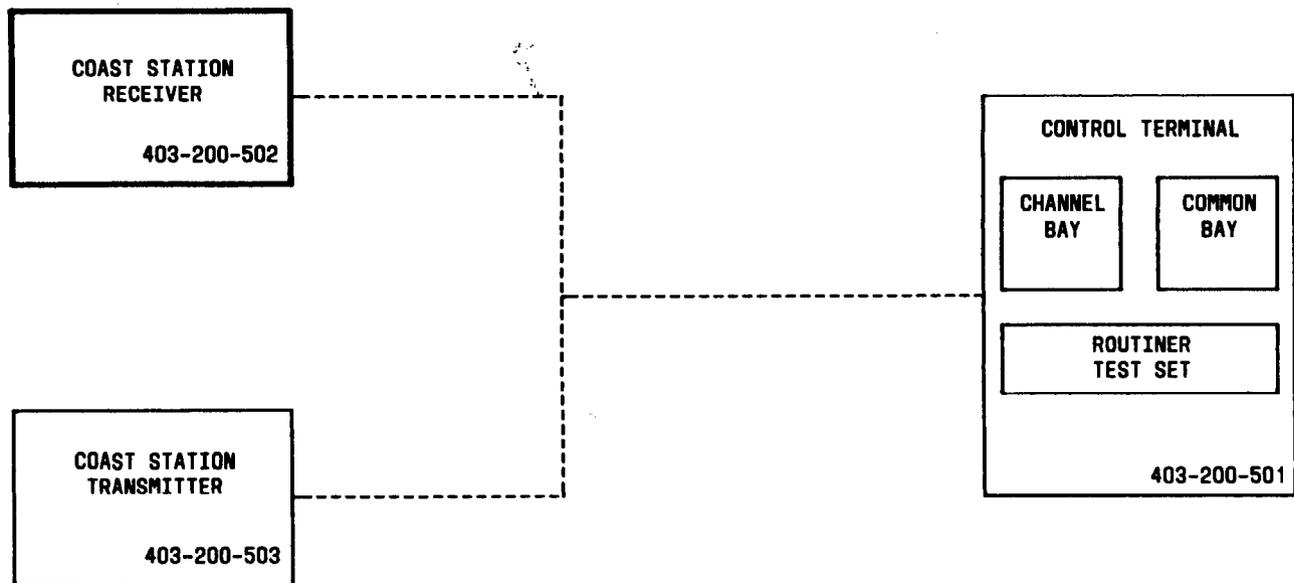


**MM COASTAL HARBOR RADIO
TOP DOCUMENTATION
THREE VOLUMES**



TPA 648578
BSP 403-200-502
DOC PLAN
40W X 26H

Task Oriented Practice
(TOP)

MM COASTAL HARBOR RADIO SYSTEM

COAST STATION RECEIVERS

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

Printed in U.S.A.

ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE
CHECKLIST		DLP-500		DLP-535							
RTL-001		DLP-501		DLP-536							
RTP-002		DLP-502		DLP-537							
RTP-003		DLP-503		DLP-538							
RTP-004		DLP-504		DLP-539							
ATL-030		DLP-505		IXL-890							
ATP-031		DLP-506									
COL-050		DLP-507									
TIL-095		DLP-508									
TAP-100		DLP-509									
TAP-101		DLP-510									
TAP-102		DLP-511									
TAP-103		DLP-512									
TAP-104		DLP-513									
TAP-105		DLP-514									
TAP-106		DLP-515									
TAP-107		DLP-516									
TAP-108		DLP-517									
TAP-109		DLP-518									
TAP-110		DLP-519									
TAP-111		DLP-520									
TAP-112		DLP-521									
TAP-113		DLP-522									
TAP-114		DLP-523									
TAD-115		DLP-524									
TAP-116		DLP-525									
TAD-117		DLP-526									
TAP-118		DLP-527									
TAD-119		DLP-528									
TAP-120		DLP-529									
TAP-121		DLP-530									
TAP-122		DLP-531									
TAP-123		DLP-532									
TAP-124		DLP-533									
TAD-125		DLP-534									
<input checked="" type="checkbox"/> REVISED OR ADDED ITEM <input type="checkbox"/> CANCELED ITEM									Issue 2	FEB 1979	
CHECKLIST									403-200-502	CKL	
									PAGE 1 of 1	000	

JOB NO.	ROUTINE TASKS	CLASS.	FREQ	PROCEDURE NUMBER
	MEASURE RECEIVER AFC, S/N THRESHOLD, CODAN, AND RF SIGNALING LEVEL	MW	3M	RTP-002
	SET AGC REFERENCE LEVEL	MW	3M	DLP-500
	MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL	MW	3M	DLP-502
	TEST RECEIVER TO CONTROL TERMINAL AC ON SIGNALING	MW	1M	DLP-504
	MEASURE RECEIVER POWER SUPPLY VOLTAGES	MW	3M	DLP-513
	MEASURE RECEIVER OSCILLATOR FREQUENCIES	MW	3M	DLP-514
	MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS	MW	3M	DLP-516
	MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES	MW	3M	DLP-517
	MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE	MW	3M	DLP-518
	MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL	MW	3M	DLP-519
	MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS	MW	3M	DLP-520
	MEASURE CONTROL TERMINAL TO RECEIVER 1000-HZ TONE LEVEL	MW	3M	DLP-521
	TEST RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND B ALARM SIGNALING	MW	1M	RTP-003
	TEST RECEIVER RESPONSE TO CONTROL TERMINAL SIGNALING	MW	3M	RTP-004
	SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS	MW	3M	DLP-525

ROUTINE TASK LIST - COAST STATION RECEIVERS

Issue 2 FEB 1979

403-200-502

RTL

PAGE 1 of 1

001

ITEM	SUBTASKS	PROCEDURE NUMBER
1	TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)	DLP-515
2	SET S/N THRESHOLD LEVEL	DLP-501
3	TEST RECEIVER CODAN	DLP-505
4	TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING	DLP-530
MEASURE RECEIVER AFC, S/N THRESHOLD, CODAN, AND RF LEVEL SIGNALING		Issue 2
		FEB 1979
		403-200-502
		RTP
		PAGE 1 of 1
		002

ITEM	SUBTASKS	PROCEDURE NUMBER
1	TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING	DLP-506
2	TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING	DLP-507
3	TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING	DLP-508
4	TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING	DLP-509
TEST RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND B ALARM SIGNALING		Issue 2 FEB 1979
		403-200-502 RTP
		PAGE 1 of 1 003

ITEM	SUBTASKS	PROCEDURE NUMBER
1	TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE COMMANDS FROM CONTROL TERMINAL	DLP-510
2	TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL	DLP-511
3	TEST RECEIVER RESPONSE TO FREEZE COMMAND FROM CONTROL TERMINAL	DLP-512
TEST RECEIVER RESPONSE TO CONTROL TERMINAL SIGNALING		Issue 2
		FEB 1979
		403-200-502
		RTP
		PAGE 1 of 1
		004

ACCEPTANCE TASKS	PROCEDURE NUMBER	
ACCEPT RADIO RECEIVER	ATP-031	
ACCEPTANCE TASK LIST – COAST STATION RECEIVERS	Issue 2	FEB 1979
	403-200-502	ATL
	PAGE 1 of 1	030

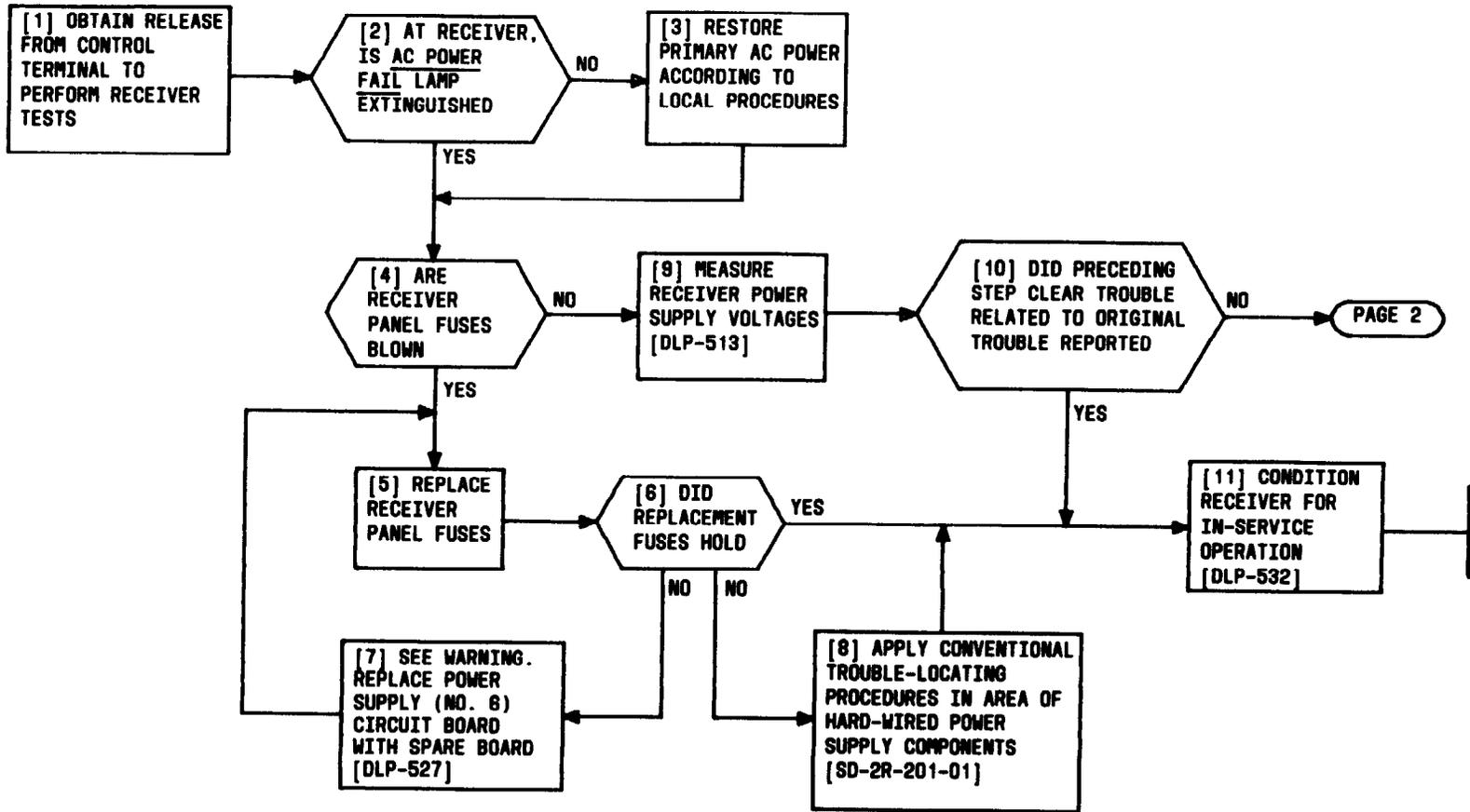
ITEM	SUBTASKS	PROCEDURE NUMBER
1	MEASURE RECEIVER POWER SUPPLY VOLTAGES	DLP-513
2	MEASURE RECEIVER OSCILLATOR FREQUENCIES	DLP-514
3	SET AGC REFERENCE LEVEL	DLP-500
4	SET S/N THRESHOLD LEVEL	DLP-501
5	MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL	DLP-502
6	TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)	DLP-515
7	MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL	DLP-503
8	MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS	DLP-516
9	MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES	DLP-517
10	MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE	DLP-518
11	TEST RECEIVER TO CONTROL TERMINAL AC ON SIGNALING	DLP-504
12	TEST RECEIVER CODAN	DLP-505
13	TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING	DLP-506
14	TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING	DLP-507
15	TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING	DLP-508
16	TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING	DLP-509
17	TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING	DLP-530
18	TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE COMMANDS FROM CONTROL TERMINAL	DLP-510
19	TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL	DLP-511
20	TEST RECEIVER RESPONSE TO FREEZE COMMAND FROM CONTROL TERMINAL	DLP-512

ACCEPT RADIO RECEIVER

Issue 2	FEB 1979
403-200-502	ATP
PAGE 1 of 1	031

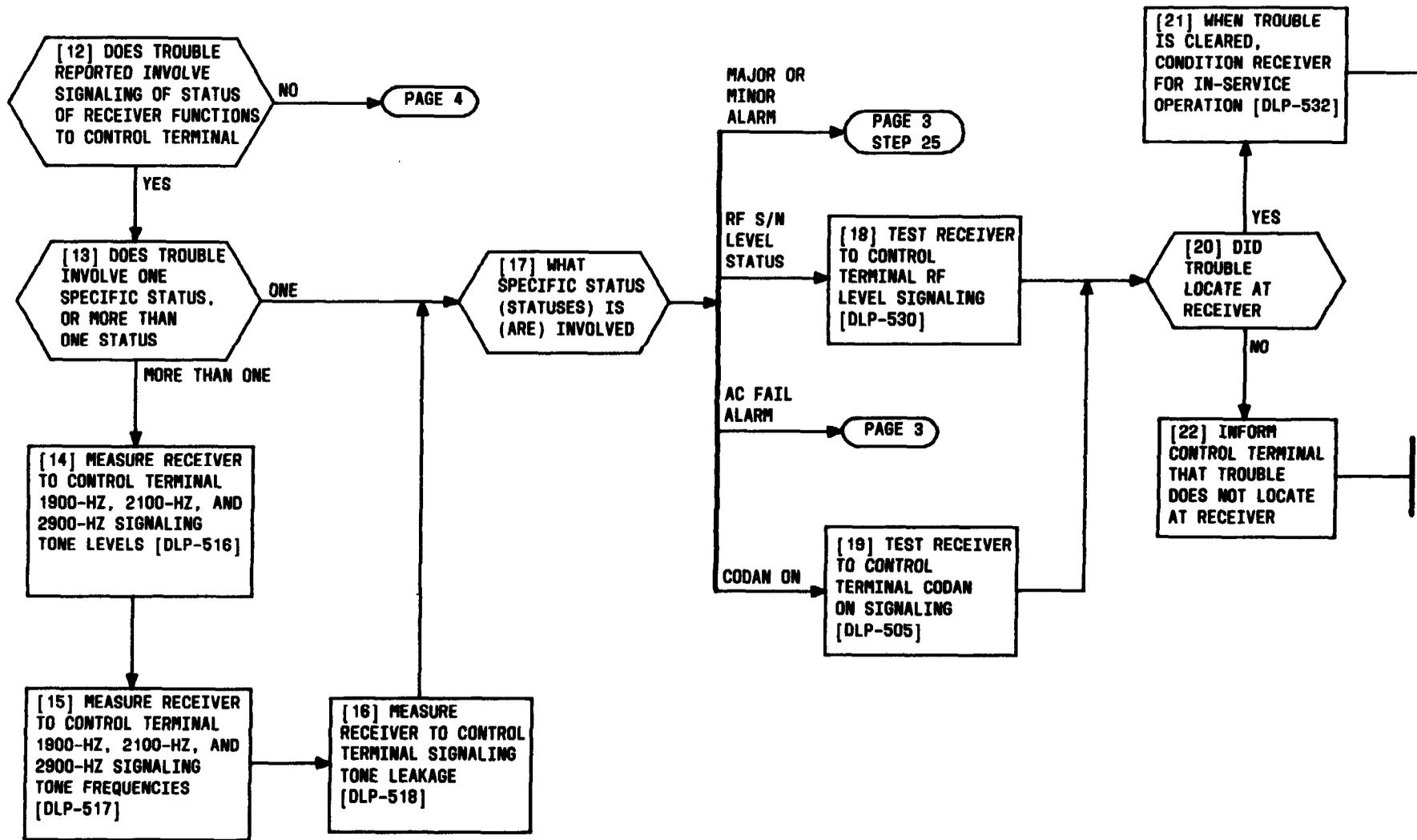
COMPANY ORDER TASKS	PROCEDURE NUMBER
NONE REQUIRED	
CIRCUIT ORDER LIST - COAST STATION RECEIVERS	Issue 2 FEB 1979
	403-200-502 COL
	PAGE 1 of 1 050

TROUBLE INDICATED	MAY ALSO BE REPORTED AS	PROCEDURE NUMBER
MAINTENANCE PHILOSOPHY		TAD-102
TROUBLE REPORTS LOCATE RECEIVER FAULT FROM TROUBLE REPORT		TAD-100



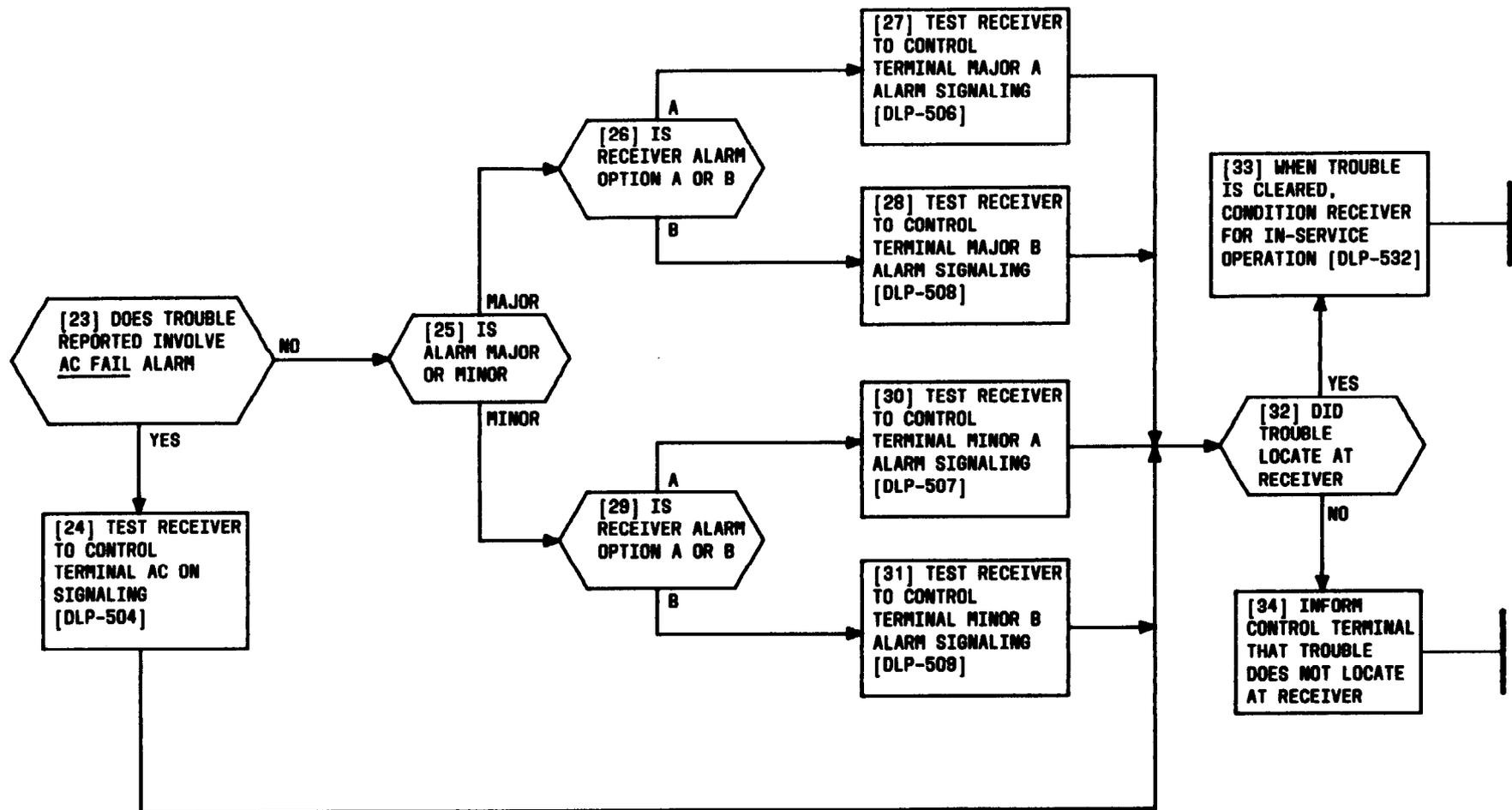
LOCATE RECEIVER FAULT FROM TROUBLE REPORT

WARNING	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 10	100



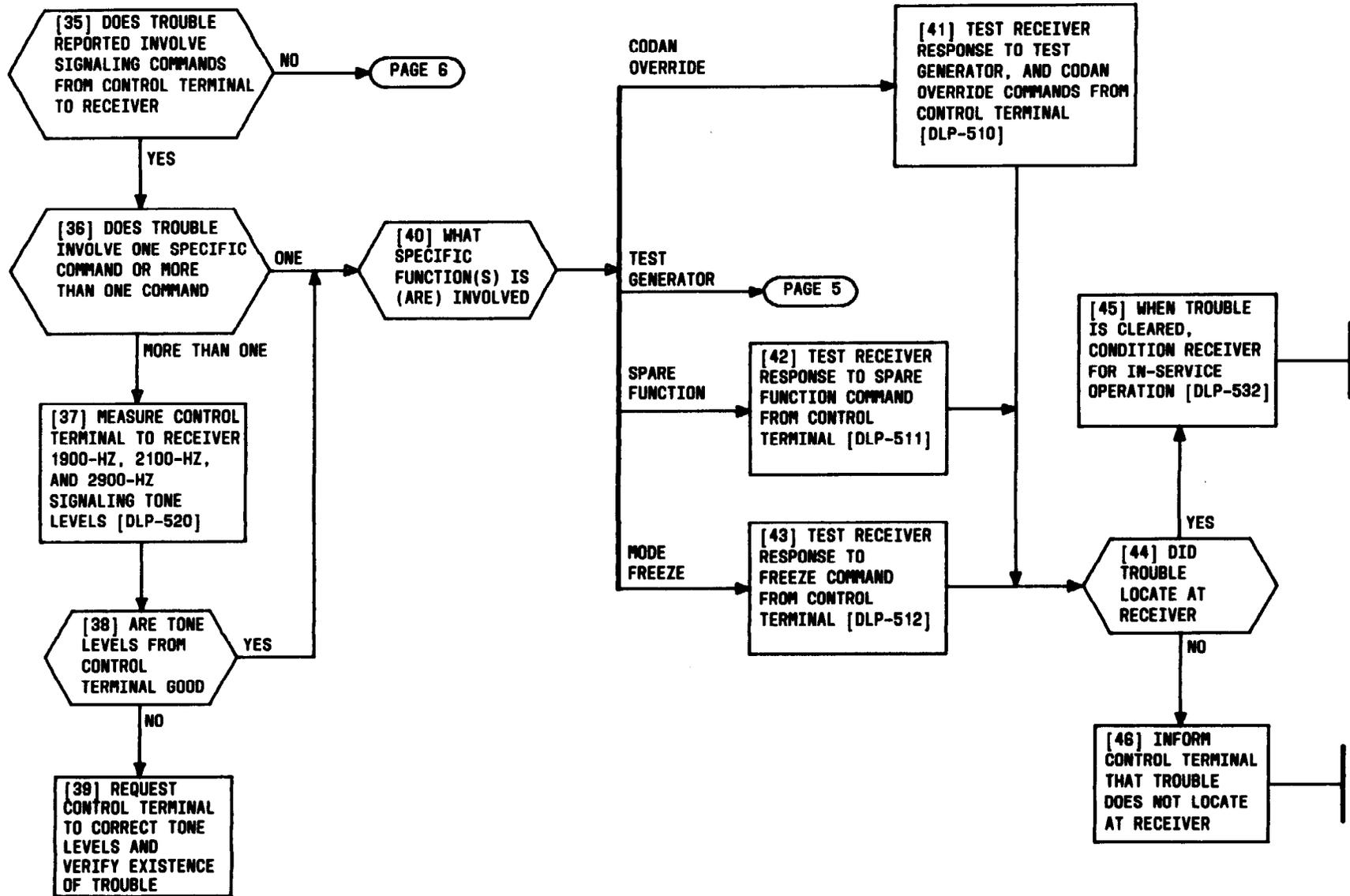
LOCATE RECEIVER FAULT FROM TROUBLE REPORT

Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 10	100



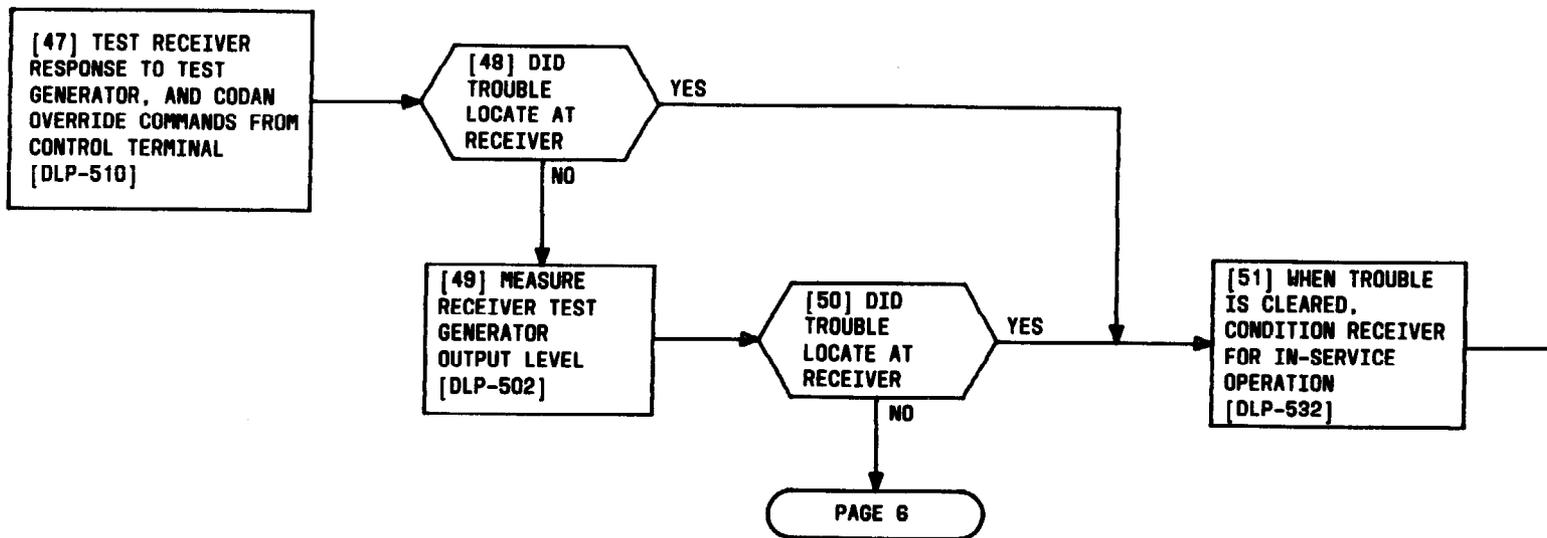
LOCATE RECEIVER FAULT FROM TROUBLE REPORT

Issue 2	FEB 1979
403-200-502	TAP
PAGE 3 of 10	100



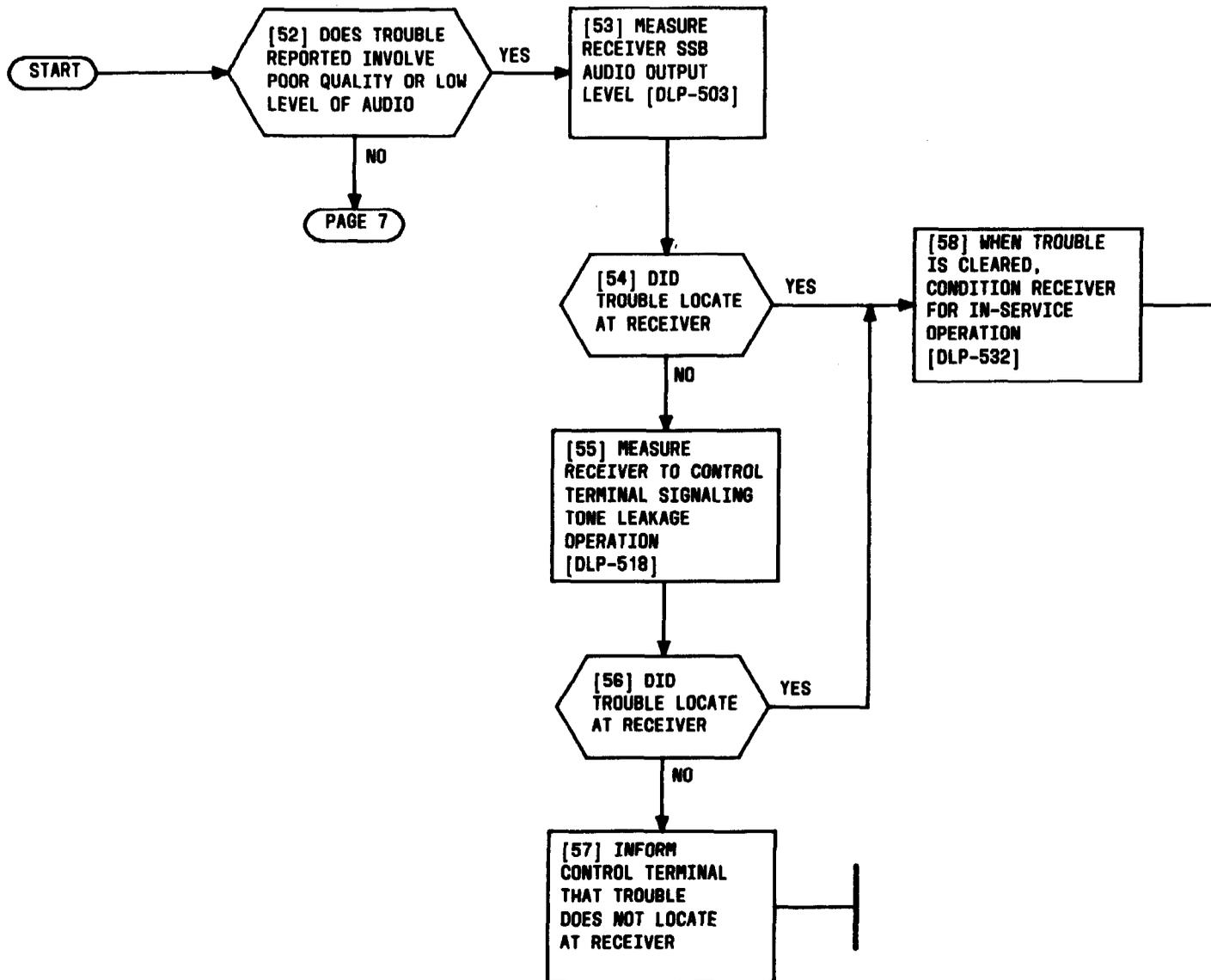
LOCATE RECEIVER FAULT FROM TROUBLE REPORT

Issue 2	FEB 1979
403-200-502	TAP
PAGE 4 of 10	100



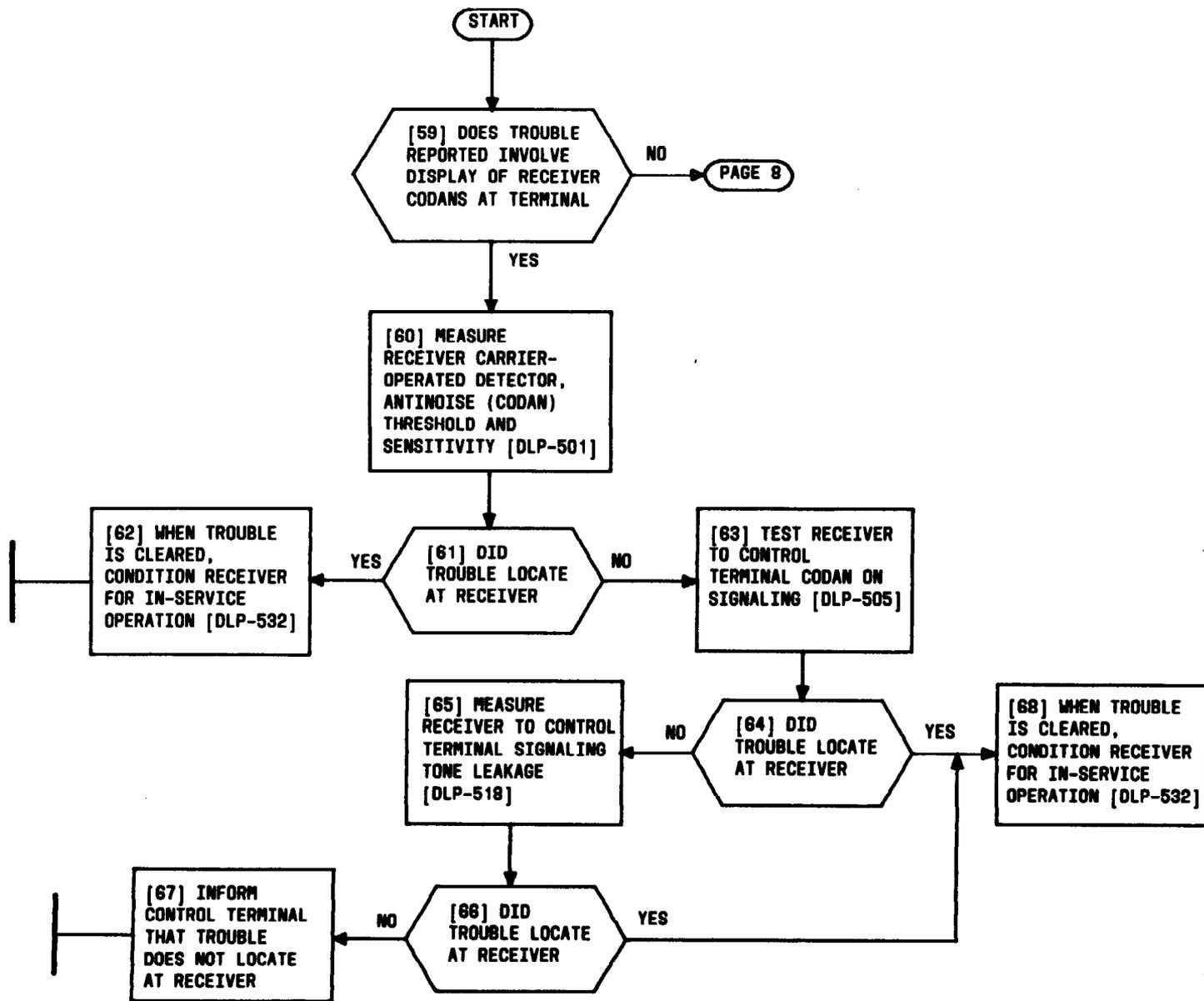
LOCATE RECEIVER FAULT FROM TROUBLE REPORT

Issue 2	FEB 1979
403-200-502	TAP
PAGE 5 of 10	100



LOCATE RECEIVER FAULT FROM TROUBLE REPORT

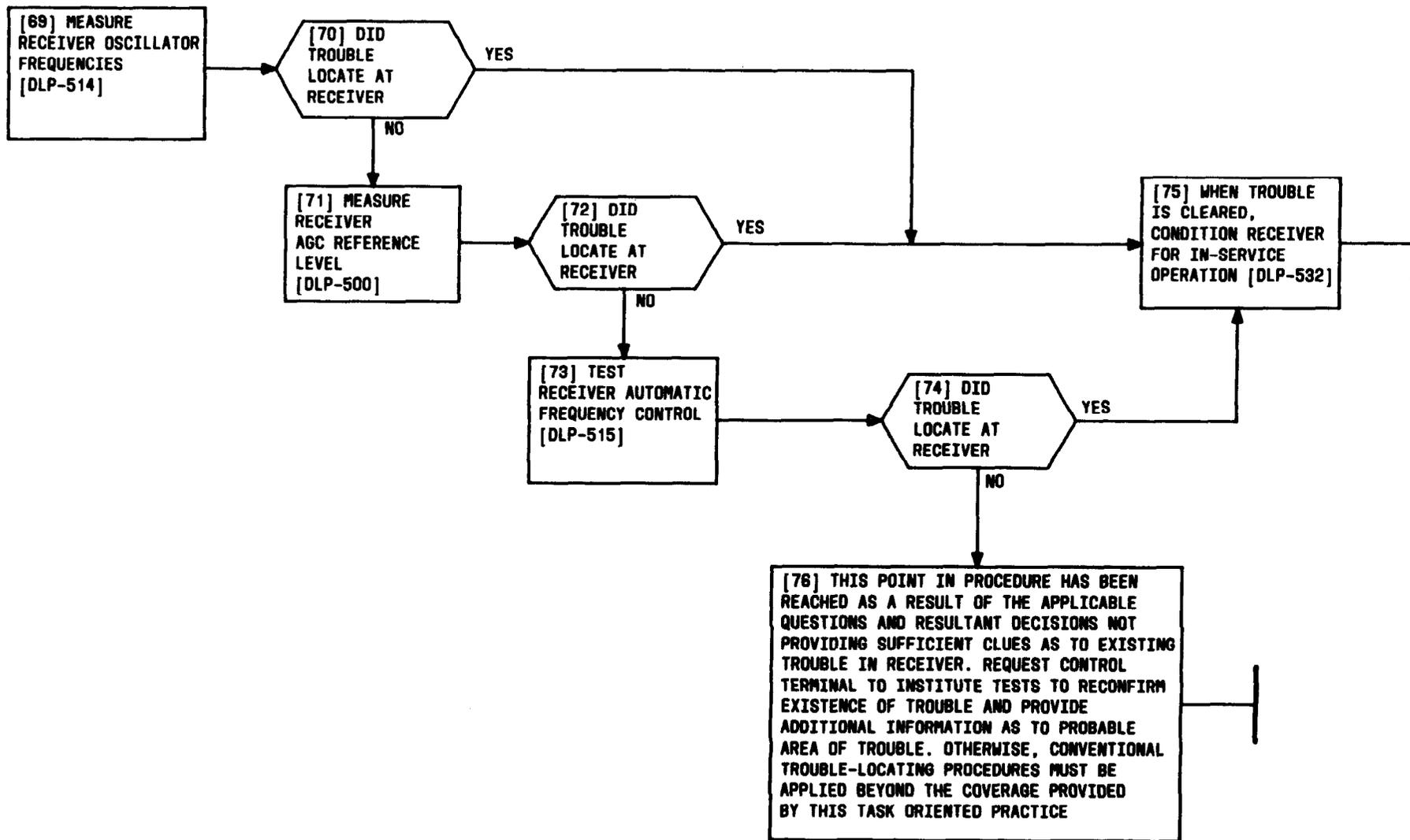
Issue 2	FEB 1979
403-200-502	TAP
PAGE 6 of 10	100



NOTE
 A REAL CODAN IS DEFINED AS RESPONSE TO A 250-MILLISECOND OR LONGER RF SIGNAL INITIATED BY A SHIP ATTEMPTING TO TRANSMIT. CODANA SHOULD BE INDICATED AT TERMINAL BUT MAY NOT BE, DUE TO A FAULT AT RECEIVER. A FALSE CODAN IS DEFINED AS OPERATION PER ABOVE BUT DUE TO CIRCUIT FAULT OR NOISE RATHER THAN DUE TO RF SIGNAL

Issue 2	FEB 1979
403-200-502	TAP
PAGE 7 of 10	100

LOCATE RECEIVER FAULT FROM TROUBLE REPORT



LOCATE RECEIVER FAULT FROM TROUBLE REPORT

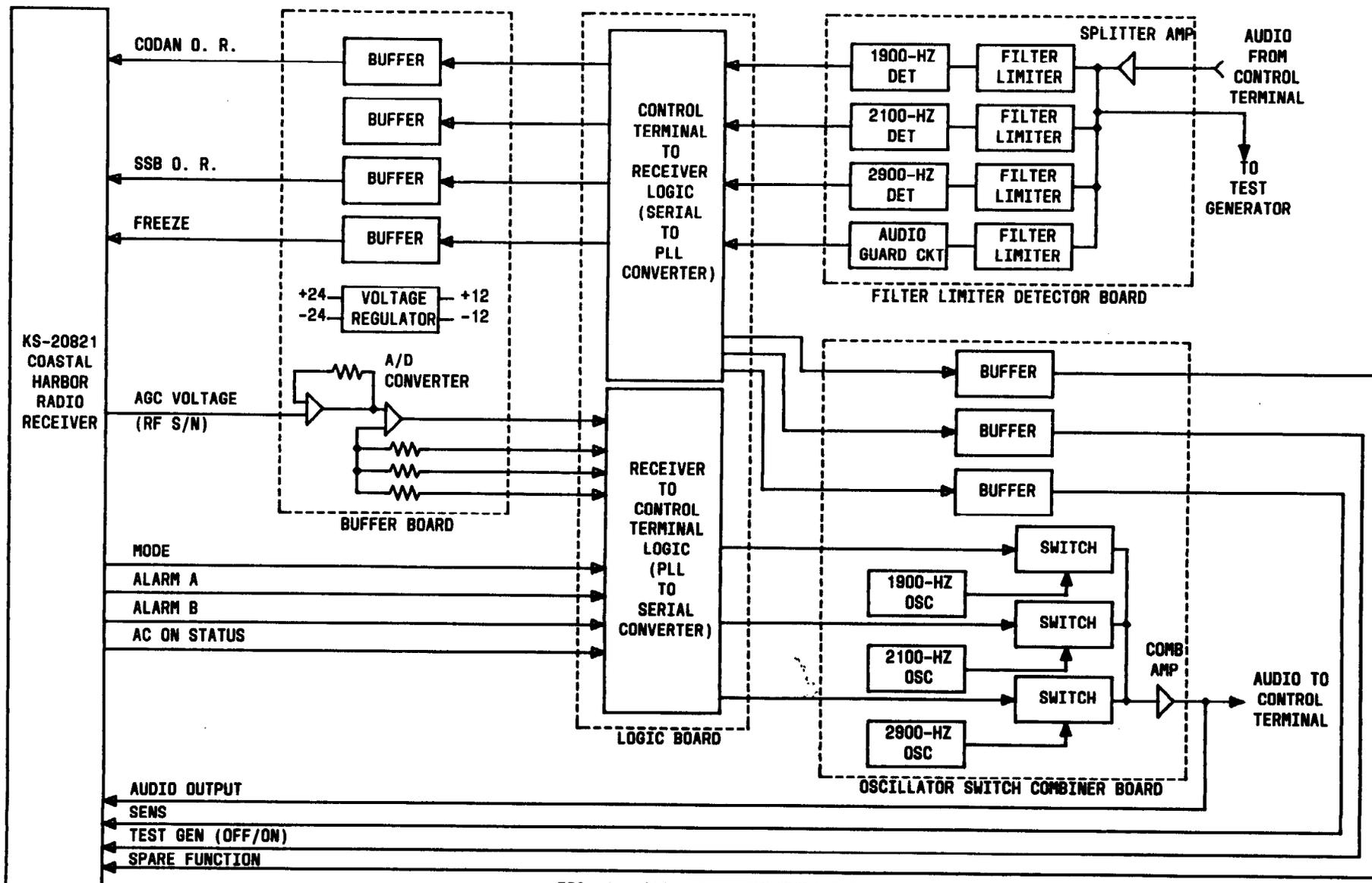


FIG. 1 - SIGNALING FUNCTIONS BLOCK DIAGRAM
(SD-2R-110-01)

LOCATE RECEIVER FAULT FROM TROUBLE REPORT

Issue 2	FEB 1979
403-200-502	TAP
PAGE 9 of 10	100

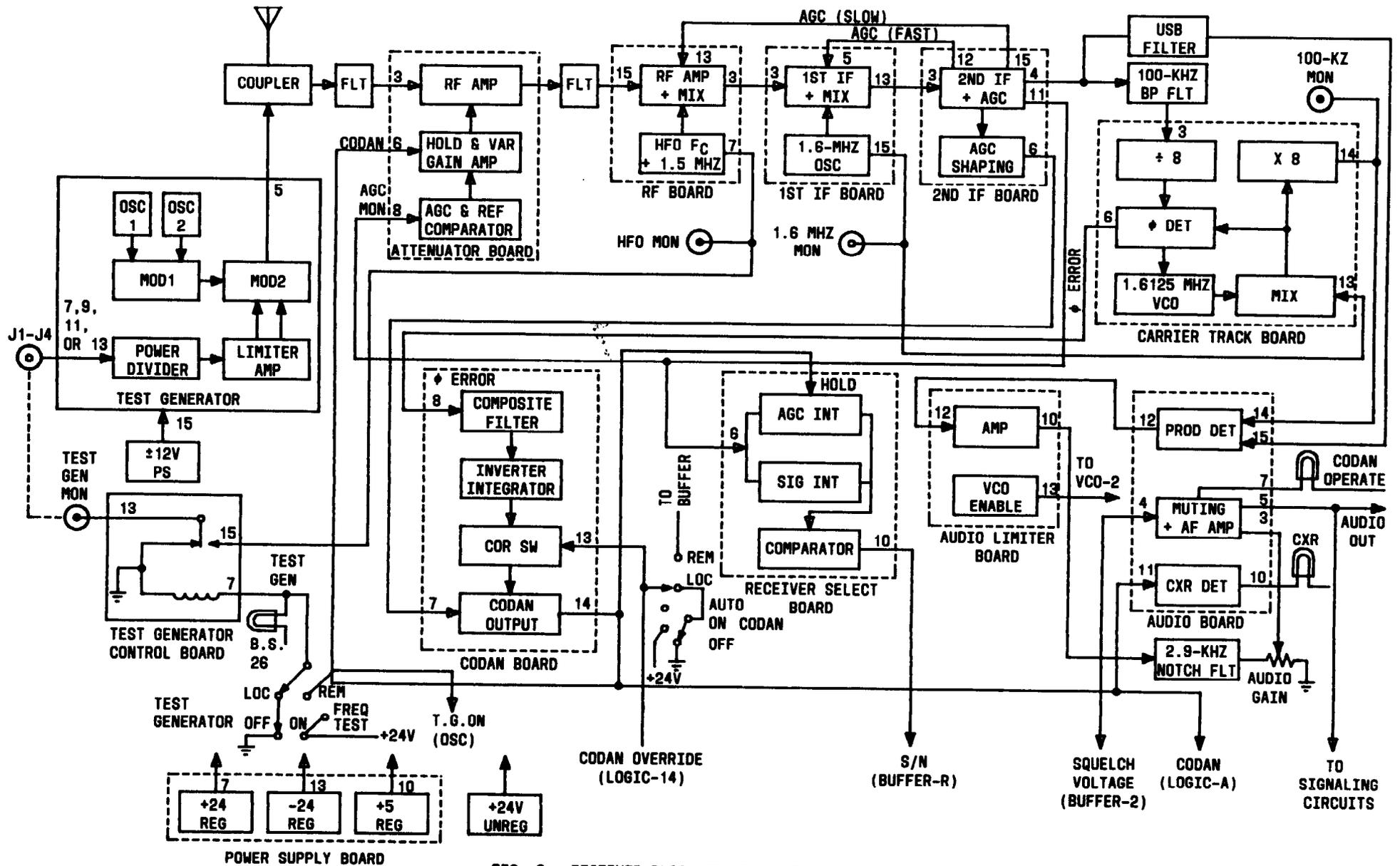


FIG. 2 - RECEIVER BLOCK DIAGRAM (SD-2R-201-01)

LOCATE RECEIVER FAULT FROM TROUBLE REPORT

Issue 2	FEB 1979
403-200-502	TAP
PAGE 10 of 10	100

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO LOC POSITION

[3] PERFORM DLP-527 TO REPLACE BUFFER (NO. 1), OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), AND LOGIC (NO. 3) CIRCUIT BOARDS WITH SPARE BOARDS. RERUN TEST

[4] IS TROUBLE CLEARED

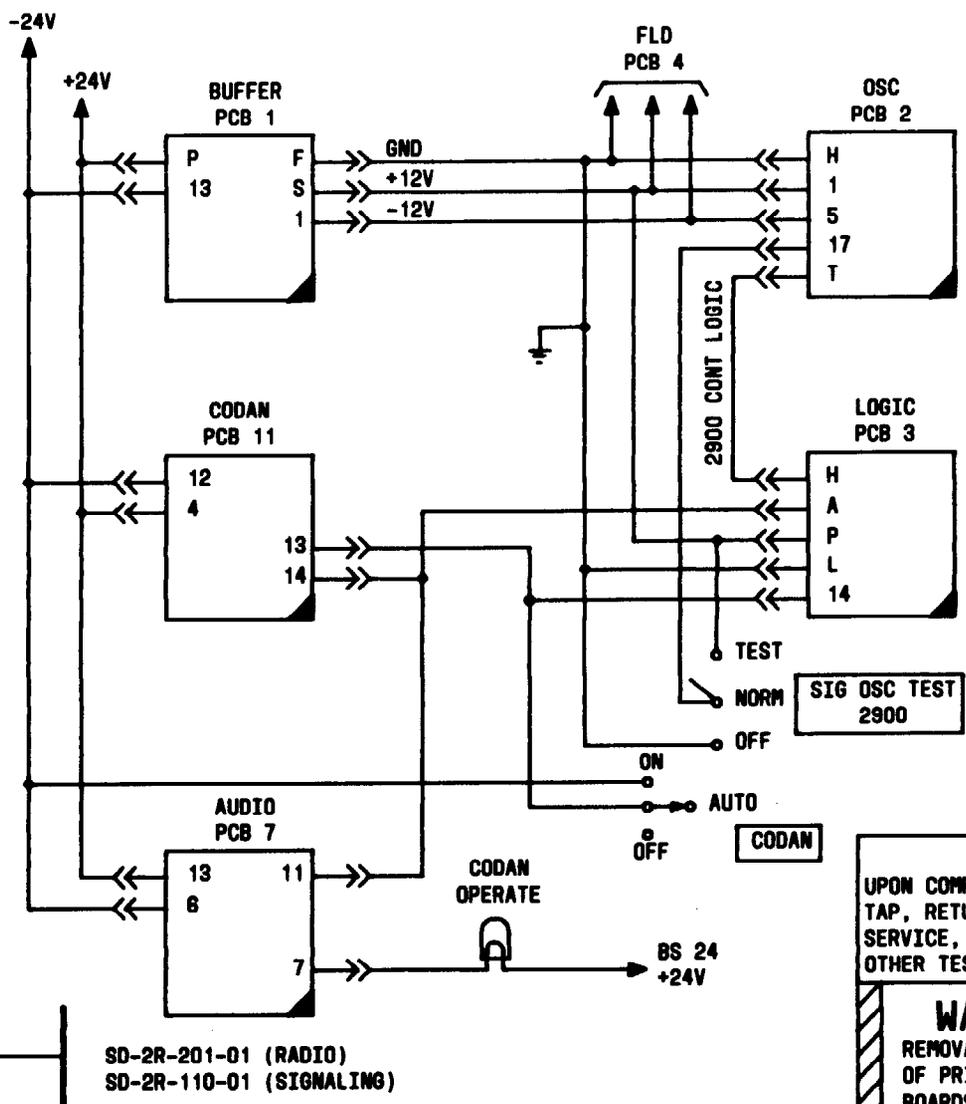
NO

PAGE 2

YES

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE



SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALLING)

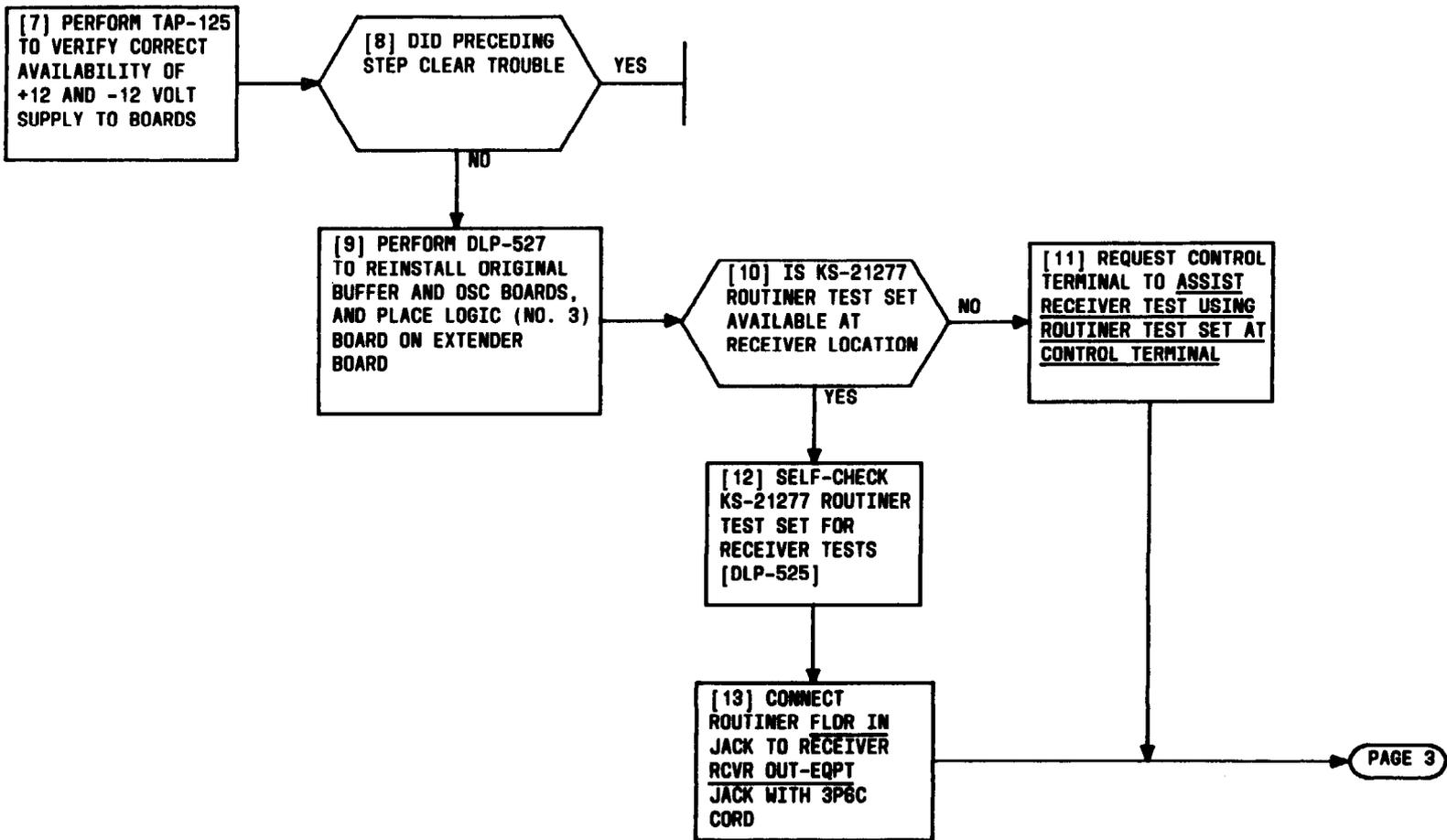
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

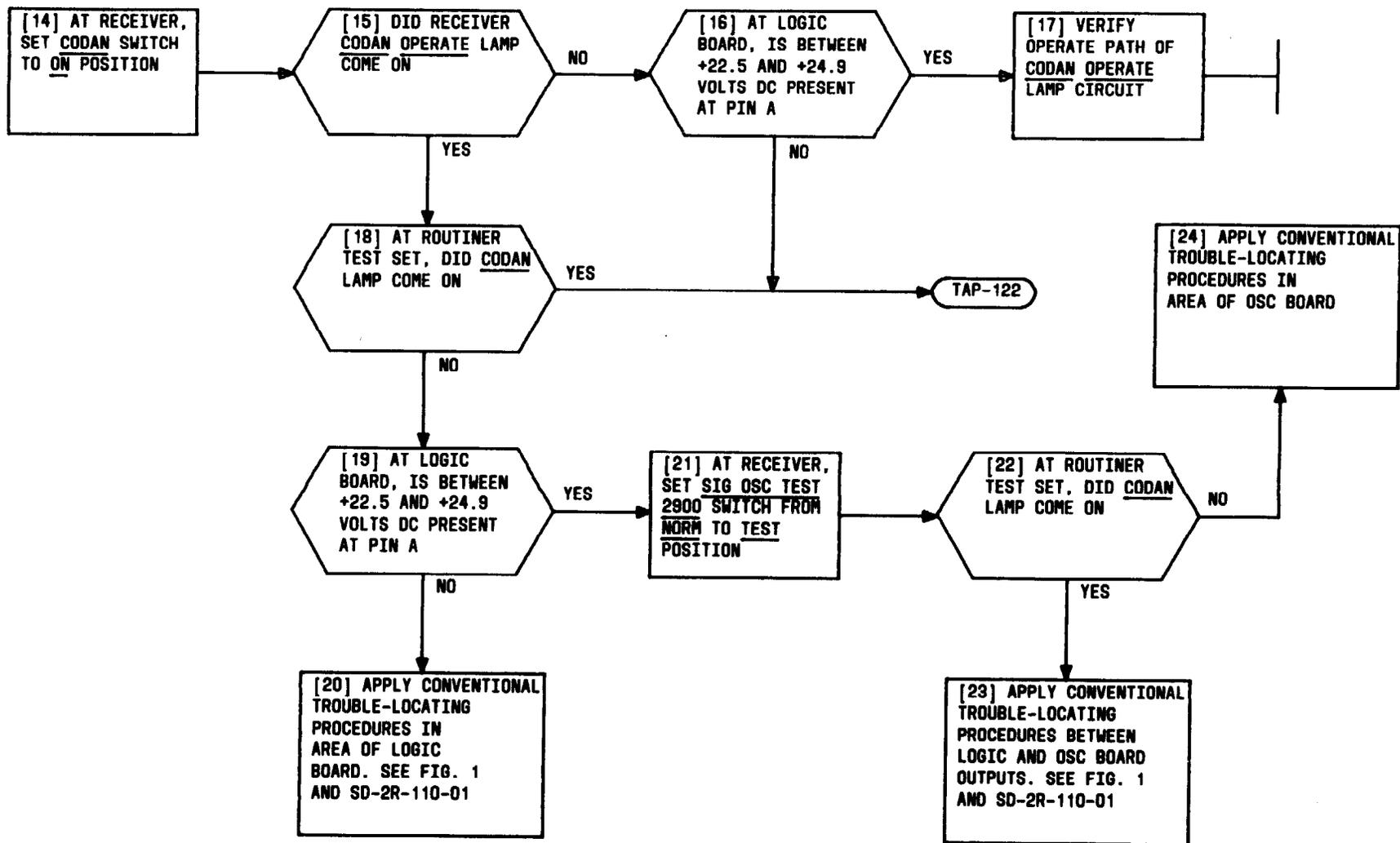
Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 3	101

CLEAR 2900-HZ CODAN ON TROUBLE



CLEAR 2900-HZ CODAN ON TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 3	101



CLEAR 2900-HZ CODAN ON TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 3 of 3	101

PREVENTIVE AND CORRECTIVE MAINTENANCE

COASTAL HARBOR RADIO MAINTENANCE PHILOSOPHY IS BASED UPON (A) PREVENTIVE MAINTENANCE AS REPRESENTED BY THE ROUTINE TASKS LISTED ON THE ROUTINE TASK LIST (RTL) AND (B) CORRECTIVE MAINTENANCE AS REPRESENTED BY THE TROUBLE ANALYSIS PROCEDURES (TAP) REFERENCED FROM ROUTINE TASKS AND THE TROUBLE INDICATOR LIST (TIL). THE MAINTENANCE COVERAGE, AS CONTAINED IN THE THREE TOP VOLUMES, IS STRUCTURED AND DESIGNED TO VERIFY OVERALL SYSTEM PERFORMANCE AND TO ISOLATE AND IDENTIFY TROUBLES IN THE CONTROL TERMINAL, SWITCHBOARD, SWITCHBOARD INTERFACE, RADIO RECEIVER, RADIO TRANSMITTER, AND TRANSMISSION FACILITY. A GENERAL DESCRIPTION OF THE STRUCTURE AND PHILOSOPHY OF USE FOR COASTAL HARBOR PREVENTIVE AND CORRECTIVE MAINTENANCE IS GIVEN BELOW

PREVENTIVE MAINTENANCE: AS SHOWN IN FIG. 1 ROUTINE TASKS MAKE UP A PREVENTIVE MAINTENANCE PROGRAM DESIGNED TO VERIFY THE FUNCTIONAL CONDITION OF MAJOR CIRCUIT OPERATIONS NECESSARY TO PROPER PERFORMANCE OF SYSTEM DESIGN CAPABILITIES. CORRECT PERFORMANCE OF THE ROUTINE TASKS ON A REGULARLY SCHEDULED INTERVAL PROVIDES A HIGH DEGREE OF CONFIDENCE IN SYSTEM READINESS AND OPERATION. THE CONTROL TERMINAL IS THE CENTER OF MAINTENANCE ACTIVITY. CONTROL TERMINAL ROUTINE TASKS (VOLUME 1) ARE DESIGNED

TO (A) TEST CONTROL TERMINAL FUNCTIONS ONLY, (B) TEST TERMINAL-TO-RECEIVER FUNCTIONS, AND (C) TEST TERMINAL-TO-TRANSMITTER FUNCTIONS. ROUTINE TASKS ON THE RECEIVER (VOLUME 2) AND TRANSMITTER (VOLUME 3) ARE STRUCTURED TO (A) TEST RECEIVER/TRANSMITTER FUNCTIONS AT THE RECEIVER/TRANSMITTER SITE WITH AND WITHOUT ASSISTANCE FROM THE CONTROL TERMINAL AND (B) TEST RECEIVER/TRANSMITTER-TO-CONTROL TERMINAL FUNCTIONS WITH ASSISTANCE AT CONTROL TERMINAL. MANY OF THE ROUTINE TASKS IN EACH OF THE THREE VOLUMES USE THE ROUTINER TEST SET TO VERIFY FUNCTIONAL OPERATIONS. PROCEDURES ARE GIVEN FOR USING THE ROUTINER AT CONTROL TERMINAL OR RECEIVER/TRANSMITTER SITE.

ALL ROUTINE TASKS PERFORMED AT THE CONTROL TERMINAL ARE DESIGNED FOR THE PUBLIC CORRESPONDENCE CHANNELS UNLESS SPECIFICALLY REFERRED TO WITHIN THE ROUTINE TITLE AS SAFETY AND CALLING. ROUTINE TASKS PERFORMED ON THE RECEIVERS AND TRANSMITTERS ASSOCIATED WITH THE SAFETY AND CALLING CHANNEL MUST BE COORDINATED IN ACCORDANCE WITH LOCAL OPERATING PROCEDURES. THE PERFORMANCE OF ALL ROUTINE TASKS FOR COASTAL HARBOR RADIO IS

BASED ON THE FOLLOWING:

1. PERMISSION HAS BEEN OBTAINED TO USE CHANNEL AND RUN TEST IN ACCORDANCE WITH LOCAL OPERATING PROCEDURES
2. NO ALARM CONDITIONS EXIST
3. ALL SYSTEM OPERATING CONTROLS ARE IN THEIR NORMAL POSITIONS

CORRECTIVE MAINTENANCE: WHEN A TROUBLE REPORT IS RECEIVED OR AN ALARM IS ACTIVATED, CORRECTIVE MAINTENANCE PROCEDURES (VOLUME 1) PROVIDE DIRECTION TO DETERMINE WHETHER THE TROUBLE IS VALID AND IF SO, WHETHER THE TROUBLE LOCATES IN CONTROL TERMINAL, RECEIVER, OR TRANSMITTER. TROUBLE ANALYSIS PROCEDURES (TAP) KEYED TO TROUBLE REPORTS AND ALARM INDICATIONS, AS REFERENCED FROM THE TROUBLE INDICATOR LIST (TIL), CONTAIN CORRECTIVE MAINTENANCE PROCEDURES [FIG. 2] TO VERIFY AND LOCATE TROUBLES AND CORRECT FAULTS. CORRECTIVE MAINTENANCE FOR FAULTS WHICH ARE IDENTIFIED DURING ROUTINE TASKS AT THE CONTROL TERMINAL, RECEIVER, OR TRANSMITTER IS PROVIDED EITHER ON THE ROUTINE TASK OR ON THE APPROPRIATE TAP.

IN GENERAL, TROUBLES WILL FIRST BE IDENTIFIED BY CONTROL TERMINAL PERSONNEL FROM ALARM INDICATIONS OR TROUBLE REPORTS. THE FIRST CORRECTIVE MAINTENANCE THEREFORE WILL BE PERFORMED AT THE CONTROL

TERMINAL TO ISOLATE AND CORRECT THE TROUBLE OR, IF REQUIRED, REFERENCE RECEIVER AND TRANSMITTER PERSONNEL INTO THE SUSPECTED FAULT AREA FOR USING CORRECTIVE MAINTENANCE PROCEDURES WITHIN THE RECEIVER OR TRANSMITTER VOLUME. ALL TROUBLE ANALYSIS PROCEDURES ARE BASED ON THE FOLLOWING:

1. PERMISSION HAS BEEN OBTAINED TO USE CHANNEL AND RUN TEST IN ACCORDANCE WITH LOCAL OPERATING PROCEDURES
2. ONLY ONE TROUBLE EXISTS AT A TIME
3. ALL SYSTEM OPERATING CONTROLS ARE IN THEIR NORMAL POSITIONS

TROUBLE ANALYSIS PROCEDURES ARE DESIGNED TO GUIDE THE USER BY THE MOST DIRECT MEANS AVAILABLE TO LOCATING AND CORRECTING FAULTS. TROUBLE CLEARING IS APPROACHED IN THE FOLLOWING MANNER:

- FIRST: BY OBSERVING AVAILABLE CIRCUIT INDICATORS SUCH AS LEDS, METERS, AND ALARM LAMPS
- SECOND: BY ESTABLISHING OR SIMULATING OPERATING CONDITIONS NECESSARY FOR CIRCUIT OBSERVATION AND MEASUREMENT
- THIRD: BY USING CONVENTIONAL TROUBLE-CLEARING PROCEDURES SUCH AS CHECKING THE DC OPERATE PATH FOR CIRCUIT FUNCTIONS AND WIRING

COASTAL HARBOR RADIO MAINTENANCE PHILOSOPHY

Issue 2	FEB 1979
403-200-502	TAD
PAGE 2 of 7	102

ADMONISHMENT BLOCKS

COASTAL HARBOR TOP PROCEDURES CONTAIN, AS REQUIRED, THREE TYPES OF ADMONISHMENT BLOCKS, OR FLAGS, TO CALL ATTENTION TO PERSONAL DANGER (DANGER BLOCKS), POSSIBLE SERVICE INTERRUPTION (CAUTION BLOCKS), AND POSSIBLE EQUIPMENT DAMAGE (WARNING BLOCKS). THE USER IS REMINDED TO READ THE ADMONISHMENT BY HAVING ATTENTION CALLED TO THE ADMONISHMENT AT THE BEGINNING OF A STEP WHICH INVOLVES ANY OF THE ABOVE ADMONISHMENT CONDITIONS AS SHOWN IN THE EXAMPLES BELOW:

[48] SEE WARNING. REPLACE CIRCUIT BOARDS 121 AND 120, ONE AT A TIME, TO ISOLATE TROUBLE [TAD-120]

[1] SEE WARNING. LOCATE CIRCUIT BOARD OF INTEREST. SEE NOTE 1

WARNINGS

1. WHEN MAKING RESISTANCE MEASUREMENTS, MAKE SURE THAT POWER IS NOT APPLIED TO CIRCUIT BEING MEASURED, AS DAMAGE TO METER WILL RESULT
2. WHEN MAKING EITHER CURRENT OR VOLTAGE MEASUREMENTS, SET FUNCTION SWITCH TO PROPER RANGE BEFORE MAKING CONTACT WITH TEST PROBES TO CIRCUIT BEING MEASURED. IF THERE IS ANY DOUBT AS TO APPROXIMATE VALUE OF VOLTAGE OR CURRENT TO BE MEASURED, SET FUNCTION SWITCH TO HIGHEST VALUE FOR INITIAL TEST AND THEN DECREASE STEP-BY-STEP UNTIL PROPER RANGE IS REACHED

WARNINGS

1. WHEN REMOVING CIRCUIT BOARDS, MAKE SURE THAT EDGES OF BOARD ARE AIMED SO THEY COME THROUGH THE SWITCH ON THE SIDE OF BOARD CARRIER
2. SOME OF THE CIRCUIT BOARDS COULD BE DAMAGED BY STATIC DISCHARGE IF HANDLED IMPROPERLY. CARE SHOULD BE TAKEN NOT TO TOUCH ANY BARE SURFACE SUCH AS THE CONTACT POINTS. IF A CIRCUIT BOARD IS TO BE STORED, IT SHOULD BE PLACED IN A CONDUCTIVE MEDIUM SUCH AS ALUMINUM FOIL

AN EXAMPLE OF EACH TYPE OF ADMONISHMENT BLOCK FOUND IN THIS VOLUME IS PROVIDED BELOW FOR REVIEW

PERSONAL DANGER

DANGER
120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS

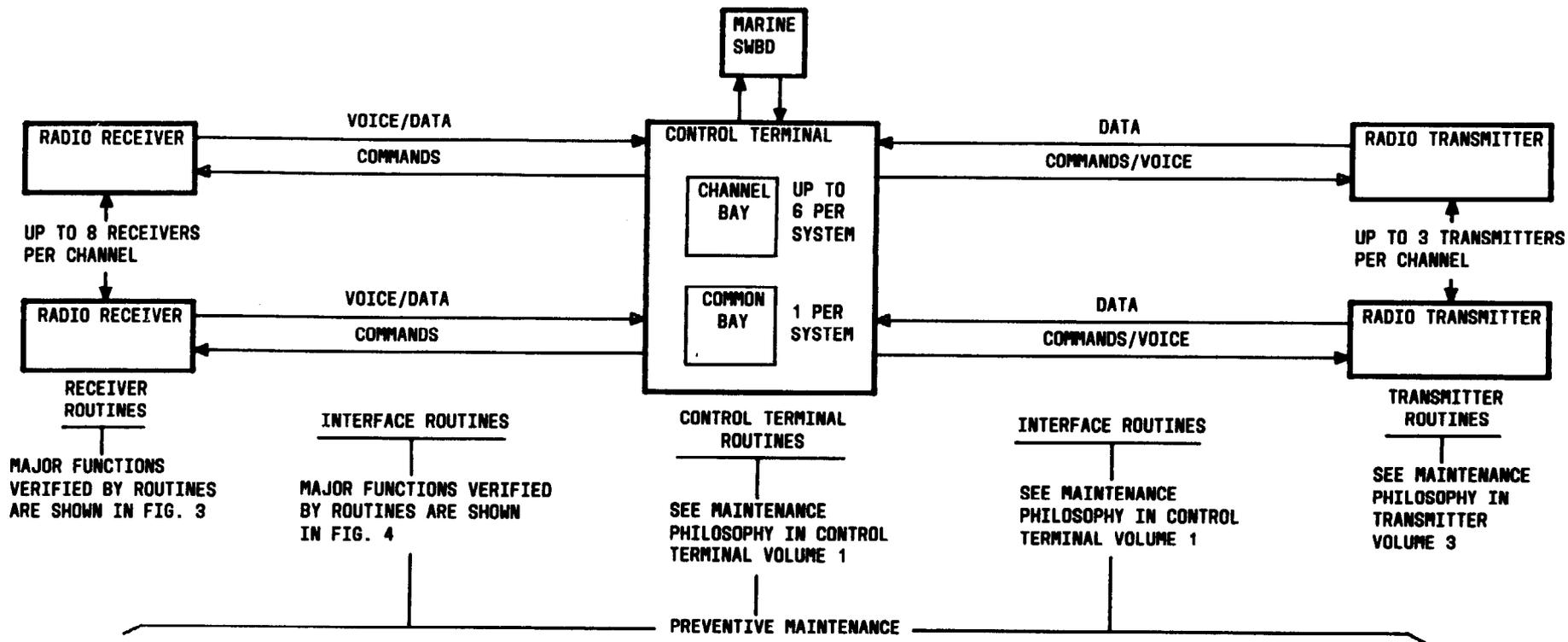
POSSIBLE EQUIPMENT DAMAGE

WARNING

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

WARNING

WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-548 TO PREVENT DAMAGE TO EQUIPMENT

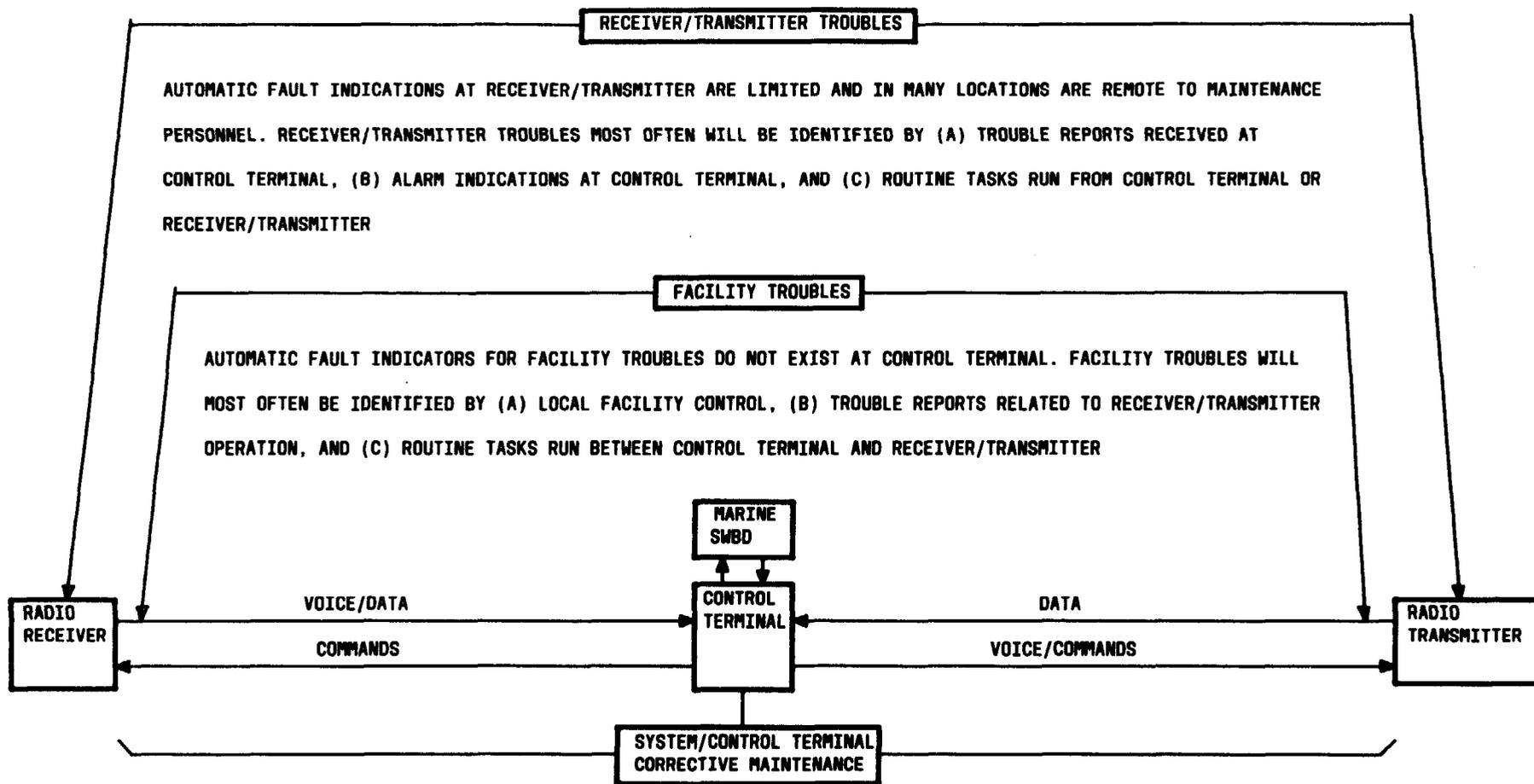


ROUTINE TASKS ARE STRUCTURED TO BE PERFORMED PERIODICALLY ON A CHANNEL BASIS AND ARE DESIGNED TO (A) VERIFY CIRCUIT OPERATIONS UNIQUE TO THE CONTROL TERMINAL WITHOUT ASSISTANCE FROM RECEIVER OR TRANSMITTER PERSONNEL, (B) VERIFY CIRCUIT OPERATIONS WITHIN THE CONTROL TERMINAL ASSOCIATED WITH CIRCUIT OPERATIONS WITHIN THE RECEIVER WITH AND WITHOUT ASSISTANCE FROM RECEIVER PERSONNEL, AND (C) VERIFY CIRCUIT OPERATIONS WITHIN THE CONTROL TERMINAL ASSOCIATED WITH CIRCUIT OPERATIONS WITHIN THE TRANSMITTER WITH AND WITHOUT ASSISTANCE FROM TRANSMITTER PERSONNEL

FIG. 1 - PREVENTIVE MAINTENANCE

COASTAL HARBOR RADIO MAINTENANCE PHILOSOPHY

Issue 2	FEB 1979
403-200-502	TAD
PAGE 4 of 7	102



CORRECTIVE MAINTENANCE IS ACCOMPLISHED THROUGH TROUBLE ANALYSIS PROCEDURES WHICH MAKE USE OF MANUAL AND ROUTINER TEST SET PROCEDURES TO ISOLATE TROUBLES TO CONTROL TERMINAL, RADIO RECEIVER, OR TRANSMITTER AND LOCATE FAULTS DOWN TO THE REPLACEABLE CARD LEVEL

FIG. 2 - CORRECTIVE MAINTENANCE

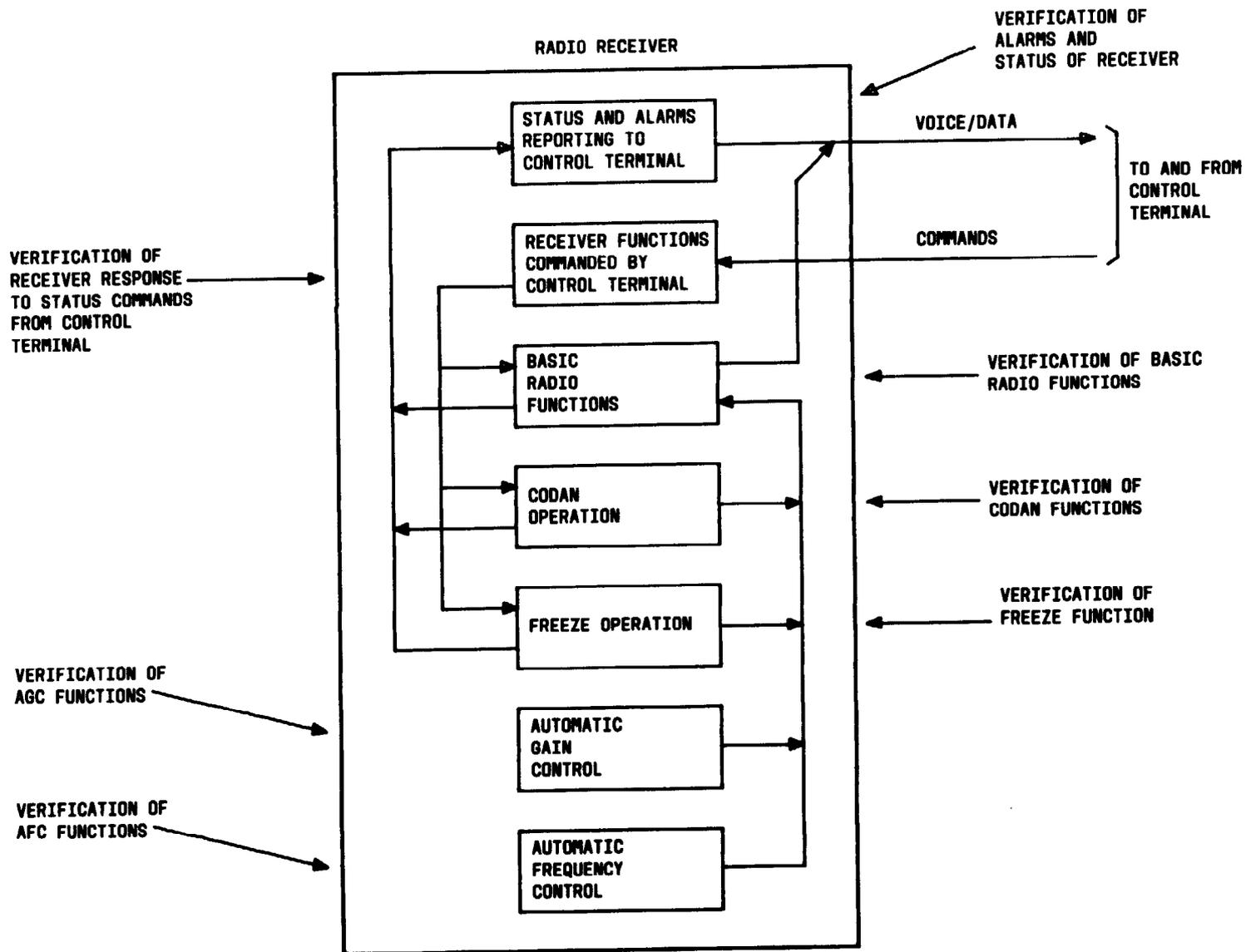


FIG. 3 - MAJOR FUNCTIONS VERIFIED BY RECEIVER ROUTINES

Issue 2	FEB 1979
403-200-502	TAD
PAGE 6 of 7	102

COASTAL HARBOR RADIO MAINTENANCE PHILOSOPHY

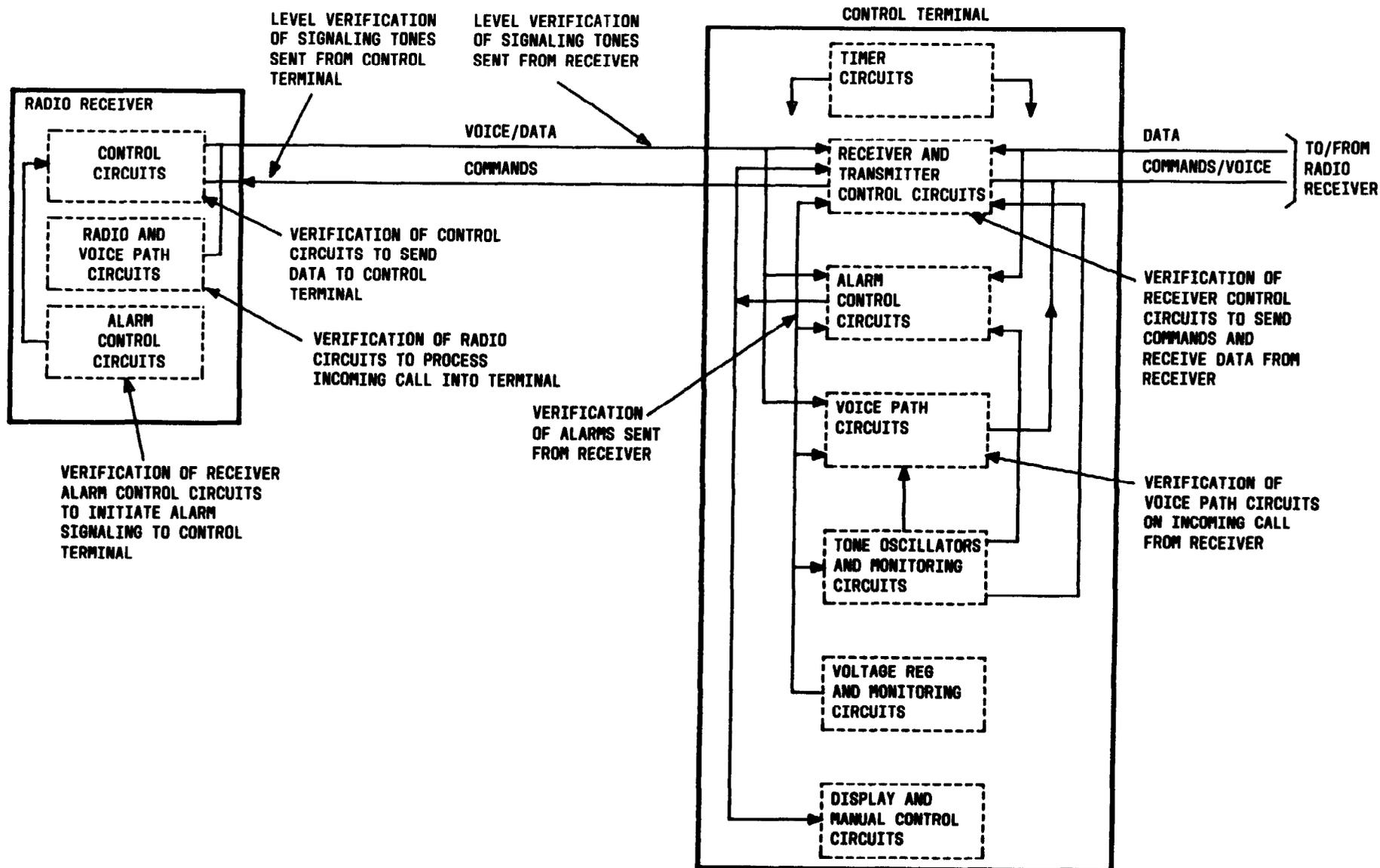


FIG. 4 - MAJOR FUNCTIONS VERIFIED BY CONTROL TERMINAL TO/FROM RECEIVER INTERFACE ROUTINES

Issue 2	FEB 1979
403-200-502	TAD
PAGE 7 of 7	102

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO LOC POSITION

[3] PERFORM DLP-527 TO REPLACE BUFFER (NO. 1), OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), AND LOGIC (NO. 3) CIRCUIT BOARDS WITH SPARE BOARDS

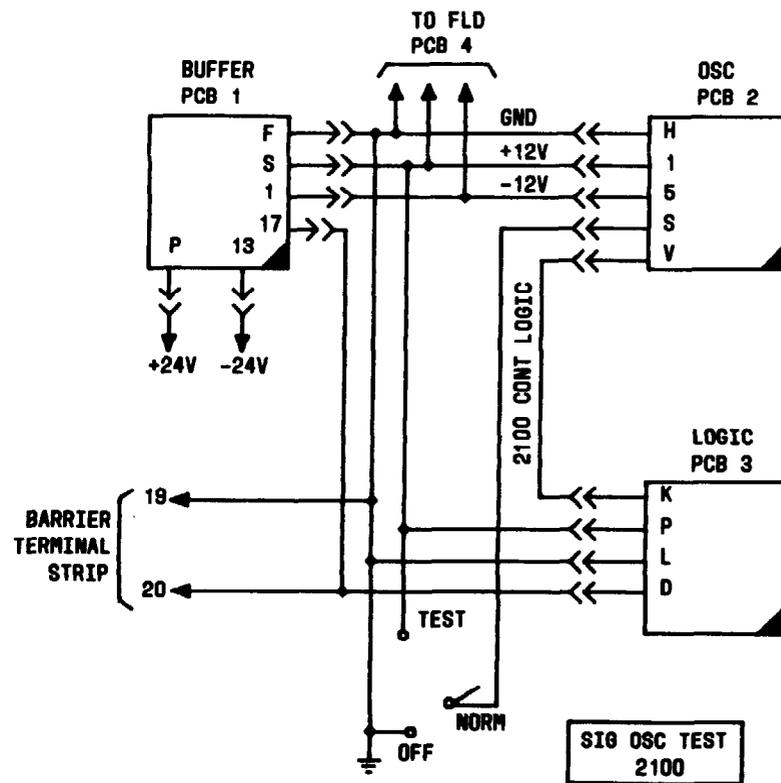
[4] IS TROUBLE CLEARED

NO → PAGE 2

YES → [5]

[5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON, UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE



SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALLING)

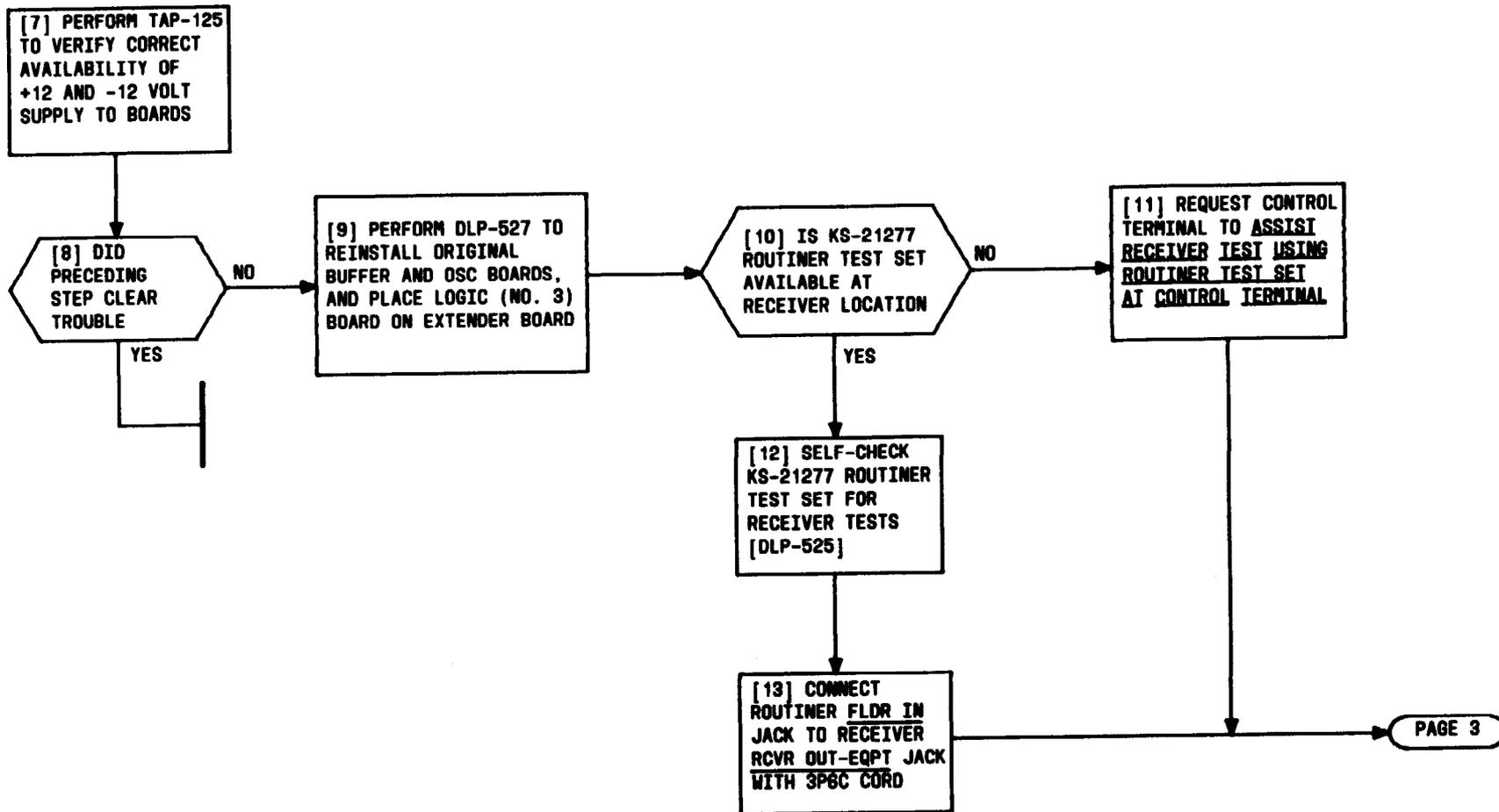
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

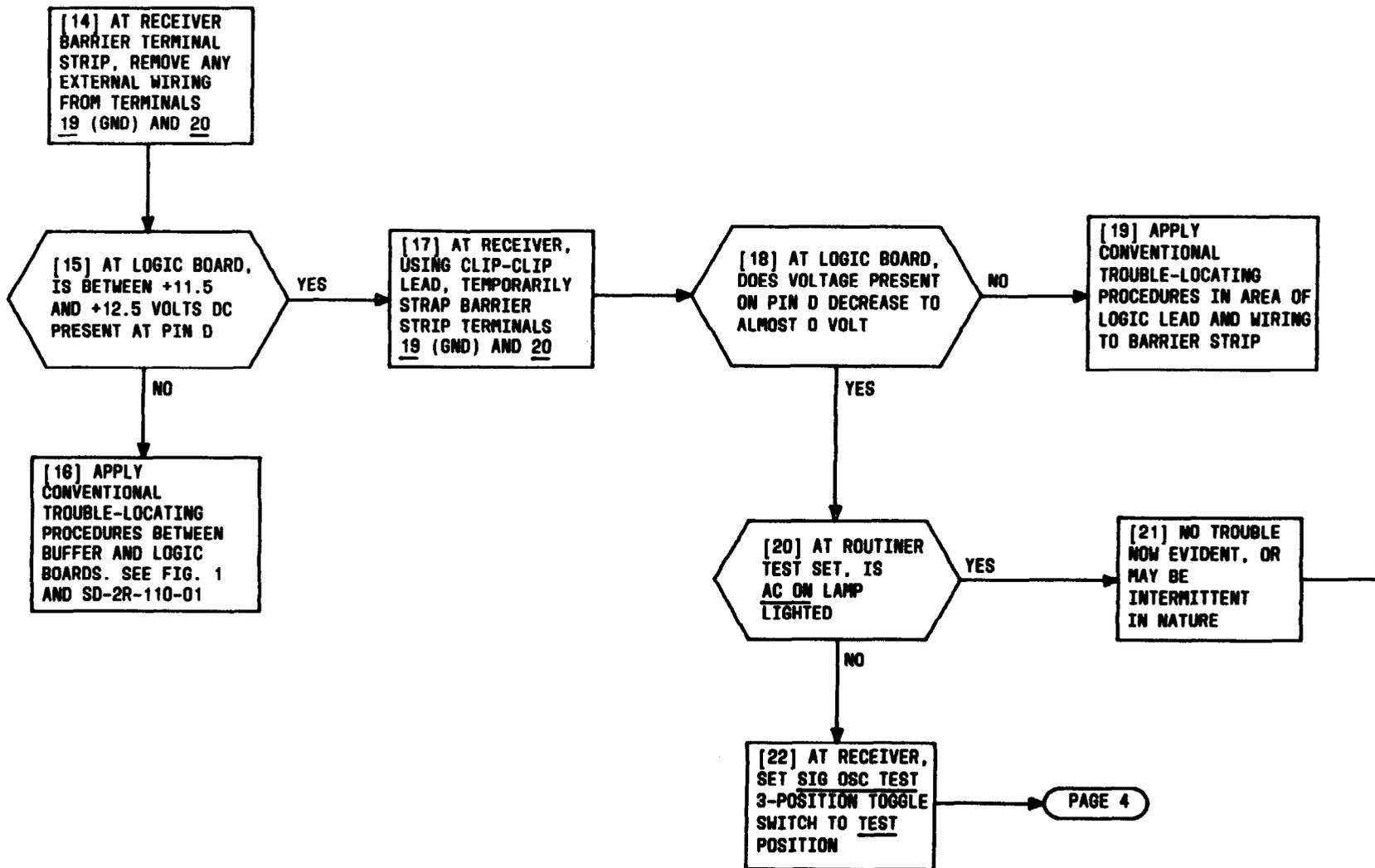
Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 4	103

CLEAR AC ON TROUBLE



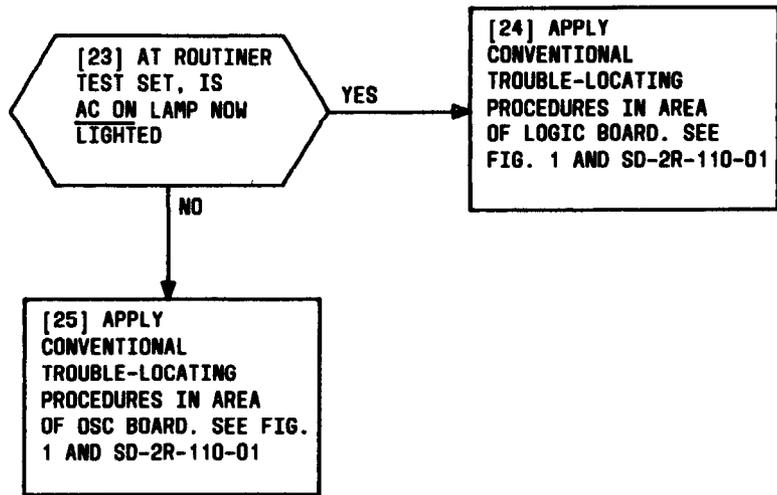
CLEAR AC ON TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 4	103

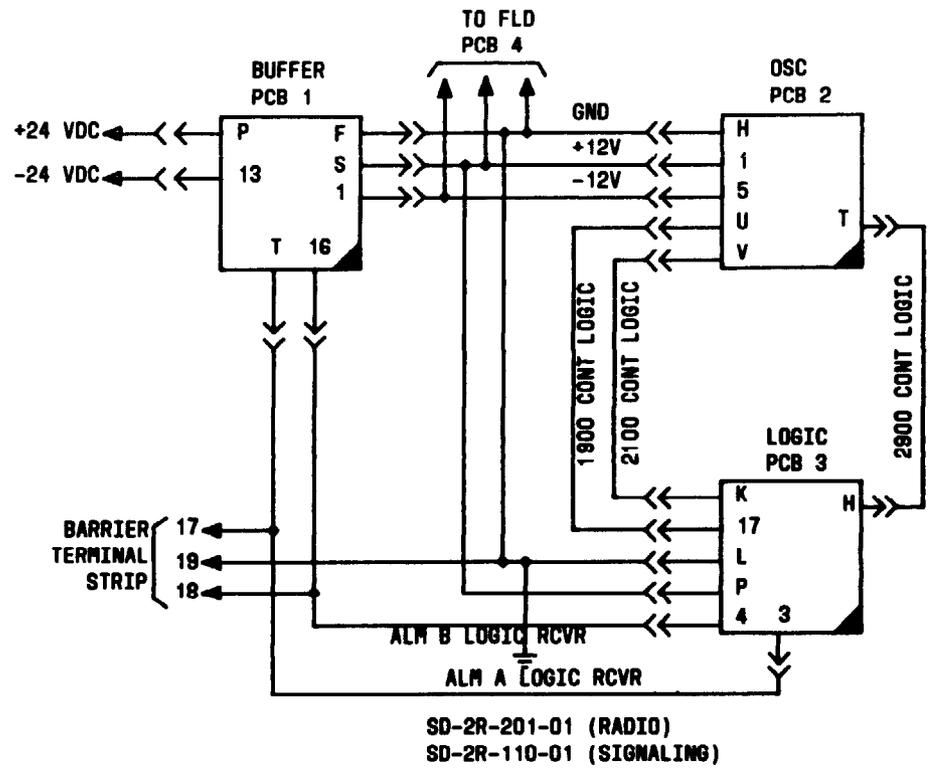
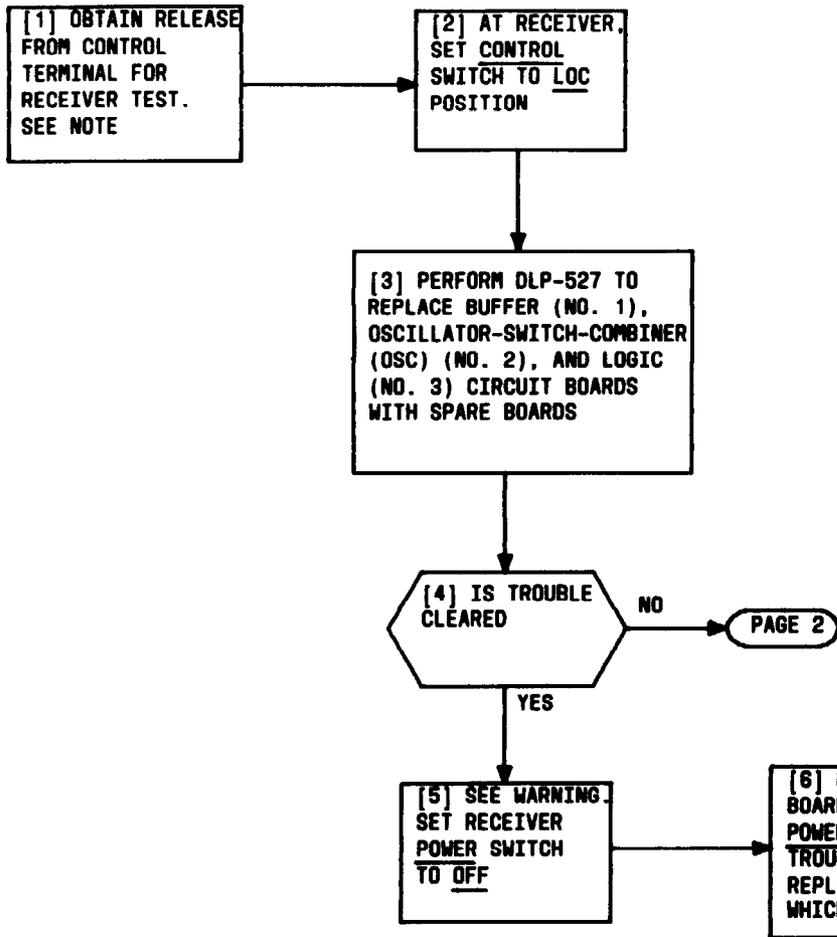


CLEAR AC ON TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 3 of 4	103



CLEAR AC ON TROUBLE



SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALING)

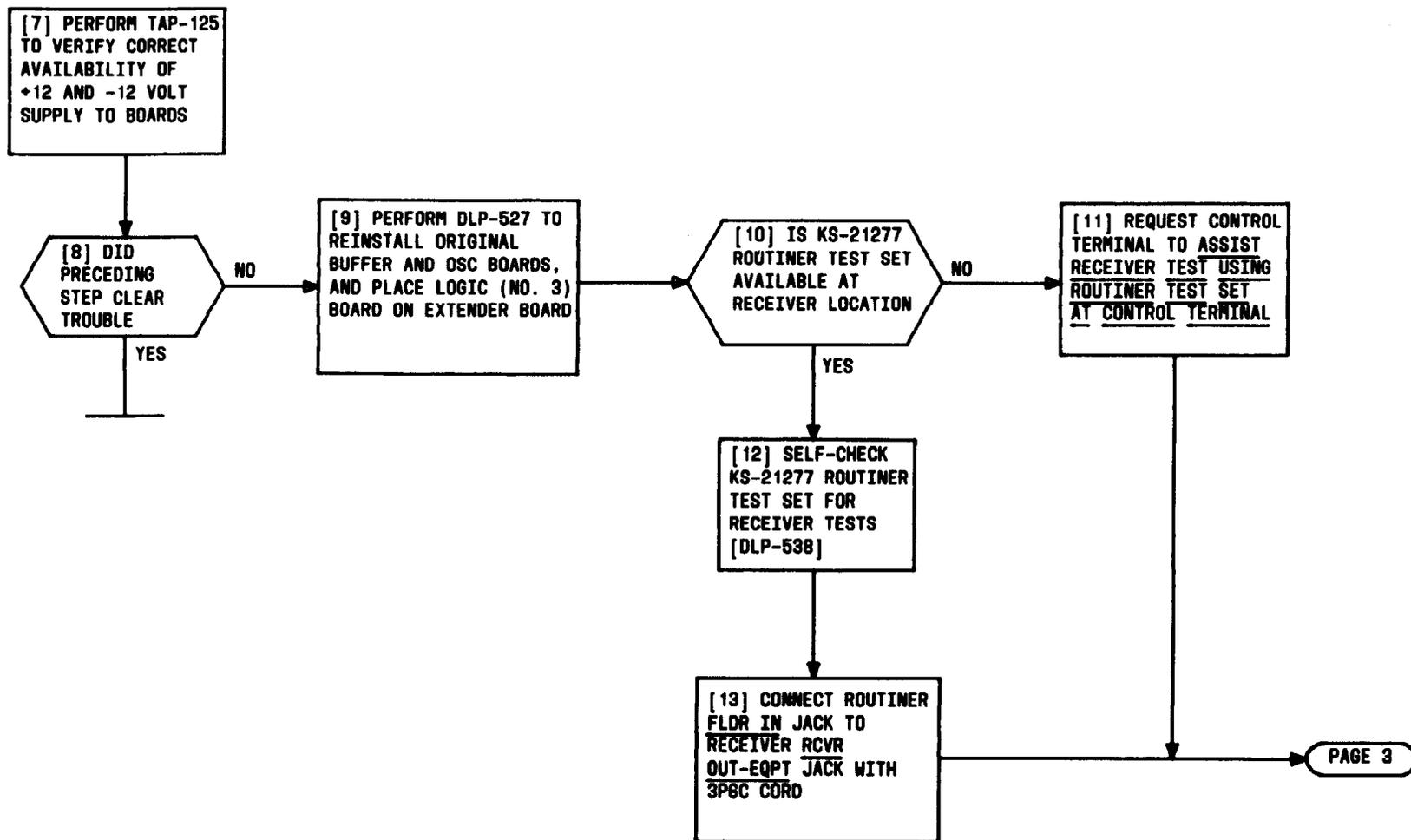
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

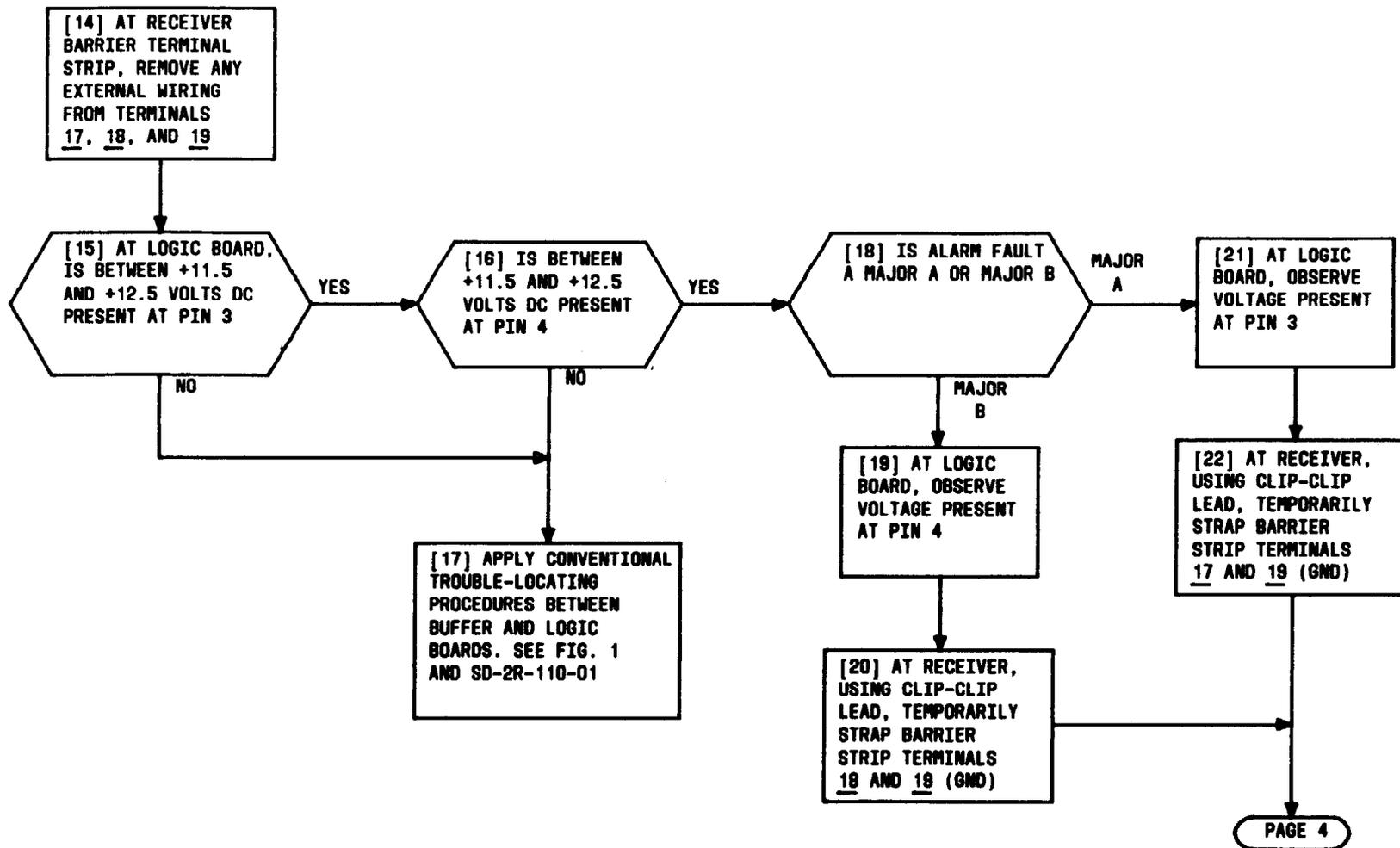
WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 4	104

CLEAR ALARM TROUBLE

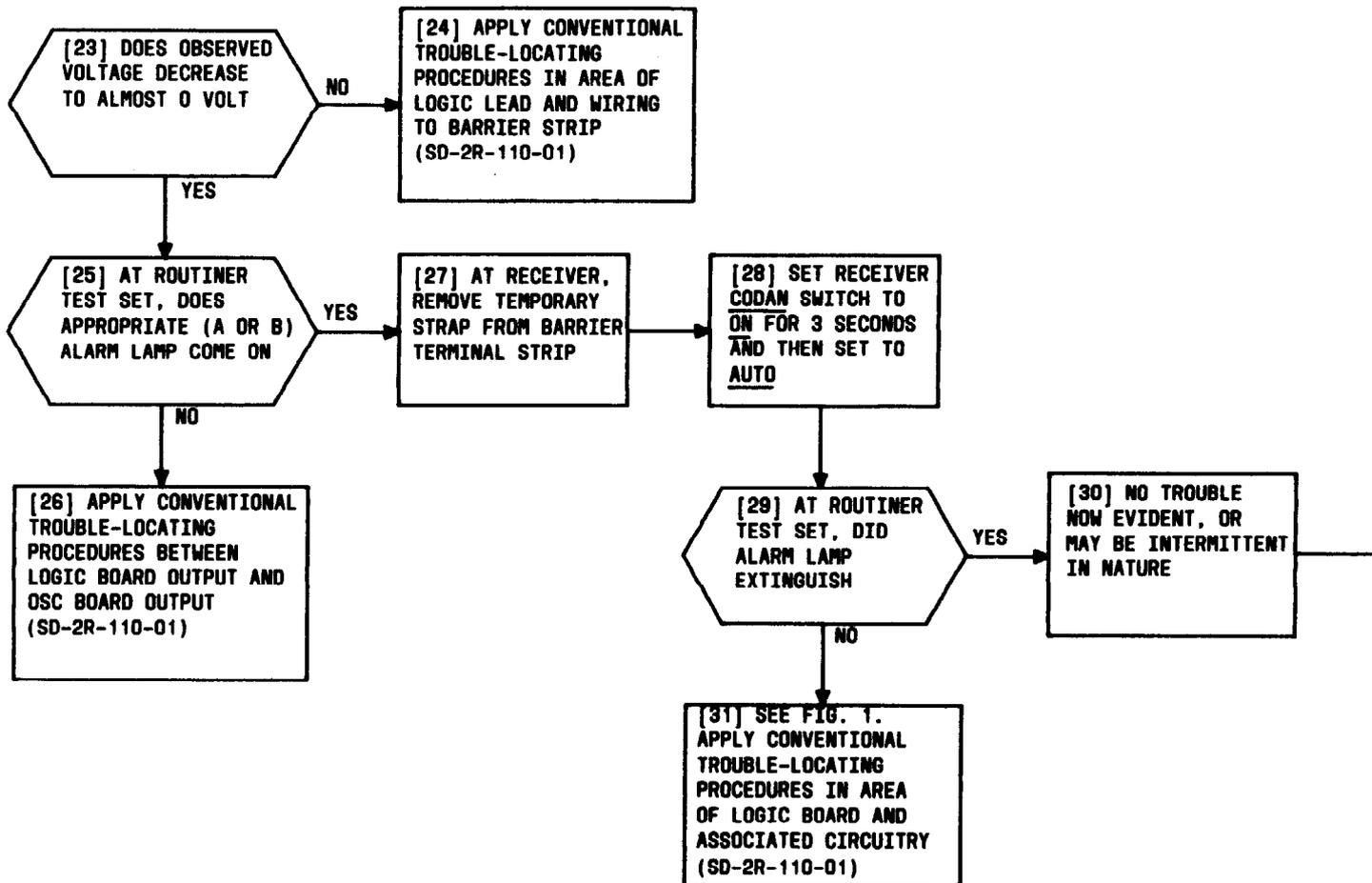


CLEAR ALARM TROUBLE

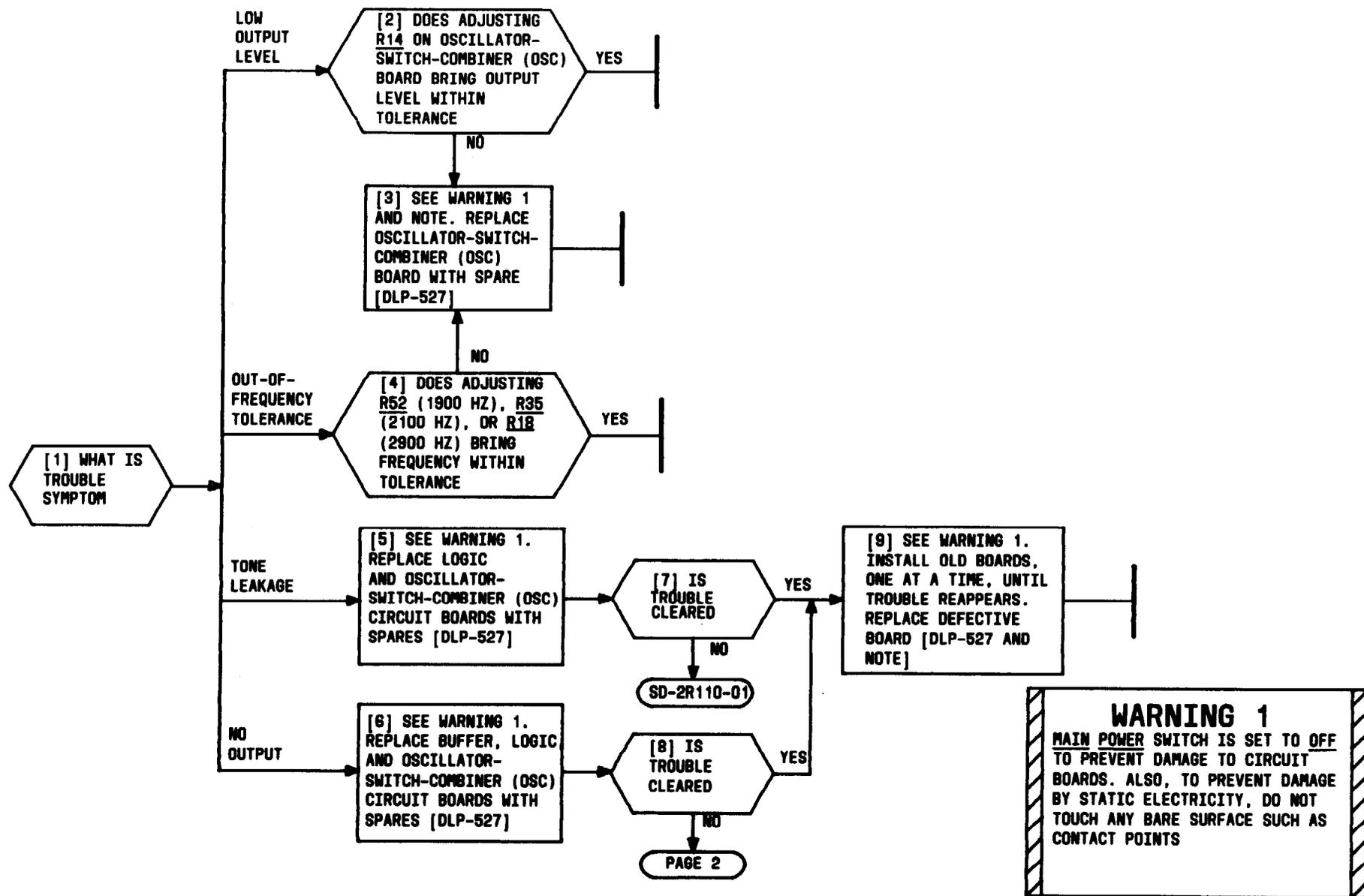


CLEAR ALARM TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 3 of 4	104

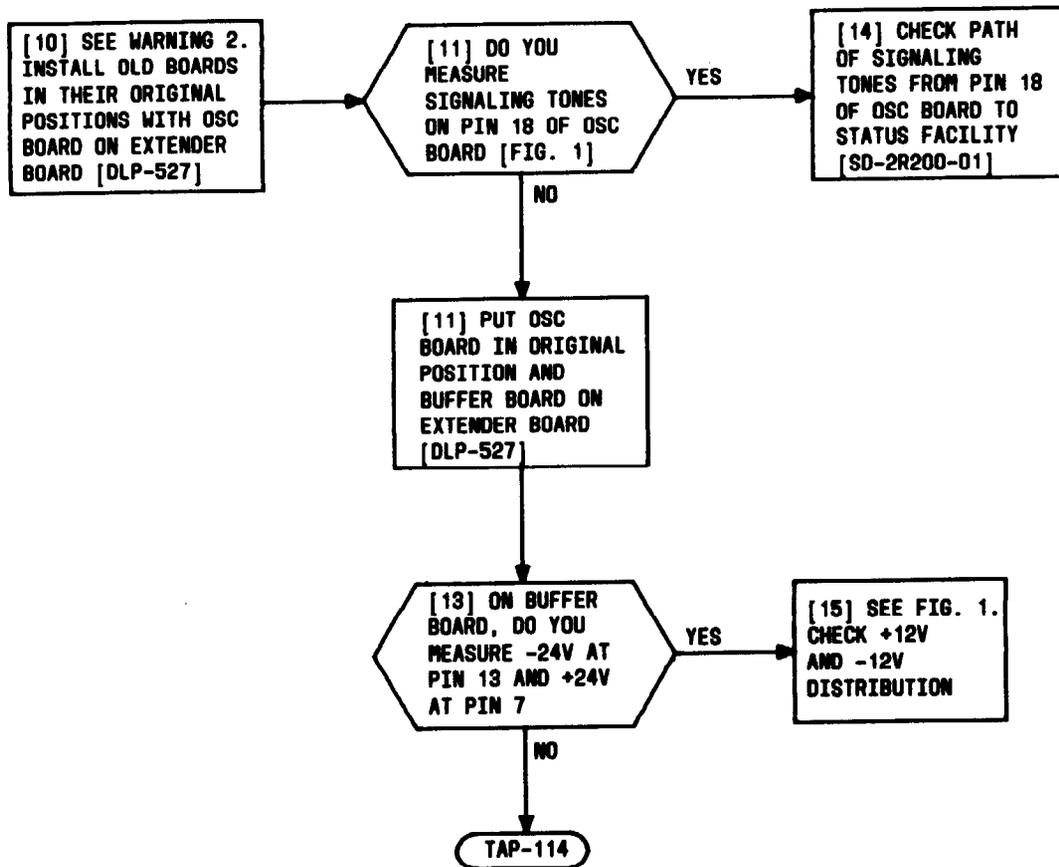


CLEAR MAJOR ALARM TROUBLE



CLEAR SIGNALING TONE TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 3	105



WARNING 2
 MAIN POWER SWITCH IS SET TO OFF TO PREVENT DAMAGE TO CIRCUIT BOARDS. ALSO, TO PREVENT DAMAGE BY STATIC ELECTRICITY, DO NOT TOUCH ANY BARE SURFACE SUCH AS CONTACT POINTS

Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 3	105

CLEAR SIGNALING TONE TROUBLE

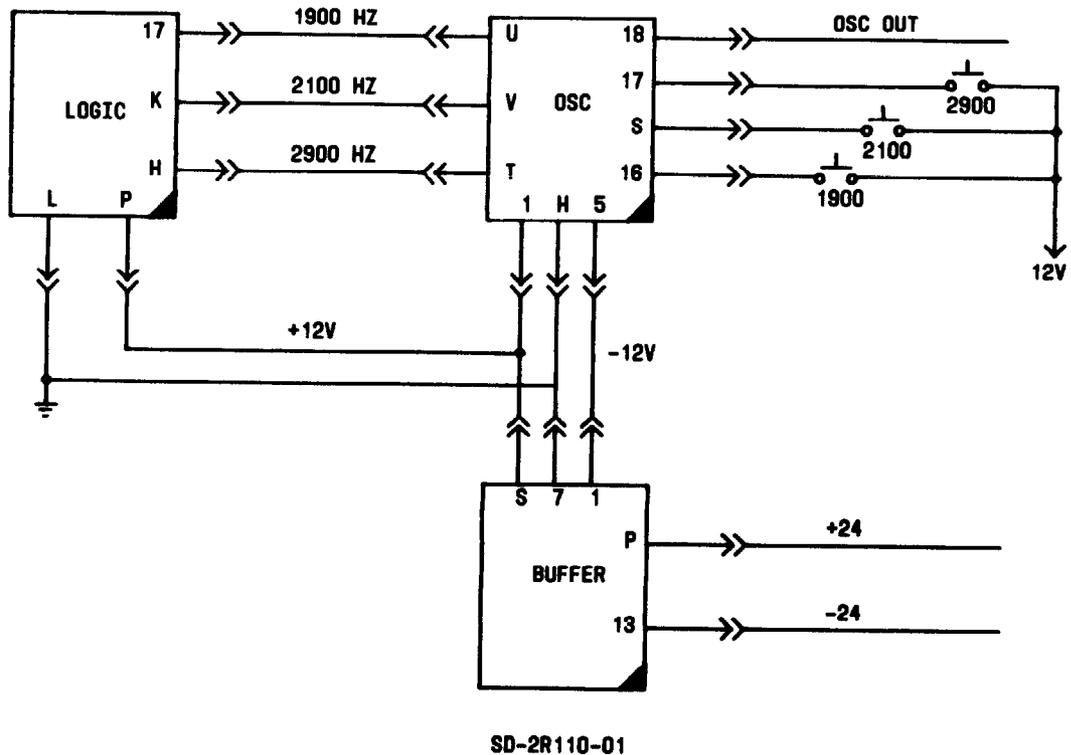


FIG. 1

CLEAR SIGNALING TONE TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 3 of 3	105

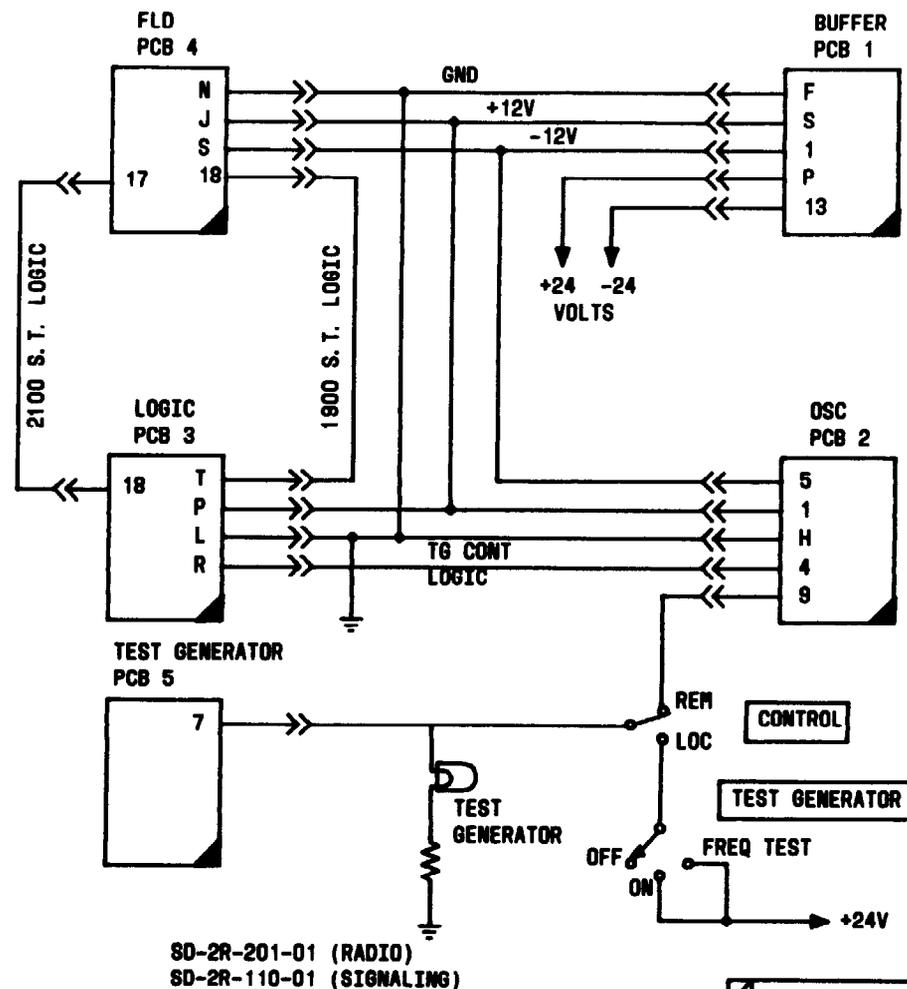
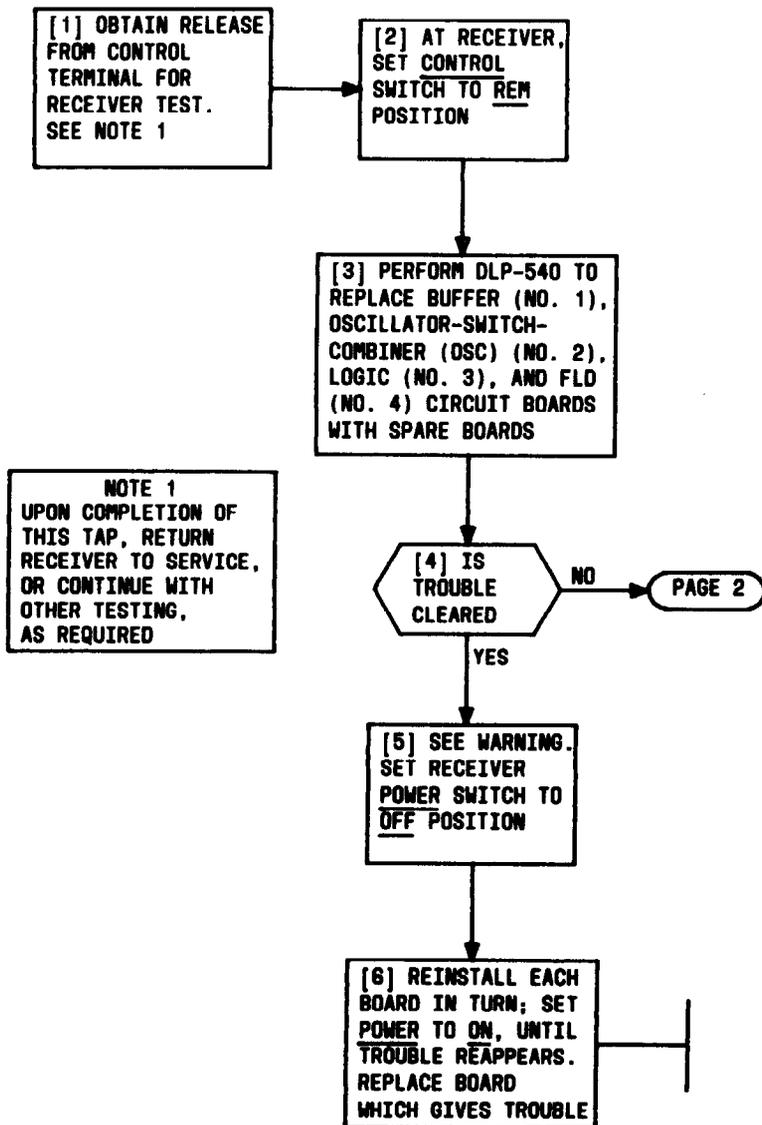
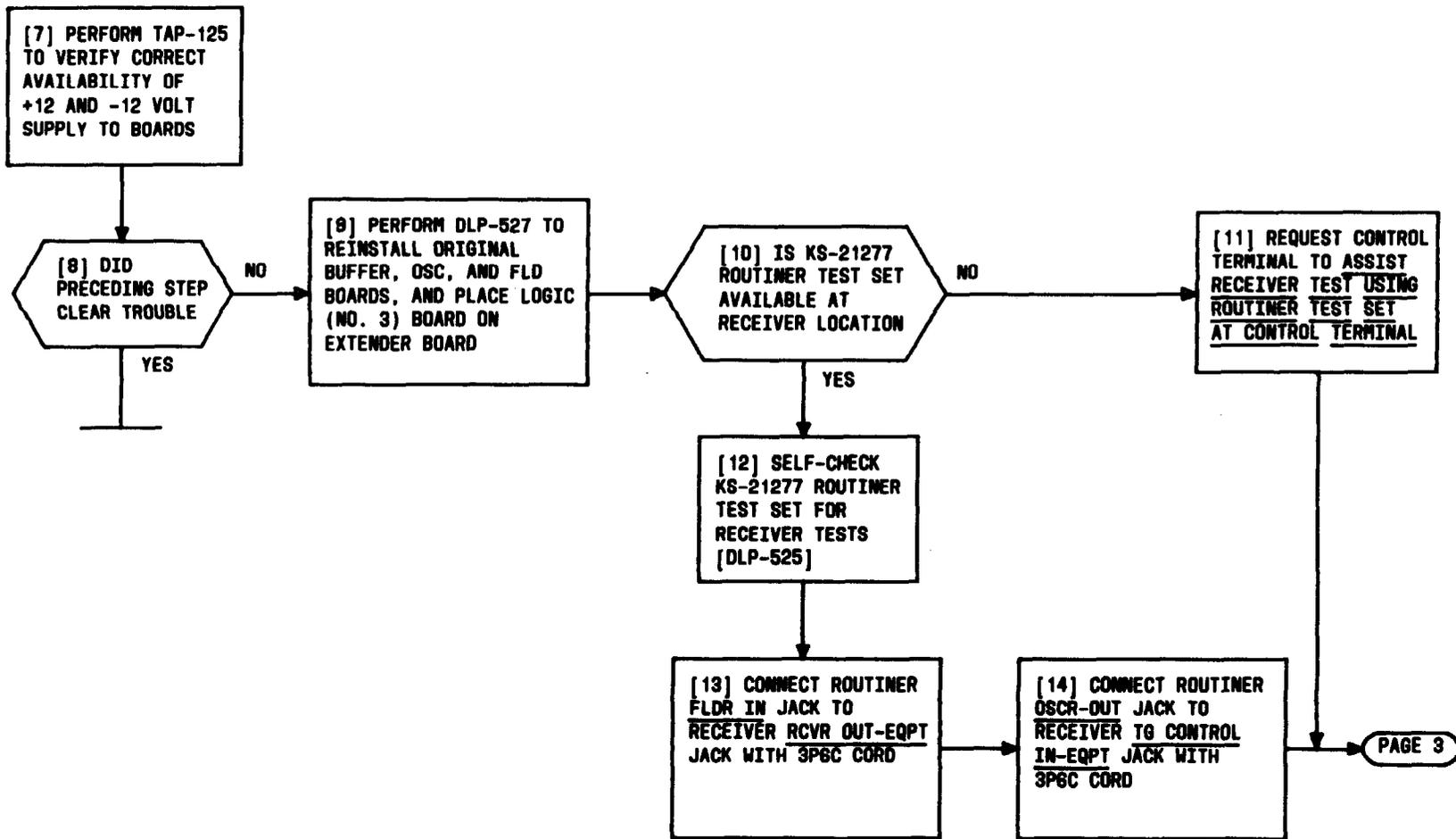


FIG. 1

WARNING	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 3	106



PAGE 3

CLEAR TEST GENERATOR CONTROL TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 3	106

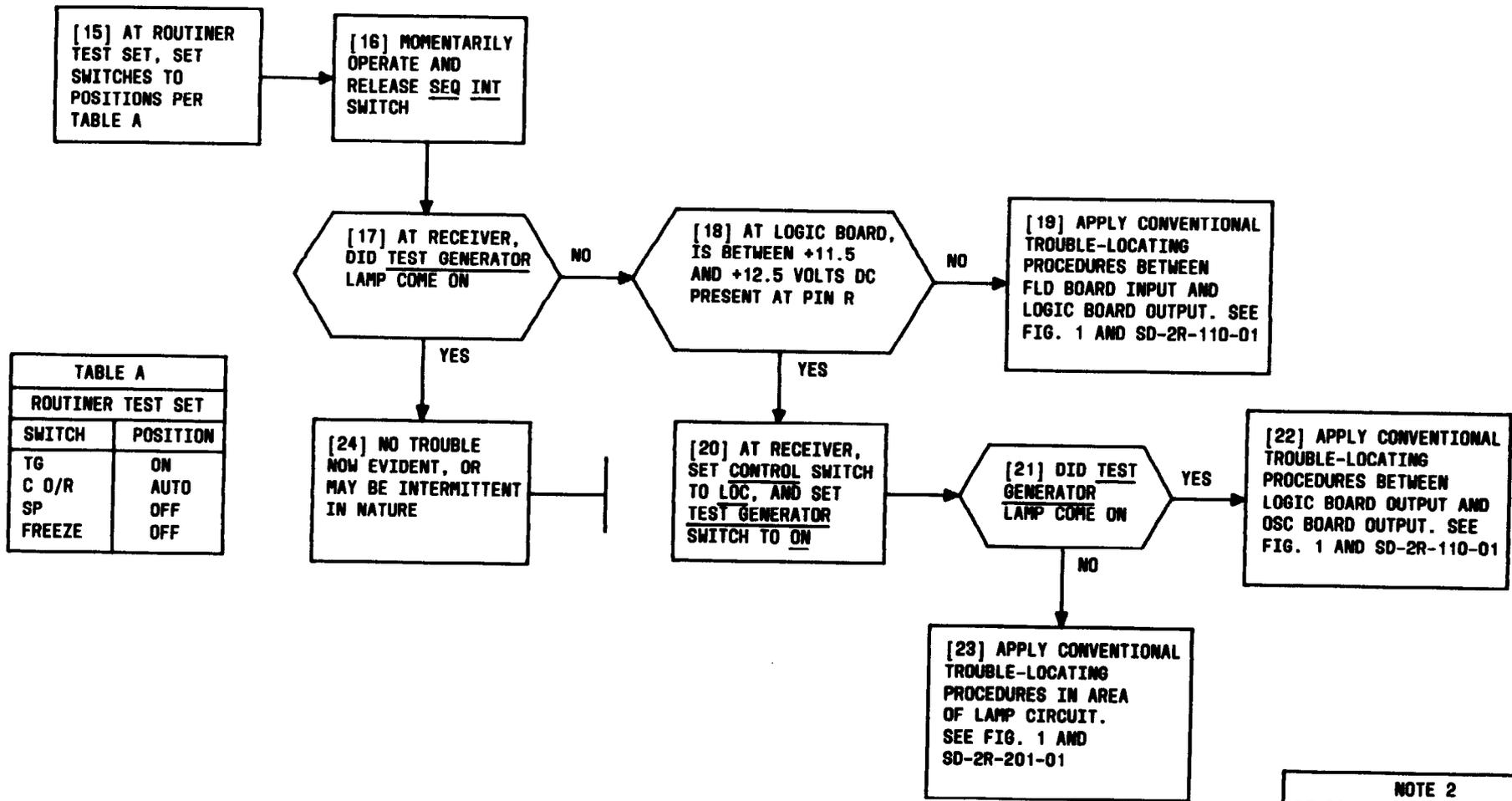


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	ON
C O/R	AUTO
SP	OFF
FREEZE	OFF

NOTE 2
 IF CODAN OPERATE LAMP COMES ON AT RECEIVER, CODAN LAMP AT ROUTINER TEST SET SHOULD ALSO COME ON. IF NOT, THE RECEIVER LAMP CIRCUIT MAY BE AT FAULT

CLEAR TEST GENERATOR CONTROL TROUBLE

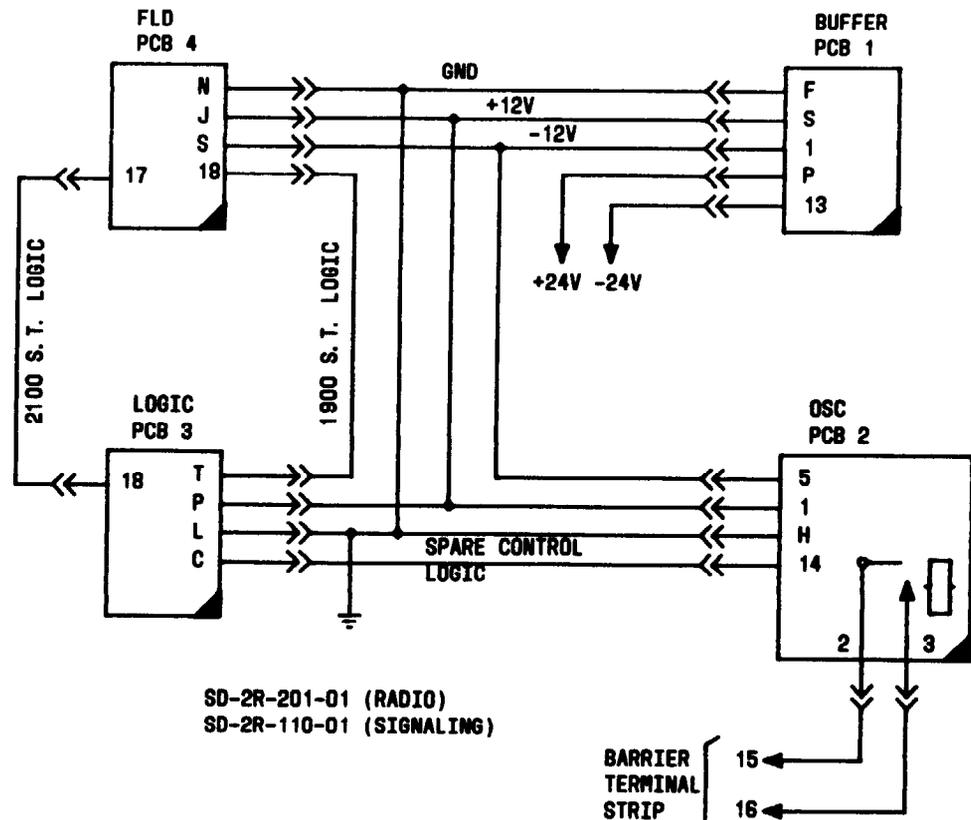
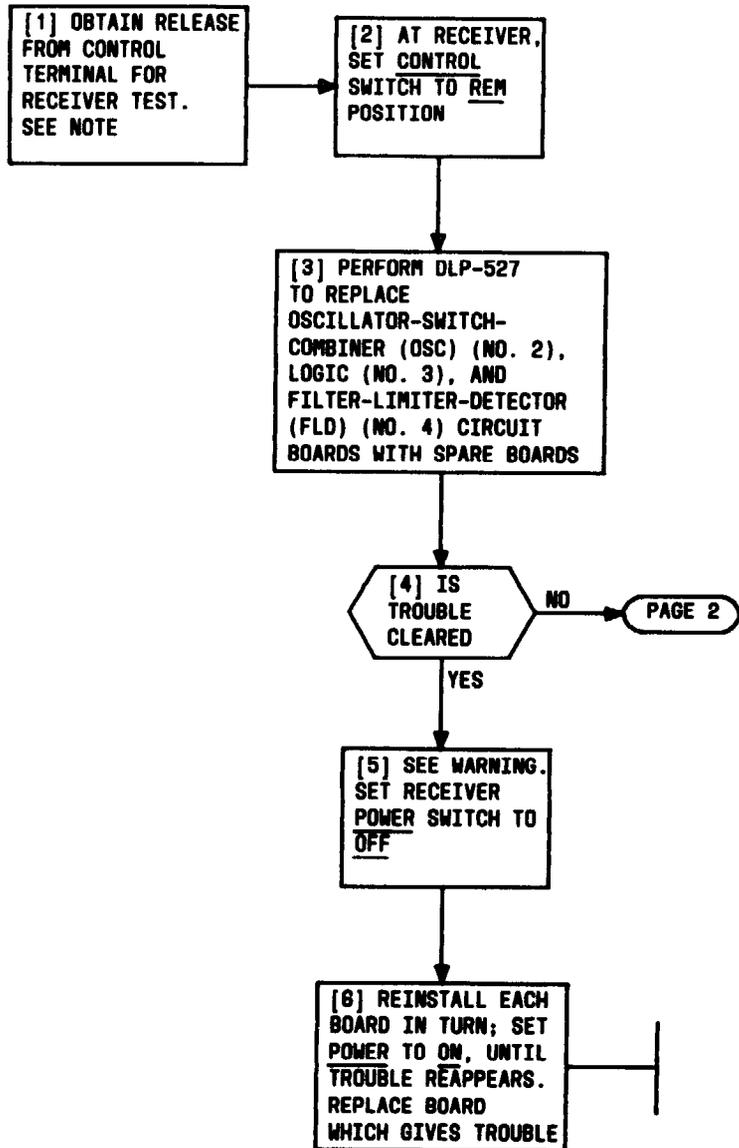


FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 3	107

CLEAR SPARE FUNCTION TROUBLE

[7] PERFORM TAP-125 TO VERIFY CORRECT AVAILABILITY OF +12 AND -12 VOLT SUPPLY TO BOARDS

[8] DID PRECEDING STEP CLEAR TROUBLE

[9] PERFORM DLP-527 TO REINSTALL ORIGINAL OSC AND FLD BOARDS, AND PLACE LOGIC (NO. 3) BOARD ON EXTENDER BOARD

[10] IS KS-21277 ROUTINER TEST SET AVAILABLE AT RECEIVER LOCATION

[11] REQUEST CONTROL TERMINAL TO PERFORM ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

[12] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

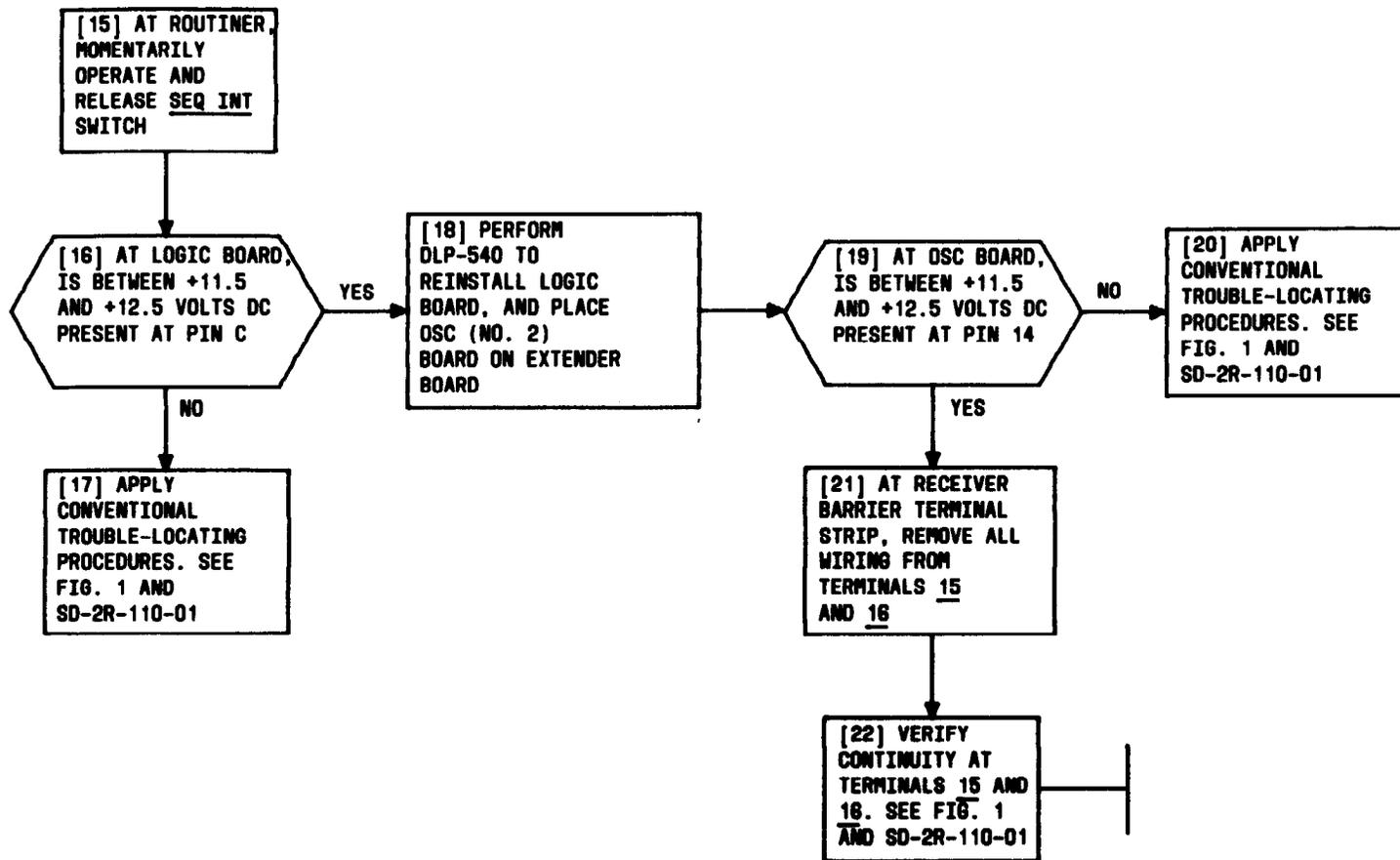
[13] CONNECT ROUTINER OSCR OUT JACK TO RECEIVER TG CONTROL IN-EQPT JACK WITH SP6C CORD

[14] SET ROUTINER TEST SET SWITCHES TO POSITIONS PER TABLE A

PAGE 3

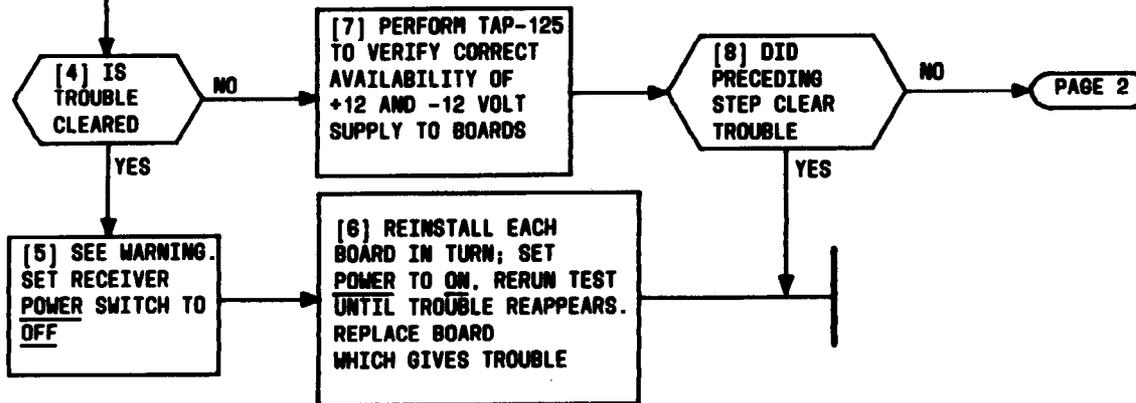
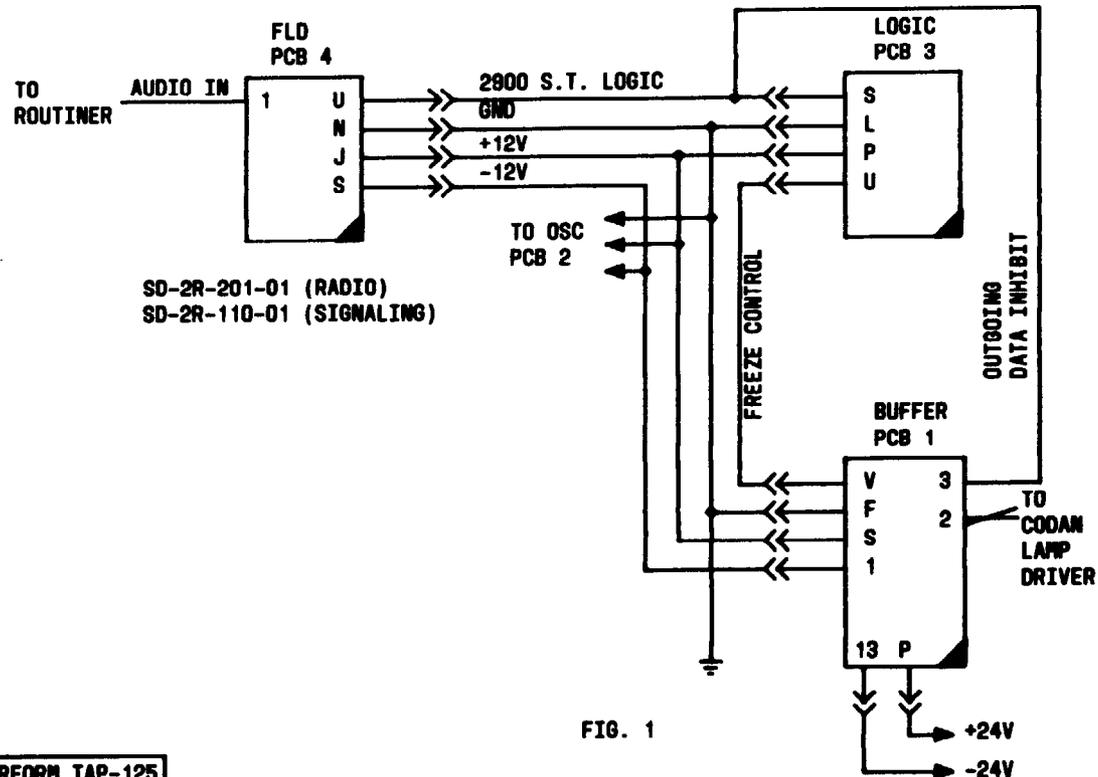
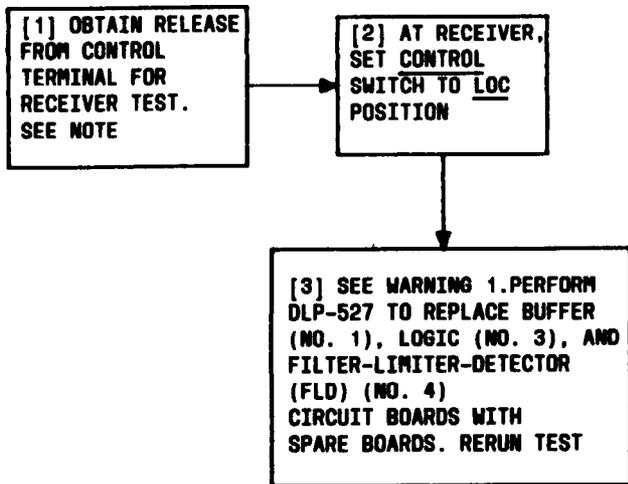
TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	ON
FREEZE	OFF

CLEAR SPARE FUNCTION TROUBLE



CLEAR SPARE FUNCTION TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 3 of 3	107



NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING 1
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 3	108

CLEAR FREEZE COMMAND TROUBLE

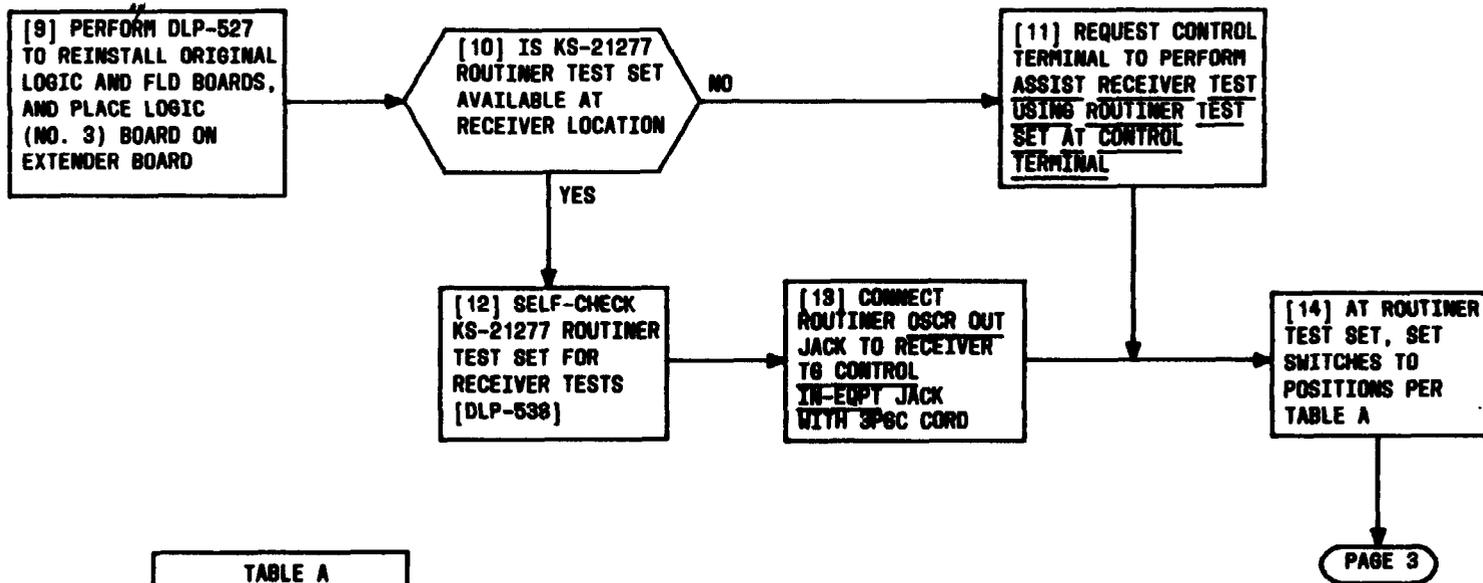
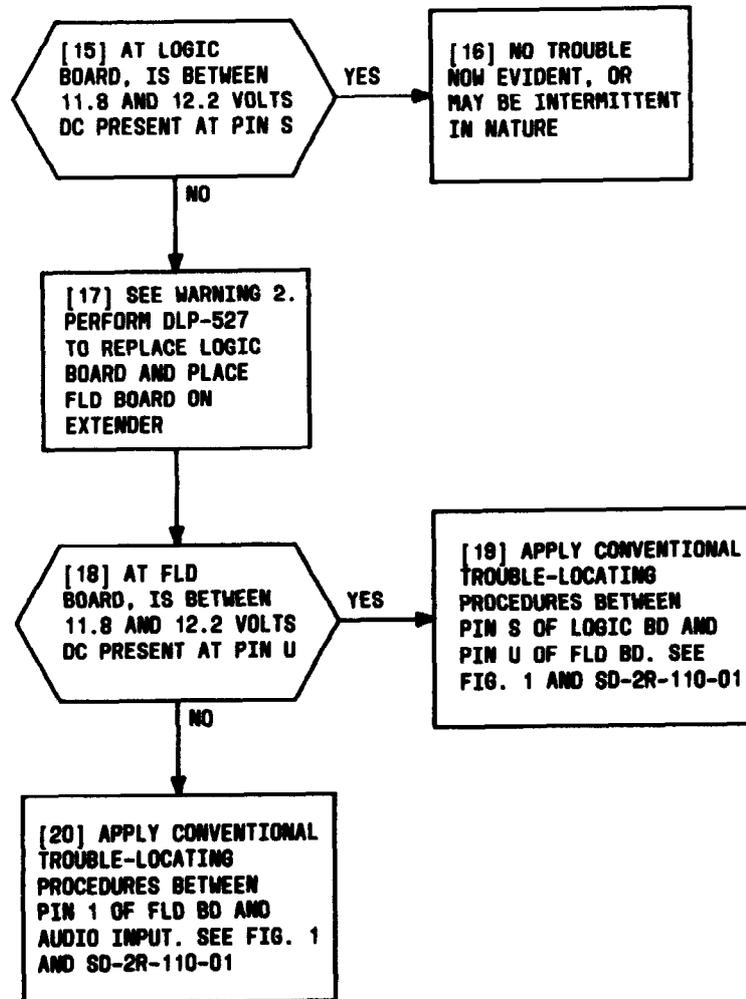


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	OFF
FREEZE	ON

CLEAR FREEZE COMMAND TROUBLE



CLEAR FREEZE COMMAND TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 3 of 3	108

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO REM POSITION

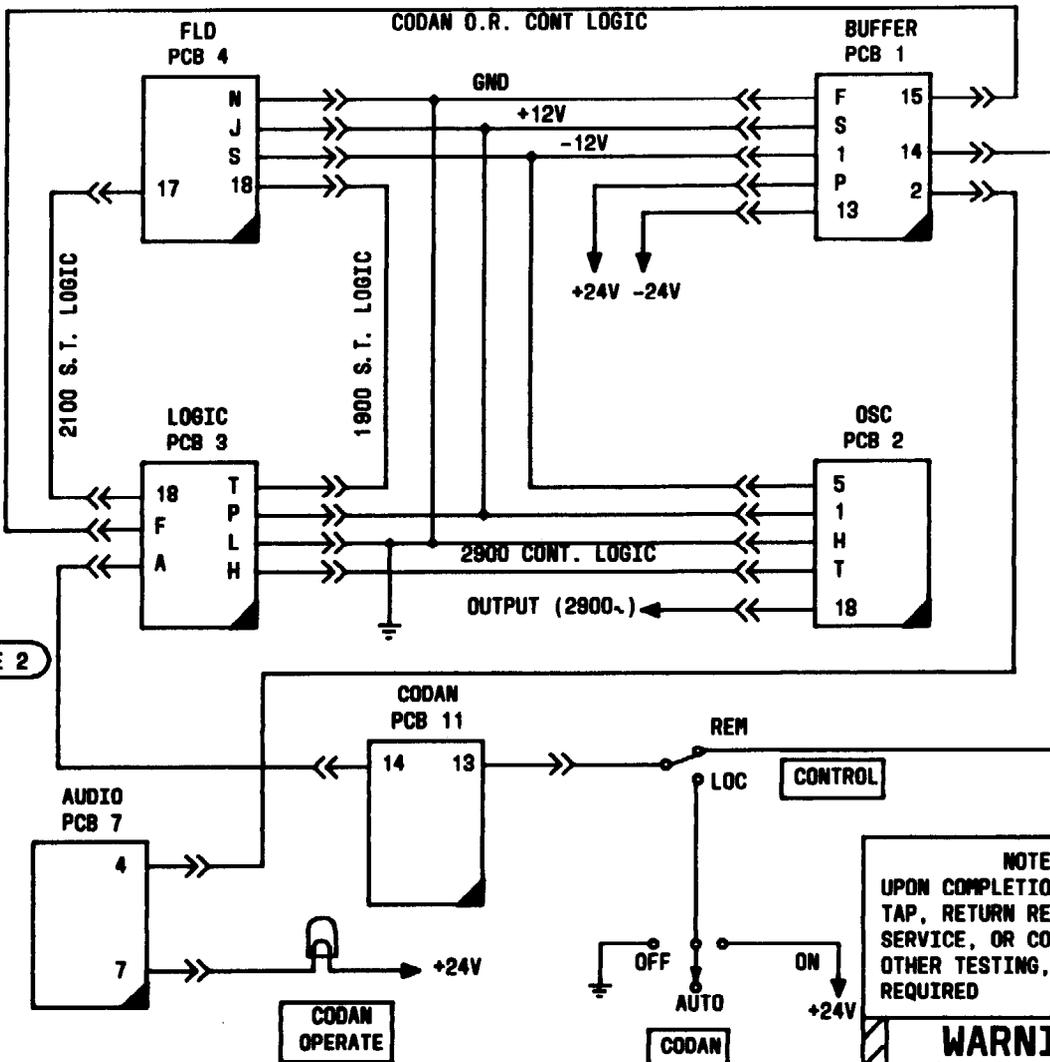
[3] PERFORM DLP-527 TO REPLACE BUFFER (NO. 1), OSCILLATOR-SWITCH-COMBINER (OSC) (NO. 2), LOGIC (NO. 3), AND FLD (NO. 4) CIRCUIT BOARDS WITH SPARE BOARDS

[4] IS TROUBLE CLEARED

NO → PAGE 2

YES → [5] SEE WARNING. SET RECEIVER POWER SWITCH TO OFF

[6] REINSTALL EACH BOARD IN TURN; SET POWER TO ON, UNTIL TROUBLE REAPPEARS. REPLACE BOARD WHICH GIVES TROUBLE



SD-2R-201-01 (RADIO)
SD-2R-110-01 (SIGNALING)

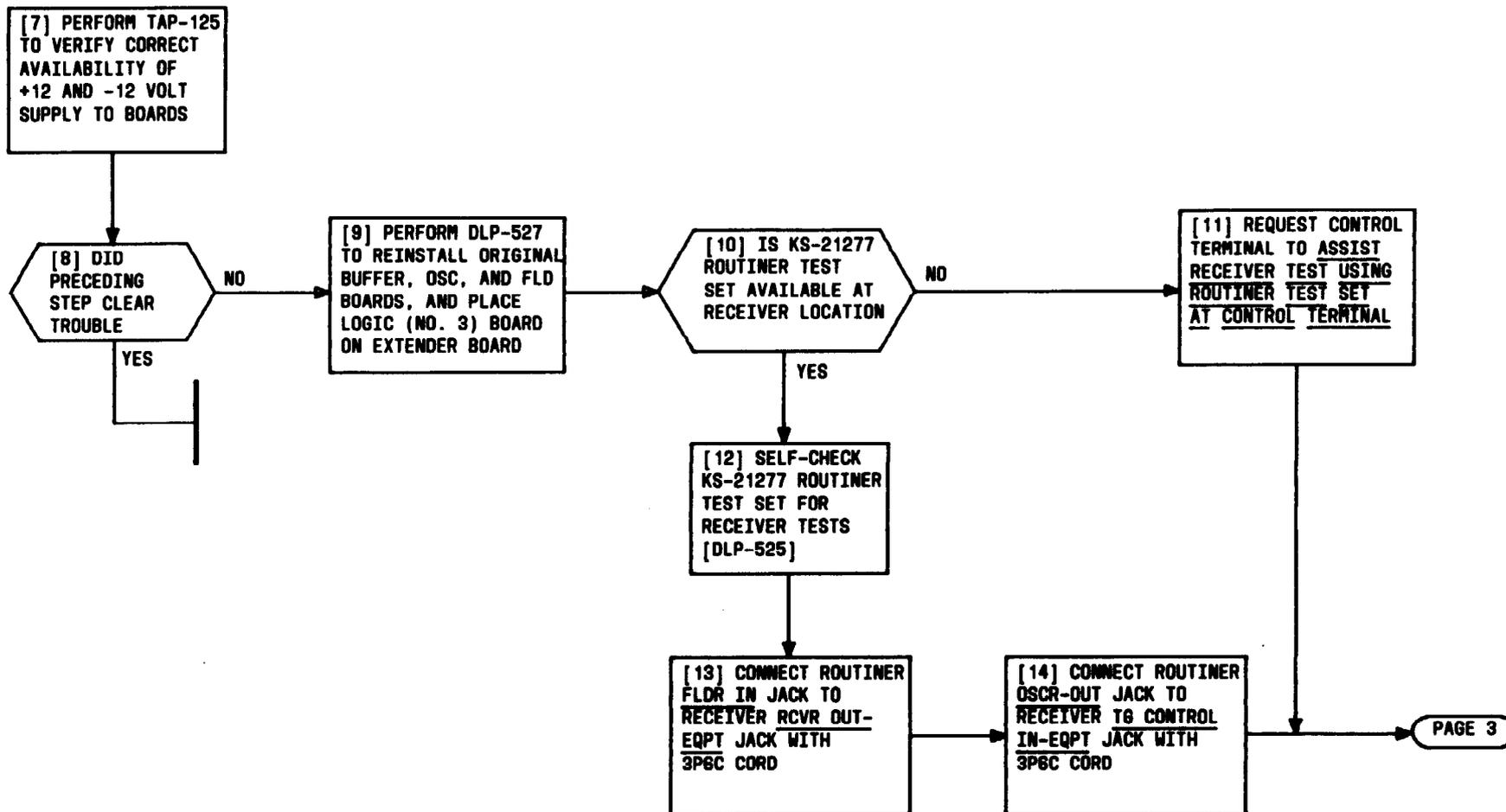
FIG. 1

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 3	109

CLEAR CODAN OVERRIDE TROUBLE



CLEAR CODAN OVERRIDE TROUBLE

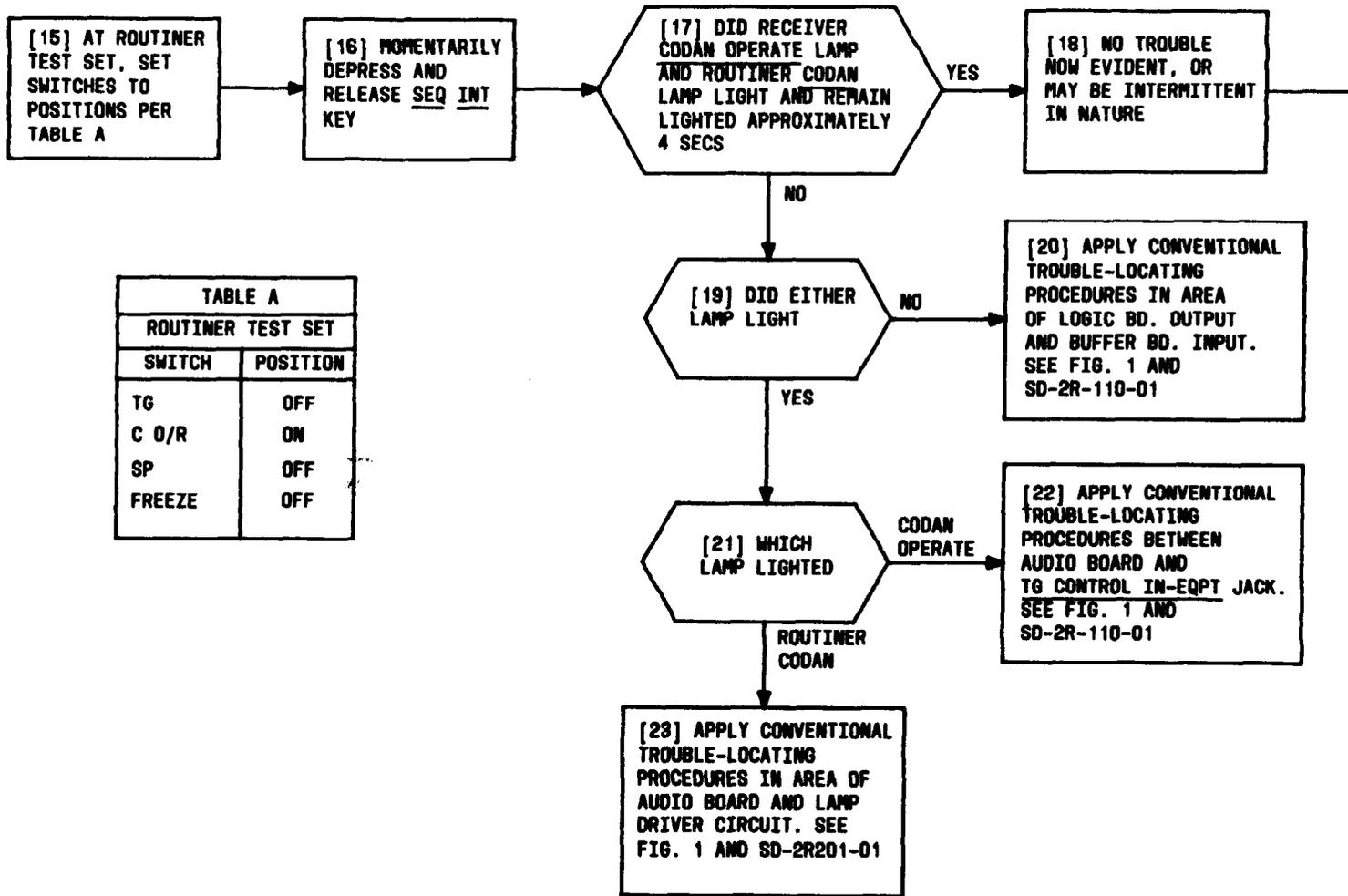


TABLE A	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	ON
SP	OFF
FREEZE	OFF

CLEAR CODAN OVERRIDE TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] SET RECEIVER PANEL CONTROLS PER TABLE A

[3] SET RECEIVER METER SWITCH TO +24V POSITION

AND

[4] DOES RECEIVER PANEL METER INDICATE BETWEEN 29 AND 31 METER DIVISIONS

YES

[5] ANY TROUBLE EVIDENT IS IN DISTRIBUTION CIRCUITRY OR BOARD SOCKETS [TAD-111]

NO

[6] SEE WARNING. PERFORM DLP-527 TO PLACE POWER SUPPLY (NO. 6) BOARD ON EXTENDER BOARD

[7] AT POWER SUPPLY BOARD IS DC VOLTAGE ON PIN 7 BETWEEN 22.5 AND 24.9 VOLTS

YES

PAGE 2, STEP 8

NO

PAGE 2, STEP 9

CONTROL	SETTING
POWER CONTROL	ON
TEST GENERATOR	LOC
CODAN	ON
AGC/MANUAL	AGC

NOTE

UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE OR CONTINUE WITH OTHER TESTING, AS REQUIRED

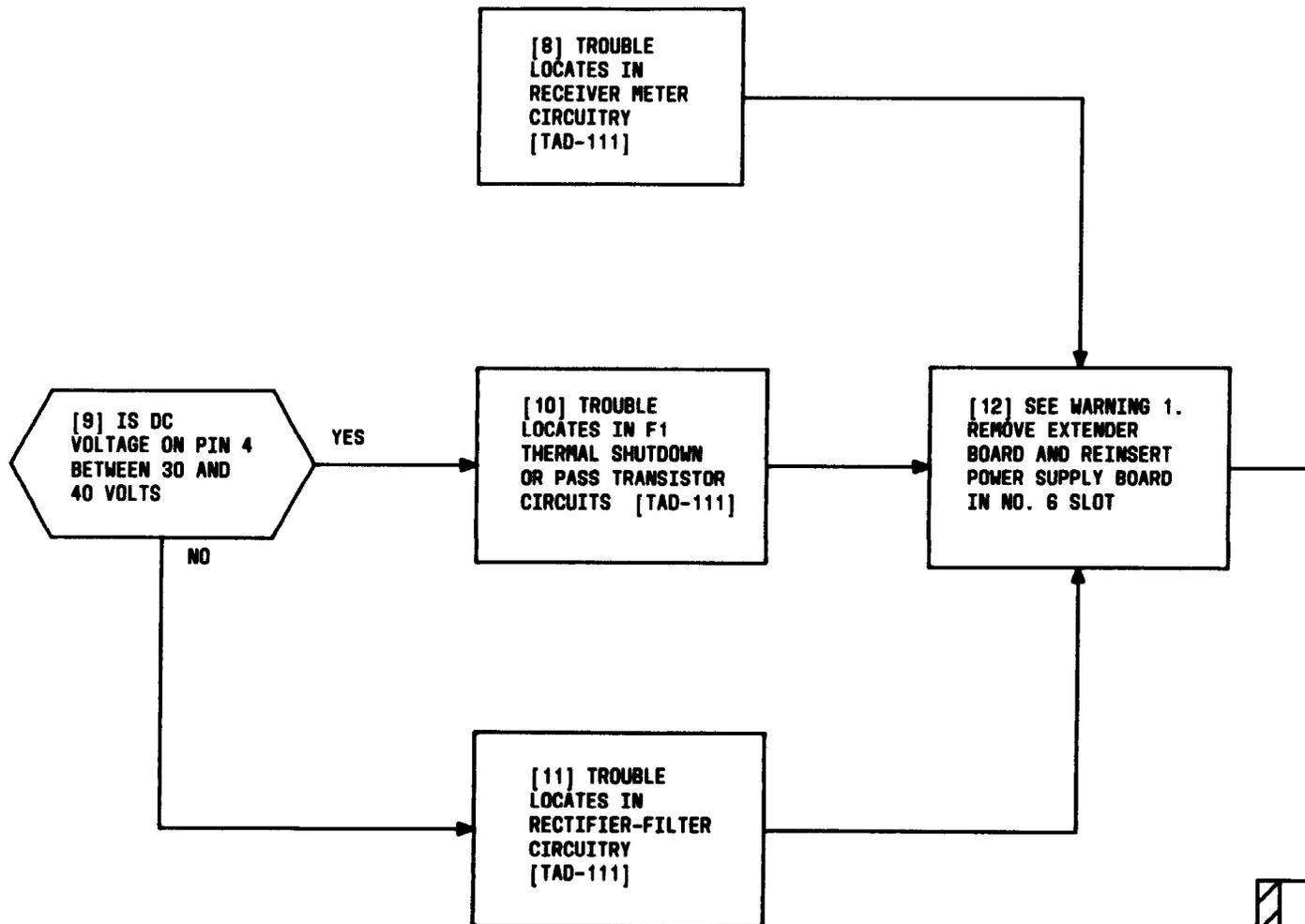
WARNING

POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

Issue 2 FEB 1979

403-200-502 TAP

PAGE 1 of 2 110



WARNING 1	
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 2	110

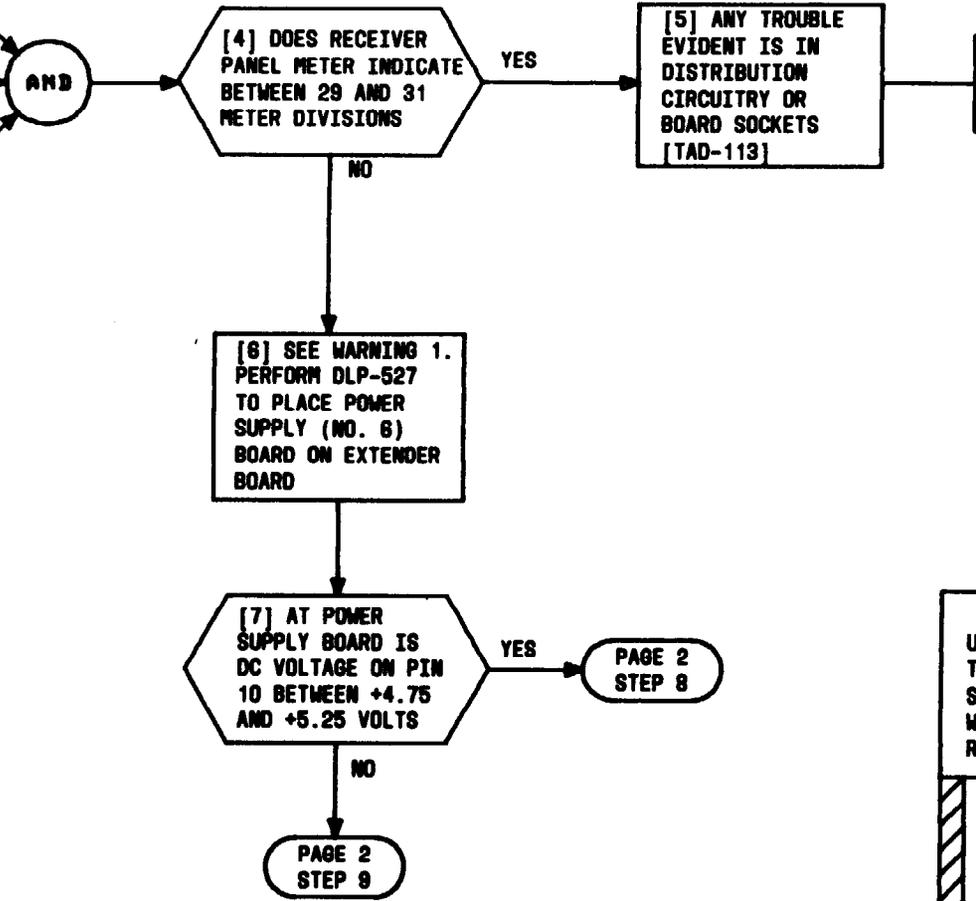
CLEAR +24 VOLT REGULATED POWER SUPPLY TROUBLE

[1] OBTAIN RELEASE FROM CONTROL
 TERMINAL FOR RECEIVER TEST.
 SEE NOTE

[2] SET RECEIVER PANEL
 CONTROLS PER TABLE A

[3] SET RECEIVER METER SWITCH
 TO +5.V POSITION

TABLE A	
CONTROL	SETTING
POWER CONTROL	ON
TEST GENERATOR	LOC
CODAN	ON
AGC/MANUAL	AGC

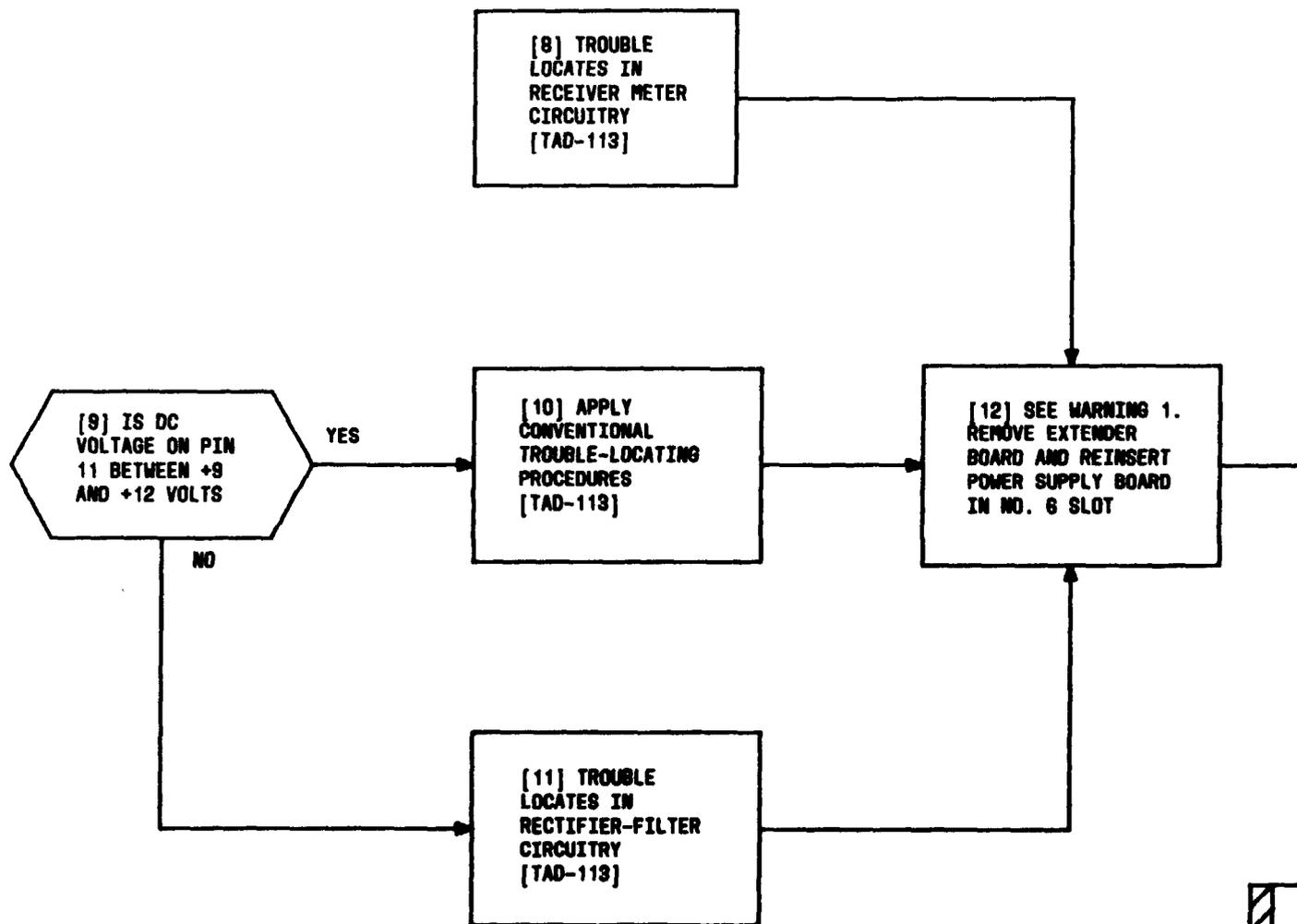


NOTE
 UPON COMPLETION OF THIS
 TAP, RETURN RECEIVER TO
 SERVICE, OR CONTINUE
 WITH OTHER TESTING, AS
 REQUIRED

WARNING 1
 POWER MUST BE
 REMOVED AS SHOWN
 IN DLP-527 TO
 PREVENT DAMAGE
 TO EQUIPMENT

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 2	112

CLEAR +5 VOLT REGULATED POWER SUPPLY TROUBLE



WARNING 1	
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 2	112

NOTE: LIGHTNING PROTECTION - G.E. METAL OXIDE VARISTORS
 * FACTORY ADJUST

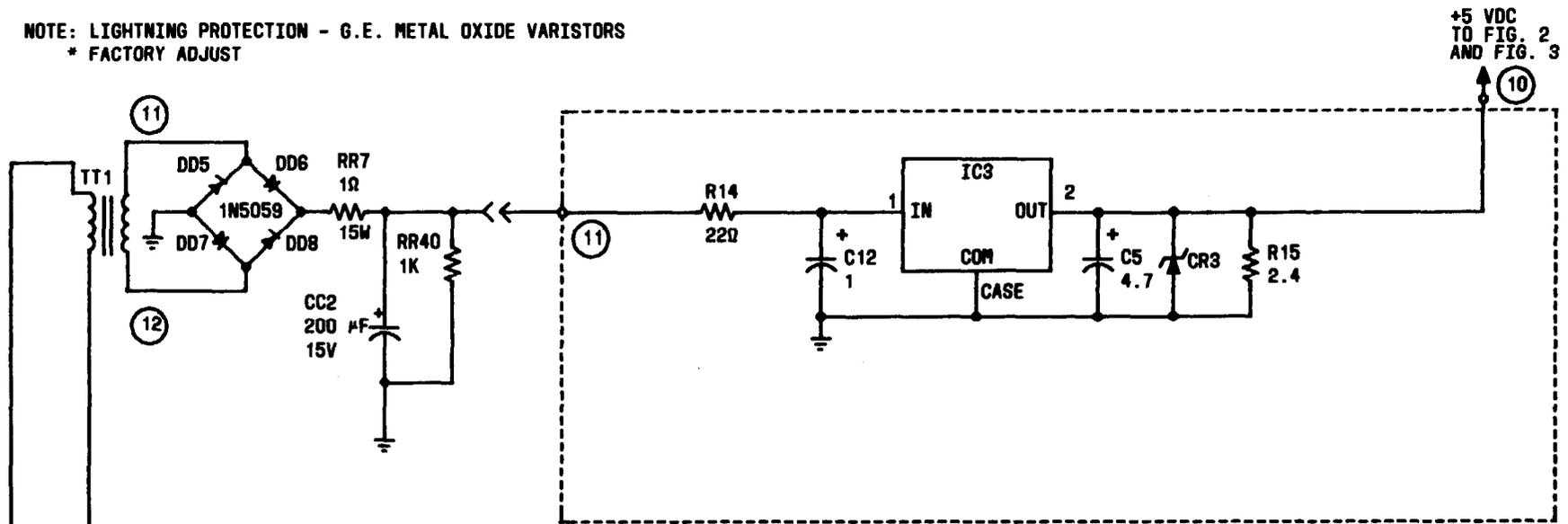


FIG. 1 - POWER SUPPLY

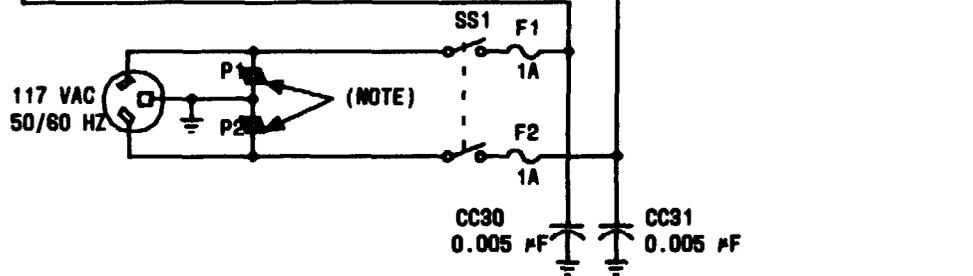


FIG. 2 - DISTRIBUTION

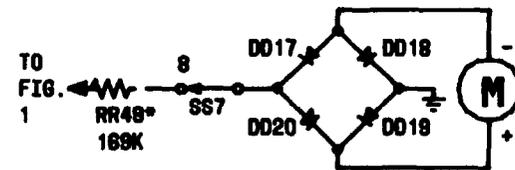


FIG. 3 - METER CIRCUIT

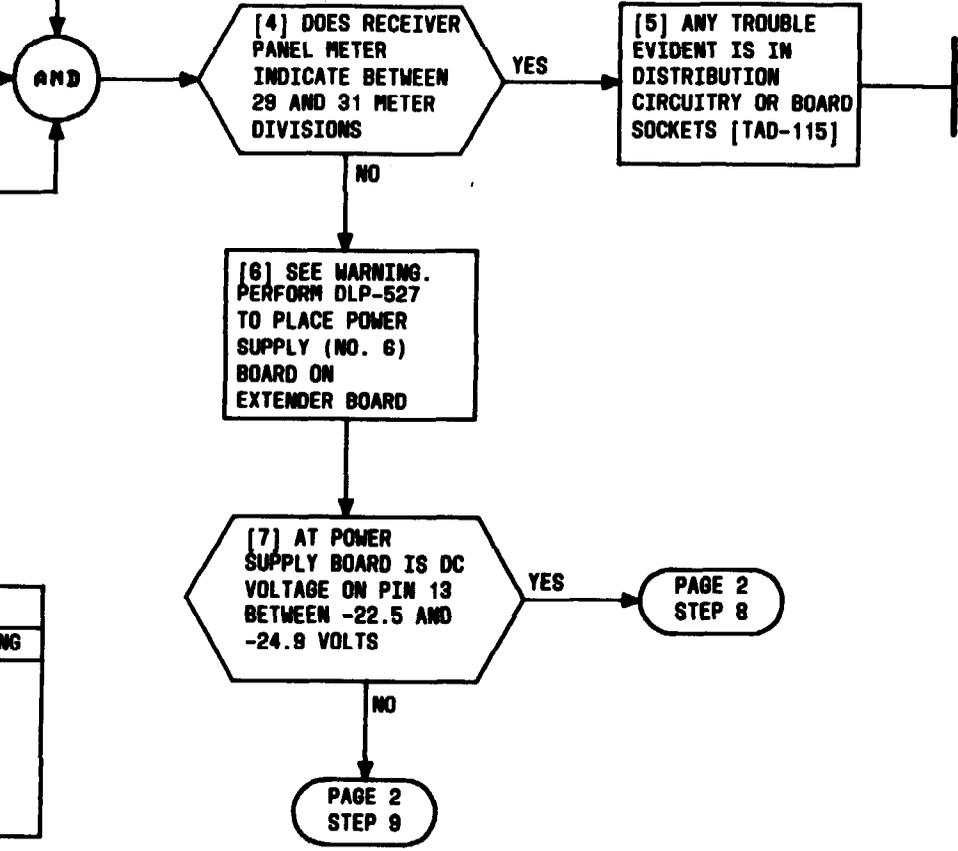
+5 VOLT REGULATED POWER SUPPLY CIRCUIT

Issue 2	FEB 1979
403-200-502	TAD
PAGE 1 of 1	113

[1] OBTAIN RELEASE FROM CONTROL
TERMINAL FOR RECEIVER TEST.
[SEE NOTE]

[2] SET RECEIVER PANEL
CONTROLS PER TABLE A

[3] SET RECEIVER METER SWITCH
TO -24V POSITION



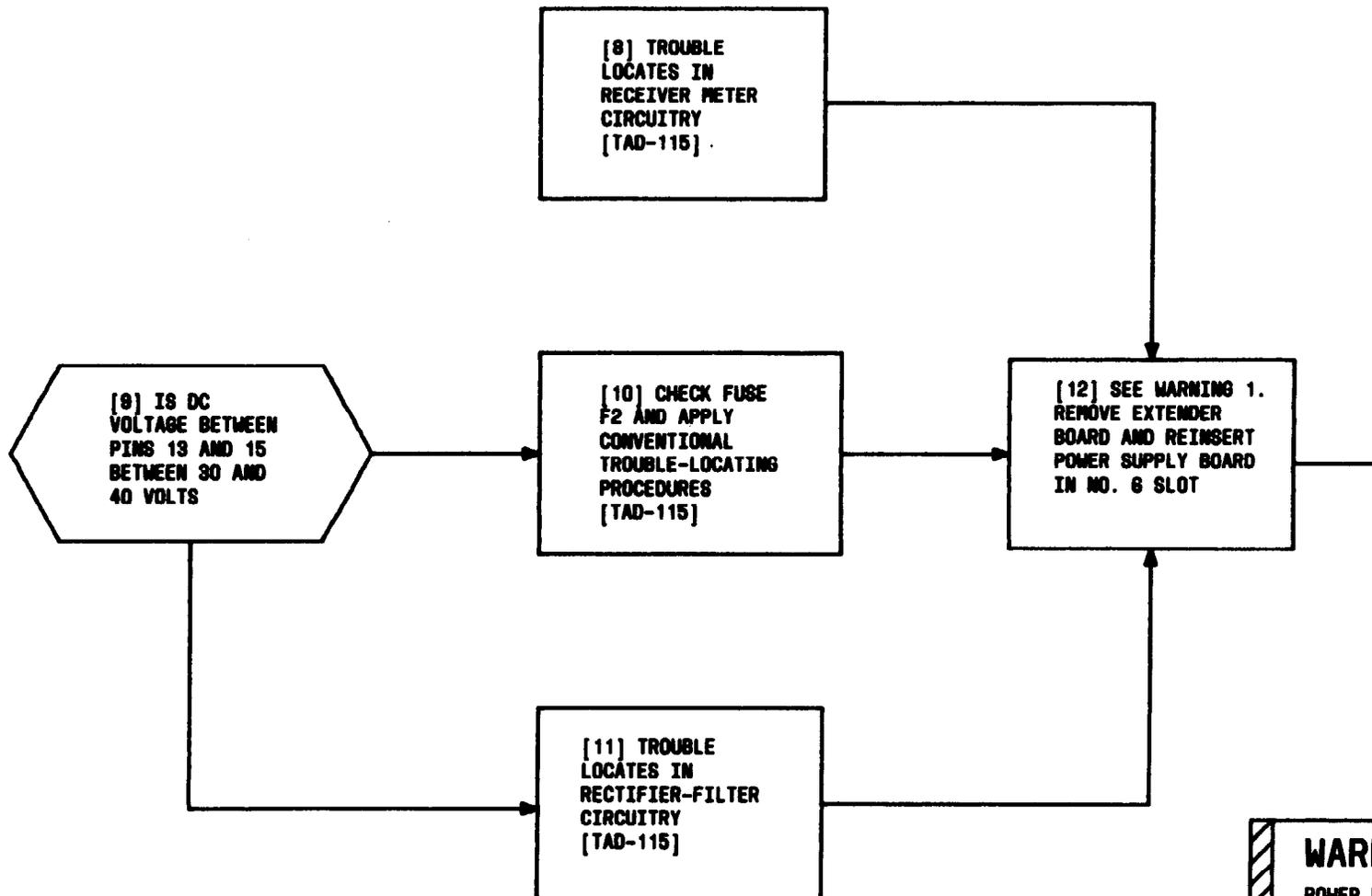
CONTROL	SETTING
POWER	ON
CONTROL	LOC
TEST GENERATOR	ON
CODAN	ON
AGC/MANUAL	AGC

NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

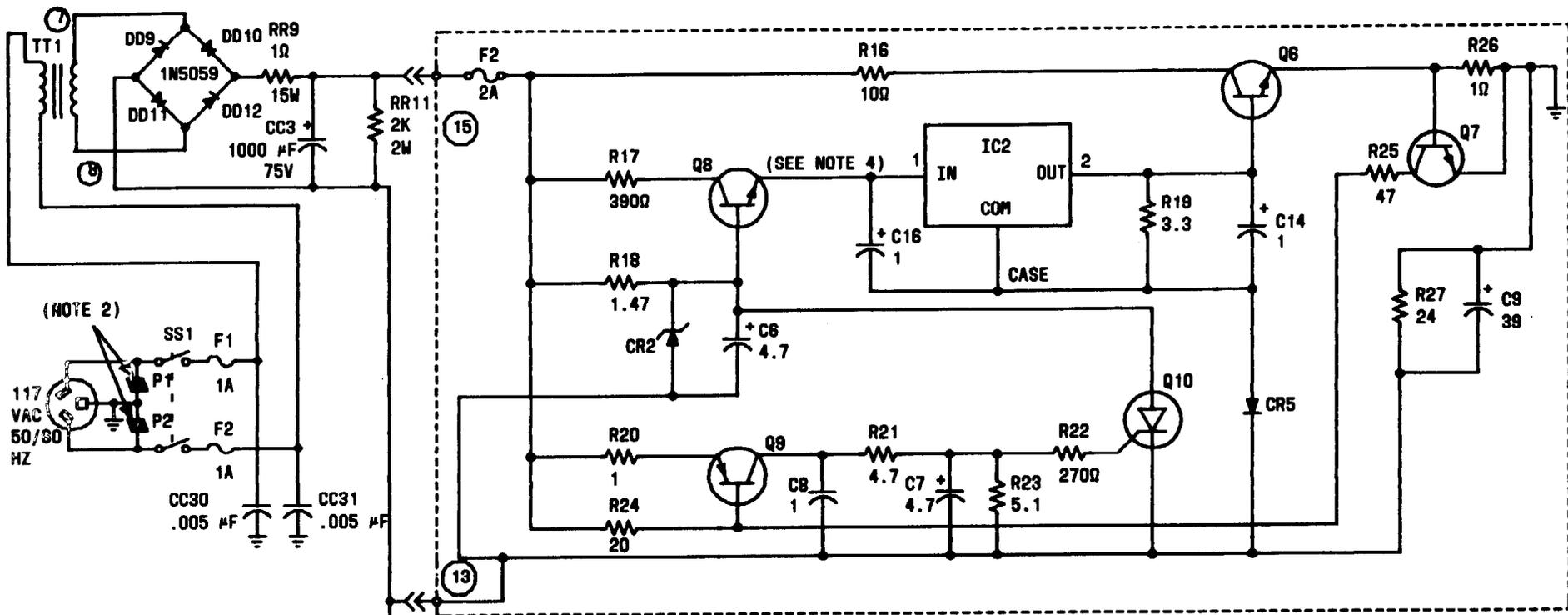
Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 2	114

CLEAR -24 VOLT REGULATED POWER SUPPLY TROUBLE



WARNING 1	
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 2	114

CLEAR -24 VOLT REGULATED POWER SUPPLY TROUBLE



-24 VDC
TO FIG. 2
AND FIG. 3

SD-2R-201-01

FIG. 1 - POWER SUPPLY

NOTES:

1. ALL -24V LINES BYPASSED BY .1-μF 100V MYLAR CAPACITOR AT EACH CARD SOCKET. CAPACITORS ARE CC15-CC20
2. LIGHTNING PROTECTION - G.E. METAL OXIDE VARISTORS
3. CAPACITORS ARE LOCATED ON BACK OF BOARDS, SOLDERED DIRECTLY TO PINS
4. * FACTORY ADJUST

- ATTENUATOR BOARD PIN 5
- 2ND IF BOARD (12) PIN 5
- CODAN (11) BOARD PIN 12
- AUDIO (7) BOARD PIN 6
- AUDIO LIMITER (9) BOARD PIN 14
- CARRIER TRACK (10) BOARD PIN 11
- RECEIVER SELECT (8) BOARD PIN 8
- BUFFER (1) BOARD PIN 13 (SD-2R-110-01)

TO FIG. 1
-24 VDC
REGULATED

FIG. 2 - DISTRIBUTION

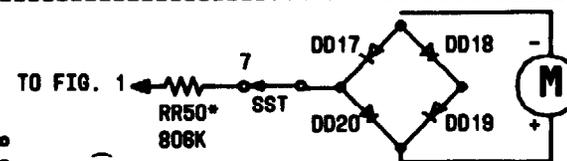


FIG. 3 - METER CIRCUIT

-24 VOLT REGULATED POWER SUPPLY CIRCUIT

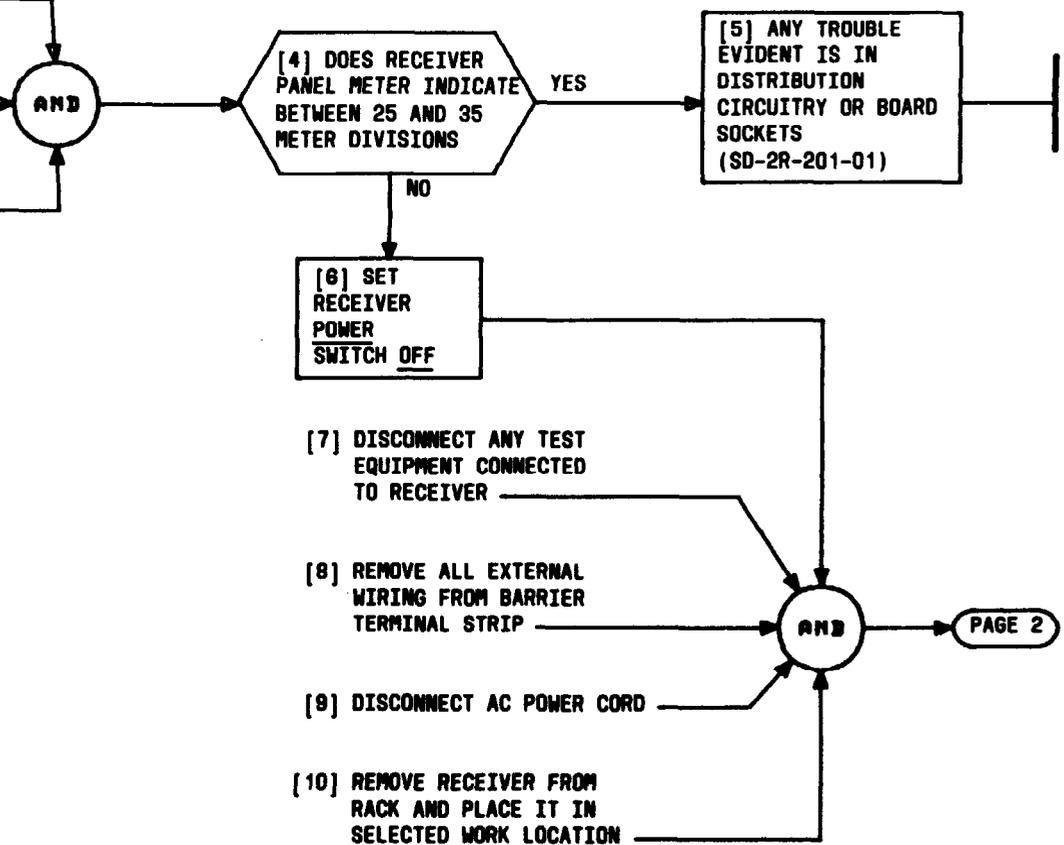
Issue 2	FEB 1979
403-200-502	TAD
PAGE 1 of 1	115

[1] OBTAIN RELEASE FROM CONTROL
 TERMINAL FOR RECEIVER.
 SEE NOTE

[2] SET RECEIVER PANEL
 CONTROLS PER TABLE A

[3] SET RECEIVER METER SWITCH
 TO +24V UNREG POSITION

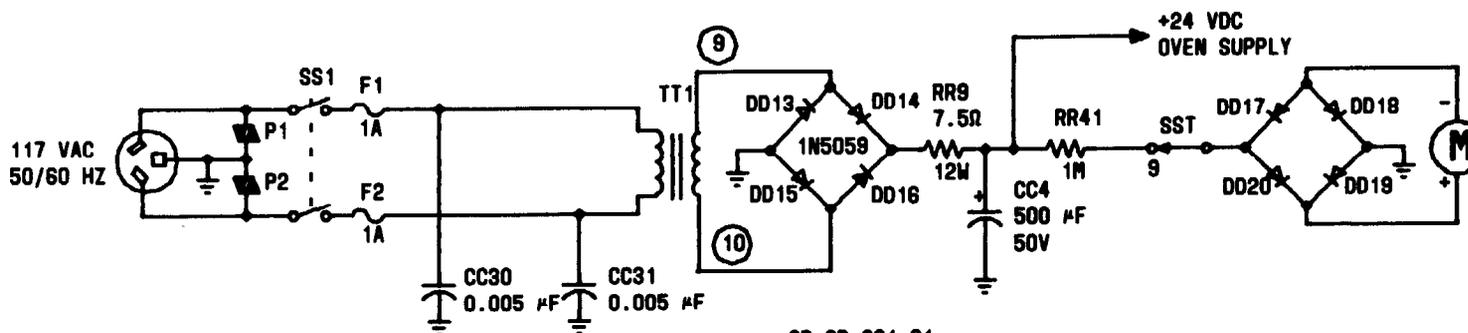
TABLE A	
CONTROL	SETTING
POWER CONTROL	ON
TEST GENERATOR	LOC
CODAN	ON
AGC/MANUAL	AGC



NOTE
 UPON COMPLETION OF THIS
 TAP, RETURN RECEIVER TO
 SERVICE, OR CONTINUE
 WITH OTHER TESTING, AS
 REQUIRED

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 2	116

CLEAR +24 VOLT UNREGULATED POWER SUPPLY TROUBLE



SD-2R-201-01
FIG. 1 - POWER SUPPLY

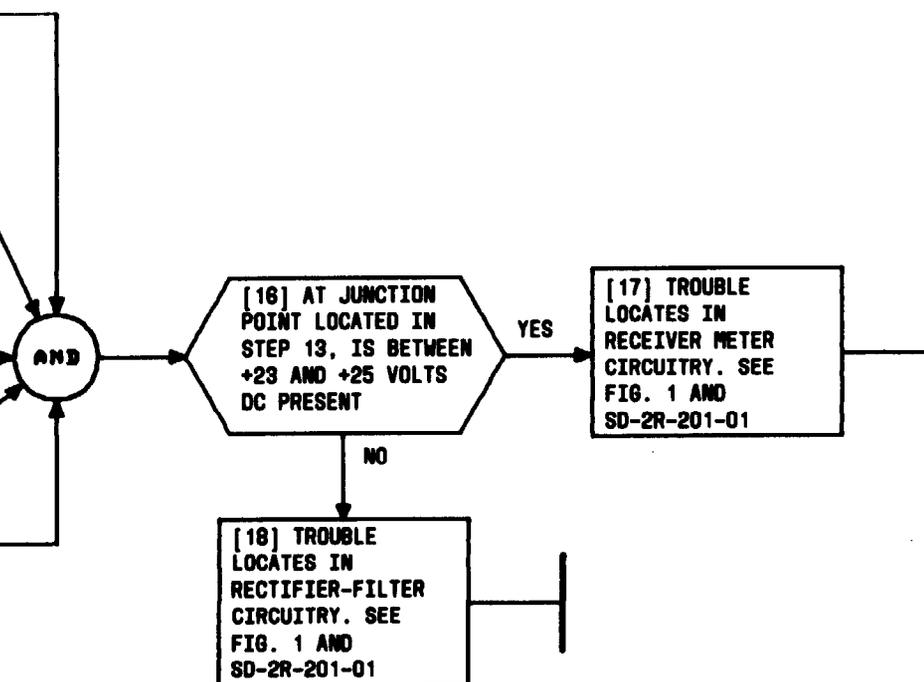
[11] REMOVE RECEIVER TOP COVER BY REMOVING FOUR SCREWS ON EACH SIDE AND SLIDING COVER TO REAR

[12] PLACE RECEIVER IN POSITION SO THAT ABOVE CHASSIS COMPONENTS ARE ACCESSIBLE

[13] LOCATE JUNCTION POINT OF RESISTOR RR9 (7.5Ω, 12 WATT), CAPACITOR CC4 (500μF, 50V), LEAD TO RECEIVER METER CIRCUITRY AND LEAD TO VCO OVEN. SEE FIG. 1 AND SD-2R-201-01

[14] RECONNECT RECEIVER POWER CORD TO 117-VAC SOURCE

[15] SET RECEIVER POWER SWITCH ON



CLEAR +24 VOLT UNREGULATED POWER SUPPLY TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO REM POSITION

[3] USING FREQUENCY COUNTER TERMINATED INTO 50 OHMS, MEASURE FREQUENCY AT PANEL BNC JACK MARKED HFO

[4] IS FREQUENCY INDICATED BETWEEN 1.499998 AND 1.500002 MHZ ABOVE ASSIGNED CHANNEL FREQUENCY

NO

[6] SET PANEL METER SWITCH TO +24V POSITION

[7] DOES METER INDICATE BETWEEN ONE MARKED DIVISION ABOVE OR BELOW RED LINE MARK

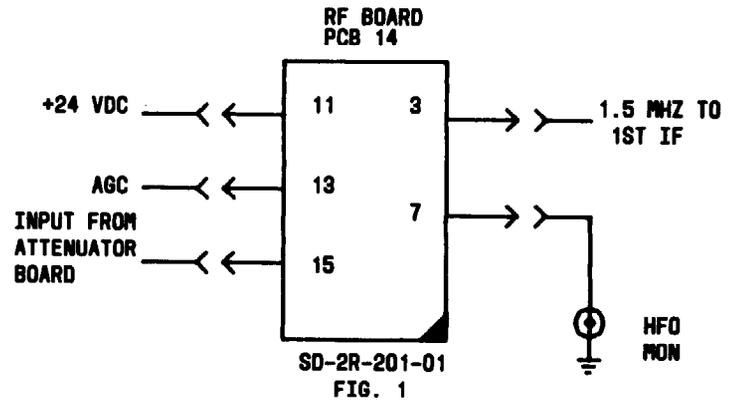
YES

PAGE 2

NO

TAP-110

[5] NO TROUBLE NOW EVIDENT, OR MAY BE INTERMITTENT IN NATURE



NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE OR CONTINUE WITH OTHER TESTING, AS REQUIRED

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 2	117

CLEAR HIGH-FREQUENCY OSCILLATOR TROUBLE

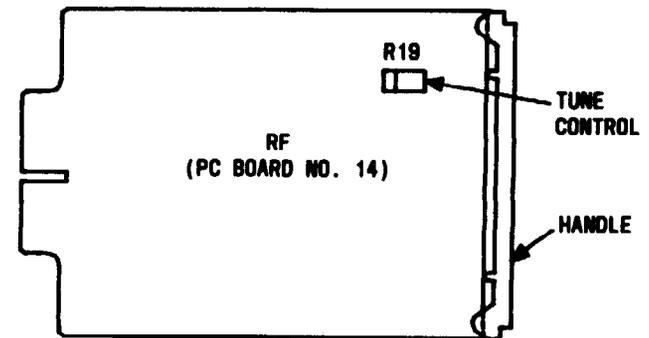
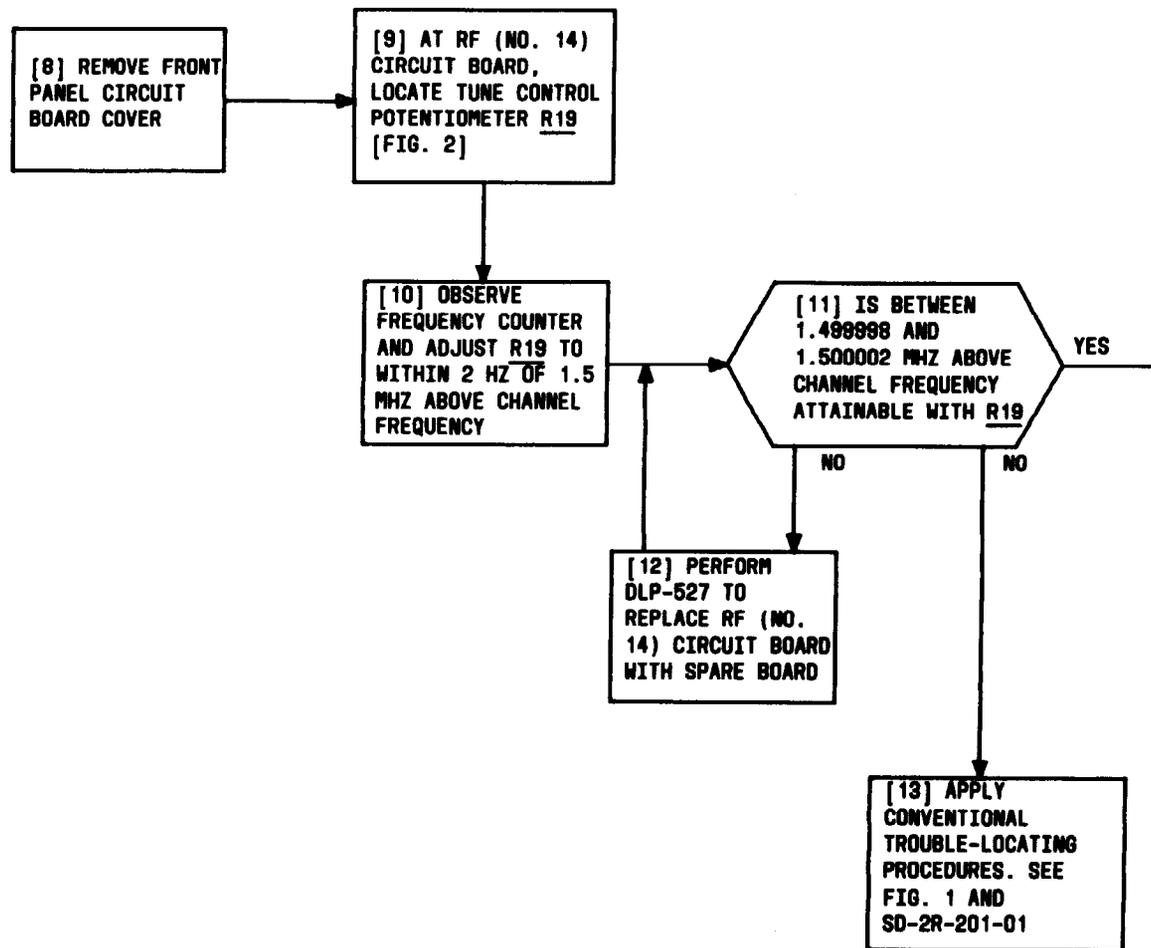


FIG. 2 - RF BOARD

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE

[2] AT RECEIVER, SET CONTROL SWITCH TO REM POSITION

[3] USING FREQUENCY COUNTER TERMINATED INTO 50 OHMS, MEASURE FREQUENCY AT PANEL BNC JACK MARKED 1.6 MHZ

[4] IS FREQUENCY INDICATED BETWEEN 1.599998 AND 1.600002 MHZ

NO

[6] SET PANEL METER SWITCH TO +24V POSITION

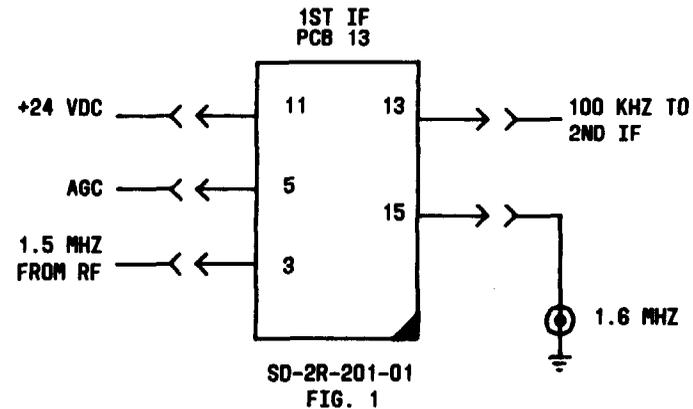
[7] DOES METER INDICATE BETWEEN ONE MARKED DIVISION ABOVE OR BELOW RED LINE MARK

YES

PAGE 2

TAP-110

[5] NO TROUBLE NOW EVIDENT, OR MAY BE INTERMITTENT IN NATURE



NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 2	118

CLEAR FIRST IF LOCAL (1.6 MHZ) OSCILLATOR TROUBLE

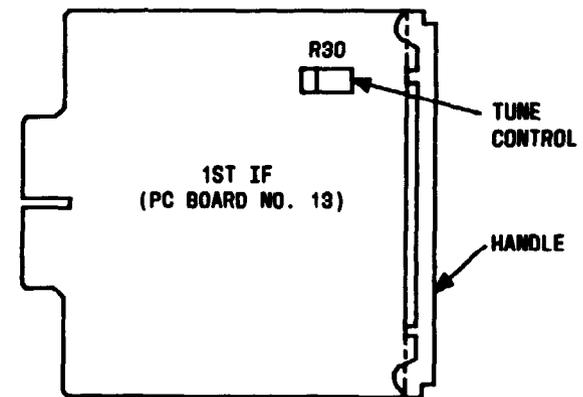
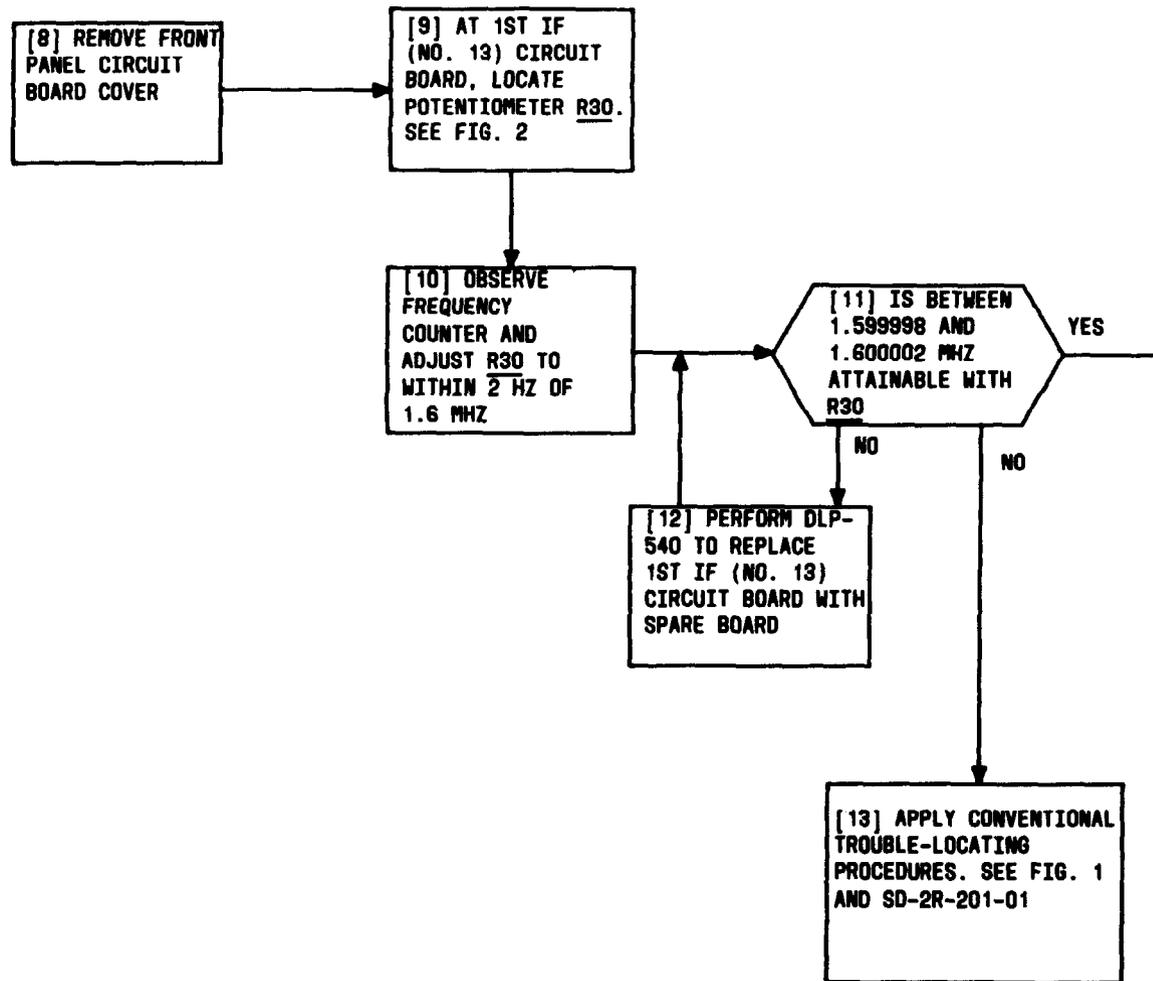


FIG. 2 - 1ST IF BOARD

CLEAR FIRST IF LOCAL (1.6 MHZ) OSCILLATOR TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 2	118

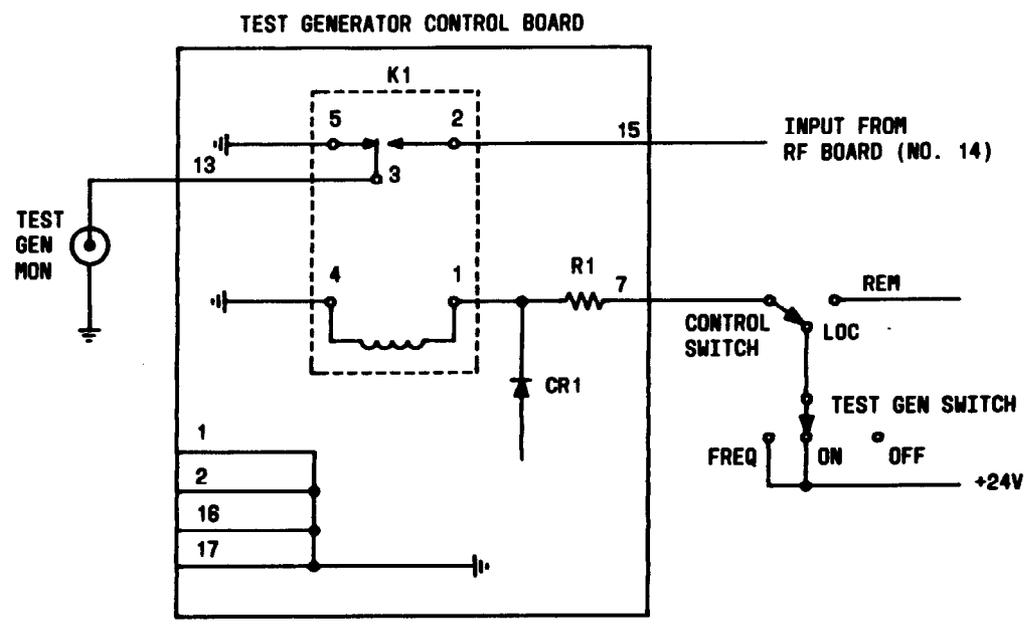
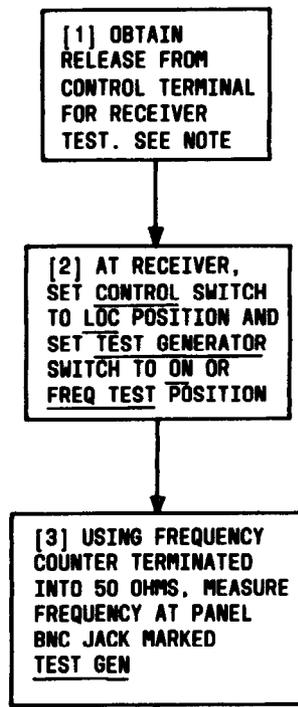
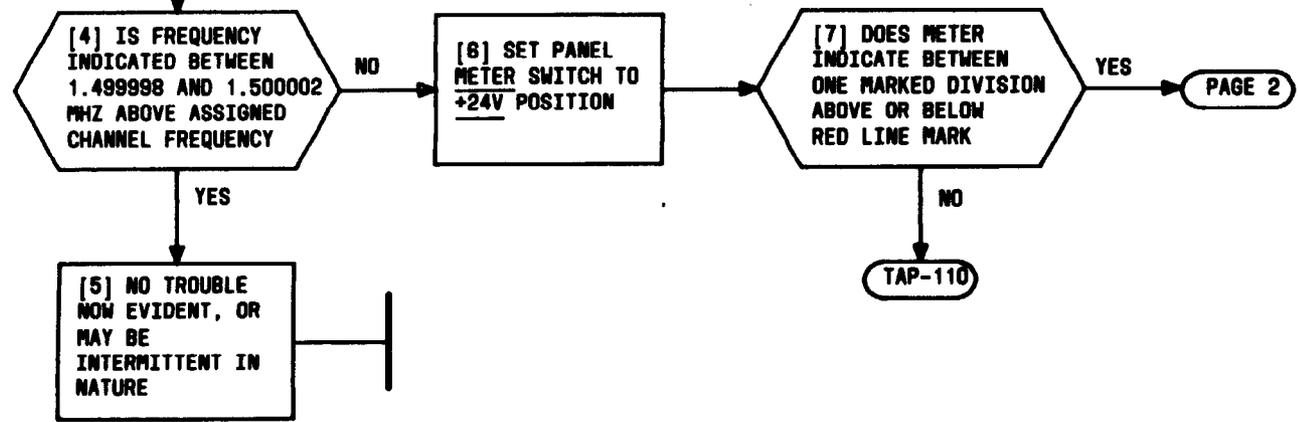


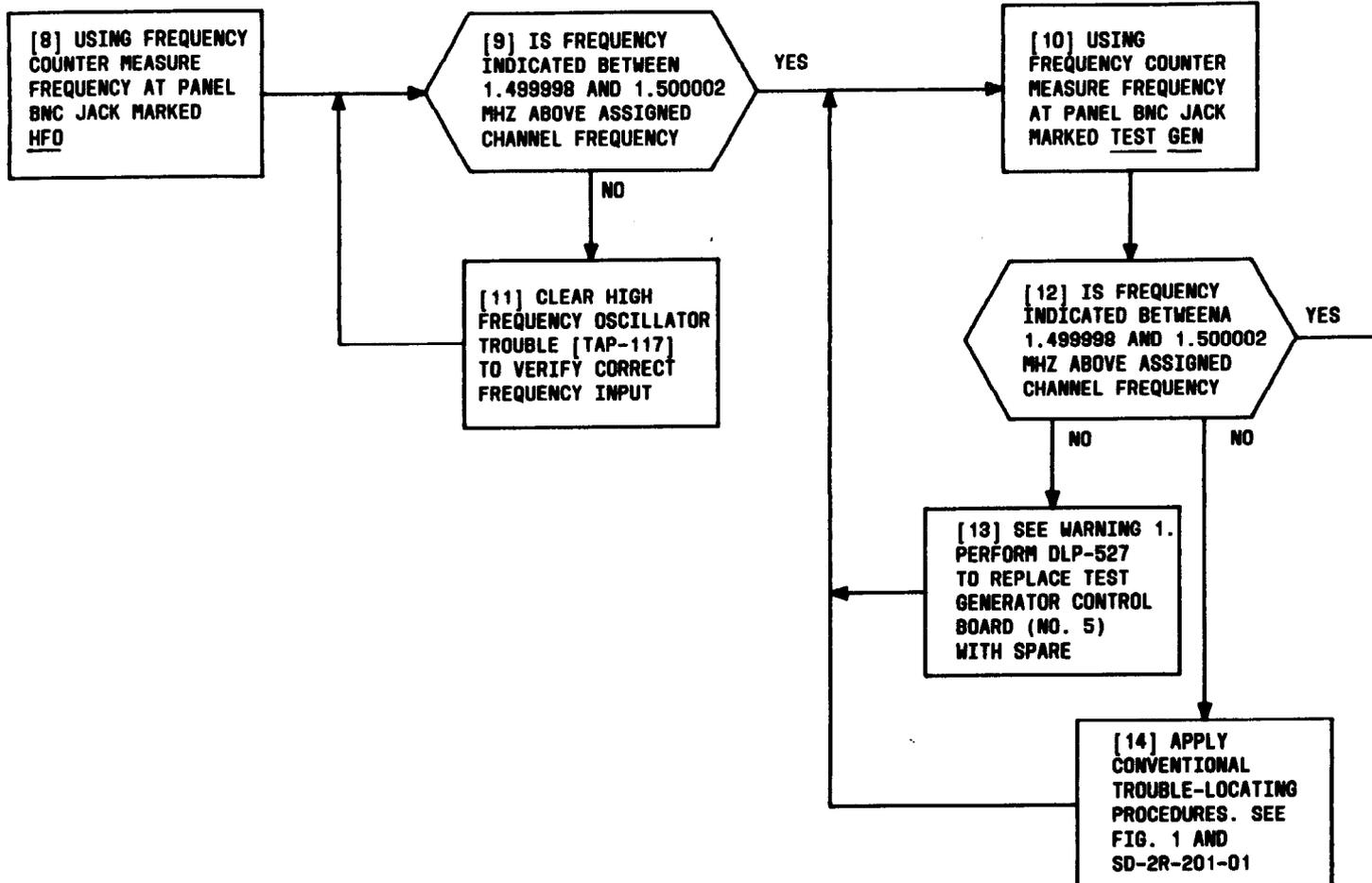
FIG. 1



CLEAR TEST GENERATOR FREQUENCY TROUBLE

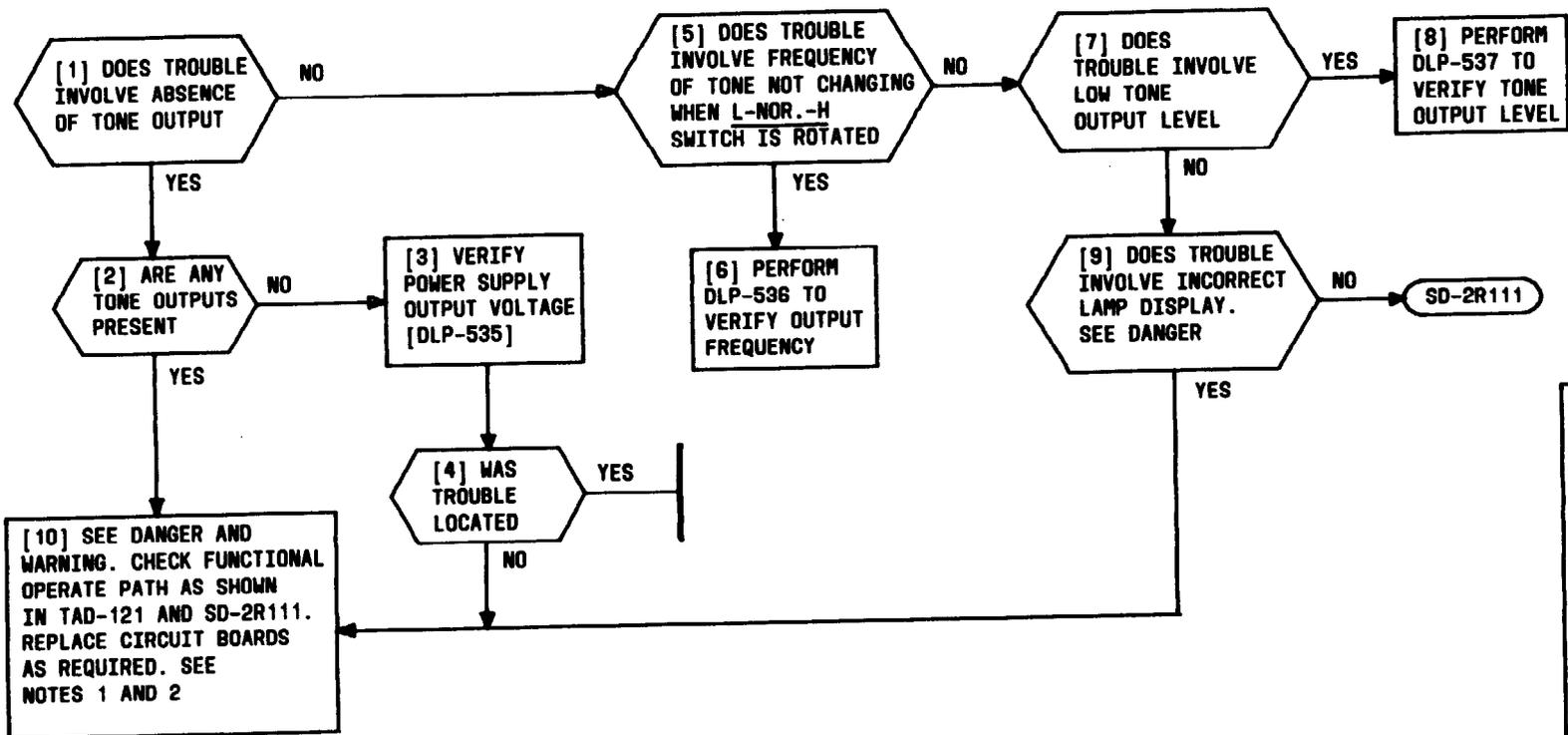
NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 2	119



WARNING 1	
POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 2 of 2	119

CLEAR TEST GENERATOR FREQUENCY TROUBLE



NOTES

1. PARTICULAR ATTENTION SHOULD BE GIVEN TO FAULTY AND INTERMITTENT SWITCH CONTACTS
2. WHEN OSCILLATOR POTENTIOMETER OR OSCILLATOR-SWITCH-COMBINER BOARDS ARE REPLACED, PERFORM DLP-536 AND DLP-537 TO VERIFY FREQUENCY AND LEVEL OUTPUTS

WARNING

WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

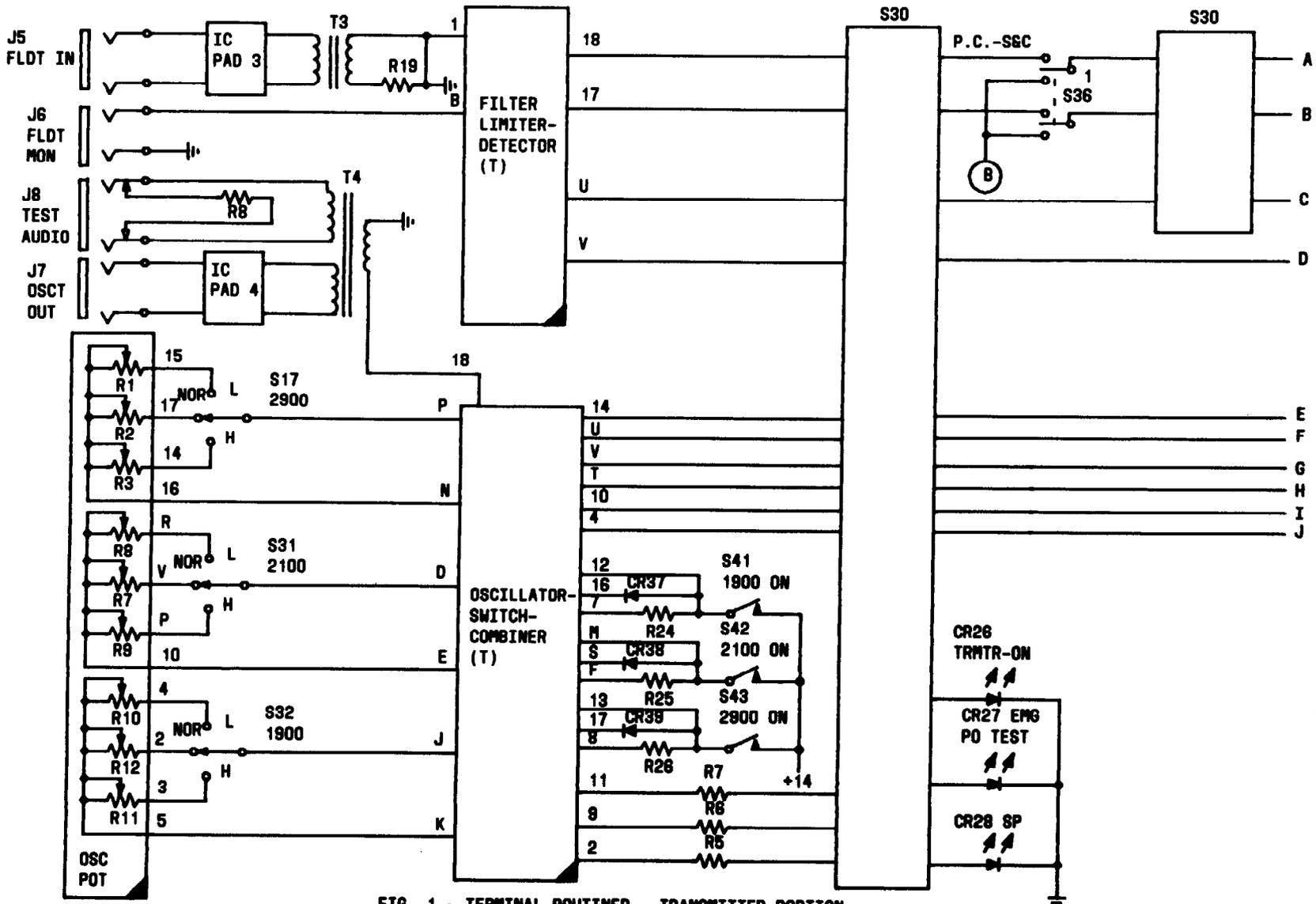
DANGER

120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

Issue 2 FEB 1979

403-200-502 TAP

PAGE 1 of 1 120



PAGE 2

FIG. 1 - TERMINAL ROUTINER - TRANSMITTER PORTION
SD-2R111

ROUTINER TEST SET CIRCUITS

Issue 2	FEB 1979
403-200-502	TAD
PAGE 1 of 8	121

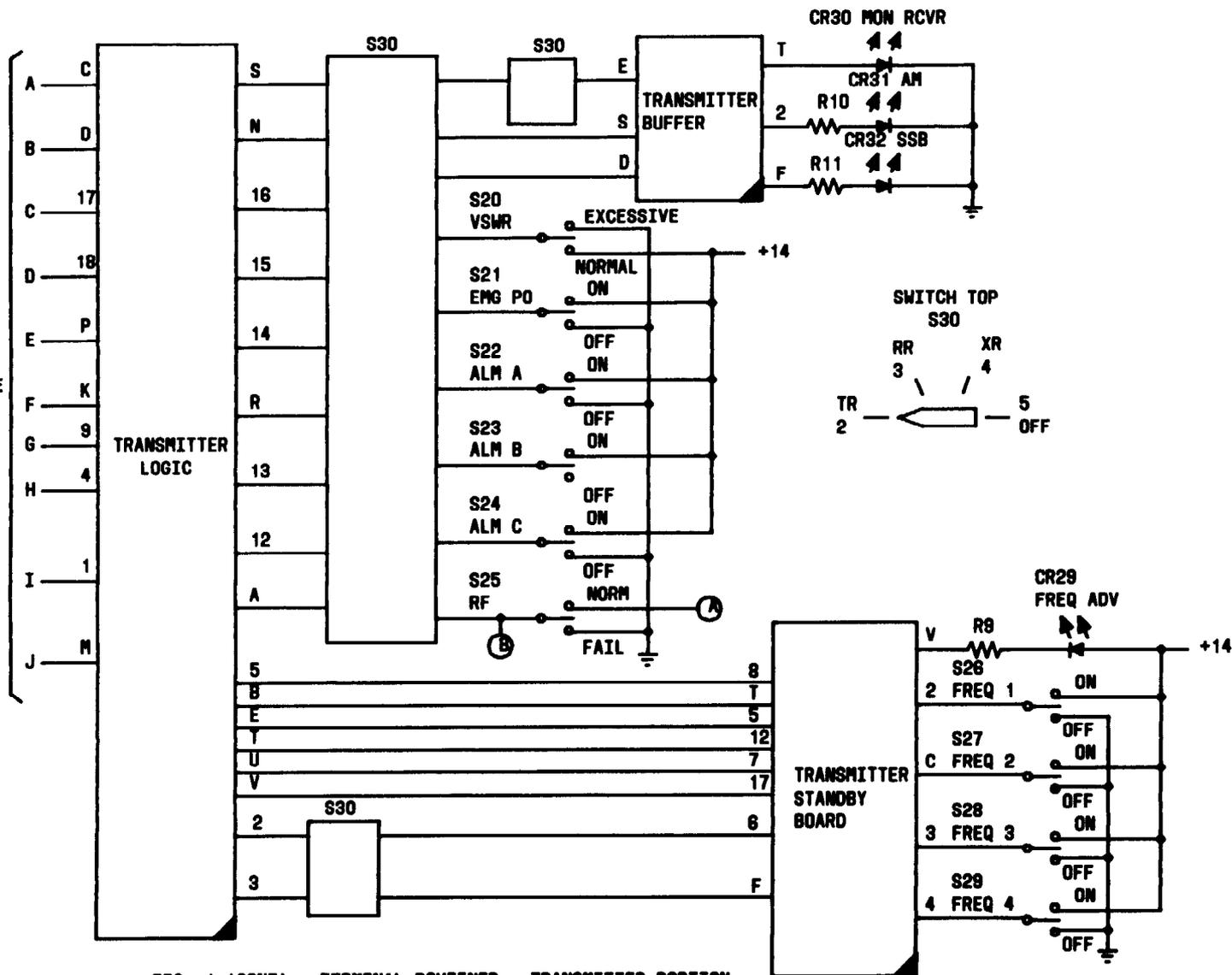
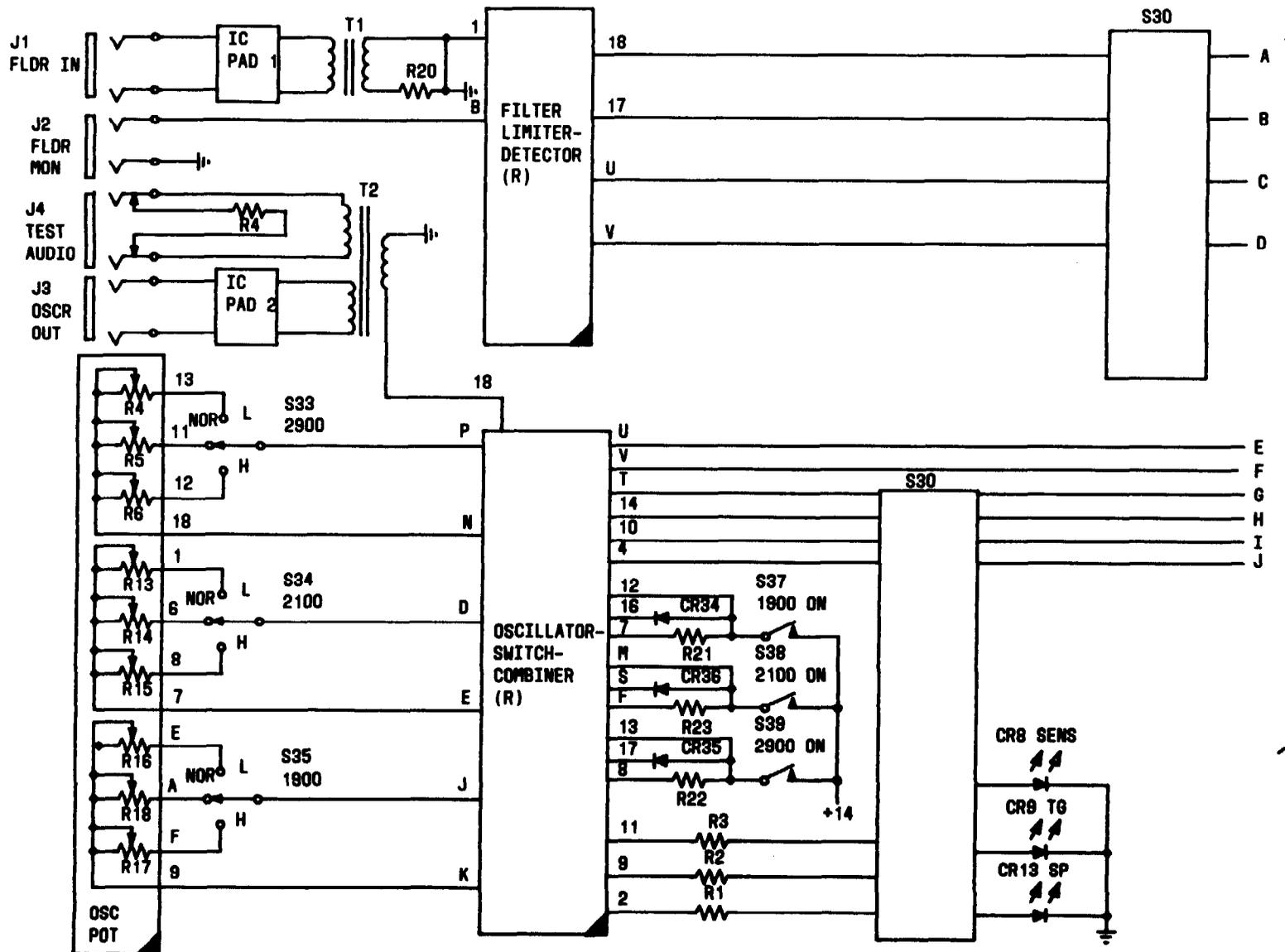


FIG. 1 (CONT) - TERMINAL ROUTER - TRANSMITTER PORTION
SD-2R111



PAGE 4

FIG. 2 - Terminal Router - Receiver Portion
SD-2R111

ROUTINER TEST SET CIRCUITS

Issue 2	FEB 1979
403-200-502	TAD
PAGE 3 of 8	121

PAGE 3

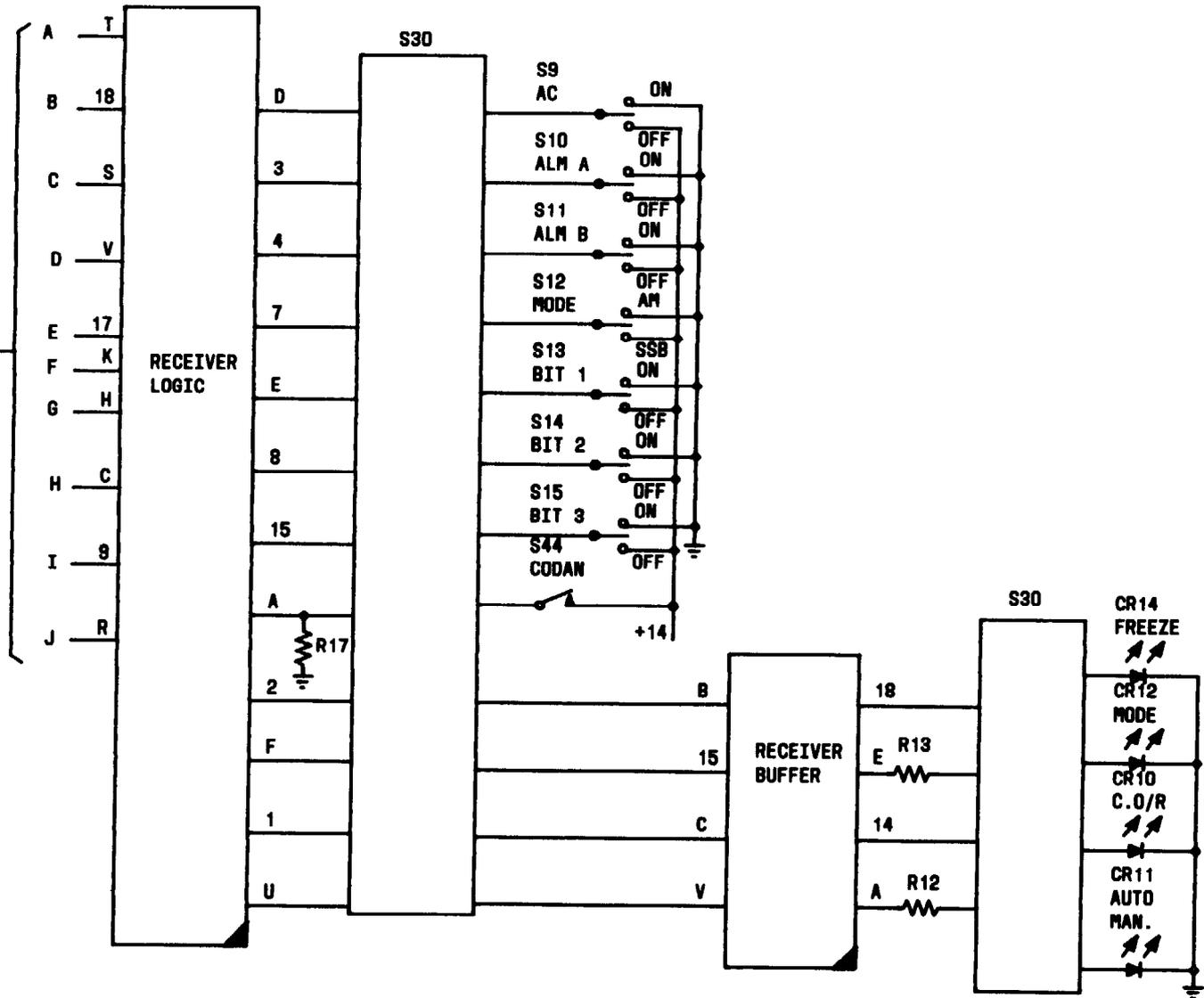
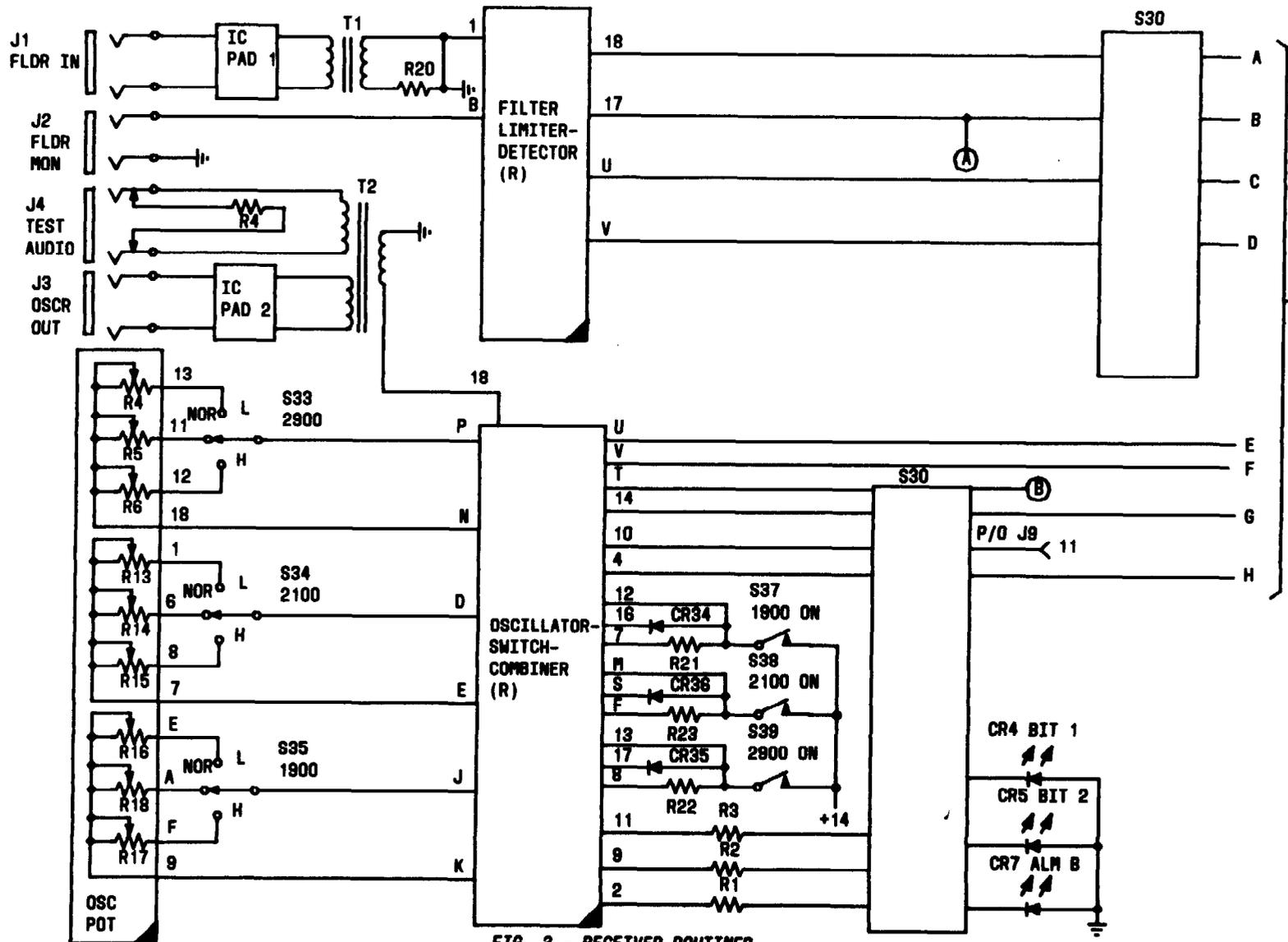


FIG. 2 (CONT) - TERMINAL ROUTINER - RECEIVER PORTION
SD-2R111



PAGE 6

FIG. 3 - RECEIVER ROUTINER
SD-2R111

ROUTINER TEST SET CIRCUITS

Issue 2	FEB 1979
403-200-502	TAD
PAGE 5 of 8	121

PAGE 5

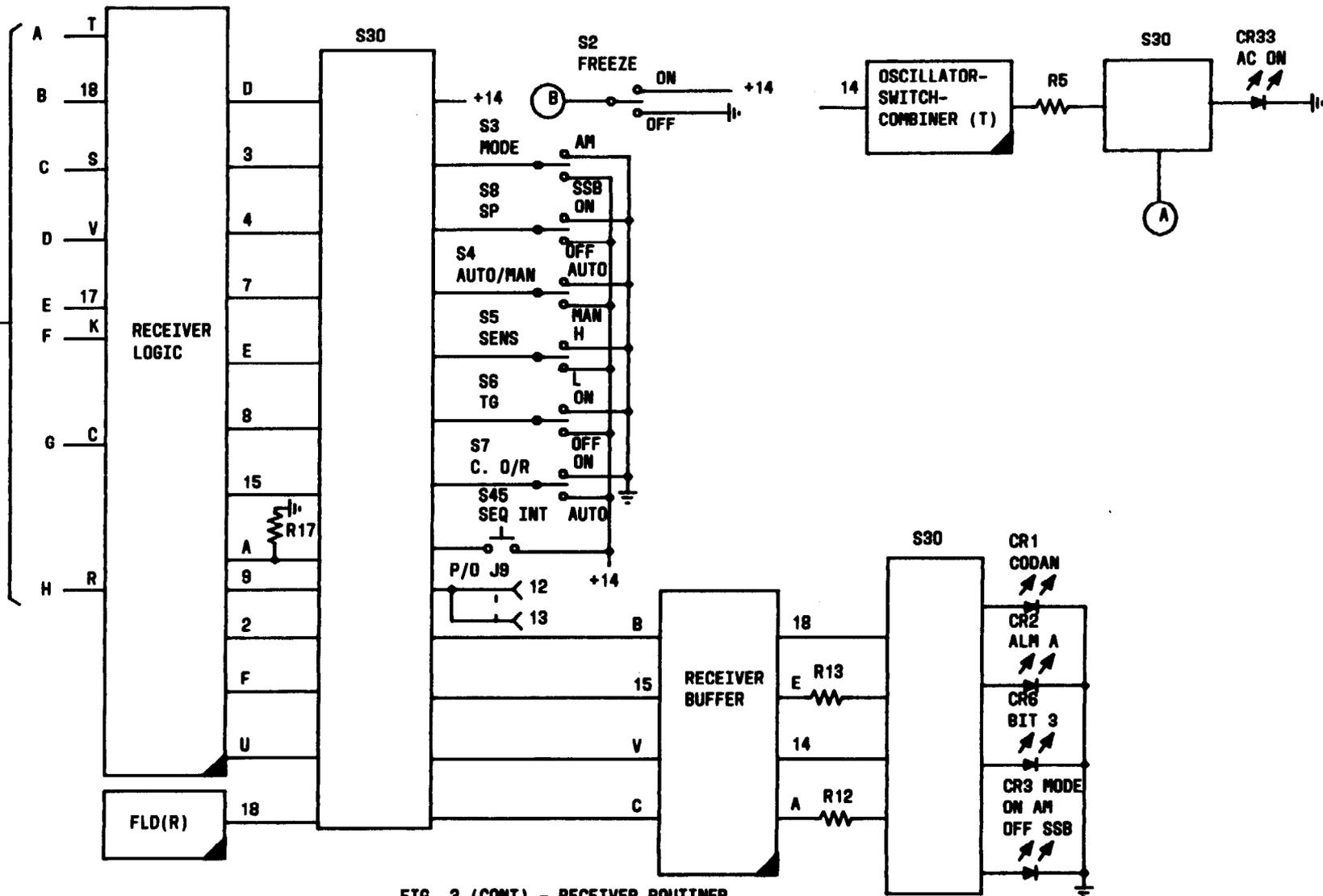


FIG. 3 (CONT) - RECEIVER ROUTINER
SD-2R111

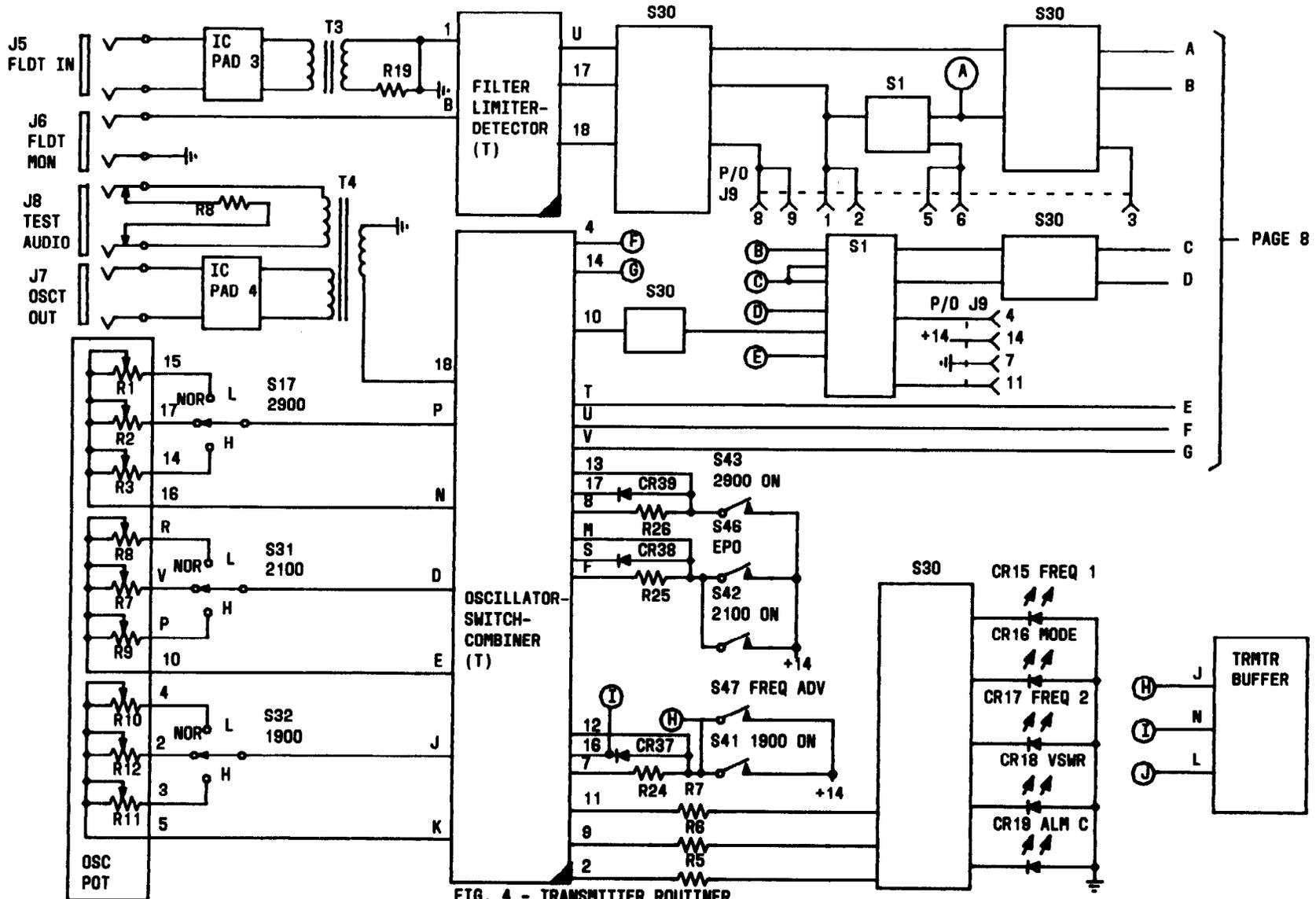


FIG. 4 - TRANSMITTER ROUTINER
SD-2R111

PAGE 8

ROUTINER TEST SET CIRCUITS

Issue 2	FEB 1979
403-200-502	TAD
PAGE 7 of 8	121

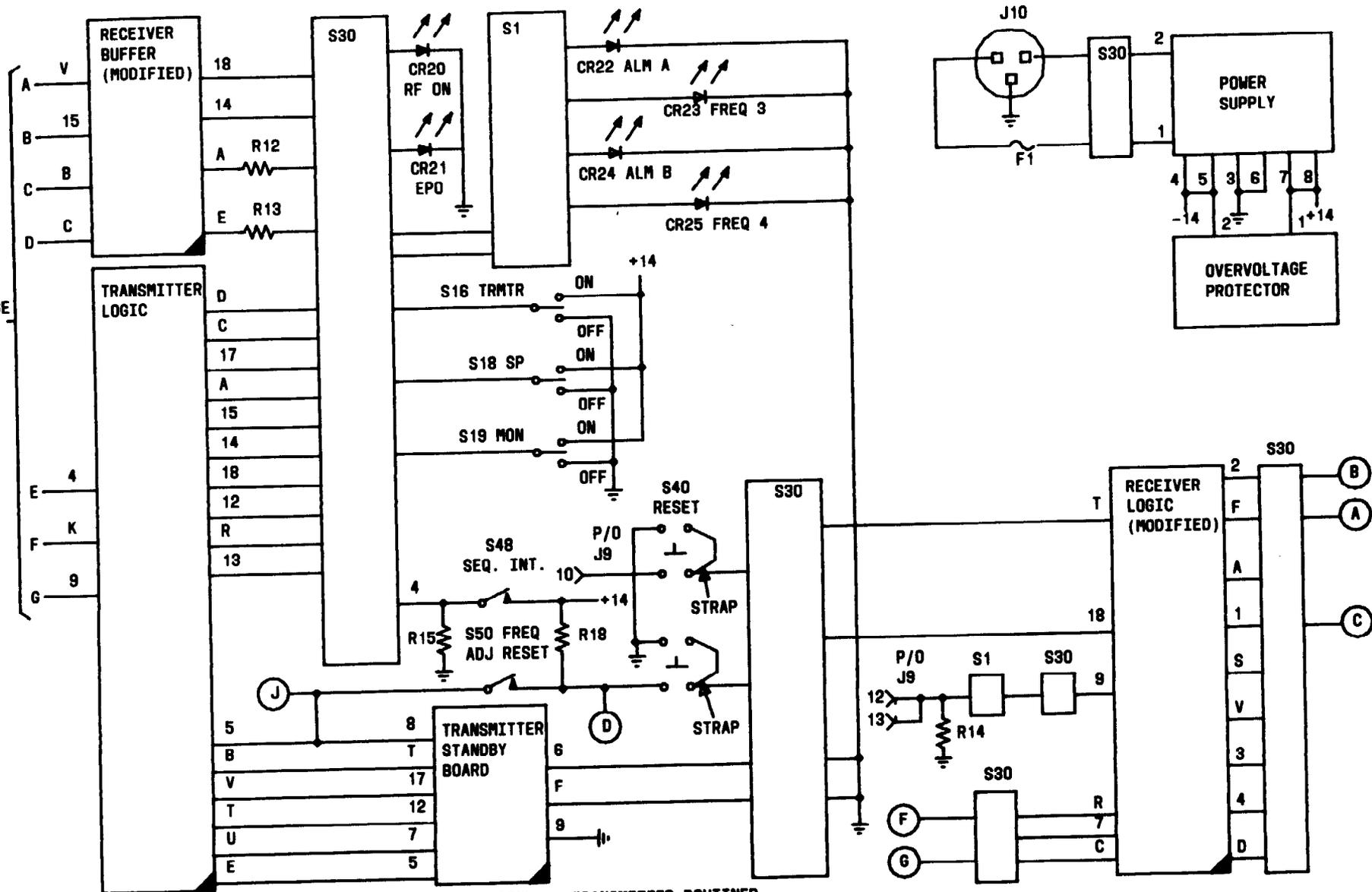


FIG. 4 (CONT) - TRANSMITTER ROUTINER
SD-2R111

Issue 2	FEB 1979
403-200-502	TAD
PAGE 8 of 8	121

[1] AT RECEIVER, DISCONNECT ANTENNA OR ANY TEST EQUIPMENT FROM ANTENNA JACK. SEE NOTE

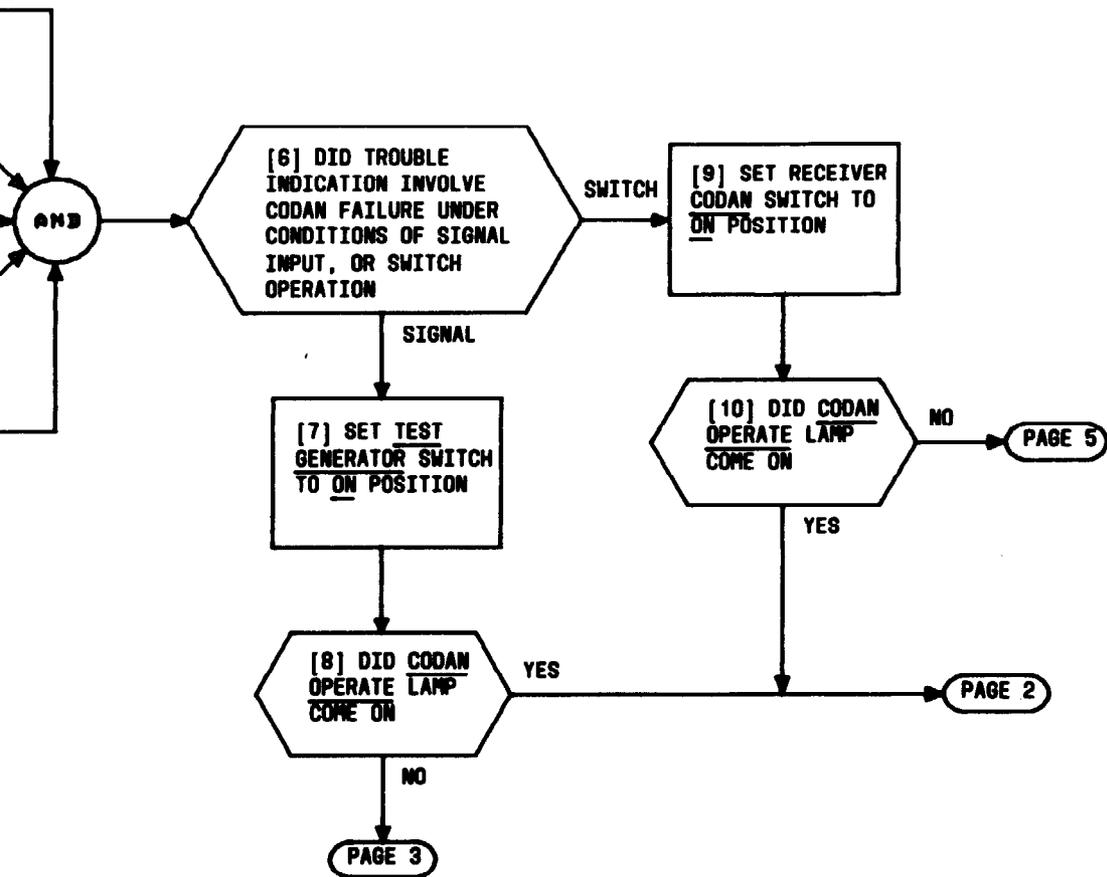
[2] SET CONTROL SWITCH TO LOC POSITION

[3] SET CODAN SWITCH TO AUTO POSITION

[4] SET MODE SWITCH TO AUTO POSITION

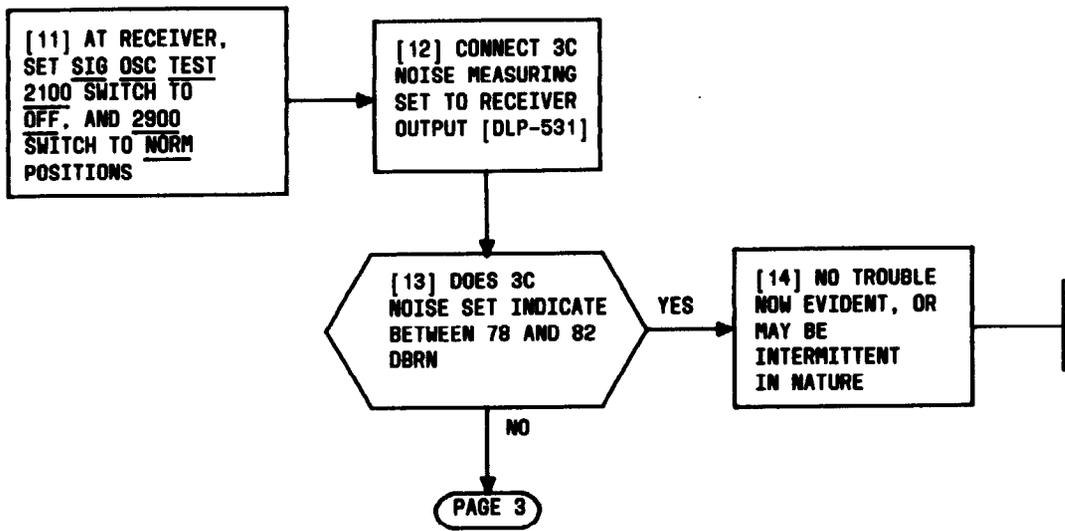
[5] SET TEST GENERATOR SWITCH TO OFF POSITION

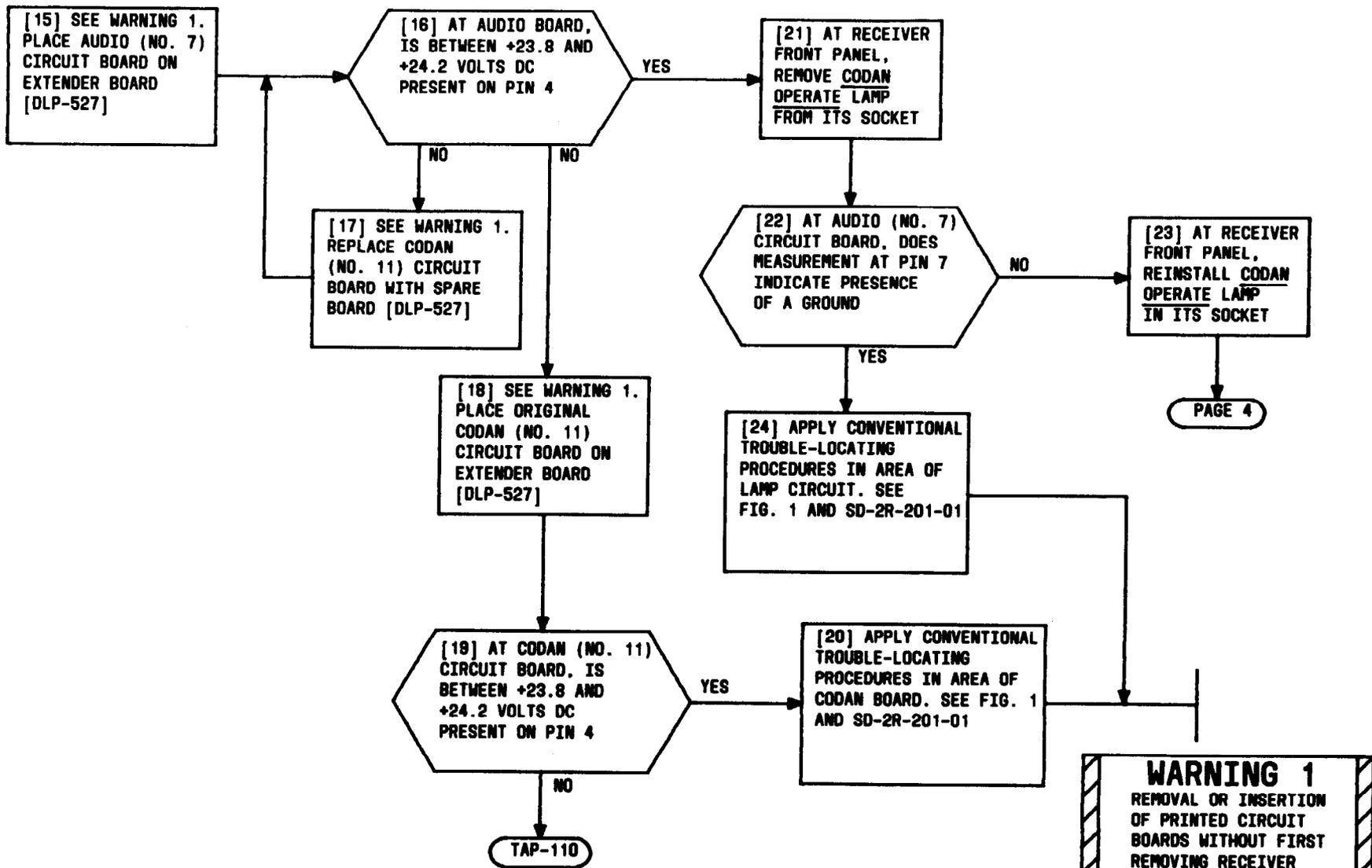
NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED



CLEAR CODAN OPERATE TROUBLE

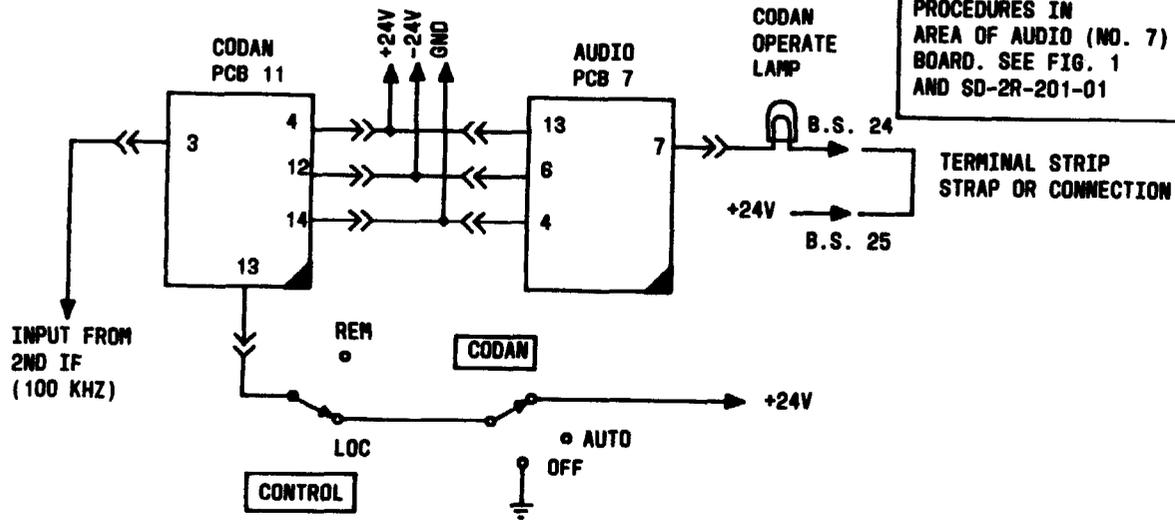
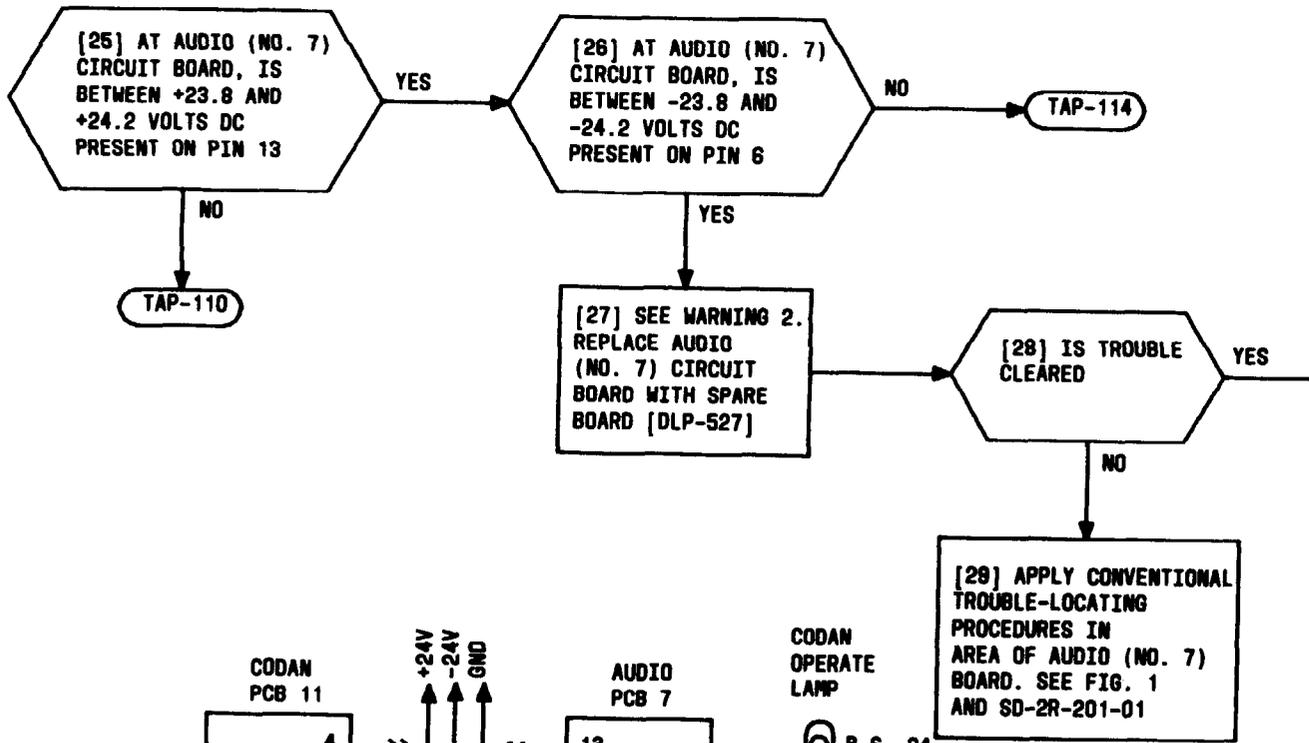
Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 5	122





CLEAR CODAN OPERATE TROUBLE

WARNING 1	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 3 of 5	122

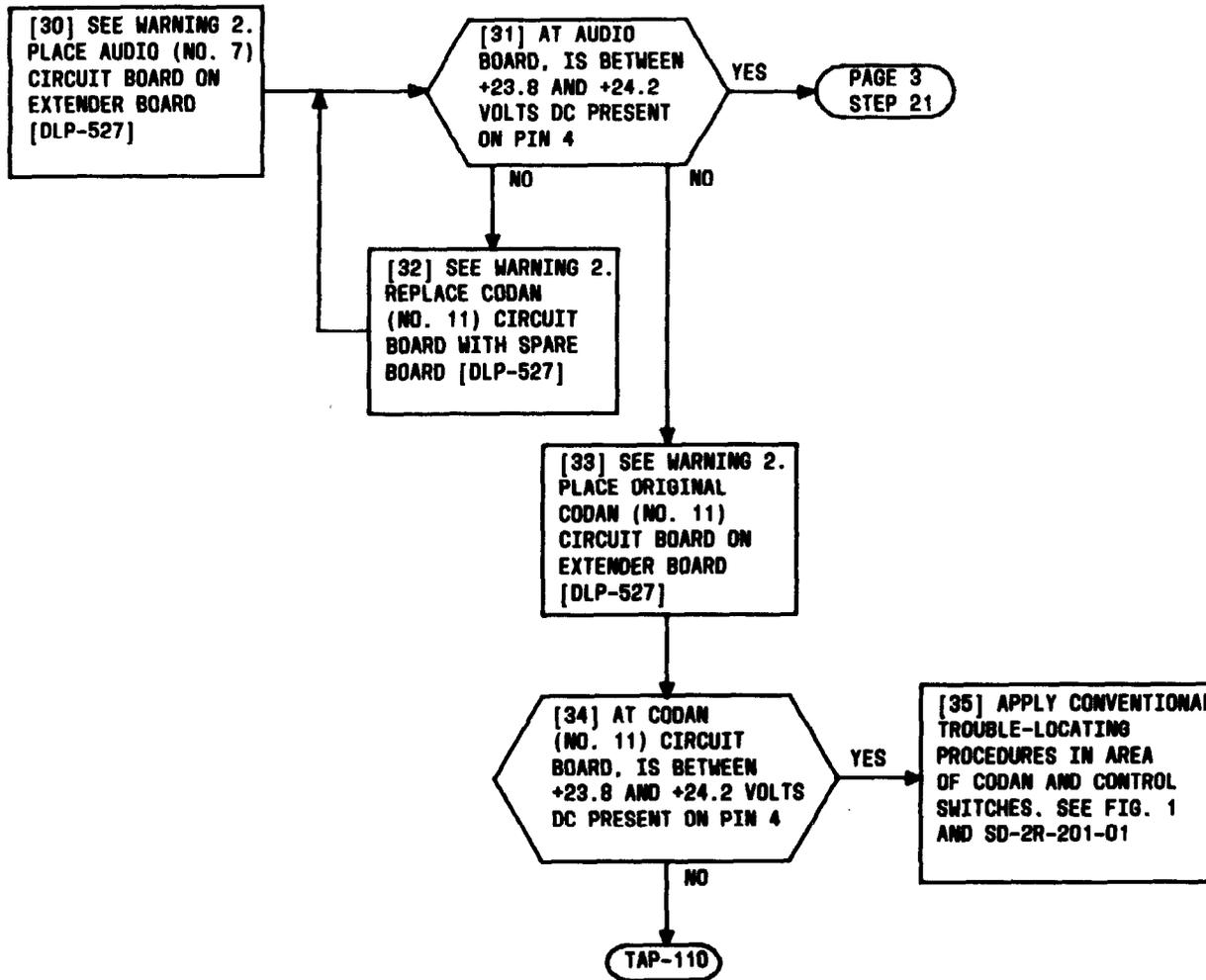


SD-2R-201-01

FIG. 1

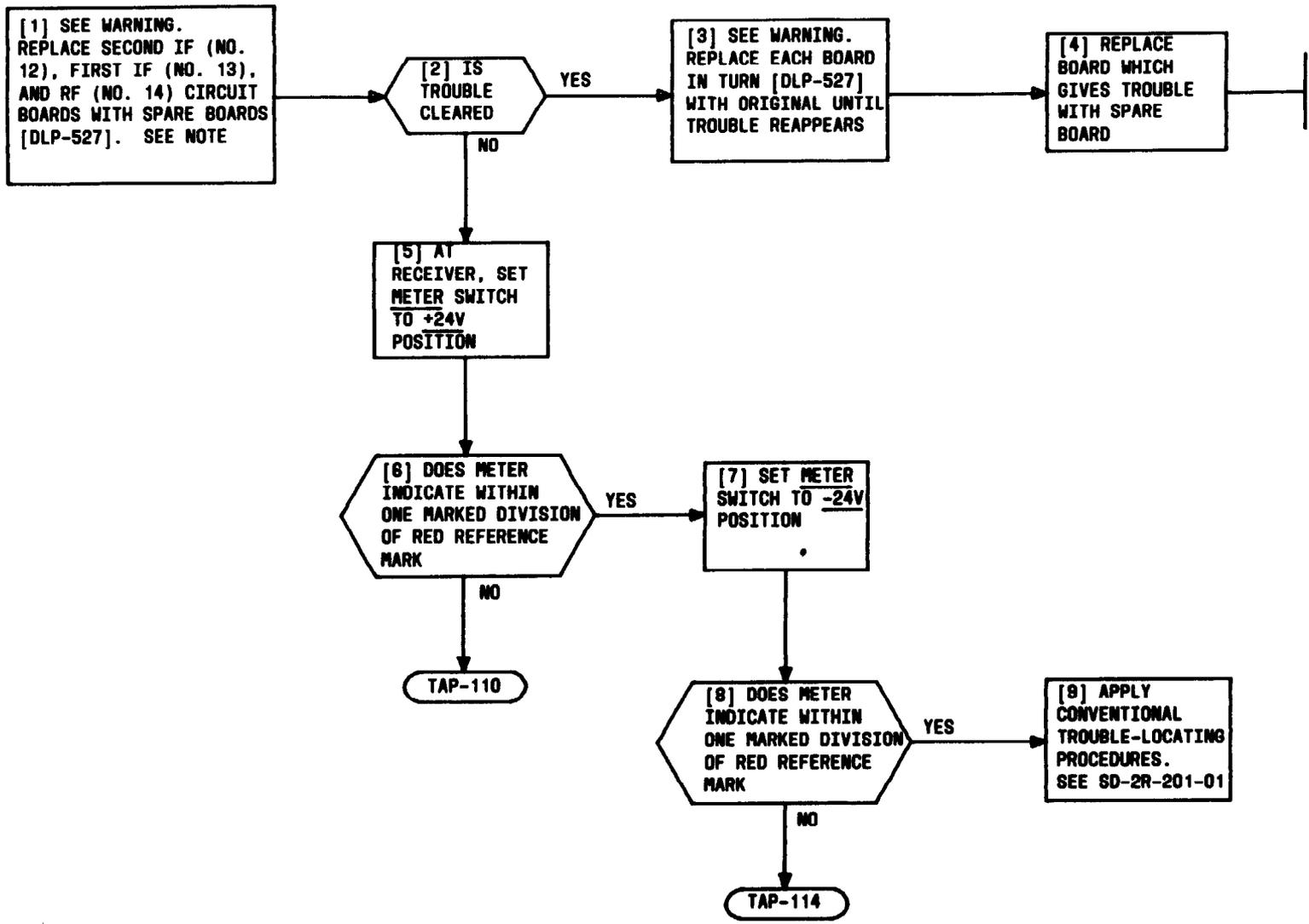
CLEAR CODAN OPERATE TROUBLE

Issue 2	FEB 1979
403-200-502	TAP
PAGE 4 of 5	122



WARNING 2	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 5 of 5	122

CLEAR CODAN OPERATE TROUBLE



NOTE
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 1	123

CLEAR AUTOMATIC GAIN CONTROL TROUBLE

[1] SEE WARNING.
REPLACE AUDIO
(NO. 7) CIRCUIT
BOARD WITH SPARE
BOARD [DLP-527] .
SEE NOTE

[2] IS TROUBLE
CLEARED

NO

[3] AT RECEIVER,
SET METER SWITCH
TO +24V POSITION

[4] DOES METER
INDICATE WITHIN ONE
MARKED DIVISION OF
RED REFERENCE MARK

YES

[5] SET METER
SWITCH TO -24V
POSITION

NO

TAP-110

[6] DOES METER
INDICATE WITHIN ONE
MARKED DIVISION OF
RED REFERENCE MARK

YES

[7] APPLY CONVENTIONAL
TROUBLE-LOCATING
PROCEDURES. SEE
SD-2R-201-01

NO

TAP-114

NOTE
UPON COMPLETION OF
THIS TAP, RETURN
RECEIVER TO SERVICE,
OR CONTINUE WITH OTHER
TESTING, AS REQUIRED

WARNING
REMOVAL OR INSERTION
OF PRINTED CIRCUIT
BOARDS WITHOUT FIRST
REMOVING RECEIVER
POWER MAY RESULT IN
DAMAGE TO COMPONENTS

Issue 2 FEB 1979

403-200-502 TAP

PAGE 1 of 1 124

CLEAR SSB AUDIO OUTPUT LEVEL TROUBLE

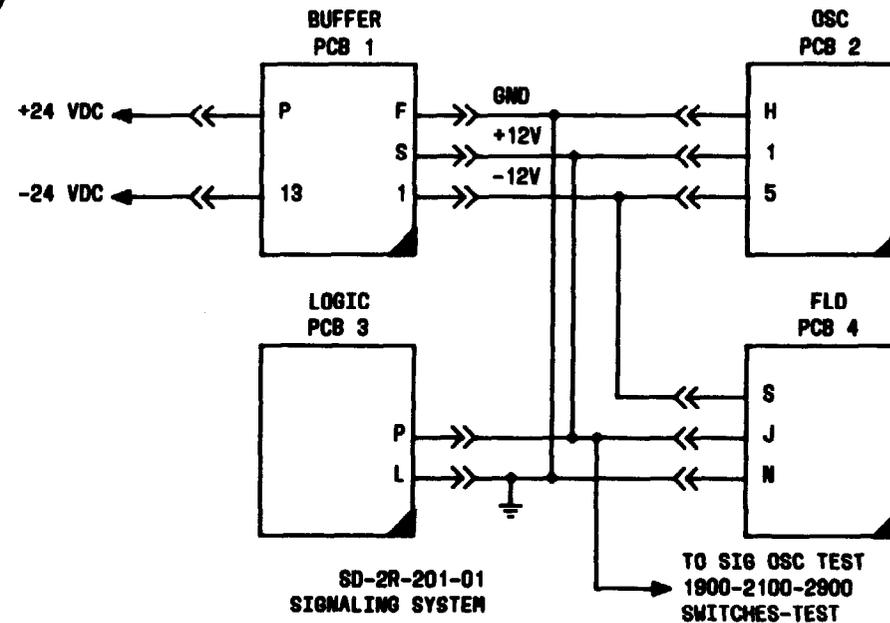
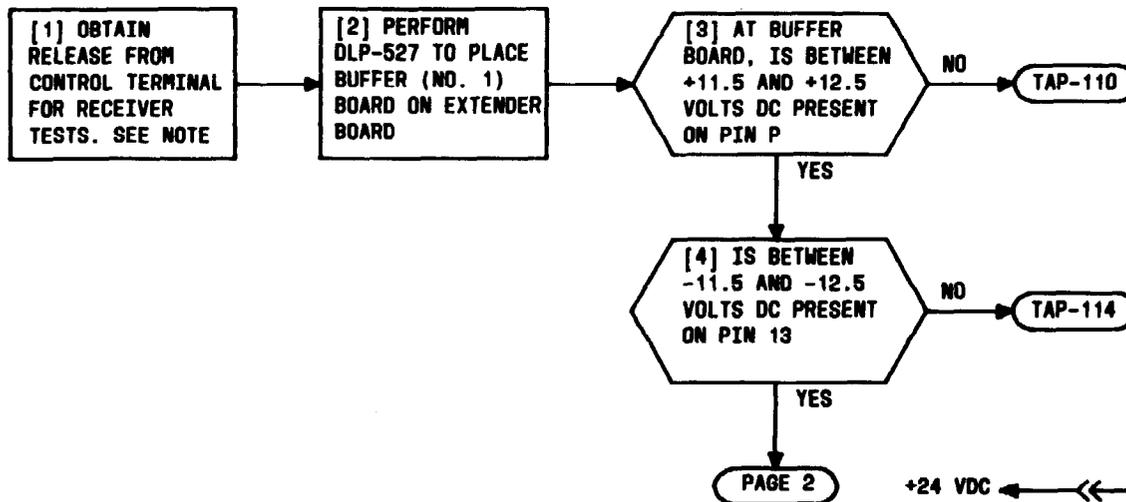
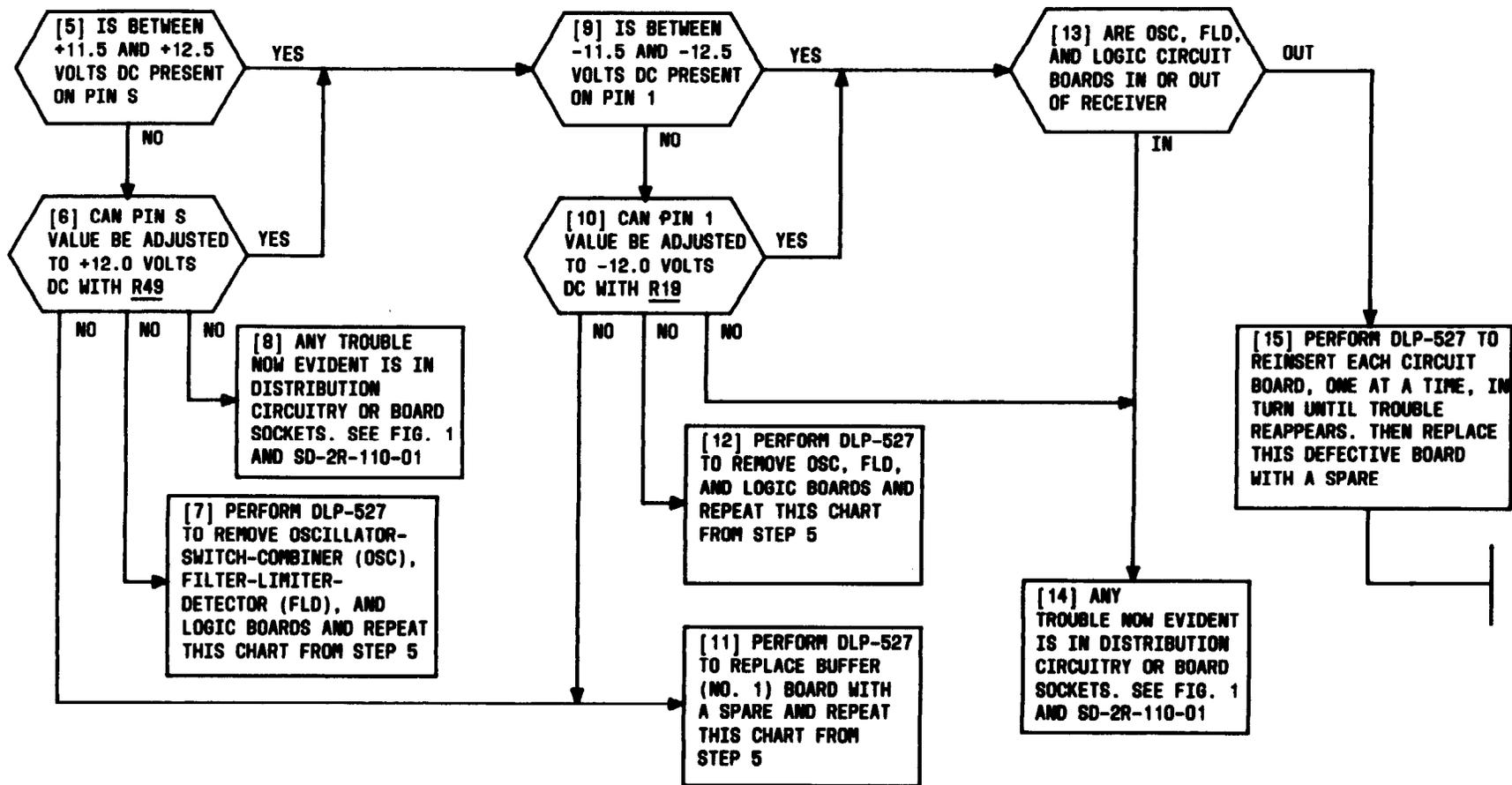


FIG. 1

NOTE	
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED	
Issue 2	FEB 1979
403-200-502	TAP
PAGE 1 of 2	125

CLEAR +12 VOLT AND -12 VOLT POWER SUPPLY TROUBLE



CLEAR +12 VOLT AND -12 VOLT POWER SUPPLY TROUBLE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE 1

[2] DISCONNECT ANY TEST EQUIPMENT PREVIOUSLY CONNECTED

ON RECEIVER:

[3] SET POWER-ON-OFF SWITCH TO OFF

[4] DISCONNECT ANTENNA INPUT

[5] DISCONNECT POWER CORD

[6] MARK OR LABEL AND THEN REMOVE EXTERNAL WIRING FROM BARRIER STRIP

[7] REMOVE RECEIVER FROM RACK

[8] REMOVE RECEIVER TOP COVER BY REMOVING FOUR SCREWS ON EACH SIDE AND SLIDING COVER TO REAR

[9] RECONNECT POWER CORD TO RECEIVER

[10] GET TEST EQUIPMENT PER TABLE A

[11] CONDITION HP-3469 MULTIMETER TO READ DC VOLTS [DLP-529]

[12] CONNECT MULTIMETER LEADS TO ATTENUATOR BOARD PINS 8(-) AND GROUND(+)

AND

AND

PAGE 2

EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
RF ATTENUATOR	HP 355D
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
NOISE MEASURING SET	WECO J94003C
T CONNECTOR	BNC UG274 B/U
ADAPTER BNC MALE	UG491 A/U
TELEPHONE PATCH CORD	3P6C
4 6- FOOT COAXIAL CABLES	RG 58/U EQUIPPED WITH UG 88 D/U CONNECTORS
DIGITAL MULTIMETER	HP-3469B

NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

Issue 2 FEB 1979

403-200-502 DLP

PAGE 1 of 6 500

SET AGC REFERENCE LEVEL

[13] CONNECT T CONNECTOR BNC UG274 B/U TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[14] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

[15] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D RF ATTENUATOR WITH RG 58/U CABLE

[16] CONNECT OUTPUT OF HP 355D TO INPUT OF AR-2 CONTINUOUSLY VARIABLE ATTENUATOR WITH UG491 A/U BNC MALE ADAPTER

[17] CONNECT OUTPUT OF AR-2 TO INPUT OF RECEIVER WITH RG 58/U CABLE

AND

PAGE 3

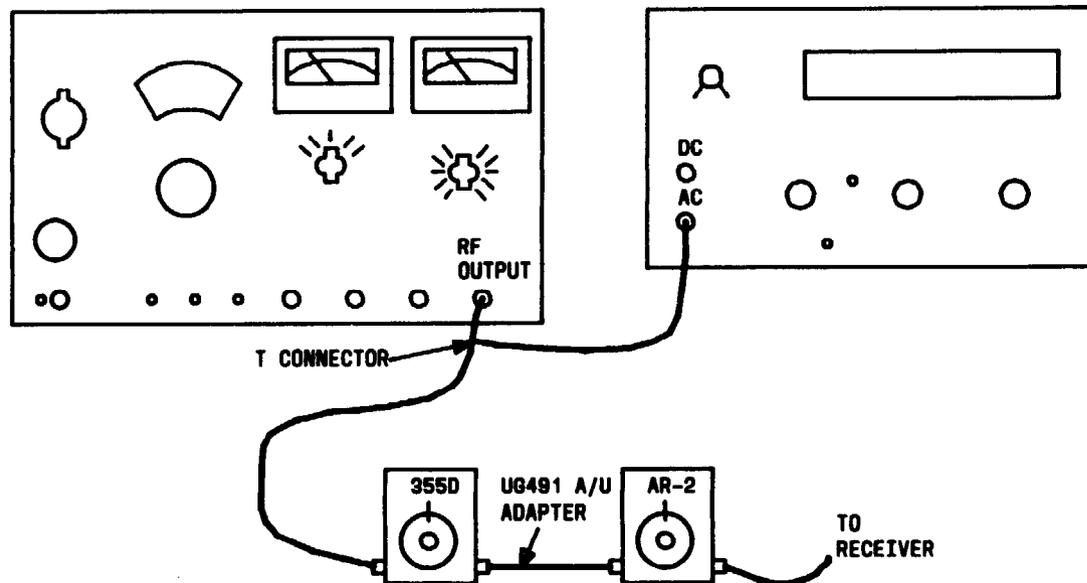


FIG. 1

SET AGC REFERENCE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 6	500

[18] SET HP 355D AND AR-2 ATTENUATORS
TO TOTAL 81 DB.

[19] CONDITION HP 5245L FREQUENCY COUNTER
TO MEASURE FREQUENCY [DLP-523]

[20] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[21] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[22] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

FREQUENCY
COUNTER
SET UP

AND

[23] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[24] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH
BRACKETS CHANNEL FREQUENCY

[25] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO
RECEIVER CHANNEL FREQUENCY PLUS 1000.

AND

PAGE 4

SET AGC REFERENCE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 6	500

ON SIGNAL GENERATOR:

[26] SET MODULATION SELECTION SWITCH TO INT
AND SELECT 1000 POSITION

[27] SET MODULATION AMPLITUDE CONTROL TO
INDICATE 40 PERCENT ON PERCENT MODULATION
METER

[28] SET SIGNAL GENERATOR ATTENUATOR
TO 0 DBM AND ADJUST VERNIER FOR
DBM METER INDICATION OF 0

ON RECEIVER FRONT PANEL:

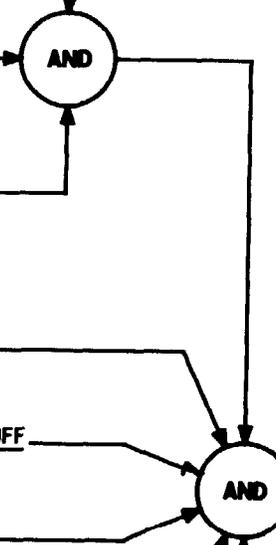
[29] SET REM-LOC CONTROL SWITCH TO LOC

[30] SET TEST GENERATOR OFF-ON FREQ TEST TO OFF

[31] SET CODAN OFF-AUTO-ON SWITCH TO OFF

[32] SET POWER-OFF-ON SWITCH TO ON

[33] WAIT AT LEAST TWO MINUTES



[34] READ DIGITAL
MULTIMETER
INDICATION

PAGE 5

SET AGC REFERENCE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 6	500

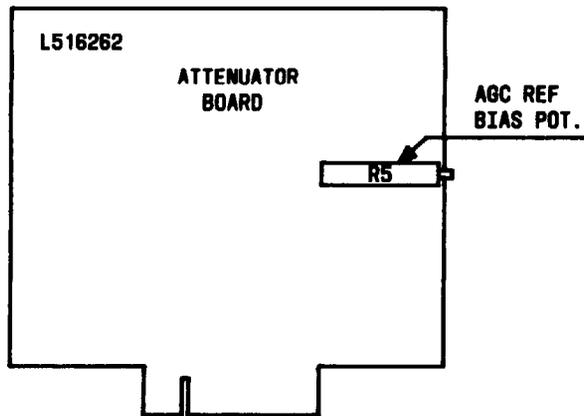
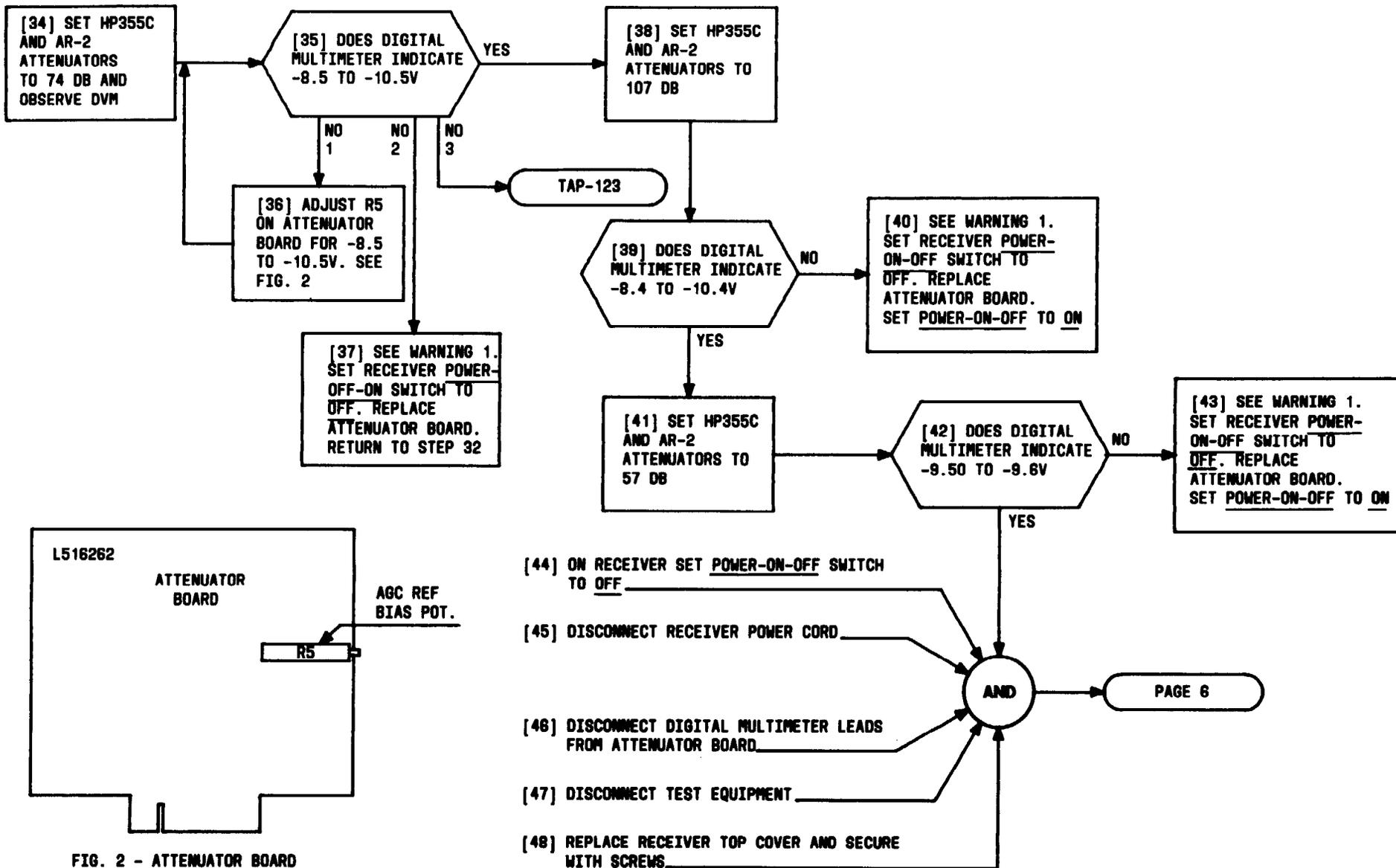


FIG. 2 - ATTENUATOR BOARD (CHASSIS MOUNTED)

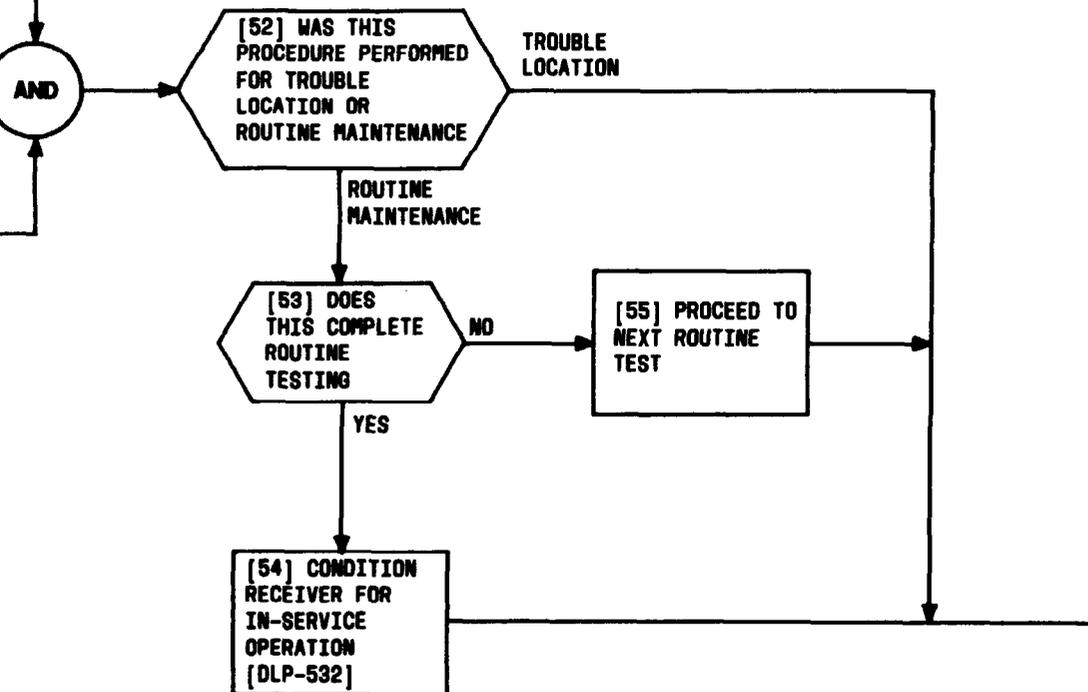
SET AGC REFERENCE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 6	500

[49] MOUNT RECEIVER ON RACK AND RECONNECT BARRIER STRIP WIRING. SEE STEP 6

[50] CONNECT RECEIVER POWER CORD TO RECEIVER

[51] CONNECT ANTENNA CABLE TO RECEIVER ANTENNA INPUT



SET AGC REFERENCE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 6 of 6	500

[1] OBTAIN RELEASE ROOM CONTROL TERMINAL FOR RECEIVER TEST SEE NOTE 1

[2] SET RECEIVER PANEL CONTROLS FOR TABLE A

[3] REMOVE RECEIVER CIRCUIT BOARD COVER

[4] SEE WARNING 1. AT RECEIVER, PLACE BUFFER (NO. 1) CIRCUIT BOARD ON EXTENDER [DLP-527]

[5] GET TEST EQUIPMENT PER TABLE B

TABLE B	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
RF ATTENUATOR	HP 355D
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
NOISE MEASURING SET	WECO J94003C
T CONNECTOR	BNC UG274, B/U
ADAPTER BNC MALE	UG491 A/U
TELEPHONE PATCH CORD	3P6C
4 6-FOOT COAXIAL CABLES	RG 58/U EQUIPPED WITH UG 88 D/U CONNECTORS
DIGITAL MULTIMETER	HP-3469B

[6] CONNECT T CONNECTOR BNC UG274 B/U TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[7] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

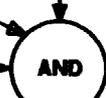
[8] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D RF ATTENUATOR WITH RG 58/U CABLE

[9] CONNECT OUTPUT OF HP 355D TO INPUT OF AR-2 ATTENUATOR WITH UG491 A/U BNC MALE ADAPTER

[10] CONNECT OUTPUT OF AR-2 TO INPUT OF RECEIVER WITH RG 58/U CABLE

[11] SET 355D AND AR-2 ATTENUATORS TO 70 DB

TABLE A	
CONTROL	SETTING
POWER	OFF
CONTROL	LOC
TEST GENERATOR	OFF
CODAN	OFF



PAGE 2

NOTE 1
UPON COMPLETION OF THIS TAP, RETURN RECEIVER TO SERVICE, OR CONTINUE WITH OTHER TESTING, AS REQUIRED

WARNING 1
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 7	501

SET S/N THRESHOLD LEVEL

[12] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[13] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[14] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[15] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

FREQUENCY COUNTER SET UP

AND

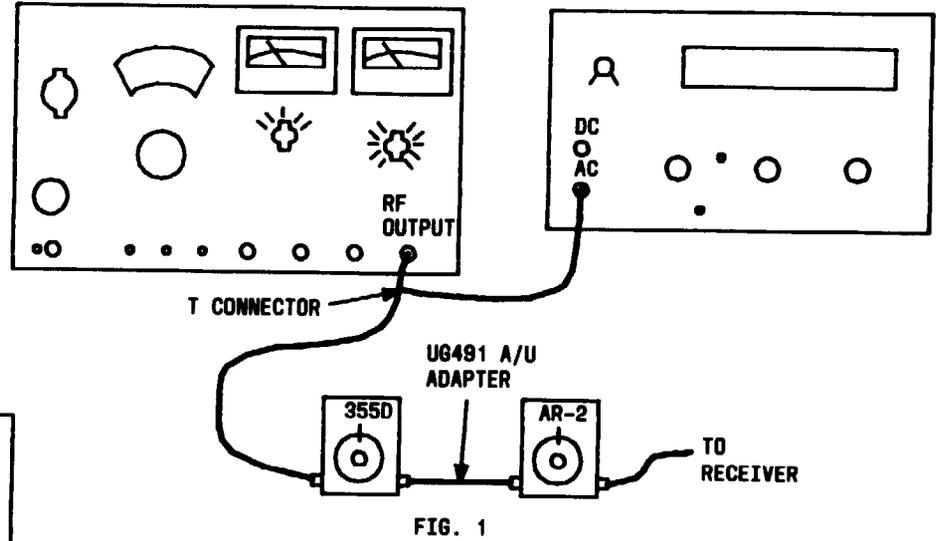
[16] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[17] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

[18] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO RECEIVER CHANNEL FREQUENCY PLUS 1000-

AND

PAGE 3



ON SIGNAL GENERATOR

[19] USING ATTENUATOR SWITCH VERNIER CONTROL
AND DBM METER INDICATION SET
SIGNAL GENERATOR OUTPUT LEVEL
TO 0 DBM

[20] SET MODULATION SELECTOR SWITCH TO INT.
AND SELECT 1000 POSITION

[21] SET MODULATION AMPLITUDE CONTROL
TO INDICATE 40 PERCENT ON
PERCENT MODULATION METER

[22] DISCONNECT RECEIVER ANTENNA INPUT CABLE

[23] CONNECT SIGNAL GENERATOR OUTPUT (THRU
3550 ATTENUATOR AND AR-2)
TO RECEIVER ANTENNA INPUT JACK

[24] CONDITION HP-3469 DVM TO READ
DC VOLTS (DLP-529)

[25] CONNECT DVM LEADS TO RECEIVER SELECT
BOARD (#8) TEST POINT (+) AND GROUND (-)
SEE FIG. 2

[26] AT RECEIVER, SET POWER-ON-OFF
SWITCH TO ON

[27] WAIT TWO (2) MINUTES THEN AT RECEIVER
SET CODAN OFF-AUTO-ON SWITCH TO ON

[28] SET EXTERNAL ATTENUATORS TO 57 DB

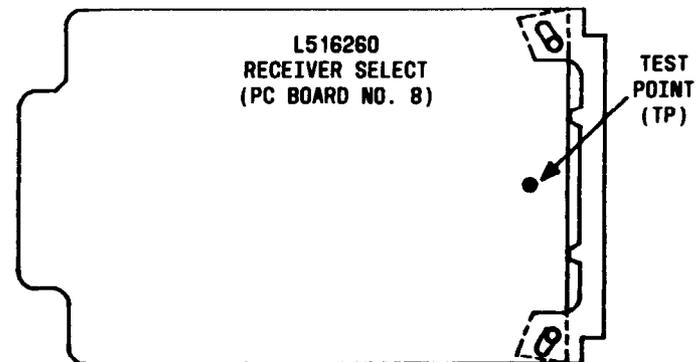
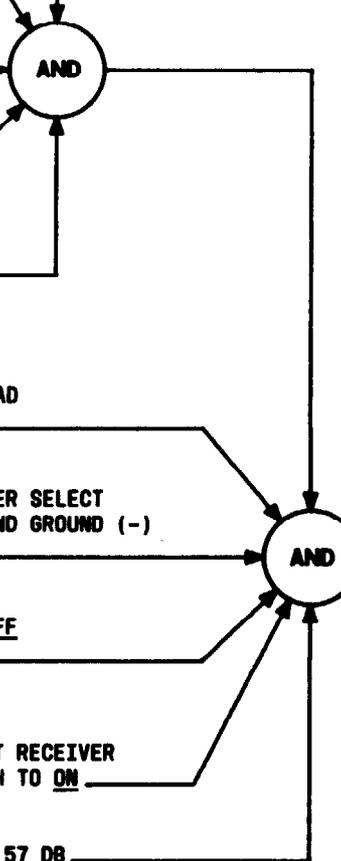
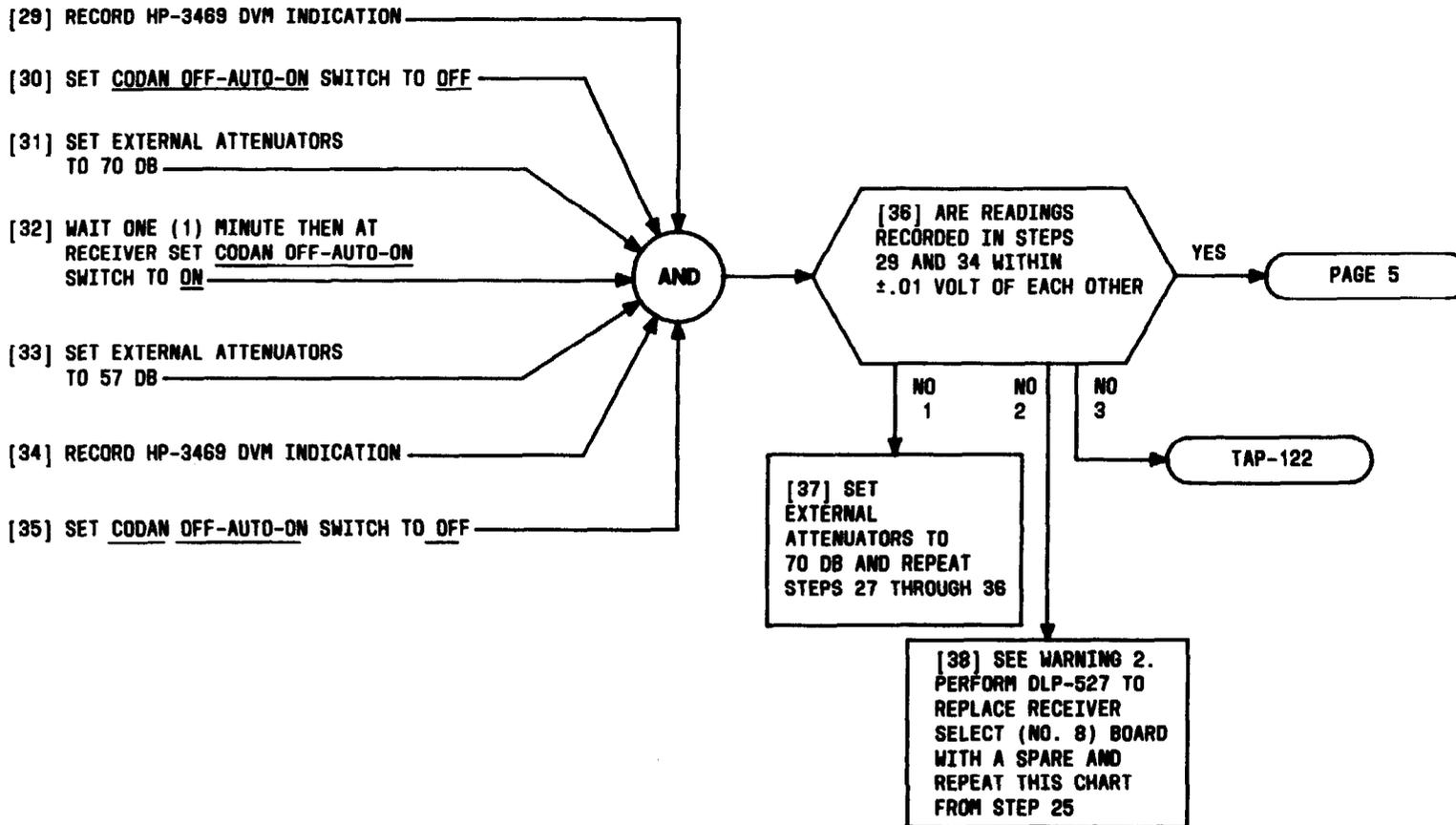


FIG. 2 - RECEIVER SELECT BOARD

PAGE 4

SET S/N THRESHOLD LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 7	501



SET S/N THRESHOLD LEVEL

WARNING 2	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 7	501

[39] SET CODAN OFF-AUTO-ON SWITCH TO OFF POSITION

[40] DISCONNECT HP-3469 FROM RECEIVER SELECT BOARD (NO. 8)

[41] CONNECT HPO3469 TO RECEIVER BUFFER BOARD (NO. 1) TEST POINT (+) AND GROUND (-) SEE FIG. 3

[42] ADJUST R17 FOR INDICATION OBTAINED IN STEP 29

AND

[43] DID ADJUSTMENT RANGE OF R17 ALLOW A MATCH WITH INDICATION RECORDED IN STEP 29

YES

[45] PLACE A JUMPER BETWEEN BARRIER STRIP TERMINALS 29 AND 30 ON REAR OF RECEIVER. SEE FIG. 4

NO

NO

TAP-122

[44] SEE WARNING 2. PERFORM DLP-527 TO REPLACE (NO. 1) BOARD WITH A SPARE AND REPEAT THIS CHART FROM STEP 41

[46] OBSERVE DVM AND ADJUST R37 ON BUFFER CIRCUIT BOARD FOR AN INDICATION OF BETWEEN 2.9 AND 3.1 VOLTS

[47] WAS R37 ADJUSTMENT ATTAINABLE

YES

PAGE 6

NO

NO

TAP-122

[48] SEE WARNING 2. PERFORM DLP-527 TO REPLACE BUFFER (NO. 1) BOARD WITH A SPARE

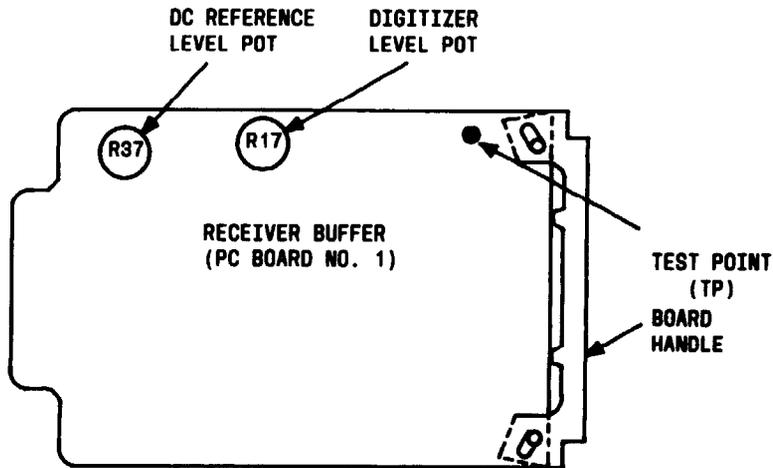


FIG. 3 - RECEIVER BUFFER BOARD

SET S/N THRESHOLD LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 7	501

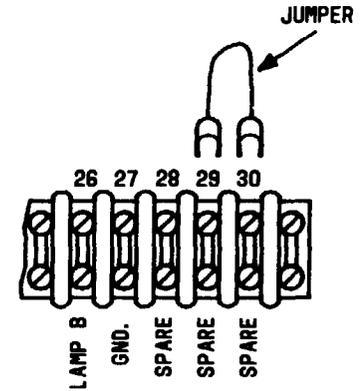
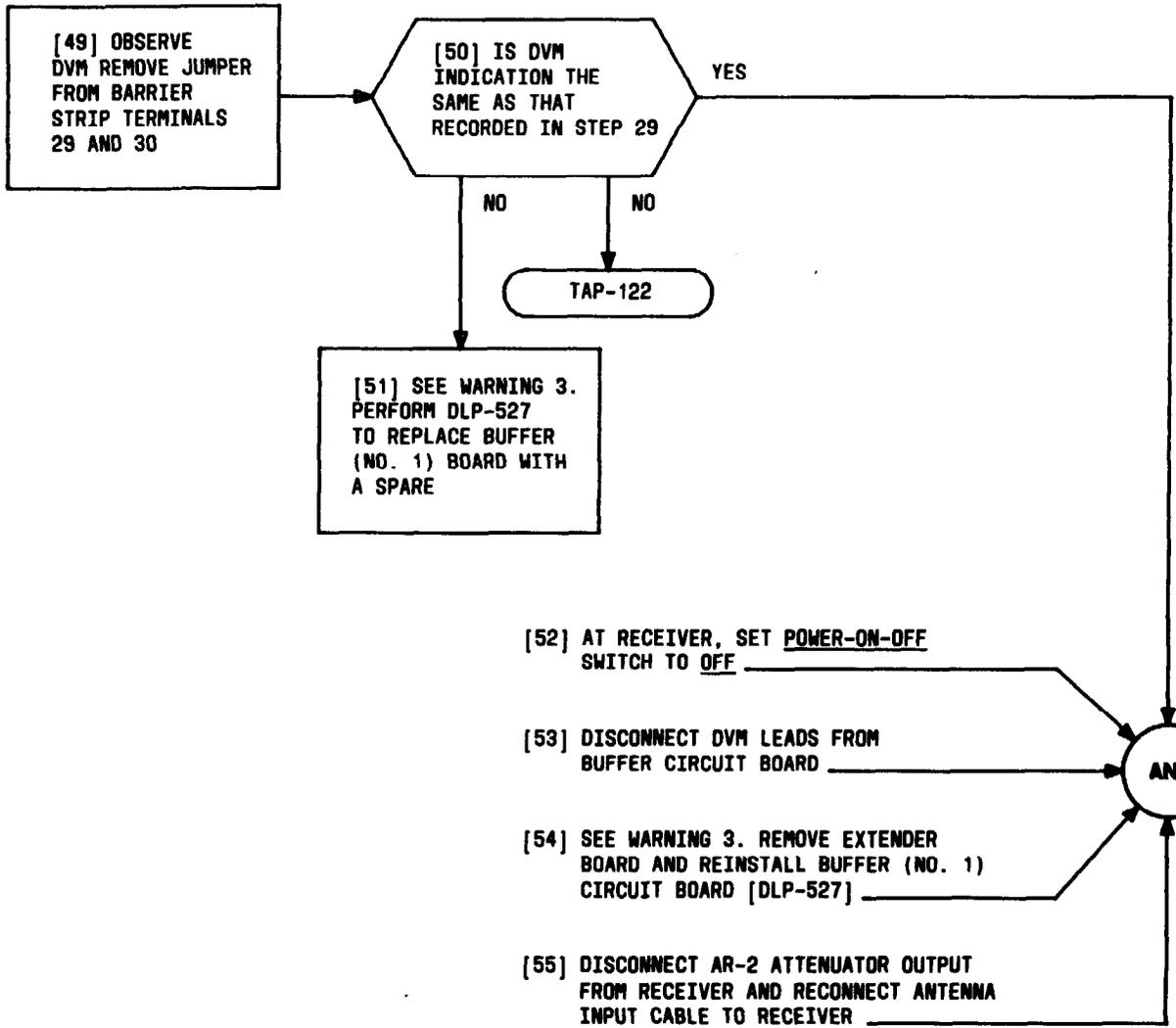
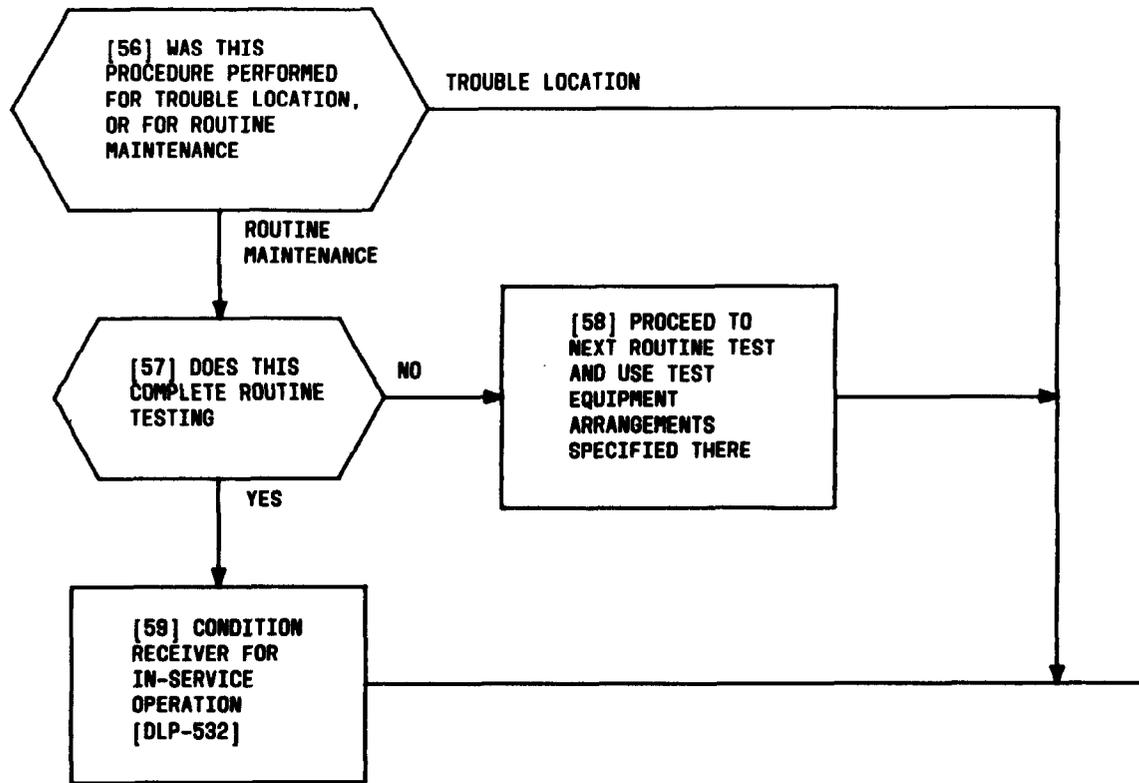


FIG. 4 - BARRIER STRIP

WARNING 3	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 6 of 7	501

SET S/N THRESHOLD LEVEL



SET S/N THRESHOLD LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 7 of 7	501

[1] OBTAIN RELEASE FROM CONTROL
TERMINAL FOR RECEIVER TO
BE TESTED. SEE NOTE 1

[2] SET RECEIVER PANEL
CONTROLS PER TABLE A

LOCAL CONTROL
AND CODAN OPERATE
LAMPS LIGHTED

[3] TERMINATE RECEIVER RCVR OUT - EQPT
JACK WITH 262B PLUG (600 OHMS).
SEE FIG. 1

[4] REMOVE RECEIVER FRONT PANEL
PRINTED CIRCUIT BOARD COVER

RECEIVER
READY FOR
TESTING

PAGE 2

[5] ON CARRIER TRACK (NO. 10) PRINTED
CIRCUIT BOARD, VERIFY THAT 2-POSITION
TOGGLE SWITCH IS IN A3A (UP) POSITION

[6] AT TEST GENERATOR PANEL,
SET ON-OFF SWITCH TO ON

ORANGE DC ON
LAMP LIGHTS

[7] AT RECEIVER, SET TEST
GENERATOR TO ON

TEST GENERATOR
LAMP LIGHTS

AND

TERMINATE

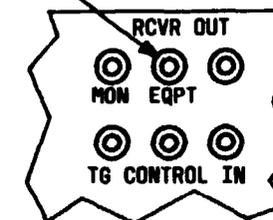


FIG. 1

TABLE A

CONTROL	SETTING
POWER CONTROL	ON
TEST GENERATOR	LOC
CODAN	OFF
METER MODE	AUTO
SIG OSC TEST	IF OUT
2100 TEST/NORM/OFF	OFF
2900 TEST/NORM/OFF	OFF

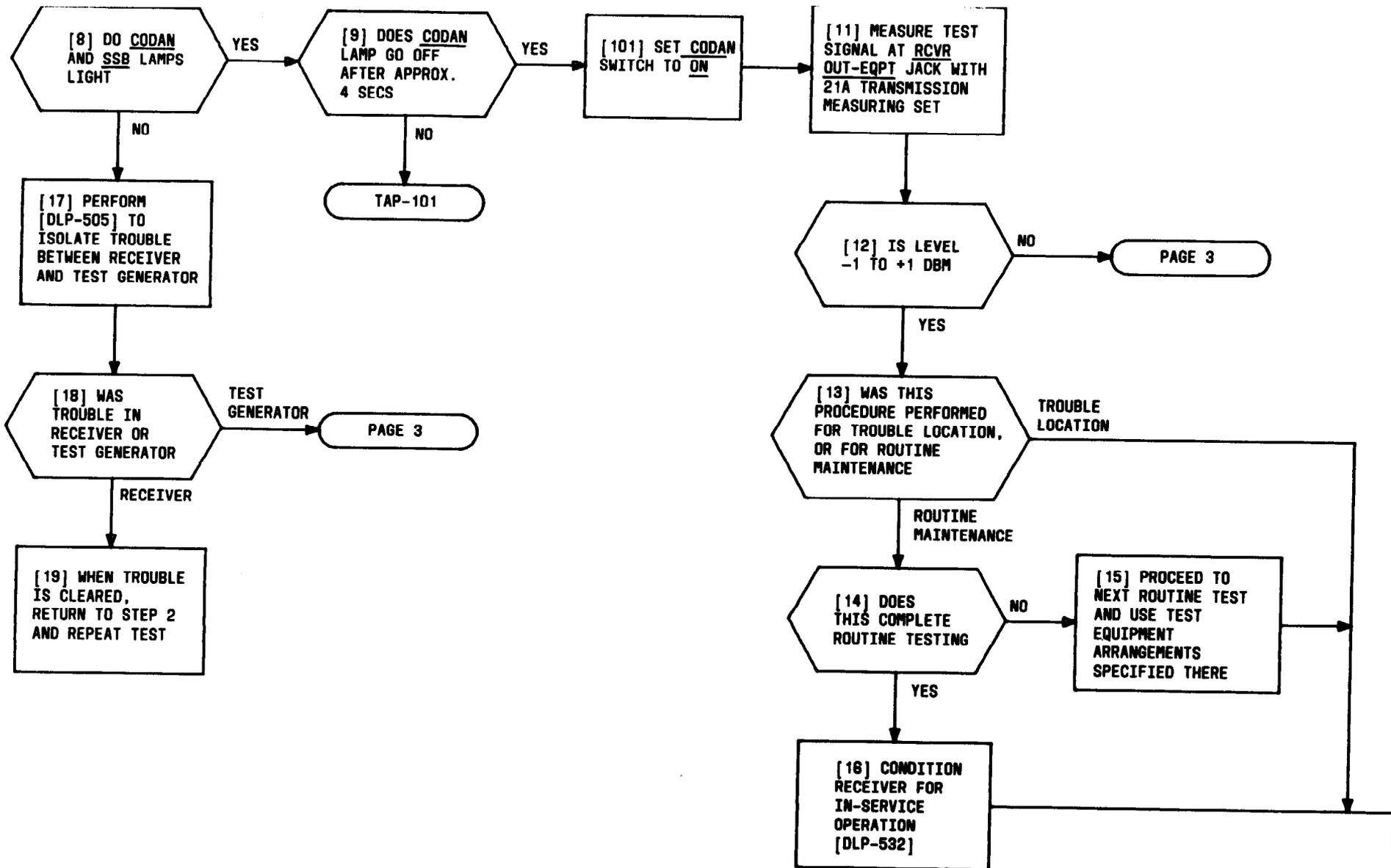
NOTE 1
FOR ACCEPTANCE
PROCEDURES, REFER
ABNORMAL CONDITIONS
TO INSTALLER FOR
CORRECTION

Issue 2 FEB 1979

403-200-502 DLP

PAGE 1 of 3 502

MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL



MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 3	502

[17] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[18] CONNECT T CONNECTOR BNC UG274 B/U TO FREQUENCY COUNTER SIGNAL INPUT- AC JACK

[19] CONNECT 50-OHM BNC MX554 A/U TERMINATION TO ONE LEG OF 1 CONNECTOR

[20] CONNECT OTHER LEG OF T CONNECTOR TO RECEIVER TEST GEN JACK WITH RG 58/U CABLE

AND

[21] DOES COUNTER INDICATE $F_c + 1.5$ MHZ

YES

[26] AT TERMINAL CONNECTOR ON REAR OF TEST GENERATOR PANEL, MEASURE VOLTAGE BETWEEN TERMINALS 1 (MINUS) AND 3

[27] DOES METER INDICATE -11.5 TO -12.5V

NO

[29] SET RECEIVER POWER SWITCH TO OFF. REPLACE DC - DC CONVERTER

YES

[28] AT TEST GENERATOR PANEL, SET ON-OFF SWITCH TO OFF. REPLACE CIRCUIT BOARD IN TEST GENERATOR PANEL

[22] SEE WARNING 1. REPLACE T.G. CONTROL (NO. 5)

[23] DOES COUNTER INDICATE $F_c + 1.5$ MHZ

YES

[25] RETURN TO STEP 8 AND REPEAT TEST

NO

[24] SEE WARNING 1. REPLACE RF (NO. 14) CIRCUIT BOARD DLP-527

WARNING 1

REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

Issue 2 FEB 1979

403-200-502

DLP

PAGE 3 of 3

502

MEASURE RECEIVER TEST GENERATOR OUTPUT LEVEL

SUMMARY
 USING RF SIGNAL GENERATOR, SET FREQUENCY (CW) TO WITHIN 25 HZ OF 1000 HZ ABOVE CHANNEL FREQUENCY AND SET OUTPUT LEVEL TO 100,000 μ V. APPLY RF SIGNAL TO RECEIVER INPUT WITHOUT ATTENUATION. MODULATE RECEIVER AT TG CONTROL IN - EQPT JACK

WITH AUDIO OSCILLATOR FREQUENCY SET BETWEEN 990 AND 1010 HZ AT A LEVEL OF BETWEEN 73 AND 75 DBRN. MEASURE WITH 3C NOISE SET, AUDIO OUTPUT OF RECEIVER IN SSB MODE FOR REQUIREMENT BETWEEN 88 AND 92 DBRN

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE 1

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

LOCAL CONTROL
LAMP LIGHTED

[3] SET RECEIVER MODE SWITCH TO SSB POSITION

[4] SET RECEIVER SIG OSC TEST 2100 AND 2900 3-POSITION TOGGLE SWITCHES TO OFF POSITION

[5] DISCONNECT ANTENNA CABLE ON REAR OF RECEIVER

[6] REMOVE RECEIVER FRONT PANEL PRINTED CIRCUIT BOARD COVER

[7] ON CARRIER TRACK (NO. 10) PRINTED CIRCUIT BOARD, SET 2-POSITION TOGGLE SWITCH TO A3J (DOWN) POSITION

AND

RECEIVER READY FOR TESTING

PAGE 2

NOTE 1
 FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

Issue 2 FEB 1979

403-200-502 DLP

PAGE 1 of 9 503

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

[8] GET TEST EQUIPMENT
PER TABLE A

[9] CONNECT BNC UG274 B/U T CONNECTOR TO SIGNAL
GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[10] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER
SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

[11] CONNECT OTHER LEG OF T CONNECTOR TO INPUT
OF RF CONTROL UNIT WITH RG 58/U CABLE

[12] CONNECT OUTPUT OF RF CONTROL UNIT TO
RECEIVER ANTENNA INPUT WITH RG 58/U CABLE

[13] SET RF CONTROL UNIT
SWITCH TO OFF POSITION

PAGE 3

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
AUDIO OSCILLATOR	HP 200CD
NOISE MEASURING SET	WECO J94003C
RF CONTROL UNIT	TELCO FURNISHED
TELEPHONE CORD	3P6C
ADAPTER	HP 1250-2277
COAX T CONNECTOR	BNC UG274 B/U
3 6-FOOT LONG COAX CABLES	RG 58/U COAX WITH UG 88 D/U CONNECTORS
ADAPTER CABLE	TWISTED PAIR WITH 310 PLUG AND DUAL BANANA PLUGS

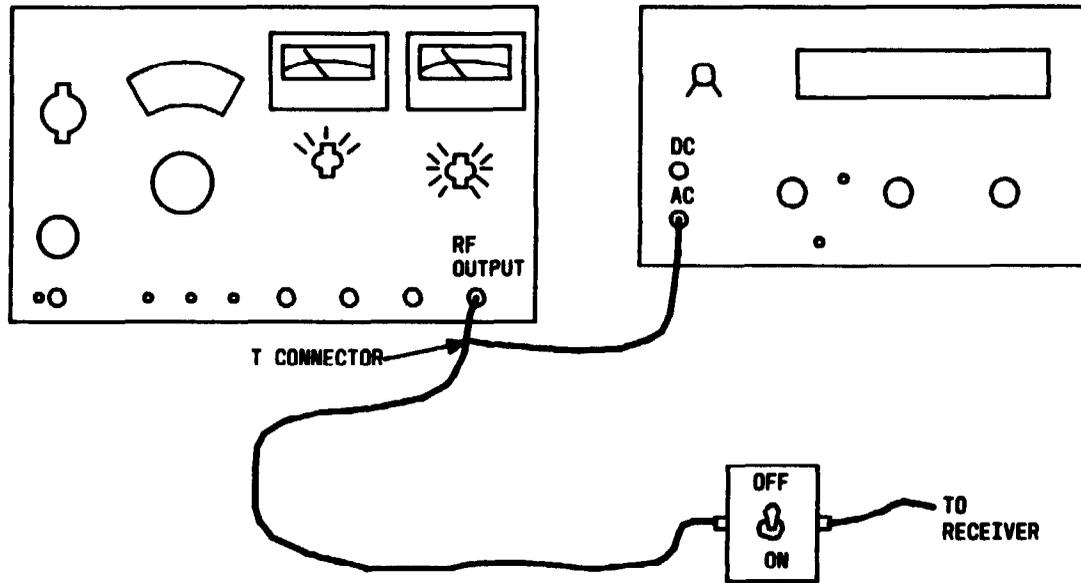


FIG. 1

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

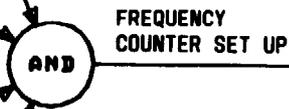
Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 9	503

[14] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[15] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[16] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[17] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION



[18] CONDITION HP 6068 SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[19] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

[20] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO WITHIN 25 HZ OF 1000 HZ ABOVE CHANNEL FREQUENCY AS REGISTERED ON FREQUENCY COUNTER

[21] SET SIGNAL GENERATOR ATTENUATOR TO -10 DBM .1 VOLTS POSITION AND ADJUST VERNIER FOR OUTPUT VOLTS METER INDICATION OF 1

[22] SET SIGNAL GENERATOR MODULATION SELECTOR SWITCH TO CW POSITION



PAGE 4

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 9	503

[23] CONDITION HP 200CD AUDIO OSCILLATOR FOR UNBALANCED 600-OHM OUTPUT {DLP-538}

[24] SET OSCILLATOR FREQUENCY DIAL 10 UNDER HAIRLINE

[25] SET OSCILLATOR RANGE SWITCH TO X100 POSITION

[26] SET OSCILLATOR AMPLITUDE CONTROL TO 100

[27] CONNECT HP 1250-2277 ADAPTER TO OSCILLATOR 600Ω JACKS. SEE FIG. 2

[28] TEMPORARILY DISCONNECT FREQUENCY COUNTER RG 58/U CABLE WHICH IS CONNECTED TO ONE LEG OF T CONNECTOR AT RF SIGNAL GENERATOR

[29] CONNECT RG 58/U CABLE FROM STEP 28 TO ADAPTER ON AUDIO OSCILLATOR OUTPUT

AND

[30] OBSERVE FREQUENCY COUNTER AND ADJUST OSCILLATOR FREQUENCY DIAL VERNIER UNTIL COUNTER REGISTERS BETWEEN 990 AND 1010 HZ

[31] DISCONNECT ADAPTER FROM OSCILLATOR, AND RG 58/U CABLE FROM ADAPTER

[32] RECONNECT RG 58/U CABLE REMOVED IN STEP 28 TO SIGNAL GENERATOR T CONNECTOR

PAGE 5

[33] CONDITION 3C NOISE
MEASURING SET [DLP-526]

[34] SET 3C SET FUNCTION
SWITCH TO $\frac{600}{900}$ POSITION

[35] SET 3C SET OBRN
SWITCH TO 70

[36] SET 3C SET FILTER
TO 3 KC FLAT WTG

[37] CHANGE AUDIO OSCILLATOR OUTPUT
TO BALANCED 600 Ω BY REMOVING
STRAP ON OUTPUT TERMINALS

[38] CONNECT OSCILLATOR 600 Ω JACKS
TO 5A ATTENUATOR IN BINDING POSTS
WITH TWISTED PAIR ADAPTER CORD.
SEE FIG. 3

[39] SET 5A ATTENUATOR KEYS FOR
MAXIMUM ATTENUATION (81 DB)

[40] CONNECT 5A ATTENUATOR OUT BINDING POSTS
TO 3C SET IN-310 JACK WITH SWITCHBOARD
ADAPTER CORD

[41] OBSERVE 3C SET METER INDICATION AND REMOVE
ATTENUATION FROM 5A ATTENUATOR IN 1-DB
STEPS UNTIL INDICATION OF BETWEEN 73 AND 75 DBRN IS
OBTAINED

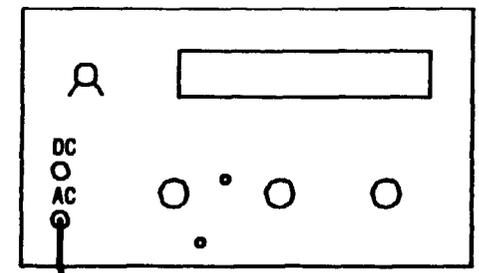
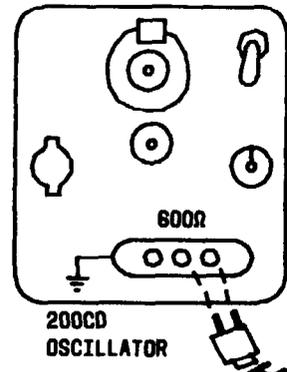
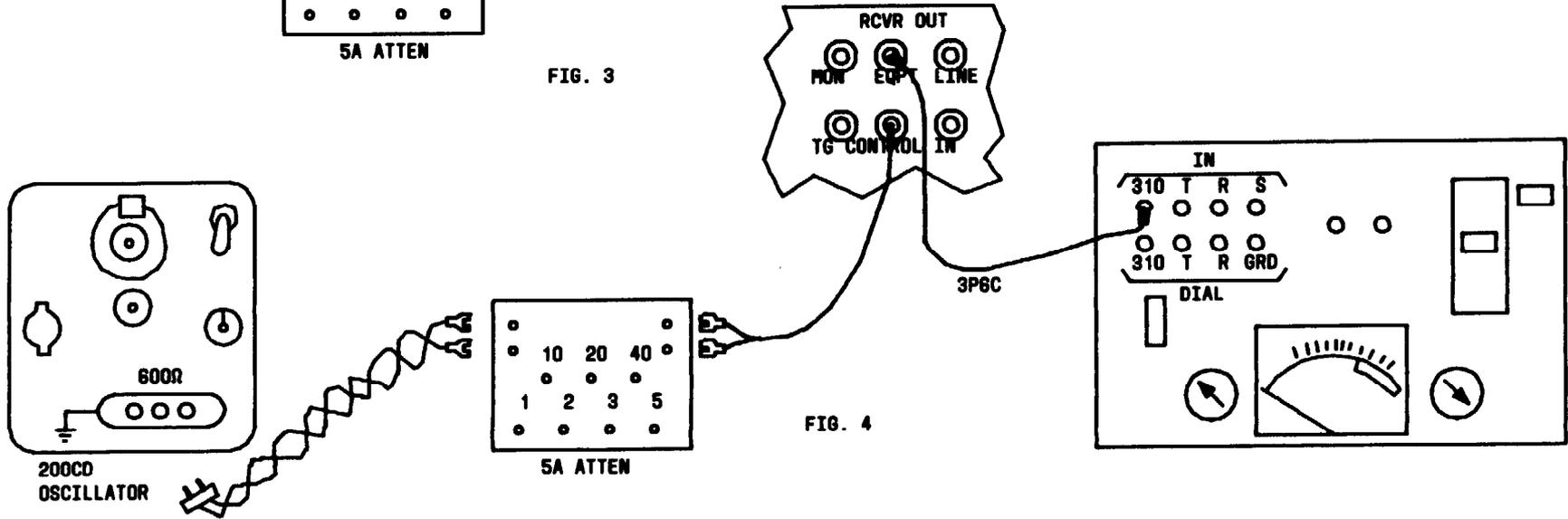
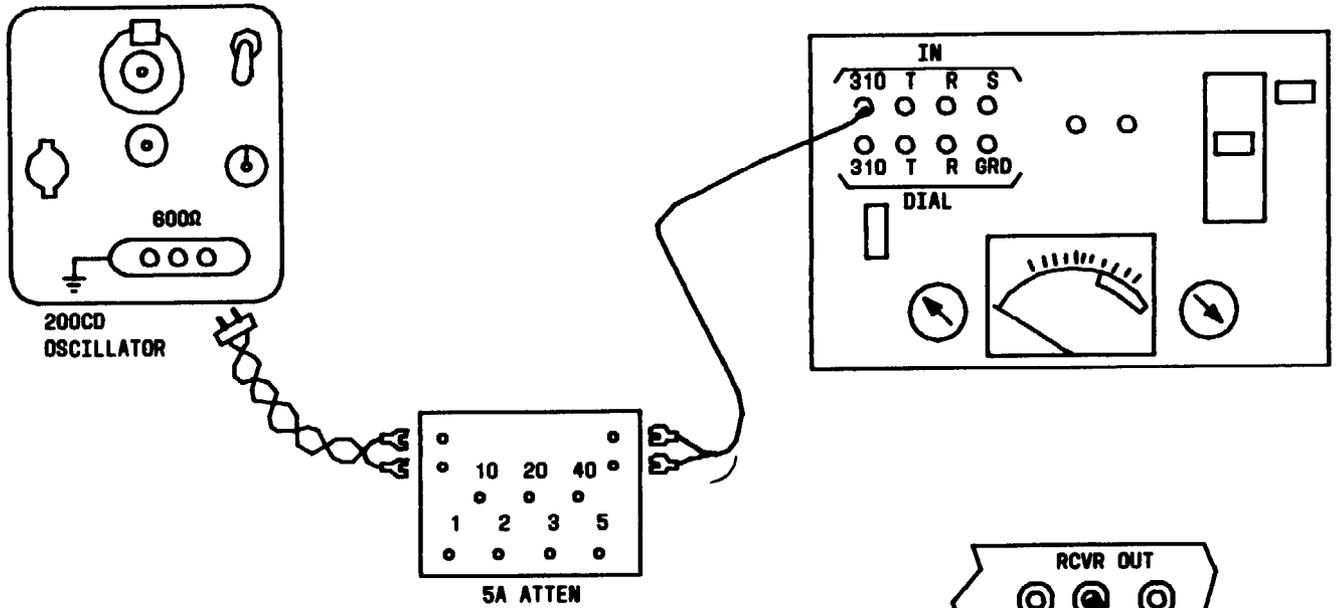


FIG. 2

PAGE 7

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 9	503



MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

[42] NOTE: RECEIVER CONTROL IN - EQPT JACK. SEE FIG. 4

[43] SET 3C SET DBRN SWITCH TO 85

[44] SET 3C SET FILTER TO C-MESSAGE WTG

[45] CONNECT 3C SET IN-310 JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD. SEE FIG. 4

[46] OBSERVE 3C SET METER AND SET RF CONTROL UNIT SWITCH TO ON POSITION

AND

[47] DOES 3C SET METER INDICATE BETWEEN 88 AND 92 DBRN

YES

PAGE 9

NO

[48] PERFORM DLP-527 TO PLACE AUDIO (NO. 7) CIRCUIT BOARD ON EXTENDER BOARD

[49] EXAMINE AUDIO CIRCUIT BOARD AND LOCATE R14

PAGE 8

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 7 of 9	503

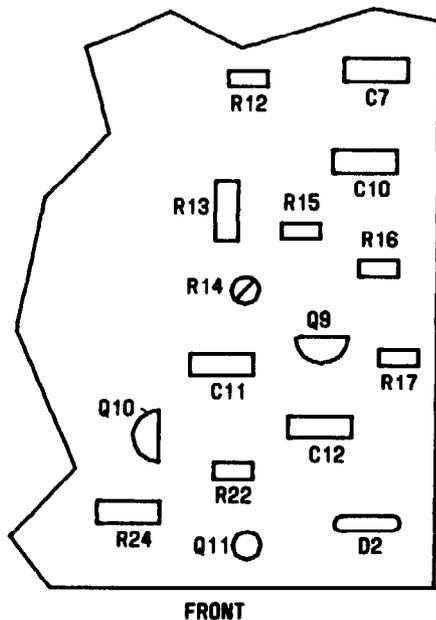
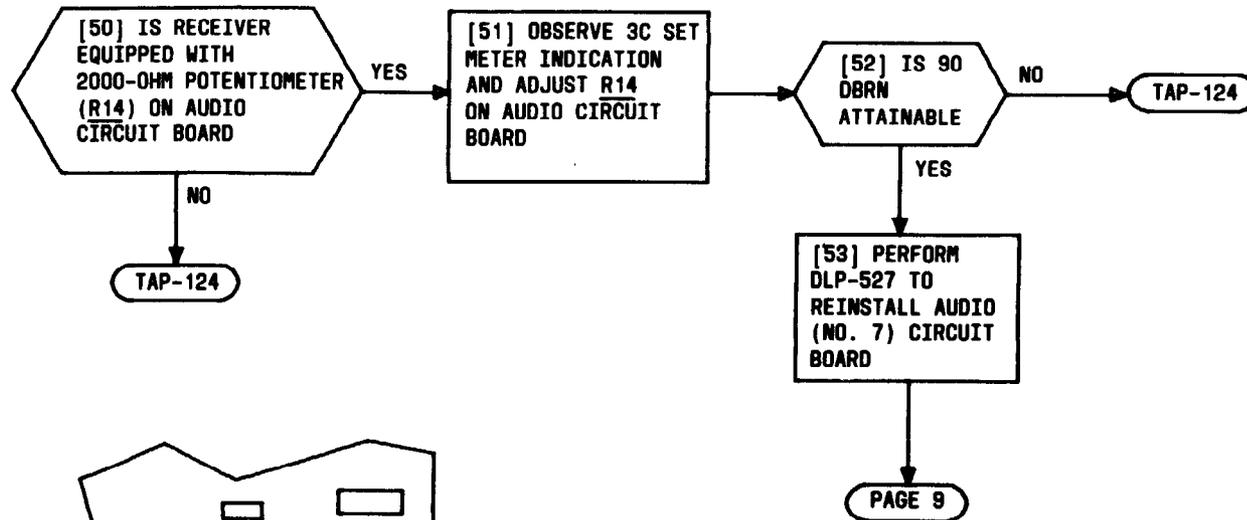
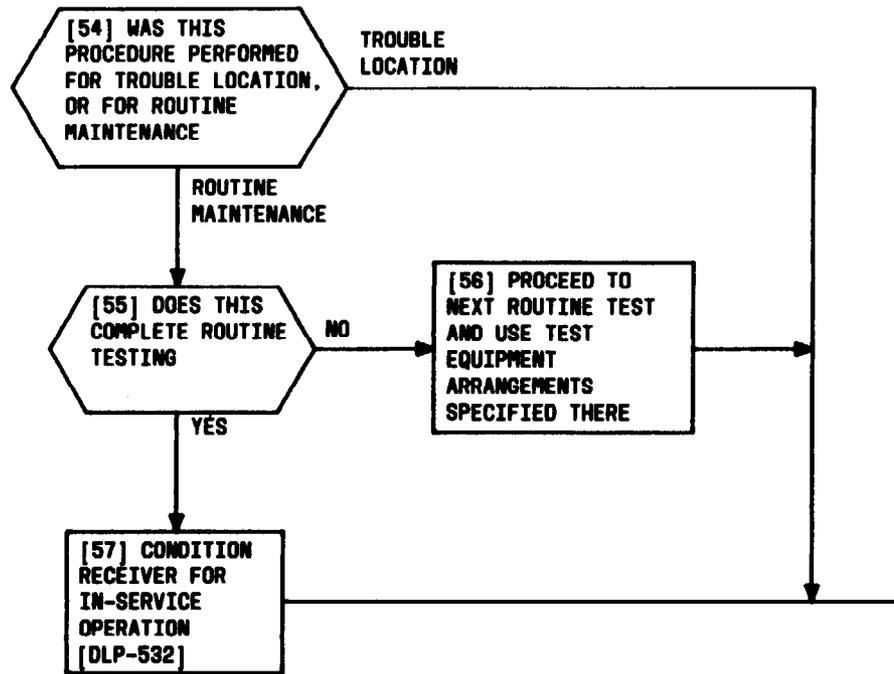


FIG. 5 - PORTION OF AUDIO BOARD

MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

WARNING	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 8 of 9	503



MEASURE RECEIVER SSB AUDIO OUTPUT LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 9 of 9	503

SUMMARY

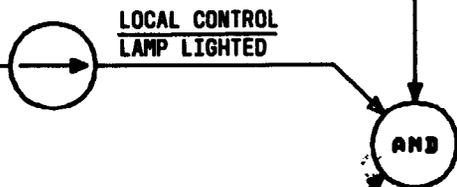
USING KS-21277 ROUTINER TEST SET, VERIFY OPERATION OF AC ON SIGNALING FUNCTION BY STRAPPING (TEMPORARILY) TERMINALS 19 (GND) AND 20 ON BARRIER TERMINAL STRIP ON RECEIVER REAR AND BY OBSERVING LAMP INDICATIONS ON ROUTINER TEST SET

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

[3] DISCONNECT ANY WIRING ON BARRIER TERMINAL STRIP TERMINAL 20 ON REAR OF RECEIVER

[4] TEMPORARILY STRAP TERMINALS 19 (GND) AND 20



[5] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL. SEE NOTE 2

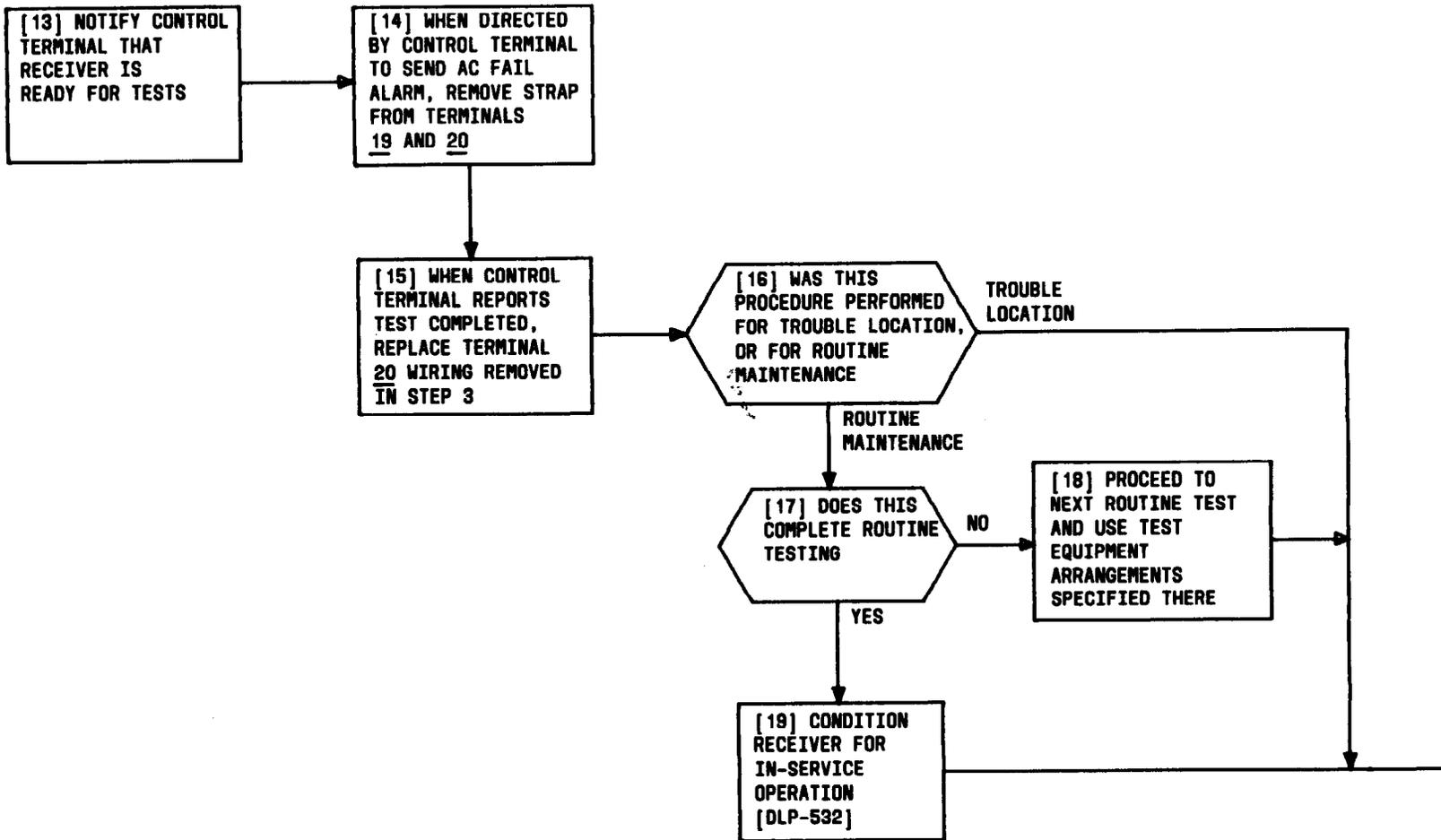
CONTROL TERMINAL → PAGE 3

RECEIVER → PAGE 2

- NOTES**
1. FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS INSTALLER FOR CORRECTIONS
 2. IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 3	504

TEST RECEIVER TO CONTROL TERMINAL AC ON SIGNALING



TEST RECEIVER TO CONTROL TERMINAL AC ON SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 3	504

SUMMARY
USING KS-21277 ROUTINER TEST SET, VERIFY OPERATION OF RECEIVER CODAN.

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST. SEE NOTE 1

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION



[3] DISCONNECT ANTENNA CABLE ON REAR OF RECEIVER

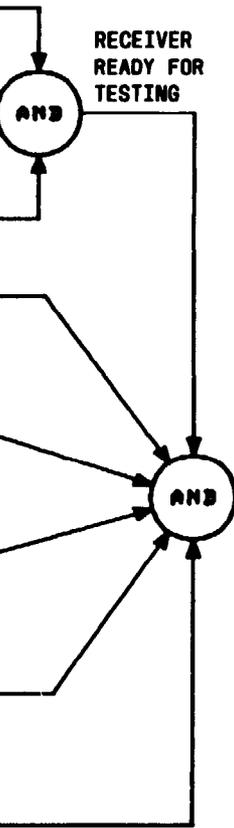
[4] GET TEST EQUIPMENT PER TABLE A

[5] CONNECT BNC UG274 B/U T CONNECTOR TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[6] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT AC JACK WITH RG 58/U CABLE

[7] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D ATTENUATOR WITH RG 58/U CABLE

[8] CONNECT OUTPUT OF HP 355D ATTENUATOR TO INPUT OF AR-2 ATTENUATOR WITH BNC UG491 A/U ADAPTER



PAGE 2

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
RF ATTENUATOR	HP 355D
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
ADAPTER BNC MALE	UG491 A/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U
T CONNECTOR	BNC UG274 B/U
ROUTINER TEST SET	KS-21277
TELEPHONE CORD	3P6C

NOTE 1
FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 4	505

TEST RECEIVER CODAN

[9] CONNECT OUTPUT OF AR-2 ATTENUATOR TO ANTENNA INPUT ON RECEIVER REAR WITH RG 58/U CABLE

[10] SET HP3550 AND AR-2 ATTENUATORS TO 100 DB

[11] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[12] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[13] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[14] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

TEST EQUIPMENT CONNECTED

FREQUENCY COUNTER SET UP

PAGE 3

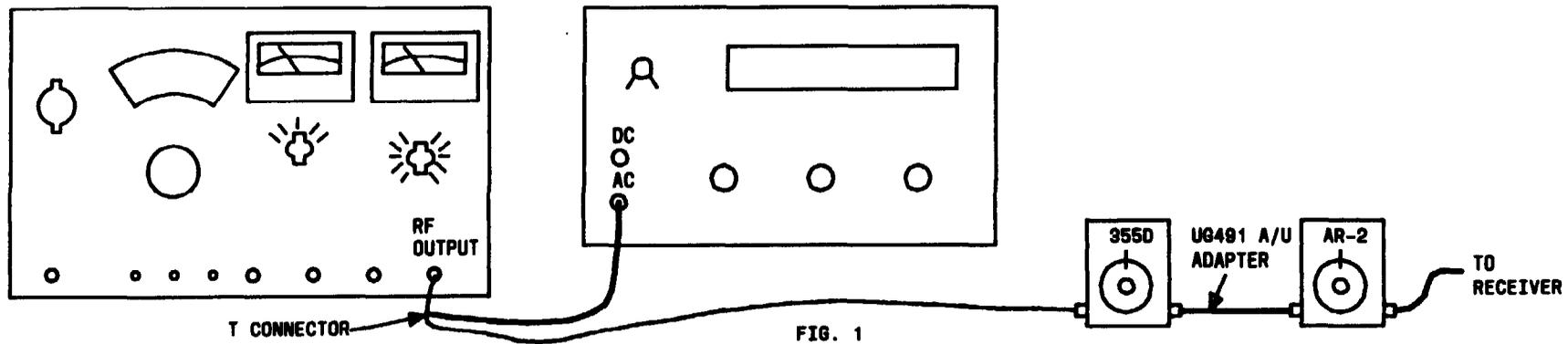


FIG. 1

TEST RECEIVER CODAN

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 4	505

[15] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[16] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

[17] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO RECEIVER CHANNEL FREQUENCY PLUS 1000.

[18] SET SIGNAL GENERATOR ATTENUATOR TO 0 DBM POSITION AND ADJUST VERNIER FOR DBM METER INDICATION OF 0

[19] SET MODULATION SELECTOR SWITCH TO CW. SELECT 1000 POSITION

[20] SET MODULATION AMPLITUDE CONTROL TO INDICATE 40 PERCENT ON PERCENT MODULATION METER

SIGNAL GENERATOR SET UP



[21] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL. SEE NOTE 2

CONTROL TERMINAL

PAGE 4 STEP 29

RECEIVER

[22] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

[23] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD. SEE FIG.2

ROUTINER CONNECTED

PAGE 4

[24] OBSERVE LAMP DISPLAYS ON RECEIVER AND ROUTINER AND SET SIGNAL GENERATOR MODULATION SELECTOR CONTROL SWITCH TO INT

NOTE 2
IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

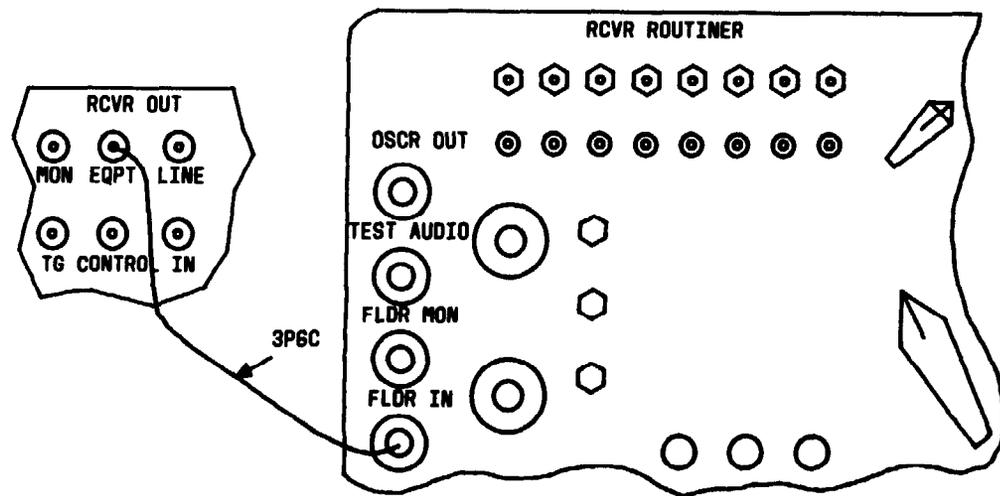
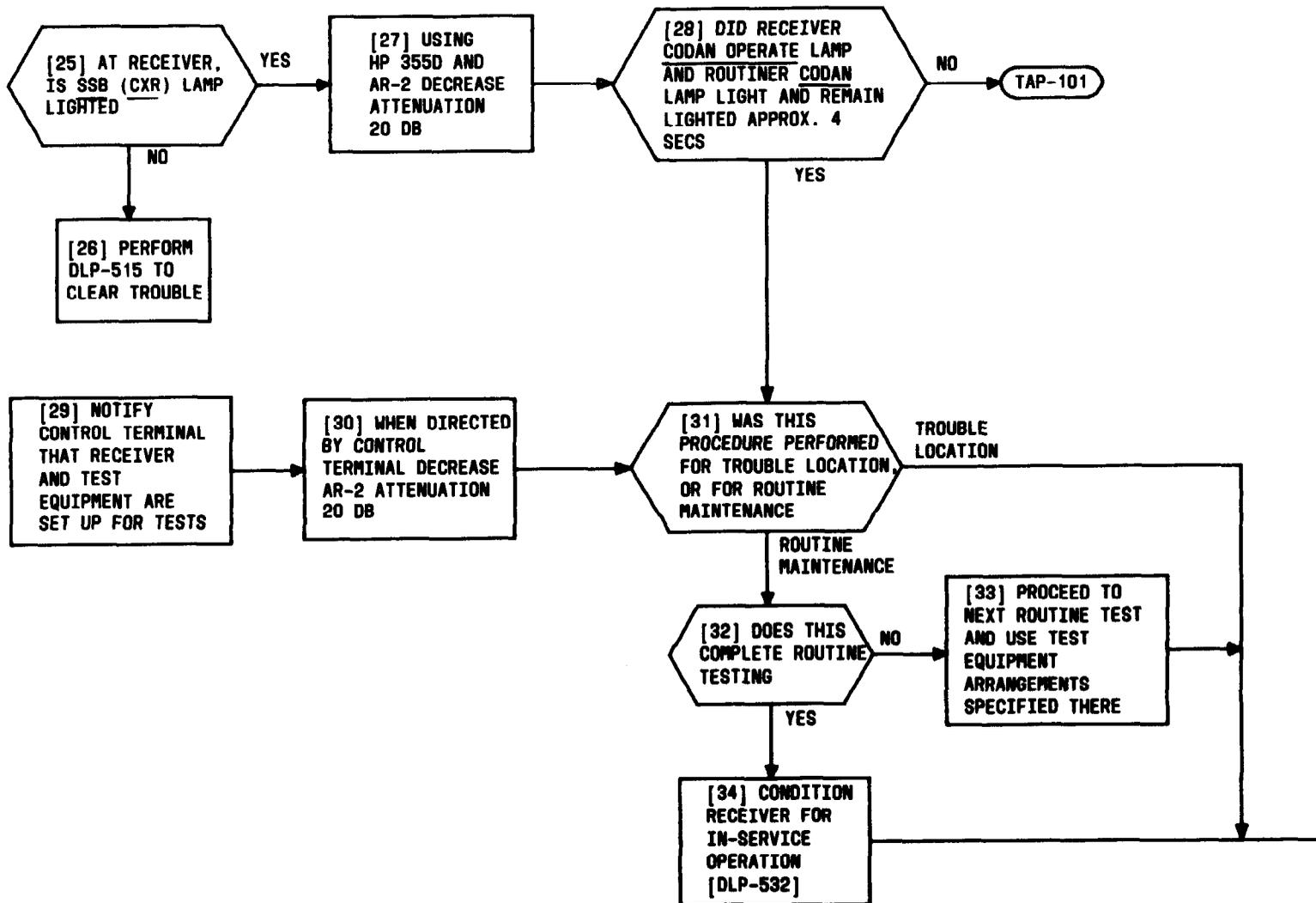


FIG. 2

TEST RECEIVER CODAN

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 4	505



SUMMARY

USING KS-21277 ROUTINER TEST SET, VERIFY THAT A MAJOR A ALARM WILL BE ENCODED TO CONTROL TERMINAL UPON APPLICATION OF A STRAP SIMULATING THE EXTERNAL DEVICE BETWEEN BARRIER TERMINAL STRIP TERMINALS 17 AND 19 (GND)

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

[3] ON RECEIVER REAR ON BARRIER TERMINAL STRIP, REMOVE ANY WIRING ON TERMINAL 17

[4] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL [NOTE 2]

CONTROL TERMINAL

PAGE 3

RECEIVER

[5] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

[6] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD [FIG. 1]

ROUTINER CONNECTED

PAGE 2

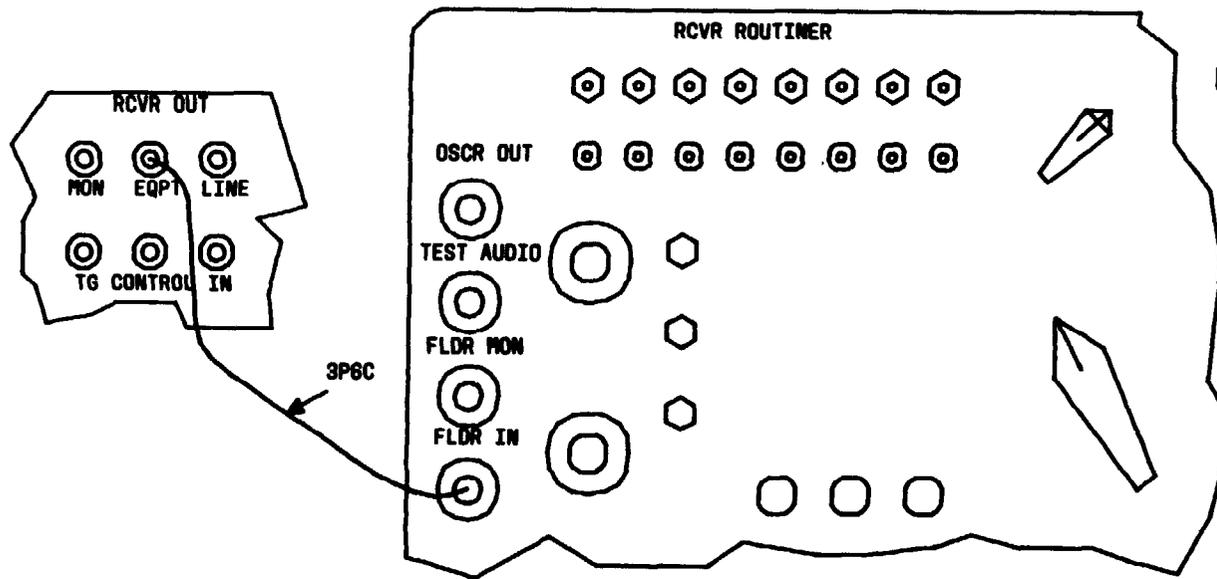


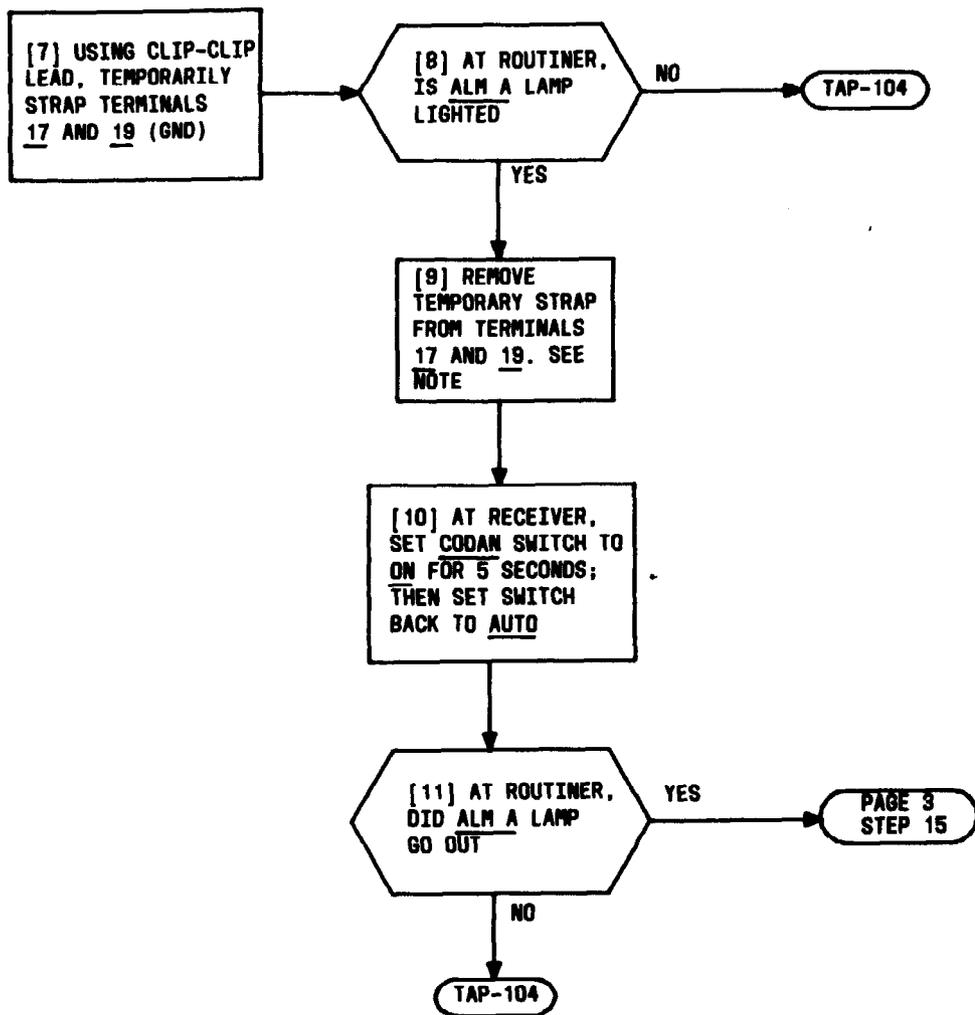
FIG. 1

NOTES

1. FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. IF ROUTINER TEST SET IS NOT AVIALABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 3	506

TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING



NOTE	
ALM A LAMP MAY GO OUT WHEN STRAP IS REMOVED	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 3	506

TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING

[12] WHEN DIRECTED BY CONTROL TERMINAL TO INITIATE MAJOR A ALARM, USE CLIP-CLIP LEAD TO TEMPORARILY STRAP BARRIER TERMINAL STRIP TERMINALS 17 AND 19

[13] WHEN CONTROL TERMINAL REPORTS TEST COMPLETED, REMOVE TEMPORARY STRAP FROM TERMINALS 17 AND 19

[14] AT RECEIVER, SET CODAN SWITCH TO ON FOR 5 SECONDS; THEN SET SWITCH TO AUTO

[15] WAS THIS PROCEDURE PERFORMED FOR TROUBLE LOCATION, OR FOR ROUTINE MAINTENANCE

TROUBLE LOCATION

ROUTINE MAINTENANCE

[16] DOES THIS COMPLETE ROUTINE TESTING

NO

[17] PROCEED TO NEXT ROUTINE TEST AND USE TEST EQUIPMENT ARRANGEMENTS SPECIFIED THERE

YES

[18] CONDITION RECEIVER FOR IN-SERVICE OPERATION [DLP-532]

TEST RECEIVER TO CONTROL TERMINAL MAJOR A ALARM SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 3	506

SUMMARY
 USING KS-21277 ROUTINER TEST SET, AND A STRAP BETWEEN BARRIER
 TERMINAL STRIP TERMINALS 17 AND 19 (GND) SIMULATING THE EXTERNAL
 DEVICE, VERIFY THAT A MINOR A ALARM WILL BE ENCODED TO CONTROL
 TERMINAL FOLLOWING A CODAN OPERATION

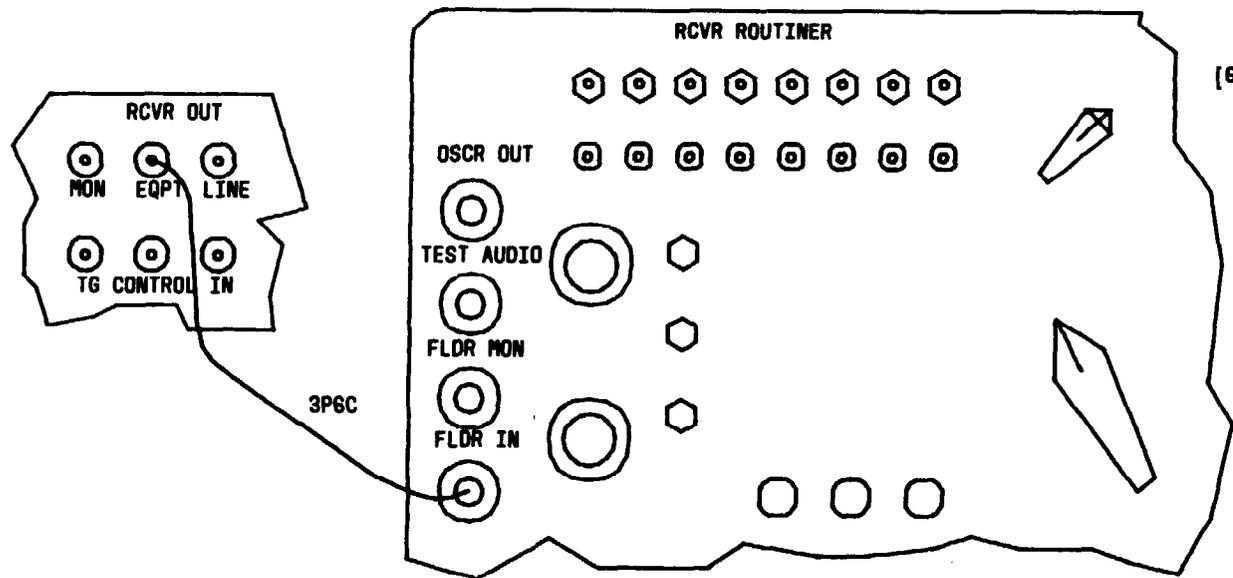
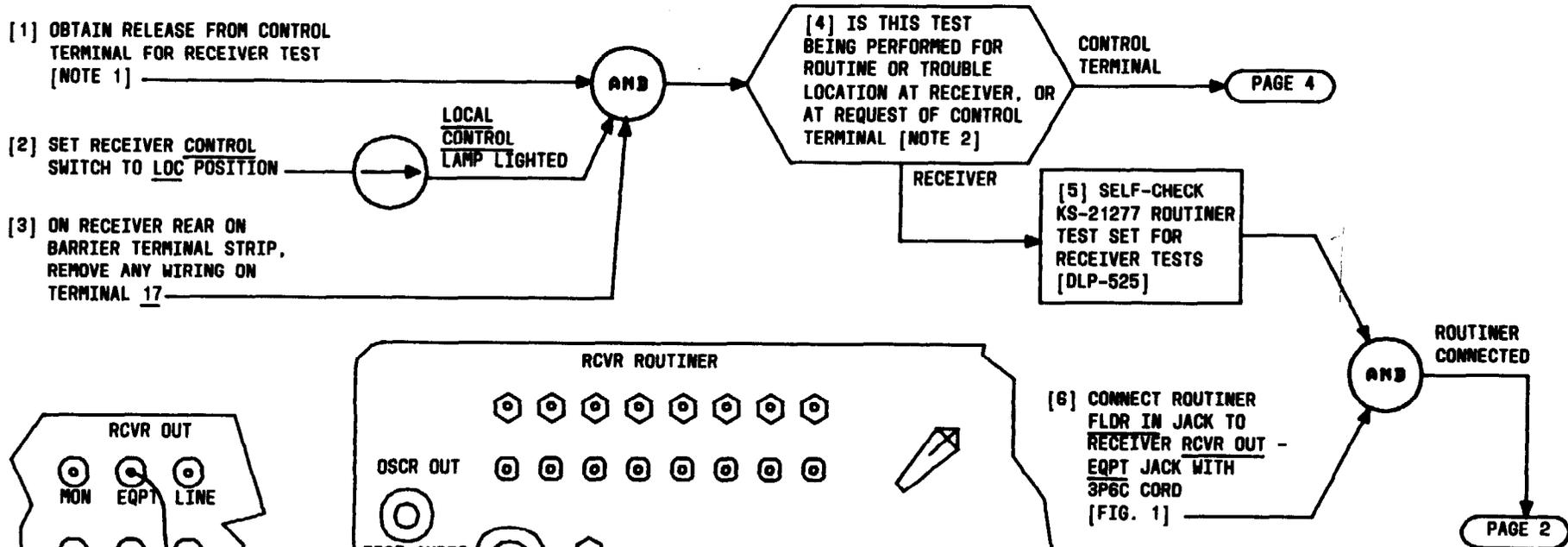


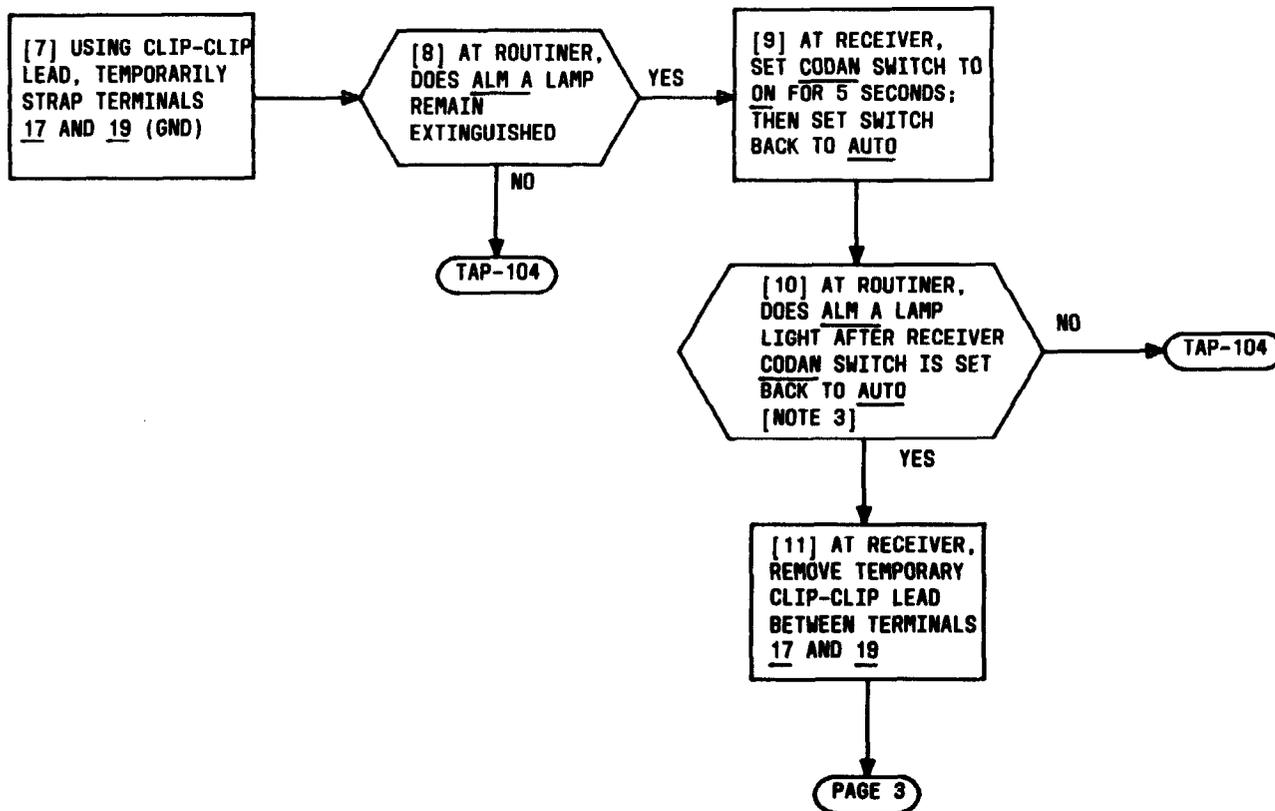
FIG. 1

NOTES

- FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
- IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

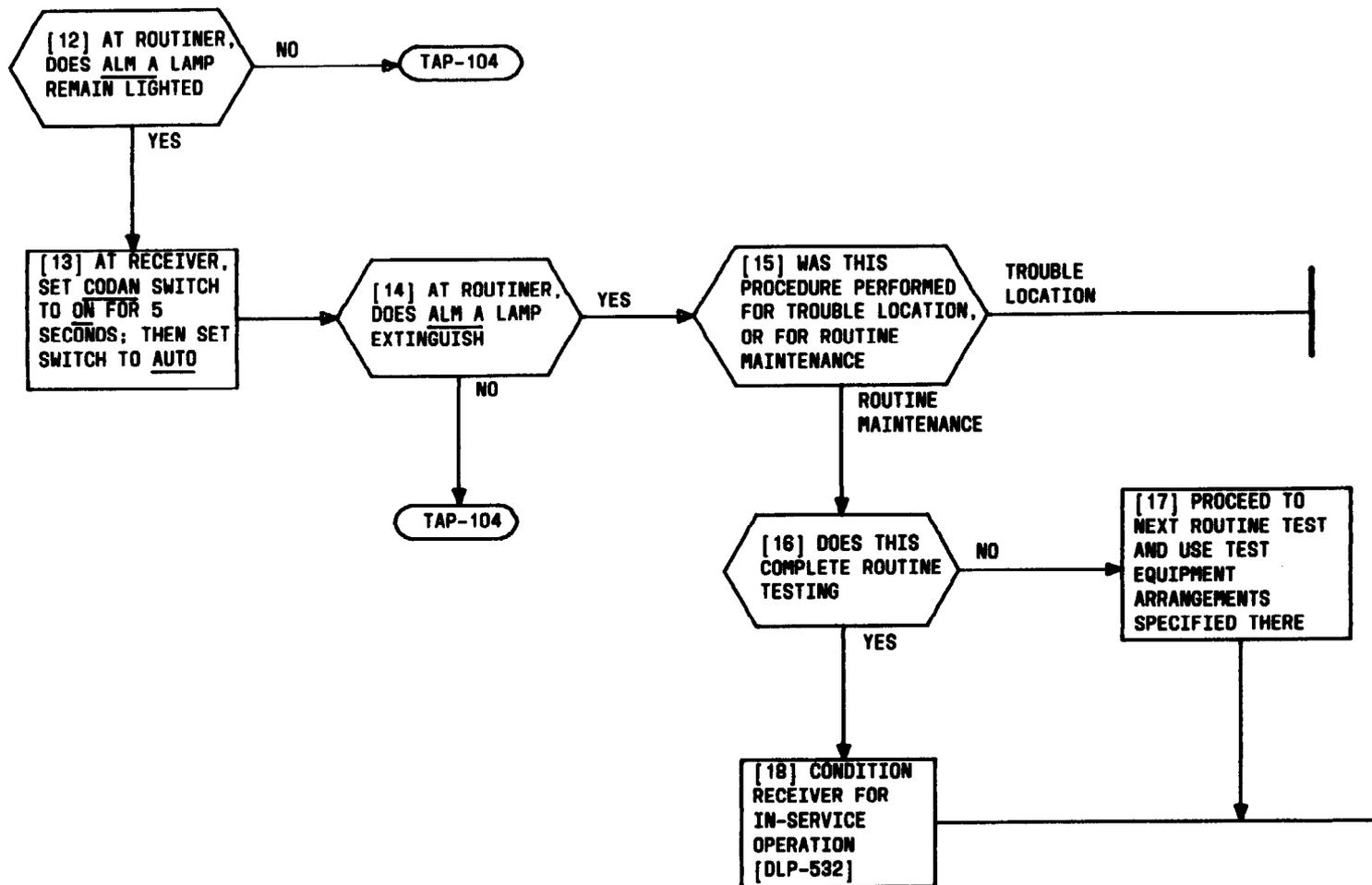
Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 4	507

TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING



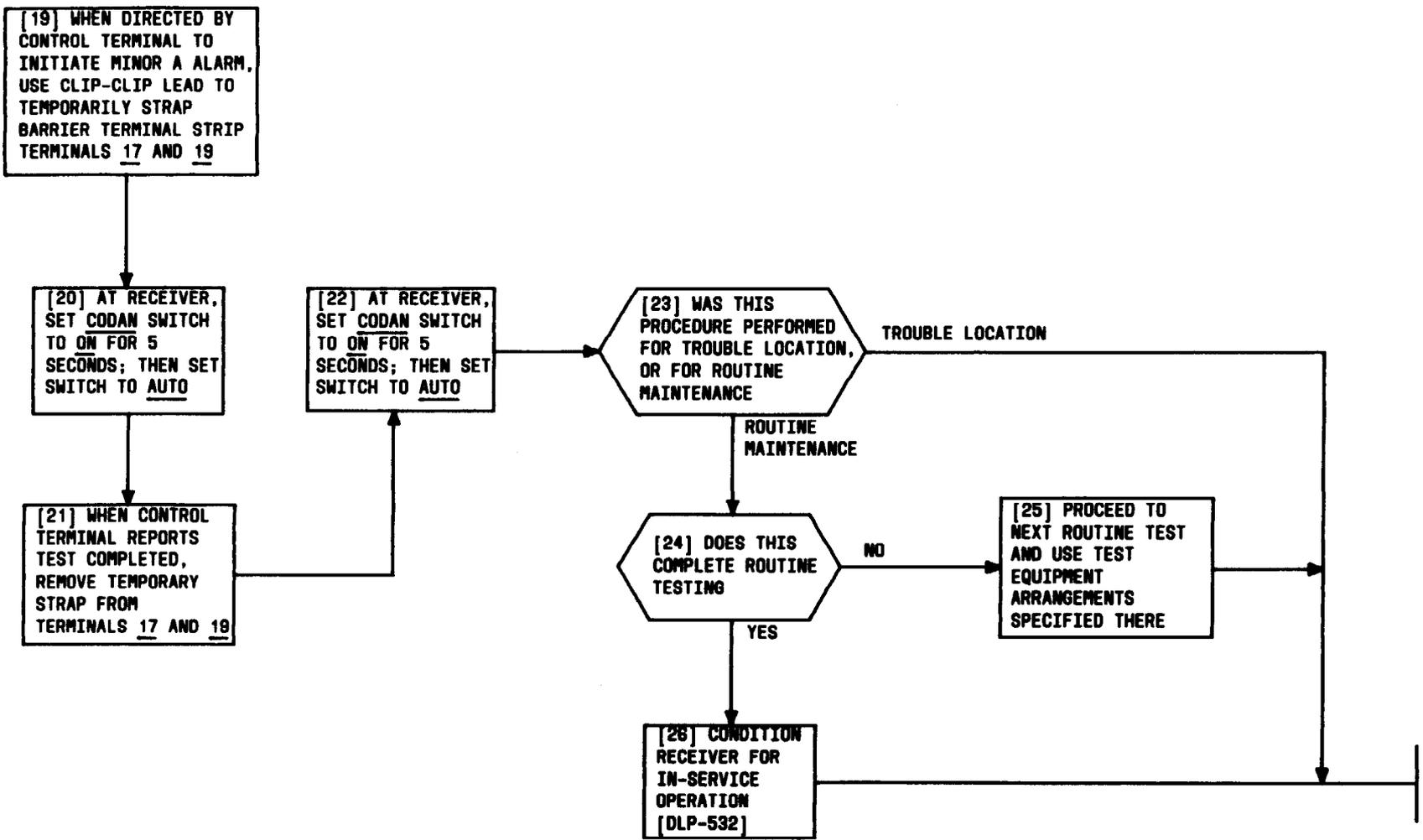
NOTE 3	
SEQUENCE OF LAMP OPERATION IS: RECEIVER <u>CODAN</u> SWITCH TO <u>ON</u> RESULTS IN RECEIVER <u>CODAN OPERATE</u> AND ROUTINER <u>CODAN LAMPS LIGHTING</u> . RECEIVER <u>CODAN</u> SWITCH BACK TO <u>AUTO</u> RESULTS IN RECEIVER <u>CODAN OPERATE</u> AND ROUTINER <u>CODAN LAMPS EXTINGUISHING</u> AND ROUTINER <u>ALM A LAMP LIGHTING</u>	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 4	507

TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING



TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 4	507

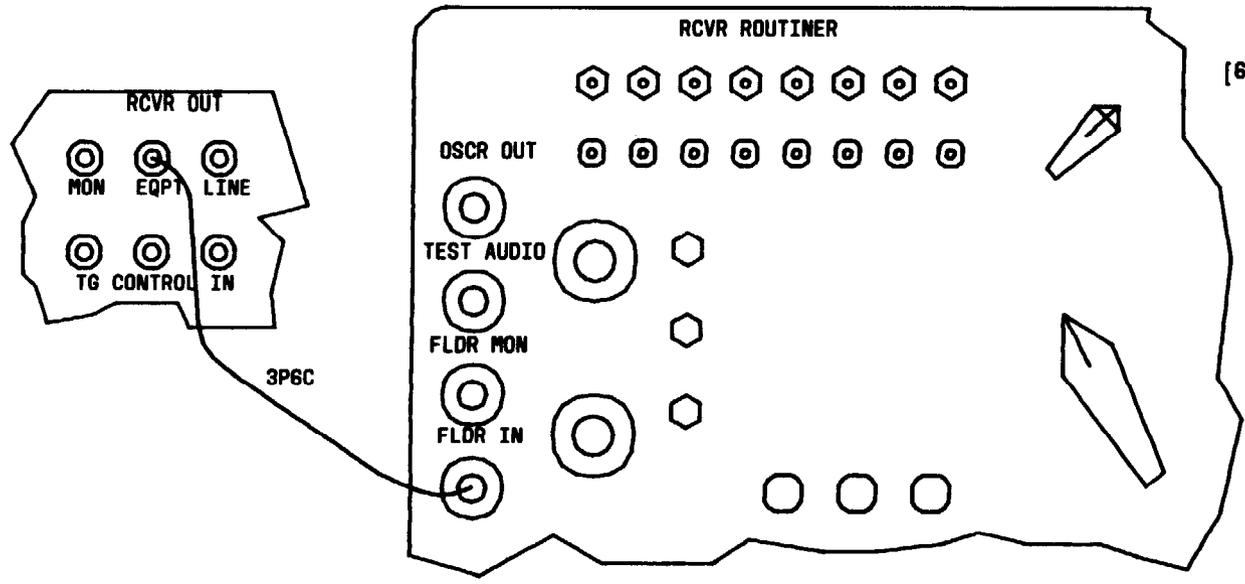
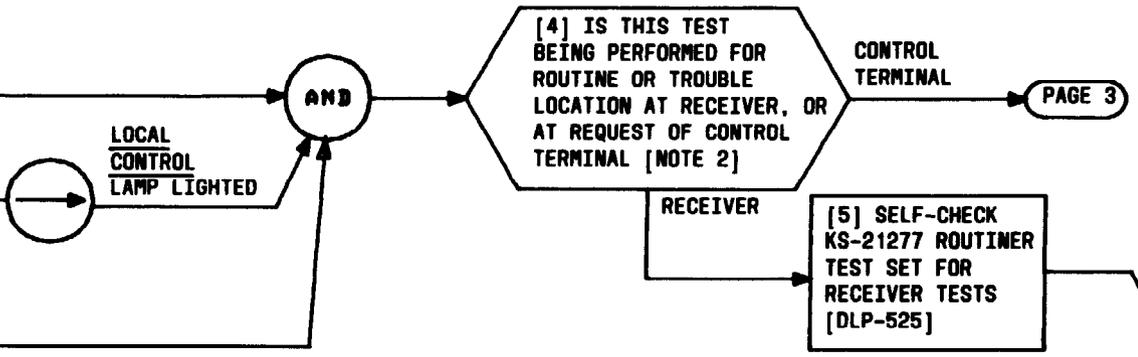


TEST RECEIVER TO CONTROL TERMINAL MINOR A ALARM SIGNALING

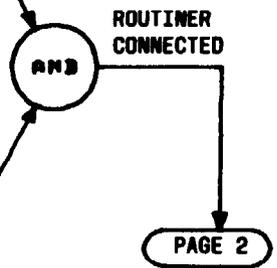
Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 4	507

SUMMARY
 USING KS-21277 ROUTINER TEST SET, VERIFY THAT A MAJOR B ALARM WILL BE ENCODED TO CONTROL TERMINAL UPON APPLICATION OF A STRAP SIMULATING THE EXTERNAL DEVICE BETWEEN BARRIER TERMINAL STRIP TERMINALS 18 AND 19 (GND)

- [1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]
- [2] SET RECEIVER CONTROL SWITCH TO LOC POSITION
- [3] ON RECEIVER REAR ON BARRIER TERMINAL STRIP, REMOVE ANY WIRING ON TERMINAL 18



- [4] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL [NOTE 2]
- [5] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]
- [6] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD [FIG. 1]

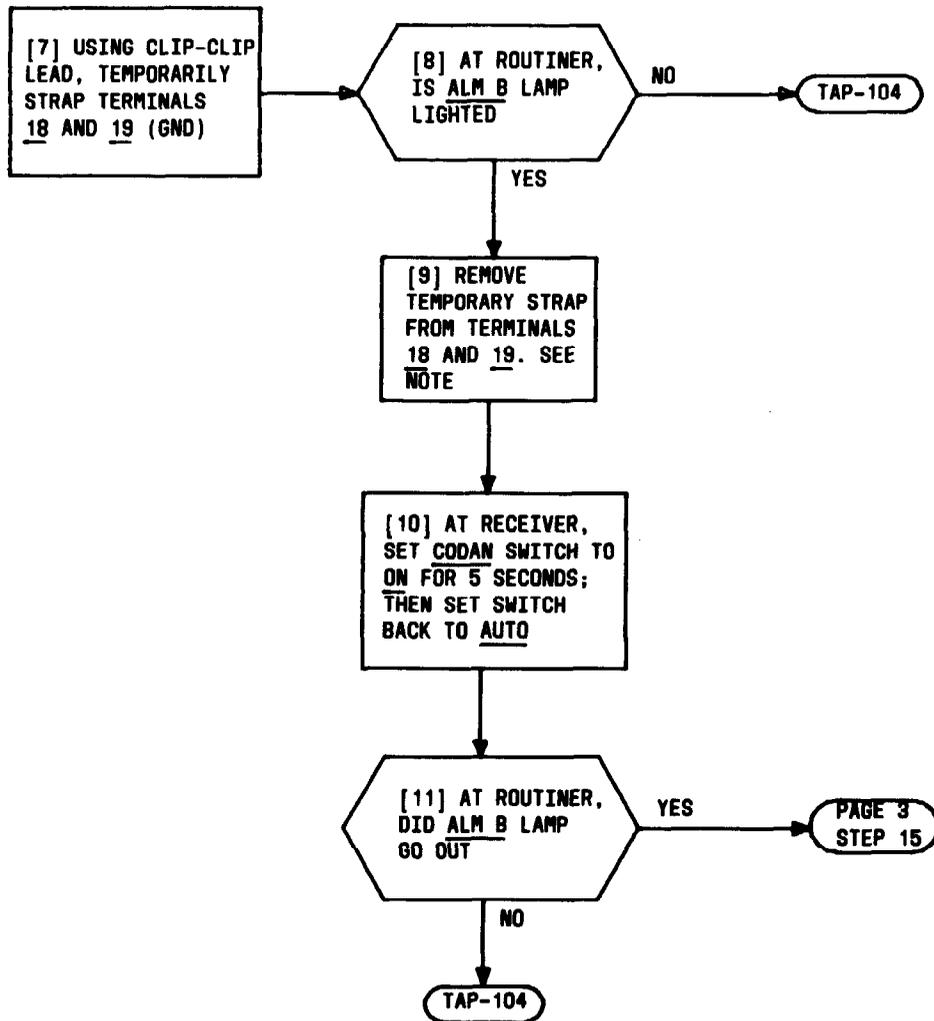


NOTES

1. FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
2. IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

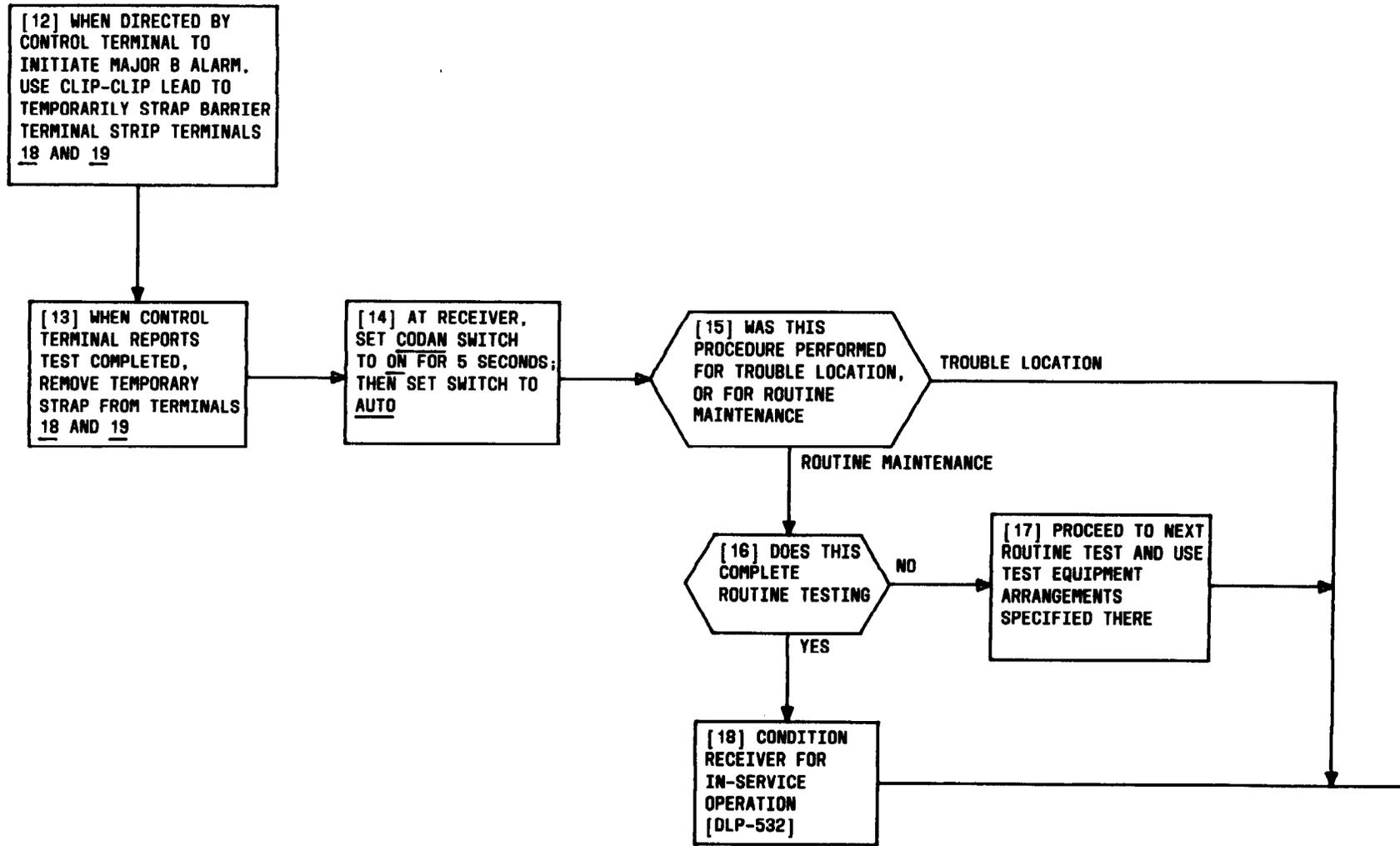
Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 3	508

TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING



NOTE ALM B LAMP MAY GO OUT WHEN STRAP IS REMOVED	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 3	508

TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING



TEST RECEIVER TO CONTROL TERMINAL MAJOR B ALARM SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 3	508

SUMMARY
 USING KS-21277 ROUTINER TEST SET, AND A STRAP BETWEEN BARRIER
 TERMINAL STRIP TERMINALS 18 AND 19 (GND) SIMULATING THE EXTERNAL
 DEVICE, VERIFY THAT A MINOR B ALARM WILL BE ENCODED TO CONTROL
 TERMINAL FOLLOWING A CODAN OPERATION

[1] OBTAIN RELEASE FROM CONTROL
 TERMINAL FOR RECEIVER TEST
 [NOTE 1]

[2] SET RECEIVER CONTROL
 SWITCH TO LOC POSITION

[3] ON RECEIVER REAR ON
 BARRIER TERMINAL STRIP,
 REMOVE ANY WIRING ON
 TERMINAL 18

LOCAL
 CONTROL
 LAMP LIGHTED

[4] IS THIS TEST
 BEING PERFORMED FOR
 ROUTINE OR TROUBLE
 LOCATION AT RECEIVER, OR
 AT REQUEST OF CONTROL
 TERMINAL [NOTE 2]

CONTROL
 TERMINAL → PAGE 4

RECEIVER → [5] SELF-CHECK
 KS-21277 ROUTINER
 TEST SET FOR
 RECEIVER TESTS
 [DLP-525]

[6] CONNECT ROUTINER
 FLDR IN JACK TO
 RECEIVER RCVR OUT -
 EQPT JACK WITH
 3P6C CORD
 [FIG. 1]

ROUTINER
 CONNECTED → AND → PAGE 2

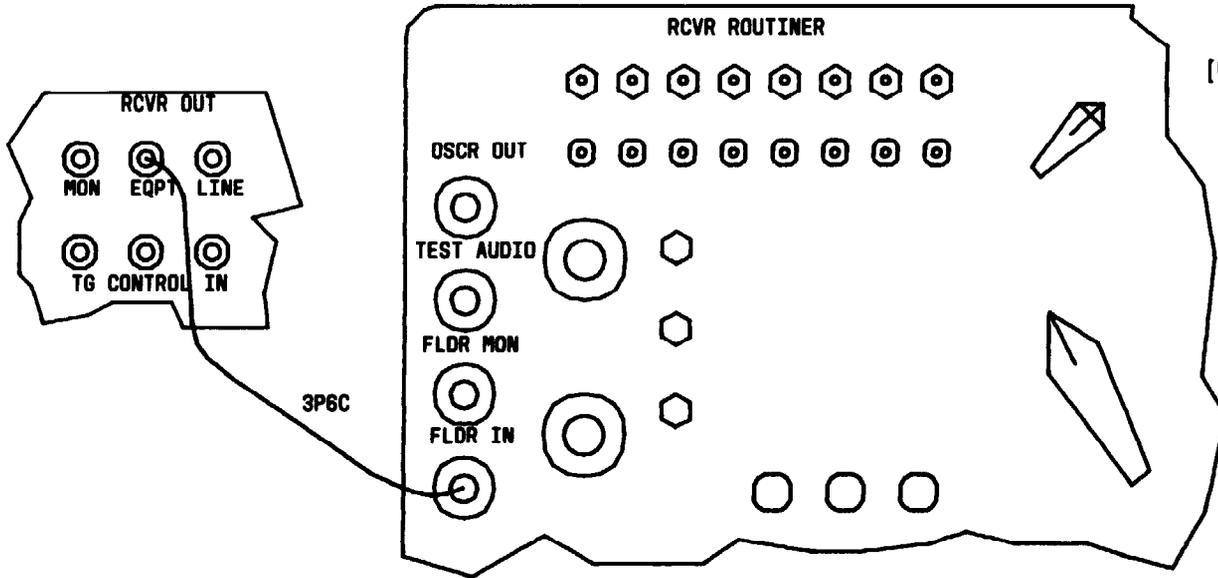


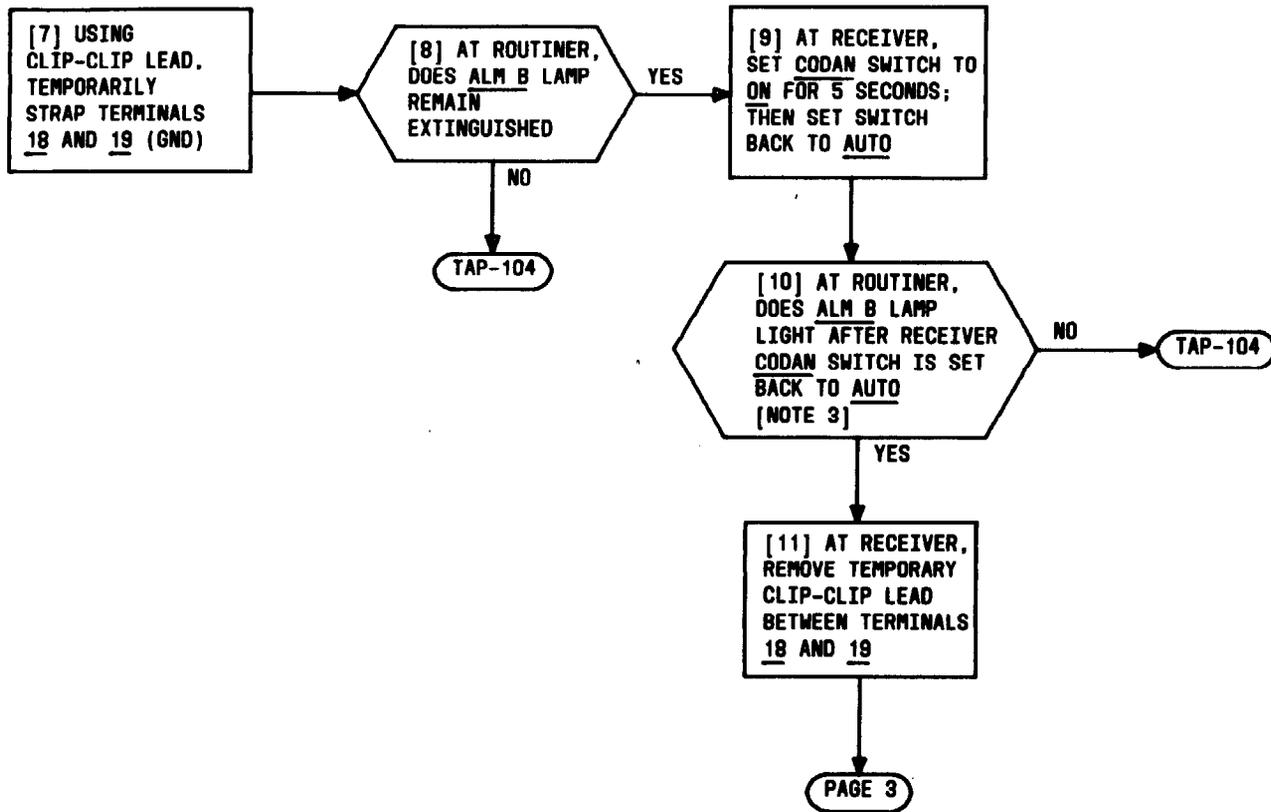
FIG. 1

NOTES

- FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
- IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

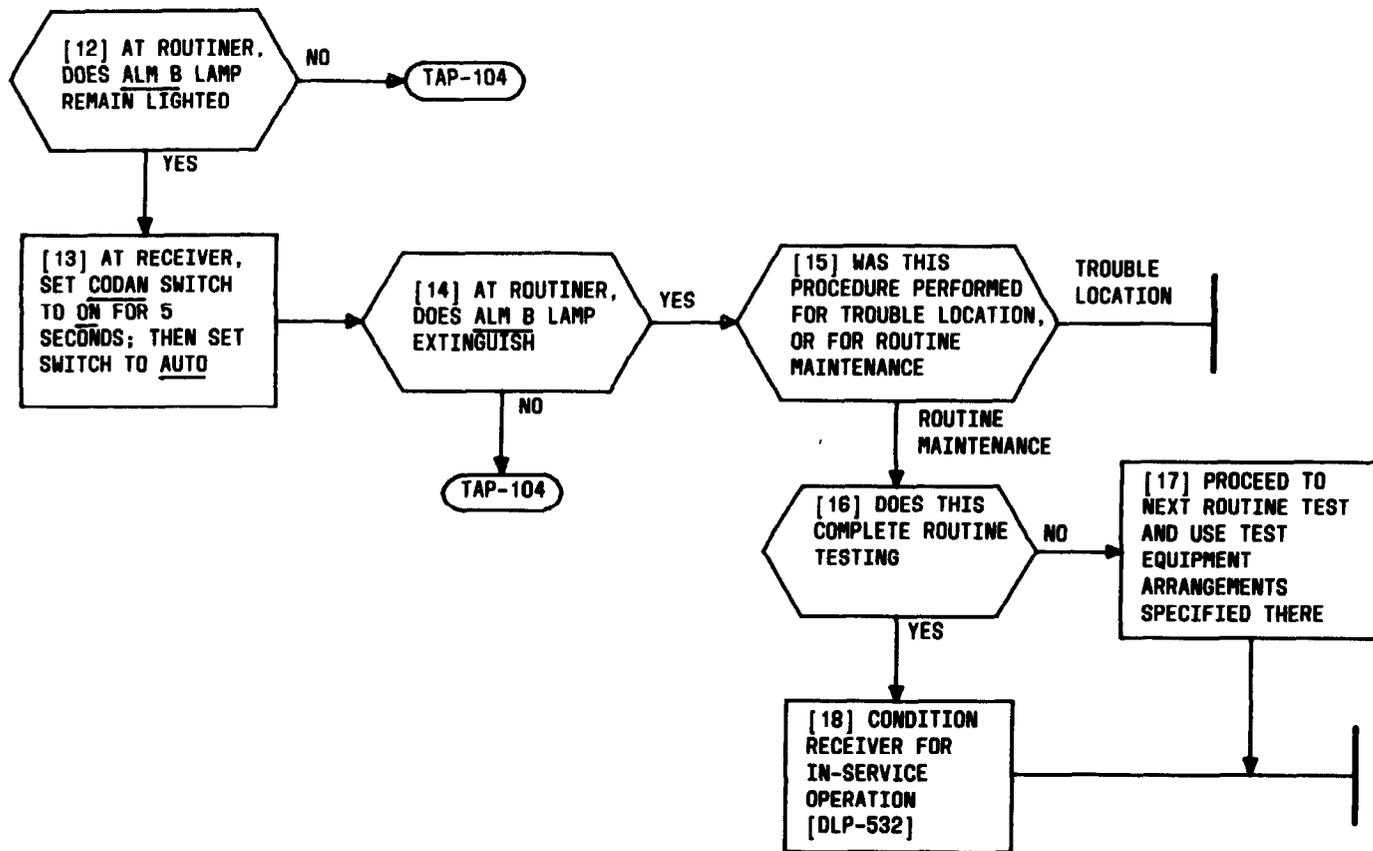
Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 4	509

TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING



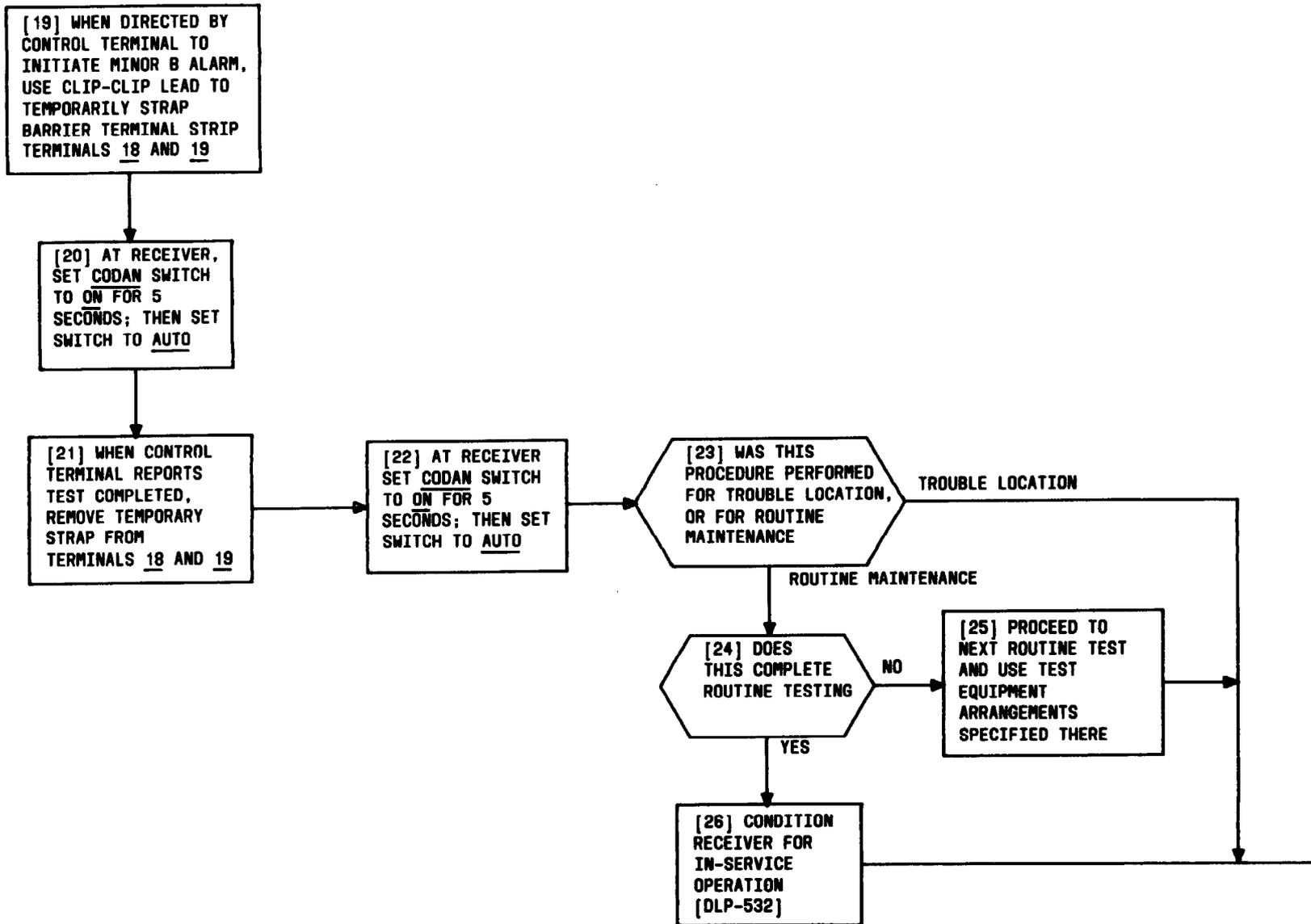
NOTE 3
 SEQUENCE OF LAMP OPERATION IS: RECEIVER CODAN SWITCH TO ON RESULTS IN RECEIVER CODAN OPERATE AND ROUTINER CODAN LAMPS LIGHTING. RECEIVER CODAN SWITCH BACK TO AUTO RESULTS IN RECEIVER CODAN OPERATE AND ROUTINER CODAN LAMPS EXTINGUISHING AND ROUTINER ALM B LAMP LIGHTING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 4	509



TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 4	509



TEST RECEIVER TO CONTROL TERMINAL MINOR B ALARM SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 4	509

SUMMARY
 USING KS-21277 ROUTINER TEST SET TO INITIATE DATA TRAINS TO RECEIVER, VERIFY RECEIVER RESPONSES TO COMMANDS FOR TEST GENERATOR AND CODAN OVERRIDE

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] VERIFY THAT RECEIVER CONTROL SWITCH IS SET TO REM POSITION



[3] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL [NOTE 2]

CONTROL TERMINAL

PAGE 5
STEP 21

RECEIVER

[4] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

[5] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD [FIG. 1]

[6] CONNECT ROUTINER OSCR OUT JACK TO RECEIVER TG CONTROL IN - EQPT JACK WITH 3P6C CORD



ROUTINER CONNECTED

PAGE 2

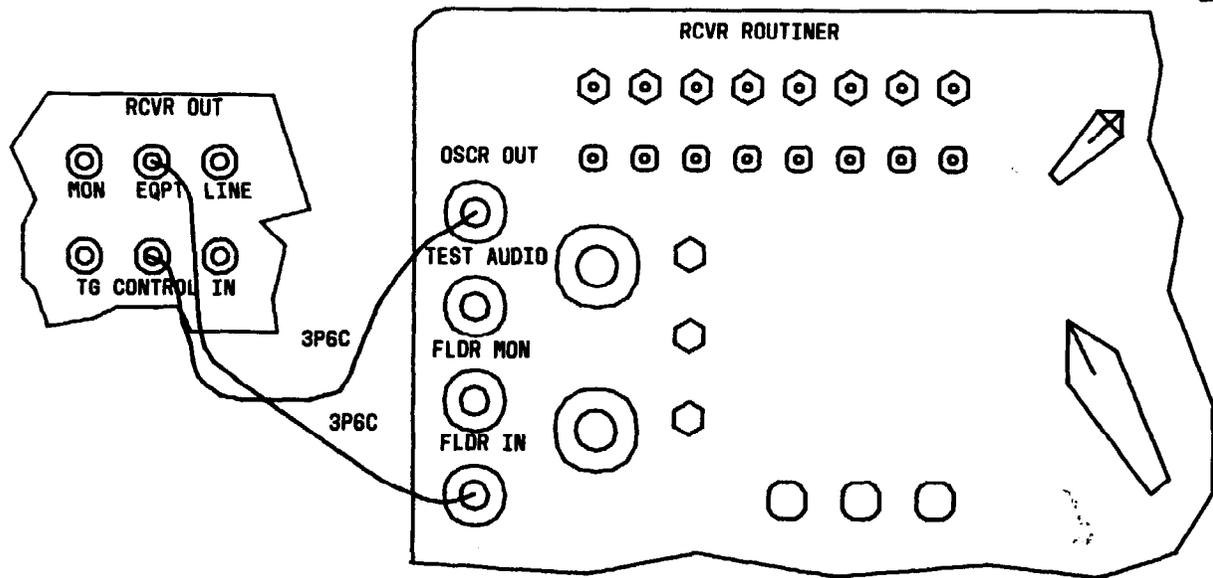
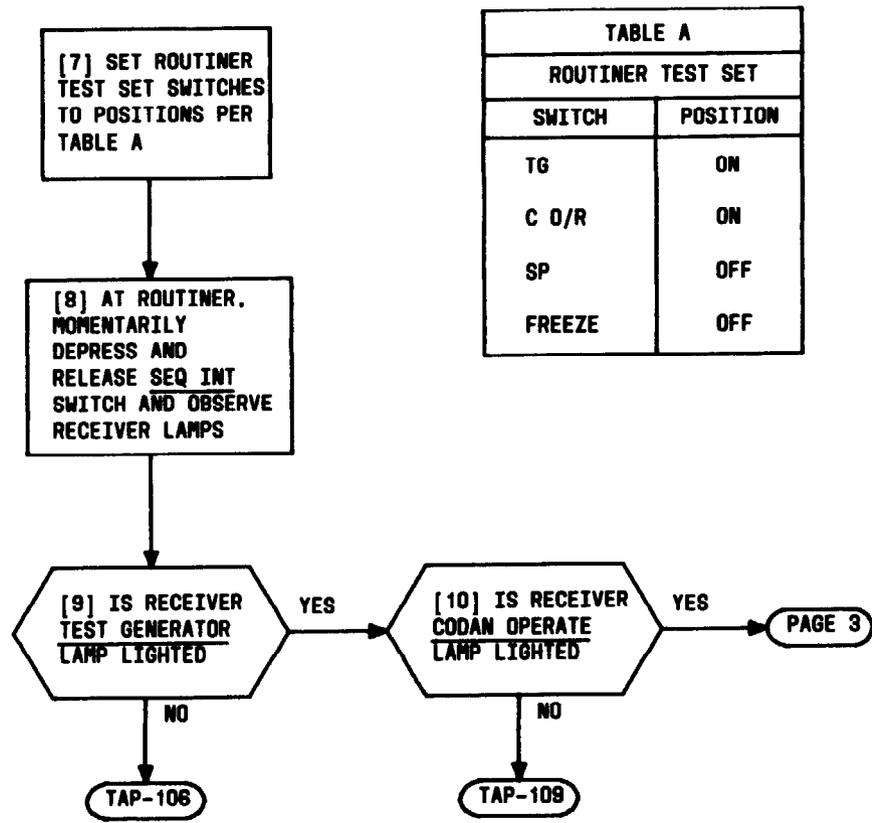


FIG. 1

NOTES
 1. FOR ACCEPTANCE PROCEDURE, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
 2. IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 5	510

TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL



TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL

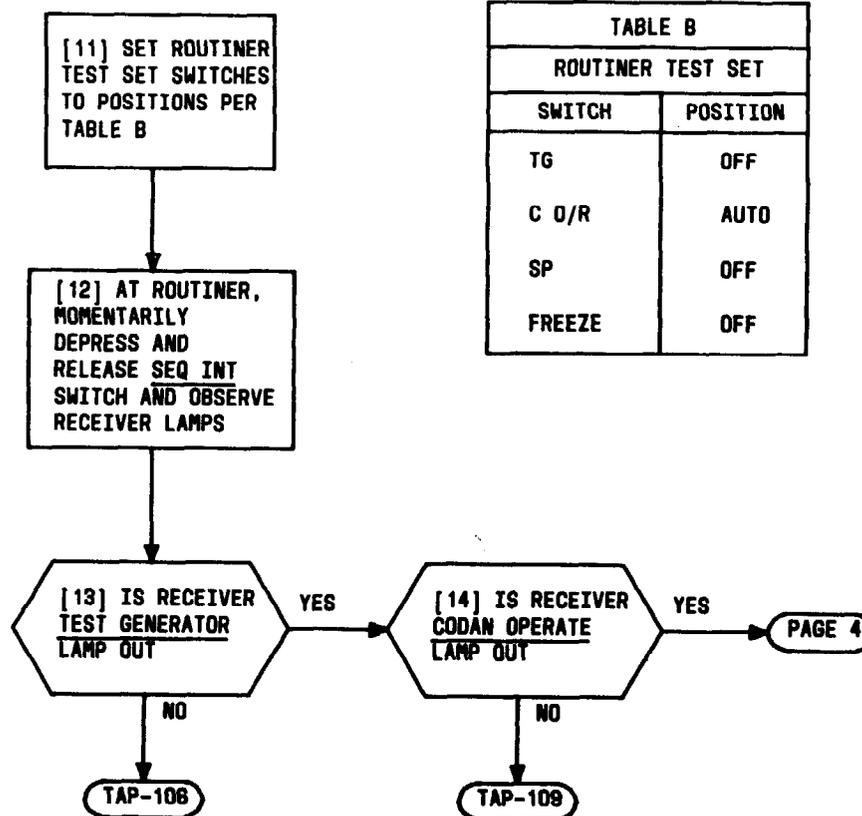
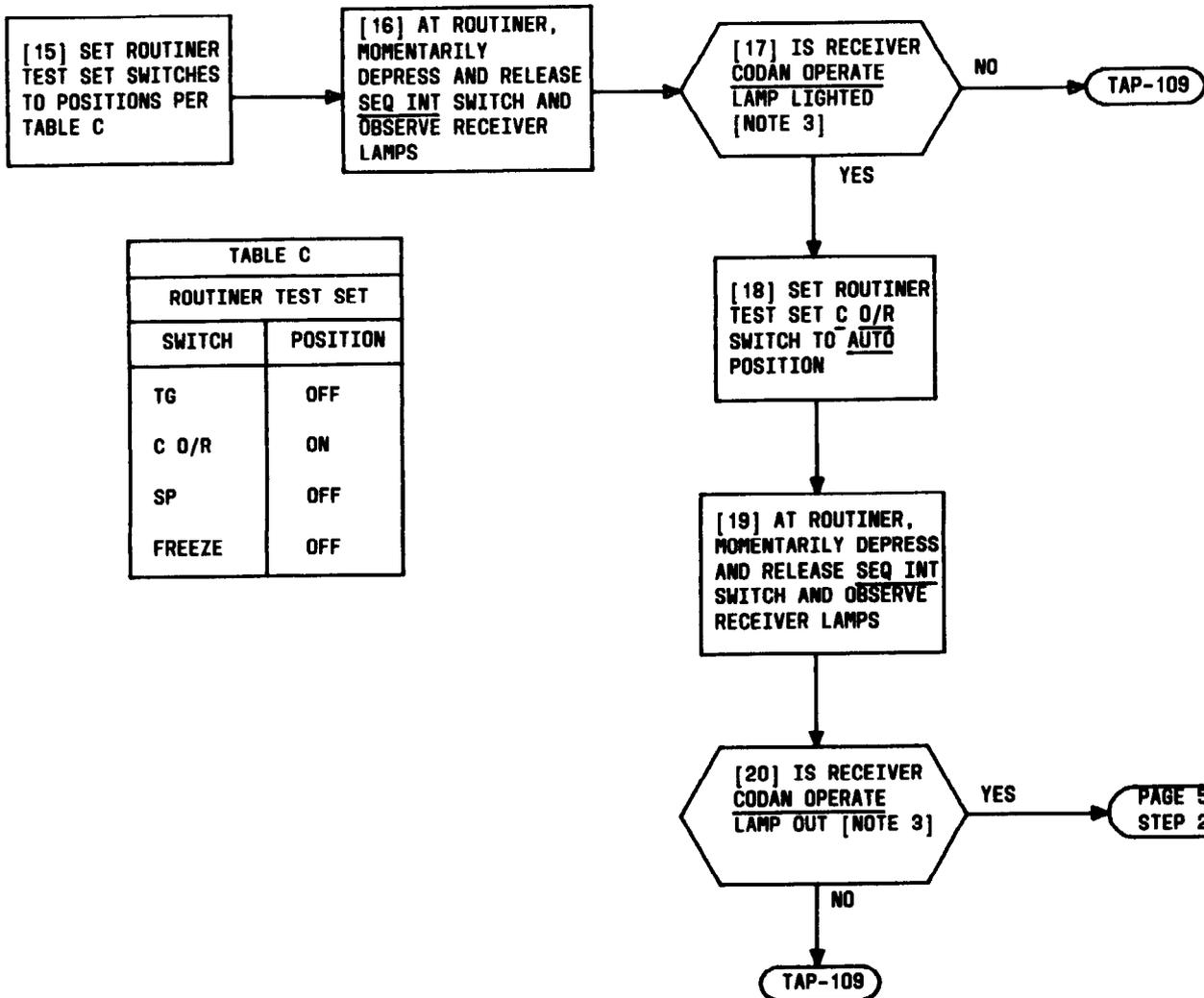


TABLE B	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	OFF
FREEZE	OFF

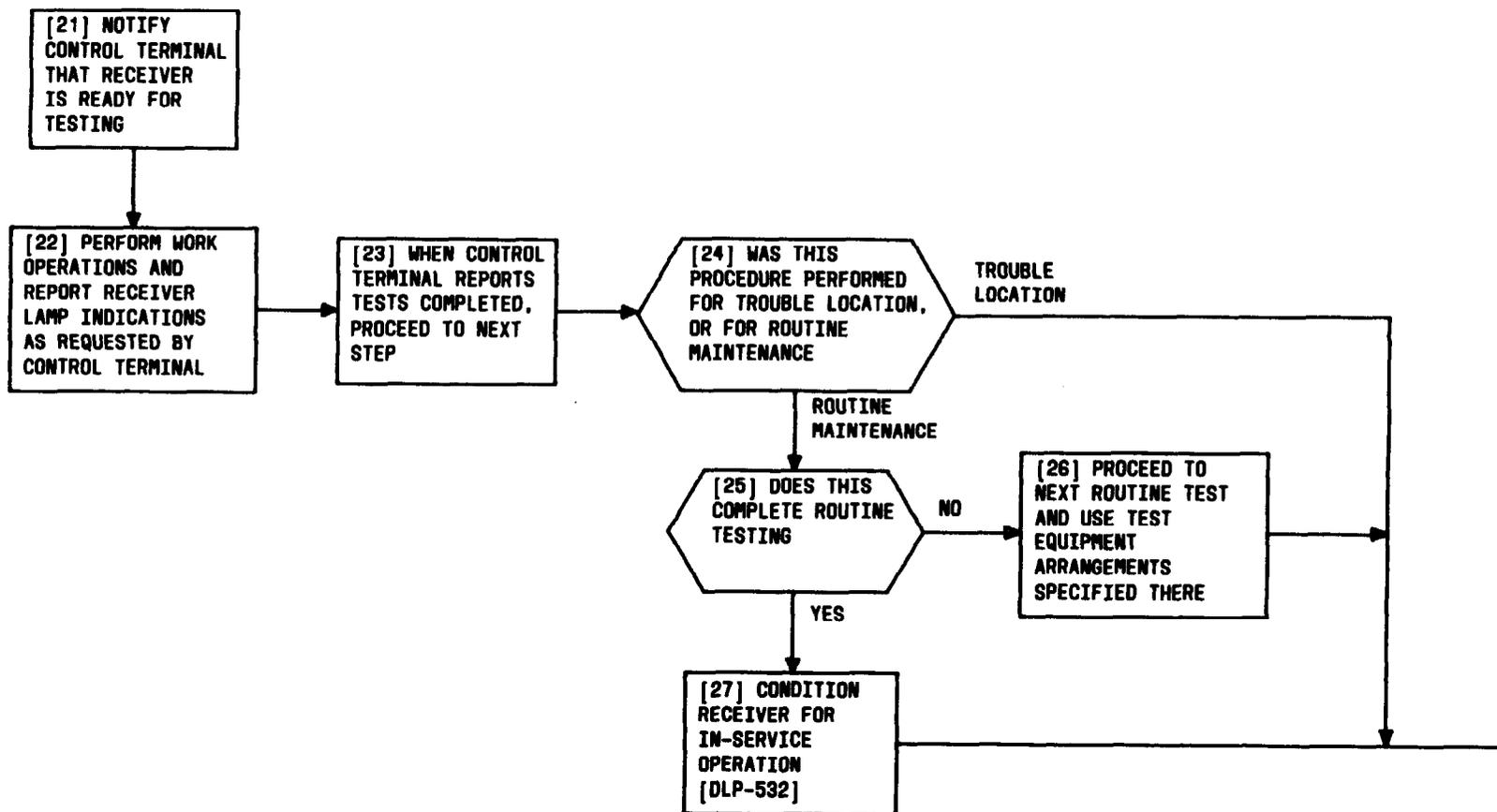
TEST RECEIVER RESPONSE TO TEST GENERATOR AND
CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 5	510



TEST RECEIVER RESPONSE TO TEST GENERATOR AND CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL

NOTE 3	
IGNORE LIGHTED <u>SSB</u> LAMP	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 5	510



**TEST RECEIVER RESPONSE TO TEST GENERATOR AND
CODAN OVERRIDE, COMMANDS FROM CONTROL TERMINAL**

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 5	510

SUMMARY
 USING KS-21277 ROUTINER TEST SET TO INITIATE A DATA TRAIN TO RECEIVER, VERIFY RESPONSE OF SPARE FUNCTION RELAY CLOSURE INTERNAL TO RECEIVER

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] VERIFY THAT RECEIVER CONTROL SWITCH IS SET TO REM POSITION



[3] IS AN EXTERNAL DEVICE CONNECTED TO BARRIER TERMINAL STRIP TERMINALS 15 AND 16

[4] CONDITION KS-14510 METER (VOM) FOR CONTINUITY MEASUREMENTS [DLP-524]

[5] CONNECT OHMMETER TEST LEADS BETWEEN BARRIER STRIP TERMINALS 15 AND 16 [NOTE 2]

PAGE 2

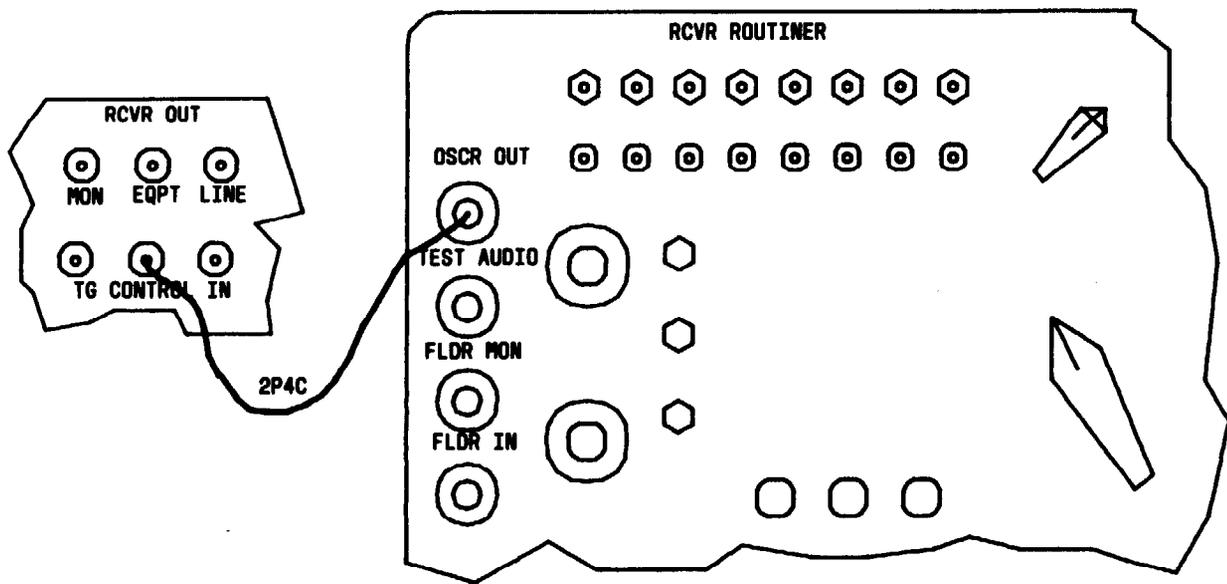


FIG. 1

NOTES

- FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
- REFERENCE IN THIS PROCEDURE TO EXTERNAL DEVICE REFERS TO EITHER OHMMETER OR ANY PREEXISTING DEVICE

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 3	511

TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL

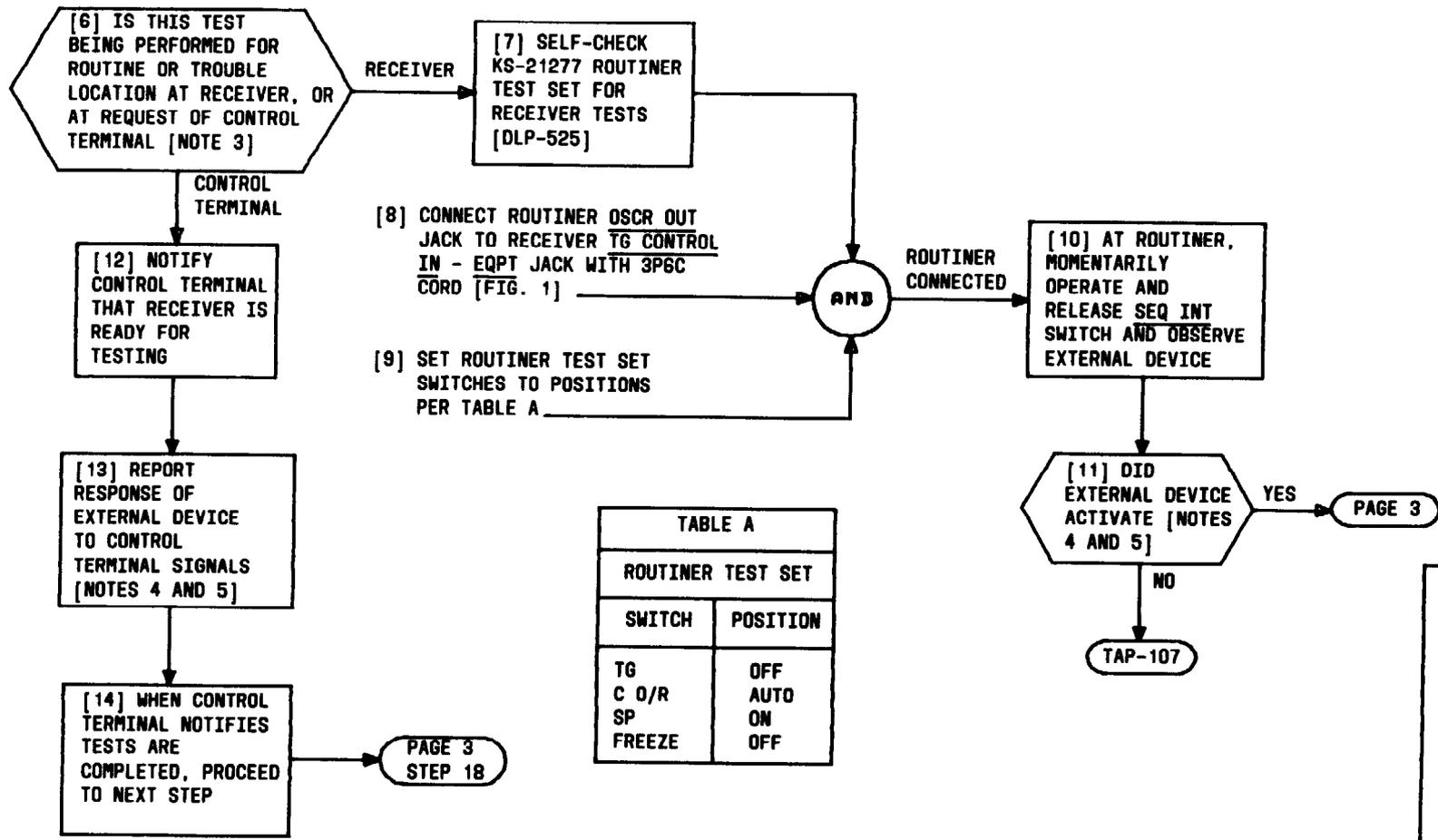
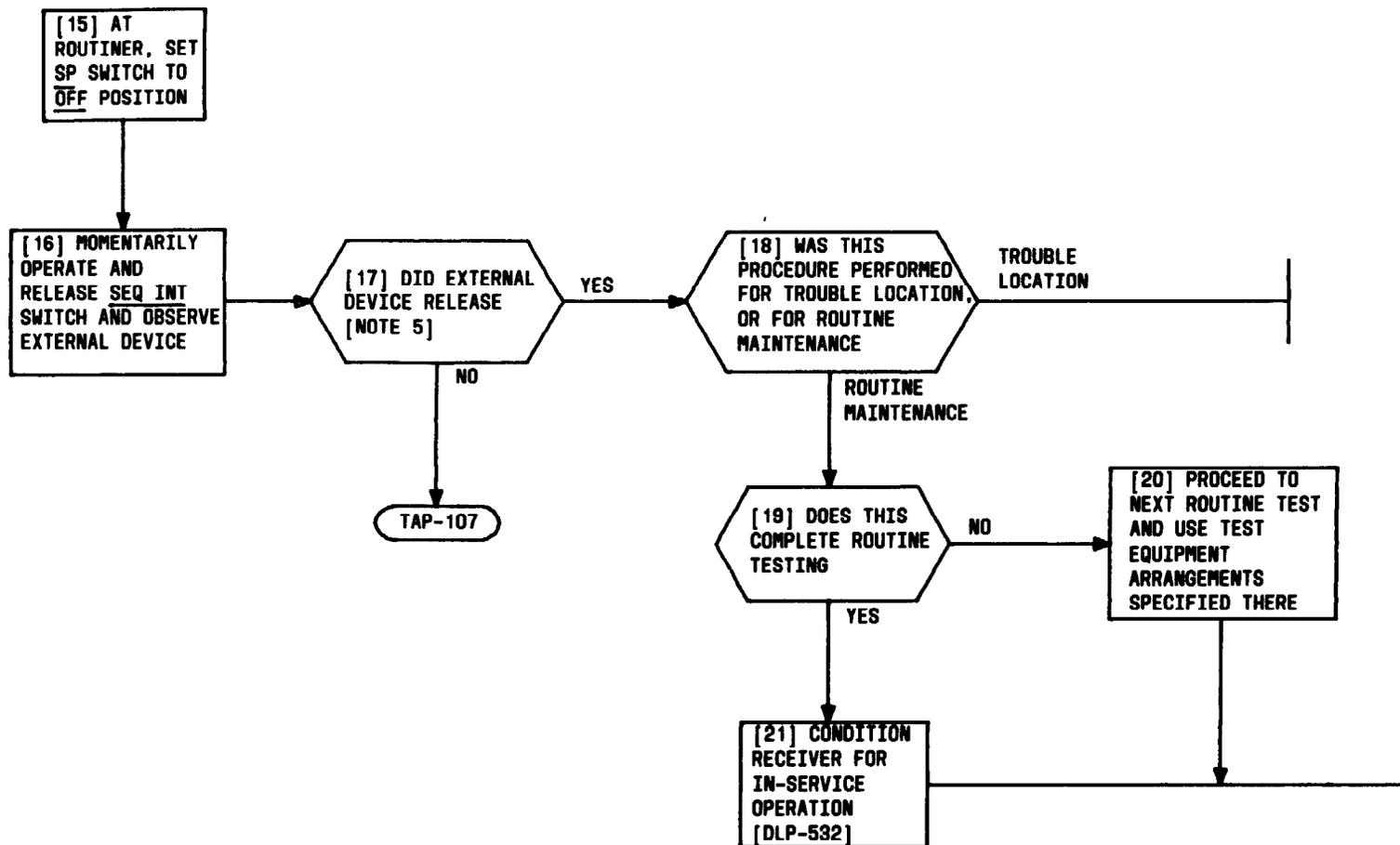


TABLE A

ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	ON
FREEZE	OFF

- NOTES
3. IF ROUTINER TEST SET IS NOT AVIALABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL
 4. FOR PURPOSES OF THIS TEST, ALL RECEIVER AND ROUTINER INDICATIONS (LAMPS) MAY BE IGNORED
 5. IF EXTERNAL DEVICE IS AN OHMMETER, ACTIVATION SHOULD RESULT IN AN INDICATION OF 0 OHM. RELEASE SHOULD RESULT IN AN INDICATION OF INFINITE OHMS

TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL

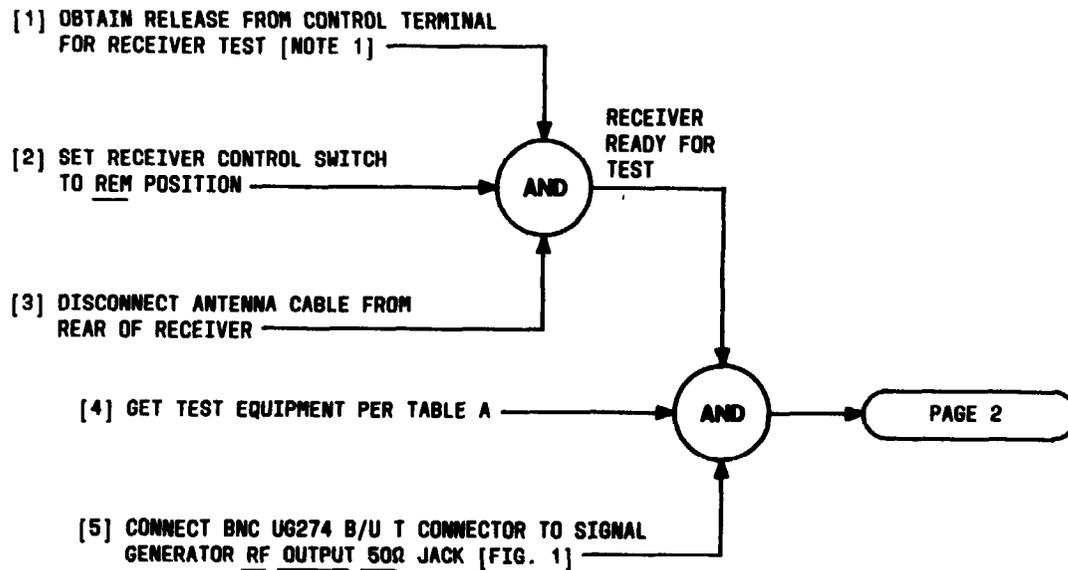


TEST RECEIVER RESPONSE TO SPARE FUNCTION COMMAND FROM CONTROL TERMINAL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 3	511

SUMMARY

USING KS-21277 ROUTINER TEST SET TO INITIATE DATA TO RECEIVER, WITH AN AMPLITUDE-MODULATED SIGNAL INPUT TO RECEIVER, VERIFY RECEIVER RESPONSE TO FREEZE COMMAND.



NOTE 1
 FOR ACCEPTANCE
 PROCEDURES, REFER
 ABNORMAL CONDITIONS
 TO INSTALLER FOR
 CORRECTION

Issue 2 | **FEB 1979**

403-200-502 | **DLP**

PAGE 1 of 6 | **512**

TEST RECEIVER RESPONSE TO FREEZE COMMAND

[6] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

[7] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D ATTENUATOR WITH RG 58/U CABLE

[8] CONNECT OUTPUT OF HP 355D ATTENUATOR TO INPUT OF AR-2 ATTENUATOR WITH BNC UG491 A/U ADAPTER

[9] CONNECT OUTPUT OF AR-2 ATTENUATOR UNIT TO ANTENNA INPUT ON RECEIVER REAR WITH RG 58/U CABLE

[10] SET AR-2 AND 355D ATTENUATORS TO 100 DB



TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
VARIABLE RF ATTENUATOR	HP 355D
COAX ADAPTER BNC MALE	UG491 A/U
COAX T CONNECTOR	BNC UG274 B/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U COAX WITH UG 88 D/U CONNECTORS
ROUTINER TEST SET	KS-21277
2 TELEPHONE CORDS	3P6C

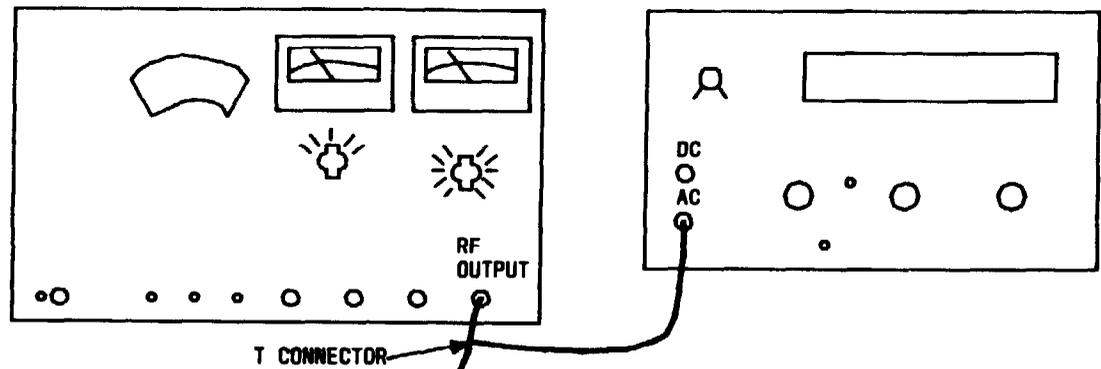


FIG. 1

- [11] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]
- [12] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION
- [13] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION
- [14] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

FREQUENCY COUNTER SET UP



- [15] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]
- [16] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

- [17] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO RECEIVER CHANNEL FREQUENCY PLUS 1000

- [18] SET SIGNAL GENERATOR ATTENUATOR TO 0DBM POSITION AND ADJUST VERNIER FOR OUTPUT LEVEL OF 0

- [19] SET SIGNAL GENERATOR MODULATION SELECTOR SWITCH TO CW, SELECT 100% POSITION, AND ADJUST MODULATION AMPLITUDE CONTROL FOR PERCENT MODULATION METER INDICATION OF 40



SIGNAL GENERATOR SET UP

PAGE 4

TEST RECEIVER RESPONSE TO FREEZE COMMAND

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 6	512

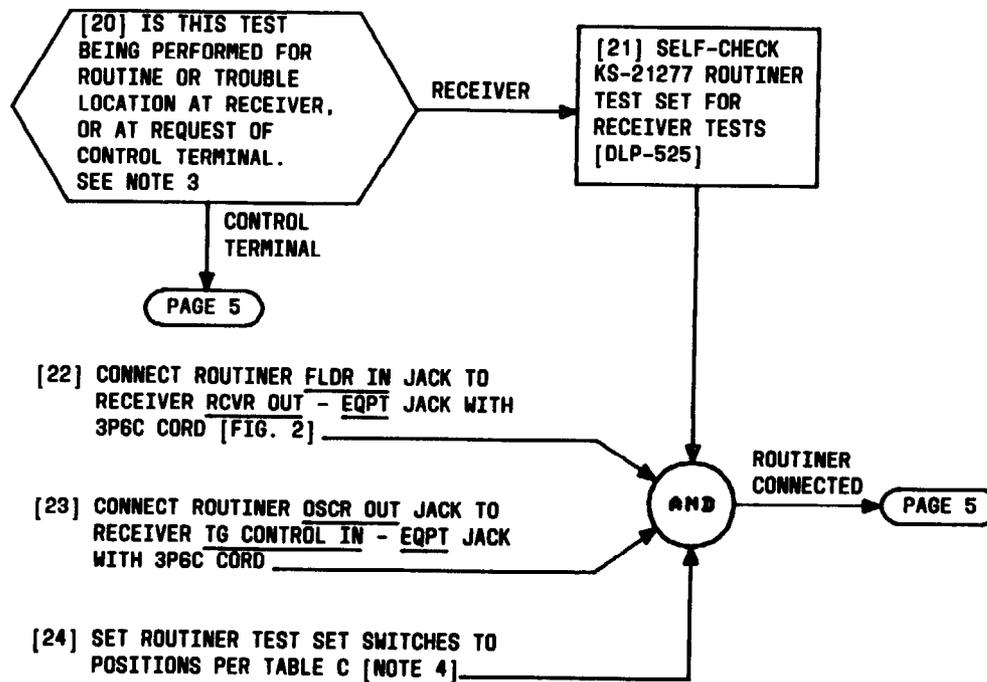
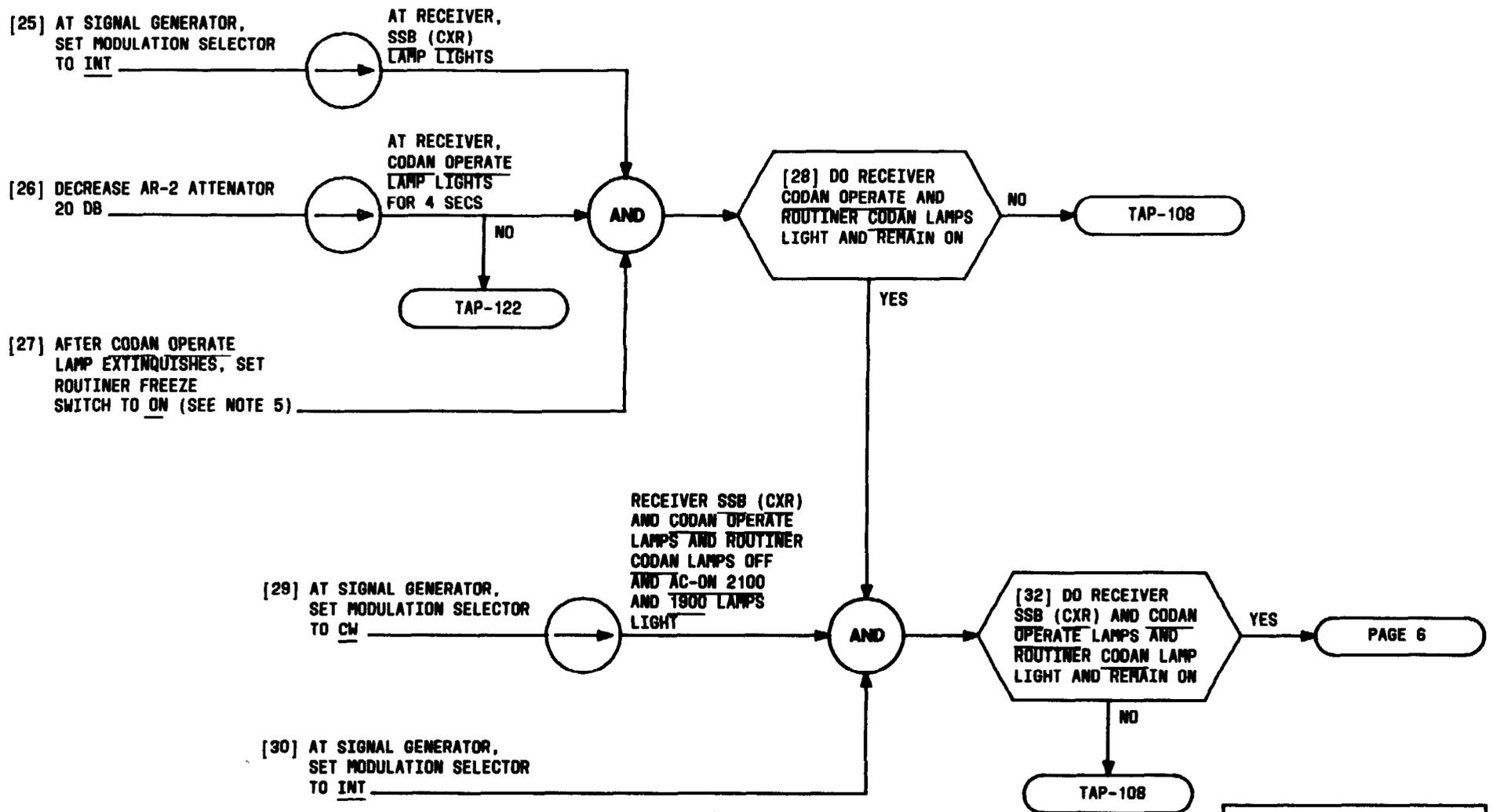


TABLE C	
ROUTINER TEST SET	
SWITCH	POSITION
TG	OFF
C O/R	AUTO
SP	OFF
FREEZE	OFF

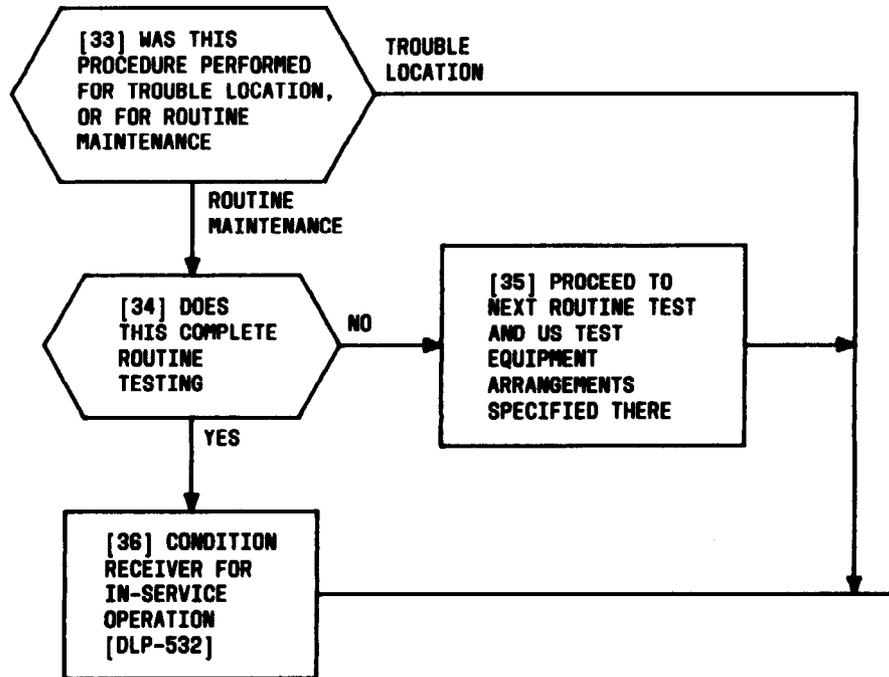
NOTES	
3. IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL	
4. FOR PURPOSES OF THIS TEST, ALL LAMP INDICATIONS ON ROUTINER TEST SET MAY BE IGNORED	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 6	512



NOTE 5
 IF ROUTINER IS AT CONTROL TERMINAL, REQUEST CONTROL TERMINAL TO PERFORM ROUTINER ACTIONS WHEN REQUIRED

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 6	512

TEST RECEIVER RESPONSE TO FREEZE COMMAND



TEST RECEIVER RESPONSE TO FREEZE COMMAND

Issue 2	FEB 1979
403-200-502	DLP
PAGE 6 of 6	512

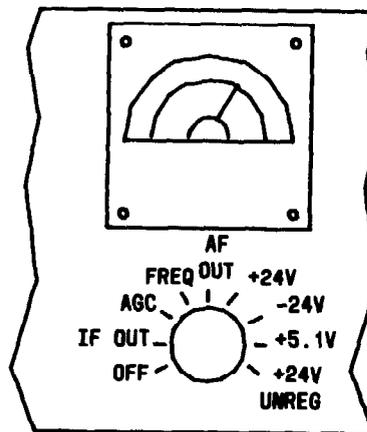
SUMMARY
 USING RECEIVER PANEL METER, MEASURE INTERNAL RECEIVER POWER
 SUPPLY VOLTAGES AT BETWEEN 28 AND 30 DIVISIONS (REGULATED) AND
 25 AND 35 (UNREGULATED)

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR
 RECEIVER TO BE TESTED [NOTE 1]

[2] SET RECEIVER PANEL CONTROLS PER TABLE A

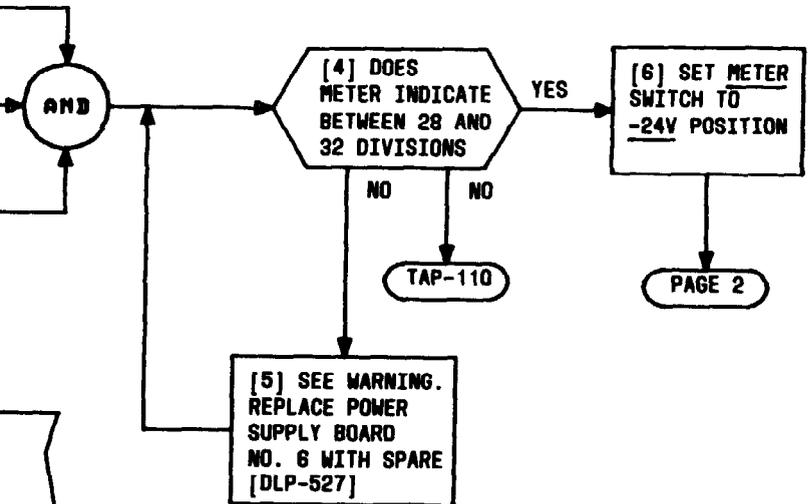
[3] SET RECEIVER METER SWITCH TO +24V POSITION
 [FIG. 1]

TABLE A	
CONTROL	SETTING
POWER CONTROL	ON
CONTROL LOC	LOC
TEST GENERATOR	ON
CODAN	ON



RECEIVER METER

FIG. 1



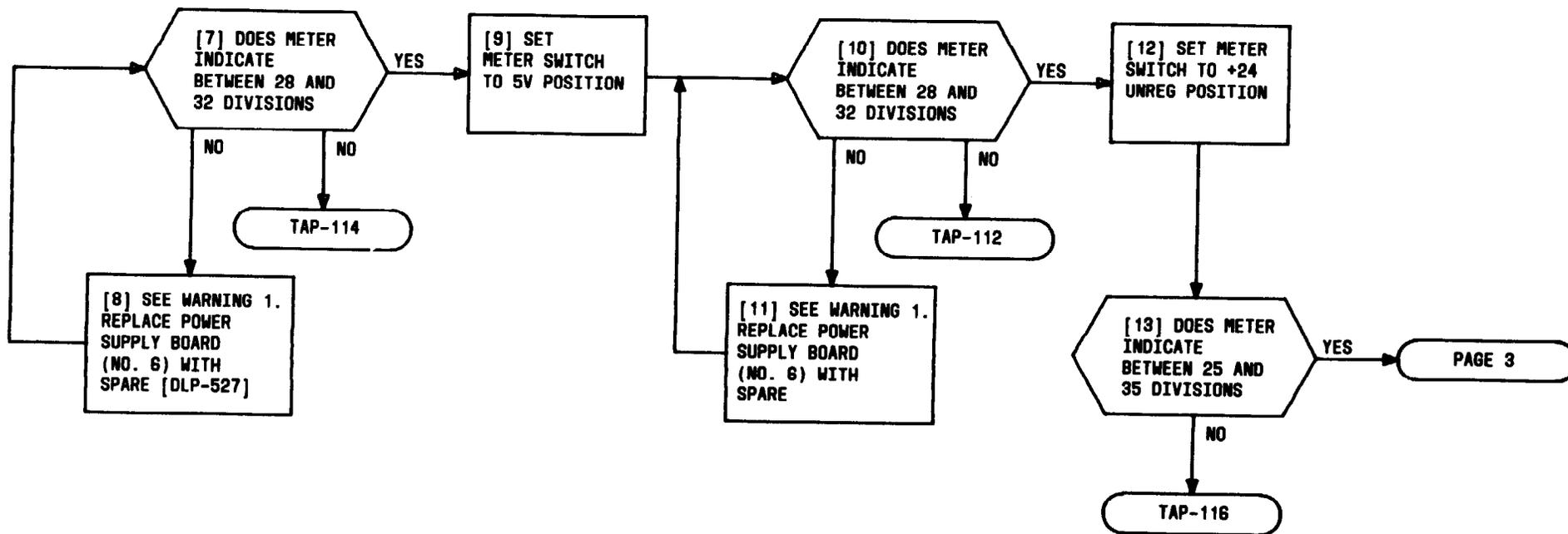
NOTES

- FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTIVE ACTION
- THE FOLLOWING PANEL LAMPS WILL BE LIGHTED:
 LOCAL CONTROL
 TEST GENERATOR
 CODAN OPERATE

WARNING
 POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT

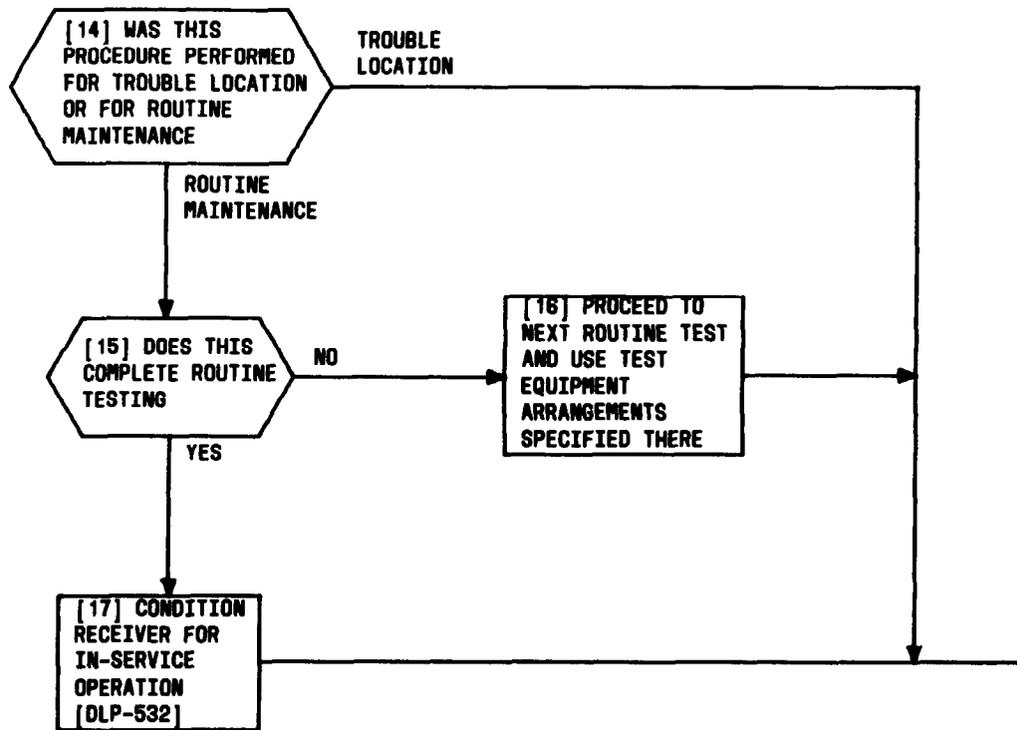
Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 3	513

MEASURE RECEIVER POWER SUPPLY VOLTAGES



MEASURE RECEIVER POWER SUPPLY VOLTAGES

WARNING 1 POWER MUST BE REMOVED AS SHOWN IN DLP-527 TO PREVENT DAMAGE TO EQUIPMENT	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 3	513



MEASURE RECEIVER POWER SUPPLY VOLTAGES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 3	513

SUMMARY

USING FREQUENCY COUNTER, MEASURE RECEIVER HIGH-FREQUENCY OSCILLATOR AT WITHIN 2 HZ OF 1.5 MHZ ABOVE CHANNEL FREQUENCY. MEASURE SECOND LOCAL OSCILLATOR AT WITHIN 2 HZ OF 1.6 MHZ. MEASURE TEST GENERATOR AT WITHIN 2 HZ OF 1.5 MHZ ABOVE CHANNEL FREQUENCY

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER POWER SWITCH TO ON POSITION

[3] SET RECEIVER CONTROL SWITCH TO LOC POSITION

LOCAL CONTROL
LAMP LIGHTED

[4] GET TEST EQUIPMENT PER TABLE A

[5] CONNECT T CONNECTOR BMC UG274 B/U TO FREQUENCY COUNTER SIGNAL INPUT-AC JACK [FIG. 1]

[6] CONNECT 50-OHM BNC MX554 A/U TERMINATION TO ONE LEG OF T CONNECTOR

[7] CONNECT OTHER LEG OF T CONNECTOR TO RECEIVER HFJ JACK WITH RG 58/U CABLE

AND

AND

PAGE 2

TABLE A

EQUIPMENT REQUIRED	RECOMMENDED TYPE
TERMINATION, 600 OHM	WECO 262B PLUG
FREQUENCY COUNTER	HP 5245L
T CONNECTOR	BMC UG274
6-FOOT LENGTH OF COAX CONNECTING CABLE	RG 58/U EQUIPPED WITH UG 88 D/U CONNECTORS
TERMINATION, 50 OHM	BNC MX554 A/U

NOTE 1

FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

Issue 2 FEB 1979

403-200-502 DLP

PAGE 1 of 6 514

[8] CONDITION HP 5245L
FREQUENCY COUNTER TO
MEASURE FREQUENCY [DLP-523]

[9] SET COUNTER FUNCTION
SWITCH TO FREQUENCY

[10] SET COUNTER SENSITIVITY
SWITCH TO .1 POSITION

[11] SET COUNTER TIME BASE
SWITCH TO .1 MS POSITION

AND

[12] FIVE (5) MINUTES
OR MORE AFTER
RECEIVER POWER-ON
OBSERVE INDICATED
FREQUENCY

[13] DOES COUNTER
INDICATE BETWEEN
1.499998 AND 1.500002
MHZ ABOVE ASSIGNED
CHANNEL FREQUENCY

NO

TAP-117

YES

[14] MOVE TEST CORD
FROM HFO JACK TO
1.6 MHZ JACK AND
OBSERVE INDICATED
FREQUENCY

[15] DOES COUNTER
REGISTER BETWEEN
1.599998 AND
1.600002 MHZ

YES

PAGE 3

NO

TAP-118

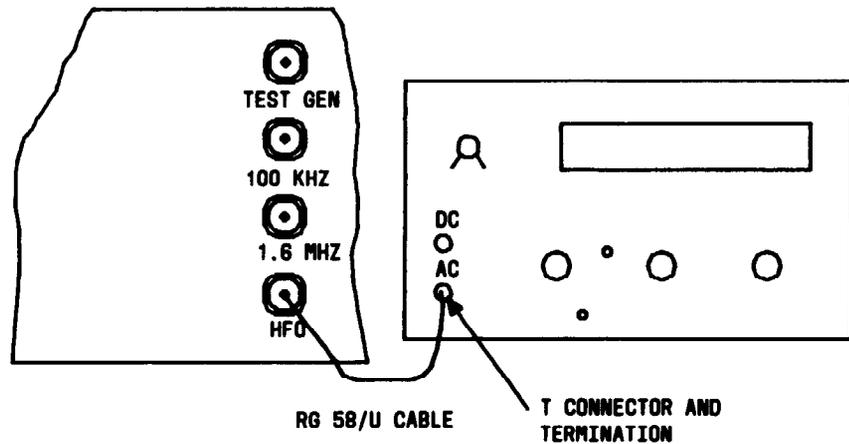


FIG. 1

MEASURE RECEIVER OSCILLATOR FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 6	514

[16] MOVE TEST CORD FROM
1.6 MHZ JACK TO TEST GEN
JACK ON RECEIVER PANEL

[17] TERMINATE TG/CONTROL IN-EQPT JACK
ON RECEIVER PANEL
USING 262B (600 OHM)
PLUG [FIG. 2]

[18] SET TEST GENERATOR
SWITCH TO FREQ TEST
POSITION

TEST
GENERATOR
LAMP ON



[19] OBSERVE
INDICATED
FREQUENCY

[20] DOES COUNTER
INDICATE BETWEEN
1.499998 AND 1.500002
MHZ ABOVE ASSIGNED
CHANNEL FREQUENCY

YES

PAGE 4

NO

TAP-119

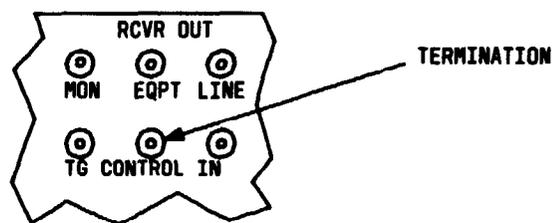
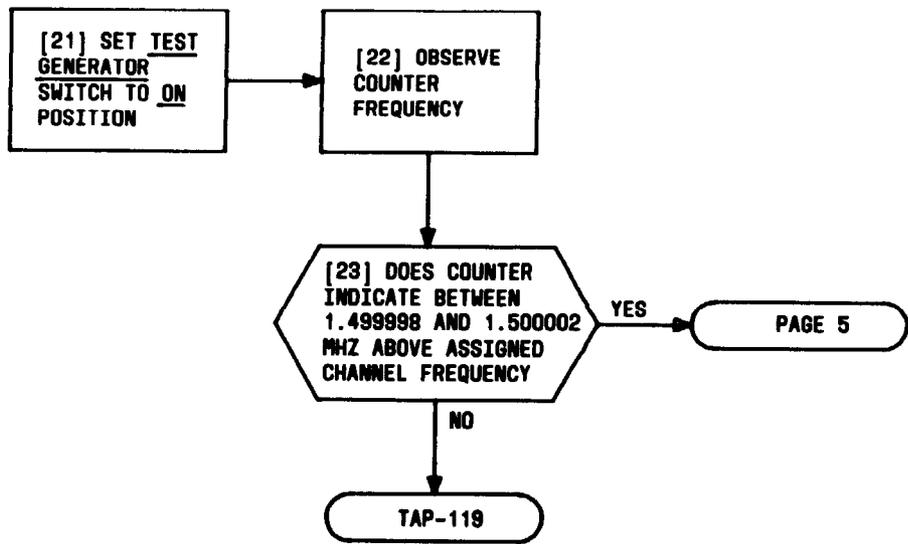


FIG. 2

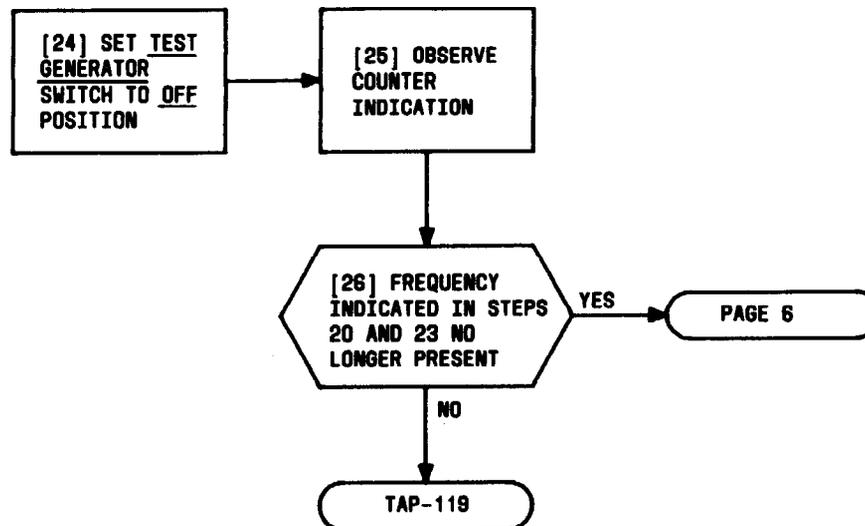
MEASURE RECEIVER OSCILLATOR FREQUENCIES

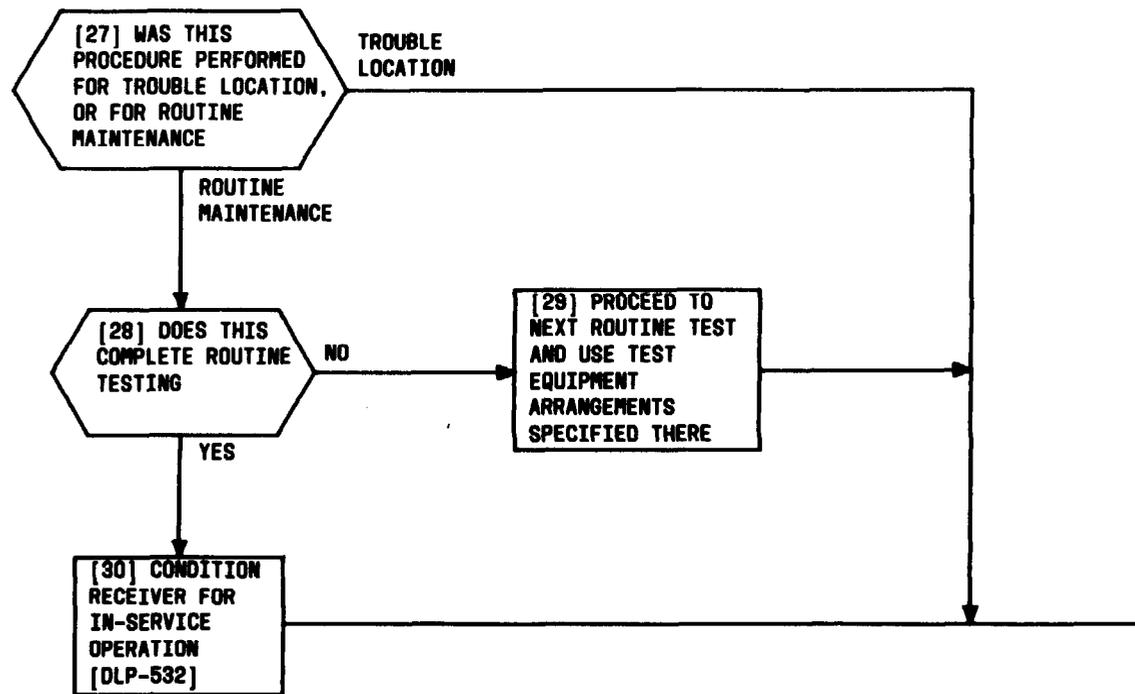
Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 6	514



MEASURE RECEIVER OSCILLATOR FREQUENCIES

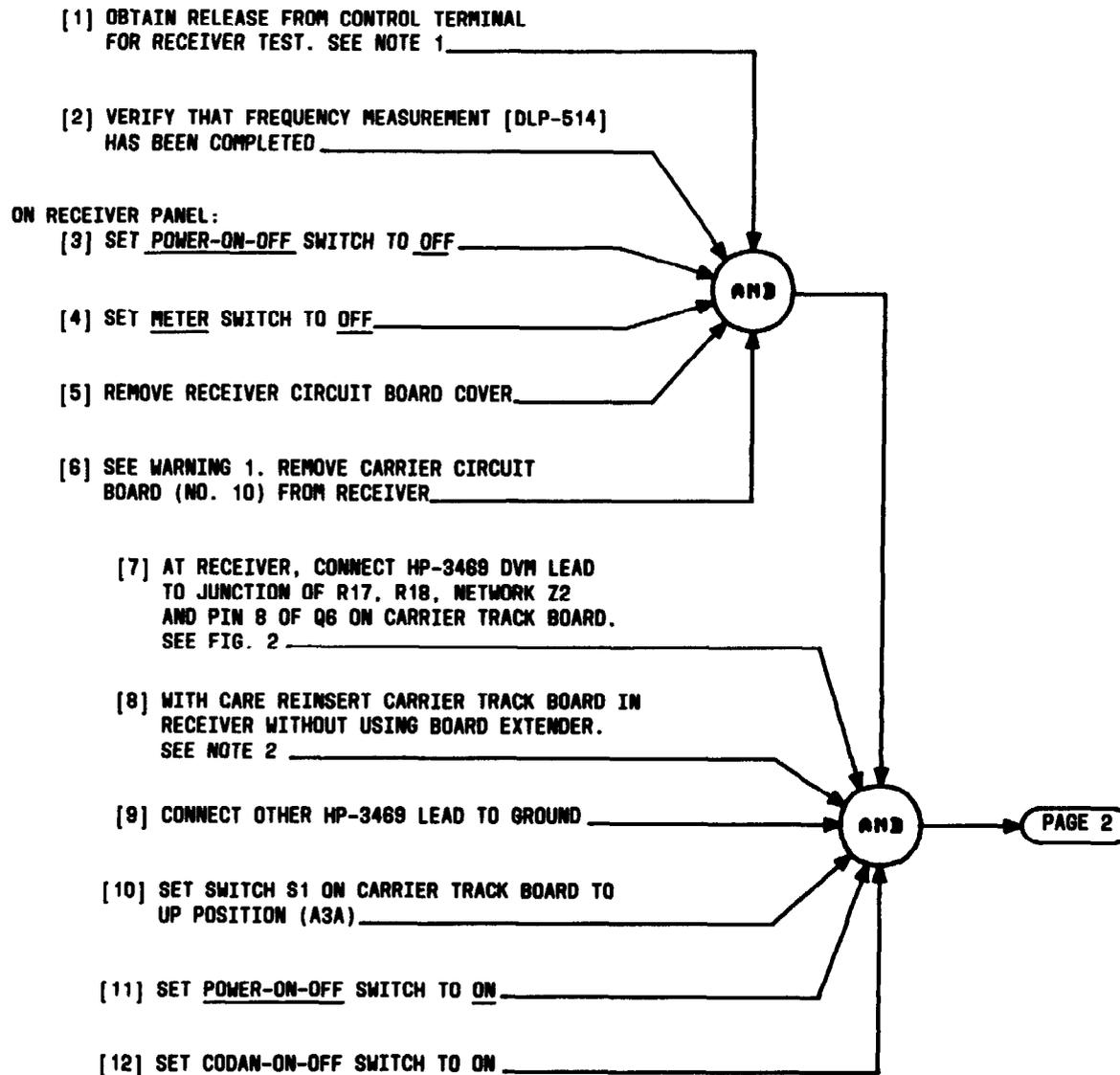
Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 6	514





MEASURE RECEIVER OSCILLATOR FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 6 of 6	514



NOTES

- FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION
- USE OF CARD EXTENDER WILL GIVE INCORRECT READING

WARNING 1
 REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN CHANGE TO COMPONENTS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 7	515

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

[13] GET TEST EQUIPMENT PER TABLE A

[14] CONNECT T CONNECTOR BNC UG274 B/U TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1

[15] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT - AC JACK WITH RG 58/U CABLE

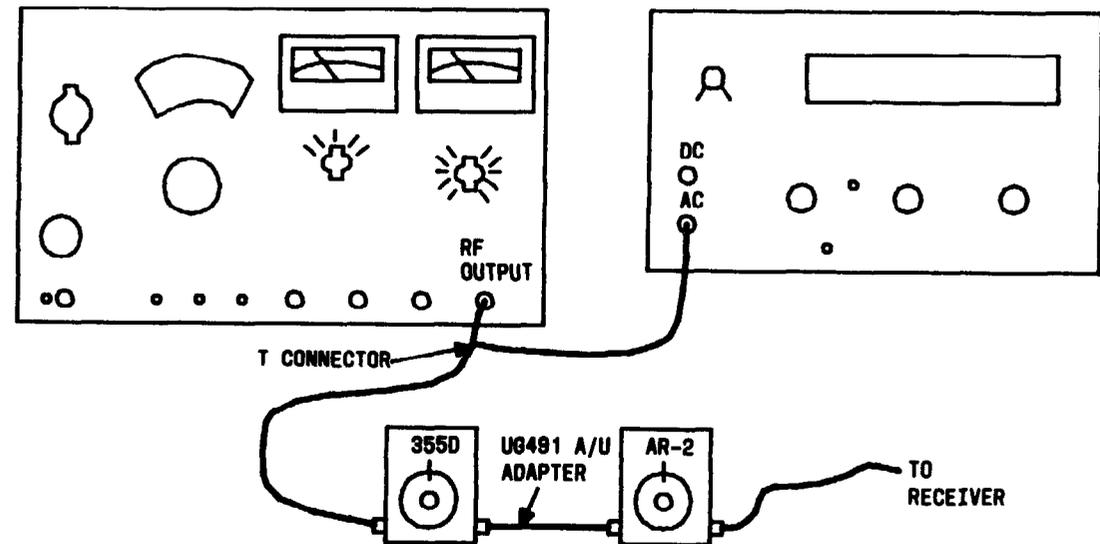
[16] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D RF ATTENUATOR WITH RG 58/U CABLE

[17] CONNECT OUTPUT OF HP 355D TO INPUT OF AR-2 WITH UG491 A/U BNC MALE ADAPTER

[18] CONNECT OUTPUT OF AR-2 TO INPUT OF RECEIVER WITH RG 58/U CABLE

[19] SET 355D AND AR-2 ATTENUATORS TO 100 DB

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP-5245L
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
RF ATTENUATOR	HP-355D
NOISE MEASURING SET	WECO J964003C
T CONNECTOR	BNC UG274 B/U
BNC MALE ADAPTER	UG491 A/U
4 6-FOOT LENGTHS OF COAX CABLE	RG 58/U
TELEPHONE CORD	3P6C



PAGE 3

FIG. 1

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 7	515

[20] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]. SEE NOTE 2

[21] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[22] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

[23] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

FREQUENCY COUNTER SET UP

AND

[24] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[25] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

[26] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO RECEIVER CHANNEL FREQUENCY WITHIN ± 1 HZ

AND

PAGE 4

NOTE 2
EXTERNAL FREQUENCY
COUNTER IS NEEDED TO
MEASURE 100HZ

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 7	515

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

[27] SET SIGNAL GENERATOR ATTENUATOR TO 0 DBM POSITION AND ADJUST VERNIER FOR DBM METER INDICATION OF 0

[28] SET SIGNAL GENERATOR MODULATION SELECTOR TO CW POSITION

[29] WAIT TWO MINUTES

AND

[30] DOES HP-3469 INDICATE BETWEEN 3.49 AND 3.51 VOLTS

YES

PAGE 5

NO

NO

[31] ADJUST R19 ON CARRIER CIRCUIT BOARD (FIG. 2) UNTIL HP-3469 READS 3.5 VOLTS

[32] SEE WARNING 2. PERFORM DLP-527 TO REPLACE CARRIER TRACK BOARD (NO. 10)

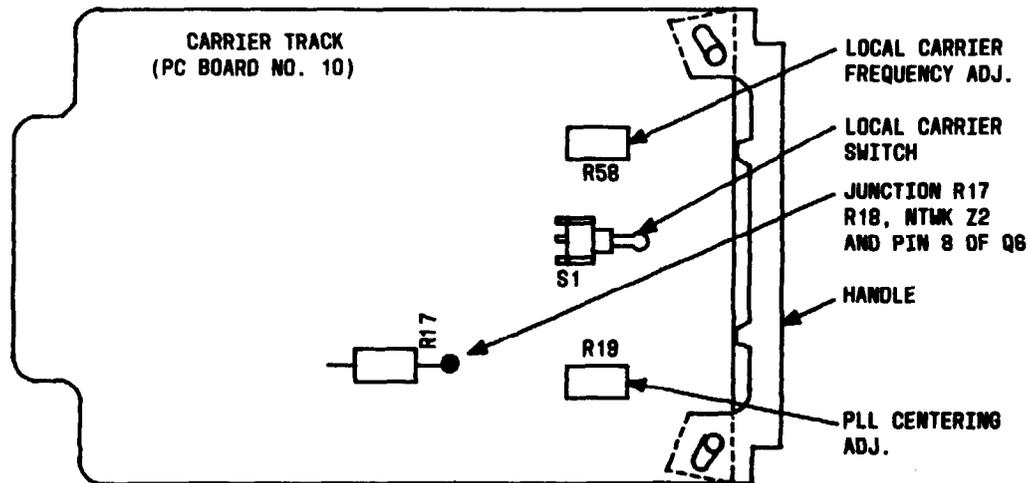
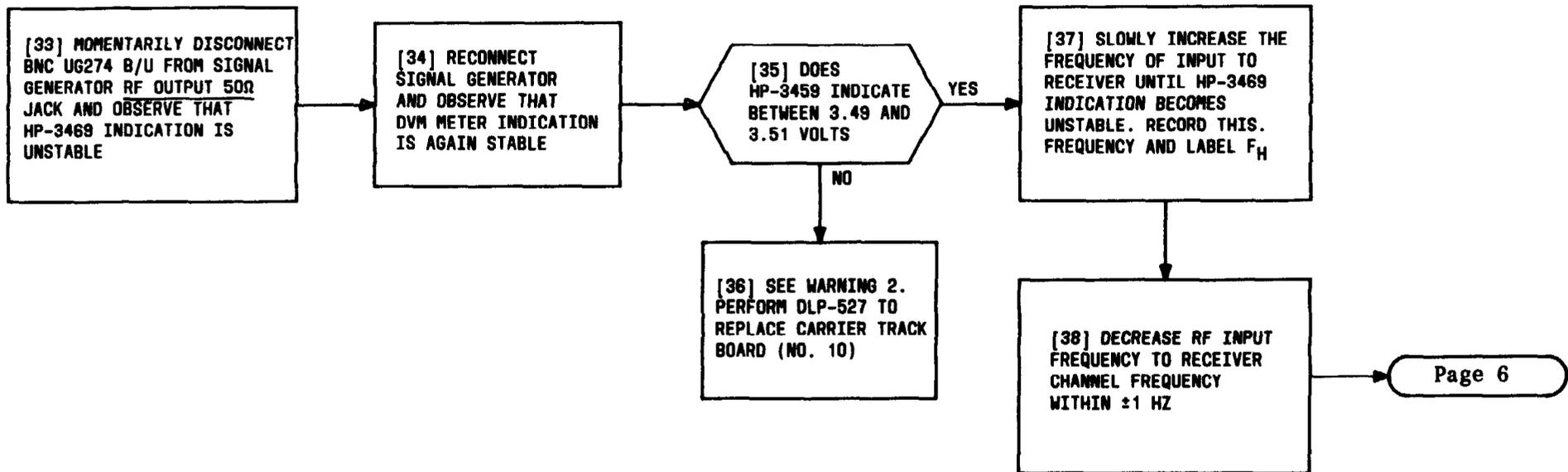


FIG. 2 - CARRIER TRACK BOARD

WARNING 2	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN CHANGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 7	515

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)



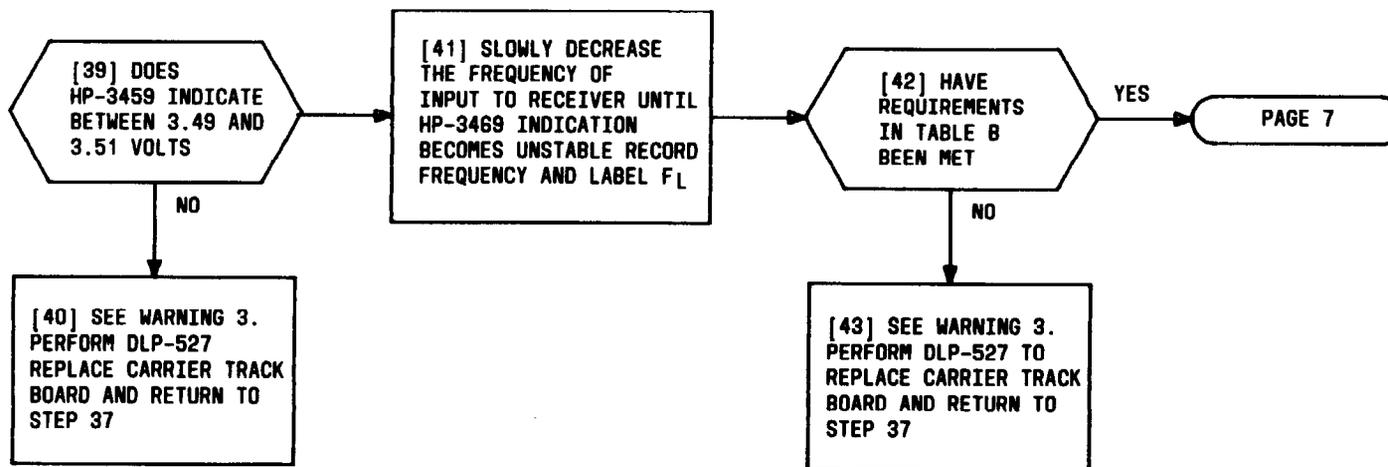
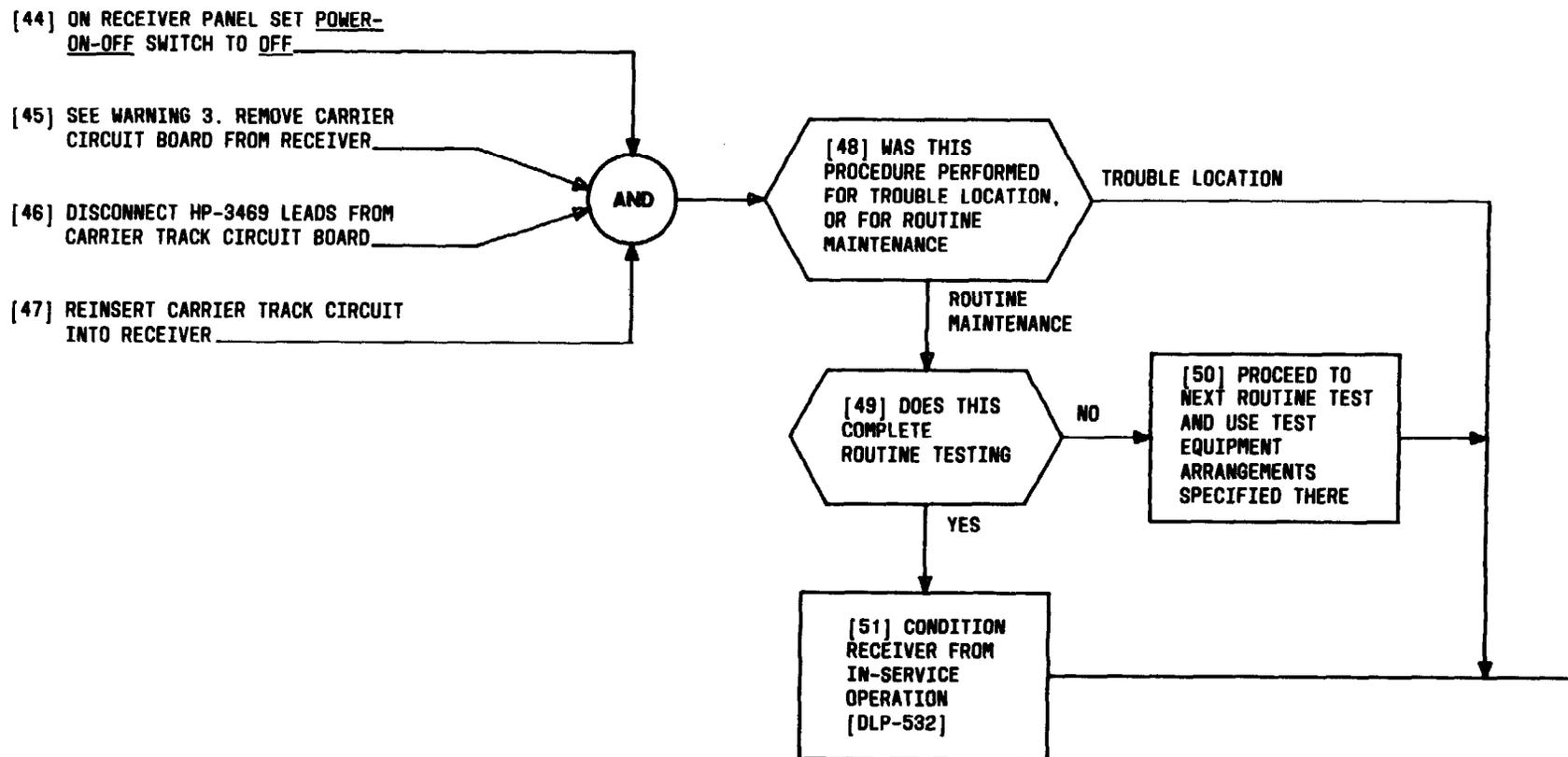


TABLE B
F _{CH} = RECEIVER CHANNEL FREQUENCY
F _H = FREQUENCY ABOVE F _{CH}
F _L = FREQUENCY BELOW F _{CH}
REQUIREMENTS:
F _H - F _{CH} GREATER THAN 100 HZ
F _{CH} - F _L GREATER THAN 100 HZ

WARNING 3	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 6 of 7	515

TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)



TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC)

Issue 2	FEB 1979
403-200-502	DLP
PAGE 7 of 7	515

SUMMARY

USING 21A TRANSMISSION SET AT RECEIVER OUTPUT, MEASURE 1900-HZ AND 2100-HZ SIGNALING TONES FOR A LEVEL OF BETWEEN -2 DBM AND -4 DBM AND 2900-HZ SIGNALING TONE FOR A LEVEL OF BETWEEN -8 AND -12 DBM

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
TRANSMISSION MEASURING SET (TMS)	WECO J94021A TMS
TEST CORD	WECO 3P17B

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST
[NOTE 1]

[2] ON RECEIVER SET POWER SWITCH TO ON

[3] SET RECEIVER SIG OSC TEST 2100 AND 2900 3-POSITION TOGGLE SWITCHES TO OFF POSITION

[4] SET RECEIVER CODAN SWITCH TO OFF

[5] SET RECEIVER CONTROL SWITCH TO LOC POSITION



[6] GET TEST EQUIPMENT PER TABLE A

[7] CONDITION 21A TRANSMISSION MEASURING SET (TMS) TO MEASURE DB [DLP-522]

[8] CONNECT 21A TMS DET IN 800 TO RECEIVER RCVR OUT EQPT JACK USING THE 3P17B CORD [FIG. 1]

[9] SET 21A TMS DET INPUT STEP CONTROL SWITCH TO 0



Page 2

MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE LEVELS

NOTE 1		
FOR ACCEPTANCE PROCEDURES REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION		
Issue 2	FEB 1979	
403-200-502	DLP	
PAGE 1 of 5	516	

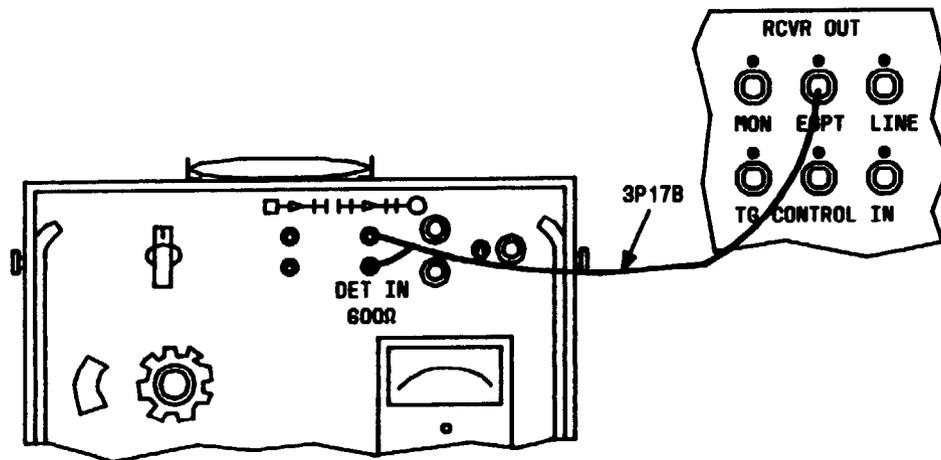
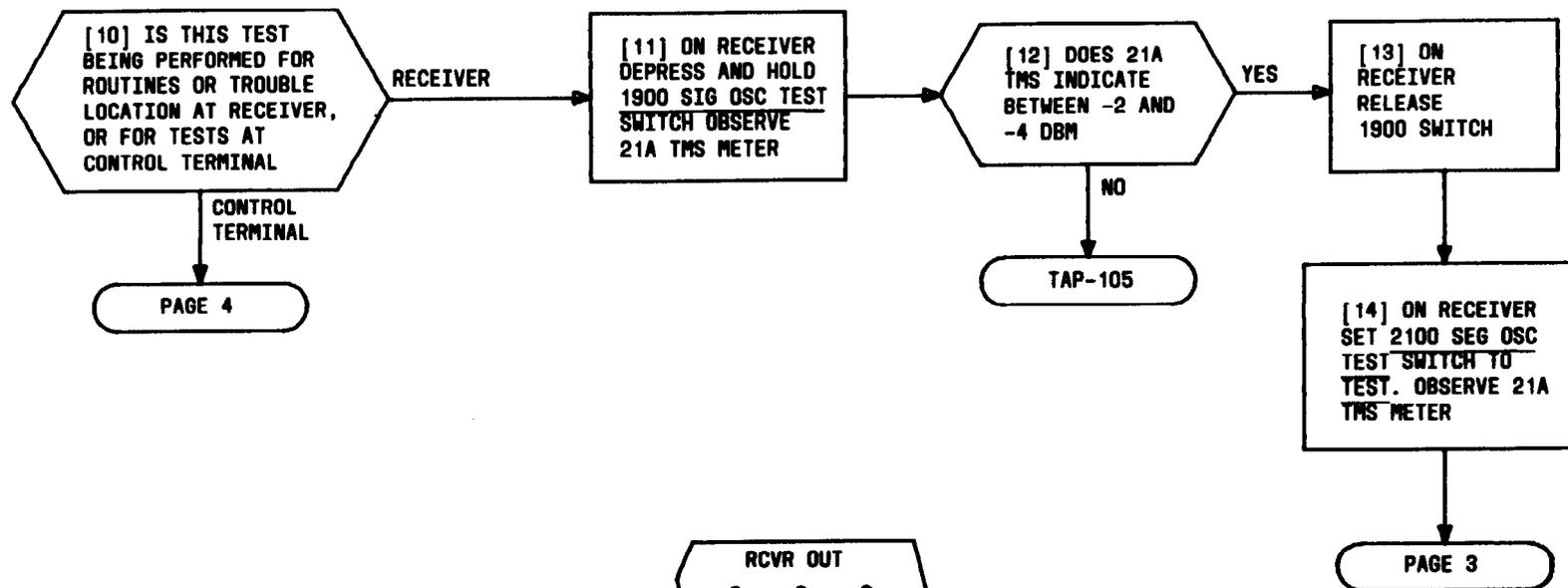
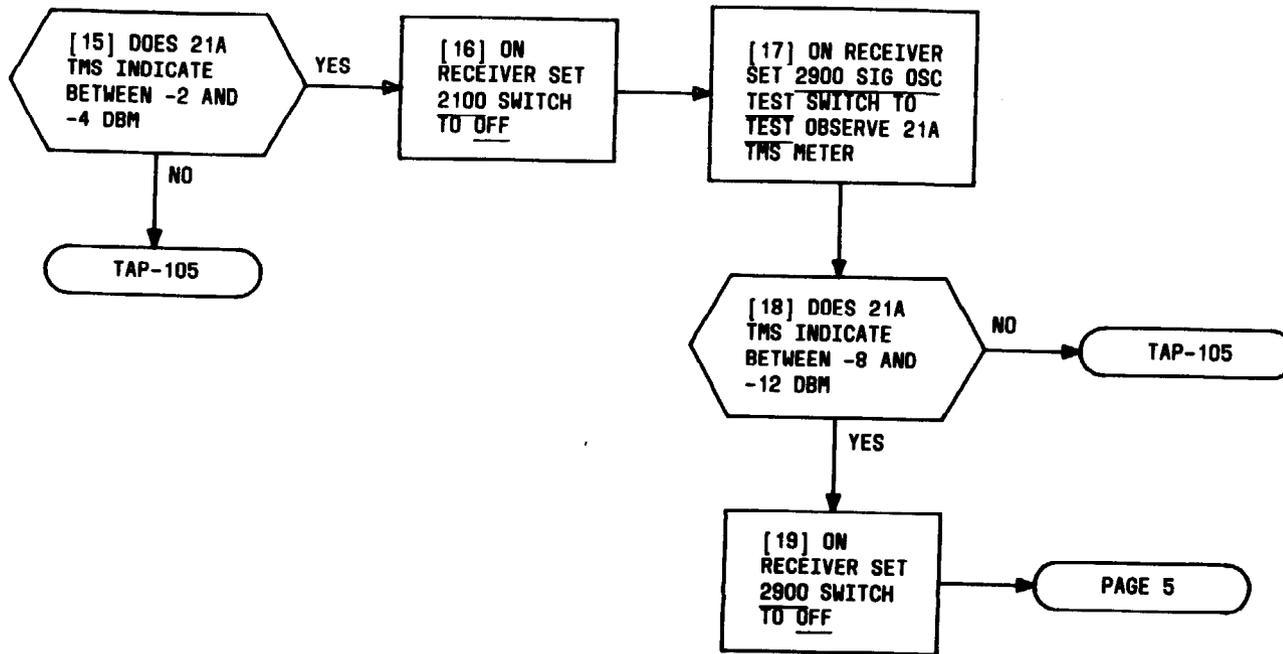


FIG. 1

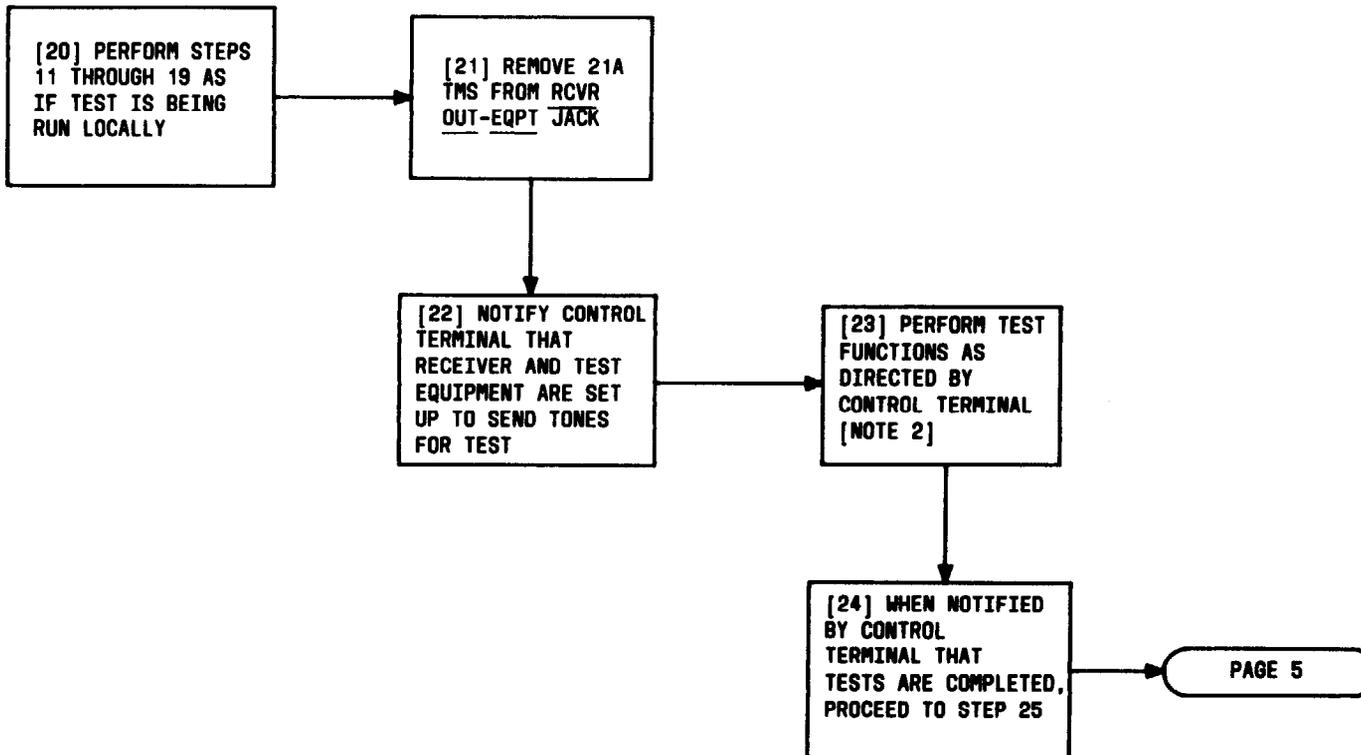
MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE LEVELS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 5	516



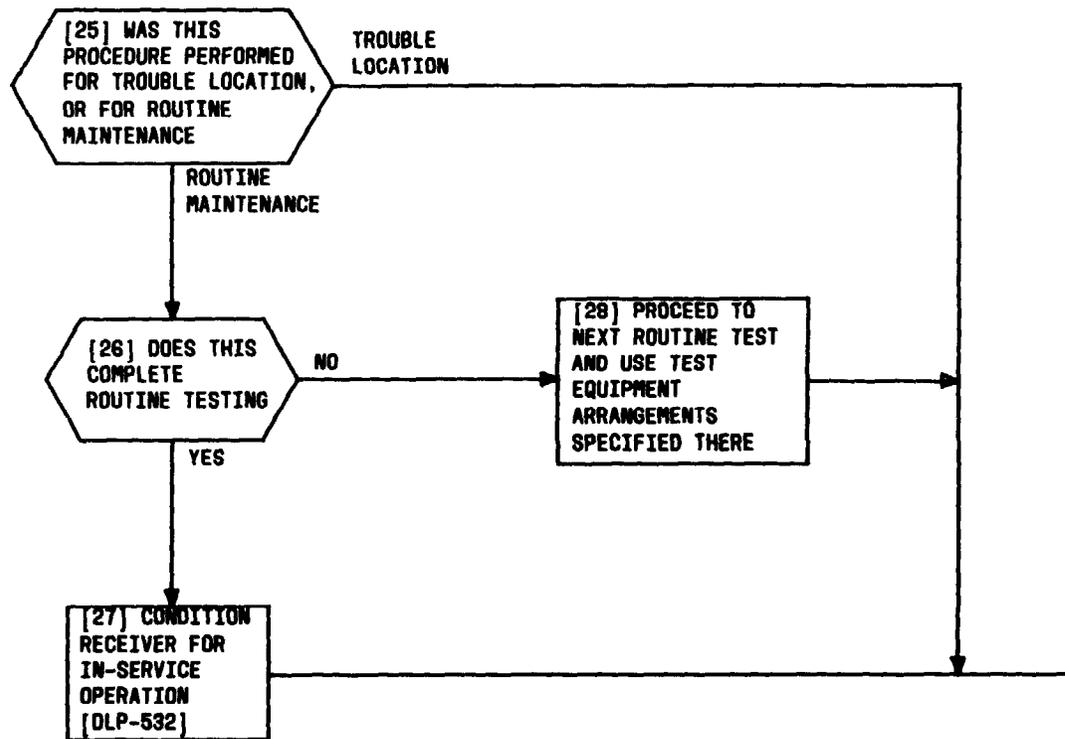
**MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ,
2100-HZ AND 2900-HZ SIGNALING TONE LEVELS**

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 5	516



NOTE 2		
IN EVENT OF AN ABNORMAL TONE LEVEL INDICATION AT CONTROL TERMINAL, TONE LEVEL AT RECEIVER OUTPUT HAS BEEN VERIFIED AS CORRECT		
Issue 2	FEB 1979	
403-200-502	DLP	
PAGE 4 of 5	516	

**MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ,
2100-HZ AND 2900-HZ SIGNALING TONE LEVELS**



**MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ,
2100-HZ AND 2900-HZ SIGNALING TONE LEVELS**

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 5	516

SUMMARY
 USING FREQUENCY COUNTER, MEASURE FREQUENCY OF 1900-HZ SIGNALING TONE FOR BETWEEN 1894 AND 1906 HZ, 2100-HZ SIGNALING TONE FOR BETWEEN 2094 AND 2106 HZ, AND 2900-HZ SIGNALING TONE FOR BETWEEN 2891 AND 2909 HZ

[1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST [NOTE 1]

[2] SET RECEIVER CONTROL SWITCH TO LOC POSITION

[3] SET RECEIVER SIG OSC TEST 2100 AND 2900 3-POSITION TOGGLE SWITCHES TO OFF POSITIONS

[4] GET TEST EQUIPMENT PER TABLE A

[5] CONNECT BNC UG491 A/U ADAPTER TO FREQUENCY COUNTER SIGNAL INPUT-AC JACK [FIG. 1]

[6] CONNECT BENDIX 2038-1 ADAPTER TO BNC UG491 A/U ON COUNTER

[7] CONNECT ADAPTER CABLE DUAL BANANA PLUG TO BENDIX 2038-1 AND CONNECT 310 PLUG TO RECEIVER RCVR OUT-EQPT JACK

LOCAL CONTROL
LAMP LIGHTED

RECEIVER
READY FOR
TESTING

TEST EQUIPMENT
INTERCONNECTED

PAGE 2

TABLE A

EQUIPMENT REQUIRED	RECOMMENDED TYPE
FREQUENCY COUNTER	HP 5245L
ADAPTER	BENDIX 2038-1
ADAPTER	BNC UG491 A/U
ADAPTER CABLE	TWISTED PAIR WITH DUAL BANANA PLUG AND 310 PLUG

NOTE 1
 FOR ACCEPTANCE PROCEDURES, REFER ABNORMAL CONDITIONS TO INSTALLER FOR CORRECTION

Issue 2 | FEB 1979

403-200-502 | DLP

PAGE 1 of 4 | 517

MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES

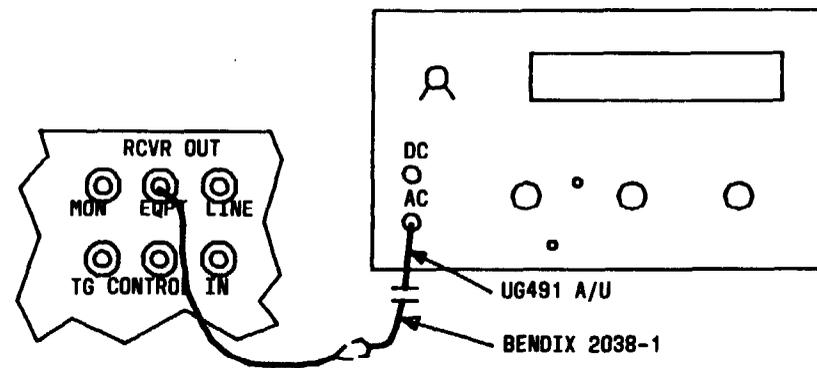
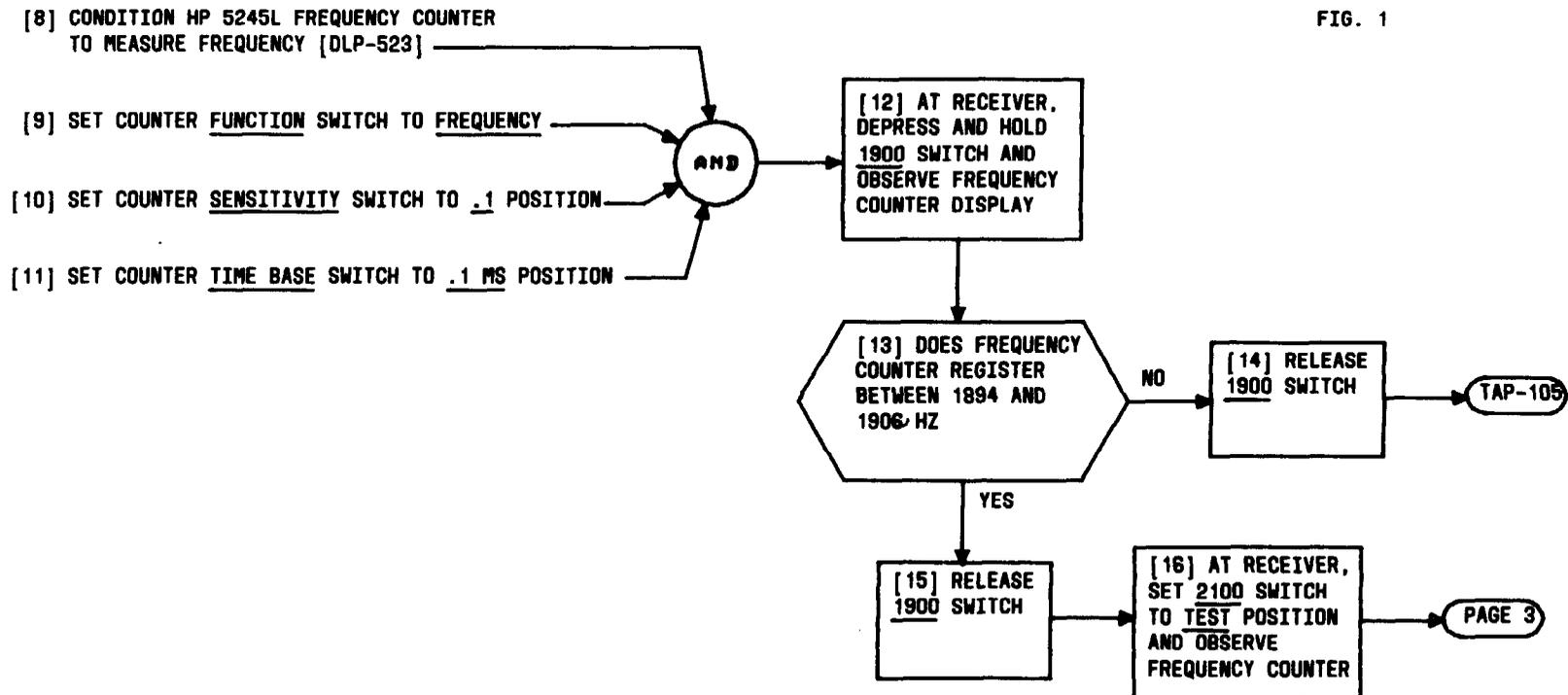
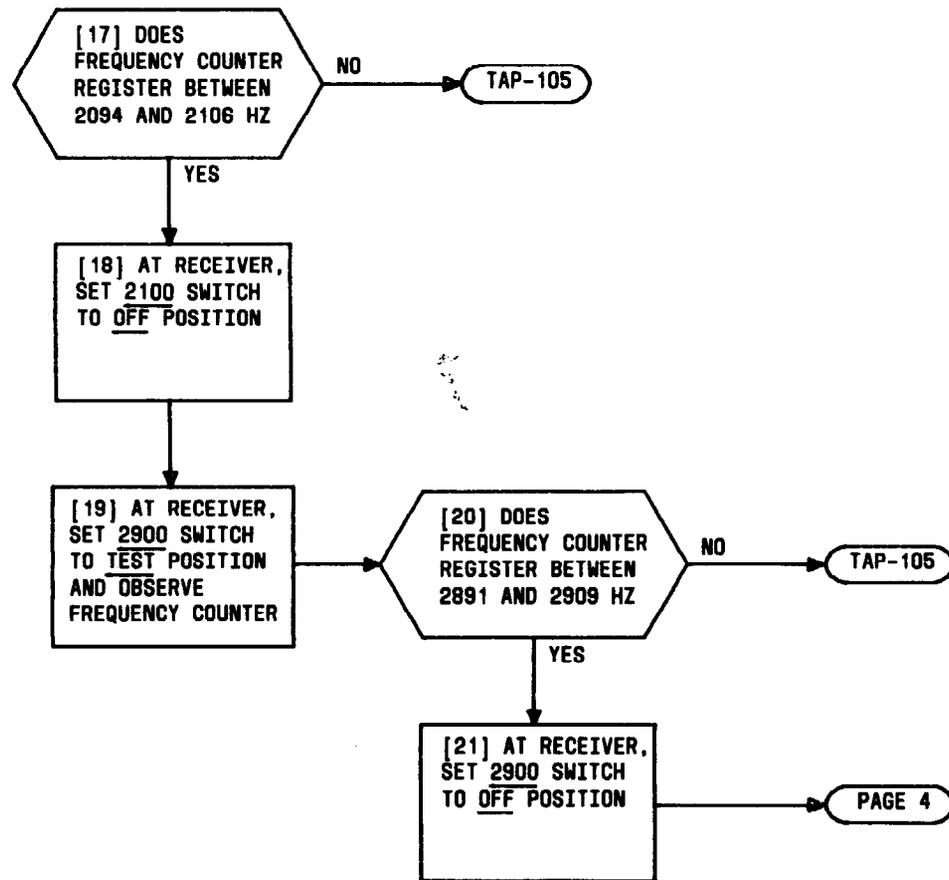


FIG. 1



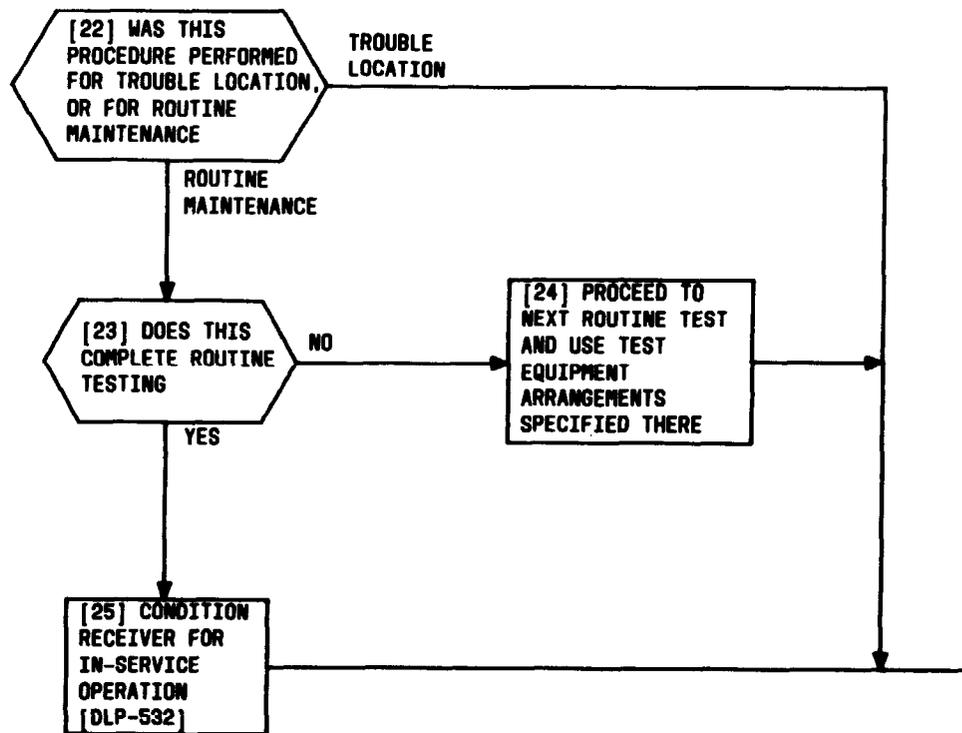
**MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ,
AND 2900-HZ SIGNALING TONE FREQUENCIES**

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 4	517



MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 4	517



MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 4	517

SUMMARY
 USING 3C NOISE MEASURING SET, MEASURE RECEIVER SIGNALING TONE
 LEAKAGE AT NOT GREATER THAN 47 DBRM

[1] OBTAIN RELEASE FROM CONTROL
 TERMINAL FOR RECEIVER TEST
 [NOTE 1]

[2] SET RECEIVER POWER SWITCH
 TO OFF POSITION



[3] REMOVE RECEIVER FRONT PANEL
 PRINTED CIRCUIT BOARD COVER

[4] SEE WARNING 1. REMOVE AUDIO
 (NO. 7) PRINTED CIRCUIT BOARD

[5] SET RECEIVER POWER SWITCH
 TO ON POSITION

[6] SET RECEIVER SIG OSC TEST
 2100 AND 2900 3-POSITION
 TOGGLE SWITCHES TO OFF POSITIONS

[7] SET RECEIVER CONTROL
 SWITCH TO LOC POSITION



NOTE 1
 FOR ACCEPTANCE
 PROCEDURES, REFER
 ABNORMAL CONDITIONS
 TO INSTALLER FOR
 CORRECTION

WARNING 1
 REMOVAL OR INSERTION
 OF PRINTED CIRCUIT
 BOARDS WITHOUT FIRST
 REMOVING RECEIVER
 POWER MAY RESULT IN
 DAMAGE TO COMPONENTS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 3	518

**MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING
 TONE LEAKAGE**

[8] GET TEST EQUIPMENT PER TABLE A

[9] CONDITION 3C NOISE MEASURING SET (DLP-526)

[10] SET 3C SET FUNCTION SWITCH TO NM 600 900

[11] SET 3C SET DBRN SWITCH TO 40

[12] SET 3C SET FILTER FOR C-MESSAGE WTG

[13] CONNECT 3C NOISE MEASURING SET IN-310 JACK TO RECEIVER RCVR OUT-EQPT JACK WITH 3P6C CORD [FIG. 1]

TEST EQUIPMENT SET UP

AND

[14] OBSERVE 3C METER INDICATION

[15] DOES METER INDICATE LESS THAN 47 DBRN

[19] SET RECEIVER POWER SWITCH OFF

[20] SEE WARNING 2. REINSERT AUDIO (NO. 7) PRINTED CIRCUIT BOARD

[21] SET RECEIVER POWER SWITCH ON

[22] REPLACE RECEIVER BOARD COVER

AND

PAGE 3

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
NOISE MEASURING SET	WECO 3C J94003C
TELEPHONE PATCH CORD	3P6C

[16] SEE WARNING 2. PERFORM DLP-527 TO REPLACE BUFFER (NO. 1) OSCILLATOR SWITCH-COMBINER (OSC) (NO. 2) LOGIC (NO. 3), AND FLD (NO. 4) CIRCUIT BOARDS WITH SPARE BOARDS

[17] SEE WARNING 2. SET RECEIVER POWER SWITCHING OFF POSITION

[18] REINSTALL EACH BOARD IN TURN; SET POWER TO ON UNTIL TROUBLE REAPPEARS REPLACE BOARD WHICH GIVES TROUBLE

WARNING 2	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 3	518

MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE

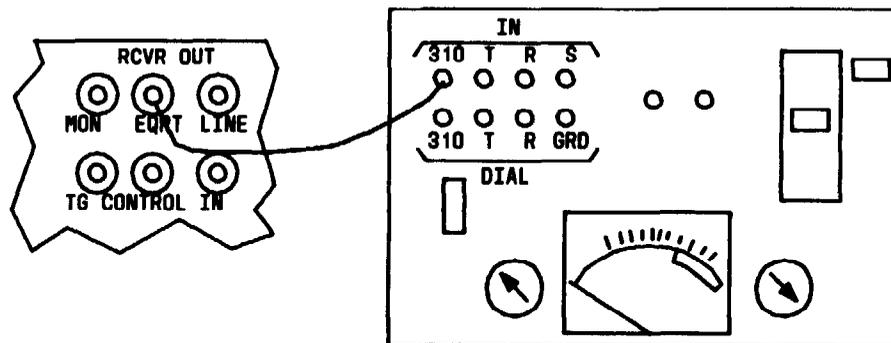
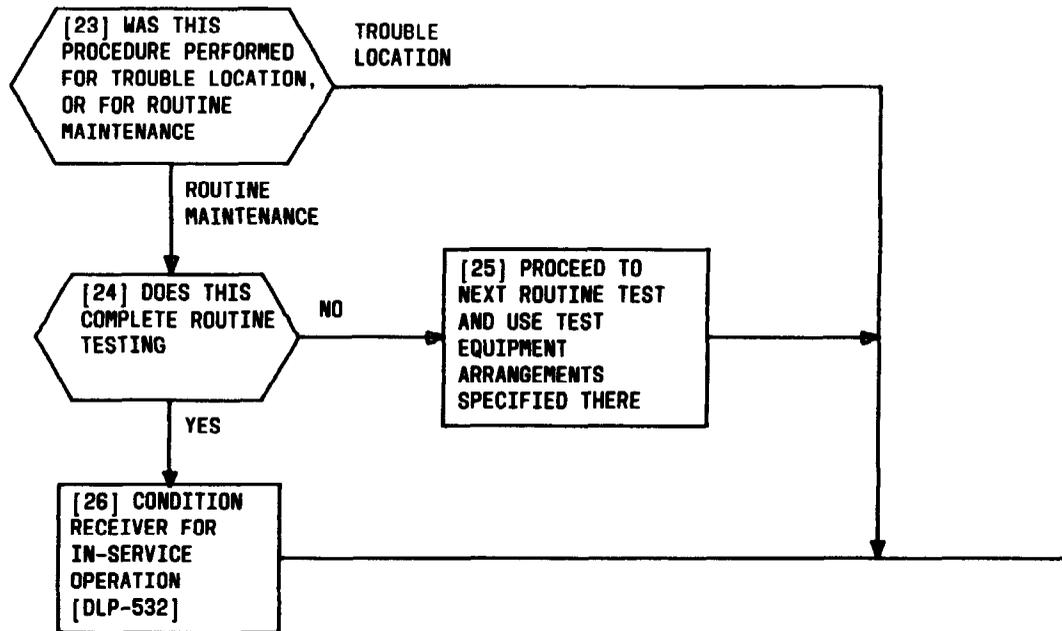


FIG. 1

[1] VERIFY WITH CONTROL TERMINAL
THAT RECEIVER TO BE TESTED
HAS BEEN RELEASED

[2] SET RECEIVER CONTROL SWITCH
TO LOC POSITION

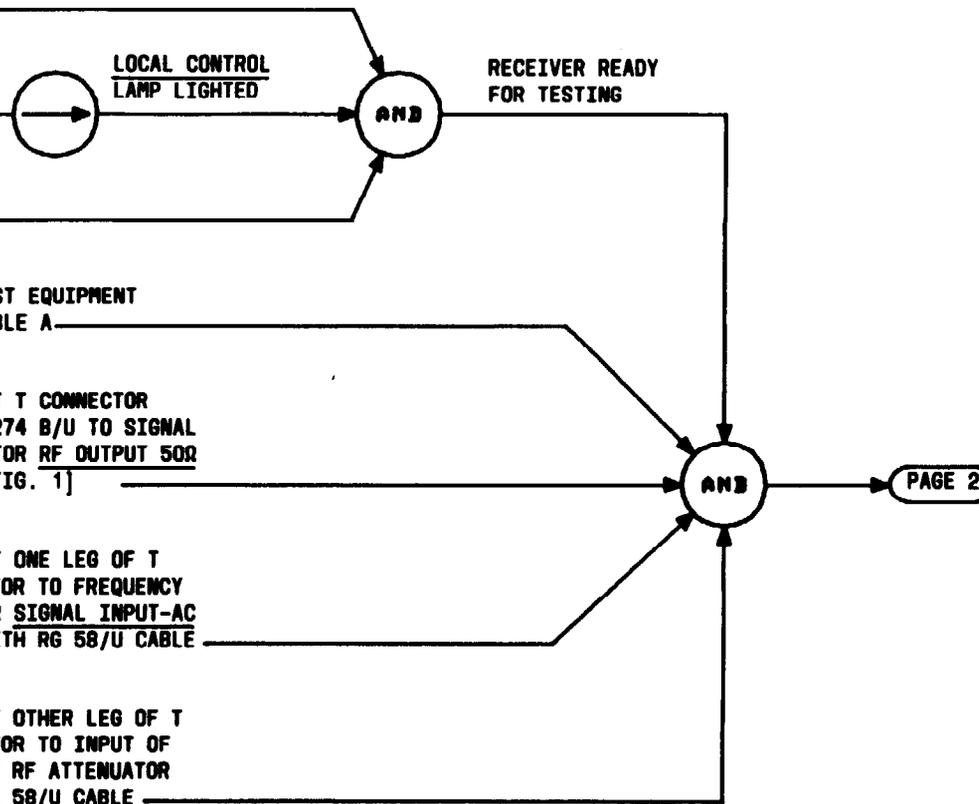
[3] DISCONNECT ANTENNA CABLE
ON RECEIVER REAR

[4] GET TEST EQUIPMENT
PER TABLE A

[5] CONNECT T CONNECTOR
BNC UG274 B/U TO SIGNAL
GENERATOR RF OUTPUT 50Ω
JACK [FIG. 1]

[6] CONNECT ONE LEG OF T
CONNECTOR TO FREQUENCY
COUNTER SIGNAL INPUT-AC
JACK WITH RG 58/U CABLE

[7] CONNECT OTHER LEG OF T
CONNECTOR TO INPUT OF
HP 355D RF ATTENUATOR
WITH RG 58/U CABLE



MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 5	519

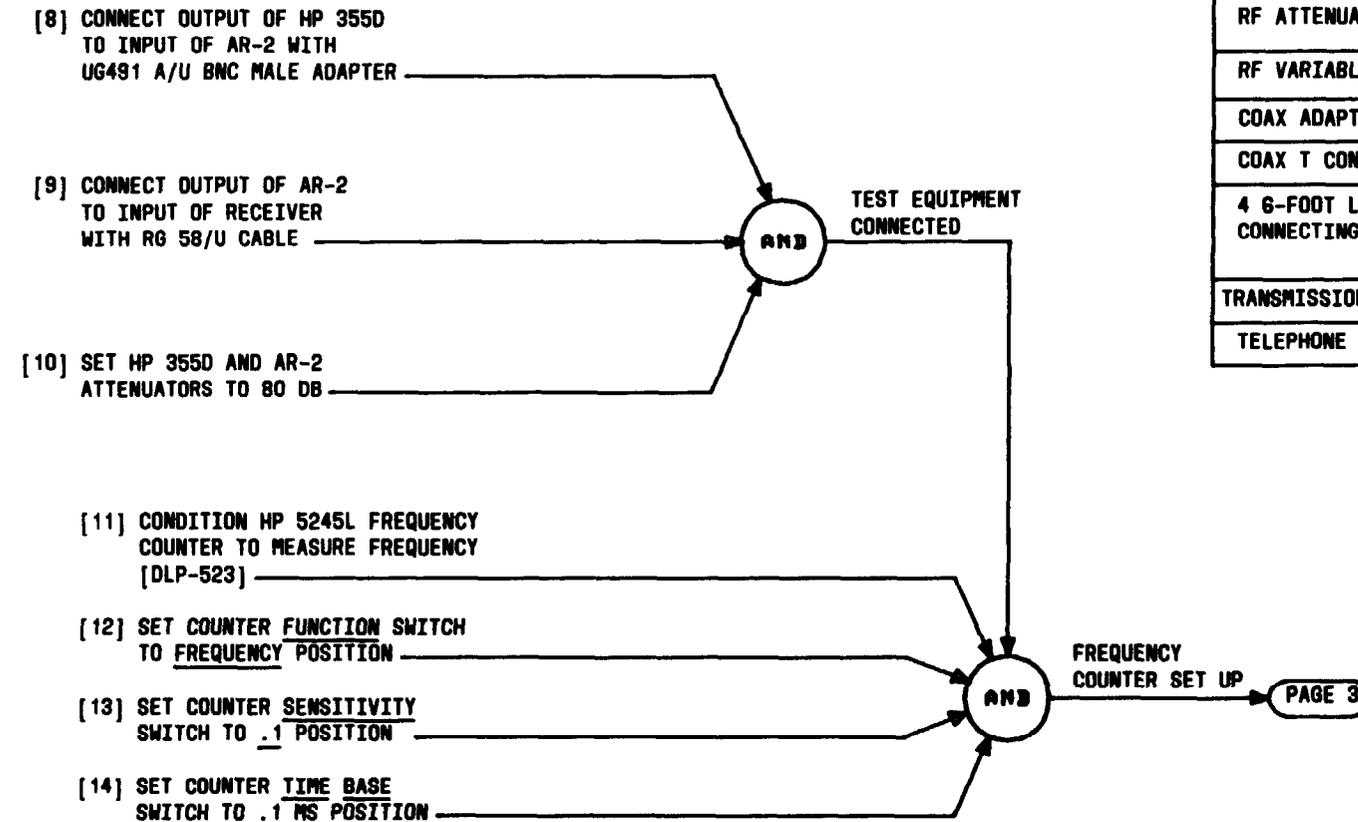
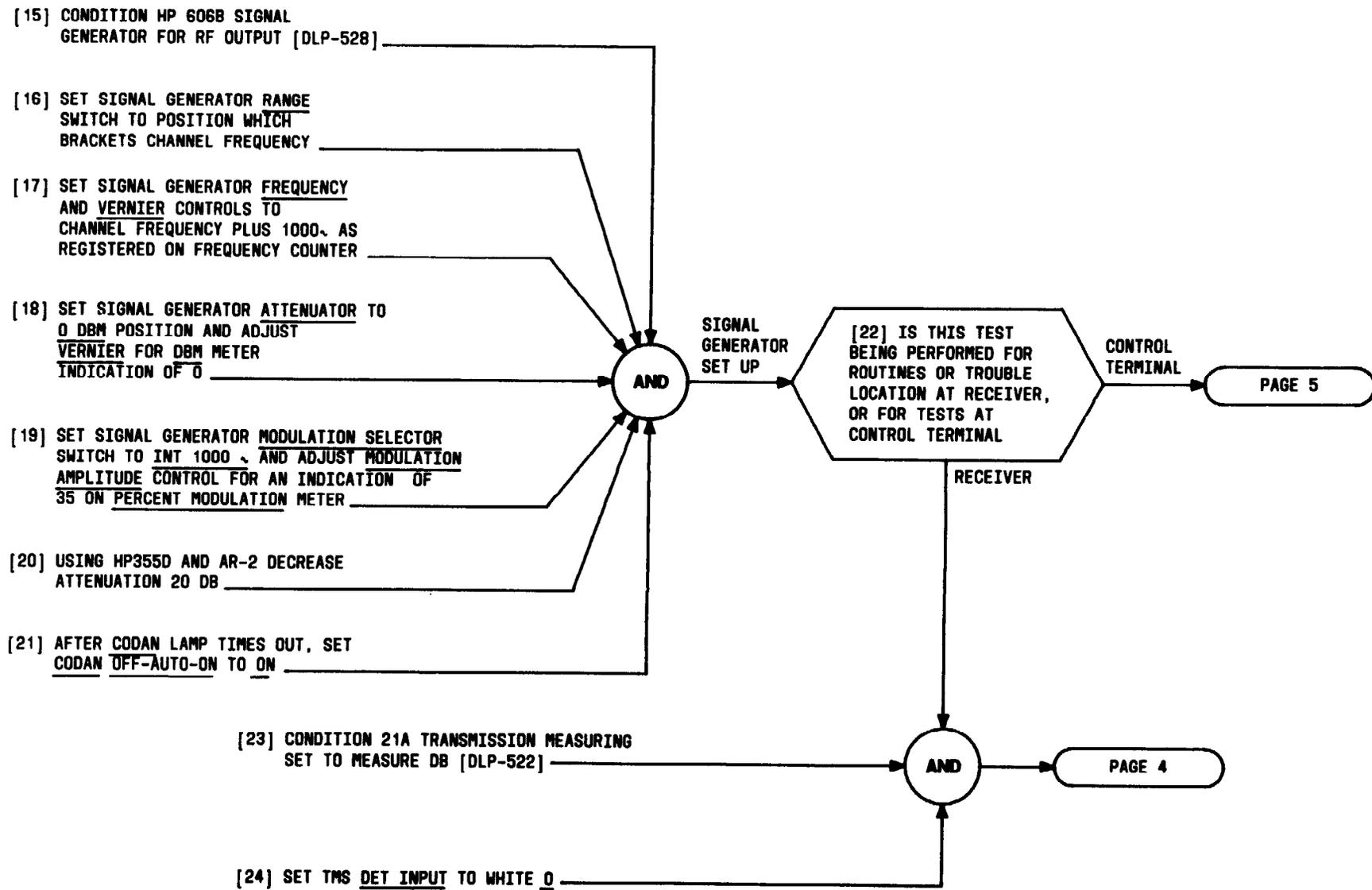


TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
RF VARIABLE ATTENUATOR	HP 355D
COAX ADAPTER BNC MALE	UG491 A/U
COAX T CONNECTOR	BNC UG274 B/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U COAX WITH UG 88 D/U CONNECTORS
TRANSMISSION MEASURING SET	WECO J94021A TMS
TELEPHONE CORD	3P17B



MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 5	519

[25] CONNECT TRANSMISSION MEASURING SET DET IN 600Ω JACK TO RECEIVER RCVR OUT-EQPT JACK WITH 3P17B CORD [FIG. 2]

[26] OBSERVE TMS METER INDICATION

AND

[27] DOES TMS INDICATE BETWEEN -1 AND +1 DBM

YES

PAGE 5

NO

[28] ADJUST RECEIVER AF GAIN CONTROL FOR METER INDICATION OF 0 DBM

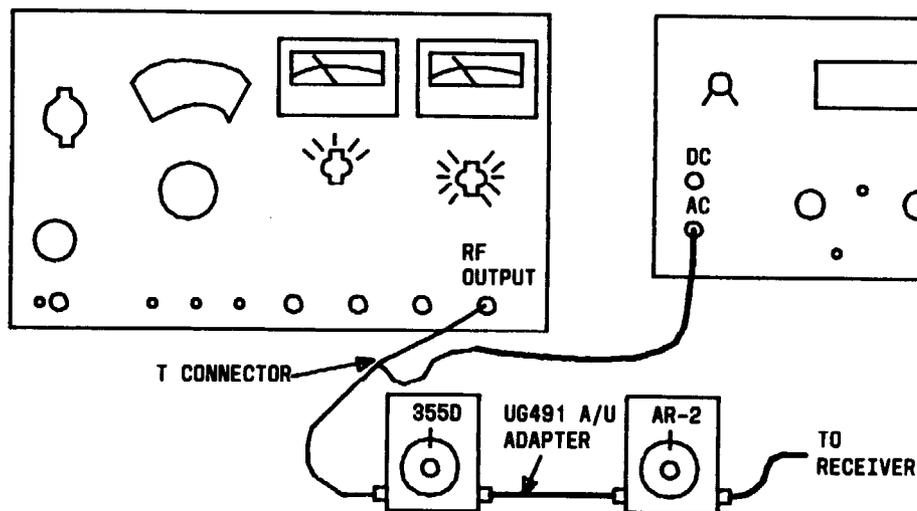


FIG. 1

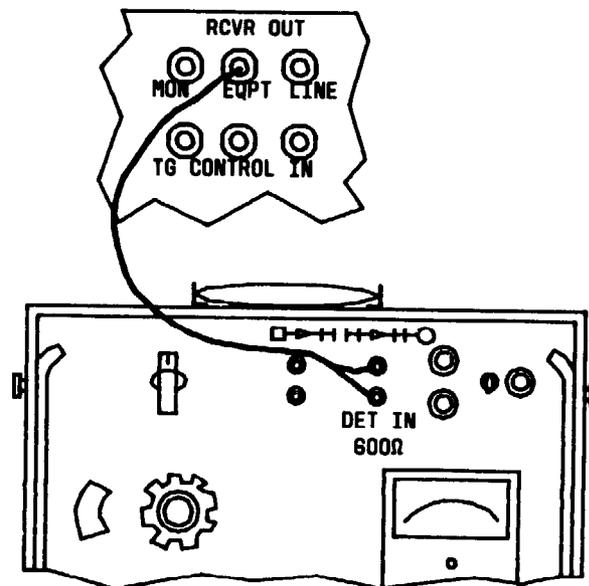
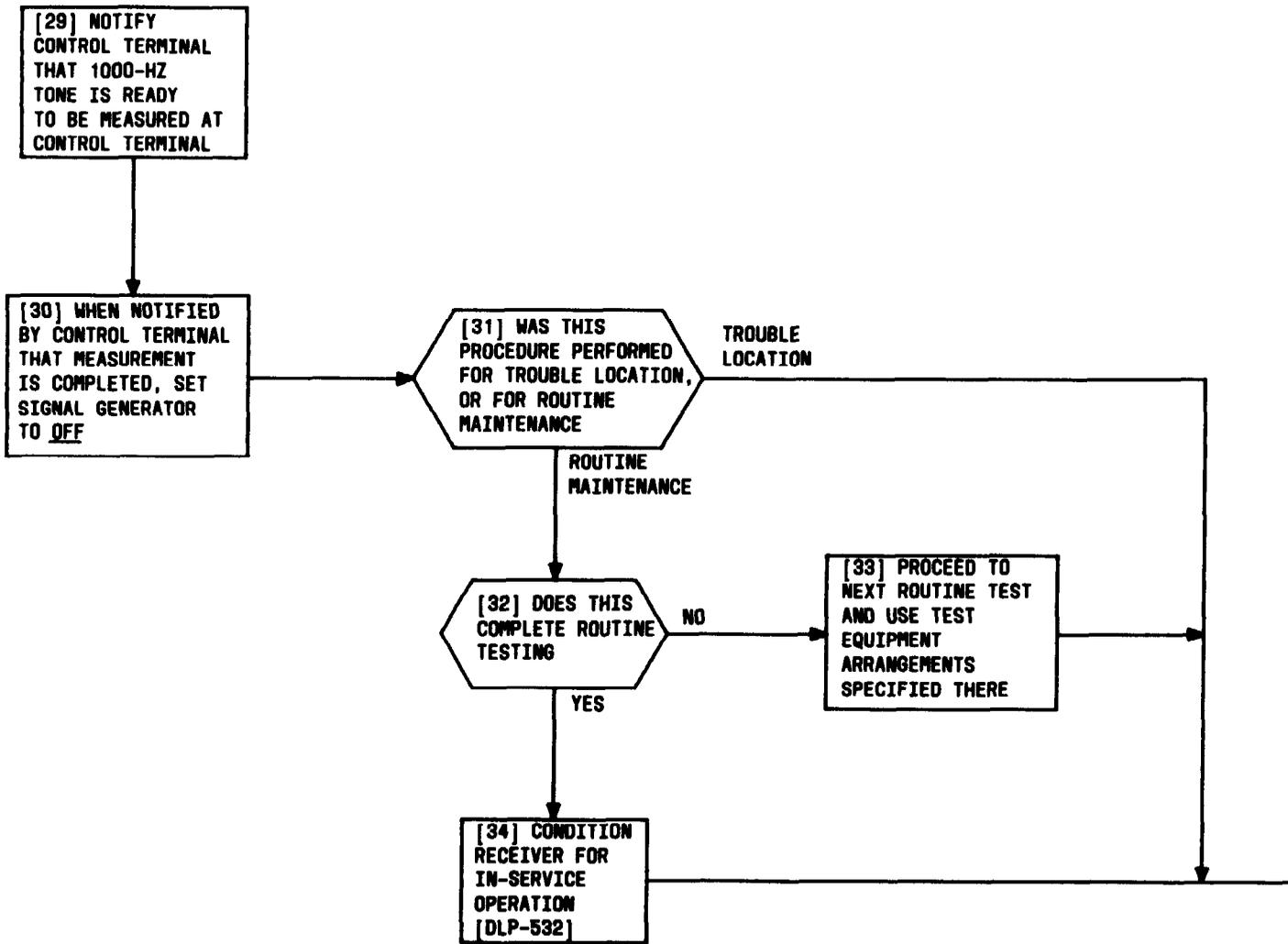


FIG. 2

MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 5	519



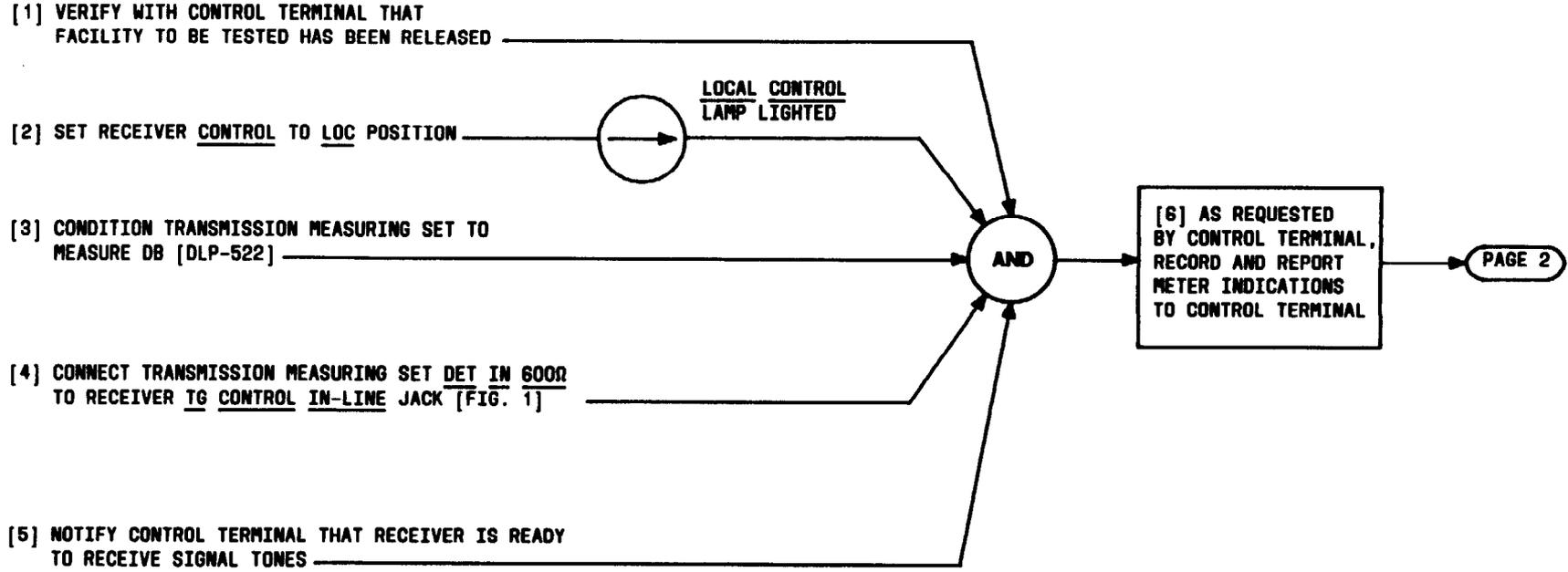
MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 5	519

SUMMARY

USING TRANSMISSION MEASURING SET CONNECTED TO RECEIVER TG CONTROL IN-LINE JACK, MEASURE 1900-HZ AND 2100-HZ SIGNALING TONE LEVELS FROM CONTROL TERMINAL FOR BETWEEN -10.0 AND -24.0 DBM, AND 2900-HZ SIGNALING TONE FOR BETWEEN -19.0 AND -37.0 DBM

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
TRANSMISSION MEASURING SET (TMS)	WECO J94021A TMS
TEST CORD	WECO 3P17B



MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS

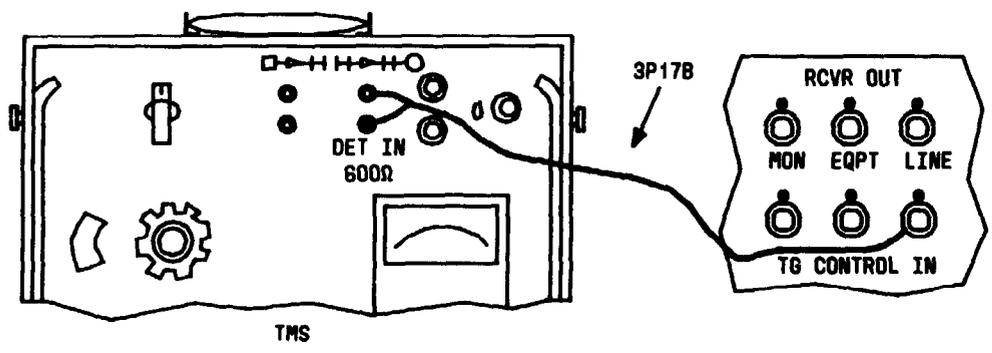
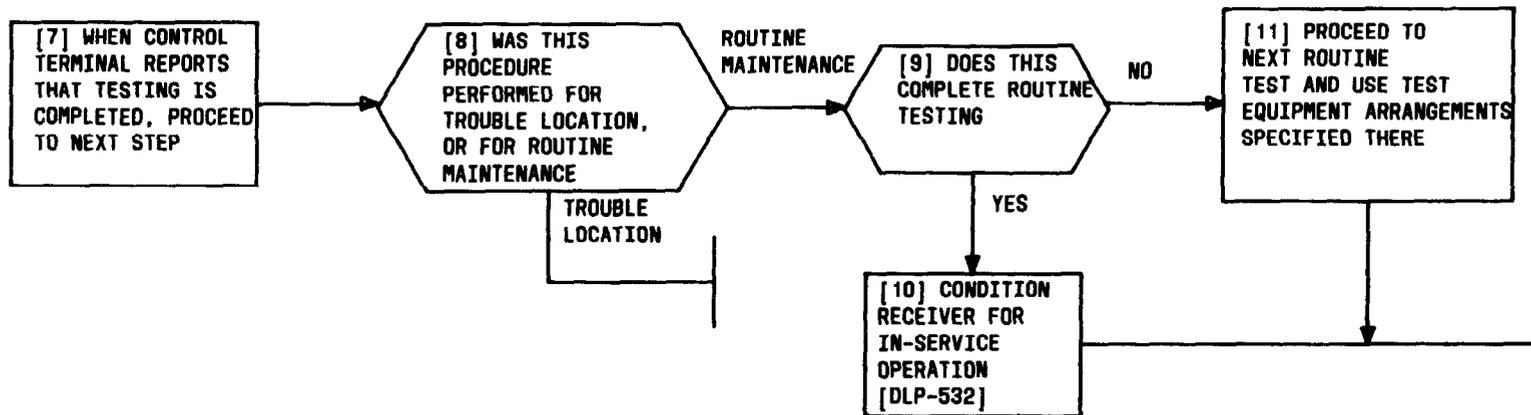


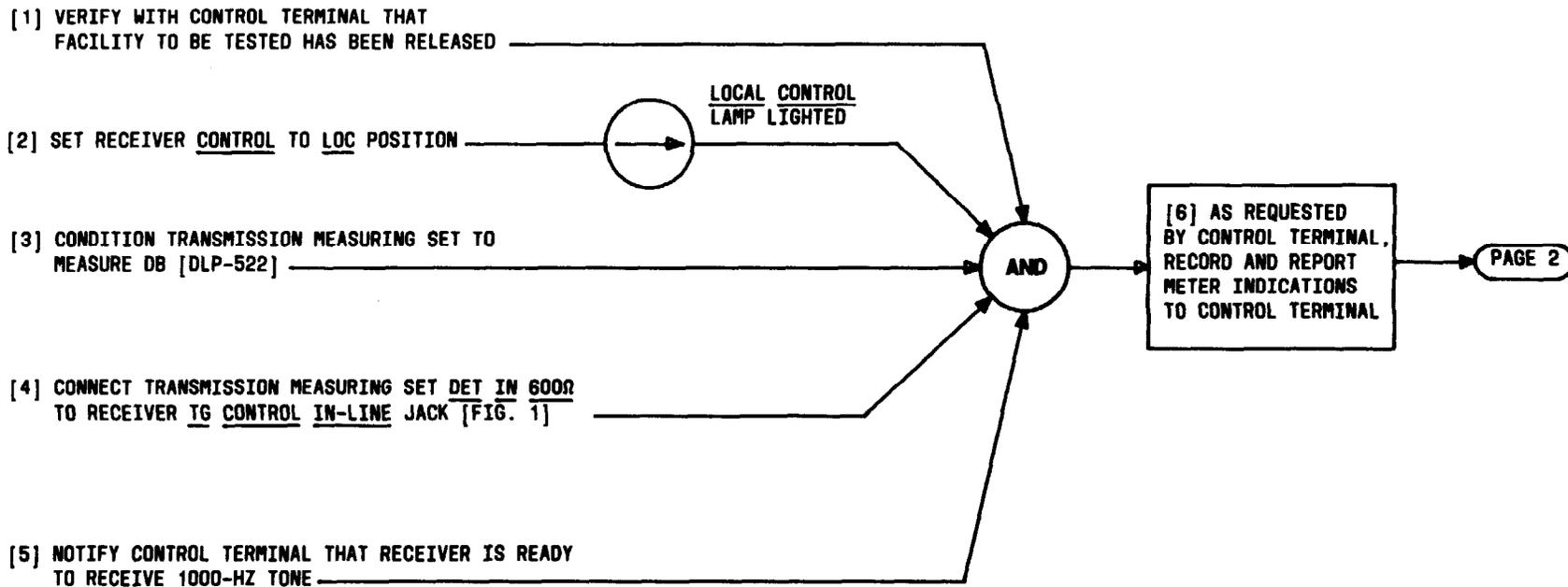
FIG. 1

MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 2	520

SUMMARY
 USING TRANSMISSION MEASURING SET CONNECTED TO RECEIVER
 TG CONTROL IN-LINE JACK, MEASURE 1000-HZ TONE LEVEL FROM
 CONTROL TERMINAL FOR BETWEEN -13.0 AND -19.0 DBM

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
TRANSMISSION MEASURING SET	WECO J94021A TMS
TEST CORD	WECO 3P17B



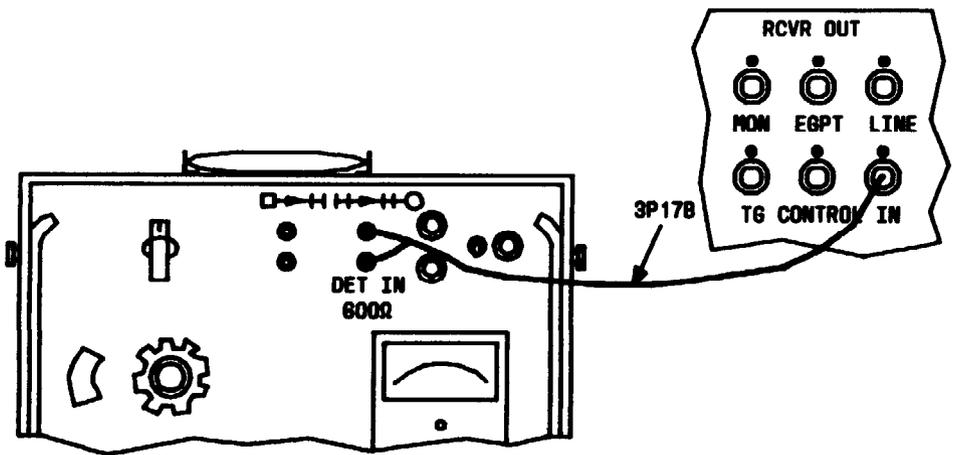
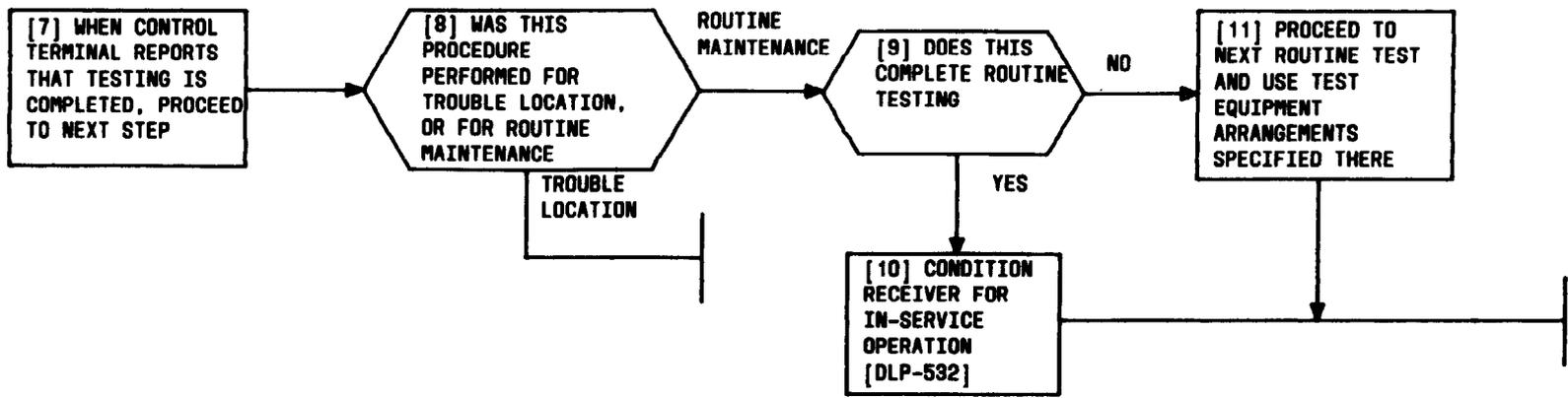


FIG. 1

MEASURE CONTROL TERMINAL TO RECEIVER 1000-HZ TONE LEVEL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 2	521

[1] CONNECT LINE POWER
CORD TO 115-VOLT, 60-HZ
OUTLET [FIG. 1]

[2] SET 115V 60 SWITCH TO ON

[3] ALLOW TMS TO WARM
UP AT LEAST 10 MINUTES

[4] SET FREQ MULT TO X100

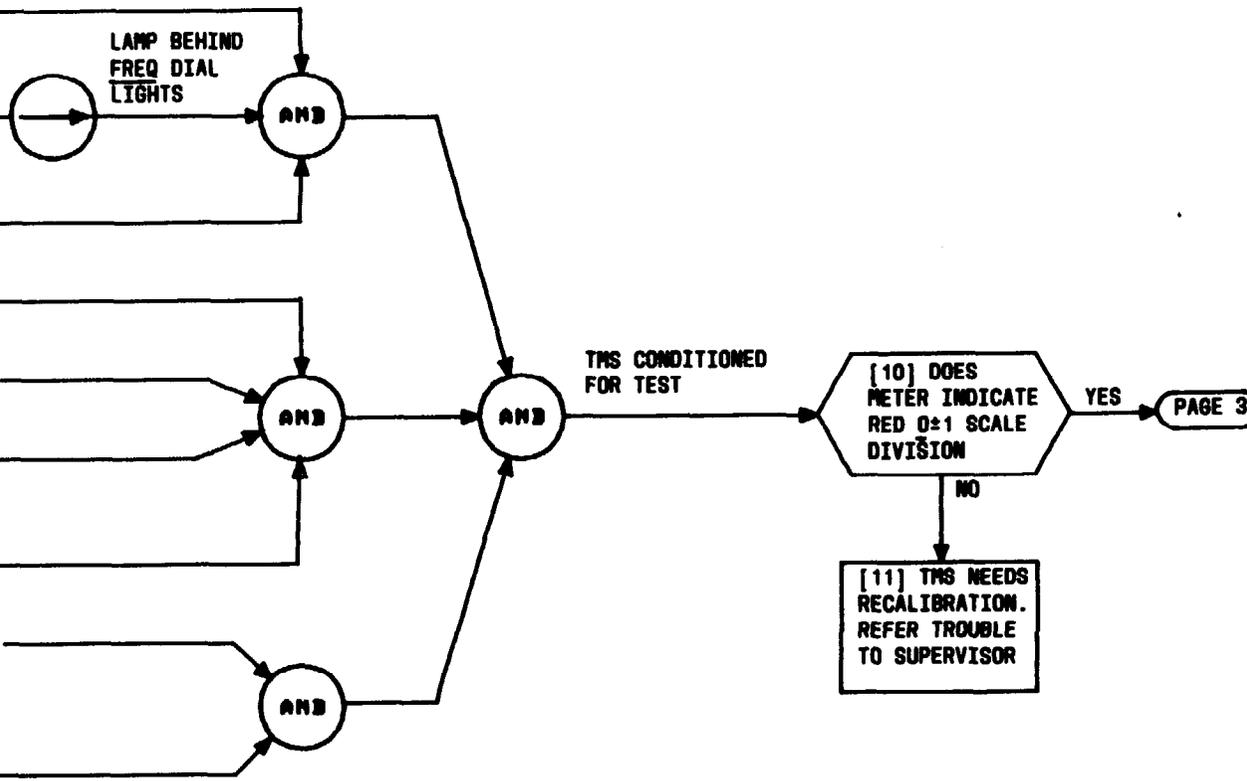
[5] SET FREQ DIAL TO 10

[6] SET DET INPUT TO RED 0

[7] SET BOTH OSC OUTPUT
SWITCHES TO RED 0

[8] GET 2P14A OR 3P14A CORD

[9] CONNECT OSC OUT 800Ω
JACK TO DET IN 600Ω
JACK



CONDITION J94021A (21A) TMS FOR TEST

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 3	522

SCALE RANGE 2 TO 20

PLUS SCALE VALUES ARE RED FOR OUTPUT OR INPUT ABOVE 1 MW. MINUS VALUES ARE WHITE OR BLACK

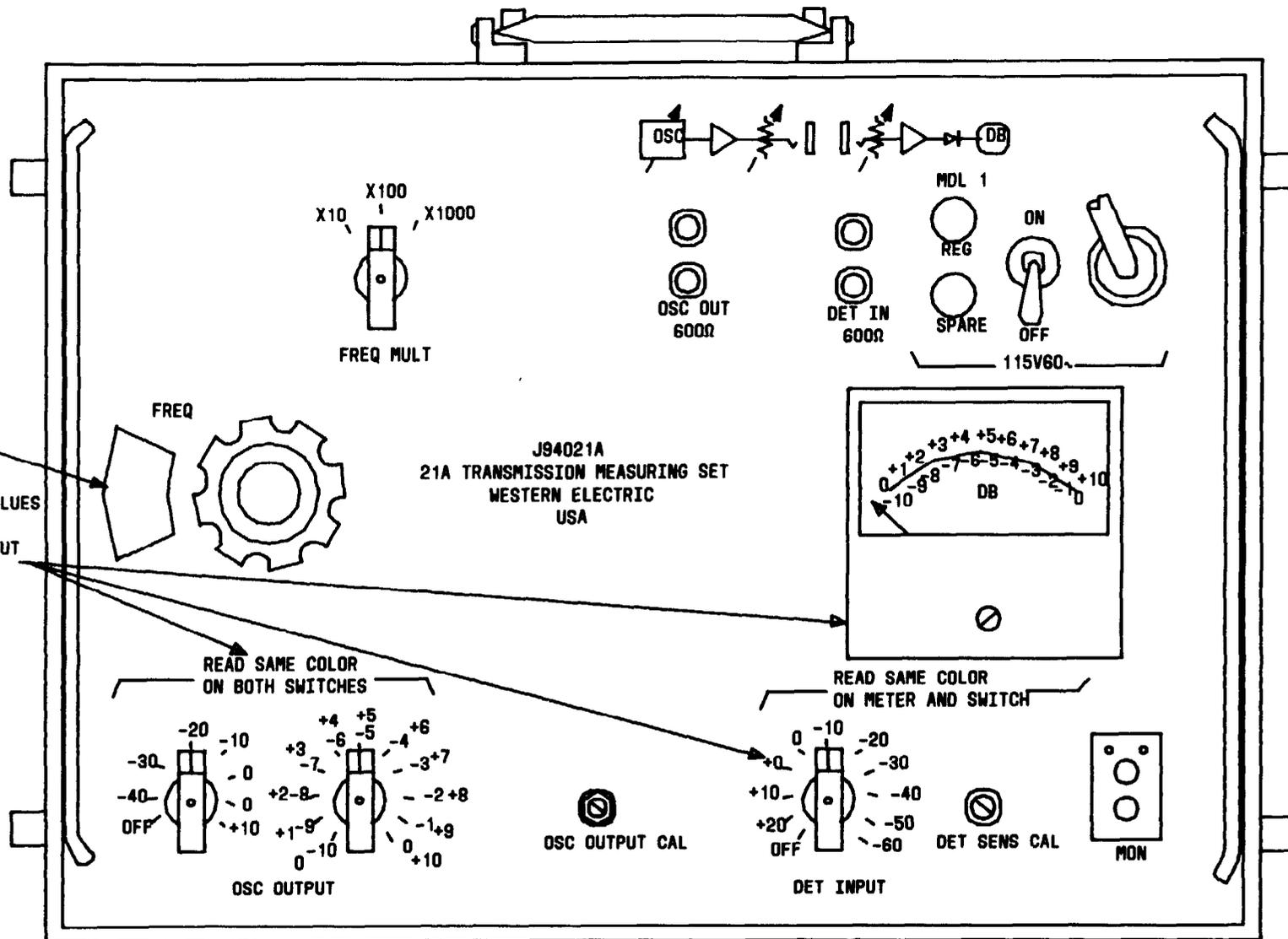


FIG. 1

CONDITION J94021A (21A) TMS FOR TEST

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 3	522

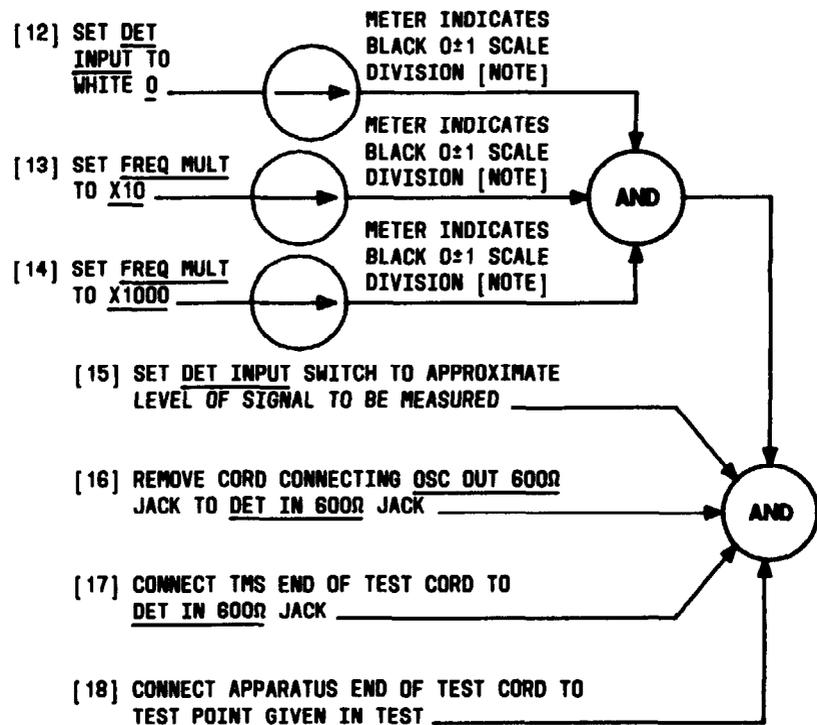


TABLE A				
SIGNAL LEVEL IN DB IS SUM OF DET INPUT SWITCH SETTING (RED OR WHITE) AND METER INDICATION (RED OR BLACK SCALE)				
EXAMPLES				
DET INPUT SETTING	-30	-10	+10	+30
DB METER INDICATION	- 3	- 5	+ 3	+ 3
	-33 DB	-15 DB	+13 DB	+33 DB

NOTE
 IF METER REQUIREMENT IS NOT MET, TMS NEEDS RECALIBRATION. REFER TROUBLE TO SUPERVISOR

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 3	522

[1] CONNECT POWER CABLE TO
115V, 60-HZ OUTLET

[2] ROTATE SAMPLE RATE
CONTROL CW FROM POWER
OFF [FIG. 1]

DISPLAY
COMES ON

[3] SET SENSITIVITY
SWITCH TO CHECK

[4] SET LEVEL CONTROL
TO PRESET

[5] SET FUNCTION SWITCH
TO FREQUENCY

[6] SET TIME BASE SWITCH
TO EACH POSITION
SHOWN IN TABLE A

AND

[7] DOES
DISPLAY READ
AS SHOWN IN
TABLE A

YES

[9] SET
FUNCTION
SWITCH TO
MANUAL START

NO

[10] DOES COUNTER
COUNT CONTINUOUSLY
AT FREQUENCY
SELECTED ON TIME
BASE SWITCH

YES

PAGE 2

NO

[8] CALIBRATE
COUNTER BEFORE
USING AS SHOWN IN
MANUFACTURER'S
HANDBOOK

TABLE A

TIME BASE	DISPLAY
1 μ S	0000010. MHZ
10 μ S	000010.0 MHZ
.1 MS	00010.00 MHZ
1 MS	0010000. KHZ
10 MS	0010000.0 KHZ
.1S	010000.00 KHZ
1S	10000.000 KHZ
10S	0000.0000 KHZ

CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 2	523

[11] SET FUNCTION SWITCH TO EACH PERIOD AVERAGE SETTING IN TABLE B

[12] DOES DISPLAY READ AS SHOWN IN TABLE B

[13] CALIBRATE COUNTER BEFORE USING ACCORDING TO MANUFACTURER'S HANDBOOK

NOTE
IF THERE IS NO COUNT, OR IF COUNT IS UNCERTAIN, PROGRESSIVELY CHANGE SENSITIVITY TO LOWER RANGES

TABLE B	
PERIOD AVERAGE	DISPLAY
1	00000001
10	00000010
100	00000100
1K	00001000
10K	00010000
100K	00100000

[14] SET FUNCTION SWITCH TO FREQUENCY

[15] SET TIME BASE SWITCH FOR DESIRED COUNT TIME

[16] CONNECT UNKNOWN SIGNAL TO AC OR DC SIGNAL INPUT JACK

[17] SET SENSITIVITY SWITCH TO 10 [NOTE]

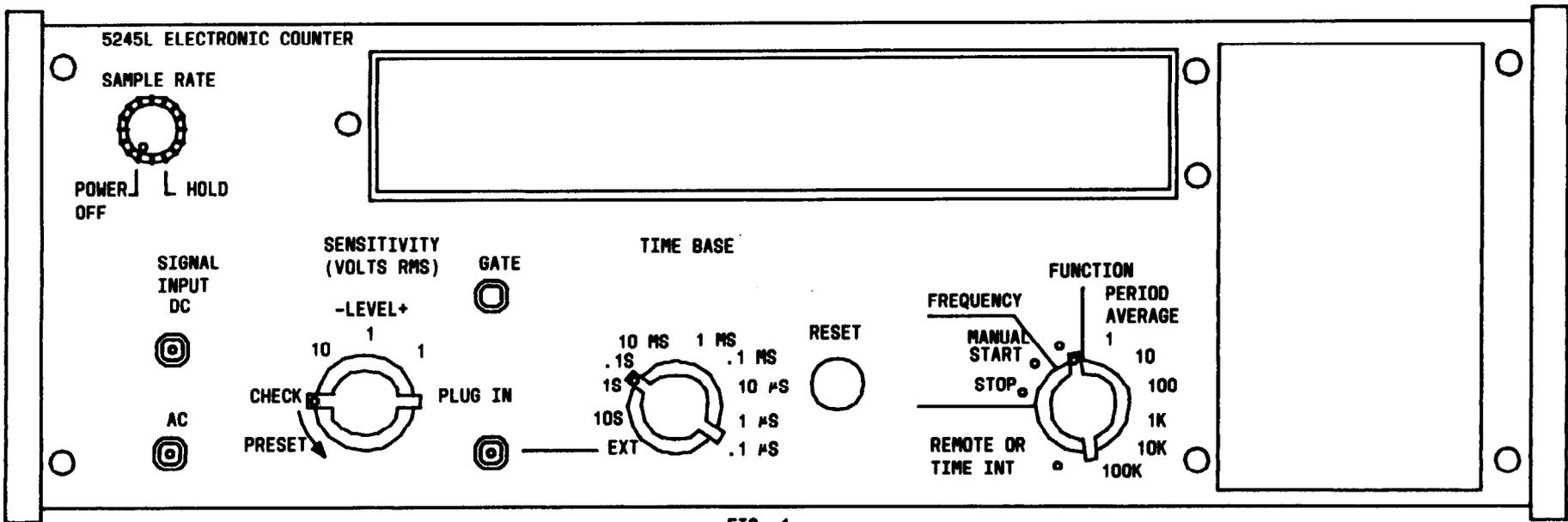


FIG. 1

CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY

[1] PLACE METER ON HORIZONTAL SURFACE WITH FRONT OF METER UP [NOTE]

[2] SET FUNCTION SWITCH TO OFF [FIG. 1]

[3] ADJUST METER ZERO SCREW FOR ZERO INDICATION

[4] INSERT SHORT PIN PLUG OF RED TEST LEAD IN + JACK

[5] INSERT SHORT PIN PLUG OF BLACK TEST LEAD IN - JACK

[6] SEE FIG. 1 AND WARNINGS. SET FUNCTION SWITCH TO PARAMETER TO BE MEASURED AND TO REQUIRED RANGE

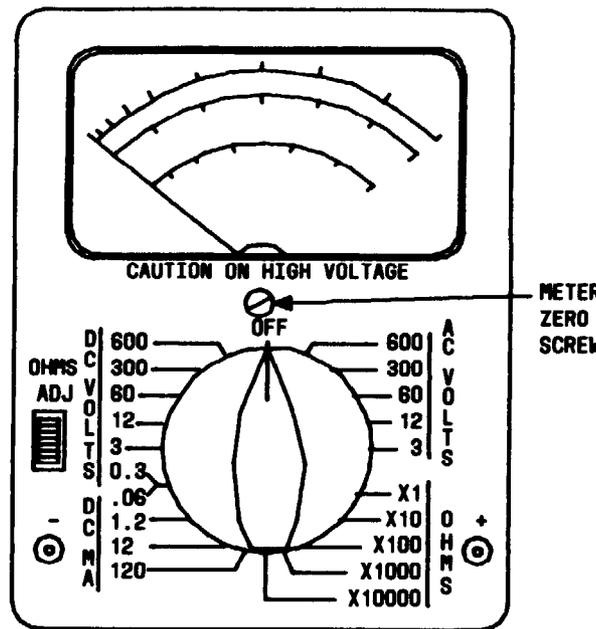
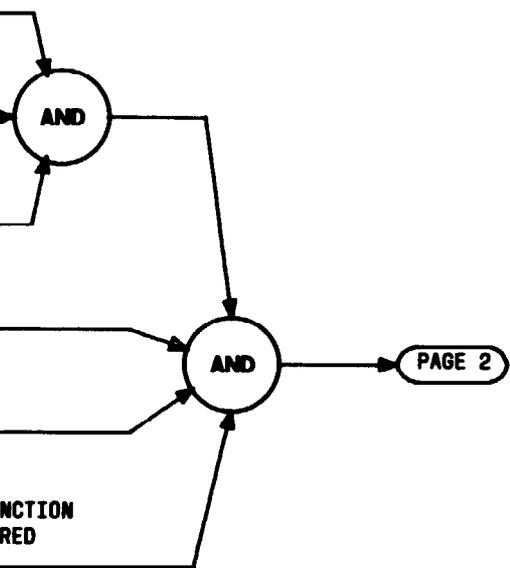
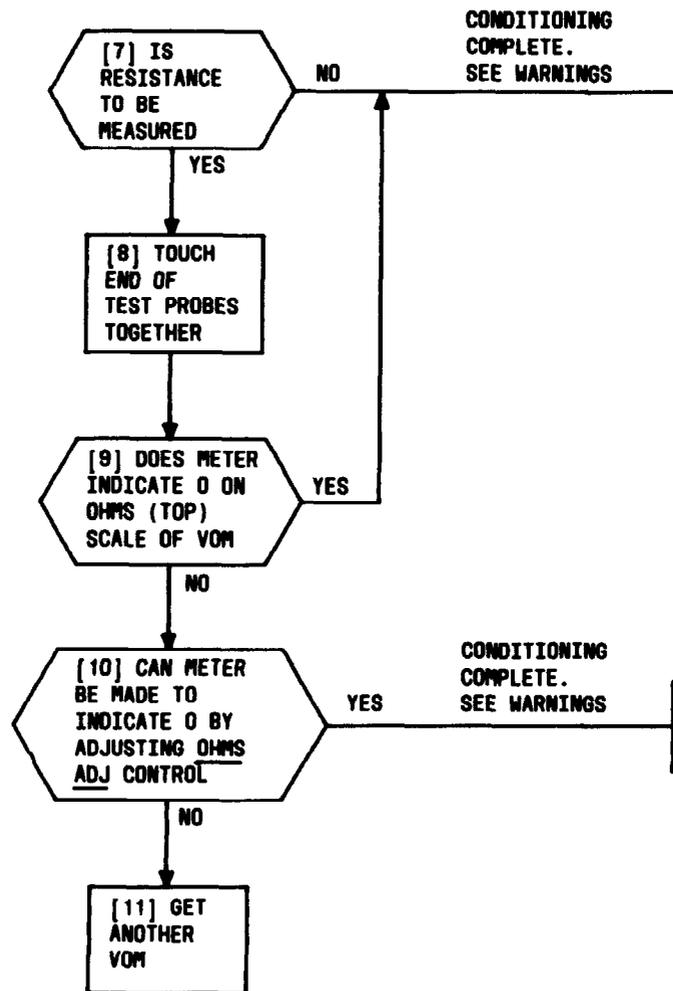


FIG. 1

NOTE
 METER SHOULD NOT BE PLACED ON A MAGNETIC SURFACE OR OTHER LOCATION WHERE METER MOVEMENT WILL BE SUBJECT TO INFLUENCE OF MAGNETIC FIELD

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 2	524

CONDITION KS-14510 METER (VOM) FOR MEASUREMENT



WARNINGS

1. WHEN MAKING RESISTANCE MEASUREMENTS, MAKE SURE THAT POWER IS NOT APPLIED TO CIRCUIT BEING MEASURED, AS DAMAGE TO METER WILL RESULT
2. WHEN MAKING EITHER CURRENT OR VOLTAGE MEASUREMENTS, SET FUNCTION SWITCH TO PROPER RANGE BEFORE MAKING CONTACT WITH TEST PROBES TO CIRCUIT BEING MEASURED. IF THERE IS ANY DOUBT AS TO APPROXIMATE VALUE OF VOLTAGE OR CURRENT TO BE MEASURED, SET FUNCTION SWITCH TO HIGHEST VALUE FOR INITIAL TEST AND THEN DECREASE STEP-BY-STEP UNTIL PROPER RANGE IS REACHED

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 2	524

[1] GET TEST EQUIPMENT
PER TABLE A

[2] CONNECT ROUTINER TEST
SET TO 115-VOLT AC
OUTLET WITH CORD-AND-PLUG
ASSEMBLY

[3] SET MAIN FUNCTION 4-POSITION
SWITCH TO RR POSITION
[FIG. 1 AND NOTE 1]

[4] CONNECT OSCR OUT JACK TO
FLDR IN JACK WITH
3P6C CORD

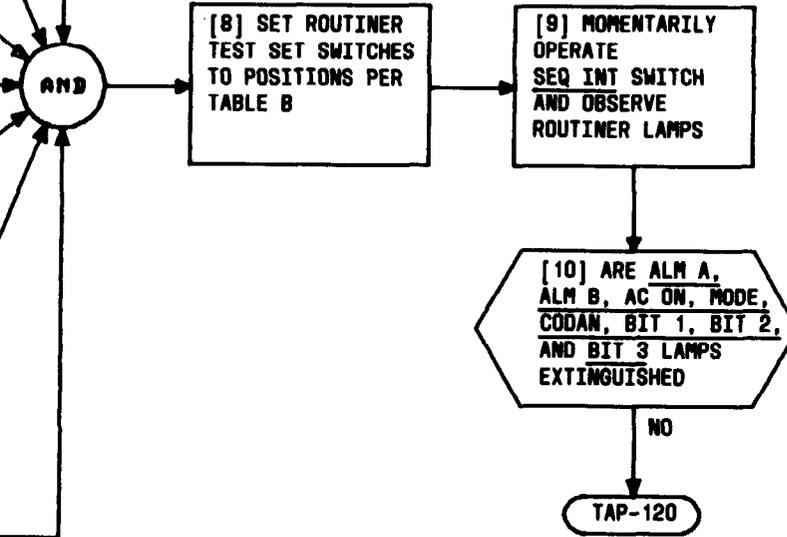
[5] CONNECT MONITORING
SPEAKER TO FLDR MON
JACK

[6] SET 1900-2100-2900
3-POSITION ROTARY
SWITCHES MARKED
L/NOR./H TO NOR. POSITION

[7] INSERT AN 898N (16 DB) RESISTOR
INTO OUT SOCKET, AND INSERT AN
89A (0 DB) RESISTOR INTO IN
SOCKET

TABLE A
EQUIPMENT REQUIRED
KS-21277 ROUTINER TEST SET
3P6C TELEPHONE CORD
89A (0 DB) RESISTOR
2 898N (16 DB) RESISTORS
SIGNAL MONITORING SPEAKER WITH 310 PLUG

TABLE B	
ROUTINER TEST SET	
SWITCH	POSITION
SENS	LO
TG	OFF
C O/R	AUTO
AUTO/MAN	MAN
MODE	SSB
SP	OFF
FREEZE	OFF



NOTES

1. THE RECEIVER PORTION OF ROUTINER TEST SET IS LOCATED AT UPPER-LEFT PART OF PANEL. SWITCHES AND LAMPS ARE COLOR-CODED GREEN AND BLACK
2. IGNORE ANY LAMP INDICATIONS ON TERMINAL AND TRANSMITTER PORTIONS OF ROUTINER

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 7	525

SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS

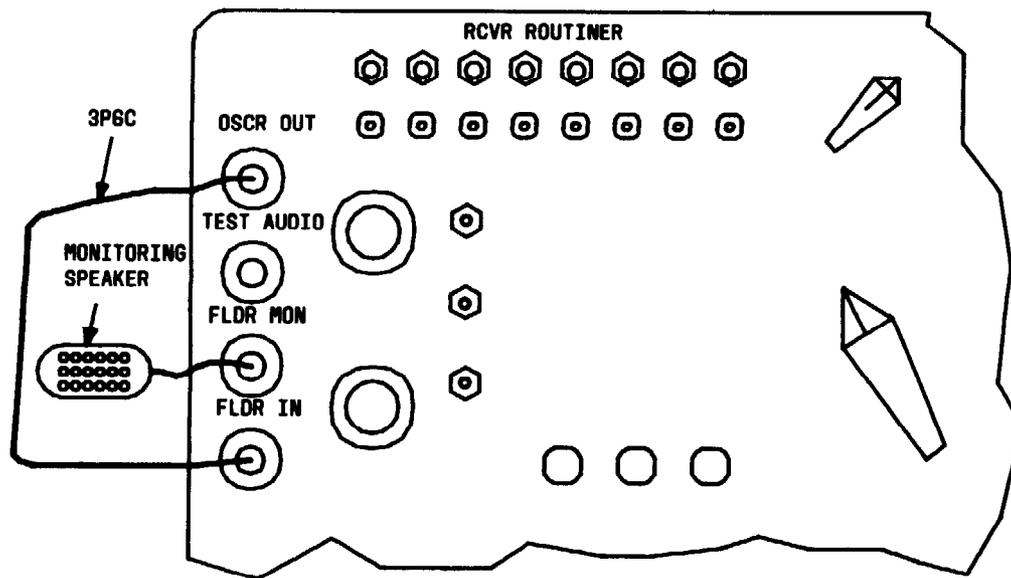
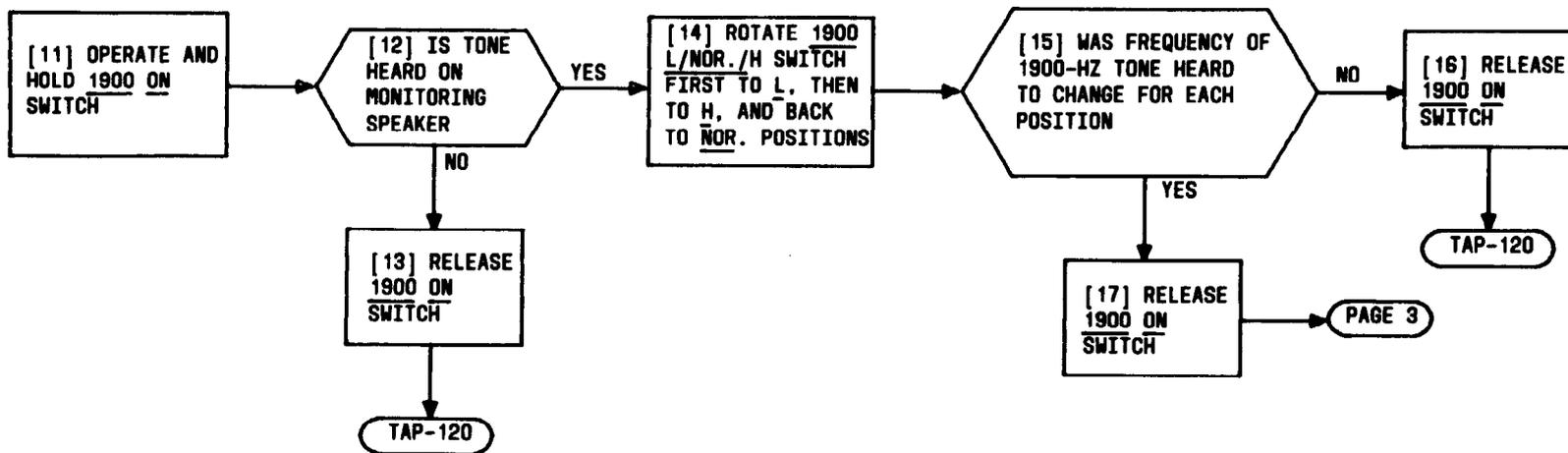
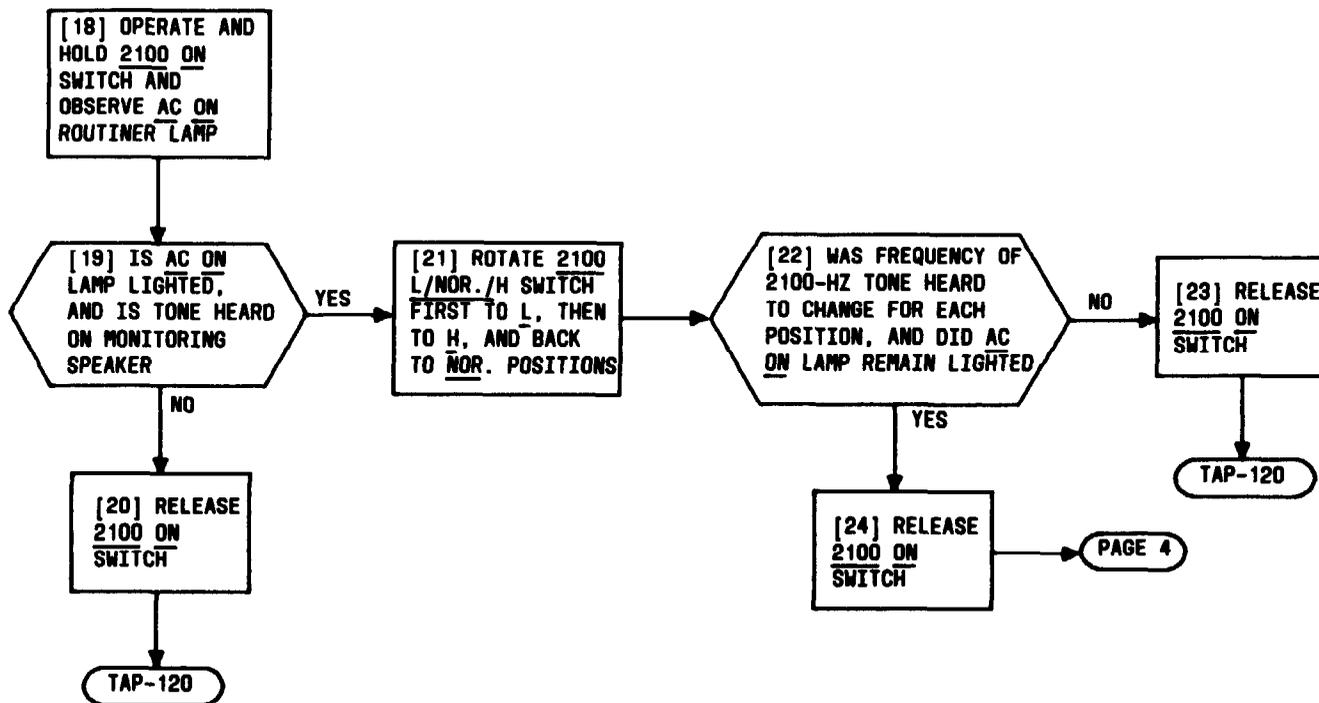
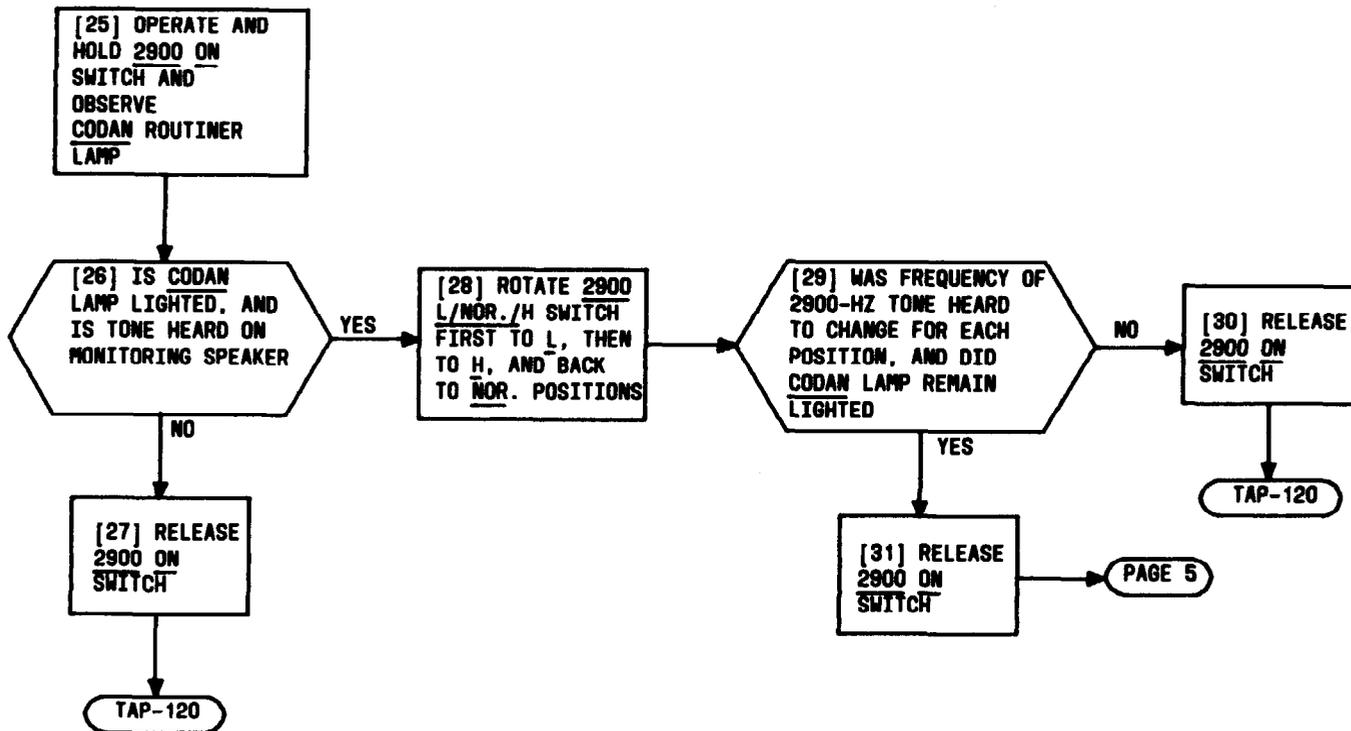


FIG. 1



SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 7	525



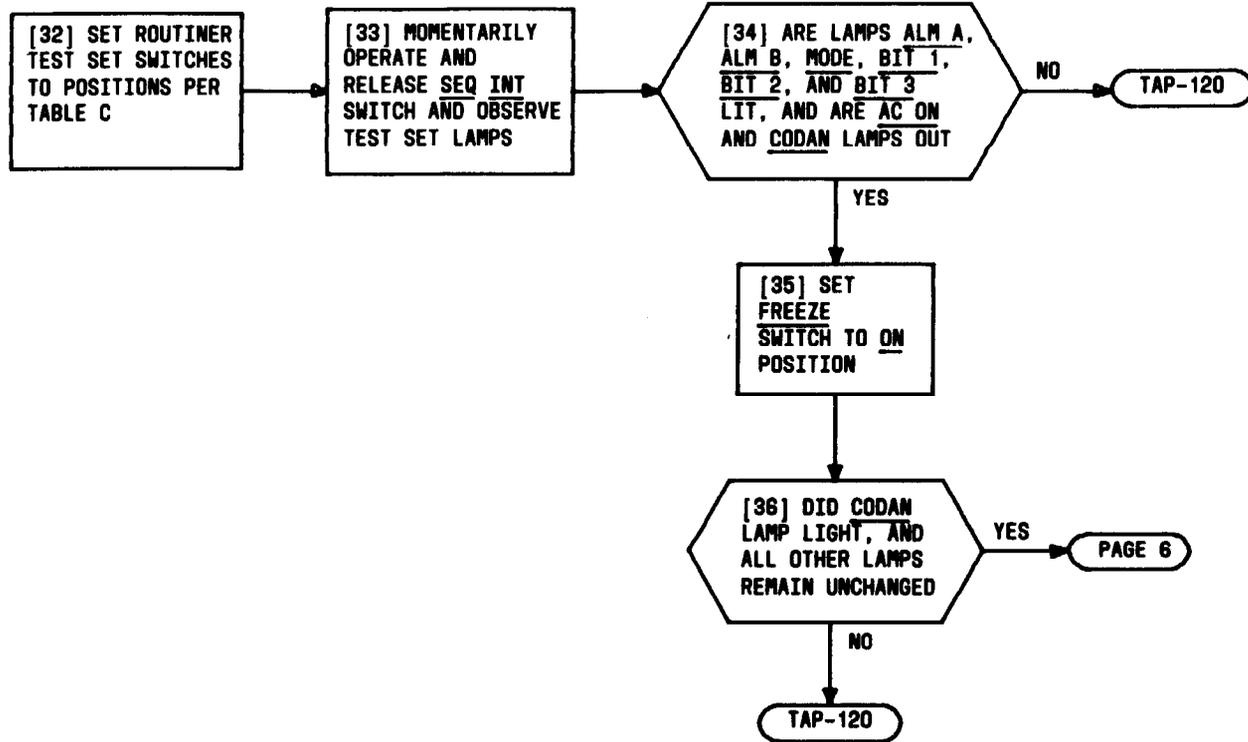


TABLE C	
ROUTINER TEST SET	
SWITCH	POSITION
SENS	HI
TG	ON
C O/R	ON
AUTO/MAN	AUTO
MODE	AM
SP	ON
FREEZE	OFF

SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 7	525

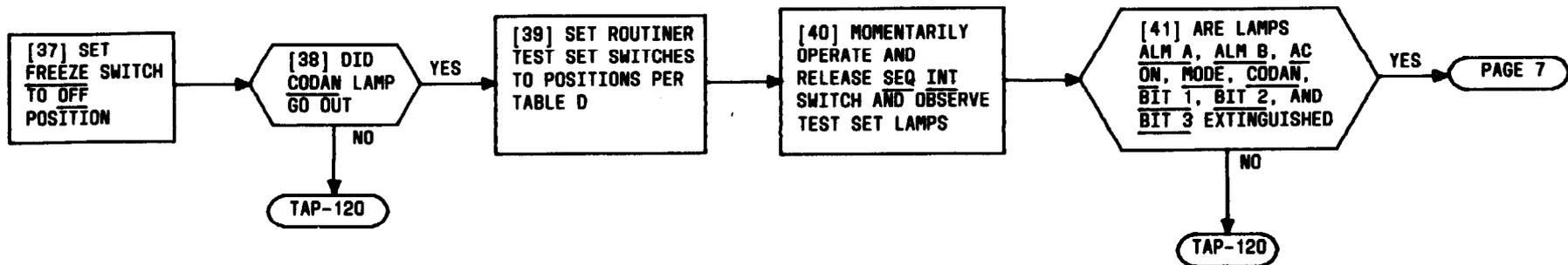
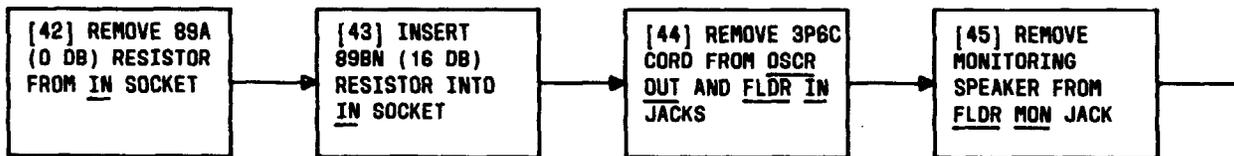


TABLE D	
ROUTINER TEST SET	
SWITCH	POSITION
SENS	LO
TG	OFF
C O/R	AUTO
AUTO/MAN	MAN
MODE	SSB
SP	OFF
FREEZE	OFF



SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 7 of 7	525

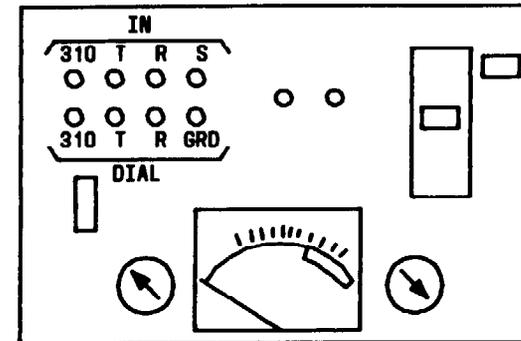
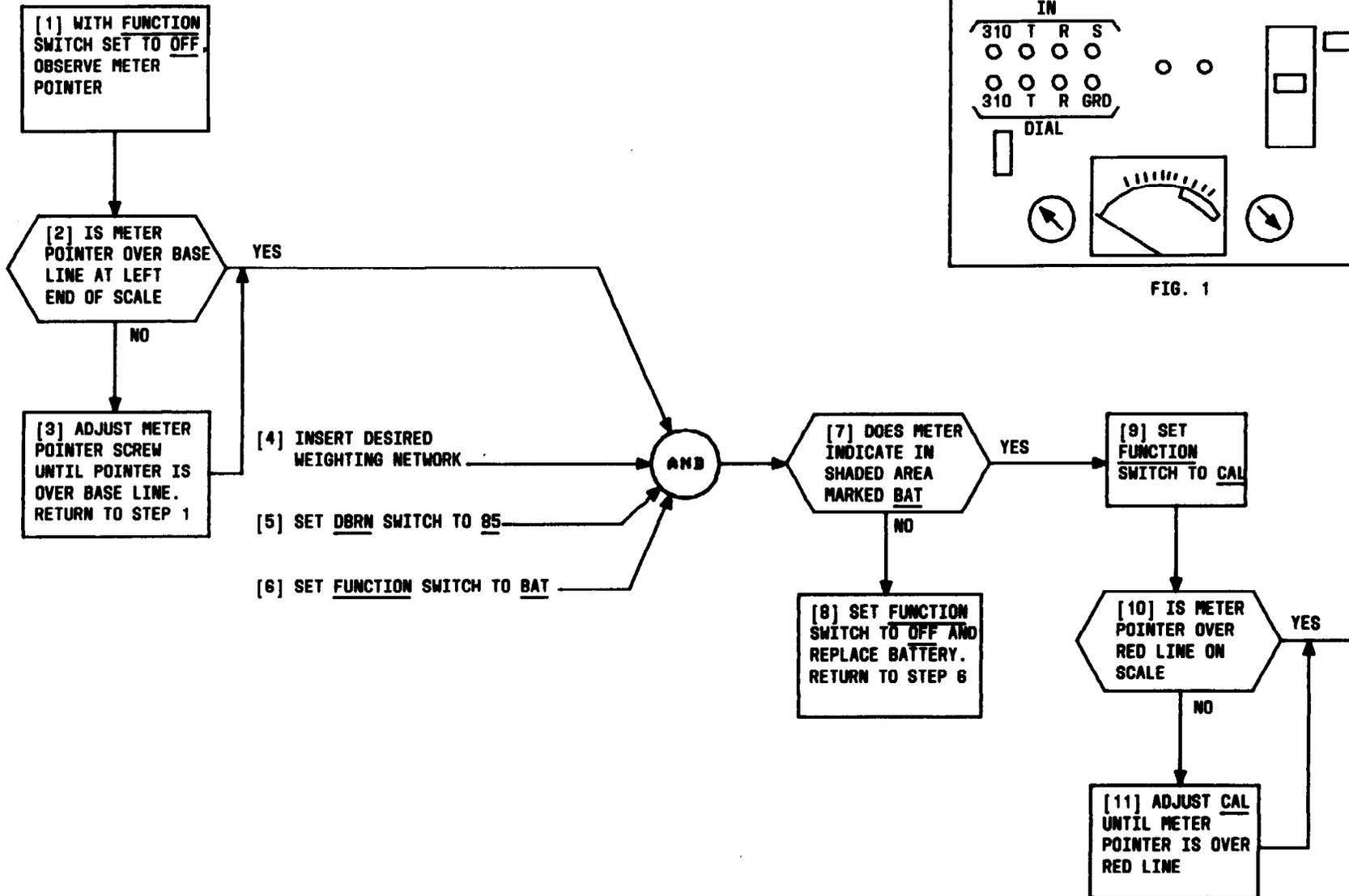


FIG. 1

[1] SEE WARNING.
AT RECEIVER, SET
POWER SWITCH OFF

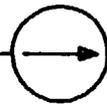
ANY LAMPS LIGHTED
WILL EXTINGUISH

[2] REMOVE FRONT PANEL
CIRCUIT BOARD COVER
BY ROTATING TWO KNURLED
CAPTIVE SCREWS TO LEFT
UNTIL UPPER PANEL IS FREE

[3] SWING PANEL FORWARD FROM
TOP UNTIL BOTTOM LIP OF
PANEL DISENGAGES FROM
RECEIVER PANEL

[4] LAY PANEL COVER ASIDE

[5] LOCATE CIRCUIT BOARD
OF INTEREST AND REMOVE
IT BY GRASPING PLASTIC
HANDLE AND PULLING FIRMLY
STRAIGHT FORWARD



AND

[6] IS BOARD TO BE
REPLACED WITH A SPARE
OR IS ORIGINAL BOARD
TO BE REINSTALLED ON
AN EXTENDER BOARD

SPARE

[9] SEE NOTE. LAY
REMOVED CIRCUIT
BOARD ASIDE AND
SELECT REPLACEMENT
BOARD

EXTENDER
BOARD

[7] INSERT EXTENDER
INTO TOP AND
BOTTOM SLOTS IN
CARD BASKET AND
PUSH FIRMLY
INWARD TO SEAT

[10] INSERT SPARE
CIRCUIT BOARD INTO
TOP AND BOTTOM SLOTS
IN CARD BASKET AND
PUSH FIRMLY IN TO
SEAT

[8] WITH COMPONENTS
TO LEFT SIDE,
INSERT ORIGINAL
CIRCUIT BOARD
INTO EXTENDER
AND SEAT FIRMLY

[11] SET RECEIVER
POWER SWITCH TO ON

NOTE
IF BUFFER, OSCILLATOR-
SWITCH-COMBINER (OSC),
LOGIC, OR FILTER-LIMITER-
DETECTOR (FLD) CIRCUIT
BOARDS ARE TEMPORARILY
PLACED ASIDE, AVOID
TOUCHING EXPOSED S
TERMINALS, TIE POINTS,
COMPONENTS, ETC., AND
THESE BOARDS SHOULD BE
PLACED ON ALUMINUM FOIL.
ALL TO AVOID STATIC
CHARGES

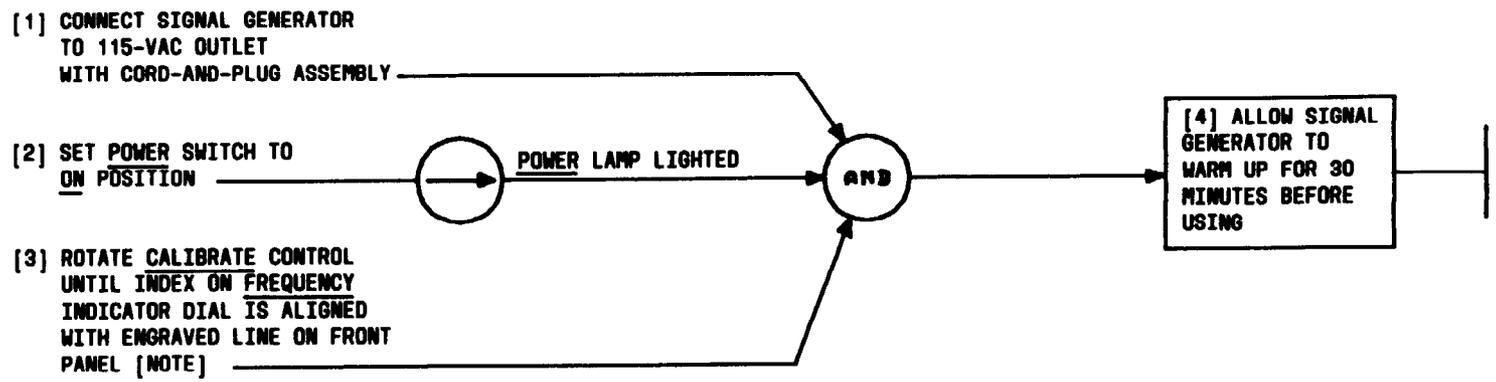
WARNING

REMOVAL OR INSERTION
OF PRINTED CIRCUIT
BOARDS WITHOUT FIRST
REMOVING RECEIVER
POWER MAY RESULT IN
DAMAGE TO COMPONENTS

Issue 2 FEB 1979

403-200-502 DLP

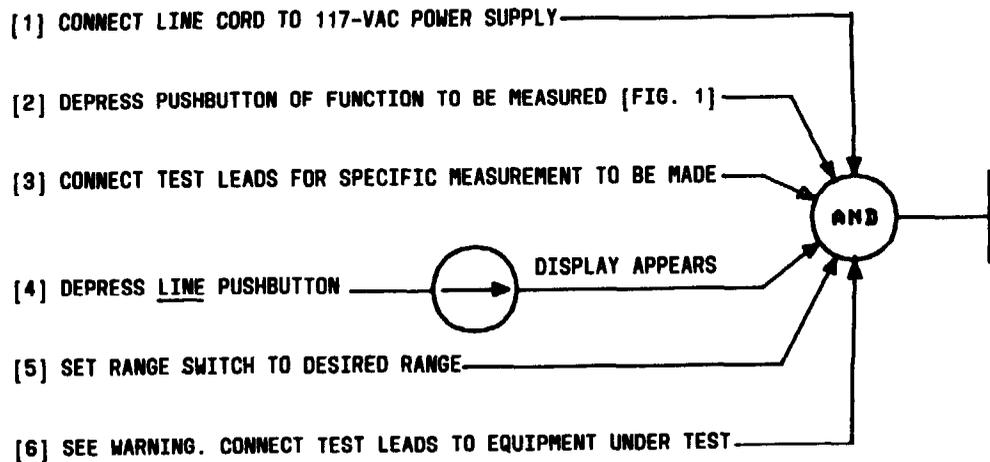
PAGE 1 of 1 527



NOTE
FREQUENCY DIAL
IS NOT ACCURATE
UNTIL INDICATOR
IS ALIGNED

CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 1	528



WARNING
 WHEN MAKING RESISTANCE MEASUREMENTS, MAKE SURE THAT POWER IS NOT APPLIED TO THE CIRCUIT BEING MEASURED, AS DAMAGE TO THE METER WILL RESULT

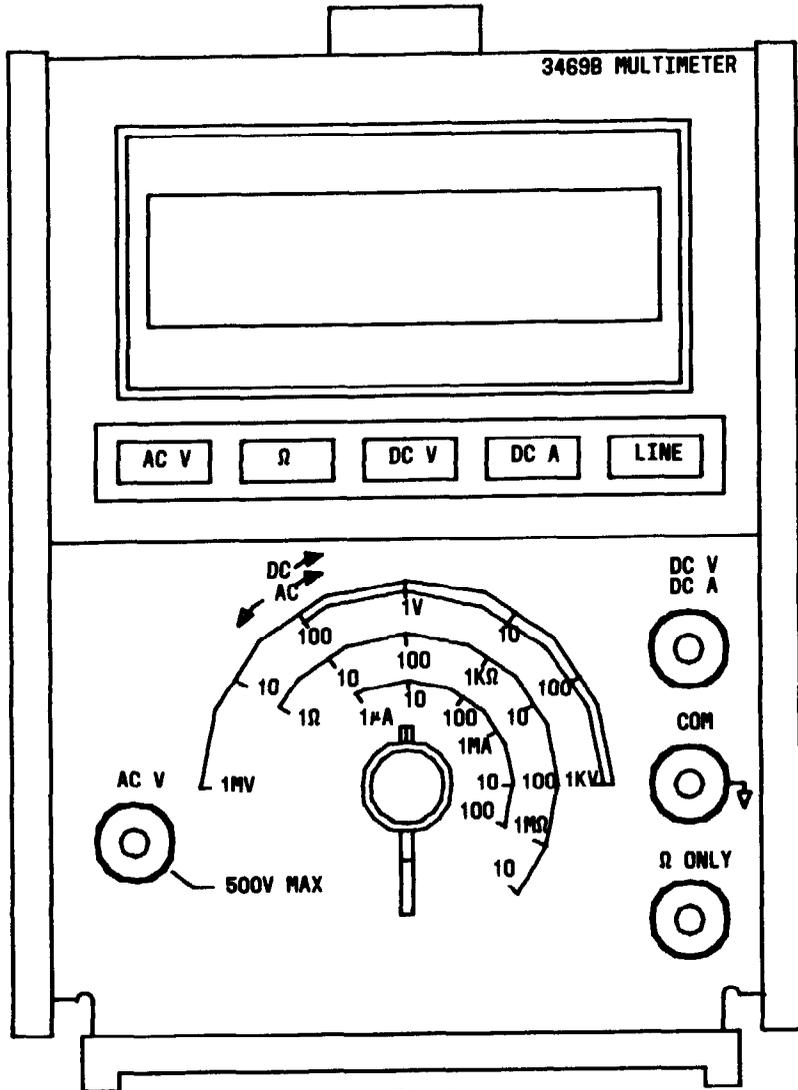


FIG. 1

**CONDITION HEWLETT-PACKARD 3469B
 DIGITAL MULTIMETER FOR MEASUREMENT**

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 1	529

[1] OBTAIN RELEASE FROM CONTROL
TERMINAL FOR RECEIVER TEST.
SEE NOTE 1

[2] SET RECEIVER CONTROL
SWITCH TO LOC POSITION

LOCAL CONTROL
LAMP LIGHTED

RECEIVER
READY FOR
TESTING

[3] DISCONNECT ANTENNA CABLE
ON REAR OF RECEIVER

[4] GET TEST EQUIPMENT PER TABLE A

[5] CONNECT BNC UG274 B/U T
CONNECTOR TO SIGNAL GENERATOR
RF OUTPUT 50Ω JACK. SEE FIG. 1

[6] CONNECT ONE LEG OF T CONNECTOR
TO FREQUENCY COUNTER SIGNAL INPUT AC
JACK WITH RG 58/U CABLE

[7] CONNECT OTHER LEG OF T CONNECTOR TO
INPUT OF HP 355D ATTENUATOR WITH
RG 58/U CABLE

[8] CONNECT OUTPUT OF HP 355D ATTENUATOR
TO INPUT OF AR-2 ATTENUATOR WITH
BNC UG491 A/U ADAPTER

AND

PAGE 2

TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

TABLE A

EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
RF ATTENUATOR	HP 355D
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
ADAPTER BNC MALE	UG491 A/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U
T CONNECTOR	BNC UG274 B/U
ROUTINER TEST SET	KS-21277
TELEPHONE CORD	3P6C

NOTE 1
FOR ACCEPTANCE
PROCEDURES, REFER
ABNORMAL CONDITIONS
TO INSTALLER FOR
CORRECTION

Issue 2 | FEB 1979

403-200-502 | DLP

PAGE 1 of 7 | 530

[9] CONNECT OUTPUT OF AR-2 ATTENUATOR TO ANTENNA INPUT ON RECEIVER REAR WITH RG 58/U CABLE

[10] SET HP3550 AND AR-2 ATTENUATORS TO 100 DB

[11] CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY [DLP-523]

[12] SET COUNTER FUNCTION SWITCH TO FREQUENCY POSITION

[13] SET COUNTER SENSITIVITY SWITCH TO .1 POSITION

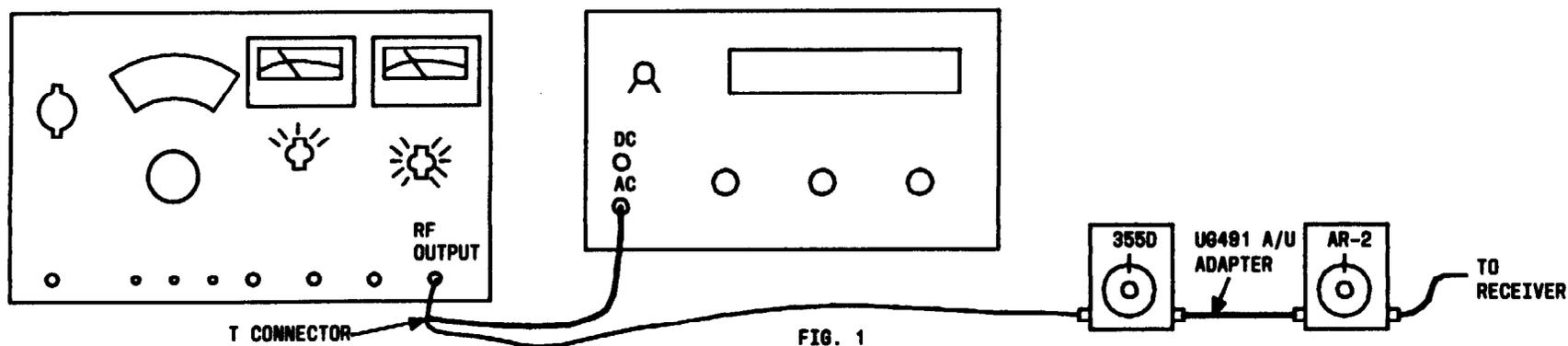
[14] SET COUNTER TIME BASE SWITCH TO .1 MS POSITION

TEST EQUIPMENT CONNECTED



FREQUENCY COUNTER SET UP

PAGE 3



TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 7	530

[15] CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT [DLP-528]

[16] SET SIGNAL GENERATOR RANGE SWITCH TO POSITION WHICH BRACKETS CHANNEL FREQUENCY

[17] SET SIGNAL GENERATOR FREQUENCY AND VERNIER CONTROLS TO RECEIVER CHANNEL FREQUENCY PLUS 1000.

[18] SET SIGNAL GENERATOR ATTENUATOR TO 0 DBM POSITION AND ADJUST VERNIER FOR DBM METER INDICATION OF 0

[19] SET MODULATION SELECTOR SWITCH TO CW AND SELECT 1000 POSITION

[20] SET MODULATION AMPLITUDE CONTROL TO INDICATE 40 PERCENT ON PERCENT MODULATION METER

SIGNAL GENERATOR SET UP

[21] IS THIS TEST BEING PERFORMED FOR ROUTINE OR TROUBLE LOCATION AT RECEIVER, OR AT REQUEST OF CONTROL TERMINAL. SEE NOTE 2

CONTROL TERMINAL

PAGE 6

RECEIVER

[22] SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS [DLP-525]

[23] CONNECT ROUTINER FLDR IN JACK TO RECEIVER RCVR OUT - EQPT JACK WITH 3P6C CORD. SEE FIG.2

[24] OBSERVE LAMP DISPLAYS ON RECEIVER AND ROUTINER AND SET SIGNAL GENERATOR MODULATION SELECTOR CONTROL SWITCH TO INT

AND

PAGE 4

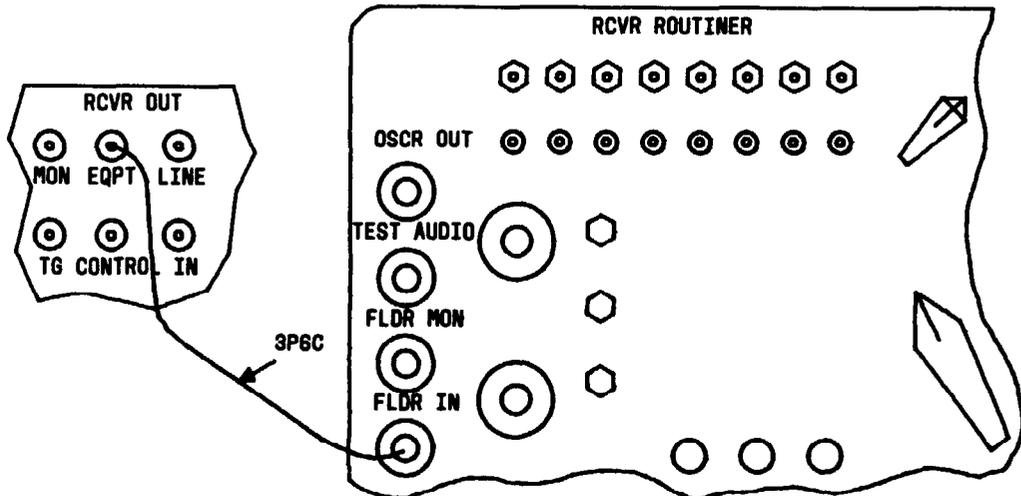
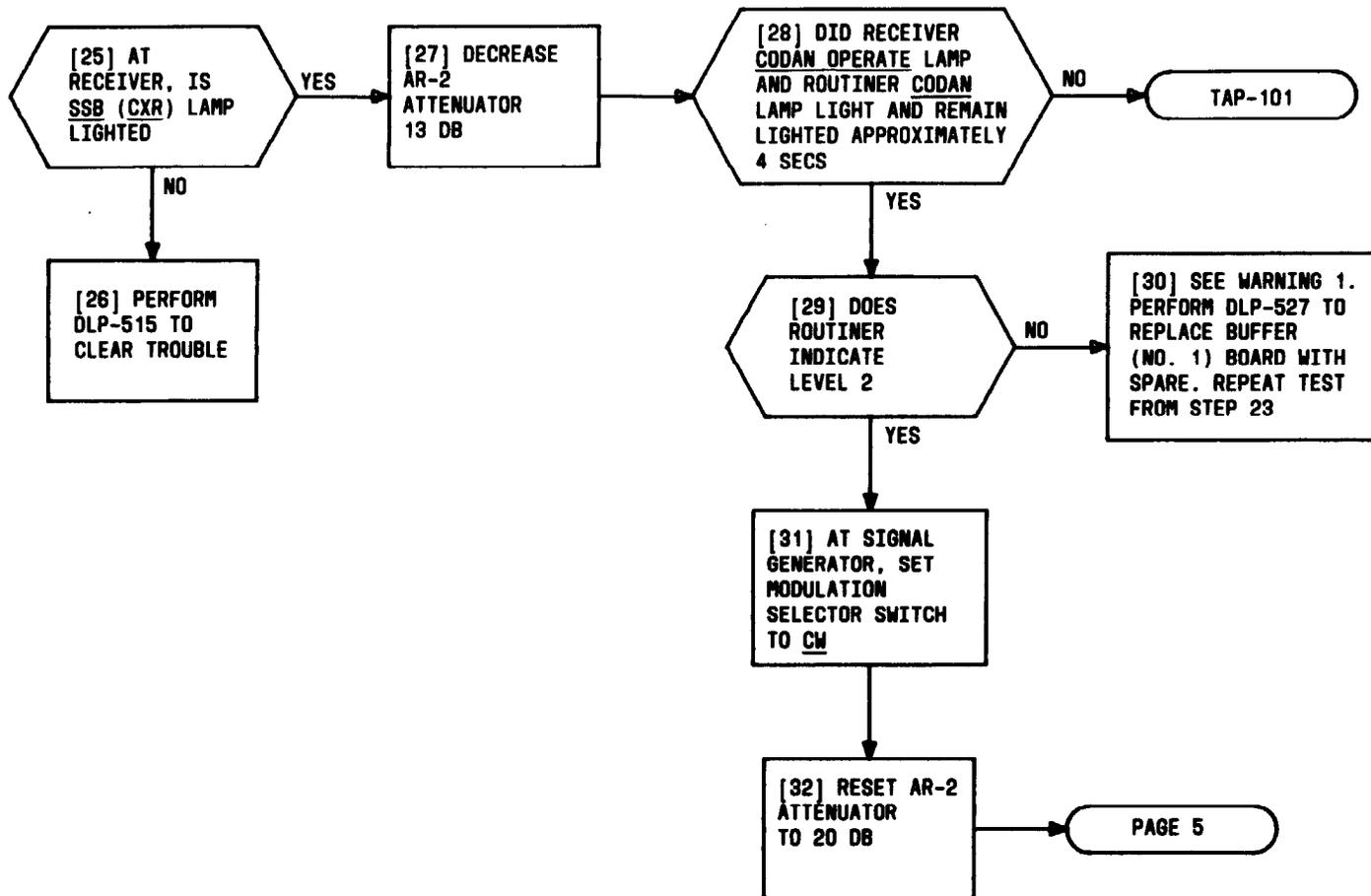


FIG. 2

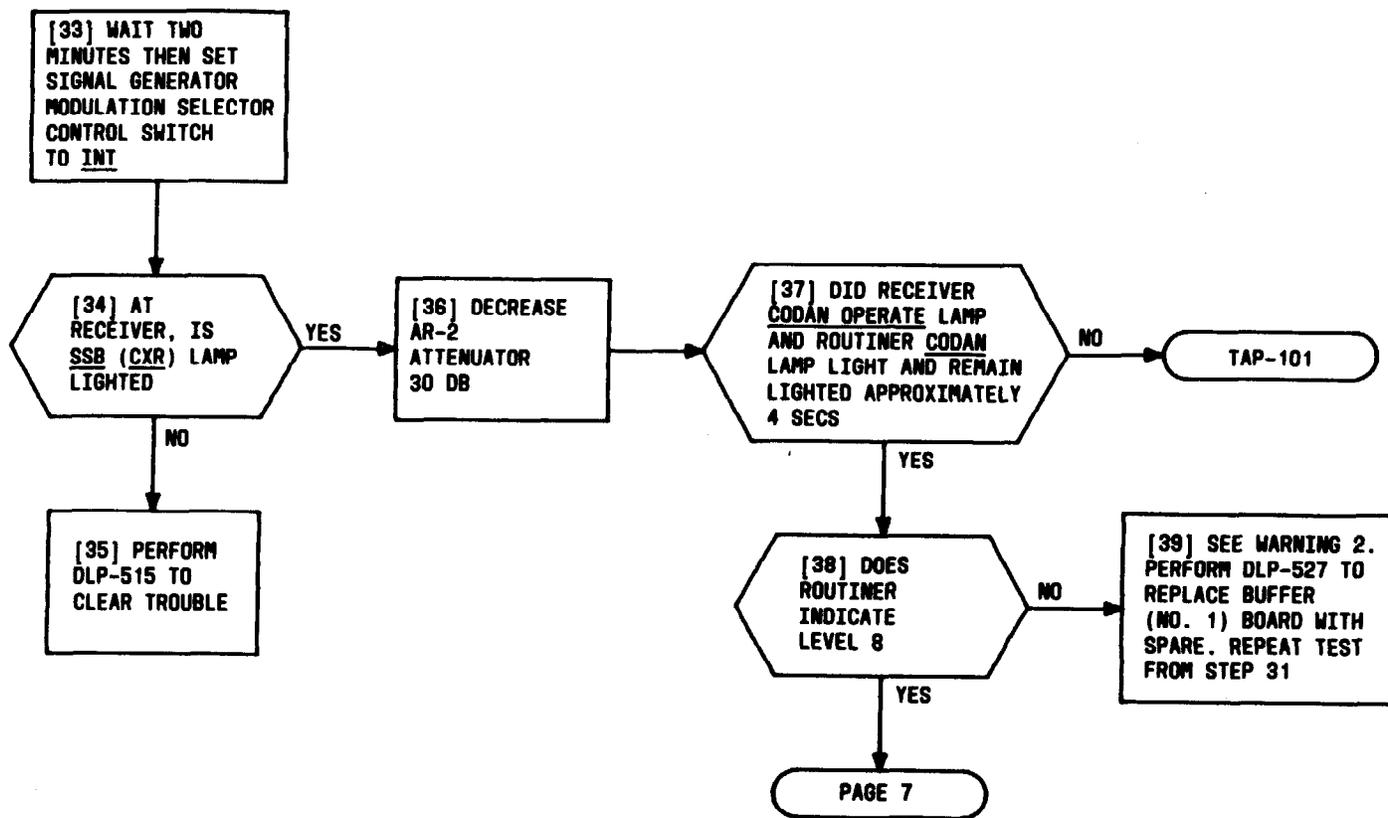
NOTE 2
IF ROUTINER TEST SET IS NOT AVAILABLE AT RECEIVER LOCATION, REQUEST CONTROL TERMINAL TO ASSIST RECEIVER TEST USING ROUTINER TEST SET AT CONTROL TERMINAL

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 7	530

TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

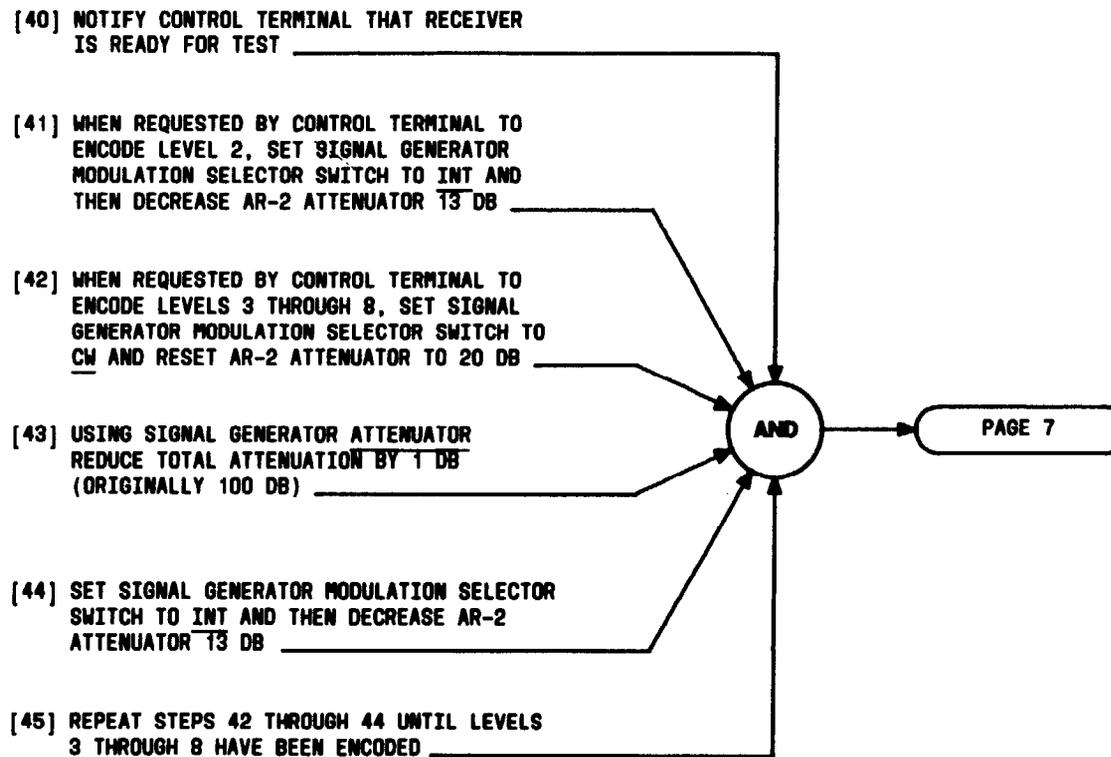


WARNING 1	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 7	530



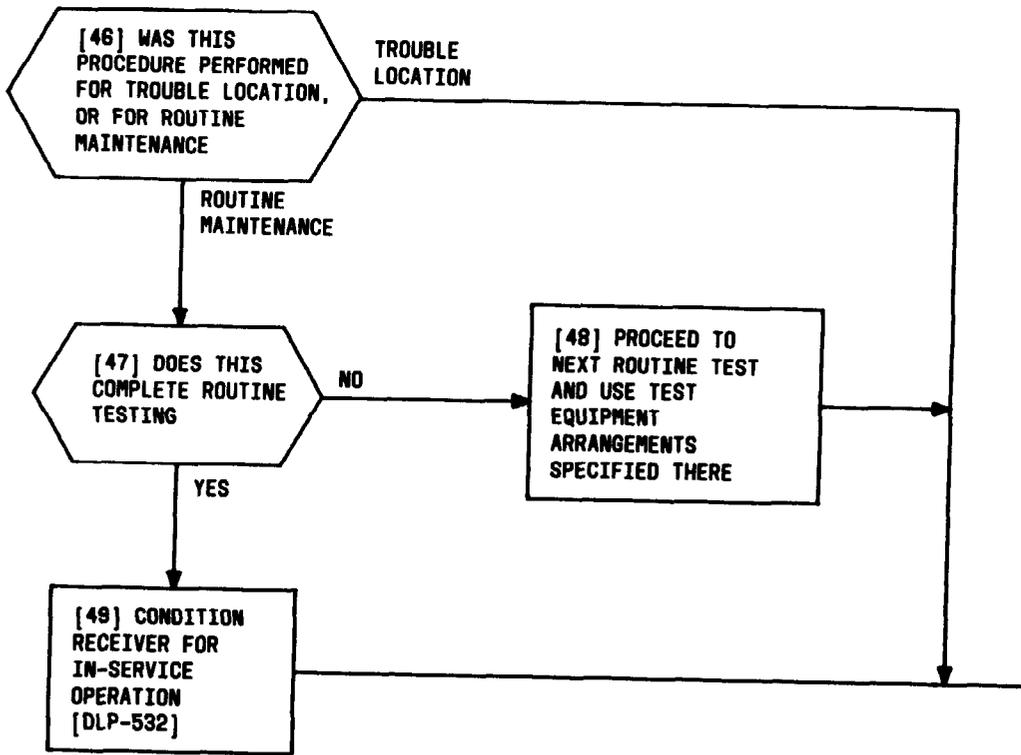
TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

WARNING 2	
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 7	530



TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 6 of 7	530



TEST RECEIVER TO CONTROL TERMINAL RF LEVEL SIGNALING

Issue 2	FEB 1979
403-200-502	DLP
PAGE 7 of 7	530

[1] CONDITION 3C NOISE MEASURING SET FOR MEASUREMENT [DLP-526]

[2] SET 3C SET FUNCTION SWITCH TO NM 600 / 900 POSITION

[3] SET 3C SET DBRN SWITCH TO 85

[4] SET 3C SET FILTER FOR C-MESSAGE WTG

[5] CONNECT 3C SET IN-310 JACK TO RECEIVER RCVR OUT-EQPT JACK WITH 3P6C CORD. SEE FIG. 1

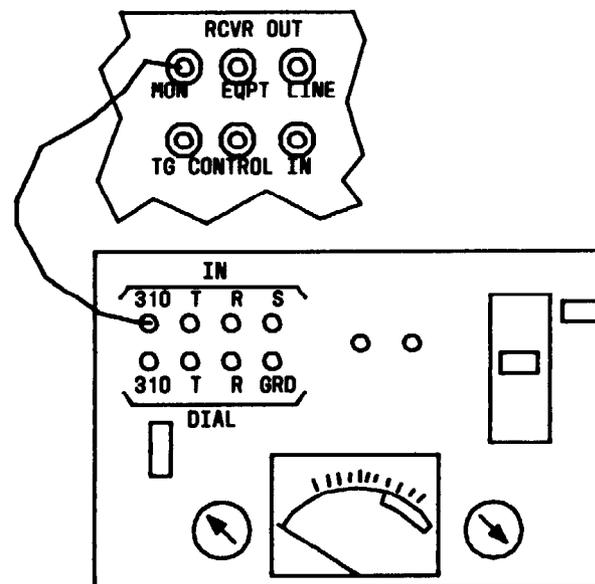
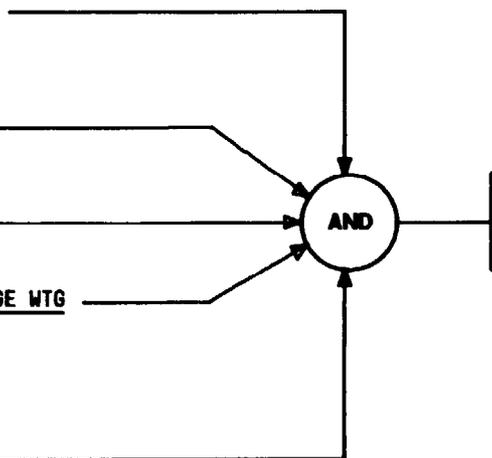


FIG. 1

CONNECT 3C NOISE MEASURING SET TO RECEIVER OUTPUT

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 1	531

[1] DISCONNECT ANY TEST EQUIPMENT FROM ANTENNA INPUT

[2] RECONNECT ANTENNA CABLE TO RECEIVER ANTENNA JACK

[3] RECONNECT ANY WIRING REMOVED FROM BARRIER TERMINAL STRIP

[4] DISCONNECT ANY TEST EQUIPMENT AND TERMINATING PLUGS FROM RECEIVER FRONT PANEL JACK FIELD

[5] SEE WARNING. REMOVE CIRCUIT BOARD EXTENDER BOARD AND REINSTALL REMOVED CIRCUIT BOARDS [DLP-527]

[6] VERIFY CIRCUIT BOARD TOGGLE SWITCH POSITIONS PER TABLE A

[7] REINSTALL RECEIVER FRONT PANEL CIRCUIT BOARD COVER

AND

[8] SET RECEIVER PANEL CONTROLS AND SWITCHES TO POSITIONS PER TABLE B

[9] SET RECEIVER TEST GENERATOR SWITCH TO ON POSITION FOR 5 SECONDS; THEN SET TO OFF POSITION

[10] SET RECEIVER CONTROL SWITCH TO REM POSITION. SEE NOTE

[11] NOTIFY CONTROL TERMINAL THAT RECEIVER IS CONDITIONED FOR IN-SERVICE OPERATION

TABLE A		
CIRCUIT BOARDS OPERATIONAL TOGGLE SWITCH POSITIONS		
CIRCUIT BOARD	SWITCH SET	SWITCH FUNCTION
8	CENTER	OPERATE
10	UP	LOCK A3A
12	UP	SAFETY AND CALLING
12	DOWN	PUBLIC CORRESPONDENCE

TABLE B	
CONTROL	SET
POWER CONTROL	ON
TEST GENERATOR	LOC
CODAN	OFF
METER	AUTO
SIG OSC TEST	OFF
2100 TEST/NORM/OFF	NORM
2900 TEST/NORM/OFF	NORM

NOTE
ONLY SSB LAMP SHOULD REMAIN LIGHTED

WARNING
REMOVAL OR INSERTION OF PRINTED CIRCUIT BOARDS WITHOUT FIRST REMOVING RECEIVER POWER MAY RESULT IN DAMAGE TO COMPONENTS

Issue 2	FEB 1979/
403-200-502	DLP
PAGE 1 of 1	532

CONDITION RECEIVER FOR IN-SERVICE OPERATION

SUMMARY
 THIS PROCEDURE INTERCONNECTS TEST EQUIPMENT AND RECEIVER TO PROVIDE FOR APPLICATION OF AN RF INPUT TO RECEIVER ANTENNA INPUT AT VARIOUS LEVELS

TABLE A	
EQUIPMENT REQUIRED	RECOMMENDED TYPE
RF SIGNAL GENERATOR	HP 606B
FREQUENCY COUNTER	HP 5245L
CONTINUOUSLY VARIABLE RF ATTENUATOR	MERRIMAC AR-2
RF VARIABLE ATTENUATOR	HP 355D
COAX ADAPTER BNC MALE	UG491 A/U
COAX T CONNECTOR	BNC UG274 B/U
4 6-FOOT LONG CONNECTING CABLES	RG 58/U COAX WITH UG 88 D/U CONNECTORS

- [1] OBTAIN RELEASE FROM CONTROL TERMINAL FOR RECEIVER TEST
- [2] DISCONNECT ANTENNA CABLE FROM REAR OF RECEIVER
- [3] GET TEST EQUIPMENT PER TABLE A
- [4] CONNECT T CONNECTOR BNC UG274 B/U TO SIGNAL GENERATOR RF OUTPUT 50Ω JACK. SEE FIG. 1
- [5] CONNECT ONE LEG OF T CONNECTOR TO FREQUENCY COUNTER SIGNAL INPUT-AC JACK WITH RG 58/U CABLE
- [6] CONNECT OTHER LEG OF T CONNECTOR TO INPUT OF HP 355D ATTENUATOR WITH RG 58/U CABLE
- [7] CONNECT OUTPUT OF HP 355D ATTENUATOR TO INPUT OF AR-2 ATTENUATOR WITH UG491 A/U ADAPTER

PAGE 2

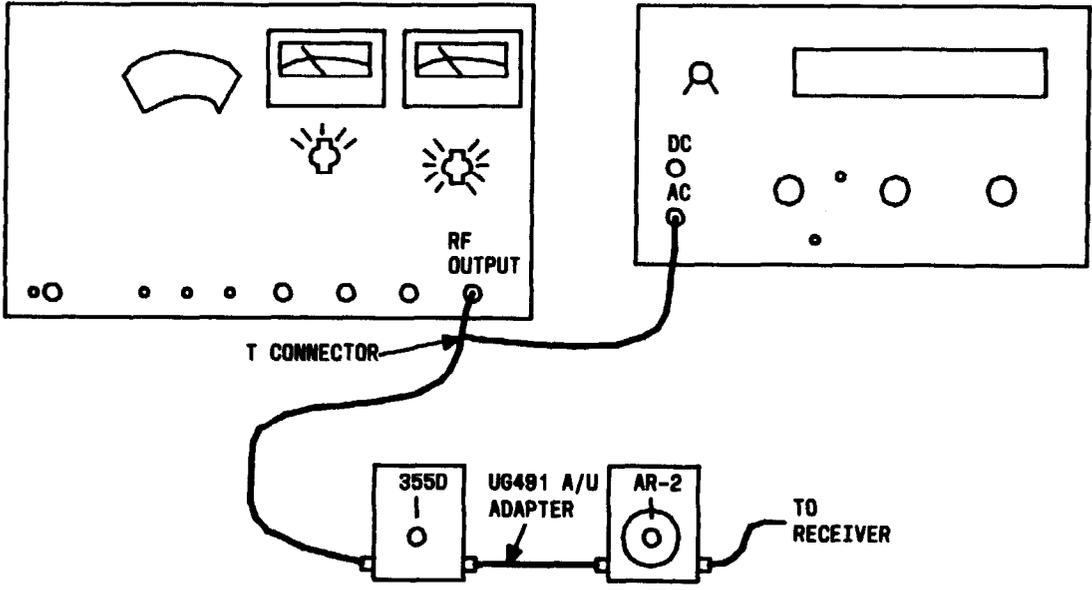


FIG. 1

CONNECT TEST EQUIPMENT TO RECEIVER FOR RF INPUT

[8] CONNECT OUTPUT OF AR-2
TO RECEIVER ANTENNA INPUT
WITH RG 58/U CABLE

[9] SET 3550 AND AR-2 ATTENUATORS
TO 100 DB

[10] CONDITION HP 5245L FREQUENCY
COUNTER TO MEASURE FREQUENCY

[11] SET COUNTER FUNCTION
SWITCH TO FREQUENCY

[12] SET COUNTER SENSITIVITY
SWITCH TO .1 POSITION

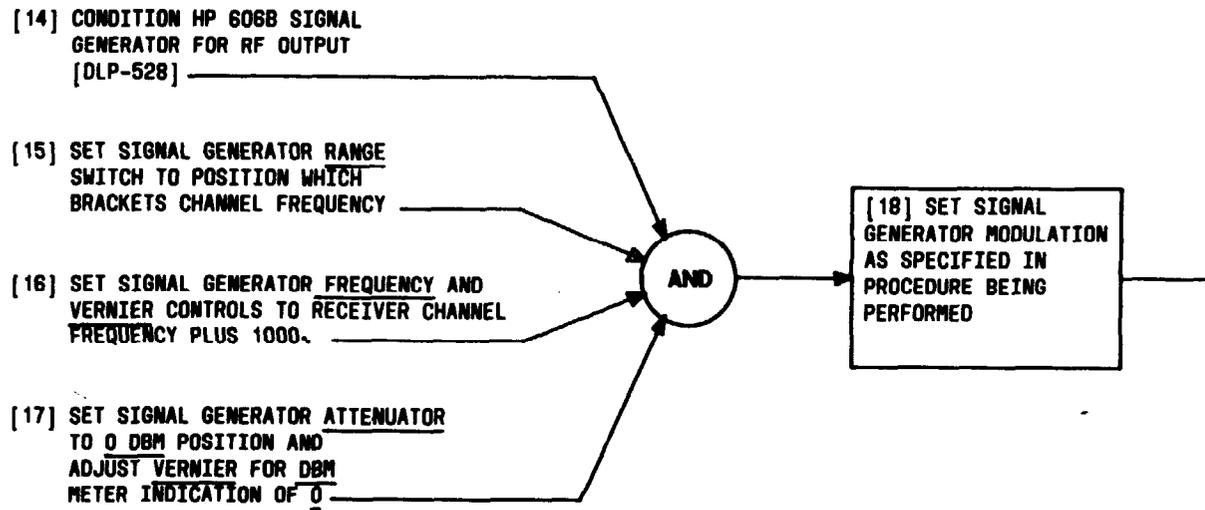
[13] SET COUNTER TIME BASE
SWITCH TO .1 MS POSITION



PAGE 3

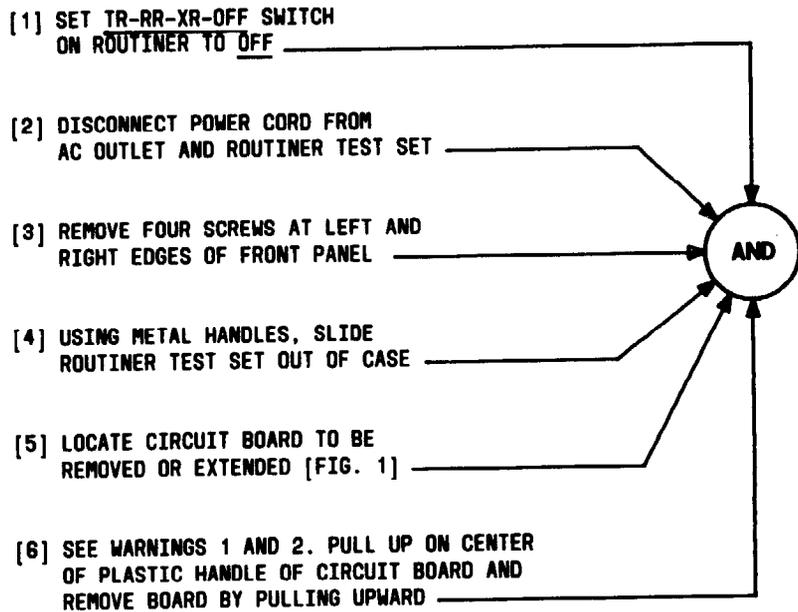
CONNECT TEST EQUIPMENT TO RECEIVER FOR RF INPUT

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 3	533



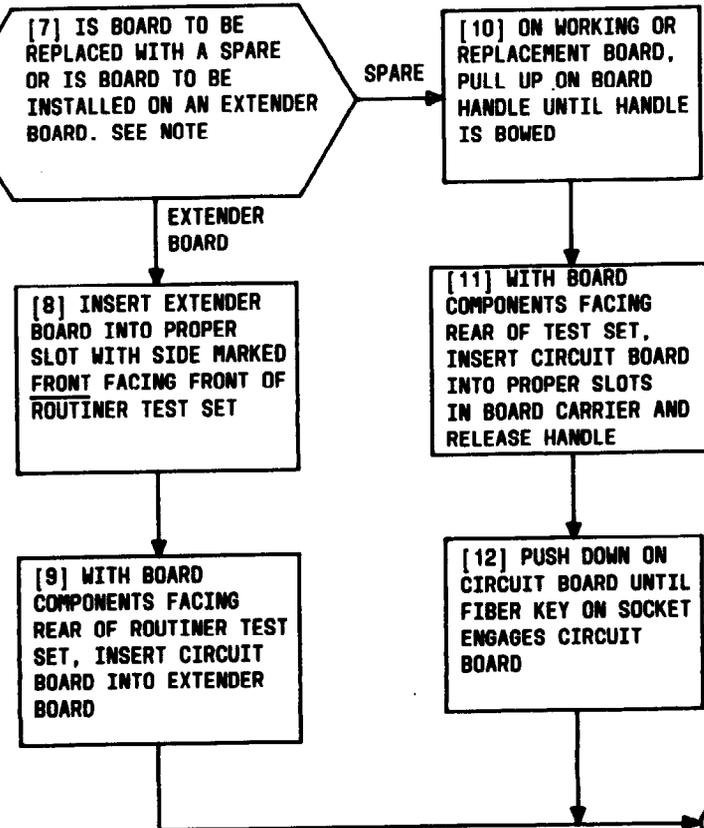
CONNECT TEST EQUIPMENT TO RECEIVER FOR RF INPUT

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 3	533



WARNINGS

1. WHEN REMOVING CIRCUIT BOARDS, MAKE SURE THAT EDGES OF BOARD ARE AIMED SO THEY COME THROUGH THE SWITCH ON THE SIDE OF BOARD CARRIER
2. SOME OF THE CIRCUIT BOARDS COULD BE DAMAGED BY STATIC DISCHARGE IF HANDLED IMPROPERLY. CARE SHOULD BE TAKEN NOT TO TOUCH ANY BARE SURFACE SUCH AS THE CONTACT POINTS. IF A CIRCUIT BOARD IS TO BE STORED, IT SHOULD BE PLACED IN A CONDUCTIVE MEDIUM SUCH AS ALUMINUM FOIL.



PAGE 2

NOTE	
EXTENDER BOARD IS STORED ON SIDE OF CIRCUIT BOARD CARRIER	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 2	534

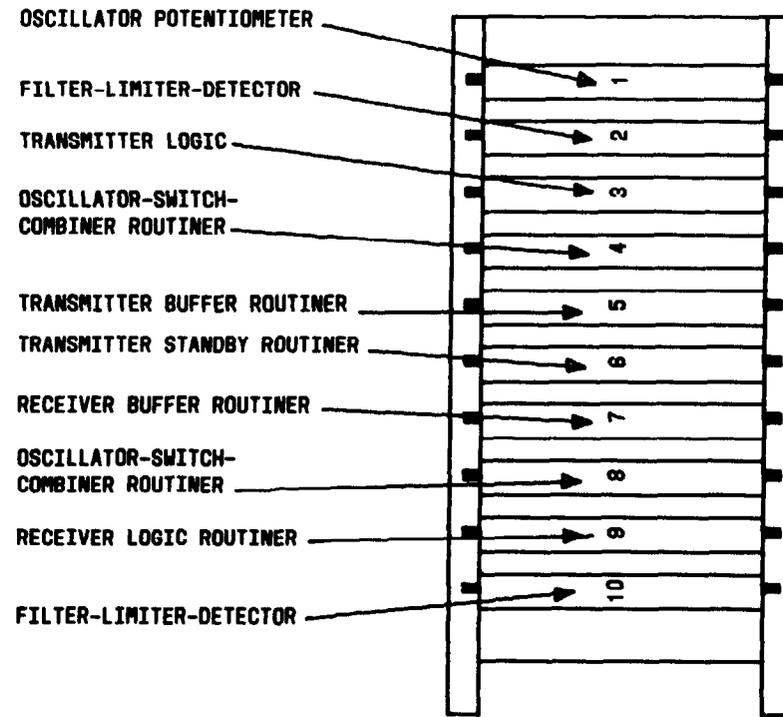
REMOVE AND INSTALL ROUTINER TEST SET CIRCUIT BOARD

[13] WHEN CIRCUIT BOARD TEST IS COMPLETED, IF NECESSARY, REMOVE CIRCUIT AND/OR EXTENDER BOARDS. INSTALL WORKING CIRCUIT BOARD INTO BOARD CARRIER USING STEPS 10 THRU 12. STORE EXTENDER BOARD

[14] USING METAL HANDLES, SLIDE ROUTINER TEST SET INTO CASE

[15] CONNECT CASE AND ROUTINER TEST SET USING FOUR SCREWS REMOVED IN STEP 3

AND

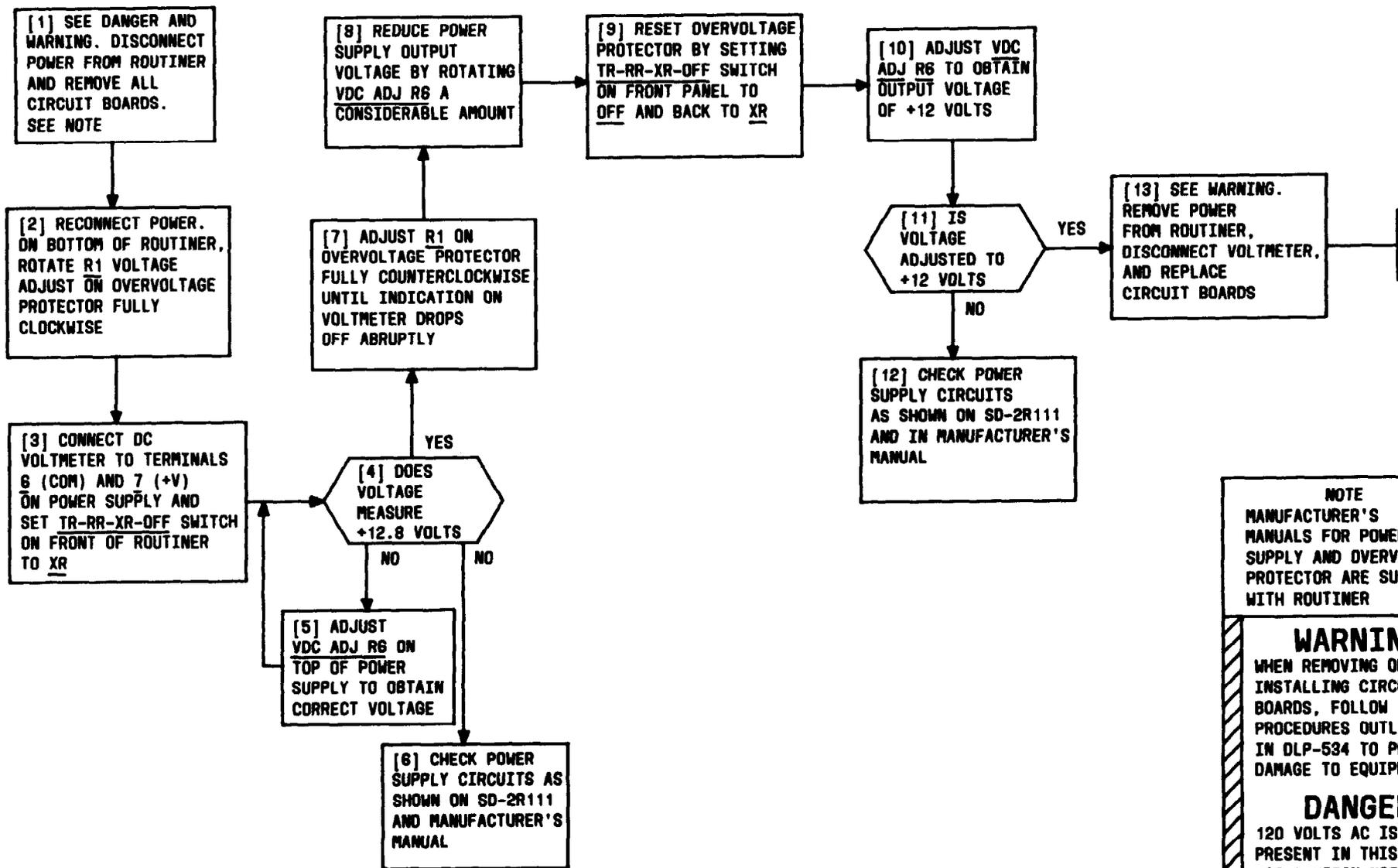


ROUTINER FRONT PANEL (BACK SIDE)

FIG. 1

REMOVE AND INSTALL ROUTINER TEST SET CIRCUIT BOARD

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 2	534



NOTE
MANUFACTURER'S MANUALS FOR POWER SUPPLY AND OVERVOLTAGE PROTECTOR ARE SUPPLIED WITH ROUTINER

WARNING
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

DANGER
120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 1	535

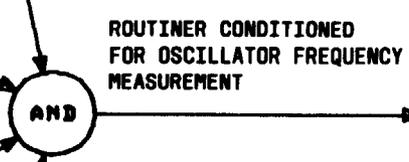
ADJUST ROUTINER TEST SET POWER SUPPLY OUTPUT

[1] SEE DANGER 1. REMOVE POWER AND CONNECTIONS FROM ROUTINER, AND REMOVE ROUTINER FROM CASE [DLP-534]

[2] RECONNECT POWER AND SET TR-RR-XR-OFF SWITCH ON FRONT PANEL OF ROUTINER TO TR

[3] CONDITION FREQUENCY COUNTER [DLP-523] AND CONNECT COUNTER INPUT TO OSC OUT JACK

[4] ON RIGHT MIDDLE SIDE OF ROUTINER, SET 1900, 2100, AND 2900 SWITCHES TO NOR.



[5] SEE TABLE A AND FIG. 1. PERFORM STEPS 6 THRU 47 TO MEASURE FREQUENCY AND MAKE ADJUSTMENTS AS REQUIRED. IF TROUBLE IS ENCOUNTERED, CONTINUE TO NEXT STEP

TABLE A - OSCILLATOR ADJUSTMENTS

POTENTIOMETER	FREQUENCY	POTENTIOMETER	FREQUENCY
R1	2900 (T) L	R10	1900 (T) L
R2	2900 (T) NOR.	R11	1900 (T) H
R3	2900 (T) H	R12	1900 (T) NOR.
R4	2900 (R) L	R13	2100 (R) L
R5	2900 (R) NOR.	R14	2100 (R) NOR.
R6	2900 (R) H	R15	2100 (R) H
R7	2100 (T) NOR.	R16	1900 (R) L
R8	2100 (T) L	R17	1900 (R) H
R9	2100 (T) H	R18	1900 (R) NOR.

* (T) TRANSMITTER SIDE
(R) RECEIVER SIDE

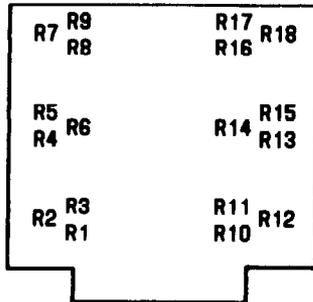


FIG. 1 - OSCILLATOR POTENTIOMETER BOARD

DANGER 1
120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 7	536

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

- [6] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH
- [7] OBSERVE FREQUENCY COUNTER AND ADJUST R12 FOR AN INDICATION OF 1900 HZ AND RELEASE 1900 ON SWITCH
- [8] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH
- [9] OBSERVE FREQUENCY COUNTER AND ADJUST R7 FOR AN INDICATION OF 2100 HZ AND RELEASE 2100 ON SWITCH
- [10] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH
- [11] OBSERVE FREQUENCY COUNTER AND ADJUST R2 FOR AN INDICATION OF 2900 HZ AND RELEASE 2900 ON SWITCH
- [12] ON RIGHT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO THE L POSITION
- [13] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH
- [14] OBSERVE FREQUENCY COUNTER AND ADJUST R10 FOR AN INDICATION OF 1889 HZ AND RELEASE 1900 ON SWITCH

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 7	536

- [15] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH
- [16] OBSERVE FREQUENCY COUNTER AND ADJUST R8 FOR AN INDICATION OF 2089 HZ AND RELEASE 2100 ON SWITCH
- [17] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH
- [18] OBSERVE FREQUENCY COUNTER AND ADJUST R1 FOR AN INDICATION OF 2886 HZ AND RELEASE 2900 ON SWITCH
- [19] ON RIGHT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO THE H POSITION
- [20] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH
- [21] OBSERVE FREQUENCY COUNTER AND ADJUST R11 FOR AN INDICATION OF 1911 HZ AND RELEASE 1900 ON SWITCH
- [22] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH
- [23] OBSERVE FREQUENCY COUNTER AND ADJUST R9 FOR AN INDICATION OF 2111 HZ AND RELEASE 2100 ON SWITCH

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 7	536

- [24] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD THE 2900 ON SWITCH
- [25] OBSERVE FREQUENCY COUNTER AND ADJUST R3 FOR AN INDICATION OF 2914 HZ AND RELEASE THE 2900 ON SWITCH
- [26] DISCONNECT FREQUENCY COUNTER FROM OSCT OUT JACK AND CONNECT FREQUENCY COUNTER TO OSCR OUT JACK
- [27] ON LEFT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO NOR POSITION
- [28] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH
- [29] OBSERVE FREQUENCY COUNTER AND ADJUST R18 FOR AN INDICATION OF 1900 HZ AND RELEASE 1900 ON SWITCH
- [30] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH
- [31] OBSERVE FREQUENCY COUNTER AND ADJUST R14 FOR AN INDICATION OF 2100 HZ AND RELEASE 2100 ON SWITCH
- [32] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH
- [33] OBSERVE FREQUENCY COUNTER AND ADJUST R5 FOR AN INDICATION OF 2900 HZ AND RELEASE 2900 ON SWITCH

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 7	536

- [34] ON LEFT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO THE L POSITION
- [35] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH
- [36] OBSERVE FREQUENCY COUNTER AND ADJUST R16 FOR AN INDICATION OF 1889 HZ AND RELEASE 1900 ON SWITCH
- [37] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH
- [38] OBSERVE FREQUENCY COUNTER AND ADJUST R13 FOR AN INDICATION OF 2089 HZ AND RELEASE 2100 ON SWITCH
- [39] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH
- [40] OBSERVE FREQUENCY COUNTER AND ADJUST R4 FOR AN INDICATION OF 2886 HZ AND RELEASE 2900 ON SWITCH
- [41] ON LEFT SIDE MIDDLE OF FRONT PANEL, ROTATE 1900, 2100, AND 2900 SWITCHES TO H POSITION

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 7	536

[42] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

[43] OBSERVE FREQUENCY COUNTER AND ADJUST R17 FOR AN INDICATION OF 1911 HZ AND RELEASE 1900 ON SWITCH

[44] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2100 ON SWITCH

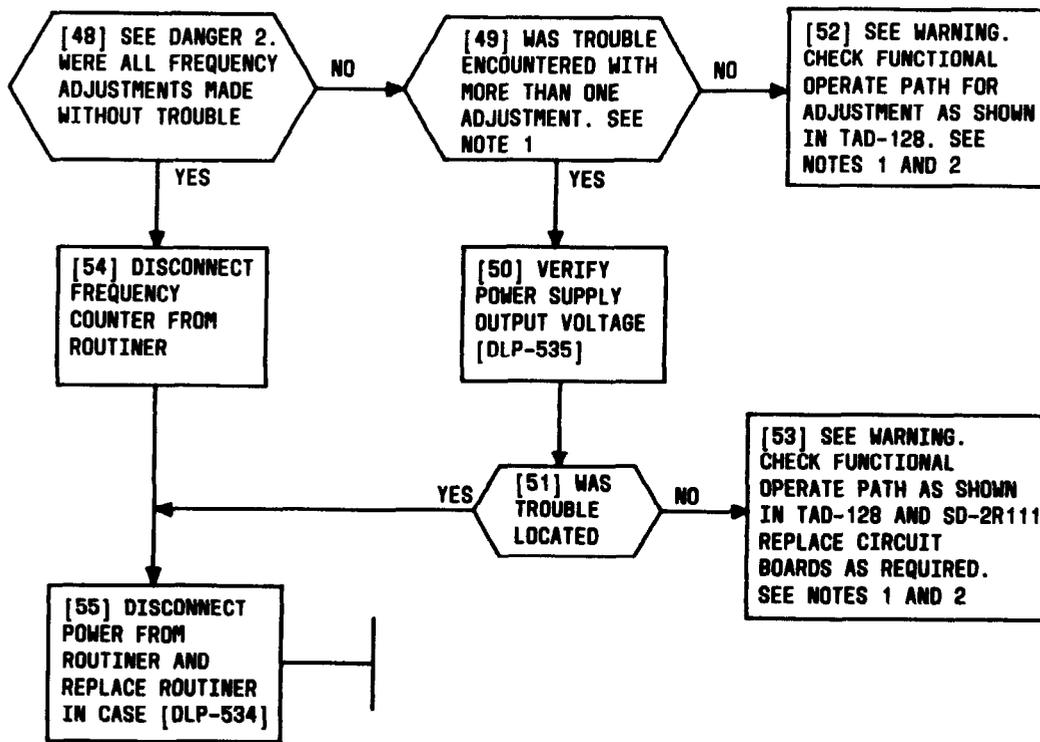
[45] OBSERVE FREQUENCY COUNTER AND ADJUST R15 FOR AN INDICATION OF 2111 HZ AND RELEASE 2100 ON SWITCH

[46] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 2900 ON SWITCH

[47] OBSERVE FREQUENCY COUNTER AND ADJUST R6 FOR AN INDICATION OF 2914 HZ AND RELEASE 2900 ON SWITCH

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES

Issue 2	FEB 1979
403-200-502	DLP
PAGE 6 of 7	536



NOTES

1. PARTICULAR ATTENTION SHOULD BE GIVEN TO FAULTY AND INTERMITTENT SWITCH CONTACTS
2. WHEN OSCILLATOR POTENTIOMETER OR OSCILLATOR-SWITCH-COMBINER BOARDS ARE REPLACED, ALL ADJUSTMENTS ON THIS PROCEDURE MUST BE REPEATED AND DLP-537 MUST BE PERFORMED

WARNING

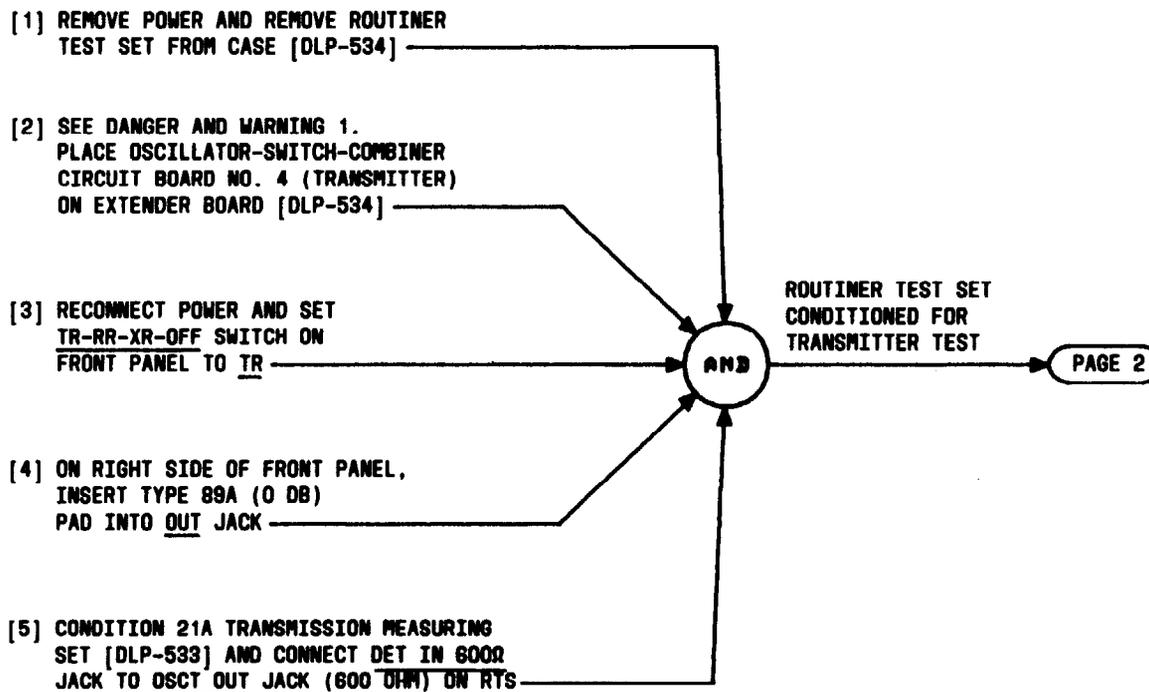
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT

DANGER 2

120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE

Issue 2	FEB 1979
403-200-502	DLP
PAGE 7 of 7	536

ADJUST ROUTINER TEST SET OUTPUT FREQUENCIES



WARNING 1	
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT	
DANGER	
120 VOLTS AC IS PRESENT IN THIS UNIT. USE CAUTION NOT TO TOUCH EXPOSED POINTS CARRYING THIS VOLTAGE	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 5	537

ADJUST ROUTINER TEST SET OUTPUT LEVELS

[6] ON RIGHT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

[7] NOTE INDICATION ON TRANSMISSION MEASURING SET (TMS) AND RELEASE 1900 ON SWITCH

[8] OPERATE AND HOLD 2100 ON SWITCH

[9] NOTE INDICATION ON TMS AND RELEASE 2100 ON SWITCH

[10] OPERATE AND HOLD 2900 ON SWITCH

[11] NOTE INDICATION ON TMS AND RELEASE 2900 ON SWITCH

AND

[12] ARE TMS INDICATIONS 0 ± 2.0 DBM FOR 1900 AND 2100 TONES AND -10 ± 2.0 DBM FOR 2900 TONE

YES

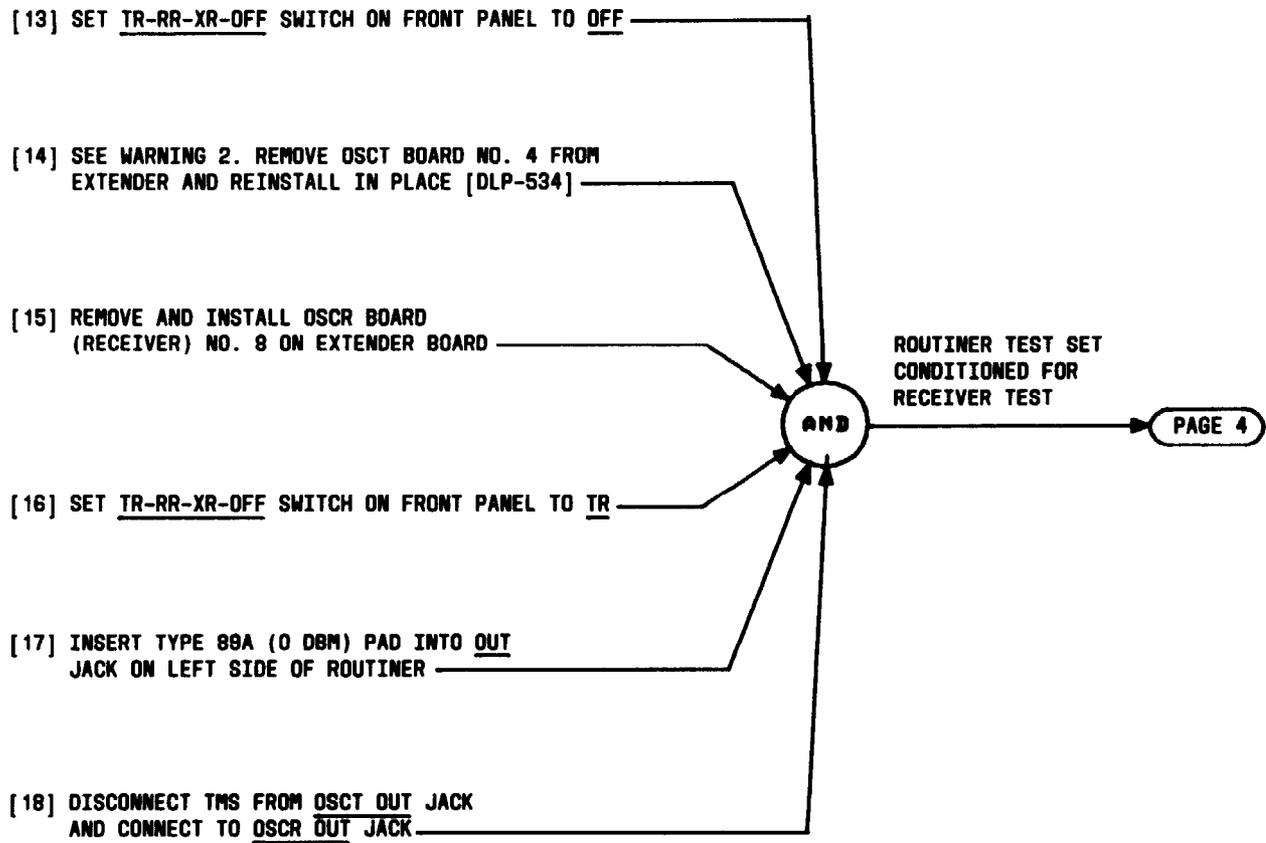
PAGE 3

NO

PAGE 5

ADJUST ROUTINER TEST SET OUTPUT LEVELS

Issue 2	FEB 1979
403-200-502	DLP
PAGE 2 of 5	537



ADJUST ROUTINER TEST SET OUTPUT LEVELS

WARNING 2
 WHEN REMOVING OR
 INSTALLING CIRCUIT
 BOARDS, FOLLOW
 PROCEDURES OUTLINED
 IN DLP-534 TO PREVENT
 DAMAGE TO EQUIPMENT

Issue 2	FEB 1979
403-200-502	DLP
PAGE 3 of 5	537

[19] ON LEFT SIDE OF FRONT PANEL, OPERATE AND HOLD 1900 ON SWITCH

[20] NOTE INDICATION ON TMS AND RELEASE 1900 ON SWITCH

[21] OPERATE AND HOLD 2100 ON SWITCH

[22] NOTE INDICATION ON TMS AND RELEASE 2100 ON SWITCH

[23] OPERATE AND HOLD 2900 ON SWITCH

[24] NOTE INDICATION ON TMS AND RELEASE 2900 ON SWITCH

AND

[25] ARE TMS INDICATIONS 0 ± 2.0 DBM FOR 1900 AND 2100 TONES AND -10 ± 2.0 DBM FOR 2900 TONE

NO

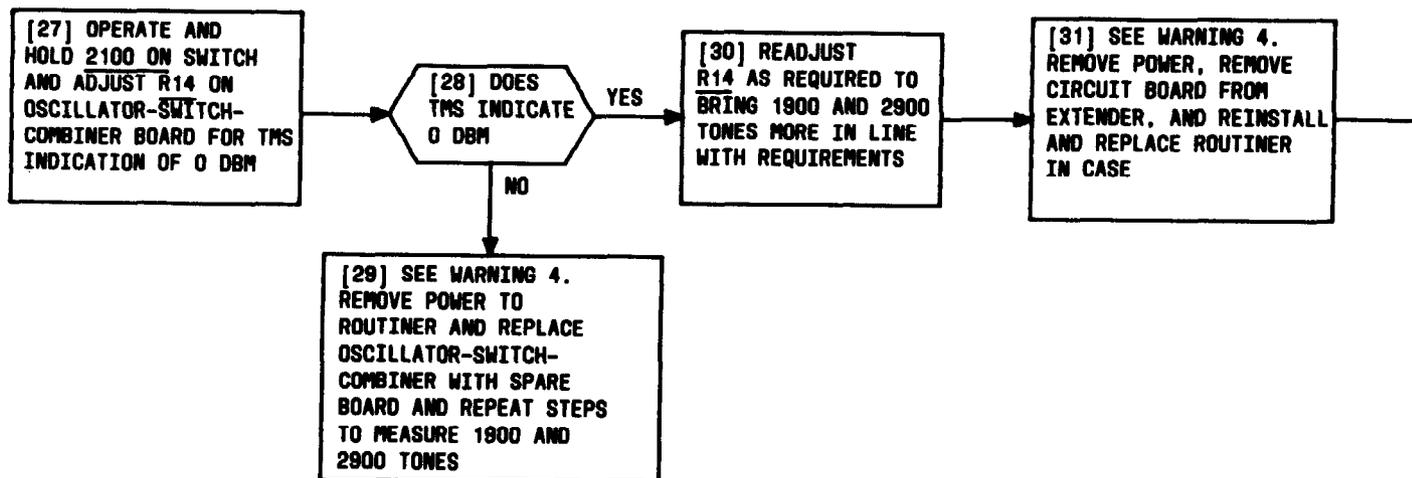
PAGE 5

YES

[26] SEE WARNING 3. REMOVE POWER. REMOVE CIRCUIT BOARD FROM EXTENDER, AND REINSTALL AND REPLACE ROUTINER IN CASE

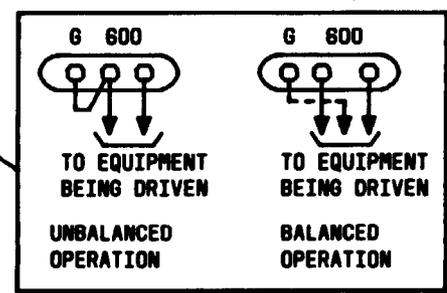
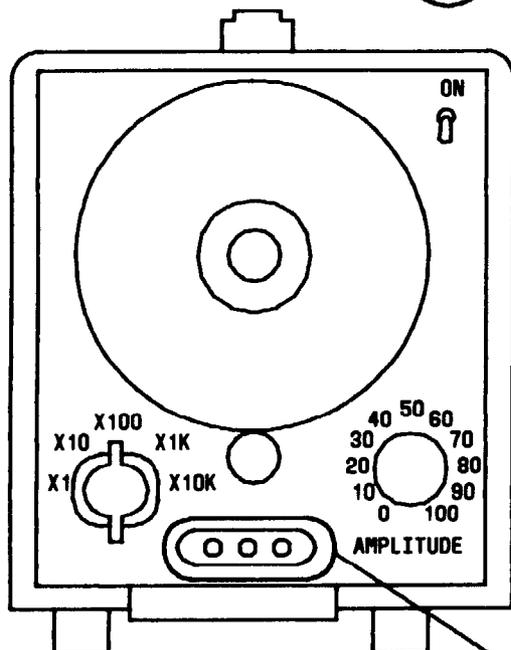
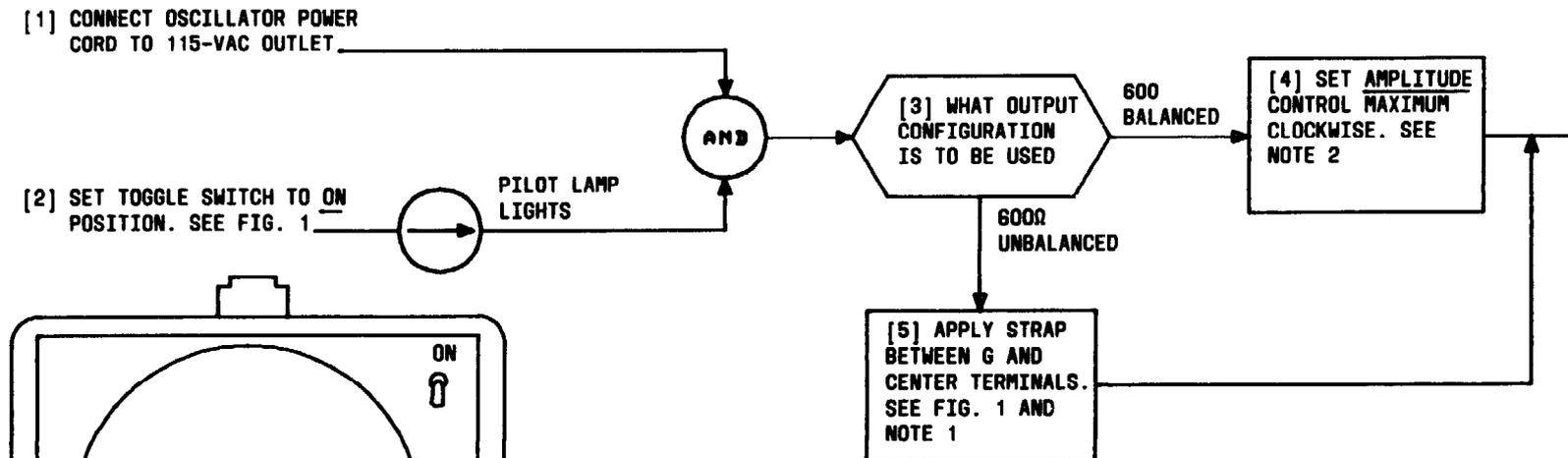
ADJUST ROUTINER TEST SET OUTPUT LEVELS

WARNING 3	
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 4 of 5	537



ADJUST ROUTINER TEST SET OUTPUT LEVELS

WARNING 4	
WHEN REMOVING OR INSTALLING CIRCUIT BOARDS, FOLLOW PROCEDURES OUTLINED IN DLP-534 TO PREVENT DAMAGE TO EQUIPMENT	
Issue 2	FEB 1979
403-200-502	DLP
PAGE 5 of 5	537



NOTES

1. WHEN IT IS DESIRED TO OPERATE UNBALANCED, GROUND SHOULD BE CONNECTED TO CENTER OUTPUT TERMINAL, THE TERMINATION FOR CONNECTION BROUGHT OUT FROM TERMINAL 6 OF OUTPUT TRANSFORMERS T1 AND T2. PROPER OPERATION CANNOT BE OBTAINED IF GROUND IS CONNECTED TO SIDE OF CIRCUIT WHICH INCLUDES ATTENUATOR
2. THE AMPLITUDE CONTROL IN OUTPUT CIRCUIT IS A BRIDGED-T ATTENUATOR AND AT ANY SETTING EXCEPT MINIMUM ATTENUATION UNBALANCES CIRCUIT. THEREFORE, FOR BALANCED OPERATION, AMPLITUDE CONTROL MUST BE SET FOR MAXIMUM OUTPUT (FULLY CLOCKWISE)

FIG. 1

[1] CONNECT MODEL 564B TEKTRONIX OSCILLOSCOPE TO 117-VAC POWER SUPPLY

[2] SET OSCILLOSCOPE CONTROLS ON FRONT PANEL [FIG. 1] AND SIDE PANEL AS SHOWN IN TABLE A

[3] CONNECT PATCH CORD FROM CAL OUT CONNECTOR TO CHANNEL 1 INPUT CONNECTOR OF AMPLIFIER UNIT

[4] SET POWER SWITCH TO ON (PULLED OUT). SEE NOTE

[5] ADVANCE INTENSITY, FOCUS, AND SCALE ILLUM CONTROLS AS DESIRED



TRACE BECOMES VISIBLE



PAGE 2

TABLE A

FRONT PANEL CONTROLS			FRONT PANEL CONTROLS		
CONTROL TYPE	CONTROL	SETTING	CONTROL TYPE	CONTROL	SETTING
CRT CONTROLS	INTENSITY	COUNTERCLOCKWISE	TIME-BASE UNIT (FOR EXAMPLE, TYPE 3B3)	TIME/DIV	.5 MS
	FOCUS	MIDRANGE		VARIABLE (TIME/DIV)	CALIBRATED
	SCALE ILLUM	COUNTERCLOCKWISE		MAGNIFIER	OFF
	CALIBRATOR	4V		MODE	NORMAL
	STORE (BOTH)	NON-STORE (OUT)		NORMAL-SINGLE SWEEP	NORMAL
	ENHANCE (BOTH)	OFF (OUT)		LEVEL	CLOCKWISE (FREE RUN)
	LEVEL	COUNTERCLOCKWISE		TRIGGERING SOURCE	INTERNAL
	CRT CATHODE SELECTOR (REAR PANEL)	NORM		SLOPE	+
AMPLIFIER UNIT (FOR EXAMPLE, TYPE 3A6)	POSITION	CENTERED		COUPLING	AUTO
	MODE	NORMAL (CHANNEL 1)			
	VOLTS/DIV	2			
	VARIABLE (VOLTS/DIV)	CALIBRATED			
	INPUT COUPLING	DC			

NOTE
ALLOW APPROXIMATELY
2 MINUTES WARM-UP
TIME

Issue 2	FEB 1979
403-200-502	DLP
PAGE 1 of 2	539

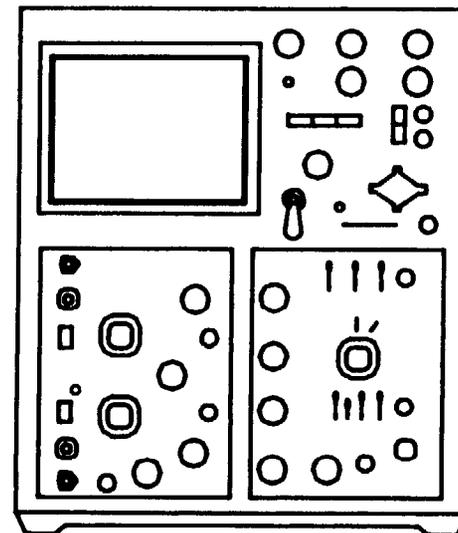
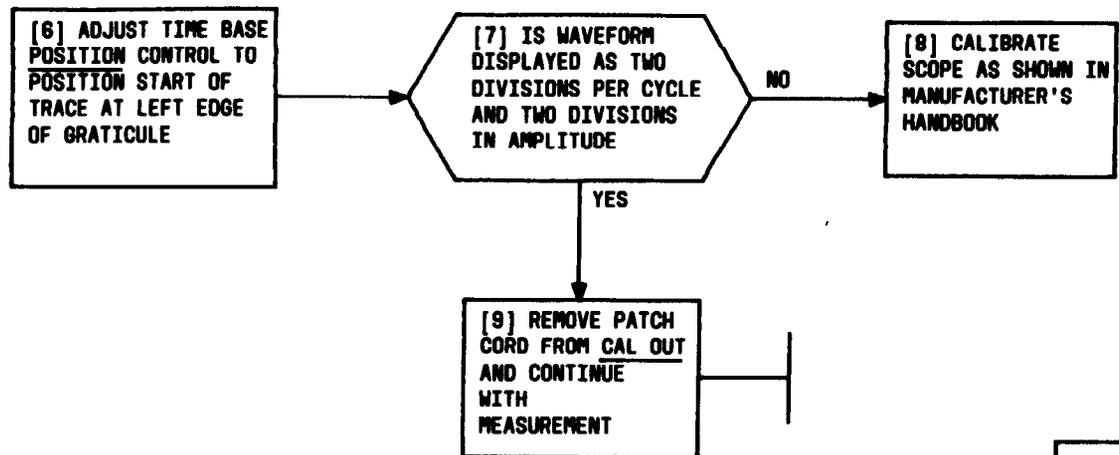


FIG. 1

ACCEPT RADIO RECEIVER	031
ALARM SIGNALING ... TEST RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND B	003
AUTOMATIC FREQUENCY CONTROL (AFC) ... TEST RECEIVER	515
B ALARM SIGNALING ... TEST RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND	003
BOARD ... REMOVE AND INSTALL CIRCUIT	527
CIRCUIT BOARD ... REMOVE AND INSTALL	527
CLEAR -24 VOLT REGULATED POWER SUPPLY TROUBLE	115
CLEAR +24 VOLT REGULATED POWER SUPPLY TROUBLE	111
CLEAR +5 VOLT REGULATED POWER SUPPLY TROUBLE	113
COASTAL HARBOR RADIO MAINTENANCE PHILOSOPHY	102
CONDITION HEWLETT-PACKARD 3469B DIGITAL MULTIMETER FOR MEASUREMENT	529
CONDITION HP 200CD WIDE RANGE OSCILLATOR FOR TEST	538
CONDITION HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY	523
CONDITION HP 606B SIGNAL GENERATOR FOR RF OUTPUT	528
CONDITION J94021A (21A) TRANSMITTER MEASURING SET (TMS) FOR TEST	522
CONDITION KS-14510 METER (VOM) FOR MEASUREMENT	524
CONDITION RECEIVER FOR IN-SERVICE OPERATION	532
CONDITION TEKTRONIX 564B OSCILLOSCOPE FOR MEASUREMENT	539
CONDITION 3C NOISE MEASURING SET FOR MEASUREMENT	526
CONTROL TERMINAL MAJOR AND MINOR A AND B ALARM SIGNALING ... TEST RECEIVER TO	003

CONTROL TERMINAL SIGNALING TONE LEAKAGE ... MEASURE RECEIVER TO . . .	518
CONTROL TERMINAL SIGNALING ... TEST RECEIVER RESPONSE TO	004
CONTROL TERMINAL TO RECEIVER 1000-HZ TONE LEVEL ... MEASURE	521
CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS ... MEASURE.	520
CONTROL TERMINAL 1000-HZ TONE LEVEL ... MEASURE RECEIVER TO.	519
CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS ... MEASURE RECEIVER TO	516
DIGITAL MULTIMETER FOR MEASUREMENT ... CONDITION HEWLETT-PACKARD 3469B.	529
FAULT FROM TROUBLE REPORT ... LOCATE RECEIVER.	100
FREQUENCIES ... MEASURE RECEIVER OSCILLATOR.	514
FREQUENCIES ... MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE.	517
FREQUENCY COUNTER TO MEASURE FREQUENCY ... CONDITION HP 5245L.	523
HEWLETT-PACKARD 3469B DIGITAL MULTIMETER FOR MEASUREMENT ... CONDITION.	529
HP 200CD WIDE RANGE OSCILLATOR FOR TEST ... CONDITION	538
HP 5245L FREQUENCY COUNTER TO MEASURE FREQUENCY ... CONDITON	523
HP 606B SIGNAL GENERATOR FOR RF OUTPUT ... CONDITION	528
IN-SERVICE OPERATION ... CONDITON RECEIVE FOR.	532
INSTALL CIRCUIT BOARD ... REMOVE AND	527
J94012 (21A) TRANSMITTER MEASURING SET (TMS) FOR TEST ... CONDITION.	522
LEAKAGE ... MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE. . .	518
LEVEL ... MEASURE CONTROL TERMINAL TO RECEIVER 1000-HZ TONE.	521

INDEX

Issue 2	FEB 1979
403-200-502	IXL
PAGE 1 of 4	890

LEVEL ... MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE.	519
LEVELS ... MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ AND 2900-HZ SIGNALING TONE	520
LEVELS ... MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE	516
LOCATE RECEIVER FAULT FROM TROUBLE REPORT.	100
MAINTENANCE PHILOSOPHY ... COASTAL HARBOR RADIO.	102
MAJOR AND MINOR A AND B ALARM SIGNALING ... TEST RECEIVER TO CONTROL TERMINAL.	003
MEASURE CONTROL TERMINAL TO RECEIVER 1000-HZ TONE LEVEL	521
MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS	520
MEASURE FREQUENCY ... CONDITION HP 5245L FREQUENCY COUNTER TO	523
MEASURE RECEIVER AFC, S/M THRESHOLD, CODAN, AND RF LEVEL SIGNALING	002
MEASURE RECEIVER OSCILLATOR FREQUENCIES	514
MEASURE RECEIVER POWER SUPPLY VOLTAGES	513
MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE	518
MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL	519
MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE FREQUENCIES	517
MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS	516
MEASUREMENT ... CONDITION HEWLETT-PACKARD 3469B DIGITAL MULTIMETER FOR	529
MEASUREMENT ... CONDITION KS-14510 METER (VOM) FOR	524
MEASUREMENT ... CONDITION TEKTRONIX 564B OSCILLOSCOPE FOR	539

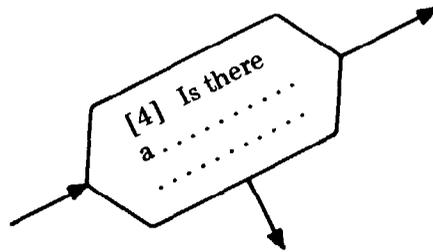
MEASUREMENT ... CONDITION 3C NOISE MEASURING SET FOR	526
METER (VOM) FOR MEASUREMENT ... CONDITION KS-14510	524
MINOR A AND B ALARM SIGNALING ... TEST RECEIVER TO CONTROL TERMINAL MAJOR AND	003
MULTIMETER FOR MEASUREMENT ... CONDITION HEWLETT-PACKARD 3469B DIGITAL	529
NOISE MEASURING SET FOR MEASUREMENT ... CONDITION 3C	526
OPERATION ... CONDITION RECEIVER FOR IN-SERVICE	532
OSCILLATOR FOR TEST ... CONDITION HP 200CD WIDE RANGE	538
OSCILLATOR FREQUENCIES ... MEASURE RECEIVER	514
OSCILLOSCOPE FOR MEASUREMENT ... CONDITION TEKTRONIX 564B	539
OUTPUT ... MEASURE RECEIVER TEST GENERATOR	507
OUTPUT ... CONDITION HP 606B SIGNAL GENERATOR FOR RF	528
PHILOSOPHY ... COASTAL HARBOR RADIO MAINTENANCE	102
POWER SUPPLY TROUBLE ... CLEAR +24 VOLT REGULATED	111
POWER SUPPLY TROUBLE ... CLEAR +5 VOLT REGULATED	113
POWER SUPPLY TROUBLE ... CLEAR -24 VOLT REGULATED	115
POWER SUPPLY VOLTAGES ... MEASURE RECEIVER	513
RADIO MAINTENANCE PHILOSOPHY ... COASTAL HARBOR.	102
RADIO RECEIVER ... ACCEPT.	031
RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC) ... TEST	515
RECEIVER FAULT FROM TROUBLE REPORT ... LOCATE.	100
RECEIVER FOR IN-SERVICE OPERATION ... CONDITION.	532

RECEIVER OSCILLATOR FREQUENCIES ... MEASURE	514	SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER TESTS	525
RECEIVER POWER SUPPLY VOLTAGES ... MEASURE	513	SIGNAL GENERATOR FOR RF OUTPUT ... CONDITION HP 606B	528
RECEIVER RESPONSE TO CONTROL TERMINAL SIGNALING ... TEST	004	SIGNALING TONE FREQUENCIES ... MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ	517
RECEIVER TEST GENERATOR OUTPUT LEVEL ... MEASURE	507	SIGNALING TONE LEAKAGE ... MEASURE RECEIVER TO CONTROL TERMINAL	518
RECEIVER TESTS ... SELF-CHECK KS-21277 ROUTINER TEST SET FOR	525	SIGNALING TONE LEVELS ... MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ	520
RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND B ALARM SIGNALING ... TEST	003	SIGNALING TONE LEVELS ... MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ	516
RECEIVER TO CONTROL TERMINAL SIGNALING TONE LEAKAGE ... MEASURE	518	SIGNALING ... TEST RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND B ALARM	003
RECEIVER TO CONTROL TERMINAL 1000-HZ TONE LEVEL ... MEASURE	519	TEXTROMIX 564B OSCILLOSCOPE FOR MEASUREMENT ... CONDITION.	539
RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS ... MEASURE	516	TEST GENERATOR OUTPUT LEVEL ... MEASURE RECEIVER	507
RECEIVER 1000-HZ TONE LEVEL ... MEASURE CONTROL TERMINAL TO	521	TEST RECEIVER AUTOMATIC FREQUENCY CONTROL (AFC).	515
RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING TONE LEVELS ... MEASURE CONTROL TERMINAL TO	520	TEST RECEIVER RESPONSE TO CONTROL TERMINAL SIGNALING	004
RECEIVER ... ACCEPT RADIO	031	TEST RECEIVER TO CONTROL TERMINAL MAJOR AND MINOR A AND B ALARM SIGNALING.	003
REGULATED POWER SUPPLY TROUBLE ... CLEAR +24 VOLT	111	TEST SET FOR RECEIVER TESTS ... SELF-CHECK KS-21277 ROUTINER	525
REGULATED POWER SUPPLY TROUBLE ... CLEAR +5 VOLT	113	TEST ... CONDITION HP 200CD WIDE RANGE OSCILLATOR FOR.	538
REGULATED POWER SUPPLY TROUBLE ... CLEAR -24 VOLT	115	TEST ... CONDITION J94021A (21A) TRANSMITTER MEASURING SET (TMS) FOR.	522
REMOVE AND INSTALL CIRCUIT BOARD	527	TESTS ... SELF-CHECK KS-21277 ROUTINER TEST SET FOR RECEIVER	525
REPORT ... LOCATE RECEIVER FAULT FROM TROUBLE	100	TONE FREQUENCIES ... MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING.	517
RESPONSE TO CONTROL TERMINAL SIGNALING ... TEST RECEIVER	004	TONE LEAKAGE ... MEASURE RECEIVER TO CONTROL TERMINAL SIGNALING.	518
RF LEVEL SIGNALING ... TEST RECEIVER TO CONTROL TERMINAL	530	TONE LEVEL ... MEASURE CONTROL TERMINAL TO RECEIVER 1000-HZ.	521
RF OUTPUT ... CONDITION HP 606B SIGNAL GENERATOR FOR	528		
ROUTINER TEST SET FOR RECEIVER TESTS ... SELF-CHECK KS-21277	525		

INDEX

Issue 2	FEB 1979
403-200-502	IXL
PAGE 3 of 4	890

TONE LEVEL ... MEASURE RECEIVER TO CONTROL TERMINAL 1000-HZ	519	TROUBLE ... CLEAR +24 VOLT REGULATED POWER SUPPLY	111
TONE LEVELS ... MEASURE CONTROL TERMINAL TO RECEIVER 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING	520	TROUBLE ... CLEAR +5 VOLT REGULATED POWER SUPPLY	113
TONE LEVELS ... MEASURE RECEIVER TO CONTROL TERMINAL 1900-HZ, 2100-HZ, AND 2900-HZ SIGNALING	516	TROUBLE ... CLEAR -24 VOLT REGULATED POWER SUPPLY	115
TRANSMITTER MEASURING SET (TMS) FOR TEST ... CONDITION J94021A (21A)	522	VOLTAGES ... MEASURE RECEIVER POWER SUPPLY	513
TROUBLE REPORT ... LOCATE RECEIVER FAULT FROM	100	WIDE RANGE OSCILLATOR FOR TEST ... CONDITION HP 200CD	538



This is a

TASK ORIENTED PRACTICE or TOP

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

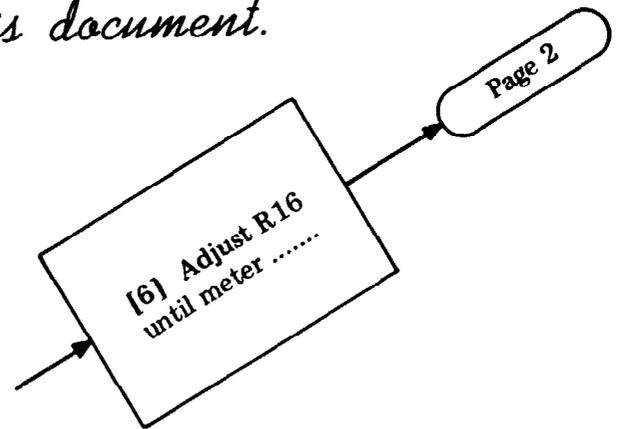
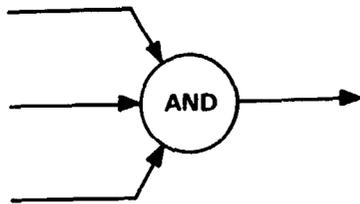
TAP

TIL

ATP

ATL

[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*.

Issue 1	Apr 1976
XXX-XXX-XXX	COL
PAGE 1 of 2	050

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."

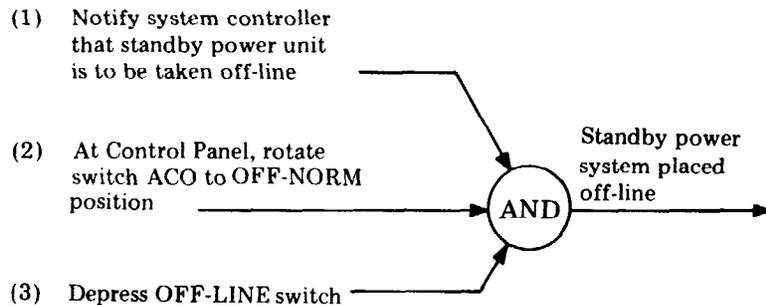
Here are some of the things designed into TOP to help you "bypass" information you may already know:

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

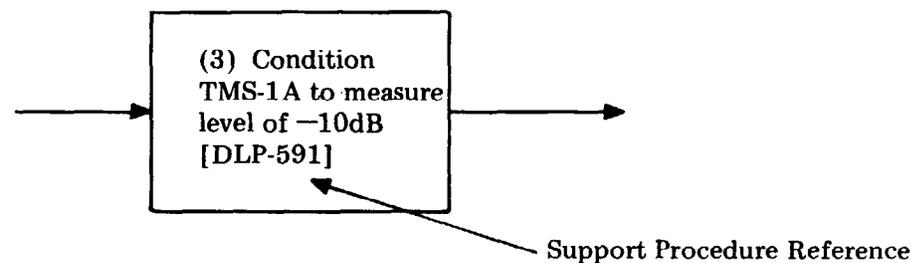
A result statement may be used in a flow-charted procedure along with the "AND" symbol. Here is an example of the "AND" symbol and a *result statement*:



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

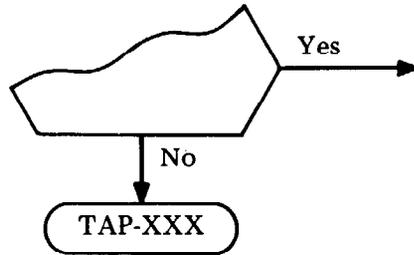
When you see this kind of reference in TOP, it refers to a support procedure.



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.

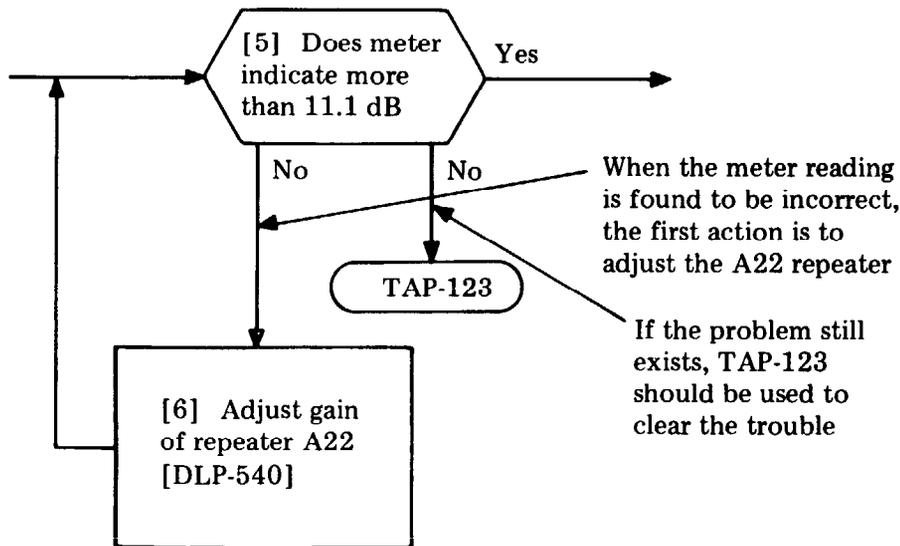
So far, the Company Order type jobs have been the main topic; however, you will find that the Routine and Acceptance categories are used in the same manner. You may come across a couple of new abbreviations in those categories; namely, Acceptance Task Procedure (ATP) and Routine Task Procedure (RTP).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



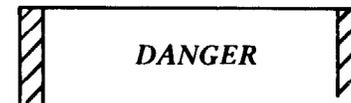
This reference to TAP-XXX indicates that the equipment is not operating correctly and the TAP (Trouble Analysis Procedure) should be used to help you find and repair the trouble.

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.

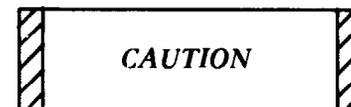


Trouble clearing information in TOP is basically used the same way as the other types. When a trouble report or equipment alarm requires you to troubleshoot a system, the Trouble Indicator List (TIL) is the place to start. This (TIL) is a listing of trouble symptoms or alarms with a reference to a Trouble 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.

