Introduction

This Tab provides procedures to equip and power up the various types of power shelves used in SLC® Series 5 carrier system remote terminal (RT) enclosures. The procedures include installation of batteries, rectifier units, battery charger units, and ringing generator units. The purpose of these procedures is to provide power and ringing current prior to the turnup of the SLC Series 5 carrier system dual RT channel bank Assembly. Procedures to add battery strings to an equipped RT enclosure are included.

New bulk power cabinets may be equipped with 4A fan units. The 4A fan has a built-in control unit and does not require the AUA24 Fan Control Unit (FCU) in the RT channel bank. The 4A fan unit will be functional when the power shelf is equipped. This Tab section provides procedures to test the 4A fan.

NOTE:
The discontinued availability 80C cabinet (Phase 0) used SLC 96 1B (1A) power and jack panel, 3B battery charger, and 128A apparatus mounting battery shelves. Refer to AT&T 363-202-401 to establish power for this equipment.

The following is a list of currently available power and ringing equipment:

**J1C182BA - Distributed Power Shelf**
This power shelf can be in 51A cabinets, 80-type cabinets, 90-type cabinets, and frame RT enclosures.
The J1C182BA power shelf (Figure 1) requires the following equipment:

- 181A or 181B apparatus mounting shelf equipped with 4 KS-21906, L4 battery strings (up to 6).
- 366A rectifier units (up to 4).
- 337A battery charger. The 377A is mounted in the J1C182BA power shelf only for 51A cabinets (up to 2). For all other applications the 337A battery charger is mounted in the 181A or 181B apparatus mounting shelf.
- ED-7C613-30 load distribution unit (LDU) (1 required).
- Bank fuse unit (AUG11 BFU or 40D BFU) (up to 2, 1 for each dual channel bank).
- 3A, 3B, 3C, or 3C1 ringing generator (up to 2).
- AUG1 positive ringing unit (PRU) (1 only if positive ringing current is required for multiparty service).
J1C182BB - Bulk Power Shelf

This power shelf can be in RT frame enclosures (such as a mini hut or CEV) with a -48 Volt battery plant.

![Diagram of J1C182BB Power Shelf]

* Positive ringing unit only for multiparty service.
† Bank fuse unit (AUG11)

**Figure 2 — J1C182BB Power Shelf**

The J1C182BB power shelf (Figure 2) requires the following equipment:

- Bank fuse unit (AUG11 BFU or 40D BFU) (up to 3, 1 for each dual channel bank).
- 3A, 3B, 3C, or 3C1 Ringing Generator (up to 2).
- AUG2 ring switch unit (RSU) (1 required).
- AUG1 positive ringing unit (PRU) (up to 2 only if positive ringing current is required for multiparty service).
J1C182BD - bulk power plant
This power shelf is used in 80A cabinets.

Figure 3 — J1C182BD Power Plant

The J1C182BD power shelf (Figure 3) requires the following equipment:

- Two battery strings mounted at the bottom of the 80A cabinet on battery heaters.
- Battery controller (1 required).
- 3H1 ringing generator (2 required) (functionally equivalent to the 3C1 Ringing Generator).
- Ring control unit (RCU) (1 required).
- 336A rectifier (5 required).
J1C182PB-1 - Optical Power Shelf

This power shelf is used with Fiber to the Home equipment in a frame fed by -48 Volt power plant or 80E Bulk Powered cabinet.

Figure 4 — Right half of J1C182PB-1 Optics Power Shelf

The J1C182PB-1 power shelf (Figure 4) requires the following equipment:

- 4 bank fuse units (AUG11 BFU or 40D BFU, 1 for each equipped dual channel bank).
- 8 power converter units (AUA11B PCU or AUA11C PCU, 2 for each equipped optical shelf).
- 1 Alarm/Fan control unit (AUA402 A/FCU).
ED7C704-30 OLS Rectifier Shelf

This power shelf is used in 80E or 80D bulk power cabinets, along with the J1C182BC ring shelf (non-FTTH) and a central interconnect panel.

The ED7C704-30 OLS (Figure 5) requires the following equipment:

- 2 or 3 Chloride® or Lineage VR Series Battery strings at the bottom of the cabinet mounted on heaters.
- 2 or 3 CS787B540 power units.

* Registered trademark of Chloride Group, Plc.
Figure 6 — Ringing Generator Installed in J1C182BC Ring Shelf

The J1C182BC (Figure 6) requires the following equipment:

- 2 3C1 Ringing Generators (3B1 for 30 Hz).
- 1 ring control unit (AUG3 RCU).
- a second compliment of 1 AUG3 RCU and 2 3C ringing generators for split shelf ring supply.
Turn Up J1C182BD Power Shelf
In 80A Cabinet

DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

1. NOTE:
This procedure provides steps for the initial installation
of the J1C182BD power shelf and supporting equipment
in an 80A-type cabinet.

This procedure assumes the following:

- The outside cable pairs are not connected through
to the RT (protectors not installed) so that the RT
is isolated from the digital lines and derived pairs.

- The cabinet housing the RT has been installed.

- The applicable acceptance Tab procedures in this
volume have been performed.

This procedure contains instructions concerning the
installation of batteries into the cabinet and the various units
into the J1C182BD power shelf assembly, and for verifying
that the units are operating properly prior to turning up RT
channel banks or other carrier facility shelf equipment.

2. Get support apparatus listed:

- 216-type tool,

- Special key (modified hex key) - COMCODE
846244168,

- DMM (digital multimeter) with an accuracy of 0.02%
and an AC/DC input impedance of \( \geq 1 \text{ megohm} \),
DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

- Permanent marker or equivalent (for battery installation).
- One AUA11() PCU (power converter unit).

3. **CAUTION:**

   An electrostatic discharge wrist strap with a minimum resistance of 250K Ohms should be worn when handling Series 5 circuit packs to prevent possible damage to the circuit packs. Before using the wrist strap, check it for opens, shorts, and minimum resistance value. If the strap does not pass these checks it should not be used. To avoid possible personal injury while using the wrist strap, do not connect it to the power shelf or adjacent portions of the RT frame. Connect the wrist strap to ESD GRD jack on the fan unit, if present. If grounding jack is not present, connect wriststrap to bare-metal section of the frame well away from the power shelf.

4. Open Cabinet using 216-tool and Hex Key. Verify the AC circuit breaker is on and power shelf is plugged in. DLP-500

5. Verify four 30 amp fuses are installed on the AUG4 BIU (battery interface unit) and install in power shelf BIU slot. DLP-519

6. Install up to five 336A Rectifiers in power shelf. DLP-519

7. Install two 3H1 RINGING GENERATORS in power shelf. DLP-521

8. Install RCU (ring control unit) in power shelf. DLP-520

9. **NOTE:**

   Batteries are shipped directly from manufacturer.

   Install and test RT batteries in 80A cabinet skirt.

   - Chloride batteries DLP-522
   - Lineage 2000 VR Series batteries DLP-523
DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

10. Turn on each power shelf DC circuit breaker and verify that they do not trip. If a circuit breaker does trip, cabinet wiring trouble must be cleared before continuing.

11. Turn off AC circuit breaker and verify BOD on AUG4 BIU and ALARM on 336A indicators light (may take up to 5 minutes). Replace unit if indicator does not light.

12. If the power shelf powers an RT dual channel bank, continue with Step 13. Otherwise, proceed to Step 15.

13. Install and test PCU, then remove PCU; in dual RT channel DLP-511 bank facility (middle) shelf.

14. Repeat Steps 13 for each RT channel bank. Then continue with Step 15.

15. Turn on AC circuit breakers.

16. Update office records.
Install 336A Rectifiers in J1C182BD Power Shelf

SUMMARY: Insert 336A RECTIFIER into power shelf. Measure -54 to -55 V DC between - (1A/mV) and + (VOLTAGE) on the power shelf (bottom 2 jacks). Unseat 336A RECTIFIER and repeat for additional 336A RECTIFIERs. Reseat all 336A RECTIFIERs.

1. NOTE:
   Three 336A RECTIFIERs are suggested for one string of batteries and an additional two 336A RECTIFIERs (total of five) are required for a second string of batteries.

   Get required number of 336A RECTIFIERs and inspect for possible physical damage.

2. All BATTERY CHARGERs must be unseated throughout this procedure.

   Verify that fuse on 336A RECTIFIERs (Figure 1) is not blown.
3. Insert one 336A RECTIFIER into first vacant RECT slot (counting left to right) in power shelf (Figure 2).
4. Condition DMM to measure DC volts.

5. Connect DMM test leads to - (1A/mV) and + (VOLTAGE) on the power shelf (bottom 2 jacks).

6. Does DMM indicate between -54 and -55 volts?
   
   If YES, then proceed to Step 12.
   
   If NO, then continue with Step 7.

7. Condition DMM to measure AC volts.

8. Operate AC power circuit breaker off and then back on.
9. Verify AC power is connected to P112 on the side of the power shelf.
Check for presence of 105 to 129 volts AC at TB1 rear of power shelf
(pin3 neutral; pin1 61 RECTs 1, 2, 3; pin4 62 RECTs 4 and 5).

10. Is correct voltage present?
   
   If YES, then proceed to Step 11.
   If NO, then refer trouble to installation group.

11. Check wiring on power shelf using SD-7C163-01. Repeat procedure from
    Step 4 after trouble is found and corrected.

12. Is another 336A RECTIFIER to be installed?

   If YES, then continue with Step 13.
   If NO, then proceed to Step 15.

13. Unseat 336A RECTIFIER(s) installed previously.


15. Remove DMM test leads and reseat all 336A RECTIFIERS.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Install *Chloride* Batteries in
80A Cabinet Battery Compartment

**SUMMARY:** Inspect *Chloride* 3VB11 batteries for damage. Measure battery voltage (Requirement: minimum 6.2 V DC). Remove covers and connect cable assemblies to batteries. Replace covers. Put batteries in position and connect batteries together. Connect battery string cable to batteries 1 and 8. Check battery string voltage (requirement: minimum 49.5 V DC). Connect cable form battery string to power shelf. Repeat for second battery string to be installed.

1. **DANGER:**

   Batteries are electrically live at all times and are capable of supplying high short circuit currents. Each battery comes with a plastic cover. Do not remove the cover until access to the terminals is required.

2. **CAUTION:**

   Batteries should be handled carefully; the plastic container can be damaged if dropped. Never lift batteries by holding terminal posts.

Get eight *Chloride* 3VB11 (COMCODE 405890336) batteries [Figure 1] and hardware (but discard connecting straps). Get cable assemblies (shipped with cabinet as Group 62) for connecting batteries:

- **8** — *Chloride* battery cable assemblies (COMCODE 846279149) [includes positive battery cable BAT (+), negative battery cable BAT (–), and cable separator]

- **1** — patch cord JMP(+) / JMP(–) (COMCODE 846279107)

- **1** — battery string cable STR1/BAT1(+) / BAT8(–) (COMCODE 846279115).
Figure 1 — Detail of Chloride Batteries and Cable Assembly

- CUT-OUT FOR CABLE ASSEMBLY
- CHLORIDE BATTERY CABLE ASSEMBLY
- NOTE: APPLY PETROLEUM JELLY OR EQUIVALENT TO CABLE LUGS, BATTERY TERMINALS AND HARDWARE
- SLOT FOR COVER LATCH
- ACCESS TO RELEASE COVER LATCH
2. Visually inspect batteries for cracks, leakage, or other damage. Inspect cable assemblies for damage. Replace batteries or cables that appear damaged or defective.

3. Condition DMM to measure DC volts.

4. Measure terminal voltage of each battery. Does meter indicate 6.2 V DC or higher for each battery?
   
   If YES, then proceed to Step 6.
   If NO, then continue with Step 5.

5. Replace any battery that measures less than 6.2 V DC.

6. **DANGER:**  
   *Insulated tools must be used, and any rings, watches, bracelets, etc. must be removed when working on batteries.*

   **CAUTION:**  
   *Do not loosen large hexagonal nut at bottom of each terminal. Doing so will release terminal seal and may cause permanent damage to battery.*

   **CAUTION:**  
   *Battery covers have 2 latches, one on each side (in the handle) of the battery, accessed through battery handle opening. These latches must be depressed to remove cover, otherwise latches will break.*

Remove battery covers and retain for fitting after battery cables are terminated. With permanent marker, mark each cable separator label with battery string identification.
7. Wipe battery terminals until clean and dry.

8. **CAUTION:**

   For proper connection, make sure flat side of cable lug is installed first on battery post!

   On cable assembly [Figure 1], connect BAT (+) cable to + (positive) terminal of battery by installing cable lug, flat washer, spring lock washer, and nut on battery post. **Use only open-end wrench supplied with battery to tighten nut** (which prevents over-tightening). If no wrench is supplied, torque wrench may be used to tighten nut (8mm) to recommended fastening torque value of 4 ft-lbs (48 in-lbs). Do not overtighten.

9. On cable assembly [Figure 1], connect BAT (−) cable to − (negative) terminal of battery by installing cable lug, plain washer, spring lock washer, and nut on battery post. **Use only open-end wrench supplied with battery to tighten nut** (which prevents over-tightening). If no wrench is supplied, torque wrench may be used to tighten nut (8mm) to recommended fastening torque value of 4 ft-lbs (48 in-lbs). Do not overtighten.

10. Double check connections to make sure they are correct.

11. Apply petroleum jelly or equivalent on terminal connections as needed to prevent corrosion.

12. Install plastic cover (removed in Step 6) on battery. Remove cut-outs in side wall of cover [Figure 1] as needed to fit over cable assembly.

13. Repeat from Step 7 for remaining batteries in battery string.

14. Use special key (modified hex key) and 216-tool to open doors to battery compartment (in cabinet skirt).
15. **NOTE:**
Connectors are "keyed" and must be properly oriented to be connected.

Connect patch cord [Figure 2] to BAT (−) connector of battery 5.

![Chloride Battery String Connections and Position in 80A Cabinet](image)

16. As shown in Figure 2, place batteries 5 through 8 (with cable assemblies) in battery compartment in position for battery string 1 or 2.
17. ▲ DANGER:
When connecting batteries together, be careful not to connect together the positive and negative terminals of the same battery.

Connect batteries together by plugging BAT (-) connector from one battery into BAT (+) connector from next battery [Figure 2].

18. Place batteries 1 through 4 in positions shown in Figure 2.

19. Connect other end of patch cord [Figure 2] to BAT (+) connector of battery 4.

20. ▲ DANGER:
When connecting batteries together, be careful not to connect together the positive and negative terminals of the same battery.

Connect batteries together by plugging BAT (-) connector from one battery into BAT (+) connector from next battery [Figure 2]. Repeat for remaining batteries in battery string.

21. Connect battery string cable to battery string: plug BAT1 (+) (female) connector to BAT (+) connector from battery 1 and BAT8 (-) (male) connector to BAT (-) connector from battery 8.

22. Condition DMM to measure DC volts. Measure battery string voltage at gray STR( ) connector (across clips) of battery string cable.
23. Does meter indicate battery string voltage of 49.5 V DC (absolute) or higher?

   If YES, then proceed to Step 25.
   If NO, then continue with Step 24.

24. Recheck battery connections for proper (positive to negative) sequence. Correct if necessary. If connections are correct, check individual battery voltage (can be measured through cover). Any battery that indicates less than 6.2 V DC should be replaced. If all batteries indicate less than 6.2 V DC, refresher charge may be necessary. Refer to manufacturer's instructions for refresher charge operation.

25. Connect together gray connectors on STR( ) (1 or 2) battery string cable and STR( ) (1 or 2) cable from the power shelf. Verify battery cable J140 is plugged in P140 on the side of the power shelf.

26. Dress and secure cables to the top of the battery compartment as necessary to keep them above batteries (in case of flood).

27. **NOTE:**
   To measure battery string voltage accurately, disconnect any battery strings other than battery string being measured. [To disconnect other battery strings, unplug STR( ) battery string cable connector (gray) from STR( ) battery cable connector (gray) from power shelf.]

   On power shelf connect DMM to (1A/mV) - and VOLTAGE + (bottom 2 jacks). Turn AC circuit breaker off.

28. Does meter indicate battery string voltage of 49.5 V DC or higher?

   If YES, then proceed to Step 30.
   If NO, then continue with Step 29.
29. Check the four 30 Amp fuses on the AUG4 BIU. Visually inspect cable assembly between power shelf and battery string. Replace cable assembly fuse and/or cable assembly and AUG4 BIU until meter indicates correct voltage.

30. Is this the last battery string to be installed?
   
   If YES, then proceed to Step 31.
   If NO, then repeat from Step 1 for next battery string.

31. Reconnect any battery strings disconnected for battery string voltage measurement. Turn AC circuit breaker on. Close and secure doors to battery compartment.

   Comment: Battery current can be measured on the AUG4 BIU by measuring millivolts DC between + and - for battery string 1 or 2. One millivolt DC corresponds to 1 AMP DC. A positive reading (+ to - with the common meter lead in -) indicates the batteries are being charged.

STOP. YOU HAVE COMPLETED THIS PROCEDURE
Install Lineage 2000 VR Series Batteries In 80A Cabinet Battery Compartment

SUMMARY: Unpack and visually inspect the batteries for damage. Measure the voltage of each battery. Requirement: 4.20 V DC or higher. Place batteries in the battery compartment (Figure 1). Coat inter-battery bus bars with NO-OXid grease. Connect the batteries together with the bus bar as shown in Figure 2. Connect battery string cable to batteries 1 and 12. Check the battery string voltage, note polarity and voltage (Requirement: minimum 50.4 V DC). Connect cable from power shelf to battery string cable. Repeat for second battery string to be installed.

1. △ DANGER 1:
   Batteries are electrically live at all times and are able to supply several thousand amperes short circuit current. Great care should be exercised to avoid short circuiting the battery terminals. Insulated tools must be used; any rings, watches, bracelets, etc. must be removed when working on batteries.

△ DANGER 2:
Any contact of electrolyte with skin or clothing should be avoided. If contact occurs, the electrolyte can be neutralized by flushing with plenty of water. If electrolyte enters the eye, immediately flush the eye with water and seek medical help. If the batteries appear damaged in shipping, protective rubber apron, rubber gloves and goggles should be worn by persons handling the batteries.

△ CAUTION:
The Lineage 2000 VR Series battery is valve regulated, starved electrolyte lead acid cell. Should the case crack, it is possible that small amount of electrolyte (one ounce) could leak out. The electrolyte is sulfuric acid and should be handled as highly corrosive material. No battery installation should be attempted unless the
installer has ready access to several gallons of water and a package of baking soda. Baking soda or solution of baking soda and water may be used to neutralize small amounts of electrolyte.

Get equipment for installation:

- (1) ED-83242-30, G3 which consists of 12 Lineage 2000 VR series batteries, 11 inter-battery bus bars, 24 1/4-inch lock washers, 24 1/4-inch nuts, a container of the NO-OXid grease and a form 1285 (all these items are supplied with the batteries).

- (1) battery string cable (comcode 846278224, one for each battery string) (shipped with the cabinet as Group 63).

- torque wrench (range between 30 inch lb. and 200 inch lb.) with insulated handle (or insulate the handle with electrical tape).

- 7/16-inch socket (for the 1/4-20 nut).

2. Unpack the batteries and inspect for physical damage. Do not install any cell that appears to be damaged. Any cell that has leaked electrolyte should be considered defective.

3. Condition DMM to measure DC volts.

4. Measure the terminal voltage of each battery. Does meter indicate 4.20 V DC or higher for each battery?

   If YES, then proceed to Step 6.

   If NO, then continue with Step 5.

5. Replace any battery that measures less than 4.20 V DC.

6. Wipe battery terminals until clean and dry.
7. Use special hex key (modified hex key) and 216-tool to open the battery compartment doors.

8. Place all twelve batteries in the battery compartment as shown in Figure 1.

Figure 1 — Layout of Lineage 2000 VR Series batteries in 80A cabinet
9. Coat inter-battery bus bars with NO-OXid grease and install on the batteries as shown in Figure 2. Install 1/4 inch lock washer and nut on battery post. Using insulated torque wrench with the socket, tighten nut to 55 in-lbs torque. Repeat for each battery post until all 12 batteries are connected together.

![Battery string connections diagram](image)

Figure 2 — Battery string connections for Lineage 2000 VR Series batteries

10. Cut a notch in the cover of the battery No. 1 (above "-" battery post) and battery No. 12 (above "+" battery post) (see Figure 2). This is required to install the battery string cable.

11. Connect the battery string cable to battery No. 1 by terminating the lug marked BAT 1 (−) to the "-" (negative) battery post of the first battery in the string (Figure 2). Connect the battery string cable to battery No. 12 by terminating the lug marked BAT 12 (+) to the "+" (positive) battery post of the 12th battery as shown in Figure 2. Install the lock washer and nut on the battery posts. Use insulated torque wrench to tighten the nuts to 55 in-lbs torque.
12. Coat each battery connection with NO-OXid grease.

13. Condition DMM to measure DC volts. Measure battery string voltage at the connector (marked STR "+" and "-" ) at the end of the battery string cable. Make sure measured polarity corresponds with polarity indicated on connector.

14. Does meter indicate battery string voltage -50.4 V DC or higher?
   If YES, then proceed to Step 16.
   If NO, then continue with Step 15.

15. Make sure that there are twelve batteries in the string. Recheck battery connections and correct if necessary. If connections are correct, check individual battery voltage. Any battery that indicates less than 4.20 V DC should be replaced.

16. Connect the battery string cable STR connector to the connector designated STR( ) (1 or 2) on the end of the battery cable located in the battery compartment. Verify battery cable J140 is plugged in P140 on the side of the power shelf.

17. Dress cables in the battery compartment.

18. NOTE:
   To measure the battery string voltage accurately, disconnect any battery strings other than battery string being measured. [To disconnect other battery strings, unplug the battery string cable connector marked STR from the battery cable connector marked STR( ).]

   On power shelf connect DMM to (1A/mV) - and VOLTAGE + (bottom 2 jacks). Turn AC circuit breaker off.
19. Does meter indicate battery string voltage of 50.4 V DC or higher?
   If YES, then proceed to Step 21.
   If NO, then continue with Step 20.

20. Check the four 30 Amp fuses on the AUG4 BIU. Visually inspect cable assembly between powershelf and battery string. Replace cable assembly fuse and/or cable assembly and AUG4 BIU until meter indicates correct voltage.

21. Is this the last battery string to be installed?
   If YES, then proceed to Step 22.
   If NO, then repeat from Step 1 for next battery string to be installed.

22. Disconnect test equipment. Reconnect any battery strings disconnected for voltage measurement. Turn AC breaker on. Close and lock battery compartment door.
   Comment: Battery current can be measured on the AUG4 BIU by measuring millivolts DC between + and - for battery string 1 or 2. One millivolt DC corresponds to 1 AMP DC. A positive reading (+ to - with the common meter lead in -) indicates the batteries are being charged.

23. Between one and three hours after the rectifiers are installed, measure the voltage of each battery in the string and record on form 1285 supplied with the batteries. Meter should indicate between 4.44 V DC and 4.64 V DC for each battery. Any battery outside this limit should be measured again within one week. If it is still outside the limit, replace battery.

STOP YOU HAVE COMPLETED THIS PROCEDURE.
Check 4A or 4B Fan Unit Operation

Summary: The 4A and 4B fan units are identical except for the air flow direction from the shelf. The 4A or 4B has a built-in controller circuit pack. The 4A or 4B fans will start running at +10°C (+50°F) and run at 2 speeds depending on temperature (3600 RMP above 40°C, 3200 RMP below 40°C) and a third speed (2800 RPM) if the SLC-2000 remote terminal (RT) is on batteries. The 4A or 4B fans will begin to operate when the power shelf is equipped and the power shelf circuit breakers are turned on. To check the 4A or 4B fans press the CHANGE FAN SPEED button at least 3 times to verify high, medium, and shut off speeds. The CHANGE FAN SPEED button also functions as an LED TEST for the 4A or 4B fan FAULT indicator.

1. Verify that the power equipment has been turned up and batteries have been installed. Verify that the power equipment DC circuit breakers are turned on. The CHANGE FAN SPEED button on the fan unit should not have been pressed in the last 10 minutes to perform this procedure.

2. **NOTE:**
   The fans will start operating if the temperature is +10°C (+50°F) or higher and if power is supplied. The fans will not turn off until the temperature is -10°C (+14°F) or less. The 4A or 4B provides TEMP voltage test jacks that can be used to determine the temperature of the fan controller (1 volt DC per 10°C above 0°C).

   If the 4A or 4B FAULT indicator is on (see Figure 1), proceed to Step 6.

3. Press and hold down the CHANGE FAN SPEED button and verify that the FAULT indicator lights. Press and release the CHANGE FAN SPEED button at least 3 times and verify that the fans run at high speed, medium speed, and then off. Leave the fans in the off mode.

4. Did the fans step through 3 speeds and did the FAULT indicator light for the CHANGE FAN SPEED test?
   
   **If YES, THEN STOP. YOU HAVE COMPLETED THIS PROCEDURE.**
   If NO, then continue with Step 5.
5. If FAULT indicator did not light and/or the fans did not operate, check P114/J114 connection and verify that the power equipment DC circuit breaker is not tripped. Refer to appropriate SD drawings to clear power trouble. Replace the control circuit pack in the 4A or 4B fan unit if no power troubles are found. Then repeat this procedure.

6. When the FAULT indicator is lighted, look through the front grille at the control circuit pack.

   - If the control circuit pack YELLOW indicator is lighted and the GREEN LED is flashing, the thermal sensor may have failed. Check the voltage between TEMP + and - jacks (1 volt DC per 10°C above 0°C). If the voltage indicates a temperature close to the ambient air, unplug and reconnect P114/J114 connector. If the voltage indicates a temperature obviously too high or too low, replace the control circuit pack in the 4A or 4B fan unit.

   The thermal sensor alarm (YELLOW LED) will light if a temperature change of more than 2.7°C has not occurred in the past three days. To clear this alarm reconnect the P114/J114 connector. To test the sensor check the voltage between TEMP + and - jacks while blocking air flow from the fan unit. The voltage will rise if the sensor is functional.

   - If the GREEN indicator is flashing and the RED and YELLOW indicators are off, one or both fans is obstructed or defective (for example, rotates at less than 2000 RPM). Clear obstruction and/or replace defective fan.

   - With the FAULT LED lighted and any other combination of control circuit packs indicators, replace the control circuit pack in the 4A or 4B fan unit.

7. Repeat this procedure after correcting trouble.
Look through here to see red, yellow, and green LED indicators on the control circuit pack.
RT Channel Bank Turn Up

Task Index List

FIND YOUR JOB IN THE LIST BELOW THEN GO TO

⇒ NOTE:
When establishing a SLC® Series 5 Carrier System remote terminal (RT) you must initially accept the RT equipment as directed in the Acceptance Tab procedures. Then you must Turn Up the RT frame/cabinet supporting equipment so that power is established using procedures in the Power Up Tab. After the RT power (rectifiers, batteries, and ringing) has been established, the channel bank can be Turned Up for the required Feature Package configuration.

For craft personnel familiar with SLC® Series 5 Carrier System RT Turn up procedures, the quick reference cards (Appendix B for option settings and Appendix C for RT Turn Up) may be used for abbreviated Turn Up procedures.

Acceptance.............................................................................................................. NTP-002
Turn Up Series 5 RT Blue or White System Equipped for Any Feature Package Except 303..................................................... NTP-003
Add Digroups C and D to Existing RT for Any Feature Package Except 303.................................................................................. NTP-004
Test Digital Line Connections to DDM-2000, DDM-1000, or DDM-Plus for Preservice RT (Optional)........................................ NTP-005
Turn Up Series 5 RT Blue or White System Equipped for Feature Package 303 ........................................................................ NTP-006
Add DS1s to an In-Service Feature Package 303 RT .......................................... NTP-007
Verify That Correct Complement of Circuit Packs is Available.......................... DLP-500
CAUTION:
With the introduction of additional features for the Series 5 system, it becomes imperative that personnel turning up an RT bank assembly use care when making settings on circuit packs (CPs) being installed and ensure that the correct codes of CPs are installed into the proper slots in the RT bank assembly. Failure to observe these cautions may result in immediate or future loss of service or may introduce errors into the digital bitstream. Accurate facility records should be used to determine correct CP code, bank slot position, and to make all CP option switch settings. Listed below are several indications that the craft personnel may use to determine whether an error has been made during RT bank turnup:

- When a CP is installed, the CP FAIL indicator (LED) should be observed to ensure that it comes on momentarily, then goes off. The absence of this just powered up (JPU) indication should cause the craft personnel to check for proper CP type, option settings, and location.

- A misplaced or misset CP should always cause the associated digroup indicator (on the BCU) to light.

- If the FAIL LED stays on following the installation of a common unit, the CP is probably failed or in the wrong position. This indication does not always occur due to system design.

- The following procedure may be used when a problem is indicated (as above) following installation of a CP. A simple verification of craft personnel error may be made as follows: While observing the FAIL LED on the CP just installed, depress the ADU LAMP TEST switch. With the exception of an ADU CP, if option switches on the CP just installed are set incorrectly, the FAIL LED on the CP will not light.

CAUTION:
In dusty areas (for example, near construction sites), AT&T recommends tenting the RT cabinet to protect electronic equipment whenever cabinet doors are open for extended periods.
FIND YOUR JOB IN THE LIST BELOW

Block diagrams of the various feature package arrangements available for the SLC Series 5 Carrier System are shown in Figure 1.

Figure 1 — Feature Package Arrangements
Turn Up Series 5 RT Blue or White System
Equipped for Feature Package 303

DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

**SUMMARY:** Use this procedure to turn up Feature Package 303 (FP303) in the blue (lower) or white (upper) system of a dual channel bank. The A and C line interface unit (LIU) DS1 facilities carry the active and standby embedded operations channel (EOC) and timeslot management channel (TMC) for a system; therefore, the minimum turn up must include both of these facilities. B and/or D LIU DS1 facilities can also be equipped now or at a later time.

The term "facility shelf" is used throughout this procedure to refer to the middle shelf of the Series 5 RT. The remaining shelves will be referenced according to digroup name (for example, the shelf containing digroups A and B is referred to as the AB shelf). The white system refers to the two upper shelves of the Series 5 RT plus the right half of the facility shelf; the blue system refers to the two lower shelves of the Series 5 RT plus the left half of the facility shelf.

1. Get support equipment listed:
   - 216-type tool (80-type cabinet only)
   - Special key (allen-type wrench) - COMCODE 846244168 (51- and 80-type cabinet only)
   - DMM (digital multimeter) with an accuracy of 1.0% and an AC/DC input impedance of ≥ 1 megohm.
DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

2. Verify the following:
   • The outside cable pairs are not connected through to the remote terminal (RT) so that the RT is isolated from the digital and derived lines.
   • The frame or cabinet housing the RT has been installed.
   • The J1C182AB, J1C182AC, J1C182AE, J1C182AF, or J1C182AH dual channel bank assembly has been installed in the frame or cabinet enclosure.
   • The miscellaneous pair panel, protector connectors, power shelf, fan shelves, and battery shelves (if required) have been installed in the frame or cabinet enclosure.
   • The acceptance procedures in this volume have been performed.
   • The cabinet or frame supporting equipment has been turned up using procedures in this volume.

3. CAUTION:
   An electrostatic discharge wrist strap with a minimum resistance of 250K Ohms should be worn when handling Series 5 circuit packs to prevent possible damage to the circuit packs. Before using the wrist strap, check it for opens, shorts, and minimum resistance value. If the strap does not pass these checks it should not be used. To avoid possible personal injury while using the wrist strap, do not connect it to the power shelf or adjacent portions of the RT frame. Connect the wrist strap to ESD GRD jack on the fan unit, if present. If grounding jack is not present, connect wrist strap to bare-metal section of the frame well away from the power shelf.
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove 3-type voltage protector units in protector panel for the DS1s being equipped.</td>
</tr>
<tr>
<td>4.</td>
<td>Verify, per work order, that the correct complement of circuit packs is available. <strong>DLP-521</strong></td>
</tr>
<tr>
<td>5.</td>
<td>If not previously installed, install and test the power converter unit (PCU) in the facility shelf. <strong>DLP-502</strong></td>
</tr>
<tr>
<td>6.</td>
<td>Install the channel fuse unit (CFU) and check fuses. <strong>DLP-504</strong></td>
</tr>
<tr>
<td>7.</td>
<td><strong>NOTE:</strong> A line fuse unit (LFU) is required if equipping the RT dual channel bank with AUA62D line powering line interface units (LIUs). If not previously installed and if required, install the LFU in the facility shelf and check fuses. <strong>DLP-501</strong></td>
</tr>
<tr>
<td>8.</td>
<td>Install the fan control unit (FCU), if the 2( ) Fan Unit is installed. <strong>DLP-503</strong></td>
</tr>
<tr>
<td>9.</td>
<td>Set option switches for preservice and unequipped. Install the alarm display unit (ADU) and disregard all alarms. <strong>DLP-523</strong></td>
</tr>
<tr>
<td>10.</td>
<td>Install the bank control unit (BCU). <strong>DLP-522</strong></td>
</tr>
</tbody>
</table>
11. Remove the ADU. Change switch S1-5 and S1-6 to ABE and CDE. If also equipping the B DS1, change S2-7 to the left (not labeled). If also equipping the D DS1, change S2-8 to the left (not labeled).

Set the NORM/CLEAR option plug for NORM. Reinstall the ADU.

**CAUTION:**
If the NORM/CLEAR option plug is left in the CLEAR position, administrative memory clears each time the bank resets. This memory clearing results in a temporary service interruption.

If a channel test unit (CTU) or digital test unit (DTU) is already installed in the dual bank assembly, after about 75 seconds, only the MJ and NE LEDs on the ADU and the DIGROUP LEDs on the BCU stay lighted.

Otherwise, after about 75 seconds, only the FAIL, MN, and NE LEDs on the ADU stay lighted.

12. Install and test a PCU in AB shelf.  
13. Install and test a PCU in CD shelf.

14. Install an AUA112 transmit/receive unit (TRU) in AB shelf. Verify that the TRU FAIL LED lights and goes off. If not, do TAP-100 before continuing.

In about 25 seconds, only the MJ and NE on the ADU and the DIGROUP LEDs on the BCU stay lighted.

Since a minimum system configuration requires equipping both the A and C DS1 facilities, the A and C DIGROUP LEDs will be lighted. The D DIGROUP LED will also light whether or not it is being equipped. The B will only light if the B DIGROUP DS1 facility is being equipped.
15. Install an AUA112 transmit/receive unit (TRU) in CD shelf. Verify that the TRU FAIL LED lights and goes off. If not, do TAP-100 before continuing.

Only the MJ, NE, and CMP on the ADU and the DIGROUP LEDs on the BCU stay lighted.

Since a minimum system configuration requires equipping both the A and C DS1 facilities, the A and C DIGROUP LEDs will be lighted. The D DIGROUP LED will also light whether or not it is being equipped. The B will only light if the B DIGROUP DS1 facility is being equipped.

16. Install the 993A TRU cable between the faceplate connectors on the TRUs. The CMP LED on the ADU clears in about 30 seconds.

If the LIU D DS1 facility is not being equipped, the D DIGROUP LED goes off at this point.

17. **NOTE:**

All line interface units (LIUs) in the same system should have identical option switch settings.

Set options and install a C- or D-type LIU in the facility shelf for each DS1 being equipped. Wait for the FAIL LED on the LIU to light and go off before installing the next LIU. If the FAIL LED fails to light and go off, do TAP-100 before continuing.

Within 30 seconds, the DIGROUP LED on the BCU for the LIU just installed goes off. After the last digroup LIU is installed in a system optioned for protection switching, only the MN and NE LEDs on the ADU remain lighted. In systems not optioned for protection switching, all alarms clear.
18. If protection switching is desired, install AUA74 LSU (line switch unit) in facility shelf. Otherwise, proceed to Step 20.

DLP-525

19. **NOTE:**
All line interface units (LIUs) in the same system should have identical option switch settings.

Set options and install a C- or D-type LIU in the LIU-P slot in the facility shelf. The FAIL LED on the LIU should light momentarily and go off. If the FAIL LED fails to light and go off, do TAP-100 before continuing.

Within 30 seconds, the MN and NE LED on the ADU goes off.

DLP-524

20. **NOTE:**
The CTU is used with the pair gain test controller (PGTC) to enable remote testing of channel units and subscriber lines beyond the remote terminal.

If required and not previously installed, install the CTU. Verify that the FAIL LED on the CTU lights and goes off and BUSY LED is off. If not, check fuses on the CFU then do TAP-100 before continuing.

DLP-524


DLP-526

22. Update office records.

23. Perform End-to-End tests in AT&T 363-205-406 when required.
Add DS1s to an In-Service Feature Package 303 RT

DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

SUMMARY: Use this procedure to add line interface unit (LIU) B and/or D DS1 facilities to an in-service Feature Package 303 (FP303) remote terminal (RT).

1. ▲ CAUTION:

An electrostatic discharge wrist strap with a minimum resistance of 250K Ohms should be worn when handling Series 5 circuit packs to prevent possible damage to the circuit packs. Before using the wrist strap, check it for opens, shorts, and minimum resistance value. If the strap does not pass these checks it should not be used. To avoid possible personal injury while using the wrist strap, do not connect it to the power shelf or adjacent portions of the RT frame. Connect the wrist strap to ESD GRD jack on the fan unit, if present. If grounding jack is not present, connect wrist strap to bare-metal section of the frame well away from the power shelf.

Remove the ADU. If equipping the B DS1, change S2-7 to the left (not labeled). If equipping the D DS1, change S2-8 to the left (not labeled). Reinstall the ADU.

Ignore initial alarms. Within 75 seconds, the MJ and NE LEDs on the ADU and the DIGROUP LED(s) (for the DS1(s) being equipped) on the BCU stay lighted.
2. **NOTE:**
   All line interface units (LIUs) in the same system should have identical option switch settings.

   Set options and install a C- or D-type LIU in the facility shelf for the B and/or D DS1s. Wait for the FAIL LED on the LIU to light and go off. If the FAIL LED fails to light and go off, do TAP-100 before continuing.

   Within 30 seconds, the DIGROUP LED on the BCU for the LIU(s) just installed goes off and all alarms clear.

3. Perform RT LED test.  

4. Update office records.
Clear FAIL LED Problems on a Unit During Turnup and Conversion

Use this procedure when on installing a unit, the unit's FAIL LED remains lighted or fails to light momentarily and go off. This procedure assumes there are no blown fuses on the BFU, CFU, or LFU fuse units and each PCU voltage (-42 to -56 V DC) is present.

1. Press and hold LED TEST button on the ADU.

2. Do the LEDs on the common units light?
   If YES, proceed to Step 12.
   If NO, continue with Step 3.

3. Replace the bank control unit (BCU).

4. Press and hold LED TEST button on the ADU.

5. Do the LEDs on the common units light?
   If YES, proceed to Step 12.
   If NO, continue with Step 6.

6. Replace the BCU with the BCU removed previously.

7. Replace the alarm display unit (ADU).

8. Press and hold LED TEST button on the ADU.
9. Do the LEDs on the common units light?
   
   If YES, proceed to Step 12.
   If NO, continue with Step 10.

10. Replace the ADU with the ADU removed previously.

11. Check the wiring using SD-7C117-01, SD-7C117-02, or SD-7C117-03. After locating and correcting the wiring trouble, go back to the NTP and reinstall the unit with the FAIL LED problem.

12. Is the FAIL LED on the suspect unit lighted?
   
   If YES, continue with Step 13.
   If NO, proceed to Step 14.

13. With the LED TEST button held, does the FAIL LED on the suspect unit go off?
   
   If YES, proceed to Step 24.
   If NO, continue with Step 14.

14. Replace the suspect unit with another unit of the same type.

15. Did the FAIL LED on the suspect unit light momentarily and then go off?
   
   If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, continue with Step 16.

16. Replace the unit with the unit removed previously.

17. Replace the BCU.
18. Did the FAIL LED on the suspect unit go off?

If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.
If NO, continue with Step 19.

19. Replace the BCU with the BCU removed previously.

20. Replace the ADU.

21. Did the FAIL LED on the suspect unit go off?

If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.
If NO, continue with Step 22.

22. Replace the ADU with the ADU removed previously.

23. Check the wiring using SD-7C117-01, SD-7C117-02, or SD-7C117-03. After locating and correcting the wiring trouble, go back to the NTP and reinstall the unit with the FAIL LED problem.

24. Release the LED TEST button. Is the CMP LED on the ADU lighted?

If YES, continue with Step 25.
If NO, proceed to Step 26.

25. There is either a common unit or option switch incompatibility within the system. Either replace the incompatible unit with a compatible unit, or correct the option switch setting on the ADU or suspect unit itself.

References: DLP-523 (ADU), DLP-524 (LIU), DLP-521 (CU Compatibility)
26. After correcting the incompatibility problem, did the FAIL LED on the suspect unit go off?

   If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, continue with Step 27.

27. Check the wiring using SD-7C117-01, SD-7C117-02, or SD-7C117-03. After locating and correcting the wiring trouble, go back to the NTP and reinstall the unit with the FAIL LED problem. If this fails to fix the FAIL LED problem, consult the AT&T Regional Technical Assistance Center (RTAC) by calling 1-800-225-RTAC or the local technical support group.
Install Line Fuse Unit (LFU) in RT Facility Shelf

1. Get one AUA115 or 39F LFU (Figure 1) and inspect for possible damage.

2. Verify that each fuse holder on faceplate of LFU contains 3.0A fuse (WP90247 L110 in the AUA115 or 80C in the 39F) and that fuses are not blown (fuse is blown when flag protrudes on faceplate). If a fuse is blown, use appropriate extractor tool (see Step 7) to replace fuse.

3. Install LFU into LFU slot in facility (middle) shelf.
4. Does any fuse(s) in LFU blow?

   If YES, then continue with Step 5.
   If NO, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.

5. Check wiring on dual bank assembly using SD-7C117-01 or SD-7C117-02 and SD-7C118-01.

6. Is wiring correct?

   If YES, then get another LFU and proceed to Step 2.
   If NO, then continue with Step 7.

7. Repair wiring and use WP0247 L201 insertion/extraction tool for AUA115 LFU; or WECO 553A extractor tool (Techni-Tool No. 594TE170) or WECO 319B (KS-6305) extractor tool (Techni-Tool No. 490PL020) for 39F LFU, to replace blown fuse(s).
Install and Test Power Converter Unit (PCU)
In Facility Shelf

**SUMMARY:** Install PCU in facility shelf and verify that FAIL indicator goes off and remains off. Measure -42 to -56 V DC at PCU faceplate.

1. Get one PCU (AUA11, AUA11B or AUA11C) and inspect for possible damage.

2. Insert PCU into PCU slot in facility (middle) shelf.

3. **NOTE:** FAIL indicator on PCU may light momentarily when inserted into RT.

   Does FAIL indicator on PCU go off and remain off?
   
   If YES, then proceed to Step 8.
   If NO, then continue with Step 4.

4. Replace PCU.

5. **NOTE:** FAIL indicator on PCU may light momentarily when inserted into RT.

   Does FAIL indicator on PCU go off and remain off?
   
   If YES, then proceed to Step 8.
   If NO, then continue with Step 6.

6. Replace PCU with PCU removed previously.
7. Use SD-7C117-01 or SD-7C117-02 to check bank wiring. Repeat procedure from Step 3 after locating and correcting trouble.

8. Condition DMM to measure volts DC.

9. On PCU, connect DMM test leads to GND jack and -48 jack.

10. Does DMM indicate between -42 and -56 volts?
    
    If YES, then proceed to Step 31.
    If NO, then continue with Step 11.

11. Verify that wiring from power shelf to PCU in facility shelf is present and connected properly.

12. Is wiring present and connected properly?
    
    If YES, then proceed to Step 14.
    If NO, then continue with Step 13.

13. Resolve problem through local procedures. Repeat procedure from Step 3 after locating and correcting trouble.

14. Is system being equipped with Fiber-To-The-Home (FTTH) feature?
    
    If YES, then continue with Step 15.
    If NO, then proceed to Step 18.

15. At BFU3 or BFU4 in optics power shelf, is fuse -48 WHITE, -48 BLUE, or -48 CMN blown?
    
    If YES, then continue with Step 16.
    If NO, then proceed to Step 18.

16. Replace blown fuse(s).
17. Does fuse(s) blown again?
   If YES, then continue with Step 29.
   If NO, then proceed to Step 8.

18. Replace PCU in facility shelf.

19. Is FAIL indicator on PCU off?
   If YES, then continue with Step 20.
   If NO, then proceed to Step 4.

20. On PCU, connect DMM test leads to GND jack and -48 jack.

21. Does DMM indicate between -42 and -56 volts?
   If YES, then proceed to Step 31.
   If NO, then continue with Step 22.

22. Replace PCU with PCU removed previously.

23. Is PCU being installed in a frame-type RT with bulk powering (J1C182BB bulk power shelf)?
   If YES, then proceed to Step 30.
   If NO, then continue with Step 24.
24. **NOTE:**
   Two dual bank assemblies share a common power shelf.

   Is PCU being installed in second dual bank assembly?
   - If YES, then continue with Step 25.
   - If NO, then proceed to Step 29.

25. Replace associated 336A RECTIFIER located in power shelf.

26. On PCU, connect DMM test leads to GND jack and -48 jack.

27. Does DMM indicate between -42 and -56 volts?
   - If YES, then proceed to Step 31.
   - If NO, then continue with Step 28.

28. Replace 336A RECTIFIER with 336A RECTIFIER removed previously.

29. Check wiring using SD-7C117-01 or SD-7C117-02 and, if system is being equipped with FTTH feature, also use SD-7C118-02 and SD-7C150-01. Repeat procedure from Step 3 after locating and correcting trouble.

30. Check fuses in RT dual bank assembly LFU and bulk power shelf BFU. If trouble is not found, check wiring at RT dual bank assembly and bulk power shelf using SD-7C117-01 or SD-7C117-02 and SD-7C130-01, respectively. Repeat procedure from Step 3 after locating and correcting trouble.

31. Disconnect DMM test leads.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Install Fan Control Unit (FCU)

1. **CAUTION:**
   *Fan operation is essential to prevent system failures in the Series 5 RTs engineered and installed with fans.*

   Get one FCU (AUA24) and inspect for possible damage.

   **Comment:** The FCU is not required if the 4A Fan Unit is used.

2. Insert FCU into FCU slot in upper shelf of system being equipped.

3. Press FAN TEST button on FCU.
   
   **Response:** Fans should operate while button is pressed.

4. Do fans operate while FAN TEST button is pressed?
   
   If **YES**, then **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**
   If **NO**, then continue with Step 5.

5. Is system equipped with Fiber-to-the-Home (FTTH) feature?
   
   If **YES**, then continue with Step 6.
   If **NO**, then proceed to Step 7.

6. Is –48V FAN H or –48V FAN L fuse on BFU1 or BFU2 blown?
   
   If **YES**, then continue with Step 8.
   If **NO**, then proceed to Step 13.
7. Is \(-48\text{V FAN H}\) or \(-48\text{V FAN L}\) fuse on BFU blown?

   If YES, then continue with Step 8.
   If NO, then proceed to Step 13.

8. Replace blown fuse(s) on BFU.

9. Press FAN TEST button on FCU.

   Response: Fans should operate while button is pressed.

10. Do fans operate while FAN TEST button is pressed?

    If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
    If NO, then continue with Step 11.

11. Does \(-48\text{V FAN H}\) or \(-48\text{V FAN L}\) fuse on BFU blow again?

    If YES, then continue with Step 12.
    If NO, then proceed to Step 13.

12. Check wiring using SD-7C118-01 or SD-7C118-02 (FTTH). Repeat procedure from Step 3 after locating and correcting trouble.

13. Replace FCU.

14. Press FAN TEST button on FCU.

   Response: Fans should operate while button is pressed.
15. Do fans operate while FAN TEST button is pressed?
   
   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 16.

16. Replace FCU with FCU removed previously.

17. Is FAN ALARM indicator on fan shelf lighted?
   
   If YES, then continue with Step 18.
   If NO, then proceed to Step 19.

18. Replace fan shelf and repeat from Step 3.

19. Check wiring to fan shelf per SD-7C118-01 or SD-7C118-02 (FTTH).
    Repeat procedure from Step 3 after locating and correcting trouble.
Install Channel Fuse Unit (CFU)

1. Get AUA114 or 39E CFU (Figure 1) and inspect for possible damage.

![Figure 1 — AUA114 and 39E Channel Fuse Unit](image)

2. Verify per Table A or Table B that fuse holders on faceplate of CFU contain correct value fuses and that fuses are not blown (fuse is blown when flag protrudes on faceplate). If a fuse is blown, use appropriate extractor tool (see Step 7) to replace fuse.

3. Install CFU into vacant CFU slot in upper or lower bank.
Table A

AUA114 CFU Fuses

<table>
<thead>
<tr>
<th>Fuse Designation</th>
<th>Bead Color</th>
<th>Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 HZ - AB</td>
<td>Red</td>
<td>½A</td>
<td>WP90247 L103</td>
</tr>
<tr>
<td>20 HZ - CD</td>
<td>Red</td>
<td>½A</td>
<td>WP90247 L103</td>
</tr>
<tr>
<td>-48V - AB</td>
<td>Blue</td>
<td>3A</td>
<td>WP90247 L110</td>
</tr>
<tr>
<td>-48V - CD</td>
<td>Blue</td>
<td>3A</td>
<td>WP90247 L110</td>
</tr>
<tr>
<td>-48V - CMN</td>
<td>Blue</td>
<td>3A</td>
<td>WP90247 L110</td>
</tr>
</tbody>
</table>

Table B

39E CFU Fuses

<table>
<thead>
<tr>
<th>Fuse Designation</th>
<th>Bead Color</th>
<th>Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 HZ - A/B</td>
<td>Red</td>
<td>½A</td>
<td>80G</td>
</tr>
<tr>
<td>20 HZ - C/D</td>
<td>Red</td>
<td>½A</td>
<td>80G</td>
</tr>
<tr>
<td>-48V - A/B</td>
<td>Blue</td>
<td>3A</td>
<td>80C</td>
</tr>
<tr>
<td>-48V - C/D</td>
<td>Blue</td>
<td>3A</td>
<td>80C</td>
</tr>
<tr>
<td>-48V - CMN</td>
<td>Blue</td>
<td>3A</td>
<td>80C</td>
</tr>
</tbody>
</table>

4. Does any fuse(s) in CFU blow?
   
   If YES, then proceed to Step 5.
   If NO, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.

5. Check wiring on dual bank assembly using SD-7C117-01 or SD-7C117-02
   and SD-7C118-01 or SD-7C118-02 (Fiber-To-The-Home feature only).
6. Is wiring correct?

   If YES, then get another CFU and proceed to Step 2.
   If NO, then continue with Step 7.

7. Repair wiring and use WP0247 L201 insertion/extraction tool for AUA114 CFU; or WECO 553A extractor tool (Techni-Tool No. 594TE170) or WECO 319B (KS-6305) extractor tool (Techni-Tool No. 490PL020) for 39E CFU, to replace blown fuse(s).
Option and Install AUB27 ADU

SUMMARY: Set the ADU options for the system configuration (S1 through S11) with AB and CD set to preservice and unequipped (S1 positions 3-6). Install ADU, then BCU and verify no alarms. Remove ADU and set AB (and CD if required) to equipped (positions 2 and 3). Reinstall ADU and disregard alarms.

1. Has the BCU been installed?
   If NO, then continue with Step 2.
   If YES, then proceed to Step 12.

2. Get one AUB27 (Feature Package B, Feature Package C-AutoCut, or Feature Package F) and inspect for possible damage.

3. Verify that fuse on ADU is not blown. If fuse is blown, get another ADU that contains good fuse.

4. On AUB27 ADU option switch S1 (Figure 1 and Table A), use an orange stick (KS-6320, L1) or equivalent and set switch positions as follows:
   - 1 - Toward PL for protection switching or toward NPL for no protection switching.
   - 2 - Toward 2 if system is FPB Mode 2. Otherwise, set it toward 4.
   - 3 - Toward ABP.
   - 4 - Toward CDP.
   - 5 - Toward ABU.
   - 6 - Toward CDU.
   - 7 - Toward 1MJ if MISC1 is to report a major alarm or toward 1MN if MISC1 is to report a minor alarm.
   - 8 - Toward 2MJ if MISC2 is to report a major alarm or toward 2MN if MISC2 is to report a minor alarm.
## Table A
### AUB27 Switch Setting

<table>
<thead>
<tr>
<th>Function</th>
<th>S1 Switch Position</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Protection Line (NPL)</td>
<td>1</td>
<td>Protection Line (PL)</td>
</tr>
<tr>
<td>Mode 2 Operation (2)</td>
<td>2</td>
<td>Mode 1 or FPC Operation (4) (Always Use 4 Unless Equipping FPB Mode 2)</td>
</tr>
<tr>
<td>AB In-Service (ABI)</td>
<td>3</td>
<td>AB Pre-Service (ABP)</td>
</tr>
<tr>
<td>CD In-Service (CDI)</td>
<td>4</td>
<td>CD Pre-Service (CDP)</td>
</tr>
<tr>
<td>AB Equipped (ABE)</td>
<td>5</td>
<td>AB Unequipped (ABU)</td>
</tr>
<tr>
<td>CD Equipped (CDE)</td>
<td>6</td>
<td>CD Unequipped (CDU)</td>
</tr>
<tr>
<td>Major Alarm for MISC1 (1M1)</td>
<td>7</td>
<td>Minor Alarm for MISC1 (1MN)</td>
</tr>
<tr>
<td>Major Alarm for MISC2 (2M1)</td>
<td>8</td>
<td>Minor Alarm for MISC1 (2MN)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>S2 Switch Position</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 Bit Alarm Field (16)</td>
<td>1</td>
<td>13 Bit Alarm Field (13) (Always Use 13)</td>
</tr>
<tr>
<td>FS Framing (FS) * (Use FS for FPB Mode 1 or 2)</td>
<td>2</td>
<td>ESF Framing (FE) † (Use FE for FPC-AutoCut)</td>
</tr>
<tr>
<td>No Cutover Hunting (NC) (Use NC for Mode 1 and 2 or When FPC-AutoCut is in Pre-Service)</td>
<td>3</td>
<td>Cutover Enabled (CUT) (Only Use CUT When Establishing End-to-End FPC-AutoCut System)</td>
</tr>
<tr>
<td>(SGL)</td>
<td>4</td>
<td>(Always Use DBL)</td>
</tr>
<tr>
<td>(PA)</td>
<td>5</td>
<td>(Always Use NPA)</td>
</tr>
<tr>
<td>(MJP)</td>
<td>6</td>
<td>(Always Use MNP)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>S3 Switch Position</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Link (DL) (Always Use DL)</td>
<td></td>
<td>No Data Link (NDL)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Clear Norm Position</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Provisioning (Use CLEAR When ADU is First Installed in New System)</td>
<td>Do Not Clear Provisioning (Use NORM for In-Service System)</td>
<td></td>
</tr>
<tr>
<td>S4, S5, S6, S7</td>
<td>Rotary Switches</td>
<td>S8, S9, S10, S11</td>
</tr>
</tbody>
</table>

System ID Number (Always Set to 0)

* Use FS option for FPB Mode 1, Mode 2, and for integrated applications.
† Use FE option for FPC-AutoCut and FPC applications.
5. On AUB27 ADU option switch S2 (Figure 1 and Table A), use an orange stick (KS-6320) or equivalent and set switches as follows:
   
   • 1 - Toward 13.
   
   • 2 - Toward FS for FPB (Feature Package B Mode 1 or Mode 2) applications. Toward FE for Feature Package C-AutoCut or other applications.
   
   • 3 - Toward NC for all preservice applications. (CUT is only used when an FPC-AutoCut RT is optioned for in-service when establishing end-to-end system)
CAUTION:
FPB Mode 2 must be set to NC for ADU FAIL, MN, NE, and CMP alarms to clear.

- 4 - Toward DBL.
- 5 - Toward NPA.
- 6 - Toward MNP.
- 7 and 8 - Unused.

6. Set switch S3 toward DL.

7. Set system identification rotary switches S4 (most significant digit) through S7 (least significant digit) to bank ID number.

8. Set rotary switches S8 through S11 to 0.

9. NOTE:
The NORM/CLEAR switch option is used to automatically clear random channel provisioning data stored in the ADU and BCU when the BCU is installed by selecting CLEAR. After the BCU has been installed, the NORM position is used.

Set NORM/CLEAR option plug for CLEAR option (center and bottom pins).

10. CAUTION:
Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

Insert ADU into lower ADU slot if equipping blue bank or upper ADU slot if equipping white bank.

Response: Disregard all indicators that may be lighted.
11. **NOTE:**
When the BCU is first installed, the ADU should be set for preservice and unequipped digroups (AB and CD) to verify these units (ADU and BCU) are functioning properly (all alarms clear).

Install BCU.

Reference: DLP-508

Response: After approximately 1 minute, all indicators will go off. MISC( ) may be lighted. Clear power shelf trouble if you have a MJ/MN NE alarm using AT&T 363-205-500 Maintenance TOP.

12. **CAUTION:**
Incorrect ADU option switch settings can cause service interruptions. Do not change any option switches except the ones listed for equipping digroups. For FPB Mode 1 systems, removing the ADU will interrupt service on digroup A. Therefore, this procedure requires that a Mode 1 system has all digroups equipped.

**NOTE:**
If the ADU you are installing is a replacement, the system configuration (S1 through S11) options must be set as directed in the previous Steps.

Remove ADU (Figure 1) from bank being equipped.
13. Set switch S1 positions 5 and 6 as follows;
   - 5 - Toward ABE to option digroup(s) AB equipped.
   - 6 - Toward CDE to option digroup(s) CD equipped (if required).

14. Set NORM/CLEAR option plug for NORM option (center and top pins).

15. Have a CTU and/or DTU already been installed in the dual bank assembly?
    If YES, then continue with Step 16.
    If NO, then proceed to Step 26.

16. **NOTE:**
    This procedure assumes the TRU and LIU slots for the digroup(s)
    (AB or CD) being equipped have not been installed.

**CAUTION:**
*Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.*

Reinstall ADU into ADU slot.
17. After approximately 15 seconds, are ADU MJ and NE and BCU A, B DIGROUP indicators lighted (BCU C, D DIGROUP indicators will also be lighted if CD digroups are in the preservice and equipped state)?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 18.

18. Replace BCU.

19. After approximately 15 seconds, are ADU MJ and NE and BCU A, B DIGROUP indicators lighted (BCU C, D DIGROUP indicators will also be lighted if CD digroups are in the preservice and equipped state)?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 20.

20. Replace BCU with BCU removed previously.

21. Remove ADU and check settings of switches on option switch S1 through S11 per work order and Steps 4 through 8.

22. Are switch settings on option switch correct?

   If YES, then continue with Step 23.
   If NO, then proceed to Step 24.

23. Get another ADU and use an orange stick (KS-6320, L1) or equivalent to set switches on option switches S1 through S11 according to work order and Steps 4 through 8.
24. **CAUTION:**

Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

Insert ADU into ADU slot in bank being equipped.

Response: After approximately 15 seconds ADU MJ and NE and BCU A, B DIGROUP indicators are lighted. BCU C, D DIGROUP indicators will also be lighted if CD digroups are in the preservice and equipped state.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.

25. Set switches on option switch to correct position and repeat from Step 16.

26. **CAUTION:**

Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

Reinstall ADU into ADU slot.

27. After approximately 15 seconds, are FAIL, MN, and NE indicators on ADU lighted?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.

   If NO, then continue with Step 28.

28. Replace BCU.
29. After approximately 15 seconds, are FAIL, MN, and NE indicators on ADU lighted?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.

   If NO, then continue with Step 30.

30. Replace BCU with BCU removed previously.

31. Remove ADU and check settings of switches S1 through S11 per work order and Steps 4 through 8.

32. Are switch settings on option switch correct?

   If YES, then continue with Step 33.

   If NO, then proceed to Step 35.

33. Get another ADU and set switches on option switch S1 through S11 per work order and Steps 4 through 8.

34. ▲ CAUTION:

   Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

   Insert ADU into ADU slot in bank being equipped.

   Response: After approximately 15 seconds, FAIL, MN, and NE indicators on ADU are lighted.

   STOP. YOU HAVE COMPLETED THIS PROCEDURE.

35. Correct setting of switches on option switch and repeat from Step 26.
Install Bank Control Unit (BCU)

**Summary:** With the ADU option for preservice and unequipped, install the BCU and verify all alarms clear in 1 minute or less (MISC alarms may be lighted). If not check the ADU options, then replace ADU and/or BCU. If you have ADU MJ/MN NE alarms (no FAIL), clear power shelf trouble (ringing generators, fuse units, power units, ...) before continuing (use AT&T 363-205-500 Maintenance TOP).

1. **NOTE:**
   The MC97726A1 BCU is rated discontinued availability; any units remaining in the field should be returned for an upgrade per customer information release (CIR) AT&T 363-099-072.

Get one MC97723A1 (Feature Package A) (rated discontinued availability), MC97724A1 (Feature Package B), MC97756A1 (Feature Package C or D), MC97771A1 or MC97776A1 (Feature Package B Mode 1 and Mode 2, or Feature Package C-AutoCut) MC97779A1 (Feature Package F) BCU (Figure 1), as required, and inspect for possible damage.

![Figure 1 — Typical RT BCU Faceplates](image)
2. **NOTE 1:**
The MC97771A1 or MC97776A1( ) BCU can be used for FPB (Feature Package B Mode 1 or Mode 2) or Feature Package C-AutoCut operation depending on the choice of ADU circuit packs and how the ADU options are set. The MC97779A1 BCU is required for FPF (Feature Package F).

**NOTE 2:**
MISC1 or MISC2 indicator on BCU will light if either one is connected to open door closure alarm. Deactivate miscellaneous alarm.

Insert BCU into lower BCU slot if equipping blue bank or upper BCU slot if equipping white bank.

Response: Ignore initial transient alarm indications (typically FAIL LEDs light on the BCU, ADU, and CTU if installed). Within 1 minute all alarms clear.

3. Did all indicators go off within 1 minute?

If YES, then **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If NO, then continue with Step 4.

Comment: Clear power shelf trouble if you have alarm indicators other than FAIL (use AT&T 363-205-500 Maintenance TOP) before continuing with the turn up procedures.
4. Is BCU FAIL indicator off?
   
   If YES, then continue with Step 5.
   If NO, then proceed to Step 12.

5. **CAUTION:**
   Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

   Replace ADU.
   Reference: DLP-505, DLP-506, DLP-507

6. Did all indicators go off within 1 minute?
   
   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 7.

   Comment: Clear power shelf trouble if you have alarm indicators other than FAIL (use AT&T 363-205-500 Maintenance TOP) before continuing with the turn up procedures.
7. **CAUTION:**
Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

Replace ADU with ADU removed previously.

8. Replace BCU.

9. Did all indicators go off within 1 minute?

   If YES, then **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**
   If NO, then continue with Step 10.

Comment: Clear power shelf trouble if you have alarm indicators other than FAIL (use AT&T 363-205-500 Maintenance TOP) before continuing with the turn up procedures.

10. Replace BCU with BCU removed previously.
11. Check wiring using SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 2 after locating and correcting trouble.

12. Replace BCU.

13. Did all indicators go off within 1 minute?
   
   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   
   If NO, then continue with Step 14.

Comment: Clear power shelf trouble if you have alarm indicators other than FAIL (use AT&T 363-205-500 Maintenance TOP) before continuing with the turn up procedures.

14. Replace BCU with one removed previously.

15. **CAUTION:**

   Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

   Replace ADU.

Reference: DLP-505, DLP-506, DLP-507
16. Did all indicators go off within 1 minute?

If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
If NO, then continue with Step 17.

Comment: Clear power shelf trouble if you have alarm indicators other than FAIL (use AT&T 363-205-500 Maintenance TOP) before continuing with the turn up procedures.

17. **CAUTION:**

Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

Replace ADU with ADU removed previously and check wiring using SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 2 after locating and correcting trouble.
Install and Test Power Converter Unit (PCU) in AB Shelf

SUMMARY: Install PCU into AB shelf and verify that FAIL indicator is off. Measure -42 to -56 V DC at PCU faceplate.

1. Get one PCU (AUA11, AUA11B, or AUA11C) and inspect for possible damage.

2. Have a CTU and/or a DTU already been installed in the dual bank assembly?
   - If YES, then continue with Step 3.
   - If NO, then proceed to Step 4.

3. Insert PCU into AB (lower) shelf PCU slot of channel bank.
   
   Response: ADU MJ and NE and BCU A, B DIGROUP indicators are lighted and PCU FAIL indicator is off. BCU C, D DIGROUP indicators will also be lighted if CD digroups are in the preservice and equipped state.

   Proceed to Step 5.

4. Insert PCU into AB (lower) shelf PCU slot of channel bank.
   
   Response: MN, NE, and FAIL indicators on ADU are lighted and FAIL indicator on PCU is off.

5. Is PCU FAIL indicator off?
   - If YES, then proceed to Step 10.
   - If NO, then continue with Step 6.

6. Replace PCU.
7. Does FAIL indicator on PCU light and remain lighted?
   
   If YES, then continue with Step 8.
   If NO, then proceed to Step 10.

8. Replace PCU with PCU removed previously.

9. Use SD-7C117-01 or SD-7C117-02 to check wiring. Repeat procedure from Step 2 after locating and correcting trouble.

10. Condition DMM to measure volts DC.

11. On PCU faceplate, connect DMM test leads to GND jack and -48 jack.

12. Does DMM indicate between -42 and -56 volts?
   
   If YES, then proceed to Step 28.
   If NO, then continue with Step 13.

13. Verify that wiring from power shelf to PCU in AB shelf is present and connected properly.

14. Is wiring present and connected properly?
   
   If YES, then proceed to Step 16.
   If NO, then continue with Step 15.

15. Resolve problems through local procedures. Repeat procedure from Step 2 after locating and correcting trouble.
16. Is system being equipped with FTTH (Fiber-To-The-Home) feature?
   If YES, then continue with Step 17.
   If NO, then proceed to Step 20.

17. At BFU3 or BFU4 in optics power shelf, is fuse -48 WHITE, -48 BLUE, or -48 CMN blown?
   If YES, then continue with Step 18.
   If NO, then proceed to Step 20.

18. Replace blown fuse(s).

19. Does fuse(s) blown again?
   If YES, then continue with Step 25.
   If NO, then proceed to Step 11.

20. Replace PCU.

21. Is FAIL indicator on PCU off?
   If YES, then continue with Step 22.
   If NO, then proceed to Step 6.

22. On PCU faceplate, connect DMM test leads to GND jack and -48 jack.

23. Does DMM indicate between -42 and -56 volts?
   If YES, then proceed to Step 26.
   If NO, then continue with Step 24.

24. Replace PCU with PCU removed previously.
25. Check wiring using SD-7C117-01 or SD-7C117-02 and, if system is being equipped with FTTH feature, also use SD-7C118-02 and SD-7C150-01. Repeat procedure from Step 2 after locating and correcting trouble.

26. Disconnect DMM test leads.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Install PCU Unit in CD Shelf

**SUMMARY:** Install PCU into CD shelf and verify that FAIL indicator is off. Measure -42 to -56 V DC at PCU faceplate.

1. Get one PCU (AUA11, AUA11B or AUA11C) and inspect for possible damage.

2. Insert PCU into PCU slot in CD (upper) shelf of channel bank.
   
   Response: MJ and NE indicators on ADU and DIGROUP C, D indicators on BCU are lighted. FAIL indicator on PCU should be off.

3. Does FAIL indicator on PCU go off and remain off?
   
   If YES, then proceed to Step 8.
   If NO, then continue with Step 4.

4. Replace PCU.

5. Does FAIL indicator on PCU go off and remain off?
   
   If YES, then proceed to Step 8.
   If NO, then continue with Step 6.

6. Replace PCU with PCU removed previously.

7. Use SD-7C117-01 or SD-7C117-02 to check wiring. Repeat procedure from Step 2 after locating and correcting trouble.

8. Condition DMM to measure volts DC.

9. On PCU faceplate, connect DMM test leads to GND jack and -48 jack.
10. Does DMM indicate between -42 and -56 volts?

   If YES, then proceed to Step 20.
   If NO, then continue with Step 11.

11. Verify that wiring from power shelf to PCU in facility shelf is present and connected properly.

12. Is wiring present and properly connected?

   If YES, then proceed to Step 14.
   If NO, then continue with Step 13.

13. Resolve problem through local procedures. Repeat procedure from Step 2 after trouble is located and corrected.

14. Replace PCU.

15. Does FAIL indicator on PCU go off and remain off?

   If YES, then continue with Step 16.
   If NO, then proceed to Step 4.

16. On PCU faceplate, connect DMM test leads to GND jack and -48 jack.

17. Does DMM indicate between -42 and -56 volts?

   If YES, then proceed to Step 20.
   If NO, then continue with Step 18.

18. Replace PCU with PCU removed previously.

19. Check wiring using SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 3 after locating and correcting trouble.
20. Disconnect DMM test leads.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Verify Correct Complement of Circuit Pack for FP303

1. Refer to Table A to determine the required number and complement of circuit pack for feature package 303 (FP303).

2. Are all required packs available?

If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
If NO, then obtain missing packs.

<table>
<thead>
<tr>
<th>Unit Code</th>
<th>Function Code</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCU</td>
<td>MC97777A1</td>
<td>One BCU for each system (blue and white).</td>
</tr>
<tr>
<td>ADU</td>
<td>AUB27( )</td>
<td>One ADU for each system (blue and white).</td>
</tr>
<tr>
<td>TRU</td>
<td>AUA112</td>
<td>One TRU for each dual digroup shelf (two for each system); 993A TRU cable to connect TRUs.</td>
</tr>
<tr>
<td>LIU</td>
<td>AUA61C or D</td>
<td>One LIU for each equipped DS1; choose among unit codes.</td>
</tr>
<tr>
<td></td>
<td>AUA62C or D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AUA64C or D</td>
<td></td>
</tr>
<tr>
<td>LSU</td>
<td>AUA74</td>
<td>One LSU for each system with DS1 protection switching.</td>
</tr>
<tr>
<td>CTU</td>
<td>AUB22</td>
<td>One CTU for each dual channel bank; choose between unit codes.</td>
</tr>
<tr>
<td></td>
<td>AUB25</td>
<td></td>
</tr>
<tr>
<td>PCU</td>
<td>AUA11( )</td>
<td>One PCU for each shelf of the dual channel bank.</td>
</tr>
<tr>
<td>CFU</td>
<td>AUA114</td>
<td>One CFU for each system; choose between unit codes.</td>
</tr>
<tr>
<td></td>
<td>39E</td>
<td></td>
</tr>
<tr>
<td>LFU</td>
<td>AUA115</td>
<td>One LFU for each dual channel bank if equipped with AUA62C or D LIUs; choose between unit codes.</td>
</tr>
<tr>
<td></td>
<td>39F</td>
<td></td>
</tr>
<tr>
<td>FCU</td>
<td>AUA24</td>
<td>One FCU is required for each system if a 2( ) fan unit is installed.</td>
</tr>
</tbody>
</table>
Install FP303 Bank Control Unit

1. Get one MC97777A1 bank control unit (BCU) and inspect for possible damage.

![Figure 1 — MC97777A1 BCU Faceplate]

2. Insert the BCU into lower BCU slot if equipping blue bank or upper BCU slot is equipping the white bank. Within 75 seconds, all other indicators go off and the PRV LED on the ADU lights. Wait for the PRV indicator to go off before removing the ADU or BCU. It can take up to 10 minutes for PRV LED to go off.
3. Did all alarm indicators go off?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 4.

4. Replace BCU.

5. Did all alarm indicators go off?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 6.

6. Replace the BCU with the one removed previously.

7. CAUTION:
   Incorrectly set ADU option switches can result in immediate or future loss of service or can introduce errors into the digital bitstream.

   Replace ADU.

   Reference: DLP-523

8. Did all alarm indicators go off?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 9.

9. Replace the ADU with the one removed previously.

10. Check wiring using SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 2 after locating and correcting the trouble.
Install Alarm Display Unit in FP303
Optioned for Preservice and Unequipped

1. Get one alarm display unit (ADU), as required, and inspect for possible damage.

2. On AUB27( ) option switch S1 (Table A and Figure 1), use an orange stick (KS-6320, L1) or equivalent and set switch positions as follows:
   - 1 - Toward PL if equipping system with protection switching. Otherwise, toward NPL. (See work order.)
   - 2 - Toward 4.
   - 3 - Toward ABP.
   - 4 - Toward CDP.
   - 5 - Toward ABU.
   - 6 - Toward CDU.
   - 7 - Toward 1MJ if MISC1 is to report a major alarm or toward 1MN if MISC1 is to report a minor alarm. (See work order.)
   - 8 - Toward 2MJ if MISC2 is to report a major alarm or toward 2MN if MISC2 is to report a minor alarm. (See work order.)
### Table A
#### AUB27() Switch Setting

<table>
<thead>
<tr>
<th>Switch</th>
<th>No Protection Line (NPL)</th>
<th>Protection Line (PL)</th>
<th>2</th>
<th>Use 4</th>
<th>AB In-Service (ABI)</th>
<th>AB Preservice (ABP)</th>
<th>CD In-Service (CDI)</th>
<th>CD Preservice (CDP)</th>
<th>AB Equipped (ABE)</th>
<th>AB Unequipped (ABU)</th>
<th>CD Equipped (CDE)</th>
<th>CD Unequipped (CDU)</th>
<th>Major Alarm for MISC1 (M1)</th>
<th>Major Alarm for MISC2 (M2)</th>
<th>7</th>
<th>Minor Alarm for MISC1 (M1N)</th>
<th>8</th>
<th>Minor Alarm for MISC2 (M2N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>81 Switch</td>
<td>1</td>
<td>Protection Line (PL)</td>
<td>2</td>
<td>Use 4</td>
<td>AB In-Service (ABI)</td>
<td>AB Preservice (ABP)</td>
<td>CD In-Service (CDI)</td>
<td>CD Preservice (CDP)</td>
<td>AB Equipped (ABE)</td>
<td>AB Unequipped (ABU)</td>
<td>CD Equipped (CDE)</td>
<td>CD Unequipped (CDU)</td>
<td>Major Alarm for MISC1 (M1)</td>
<td>Major Alarm for MISC2 (M2)</td>
<td>7</td>
<td>Minor Alarm for MISC1 (M1N)</td>
<td>8</td>
<td>Minor Alarm for MISC2 (M2N)</td>
</tr>
<tr>
<td>82 Switch</td>
<td>Use FL</td>
<td>1</td>
<td>13</td>
<td>2</td>
<td>Use FE</td>
<td>Use NC</td>
<td>3</td>
<td>CUT</td>
<td>Use SGL</td>
<td>4</td>
<td>DBL</td>
<td>5</td>
<td>Use NPA</td>
<td>6</td>
<td>Use MP</td>
<td>LIU B DS1 Equipped</td>
<td>7</td>
<td>LIU B DS1 Unequipped</td>
</tr>
<tr>
<td>83 Switch</td>
<td>Use DL</td>
<td>1</td>
<td>Use FL</td>
<td>13</td>
<td>Use FE</td>
<td>Use NC</td>
<td>3</td>
<td>CUT</td>
<td>Use SGL</td>
<td>4</td>
<td>DBL</td>
<td>5</td>
<td>Use NPA</td>
<td>6</td>
<td>Use MP</td>
<td>LIU B DS1 Equipped</td>
<td>7</td>
<td>LIU B DS1 Unequipped</td>
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<tr>
<td>CLEAR/NORM Plug</td>
<td>Clear Provisioning</td>
<td>Do Not Clear Provisioning</td>
<td>(Use CLEAR When ADU is first installed in a new system)</td>
<td>(Use NORM for In-Service System)</td>
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<tr>
<td>84, 85, 86, and 87 Rotary Switches</td>
<td>System ID Number</td>
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<tr>
<td>88, 89, 90, and 91 Rotary Switches</td>
<td>Unused (Set to 0)</td>
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</tbody>
</table>
3. On AUB27( ) ADU option switch S2 (Table A and Figure 1), use an orange stick (KS-6320) or equivalent and set switches as follows:
   - 1 - Toward 16.
   - 2 - Toward FE.
   - 3 - Toward NC.
   - 4 - Toward SGL.
   - 5 - Toward NPA.
• 6 - Toward MNP.
• 7 - Toward right (MNP side of switch).
• 8 - Toward right (MNP side of switch).

4. Set switch S3 toward DL.

5. Set system identification rotary switches S4 (most significant digit) through S7 (least significant digit) to bank ID number. (See work order.)

6. Rotary switches S8 through S11 are unused (set to 0).

7. **NOTE:**
The NORM/CLEAR switch option is used to automatically clear random channel provisioning data stored in the ADU and BCU.

Set NORM/CLEAR option plug for CLEAR option [AUB27( ) center and bottom pins].

8. **CAUTION:**
**Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.**

Insert ADU into lower ADU slot if equipping blue bank or upper ADU slot if equipping white bank. Disregard all alarms.

**STOP. YOU HAVE COMPLETED THIS PROCEDURE.**
Set the Option Switches on a C- or D-type LIU

1. **CAUTION:**
   *Do not use a line powering LIU (AUA62C or D) in applications with a lightwave multiplexer. The powering LIUs may damage the multiplexer low speed interface pack.*

   **CAUTION:**
   *Incorrectly set LIU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream. All LIUs in the same bank should have identical option switch settings."

Get one C- or D-type line interface unit (LIU) (Figure 1) and inspect for possible damage.

2. Is the LIU an AUA61C or D?
   - If YES, then continue with Step 3.
   - If NO, then go to Step 5.

3. Using an orange stick (KS-6320, L1) or equivalent, set the equalizer switches (S2) per work order (Table A).

4. Set the loopback enable/disable switch (S3) to DIS. Go to Step 6.

5. Set the transmit and receive pad switches per work order (Table B).
Figure 1 — C- and D-Type LIU Option Switches and Faceplates
Table A
AUA81C or D
LIU Equalizer Settings

<table>
<thead>
<tr>
<th>Distance to DSX-1</th>
<th>Equalizer Switch Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Feet)</td>
<td>2</td>
</tr>
<tr>
<td>0-132</td>
<td>OFF</td>
</tr>
<tr>
<td>133-265</td>
<td>OFF</td>
</tr>
<tr>
<td>266-398</td>
<td>OFF</td>
</tr>
<tr>
<td>399-532</td>
<td>ON</td>
</tr>
<tr>
<td>533-655</td>
<td>ON</td>
</tr>
</tbody>
</table>

Table B
AUA62C or D and AUA64C or D LIU Transmit/Receive Pad Setting

<table>
<thead>
<tr>
<th>Inserted Loss (dB)</th>
<th>Transmit Pad (S400/S1, S2) Switch Settings</th>
<th>Receive Pad (S100) Switch Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22.5</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>15.0</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>7.5</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>0</td>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>

* ON when depressed toward the numbers.

6. **CAUTION:**

*Line coding on the digital facility and terminal equipment interfaces MUST BE THE SAME* or service interruptions can result.

Set the line coding switch (S1 on the AUA61C or D or S100 on the AUA62C or D or AUA64C or D) to B8ZS (Table C).
### Table C

<table>
<thead>
<tr>
<th>LIU Line Coding</th>
<th>Switch Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option Description</td>
<td>LIU Switch (S1 or S100) Settings</td>
</tr>
<tr>
<td>B8ZS Coding</td>
<td>B</td>
</tr>
<tr>
<td>ZCS Coding</td>
<td>Z</td>
</tr>
</tbody>
</table>

7. Set the RATE switch (S4) to 64.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Install AUA74 Line Switch Unit (LSU) in Facility Shelf

1. Get one AUA74 LSU (Line Switch Unit) and inspect for possible damage.

2. 

⚠️ CAUTION: 
Incorrectly set LSU option switches may result in immediate or future loss of service.

Set all eight force (f)/deny (d) switches on LSU faceplate to off (right-hand side) position (Figure 1).

![AUA74 LSU faceplate]

Figure 1 — AUA74 Line Switch Unit Faceplate

While observing FAIL indicator on LSU faceplate, insert LSU into LSU slot in middle (for the blue bank) or right side (for white bank) of facility shelf.

Response: LSU FAIL indicator lights momentarily. MN and NE indicators on ADU are lighted.
3. Did LSU FAIL indicator light momentarily and go off?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 4.

4. Remove LSU.

5. **CAUTION:**
   Incorrectly set LSU option switches may result in immediate or future loss of service.

   Get a replacement LSU and set all eight force (f)/deny (d) switches on LSU faceplate to off (right-hand side) position (Figure 1).

6. While observing FAIL indicator on LSU faceplate, insert LSU into LSU slot in facility shelf.

   Response: LSU FAIL indicator lights momentarily and MN and NE indicators on ADU are lighted.

7. Did FAIL indicator on LSU light momentarily and go off?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 8.

8. Remove ADU and check for proper option settings.

   Reference: DLP-523

9. Are option switches on ADU set correctly?
If YES, then proceed to Step 12.  
If NO, then continue with Step 10.

10. Set option switches on ADU to correct positions and reinsert ADU into ADU slot.

11. Wait 20 seconds and then replace LSU with LSU removed previously and repeat from Step 3.

12. **CAUTION:**  
*Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.*

Replace ADU with another correctly optioned ADU.

Reference: DLP-523

13. Wait 20 seconds and then replace LSU with the LSU removed previously while observing FAIL indicator on LSU faceplate.

14. Did FAIL indicator on LSU light momentarily and go off?  
   
   If YES, then **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**  
   If NO, then continue with Step 15.

15. Replace ADU with ADU removed previously.

16. Check wiring using SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 3 after locating and correcting trouble.
Perform RT Indicator Test

1. Press and hold LED TEST pushbutton on ADU.

2. Are all indicators listed in Table A lighted during LED test?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 3.

<table>
<thead>
<tr>
<th>Table A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series 5 RT LED Test</td>
</tr>
<tr>
<td>Unit</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>AUB27( ) ADU</td>
</tr>
<tr>
<td>BCU</td>
</tr>
<tr>
<td>TRU</td>
</tr>
<tr>
<td>LIU</td>
</tr>
<tr>
<td>CTU</td>
</tr>
</tbody>
</table>

3. Are any of the indicators lighted during LED test?

   If YES, then continue with Step 4.
   If NO, then proceed to Step 5.

4. **CAUTION:**

   Any time a circuit pack containing option switches is replaced in an RT assembly, ensure that any option switches are set per the work order or engineering records. Incorrectly set LIU, LSU, or ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.
Replace unit(s) that contain indicators that do not light and repeat from Step 1.

5. Replace BCU.

6. Press and hold LED TEST pushbutton on ADU.

7. Are all indicators listed in Table A lighted during LED test?
   - If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   - If NO, then continue with Step 8.

8. Are any of the indicators lighted during LED test?
   - If YES, then proceed to Step 4.
   - If NO, then continue with Step 9.

9. Replace BCU with BCU removed previously.
10. **CAUTION:**
   Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

   Replace ADU. Verify that option switch settings on replacement ADU agree with option switch settings on ADU being replaced.

11. Press and hold LED TEST pushbutton on ADU.

12. Are all indicators listed in Table A lighted during LED test?

   If YES, then **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**
   If NO, then continue with Step 13.

13. Are any of the indicators lighted during LED test?

   If YES, then proceed to Step 4.
   If NO, then continue with Step 14.

14. **CAUTION:**
   Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

   Replace ADU with ADU removed previously.

15. Refer to SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 1 after locating and correcting trouble.
## RT Channel Bank Conversions
### Task Index List

FIND YOUR JOB IN THE LIST BELOW

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance......................................................................................................</td>
<td>NTP-002</td>
</tr>
<tr>
<td>Convert Series 5 RT from Feature Package A Capability to Feature Package C Capability</td>
<td>NTP-003</td>
</tr>
<tr>
<td>Convert Feature Package A or C RT to Feature Package C-AutoCut</td>
<td>NTP-004</td>
</tr>
<tr>
<td>Convert Series 5 RT from Feature Package B Mode 2 to Feature Package</td>
<td>NTP-005</td>
</tr>
<tr>
<td>Convert Series 5 RT from Feature Package B Mode 1 to Feature Package</td>
<td>NTP-006</td>
</tr>
<tr>
<td>Add Special Service Capability to Feature Package B RT</td>
<td>NTP-007</td>
</tr>
<tr>
<td>Add or Remove Protection Line Option</td>
<td>NTP-008</td>
</tr>
<tr>
<td>Convert Series 5 RT to Any Feature Package Capability Generic Procedures</td>
<td>NTP-009</td>
</tr>
<tr>
<td>Convert Feature Package B Mode 1 or Mode 2 to Feature Package 303</td>
<td>NTP-010</td>
</tr>
<tr>
<td>Reinstate Feature Package B Following a Failed Conversion to Feature Package 303</td>
<td>NTP-011</td>
</tr>
<tr>
<td>Verify That Correct Complement of Circuit Packs is Available</td>
<td>DLP-500</td>
</tr>
</tbody>
</table>

CAUTION:

In dusty areas (for example, near construction sites), AT&T recommends tenting the RT cabinet to protect electronic equipment whenever cabinet doors are open for extended periods.
Add or Remove Protection Line Option

SUMMARY: The protection line is removed by removing the LSU and LIU-P and setting the ADU protection line option (mini switch position 1 on S1 or S2) for no protection. An LFU may be required if interfacing with a DDM-1000 or DDM-2000 multiplexer. The protection line is added by setting the ADU for the protection line (mini switch position 1 on S1 or S2), optioning and installing the LSU and LIU-P LIU. When changing the protection line equipage, both the RT and the CO equipment must be changed.

1. **CAUTION:**
   When changing ADU protection equipage option, changing any other mini switch position will cause service interruption. Removing the ADU will interrupt service on digroup A if the system is equipped for FPB Mode 1.

   **NOTE:**
   Changing protection line equipage option will cause an MN alarm until changes at both ends are complete.

Remove the **ADU** and change mini switch position 1 on **S1** (AUB26 or AUB27) or **S2** (AUB22 or AUB24). Reinstall ADU.
2. If adding protection line proceed to Step 5. If removing protection line continue with Step 3.

3. Remove LSU and LIU in LIU-P slot. Alarms will clear when both ends make the changes.

4. If required, install LFU. Proceed to Step 8.

5. **CAUTION:**
   The AUA73 LSU has a 32/64 option that must be set to 64 except for FPD applications.

   Install LSU. DLP-511

6. **NOTE:**
   The LIU will have a CLF alarm and the ADU will have an MN alarm until both ends are equipped for protection.

   Option and install LIU in LIU-P slot. DLP-507

7. Exercise protection switching (**LSU** if mini switch **on** then **off**) for each digroup. Replace LSU if any digroup will not switch.

8. Update office records.
Convert Feature Package B Mode 1 or Mode 2
to Feature Package 303

DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

SUMMARY: Use this procedure to convert feature package B (FPB) [with
AUB27 alarm display unit (ADU)] Mode 1 or Mode 2 to feature package 303
(FP303). The A and C line interface unit (LIU) DS1 facilities carry the active and
standby embedded operations channel (EOC) and timeslot management
channel (TMC) in a FP303 system; therefore, the minimum system must include
both of these facilities.

⚠️ CAUTION:
FP303 does not support non-switched and non-locally switched special
services; therefore, these services must be moved to another system before
starting this procedure.

This conversion requires coordination between the RT craft and the 5ESS IDCU
personnel. The RT craftsperson follows this procedure while the switch person
follows AT&T 235-105-210, Procedure 9.91.

1. ⚠️ CAUTION:
An electrostatic discharge wrist strap with a minimum
resistance of 250K Ohms should be worn when
handling Series 5 circuit packs to prevent possible
damage to the circuit packs. Before using the wrist
strap, check it for opens, shorts, and minimum
resistance value. If the strap does not pass these
checks it should not be used. To avoid possible
personal injury while using the wrist strap, do not
connect it to the power shelf or adjacent portions of the
RT frame. Connect the wrist strap to ESD GRD jack on
the fan unit, if present. If grounding jack is not present,
connect wrist strap to bare-metal section of the frame well away from the power shelf.

Verify that the following is available.

- One MC97777A1 bank control unit (BCU)
- Two AUA112 transmit/receive units (TRUs)
- One 993A TRU faceplate cable
- One AUA74 line switch unit (LSU), if protection switching is desired
- One C- or D-series line interface unit (LIU) for each DS1 (including the protection DS1) being equipped, may already be present in FPB system.

2. **CAUTION:**

   During recent change and verify activities the switch personnel must assign IFACs to RT TERM numbers that correspond to physical DS1 location (LIUs) in the RT. RT TERM 1 corresponds to LIU-A, RT TERM 2 corresponds to LIU-B, RT TERM 3 corresponds to LIU-C, RT TERM 4 corresponds to LIU-D, and RT TERM 5 corresponds to LIU-P. Since the LIU-C DS1 facility carries the backup EOC/TMC, the EOC/TMC BKUP RT TERM recent change field must be set to 3.

   Establish communication with 5ESS IDCU personnel.

3. **CAUTION:**

   Prior to doing recent change and verify activities to update the RT data to TR-303, the switch personnel removes the IFACs from service. This results in a service interruption that last till the switch personnel restores the IFACs to service and provisions the RT.

   Wait for the switch personnel to remove from service the IFACs associated with the RT before continuing.
DO ITEMS BELOW IN ORDER LISTED

FOR DETAILS, GO TO

4. Remove the following circuit packs from the RT system being converted:
   • ADU
   • BCU
   • TRUs
   • LIUs
   • LSU.

5. Set option switches for preservice and unequipped. Install DLP-513
   the alarm display unit (ADU) and disregard all alarms.

6. Install the bank control unit (BCU). DLP-512

7. Remove the ADU. Change switch S1-5 and S1-6 to ABE
   and CDE. If also equipping the B DS1, change S2-7 to the
   left (not labeled). If also equipping the D DS1, change S2-8
   to the left (not labeled).

   Set the NORM/CLEAR option plug for NORM. Reinstall the
   ADU.

⚠️ CAUTION:

If the NORM/CLEAR option plug is left in the CLEAR
position, administrative memory clears each time the
bank resets. This memory clearing results in a
temporary service interruption.

If a channel test unit (CTU) or digital test unit (DTU) is
already installed in the dual bank assembly, within 75
seconds, only the MJ and NE LEDs on the ADU and the
DIGROUP LEDs on the BCU stay lighted.

Otherwise, within 75 seconds, only the FAIL, MN, and NE
LEDs on the ADU stay lighted.
8. Install an AUA112 transmit/receive unit (TRU) in AB shelf. Verify that the TRU FAIL LED lights and goes off. If not, do TAP-100 before continuing.

In about 25 seconds, only the MJ and NE on the ADU and DIGROUP LEDs on the BCU stay lighted.

Since a minimum system configuration requires equipping both the A and C DS1 facilities, the A and C DIGROUP LEDs will be lighted. The D DIGROUP LED will also light whether or not it is being equipped. The B will only light if the B DIGROUP DS1 facility is being equipped.

9. Install an AUA112 transmit/receive unit (TRU) in CD shelf. Verify that the TRU FAIL LED lights and goes off. If not, do TAP-100 before continuing.

Only the MJ, NE, and CMP on the ADU and the DIGROUP LEDs on the BCU stay lighted.

Since a minimum system configuration requires equipping both the A and C DS1 facilities, the A and C DIGROUP LEDs will be lighted. The D DIGROUP LED will also light whether or not it is being equipped. The B will only light if the B DIGROUP DS1 facility is being equipped.

10. Install the 993A TRU cable between the faceplate connectors on the TRUs. The CMP LED on the ADU clears in about 30 seconds.

If the LIU D DS1 facility is not being equipped, the D DIGROUP LED goes off at this point.

11. **NOTE:**
    All line interface units (LIUs) in the same system should have identical option switch settings.
DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

Set options and install a C- or D-type LIU in the facility shelf for each DS1 being equipped. Wait for the FAIL LED on the LIU to light and go off before installing the next LIU. If the FAIL LED fails to light and go off, do TAP–100 before continuing.

Within 30 seconds, the DIGROUP LED on the BCU for the LIU just installed goes off. After the last digroup LIU is installed in a system optioned for protection switching, only the MN and NE LEDs on the ADU remain lighted. In systems not optioned for protection switching, all alarms clear.

12. If protection switching is desired, install AUA74 LSU (line switch unit) in facility shelf. Otherwise, proceed to Step 14

13. => NOTE:
   All line interface units (LIUs) in the same system should have identical option switch settings.

   Set options and install a C- or D-type LIU in the LIU-P slot in the facility shelf. The FAIL LED on the LIU should light momentarily and go off. If the FAIL LED fails to light and go off, do TAP–100 before continuing.

   Within 30 seconds, the MN and NE LED on the ADU goes off.

14. => NOTE:
   The CTU is used with the pair gain test controller (PGTC) to enable remote testing of channel units and subscriber lines beyond the remote terminal.

   If required and not previously installed, install the CTU. Verify that the FAIL LED on the CTU lights and goes off and BUSY LED is off. If not, check fuses on the CFU then do TAP–100 before continuing.
DO ITEMS BELOW IN ORDER LISTED	 FOR DETAILS, GO TO

15. Perform RT LED test. DLP-515
16. Remove the ADU and set switches S1-3 and S1-4 to ABI and CDI. Reinstall the ADU.

The MJ and FE LEDs on the ADU and DIGROUP LEDs on the BCU light.

17. Wait for the switch personnel to restore to service the IFACs associated with the RT.

As each IFAC is restored to service, the DIGROUP LED on the BCU associated with the IFAC goes off. After all the DIGROUP LEDs go off, a MN and FE remains lighted until the protection IFAC is restored.

18. Wait for the switch personnel at the MCC to provision the RT.

Response:

Wait for the MCC to display EXC RT PROV TYPE=ALL SID=g LRT=d e f COMPLETED - NO TASKS PENDING (where g=Site ID number, d=SM number, e=IDCU number, and f=FP303 RT number) before continuing. Provisioning can take up to 15 minutes depending on the switch activity level.

19. NOTE: The next three steps verify correct end-to-end operation.

Test alarm system for power minor and fan alarms. DLP-517
20. Test alarm system for miscellaneous alarms. DLP-518
21. Perform channel tests. DLP-519
22. Update office records.
Reinstall Feature Package B Following a Failed Conversion to Feature Package 303

**DO ITEMS BELOW IN ORDER LISTED**  
**FOR DETAILS, GO TO**

**SUMMARY:** Use this procedure to convert back to feature package B (FPB) Mode 1 or Mode 2 following a failed conversion to feature package 303 (FP303).

This procedure requires coordination between the RT craft and the 5ESS IDCU personnel. The RT craftsperson follows this procedure while the switch person follows the backout procedure in AT&T 235-105-210, Procedure 9.91.

1. Establish communication with 5ESS IDCU personnel.
2. Wait for the switch personnel to remove from service the IFACs associated with the RT before continuing.
3. **CAUTION:** An electrostatic discharge wrist strap with a minimum resistance of 250K Ohms should be worn when handling Series 5 circuit packs to prevent possible damage to the circuit packs. Before using the wrist strap, check it for opens, shorts, and minimum resistance value. If the strap does not pass these checks it should not be used. To avoid possible personal injury while using the wrist strap, do not connect it to the power shelf or adjacent portions of the RT frame. Connect the wrist strap to ESD GRD jack on the fan unit, if present. If grounding jack is not present, connect wrist strap to bare-metal section of the frame well away from the power shelf.
Remove the following circuit packs from the RT system being converted:

- Alarm display unit (ADU)
- Bank control unit (BCU)
- Transmit/receive unit (TRUs)
- Line switch unit (LSU).

4. Set option switches on the AUB27( ) ADU for preservice and OLP-520 unequipped. Install the ADU and disregard all alarms.

5. Install the FPB BCU removed during the conversion to FP303.

Within 30 seconds, all indicators go off. If the PRV LED on the ADU remains lighted, wait for the PRV LED to go off before continuing.

6. Remove the ADU. If equipping the AB shelf change switch S1-5 to ABE; if equipping the CD shelf change switch S1-6 to CDE.

Set the NORM/CLEAR option plug for NORM. Reinstall the ADU.

Within 30 seconds, only the MJ and NE LEDs on the ADU and the DIGROUP LEDs (for those DS1s being equipped) on the BCU stay lighted.
DO ITEMS BELOW IN ORDER LISTED FOR DETAILS, GO TO

7. Install an AUA105 or AUA109 transmit/receive unit (TRU) in AB shelf. Verify that the TRU FAIL LED lights and goes off.

In about 25 seconds, one of the following happens:

- If equipping only the AB shelf with no protection switching, all alarms clear.
- If equipping only the AB shelf with protection switching, only the MN and NE LED on the ADU stay lighted.
- If equipping both the AB and CD shelves with or without protection switching, only the MJ and NE on the ADU and the DIGROUP C and D LEDs on the BCU stay lighted.

8. If equipping the CD shelf, install an AUA105 or AUA109 transmit/receive unit (TRU) in CD shelf. Verify that the TRU FAIL LED lights and goes off.

In about 25 seconds if the system is not optioned for protection switching, all alarms clear. Otherwise, only the MN and NE LEDs on the ADU remain lighted.

9. If the FPB system had protection switching, install AUA73( ) LSU removed in converting to FP303.

In about 10 seconds, all alarms clear.

10. Perform RT LED test. DLP-515

11. Remove the ADU and if equipping the AB shelf, set switch S1-3 to AB1. If equipping the CD shelf set switch S1-4 to CD1. Reinstall the ADU.

The MJ LED on the ADU, DIGROUP LEDs (for those DS1s equipped) on the BCU, and CLF LEDs on the LIUs light.
<table>
<thead>
<tr>
<th>DO ITEMS BELOW IN ORDER LISTED</th>
<th>FOR DETAILS, GO TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Wait for the switch personnel to restore to service the IFACs associated with the FPB RT. As each digroup IFACs is restored to service, the DIGROUP LED on the BCU and the CLF on the LIU associated with the IFACs go off. An MN and FE on the ADU and a CLF on the LIU-P remains lighted until the protection IFACs is restored.</td>
<td></td>
</tr>
<tr>
<td>13. Have the switch personnel verify that the IFACs are provisioned for B8ZS line coding (the current LIU line code setting).</td>
<td></td>
</tr>
<tr>
<td>14. <strong>NOTE:</strong> This step verifies correct end-to-end operation. Perform channel tests.</td>
<td></td>
</tr>
<tr>
<td>15. Update office records.</td>
<td>DLP-519</td>
</tr>
</tbody>
</table>
Clear FAIL LED Problems on a Unit During Turnup and Conversion

Use this procedure when on installing a unit, the unit's FAIL LED remains lighted or fails to light momentarily and go off. This procedure assumes there are no blown fuses on the BFU, CFU, or LFU fuse units and each PCU voltage (-42 to -56 V DC) is present.

1. Press and hold LED TEST button on the ADU.

2. Do the LEDs on the common units light?
   - If YES, proceed to Step 12.
   - If NO, continue with Step 3.

3. Replace the bank control unit (BCU).

4. Press and hold LED TEST button on the ADU.

5. Do the LEDs on the common units light?
   - If YES, proceed to Step 12.
   - If NO, continue with Step 6.

6. Replace the BCU with the BCU removed previously.

7. Replace the alarm display unit (ADU).

8. Press and hold LED TEST button on the ADU.
9. Do the LEDs on the common units light?
   If YES, proceed to Step 12.
   If NO, continue with Step 10.

10. Replace the ADU with the ADU removed previously.

11. Check the wiring using SD-7C117-01, SD-7C117-02, or SD-7C117-03. After locating and correcting the wiring trouble, go back to the NTP and reinstall the unit with the FAIL LED problem.

12. Is the FAIL LED on the suspect unit lighted?
   If YES, continue with Step 13.
   If NO, proceed to Step 14.

13. With the LED TEST button held, does the FAIL LED on the suspect unit go off?
   If YES, proceed to Step 24.
   If NO, continue with Step 14.

14. Replace the suspect unit with another unit of the same type.

15. Did the FAIL LED on the suspect unit light momentarily and then go off?
   If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, continue with Step 16.

16. Replace the unit with the unit removed previously.

17. Replace the BCU.
18. Did the FAIL LED on the suspect unit go off?

   If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, continue with Step 19.

19. Replace the BCU with the BCU removed previously.

20. Replace the ADU.

21. Did the FAIL LED on the suspect unit go off?

   If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, continue with Step 22.

22. Replace the ADU with the ADU removed previously.

23. Check the wiring using SD-7C117-01, SD-7C117-02, or SD-7C117-03. After locating and correcting the wiring trouble, go back to the NTP and reinstall the unit with the FAIL LED problem.

24. Release the LED TEST button. Is the CMP LED on the ADU lighted?

   If YES, continue with Step 25.
   If NO, proceed to Step 26.

25. There is either a common unit or option switch incompatibility within the system. Either replace the incompatible unit with a compatible unit, or correct the option switch setting on the ADU or suspect unit itself.

   References:  DLP-512 (ADU), DLP-514 (LIU), DLP-521 (CU Compatibility)
26. After correcting the incompatibility problem, did the FAIL LED on the suspect unit go off?

   If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, continue with Step 27.

27. Check the wiring using SD-7C117-01, SD-7C117-02, or SD-7C117-03. After locating and correcting the wiring trouble, go back to the NTP and reinstall the unit with the FAIL LED problem. If this fails to fix the FAIL LED problem, consult the AT&T Regional Technical Assistance Center (RTAC) by calling 1-800-225-RTAC or the local technical support group.
Install Alarm Display Unit in FP303
Optioned for Preservice and Unequipped

1. Get one alarm display unit (ADU), as required, and inspect for possible damage.

2. On AUB27() option switch S1 (Table A and Figure 1), use an orange stick (KS-6320, L1) or equivalent and set switch positions as follows:
   - 1 - Toward PL if equipping system with protection switching. Otherwise, toward NPL. (See work order.)
   - 2 - Toward 4.
   - 3 - Toward ABP.
   - 4 - Toward CDP.
   - 5 - Toward ABU.
   - 6 - Toward CDU.
   - 7 - Toward 1MJ if MISC1 is to report a major alarm or toward 1MN if MISC1 is to report a minor alarm. (See work order.)
   - 8 - Toward 2MJ if MISC2 is to report a major alarm or toward 2MN if MISC2 is to report a minor alarm. (See work order.)
## Table A
### AUB27() Switch Setting

<table>
<thead>
<tr>
<th>S1 Switch</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No Protection Line (NPL)</td>
<td>1 Protection Line (PL)</td>
</tr>
<tr>
<td>2</td>
<td>Use 4</td>
</tr>
<tr>
<td>AB In-Service (ABI)</td>
<td>3 AB Preservice (ABP)</td>
</tr>
<tr>
<td>CD In-Service (CDI)</td>
<td>4 CD Preservice (CDP)</td>
</tr>
<tr>
<td>AB Equipped (ABE)</td>
<td>5 AB Unequipped (ABU)</td>
</tr>
<tr>
<td>CD Equipped (CDE)</td>
<td>6 CD Unequipped (CDU)</td>
</tr>
<tr>
<td>Major Alarm for MISC1 (MML)</td>
<td>7 Minor Alarm for MISC1 (MUM)</td>
</tr>
<tr>
<td>Major Alarm for MISC2 (MNM)</td>
<td>8 Minor Alarm for MISC2 (MMN)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S2 Switch</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Use 18</td>
<td>13</td>
</tr>
<tr>
<td>FS</td>
<td>Use FE</td>
</tr>
<tr>
<td>Use NC</td>
<td>CLOT</td>
</tr>
<tr>
<td>Use SD</td>
<td>DBL</td>
</tr>
<tr>
<td>PA</td>
<td>Use NPA</td>
</tr>
<tr>
<td>MJP</td>
<td>Use MNP</td>
</tr>
<tr>
<td>LIU B DS1 Equipped</td>
<td>LIU B DS1 Unequipped</td>
</tr>
<tr>
<td>LIU D DS1 Equipped</td>
<td>LIU D DS1 Unequipped</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S3 Switch</th>
<th>ND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Provisioning</td>
<td>Do Not Clear Provisioning</td>
</tr>
<tr>
<td>(Use CLEAR When ADU is installed in a new system)</td>
<td>(Use NORM for In-Service System)</td>
</tr>
</tbody>
</table>

### 84, 85, 86, and 87 Rotary Switches
- System ID Number

### 88, 89, 810, and 811 Rotary Switches
- Unused (Set to 0)
3. On AUB27() ADU option switch S2 (Table A and Figure 1), use an orange stick (KS-6320) or equivalent and set switches as follows:

- 1 - Toward 16.
- 2 - Toward FE.
- 3 - Toward NC.
- 4 - Toward SGL.
- 5 - Toward NPA.
- 6 - Toward MNP.
- 7 - Toward right (MNP side of switch).
- 8 - Toward right (MNP side of switch).

4. Set switch S3 toward DL.

5. Set system identification rotary switches S4 (most significant digit) through S7 (least significant digit) to bank ID number. (See work order.)

6. Rotary switches S8 through S11 are unused (set to 0).

7. \(\Rightarrow\) NOTE:
The NORM/CLEAR switch option is used to automatically clear random channel provisioning data stored in the ADU and BCU.

Set NORM/CLEAR option plug for CLEAR option (AUB27( ) center and bottom pins).

8. \(\Delta\) CAUTION:
Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

Insert ADU into lower ADU slot if equipping blue bank or upper ADU slot if equipping white bank. Disregard all alarms.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Install FP303 Bank Control Unit

1. Get one MC97777A1 bank control unit (BCU) and inspect for possible damage.

2. Insert the BCU into lower BCU slot if equipping blue bank or upper BCU slot is equipping the white bank. Within 75 seconds, all indicators go off and the PRV LED on the ADU lights. Wait for the PRV indicator to go off before removing the ADU or BCU. It can take up to 10 minutes for PRV LED to go off.
3. Did all alarm indicators go off?

If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
If NO, then continue with Step 4.

4. Replace BCU.

5. Did all alarm indicators go off?

If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
If NO, then continue with Step 6.

6. Replace the BCU with the one removed previously.

7. **CAUTION:**
   Incorrectly set ADU option switches can result in immediate or future loss of service or can introduce errors into the digital bitstream.

Replace ADU.

Reference: DLP-512

8. Did all alarm indicators go off?

If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
If NO, then continue with Step 9.

9. Replace the ADU with the one removed previously.

10. Check wiring using SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 2 after locating and correcting the trouble.
Set the Option Switches on a C- or D-type LIU

1. **CAUTION:**
   Do not use a line powering LIU (AUA62C or D) in applications with a lightwave multiplexer. The powering LIUs may damage the multiplexer low speed interface pack.

   **CAUTION:**
   Incorrectly set LIU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream. All LIUs in the same bank should have identical option switch settings.

Get one C- or D-type line interface unit (LIU) (Figure 1) and inspect for possible damage.

2. Is the LIU an AUA61C or D?
   - If YES, then continue with Step 3.
   - If NO, then go to Step 5.

3. Using an orange stick (KS-6320, L1) or equivalent, set the equalizer switches (S2) per work order (Table A).

4. Set the loopback enable/disable switch (S3) to DIS. Go to Step 6.

5. Set the transmit and receive pad switches per work order (Table B).
Figure 1 — C- and D-Type LIU Option Switches and Faceplates
Table A
AUA61C or D
LIU Equalizer Settings

<table>
<thead>
<tr>
<th>Distance to DSX-1</th>
<th>Equalizer Switch Setting (8400/82) Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Feet)</td>
<td>2</td>
</tr>
<tr>
<td>0-132</td>
<td>OFF</td>
</tr>
<tr>
<td>133-265</td>
<td>OFF</td>
</tr>
<tr>
<td>266-398</td>
<td>OFF</td>
</tr>
<tr>
<td>399-532</td>
<td>ON</td>
</tr>
<tr>
<td>533-655</td>
<td>ON</td>
</tr>
</tbody>
</table>

Table B
AUA62C or D and AUA64C or D LIU Transmit/Receive Pad Setting

<table>
<thead>
<tr>
<th>Inserted Loss (dB)</th>
<th>Transmit Pad (8400/S1, S2) Switch Settings</th>
<th>Receive Pad (8100) Switch Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22.5</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>15.0</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>7.5</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>0</td>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>

* ON when depressed toward the numbers.

6. **CAUTION:**

Line coding on the digital facility and terminal equipment interfaces **MUST BE THE SAME** or service interruptions can result.

Set the line coding switch (S1 on the AUA61C or D or S100 on the AUA62C or D or AUA64C or D) to B8ZS (Table C).
Table C
LIU Line Coding Switch Setting

<table>
<thead>
<tr>
<th>Option Description</th>
<th>LIU Switch (S1 or S100) Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>B8ZS Coding</td>
<td>B</td>
</tr>
<tr>
<td>ZCS Coding</td>
<td>Z</td>
</tr>
</tbody>
</table>

7. Set the RATE switch (S4) to 64.
8. Install the LIU.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Perform RT Indicator Test

1. Press and hold LED TEST pushbutton on ADU.

2. Are all indicators listed in Table A lighted during LED test?

   If YES, then **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**
   If NO, then continue with Step 3.

<table>
<thead>
<tr>
<th>Table A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series 5 RT Led Test</td>
</tr>
<tr>
<td>Unit</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>AUB27( ) ADU</td>
</tr>
<tr>
<td>BCU</td>
</tr>
<tr>
<td>TRU</td>
</tr>
<tr>
<td>LIU</td>
</tr>
<tr>
<td>CTU</td>
</tr>
</tbody>
</table>

3. Are any of the indicators lighted during LED test?

   If YES, then continue with Step 4.
   If NO, then proceed to Step 5.

4. **CAUTION:**
   Any time a circuit pack containing option switches is replaced in an RT assembly, ensure that any option switches are set per the work order or engineering records. Incorrectly set LIU, LSU, or ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.
Replace unit(s) that contain indicators that do not light and repeat from Step 1.

5. Replace BCU.

6. Press and hold LED TEST pushbutton on ADU.

7. Are all indicators listed in Table A lighted during LED test?
   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 8.

8. Are any of the indicators lighted during LED test?
   If YES, then proceed to Step 4.
   If NO, then continue with Step 9.

9. Replace BCU with BCU removed previously.
10. **CAUTION:**

Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

Replace ADU. Verify that option switch settings on replacement ADU agree with option switch settings on ADU being replaced.

11. Press and hold LED TEST pushbutton on ADU.

12. Are all indicators listed in Table A lighted during LED test?

   If YES, then **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**
   If NO, then continue with Step 13.

13. Are any of the indicators lighted during LED test?

   If YES, then proceed to Step 4.
   If NO, then continue with Step 14.

14. **CAUTION:**

Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

Replace ADU with ADU removed previously.

15. Refer to SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 1 after locating and correcting trouble.
Install AUA74 Line Switch Unit (LSU) in Facility Shelf

1. Get one AUA74 LSU (Line Switch Unit) and inspect for possible damage.

2. **CAUTION:** Incorrectly set LSU option switches may result in immediate or future loss of service.

Set all eight force (f)/deny (d) switches on LSU faceplate to off (right-hand side) position (Figure 1).

![Figure 1 — AUA74 Line Switch Unit Faceplate](image)

While observing FAIL indicator on LSU faceplate, insert LSU into LSU slot in middle (for the blue bank) or right side (for white bank) of facility shelf.

Response: LSU FAIL indicator lights momentarily. MN and NE indicators on ADU are lighted.
3. Did LSU FAIL indicator light momentarily and go off?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 4.

4. Remove LSU.

5. **CAUTION:**
   Incorrectly set LSU option switches may result in immediate or future loss of service.

   Get a replacement LSU and set all eight force (f)/deny (d) switches on LSU faceplate to off (right-hand side) position (Figure 1).

6. While observing FAIL indicator on LSU faceplate, insert LSU into LSU slot in facility shelf.

   Response: LSU FAIL indicator lights momentarily and MN and NE indicators on ADU are lighted.

7. Did FAIL indicator on LSU light momentarily and go off?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 8.

8. Remove ADU and check for proper option settings.

   Reference: DLP-512

9. Are option switches on ADU set correctly?
If YES, then proceed to Step 12.
If NO, then continue with Step 10.

10. Set option switches on ADU to correct positions and reinsert ADU into ADU slot.

11. Wait 20 seconds and then replace LSU with LSU removed previously and repeat from Step 3.

12. **CAUTION:**

   Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

   Replace ADU with another correctly optioned ADU.

   Reference: DLP-512

13. Wait 20 seconds and then replace LSU with the LSU removed previously while observing FAIL indicator on LSU faceplate.

14. Did FAIL indicator on LSU light momentarily and go off?

   If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.
   If NO, then continue with Step 15.

15. Replace ADU with ADU removed previously.

16. Check wiring using SD-7C117-01 or SD-7C117-02. Repeat procedure from Step 3 after locating and correcting trouble.
Test Alarm System for Power
Minor and Fan Alarms

1. ▲ CAUTION:
System must be out of service to perform test; otherwise, service will be interrupted. If dual channel bank is already providing service, RT batteries must be fully charged before test is started; otherwise, service may be interrupted on the working bank while alarms are being tested.

Consult office records and verify that needed jumpers for central office and remote alarm points have been made at main distributing frame.

2. ≫ NOTE:
This procedure should only be performed if the -48V DC power shelf (or bulk power plant) is equipped with fully charged batteries.

At RT interrupt AC power by turning off AC circuit breaker to the power shelf (see label on inside door for cabinets), or unplugging the AC power cord plug from outlet.

Response:
At 5ESS switch MCC IDCU RT Page 188YZZ,X for 5E9(1) generic or Page 1880,Y,ZZ,X for 5E9(2) generic (where Y=IDCU, ZZ=TR303 RT number, X=SM number) POWER and MINOR alarm messages appear after about 4 minutes.

At RT, ADU indicator NE and BCU indicator PMN light after about 4 minutes (both banks).

3. At RT, restore AC power by turning circuit breaker on or plugging power cord into AC outlet.
Response: Alarms clear after about 1 minute.

4. **NOTE:**

   If fans are running, it will be necessary to remove power to the fans by unplugging J114 to fan assembly before obstructing fan blade. The power should be restored before testing the fan alarm. The 4( ) type fans can be stopped by pressing the LED TEST/CHANGE FAN SPEED pushbutton.

When fans are not running at the RT, insert an obstruction (screwdriver, pencil, etc, not your finger) between the fan blades. Start fans by depressing and holding the FAN TEST pushbutton on the fan control unit (FCU) or 4( ) Cooling Shelf LED TEST/CHANGE FAN SPEED pushbutton.

Response:

At 5ESS switch MCC IDCU RT Page 188YZZ,X for 5E9(1) generic or Page 1880,Y,ZZ,X for 5E9(2) generic (where Y=IDCU, ZZ=TR303 RT number, X=SM number) MINOR alarm message appears after about 30 seconds.

At RT, ADU indicators MN and NE light after about 30 seconds.

5. Remove fan blade obstruction. Then disconnect and reconnect J114 fan power plug to reset the alarm in the 2A fan.

Response: Alarms clear after 30 seconds.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Test Remote Miscellaneous Alarm (If Provided)

1. Is MISC1 alarm assigned at the RT?

   If YES, then continue with Step 2.
   If NO, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.

2. At RT, operate MISC1 alarm.
   Response: At 5ESS switch MCC IDCU RT Page 188YZZ,X for 5E9(1) generic or Page 1880,Y,ZZ,X for 5E9(2) generic (where Y=IDCU, ZZ=TR303 RT number, X=SM number) ENV1 and MINOR or MAJOR (depending on ADU S1-7 setting) alarm messages appear after about 30 seconds.
   At RT, BCU indicator MISC1 and ADU indicators MJ or MN (depending on ADU S1-7 setting) light after about 30 seconds.

3. At RT, cancel MISC1 alarms.
   Response: All alarms clear.

4. Is MISC2 alarm assigned at the RT?

   If YES, then continue with Step 5.
   If NO, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.

5. At RT, operate MISC2 alarm.
   Response: At 5ESS switch MCC IDCU RT Page 188YZZ,X for 5E9(1) generic or Page 1880,Y,ZZ,X for 5E9(2) generic (where Y=IDCU, ZZ=TR303 RT number, X=SM number) ENV2 and MINOR or MAJOR (depending on ADU S1-8 setting) alarm messages appear after about 30 seconds.
At RT, BCU indicator MISC2 and ADU indicators MJ or MN (depending on ADU S1-8 setting) light after about 30 seconds.

6. At RT, cancel MISC2 alarms.

   Response: All alarms clear.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.
Test Single-Party POTS Channel End to End
(IDCU to Series 5 RT)

**SUMMARY:** At RT, locate in both the AB and CD shelves a single-party channel to test. At IDCU, determine corresponding channel and directory number of channel. At RT, connect a test telephone set connected for bridged ringing to channel being tested. Make talking, dialing, ringing, and ring-trip tests on the channel.

1. Obtain Support Apparatus listed:
   - DMM (digital multimeter) with an accuracy of 1.0% and and AC/DC impedance of ≥ 1 megohm.
   - 500-type telephone set or 1015B dial hand set (Butt set).
   - AUA58B or similar single party SLC Series 5 RT channel unit.
   - ITT RTG16L2H15A channel unit faceplate test cord (COMCODE 405755208).

2. Establish communication between RT and IDCU personnel.

3. **NOTE:**
   These test procedures are to be performed on one channel in the AB and CD shelves.

   Pull the protector unit for the customer drop corresponding to the channel to be tested.

4. **NOTE:**
   Test telephone set should be connected for bridged ringing.
Install the channel unit faceplate test cord plug into the channel unit faceplate jack. Connect the other end of the test cord to a test telephone set.

5. At RT, lift handset and check for dial tone.

6. Is dial tone present at RT?
   
   If **YES**, then proceed to Step 10.
   
   If **NO**, then continue with Step 7.

7. Request IDCU personnel review line assignment to ensure correct test number. If line assignment is correct, check test connections at RT and correct if needed. If dial tone is still not present, replace RT channel unit and check for dial tone.

8. Is dial tone present at RT?
   
   If **YES**, then proceed to Step 10.
   
   If **NO**, then continue with Step 9.

9. At RT, use SD-7C118-01 to check channel bank wiring. Look for tip and ring reversal between RT and cross-connect terminal. Correct wiring and repeat Step 8.

10. At RT, dial local test number and make normal talk tests.

11. Was call completed with normal transmission quality in both directions?
   
   If **YES**, then proceed to Step 15.
   
   If **NO**, then continue with Step 12.

12. Replace RT channel unit and repeat normal talk tests.
13. Was call completed with normal transmission quality in both directions?
   
   If YES, then proceed to Step 15.
   If NO, then continue with Step 14.

14. At RT, use SD-7C118-01 to check wiring. Check for tip and ring reversal between RT and cross-connect terminal. Correct wiring and repeat Step 13.

15. At CO, dial test line number to ring telephone at RT.

16. At RT does test telephone ring normally?
   
   If YES, then proceed to Step 20.
   If NO, then continue with Step 17.

17. Has tip and ring reversal been checked?
   
   If YES, then continue with Step 18.
   If NO, then proceed to Step 19.

18. Replace RT channel unit and repeat this procedure from Step 5.

19. At RT, look for tip and ring reversal and repeat from Step 15.

20. At RT, lift telephone handset during ringing.

21. At RT, does ringing trip normally?
   
   If YES, then proceed to Step 23.
If NO, then continue with Step 22.

22. Replace RT channel unit and repeat this procedure from Step 5.

23. Is this the last designated channel to be tested?
   
   If YES, then continue with Step 24.
   
   If NO, then proceed to Step 3.

24. Is TBCU (test bus control unit) available for use in testing channels?
   
   If NO, then proceed to Step 33.
   
   If YES, then continue with Step 25.

25. Request that Repair Service Bureau or Local Test Desk perform necessary channel tests using TBCU.

26. Did tests pass?
   
   If YES, then proceed to Step 32.
   
   If NO, then continue with Step 27.

27. Check test connections and correct if needed. If connections are correct, replace RT channel unit. Repeat Step 25 and continue with Step 28.

28. Did tests pass?
   
   If YES, then proceed to Step 32.
   
   If NO, then continue with Step 29.

29. Make sure TBCU is working properly and that you are using proper
procedures. Repeat Step 25 and continue with Step 30.

30. Did tests pass?

    If YES, then proceed to Step 32.
    If NO, then continue with Step 31.

31. Use RT schematic drawing SD-7C118-01 to check wiring. Check for tip and ring reversal between RT and cross-connect terminal. Correct wiring problem and repeat Step 25 until tests pass and continue with Step 32.

32. Is this the last designated channel to be tested with TBCU?

    If YES, then continue with Step 33.
    If NO, then proceed to Step 25.

33. At RT, remove test telephone and reinstall the protector unit for the customer drop.

STOP. YOU HAVE COMPLETED THIS PROCEDURE
Install Alarm Display Unit in FPB
Optioned for Preservice and Unequipped

1. On AUB27( ) option switch S1 (Table A and Figure 1), use an orange stick (KS-6320, L1) or equivalent and set switch positions as follows:

- 1 - Toward PL if equipping system with protection switching. Otherwise, toward NPL.
- 2 - Toward 2 if the FPB system was Mode 2. Otherwise, toward 4.
- 3 - Toward ABP.
- 4 - Toward CDP.
- 5 - Toward ABU.
- 6 - Toward CDU.
- 7 - Toward 1MJ if MISC1 is to report a major alarm or toward 1MN if MISC1 is to report a minor alarm.
- 8 - Toward 2MJ if MISC2 is to report a major alarm or toward 2MN if MISC2 is to report a minor alarm.
Table A
AUB27() Switch Setting

<table>
<thead>
<tr>
<th>81 Switch</th>
<th>82 Switch</th>
<th>83 Switch</th>
<th>CLEAR/NORM Plug</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Protection Line (NPL)</td>
<td>1</td>
<td>Protection Line (PL)</td>
<td>Clear Provisioning (Use CLEAR When ADU is first installed in a new system)</td>
</tr>
<tr>
<td>Mode 2 Operation (2)</td>
<td>2</td>
<td>Mode 1 Operation (4)</td>
<td>Do Not Clear Provisioning (Use NORM for In-Service System)</td>
</tr>
<tr>
<td>AB In-Service (ABI)</td>
<td>3</td>
<td>AB Preservice (ABP)</td>
<td></td>
</tr>
<tr>
<td>CD In-Service (CDI)</td>
<td>4</td>
<td>CD Preservice (CDP)</td>
<td></td>
</tr>
<tr>
<td>AB Equipped (ABE)</td>
<td>5</td>
<td>AB Unequipped (ABU)</td>
<td></td>
</tr>
<tr>
<td>CD Equipped (CDE)</td>
<td>6</td>
<td>CD Unequipped (CDU)</td>
<td></td>
</tr>
<tr>
<td>Major Alarm for MISC1 (1MN)</td>
<td>7</td>
<td>Minor Alarm for MISC1 (1MN)</td>
<td></td>
</tr>
<tr>
<td>Major Alarm for MISC2 (2MN)</td>
<td>8</td>
<td>Minor Alarm for MISC2 (2MN)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>Use 13</td>
<td></td>
</tr>
<tr>
<td>Use FS</td>
<td>2</td>
<td>FE</td>
<td></td>
</tr>
<tr>
<td>Use NC</td>
<td>3</td>
<td>CUT</td>
<td></td>
</tr>
<tr>
<td>SDL</td>
<td>4</td>
<td>Use DBL</td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>5</td>
<td>Use NPA</td>
<td></td>
</tr>
<tr>
<td>MJP</td>
<td>6</td>
<td>Use MNP</td>
<td></td>
</tr>
<tr>
<td>Not Used</td>
<td>7</td>
<td>Not Used</td>
<td></td>
</tr>
<tr>
<td>Not Used</td>
<td>8</td>
<td>Not Used</td>
<td></td>
</tr>
<tr>
<td>Use DL</td>
<td>NDL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CLEAR/NORM Plug

System ID Number

Unused (Set to 0)
2. On AUB27() ADU option switch S2 (Table A and Figure 1), use an orange stick (KS-6320) or equivalent and set switches as follows:

- 1 - Toward 13.
- 2 - Toward FS.
- 3 - Toward NC.
- 4 - Toward DBL.
- 5 - Toward NPA.
• 6 - Toward MNP.
• 7 - Not used.
• 8 - Not used.

3. Set switch S3 toward DL.

4. Set system identification rotary switches S4 (most significant digit) through S7 (least significant digit) to bank ID number.

5. Rotary switches S8 through S11 are unused (set to 0).

6. **NOTE:**
   The NORM/CLEAR switch option is used to automatically clear random channel provisioning data stored in the ADU and BCU.

   Set NORM/CLEAR option plug for CLEAR option (AUB2( ) center and bottom pins).

7. **CAUTION:**
   Incorrectly set ADU option switches may result in immediate or future loss of service or may introduce errors into the digital bitstream.

   Insert ADU into lower ADU slot if equipping blue bank or upper ADU slot if equipping white bank. Disregard all alarms.

**STOP. YOU HAVE COMPLETED THIS PROCEDURE.**
Verify Correct Complement of Circuit Pack for FP303

1. Refer to Table A to determine the required number and complement of circuit pack for feature package 303 (FP303).

2. Are all required packs available?

If YES, then STOP. YOU HAVE COMPLETED THIS PROCEDURE.

If NO, then obtain missing packs.

<table>
<thead>
<tr>
<th>Unit Code</th>
<th>Function Code</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCU</td>
<td>MC97777A1</td>
<td>One BCU for each system (blue and white).</td>
</tr>
<tr>
<td>ADU</td>
<td>AUB27( )</td>
<td>One ADU for each system (blue and white).</td>
</tr>
<tr>
<td>TRU</td>
<td>AUA112</td>
<td>One TRU for each dual digroup shelf (two for each system); one 993A TRU cable to connect TRUs.</td>
</tr>
<tr>
<td>LIU</td>
<td>AUA61C or D</td>
<td>One LIU for each equipped DS1; choose among unit codes.</td>
</tr>
<tr>
<td></td>
<td>AUA62C or D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AUA64C or D</td>
<td></td>
</tr>
<tr>
<td>LSU</td>
<td>AUA74</td>
<td>One LSU for each system with DS1 protection switching.</td>
</tr>
<tr>
<td>CTU</td>
<td>AUB22</td>
<td>One CTU for each dual channel bank; choose between unit codes.</td>
</tr>
<tr>
<td></td>
<td>AUB25</td>
<td></td>
</tr>
<tr>
<td>PCU</td>
<td>AUA11( )</td>
<td>One PCU for each shelf of the dual channel bank.</td>
</tr>
<tr>
<td>CFU</td>
<td>AUA114 39E</td>
<td>One CFU for each system; choose between unit codes.</td>
</tr>
<tr>
<td>LFU</td>
<td>AUA115 39F</td>
<td>One LFU for each dual channel bank if equipped with AUA62C or D LIUs; choose between unit codes.</td>
</tr>
<tr>
<td>FCU</td>
<td>AUA24</td>
<td>One FCU is required for each system if a 2( ) fan unit is installed.</td>
</tr>
</tbody>
</table>