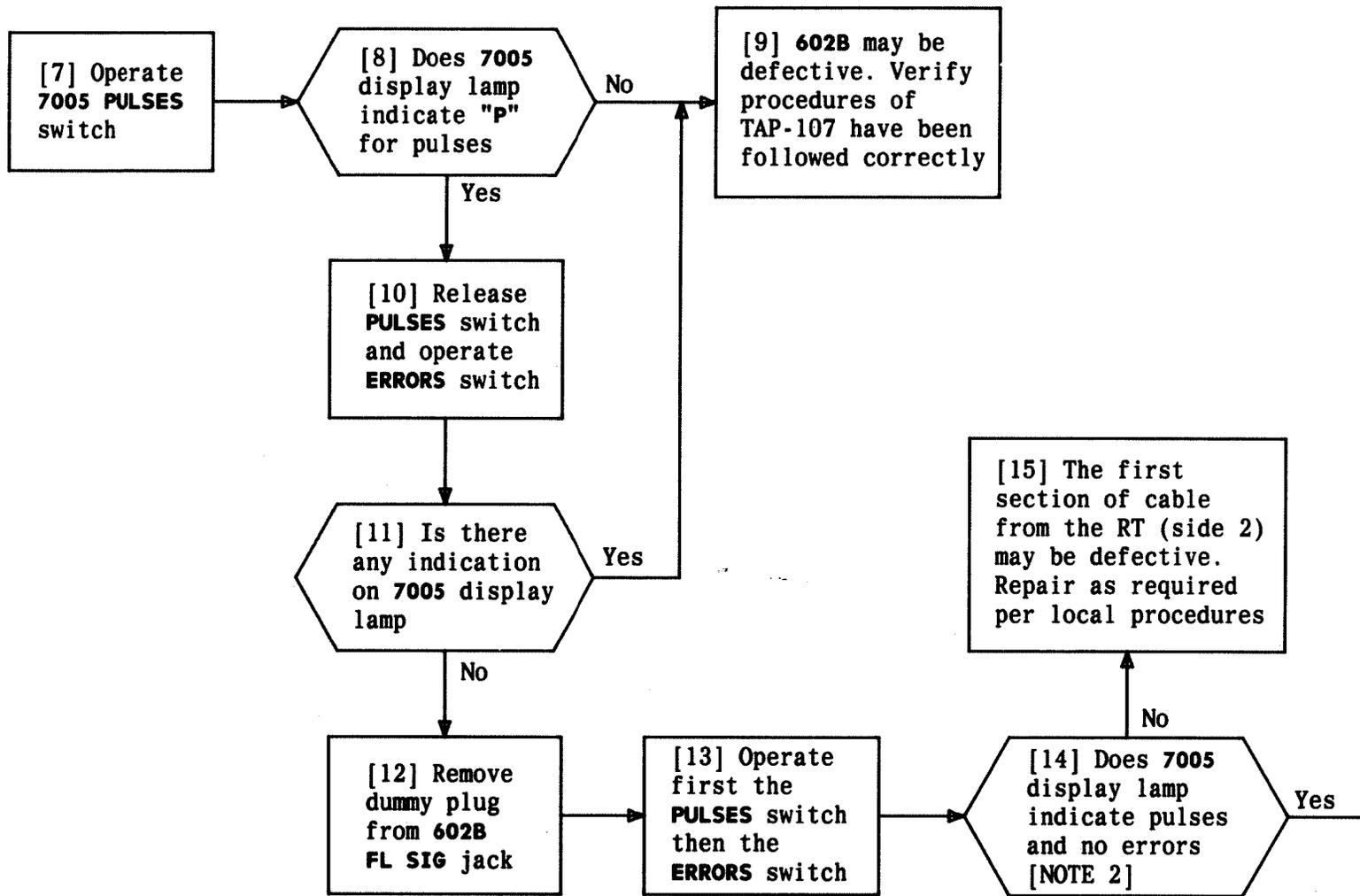
* SPL lamp on KE15 must be OFF. If spare line sharing is used, the spare line for systems 1 and 2 appears at test jacks of system 2 etc.

NOTE 1
This procedure loops power and signal to allow tests on side 2 of the line

DANGER 1
Voltages of ±135 volts to ground and 270 volts between test jacks exist at RT test jacks. All patch cords and test cords should be connected in the order given

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PERFORM RT LOOPBACK PROCEDURES



NOTE 2
 The 602B must be removed when trouble is cleared. The 602B should be removed before test connections are removed from RT

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PERFORM RT LOOPBACK PROCEDURES

[1] Determine RT wiring options to be used from Engineering Work Order or from TABLE A. See NOTE 1

[2] Using TABLES B through K, Page 2, verify that all options to be used are installed and that all options not to be used are removed

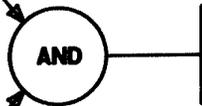


TABLE A RT OPTIONS	
OPTIONS	
"Z"	Required for spare line sharing when interfacing with two SLC-40 COTs
"X"	Required when only system 1 uses dedicated spare line. System 2 uses no spare line
"W"	Required when only system 2 uses dedicated spare line. System 1 uses no spare line
"Y"	Required when both systems 1 and 2 use dedicated spare lines
"V"	No spare line for either system 1 or system 2. Also use for Digital Multiplex use
"U"	For AC alarm
"T"	For external alarm
"S"	For order wire
"R"	For fault locate
"Q"	Use for Digital Multiplexer Configurations

NOTE 1 If RT is cabinet-mounted, no wiring options are specified	
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CHECK FRAME-MOUNTED REMOTE TERMINAL WIRING OPTIONS

TABLE B	
"Z" OPTION (SYSTEMS 1 & 2)	
ON: FF&A PANEL	
TB910-3A	TB910-3B
-4A	-4B
-9A	-9B
-10A	-10B
TB920-3A	TB920-3B
-4A	-4B
-9A	-9B
-10A	-10B
ON: CHANNEL BANK	
TB3-1A	TB3-1B

TABLE C	
"X" OPTION (SYSTEM 1)	
ON: FF&A PANEL	
TB910-3A	TB910-2B
-4A	-5B
-9A	-8B
-10A	-11B
TB920-3A	TB920-4A
-4A	-9A

TABLE D	
"W" OPTION (SYSTEM 2)	
ON: FF&A PANEL	
TB910-3A	TB910-4A
-4A	-9A
TB920-3A	TB920-2B
-4A	-5B
-9A	-8B
-10A	-11B

TABLE E	
"Y" OPTION (SYSTEMS 1 & 2)	
ON: FF&A PANEL	
TB910-3A	TB910-2B
-4A	-5B
-9A	-8B
-10A	-11B
TB920-3A	TB920-2B
-4A	-5B
-9A	-8B
-10A	-11B

TABLE F	
"V" OPTION (SYSTEMS 1 & 2)	
ON: FF&A PANEL	
TB910-3A	TB910-4A
-4A	-9A
TB920-3A	TB920-4A
-4A	-9A

TABLE G	
"U" OPTION	
FROM: FF&A PANEL	TO: POWER PLANT
TB901-6	-48 VOLTS FROM EXT. POWER PLANT

TABLE H	
"T" OPTION	
FROM: FF&A PANEL	TO: EXT ALARMS
TB901-4 -5	CLOSURE FROM EXT. ALARMS

TABLE I	
"S" OPTION	
FROM: FF&A PANEL	TO: XCONNECT
TB900-11B -12B	T R

TABLE J	
"R" OPTION	
FROM: FF&A PANEL	TO: XCONNECT
TB900-11A -12A	T R

TABLE K	
"Q" OPTION (SYSTEMS 1 & 2)	
ON CHANNEL BANK	
J213-16	J211-47
J213-32	J212-13
J613-16	J611-47
J613-32	J612-13

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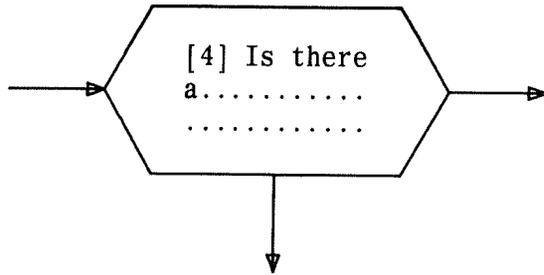
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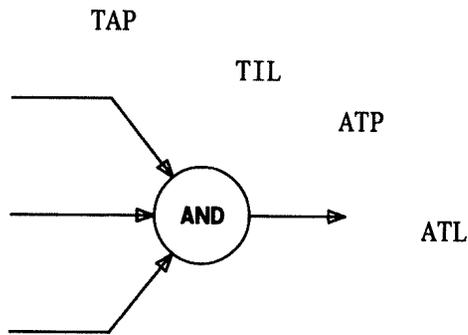


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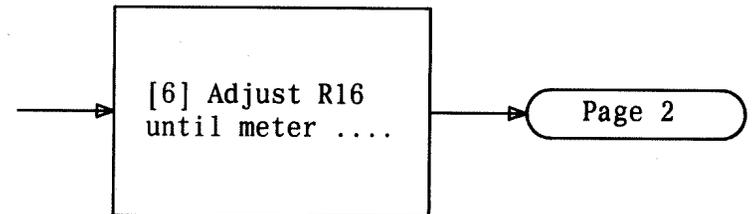
WARNING
*Always be safety
 conscious on
 and off the job*

TASK ORIENTED PRACTICE..... or TOP

*The next few pages will tell
 you how to use this document.*



[DLP-540]



HOW TO USE THIS "TOP"

This book is called a Task Oriented Practice or a "TOP." It is a type of programmed document - one which gives you step-by-step instructions of how to do a job (or task). A TOP can be a big help in your everyday work, but you must know how to use it correctly. Take a few minutes, say 15 or 20, and study these few pages until you feel you understand how to use a TOP. Taking this time now will very likely save you time and effort later on.

An important thing to remember about TOP is that it contains all the needed instructions to complete a job. If you are doing the job for the first time, you will be directed through each action without having to guess or remember where to find the necessary information. If you are experienced on a particular job, TOP can provide just that information which you may have forgotten.

Almost all of your jobs can be classified into one of four types - *Routine*, *Acceptance*, *Company Order*, or *Trouble Clearing*. This is how TOP defines these four work types:

Routine

that work you do as part of a Controlled Maintenance Plan like scheduled cleaning or scheduled tests. Routine work may also include those things you do as a "routine" part of your job like requesting a TTY printout or turning on equipment in the mornings and off in the evenings.

Acceptance

that work you do to verify that equipment is installed properly. Normally this is a test or inspection you perform when Western Electric has completed a new installation or addition. It could also be a test you perform when another group from *your* Company has completed

an installation or addition of equipment. Acceptance work, however, is always related to testing or checking newly installed equipment.

Company Order

that work you do in response to one of several different "orders" which may be given to you. Some of the orders you may be familiar with are Circuit Orders, Service Orders, Traffic Orders, Recent Change Orders, etc. Normally, company order type work is something done to install, establish, change, or discontinue some service offered by the telephone company.

Trouble Clearing

is simply what it says - that work you do to clear and repair troubles in the system. Trouble clearing may be done in answering a customer complaint, responding to some office alarm, an abnormal TTY printout, etc.

Try to fix these four work types firmly in your mind. As you will see, you must classify each job you get in one of these four types before you will be able to look up the instructions in the TOP.

Now glance briefly at the front cover; there are several things which will be useful there. In the upper-right corner is the 9-digit volume number. Near the center is the volume title which tells you something about the contents - such things as the system (or subsystem) name and perhaps the type of jobs included in the volume. Next is a four-line index located in the lower-left corner. This index provides the location of four "lists" which are simply a listing of all the jobs in each of the four job types. If a nine-digit (XXX-XXX-XXX) number appears on

the front cover index, that particular list is located in another volume of the TOP. A three-digit number on the line means that the list is in this volume, and the list can be located by searching the lower-right corner of each page for the referenced number.

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These numbers will always be arranged in numerical order; however, all numbers in the sequence will not be used.

Some TOP volumes may cover only a small part of a system, so on the inside of each front cover you will find a documentation plan. This plan will give a bird's-eye view of all the volumes in the TOP and can help you quickly determine the correct volume.

Locate one of the TOP volumes which contains a Company Order List, and note from the front cover that this list is numbered "050." Turn to that number in the TOP.

This Company Order List (COL) is simply a listing of all the Circuit Order jobs, Service Order jobs, etc, that may be done on this system. Once you know the job you have to do, use the lists as an index to find the number of the "procedure" which tells you *what to do* to complete that job.

Now pick one of these jobs from the list which references to a COP (Company Order Procedure), and using the referenced number, locate that procedure in the TOP. Look over this procedure and note that it gives all the items which must be done to complete the job.

The items are numbered and must be completed in that order; however, you may see some lettered (A, B, C...) items in the procedure. These letters are assigned to options or other items which may be done differently because of equipment variations, etc. Look over the following example to get a better idea of what is meant by the numbers (1, 2, 3...) and letters (A, B, C...) which may be used in the procedure.

ITEM	SUBTASKS	PROCEDURE NUMBER
1	Do the first thing first	DLP-XXX
2	Do the second item next	DLP-XXX
3	Do the following optional items as required by the Company Order or as is required by the system you are working on	
	A. An optional item	DLP-XXX
	B. Another optional item	-
	C. Another optional item which must be done in the sequence below	
	1. First part of Option "C"	DLP-XXX
	2. Last part of Option "C"	DLP-XXX
4	Do the next part of the job	DLP-XXX
5	Do the last part of the job	DLP-XXX

Remember that this procedure tells you *what* to do in order to complete the total job. If you know *how* to do an item in the procedure, you should go ahead and complete it. If you need further information on *how* to do part of the job, then you should turn to the referenced DLP or Detail Level Procedure. When you complete all the steps in the DLP, then you must turn back to the COP or Company Order Procedure to find the next item to be done.

TOP is designed so that you will have to read only what is necessary to get your job done. At any time when you know how to perform all the steps in an item, it is not necessary to look further for the "how to" information - simply complete the item and go on to the next one. This idea, in TOP, is known as "bypassing."

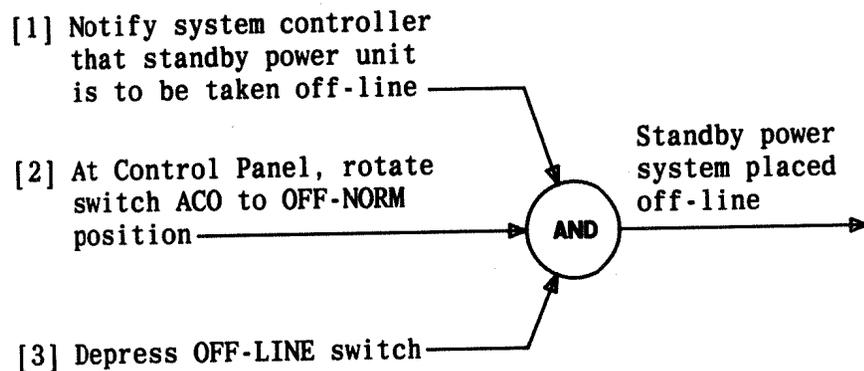
Here are some of the things designed into TOP to help you "bypass" information you may already know:

Summary Statement

A summary statement is used with a DLP (or the flow-charted procedures). It tells you briefly what the procedure does and what type measurement or result can be observed. After reading the summary, you may be able to complete the procedure without reading further. Some shorter DLPs, of course, do not have summary statements.

Result Statement

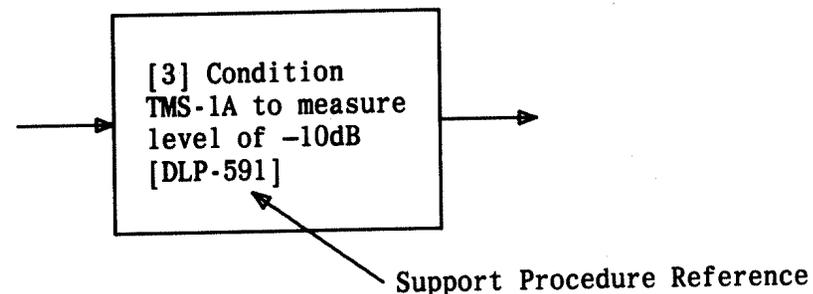
A result statement may be used in a flow-charted procedure along with the "AND" symbol. Here is an example of the "AND" symbol and a *result statement*:



When using a procedure, read the result statement first. If you know how to place standby power system in off-line status, it would be unnecessary to read steps 1, 2, and 3.

Support Procedures

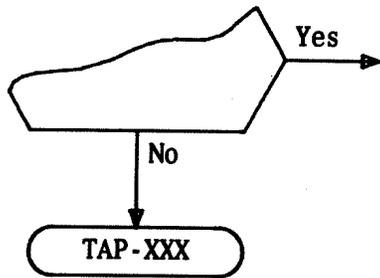
When you see this kind of reference in TOP, it refers to a support procedure.



The support procedure (DLP-591) would provide information about how to operate the TMS-1A. Of course, if you are familiar with the TMS-1A, there is no reason to look up DLP-591.

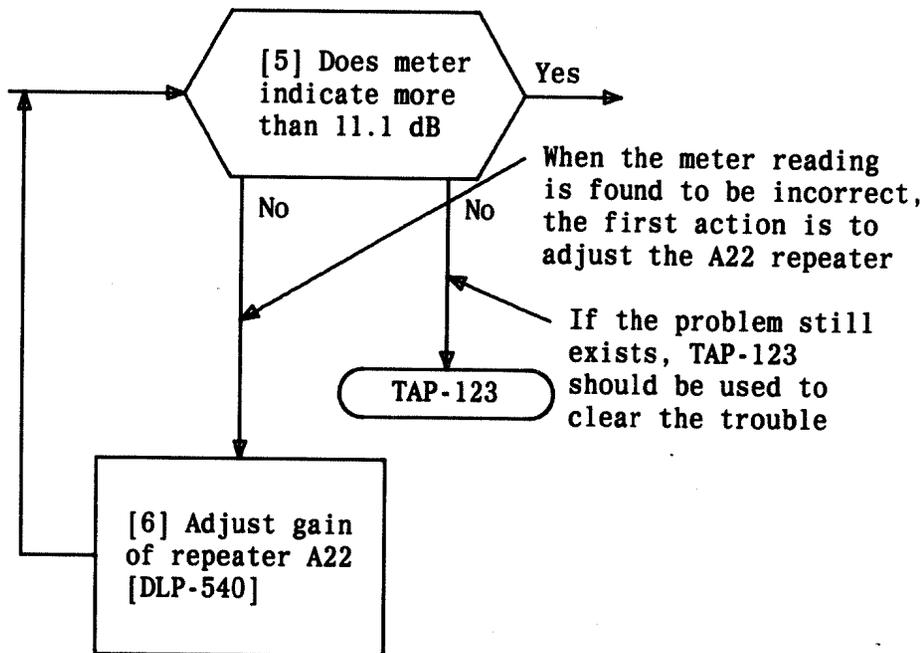
So far, the Company Order type jobs have been the main topic; however, you will find that the Routine and Acceptance categories are used in the same manner. You may come across a couple of new abbreviations in those categories, namely, Acceptance Task Procedure (ATP) and Routine Task Procedure (RTP). These categories are used in the same way that the Company Order Procedure (COP) is used in the Company Order work.

While using TOP, you probably will run across a reference similar to this:



This reference to TAP-XXX indicates that the equipment is not operating correctly and the TAP (Trouble Analysis Procedure) should be used to help you find and repair the trouble.

This idea can be carried further. In some cases, a decision block may have more than one abnormal output. This simply means that you should try more than one solution to the problem. See the example below.



Trouble clearing information in TOP is basically used the same way as the other types. When a trouble report or equipment alarm requires you to troubleshoot a system, the Trouble Indicator List (TIL) is the place to start. This (TIL) is a listing of trouble symptoms or alarms with a reference to a Trouble Analysis Procedure (TAP). The TAP is an aid in analyzing and locating the cause of the trouble. The TAP may reference to other information such as a Trouble Analysis Data (TAD) or an Isolation Diagram (ISD) as an aid in the trouble clearing process.

Any job must always be done safely and it is no different with TOP. Here are three items which you should look for in TOP:



- means there is a possibility of personal injury



- means there is a possibility of service interruption



- means there is a possibility of equipment damage

The last page of this introductory section is a diagram which shows all the elements used to make up a TOP and basically how they are organized to make a complete document. The diagram may, at first, seem to be complex; but remember, TOP is a programmed document and it always tells you where to find the next bit of information required to do the job. The diagram, however, may be useful later if you need to know the words which DLP, TAP, etc, represent or simply a memory jogger about TOP in general.

While using any TOP, if you find errors, or if a procedure is inadequate or missing, your comments are greatly needed. They may be forwarded by using the standard form E3973 which is available through your Company. Thank you for helping us prepare better documentation.

