SLC Series 5 CARRIER SYSTEM

REMOTE TERMINAL **Turn Up Power Plant for Series 5 RT**

ACCEPTANCE & TURN-UP **Introduction**

TASK ORIENTED PRACTICE (TOP)

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.

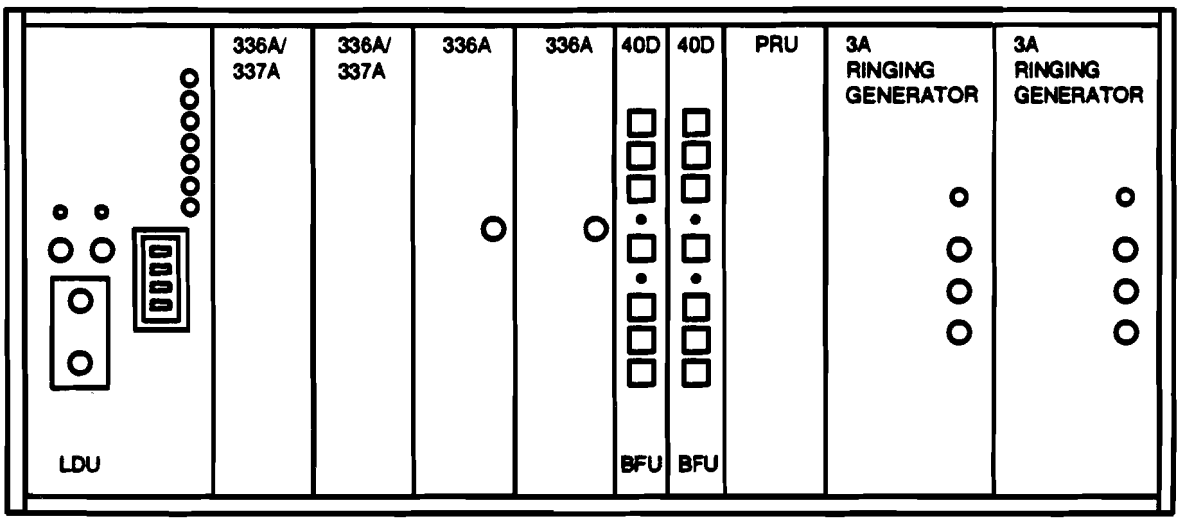

Figure 1 — J1C182BA Power Shelf

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.

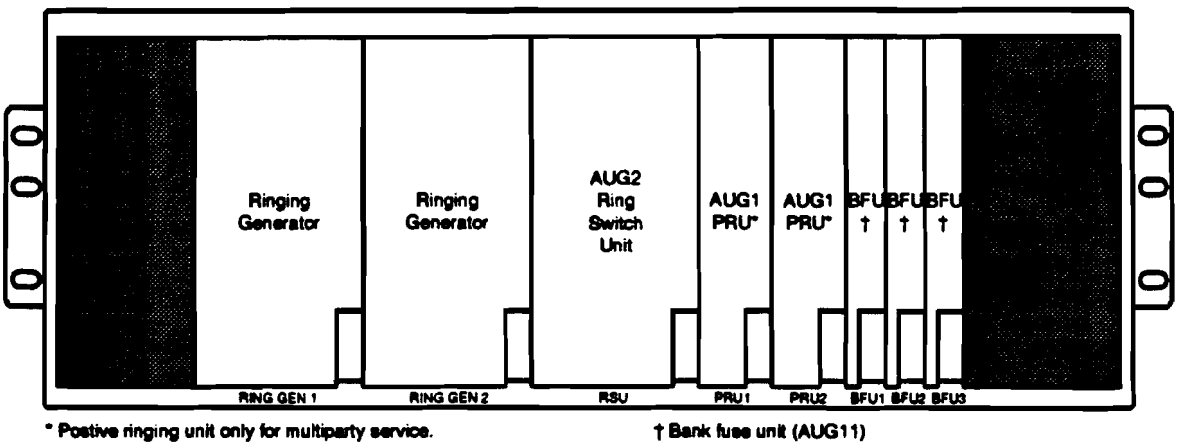

Figure 2 — J1C182BB Power Shelf

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.

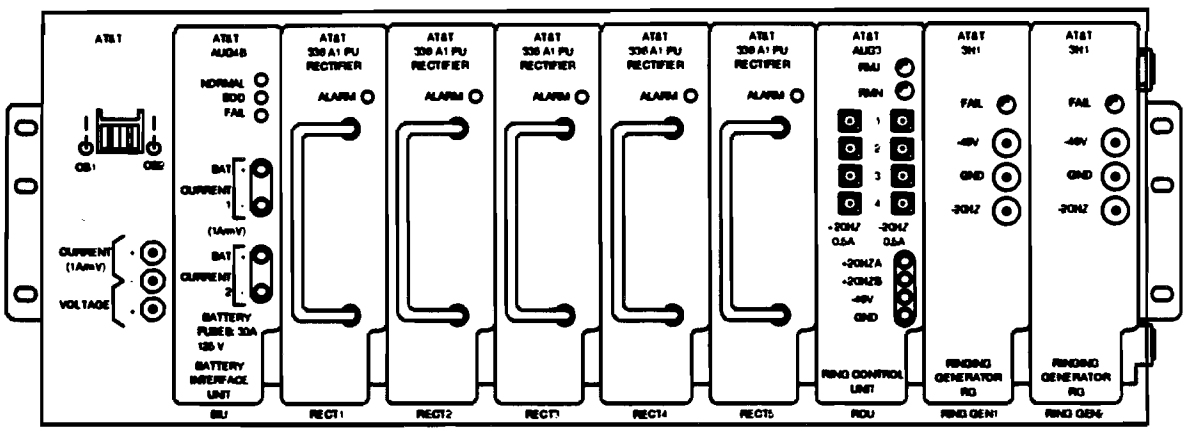

Figure 3 — J1C182BD Power Plant

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.

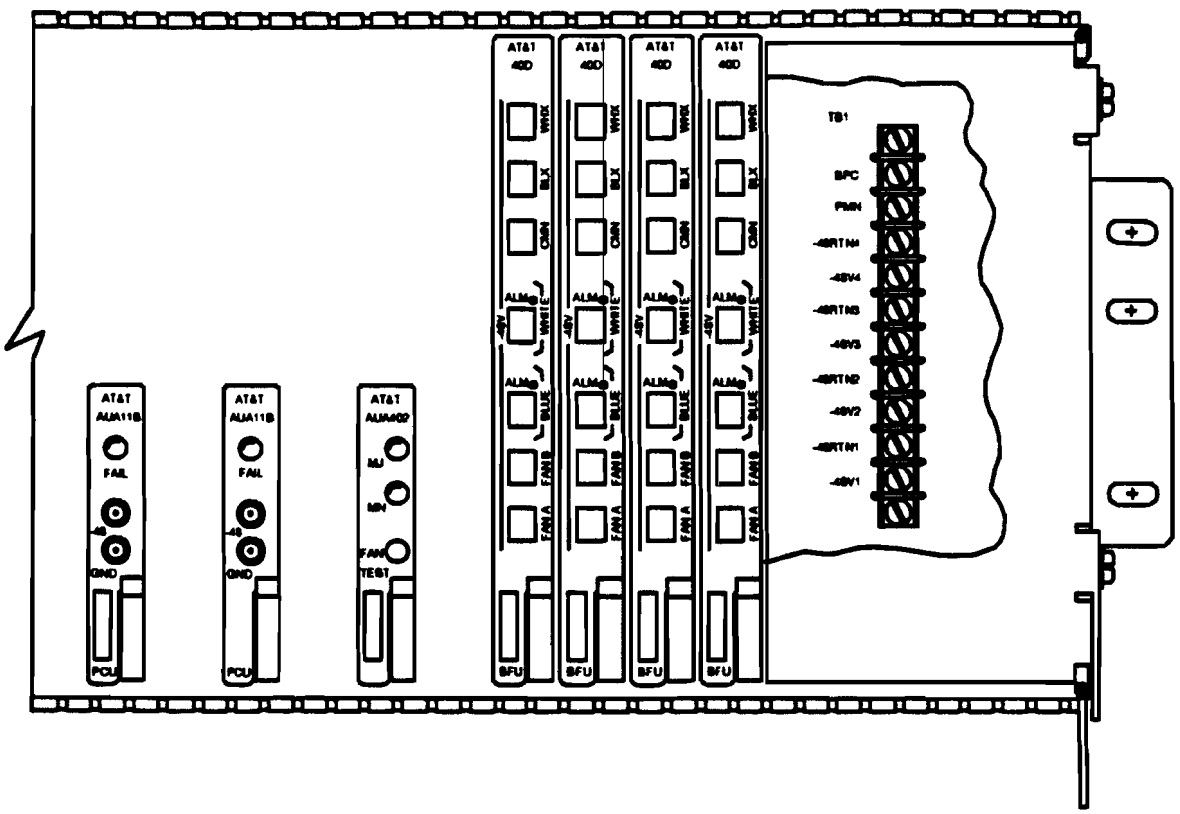

Figure 4 — Right half of J1C182PB-1 Optics Power Shelf

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.

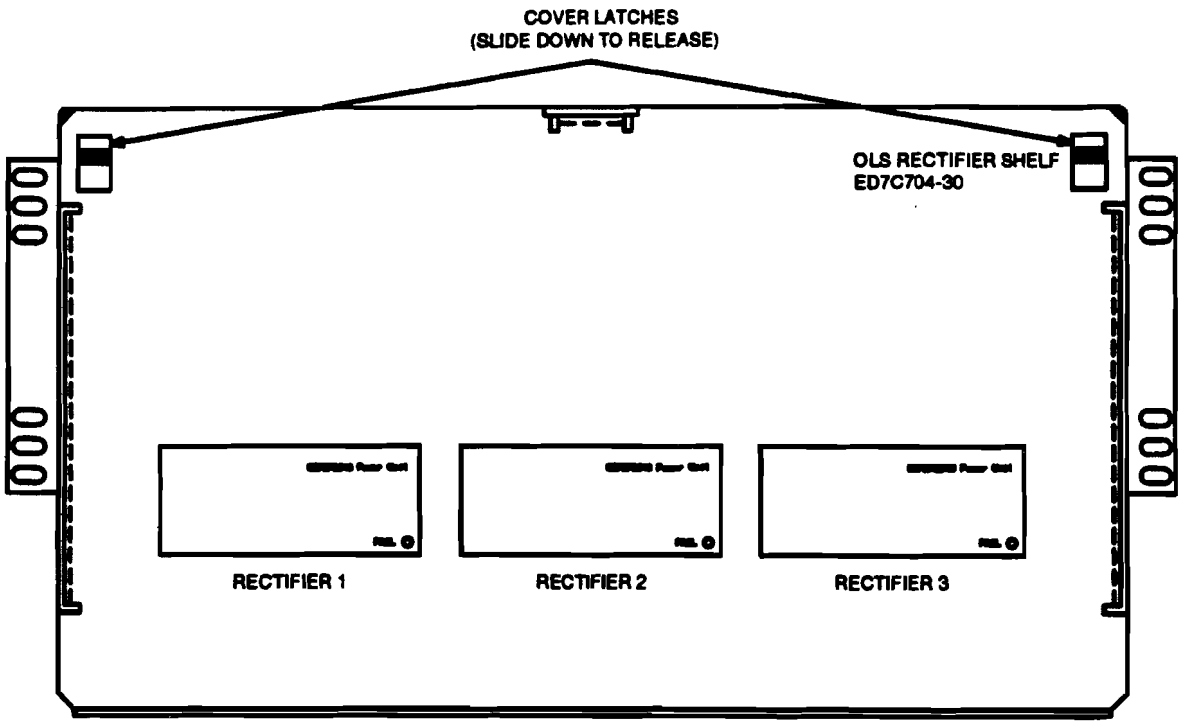

Figure 5 — ED-7C704-30 Rectifier Shelf (With Cover)

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.

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* Registered trademark of Chloride Group, Plc.

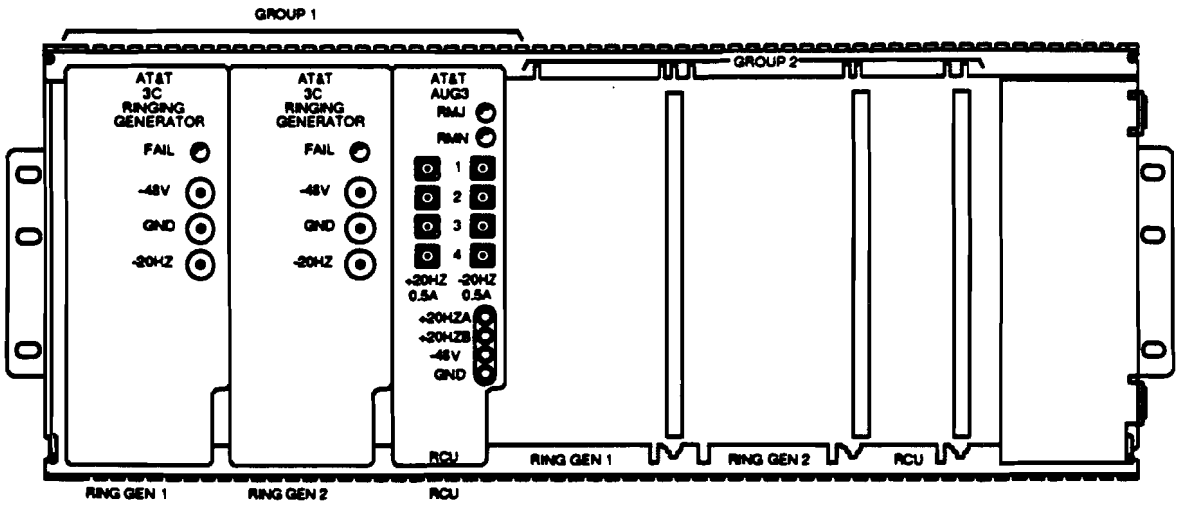

Figure 6 — Ringing Generator Installed in J1C182BC Ring Shelf

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 ≥ 1 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 wrist strap 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.	
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.

A.	Chloride batteries	DLP-522
B.	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 bank facility (middle) shelf.	DLP-511
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.

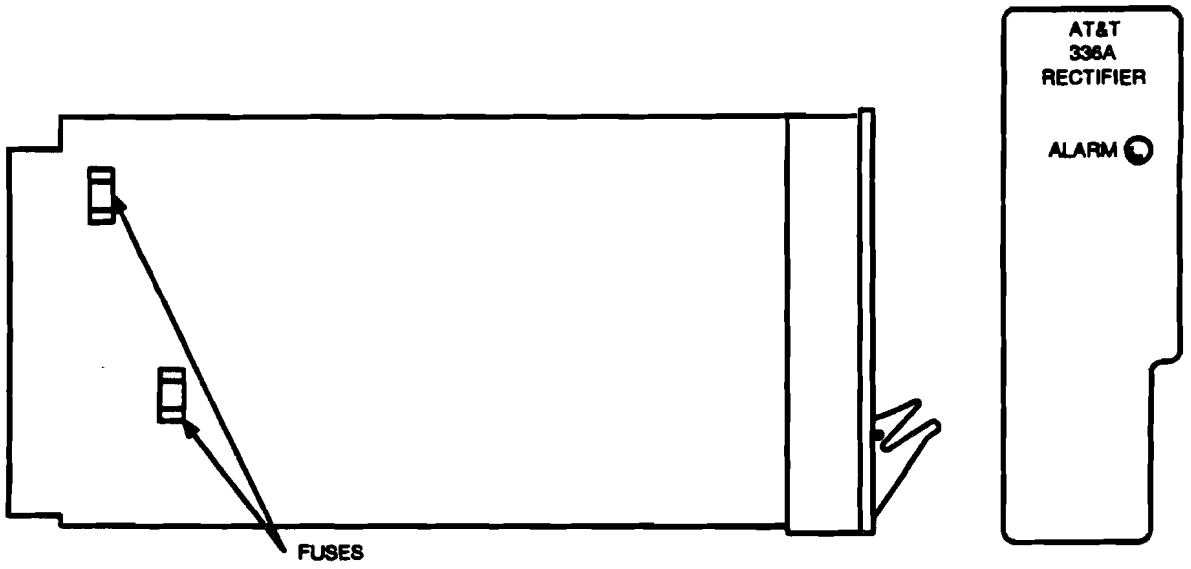

Figure 1 — Location of Fuse on 336A RECTIFIER

3. Insert one **336A RECTIFIER** into first vacant **RECT** slot (counting left to right) in power shelf (Figure 2).

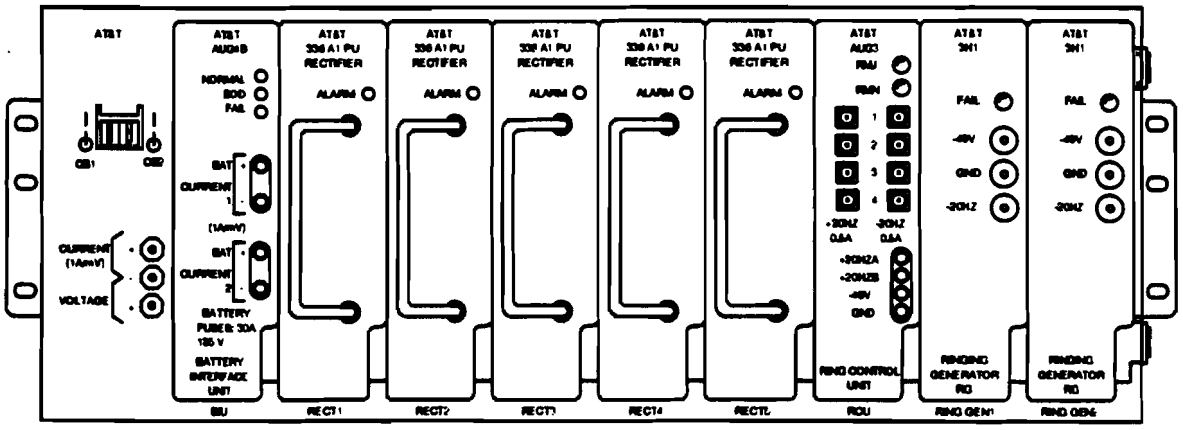

Figure 2 — J1C182BD Power Shelf

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 θ1 RECTs 1, 2, 3; pin4 θ2 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.

14. Get another **336A RECTIFIER** and repeat from Step **2.**

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.

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).

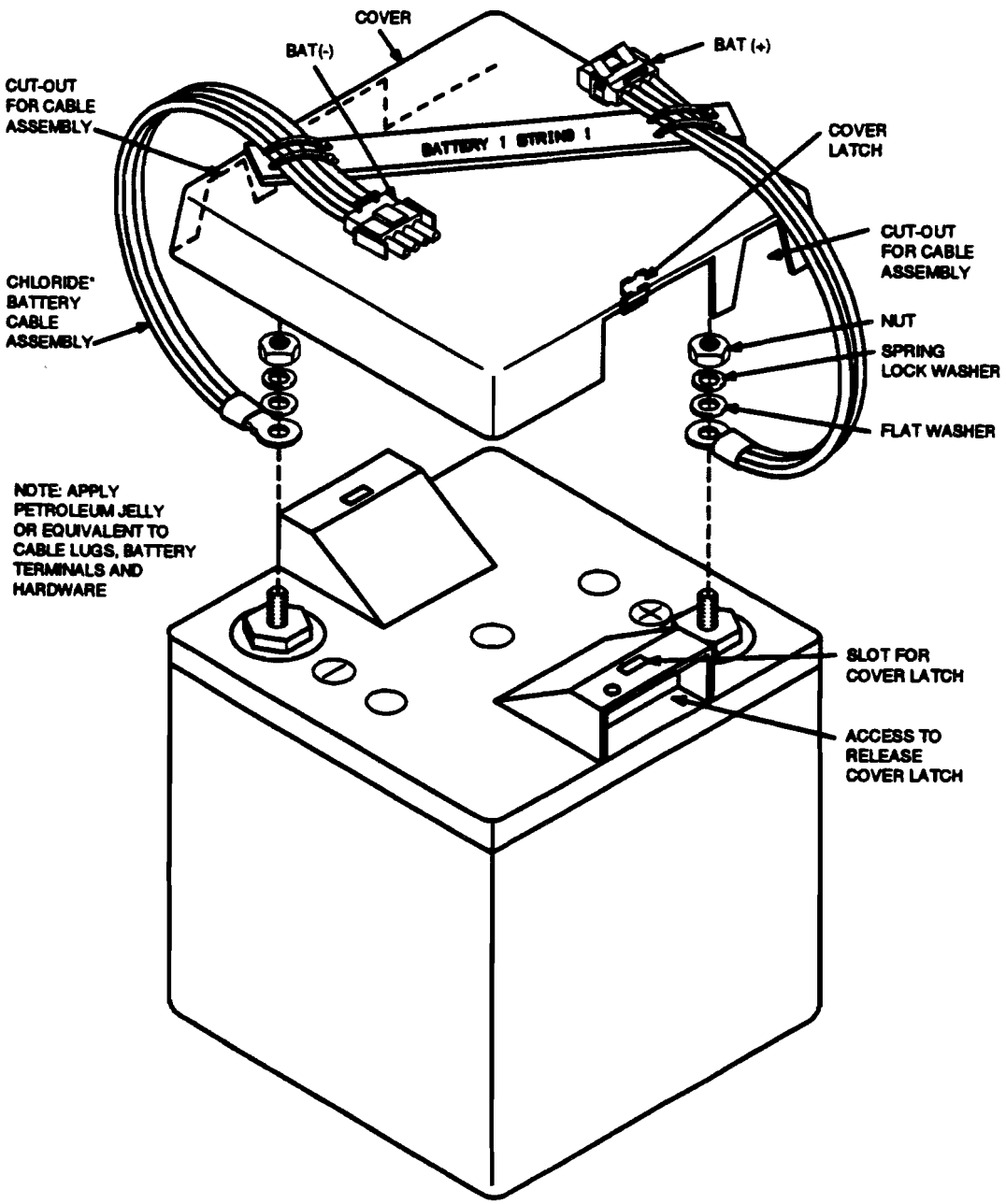

Figure 1 — Detail of *Chloride* Batteries and Cable Assembly

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**.

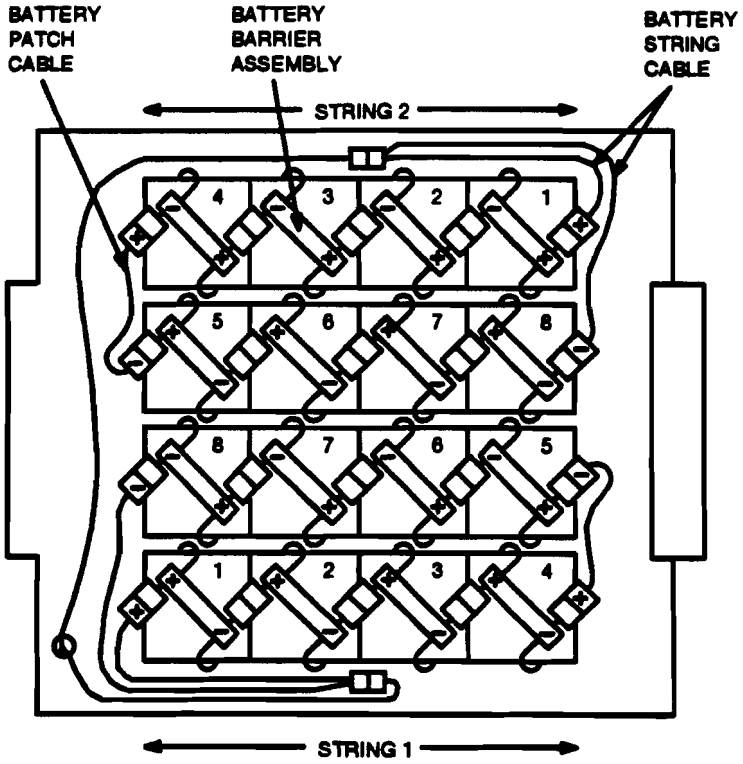

Figure 2 — *Chloride* Battery String Connections and Position in 80A Cabinet

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.

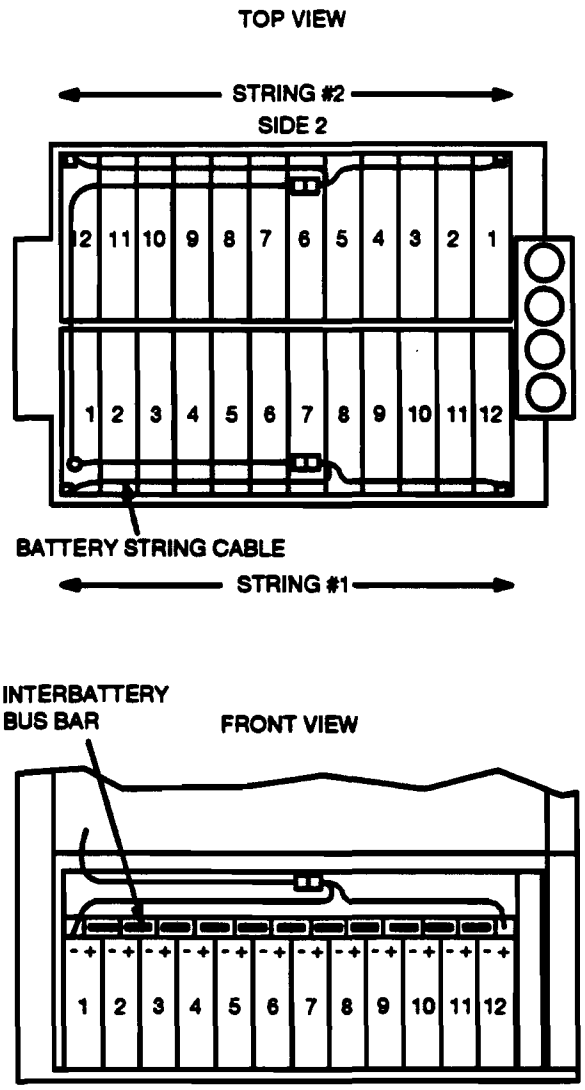

Figure 1 — Layout of Lineage 2000 VR Series batteries in 80A cabinet

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.

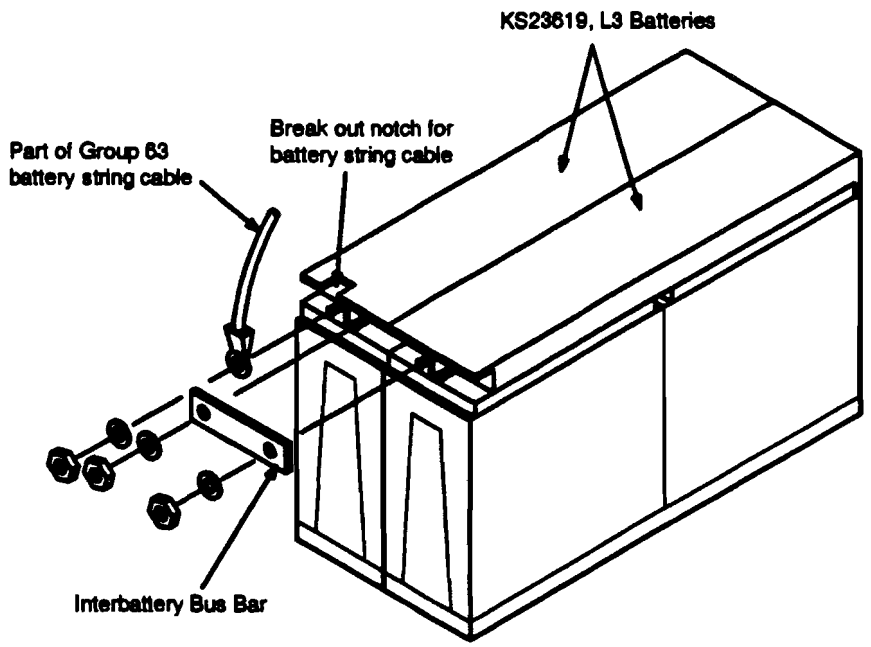

Figure 2 — Battery string connections for Lineage 2000 VR Series batteries

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 power shelf 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 40C, 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.

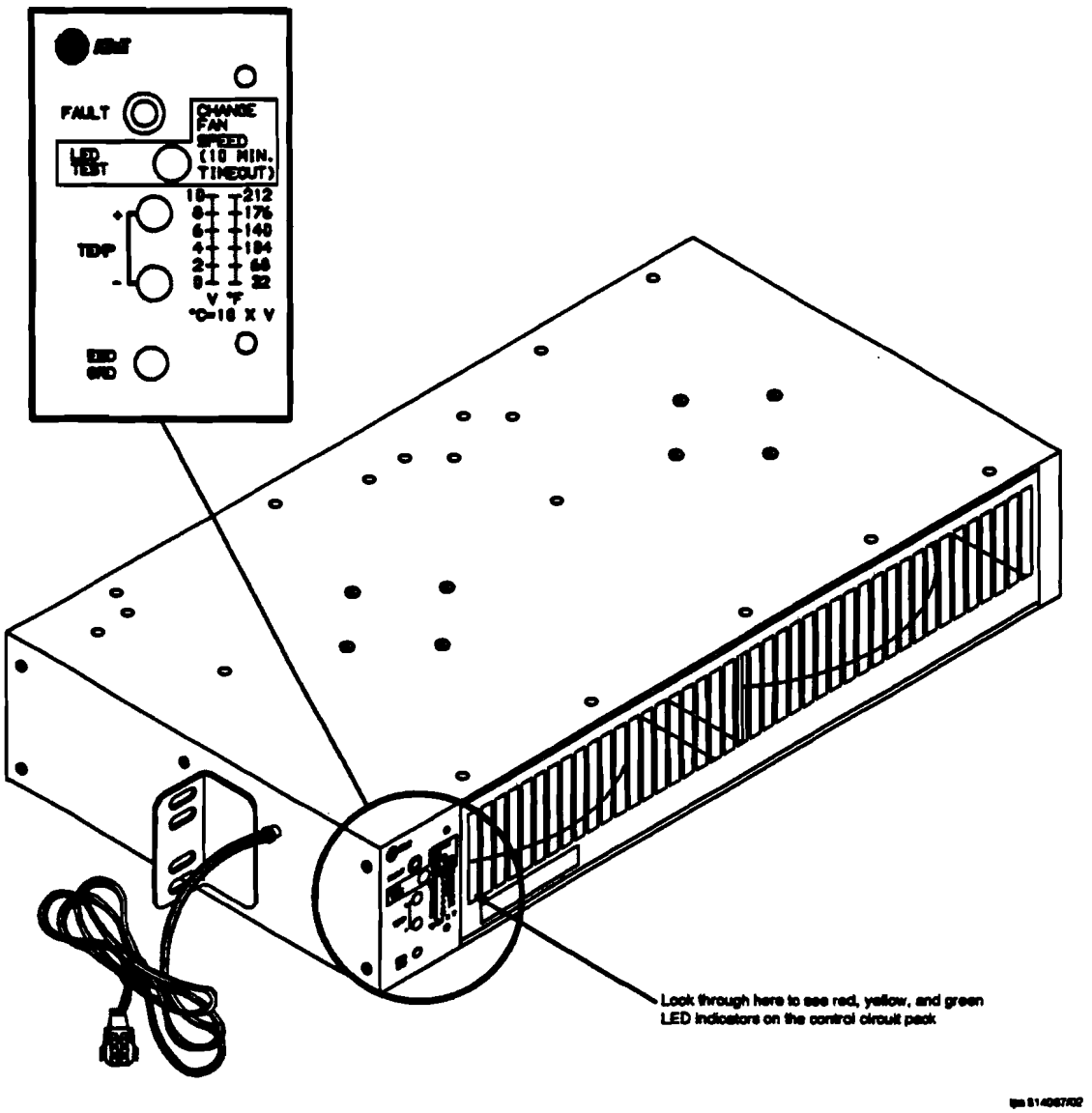

Figure 1 — 4A or 4B Fan Unit and Control Circuit Pack

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.

FIND YOUR JOB IN THE LIST BELOW	THEN GO TO

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	THEN GO TO

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

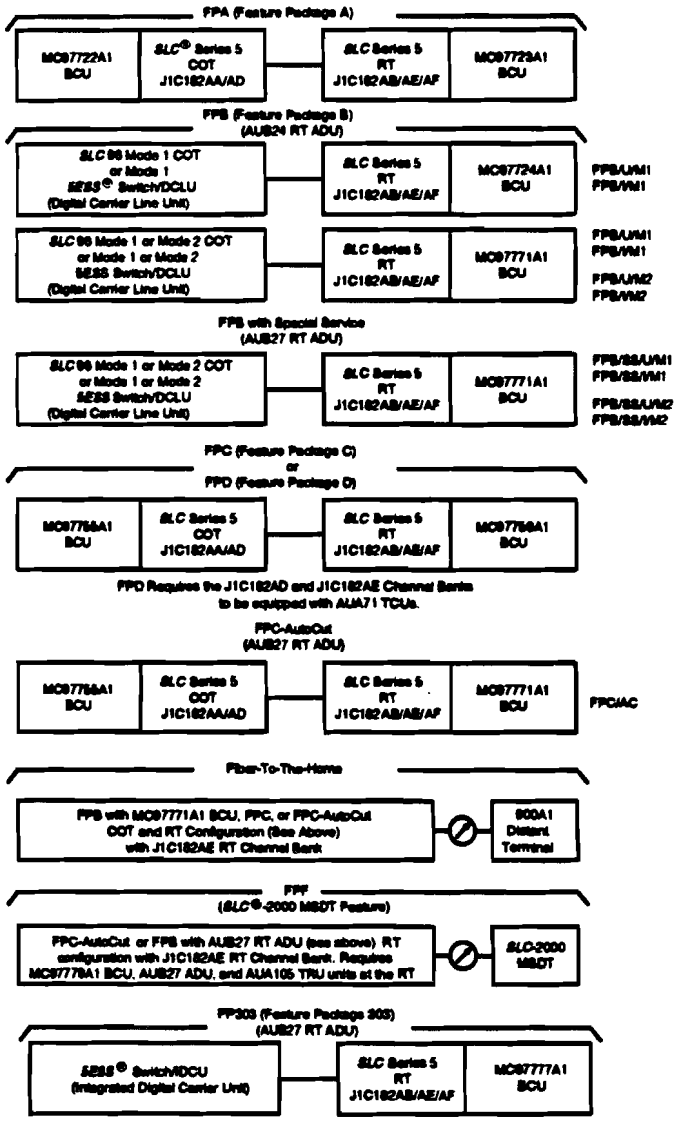

Figure 1 — Feature Package Arrangements

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 $\geq$ 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.*

DO ITEMS BELOW IN ORDER LISTED		FOR DETAILS, GO TO
	Remove 3-type voltage protector units in protector panel for the DS1s being equipped.	
4.	Verify, per work order, that the correct complement of circuit packs is available.	DLP-521
5.	If not previously installed, install and test the power converter unit (**PCU**) in the facility shelf.	DLP-502
6.	Install the channel fuse unit (**CFU**) and check fuses.	DLP-504
7.	NOTE: 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.	DLP-501
8.	Install the fan control unit (**FCU**), if the 2( ) Fan Unit is installed.	DLP-503
9.	Set option switches for preservice and unequipped. Install the alarm display unit (**ADU**) and disregard all alarms.	DLP-523
10.	Install the bank control unit (**BCU**).	DLP-522

DO ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO
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.	DLP-509
13. Install and test a **PCU** in CD shelf.	DLP-513
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.	

DO ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO
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.	DLP-524

DO ITEMS BELOW IN ORDER LISTED		FOR DETAILS, GO TO
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.	
21.	Perform RT LED test.	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.

DO ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO
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.	DLP-524
3. Perform RT LED test.	DLP-526
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.

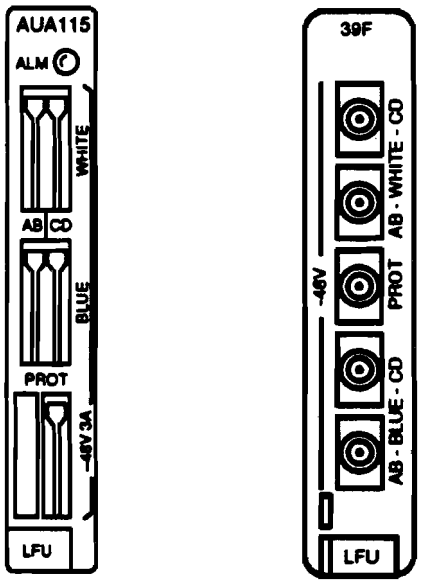

Figure 1 — AUA115 and 39F Line Fuse Unit

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 **–48V FAN H** or **–48V 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 **–48V FAN H** or **–48V 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.

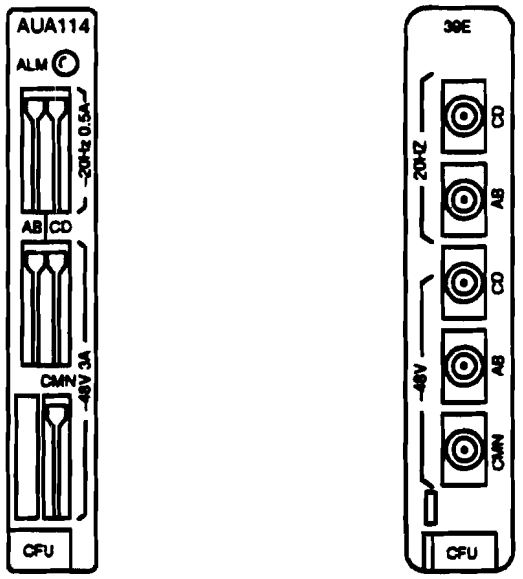

Figure 1 — AUA114 and 39E Channel Fuse Unit

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

Fuse Designation	Bead Color	Size	Code
20 HZ - AB	Red	½A	WP90247 L103
20 HZ - CD	Red	½A	WP90247 L103
–48V - AB	Blue	3A	WP90247 L110
–48V - CD	Blue	3A	WP90247 L110
–48V - CMN	Blue	3A	WP90247 L110

Table B

39E CFU Fuses

Fuse Designation	Bead Color	Size	Code
20 HZ - A/B	Red	½A	80G
20 HZ - C/D	Red	½A	80G
–48V - A/B	Blue	3A	80C
–48V - C/D	Blue	3A	80C
–48V - CMN	Blue	3A	80C

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

Function	S1 Switch Position	Function
No Protection Line (*NPL*)	1	Protection Line (*PL*)
Mode 2 Operation (*2*)	2	Mode 1 or FPC Operation (*4*) (Always Use *4* Unless Equipping FPB Mode 2)
AB In-Service (*ABI*)	3	AB Pre-Service (*ABP*)
CD In-Service (*CDI*)	4	CD Pre-Service (*CDP*)
AB Equipped (*ABE*)	5	AB Unequipped (*ABU*)
CD Equipped (*CDE*)	6	CD Unequipped (*CDU*)
Major Alarm for MISC1 (*1MJ*)	7	Minor Alarm for MISC1 (*1MN*)
Major Alarm for MISC2 (*2MJ*)	8	Minor Alarm for MISC1 (*2MN*)
Function	**S2 Switch Position**	**Function**
16 Bit Alarm Field (*16*)	1	13 Bit Alarm Field (*13*) (Always Use *13*)
FS Framing (*FS*) * (Use *FS* for FPB Mode 1 or 2)	2	ESF Framing (*FE*) † (Use *FE* for FPC-AutoCut)
No Cutover Hunting (*NC*) (Use *NC* for Mode 1 and 2 or When FPC-AutoCut is in Pre-Service)	3	Cutover Enabled (*CUT*) (Only Use *CUT* When Establishing End-to-End FPC-AutoCut System)
(*SGL*)	4	(Always Use *DBL*)
(*PA*)	5	(Always Use *NPA*)
(*MJP*)	6	(Always Use *MNP*)
Function	**S3 Switch Position**	**Function**
Data Link (*DL*) (Always Use *DL*)		No Data Link (*NDL*)
Function	**Clear Norm Position**	**Function**
Clear Provisioning (Use *CLEAR* When ADU is First Installed in New System)		Do Not Clear Provisioning (Use *NORM* for In-Service System)
S4, S5, S6, S7	**Rotary Switches**	**S8, S9, S10, S11**
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.

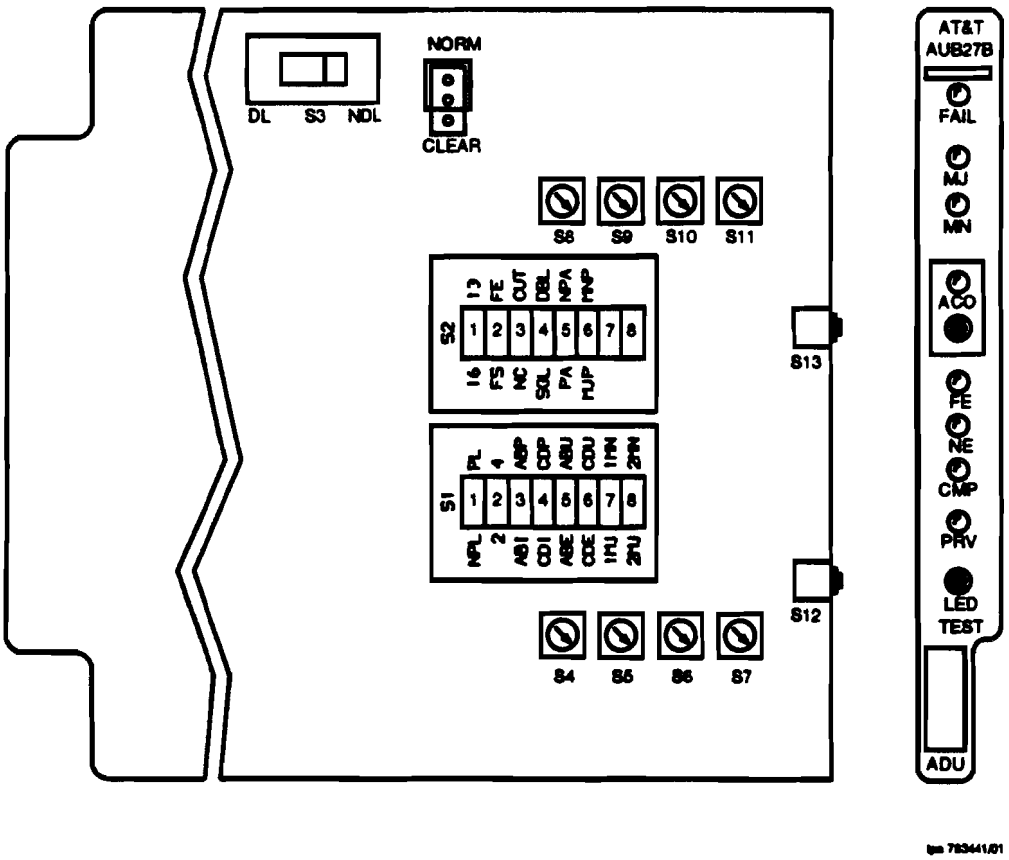

Figure 1 — AUB27 RT ADU Option Switch Settings

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.

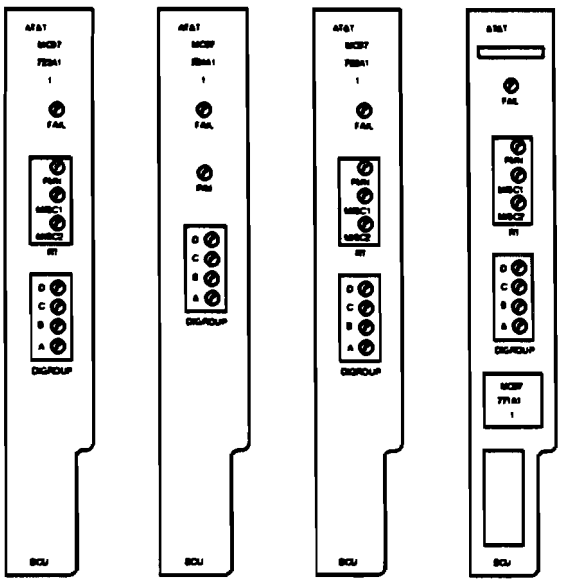

Figure 1 — Typical RT BCU Faceplates

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 **26.**
    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 A
FP303 COMMON UNIT COMPATIBILITY

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

Install FP303 Bank Control Unit

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

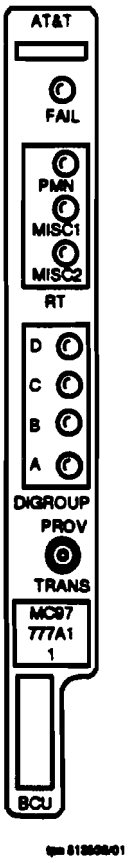

Figure 1 — MC97777A1 BCU Faceplate

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		
S1 Switch		
No Protection Line (*NPL*)	1	Protection Line (*PL*)
2	2	Use *4*
AB In-Service (*ABI*)	3	AB Preservice (*ABP*)
CD In-Service (*CDI*)	4	CD Preservice (*CDP*)
AB Equipped (*ABE*)	5	AB Unequipped (*ABU*)
CD Equipped (*CDE*)	6	CD Unequipped (*CDU*)
Major Alarm for MISC1 (*1MJ*)	7	Minor Alarm for MISC1 (*1MN*)
Major Alarm for MISC2 (*2MJ*)	8	Minor Alarm for MISC2 (*2MN*)
S2 Switch		
Use *16*	1	*13*
FS	2	Use *FE*
Use *NC*	3	*CUT*
Use *SGL*	4	*DBL*
PA	5	Use *MPA*
MJP	6	Use *MNP*
LIU B DS1 Equipped	7	LIU B DS1 Unequipped
LIU D DS1 Equipped	8	LIU D DS1 Unequipped
S3 Switch		
Use *DL*		*NDL*
CLEAR/NORM Plug		
Clear Provisioning (Use *CLEAR* When ADU is first installed in a new system)		Do Not Clear Provisioning (Use *NORM* for In-Service System)
S4, S5, S6, and S7 Rotary Switches		
System ID Number		
S8, S9, S10, and S11 Rotary Switches		
Unused (Set to 0)		

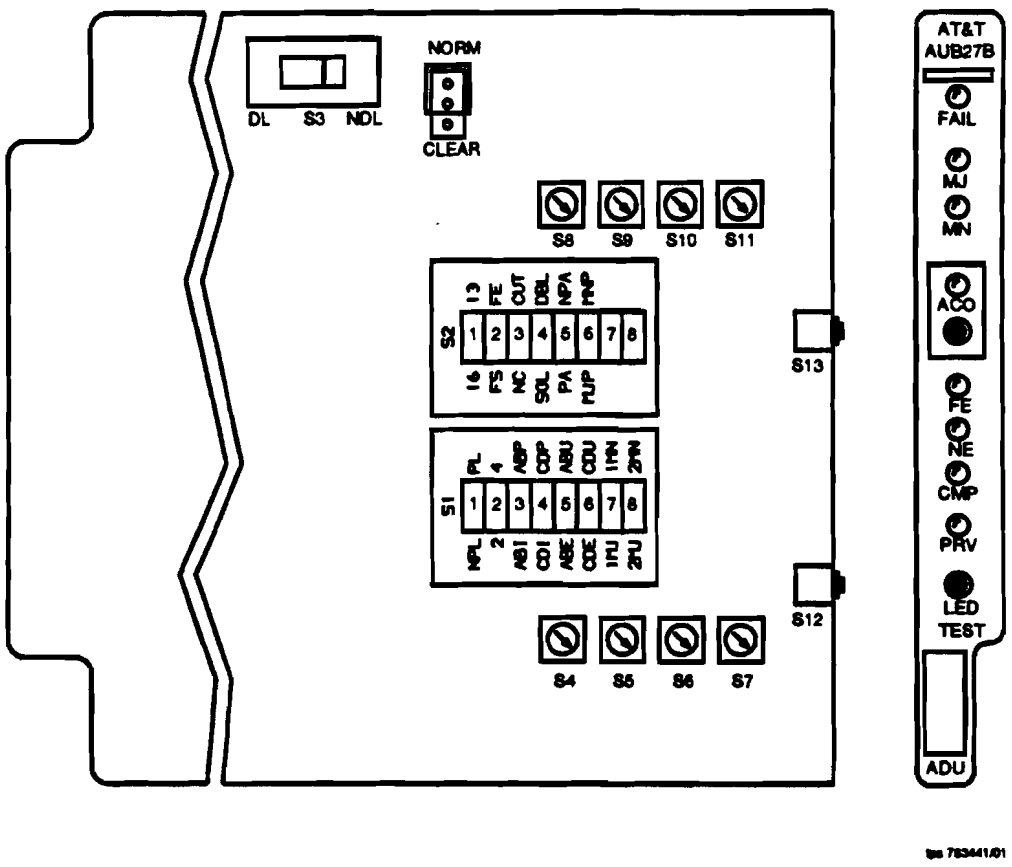

Figure 1 — AUB27( ) RT ADU Option Switch Settings

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).

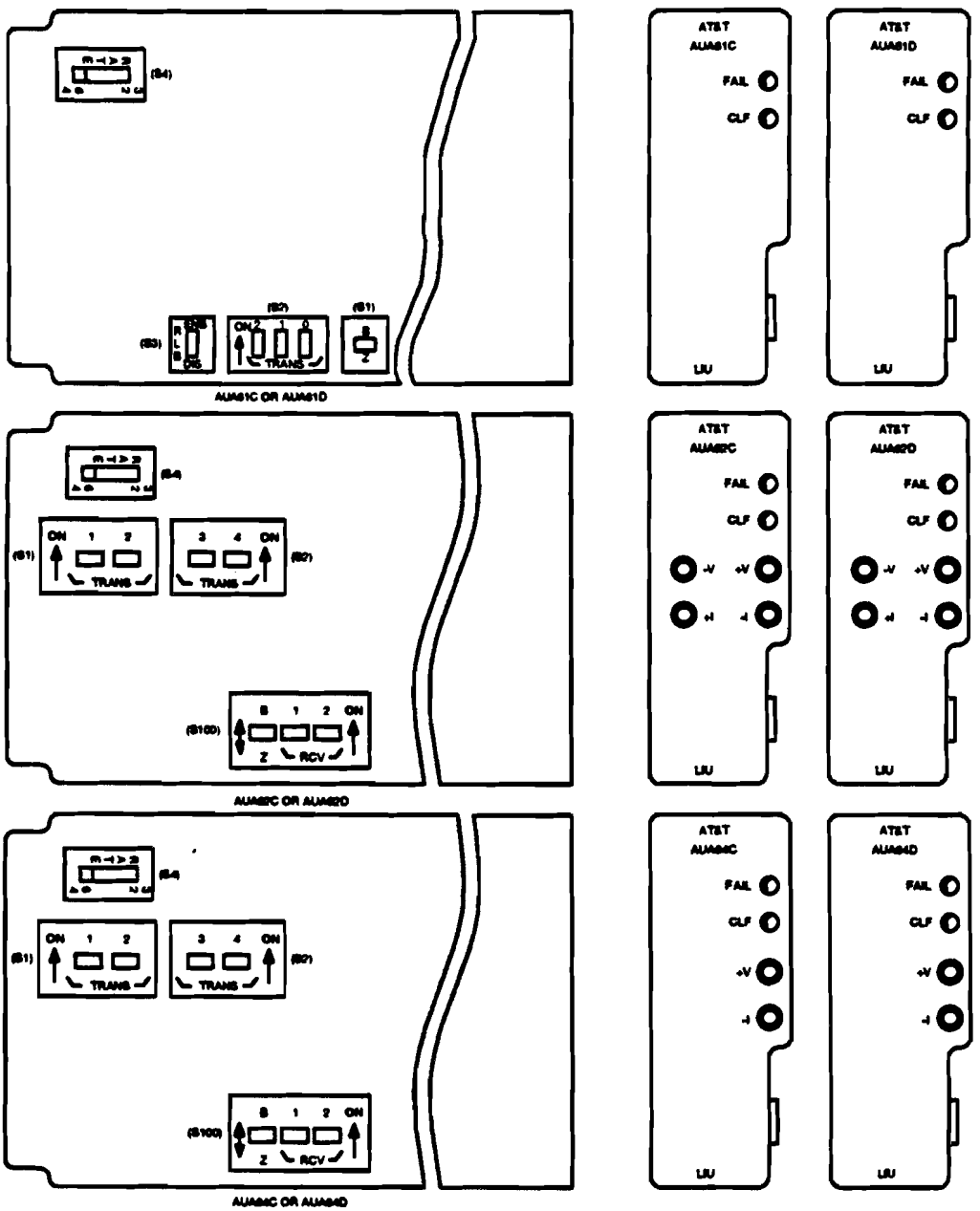

Figure 1 — C- and D-Type LIU Option Switches and Faceplates

Table A
AUA61C or D
LIU Equalizer Settings

Distance to DSX-1	Equalizer Switch (S400/S2) Setting		
(Feet)	2	1	0
0-132	OFF	OFF	ON
133-265	OFF	ON	OFF
266-398	OFF	ON	ON
399-532	ON	OFF	OFF
533-655	ON	OFF	ON

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

Inserted Loss	Transmit Pad (S400/S1, S2) Switch Settings				Receive Pad (S100) Switch Settings	
(dB)	1	2	3	4	1	2
22.5	OFF	OFF	OFF	ON	—	—
15.0	OFF	OFF	ON	OFF	—	—
7.5	OFF	ON	OFF	OFF	OFF	ON*
0	ON	OFF	OFF	OFF	ON*	OFF

* 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	
Option Description	**LIU Switch (S1 or S100) Settings**
B8ZS Coding	B
ZCS Coding	Z

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).

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 momemtarily 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 A
Series 5 RT LED Test

Unit	Indicator Lighted
AUB27( ) ADU	All LEDs
BCU	All LEDs
TRU	All LEDs
LIU	All LEDs
CTU	FAIL

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

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

DO ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO

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.**

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

DO ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO

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 the alarm display unit (**ADU**) and disregard all alarms.	DLP-513
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.

DO ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO
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.	DLP-514
12.	If protection switching is desired, install **AUA74 LSU** (line switch unit) in facility shelf. Otherwise, proceed to Step 14	DLP-516
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.	DLP-514
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.	

Reinstate 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.*

DO ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO
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 unequipped. Install the **ADU** and disregard all alarms.	DLP-520
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 ABI. If equipping the CD shelf set switch S1-4 to CDI. 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.	

DO ITEMS BELOW IN ORDER LISTED	FOR DETAILS, GO TO
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.	
13. Have the switch personnel verify that the IFACs are provisioned for **B8ZS** line coding (the current **LIU** line code setting).	
14. ⇛ NOTE: This step verifies correct end-to-end operation. Perform channel tests.	DLP-519
15. 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-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		
S1 Switch		
No Protection Line (*NPL*)	1	Protection Line (*PL*)
2	2	Use *4*
AB In-Service (*ABI*)	3	AB Preservice (*ABP*)
CD In-Service (*CDI*)	4	CD Preservice (*CDP*)
AB Equipped (*ABE*)	5	AB Unequipped (*ABU*)
CD Equipped (*CDE*)	6	CD Unequipped (*CDU*)
Major Alarm for MISC1 (*1MJ*)	7	Minor Alarm for MISC1 (*1MN*)
Major Alarm for MISC2 (*2MJ*)	8	Minor Alarm for MISC2 (*2MN*)
S2 Switch		
Use *16*	1	*13*
FS	2	Use *FE*
Use *NC*	3	*CUT*
Use *SGL*	4	*DBL*
PA	5	Use *NPA*
MJP	6	Use *MNP*
LIU B DS1 Equipped	7	LIU B DS1 Unequipped
LIU D DS1 Equipped	8	LIU D DS1 Unequipped
S3 Switch		
Use *DL*		*NDL*
CLEAR/NORM Plug		
Clear Provisioning (Use *CLEAR* When ADU is first installed in a new system)		Do Not Clear Provisioning (Use *NORM* for In-Service System)
S4, S5, S6, and S7 Rotary Switches		
System ID Number		
S8, S9, S10, and S11 Rotary Switches		
Unused (Set to 0)		

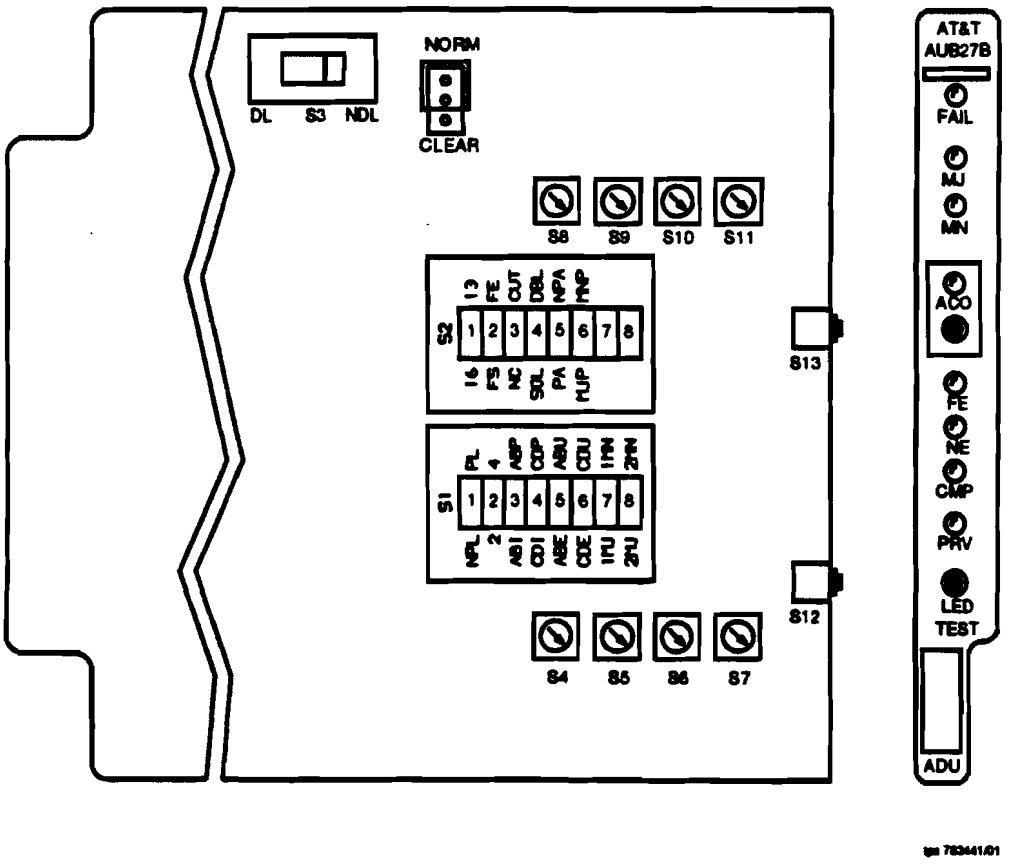

Figure 1 — AUB27( ) RT ADU Option Switch Settings

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.

Install FP303 Bank Control Unit

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

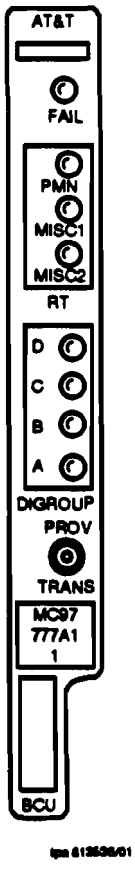

Figure 1 — MC97777A1 BCU Faceplate

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 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).

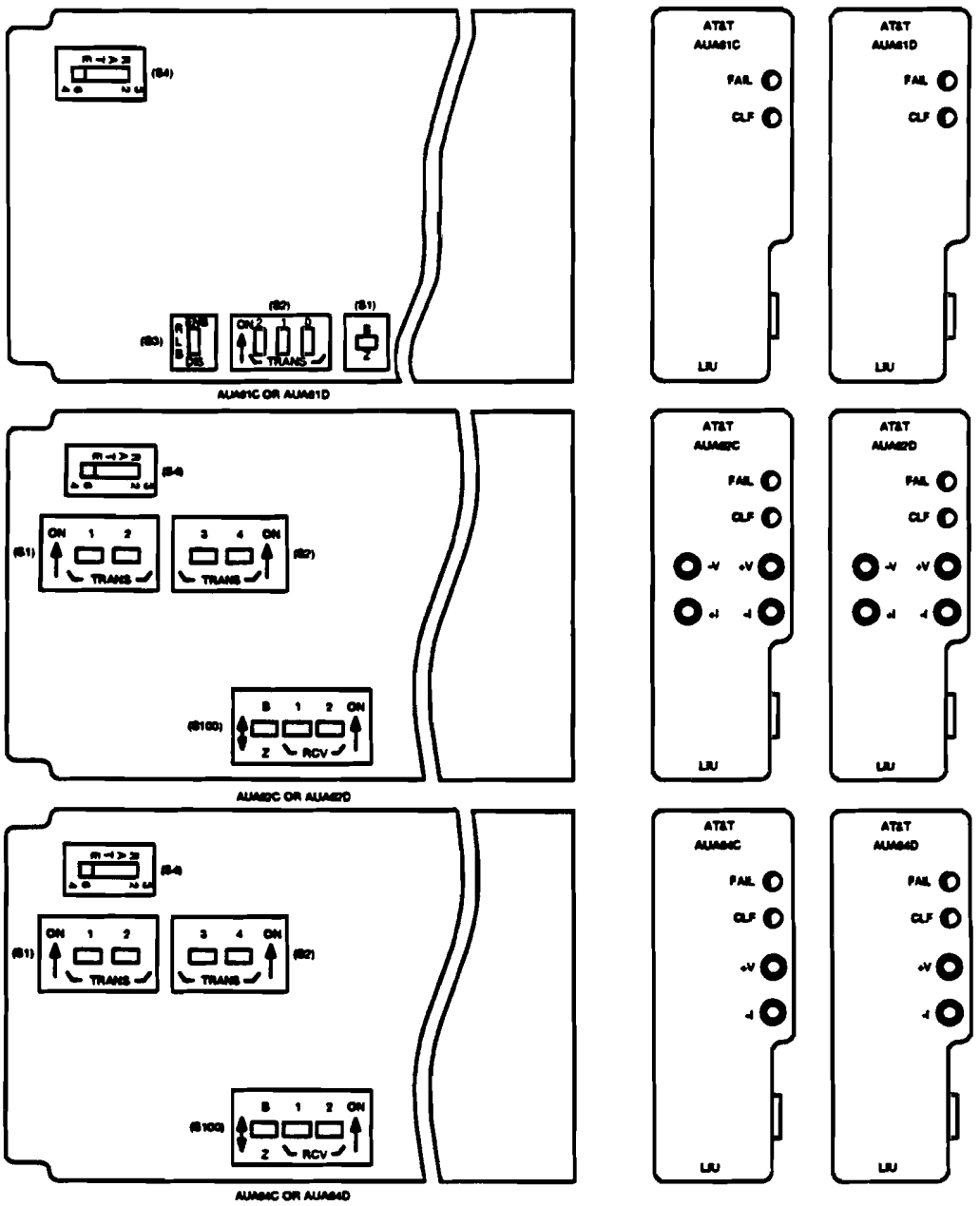

Figure 1 — C- and D-Type LIU Option Switches and Faceplates

Table A
AUA61C or D
LIU Equalizer Settings

Distance to DSX-1	Equalizer Switch (S400/S2) Setting		
(Feet)	2	1	0
0-132	OFF	OFF	ON
133-265	OFF	ON	OFF
266-398	OFF	ON	ON
399-532	ON	OFF	OFF
533-655	ON	OFF	ON

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

Inserted Loss	Transmit Pad (S400/S1, S2) Switch Settings				Receive Pad (S100) Switch Settings	
(dB)	1	2	3	4	1	2
22.5	OFF	OFF	OFF	ON	—	—
15.0	OFF	OFF	ON	OFF	—	—
7.5	OFF	ON	OFF	OFF	OFF	ON*
0	ON	OFF	OFF	OFF	ON*	OFF

* 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	
Option Description	**LIU Switch (S1 or S100) Settings**
B8ZS Coding ZCS Coding	B Z

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 A Series 5 RT Led Test	
Unit	**Indicator Lit**
AUB27( ) ADU	All LEDs
BCU	All LEDs
TRU	All LEDs
LIU	All LEDs
CTU	FAIL

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

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 momemtarily 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

S1 Switch		
No Protection Line (***NPL***)	1	Protection Line (***PL***)
Mode 2 Operation (***2***)	2	Mode 1 Operation (***4***)
AB In-Service (***ABI***)	3	AB Preservice (***ABP***)
CD In-Service (***CDI***)	4	CD Preservice (***CDP***)
AB Equipped (***ABE***)	5	AB Unequipped (***ABU***)
CD Equipped (***CDE***)	6	CD Unequipped (***CDU***)
Major Alarm for MISC1 (***1MJ***)	7	Minor Alarm for MISC1 (***1MN***)
Major Alarm for MISC2 (***2MJ***)	8	Minor Alarm for MISC2 (***2MN***)
S2 Switch		
16	1	Use ***13***
Use ***FS***	2	***FE***
Use ***NC***	3	***CUT***
SGL	4	Use ***DBL***
PA	5	Use ***MPA***
MJP	6	Use ***MNP***
Not Used	7	Not Used
Not Used	8	Not Used
S3 Switch		
Use ***DL***		***NDL***
CLEAR/NORM Plug		
Clear Provisioning (Use ***CLEAR*** When ADU is first installed in a new system)		Do Not Clear Provisioning (Use ***NORM*** for In-Service System)
S4, S5, S6, and S7 Rotary Switches		
System ID Number		
S8, S9, S10, and S11 Rotary Switches		
Unused (Set to 0)		

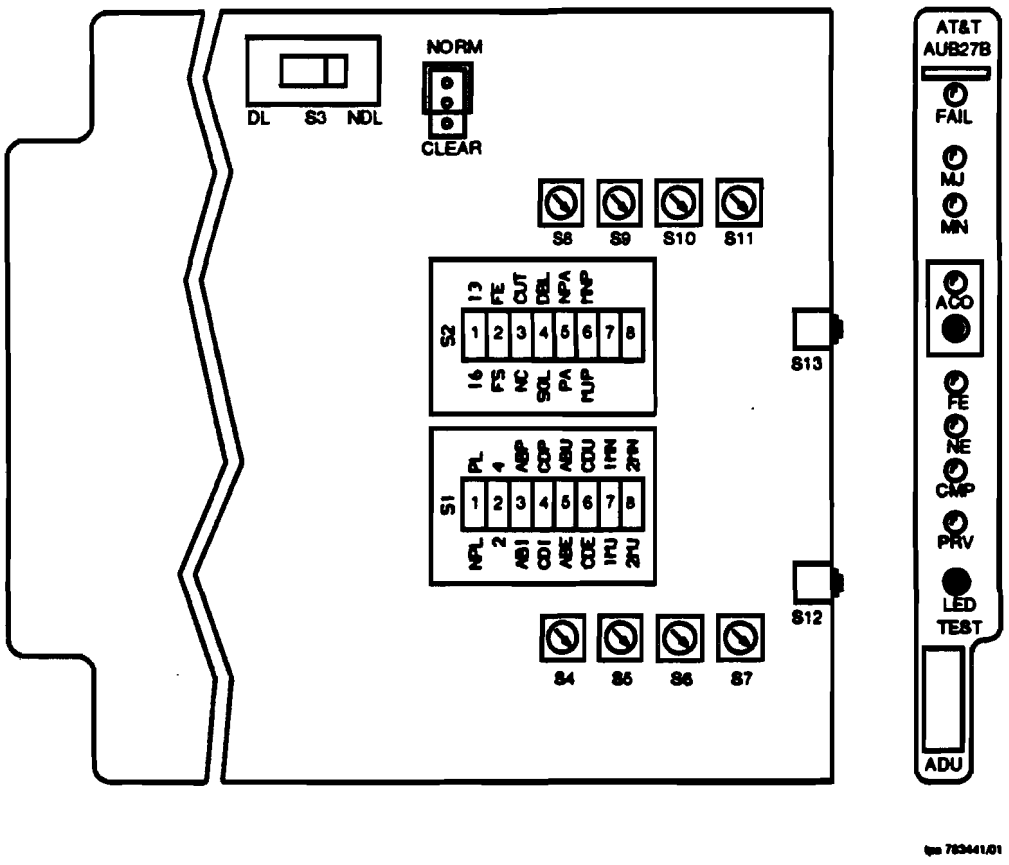

Figure 1 — AUB27( ) RT ADU Option Switch Settings

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 (AUB27( ) 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 A
FP303 COMMON UNIT COMPATIBILITY

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