

NO. 3 ESS
 CONTROL COMPLEX
 POWER VERIFICATION TESTS

CONTENTS

- 1. GENERAL INFORMATION
- 2. TEST EQUIPMENT
- 3. TEST PREPARATION
- 4. MAINTENANCE (MTCE) FRAME POWER DISTRIBUTION AND CONTROL CHECK
- 5. PROCESSOR (PROC) FRAME POWER DISTRIBUTION AND CONTROL CHECK

1. GENERAL INFORMATION

1.1 Description

1.11 This section provides a method of verifying that power with the proper voltages and polarities appears at the No. 3 ESS Control Complex. It also provides a method for verifying the operation of the power sequencing, power alarm and fuse alarm circuits on the Maintenance (MTCE) and Processor (PROC) Frames.

1.12 The MTCE Frame is a single bay frame which requires one +24V and one -48V power feeder from each power bus. -48V power is supplied directly from the -48V Power Frame while +24V power is supplied from +24V converters on the Miscellaneous Power Frame.

1.13 The PROC Frame is a double bay frame with Control Unit 0 (CU-0) contained in Bay 0 and CU-1 contained in Bay 1. Bay 0 of the PROC Frame requires one +24V and one -48V power feeder from Bus A. Similarly, Bay 1 requires one +24V and one -48V power feeder from Bus B. -48V and +24V power is supplied as indicated above for the MTCE frame.

1.14 Additional DC voltage potentials required for the MTCE and PROC frame units are provided by DC to DC Converter Power Modules (PWR MODS) within each frame.

1.15 The MTCE teletypewriter (TTY) requires 120V AC which is supplied through the Inverter Unit on the Test Frame.

1.2 Sequence

1.21 Refer to Handbook 269, Section 1 for test sequence information.

1.22 The -48V Power Plant and the +24V Converters on the Miscellaneous Power Frame must be operational

prior to the performance of this test. Handbook 21, Sections 211 and 399 provide test procedures for the 151A Power Plant and Miscellaneous Power Frame, respectively.

1.23 This section must be applied before Test Program tests (Handbook 269, Section 300) can be initiated.

1.3 References

1.31 The following documents will be useful as references during the performance of this test:

<u>Document</u>	<u>Title</u>
SD-1C900-01	3A Central Control Circuit
SD-1C901-01	3ACC Control Panel Circuit
SD-1C902-03	Main Store Controller and Memory Circuit
SD-1C904-01	Tape Data Controller Circuit
SD-1C905-01	Teletypewriter Controller Circuit
SD-1C906-01	System Status Panel Circuit
Sd-1C907-01	System Status Controller Circuit
SD-1C908-01	System Status Panel Relay Unit Circuit
SD-1C909-01	Maintenance Frame Power Unit Circuit
SD-1C910-02	Processor Frame Circuit
SD-1C911-02	Processor Frame Power Unit Circuit
SD-1C912-01	Maintenance Frame Circuit
SD-3H905-01	Miscellaneous Power Circuit

1.32 Fuse assignments for PROC frame Units are shown in Information Notes 302 and 304 on SD-1C911.

1.33 Each A8 and A19 Power Module (PM) is associated with an FC21 +3V Reference and Filter Circuit Pack. The following shows the association of PMs and FC21 circuit packs in each PROC Frame Bay.

POWER MODULE		FRAME	ASSOC FC21
TYPE	DESIG	EQL	FRAME EQL
A19	PM054A.B	16-24	54-01
A19	PM054C.D	16-09	54-14
A8	PM054E	12-24	54-44
A19	PM058A.B	08-12	58-01
A8	PM058D	16-34	58-02
A8	PM058E	12-09	58-02
A8	PM058F	12-38	58-44
A19	PM062A.B	16-42	62-29
A8	PM062C	12-19	62-01

1.34 Fuse assignments and power distribution for MTCE Frame Units is shown on SD-1C909.

1.4 Records

1.41 The results of these tests should be recorded on Forms SD-97-1313 and SD-97-1315. Information regarding the completion of these forms appears in Handbook 3, Section 6B.

2. TEST EQUIPMENT

2.1 Test Sets

2.11 The following test sets will be required for the performance of these tests:

Amt.	ITE	Description
1	4659	Volt-Ohm-Milliammeter
1	5632	Digital Multimeter

2.2 Accessories

2.21 The following accessories are required for the performance of these tests:

Amt.	ITE	Description	With ITE
1	4715	Capacitor Forming Tool	*5543
1	5478	Adapter, SAF-T-LEED	*5543
1	5590	70 Type Fuse Alarm Verification Test Set	*5543

* 3ACC/Auxiliary Processor Test Accessory Set

3. TEST PREPARATION

3.01 Remove the base covers from the Maintenance (MTCE) and Processor (PROC) Frames.

3.02 At the Power Frame, verify all -48V fuses supplying the MTCE and PROC Frames are removed.

3.03 At the Miscellaneous Power Frame, verify +24V Fuses MF(0), MF(1), PRF(0), and PRF(1) and associated LED assemblies are removed from the +24V Converter Unit.

PRECAUTION: Since the MTCE and Test Frames are both powered from the MF(0) +24V fuse, it is required that the distributing fuses at the bottom of the Test frame be removed at this time.

3.04 Remove all distributing fuses from each PROC Frame Power Unit (Bays 0 and 1) and from the MTCE Frame Power Unit.

3.05 On each 3ACC Control Panel, operate all toggle switches to the non-operated (down) position.

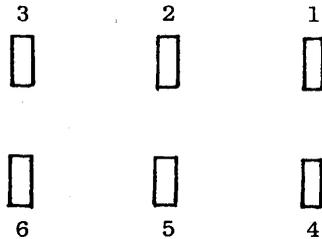
3.06 At the MTCE Frame unseat all circuit packs in all units (including the packs in the KS-21447, L2 Mini Recorder on each TDC Unit) except the following:

NOTE: Discard the packing material found in front of the KS-21447, L2 Mini Recorders.

- a) Power modules in TTYC, TDC and MTCE Power Units.
- b) FC209 circuit pack in SSPC unit.
- c) FB152 and FC21 circuit packs in TTYC and SSPC Units.
- d) FB494 circuit pack in TTY Controller Units.
- e) FC210 circuit packs in MTCE Frame power unit.

3.07 On the System Status Panel (SSP) operate the CIRCUIT POWER switch to the "OFF" position.

NOTE: Since there is no physical indication of the position of this switch, determine the switch position using an ohmmeter connected between terminals 1 and 2 of the CIRCUIT POWER (S1) switch on the rear of the SSP (ED-4C007-30). Refer to Fig. 1 for terminal numbering and position the switch such that the ohmmeter reads zero ohms.



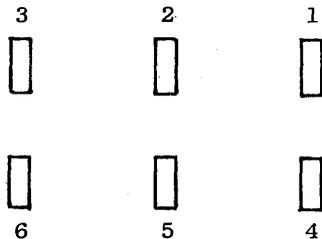
CIRCUIT POWER AND LAMP POWER SWITCH
TERMINAL NUMBERING

FIG. 1

3.08 Operate the LAMP POWER (S2) switch on the SSP to the "ON" position. Use the method described in the note after paragraph 3.07 only connect the ohmmeter between terminals 2 and 3.

3.09 On each 3ACC Control Panel, operate the POWER switch to the "OFF" position.

NOTE: Determine the position of the POWER switch using the ohmmeter at the rear of the 3ACC Control Panel. Connect the ohmmeter between terminals 1 and 2 (see Fig. 2) and position the switch such that the ohmmeter reads zero ohms.



3ACC POWER SWITCH TERMINAL NUMBERING

FIG. 2

3.10 Unseat all circuit packs in all and memory planes in all Processor Frame units (Bays 0 and 1) except the following:

- a) Power modules in all units.
- b) FC21 circuit packs in all units.
- c) FB152 circuit pack in 3ACC units.
- d) FA1034 (06-06), FA1032 (02-25), and FA1010 (06-11) circuit packs in 3ACC units.
- e) FC262 and FC203 circuit packs in MASCN units.
- f) FC210 circuit pack in power units.

3.11 On the rear of each 3ACC Control panel, operate the TMR switch to the TEST MODE position.

3.12 Verify that the 959A and 959B termination resistor paddle boards on the rear of the PROC Frame Main Store Units are securely seated. (See Fig. 3 on page 10.) These paddle boards must be in place to allow power to be applied to the processor.

3.13 At Control Frame 0, unseat the FC181 circuit packs in locations 144-09 and 144-39. This will prevent a possible inadvertent Peripheral Decoder (PD) ground signal to the associated PAT relay in the MTCE, CU-0 or CU-1 bays. This signal would cause the PAT relay to always be in an operated state thereby altering the required test results.

4. MAINTENANCE (MTCE) FRAME POWER DISTRIBUTION AND CONTROL CHECK

4.1 False Ground Check

4.11 Set up ITE-4659 Volt-Ohm-Milli-ammeter for resistance measurement on the X1K scale.

4.12 At rear of the Miscellaneous Power (MP) Frame, measure the resistance between T.S.(G) terminals 9 and 10 on the +24V Converter Unit by connecting the negative meter lead to terminal 10 and the positive lead to terminal 9. Allow sufficient time for the filter capacitor to charge before taking the reading.

4.13 This resistance should read approximately 3300 ohms.

NOTE: At the instant the Volt-Ohm-Milliammeter is connected, the pointer reads a very low resistance because the plates of the electrolytic capacitor are not formed at that instant. As the filter capacitor begins to charge, the pointer gradually shifts toward a higher resistance value and finally reads approximately 3300 ohms after a lapse of a few minutes.

4.14 Repeat paragraphs 4.12 and 4.13 for T.S.(H).

4.15 At the Power Frame, measure the resistance between the ground bus at the rear of the Power Frame and the load terminal of the -48V Bus A fuse supplying the MTCE Frame by connecting the positive meter lead to the ground bus and the negative lead to the load terminal.

4.16 This resistance should read infinite ohms.

4.17 Repeat paragraphs 4.15 and 4.16 for the -48V Bus B fuse supplying the MTCE Frame.

4-10 4.2 +24V, -48V and 120V AC Distribution

4.21 At the MP Frame, insert ITE-4715 Capacitor Forming Tool in the fuse socket of the +24V MF(0) fuse supplying the MTCE Frame. Leave the tool in the socket until the lamp extinguishes indicating the filter capacitor is fully charged.

NOTE: The lamp normally glows very dimly and rapidly extinguishes.

4.22 Replace the +24V MF(0) fuse at the MP Frame and the -48V A Bus fuse supplying the MTCE at the Power Frame.

4.23 At the MTCE Frame, measure the voltage between terminals +24AA and GRD AA on TS 4 located at the bottom front of the MTCE Frame. This voltage should read between +20.75 and +26.25 volts DC.

4.24 Measure the voltage between terminals -48BA and GRD BA on TS 4. This voltage should read between -42.75 and -52.5 volts DC.

4.25 Repeat paragraph 4.21 for the MF(1) fuse.

4.26 Replace the +24V MF(1) fuse at the MP Frame and the -48V B Bus fuse supplying the MTCE at the Power Frame.

4.27 At the MTCE measure the voltage between terminals +24AB and GRD AB on TS 5 located at the bottom front of the MTCE Frame. This voltage should read between +20.75 and +26.25 volts DC.

4.28 Measure the voltage between terminals -48BB and GRD BB on TS 5. This voltage should read between -42.75 and -52.5 volts DC.

NOTE: Test the KS-20816, L2 Inverter Unit on the Test Frame in accordance with HB 21, Section 822.

4.29 Operate the ILC (CB2) circuit breaker on the Inverter Unit to apply power to the TTY through the Idle Line Control Unit.

4.3 Fuse Alarm Circuit Check

NOTE: Verify FC181 circuit packs in positions 144-09 and 144-39 on Control Frame 0 are unseated per instructions in paragraph 3.14.

4.31 Replace fuse AA1A in the MTCE Power Unit fuse block and verify that all relays on the MTCE Power Unit except PAT and PAB24 are operated. Verify the PWR RESET key lamp is extinguished.

4.32 Insert ITE-5590 70 Type Fuse Alarm Verification Test Set in fuse position AOA and verify the MJ1 relay releases and the PWR RESET key lamp is lit.

4.33 Remove ITE-5590 and momentarily operate the PWR RESET key. Verify that all relays in the MTCE Power Unit except PAT and PAB24 are operated and the PWR RESET key lamp is extinguished.

4.34 Repeat paragraphs 4.32 and 4.33 for fuse positions AOB, AAOAP and AAOBP.

4.35 Repeat paragraphs 4.32 and 4.33 for fuse positions BOA, BOB, ABOAP and ABOBP observing the MJ2 relay.

4.36 Repeat paragraphs 4.32 and 4.33 for fuse positions COA, COB, ACOA, and ACOB observing the MJ3 relay.

4.37 Replace the AA1B fuse in the MTCE Power Unit and verify relay PAB24 operates. Remove fuse AA1A and insert ITE-5590 in AA1A fuse position. Verify the MJ1 relay releases and the PWR RESET key lamp is lit.

4.4 Fusing and Power Control Check

4.401 Replace all fuses in their appropriate locations in the MTCE Power unit.

NOTE: If MTCE Frame equipped with E2A Telemetry Unit (J92621AE), do not replace fuses A1 (-48V) or AA4 (+24V) at this time. Instructions for applying power to the E2A Telemetry Unit are contained in Handbook 239, Section 510G.

Momentarily operate the PWR RESET key on the MTCE Power Unit and the CIRCUIT POWER switch on the SSP. Operate and hold the ALT BUS key on the System Status Panel (SSP). Veri-

fy only relays A and B on the System Status Panel Relay (SSPR) Unit are operated. Release the ALT BUS key and verify relays A, B, AB24 and AB48 on the SSPR Unit are operated. (A and B relays will release momentarily.)

4.402 Operate CIRCUIT POWER switch "OFF" and reseal all SSPC Unit circuit packs only.

4.403 Operate CIRCUIT POWER switch "ON" and verify that no fuses blow and no power unit alarms occur.

NOTE: The non-alarmed state for power unit alarms is for all relays except PAT in the MTCE Power Unit to be operated and the PWR RESET key lamp to be extinguished.

EXEC
4.404 Operate the SSP CIRCUIT POWER switch "OFF" and verify that all lamps and LEDs on SSP light except for LAMP & POWER TEST and CIRCUIT POWER lamps.

4.405 Operate the CIRCUIT POWER switch "ON" and verify the following:

- a) After approximately a three (3) second delay, the PANEL TIMEOUT lamp lights and the CRT ALM relay in the SSPR Unit operates.
- b) LOCK, ALT BUS and SYSTEM NORMAL lamps are extinguished.
- c) The "CRITICAL" and "SERVICE LOSS" LEDs under the heading of ALARMS are extinguished.
- d) The CIRCUIT POWER lamp is lit.
- e) All lamps under the headings of SYSTEM EMERGENCY MANUAL CONTROL, ALARM CONTROL and TEST CONTROL are extinguished.
- f) No power unit alarms occur.

4.406 Verify TTYC PWR & RESET key lamp on TTY Controller Units 0 and 1 is lit. (It may be necessary to momentarily operate the TTYC PWR & RESET switch to place it in the active mode.)

4.407 Operate TTYC PWR & RESET key on each TTYC Unit "OFF" and verify lamp within key is extinguished.

4.408 Reseat all TTYC circuit packs on each TTYC Unit, operate TTYC PWR & RESET key "ON" and verify lamp within key is lit and no power unit alarms occur.

4.409 Momentarily operate PWR RESET key on the MTCE Power Unit. Verify all frame power alarms remain extinguished.

NOTE: Only the MN or MJ2 alarms could normally occur with this step. Any other alarm indicates a problem.

4.410 Verify TDC POWER key lamp on TDC Controller Units 0 and 1 is lit. (It may be necessary to momentarily operate the TDC POWER key to place it in the active mode.)

4.411 Operate TDC POWER key on each TDC Unit "OFF" and verify lamp within key is extinguished.

4.412 Reseat all TDC Unit circuit packs on each TDC unit (including the packs in the KS-21447, L2 Mini Recorders), operate TDC POWER key and verify lamp within key is lit and no power unit alarms occur.

4.413 Momentarily operate PWR RESET key on the MTCE Power Unit. Verify all frame power alarms remain extinguished.

NOTE: Only the MN or MJ3 alarms could normally occur during this step. Any other alarm indicates a problem.

4.5 Power Alarm Test

4.51 Depress and hold the LAMP & POWER TEST key on the SSP and verify the following:

- a) All lamps and LEDs on SSP are lit.
- b) In the MTCE Power Unit, the PAT relay is operated. The MN and NPA relays are released and the PWR RESET lamp is lit.
- c) The LED indicators on all MTCE Frame power modules and on the FB152 circuit packs in the SSPC and each TTYC Unit are lit.

4.52 Release the LAMP & POWER TEST key and verify that all alarm indicators return to the non-alarmed state. (It may be necessary to momentarily operate the PWR RESET key to clear alarm indicators.)

4.6 SSP Key and Lamp Verification

4.61 Perform this test according to the procedures in Table A.

TABLE A

STEP	MOMENTARILY OPR SWITCH	LAMP WITHIN SWITCH	OTHER OBSERVATIONS
1	STABLE CALLS	No change	
2	PAST OFFICE DATA	No change	
3	MEMORY RELOAD	No change	
4	BACKDT OFFICE DATA	No change	
5	INIT EXECUTE	No change	
6	ENABLE	Lights only	
7	STABLE CALLS	Lights only	
8	PAST OFFICE DATA	Lights only	
9	MEMORY RELOAD	Lights only	
10	BACKDT OFFICE DATA	Lights only	
11	INIT EXECUTE	Lights	ENABLE Lamp extinguishes
12	STABLE CALLS	Extinguishes only	
13	PAST OFFICE DATA	Extinguishes only	
14	MEMORY RELOAD	Extinguishes only	
15	BACKDT OFFICE DATA	Extinguishes only	
16	INIT EXECUTE	Extinguishes only	
17	TTY INIT	Lights only	
18	EMER LINE TRFR	Lights only	
19	EMER LINE TRFR	Extinguishes only	
20	TTY INIT	Extinguishes only	
21	SELECT 0	Lights only	
22	SELECT 1	No change	No change in lamp status
23	FORCE	Lights only	
24	FORCE	Extinguishes only	
25	FORCE	Lights only	
26	SELECT 0	Extinguishes	FORCE lamp extinguishes
27	SELECT 1	Lights only	
28	SELECT 0	No change	No change in lamp status
29	FORCE	Lights only	
30	SELECT 1	Extinguishes	FORCE Lamp extinguishes

TABLE A (Cont.)

STEP	MOMENTARILY OPR SWITCH	LAMP WITHIN SWITCH	OTHER OBSERVATIONS
31	LOCK	Lights only	
32	LOCK	Extinguishes only	
33	LOCK	Lights only	
34	SELECT 0	Lights only	LOCK Lamp extinguishes
35	SELECT 0	Extinguishes only	
36	INHIBIT BUILDING ALARM	Lights only	
37	INHIBIT BUILDING ALARM	Extinguishes only	
38	ALARM TRFR	Lights only	
39	ALARM TRFR	Extinguishes only	
40	ALARM RELEASE	No change	No change in lamp status
41	CLIPCORDER TERMINAL 02-21-112 ON SSPC UNIT TO GROUND		
42	ALARM RELEASE	Lights only	
43	ALARM RELEASE	Extinguishes only	
44	EXECUTE	Lights	PF Relay in SSPR Unit operates while switch is depressed.
45	EXECUTE	Extinguishes	
46	REMOVE CLIPCORDER FROM SSPC		

5. PROCESSOR (PROC) FRAME POWER
DISTRIBUTION AND CONTROL CHECK

5.1 False Ground Check

5.11 Set up ITE-4659 Volt-Ohm-Milliammeter for resistance measurement.

5.12 At rear of the Miscellaneous Power (MP) Frame, measure the resistance between T.S.(G) terminals 11 and 12 on the +24V Converter Unit by connecting the negative meter lead to terminal 12 and the positive lead to terminal 11. Allow sufficient time for the filter capacitor to charge before taking the reading.

5.13 This resistance should read approximately 3300 ohms.

NOTE: At the instant the Volt-Ohm-Milliammeter is connected, the pointer reads a very low resistance because the plates of the

electrolytic capacitor are not formed at that instant. As the filter capacitor begins to charge, the pointer gradually shifts toward a higher resistance value and finally reads approximately 3300 ohms after a lapse of a few minutes.

5.14 Repeat paragraphs 5.12 and 5.13 for T.S.(H).

5.15 At the Power Frame, measure the resistance between the ground bus at the rear of the Power Frame and the load terminal of the -48V Bus A fuse supplying the PROC Frame by connecting the positive meter lead to the ground bus and the negative lead to the load terminal.

5.16 This resistance should read infinite ohms.

5.17 Repeat paragraphs 5.15 and 5.16 for the -48V Bus B fuse supplying the PROC Frame.

5.2 +24V and -48V Distribution

5.21 At the MP Frame, insert ITE-4715 Capacitor Forming Tool in the fuse socket of the +24V PRF(0) fuse supplying the PROC Frame. Leave the tool in the socket until the lamp extinguishes indicating the filter capacitor is fully charged.

NOTE: The lamp normally glows very dimly and rapidly extinguishes.

5.22 Replace the +24V PRF(0) fuse at the MP Frame and the -48V A Bus fuse supplying the PROC at the Power Frame.

5.23 At the PROC Frame, measure the voltage between terminals +24CA and GRD CA on TS A located at the bottom front of the PROC Frame (Bay 0). This voltage should read between +20.75 and +26.25 volts DC.

5.24 Measure the voltage between terminals -48DA and GRD DA on TS A. This voltage should read between -42.75 and -52.5 volts DC.

5.25 Repeat paragraph 5.21 for the PRF(1) fuse.

5.26 Replace the +24V PRF(1) fuse at the MP Frame and the -48V B Bus fuse supplying the PROC at the Power Frame.

5.27 At the PROC Frame, measure the voltage between terminals +24CB and GRD CB on TS B located at the bottom front of the PROC Frame (Bay 1). This voltage should read between +20.75 and +26.25 volts DC.

5.28 Measure the voltage between terminals -48DB and GRD DB on TS B. This voltage should read between -42.75 and -52.5 volts DC.

5.3 Fuse Alarm Circuit Check (CU-0, Bay 0)

NOTE: Verify the FC181 circuit packs in positions 144-09 and 144-39 on Control Frame 0 have been unseated per instructions in paragraph 3.13.

5.31 Replace +24V fuses AA8 and AA9 in the PROC Frame Power Unit (Bay 0). Verify the POWER RESET (Power Unit) and the TEST MODE (3ACC Unit) lamps are lit.

5.32 Momentarily operate the POWER RESET key in the Power Unit and verify relays MN, MJO and NPA are operated; relays PAT, STAO, STB0, STB1, and STB2 are released and the POWER RESET lamp is extinguished. (See SD-1C911, FS2)

5.33 Insert ITE-5590 70 Type Fuse Alarm Verification Test Set into fuse position AAO (+24V) and verify that relay MJO releases and the POWER RESET lamp in the Power Unit lights.

5.34 Remove ITE-5590 and momentarily operate the POWER RESET key. Verify relay MJO operates and the POWER RESET lamp extinguishes.

5.35 Repeat paragraphs 5.33 and 5.34 for fuse positions AA1 (+24V) and AOP (-48V).

5.36 Replace all +24V and -48V fuses in the power unit fuse blocks and momentarily operate the POWER RESET key. Verify that no fuse alarms occur.

5.4 Power Sequencing Circuit Check (CU-0, Bay 0)

5.41 Using ITE-5632 Multimeter, measure the voltage at 06-06-015 on the 3ACC Unit. This voltage should read less than +0.3 volts DC. (See SD-1C900-01, FS7, Sym No. 20, Composite Diagram 2, NET PWRØFF0 and SD-1C911, FS 1, Sym No. 6.)

5.42 Leave the meter connected at 06-06-015 to monitor voltage changes during the following procedures.

5.43 Momentarily operate the POWER switch on the 3ACC Control Panel and verify the following:

- a) Relays STB0, STB1, and STB2 operate approximately one (1) second after relay STAO operates.
- b) ITE-5632 Multimeter reading changes from less than +0.3 volts DC to between +1.1 and +1.6 volts DC one (1) to two (2) seconds after the POWER switch is operated.
- c) The POWER lamp on the 3ACC Unit is lit.
- d) No converter LEDs are lit.
- e) The POWER RESET lamp on the Power Unit is extinguished.
- f) If manual lamp not lit, operate MANUAL key and verify manual lamp is lit.

5.44 Momentarily operate MANUAL key and verify MANUAL lamp is extinguished.

5.45 Momentarily operate POWER switch on the 3A CC Control Panel and verify that POWER lamp remains lit. This

test checks that power cannot be removed when not in manual mode. (See SD-1C900-01, FS 7, Sym No. 1 and Composite Diagram 2, Net MANKO)

5.46 Momentarily operate the MANUAL key on the 3ACC Control Panel and verify the following:

- a) ITE-5632 Multimeter reading changes to less than +0.3 volts DC just before relay STAO releases.
- b) The POWER and MANUAL lamps on the 3ACC Control Panel are extinguished.

5.47 Disconnect the Multimeter from the 3ACC.

5.5 Status Lamp Check (CU-0, Bay 0)

5.51 Operate and hold the LAMP & POWER TEST key on the 3ACC Control Panel and verify the POWER, ACTIVE, NOT ACTIVE, MANUAL, ERROR STOPPED and TEST MODE lamps on the 3ACC Control Panel are lit.

NOTE: This test will cause the LEDs on FB152 and FC262 circuit packs in 3ACC and MASCN Units, respectively, and the POWER RESET lamp on the Power Unit to light.

5.52 Release the LAMP & POWER TEST key and verify all of the above lamps that lit are now extinguished. (TEST MODE lamp remains lit.) Momentarily operate POWER RESET key to clear LED indicators.

5.6 Power Alarm Test (CU-0, Bay 0)

5.61 Operate the POWER switch on the 3ACC Control Panel and verify the following:

- a) The POWER and MANUAL lamps on the 3ACC Control Panel are lit.
- b) Relays MJO, MN, STAO, STBO, STB1, and NPA in the Power Unit are operated.
- c) No converter LEDs are lit.
- d) The LED on circuit pack FB152 in location 10-28 on the 3ACC Unit is not lit.

e) The LED on circuit pack FC262 in location 08-25 of the MASCN Unit is not lit.

f) The POWER RESET lamp on the Power Unit.

5.62 Operate and hold the LAMP & POWER TEST key on the #ACC Control Panel and verify the following:

- a) The LED lights on the FB152 and FC262 circuit packs and on all power modules in the bay.
- b) The POWER RESET lamp in the Power Unit is lit.
- c) The MN and NPA relays are released.

This test checks the power alarm (PA) net (PA11) to be continuous through all power mods and the FB152 and FC262 circuit packs. See SD-1C910-02, Sht B1GA for power alarm net layout.

NOTE: K1 relay on FC262 circuit pack should be operated during this test.

5.63 Release the LAMP & POWER TEST key and verify the following:

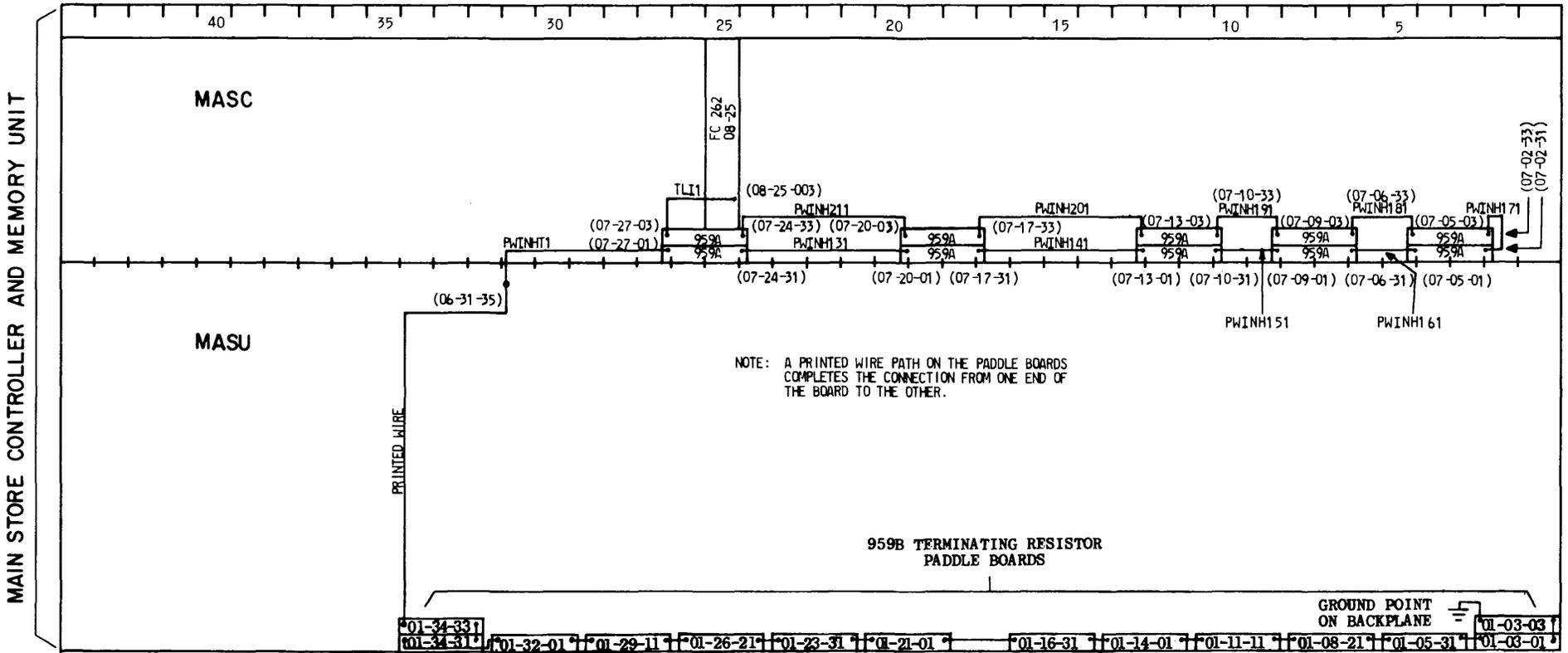
- a) The LEDs on all power modules and the FB152 and FC262 circuit packs are extinguished.
- b) The POWER RESET lamp is extinguished.
- c) The MN and NPA relays are operated.

5.7 Main Store Controller and Memory (MASCN) Power Checks (CU-0, Bay 0)

5.71 Operate the 3ACC POWER key "OFF" and block PROC Power Unit STBO relay in the released position. This opens the STB1 net to the FC262 circuit pack (Pins 114 and 115) and will inhibit a +24V start signal on net STBO1 (Pins 111 and 112) to the S9 power modules. (See SD-1C902-03, FS 9 and 10)

5.72 Operate the 3ACC POWER key "ON" and verify the potentials shown below for the MASCN Unit. No power alarms should occur.

<u>TEST POINT</u>	<u>POTENTIAL</u>
03-38-001	+4.5 to +5.5V DC
03-44-001	Less than 0.5V DC
03-44-005	Less than 0.5V DC
08-23-004	More than +1.0V DC



RP-0050/LE-5

FIG. 3 - MAIN STORE BUS TERMINATION LOOP (Rear View of Main Store)

5.73 Remove the block from the STBO relay and verify the potentials shown below for the MASC M Unit. No power alarms should occur.

<u>TEST POINT</u>	<u>POTENTIAL</u>
03-38-001	+4.5 to +5.5V DC
03-44-001	-4.75 - -5.25V DC
03-44-005	+11.65 - +12.35V DC
08-23-004	Less than 0.4V DC

5.74 With POWER key "OFF", unseat the S7 power module in location 03-38 of the MASC M Unit. Operate POWER "ON" and verify the potentials shown below for the MASC M Unit. Verify no alarm indications appear. The absence of +5V from the S7 will not allow the S9 to turn on. (See SD-1C902-03, FS 9)

<u>TEST POINT</u>	<u>POTENTIAL</u>
03-44-001	Less than -0.5V DC
03-44-005	Less than +0.5V DC

5.75 Operate POWER key "OFF" and replace the S7 power modules.

5.8 Main Store Bus Termination Loop Check (CU-0, Bay 0)

5.81 With POWER key "OFF", remove the 959A terminating resistor paddle board from Location 07-27-01 on the MASC M Unit (see Fig. 3) on the PROC Frame. This will open the termination loop monitored by the FC262 circuit pack and should not allow power to be applied to the CU.

5.82 Operate POWER key "ON" and verify power shuts down by observing that the POWER lamp on the 3ACC Control Panel is extinguished, PROC Power Unit relays STAO, STBO, STB1, and STB2 are released, the POWER RESET lamp is lit, and the LED on the FC262 circuit pack in position 08-25 of the MASC M Unit is lit.

NOTE: If power does not shut down, a ground exists somewhere in the termination loop. Figure 3 shows the Main Store Bus termination loop. Those portions of the loop labeled with net names are wire wrap connections and should be considered the probable area of trouble. Begin troubleshooting by repeating paragraphs 5.81 and 5.82 for the preceding 959A paddle board on the MASC M Unit. Continue this procedure until the ground is isolated.

5.83 Operate POWER key "OFF" and replace the 959A terminating resistor paddle board.

5.84 Clear the power alarm conditions by momentarily operating POWER RESET key.

5.85 Remove the 959A terminating resistor paddle board from Location 01-03T-03 on the MASC M Unit (see Fig. 3). This will again open the termination loop and not allow power to be applied to the CU.

5.86 Repeat paragraph 5.82.

NOTE: If power does not shut down, a ground exists in the termination loop on the MASC M Unit. Begin troubleshooting by operating POWER key "OFF", removing the preceding 959B paddle board, and repeating paragraph 5.82. Continue this procedure until the ground is isolated.

5.87 Operate POWER key "OFF" and replace the 959B terminating board.

5.88 Clear the power alarm conditions by momentarily operating POWER RESET key.

5.9 Main Store Voltage Monitor Circuit Checks (CU-0, Bay 0)

5.901 With POWER key off, unseat the S3 power module from location 02-05 (Frame Level 08-05) in the PROC Power Unit and operate POWER key "ON". FC262 circuit pack (Pin 308) should detect the absence of +5V and not allow power to be applied to the CU. (See SD-1C902-03, FS 9 and 10, Net 5V039A)

5.902 Verify the conditions indicated in paragraph 5.82.

5.903 Operate POWER key "OFF", replace the S3 power module and clear the alarm indications by momentarily operating the POWER RESET key.

5.904 With POWER key "OFF", unseat the A8 power module from location (Frame EQL) 46-29 in the PROC Frame and operate POWER key "ON". FC262 circuit pack should detect the absence of +3V on the associated net (3V046A-D) and not allow power to be applied to the CU. (See SD-1C902-03, FS 9 and 10)

5.905 Verify the conditions indicated in paragraph 5.82.

5.906 Operate POWER key "OFF",
replace the A8 power module
and clear the alarm conditions by momen-
tarily operating POWER RESET key.

5.907 Repeat paragraphs 5.904
through 5.906 for each remain-
ing A8 power module in the MASCM Unit.

5.908 With control unit power off,
reset all PROC Frame Bay 0
circuit packs and memory planes.

5.909 Operate 3ACC Unit power key
to the "ON" position and
verify the POWER lamp lights and no power
alarms occur.

5.910 Repeat paragraphs 5.3
through 5.909 for CU-1 in
Bay 1 of PROC Frame.

No arrows shown due to
extensive changes.

Manager, ESS Installation & Field Engineering

5-19-78

Reason for Reissue:
To reflect new Main Store
and Power Unit.