READEL 1

MINI-ROTL DIAGNOSTICS

CONTENTS

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1. GENERAL INFORMATION

1.1 Description

1.11 This section provides the diagnostic test procedures to be applied to Mini-ROTL in a No. 3 ESS office.

1.2 Sequence of Operation

1.21 The tests of this section are arranged for ease of isolating troubles and are to be performed in the sequence specified and must be performed prior to the tests per Section 613.03.

1.3 Precautions

PRECAUTION 1: TO PREVENT DAMAGE TO THE CIRCUIT IT IS IMPERATIVE THAT THE CP NUMBER AGREE WITH THE CP NUMBER OF THE TRAY LOCATION USED. ANY MISMATCH OF PACK AND CONNECTOR MAY CAUSE SERIOUS DAMAGE.

PRECAUTION 2: WHEN CIRCUIT PACKS ARE REMOVED FOR ANY REASON, OR WHEN THE EXTENDER IS USED, EXTREME CARE MUST BE USED IN REPLACING THEM TO PREVENT BENDING OF THE BACKPLANE PINS. THE PINS IN THE BACKPLANE ARE SOMEWHAT FRAGILE AND ARE EASILY BENT. THE CIRCUIT PACK SHOULD BE SLID INTO ITS SLOT UNTIL THE PINS OF THE BACKPLANE BEGIN TO ENGAGE THE CIRCUIT PACK CONNECTOR. USING EVEN THUMB PRESSURE ON BOTH OF THE CARD EJECTORS, ENGAGE THE PINS OF THE BACKPLANE WITH THE CIRCUIT PACK CONNECTOR. IT WILL SLIDE SMOOTHLY WITH A PERCEPTIBLE TENSION AS THE PINS AND CONNECTOR ARE ENGAGED. WHEN PROPERLY SEATED THE CARD EJECTORS WILL ALMOST REST AGAINST THE HOUSING.

1.4 Notes

NOTE 1: Location of LED's and switches, on circuit packs specified in this section are provided in Section 613.

NOTE 2: Trouble locating information is in Section 613.03, Paragraph 8.

1.5 Circuit Pack Replacement Procedures

1.51 Replace circuit packs one at a time in the order specified. If the first circuit pack does not correct the trouble, replace the original pack and then replace the second circuit pack specified. Continue this procedure until the trouble is cleared. Circuit packs are to be replaced with power shut off using the following procedure:

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1) Shut power off by releasing the PWR OFF switch.
2) Remove the specified circuit pack and verify that the associated pins of the backplane are not bent.
3) Replace the specified Circuit Pack.
4) Operate the PWR OFF switch on CP19.
5) Momentarily operate the RST switch on CP18 if the RUN LED on CP18 is not blinking approximately once a second. The DIAG ENAB switch must be operated for the RST button to work.
6) MONITOR RUNNING STATE REQUEST printout is obtained on the TELETYPE.
7) Perform a Multiplex test per Para. 9, begin with entry E2.

NOTE: When erratic indications or circuit failure occurs bent pins may be the source. No printout is obtained, replace CP 12.

8) Repeat the entry for the specified test.

2. RECORDS AND REQUIREMENTS

2.1 Records

2.11 Results of tests covered in this section shall be recorded on Form SD-97-1313 and summarized on Form SD-97-1315.

2.2 Requirements

2.21 Test in this section meet requirements of SD and CD information.

3. TEST EQUIPMENT

3.1 Test Sets

Amt	ITE	Description
1	5469	Execuport
	or	
1	5689	Model 43 TTY
1	5945	ROTL Test Accessory Set

3.2 Spare Packs Package

Amt	Code	Description
1	SPP-838 List 2	ROTL Spare Packs Package

4. TEST SETUP INFORMATION

4.1 Execuport

4.11 Set the switches on the Execuport to the following positions:

NOTE: If the Line Spacing Switch is between positions, paper may spew out. Therefore, be certain the switch is secure in the back position.

SWITCH	POSITION
MODE	ISOLATE
DUPLEX	FULL
CHAR/SEC	10
PARITY	ODD
QSL	UPPER
LINE SPACING SLIDE	Back (two-position slide switch mounted on right side of paper roll)
POWER	OFF (on back)

4.12 Using an ITE-9868B cord, connect one end to the Terminal Connector on the back of the EXECUPORT and connect the other end to the EIA connector on the Mini-ROTL.

4.13 Using the power cord supplied, connect the EXECUPORT to an AC outlet. Turn the power switch ON.

4.2 Model 43 TTY (ITE-5689, List 3)

4.21 Set the switches on the Model 43 TTY to the following positions:

Switch	Position
Duplex	Full (DN)
CPS	10 (DN)
Parity	(DN)
Caps Lock	(DN)

4.22 The ITE-9868B cord is required to make a connection between the Model 43 TTY and the EIA Connector on the CCU. In addition, Terminals 5, 6 and 8 on the Model 43 end of the cord should be strapped together. Mark the cord "modified for Model 43 TTY."

4.3 Circuit packs:

4.31 The following circuit packs should be inserted in their respective slots and engaged with their connectors; CP-5, 6, 7, 12, 14, or 36, 15, 16, 17, 18, or 38, 19, 20, 21 and the 208B and 208G Power Packs.

5. FORMAT OF PRINTOUTS AND ENTRIES

5.1 The following provides an introduction and general guides to be followed when communicating with the ROTL via the TELETYPE.

NOTE 1: The ID column identifies a printed line of type, automatically generated by an asterick (*) and identifies entries to be typed, using the TELETYPE keyboard, by E-.

NOTE 2: Entries specified under PRINTOUT that are preceded and followed by an apostrophe, e.g., 'RETURN', denotes a single key on the TELETYPE.

NOTE 3: In the TROUBLE column, the possible remedies are to be performed, one at a time, in the order specified.

NOTE 4: The work operations in both the Printout column and the Action column are to be performed.

NOTE 5: The printout obtained will be repeated until the test is aborted.

ID	PRINTOUT	ACTION & NOTES	TROUBLE
*	MONITOR RUNNING STATE REQUEST	This printout is obtained to indicate that the system is waiting for an input for the TELETYPE. Operate the DIAG ENAB switch on CP18 or CP38 DIAG ENAB LED lights. The DIAG ENAB switch is the multiple slide switch mounted above the RST (reset) push-button. The DIAG ENAB switch is in the operated position when it is pushed to the rear or connector end of CP18 or CP38.	No Printout or Mutilated Printout: 1) Check switch settings on the TELETYPE 2) With DIAG ENAB switch operated, Momentarily operate the RST switch on CP18 or CP38. 3) Check for bent pins on the circuit pack side of the Backplane that mate with CP18 or CP38, CP14 or CP36, CP12 are firmly seated. 4) Verify that the IC's on socket in CP18 or CP38, CP14 or CP36, CP12 are firmly seated. 5) Replace CP12 6) Replace CP14 or CP36 7) Replace CP18 or CP38
*	MONITOR RUNNING STATE REQUEST	After approx. 2.5 min., the printout is repeated. This is a timeout feature to prevent a call from locking up the system.	

5.1 (Cont'd)

ID	PRINTOUT	ACTION & NOTES	TROUBLE
E1 * * *	TTTT 'RETURN' ILLEGAL REQUEST MONITOR RUNNING STATE REQUEST	The entries using the teletype require two or three sets of characters separated by a space, e.g., TT space TT return . Only certain strings of characters are valid entries. A printout of ILLEGAL REQUEST will be obtained for all non-valid entries, e.g., TT'SPACE'TT'RETURN' is not a valid entry. During subsequent testing when an error is encountered, a printout of MONITOR RUNNING STATE REQUEST will be obtained in addition to an indication of the error. The test can be repeated by re-entering the test command. Only one printout is required to make the verifications per the following tests.	

6. CPU TEST

The following test verifies that the microprocessor can execute each of its instructions

ID	PRINTOUT	ACTION & NOTES	TROUBLE
* *	MONITOR RUNNING STATE REQUEST		
E1 * * *	TE CP'RETURN' CPU OK CPU OK CPU OK . . .	This printout is obtained approx. every 2 seconds	CPU ERROR, printout is obtained: 1) Replace CP18 or CP38 2) Replace CP14 or CP36
E2 * *	A MONITOR RUNNING STATE REQUEST		

7. RAM TEST

The following test verifies that data can be written into and read from each RAM location.

ID	PRINTOUT	ACTION & NOTES	TROUBLE
* *	MONITOR RUNNING STATE REQUEST		
E1 * * * * * *	TE RA 'RETURN' ADD A JUMPER BETWEEN PINS E18 AND A1 ON BACK- PLANE AT POSITION 5 HIT SPACE WHEN DONE HIT A TO ABORT	Connect jumper between pins E18 and A1 on backplane at position 5.	

7. RAM TEST (Cont'd)

ID	PRINTOUT	ACTION & NOTES	TROUBLE
E2 * * * *	SPACE BAR RAM TEST RESULT APPEARS EVERY 20 SECONDS. RAM OK RAM OK . .		RAM ERROR, printout obtained: 1) Replace CP18 or CP38 2) Replace CP14 or CP36
E3 * * * * *	A REMOVE JUMPER FROM BACKPLANE HIT SPACE WHEN DONE HIT A TO ABORT	Remove jumper from backplane.	
E4 * *	SPACE BAR MONITOR RUNNING STATE REQUEST		

8. TEST EPROM

The check-sum routines verify that the diagnostic and running programs are stored correctly in EPROM.

ID	PRINTOUT	ACTION & NOTES	TROUBLE
* *	MONITOR RUNNING STATE REQUEST		
E1 * * * * *	TE DC 'RETURN' ALLOW FOR DELAY OF SEVERAL SEC- ONDS BETWEEN PRINTED RESULTS CHECK-SUM OK	Allow 20-30 sec. for the printout.	CHECK-SUM ERROR, printout, or no printout, or Monitor Running Printout is obtained: Replace CP14 or CP36.
E2 * *	A MONITOR RUNNING STATE REQUEST		
E3 * * * * *	TE RC 'RETURN' ALLOW FOR DELAY OF SEVERAL SEC- ONDS BETWEEN PRINTED RESULTS CHECK-SUM OK	Allow 20-30 sec. for the printout.	CHECK-SUM ERROR, printout, or no printout, or Monitor Running Printout is obtained: Replace CP14 or CP36.
E4 * *	A MONITOR RUNNING STATE REQUEST		

9. TEST MULTIPLEX

STEP 1. This test verifies that data can be written into and read from each equipped port.

ID	PRINTOUT	ACTION & NOTES	TROUBLE
* *	MONITOR RUNNING STATE REQUEST		
E1 *	TE MU 'RETURN' Ports 6, 9, 10, 14 and 15 are not equipped and are listed as inoperative. 01 IS AN OK PORT 02 IS AN OK PORT 03 IS AN OK PORT 04 IS AN OK PORT 05 IS AN OK PORT 06 IS AN INOPERATIVE PORT 07 IS AN OK PORT 08 IS AN OK PORT 09 IS AN INOPERATIVE PORT 10 IS AN INOPERATIVE PORT 11 IS AN OK PORT 12 IS AN OK PORT 13 IS AN OK PORT 14 IS AN INOPERATIVE PORT 15 IS AN INOPERATIVE PORT F4 IS AN OK PORT	PORT F4 is printed as inoperative if CP37 is not equipped.	A) 01 IS AN INOPERATIVE PORT, replace CP5 B) 02 IS AN INOPERATIVE PORT, replace CP6 C) 03 IS AN INOPERATIVE PORT, replace CP6 D) 04 IS AN INOPERATIVE PORT, replace CP15 E) 05 IS AN INOPERATIVE PORT, replace CP12 F) 06,9,10,14 or 15 IS AN INOPERATIVE PORT, IS OK THEY ARE NOT EQUIPPED. G) 07 IS AN INOPERATIVE PORT, replace CP16 H) 08 IS AN INOPERATIVE PORT, replace 21 I) 11 IS AN INOPERATIVE PORT, replace CP17 J) 12 IS AN INOPERATIVE PORT, replace CP7 K) 13 IS AN INOPERATIVE PORT, replace CP7 L) All Ports print INOPERATIVE 1) Replace CP14 or CP36 2) Replace CP18 or CP38 M) F4 IS AN INOPERATIVE PORT IS PRINTED IF CP37 IS NOT EQUIPPED.
* *	MONITOR RUNNING STATE REQUEST		

STEP 2. If this test will not run at all, power down the system as described in Paragraph 1.5 and remove all circuit packs except CP14 OR CP36, CP18 or CP38, CP19, CP12 and CP17, and the 208B, G Power Packs.

STEP 3. Verify that the following printout is obtained.

ID	PRINTOUT	ACTION & NOTES	TROUBLE
* *	MONITOR RUNNING STATE REQUEST		
E1 * * * * * * * * * * * * * * *	TE MU 'RETURN' 1 IS AN INOPERATIVE PORT 2 IS AN INOPERATIVE PORT 3 IS AN INOPERATIVE PORT 4 IS AN INOPERATIVE PORT 5 IS AN OK PORT 6 IS AN INOPERATIVE PORT 7 IS AN INOPERATIVE PORT 8 IS AN INOPERTIVE PORT 9 IS AN INOPERATIVE PORT 10 IS AN INOPERATIVE PORT 11 IS AN OK PORT 12 IS AN INOPERATIVE PORT 13 IS AN INOPERATIVE PORT 14 IS AN INOPERATIVE PORT 15 IS AN INOPERATIVE PORT F4 IS AN INOPERATIVE PORT		A) 5 IS AN INOPERATIVE PORT, printout is obtained: Replace CP12 B) 11 IS AN INOPERATIVE PORT, printout is obtained: Replace CP17 C) All ports print INOPERATIVE 1) Replace CP18 or CP38 2) Replace CP14 or CP36
* *	MONITOR RUNNING STATE REQUEST		

STEP 4. Now replace (according to proper procedures) the removed circuit packs one at a time until the troublesome one is located.

10. TEST MESSAGE CHANNEL

10.1 The following test verifies the communications with the No. 3 ESS Message Channel.

10.2 The object of this test is to verify that whatever is typed in is echoed back exactly the same way.

* The message channel baud rate (110 or 300) printed during this test should be the same as that of the TTYC. If they do not agree, switches S1 on CP 17 should be set to the TTYC speed. (For 110 Baud, set switch to 110. For 300 Baud, set switch to 3/12 and 3.

	MONITOR RUNNING STATE REQUEST
E1	TE MC 'RETURN'
*	WARNING!! Connector (P4) to 3 ESS should be unplugged from backplane during this test.
*	WHEN READY TO BEGIN TEST OF MESSAGE CHANNEL HIT SPACE AND SWITCH CONNECTION OF THIS TERMINAL FROM EIA JACK TO MSG CHAN JACK.
*	SET FOR HALF DUPLEX 110 BAUD. CHARACTER STRINGS UP TO 80 IN LENGTH ENTERED ON THE MESSAGE CHANNEL AND ENDING WITH CARRIAGE RETURN ARE STORED AND OUTPUTTED ON THE MESSAGE CHANNEL.
*	ENTER ALL LETTERS, NUMBERS, AND SYMBOLS FOR TEST.
*	HIT ESCAPE TO ABORT ON MESSAGE CHANNEL.
*	HIT SPACE TO CONTINUE, A TO ABORT
E2	Space Bar
E3	1234567890QWERTYUIOPASDFGHJKL;:ZXCVBNM,./!"*$ &'0_= 1234567890QWERTYUIOPASDFGHJKL;:ZXCVBNM,./!"*$ &'0_= If the two lines do not match try again. If still no match, replace CP17 and repeat the test.

10.21 Hit Escape key.

10.3 Restore the teletype cord to the EIA jack.

11. TEST ROTL TONES

ID	PRINTOUT	ACTION & NOTES	TROUBLE
*	MONITOR RUNNING STATE REQUEST		
E1	TE RT 'RETURN'		
*	OPERATE SWITCH "ROTL" (S2) on CP15	Operate the ROTL switch (S2) on CP15 to the UP position.	
*	TYPE H TO HOLD TONE, C TO CONTINUE - ANY OTHER KEY TO ABORT	A 2 sec. interval is allocated to entering the H command before the test proceeds.	
*	LOW TONE	LOW TONE (480 & 620 Hz) is heard from the SPEAKER for 2 seconds.	A) Low Tone is not heard: 1) Replace CP15
*	TPT	TEST PROGRESS TONE (2225 Hz) is heard for 2 seconds.	B) TPT is not heard: 1) Replace CP15
*	GUARD	GUARD TONE (1200 Hz) is heard for 2 seconds.	C) Guard is not heard: 1) Replace CP15

11. TEST ROTL TONES (Cont'd)

ID	PRINTOUT	ACTION & NOTES	TROUBLE
*	TPT FROM AGC	TEST PROGRESS TONE is heard for 2 seconds. A warning message may be printed. That is not a problem.	D) TPT is not heard: 1) Replace CP15 2) Replace CP5 3) Replace CP6
*	TEST OF ROTL HYBIRD, TONE LEVEL SHOULD DECREASE	An audible Decrease in the level of TPT can be heard for 2 seconds at the end of the printout. The volume may have to be decreased by adjusting the VOL potentiometer on CP15 to hear the difference.	E) Decrease is not heard: 1) Replace CP15
*	LOW TONE	LOW TONE is heard.	
E2	H (During Tone)	Tone is heard continuously.	
E3 *	C TPT	TEST PROGRESS TONE is heard. The tones above will repeat continuously from GUARD to TPT until the A is entered.	
E4 * *	A MONITOR RUNNING STATE REQUEST	Restore the ROTL switch to the DOWN position.	

12. TEST TRUNK TONES

This test verifies that tones can be sent over the trunk tip and ring. The test will repeat until it is aborted.

ID	PRINTOUT	ACTION & NOTES	TROUBLE
* *	MONITOR RUNNING STATE REQUEST		
E1 *	TE TT 'RETURN' OPERATE SWITCH "TUT" (S1) ON CP15	Operate the TUT switch S1 on CP15 to the UP position.	
*	TYPE H TO HOLD, THEN, C TO CONTINUE-ANY OTHER KEY TO ABORT	A 2 second interval after a tone begins is allocated to enter the H command to hold the tone before the test proceeds.	
*	GUARD	GUARD TONE, 1200 Hz, is heard for 2 sec. from the speaker on the ROTL TEST PANEL Adjust the Volume Control for appropriate level.	If no tone is heard: 1) Replace CP6 (See paragraph 6.2). 2) Replace CP15
*	MILLIWATT	Milliwatt, 1004 Hz, is heard for 2 seconds	Milliwatt is not heard: 1) Replace CP5 2) Replace CP6
*	TPT	TPT, 2225 Hz, is heard for 2 sec.	TPT is not heard: 1) Replace CP15
*	MF7	700 Hz MF tone is heard for 2 sec.	700 Hz tone is not heard: 1) Replace CP17

12. TEST TRUNK TONES (Cont'd)

ID	PRINTOUT	ACTION & NOTES	TROUBLE
*	MF9	900 Hz MF tone is heard for 2 sec.	900 Hz tone is not heard: 1) Replace CP17
*	MF11	1100 Hz MF Tone is heard for 2 sec.	1100 Hz tone is not heard: 1) Replace CP17
*	MF13	1300 Hz MF Tone is heard for 2 sec.	1300 Hz tone is not heard: 1) Replace CP17
*	MF15	1500 HZ MF Tone is heard for 2 sec.	1500 Hz tone is not heard: 1) Replace CP17
*	MF17	1700 Hz MF Tone is heard for 2 sec.	1700 Hz tone is not heard: 1) Replace CP17
*	LT THRU AGC	Combination of 480Hz and 620 Hz Tone is heard for 2 sec.	Low tone is not heard: 1) Replace CP15
*	405 HZ	405 HZ Tone is heard continuously.	405 Hz Tone is not heard: 1) Replace CP5
E2	H (During Tone)	Increase the volume by adjusting the the VOL pot. on CP15 to hear the tone and then decrease the volume to its previous position.	
E3	C		
*	2804 Hz	2804 Hz tone is heard for 2 seconds.	2804 Hz tone is not heard: 1) Replace CP5
*	GUARD	GUARD TONE, 1200 Hz, is heard.	
E4	A		
*	MONITOR RUNNING		
*	STATE REQUEST		

13. TEST TONE DETECTOR

This is a self check to verify that the tones generated can be detected.

ID	PRINTOUT	ACTION & NOTES	TROUBLE
*	MONITOR RUNNING		
*	STATE REQUEST		
E1	TE TD 'RETURN'		
*	OPERATE SWITCH "TUT"		
*	(S1) ON CP15 WOULD YOU LIKE TO TEST TONE DETECTORS USING AN EXTERNAL OSCILLATORS ON TR JACK?		
*	TYPE Y FOR YES OR N FOR NO		

13. TEST TONE DETECTOR (Cont'd)

ID	PRINTOUT	ACTION & NOTES	TROUBLE
E2	N		
*	TYPE H TO HOLD TONE, THEN C TO CONTINUE-ANY OTHER KEY TO ABORT		
*	LISTEN FOR TPT	2225 Hz Tone is heard for 2 sec.	
*	TPT DETECTOR OK		Printout of TPT BIT ERROR or LT BIT ERROR or MW BIT IS SET is obtained: 1) Replace CP12 2) Replace CP6 3) Replace CP15
*	LISTEN FOR MW	1004 Hz Tone is heard for 2 sec.	
*	MW DETECTOR OK		Printout of MW BIT ERROR or LT BIT ERROR or TPT BIT IS SET or BIT ERROR (BAL INPUT) or BIT ERROR (UNBAL INPUT) or THIS TEST SHOULD BE CONDUCTED VIA LOCAL KEYBOARD ACCESS ONLY! is obtained: Replace CP12
*	LISTEN FOR LT	480 Hz and 620 Hz Tone is heard for 2 sec. It may be necessary to increase the volume to hear low tone, adjust the VOL pot. on CP15.	
*	LT DETECTOR OK		
*	WARNING!! Connector (P4) to 3 ESS should be unplugged from backplane for this test		
*	LISTEN FOR 1300 Hz	1300 Hz tone is heard until TPT is heard	
*	(BAL INPUT)		
*	1300 HZ DETECTOR OK (UNBAL INPUT)		
*	TYPE "H" TO HOLD,THEN "C" TO CONTINUE- ANY OTHER KEY TO ABORT		
*	LISTEN FOR TPT	TPT, 2225 Hz Tone is heard.	
E3	A		
*	MONITOR RUNNING		
*	STATE REQUEST		

14. TEST MF DETECTOR

This test is a self check to verify that the MF Tones generated can be detected.

ID	PRINTOUT	ACTION	TROUBLE
*	MONITOR RUNNING STATE REQUEST		
E1	TE MF 'RETURN' OPERATE SWITCH "TUT" (S1) ON CP15 WOULD YOU LIKE TO TEST MF TONE DETECTORS USING AN EXTERNAL OSCILLATORS ON T, R JACK (J1)? TYPE Y FOR YES OR N FOR NO		
E2	N TYPE H TO HOLD,THEN C TO CONTINUE-ANY OTHER KEY TO ABORT MF 7 MF 9 MF 11 MF 13 MF 15 MF 17 MF THRESHOLD TEST MF DETECTOR OK WOULD YOU LIKE TO TEST MF TONE DETECTORS USING AN EXTERNAL OSCILLATORS ON T, R JACK (J1)? TYPE Y FOR YES OR N FOR NO.	The MF digits are heard one at a time for 2 seconds each from the speaker.	Printout of MF7 ERROR or MF9 ERROR or MF 11 ERROR or MF 13 ERROR or MF 15 ERROR or MF 17 ERROR or -10DB THRESHOLD or -5DB THRESHOLD is obtained: Replace CP5 Replace CP17
E3	Y TYPE H TO HOLD,THEN C TO CONTINUE-ANY OTHER KEY TO ABORT DETECTED MF TONES USING THE -10DB THRESHOLD ARE AS FOLLOWS: NO MF TONES DETECTED DETECTED MF TONES USING THE -5DB THRESHOLD ARE AS FOLLOWS: NO MF TONES DETECTED WOULD YOU LIKE TO TEST AGAIN? TYPE Y FOR YES OR N FOR NO	A warning message may be printed that is not a problem.	
E4	N		
E5	A MONITOR RUNNING STATE REQUEST		

15. TEST LINE TESTS

ID	SUCCESS PRINTOUT	FAILURE PRINTOUT
	MONITOR RUNNING STATE REQUEST	
E1	TE TL * 105A TEST LEVEL POINT = ODB * 105A TEST IMPEDANCE = 900 OHMS * 015B TEST LEVEL POINT = 0 DB * 105B TEST IMPEDANCE = 900 OHMS	
*	WARNING!! Connector (P4) to 3 ESS should be unplugged from backplane for this test.	
*	PATCH 105A JACK TO T,R JACK (J1) OPERATE SWITCH "TUT" (S1) ON CP 15 TO MONITOR SIGNALS ON TR JACK * HIT SPACE WHEN DONE * HIT A TO ABORT	
E2	SPACE BAR * TPT SHOULD BE HEARD * OK - TPT IS DETECTED * HIT SPACE TO CONTINUE, A TO ABORT	TPT SHOULD BE HEARD TPT IS NOT DETECTED 105A CKT TPT TEST FAILURE HIT SPACE TO CONTINUE, A TO ABORT
E3	SPACE BAR * IF RELAYS TL1PA AND TL1PB ARE OK, TPT WILL STOP FOR 1/2 SECOND, THEN RETURN, * IF TPT SWITCH CTPCN1 IS OK, TPT WILL STOP FOR 1/2 SECOND, THEN RETURN * HIT SPACE TO CUT 105A CKT THROUGH, A TO ABORT	REMOVE 105A JACK PATCH TO TR JACK (J1) PATCH 105B JACK TO TR JACK (J1) HIT SPACE WHEN DONE HIT A TO ABORT
E4	SPACE BAR * TPT SHOULD STOP * OK - TPT IS NOT DETECTED * 105A PORT TPT PATH IS GOOD * HIT SPACE TO CONTINUE, A TO ABORT	TPT IS STILL DETECTED CUT-THROUGH RELAY FAILURE (105A CKT)
E5	SPACE BAR * REMOVE 105A JACK PATCH TO T, R JACK (J1) * PATCH 105B JACK TO T, R JACK (J1) * HIT SPACE WHEN DONE * HIT A TO ABORT	
E6	SPACE BAR * TPT SHOULD BE HEARD * OK - TPT IS DETECTED * HIT SPACE TO CONTINUE, A TO ABORT	TPT SHOULD BE HEARD TPT IS NOT DETECTED 105B CKT TPT TEST FAILURE HIT SPACE TO CONTINUE, A TO ABORT
E7	SPACE BAR * IF RELAYS TL2PA AND TL2PB ARE OK, * TPT WILL STOP FOR 1/2 SECOND, THEN RETURN * IF TPT SWITCH CTPCN2 IS OK, * TPT WILL STOP FOR 1/2 SECOND, THEN RETURN * HIT SPACE TO CUT 105B CKT THROUGH, A TO ABORT	REMOVE 105B PORT PATCH TO TR JACK (J1) PATCH 105A PORT TO 105B PORT HIT SPACE WHEN DONE HIT A TO ABORT
E8	SPACE BAR * TPT SHOULD STOP * OK - TPT IS NOT DETECTED * 105B PORT TPT PATH IS GOOD * HIT SPACE TO CONTINUE, A TO ABORT	TPT IS STILL DETECTED CUT THROUGH RELAY FAILURE (105B CKT)

15. (Cont'd)

ID	SUCCESS PRINTOUT	FAILURE PRINTOUT
E9	SPACE BAR	
*	REMOVE 105B JACK PATCH TO T, R JACK (J1)	
*	PATCH 105A JACK TO 105B JACK	
*	HIT SPACE WHEN DONE	
*	HIT A TO ABORT	
E10	SPACE BAR	
*	TPT SHOULD BE HEARD	TPT SHOULD BE HEARD
*	OK - TPT IS DETECTED	TPT IS NOT DETECTED
*	105A PORT TRANSMISSION PATH IS GOOD	105A PORT TRANSMISSION PATH OR 105B TPT PATH IS BAD
*	HIT SPACE TO CONTINUE, A TO ABORT	HIT SPACE TO CONTINUE, A TO ABORT
E11	SPACE BAR	
*	TPT SHOULD BE HEARD	TPT SHOULD BE HEARD
*	OK - TPT IS DETECTED	TPT IS NOT DETECTED
*	105B PORT TRANSMISSION PATH IS GOOD	105B PORT TRANSMISSION PATH OR 105A TPT PATH IS BAD
*	HIT SPACE TO RETURN TO MONITOR	HIT SPACE TO RETURN TO MONITOR
*	REMOVE ALL PATCH CORDS WHEN TESTING IS COMPLETED.	

16. TEST TR

ID	SUCCESS PRINTOUT	FAILURE PRINTOUT
	MONITOR RUNNING	
	STATE REQUEST	
E1	TE TR 'RETURN'	
*	WARNING!! Connector (P4) to 3 ESS should be unplugged from backplane for this test.	
*	OPERATE SWITCH "TUT" S1 ON CP15	
*	PATCH JACK MWR (J2) TO JACK CA	
*	PATCH JACK TUT TO JACK T, R (J1)	
	THE TONE WILL GO ON AND OFF	
	THE RESULT OF THIS TEST WILL BE PRINTED	
*	HIT SPACE WHEN DONE	
*	HIT A TO ABORT	
E2	SPACE BAR	
*	RELAYS LCKT, LCKTA AND LCKTB ARE OK	RELAYS LCKT, LCKTA, LCKTB OR TCA, TCB ARE BAD, TYPE SPACE TO REPEAT THE TEST, A TO ABORT OR RELAYS LCKT, LCKTA AND LCKTB DO NOT RELEASE, TYPE SPACE TO REPEAT THE TEST, A TO ABORT
*	RELAYS TCA AND TCB ARE OK	
	DISCONNECT JACK TUT FROM JACK TR (J1)	RELAYS LCKT, LCKTA, LCKTB OR TCA, TCB ARE BAD. TYPE SPACE TO REPEAT THE TEST, A TO ABORT OR RELAYS TCA AND TCB DO NOT RELEASE, TYPE SPACE TO REPEAT THE TEST, A TO ABORT
*	HIT SPACE WHEN DONE	
*	HIT A TO ABORT	
E3	SPACE BAR	
*	RELAYS TTA AND TTB ARE OK	RELAYS LCKT, LCKTA, LCKTB OR TTA, TTB ARE BAD. TYPE SPACE TO REPEAT THE TEST A TO ABORT OR RELAYS TTA AND TTB DO NOT RELEASE TYPE SPACE TO REPEAT THE TEST, A TO ABORT
*	RELAY TRDIAG IS OK	
	RELAY R2BUS IS OK	
	TYPE SPACE TO REPEAT THE TEST, A TO ABORT	

17. TEST RO

	MONITOR RUNNING STATE REQUEST
E1	TE RO 'RETURN'
*	WARNING!! Connector (P4) to 3 ESS should be unplugged from backplane for this test.
*	CONNECT AN OHMMETER BETWEEN TIP AND RING OF ROTL JACK (RT AND RR)
*	SET THE METER ON THE X10,000 OHMS SCALE
	THE ROH RELAY IS OK IF BEFORE HITTING THE SPACE, THE METER SHOWS CONTINUITY AND AFTER THE SPACE, AN OPEN
*	HIT SPACE WHEN DONE
*	HIT A TO ABORT
E2	SPACE BAR
*	TYPE SPACE TO CONTINUE, A TO ABORT
E3	SPACE BAR
*	CONNECT AN OHMMETER BETWEEN TIP AND RING OF TUT JACK (TUTT AND TUTR)
	SET THE METER ON THE X10,000 OHMS SCALE
	THE TCS RELAY IS OK IF BEFORE HITTING SPACE, THE METER SHOWS AN OPEN CIRCUIT AND AFTER THE SPACE, CONTINUITY
*	HIT SPACE WHEN DONE
*	HIT A TO ABORT
E4	SPACE BAR
*	TYPE SPACE TO REPEAT THE TEST, A TO ABORT

18. TEST HB

	MONITOR RUNNING STATE REQUEST
E1	TE HB 'RETURN'
*	WARNING!! CONNECTOR (P4) TO 3 ESS SHOULD BE UNPLUGGED FROM BACKPLANE FOR THIS TEST.
*	CONNECT AN OHMMETER BETWEEN TIP AND RING OF CA JACK (CAT AND CAR)
*	SET THE METER ON THE X10,000 OHMS SCALE
	THE PG RELAY IS OK IF BEFORE HITTING THE SPACE THE METER SHOWS AN OPEN AND AFTER THE SPACE, CONTINUITY
*	HIT SPACE WHEN DONE
*	HIT A TO ABORT
E2	SPACE BAR
*	TYPE SPACE TO CONTINUE, A TO ABORT
E3	SPACE BAR
*	CONNECT AN OHMMETER BETWEEN THE CA JACK TIP AND RING
*	SET THE METER ON THE X10,000 OHMS SCALE
	THE HB3 RELAY IS OK IF BEFORE HITTING A SPACE, THE METER SHOWS AN OPEN AND AFTER THE SPACE, CONTINUITY
*	HIT SPACE WHEN DONE
*	HIT A TO ABORT
E4	SPACE BAR
*	TYPE SPACE TO REPEAT THE TEST, A TO ABORT
E5	A

19. TEST 37

This test checks that the interwal functions of circuit pack are working properly.

ID	PRINTOUT	ACTION	TROUBLE
*	MONITOR RUNNING STATE REQUEST		
E1	TE 37 'RETURN' OBSERVE LEDS RX/TX ARE BOTH LEDS LIT? TYPE Y FOR YES OR N OR NOATORS ON	Observe LEDS RX/TX Enter proper answer	USART bad printed 1) replace CP37 2) replace CP36 or 14 3) replace CP38 or 18
E2	Y ARE BOTH LEDS OFF? TYPE Y OR YES OR N FOR NO	observe LEDS RX/TX	OPTO - ISOLATION failure printed 1) replace CP37
E3	Y ARE BOTH LEDS LIT? TYPE Y FOR YES OR N FOR NO	observe LEDS RX/TX enter proper answer	
E4	Y USARI TX/RX FUNCTIONS ARE OK OBSERVE LEDS DSR/DTR ARE BOTH LEDS LIT? TYPE Y FOR Y OR N FOR NO	observe LEDS DSR/DTR enter proper answer	
E5	Y ARE BOTH LEDS OFF? TYPE Y FOR YES OR N FOR NO	observe LEDS DSR/DTR enter proper answer	
E6	Y DSR/DTR AND USART READ AND WRITE FUNCTIONS ARE OK MONITOR RUNNING STATE REQUEST		
E7	TE 37'RETURN' OBSERVE LEDS RX/TX ARE BOTH LEDS LIT? TYPE Y FOR YES OR N FOR NO	observe LEDS RX/TX enter wrong answer	
E8	N OPTO-ISOLATOR FAILURE TYPE SPACE TO REPEAT THE TEST, A TO ABORT		
E9	SPACE BAR OBSERVE LEDS RX/TX ARE BOTH LEDS LIG? TYPE Y FOR YES OR N FOR NO	observe LEDS RX/TX enter proper answer	
E10	Y ARE BOTH LEDS OFF? TYPE Y FOR YES OR N FOR NO	observe LEDS RX/TX enter proper answer	
E11	Y ARE BOTH LEDS LIT? TYPE Y FOR Y OR N FOR NO	observe LEDS RX/TX enter proper answer	

19. TEST 37 (Cont'd)

ID	PRINTOUT	ACTION	TROUBLE
E12	Y		
*	USART TX/RX FUNCTIONS ARE OK		
*	OBSERVE LEDS DSR/DTR		
*	ARE BOTH LEDS LIT?	observe LEDS DSR/DTR	
*	TYPE Y FOR YES OR N FOR NO	enter wrong answer	
E13	N		
*	OPTO - ISOLATOR FAILURE		
*	TYPE SPACE TO REPEAT THE TEST, A TO ABORT		
E14	SPACE BAR		
*	OBSERVE LEDS DSR/DIR	observe LEDS DSR/DTR	
*	ARE BOTH LEDS LIT?		
*	TYPE Y FOR YES OR N FOR NO	enter proper answer	
E15	Y		
*	ARE BOTH LEDS OFF	observe LEDS DSR/DTR	
*	TYPE Y FOR YES OR N FOR NO	enter proper answer	
E16	Y		
*	DSR/DTR AND USART READ AND WRITE FUNCTIONS ARE OK		
*	MONITOR RUNNING		
*	STATE REQUEST		

Manager, Product Engineering
Control Center

Reason for Reissue:
To add in the tests for
circuit pack 37, paragraph # 19.