

Lucent Technologies
Bell Labs Innovations



4ESS™ Switch

Office Procedures After Loss of AC Power

234-151-022
Issue 4
May 2002

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How Are We Doing?

Document Title: **4ESS™** Switch Office Procedures After Loss of AC Power

Document No.: 234-151-022

Issue 4

Date: May 2002

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TASK INDEX LIST

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Acceptance	NTP-002
Maintenance Philosophy.....	TAD-100
Maintain System After Loss of AC Power	TAP-101
Restore Power to the 4ESS™ Switch System.....	NTP-004
Checklist	CKL-891
How To Use This Document	TNG-893

Acceptance

This document requires no acceptance procedures.

Monitor Battery Reserves While Maintaining Call Processing

DO THE ITEMS BELOW IN THE ORDER LISTED	FOR DETAILS, GO TO	
<p>Warning: An antistatic wrist strap must be worn to prevent electrostatic discharge and possible damage to circuit packs while handling or installing circuit packs or backplane cables.</p> <p>Note: It is important that you have a complete understanding of TAD-100 and TAP-101.</p>		
1	At any time ac power is restored, abort this procedure immediately and begin the power-up process as necessary.	NTP-004
2	At 1B Processor MCC terminal, enter 108 to obtain System Status Page (108).	—
3	<p>Enter the following commands to restrict recent change:</p> <ul style="list-style-type: none"> • At 1B Processor MCC terminal, enter 801. (801 - RESTRICT RC colored black on white). <p style="margin-left: 40px;"><i>R e s p o n s e</i> At 1B Processor MTC ROP: INH:RC MSG, RESTRICTED TO MOC</p> <ul style="list-style-type: none"> • At 3B Processor MCRT, enter the following messages: INH:RCV:APPDB,APP ALL! INH:FTA;APP ALL! INH:RCV:OFF! 	—
4	Connect Digital Voltmeter (DVM) to +140-volt supply for monitoring.	DLP-500
5	Connect Digital Voltmeter (DVM) to -48-volt supply for monitoring.	DLP-501
	<p>Note: If the +140-volt and/or the -48-volt supplies drop below specified values, then it will be necessary for their associated loads to be powered down. It is very important to keep a constant vigil of the voltage levels to ensure that if the supply(ies) voltage does drop below the specified value(s), immediate action can be taken.</p>	

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
6	<p>Continue monitoring the +140-volt and -48-volt supplies until either the ac power is restored or the dc supplies drop below the following values:</p> <ul style="list-style-type: none"> • If the +140-volt supply has not been powered down and drops below 126-V, go to Step 7. • If the -48-volt supply has not been powered down and drops below 44.6 volts, go to Step 38. <p>When the ac power is restored, go immediately to NTP-004.</p>	—
REMOVING POWER FROM PERIPHERAL EQUIPMENT - VOLTAGE BELOW 126-V		
7	If the +140-volt supply drops below 126 volts, perform Steps 8 through 37; otherwise, repeat from Step 6.	—
8	If the 1B Processor has not been put in the SUSPEND mode (701 on 1B Processor MCC 1990 Display Page), perform Steps 9 through 16; otherwise, if the 1B Processor has been put in the SUSPEND mode, go to Step 17.	—
9	At the back of 1B Processor Cabinet 0, set the UAS switch to UTIL ALW position.	—
10	At the back of 1B Processor Cabinet 1, set the UAS switch to UTIL ALW position.	—
11	At 1B Processor MCC terminal, enter 106 to obtain the MUP Status and Control Page (106).	—
12	<p>At 1B Processor MCC terminal, enter 613 (UAS INTF ALW) to allow interfering mode.</p> <p>Response: Under the UAS MODE field, UAS: INTERFERING is colored white on red.</p>	—
13	At 1B Processor MCC terminal, enter 118 to obtain the 1B Processor Status Display Page (118).	—
14	At 1B MTC, enter RMV:CC a! to remove standby CC. (where a = standby CC)	—
15	At 1B Processor MCC terminal, enter 1990 to obtain the Dead Start Page (1990).	—
16	<p>At 1B Processor MCC terminal, enter 701 (SUSPEND) to suspend the 1B Processor.</p> <p>Response: 701 - SUSPEND is colored white on red</p>	—

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
	Note: When powering down the peripheral equipment, disregard system responses since the equipment will be duplex failed.	
17	If the alarms have not been disabled, at the MA 0 frame, unseat the E , F , and G fuses to disable the alarms.	—
18	Power down all TSI controllers, IPUBs, and ALCs (0 and 1).	DLP-502
19	Power down all TMS controllers and IPUBs (0 and 1).	DLP-503
20	Power down all DIF controllers (0 and 1), DIUs, and IPUBs (0 and 1).	DLP-504
21	If the office contains VIF frames, power down all VIF controllers (0 and 1), VIUs, and IPUBs (0 and 1).	DLP-505
22	If the office contains EST frames, power down all EST controllers (0 and 1), ESUs, and IPUBs (0 and 1).	DLP-506
23	If the office contains DT frames, power down all DT controllers (0 and 1) and DTUs.	DLP-507
24	Power down all XTSI controllers (0 and 1), A-link controllers, D3Us, IBUs, SPUs, IPUBs (0 and 1), and fans.	DLP-508
25	If the office contains an SCS, power down all SCS controllers (0 and 1), SCUs, IPUBs (0 and 1) and fans. If the office contains CDSU and AAP, power down all the CDSUs (1 and 2) and turn each SP control knob to the "off" position on AAP cabinet.	DLP-509
26	Power down PUBB 0 (0 and 1).	DLP-510
27	Power down all SP controllers and IPUBs (0 and 1).	DLP-511
28	At each DRO, operate the ENABLE/DISABLE switch to DISABLE position.	—
29	Power down the NCLK frame.	DLP-512
<i>SHUTTING DOWN ASSOCIATED POWER PLANTS AND CONVERTERS</i>		
30	If your office contains 620A type power plant, power down the 620A power plant.	DLP-513
31	If your office contains 620C type power plant, power down the 620C power plant.	DLP-514
32	If your office contains 625B type power plant, power down the 625B power plant.	DLP-515
33	If your office contains 625C type power plant, power down the 625C power plant.	DLP-514
34	If your office contains 611N type power plant, power down the 611N power plant.	DLP-516

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
35	If your office contains other types of power plants associated with the 4ESS switch peripheral equipment, power down those power plants per the appropriate vendor documentation.	—
36	Locate the -24 V power converters associated with the SP complexes (664A Power plant) and power down.	—
37	Return to Step 6.	—
REMOVING POWER FROM 1B PROCESSOR COMMUNITY		
38	If the - 48-volt supply drops below 44.6 volts, perform Steps 39 through 55; otherwise, return to Step 6.	—
39	If the 1B Processor has not been put in the SUSPEND mode (701 on 1B Processor MCC 1990 Display Page), perform Steps 40 through 47; otherwise, if the 1B Processor has been put in the SUSPEND mode, go to Step 48.	—
40	At the back of 1B Processor Cabinet 0, set the UAS switch to UTIL ALW position.	—
41	At the back of 1B Processor Cabinet 1, set the UAS switch to UTIL ALW position.	—
42	At 1B Processor MCC terminal, enter 106 to obtain the MUP Status and Control Page (106).	—
43	At 1B Processor MCC terminal, enter 613 (UAS INTF ALW) to allow interfering mode. Response: Under the UAS MODE field, UAS: INTERFERING is colored white on red	—
44	At 1B Processor MCC terminal, enter 118 to obtain the 1B Processor Status Display Page (118).	—
45	At 1B MTC, enter RMV:CC a! to remove standby CC. (where a = standby CC)	—
46	At 1B Processor MCC terminal, enter 1990 to obtain the Dead Start Page (1990).	—
47	At 1B Processor MCC terminal, enter 701 (SUSPEND) to suspend the 1B Processor. Response: 701 - SUSPEND is colored white on red	—

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
	Note: When powering down the 1B Processor, disregard system responses since the units will be duplex failed.	
48	If the alarms have not been disabled, at the MA 0 frame, unseat the E , F , and G fuses to disable the alarms.	—
49	Power down the 1B Processor cabinet.	DLP-517
50	Power down APIs (0 and 1).	DLP-518
51	Power down all equipped IO/IOPs and IPUBs (0 and 1).	DLP-519
	REMOVING POWER FROM CNI RING CABINETS	
52	Power down the CNI ring cabinets.	DLP-520
	REMOVING POWER FROM 3B APS EQUIPMENT	
	Note: When powering down the 3B APS, disregard system responses since the units will be duplex failed.	
53	Power down the 3B21D APS cabinet.	DLP-521
	REMOVING POWER FROM RMS-D2 CABINET	
54	Power down the RMS-D2 cabinet.	DLP-522
55	Return to Step 6.	—

Restore the 4ESS™ Switching System After Return of AC Power

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
1	Monitor the voltage for the +140 and -48 supplies. When the ac is restored and the voltage readings are above 120 for the +140 volt supply and above 42.75 for the -48 volt supply, contact power group before continuing with this procedure.	—
	<p>Note: Depending on when the ac power is restored to this office, some of this procedure may not be required to be performed. If a particular piece of equipment was not powered down, skip those steps and continue the procedure at the appropriate step.</p>	
	<i>POWERING UP THE POWER PLANTS</i>	
2	If your office contains 620, 625, and/or 611 type power plants and they were powered down, perform Steps 3 through 7; otherwise, go to Step 8.	—
3	If your office contains 620A type power plant, restore power to the 620A power plant.	DLP-513
4	If your office contains 620C type power plant, restore power to the 620C power plant.	DLP-514
5	If your office contains 625B type power plant, restore power to the 625B power plant.	DLP-515
6	If your office contains 625C type power plant, restore power to the 625C power plant.	DLP-514
7	If your office contains 611N type power plant, restore power to the 611N power plant.	DLP-516
8	Locate the -24 V power converters associated with the SP complexes (664A power plant) and power up.	—
9	If your office contains other types of power plants associated with the 4ESS switch and they were powered down, restore power to those power plants per the appropriate vendor documentation.	—
	<i>POWERING UP THE DRO</i>	
10	If -48v fuses for DROs (oscillators) were removed, insert fuses.	DLP-545

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
	<i>RESTORING POWER TO THE 1B PROCESSOR COMMUNITY</i>	
11	Restore power to the 1B Processor cabinets.	DLP-523
12	If DVM is still connected, disconnect the DVM from the API frame.	—
13	Power up and rotate the ROS/OFF switches to the normal position in the API frames.	DLP-524
14	Power up and rotate the ROS/OFF switches to the normal position in the IO/IOP frames.	DLP-525
	<i>RESTORING POWER TO THE PERIPHERAL EQUIPMENT</i>	
	Note: Some frames/cabinets may not be equipped in your office. Skip the steps for the equipment that you do not have.	
15	Power up and rotate the ROS/OFF switches to the normal position in the PUBB 0 frame.	DLP-527
16	Power up and rotate the ROS/OFF switches to the normal position in the NCLK frame; then verify.	DLP-528
17	Power up and rotate the ROS/OFF switches to the normal position in the SP frames.	DLP-529
18	Power up and rotate the ROS/OFF switches to the normal position in the TMS frames.	DLP-530
19	If DVM is still connected, disconnect the DVM from TSI 0 frame.	DLP-531
20	Power up and rotate the ROS/OFF switches to the normal position in the TSI frames.	DLP-532
21	Power up and rotate the ROS/OFF switches to the normal position in the DIF frames.	DLP-533
22	Power up and operate the ROS/NORM switches to the NORM position in the XTSI cabinets.	DLP-534
23	Power up and rotate the ROS/OFF switches to the normal position in the EST frames.	DLP-535
24	Power up and rotate the ROS/OFF switches to the normal position in the VIF frames.	DLP-536
25	Power up and rotate the ROS/OFF switches to the normal position in the DT frames.	DLP-537

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
26	Power up the AAP by setting both SP knobs to the On position. Power up the CDSUs (1 and 2). Power up and operate the ROS/NORM switches to the NORM position in the SCS cabinet.	DLP-538
27	Power up the RMS-D2 cabinet.	DLP-539
28	Do not perform a Hard A (01) at this time. At 1B Processor MCC terminal, set up a force configuration to the 0 side	DLP-540
	RESTORING POWER TO THE 3B APS EQUIPMENT	
29	<p>Note: The referenced DLP must be used to perform this step to boot to Minimum Configuration.</p> <p>If power was removed from the 3B21D APS cabinet, restore power to the 3B21D APS cabinet and configure.</p>	DLP-541
	RESTORING POWER TO THE CNI RING CABINETS	
30	Restore power to the CNI Ring cabinets.	DLP-526
	RESTORING SYSTEM OPERATION	
31	If system is in Minimum Configuration (Step 29), continue at Step 32; otherwise, go to Step 34.	—
32	Perform manual recovery of the 3B21D APS.	DLP-542
33	Wait for the 3B21D APS to become stable.	—
34	At 1B Processor MCC terminal, enter 1990 to obtain the Dead Start Page (1990).	—
35	At 1B Processor MCC terminal, enter 702 (RUN) to allow the 1B Processor to run. Response: 702 - RUN is colored black on green	—
36	Perform manual recovery of the 1B Processor.	DLP-543
37	If the system clock time data is incorrect, set the system clock.	DLP-544
38	At 1B Processor MTC terminal, enter message AUD:NUM (43,44,45,66,72)!	—

DO THE ITEMS BELOW IN THE ORDER LISTED		FOR DETAILS, GO TO
39	While audits are running, continue to perform succeeding Items.	—
40	If any errors are detected and Not corrected, inform next higher support group of audit results and follow their instructions for further action.	—
41	During execution of audits 43 and 66, scan output messages periodically for abort message.	—
42	At rear of 1B Processor Cabinet 0, set the UAS switch to UTIL INH position.	—
43	At rear of 1B Processor Cabinet 1, set the UAS switch to UTIL INH position.	—
44	At 1B Processor MCC terminal, enter 106 to obtain the MUP Status and Control Page (106).	—
45	At 1B Processor MCC terminal, enter 612 (UAS NON-INTF ALW) to inhibit interfering mode. Response: 612 - UAS NON-INTF ALW is colored white on black At bottom of page, UAS: NON-INTERFERING is displayed.	—
46	At the MA O frame, insert the E, F and G fuses to enable the office alarms.	—
47	Ensure that all inhibits and restrictions have been allowed: <ul style="list-style-type: none"> • If 801 - RESTRICT RC is colored black on white, enter 801 (RESTRICT RC) to allow recent changes (801 - RESTRICT RC colored white on black). • At 3B Processor MCRT, enter the following messages: ALW:RCV:APPDB,APP ALL! ALW:FTA;APP ALL! INH:RCV:OFF! 	—
48	Return to normal office procedures for maintenance of any out-of-service equipment.	—
49	STOP! YOU HAVE COMPLETED THIS PROCEDURE.	—

Maintenance Philosophy

GENERAL

This volume aids local operations personnel and support organizations if there is an extended loss of ac power (both commercial and emergency generators). A communication link with support organizations may or may not be maintained during the entire outage. The document is used to determine **when** and **how** to shut down the 4ESS equipment to maximize call processing capability while keeping office restoral time to a minimum. Use of these procedures also result in extremely low plug-in replacement and no cell damage in the +140 volt, -48 volt, and +24 volt battery plants.

With the introduction of new 4ESS equipment such as SCS and XTSL which are powered by -48 volts rather than +140 volts and the use of dual power plants providing the -48 volts, it is no longer practical to try to extend battery life during an ac power outage by "simplexing" the 4ESS office. During an ac power outage, the procedure will be to monitor both the -48 volts and +140 volts and when either reaches the minimum operating voltage, their associated 4ESS equipment will be powered down. Both plants must be monitored since the particular office configuration will determine which battery plant will reach minimum voltage first. If an office also has a +24 volt battery plant, it need not be monitored, since the +24 volt drain is small and there will be more reserve time for the +24 volts than for either the -48 volts or +140 volts.

INITIAL PREPARATION

Upon receiving this document, all office personnel become familiar with the procedures, and "dry runs" are initiated to familiarize them with the power plant layout of the individual office.

SEQUENCE OF EVENTS

When ac power is lost, the following things are done in the order shown. **IMPORTANT:** At any time that ac power is restored, these steps are discontinued and restoral procedures are started.

1. Monitor +140 V and -48 V battery voltages.
2. When either the +140 V or -48 V battery voltages reach minimum operating voltage, power down peripheral and/or processor frames, as appropriate to prevent battery reversal.
3. Power down all converter plants.
4. Power down all converters not controlled by frame power switches.

PRECAUTIONS

In an emergency, follow these TOP instructions as accurately as possible. Do not deviate from these directions unless told to do so by the support organizations. Complete the procedures methodically and quickly, and become familiar with upcoming actions to be taken. If there is available personnel, one person remains in constant contact with on-line support organization to report specified data and TOP progress.

Care must be taken to ensure that damage to the battery plants does not occur due to battery reversal. The power group must be kept informed of your power levels.

The +140 volt and -48 volt power to a 4ESS office shall NOT be removed or restored via the circuit breakers in the battery plants. Doing so can cause the following results:

1. Massive loss of converters and circuit packs in the 4ESS switch.
2. If proper procedures are followed to restore power after the power plant circuit breakers are tripped, **ALL** the ABC fuses and PDF fuses must be removed in the entire 4ESS switch. This causes extended time to "form" all the filter capacitors and replacement of fuses leading to extremely long 4ESS switch restoral to service time.

AMBIENT TEMPERATURE AND HUMIDITY

The following table is used for reference. All equipment shall remain functional, operate as expected during actual service conditions, within the room ambient temperature (see Note 1) and humidity limits shown in Table A.

Table A (see Note 2)		
Conditions	Limits	
	Fahrenheit	Centigrade
Operating Temperature	+40° to +100°	+4.5° to 38°
Short-term Temperature (see Note 3)	+35° to +120°	+1.7° to +49°
Maximum Rate of Temperature Change	15° per hour 0.25° per min.	8.3° per hour 0.14° per min.
Operating Relative Humidity	20% to 55%	
Short-term Relative Humidity (see Note 3)	10% to 80%, but not to exceed 0.024 lbs. of water/ lb. of dry air.	

Notes:

1. Room ambient refers to conditions at a location 5 feet above the floor and 15 inches in front of the equipment.
2. Table A is based on ANSI T1.304-1989, *Telephone Office Equipment Ambient Temperature Requirements*.
3. Short-term refers to a period of not more than 72 consecutive hours and a total of not more than 15 days in one year. (This refers to a total of 360 hours in any given year, but, no more than 15 occurrences during that one year period).

Maintain System After Loss of AC Power

1. Verify ac power has been lost.

2. Are the generators running and on-line?

If **Yes** or **undetermined**, go to Step 3.
If **No**, go to Step 5.

3. Notify your next higher support group of system condition, but take no action now unless instructed.

Note: This will be a good time to review TAD-100.

4. Repeat from Step 1.

Note: Estimated time until ac power is regained may change as time passes. Reports on power restoral should be constantly monitored. **At any time ac power is restored, these procedures should be stopped and system restoral started using NTP-004.**

5. Contact power group and find out the estimated time when generators will be in operation.

Note: Care must be taken to ensure that battery plants are not damaged due to battery reversal. Voltage limits are specified by the battery manufacturer. Check the batteries to see what the specified voltage is and allow time to shut off equipment prior to reaching that low level limit.

6. Find out from the local power group personnel, or other support group, the estimated time until ac power restoral.

7. Establish contact with your next higher support group and report the condition of the system.

8. Verify that the latest version of the following tapes are available:

- 1B Processor Generic Tape
- ODA Tape
- Network Management (NWM) Tape
- Trunk Out-of-Service List (TOSL) Tape
- 3B APS Generic Tape
- 3B DB Tape
- TOP tape.

If your backup tapes are not current, notify your next higher support group to determine course of action.

9. Has the office been on battery discharge for 20 minutes or longer?

If **Yes**, go to NTP-003.

If **No**, go to Step 10.

10. Take no action now unless directed, but become familiar with NTP-003 and TAD-100; then repeat from Step 9.

Connect Digital Voltmeter (DVM) to +140-Volt Fuse Location

Warning: 140 volts dc is present. Use care to avoid shorts to ground.

1. Locate fuse position AOC (may be stamped either AOC or 1AOC), EQL 107-13, at the rear of Bay 1 in the lowest member number TSI-B frame.
2. Connect the plus (+) lead on the DVM to the AOC fuse per Figure 1.
3. Connect the common (-) lead on the DVM to either a ground punching or the mounting plate per Figure 1.
4. Position the DVM on the converter housing unit so it can be easily read from the front of the TSI frame.
5. Condition the DVM to +300 volt dc scale and turn on.
6. Check that the DVM reads between 120 to 151.9 volts.
7. Record the DVM reading for reference.
8. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

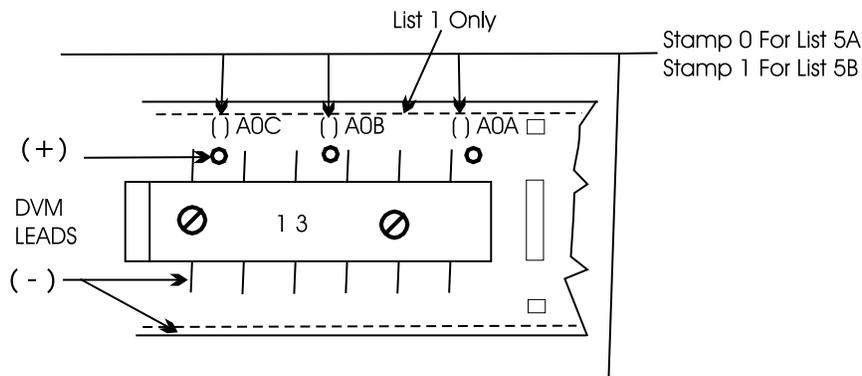


Figure 1. DVM Connection Location

Connect Digital Voltmeter (DVM) to -48-Volt Monitoring Point

1. At 1B Processor MCC terminal, enter **118** to obtain the 1B Processor Status Display Page.
2. At 1B Processor MCC terminal, on the 1B Processor Status Display Page (118), determine which API is in **STBY** state.

Warning: -48 volts dc is present. Use care to avoid shorts to ground.

3. At the back of the standby API frame, connect the plus (+) lead of one DVM to the terminal strip (**TS1**) per Figure 1.
4. At the back of the standby API frame, connect the common (-) lead of the DVM to the terminal strip (**TS1**) per Figure 1.

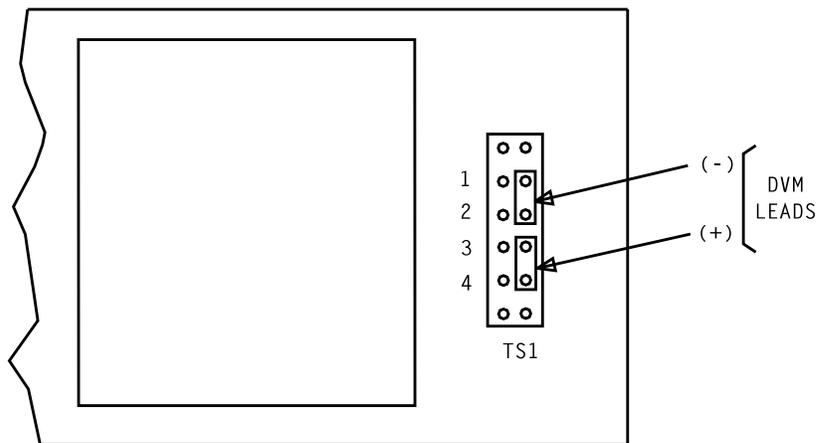


Figure 1. DVM Connection Location

5. Position the DVM so it can be easily read.
6. Condition the DVM to be able to read 48 volts and turn on.

7. Check that the DVM reads between 42.75 to 52.08 volts.
8. Record the DVM reading for reference.
9. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove from Service and Power Down TSI Frames

1. At IPUB 0 power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At IPUB 0 power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
3. At Controller 0 power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At Controller 0 power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
5. At ALC 0 power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
6. At ALC 0 power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
7. At IPUB 1 power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
8. At IPUB 1 power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
9. At Controller 1 power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
10. At Controller 1 power switch for frame to be powered down, press the **ROS/OFF** pushbutton.

11. At ALC 1 power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
12. At ALC 1 power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
13. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove from Service and Power Down TMS IPUBs and Controllers

1. At **C0IPUB0** power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At **C0IPUB0** power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
3. At **C1IPUB0** power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At **C1IPUB0** power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
5. At Controller 0 power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
6. At Controller 0 power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
7. At **C0IPUB1** power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
8. At **C0IPUB1** power switch for frame to be powered down, press the **ROS/OFF** pushbutton.
9. At **C1IPUB1** power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
10. At **C1IPUB1** power switch for frame to be powered down, press the **ROS/OFF** pushbutton.

11. At Controller 1 power switch for frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.

12. At Controller 1 power switch for frame to be powered down, press the **ROS/OFF** pushbutton.

13. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove from Service and Power Down DIF IPUBs, Controllers and DIUs

1. At IPUB 0 power switch for DIF/DIF-E1 frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At IPUB 0 power switch for DIF/DIF-E1 frame to be powered down, press the **ROS/OFF** pushbutton.
3. At Controller 0 power switch for DIF/DIF-E1 frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At Controller 0 power switch for DIF/DIF-E1 frame to be powered down, press the **ROS/OFF** pushbutton.
5. At IPUB 1 power switch for DIF/DIF-E1 frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
6. At IPUB 1 power switch for DIF/DIF-E1 frame to be powered down, press the **ROS/OFF** pushbutton.
7. At Controller 1 power switch for DIF/DIF-E1 frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
8. At Controller 1 power switch for DIF/DIF-E1 frame to be powered down, press the **ROS/OFF** pushbutton.
9. At one equipped DIU, operate slide switch to the down position.
10. Repeat Step 9 for each equipped DIU.

11. Have all DIF/DIF-E1 frames been powered down?

If **Yes**, go to Step 12.

If **No**, repeat from Step 1.

12. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Remove from Service and Power Down VIF IPUBs, Controllers and VIUs

1. At IPUB 0 power switch for VIF frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At IPUB 0 power switch for VIF frame to be powered down, press the **ROS/OFF** pushbutton.
3. At Controller 0 power switch for VIF frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At Controller 0 power switch for VIF frame to be powered down, press the **ROS/OFF** pushbutton.
5. At IPUB 1 power switch for VIF frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
6. At IPUB 1 power switch for VIF frame to be powered down, press the **ROS/OFF** pushbutton.
7. At Controller 1 power switch for VIF frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
8. At Controller 1 power switch for VIF frame to be powered down, press the **ROS/OFF** pushbutton.
9. At one equipped VIU, operate 80/81A breaker to the **OFF** position.
10. Repeat Step 9 for each equipped VIU.

11. Have all VIF frames been powered down?

If **Yes**, go to Step 12.

If **No**, repeat from Step 1.

12. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Remove from Service and Power Down EST IPUBs, Controllers and ESUs

1. At IPUB 0 power switch for EST frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At IPUB 0 power switch for EST frame to be powered down, press the **ROS/OFF** pushbutton.
3. At Controller 0 power switch for EST frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At Controller 0 power switch for EST frame to be powered down, press the **ROS/OFF** pushbutton.
5. At IPUB 1 power switch for EST frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
6. At IPUB 1 power switch for EST frame to be powered down, press the **ROS/OFF** pushbutton.
7. At Controller 1 power switch for EST frame to be powered down, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
8. At Controller 1 power switch for EST frame to be powered down, press the **ROS/OFF** pushbutton.
9. At one equipped ESU, set 142C power converter switch to the **OFF** position.
10. Repeat Step 9 for each equipped ESU.

11. Have all EST frames been powered down?

If **Yes**, go to Step 12.

If **No**, repeat from Step 1.

12. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Remove from Service and Power Down DT Controllers and DTUs

1. At Controller 0 power switch for DT frame to be powered down, press the **CONTR 0/C0 PWR** pushbutton.
2. At Controller 1 power switch for DT frame to be powered down, press the **CONTR 1/C1 PWR** pushbutton.
3. At one equipped DTU, press the **U(0-8) PWR** pushbutton.
4. Repeat Step 3 for each equipped DTU.
5. Have all DT frames been powered down?
If **Yes**, go to Step 6.
If **No**, repeat from Step 1.
6. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Power Down XTSIs

Note: Power down of the units should be performed in the order given in Table A.

1. Using Table A, determine location of one power switch in the XTSI to be powered down.

Pack	Location
IPC 0	52-188
MPC 0	52-066
ALD 0	52-014
IPC 1	61-188
MPC 1	61-066
ALD 1	61-014

2. At the power switch determined in Step 1 for XTSI cabinet to be powered down, operate the **ROS/NORM** switch to the **ROS** position.
3. At the power switch for XTSI cabinet to be powered down, simultaneously press the **OFF** and **MOR** pushbuttons.
4. Have all the units listed in Table A been powered down?
If **Yes**, go to Step 5.
If **No**, repeat from Step 1 for the next unit.
5. At one equipped D3U power switch, operate the **ROS/NORM** switch to the **ROS** position.
6. At the D3U power switch, simultaneously press the **OFF** and **MOR** pushbuttons.
7. Have all the equipped D3Us been powered down?
If **Yes**, go to Step 8.
If **No**, repeat from Step 5 for the next equipped D3U.

8. Is this XTSl equipped with SPUs?
If **Yes**, go to Step 9.
If **No**, go to Step 12.
9. At one equipped SPU power switch, operate the **ROS/NORM** switch to the **ROS** position.
10. At the SPU power switch, simultaneously press the **OFF** and **MOR** pushbuttons.
11. Have all the equipped SPUs been powered down?
If **Yes**, go to Step 12.
If **No**, repeat from Step 9 for the next equipped SPU.
12. Is this XTSl equipped with an IBU?
If **Yes**, go to Step 13.
If **No**, go to Step 15.
13. At the equipped IBU power switch (EQL 14-148), operate the **ROS/NORM** switch to the **ROS** position.
14. At the IBU power switch, simultaneously press the **OFF** and **MOR** pushbuttons.
Note: Fuses should be removed in the order given in Table B.
15. Using Table B, determine the location of one fan fuse in XTSl cabinet being powered down.

Table B	
Fan	Fuse Location
E	A2-048-A
B	A3-064-A
G	A4-072-B
F	B3-166-A
C	B4-174-B
A	B2-150-B

16. At the XTSI cabinet fuse panel, remove the fuse determined in Step 15.

17. Have all the fuses listed in Table B been removed?

If **Yes**, go to Step 5.

If **No**, repeat from Step 15 for the next fuse.

18. Have all the equipped XTSIs in this office been powered down?

If **Yes**, go to Step 19.

If **No**, repeat from Step 1 for the next equipped XTSI.

19. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Remove from Service and Power Down AAP, CDSU and SCS Cabinets

Note: Use Table A throughout this procedure for additional EQL information.

Table A	
Unit	Location
SCSC Cabinet	
IPUBs Controllers	45, 53
SCU	36
Fans	28
HDUs	11, 19
SCSU Cabinet	
SCUs	36, 45, 53, 62
HDUs	11, 19
TN1984 is Contr and TN1671 is IPUB.	

1. At TN1984 (CONTR) and TN1671 (IPUB) circuit packs of Controller 0 in an SCS 0 cabinet, operate the **ROS** switch to the **ROS** position.

Do not power down any hard drives yet.

2. At TN1984 (CONTR) and TN1671 (IPUB) circuit packs of Controller 0 in an SCS0 cabinet (Step 1), simultaneously press the **OFF** and **MOR** pushbuttons.

3. At TN1984 (CONTR) and TN1671 (IPUB) circuit packs of Controller 1 in an SCS 0 cabinet, operate the **ROS** switch to the **ROS** position.

Do not power down any hard drives yet.

4. At TN1984 (CONTR) and TN1671 (IPUB) circuit packs of Controller 1 in an SCS 0 cabinet (Step 1), simultaneously press the **OFF** and **MOR** pushbuttons.

5. At a TN1984 (SCU) circuit pack, operate the **ROS** switch to the **ROS** position.

Do not power down any hard drives yet.

6. At the same TN1984 (SCU) circuit pack (Step 5), simultaneously press the **OFF** and **MOR** pushbuttons.

7. Have all the units in this cabinet been powered down?
If **Yes**, go to Step 8.
If **No**, repeat from Step 5 for each unit in the cabinet.
8. At a UN356 hard drive power switch, simultaneously press the **OFF** and **MOR** pushbuttons.
9. Have all the hard drives in this SCS cabinet been powered down?
If **Yes**, go to Step 10.
If **No**, repeat from Step 8 for each hard drive.
10. At an SCS cabinet fuse panel, remove the fuses for **FAN A**, **FAN B**, and **FAN C**.
11. Have all the SCS cabinets for this member number been powered down?
If **Yes**, go to Step 12.
If **No**, repeat from Step 5 for the next SCS cabinet.
12. Have all the SCS member numbers in this office been powered down?
If **Yes**, go to Step 13.
If **No**, repeat from Step 1 for the next SCS member number.
13. On-site, locate the CDSC cabinets associated with the CDSUs.
14. Power down all the CDSUs, both CDSU1s and CDSU2s.
15. Locate the AAP and its associated console terminal.
16. At the AAP console terminal, press the F10 key to allow viewing of system messages.
17. At the rear of the AAP cabinet and in the top row of packs, identify the two SP control knobs. These knobs have three positions: On, Standby and Off.
18. Turn each of the respective control knobs to the **Standby** position.
19. Observe the system messages on the AAP console terminal.

Note: It may take several minutes for this message to appear.

20. When the message "**System is down**" appears, turn each SP control knob to the **Off** position.

21. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove from Service and Power PUBB 0

1. At **PUB 0** power switch in the PUBB 0 frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At **PUB 0** power switch in the PUBB 0 frame, press the **ROS/OFF** pushbutton.
3. At **PUB 1** power switch in the PUBB 0 frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At **PUB 1** power switch in the PUBB 0 frame, press the **ROS/OFF** pushbutton.
5. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove from Service and Power Down SP IPUBs and Controllers

1. Is an SP 2 frame equipped in this office?
If **Yes**, go to Step 2.
If **No**, go to Step 14.
2. At IPUB 0 power switch in SP 2 frame (EQL 1-80-43), rotate the **ROS/OFF** switch clockwise to the **ROS** position.
3. At IPUB 0 power switch in SP 2 frame, press the **ROS/OFF** pushbutton.
4. At Controller 0 power switch in SP 2 frame (EQL 1-46-03), rotate the **ROS/OFF** switch clockwise to the **ROS** position.
5. At Controller 0 power switch in SP 2 frame, press the **ROS/OFF** pushbutton.
6. At IPUB 1 power switch in SP 2 frame (EQL 2-80-43), rotate the **ROS/OFF** switch clockwise to the **ROS** position.
7. At IPUB 1 power switch in SP 2 frame, press the **ROS/OFF** pushbutton.
8. At Controller 1 power switch in SP 2 frame (EQL 2-46-03), rotate the **ROS/OFF** switch clockwise to the **ROS** position.
9. At Controller 1 power switch in SP 2 frame, press the **ROS/OFF** pushbutton.
10. At **PPL** power switch (EQL 0-52-69) in SP 2 frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
11. At **PPL** power switch (EQL 0-52-69) in SP 2 frame, press the **ROS/OFF** pushbutton.
Warning: On the **98A2** type converter, pull the toggle switch out to set the switch.
12. At **98A** power converter, power down each individual converter by setting the toggle-type power switch to **OFF**.

13. Are more SP 2 frames equipped in this office?

If **Yes**, repeat from Step 2.

If **No**, go to Step 14.

14. At IPUB 0 power switch in SP 1 frame (see Table A), rotate the **ROS/OFF** switch clockwise to the **ROS** position.

Table A - IPUB	
Switch	Location
0	*-80-29
* Bay 3 for SD-4A028-01 or Bay 2 for SD-4A028-02	

15. At IPUB 0 power switch in SP 1 frame, press the **ROS/OFF** pushbutton.

16. At Controller 0 power switch in SP 1 frame (see Table B), rotate the **ROS/OFF** switch clockwise to the **ROS** position.

Table B - Controller	
Switch	Location
0	*-48-02
* Bay 3 for SD-4A028-01 or Bay 2 for SD-4A028-02	

17. At Controller 0 power switch in SP 1 frame, press the **ROS/OFF** pushbutton.

18. At IPUB 1 power switch in SP 1 frame (see Table C), rotate the **ROS/OFF** switch clockwise to the **ROS** position.

Table C - IPUB	
Switch	Location
1	*-80-29
* Bay 4 for SD-4A028-01 Bay 3 for SD-4A028-02	

19. At IPUB 1 power switch in SP 1 frame, press the **ROS/OFF** pushbutton.

20. At Controller 1 power switch in SP 1 frame (see Table D), rotate the **ROS/OFF** switch clockwise to the **ROS** position.

Switch	Location
1	*-48-02
* Bay 4 for SD-4A028-01 Bay 3 for SD-4A028-02	

21. At Controller 1 power switch in SP 1 frame, press the **ROS/OFF** pushbutton.
22. Is SP 1 frame equipped with a Distributor Applique (SD-4A047-01)?
If **Yes**, go to Step 23.
If **No**, go to Step 25.
23. At **PPL** power switch (EQL 0-52-69) in SP 1 Distributor Applique frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
24. At **PPL** power switch (EQL 0-52-69) in SP 1 Distributor Applique frame, press the **ROS/OFF** pushbutton.
25. Is SP 1 frame equipped with a Distributor and Scanner Matrix (SD-4A046-01)?
If **Yes**, go to Step 26.
If **No**, go to Step 28.
26. At **PPR** power switch (EQL 5-68-68) in SP 1 Distributor and Scanner Matrix frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
27. At **PPR** power switch (EQL 5-68-68) in SP 1 Distributor and Scanner Matrix frame, press the **ROS/OFF** pushbutton.
28. Is SP 1 frame equipped with a Combined Distributor and Scanner Matrix?
If **Yes**, go to Step 29.
If **No**, go to Step 34.
29. At **PPL** power switch (EQL 1-22-65) in SP 1 Combined Distributor and Scanner Matrix frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.

30. At **PPL** power switch (EQL 1-22-65) in SP 1 Combined Distributor and Scanner Matrix frame, press the **ROS/OFF** pushbutton.

31. At **PPR** power switch (EQL 5-22-65) in SP 1 Combined Distributor and Scanner Matrix frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.

32. At **PPR** power switch (EQL 5-22-65) in SP 1 Combined Distributor and Scanner Matrix frame, press the **ROS/OFF** pushbutton.

Warning: On the 98A2 type converter, pull the toggle switch out to set the switch.

33. At **98A** power converter, power down each individual converter by setting the toggle-type power switch to **OFF**.

34. Are more SP 1 frames equipped in this office?

If **Yes**, repeat from Step 14.

If **No**, go to Step 35.

35. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Remove from Service and Power Down Network Clock Frame

1. At **IPUB 0** power switch in the network clock frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At **IPUB 0** power switch in the network clock frame, press the **ROS/OFF** pushbutton.
3. At **CONTR 0** power switch in the network clock frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At **CONTR 0** power switch in the network clock frame, press the **ROS/OFF** pushbutton.
5. At **NCSU 0** power switch in the network clock frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
6. At **NCSU 0** power switch in the network clock frame, press the **ROS/OFF** pushbutton.
7. At **IPUB 1** power switch in the network clock frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
8. At **IPUB 1** power switch in the network clock frame, press the **ROS/OFF** pushbutton.
9. At **CONTR 1** power switch in the network clock frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
10. At **CONTR 1** power switch in the network clock frame, press the **ROS/OFF** pushbutton.
11. At one **CHAIN** power switch in the network clock frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
12. At **CHAIN** power switch (Step 11) in the network clock frame, press the **ROS/OFF** pushbutton.
13. Have Chains 0 through 3 been powered down?
If **Yes**, go to Step 14.
If **No**, repeat from Step 11.

14. Remove -48 volt fuses for each DROs (oscillators) being power down per Table A.

Clock Chain	Oscillator Location	SD-4A014-02 Fuses	Fuse Location
0	033-21	DC	007-11
1	033-56	DD	007-59
2	133-21	DC	107-11
3	133-56	DD	107-59

15. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Power Down or Power Up 620A (24 V/-24 V) Power Plant

1. Are you powering up or powering down the power plant?
If **powering up**, go to Step 4.
If **powering down**, go to Step 2.

2. Select a converter and set the **ON/OFF** switch to the **OFF** position per Figure 1.
Response: Associated circuit breaker trips **OFF**.

3. Have all converters in this power plant been powered down?
If **Yes**, go to Step 7.
If **No**, repeat from Step 2 for the next converter.

4. Select a converter and set the **ON/OFF** switch to the **ON** position per Figure 1.

5. Set the associated circuit breaker to **ON** position per Figure 1.

6. Have all converters in this power plant been powered up?
If **Yes**, go to Step 7.
If **No**, repeat from Step 4 for the next converter.

7. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

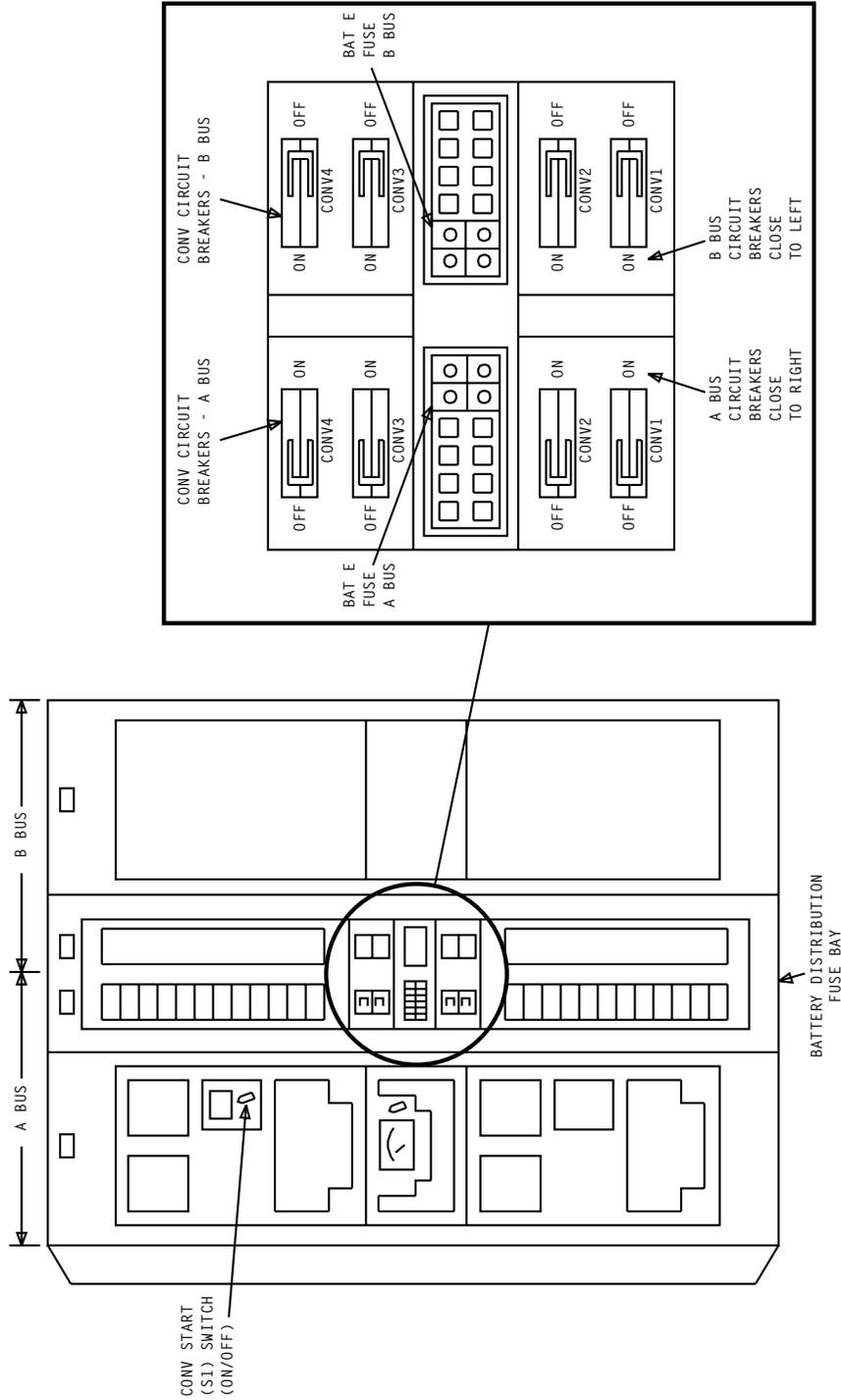


Figure 1. 620A Power Plant - Front View

Power Down or Power Up 620C (24 V) or 625C (-48 V) Power Plant

1. Are you powering up or powering down the power plant?
If **powering up**, go to Step 4.
If **powering down**, go to Step 2.
2. Select a converter and set the **ON/STANDBY** switch to the **STANDBY** position per Figure 1.
3. Have all converters in this power plant been powered down?
If **Yes**, go to Step 7.
If **No**, repeat from Step 2 for the next converter.
4. Select a converter to be powered up and on the panel at the top of the frame, set the corresponding circuit breaker to the **ON** position per Figure 1.
5. On all converters, set the **ON/STANDBY** switches to the **ON** position per Figure 1.
6. Set the remaining circuit breakers to the **ON** position per Figure 1.
7. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

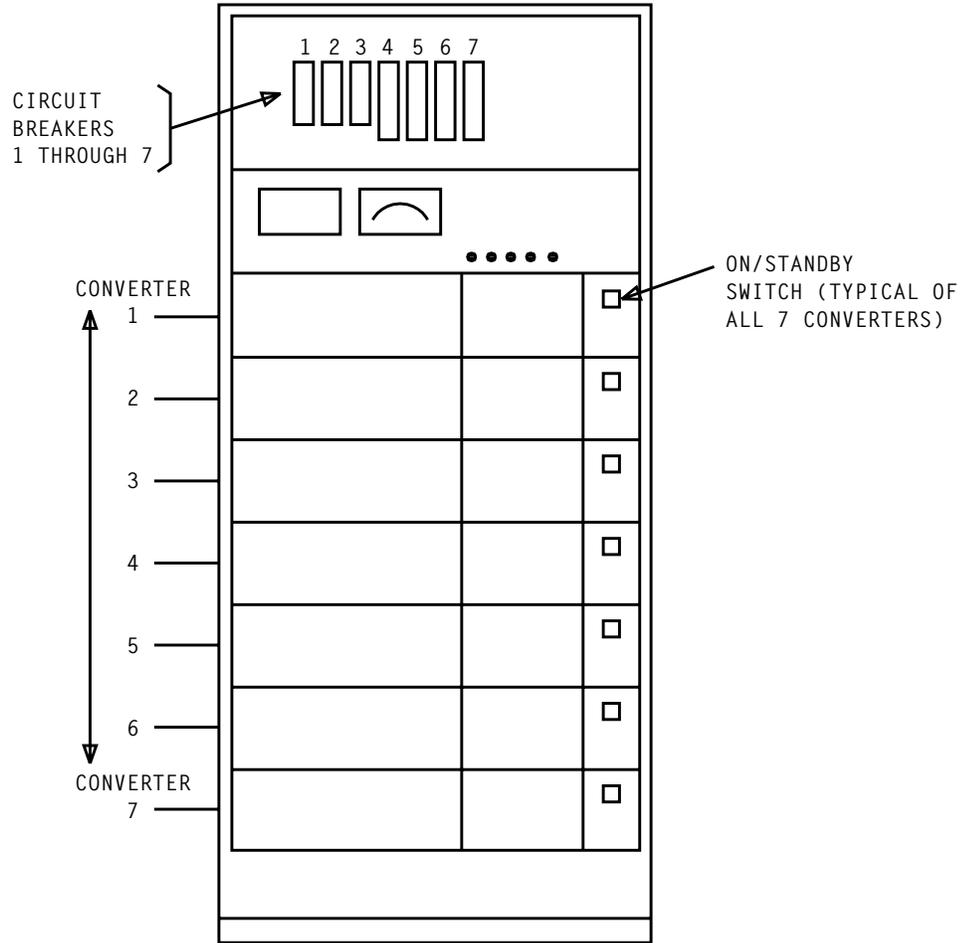


Figure 1. 620C/625C Power Plant - Front View

Power Down or Power Up 625B (-48 V) Power Plant

1. Are you powering up or powering down the power plant?
If **powering up**, go to Step 4.
If **powering down**, go to Step 2.
2. Select a converter and set the **ON/OFF** switch to the **OFF** position per Figure 1.
Response: Associated circuit breaker trips **OFF**.
3. Have all converters in this power plant been powered down?
If **Yes**, go to Step 7.
If **No**, repeat from Step 2 for the next converter.

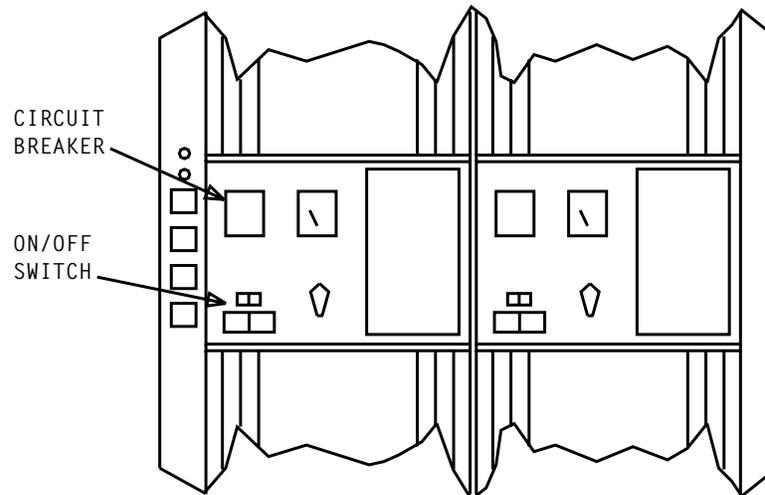


Figure 1. 625B Power Plant - Front View

4. Select a converter and set the **ON/OFF** switch to the **ON** position per Figure 1.
5. Set the converter circuit breaker to **ON** position per Figure 1.

6. Have all converters in this power plant been powered up?

If **Yes**, go to Step 7.

If **No**, repeat from Step 4 for the next converter.

7. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Power Down or Power Up 611N (-48 V) Power Plant

1. Are you powering up or powering down the power plant?
If **powering up**, go to Step 5.
If **powering down**, go to Step 2.
2. On all converters to be powered down, set the **OUTPUT** switch to the **OFF** position per Figure 1.
3. On all converters to be powered down, set the **INPUT** switch to the **OFF** position per Figure 1.
4. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

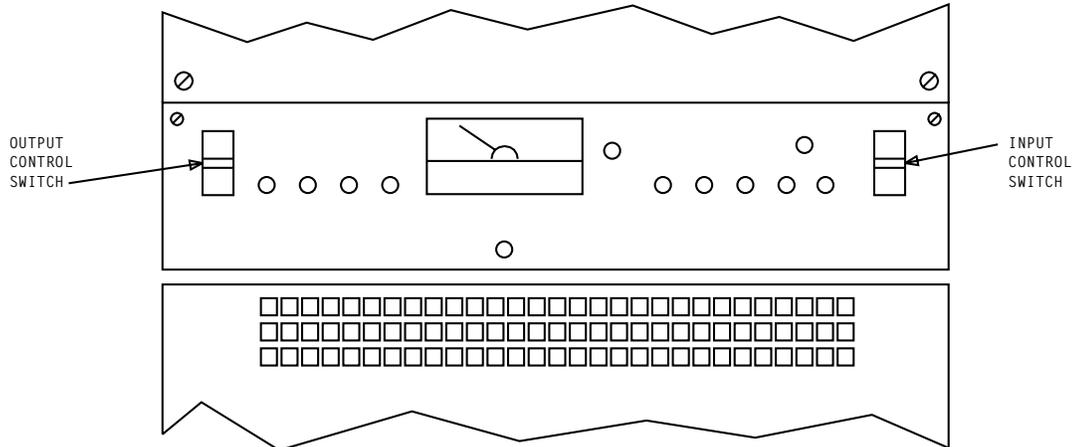


Figure 1. 611N Power Plant - Front View

5. On all converters to be powered up, set the **INPUT** switch to the **ON** position per Figure 1.

6. On all converters to be powered up, set the **OUTPUT** switch to the **ON** position per Figure 1.

7. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove from Service and Power Down 1B Processor Units

1. At 1B Processor MCC terminal, enter **118** to obtain the 1B Processor Status Display Page.
2. At 1B Processor MCC terminal, on the 1B Processor Status Display Page (118), determine which CC is **OOS**.

Note: Power down of the units should be performed in the order given in Table A.

3. Using Table A, determine location of one power switch in the 1B Processor cabinet to be powered down (starting with the OOS cabinet first).

Table A	
Pack	Location
MUP	58-086
AUI	58-120
SSD	58-168
CC	41-014
CSB 0	24-086
CSB 1	24-096

4. At the power switch determined in Step 3 in the 1B Processor cabinet, operate the **ROS/NORM** switch to the **ROS** position.
5. At the power switch determined in Step 3 in the 1B Processor cabinet, simultaneously press the **OFF** and **MOR** pushbuttons.
6. Have all the units listed in Table A been powered down?
If **Yes**, go to Step 7.
If **No**, repeat from Step 3 for the next unit.
7. At one equipped PS power switch (level 41), operate the **ROS/NORM** switch to the **ROS** position.
8. At the PS power switch, simultaneously press the **OFF** and **MOR** pushbuttons.

9. Have all the equipped PSs been powered down?
If **Yes**, go to Step 10.
If **No**, repeat from Step 7 for the next equipped PS.
10. At one equipped CS power switch (level 24), operate the **ROS/NORM** switch to the **ROS** position.
11. At the CS power switch, simultaneously press the **OFF** and **MOR** pushbuttons.
12. Have all the equipped CSs been powered down?
If **Yes**, go to Step 13.
If **No**, repeat from Step 10 for the next equipped CS.
13. At XPWR power switch (EQL 58-030), operate the **ROS/NORM** switch to the **ROS** position.
14. At the XPWR power switch, simultaneously press the **OFF** and **MOR** pushbuttons.
15. Using Table B, determine the location of fuses for one fan in 1B Processor cabinet being powered down.

Table B	
Fan	Fuse Location
1	39AC-026-A and 039AC-036-A
2	39AC-026-B and 039AC-036-B
3	39AC-026-C and 039AC-036-C
4	39AC-031-A and 039AC-041-A
5	39AC-031-B and 039AC-041-B
6	39AC-031-C and 039AC-041-C

16. At the standby 1B Processor cabinet fuse panel, remove the fuses determined in Step 15.
17. Have all the fuses listed in Table B been removed?
If **Yes**, go to Step 18.
If **No**, repeat from Step 15 for the next fuse pair.

18. Have 1B Processor cabinets 0 and 1 been powered down?

If **Yes**, go to Step 19.

If **No**, repeat from Step 3 for the suspended 1B Processor cabinet.

19. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Remove from Service and Power Down APIs 0 and 1

1. At power switch in the API 0 frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At power switch in the API 0 frame, press the **ROS/OFF** pushbutton.
3. At power switch in the API 1 frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At power switch in the API 1 frame, press the **ROS/OFF** pushbutton.
5. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove from Service and Power Down IO/IOP IPUBs and Controllers

1. At IPUB 0 power switch in IO/IOP frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
2. At IPUB 0 power switch in IO/IOP frame, press the **ROS/OFF** pushbutton.
3. At IOUS 0 power switch in IO/IOP frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
4. At IOUS 0 power switch in IO/IOP frame, press the **ROS/OFF** pushbutton.
5. At IPUB 1 power switch in IO/IOP frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
6. At IPUB 1 power switch in IO/IOP frame, press the **ROS/OFF** pushbutton.
7. At IOUS 1 power switch in IO/IOP frame, rotate the **ROS/OFF** switch clockwise to the **ROS** position.
8. At IOUS 1 power switch in IO/IOP frame, press the **ROS/OFF** pushbutton.
9. If IO frame (SD-5A021), power down each channel.
10. Have all of the IO/IOP frames been powered down?
If **Yes**, go to Step 11.
If **No**, repeat from Step 1 for the next IO/IOP frame.
11. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove Power From CNI Ring Cabinets

Note: Power should be removed from the highest numbered CNI Ring Node cabinet to the lowest numbered CNI Ring Node cabinet.

1. At one CNI Ring Node cabinet, unseat all of the circuit packs on one shelf (Do not unseat the power converter circuit packs yet).
2. Repeat Step 1 for all shelves in this CNI Ring Node cabinet.
3. Unseat all of the power converter circuit packs in this CNI Ring Node cabinet.
4. At each fan in this CNI Ring Node cabinet, press the **OFF** switch.
5. Have all of the CNI Ring Node cabinets been powered down?
If **Yes**, go to Step 6.
If **No**, Repeat from Step 1 for the next CNI Ring Node cabinet.
6. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Remove from Service and Power Down 3B21D Attached Processor System Units

1. At 3B21D APS MCRT, press the **NORM/DISP** key and enter **102** in command mode to obtain the Common Processor Display Page.
2. At 3B21D APS MCRT, on the Common Processor Display Page, determine which CU is in **STBY** state (0 or 1).

Note: For Steps 3 through 16, the standby side should be powered down first.

3. Using Table A, determine location of one unit power switch for side 0 or 1.

Side 0	Location	Side 1	Location
IOP 0	19-080	IOP 1	45-080
CU 0	28-060	CU 1	53-060
DFC 0	28-178	DFC 1	53-178

4. At the power switch determined in Step 3 in the 3B21D APS cabinet, operate the **ROS/RST** switch to the **ROS** position.
5. At the power switch determined in Step 3 in the 3B21D APS cabinet, momentarily press the **ST/ON/OFF** switch to the **OFF** position; then release and press the **MOR** pushbutton.
6. Have all the units listed in Table A for one side been powered down?
If **Yes**, go to Step 7.
If **No**, repeat from Step 3 for the next unit.

7. Using Table B, determine location of one equipped MHD for side 0 or 1.

Table B			
Side 0	Location	Side 1	Location
MHD 0	22-162	MHD 1	53-162
MHD 2	19-170	MHD 3	45-170
MHD 4	11-164	MHD 5	62-164
MHD 6	11-180	MHD 7	62-180

8. At the MHD determined in Step 7, operate the **ROS/RST** switch to the **ROS** position.
9. At the MHD determined in Step 7, momentarily press the **ST/ON/OFF** switch to the **OFF** position; then release and press the **MOR** pushbutton.
10. Unlatch the MHD circuit pack.
11. Wait 1 minute to allow the MHD to spin down.
12. Unseat the MHD.
13. Have all the equipped MHDs for one side been powered down?
If **Yes**, go to Step 14.
If **No**, repeat from Step 7 for the next equipped MHD.
14. Have Steps 3 through 13 been performed for both sides (0 and 1) of the 3B21D APS?
If **Yes**, go to Step 15.
If **No**, repeat from Step 3 for the second side.
15. At the 3B21D APS DAT 0 (EQL 11-124), operate the **ROS/RST** switch to the **ROS** position.
16. Unlatch the 3B21D APS DAT 0 circuit pack.
17. At the 3B21D APS DAT 1 (EQL 62-124), operate the **ROS/RST** switch to the **ROS** position.

18. Unlatch the 3B21D APS DAT 1 circuit pack.

19. Using Table C, determine the location of one fan fuse.

Table C	
Fan	Fuse Location
A	69-023-B
B	69-032-B
C	69-041-B
E	69-159-B
F	69-168-B
G	69-177-B

20. At the 3B21D APS cabinet fuse panel, remove the fuse determined in Step 19.

21. Have all the fuses listed in Table C been removed?

If **Yes**, go to Step 22.

If **No**, repeat from Step 19 for the next fuse.

22. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Remove Power From RMS-D2 Cabinets

1. Using Table A, determine the location of one power unit.

Table A	
Unit	Location
A	39-020
B	39-176
C	31-176

2. At one power unit determined in Step 1, unseat the circuit pack
Do not remove the power unit circuit pack from cabinet/shelf.
3. Have all the power units in Table A been powered down?
If **Yes**, go to Step 4.
If **No**, repeat from Step 1 for the next power unit.
4. At the fuse panel, remove fuses labeled **Fan 1**, **Fan 2**, and **Fan 3**.
5. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to 1B Processor Units

1. Using Table A, determine the location of fuses for one fan in 1B Processor cabinet being powered up.

Table A	
Fan	Fuse Location
1	39AC-026-A and 039AC-036-A
2	39AC-026-B and 039AC-036-B
3	39AC-026-C and 039AC-036-C
4	39AC-031-A and 039AC-041-A
5	39AC-031-B and 039AC-041-B
6	39AC-031-C and 039AC-041-C

2. At the fuse panel in a 1B Processor cabinet, install the fuses determined in Step 1.
3. Have all the fuses listed in Table A been installed?
If **Yes**, go to Step 4.
If **No**, repeat from Step 1 for the next fuse pair.
4. Power up MUP Switch 58-086. Operate the **ROS/NORM** switch at 58-086 to the **NORM** position.
5. Using Table B, determine location of one power switch in the 1B Processor cabinet to be powered up.

Table B	
Pack	Location
AUI	58-120
SSD	58-168
CC	41-014
XPWR	58-030
CSB 0	24-086
CSB 1	24-096

6. At the power switch determined in Step 5, press the **ON** pushbutton.
7. At the power switch determined in Step 5, operate the **ROS/NORM** switch to the **NORM** position.
8. Have all the units listed in Table B been powered up?
If **Yes**, go to Step 9.
If **No**, repeat from Step 5 for the next unit.
9. At one equipped PS power switch (level 41), press the **ON** pushbutton.
10. At the PS power switch, operate the **ROS/NORM** switch to the **NORM** position.
11. Have all the equipped PSs been powered up?
If **Yes**, go to Step 12.
If **No**, repeat from Step 9 for the next equipped PS.
12. At one equipped CS power switch (level 24), press the **ON** pushbutton.
13. At the CS power switch, operate the **ROS/NORM** switch to the **NORM** position.
14. Have all the equipped CSs been powered up?
If **Yes**, go to Step 15.
If **No**, repeat from Step 12 for the next equipped CS.
15. Have 1B Processor cabinets 0 and 1 been powered up?
If **Yes**, go to Step 16.
If **No**, repeat from Step 1 for the the other 1B Processor cabinet.

16. At 1B Processor MCC terminal, enter **106** to obtain the MUP Status and Control Page (106).

17. At 1B Processor MCC terminal, enter **613** (UAS INTF ALW) to allow interfering mode.

Response: Under the **UAS MODE** field, **UAS: INTERFERING** is colored white on red.

18. At 1B Processor MCC terminal, enter **1990** to obtain the Dead Start Page (1990).

19. At 1B Processor MCC terminal, enter **701** (SUSPEND) to suspend the 1B Processor.

Response: **701 - SUSPEND** is colored white on red

20. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to APIs 0 and 1

1. At power switch in the API 0 frame, press the **ON** pushbutton.
2. At power switch in the API 0 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
3. At power switch in the API 1 frame, press the **ON** pushbutton.
4. At power switch in the API 1 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
5. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to IOs/IOPs

1. At IPUB 0 power switch in IO/IOP frame, press the **ON** pushbutton.
2. At IPUB 0 power switch in IO/IOP frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
3. At IOUS 0 power switch in IO/IOP frame, press the **ON** pushbutton.
4. At IOUS 0 power switch in IO/IOP frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
5. At IPUB 1 power switch in IO/IOP frame, press the **ON** pushbutton.
6. At IPUB 1 power switch in IO/IOP frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
7. At IOUS 1 power switch in IO/IOP frame, press the **ON** pushbutton.
8. At IOUS 1 power switch in IO/IOP frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
9. If IO frame (SD-5A021), power up each channel.
10. Have all of the IO/IOP frames been powered up?
If **Yes**, go to Step 11.
If **No**, repeat from Step 1 for the next IO/IOP frame.
11. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to CNI Ring Cabinets

Note: Power should be restored starting at cabinet 00 to highest numbered CNI Ring cabinet.

1. At each fan unit in one CNI Ring Node cabinet, press the **ON** switch.
2. Seat all of the power converter circuit packs in this CNI Ring Node cabinet.
3. Seat all of the circuit packs on one shelf in this CNI Ring Node cabinet.
4. Repeat Step 3 for all shelves in this CNI Ring Node cabinet.
5. Have all of the CNI Ring Node cabinets been powered up?
If **Yes**, go to Step 6.
If **No**, Repeat from Step 1 for the next CNI Ring Node cabinet.
6. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to PUBB 0

1. At **PUB 0** power switch in the PUBB 0 frame, press the **ON** pushbutton.
2. At **PUB 0** power switch in the PUBB 0 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
3. At **PUB 1** power switch in the PUBB 0 frame, press the **ON** pushbutton.
4. At **PUB 1** power switch in the PUBB 0 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
5. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to Network Clock Frame

1. At **IPUB 0** power switch in the network clock frame, press the **ON** pushbutton.
2. At **IPUB 0** power switch in the network clock frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
3. At **CONTR 0** power switch in the network clock frame, press the **ON** pushbutton.
4. At **CONTR 0** power switch in the network clock frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
5. At **NCSU 0** power switch in the network clock frame, press the **ON** pushbutton.
6. At **NCSU 0** power switch in the network clock frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
7. At **IPUB 1** power switch in the network clock frame, press the **ON** pushbutton.
8. At **IPUB 1** power switch in the network clock frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
9. At **CONTR 1** power switch in the network clock frame, press the **ON** pushbutton.
10. At **CONTR 1** power switch in the network clock frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
11. At one **CHAIN** power switch in the network clock frame, press the **ON** pushbutton.
12. At **CHAIN** power switch (Step 11) in the network clock frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
13. Have Chains 0 through 3 been powered up?
If **Yes**, go to Step 14.
If **No**, repeat from Step 11.

14. At one DRO, verify that **OSC WRITE WORD** display is either **INIT** or **2000**.

15. Is the **OSC WRITE WORD** display either **INIT** or **2000** for this DRO?
If **Yes**, go to Step 16.
If **No**, go to Step 18.

16. At the DRO, set the **ENABLE/DISABLE** switch to **ENABLE**.

17. Has the **OSC WRITE WORD** display been verified for DROs 0 through 3?
If **Yes**, go to Step 30.
If **No**, repeat from Step 14 for the next DRO.

18. At the DRO, ensure that the **ENABLE/DISABLE** switch is set to **DISABLE**.

19. At the DRO to be rewritten, disconnect the cable connected at the **D/A INPUT/OUTPUT - J20** jack.

20. Connect an Oscillator Manual Adjustment Unit (ED-4A178) to **D/A INPUT/OUTPUT - J20** jack.

Response: Power On LED lights.

21. Adjust the Oscillator Manual Adjustment Unit thumbwheels to **2000**.

22. At the DRO, operate the **ENABLE/DISABLE** switch to **ENABLE**.

23. On the Oscillator Manual Adjustment Unit, press the **LOAD** pushbutton.

24. Look at the **OSC WRITE WORD** display to verify that the new setting is **2000**.

25. Is the **OSC WRITE WORD** display set to **2000** for this DRO?
If **Yes**, go to Step 27.
If **No**, go to Step 26.

26. Determine cause and resolve using TOP 234-151-013; repeat from Step 15.

27. At the DRO disconnect the Oscillator Manual Adjustment Unit from the **D/A INPUT/OUTPUT - J20** jack.

28. At the DRO, connect the DRO cable to the **D/A INPUT/OUTPUT - J20** jack.

29. Has the **OSC WRITE WORD** display been verified for DROs 0 through 3?

If **Yes**, go to Step 30.

If **No**, repeat from Step 14 for the next DRO.

30. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to SP Frames

1. Locate the -24 V power converters associated with the SP complexes and power up.
2. Is an SP 2 frame equipped in this office?
If **Yes**, go to Step 3.
If **No**, go to Step 15.

Warning: On the 98A2 type converter, pull the toggle switch out to set the switch.
3. At each 98A power converter in an SP 2 frame complex to be powered up, set the **ON/OFF** switch to the **ON** position.
4. At IPUB 0 power switch in SP 2 frame (EQL 1-80-43), press the **ON** pushbutton.
5. At IPUB 0 power switch in SP 2 frame (EQL 1-80-43), rotate the **ROS/OFF** switch counter-clockwise to the normal position.
6. At Controller 0 power switch in SP 2 frame (EQL 1-46-03), press the **ON** pushbutton.
7. At Controller 0 power switch in SP 2 frame (EQL 1-46-03), rotate the **ROS/OFF** switch counter-clockwise to the normal position.
8. At IPUB 1 power switch in SP 2 frame (EQL 2-80-43), press the **ON** pushbutton.
9. At IPUB 1 power switch in SP 2 frame (EQL 2-80-43), rotate the **ROS/OFF** switch counter-clockwise to the normal position.
10. At Controller 1 power switch in SP 2 frame (EQL 2-46-03), press the **ON** pushbutton.
11. At Controller 1 power switch in SP 2 frame (EQL 2-46-03), rotate the **ROS/OFF** switch counter-clockwise to the normal position.
12. At **PPL** power switch (EQL 0-52-69) in SP 2 frame, press the **ON** pushbutton.

13. At **PPL** power switch (EQL 0-52-69) in SP 2 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

14. Are more SP 2 frames equipped in this office?

If **Yes**, repeat from Step 3.

If **No**, go to Step 15.

Warning: On the 98A2 type converter, pull the toggle switch out to set the switch.

15. At each 98A power converter in an SP 1 frame complex to be powered up, set the **ON/OFF** switch to the **ON** position.

16. At IPUB 0 power switch in SP 1 frame (see Table A), press the **ON** pushbutton. rotate the **ROS/OFF** switch counter-clockwise to the normal position.

Table A - IPUB	
Switch	Location
0	*-80-29
* Bay 3 for SD-4A028-01 or Bay 2 for SD-4A028-02	

17. At IPUB 0 power switch in SP 1 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

18. At Controller 0 power switch in SP 1 frame (see Table B), press the **ON** pushbutton.

Table B - Controller	
Switch	Location
0	*-48-02
* Bay 3 for SD-4A028-01 or Bay 2 for SD-4A028-02	

19. At Controller 0 power switch in SP 1 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

20. At IPUB 1 power switch in SP 1 frame (see Table C), press the **ON** pushbutton.

Table C - IPUB	
Switch	Location
1	*-80-29
* Bay 4 for SD-4A028-01 Bay 3 for SD-4A028-02	

21. At IPUB 1 power switch in SP 1 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

22. At Controller 1 power switch in SP 1 frame (see Table D), press the **ON** pushbutton.

Table D - Controller	
Switch	Location
1	*-48-02
* Bay 4 for SD-4A028-01 Bay 3 for SD-4A028-02	

23. At Controller 1 power switch in SP 1 frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

24. Is SP 1 frame equipped with a Distributor Applique (SD-4A047-01)?

If **Yes**, go to Step 25.

If **No**, go to Step 27.

25. At **PPL** power switch (EQL 0-52-69) in SP 1 Distributor Applique frame, press the **ON** pushbutton.

26. At **PPL** power switch (EQL 0-52-69) in SP 1 Distributor Applique frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

27. Is SP 1 frame equipped with a Distributor and Scanner Matrix (SD-4A046-01)?

If **Yes**, go to Step 28.

If **No**, go to Step 30.

28. At **PPR** power switch (EQL 5-68-68) in SP 1 Distributor and Scanner Matrix frame, press the **ON** pushbutton.

29. At **PPR** power switch (EQL 5-68-68) in SP 1 Distributor and Scanner Matrix frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

30. Is SP 1 frame equipped with a Combined Distributor and Scanner Matrix?
If **Yes**, go to Step 31.
If **No**, go to Step 35.

31. At **PPL** power switch (EQL 1-22-65) in SP 1 Combined Distributor and Scanner Matrix frame, press the **ON** pushbutton.

32. At **PPL** power switch (EQL 1-22-65) in SP 1 Combined Distributor and Scanner Matrix frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

33. At **PPR** power switch (EQL 5-22-65) in SP 1 Combined Distributor and Scanner Matrix frame, press the **ON** pushbutton.

34. At **PPR** power switch (EQL 5-22-65) in SP 1 Combined Distributor and Scanner Matrix frame, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

35. Are more SP 1 frames equipped in this office?
If **Yes**, repeat from Step 15.
If **No**, go to Step 36.

36. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to TMS Frames

1. At **C0IPUB0** power switch for frame to be powered up, press the **ON** pushbutton.
2. At **C0IPUB0** power switch for TMS frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
3. At **C1IPUB0** power switch for frame to be powered up, press the **ON** pushbutton.
4. At **C1IPUB0** power switch for TMS frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
5. At Controller 0 power switch for frame to be powered up, press the **ON** pushbutton.
6. At Controller 0 power switch for frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
7. At **C0IPUB1** power switch for frame to be powered up, press the **ON** pushbutton.
8. At **C0IPUB1** power switch for TMS frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
9. At **C1IPUB1** power switch for frame to be powered up, press the **ON** pushbutton.
10. At **C1IPUB1** power switch for TMS frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
11. At Controller 1 power switch for frame to be powered up, press the **ON** pushbutton.
12. At Controller 1 power switch for frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
13. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Disconnect Digital Voltmeter (DVM) From +140-Volt Fuse Location

Warning: 140 volts dc is present. Use care to avoid shorts to ground.

1. At the rear of Bay 1 in the lowest member number TSI-B frame turn off the DVM.
2. Disconnect the plus (+) lead on the DVM from the AOC fuse per Figure 1.
3. Disconnect the common (-) lead on the DVM from either a ground punching or the mounting plate per Figure 1.
4. Remove the DVM from the frame.
5. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

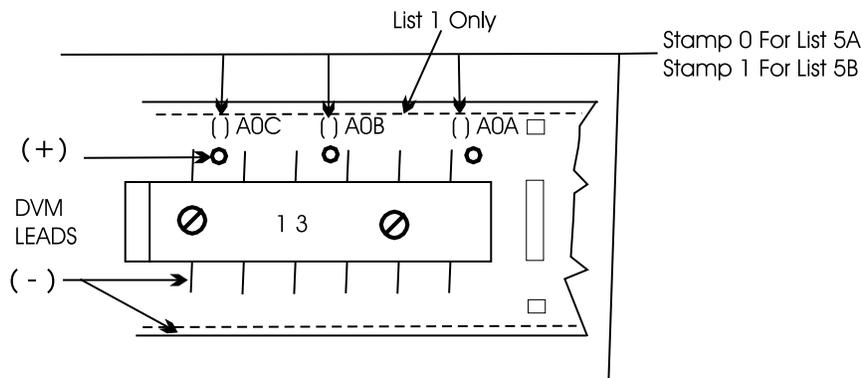


Figure 1. DVM Connection Location

Restore Power to TSI Frames

1. At each **245A** or **245C** power converter in a TSI frame to be powered up, ensure the **ON/OFF** switch is in the **ON** position.
2. At IPUB 0 power switch for frame to be powered up, press the **ON** pushbutton.
3. At IPUB 0 power switch for frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
4. At Controller 0 power switch for frame to be powered up, press the **ON** pushbutton.
5. At Controller 0 power switch for frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
6. At ALC 0 power switch for frame to be powered up, press the **ON** pushbutton.
7. At ALC 0 power switch for frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
8. At IPUB 1 power switch for frame to be powered up, press the **ON** pushbutton.
9. At IPUB 1 power switch for frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
10. At Controller 1 power switch for frame to be powered up, press the **ON** pushbutton.
11. At Controller 1 power switch for frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
12. At ALC 1 power switch for frame to be powered up, press the **ON** pushbutton.
13. At ALC 1 power switch for frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.

14. Have all equipped TSI frames been powered up?

If **Yes**, go to Step 15.

If **No**, go to Step 1.

15. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Restore Power to DIF/DIF-E1 Frames

1. At each power converter in a DIF/DIF-E1 frame to be powered up, ensure the **ON/OFF** switch is in the **ON** position.
2. At IPUB 0 power switch for DIF/DIF-E1 frame to be powered up, press the **ON** pushbutton.
3. At IPUB 0 power switch for DIF/DIF-E1 frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
4. At Controller 0 power switch for DIF/DIF-E1 frame to be powered up, press the **ON** pushbutton.
5. At Controller 0 power switch for DIF/DIF-E1 frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
6. At IPUB 1 power switch for DIF/DIF-E1 frame to be powered up, press the **ON** pushbutton.
7. At IPUB 1 power switch for DIF/DIF-E1 frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
8. At Controller 1 power switch for DIF/DIF-E1 frame to be powered up, press the **ON** pushbutton.
9. At Controller 1 power switch for DIF/DIF-E1 frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
10. At one equipped DIU, operate slide switch to the up position.
11. Repeat Step 10 for each equipped DIU.

12. Have all DIF/DIF-E1 frames been powered up?

If **Yes**, go to Step 13.

If **No**, repeat from Step 1.

13. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Restore Power to XTSI Cabinets

1. Using Table A, determine the location of one fan fuse in XTSI cabinet being powered up.

Table A	
Fan	Fuse Location
E	A2-048-A
B	A3-064-A
G	A4-072-B
F	B3-166-A
C	B4-174-B
A	B2-150-B

2. At the XTSI cabinet fuse panel, install the fuse determined in Step 1.
3. Have all the fuses listed in Table A been installed?
If **Yes**, go to Step 4.
If **No**, repeat from Step 1 for the next fuse.
4. Using Table B, determine location of one power switch in the XTSI to be powered up.

Table B	
Pack	Location
IPC 0	52-188
MPC 0	52-066
ALD 0	52-014
IPC 1	61-188
MPC 1	61-066
ALD 1	61-014

5. At the power switch determined in Step 4 for XTSI cabinet to be powered up, press the **ON** pushbutton.
6. At the power switch for XTSI cabinet to be powered up, operate the **ROS/NORM** switch to the **NORM** position.

7. Have all the units listed in Table B been powered up?
If **Yes**, go to Step 8.
If **No**, repeat from Step 4 for the next unit.
8. At one equipped D3U power switch, press the **ON** pushbutton.
9. At the D3U power switch, operate the **ROS/NORM** switch to the **NORM** position.
10. Have all the equipped D3Us been powered up?
If **Yes**, go to Step 11.
If **No**, repeat from Step 8 for the next equipped D3U.
11. Is this XTSI equipped with SPUs?
If **Yes**, go to Step 12.
If **No**, go to Step 15.
12. At one equipped SPU power switch, press the **ON** pushbutton.
13. At the SPU power switch, operate the **ROS/NORM** switch to the **NORM** position.
14. Have all the equipped SPUs been powered up?
If **Yes**, go to Step 15.
If **No**, repeat from Step 12 for the next equipped SPU.
15. Is this XTSI equipped with an IBU?
If **Yes**, go to Step 16.
If **No**, go to Step 18.
16. At the equipped IBU power switch (EQL 14-148), press the **ON** pushbutton.
17. At the IBU power switch, operate the **ROS/NORM** switch to the **NORM** position.

18. Have all the equipped XTSIs in this office been powered up?

If **Yes**, go to Step 19.

If **No**, repeat from Step 1 for the next equipped XTSI.

19. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Restore Power to EST Frames

1. At each power converter in an EST frame to be powered up, set the **ON/OFF** switch to the **ON** position.
2. At IPUB 0 power switch for EST frame to be powered up, press the **ON** pushbutton.
3. At IPUB 0 power switch for EST frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
4. At Controller 0 power switch for EST frame to be powered up, press the **ON** pushbutton.
5. At Controller 0 power switch for EST frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
6. At IPUB 1 power switch for EST frame to be powered up, press the **ON** pushbutton.
7. At IPUB 1 power switch for EST frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
8. At Controller 1 power switch for EST frame to be powered up, press the **ON** pushbutton.
9. At Controller 1 power switch for EST frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
10. At one equipped ESU, set **142C** power converter switch to the **ON** position.
11. Repeat Step 10 for each equipped ESU.
12. Have all EST frames been powered up?
If **Yes**, go to Step 13.
If **No**, repeat from Step 1.
13. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to VIF Frames

1. At each power converter in a VIF frame to be powered up, set the **ON/OFF** switch to the **ON** position.
2. At IPUB 0 power switch for VIF frame to be powered up, press the **ON** pushbutton.
3. At IPUB 0 power switch for VIF frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
4. At Controller 0 power switch for VIF frame to be powered up, press the **ON** pushbutton.
5. At Controller 0 power switch for VIF frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
6. At IPUB 1 power switch for VIF frame to be powered up, press the **ON** pushbutton.
7. At IPUB 1 power switch for VIF frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
8. At Controller 1 power switch for VIF frame to be powered up, press the **ON** pushbutton.
9. At Controller 1 power switch for VIF frame to be powered up, rotate the **ROS/OFF** switch counter-clockwise to the normal position.
10. At one equipped VIU, operate 80/81A breaker to the **ON** position.
11. Repeat Step 10 for each equipped VIU.
12. Have all VIF frames been powered up?
If **Yes**, go to Step 13.
If **No**, repeat from Step 1.
13. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to DT Frames

1. At each power converter in a DT frame to be powered up, set the **ON** latch to the latched position.
2. At Controller 0 power switch for DT frame to be powered up, press the **CONTR 0/C0 PWR** pushbutton.
3. At Controller 1 power switch for DT frame to be powered up, press the **CONTR 1/C1 PWR** pushbutton.
4. At one equipped DTU, press the **U(0-8) PWR** pushbutton.
5. Repeat Step 4 for each equipped DTU.
6. Have all DT frames been powered up?
If **Yes**, go to Step 7.
If **No**, repeat from Step 1.
7. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to AAP, CDSU and SCS Cabinets

Caution: The AAP and all CDSUs, both CDSU1s and CDSU2s, must be powered up and operational before any SCUs are restored.

Note: Use Table A throughout this procedure for additional EQL information.

Table A	
Unit	Location
SCSC Cabinet	
IPUBs Controllers	45, 53
SCU	36
Fans	28
HDUs	11, 19
SCSU Cabinet	
SCUs	36, 45, 53, 62
HDUs	11, 19
TN1984 is Contr and TN1671 is IPUB.	

1. Power up the AAP by setting both SP knobs to the **On** position.
2. Power up the CDSUs, both CDSU1s and CDSU2s.
3. Observe the AAP console terminal for the message "system is up".
Note: It may be necessary to press "CNTL C" during startup if so indicated on the console terminal.
4. Do not continue with powering up SCU's until AAP is up and operational.
5. At TN1984 (CONTR) and TN1671 (IPUB) circuit packs of Controller 0 in an SCS 0 cabinet, press the **ON** pushbutton.
Do not power up any hard drives yet.
6. At TN1984 (CONTR) and TN1671 (IPUB) circuit packs of Controller 0 in an SCS 0 cabinet, operate the **ROS** switch to the **NORM** position.

7. At TN1984 (CONTR) and TN1671 (IPUB) circuit packs of Controller 1 in an SCS 0 cabinet, press the **ON** pushbutton.

Do not power up any hard drives yet.

8. At TN1984 (CONTR) and TN1671 (IPUB) circuit packs of Controller 1 in an SCS 0 cabinet, operate the **ROS** switch to the **NORM** position.

9. At a TN1984 (SCU) circuit pack, press the **ON** pushbutton

Do not power up any hard drives yet.

10. At a TN1984 (SCU) circuit pack, operate the **ROS** switch to the **NORM** position.

11. Have all the units in this cabinet been powered up?

If **Yes**, go to Step 12.

If **No**, repeat from Step 9 for each unit in the cabinet.

12. At a UN356 hard drive power switch, press the **ON** pushbutton.

13. Have all the hard drives in this SCS cabinet been powered up?

If **Yes**, go to Step 14.

If **No**, repeat from Step 12 for each hard drive.

14. At an SCS cabinet fuse panel, install the fuses for **FAN A**, **FAN B**, and **FAN C**.

15. Have all the SCS cabinets for this member number been powered up.

If **Yes**, go to Step 16.

If **No**, repeat from Step 9 for the next SCS cabinet.

16. Have all the SCS member numbers in this office been powered up.

If **Yes**, go to Step 17.

If **No**, repeat from Step 5 for the next SCS member number.

17. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to RMS-D2 Cabinets

1. At the fuse panel, install the fuses labeled **Fan 1**, **Fan 2**, and **Fan 3**.
2. Using Table A, determine the location of one power unit.

Unit	Location
A	39-020
B	39-176
C	31-176

3. At one power unit determined in Step 2, seat the circuit pack.
4. Have all the power units in Table A been powered up?
If **Yes**, go to Step 4.
If **No**, repeat from Step 2 for the next power unit.
5. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Prepare 1B Processor for Manual Recovery

1. At 1B Processor MCC terminal, if EAI page is not displayed, depress **EA DISP** key.
2. In the **FORCE FNCT** section, are any **FORCE FNCT** poke commands colored black on purple?
If **Yes**, go to Step 3.
If **No**, go to Step 4.
3. At 1B Processor MCC terminal, enter **1x** where **x** is the CC colored black on purple (0 or 1) to clear the **FORCE FNCT** section.

Response: The selected poke commands are now colored purple on white.

4. At 1B Processor MCC terminal, enter **99** (CLEAR ALL REQUESTS).
5. Enter **10** (CC 0).

Response: **10 - CC 0** colored purple on white.
NO OVERRIDE in lower right-hand corner colored purple on white.

6. Enter **20** (PS 0).

Response: **20 - PS 0** colored purple on white.

7. Enter **22** (PSB 0).

Response: **22 - PSB 0** colored purple on white.

8. Enter **30** (CSB 0).

Response: **30 - CSB 0** colored purple on white.

9. Enter **40** (IFB 0).

Response: **40 - IFB 0** colored purple on white.

10. Enter **42** (AUB 0).

Response: **42 - AUB 0** colored purple on white.

11. Is **70 - DIS AUTO PC** colored black on purple?

If **Yes**, go to Step 13.

If **No**, go to Step 12.

12. Enter **70** (DIS AUTO PC).

Response: **70 - DIS AUTO PC** colored black on purple.

13. Enter **84** (MODIFY RECV).

Response: **84 - MODIFY RECV** colored purple on white.

14. Enter **53** (PHASE 3).

Response: **53 - PHASE 3** colored purple on white.

15. Enter **89** (CLEAR DISPLAY).

Response: **EAI FAIL DATA DISPLAY** section cleared.

16. Enter **119** to obtain DDI Key Options page (119).

17. Is DDI Key Assignments screen displayed?

If **Yes**, go to Step 19.

If **No**, go to Step 18.

18. Enter **499** (TOGGLE MRA/INHIBIT INTERRUPT Options).

Response: DDI Key Assignments screen is now displayed.

19. Enter **402** (RESET ALL).

Response: All **MODIFY RECOVERY ACTIONS DDI KEY ASSIGNMENTS** colored white on black.

20. Enter **401,16,17,24**

Response: **MODIFY RECOVERY ACTIONS DDI KEY ASSIGNMENTS - 16, 17, 24** colored black on white.

21. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to 3B21D APS and Configure for Boot to Min-Config

1. Using Table A, determine the location of one fan fuse.

Fan	Fuse Location
A	69-023-B
B	69-032-B
C	69-041-B
E	69-159-B
F	69-168-B
G	69-177-B

2. At the 3B21D APS cabinet fuse panel, install the fuse determined in Step 1.
3. Have all the fuses listed in Table A been installed?
If **Yes**, go to Step 4.
If **No**, repeat from Step 1 for the next fuse.
4. At the back of the 3B21D APS, on the fan switch panel (EQL 36-008), toggle the reset switch down to reset the fan controller.
5. Using Table B, determine location of one unit power switch.

Unit	Location
IOP 0	19-080
DFC 0	28-178
IOP 1	45-080
DFC 1	53-178

6. At the power switch determined in Step 5 in the 3B21D APS cabinet, operate the **ROS/RST** switch to the **RST** position.

7. At the power switch determined in Step 5 in the 3B21D APS cabinet, momentarily press the **ST/ON/OFF** switch to the **ST** position; then release.

8. Have all the units listed in Table B been powered up?
If **Yes**, go to Step 9.
If **No**, repeat from Step 5 for the next unit.

9. Using Table C, determine location of one equipped MHD.

Table C	
MHD	Location
MHD 0	22-162
MHD 2	19-170
MHD 4	11-164
MHD 6	11-180
MHD 3	45-170
MHD 1	53-162
MHD 5	62-164
MHD 7	62-180

10. Seat the MHD determined in Step 9,

11. At the MHD determined in Step 9, momentarily press the **ST/ON/OFF** switch to the **ST** position; then release.

12. At the MHD determined in Step 9, operate the **ROS/RST** switch to the **RST** position.

13. Have all the equipped MHDs been powered up?
If **Yes**, go to Step 14.
If **No**, repeat from Step 9 for the next equipped MHD.

14. Latch the 3B21D APS DAT 0 circuit pack (EQL 11-124).

15. At the 3B21D APS DAT 0 (EQL 11-124), operate the **ROS/RST** switch to the **RST** position.

16. Latch the 3B21D APS DAT 1 circuit pack (EQL 64-124).
17. At the 3B21D APS DAT 1 (EQL 62-124), operate the **ROS/RST** switch to the **RST** position.
18. At 3B21D APS CU 0 power switch (EQL 28-060), momentarily press the **ST/ON/OFF** switch to **ST** position; then release.
19. At 3B21D APS CU 0 power switch (EQL 28-060), operate the **ROS/RST** switch to the **RST** position.
20. At 3B21D APS CU 1 power switch (EQL 53-060), momentarily press the **ST/ON/OFF** switch to **ST** position; then release.
21. At 3B21D APS CU 1 power switch (EQL 53-060), operate the **ROS/RST** switch to the **RST** position.
22. At 3B21D APS MCRT, press the **EA DISP** key to obtain the EAI display page.
23. Enter **14** in command mode to clear forces.
24. Enter **20** in command mode to select the primary disk (MHD 0).
25. Ensure **SET** is highlighted for **Pri Disk**.
26. Enter **31** in command mode to clear initialization from **Backup-Root**.
27. Ensure **SET** is not displayed next to **Backup-Root**.
28. Enter **32** in command mode to set **MIN-CONFIG**.
29. Ensure **MIN-CONFIG** is highlighted and **SET** is displayed beside **MIN-CONFIG**.
30. Enter **10** in command mode to force CU 0 on-line.

31. Enter **y** in command mode to confirm the CU 0 force.

32. Ensure the ROP is on-line.

33. At 3B21D APS MCRT, enter **54** in command mode to boot the 3B21D APS.

34. Enter **y** to confirm the boot.

One or more **START OF CU RECOVERY** messages will be printed. Processor recover messages (PRMs) should be printing at a rate of approximately one per second for the first 30 seconds. If no errors are present, between 1 and 3 pages of PRMs will print at the ROP.

Note: The following are indications of failure or success:

FAILURE:.....Failing PRMs (**PRM 0 Fx3x**)
or additional "START OF CU RECOVERY" messages indicate the boot attempt is failing.

SUCCESS:.....Successful PRMs (**PRM 0 Ex41**) Monitor the 3B21D until system is stable. Check for passing RTR and application PRMs. Note presence of the following message at the 3B21D ROP:

RCVRY CU a COMPLETED

35. Was **RCVRY CU a COMPLETED** response received (3B21D APS boot was successful)?

If **Yes**, go to Step 38.

If **No**, go to Step 36.

36. **First boot attempt failed. Switch to the other 3B21D APS CU and boot again using the following procedure:**

1. Enter: **22** (to change MHD to secondary)

Ensure **SET SEC** is highlighted for Secondary Disk.

2. Enter: **11** (to make CU 1 FONL)

3. Enter: **y** (to confirm the force)

4. Enter: **54** (to boot again)

5. Enter: **y** (to confirm the boot).

6. Wait for a boot fail indication or boot to successfully complete.

7. Was **RCVRY CU a COMPLETED** response received (3B21D APS boot was successful)?

If **Yes**, go to Step 38.

If **No**, go to Step 37.

37. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.
38. If technical support requires remote access via SCC, perform Steps 39 through 45, otherwise continue with Step 46.
39. At the 3B21D MCRT, enter **102** in command mode to display the **Common Processor Display** page.
40. On the 102 Page, identify MTTYC 0 and 1 and record their state (ACT or OOS).
41. If MTTYC 0 is **OOS**, enter poke command **340** in command mode to restore MTTYC 0 to **ACT**.
42. If MTTYC 1 is **ACT**, enter poke command **241** in command mode to take MTTYC 1 to **OOS**.
43. At the 3B21D MCRT, enter
EXC:ENVIR:UPROC, FN"/tools/3b21/dl.tool", ARG("SCC", "1", "OOS")!
to grow the SCC 1 link to **OOS**.

Response: See Figure 1 for output messages.
44. Enter poke command **341** in command mode to restore MTTYC 1 and SCC 1 to ACT

Note:
 1. The SCC link may take a few minutes to initialize & synchronize before going ACT.
 2. In case of problems with the facilities, the SCC link will go into rolling **INITs**. If this happens it will be necessary to re-boot to a clean min-config without SCC 1 grown. Return to Step 36.
45. When SCC 1 is **ACT** have Remote Technical support verify that the SCC 1 link is operational.
46. On 3B21D APS MCRT 102 page, if system recovered on CU 1 and MHD 1, send failure information to next higher support organization to determine what caused the boot failure; then continue at Step 47.

47. At 3B21D APS MCRT on the EAI display page, enter **14** to clear forces.

48. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

```
M 09 EXC:ENVIR:UPROC, FN"/tools/3b21/dl.tool", ARG("SCC", "1", "OOS")! PF
    01/30/02 16:09:16 #002298

09 /tools/3b21/dl.tool : STARTING
    01/30/02 16:09:17 #002299

09 BEGINNING GROWTH OF SCC 1 USING THE /tools/3b21/dl.tool SCRIPT
    01/30/02 16:09:18 #002300

M 09 REPT SCC 1 IN GROWTH STATE
    01/30/02 16:09:38 #002306

09 REPT GROWTH SCC 1 IN PROGRESS
    01/30/02 16:09:39 #002308

09 REPT GROWTH SCC 1 COMPLETED
    01/30/02 16:09:39 #002309

M 09 REPT SCC 1 OUT OF SERVICE
    01/30/02 16:09:49 #002327

M 09 EXC ENVIR UPROC /tools/3b21/dl.tool COMPLETED
    BEGINNING GROWTH OF SCC 1 USING THE /tools/3b21/dl.tool SCRIPT
    01/30/02 16:09:49 #002328
```

Figure 1. ROP Output Messages For Growth of MTTY 0/1

Perform Manual Recovery of the 3B21D APS

1. At 3B21D APS MCRT, press the **EA DISP** key to obtain the EAI display page.
2. Enter **14** in command mode to clear forces.
3. Enter **20** in command mode to select the primary disk (MHD 0).
4. Ensure **SET** is highlighted for **Pri Disk**.
5. Enter **31** in command mode to clear initialization from **Backup-Root**.
6. Ensure **SET** is not displayed next to **Backup-Root**.
7. Enter **33** in command mode to clear **MIN-CONFIG**.
8. Ensure **MIN-CONFIG** is not highlighted and **SET** is displayed beside **MIN-CONFIG**.
9. Enter **10** in command mode to force CU 0 on-line.
10. Enter **y** in command mode to confirm the CU 0 force.
11. Enter **54** in command mode to boot the 3B21D APS.
12. Enter **y** to confirm the boot.

One or more **START OF CU RECOVERY** messages will be printed. Processor recover messages (PRMs) should be printing at a rate of approximately one per second for the first 30 seconds. If no errors are present, between 1 and 3 pages of PRMs will print at the ROP.

Note: The following are indications of failure or success:

FAILURE:.....Failing PRMs (**PRM 0 Fx3x**)
or additional "START OF CU RECOVERY" messages indicate the boot attempt is failing.

SUCCESS:.....Successful PRMs (**PRM 0 Ex41**) Monitor the 3B21D until system is stable. Check for passing RTR and application PRMs. Note presence of the following message at the 3B21D ROP:

RCVRY CU a COMPLETED

13. Was **RCVRY CU a COMPLETED** response received (3B21D APS boot was successful)?

If **Yes**, go to Step 17.

If **No**, go to Step 14.

14. **First boot attempt failed. Switch to the other 3B21D APS CU and boot again using the following procedure:**

1. Enter: **22** (to change MHD to secondary)

Ensure **SET SEC** is highlighted for Secondary Disk.

2. Enter: **11** (to make CU 1 FONL)

3. Enter: **y** (to confirm the force)

4. Enter: **54** (to boot again)

5. Enter: **y** (to confirm the boot).

6. Wait for a boot fail indication or boot to successfully complete.

7. Was **RCVRY CU a COMPLETED** response received (3B21D APS boot was successful)?

If **Yes**, go to Step 16.

If **No**, go to Step 15.

15. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

16. On 3B21D APS MCRT 102 page, if system recovered on CU 1 and MHD 1, send failure information to next higher support organization to determine what caused the boot failure; then continue at Step 17.

17. At 3B21D APS MCRT on the EAI display page, enter **14** to clear forces.

18. STOP! YOU HAVE COMPLETED THIS PROCEDURE.

Perform Manual Recovery of the 1B Processor

1. At 3B APS MCRT, enter message **OP:APPLOAD NORM!**

Response: **4ESS DATA BASE LOADED IN /dev/1afileX IS:**
GENERIC 4E<n 5x.yy Ra
OFFICE (office name)
LAST ODA TAPE WRITTEN mm/dd/yy AT hh:mm

X = 0 or 1
n Office Generic Number

2. Using printout and response in Step 1, determine if proper office generic is shown.
3. Is proper office generic shown?
If **Yes**, go to Step 4.
If **No**, go to Step 7.
4. At 1B Processor MCC terminal, if the EAI Page is not displayed, depress **EA DISP** key.

5. At 1B Processor MCC terminal, enter **61** (NORM FILE).

Response: **61 - NORM FILE** colored purple on white

6. Go to Step 12.

7. At 3B APS MCRT, enter message **OP:APPLOAD UPD!**

Response: **4ESS DATA BASE LOADED IN /dev/1afileX IS:**
GENERIC 4E<n 5x.yy Ra
OFFICE (office name)
LAST ODA TAPE WRITTEN mm/dd/yy AT hh:mm

X = 0 or 1
n Office Generic Number

8. Using printout and response in Step 7, determine if proper office generic is shown.
9. Is proper office generic shown?
If **Yes**, go to Step 10.
If **No**, go to Step 26.

10. At 1B Processor MCC terminal, if the EAI Page is not displayed, depress **EA DISP** key.

11. At 1B Processor MCC terminal, enter **62** (UPD FILE).

Response: **62 - UPD FILE** colored purple on white

12. At 1B Processor MCC terminal, enter **01** (HARD A).

Response: All **FORCE FNCT** selections are colored black on purple.

13. In **EAI FAIL DATA DISPLAY** section, observe **86 - CODE** field.

14. Did **86 - CODE** field start counting?

If **Yes**, go to Step 16.

If **No**, go to Step 15.

15. The 1B Processor is in an unknown state. Another attempt to update the 1B Processor will be made using a different CC. **Go to Step 45, Page 6.**

Note: During Step 16, in **EAI FAIL DATA DISPLAY** section, octal digits "aaa" and "bbbb" (see Figure 1) in the **86 - CODE** field must begin incrementing within 10 seconds after entering **01**. "bbbb" indicates that the 1B Processor is attempting to pump, and "aaa" indicates the memory range being pumped. "aaa" and "bbbb" will continue to increment until **PC PROGRESSION - CMPL** colors black on green, approximately 2 minutes after entering **01**. If "aaa" does not begin to increment and "bbbb" does begin to increment, this is a failure. If at any time "aaa" stops incrementing and "bbbb" continues to increment, this is a failure. If data is received in the **87 - DATA** field, this is a failure.

86 - CODE: O'000aaabbbb

87 - DATA:

88 - ADDR:

Figure 1 - 86 - CODE Field Layout

16. Did **PC PROGRESSION - CMPL** change color to black on green?

If **Yes**, go to Step 17.

If **No**, go to Step 18.

Note: When a phase 3 is initiated, at the 1B Processor MCC terminal, the fourth leftmost digit in the **EAI FAIL DATA DISPLAY - 86 - CODE** field will go between 0 and 4 (bit 23). **53 - PHASE 3** colors black on purple. In the lower right-hand corner, **PHASE IN PROG** is colored white on red. **PC PROGRESSION - CMPL** continues to be colored black on green.

17. Was a phase 3 initiated (**53 - PHASE 3** colored black on purple)?

If **Yes**, go to Step 19.

If **No**, go to Step 18.

18. System did not recover. Another attempt to update the 1B Processor will be made using a different CC. **Go to Step 45, Page 6.**

19. During the phase, while the fourth leftmost digit (bit 23) in the **EAI FAIL DATA DISPLAY - 86 - CODE** field continues to go between 0 and 4, **87 - DATA** and **88 - ADDR** fields must remain clear.

20. Did **53 - PHASE 3** go white on black and **PHASE IN PROG** clear (could take up to 4 minutes)?

If **Yes**, go to Step 23.

If **No**, go to Step 21.

21. Record the data in **87 - DATA** and **88 - ADDR** fields for later use in debugging, if required.

87 = _____

88 = _____

22. System did not recover. Another attempt to update the 1B Processor will be made using a different CC. **Go to Step 45, Page 6.**

23. Is 1B MTC, SCC, and/or SREC1 outputting messages?

If **Yes**, go to Step 24.

If **No**, go to Step 27.

24. Evaluate the printouts to determine if the system came up successfully. Ensure a service degrading condition does not exist.

25. Did the system come up successfully?

If **Yes**, go to Step 83, Page 10.

If **No**, go to Step 26.

26. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

27. System recovered without I/O. Attempt to restore I/O will be required. **Continue at Step 28.**

28. At 1B Processor MCC terminal, is **84 - MODIFY RECV** colored white on black?

If **Yes**, go to Step 30.

If **No**, go to Step 29.

29. Enter **84** (MODIFY RECV).

Response: **84 - MODIFY RECV** is colored white on black.

30. Enter **89** (CLEAR DISPLAY).

Response: **EAI FAIL DATA DISPLAY** section is cleared.

31. Enter **82** (RESTORE I/O).

Response: **82 - RESTORE I/O** is colored purple on white.

32. Enter **02** (SOFT A).

33. Enter **82** (RESTORE I/O).

Response: **82 - RESTORE I/O** is colored white on black.

34. Is 1B MTC, SCC, and/or SREC1 outputting messages?

If **Yes**, go to Step 36.

If **No**, go to Step 35.

35. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.
36. At 1B Processor MCC terminal, enter **108** to obtain the System Status Page (108).
37. Enter **810** (SDC).
38. Enter **CLR:APS 0;DPLXFAIL!** message.
39. Enter **899** (OP:OOSUNITS).
40. Enter **813** (INTRPT INH).
41. Depress **EA DISP** key to obtain the EAI page.
42. Evaluate printouts (Steps 37 through 40) to determine if the system came up successfully. Ensure a service-degrading condition does not exist.
43. Did the system come up successfully?
If **Yes**, go to Step 83, Page 10.
If **No**, go to Step 44.
44. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

45. At 1B Processor MCC terminal, is **84 - MODIFY RECV** colored purple on white?

If **Yes**, go to Step 47.

If **No**, go to Step 46.

46. Enter **84** (MODIFY RECV).

Response: **84 - MODIFY RECV** is colored purple on white.

47. Enter **10** (CC 0) to reset the **FORCE FNCT** section.

Response: All **FORCE FNCT** selections (except CC 0) are colored purple on white. CC 0 is colored white on black.

48. Enter **11** (CC 1) to select other CC for another attempt to boot the 1B Processor.

Response: **11 - CC 1** is colored purple on white.

49. Enter **89** (CLEAR DISPLAY).

Response: **EAI FAIL DATA DISPLAY** section is cleared.

50. Enter **01** (HARD A) to initiate a boot of the 1B Processor from the UPDATE file.

Response: All **FORCE FNCT** selections are colored black on purple.

51. In **EAI FAIL DATA DISPLAY** section, observe **86 - CODE** field.

52. Did **86 - CODE** field start counting?

If **Yes**, go to Step 54.

If **No**, go to Step 53.

53. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

Note: During Step 54, in **EAI FAIL DATA DISPLAY** section, octal digits "aaa" and "bbbb" (see Figure 2) in the **86 - CODE** field must begin incrementing within 10 seconds after entering **01**. "bbbb" indicates that the 1B Processor is attempting to pump, and "aaa" indicates the memory range being pumped. "aaa" and "bbbb" will continue to increment until **PC PROGRESSION - CMPL** colors black on green, approximately 2 minutes after entering **01**. If "aaa" does not begin to increment and "bbbb" does begin to increment, this is a failure. If at any time "aaa" stops incrementing and "bbbb" continues to increment, this is a failure. If data is received in the **87 - DATA** field, this is a failure.

86 - CODE: O'000aaabbbb

87 - DATA:

88 - ADDR:

Figure 2 - 86 - CODE Field Layout

54. Did **PC PROGRESSION - CMPL** change color to black on green?

If **Yes**, go to Step 55.

If **No**, go to Step 56.

Note: When a phase 3 is initiated, at the 1B Processor MCC terminal, the fourth leftmost digit in the **EAI FAIL DATA DISPLAY - 86 - CODE** field will go between 0 and 4 (bit 23). **53 - PHASE 3** colors black on purple. In the lower right-hand corner, **PHASE IN PROG** is colored white on red. **PC PROGRESSION - CMPL** continues to be colored black on green.

55. Was a phase 3 initiated (**53 - PHASE 3** colored black on purple)?

If **Yes**, go to Step 57.

If **No**, go to Step 56.

56. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

57. During the phase, while the fourth leftmost digit (bit 23) in the **EAI FAIL DATA DISPLAY - 86 - CODE** field continues to go between 0 and 4, **87 - DATA** and **88 - ADDR** fields must remain clear.

58. Did **53 - PHASE 3** go white on black and **PHASE IN PROG** clear (could take up to 4 minutes)?

If **Yes**, go to Step 61.

If **No**, go to Step 59.

59. Record data in **87 - DATA** and **88 - ADDR** fields for later use in debugging, if required.

87 = _____

88 = _____

60. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

61. Is 1B MTC, SCC, and/or SREC1 outputting messages?

If **Yes**, go to Step 62.

If **No**, go to Step 65.

62. Evaluate the printouts to determine if the system came up successfully. Ensure a service degrading condition does not exist.

63. Did the system come up successfully?

If **Yes**, go to Step 83, Page 10.

If **No**, go to Step 64.

64. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

65. System recovered without I/O. Attempt to restore I/O will be required. **Continue at Step 66.**

66. At 1B Processor MCC terminal, is **84 - MODIFY RECV** colored white on black?

If **Yes**, go to Step 68.

If **No**, go to Step 67.

67. Enter **84** (MODIFY RECV).

Response: **84 - MODIFY RECV** is colored white on black.

68. Enter **89** (CLEAR DISPLAY).

Response: **EAI FAIL DATA DISPLAY** section cleared.

69. Enter **82** (RESTORE I/O).

Response: **82 - RESTORE I/O** is colored purple on white.

70. Enter **02** (SOFT A)

71. Enter **82** (RESTORE I/O).

Response: **82 - RESTORE I/O** is colored white on black.

72. Is 1B MTC, SCC, and/or SREC1 outputting messages?

If **Yes**, go to Step 74.

If **No**, go to Step 73.

73. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

74. At 1B Processor MCC terminal, enter **108** to obtain the System Status Page (108).

75. Enter **810** (SDC).

76. Enter **CLR:APS 0;DPLXFAIL!** message.

77. Enter **899** (OP:OOSUNITS).

78. Enter **813** (INTRPT INH).

79. Depress **EA DISP** key to obtain the EAI page.

80. Evaluate printouts (Steps 75 through 78) to determine if the system came up successfully.
Ensure a service-degrading condition does not exist.

81. Did the system come up successfully?

If **Yes**, go to Step 83.

If **No**, go to Step 82.

82. Stop this procedure and contact next higher support organization. Do not proceed until directed by next higher support organization. A System Reinitialization of the 3B21D APS may be necessary; use the Office Emergency Recovery Procedure instructions in TOP 234-351-002.

83. At 1B Processor MCC terminal, enter **1x**.
where x is the CC colored black on purple (0 or 1).

Response: All **FORCE FNCT** selections (except CC x),
84 - MODIFY RECV, and
61 - NORM FILE or **62 - UPD FILE** are colored purple on white.
CC x is colored white on black.

84. Enter **99** (CLEAR ALL REQUESTS).

Response: All **FORCE FNCT** selections,
84 - MODIFY RECV, and
61 - NORM FILE or **62 - UPD FILE** are colored white on black.

85. Enter **89** (CLEAR DISPLAY).

Response: **EAI FAIL DATA DISPLAY** section is cleared.

86. Enter **402** (RESET ALL).

Response: **DIRECT DATA INSERT** section is cleared.

87. Enter **70** (DIS AUTO PC).

Response: **70 - DIS AUTO PC** is colored white on black.

88. At 1B Processor MTC terminal, enter message per Step 84 as follows:

If 61 was displayed: **UPD:COMMIT;NORMFILE!**

If 62 was displayed: **UPD:COMMIT;UPDFILE!**

89. At 1B Processor MCC terminal, enter **108** to obtain the System Status Page (108).

90. Enter **801** (RESTRICT RC) to restrict recent changes.

Response: **801 - RESTRICT RC** is colored black on white.

91. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Set System Clock

1. At 1B Processor MTC terminal, type, but do not send, the partially completed message.

SET:CLK:DAY a,DATE b,TIME hhmm! (Complete everything except minutes and seconds).

where a = Day (SUN, MON, TUE, etc.)
 b = Date (6-digit number - mmddyy)
 hh = Hour (00 to 23)
 mm = Minute (00 to 59)

Note: Time announcements are made every minute on the minute. The hours announced are in Greenwich Mean Time.

2. Call the U. S. Bureau of Standards Time Announcement at 303-499-7111 and listen for the time announcement.
3. At the next time announcement, complete message (but do not send) by adding minute announced plus 1.
4. Return the cursor to start of message.
5. At the next time announcement, instant tone is heard; depress the **SEND** key.
Response: **OK**
6. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Restore Power to Network Clock DRO

1. Using Table A, determine the location of fuses for DRO (oscillators) being powered up per Table A.

Table A			
Clock Chain	Oscillator Location	SD-4A014-02 Fuses	Fuse Location
0	033-21	DC	007-11
1	033-56	DD	007-59
2	133-21	DC	107-11
3	133-56	DD	107-59

2. At the fuse panel in Network Clock frame, install the fuses determined in Step 1.
3. Have all the fuses listed in Table A been installed?
If **Yes**, go to Step 4.
If **No**, repeat from Step 1 for the next fuse.
4. **STOP! YOU HAVE COMPLETED THIS PROCEDURE.**

Checklist

ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE	ITEM	ISSUE
<ul style="list-style-type: none"> • IXL-001 • NTP-002 • NTP-003 • NTP-004 • TAD-100 		<ul style="list-style-type: none"> • DLP-529 • DLP-530 • DLP-531 • DLP-532 • DLP-533 					
<ul style="list-style-type: none"> • TAP-101 • DLP-500 • DLP-501 • DLP-502 • DLP-503 		<ul style="list-style-type: none"> • DLP-534 • DLP-535 • DLP-536 • DLP-537 • DLP-538 					
<ul style="list-style-type: none"> • DLP-504 • DLP-505 • DLP-506 • DLP-507 • DLP-508 		<ul style="list-style-type: none"> • DLP-539 • DLP-540 • DLP-541 • DLP-542 • DLP-543 					
<ul style="list-style-type: none"> • DLP-509 • DLP-510 • DLP-511 • DLP-512 • DLP-513 		<ul style="list-style-type: none"> • DLP-544 • DLP-545 					
<ul style="list-style-type: none"> • DLP-514 • DLP-515 • DLP-516 • DLP-517 • DLP-518 							
<ul style="list-style-type: none"> • DLP-519 • DLP-520 • DLP-521 • DLP-522 • DLP-523 							
<ul style="list-style-type: none"> • DLP-524 • DLP-525 • DLP-526 • DLP-527 • DLP-528 							

- Revised or added item
- Not Used

HOW TO USE THIS DOCUMENT

This document gives you all the step-by-step instructions you need to do your job (task). These instructions are given in the order that they *must* be done. Failure to follow the instructions in the order given may cause service interruptions.

This document is divided into parts called procedures. Each procedure is given a 3-digit number. These numbers range from 001 through 893. Procedures are arranged in this document in numerical order beginning with 001.

Figure 1 is a typical IXL-001 procedure and is titled *Tasks*. It is an alphabetical listing of the jobs that you may have to do. To use an IXL-001 procedure, just find the job you need to do in the **FIND YOUR JOB IN THE LIST BELOW** column. Next, follow the dotted line to the procedure number and begin the task. For example, suppose you are given the job of doing a system test. On the IXL-001 procedure, as shown in Figure 1, notice that it is listed in the **THEN GO TO** column as NTP-016. It could have been any other 3-digit number.

Figure 2 is an example of an NTP (Non-Trouble Procedure). Each NTP provides specific instructions for doing a job. It consists of numbered items (or steps) listed in the order that you must do them to complete your job. To use this procedure, you must start with item 1 in the **DO THE ITEMS BELOW IN ORDER LISTED** column and continue until all items have been done. When you get to an item that you do not know how to do, look for the procedure number for that item under the **FOR DETAILS, GO TO** column. This is the number of the procedure that will give you detailed, step-by-step instructions to do that item. Note that item 2 in Figure 2 uses lettered (A, B) entries. This means that there are alternate ways of doing item 2 depending on equipment options or equipment conditions. You do only the one that fits your equipment options or equipment conditions.

For example, suppose you are doing a system test. The IXL-001 as shown in Figure 1, has directed you to NTP-016 as shown in Figure 2, and you are on item 8 "Mount Tape" in the **DO THE ITEMS BELOW IN ORDER LISTED** column. Mount the tape if you know how. If you do not know how to mount the tape, go to the procedure number listed in the **FOR DETAILS, GO TO** column for the detailed, step-by-step instructions. In this case, it happens to be DLP-500. In either case, you must continue with the next item listed in NTP-016 until you complete the job.

LT 123-456-789 Issue 2	IXL-001 Page 1 of 2
TASK INDEX LIST	
FIND YOUR JOB IN THE LIST BELOW	THEN GO TO
Alert; External - Horn, Ringer, Etc. - Remove.....	NTP-028
Amplifiers; Channel - Recorded Announcement Frame - Test.....	NTP-009
BRDG LED - Does Not Light - Correct	TAP-117
Bridging Controller; Trunk - J1C015MB - Replace	DLP-572
Channel Amplifiers - Recorded Announcement Frame - Test.....	NTP-009
Extended Station Capability - Nonkey Set Only - Reported Failure	TAP-123
External Alert - Horn, Ringer, Etc. - Remove.....	NTP-028
Interchange Two Working Station Numbers.....	NTP-081
LED: BRDG - Does Not Light - Correct	TAP-117
Loudspeaker Paging - Add	NTP-059
New International Trunk, R1 Signaling - Incoming - Establish	NTP-010
New Tandem Trunk - T-Carrier and Digroup Terminal - Establish	NTP-008
Station Capability; Extended - Nonkey Set Only - Reported Failure	TAP-123
System Test - Perform	NTP-016
Trunk Bridging Controller - J1C015MB - Replace	DLP-572

Figure 1. Typical List of Jobs You May Have to Do

LT 123-456-789 Issue 2	NTP-016 Page 1 of 2
PERFORM SYSTEM TEST	
DO THE ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO
1 Test Local Maintenance Terminal	DLP-531
2 Place SEC/SEB in Off-Line Mode	
A. If in On-Line Mode, Change System From On-Line to Off-Line	DLP-509
B. If Powered Down, Condition System for Off-Line Operation as Follows	
1. Power up Minicomputer	DLP-503
2. Power up Line Printer	DLP-503
3. Power up Maintenance Terminal	DLP-510
. . .	
. . .	
. . .	
. . .	
. . .	
. . .	
7 Run Computer Display Terminal Test For All Positions	DLP-513
8 Mount Tape	DLP-500
9 Test Computer Display	DLP-522

Figure 2. Typical List of Specific Instructions for Doing a Job

Figure 3 is a typical page of a DLP-500 (Detailed Level Procedure - 500) that gives numbered, step-by-step instructions. To use this procedure, you must start with Step 1 and proceed as directed by the instructions until you complete this procedure. Note that Step 1 of this procedure is preceded by a statement called a SUMMARY. A summary is used as a memory jogger, and briefly tells you how to do the procedure and what measurements or results you can observe. If you can do the procedure after reading the SUMMARY, go ahead and do it without reading any further.

Now, look at Step 6 of DLP-500 as shown in Figure 3. Note that following the action statement there is the sentence, For help see DLP-563. When you see a statement like this, it means that additional step-by-step instructions for doing just that step are given in the referenced procedure. In this case, DLP-563 gives you the details on how to ensure that the write-enable ring is not installed on the file reel. In this case, if you cannot do Step 6, then go to DLP-563. In either case, you must continue with Step 7 until you have completed the procedure. In some cases, you may be directed to a procedure where the procedure number is preceded by the letters TAP (Trouble Analysis Procedure); for example, TAP-109. This means that you have trouble in the equipment, and in this case TAP-109 will give you step-by-step instructions to fix the trouble. After you have fixed the trouble, you must return to Step 1 of the procedure that sent you to TAP-109. However, if you came directly from IXL-001 to TAP-109, then your job is completed when you have fixed the trouble.

Admonishments: Three admonishments are used in this document as follows:

Danger: This means there is a possibility of personal injury.

Caution: This means there is a possibility of service interruption.

Warning: This means there is a possibility of equipment damage.

Important Items: Table A lists the more important items used in this document.

LT 123-456-789 Issue 2	MOUNT TAPE	DLP-500 Page 1 of 2
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SUMMARY: Install tape with or without write enable ring, as required. Thread tape and position tape at BOT (Beginning Of Tape) marker.

1. Get file reel and empty take-up reel.
2. Set **START/STOP** switch to **STOP**.
3. Set **ON LINE/OFF LINE** switch to **OFF LINE**.
4. Set **LOAD/BR REL** switch to center position.
5. Is data to be written on tape?
 If **yes**, then install write enable ring on file reel and go to Step 7.
 If **no**, then do Step 6.
6. Ensure that write enable ring is not installed on file reel. For help see DLP-563.
7. Open tape transport door.

Figure 3. Typical List of Detailed Instructions for Doing a Job

TABLE A Important Procedural Items and Definitions

Item	Definition
Acceptance (NTP-002)	Provides information and identifies jobs to be done to accept equipment after it is installed.
Maintenance Philosophy	The maintenance philosophy, when provided, gives an overview of the considerations designed into the trouble-clearing procedures.
DLP (Detailed Level Procedure)	Detailed, step-by-step instructions.
TAP (Trouble Analysis Procedure)	Step-by-step, trouble-clearing instructions to locate and/or fix troubles.
NTP (Non-Trouble-Clearing Procedure)	A list of items to perform normal work other than trouble-clearing.