



1631 SX LMC

Maintenance and Trouble Clearing

PN 3AL45391AJ 01
R10.01, Issue 01, February 2005

THIS PRODUCT COMPLIES WITH D.H.H.S. RADIATION PERFORMANCE STANDARDS 21 CFR, 1040.10, FOR A CLASS 1 LASER PRODUCT.

DANGER

Invisible laser radiation is present when the optic connector is open. AVOID DIRECT EXPOSURE TO BEAM.

WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

NOTICE

This manual applies to 1631 SX LMC R10.01 software. Release notes describing revisions to this software may impact operations described in this manual.

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Introduction

1. OVERVIEW

1.1 This manual provides step-by-step procedures to enable the user to perform a task. Each procedure contains important introductory information that is essential to understanding and completing the task properly. Procedures must be started at step 1, and steps must be performed in the order given. Failure to do so may cause unforeseen hazardous conditions.

Writing Conventions

1.2 Boldface characters indicate commands or parameters the user must enter or keys the user must press. Enter input parameters exactly as shown in the examples.

Admonishments

1.3 To avoid hazardous conditions, observe the following admonishments:

DANGER Possibility of personal injury.

CAUTION Possibility of service interruption.

WARNING *Possibility of equipment damage.*

Related Documentation

1.4 For additional system information, refer to the following related documents:

- 1631 SX LMC Product Information manual (PN 3AL45388AJ)
- 1631 SX LMC Installation Practices manual (PN 3AL45389AJ)
- 1631 SX LMC Quick Reference manual (PN 3AL45393AJ)
- 1631 SX LMC Turn-Up (PN 3AL45390AJ)
- 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ)
- 1631 SX LMC Address and Location Guide manual (PN 3AL47973AE)
- 1631 SX LMC Engineering Support Documentation (PN 3AL45396AJ)

Document Types

1.5 The documentation contains all instructions needed to perform a task. This manual consists of the following types of documents:

- Task Index List (IXL)
- Routine Task List (RTL)
- Trouble Analysis Procedure (TAP)
- Detailed Level Procedure (DLP)

Task Index List (IXL)

1.6 IXLs group procedures by function. Each IXL lists procedures alphabetically by name and refers the user to the appropriate procedure number.

Routine Task List (RTL)

1.7 The RTL is a list of preventive maintenance procedures. It recommends a schedule (monthly, semiannual, or annual) for the performance of each procedure.

Trouble Analysis Procedure (TAP)

1.8 TAPs contain sequential steps required to perform trouble clearing. Trouble clearing involves clearing and repairing malfunctions in the system. Trouble clearing may be done to answer a customer complaint or to respond to an office alarm, a trouble report, or an abnormal display. Steps can refer to other procedures.

Detailed Level Procedure (DLP)

1.9 DLPs contain detailed steps and supporting information required to complete tasks. When a DLP is referenced from another part of the manual, perform the DLP, then return to the point where the DLP was referenced.

2. MAINTENANCE PHILOSOPHY

2.1 Maintenance of the system consists of repair and preventive maintenance. Repair covers isolation of faults, troubleshooting to the circuit card level, and subsequent replacement of the faulty circuit card. Circuit card repair is not covered. Preventive maintenance covers periodic routine tasks that are performed to ensure continued proper operation of the system.

2.2 The system incorporates both software- and firmware-based diagnostics to continuously monitor system integrity. Also available are diagnostics that can be manually invoked. Problems detected by diagnostics are reported as alarm/event messages displayed at a user terminal and/or lighted alarm indicators on the equipment. These messages and lights are the primary trouble analysis tools for fault isolation.

2.3 The instruction “contact next level of technical support for assistance” appears throughout this manual. The intent of this statement is to trigger escalation of problems that are beyond the scope of this Task Oriented Practice (TOP) to a higher level of expertise. Users who have local interim levels and/or procedures should implement those in response to this instruction. Refer to Introduction for customer access (HELP) contacts.

Troubleshooting

2.4 Troubleshooting procedures generally assume the following conditions:

- An alarm indication was received through a user terminal or a lighted alarm indicator.
- Maintenance personnel are familiar with system operation and use of the TL1 language.
- Maintenance personnel have system administration privileges or a system administrator is available.
- Replacement components (spares) are available and fully functional.

2.5 The following guidelines and information should be observed during troubleshooting:

- Trouble clearing begins with an analysis of alarm indications. The proper TAP is referenced in the IXL.
- Clear upstream problems first. This may also clear downstream problems.
- As a rule, no circuit card should be physically removed unless it was logically removed by entering the appropriate TL1 command. Exceptions to this are addressed in specific DLPs.
- To avoid unnecessary service interruption, exercise care when removing circuit cards, performing commands, and doing other maintenance tasks.
- Always follow electrostatic-sensitive device procedures when handling circuit cards.
- TL1 commands can be entered directly or in Menu mode as desired.
- After circuit card replacement, alarms can take up to 120 seconds to clear. Allow time for the alarm to clear before assuming the replacement did not clear the trouble.
- When replacing a circuit card does not clear the trouble, remove the replacement circuit card and return the original circuit card to service.
- When TAPs fail to clear the fault, an obscure or multiple fault is assumed to exist.

3. SAFETY AWARENESS

Fan, Equipment Rack, and Equipment Cabinet Precautions

3.1 When installing the equipment observe the following:

DANGER Possibility of personal injury. Keep your fingers away from the rotating fan blades. Pull the fan-tray module by the thumbscrews only and wait for the fan blades to stop spinning before you attempt to remove the fan-tray module completely from the chassis.

DANGER Possibility of personal injury. The Alcatel 1631 SX LMC requires at least three people to support, align, and attach it to an equipment rack. To prevent equipment damage or personal injury, make sure you have enough help.

DANGER Possibility of personal injury. To prevent personal injury and equipment damage due to unbalanced loading of the equipment rack or cabinet, make sure the equipment rack or cabinet is properly secured to the floor, ceiling, or other rigid structure before mounting the Alcatel 1631 SX LMC in it. For approved methods of securing the equipment rack, read the equipment-rack installation instructions or contact the equipment-rack manufacturer.

Electrical Precautions

3.2 Take appropriate safety precautions when performing procedures on electrical equipment. Hazardous electrical potentials are present when system power is on.

3.3 Some procedures in this manual require working with small conductive objects, such as screwdrivers, fuses, washers, screws, and nuts. When working on a chassis at the top of an equipment rack, a dropped object that falls into a lower chassis can cause physical damage and electrical short circuits. To prevent this, place a piece of paper or other cover over the lower chassis to catch fallen objects. Remove the paper or other cover when work is complete.

DANGER Possibility of personal injury. Install the Alcatel 1631 SX LMC in a restricted-access area only. Entrance to a restricted-access area is intended for qualified or trained personnel and access to it is controlled by a locked barrier.

DANGER Possibility of personal injury. The chassis does not contain main overcurrent protection devices. The user must provide circuit breakers or fuses and

disconnects between the power source and the Alcatel 1631 SX LMC. Each power feed from a source (–48 V dc and Return) requires a 25-amp dc-rated fast-trip circuit breaker or fuse and disconnect. Circuit breakers or fuses must meet applicable local and national electrical safety codes and be approved for the intended application.

DANGER Possibility of personal injury. Make sure you connect the node to a –48 V dc source that is electrically isolated from the ac source and is reliably connected to earth ground.

DANGER Possibility of personal injury. For personal safety, make sure you connect and secure the installation site's frame-ground (earth ground) wire to the frame-ground terminal on the 1631 SX LMC before you connect any other wires to the node.

DANGER Possibility of personal injury. A dc-power source provides high energy, which can cause serious injury or equipment damage. Only Alcatel qualified personnel should connect the dc power to the Alcatel 1631 SX LMC. To prevent serious injury or equipment damage, make sure the power source cables are de-energized before you handle or connect them to the node.

Laser Precautions

3.4 Verify that laser labels on equipment state that the system conforms to all applicable standards of 21 CFR 1040.10. See figure 3-1 and 3-2. If there are no danger labels, call the Alcatel Technical Assistance Center (TAC).

3.5 The invisible infrared radiation emitted by the fiber-optic transmitter can cause eye damage. Observe local office procedures and the following dangers:

DANGER Possibility of personal injury. The use of controls and/or adjustments, or the performance of procedures other than those specified herein may result in hazardous infrared radiation exposure.

DANGER Possibility of personal injury. Laser infrared radiation is not in the visible spectrum; therefore, it is not visible to the naked eye or with laser safety glasses. Although it cannot be seen, laser radiation may be present.

DANGER Possibility of personal injury. Never look directly into an unterminated fiber-optic connector unless it is absolutely known that no optical power is being emitted by the connector.

- DANGER** Possibility of personal injury. Never look into a broken optical fiber cable unless it is absolutely known that no laser radiation is present.
- DANGER** Possibility of personal injury. Never look at an optical fiber splice, cable, or connector unless it is absolutely known that no laser radiation is present in the fiber. Laser radiation can come from a fiber-optic transmitter, an Optical Time Domain Reflectometer (OTDR), or other optical test equipment.
- DANGER** Possibility of personal injury. Never look directly into an unterminated optical connector or cable with a magnifier/microscope unless it is absolutely known that no laser radiation is being emitted from the connector or cable. A magnifier or microscope greatly increases the laser radiation hazard to the eyes.
- DANGER** Possibility of personal injury. This system normally operates as a Class I Laser Product (no hazard). However, during servicing operations, when optical connectors are being connected, disconnected, or handled without dust covers, it is possible to be exposed to Class IIIb laser radiation, which can cause eye damage.
- DANGER** Possibility of personal injury. Everyone within a 10-foot radius of an unterminated optical fiber or connector that is connected to a powered transmitter must wear laser safety goggles or eye shields.

3.6 Laser safety goggles or eye shields are not required if the following work rules are strictly followed:

1. Always remove electrical power from fiber-optic transmitters before disconnecting fiber-optic connectors in the path between the transmitter and the receiver.
2. Never connect an unterminated optical cable to a fiber-optic transmitter. Always connect fiber-optic cables to fiber-optic receivers, test sets, or some other termination first.

Figure 3-1. Manufacture Date Label (Chassis)

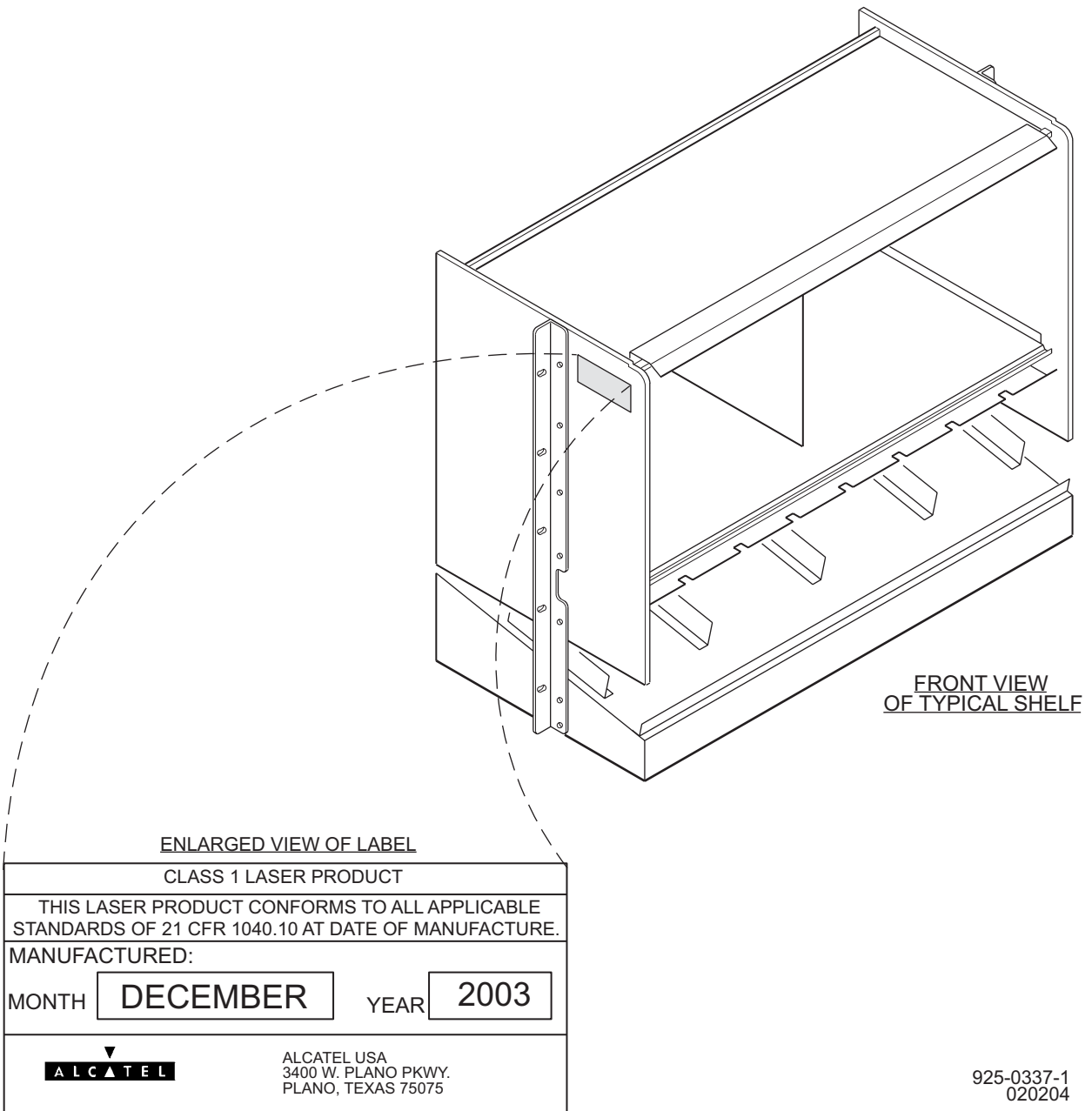
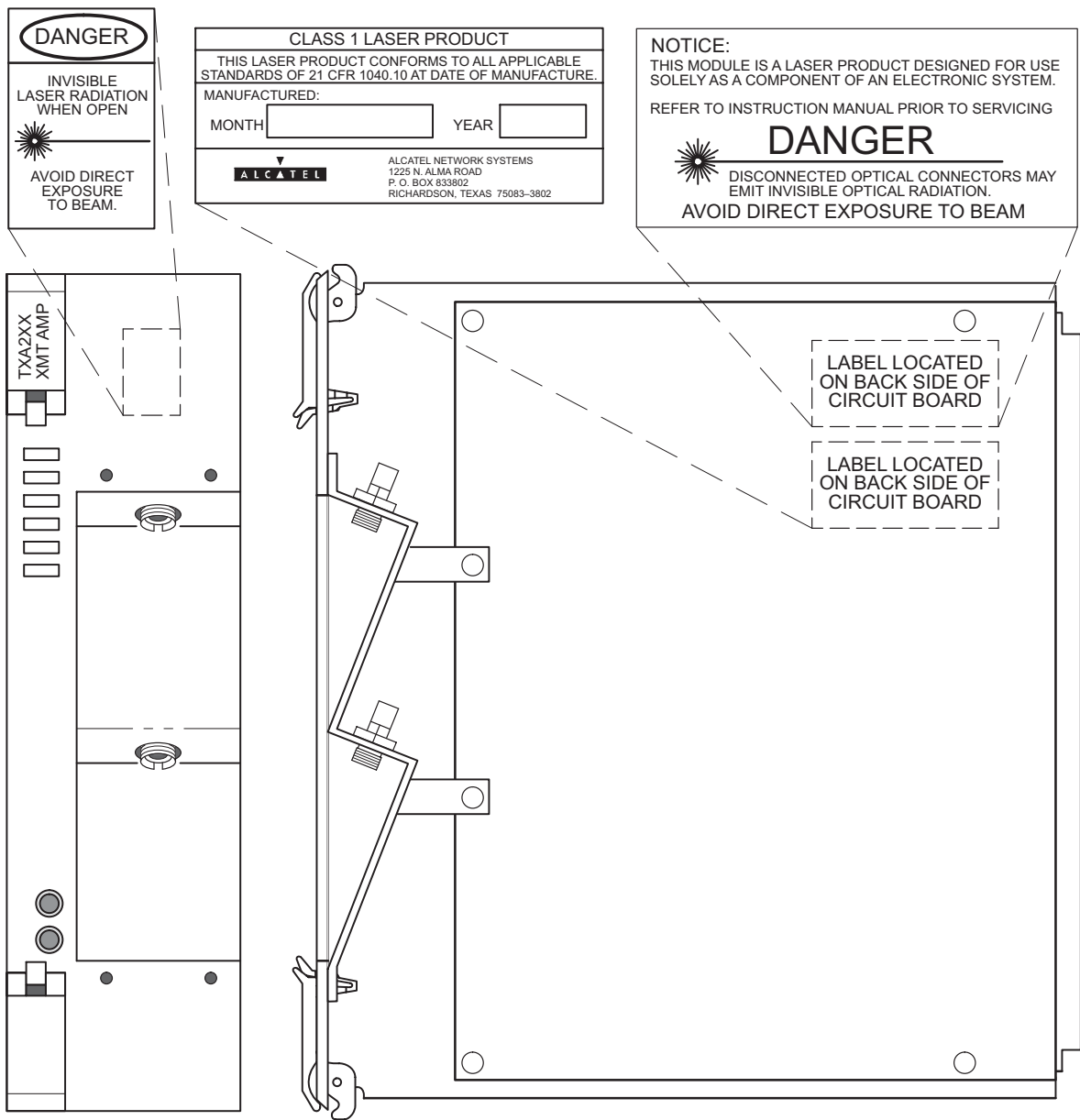


Figure 3-2. Danger and Manufacture Date Labels (Cards)



NOTE:
SOME MODELS HAVE SC OR ST CONNECTORS.
FC/PC CONNECTORS ARE SHOWN.

750-0059-1A
061500

4. ELECTROSTATIC-SENSITIVE DEVICES

Electrostatic-Sensitivity

4.1 An electrostatic-sensitive (ESS) device can withstand voltage spikes of only 10 to 100 volts and can be damaged or effectively destroyed by a discharge that might go unnoticed by a technician. Some devices have built-in protection. However, because this protection is effective only against the lower levels of electrostatic charges, a false sense of security often prevails.

WARNING *Possibility of equipment damage. Common plastic, white foam, cellophane, and masking adhesive tapes must not come in contact with ESS devices or their packaging.*

4.2 Common plastics (synthetic insulating materials), clothing, and paper or cardboard are the most common sources of static charges.

4.3 Observe special precautions when the ESS sign is displayed. See figure 4-1.

Figure 4-1. Electrostatic-Sensitive Sign



925-0338-1
020904

4.4 The following items are examples of ESS devices:

- MOS (Metal Oxide Semiconductor) capacitors, transistors, Integrated Circuits (ICs)
- CMOS (Complementary Metal Oxide Semiconductor) transistors, ICs
- JFET (Junction Field Effect Transistors)
- IGFET (Insulated Gate Field Effect Transistors)

Handling Circuit Cards

4.5 Although the risk of damage to an ESS device is reduced considerably after it is assembled into a circuit designed to protect sensitive components, take the following precautions to reduce static charges to harmless levels:

- Handle all circuit cards as ESS devices unless they are known not to contain electrostatic-sensitive parts.

WARNING *Possibility of equipment damage. Heel straps are effective only while standing on conductive or electrostatic-dissipative surfaces.*

- Wear ground straps, wrist (PN 055-9357-010) or heel (PN 055-9357-020), before and while touching or handling circuit cards containing ESS devices.
- Cover surfaces with resistance to ground in excess of 100 megohms, such as ordinary tile, with properly grounded static dissipative runners, or wax surfaces with a static dissipative wax (PN 057-4000-006).
- Store (even temporarily), pack, and ship circuit cards in antistatic bags or containers.
- Do not handle printed circuit board or components unnecessarily. Use plastic handle.
- Do not use synthetic bristled brushes or acid brushes to clean circuit cards.
- Handle failed circuit cards with same precautions as good circuit cards.

4.6 ESS devices are protected when properly packaged in conductive or antistatic packaging. Acceptable packaging is marked as either conductive or antistatic.

5. PRODUCT SUPPORT INFORMATION

Telephone Support

Customer Service Telephone Support

5.1 For telephone support for the customer services mentioned in this Product Support Information, call *888-ALCATEC (888-252-2832)* or *613-784-6100*, 8:00 a.m. to 5:00 p.m., Central Time, Monday through Friday. Ask the operator for the appropriate service to be connected to a qualified representative or engineer.

5.2 After-hours emergency telephone support is also available by calling *888-ALCATEC (888-252-2832)* or *613-784-6100*. An emergency is defined as an out-of-service, traffic-affecting problem or a nonoperating alarm system on traffic-bearing systems.

Quality Hotline

5.3 A toll-free Quality Hotline (*800-553-4056*) is available to all customers to report quality issues related to products or services.

5.4 The Quality Hotline is answered 24 hours a day, 365 days a year, and is available throughout all 50 states and Canada.

5.5 To report quality issues, call *800-553-4056*. An operator will take the information and have an Alcatel Quality Assurance Representative respond during normal business hours (8:00 a.m. to 5:00 p.m. Central Time, Monday through Friday). The regular customer service numbers should be used for normal customer service functions.

Product Documentation and Training

Product Documentation

5.6 Product documentation is available on both paper and CD-ROM. The documentation can also be accessed through Alcatel's Online Support Documentation and Software web site at <http://www.alcatel.com/osds>. Product documentation updates appear on Alcatel's Online Support Documentation and Software web site before they are available in any other format.

5.7 At Alcatel's Online Support Documentation and Software web site, follow the on-screen instructions to register for access and obtain a login ID. In addition to accessing product documentation, the Alcatel Online Support Documentation and Software web site allows the user to view the following:

- Application notes
- Configuration notes
- Data collections
- Frequently Asked Questions (FAQs)
- General information books
- General Release Documents (GRDs)
- Installation documents
- Methods of Procedure (MOPs)
- Product Change Notifications (PCNs)
- Product Information Bulletins (PIBs)
- Product manual updates
- Software patch and software load documents
- Software Update Documents (SUDs)
- Technical bulletins
- Training documents
- Urgent Product Warnings (UPWs)

Training

5.8 Equipment training is available to all customers. Crafts and maintenance personnel who are trained by Alcatel's Training department can expect more effective assistance if they need to call the Technical Assistance Center. Regularly scheduled courses are available at the training facilities in Plano, Texas. If a customer cannot attend a standard course, the Training department can arrange a course for a specific requirement and conduct it at the customer's facility. For further information, call customer service telephone support and ask for a training coordinator or write to one of the following addresses:

IN USA:

Alcatel USA
3400 W. Plano Pkwy.
Plano, Texas 75075
ATTN: Training M/S PB11-553

IN CANADA:

Alcatel Canada
Network Services Division
P.O. Box 13600
Ottawa, Ontario K2K 2E6

5.9 The annual Product Training Catalog can be ordered by calling the training coordinator, or it can be viewed on-line at <http://www7.alcatel.com/service/catalog>.

Technical Assistance Center

5.10 The Technical Assistance Center staff is always ready to provide high-quality technical assistance. Customers can expect effective telephone assistance when their crafts and maintenance personnel have been trained by Alcatel's Training department and are equipped with adequate test equipment, spares, and documentation at the site.

5.11 For technical assistance, call customer service telephone support.

After-hours Emergency Telephone Support

5.12 Emergency support is available after-hours through dispatch operators. Call customer service telephone support and ask for the Lightwave, Microwave, Operations Support System (OSS), Digital Loop Carrier (LMS), or Digital Cross-Connect emergency duty engineer.

5.13 An emergency is defined as an out-of-service, traffic-affecting problem or a nonoperating alarm system on traffic-bearing systems.

5.14 Nonemergency is defined as installation turn-ups, application questions, traffic cutover, routine maintenance, or other non-service-affecting maintenance. All non-service-affecting, after-hours telephone services are billable to the customer.

5.15 Please provide the operator with the following information:

- Company name
- Caller name
- A telephone number where caller can be reached
- A brief description of the problem, including the product involved

After-hours Nonemergency Telephone Support

5.16 After-hours telephone support to address installation turn-ups, application questions, or other non-service-affecting issues is best served when adequate documentation and resources are planned to address these issues. For this reason, customers should *prearrange* these services with Technical Assistance Center management. Call customer service telephone support during normal business hours.

On-site Technical Support

5.17 On-site technical support is available on request when services cannot be rendered effectively by telephone. For the best possible response, all requests should be made *directly* to Technical Assistance Center management. Installation turn-up requests should be made to the Field Service organization.

5.18 On-site services are *billable* to the customer. Service rates vary depending on product, product age, product status, and the time at which services are performed. Copies of on-site service rates are available by request from the Technical Assistance Center.

Repair and Return Services

5.19 As part of a comprehensive technical support program, Alcatel provides factory repair services for equipment. This service is available both during and after the warranty period through Alcatel's Return and Repair department.

Spare Parts and Replacement Circuit Packs

5.20 For spare parts, spare circuit packs, circuit pack exchange, and in-warranty replacement on a routine or emergency basis, call customer service telephone support.

5.21 Provide the following information:

- Company name
- Caller name
- A telephone number where caller can be reached
- A brief description of the problem, including product line, part number, and quantity of parts needed

5.22 For emergency assistance after normal business hours, call customer service telephone support, ask the operator for Emergency Parts Assistance, and provide the operator with the required information. The operator will contact an appropriate individual to respond.

Return for Credit or Warranty Exchange Procedure

5.23 Returned equipment must have a Return Authorization (RA) number. Obtain an RA number either by calling customer service telephone support or by fax (972-519-4611).

5.24 No equipment should be returned without an RA number. The following information is required:

- Description and quantity of equipment to be returned
- Reason for return
- Order number the equipment was purchased against and approximate date of purchase

Service Center

5.25 The Service Center tests, repairs, and modifies all circuit packs (both in and out of warranty). Circuit packs received for repair or modification are returned promptly.

Return for Repair Procedure

5.26 Refer to paragraph 5.23 for information on obtaining an RA number. Notification to the Service Center and issuance of an RA number by Alcatel personnel *must be made prior to shipment of parts*. The following information must be furnished with the request for return authorization:

- Purchase order number or requisition number
- Description and quantity of equipment to be returned
- Reason for return:
 - Modification required
 - Defective equipment to be repaired
- Warranty status (in or out of warranty) and warranty date stamped on unit
- Specific nature of problem
- Name and telephone number of person who identified problem
- Special instruction/information

Shipping Instructions for Repair, Credit, or Warranty Exchange

5.27 Return equipment or parts prepaid to the address provided when the RA number was issued. The RA number must be prominently marked on the shipping label, the packing list, and any correspondence regarding the order.

- Include company name, address, and name of person to contact in case of a question.
- Include specific reason for return. (This aids prompt processing.)
- Include the same requisition number or purchase order number that was furnished with request for return authorization.
- Include type number and part number of unit.
- State whether equipment is in or out of warranty.
- Furnish shipping address for return of unit, if applicable, or other pertinent details.
- Mail purchase order, if applicable, to address shown under Return for Repair Procedure, Attention: Service Center.

Installation and Maintenance Services

Engineering and Installation Service

5.28 Whether installation for specific equipment or a full turnkey network facility is needed, Installation Service can help. Alcatel has experience in central office, outside plant, and customer premises applications, and specializes in flexible scheduling and high-quality service. Qualified staff are in place nationwide, so an installation can be started and completed promptly.

Contract Maintenance Service

5.29 Field service from Alcatel offices nationwide is available if a maintenance contract is selected. Alcatel field service is well-suited for private networks of any size. For a fixed annual fee, Alcatel provides prompt response to service calls and provides scheduled preventive maintenance, including FCC-required measurements and record keeping.

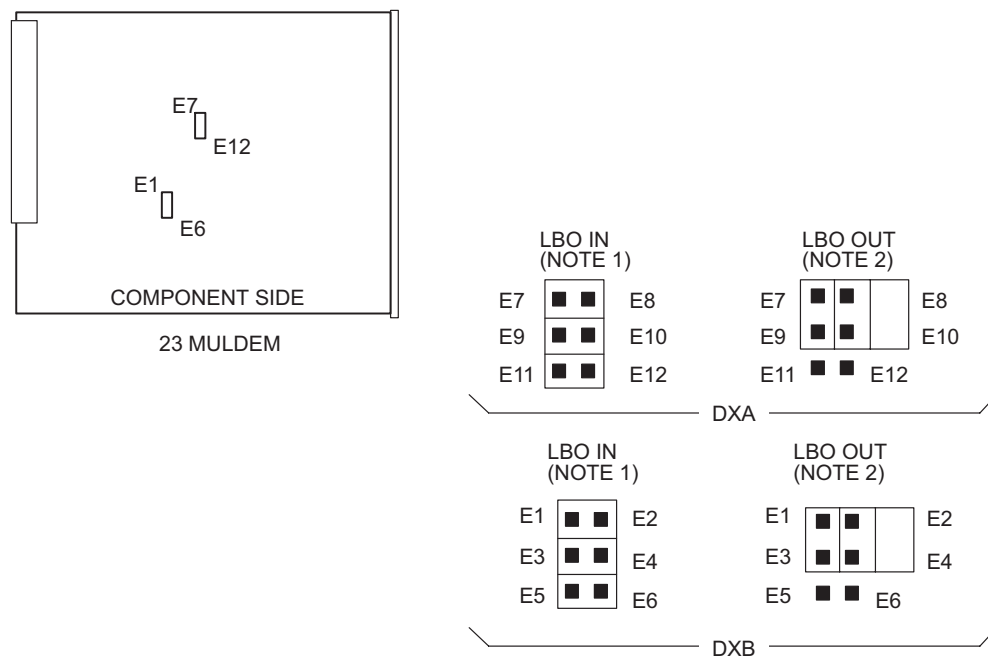
5.30 Factory-trained service technicians are qualified on similar systems before they are allowed to maintain customer equipment. They have direct access to additional technical support around the clock and to all necessary tools and test equipment.

6. HMU LBO STRAPPING

6.1 This document provides HMU Line Buildout (LBO) strapping information.

6.2 LBO straps DXA (odd) and DXB (even) provide LBO conditioning (see figure 6-1). LBOs are strapped LBO IN for 0 to 225 (short) feet of cable run. LBO fields are strapped LBO OUT for 225 to 550 (medium/long) feet of cable run. Cable distance and strapping is based on WECO 728A (or equivalent) cable.

Figure 6-1. LBO Strapping



NOTES:

1. LBO IN LESS THAN 225 FT DS3 LINE LENGTH (FACTORY CONFIG)
2. LBO OUT MORE THAN 225 FT LINE LENGTH

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7. PATH TRACE

7.1 Path Trace retrieves internal copy 0 and copy 1 equipment path of STS-1, T1, T3, and VT1 signals through the system. Each path trace consists of I/O and matrix modules and interrack cable identifiers.

COMMAND FORMAT

RTRV-PATH-STS1:: FROM,TO;

RTRV-PATH-T1:: FROM,TO;

RTRV-PATH-T3:: FROM,TO;

RTRV-PATH-VT1:: FROM,TO;

7.2 Refer to the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ) for detailed information on the RTRV-PATH command.

8. TEST ACCESS

8.1 Test Access establishes test connections from assigned test ports to ports in a valid test access state. It routes signals to external test equipment over a dedicated test access path connection.

8.2 Any unprovisioned port can be an assigned test port. A TACC port is provisioned (port + 1). For a detailed explanation of TL1 commands to configure TACC ports, refer to the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ). Once assigned, a test port retains its original DS1 port number and does not assume any other identifier. However, before a test access connection can be established, a targeted port must be in one of the valid test access states (refer to table 8-A).

Key Words and Definitions

8.3 Refer to table 8-A for key words used to reference 1631 SX LMC test access configurations.

Table 8-A. Test Access Key Words

KEYWORD	DEFINITION
A-Side	Connection from equipment side to facility side
B-Side	Connection from facility side to equipment side
Equipment	Referenced side of a cross-connection within a test access (TACC) command
Equipment Side	Referenced port in a TACC command message
Facility	Nonreferenced side of a cross-connection in a TACC command
Facility Access Digroup (FAD)	Facility Access Digroup (FAD A & FAD B) provide test access ports. Test signals default to FAD A except when MONEF and SPLTEF are used. See MONEF and SPLTEF in this table.
Facility Side	Nonreferenced port in a TACC command message
Loop E (LOOPE)	Loop connection on equipment side
Loop F (LOOPF)	Loop connection on facility side
Mode	Test access configuration. Connection can be placed in monitor, split, or loop modes (MONE, MONF, MONEF, SPLTA, SPLTB, SPLTE, SPLTF, SPLTEF, LOOPE, and LOOPF).
Monitor Equipment (MONE)	Broadcast connection made on A-side (from equipment side to facility side). A MONE connection is independent of the state of B-side.
Monitor Equipment and Facility (MONEF)	Broadcast connection made between equipment (A-side) and FAD A port and between facility (B-side) and FAD B port

Table 8-A. Test Access Key Words

KEYWORD	DEFINITION
Monitor Facility (MONF)	Broadcast connection made on B-side (from facility side to equipment side). A MONF connection is independent of the state of A-side.
Remote Test Unit (RTU)	Remotely controlled test equipment that measures transmission and signaling parameters of a circuit
Split A (SPLTA)	Split connection on A-side of circuit
Split B (SPLTB)	Split connection on B-side of circuit
Split E (SPLTE)	Split connection on equipment side of circuit
Split EF (SPLTEF)	Split connection made from equipment (A-side) to/from FAD A port and from facility (B-side) to/from FAD B port
Split F (SPLTF)	Split connection on facility side of circuit
Test Access Connection (TACC)	DS1 port provisioned for test access by ENT-T1 command. A TACC port is one-half of a test access port pair.
Test Access Path (TAP)	Path connection between a test port and any port in a valid test state. Generally, a TAP is the connecting path between a Remote Test Unit (RTU) and a FAD. Specifically, it is the test access port identification (ID) or the Access Identifier (AID) of the lower-numbered port in a TAPP.
Test Access Port Pair (TAPP)	A pair of normal ports specially designated for use by TACC. Typically, a TAPP is connected to test equipment over a test access path. (FAD A and FAD B make up a TAPP.)
Terminate-and-Leave State (TLS)	State of a FAD, either NORM (normal, unconnected) or TERM (terminated, QRS inserted)
Terminated (TERM)	A port is terminated when a Quasi-Random Signal (QRS) is inserted on outgoing line, and incoming line is terminated with its nominal characteristic impedance.
TERMAB	Indicates QRS is sent in both directions and incoming lines are terminated at their normal impedance.
TERMA	Indicates QRS is sent toward facility side and incoming line from equipment side is terminated in its normal impedance.
TERMB	Indicates QRS is sent toward equipment side and incoming line from facility side is terminated in its normal impedance.

8.4 Test access configurations include monitor test access, split test access, and loop test access. Both monitor and split test access configurations have provisions for different Terminate-and-Leave States (TLSs).

- **MONITOR** - The monitor test access configuration permits non-intrusive access for a specified test port and the facility under test. A monitor mode connection taps into a line and monitors signals on the circuit without affecting any current connections. Terminated monitor

mode disrupts the connection. These connections disconnect the A- or B-side pair and set up a connection to the appropriate Facility Access Digroup (FAD). A Quasi-Random Signal (QRS) is then inserted into the original destination of the side being monitored.

- **SPLIT** - The split test access configuration splits an existing connection to make a temporary connection between a specified test port and the DS1 facility under test. The split test access mode makes a connection from a normal port to the TACC port, and from the TACC port to the normal port. This connection can be used to insert a signal onto a circuit.
- **LOOP** - The loop (loopback) test access configuration routine returns a transmitted signal to the sending device after it passes through all or part of a network element or communications link. A technician (or a built-in diagnostic circuit) can then compare characteristics of the returned signal to the transmitted signal. This comparison becomes the basis for evaluating the status of the equipment and the transmission paths through which the signal passes.

8.5 TLSs allow maintenance personnel two options:

- Disconnect the TAPPs that are in a normal condition.
- Disconnect the TAPPs, and terminate the receiving sections in the nominal characteristic impedance while providing a QRS in each transmit direction.

8.6 Once disconnected, circuitry can be reconnected with the same TLS that existed before disconnect.

MONE Mode

8.7 The MONE test access connection mode taps into the A-side connection to monitor the condition of the circuit. A broadcast connection is made on the A-side connection into FAD A. See figure 8-1 for the A-side MONE connection for TLS state NORM, and see figure 8-2 for the A-side MONE connection for TLS state TERM. NORM monitors the connection, but TERM breaks the connection and applies a QRS to the facility side.

Figure 8-1. MONE Connection (TLS=NORM)

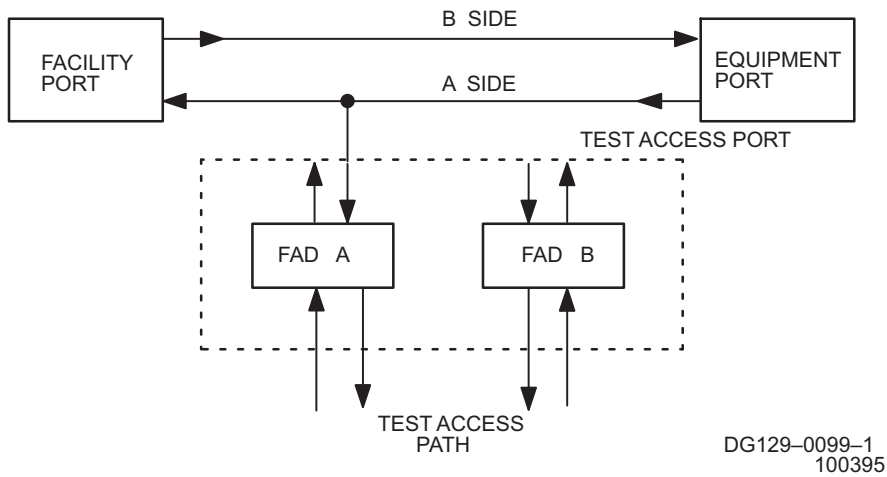
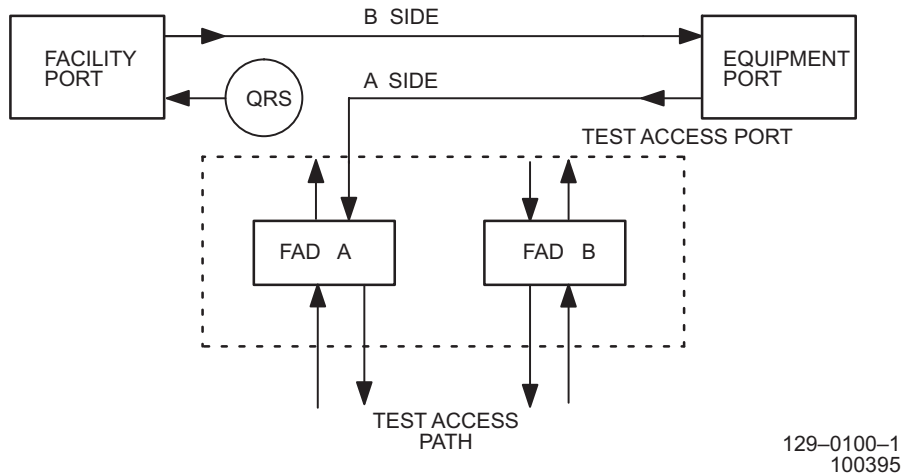


Figure 8-2. MONE Connection (TLS=TERM)



MONF Mode

8.8 The MONF test access connection mode taps into the B-side connection to determine the condition of the circuit. A broadcast connection is made on the B-side connection into FAD A. See figure 8-3 for the B-side MONF connection for TLS state NORM, and see figure 8-4 for the B-side MONF connection for TLS state TERM.

Figure 8-3. MONF Connection (TLS=NORM)

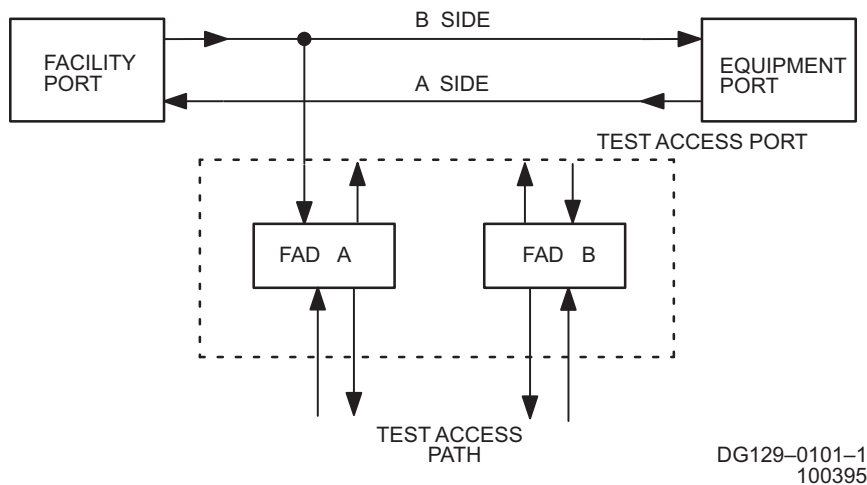
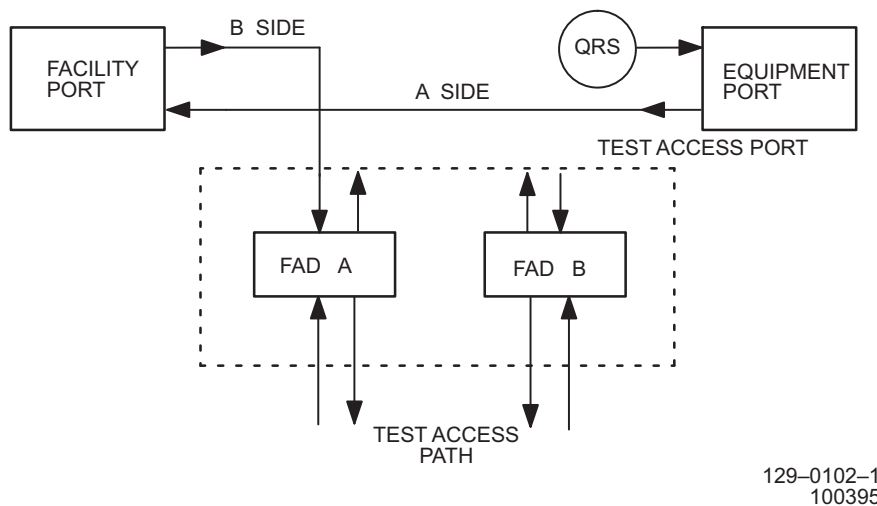


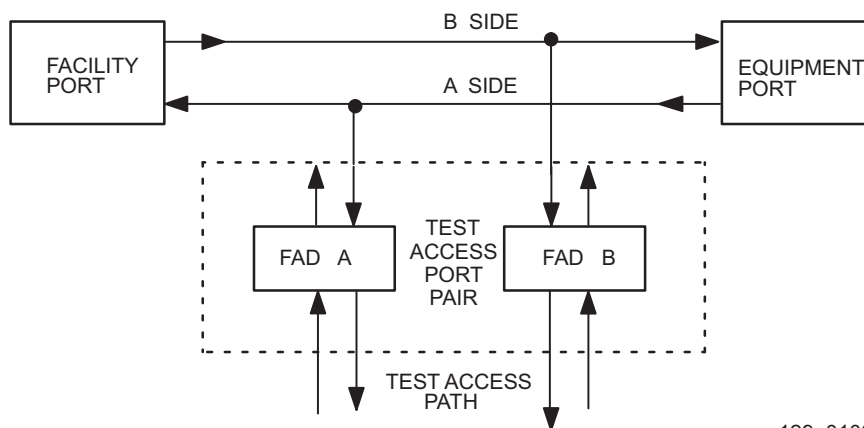
Figure 8-4. MONF Connection (TLS=TERM)



MONEF Mode

8.9 The MONEF mode connection taps into the signal being received by the equipment and the facility ports to determine circuit conditions. One broadcast connection is made from the equipment port to FAD A, and another is made from the facility port to FAD B. See figure 8-5 for a MONEF connection for a duplex-connected equipment and facility port pair.

Figure 8-5. MONEF Connection



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SPLTA Mode

8.10 The SPLTA test access connection mode splits the A-side connection. The A-side connection is routed in and out of FAD A. The RTU can either loop back to the original signal, or insert a new one. See figure 8-6 for the A-side SPLTA connection for TLS state NORM, and see figure 8-7 for the A-side SPLTA connection for TLS state TERM.

Figure 8-6. SPLTA Connection (TLS=NORM)

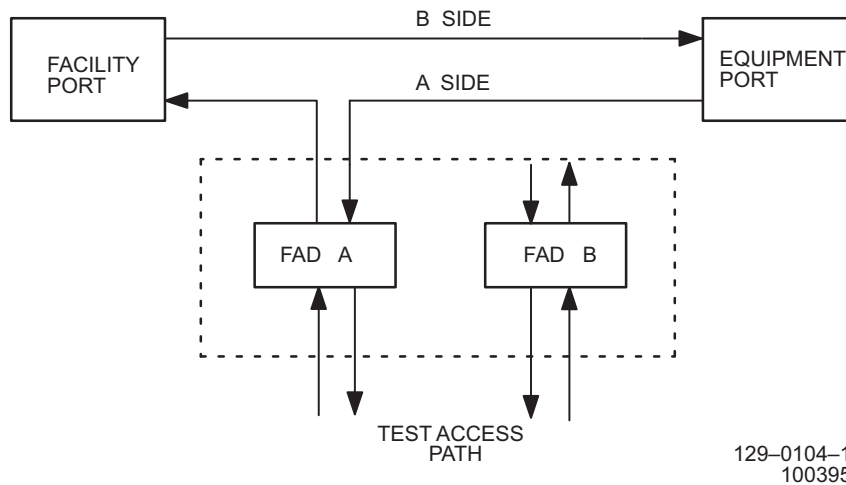
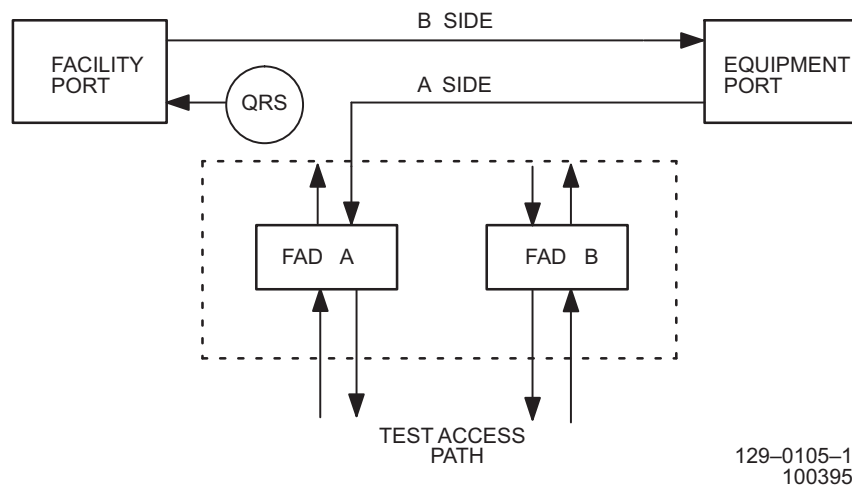


Figure 8-7. SPLTA Connection (TLS=TERM)



SPLTB Mode

8.11 The SPLTB test access connection mode splits the B-side connection. The B-side connection is routed in and out of FAD A. The RTU can either loop back to the original signal, or insert a new one. See figure 8-8 for the B-side SPLTB connection for TLS state NORM, and see figure 8-9 for the B-side SPLTB connection for TLS state TERM.

Figure 8-8. SPLTB Connection (TLS=NORM)

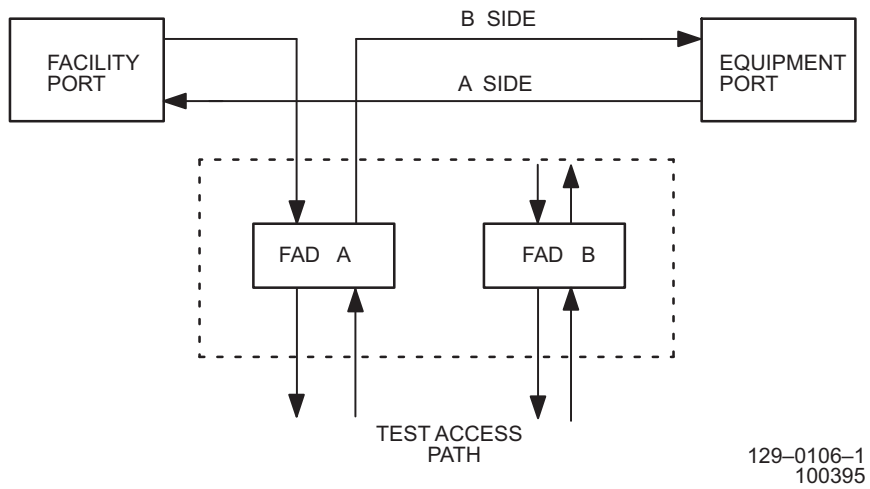
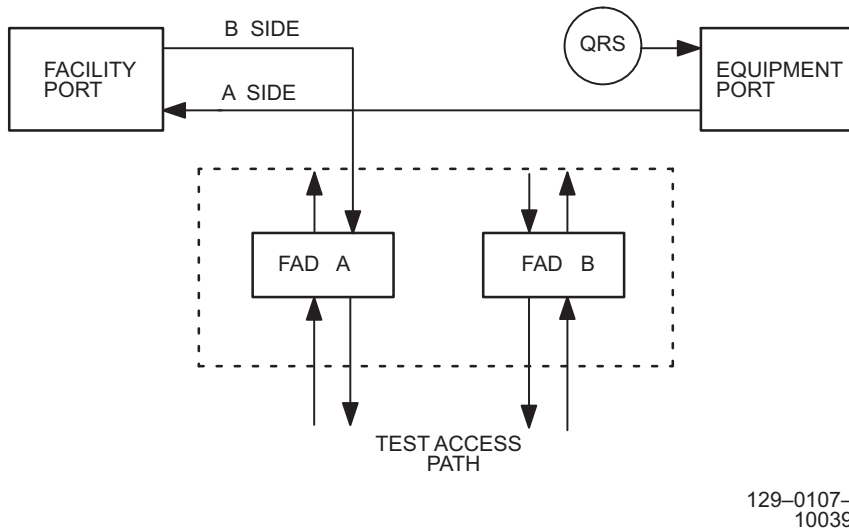


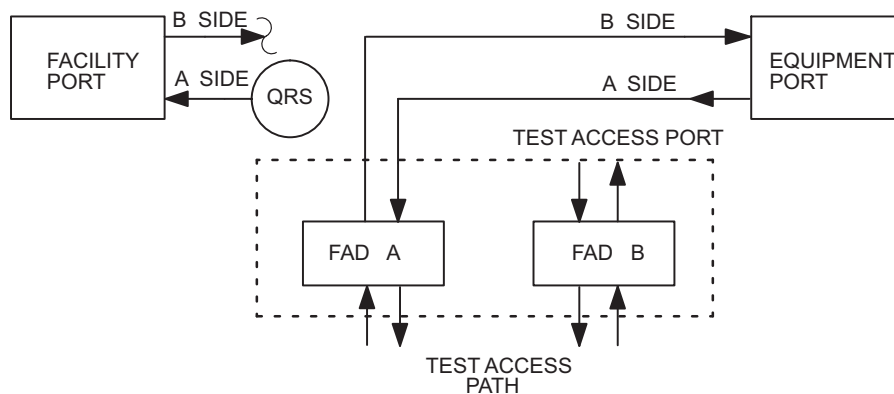
Figure 8-9. SPLTB Connection (TLS=TERM)



SPLTE Mode

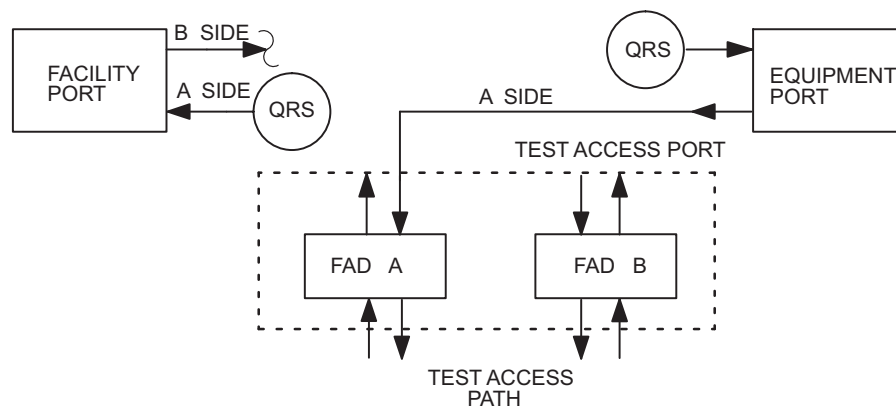
8.12 The SPLTE test access connection mode splits both the A and B paths to connect the equipment side of the circuitry to the FAD. The equipment side of the connection is routed in and out of FAD A. The RTU can either loop back to the original signal, or insert a new one. See figure 8-10 for the equipment side SPLTE connection for TLS state NORM, and see figure 8-11 for the equipment side SPLTE connection for TLS state TERM.

Figure 8-10. SPLTE Connection (TLS=NORM)



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Figure 8-11. SPLTE Connection (TLS=TERM)



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SPLTF Mode

8.13 The SPLTF test access connection mode splits both the A and B paths to connect the facility side of the circuitry to the FAD. The facility side of the connection is routed in and out of FAD A. The RTU can either loop back to the original signal, or insert a new one. See figure 8-12 for the facility side SPLTF connection for TLS state NORM, and see figure 8-13 for the facility side SPLTF connection for TLS state TERM.

Figure 8-12. SPLTF Connection (TLS=NORM)

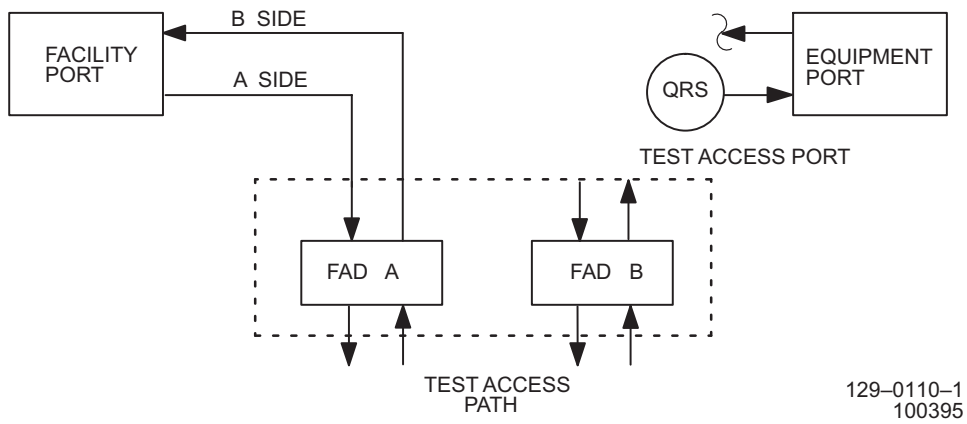
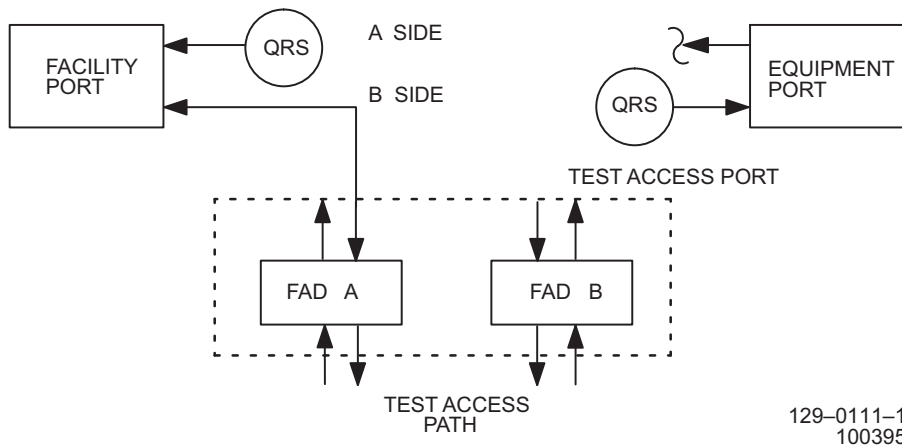


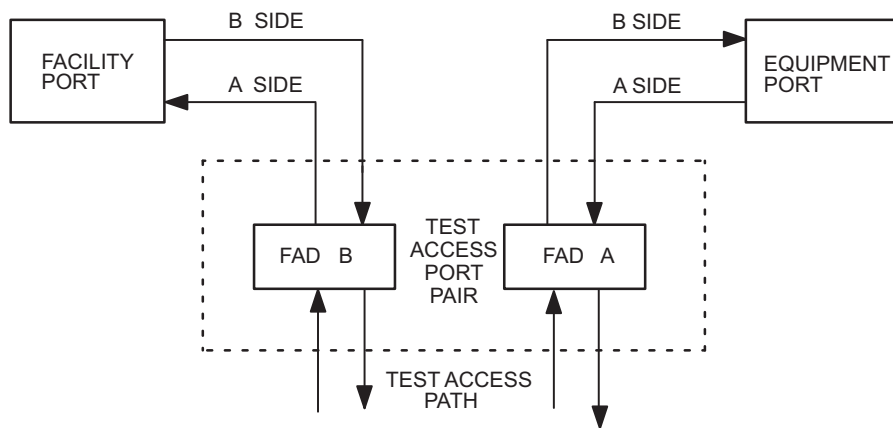
Figure 8-13. SPLTF Connection (TLS=TERM)



SPLTEF Mode

8.14 The SPLTEF connection mode (see figure 8-14) splits the equipment and the facility-side ports. A connection is made from the equipment-side port to FAD A, and then from FAD A back to the equipment-side port. Another connection is made from the facility-side port to FAD B, and then from FAD B back to the facility-side port.

Figure 8-14. SPLTEF Connection

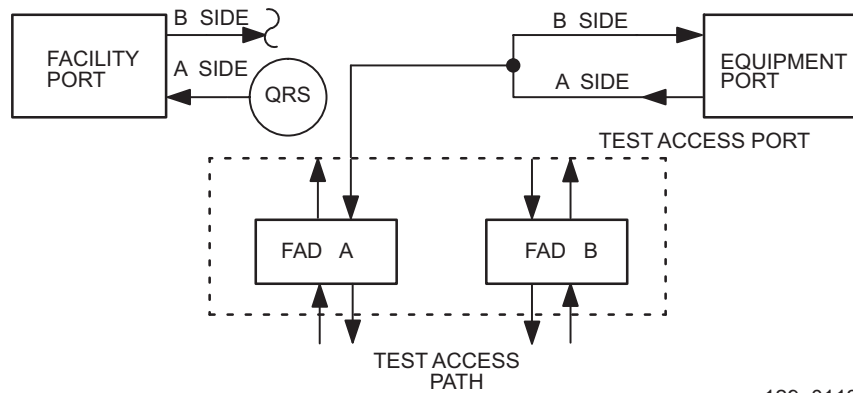


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LOOPE Mode

8.15 The LOOPE test access connection mode is made by looping the A-side connection of port B back into its B-side, where a broadcast connection is made and sent into FAD A. If ports A and B are connected, then a QRS is inserted into port A and its output is disconnected. See figure 8-15 for the LOOPE connection for TLS state NORM.

Figure 8-15. LOOPE Connection (TLS=NORM)

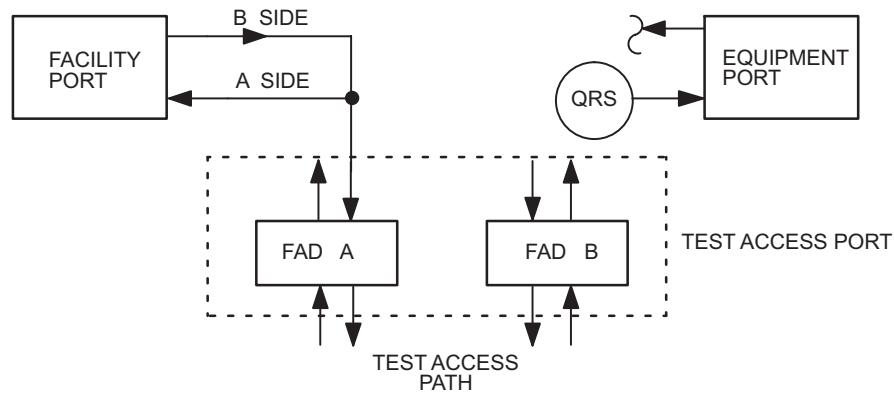


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LOOPF Mode

8.16 The LOOPF test access connection mode is made by looping the B-side connection of port B back into its A-side, where a broadcast connection is made and sent into FAD A. If ports A and B are connected, then a QRS is inserted into port B, and its output is disconnected. See figure 8-16 for the LOOPF connection for TLS state NORM.

Figure 8-16. LOOPF Connection (TLS=NORM)



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9. SI48 TERMINATOR PLUG INFORMATION

9.1 The following document provides information to help locate backplane termination plugs, and does not provide procedures to troubleshoot a BPTERM alarm. Refer to TAP-115 for troubleshooting guidelines.

9.2 For general location of a terminator that caused a BPTERM alarm, enter: DGN-EQPT::SHELF-R-Sh-1;

Example Response: /* Backplane Terminator Test: Failed*/
/* Reason: Diagnostic Failed for Device 1*/

If output of DGN-EQPT identifies device 1, it indicates the upper half shelf. Refer to table 9-A.

If output of DGN-EQPT identifies device 2, it indicates the upper half shelf. Refer to table 9-B.

If output of DGN-EQPT identifies device 3, it indicates the lower half shelf. Refer to table 9-C.

If output of DGN-EQPT identifies device 4, it indicates the lower half shelf. Refer to table 9-D.

Terminator color is as follows: Red=Transmit, Green=Receive, and Blue=Protect.

Table 9-A. Backplane Terminator Location Device=1

TERMINATOR NUMBER	TERMINATOR COLOR	TERMINATOR LOCATION
TB111	Red	I/O module slot 2
TB112	Red	I/O module slot 3
TB113	Red	I/O module slot 4
TB118	Red	I/O module slot 9
TB130	Blue	CDB slot 1 (rear)

Table 9-B. Backplane Terminator Location Device=2

TERMINATOR NUMBER	TERMINATOR COLOR	TERMINATOR LOCATION
TB114	Red	I/O module slot 5
TB115	Red	I/O module slot 6
TB116	Red	I/O module slot 7
TB117	Red	I/O module slot 8
TB121	Green	I/O module slot 2
TB122	Green	I/O module slot 3
TB123	Green	I/O module slot 4
TB124	Green	I/O module slot 5
TB125	Green	I/O module slot 6
TB126	Green	I/O module slot 7
TB127	Green	I/O module slot 8
TB128	Green	I/O module slot 9

Table 9-C. Backplane Terminator Location Device=3

TERMINATOR NUMBER	TERMINATOR COLOR	TERMINATOR LOCATION
TB211	Red	I/O module slot 11
TB212	Red	I/O module slot 12
TB213	Red	I/O module slot 13
TB218	Red	I/O module slot 18
TB230	Blue	CDB slot 2 (rear)

Table 9-D. Backplane Terminator Location Device=4

TERMINATOR NUMBER	TERMINATOR COLOR	TERMINATOR LOCATION
TB214	Red	I/O module slot 14
TB215	Red	I/O module slot 15
TB216	Red	I/O module slot 16
TB217	Red	I/O module slot 17
TB221	Green	I/O module slot 11
TB222	Green	I/O module slot 12
TB223	Green	I/O module slot 13
TB224	Green	I/O module slot 14
TB225	Green	I/O module slot 15
TB226	Green	I/O module slot 16
TB227	Green	I/O module slot 17
TB228	Green	I/O module slot 18

10. PDU FUSE POWER DISTRIBUTION

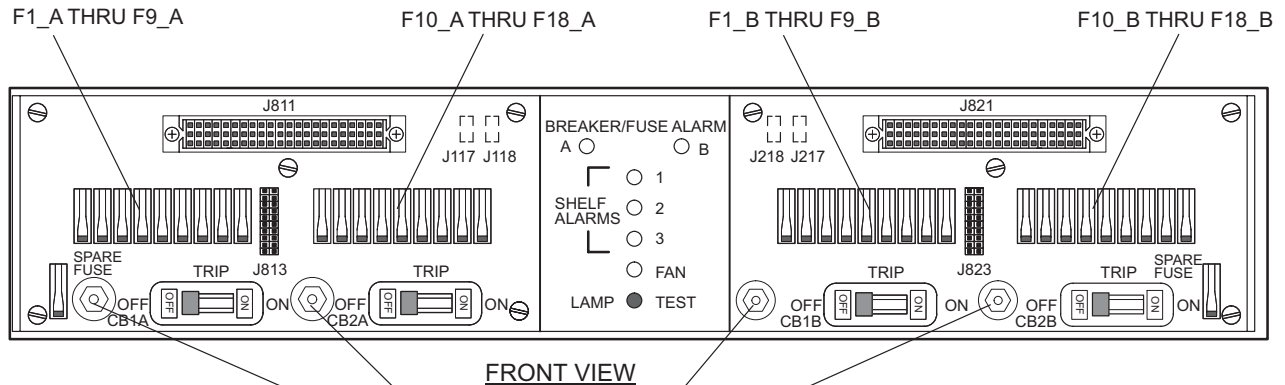
10.1 The following document covers Power Distribution Unit (PDU) (see figure 10-1) fuse-to-rack power circuits only. Refer to the 1631 SX LMC Product Information manual (PN 3AL45388AJ) for power distribution information.

10.2 This TAD provides PDU fuse information. It shows power distribution from each PDU fuse to the associated shelf. Refer to the following bulleted list for fuse-to-circuit location:

- SI48 shelf - Refer to tables 10-A and 10-B, and see figure 10-2.
- Center-stage shelf - Refer to table 10-C, and see figure 10-3.
- End-stage shelf - Refer to table 10-D, and see figure 10-4.
- Electrical-Optical Converter shelf - Refer to table 10-E, and see figure 10-5.

10.3 The PDU provides two circuit breakers (1 and 2) per primary power distribution. Circuit breakers CB1A and CB1B serve the upper shelf of the rack and CB2A and CB2B serve the lower shelf of the rack. Power is distributed through 15 A fuses to the power converters. Four 5 A fuses protect fan assemblies in each rack. If a circuit breaker or one of the 15 A fuses blows, BREAKER/FUSE ALARM A/B indicators light (see figure 10-1). A blown fuse releases a red indicator tab when it must be replaced. Use the fuse puller (PN 3AL45439AA) provided with the PDU cover to replace a blown fuse.

Figure 10-1. Power Distribution Unit (PDU) Front View



DANGER
A POSSIBILITY OF PERSONAL INJURY EXISTS.
48 V dc IS PRESENT ON EACH EMI/RFI STUD AND NUT.

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053095

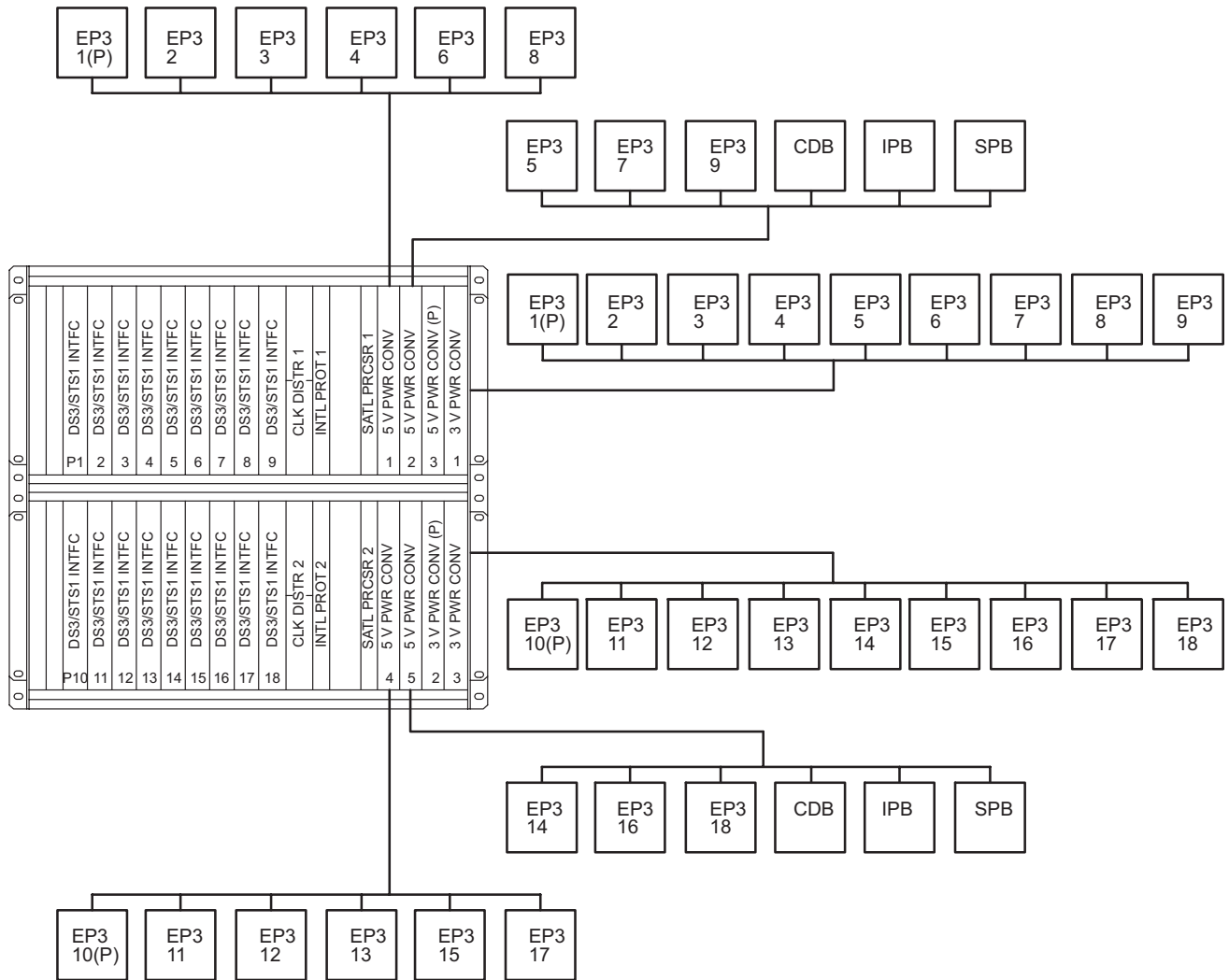
Table 10-A. PDU Fuse to Upper SI48 Shelf Power Distribution

CIRCUIT BREAKER	FUSE	UPPER SHELF JACK NUMBER	POWER CONVERTER
CB1A	Fuse F1_A	J110	P56 #1 5V
CB1A	Fuse F2_A	J120	P56 #2 5V
CB1A	Fuse F3_A	J130	P56 #3 5V
CB1A	Fuse F4_A	J140	P39 #1 3V
CB1A	Fuse F5_A	J210	P56 #4 5V
CB1A	Fuse F6_A	J220	P56 #5 5V
CB1A	Fuse F7_A	J230	P39 #2 3V
CB1A	Fuse F8_A	J240	P39 #3 3V
CB1A	Fuse F9_A	Fan upper	Fan assembly
CB1B	Fuse F1_B	J111	P56 #1 5V
CB1B	Fuse F2_B	J121	P56 #2 5V
CB1B	Fuse F3_B	J131	P56 #3 5V
CB1B	Fuse F4_B	J141	P39 #1 3V
CB1B	Fuse F5_B	J211	P56 #4 5V
CB1B	Fuse F6_B	J221	P56 #5 5V
CB1B	Fuse F7_B	J231	P39 #2 3V
CB1B	Fuse F8_B	J241	P39 #3 3V
CB1B	Fuse F9_B	Fan upper	Fan assembly

Table 10-B. PDU Fuse to Lower SI48 Shelf Power Distribution

CIRCUIT BREAKER	FUSE	LOWER SHELF JACK NUMBER	POWER CONVERTER
CB2A	Fuse F10_A	J110	P56 #1 5V
CB2A	Fuse F11_A	J120	P56 #2 5V
CB2A	Fuse F12_A	J130	P56 #3 5V
CB2A	Fuse F13_A	J140	P39 #1 3V
CB2A	Fuse F14_A	J210	P56 #4 5V
CB2A	Fuse F15_A	J220	P56 #5 5V
CB2A	Fuse F16_A	J230	P39 #2 3V
CB2A	Fuse F17_A	J240	P39 #3 3V
CB2A	Fuse F18_A	Fan upper	Fan assembly
CB2B	Fuse F10_B	J111	P56 #1 5V
CB2B	Fuse F11_B	J121	P56 #2 5V
CB2B	Fuse F12_B	J131	P56 #3 5V
CB2B	Fuse F13_B	J141	P39 #1 3V
CB2B	Fuse F14_B	J211	P56 #4 5V
CB2B	Fuse F15_B	J221	P56 #5 5V
CB2B	Fuse F16_B	J231	P39 #2 3V
CB2B	Fuse F17_B	J241	P39 #3 3V
CB2B	Fuse F18_B	Fan upper	Fan assembly

Figure 10-2. SI48 Shelf-Modules and Associated Power Converters

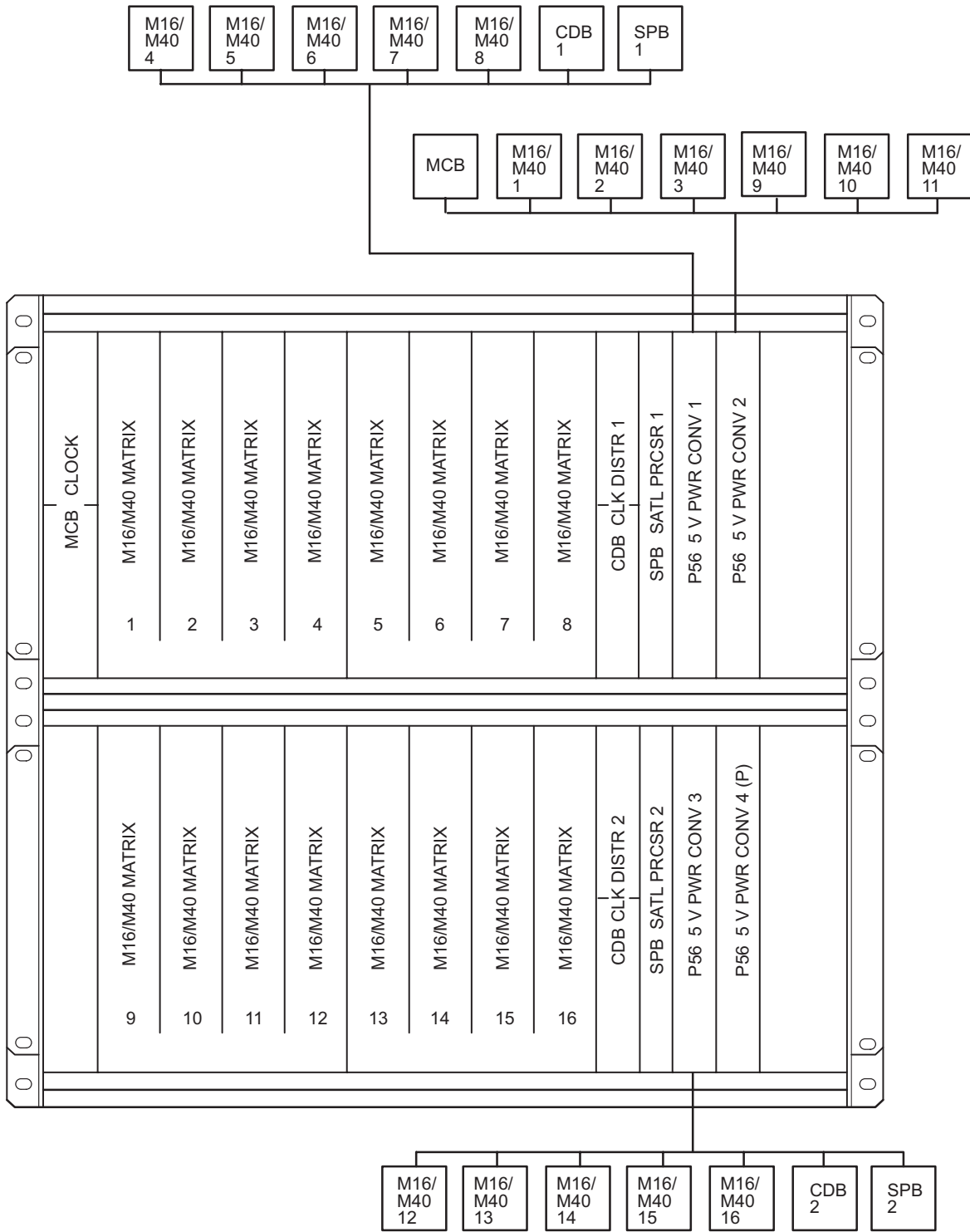


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Table 10-C. PDU Fuse to Center-Stage Subrack Power Distribution

CIRCUIT BREAKER	FUSE	SUBRACK JACK NUMBER	POWER CONVERTER
CB2A	Fuse F10_A	X502 UPPER	P56 #1 5V
CB2A	Fuse F11_A	X504 UPPER	P56 #2 5V
CB2A	Fuse F12_A	X502 LOWER	P56 #3 5V
CB2A	Fuse F13_A	X504 LOWER	P56 #4 5V
CB2A	Fuse F14_A	-	-
CB2A	Fuse F15_A	-	-
CB2A	Fuse F16_A	-	-
CB2A	Fuse F17_A	-	-
CB2A	Fuse F18_A	Fan upper	Fan assembly
CB2B	Fuse F10_B	X503 UPPER	P56 #1 5V
CB2B	Fuse F11_B	X505 UPPER	P56 #2 5V
CB2B	Fuse F12_B	X503 LOWER	P56 #3 5V
CB2B	Fuse F13_B	X505 LOWER	P56 #4 5V
CB2B	Fuse F14_B	-	-
CB2B	Fuse F15_B	-	-
CB2B	Fuse F16_B	-	-
CB2B	Fuse F17_B	-	-
CB2B	Fuse F18_B	Fan upper	Fan assembly

Figure 10-3. Center-Stage Shelf-Modules and Associated Power Converters

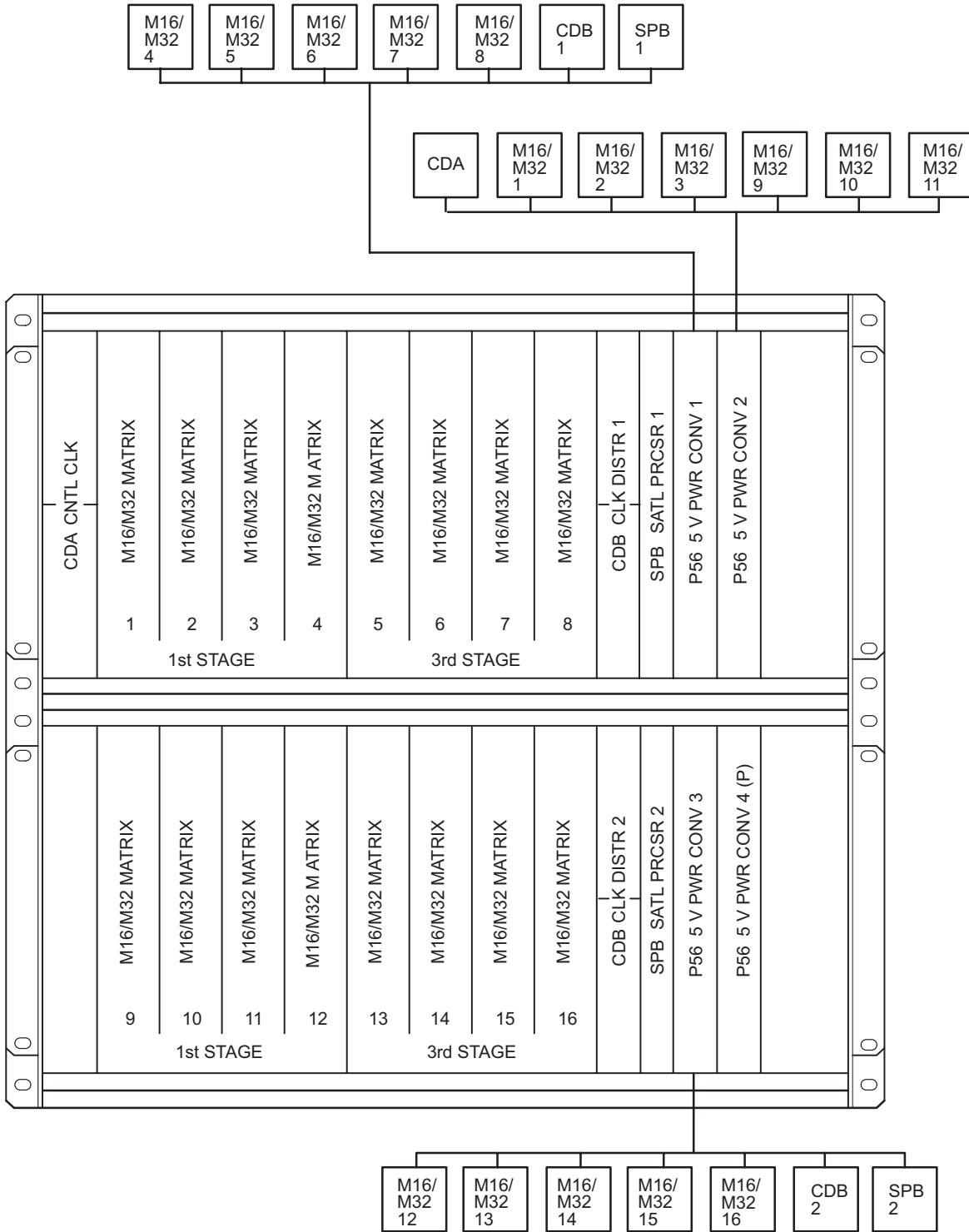


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Table 10-D. PDU Fuse to End-Stage Shelf Power Distribution

CIRCUIT BREAKER	FUSE	SUBRACK JACK NUMBER	POWER CONVERTER
CB2A	Fuse F10_A	X502 UPPER	P56 #1 5V
CB2A	Fuse F11_A	X504 UPPER	P56 #2 5V
CB2A	Fuse F12_A	X502 LOWER	P56 #3 5V
CB2A	Fuse F13_A	X504 LOWER	P56 #4 5V
CB2A	Fuse F14_A	-	-
CB2A	Fuse F15_A	-	-
CB2A	Fuse F16_A	-	-
CB2A	Fuse F17_A	-	-
CB2A	Fuse F18_A	Fan upper	Fan assembly
CB2B	Fuse F10_B	X503 UPPER	P56 #1 5V
CB2B	Fuse F11_B	X505 UPPER	P56 #2 5V
CB2B	Fuse F12_B	X503 LOWER	P56 #3 5V
CB2B	Fuse F13_B	X505 LOWER	P56 #4 5V
CB2B	Fuse F14_B	-	-
CB2B	Fuse F15_B	-	-
CB2B	Fuse F16_B	-	-
CB2B	Fuse F17_B	-	-
CB2B	Fuse F18_B	Fan upper	Fan assembly

Figure 10-4. End-Stage Shelf-Modules and Associated Power Converters

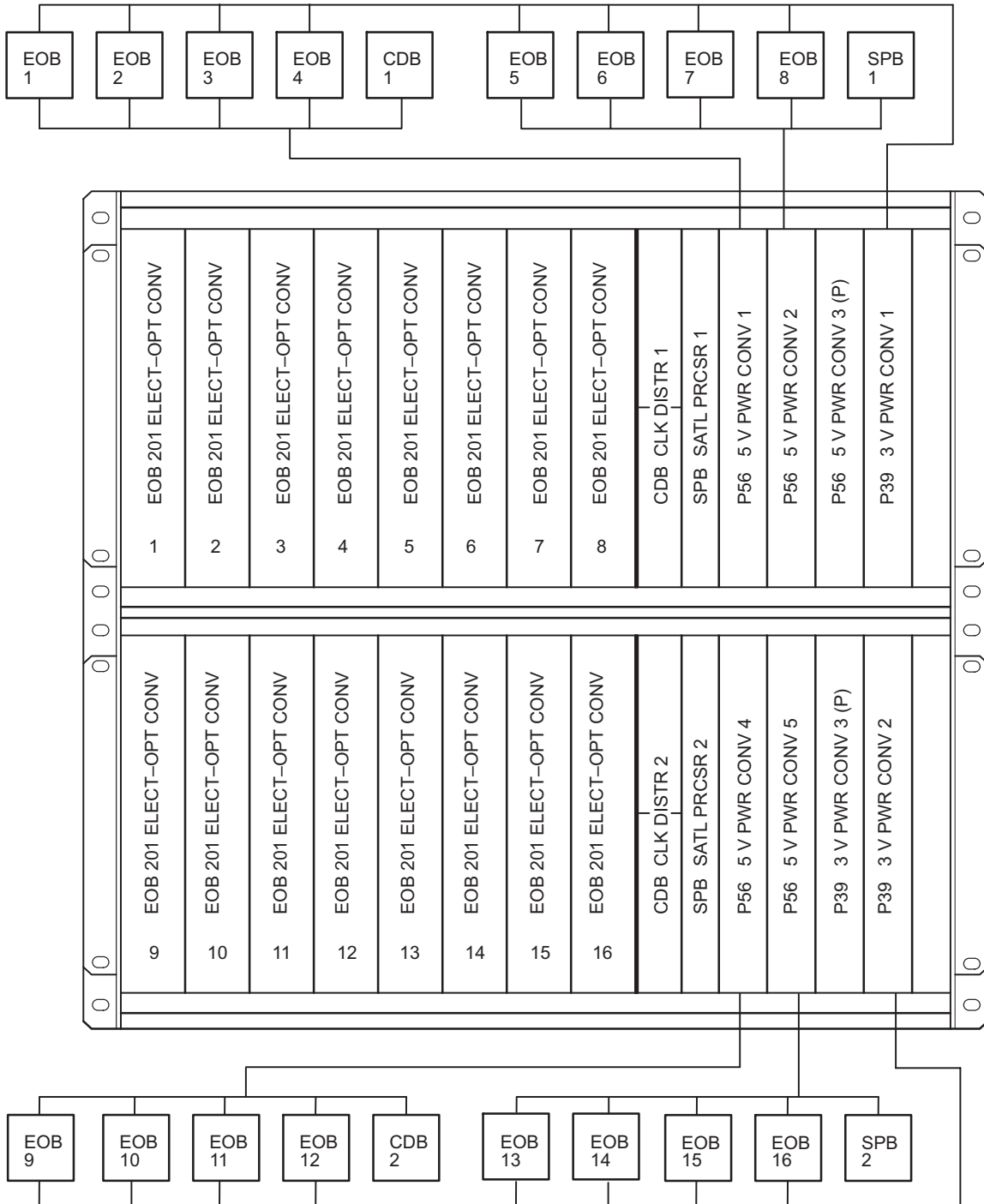


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Table 10-E. PDU Fuse to Electrical-Optical Converter Shelf Power Distribution

CIRCUIT BREAKER	FUSE	UPPER SHELF JACK NUMBER	POWER CONVERTER
CB1A	Fuse F1_A	J700	P56 #1 5V
CB1A	Fuse F2_A	J701	P56 #2 5V
CB1A	Fuse F3_A	J702	P56 #P 5V
CB1A	Fuse F4_A	J703	P39 #1 3V
CB1A	Fuse F5_A	J704	P56 #3 5V
CB1A	Fuse F6_A	J705	P56 #4 5V
CB1A	Fuse F7_A	J706	P39 #3 3V
CB1A	Fuse F8_A	J707	P39 #2 3V
CB1A	Fuse F9_A	Fan upper	Fan assembly
CB1B	Fuse F1_B	J800	P56 #1 5V
CB1B	Fuse F2_B	J801	P56 #2 5V
CB1B	Fuse F3_B	J802	P56 #P 5V
CB1B	Fuse F4_B	J803	P39 #1 3V
CB1B	Fuse F5_B	J804	P56 #3 5V
CB1B	Fuse F6_B	J805	P56 #4 5V
CB1B	Fuse F7_B	J806	P39 #3 3V
CB1B	Fuse F8_B	J807	P39 #2 3V
CB1B	Fuse F9_B	Fan upper	Fan assembly

Figure 10-5. EOC Shelf-Modules and Associated Power Converters



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Task Index List

Procedures in this manual provide TL1 commands as needed to complete particular tasks. For a full list and detailed explanation of TL1 commands, refer to the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ).

Resolving Alarms or Event Conditions	IXL-101
Support Procedures	IXL-102
Equipment Replacement Procedures	IXL-103
Supporting Information	IXL-104

IXL-101

Resolving Alarm or Event Conditions

If you referred to this IXL because of an OOS-AU condition, you can identify the alarm or event that is causing the OOS-AU condition by entering the following commands:

RTRV-ALM-ALL::ALL; (for alarm condition)
RTRV-COND-ALL::ALL; (for event condition)

This IXL refers to the Gateway Express Rack (GXR) manual (PN 3AL55233AC).

Alarm or Event Condition (Equipment Types)

ALARM OR EVENT CONDITION	EQUIPMENT TYPES	PROCEDURE
ALMCKT	(RSP, RDU)	TAP-118
BKUPMEMP	(DSK)	TAP-140
BKUPMEMS	(OPD)	TAP-135
BPMISM	(shelf)	TAP-116
BPTERM	(shelf SI48 I/O, EOC, end stage, center stage)	TAP-115
CARLOS	(DSB or CID)	Refer to GXR manual
CD	(Control and Display)	TAP-105
CID	(CID)	TAP-101
CLKLCK0 or CLKLCK1	(shelf)	TAP-136
CNTRLRFL	(DSB)	Refer to GXR manual
CONTBUS	(IPU, SPB)	TAP-134
CONTCOM	(ACM, CIM, ICM, SIO)	TAP-120
CONTR	(CPU, IPU, SPB)	TAP-142
CTNEQPT	(EOB, IOB, IPB, LMU, OXB, RPB, S3M)	TAP-141
DATALCK1	(shelf, quad)	TAP-144
DBF or DBFFT	(OPD)	TAP-145
DCCEQPT	(DSB)	TAP-146
DTLCKCPYFL	(shelf, quad)	TAP-129
DUPMACADDR	(DSB)	Refer to GXR manual
DUPTARPENTR	(DSB)	Refer to GXR manual
Y		
EXCOL	(DSB)	Refer to GXR manual

ALARM OR EVENT CONDITION	EQUIPMENT TYPES	PROCEDURE
FA	(CKB, Fuse, PDU, RDU, RSP)	TAP-119
FANEQPT	(FAN)	TAP-139
FWMISM	(MCB)	TAP-124
GT1		TAP-149
GT4		TAP-150
IMPROPRMVL	(ACM, CDA, CDB, CIM, CPU, DSI, DSB, EOB, EP3, ES1, ESA, FAN, ICM, IPB, IPU, LMU, LT1, LT2, LT4, LT5, LT8, M16, M32, M40, MCB, O1B, O4M, OXB, P39, P56, PDU, PSF, PRT, PST, RDU, RPB, S3M, SBT, SIO, SPB, SWI)	TAP-143
INHSDWX	(CPU, IPU, SPB)	TAP-130
INHSDWR	(DSI, ES1, EP3, HMU, LMU)	TAP-131
INHSDWK	(DSI, ES1, EP3, HMU, LMU)	TAP-132
INTERR	(CDA, CDB, DSI, EOB, EP3, ES1, HMU, IOB, IPB, LMU, M16, M32, M40, MCB, O1B, O4M, OXB, RPB, S3M)	TAP-122
LOCKOUT	(DSI, EP3, ES1, HMU, LMU)	TAP-133
LOTRI	(MCB)	TAP-123
MAN	(ACM, CDA, CDB, CIM, CPU, DSB, DSI, DSK, EOB, EP3, ES1, HMU, IOB, IPB, IPU, LMU, M16, M32, M40, MCB, O1B, O4M, OXB, P39, P56, PSF, RPB, S3M, SIO, SPB)	TAP-112
MANWSDWR	(DSI, EP3, ES1, HMU, LMU)	TAP-107
MISC-1	(MCB)	TAP-125
OSIPARMISM	(DSB)	Refer to GXR manual
PRCDRERR	(ACM, CDA, CDB, CIM, CPU, DSB, DSI, DSK, EOB, EP3, ES1, HMU, ICM, IOB, IPB, IPU, LT1, LT2, LT4, LT5, LT8, M16, M32, M40, O1B, O4M, OXB, P39, P56, PRT, RPB, S3M, SIO, SWI)	TAP-138
PWR	(P39, P56, PSF, PST, RSP)	TAP-113
RARFAIL	(M16, M32, M40, SPB)	TAP-121
SWFTDWN	(Software download in progress on a module; ACM, CIM, DSB, EP3, ES1, ICM, IPU, M16, M32, M40, MCB, O1B, O4M, OXB, RPB, S3M, SPB)	
SYNCEQPT	(CDA, CDB, or MCB)	TAP-126

ALARM OR EVENT CONDITION	EQUIPMENT TYPES	PROCEDURE
TERM-EC1	(ES1)	TAP-117
TERM-OC12	(O4M)	TAP-117
TERM-OC3	(O1B)	TAP-117
TERM-T1	(DSI)	TAP-117
TERM-T3	(HMU)	TAP-117
TERM-T3EC1	(EP3)	TAP-117
TSA	(DSI, EP3, ES1, HMU, LMU, M16, M32, O1B, O4M, S3M)	TAP-114
TSI	(M16, M32, M40)	TAP-127
WKSWPR	(DSI, EP3, ES1, HMU, LMU)	TAP-108
XIDMISM	(quad, shelf)	TAP-128

Alarm or Event Condition (Common COM Type)

ALARM OR EVENT CONDITION	COMMON COM TYPE	PROCEDURE
DATAFLT	(Data integrity fault during database read, contact next level of technical support for assistance.)	
EUA	(Indicates Emergency User Access activated.)	
FRNGSYNC		TAP-100
FSTSYNC		TAP-100
GOS		TAP-103
GOS	(EC1, OC-3, OC-12, STS-1, STS-3c, T1, T3, VT1)	TAP-100
HLDOVRSYNC		TAP-100
INHFL		TAP-109
INIT		TAP-100
ITMIP		TAP-147
MANSELDATAC PY0	(Indicates system is manually locked to copy 0. Used at turn-on or grow beyond wired size only. [SELECT-COPY command])	

ALARM OR EVENT CONDITION	COMMON COM TYPE	PROCEDURE
MANSELDATAC PY1	(Indicates system is manually locked to copy 1. Used at turn-on or grow beyond wired size only. [SELECT-COPY command])	
MANSWTOPRI		TAP-100
MANSWTOSEC		TAP-100
PAINTGRT		TAP-102
PMFILERDY	(15-minute or 1-Day Binary PM data is ready to be transferred.)	
RCVRY	(System recovery has been executed.)	TAP-148
SWTOPRI		TAP-100
SWTOSEC		TAP-100
UPGRD1344	(upgrade from 672 ports to 1344 ports in progress)	
UPGRD2688	(upgrade from 672 or 1344 ports to 2688 ports in progress)	
UPGRD3360	(upgrade from 2688 ports to 3360 ports in progress)	

Alarm or Event Condition (Facility Types)

ALARM OR EVENT CONDITION	FACILITY TYPES	PROCEDURE
1TO6LOF	(DS3)	TAP-110
7LOF	(DS3)	TAP-110
ACTLPBK	(DS1, DS3, EC1, OC-3, OC-12, STS-1, STS-3c, VT1)	TAP-110
AICMIS	(DS3)	TAP-110
AIS	(Incoming DS1, DS3, EC1, OC-3, OC-12, STS-1, STS-3c, TMG, VT1)	TAP-110
AIS	(Far-end DS3)	TAP-110
ALWCBLPBK	(DS1)	TAP-110
DS2YEL	(Set on supporting DS3)	TAP-110
DUPTARPENTR Y	(OC-3, OC-12)	Refer to GXR manual
EBER	(OC3, OC-12, STS-1, VT1)	TAP-110
EOC	(Embedded DS1)	TAP-110

ALARM OR EVENT CONDITION	FACILITY TYPES	PROCEDURE
ESW	(OC3, OC-12)	TAP-110
FEACEQPT	(DS3)	TAP-110
FLTESC	(DS3, STS-1, VT1)	TAP-110
FRCDWKSWBK	(OC-3, OC-12, STS-1, VT1)	TAP-110
FRCDWKSWPR	(OC-3, OC-12, STS-1, VT1)	TAP-110
IDLE	(STS-1, STS-3c, VT1)	TAP-110
IDMISMATCH	(DS3)	TAP-110
IDUNREADABLE	(DS3)	TAP-110
INHMPREPT	(DS1, DS3, EC1, F3, STS-1, STS-3c, VT1, OC-3, OC-12)	TAP-110
ISD	(Incoming DS3)	TAP-110
ISD	(Far-end DS3)	TAP-110
LDCCDLFL	(OC-3, OC-12)	Refer to GXR manual
LDCCDM	(OC-3, OC-12)	Refer to GXR manual
LDCCFRMR	(OC-3, OC-12)	Refer to GXR manual
LDCCRESET	(OC-3, OC-12)	Refer to GXR manual
L2LCONFAIL	(OC-3, OC-12)	Refer to GXR manual
L2SCONFAIL	(OC-3, OC-12)	Refer to GXR manual
LOCKOUTOFPR	(OC-3, OC-12)	TAP-110
LOF	(Far-end DS3)	TAP-110
LOF	(Incoming DS1, DS3, EC1, OC-3, OC-12, TMG)	TAP-110
LOP	(Incoming STS-1, STS-3c, VT1)	TAP-110
LOS	(Far-end DS3)	TAP-110
LOS	(Incoming DS1, DS3, EC1, OC-3, TMG)	TAP-110
MAN	(DS1, DS3, EC1, OC-3, OC-12, STS-1, VT1)	TAP-110
MANWKSWBK	(OC-3, OC-12, STS-1, VT1)	TAP-110
MANWKSWPR	(OC-3, OC-12, STS-1, VT1)	TAP-110
MONDLFL	(OC-3)	Refer to GXR manual
PHSBLDOUT	(TMG)	TAP-110
RAI	(DS1, DS3 yellow)	TAP-110
RCVCBLPBK	(DS1 C-bit loopback)	TAP-110
RFI	(EC1, OC-3, STS-1, STS-3c, VT1)	TAP-110
ROLLMON	(DS1, VT1)	TAP-110

ALARM OR EVENT CONDITION	FACILITY TYPES	PROCEDURE
SDBER	(OC-3, OC-12, STS-1, VT1)	TAP-110
SDCCDLFL	(OC-3, OC-12)	Refer to GXR manual
SDCCDM	(OC-3, OC-12)	Refer to GXR manual
SDCCFRMR	(OC-3, OC-12)	Refer to GXR manual
SDCCRESET	(OC-3, OC-12)	Refer to GXR manual
SLMF	(STS-1, STS-3c, VT1)	TAP-110
SLTMSIG	(TMG)	TAP-110
SYNCPRI	(TMG)	TAP-110
SYNCSEC	(TMG)	TAP-110
SYNCSTATCHN G	(TMG)	TAP-110
SYNCSTATQUA L	(TMG)	TAP-110
WKSWBK	(OC-3, OC-12, STS-1, STS-3c)	TAP-110
WKSWPR	(OC-3, OC-12, STS-1, STS-3c)	TAP-110
WTR	(OC-3, OC-12)	TAP-110
XMTCBLPBK	(DS1 C-bit loopback)	TAP-110

Alarm Condition (Grade of Service)

ALARM OR EVENT CONDITION	PROCEDURE
GOS-EC1	TAP-100
GOS-ST5-1	TAP-100
GOS-T1	TAP-100
GOS-OC3	TAP-100
GOS-T3	TAP-100
GOS-VT1	TAP-100

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Support Procedures

This IXL refers to the 1631 SX LMC Quick Reference manual (QRM) (PN 3AL45393AJ). The QRM provides commonly used operational procedures.

For details regarding state transitions, refer to the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ).

Alarm and Event Reports	Refer to QRM
Alarm Cutoff Control	Refer to QRM
Control and Display Problems	TAP-105
Database Backup	Refer to QRM
Database Restoration	Refer to QRM
Equipment Cleaning	DLP-130
Equipment Provisioning/Deprovisioning (grow within wired size)	Refer to QRM
Grade of Service	Refer to QRM
Lamp Test	DLP-131
Logging into System	Refer to QRM
Loopback (T1, T3, VT1, and EC1)	Refer to QRM
OPD Cleaning	DLP-144
Password Change	Refer to QRM
Path Trace	Introduction
Performance Monitoring	Refer to QRM
Port Provisioning/Deprovisioning (T1, T3, VT1, EC1, and STS-1)	Refer to QRM
Preventive Maintenance	RTL-100
Printer Problems	TAP-106
Rolling Traffic	Refer to QRM
Restore System Power	DLP-139
System Initialization	Refer to QRM
Turn Off System Power	DLP-126
Remote Database Upload in Limited Mode	DLP-147

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Equipment Replacement Procedures

ACM Replacement	DLP-137
Blower/Fan Assembly Replacement	DLP-122
CDA Replacement	DLP-114
CDB Replacement	DLP-115
CIM Replacement	DLP-107
CPU Replacement	DLP-106
DSB Replacement	DLP-136
DSI Replacement	DLP-121
DSK/OPD Replacement	DLP-110
EOB Replacement	DLP-127
EP3 Replacement	DLP-119
ES1 Replacement	DLP-140
ESA Replacement	DLP-141
Filter Element Replacement	DLP-101
HMU Replacement	DLP-105
ICM Replacement	DLP-132
IOB Replacement	DLP-142
IPB Replacement	DLP-120
IPU Replacement	DLP-104
LMU Replacement	DLP-109
LT1, LT2, or LT5 Replacement	DLP-128
LT4 or LT8 Replacement	DLP-129
M16 Replacement	DLP-113
M32 Replacement	DLP-138
M40 Replacement	DLP-133
Module Mechanical Removal and Replacement	DLP-100
MCB Replacement	DLP-112
O1B Replacement	DLP-134
O4M Replacement	DLP-143
OXB Replacement	DLP-116
P39 Replacement	DLP-117
P56 Replacement	DLP-118
PRT Replacement	DLP-125
PSF Replacement	DLP-103

PST Replacement	DLP-102
RPB Replacement	DLP-135
S3M Replacement	DLP-145
SBT Replacement	DLP-123
SIO Replacement	DLP-108
SPB Replacement	DLP-111
SWI Replacement	DLP-124

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Supporting Information

This IXL refers to the 1631 SX LMC Quick Reference manual (QRM) (PN 3AL45393AJ). The QRM provides commonly used operational procedures.

For details regarding state transitions, refer to the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ).

For information not found in this IXL, other IXLs in this manual, or the Quick Reference Manual, refer to the 1631 SX LMC Product Information manual (PN 3AL45388AJ).

For information on the Gateway Express Rack, refer to the Gateway Express Rack manual (PN 3AL45969AD).

Alarm Condition Types	Refer to Commands and Messages manual
Clock Distribution	Refer to Product Information manual
Error Codes	Refer to Commands and Messages manual
Electrostatic-Sensitive Devices	Introduction
Command Structure and Response Messages	Refer to QRM
Laser Precautions	Introduction
Maintenance Philosophy	Introduction
PDU Fuse Power Distribution	Introduction
Power Distribution	Refer to Product Information manual
Security/User Authorization	Refer to QRM
SI48 Terminator Plug Information	Introduction
Test Access	Introduction
VDT Operating Functions	Refer to QRM
CID Port Information	Refer to QRM
Operations Support System	Refer to QRM

RTL-100 Preventive Maintenance

ANNUAL¹

Replace Air Filters DLP-101

SEMIANNUAL¹

Check Air Filters DLP-101

Clean Equipment DLP-130

MONTHLY¹

Fan Operation¹

Lamp Test DLP-131

Optical Disk Drive (OPD) and Disk Media²

Printer²

Terminal²

[1] Visually inspect fans to ensure that all fans in fan assembly are working.

[2] Follow procedures in accompanying manufacturer's documentation.

1. Intervals are provided for guidance. Local conditions might require a procedure to be performed more or less frequently.

TAP-100 COM Alarm or Event

Provides procedure to identify and provide guidance to clear a common (COM) alarm or event.

STEP	PROCEDURE																																		
1	MCB and facility alarms or events often generate COM alarms or events. Clear MCB and facility conditions before clearing COM alarms or events.																																		
2	Enter RTRV-ALM-ALL ; for alarm reports and RTRV-COND-ALL ; for event reports.																																		
3	Are there any facility (EC1, STS-1, VT1, DS3, OC-3, or DS1), MCB, or TMG alarms or events? If yes, refer to IXL-101 to locate alarm- or event-clearing procedures. If no, go to step 4.																																		
4	Enter RTRV-ALM-COM ; for alarm reports and RTRV-COND-COM ; for event reports.																																		
	<table> <thead> <tr> <th>IF ALARM OR EVENT TYPE IS:</th> <th>GO TO STEP:</th> </tr> </thead> <tbody> <tr> <td>FRNGSYNC</td> <td>5</td> </tr> <tr> <td>FSTSYNC</td> <td>14</td> </tr> <tr> <td>GOS-EC1</td> <td>14</td> </tr> <tr> <td>GOS-OC3</td> <td>14</td> </tr> <tr> <td>GOS-ST5-1</td> <td>14</td> </tr> <tr> <td>GOS-ST5-3c</td> <td>14</td> </tr> <tr> <td>GOS-T1</td> <td>14</td> </tr> <tr> <td>GOS-T3</td> <td>14</td> </tr> <tr> <td>GOS-VT1</td> <td>14</td> </tr> <tr> <td>HLDOVRSYNC</td> <td>13</td> </tr> <tr> <td>INIT</td> <td>15</td> </tr> <tr> <td>MANSWTOPRI</td> <td>16</td> </tr> <tr> <td>MANSWTOSEC</td> <td>16</td> </tr> <tr> <td>PAINTGRT</td> <td>19</td> </tr> <tr> <td>SWTOPRI</td> <td>20</td> </tr> <tr> <td>SWTOSEC</td> <td>20</td> </tr> </tbody> </table>	IF ALARM OR EVENT TYPE IS:	GO TO STEP:	FRNGSYNC	5	FSTSYNC	14	GOS-EC1	14	GOS-OC3	14	GOS-ST5-1	14	GOS-ST5-3c	14	GOS-T1	14	GOS-T3	14	GOS-VT1	14	HLDOVRSYNC	13	INIT	15	MANSWTOPRI	16	MANSWTOSEC	16	PAINTGRT	19	SWTOPRI	20	SWTOSEC	20
IF ALARM OR EVENT TYPE IS:	GO TO STEP:																																		
FRNGSYNC	5																																		
FSTSYNC	14																																		
GOS-EC1	14																																		
GOS-OC3	14																																		
GOS-ST5-1	14																																		
GOS-ST5-3c	14																																		
GOS-T1	14																																		
GOS-T3	14																																		
GOS-VT1	14																																		
HLDOVRSYNC	13																																		
INIT	15																																		
MANSWTOPRI	16																																		
MANSWTOSEC	16																																		
PAINTGRT	19																																		
SWTOPRI	20																																		
SWTOSEC	20																																		

- 5 FRNGSYNC indicates that MCB was manually set to free-running synchronization mode. Are you setting clock to normal mode?

If yes, go to step 6.
If no, go to step 25.
- 6 Is there a MANSWTOPRI or MANSWTOSEC condition?

If yes, go to step 7.
If no, go to step 9.
If don't know, go to step 4.
- 7 Enter **RLS-SYNCNSW;**
- 8 Did output return COMPLD or DENY?

If COMPLD, go to step 9.
If DENY, go to step 26.
- 9 Enter **SET-SYCN::MCB-R-3-1::NORM;** for MCB in FRNGSYNC (where R=rack 2 for copy 0, and rack 3 for copy 1).
- 10 Did output return COMPLD or DENY?

If COMPLD, go to step 25.
If DENY, go to step 11.
- 11 MCB cannot change to normal operation. Go to step 1 and check for MCB or TMG alarms or events.
- 12 FSTSYNC indicates manual or automatic switch to fast acquisition clock-reference synchronization mode. Are you setting clock to normal mode?

If yes, go to step 9.
If no, go to step 25.
- 13 HLDOVRSYNC indicates manual or automatic switch to holdover clock-reference synchronization mode. Are you setting clock to normal mode?

If yes, go to step 9.
If no, go to step 25.
- 14 GOS indicates system-wide Grade of Service (GOS) threshold was reached. Refer to TAP-103 and clear facility alarms.
- 15 INIT indicates system initialization is in progress. Protection switching and alarm reporting do not function during system initialization. Monitor system for reports after initialization completes. Go to step 25.

- 16** MANSWTOPRI or MANSWTOSEC indicate external clock reference was manually switched to alternate external clock reference. Are you ready to switch external timing reference back to normal configuration?

If yes, go to step [17](#).

If no, go to step [25](#).

- 17** Enter **RLS-SYNCNSW**;

- 18** Did output return COMPLD or DENY?

If COMPLD, go to step [25](#).

If DENY, go to step [9](#).

- 19** CAUTION: Possibility of service interruption. PAINTGRT indicates system-wide data or clock failure is detected on both copies. Protection is not available; this can cause loss of traffic.

Refer to IXL-[101](#) to resolve alarms on clocks or matrices, or on clock or data cables.

- 20** SWTOPRI indicates automatic switch to primary external clock reference and is cleared by a switch to the secondary external clock reference. SWTOSEC indicates automatic switch to secondary external clock reference and is cleared by a switch to the primary external clock reference. One of these conditions is always present on the system, and one condition replaces the other to indicate a switch to the alternate external clock reference.

If retrieval of TMG-0 or TMG-1 indicate that the references are IS or IS, BUSY, no action is required.

Refer to TAP-[110](#) for information on external clock-reference TMG facilities.

- 21** The SWTOPRI and SWTOSEC standing conditions can be cleared manually, if necessary.

Do you wish to manually clear SWTOPRI or SWTOSEC event?

If yes, go to step [22](#).

If no, go to step [25](#).

- 22** Enter **CLR-ALM-EQPT::TMG-x:::z**; where x=0 or 1 and z=SWTOPRI or SWTOSEC, as required.

- 23** Enter **RTRV-COND-COM**;

- 24** Did SWTOPRI or SWTOSEC event clear?
- If yes, go to step [25](#).
If no, go to step [26](#).
- 25** Are other alarms or events present in the system?
- If yes, go to step [4](#).
If no, go to step [27](#).
- 26** Contact next level of technical support for assistance.
- 27** **STOP. This procedure is complete.**

TAP-101

Loss of Communications on CID Ports

Provides procedure on how to re-establish communications with the system after a total loss of communications on all CID ports.

GENERAL

Use this procedure only if communications on all CID ports is lost.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
3	Look at front panels of CPUs and identify inactive CPU (CPU with ACTIVE indicator not lit).
4	Unseat inactive CPU (CPU with ACTIVE indicator not lit). If both CPUs have ACTIVE indicator lit, unseat copy 1 CPU.
5	Press reset button on active CPU. (Reset button is recessed above module handle.)
6	Wait approximately 10 minutes for system prompt, then enter ACT-USER::UID:::PID;
7	Were you able to log in to system? If yes, go to step 8 . If no, go to step 11 .
8	Did you get SYSTEM READY message? (It can take from 10 to 60 minutes to get SYSTEM READY message.) If yes, go to step 9 . If no, go to step 11 .
9	Plug in CPU unseated in step 4 .

- 10 Is communications restored to CID ports?

If yes, go to step 22.
If no, go to step 11.
- 11 Remove all cables, except local terminal cable, from CID ports.
- 12 Look at front panels of CPUs and identify inactive CPU (CPU with ACTIVE indicator not lit).
- 13 If required, unseat inactive CPU (CPU with ACTIVE indicator not lit).

If both CPUs have ACTIVE indicator lit, unseat copy 1 CPU.
- 14 Press reset button on active CPU. (Reset button is recessed and above module handle.)
- 15 Wait approximately 10 minutes for system prompt, then enter **ACT-USER::UID:::PID;**
- 16 Were you able to log in to system?

If yes, go to step 17.
If no, go to step 18.
- 17 Did you get SYSTEM READY message? (It can take from 10 to 60 minutes to get SYSTEM READY message.)

If yes, go to step 19.
If no, go to step 18.
- 18 Reconnect cables removed from CID ports, then go to step 21.
- 19 If communications is lost when a cable is plugged in, there may be a problem with this cable or system that uses this port (for example, X.25 problem).

Reconnect cables removed from CID ports.
- 20 Is communications restored to CID ports?

If yes, go to step 22.
If no, go to step 21.
- 21 Contact next level of technical support for assistance.
- 22 **STOP. This procedure is complete.**

TAP-102 PAINTGRT Alarm

Provides procedure to identify a system-wide data or clock failure.

STEP	PROCEDURE
1	CAUTION: Possibility of service interruption. Path integrity failure, system-wide data failure, or clock failure detected on both copies. Protection is not available; this can cause loss of traffic.
2	Refer to IXL-101 to resolve alarms on clock or on matrix modules or clock or data cables.
3	If problem still exists, contact next level of technical support for assistance.
4	STOP. This procedure is complete.

TAP-103 GOS Alarm

Provides procedure to clear a Grade-of-Service (GOS) threshold alarm. Helps locate facility or equipment problems related to the GOS alarm.

STEP	PROCEDURE
1	System has service-affecting alarms. Refer to IXL-101 and clear facility and/or equipment alarms.
2	To clear GOS alarm, you must clear enough service-affecting alarm conditions so that number of service-affecting conditions is less than GOS threshold.
3	STOP. This procedure is complete.

TAP-104 INHPMREPT Event

Provides procedure to clear a Performance Monitoring (PM) report inhibit. An allow PM command is required to turn on PM report.

STEP	PROCEDURE
1	<p>DANGER: Possibility of personal injury. An INH-PMREPT command was issued. PM reporting for indicated facility is turned off. PM collection is still active.</p> <p>Do you wish to turn on PM reporting?</p> <p style="padding-left: 40px;">If yes, go to step 2. If no, go to step 8.</p>
2	<p>Enter ALW-PMREPT-x; (where x=EC1, F3, OC3, OC12, STS1, STS3, T1, T3, or VT1) using address reported in INH-PMREPT message. If address is unknown, enter RTRV-COND-ALL::ALL; and make note of facilities with INH-PMREPT condition.</p>
3	<p>Did INHPMREPT event clear?</p> <p style="padding-left: 40px;">If yes, go to step 8. If no, go to step 4.</p>
4	<p>Check INH-PMREPT condition. Enter RTRV-COND-ALL::ALL; and make note of facilities that still have INH-PMREPT condition.</p>
5	<p>Enter ALW-PMREPT-x; (where x=EC1, F3, OC3, OC12, STS1, STS3, T1, T3, or VT1) using address reported in step 4.</p>
6	<p>Did INHPMREPT event clear?</p> <p style="padding-left: 40px;">If yes, go to step 8. If no, go to step 7.</p>
7	<p>Contact next level of technical support for assistance.</p>
8	<p>STOP. This procedure is complete.</p>

TAP-105 CD (Control and Display)

Provides procedure to help resolve Control and Display (CD) problem.

STEP	PROCEDURE
1	Is RSP processor LED lit? If yes, go to step 2. If no, go to step 4.
2	Refer to IXL-101 and resolve RSP processor alarms (FA or PWR).
3	Go to step 51.
4	Enter ; (semicolon) and wait for prompt >. If prompt does not appear, press and hold CTRL key and press and release R key.
5	Did any kind of response display on screen? If yes, go to step 6. If no, go to step 8.
6	Did error message(s) display on screen? If yes, go to step 8. If no, go to step 7.
7	Did character garbage display on screen? If yes, go to step 8. If no, go to step 46.
8	Turn power to terminal (and modem if applicable) off and back on. If any error messages display, stop working in this procedure and refer to 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ) to troubleshoot terminal.
9	Enter ; (semicolon) and wait for prompt >. If prompt does not appear, press and hold CTRL key and press and release R key.
10	Did any kind of response display on screen? If yes, go to step 11. If no, go to step 13.

- 11** Did error message(s) display on screen?
If yes, go to step [13](#).
If no, go to step [12](#).
- 12** Did character garbage display on screen?
If yes, go to step [13](#).
If no, go to step [46](#).
- 13** Verify proper installation and part number of terminal cable (PN 694-9176-00X) (Revision B or higher). Verify proper installation and part number of modem cable (if applicable) (PN 694-8483-00X) (Revision C or higher). Make needed corrections.
- 14** Enter ; (semicolon) and wait for prompt >. If prompt does not appear, press and hold **CTRL** key and press and release **R** key.
- 15** Did any kind of response display on screen?
If yes, go to step [16](#).
If no, go to step [18](#).
- 16** Did error message(s) display on screen?
If yes, go to step [18](#).
If no, go to step [17](#).
- 17** Did character garbage display on screen?
If yes, go to step [18](#).
If no, go to step [46](#).
- 18** Logically remove and restore problem CID. Enter **RMV-CID::x**; then enter **RST-CID::x**; where x=port number.
- 19** Enter ; (semicolon) and wait for prompt >. If prompt does not appear, press and hold **CTRL** key and press and release **R** key.
- 20** Did any kind of response display on screen?
If yes, go to step [21](#).
If no, go to step [23](#).
- 21** Did error message(s) display on screen?
If yes, go to step [23](#).
If no, go to step [22](#).

- 22** Did character garbage display on screen?
- If yes, go to step [23](#).
If no, go to step [46](#).
- 23** Verify and, if necessary, change terminal setup. Refer to 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ).
- 24** Logically remove and restore problem CID. Enter **RMV-CID::x**; then enter **RST-CID::x**; where x=port number.
- 25** Enter ; (semicolon) and wait for prompt >. If prompt does not appear, press and hold **CTRL** key and press and release **R** key.
- 26** Did any kind of response display on screen?
- If yes, go to step [27](#).
If no, go to step [29](#).
- 27** Did error message(s) display on screen?
- If yes, go to step [29](#).
If no, go to step [28](#).
- 28** Did character garbage display on screen?
- If yes, go to step [29](#).
If no, go to step [46](#).
- 29** Properly set up CID associated with problem terminal and, if necessary, change terminal setup. Refer to 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ).
- 30** Turn power to terminal (and modem if applicable) off and back on. Watch for any error messages generated by terminal.
- 31** Enter ; (semicolon) and wait for prompt >. If prompt does not appear, press and hold **CTRL** key and press and release **R** key.
- 32** Did any kind of response display on screen?
- If yes, go to step [33](#).
If no, go to step [35](#).

- 33** Did error message(s) display on screen?
If yes, go to step [35](#).
If no, go to step [34](#).
- 34** Did character garbage display on screen?
If yes, go to step [35](#).
If no, go to step [46](#).
- 35** Enter **INIT-SYS::::::1;** to perform a warm start.
- 36** Wait for warm start to complete, then enter ; (semicolon) and wait for prompt >. If prompt does not appear, press and hold **CTRL** key and press and release **R** key.
- 37** Did any kind of response display on screen?
If yes, go to step [38](#).
If no, go to step [40](#).
- 38** Did error message(s) display on screen?
If yes, go to step [40](#).
If no, go to step [39](#).
- 39** Did character garbage display on screen?
If yes, go to step [40](#).
If no, go to step [46](#).
- 40** Replace LT1 associated with CID (refer to [DLP-128](#)).
- 41** Enter ; (semicolon) and wait for prompt >. If prompt does not appear, press and hold **CTRL** key and press and release **R** key.
- 42** Did any kind of response display on screen?
If yes, go to step [43](#).
If no, go to step [45](#).
- 43** Did error message(s) display on screen?
If yes, go to step [45](#).
If no, go to step [44](#).

- 44** Did character garbage display on screen?
If yes, go to step [45](#).
If no, go to step [46](#).
- 45** If there is still a problem, it might be due to one or more of the following: a faulty terminal, a faulty cable, or a faulty modem. Make needed repairs, then go to step [49](#).
- 46** Did a list of alarms display on screen?
If yes, go to step [51](#).
If no, go to step [47](#).
- 47** Did NO ALARMS IN SYSTEM display on screen?
If yes, go to step [51](#).
If no, go to step [48](#).
- 48** Did COMPLD display on screen?
If yes, go to step [51](#).
If no, go to step [49](#).
- 49** Contact next level of technical support for assistance.
- 50** To clear CD Alarm, a **CLR-ALM-EQPT** command should be issued after communications between terminal and LMC is established.
- 51** **STOP. This procedure is complete.**

TAP-106 Printer Problems

Provides procedure to help resolve printer problems.

STEP	PROCEDURE
1	Enter RTRV-CID ;
2	Did printer print correct output from RTRV-CID command? If yes, go to step 25. If no, go to step 3.
3	Have you tried to turn printer power off and on? If yes, go to step 6. If no, go to step 4.
4	Turn power to printer (and/or modem if applicable) off and back on.
5	Verify power is on, paper is installed correctly, and printer is on line, then go to step 1.
6	Did output from RTRV-CID (step 1) indicate printer port is stopped? If yes, go to step 7. If no, go to step 8.
7	Enter START-CID::x ; (where x=printer CID port number), then go to step 1.
8	Have you tried to logically remove and restore printer CID? If yes, go to step 10. If no, go to step 9.
9	Enter RMV-CID::x ; then RST-CID::x ; (where x=printer CID port number) then go to step 1.
10	Have you tried to set up CID associated with problem printer? If yes, go to step 12. If no, go to step 11.

- 11 Enter **RTRV-CID**; then check printer port provisioning.
- 12 Did printer port provisioning match printer requirements?
 - If yes, go to step 16.
 - If no, go to step 13.
- 13 Enter **ED-CID**; then press **F7** and complete form screen.
- 14 Press **F19**, then check printer port provisioning.
- 15 Is printer port provisioning OK?
 - If yes, go to step 16.
 - If no, repeat steps 11 through 14.
- 16 Did you try to set up printer?
 - If yes, go to step 18.
 - If no, go to step 17.
- 17 Properly set up printer, then go to step 1; refer to 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ) and to manufacturer's documentation.
- 18 Did you verify that printer cable is not damaged, defective, or connected to wrong CID?
 - If yes, go to step 20.
 - If no, go to step 19.
- 19 Verify proper installation and part number of printer cable (PN 694-9177-00X) (Revision B or higher). Make needed corrections, then go to step 1.
- 20 Did you try to initialize system?
 - If yes, go to step 22.
 - If no, go to step 21.
- 21 Enter **INIT-SYS:::::1**; to initialize system by a warm start, then go to step 1.
- 22 Did you try to replace LT1?
 - If yes, go to step 24.
 - If no, go to step 23.

- 23** Replace LT1 to which printer is connected, then go to step [1](#) (refer to [DLP-128](#)).
- 24** If there is still a problem, it might not be a system problem. Problem might be due to one or more of the following: a faulty printer, a faulty cable, or a faulty modem. Make needed repairs.
- 25** **STOP. This procedure is complete.**

TAP-107

MANWKSWPR (DSI, EP3, ES1, HMU, LMU)

Provides procedure to determine why a module is manually switched to protection, and provides procedure to switch back to working if desired.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	Module in protection must be manually switched back to working to clear MANWKSWPR alarm. Determine why module was switched to protection and if it should be switched back to working at this time.
2	Enter RTRV-EQPT::N-R-Sh-S ; for protect module, then make note of output parameter PROTSTAT=.
3	Enter RTRV-STATE-EQPT::N-R-Sh-S ; using AID reported by PROTSTAT= in step 2.
4	Is main I/O module state IS-STBYH? If yes, go to step 9. If no, go to step 5.
5	Is returned equipment state IS-ANR, OOS-AU, OOS-AUMA, or OOS-MA? If IS-ANR, OOS-AU, or OOS-AUMA, go to step 13. If OOS-MA, go to step 6.
6	Do you want to logically restore main I/O manually into service? If yes, go to step 7. If no, go to step 15.
7	Enter RST-EQPT::N-R-Sh-S ; using AID reported by PROTSTAT= in step 2.
8	Did output return COMPLD or DENY? If COMPLD, go to step 9. If DENY, go to step 14.

- 9 Enter **SW-TOWKG-EQPT::N-R-Sh-S**; using AID reported by PROTSTAT= in step 2.
- 10 Did output return COMPLD or DENY?

If COMPLD, go to step 15.
If DENY, go to step 11.
- 11 Enter **RTRV-ALM-EQPT::N**; where N is I/O module equipment type.
- 12 Are there alarms on I/O module that failed to switch?

If yes, go to step 13.
If no, go to step 14.
- 13 Refer to IXL-101 to resolve alarm on I/O module being protected. Return to beginning of this procedure to clear MANWKSWPR.
- 14 Contact next level of technical support for assistance.
- 15 **STOP. This procedure is complete.**

TAP-108

WKSWPR (DSI, EP3, ES1, HMU, LMU)

Provides procedure to indicate that a main I/O module automatically switched to protection.
WKSWPR clears when main I/O module alarm clears and main I/O module switches back to working.

STEP	PROCEDURE
1	Main I/O module in protection automatically switches back to working when main I/O module alarm or event clears. Refer to IXL- 101 to resolve alarm on main I/O module being protected.
2	STOP. This procedure is complete.

TAP-109 INHFL Event

Provides procedure to allow fault isolation.

STEP	PROCEDURE
1	An INH-FL-EQPT command was issued. Fault isolation is turned off. Do you wish to turn fault isolation on? If yes, go to step 2. If no, go to step 6.
2	Enter ALW-FL-EQPT ;
3	Enter RTRV-COND-ALL::ALL ;
4	Did output indicate INHFL event clear? If yes, go to step 6. If no, go to step 5.
5	Contact next level of technical support for assistance.
6	STOP. This procedure is complete.

TAP-110

Facility Alarm or Event

Provides procedure to identify and provide guidance to clear facility alarm or event.

GENERAL

Refer to Address and Location Guide (PN 3AL47973AE) for facility addressing information.

STEP	PROCEDURE																																																		
1	Enter RTRV-ALM-ALL::ALL ; then enter RTRV-COND-ALL::ALL ; and observe reports:																																																		
	<table><thead><tr><th>IF ALARM OR EVENT TYPE IS:</th><th>GO TO STEP:</th></tr></thead><tbody><tr><td>1TO6LOF</td><td>2</td></tr><tr><td>7LOF</td><td>3</td></tr><tr><td>ACTLPBK</td><td>4</td></tr><tr><td>AICMIS</td><td>6</td></tr><tr><td>AIS</td><td>7</td></tr><tr><td>ALWCBLPBK</td><td>10</td></tr><tr><td>DS2YEL</td><td>12</td></tr><tr><td>EBER</td><td>13</td></tr><tr><td>EOC</td><td>14</td></tr><tr><td>ESW (OC-3, OC-12)</td><td>27</td></tr><tr><td>FEACEQPT</td><td>15</td></tr><tr><td>FRCDWKSWBK</td><td>16</td></tr><tr><td>FRCDWKSWPR</td><td>17</td></tr><tr><td>FLTESC</td><td>18</td></tr><tr><td>IDLE</td><td>19</td></tr><tr><td>IDMISMATCH (DS3)</td><td>20</td></tr><tr><td>IDUNREADABLE (DS3)</td><td>21</td></tr><tr><td>INHPMREPT</td><td>22</td></tr><tr><td>ISD</td><td>24</td></tr><tr><td>LOCKOUTOFPR (OC-3, OC-12)</td><td>28</td></tr><tr><td>LOF</td><td>29</td></tr><tr><td>LOP</td><td>32</td></tr><tr><td>LOS</td><td>33</td></tr><tr><td>MAN</td><td>36</td></tr></tbody></table>	IF ALARM OR EVENT TYPE IS:	GO TO STEP:	1TO6LOF	2	7LOF	3	ACTLPBK	4	AICMIS	6	AIS	7	ALWCBLPBK	10	DS2YEL	12	EBER	13	EOC	14	ESW (OC-3, OC-12)	27	FEACEQPT	15	FRCDWKSWBK	16	FRCDWKSWPR	17	FLTESC	18	IDLE	19	IDMISMATCH (DS3)	20	IDUNREADABLE (DS3)	21	INHPMREPT	22	ISD	24	LOCKOUTOFPR (OC-3, OC-12)	28	LOF	29	LOP	32	LOS	33	MAN	36
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IF ALARM OR EVENT TYPE IS: (cont.) GO TO STEP:

MANWKSWBK (OC-3, OC-12)	38
MANWKSWPR (OC-3, OC-12)	39
PHSBLDOUT	40
PHSBLDTH	41
RAI	42
RCVCBLPBK	43
RFI	44
ROLLMON	45
SDBER (OC-3, OC-12, STS-1, VT1)	46
SLMF	47
SYNCPRI	50
SYNCSEC	50
SYNCSTATCHNG	51
SYNCSTATQUAL	52
T1 SLTMSIG	53
XMTCBLPBK	63
WKSWBK (OC-3, OC-12)	64
WKSWPR (OC-3, OC-12)	65
WTR	64
None of the above	IXL-101

- 2** 1TO6LOF indicates loss of frame on one to six incoming embedded DS2s. Problem is outside local system. Go to step [67](#).
- 3** 7LOF indicates loss of frame on all seven incoming embedded DS2s. Problem is outside local system. Go to step [67](#).
- 4** ACTLPBK indicates signal in loopback. Do you wish to release loopback?
- If yes, go to step [5](#).
If no, go to step [67](#).
- 5** Refer to the following list and to 1631 SX LMC Commands and Messages manual, (PN 3AL45392AJ) for details on commands to release loopback, then go to step [67](#).
- If EC-1, use RLS-LPBK-EC1.
If VT1, use RLS-LPBK-VT1.
If DS3, use RLS-LPBK-T3.
If DS1, use RLS-LPBK-T1.
If STS-1, use RLS-LPBK-ST1.
If STS-3c, use RLS-LPBK-ST3C.

If OC-3, use RLS-LPBK-OC3.
If OC-12, use RLS-LPBK-OC12.

- 6** AICMIS indicates application identification channel mismatch. Check facility port provisioning and facility type. Go to step [67](#).
- 7** Is AIS incoming or far end?
 - If incoming, go to step [8](#).
 - If far end, go to step [9](#).
- 8** AIS incoming is an alarm indication signal on incoming EC-1, STS-1, OC-3, OC-12, VT1, DS3, DS1, or TMG port. Problem is upstream. Go to step [67](#).
- 9** AIS far-end indicates that far end is receiving a DS3 alarm indication signal. Check local system transmit facility. Go to step [67](#).
- 10** ALWCBLPBK indicates C-bit loopback is allowed when requested from far end. Do you wish to inhibit C-bit loopback?
 - If yes, go to step [11](#).
 - If no, go to step [67](#).
- 11** Refer to 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ) on how to inhibit C-bit loopback using the INH-CBIT-T1 command, then go to step [67](#).
- 12** DS2YEL indicates that far end has detected a problem with DS3 facility coming from local system, and far end is sending a yellow signal back up stream to identify problem. Check local system DS3 transmit facility. Go to step [67](#).
- 13** EBER indicates that an excessive bit error rate is being detected on indicated OC-3 or OC-12. Problem can be caused by incoming facility, dirty or bad fiber connector, or by degeneration of receive PIN diode in OC-3 or OC-12 module. Go to step [67](#).
- 14** EOC indicates that embedded operations channel failure is detected. Problem is outside local system. Go to step [67](#).
- 15** FEACEQPT indicates equipment failure on far end. Problem is outside local system. Go to step [67](#).
- 16** FRCDWKSWBK indicates that working OC-3 or OC-12 was force-switched from protection back to main. Go to step [67](#).
- 17** FRCDWKSWPR indicates that working OC-3 or OC-12 was force-switched to protection. Go to step [67](#).
- 18** FLTESC indicates fault escalation is active. Go to step [67](#).

- 19** IDLE indicates an incoming STS-1 or VT1 has an idle condition. Go to step [67](#).
- 20** IDMISMATCH indicates DS3 path ID (PID) detected. Go to step [67](#).
- 21** IDUNREADABLE indicates DS3 PID is unreadable. Go to step [67](#).
- 22** INHPMREPT indicates Performance Monitoring (PM) reports are inhibited on specified facilities. Do you wish to allow PM?
- If yes, go to step [23](#).
If no, go to step [67](#).
- 23** Refer to 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ) on how to allow PM report using ALW-PMREPT command, then go to step [67](#).
- 24** Is ISD incoming or far end?
- If incoming, go to step [25](#).
If far end, go to step [26](#).
- 25** ISD incoming DS3 idle signal is detected. Problem is upstream. Go to step [67](#).
- 26** ISD far end is detecting idle signal. Problem could be local system DS3 output or in transport equipment. Go to step [67](#).
- 27** ESW means a lockout of OC-3 or OC-12 automatic switching due to excessive switching (four switches within a 10-minute time frame). ESW automatically clears at midnight, or use RLS-PROTNSW-OC3 or RLS-PROTNSW-OC12 command to manually release ESW condition. Go to step [67](#).
- 28** LOCKOUTOFPR means a lockout of OC-3 or OC-12 protection facility is active. Use RLS-PROTNSW-OC3 or RLS-PROTNSW-OC12 command to release LOCKOUTOFPR condition. Go to step [67](#).
- 29** Is LOF incoming or far end?
- If incoming, go to step [30](#).
If far end, go to step [31](#).
- 30** LOF incoming indicates loss of frame on incoming EC-1, DS3, DS1, OC-3, OC-12 or TMG facility. Problem is upstream. Go to step [67](#).
- 31** LOF far end indicates far-end loss of frame. Check local system transmit DS3 facility. Go to step [67](#).
- 32** LOP incoming indicates loss of pointer on incoming STS-1, STS-3c, or VT1 facility. Problem is upstream. Go to step [67](#).

- 33** Is LOS incoming or far end?
- If incoming, go to step [34](#).
If far end, go to step [35](#).
- 34** LOS incoming indicates loss of signal on incoming EC1, DS3, DS1, OC-3, OC-12 or TMG facility. Problem is upstream. Go to step [67](#).
- 35** LOS far end indicates that far end is detecting loss of signal. Check local system transmit DS3 facility. Go to step [67](#).
- 36** MAN indicates a facility port is logically removed. Do you wish to restore facility port?
- If yes, go to step [37](#).
If no, go to step [67](#).
- 37** Refer to 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ) on how to restore a facility port using the RST (EC1, STS-1, VT1, T1, T3, OC-3, or OC-12) command, then go to step [67](#).
- 38** MANWKSWBK indicates that working OC-3 or OC-12 was manually switched from protection back to main. To release MANWKSWBK condition, use RLS-PROTNSW-OC3 or RLS-PROTNSW-OC12. Go to step [67](#).
- 39** MANWKSWPR indicates that working OC-3 or OC-12 was manually switched to protection. To release MANWKSWPR condition, use RLS-PROTNSW-OC3 or RLS-PROTNSW-OC12. Go to step [67](#).
- 40** PHSBLDOUT indicates that phase buildout on external timing reference occurred during midnight-to-midnight period. PHSBLDOUT condition clears automatically at beginning of next 24-hour period. Go to step [67](#).
- 41** PHSBLDTH condition indicates that four phase buildouts on external timing reference occurred during midnight-to-midnight period. PHSBLDTH condition clears automatically at beginning of next 24-hour period. Go to step [67](#).
- 42** RAI indicates remote alarm of upstream failure on DS1 or DS3. Problem is outside local system. Go to step [67](#).
- If RAI is seen on the LMC, it indicates that the FEND NE that the LMC is connected to, via cable, is not seeing a valid signal from the LMC. Problem may be within the LMC, or the cable/DSX that is between the LMC and FEND.
- 43** RCVCBLPBK indicates receive DS1 C-bit loopback is active. Go to step [67](#).

- 44** RFI indicates remote failure of upstream EC-1 or STS-1. Problem is outside local system. Go to step [67](#).

If RFI is seen on the LMC, it indicates that the FEND NE that the LMC is connected to, via cable, is not seeing a valid signal from the LMC. Problem may be within the LMC, or the cable/DSX that is between the LMC and FEND.

- 45** ROLLMON indicates VT1 or DS1 roll to port (RTO) being monitored for a valid signal. ROLLMON does not clear until a valid signal is applied and detected. Go to step [67](#).

- 46** SDBER indicates signal degrade bit error rate is being detected on STS-1 or VT1 embedded in OC-3 or OC-12. Problem can be caused by incoming facility, dirty or bad fiber connector, or degeneration of receive PIN diode in OC-3 or OC-12 module. Go to step [67](#).

- 47** SLMF indicates there is a signal label mismatch between incoming signal and what the system is expecting. Refer to 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ) to use the following commands to retrieve mapping:

- a. Use RTRV-STs1 to retrieve information on STS-1 facility with SLMF alarm. Make note of STSMAP output parameter.
- b. Use RTRV-VT1 to retrieve information on VT1 with VT1 SLMF alarm. Make note of VTMAP output parameter.

- 48** Does STSMAP or VTMAP match signal type at alarmed port?

If yes, contact next level of technical support for assistance.
If no, go to step [49](#).

- 49** Does local port provisioning or incoming signal need to be changed?

If local port provisioning, edit port parameters (refer to IXL-[102](#)), then go to step [67](#).
If incoming signal, problem is upstream. Go to step [67](#).

- 50** SYNCPRI and SYNCSEC indicate that MCB automatically switched to alternate external clock reference. This indicates that normal external clock reference has a problem.

Go to step [1](#) and enter alarm and condition retrieval commands, then refer to IXL-[101](#) to locate trouble-clearing procedures related to external synchronous reference.
Go to step [67](#).

- 51** SYNCSTATCHNG indicates synchronization status change. This is a transitory condition associated with TMG source. Go to step [67](#).

- 52** SYNCSTATQUAL indicates TMG source clock is not stratum 3 traceable (ST3). Problem is with TMG source. Go to step [67](#).
- 53** Which T1 timing reference is in SLTMSIG alarm?
If TMG0, go to step [56](#).
If TMG1, go to step [57](#).
- 54** CAUTION: Possibility of service interruption. If SLTMSIG is seen on both TMG0 and TMG1 escalate to TAC.
- 55** To clear this alarm, delete and re-enter TMG0 OR TMG1.
- 56** Locate and correct source of T1 TMG0 timing error, then go to step [58](#).
- 57** Locate and correct source of T1 TMG1 timing error.
- 58** Enter **RTRV-ALM-T1::TMG-0**;
Wait for report then enter **RTRV-ALM-T1::TMG-1**;
- 59** Did T1 SLTMSIG alarm clear?
If yes, go to step [68](#).
If no, go to step [60](#).
- 60** Put alarmed timing signal on a long test to determine its stability. After external timing reference signal is stable, go to step [61](#).
- 61** Enter **RTRV-ALM-T1::TMG-0**;
Wait for report then enter **RTRV-ALM-T1::TMG-1**;
- 62** Is there a T1 SLTMSIG alarm?
If yes, refer to TAP-[111](#).
If no, go to step [68](#).
- 63** XMTCBLPBK indicates transmit DS1 C-bit loopback is active. To release C-bit loopback refer to 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ), and use INH-CBIT-T1 command. Go to step [67](#).
- 64** WKSWBK indicates OC-3, OC-12, STS-1, VT1 working facility has automatically switched from protection to working. This is a transient condition reported by REPT^EQPT. Go to step [67](#).
- 65** WKSWPR indicates OC-3, OC-12, STS-1, VT1 working facility has automatically switched to protection. This is a transient condition reported by REPT^EQPT. Go to step [67](#).

- 66** WTR indicates OC-3 or OC-12 protection facility is waiting to restore traffic to main facility until main facility is stable. Go to step [67](#).
- 67** Are any other alarms or events to be checked?
- If yes, go to step [1](#).
If no, go to step [68](#).
- 68** **STOP. This procedure is complete.**

TAP-111

Stuck SLTMSIG Alarm

Provides procedure to clear a stuck SLTMSIG alarm.

PREREQUISITES

SLTMSIG alarm-clearing procedures in TAP-110 must be completed before performing this procedure.

External timing reference signal applied to TMG port with SLTMSIG alarm must be known good before performing this procedure.

STEP	PROCEDURE
1	External timing reference signal applied to TMG port with SLTMSIG alarm must be known good before performing this procedure.
2	Which timing reference is in SLTMSIG alarm? If TMG0, go to step 3. If TMG1, go to step 7.
3	Enter RTRV-T1::TMG-0 ; (make note of output parameters).
4	Enter DLT-T1::TMG-0 ;
5	Enter ENT-T1::TMG-0:::FMT=xxx,LINECODE=xxx,TMGREF=xxx ; (where xxx is parameter value retrieved in step 3).
6	Enter RTRV-ALM-T1::TMG-0 ; and immediately go to step 11.
7	Enter RTRV-T1::TMG-1 ; (make note of output parameters).
8	Enter DLT-T1::TMG-1 ;
9	Enter ENT-T1::TMG-1:::FMT=xxx,LINECODE=xxx,TMGREF=xxx ; (where xxx is parameter value retrieved in step 7).
10	Enter RTRV-ALM-T1::TMG-1 ;
11	Is there an SLTMSIG alarm? If yes, go to step 12. If no, go to step 13.

- 12 Contact next level of technical support for assistance.
- 13 **STOP. This procedure is complete.**

TAP-112 MAN Alarm

Provides procedure to locate module or a facility entity that was logically removed, then provides procedure to clear the MAN alarm.

PREREQUISITE

A MAN alarm indicates that a module or facility entity (DS1, DS3, EC-1, OC-3, STS-1, STS-3c, or VT1) was logically removed (out of service) for a maintenance action. Determine if the module or facility entity is ready to be returned to service before doing this procedure.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack, Sh=shelf, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Is MAN alarm DS1 or DS3? Enter RTRV-ALM-ALL::ALL ; if required. If yes, make note of facility port address, then go to step 16 . If no, go to step 4 .
4	Enter RTRV-STATE-EQPT::N-R-Sh-S ; for equipment number of module in alarm.
5	Is module in OOS-MA, OOS-MA,PWR, or OOS-MA,UEQ state? If OOS-MA, go to step 7 . If OOS-MA,PWR, go to step 10 . If OOS-MA,UEQ, go to step 6 . If none of these, go to step 18 .
6	Physically install applicable module. (If O1B is being installed, clean optical connectors and connect optical cables before fully engaging O1B into backplane.)

- 7 Enter **RST-EQPT::N-R-Sh-S**; for module in alarm. (Approximately 30 minutes are required to restore a hard disk.)
- 8 Did output return a COMPLD or DENY?
 - If COMPLD, go to step 14.
 - If DENY, go to step 9.
- 9 Replace module with MAN alarm (refer to IXL-103), then go to step 14.
- 10 On PSF or PST with MAN alarm, set power switch to ON.
- 11 Enter **RTRV-STATE-EQPT::N-Sh-S**; for PSF or PST with MAN alarm.
- 12 Is module in OOS-MA or OOS-MA,PWR state?
 - If OOS-MA, go to step 7.
 - If OOS-MA,PWR, go to step 13.
 - If neither of these, go to step 18.
- 13 Replace power supply with MAN alarm (refer to IXL-103), then go to step 14.
- 14 Enter **RTRV-ALM-EQPT::ALL**; and make note of results.
Then enter **RTRV-COND-EQPT::ALL**; and make note of results.
- 15 Did MAN alarm or event clear?
 - If yes, go to step 19.
 - If no, go to step 18.
- 16 Enter **RST-xxx**; (where xxx=port number with MAN alarm).
- 17 Did output return a COMPLD or DENY?
 - If COMPLD, go to step 19.
 - If DENY, go to step 18.
- 18 Contact next level of technical support for assistance.
- 19 **STOP. This procedure is complete.**

TAP-113

PWR (P39, P56, PSF, PST, RSP)

Provides procedure to locate and clear the power converter or power supply alarm.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-ALM-ALL::ALL ; and note alarmed AID.
4	Is PWR alarm on P39, P56, PSF, PST, or RSP? If P39 or P56, go to step 5 . If PSF or PST, go to step 7 . If RSP, refer to TAP-118 and follow same procedures used to clear RSP ALMCKT alarm.
5	Replace P39 or P56 with PWR alarm (refer to DLP-117 or DLP-118).
6	Go to step 18 .
7	Is there a PSF in alarm? If yes, go to step 12 . If no, go to step 8 .
8	Is there a PST in slot that is in alarm? If yes, go to step 9 . If no, go to step 16 .

- 9** Is power switch on PST set to ON?
If yes, go to step [10](#).
If no, go to step [17](#).
- 10** Replace PST with PWR alarm (refer to [DLP-102](#)).
- 11** Go to step [18](#).
- 12** Is there a PSF in slot that is in alarm?
If yes, go to step [13](#).
If no, go to step [16](#).
- 13** Is power switch on PSF set to ON?
If yes, go to step [14](#).
If no, go to step [17](#).
- 14** Replace PSF with PWR alarm (refer to [DLP-103](#)).
- 15** Go to step [18](#).
- 16** Install power supply into slot.
- 17** Set power switch to ON.
- 18** Enter **RTRV-ALM-EQPT::ALL;**
- 19** Did power alarm clear?
If yes, go to step [30](#).
If no, go to step [20](#).
- 20** Is PWR alarm on PSF, PST, P39, or P56?
If PSF or PST, go to step [21](#).
If P39 or P56, go to step [24](#).
- 21** Was power supply replaced in previous steps of this procedure?
If yes, go to step [29](#).
If no, go to step [22](#).

- 22 Replace PSF or PST with PWR alarm (refer to DLP-102 or DLP-103).
- 23 Go to step 18.
- 24 Enter **DGN-EQPT::N-R-Sh-S**; for desired module.
- 25 Did power converter pass Card Presence Indication and module test?
 - If yes, go to step 29.
 - If no, go to step 26.
- 26 Replace P39 or P56 with PWR alarm (refer to DLP-117 or DLP-118).
- 27 Enter **RTRV-ALM-ALL::ALL**;
- 28 Did PWR alarm clear?
 - If yes, go to step 30.
 - If no, go to step 29.
- 29 Contact next level of technical support for assistance.
- 30 **STOP. This procedure is complete.**

TAP-114 TSA Event

Indicates test session is active on module identified in TSA report.

STEP	PROCEDURE
1	Test Session Active (TSA) is an event indication. Module identified by TSA condition is OOS-MT and has been manually suspended from service. This is done during initial turn-up or optionally during grow procedures. TSA condition is cleared by editing or restoring module to in-service.
2	STOP. This procedure is complete.

TAP-115

BPTERM (SI48 I/O, EOC, End Stage, Center Stage)

Lists troubleshooting escalation procedures.

GENERAL

If BPTERM is on an SI48 shelf, refer to the [Introduction](#) for additional information.

STEP	PROCEDURE
1	<p>CAUTION: Possibility of service interruption. If replacing terminator on front of SI48 shelf, roll traffic to a different circuit. If traffic is not rolled to a different circuit, perform troubleshooting during a maintenance window.</p> <p>Contact next level of technical support for assistance.</p>
2	<p>STOP. This procedure is complete.</p>

TAP-116 BPMISM (Shelf)

Identifies that there is a problem between the way the shelf is strapped and the way it is provisioned.

STEP	PROCEDURE
1	There is a mismatch between provisioned shelf and installed shelf backplane strapping. Check shelf provisioning (ENT-EQPT) information, refer to the Commands and Messages manual (PN 3AL45392AJ). Check shelf strapping information, refer to 1631 SX LMC Turn-Up manual (PN 3AL45390AJ).
2	STOP. This procedure is complete.

TAP-117

TERM (EC1, OC3, OC12, T1, T3, T3EC1)

Provides procedure to isolate a termination equipment (TERM) problem to an I/O module that must be reset or replaced.

GENERAL

Equipment associated with TERM alarm is:

- TERM-EC1 (ES1)
- TERM-OC3 (O1B)
- TERM-OC12 (O4M)
- TERM-T1 (DSI)
- TERM-T3 (HMU)
- TERM-T3EC1 (EP3)

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-ALM-EQPT::ALL ; and make note of AID that has TERM alarm.
4	Is TERM alarm OC3 or OC12? If yes, go to step 9 . If no, go to step 5 .
5	Enter RTRV-EQPT::N-R-Sh-S ; using AID retrieved in step 3 .

- 6 Did returned message indicate PROTSTAT=MAIN-SWITCHED?
If yes, go to step 9.
If no, go to step 7.
- 7 Enter **SW-TOPROTN-EQPT::N-R-Sh-S**; using AID retrieved in step 3.
- 8 Did output return a COMPLD or DENY?
If COMPLD, go to step 9.
If DENY, go to step 19.
- 9 Enter **RMV-EQPT::N-R-Sh-S**; using AID retrieved in step 3.
- 10 Enter **RST-EQPT::N-R-Sh-S**; using AID retrieved in step 3.
- 11 Did output return a COMPLD or DENY?
If COMPLD, go to step 13.
If DENY, go to step 12.
- 12 Replace module with TERM alarm (refer to IXL-103).
- 13 Enter **RTRV-ALM-EQPT::N**; where N is equipment name retrieved in step 3.
- 14 Did TERM alarm clear on this particular module?
If yes, go to step 16.
If no, go to step 15.
- 15 Was module replaced in step 12?
If yes, go to step 38.
If no, go to step 12.
- 16 Was TERM alarm just cleared TERM-OC3 or TERM-OC12?
If yes, go to step 39.
If no, go to step 17.
- 17 Did you enter SW-TOPROTN-EQPT in step 7
If yes, go to step 18.
If no, go to step 39.
- 18 Enter **SW-TOWKG-EQPT::N-R-Sh-S**; for module switched to protect in step 7, then go to step 39.

- 19** Possible reasons for module with alarm not to switch to protection are:
- Protect module is already in use.
 - Protect module is faulty.
 - Switch to protect is inhibited in lockout.
 - Improper configuration. An EP3/ES1 protection group requires at least two modules plus a protection module, with no empty slots between modules.
 - There is a facility problem where switching to protect would not clear TERM condition.

Go to step **20** and determine why module with TERM alarm did not switch to protect.

20 Enter **RTRV-EQPT::N-R-Sh-S**; for protect module of same group as alarmed module.

21 Does output parameter PROSTAT=PROTECTING-[AID] or PROT-NOT-IN-USE?

If PROTECTING-[AID], go to step **29**.
If PROT-NOT-IN-USE, go to step **22**.

22 Does protect module secondary state (SST)=PSI?

If yes, go to step **25**.
If no, go to step **23**.

23 Enter **RTRV-EQPT::N-R-Sh-S**; using AID retrieved in step **3**.

24 Does working module SST=PSI?

If yes, go to step **25**.
If no, go to step **34**.

25 Do you want to allow protection switching on individual module in protection only or on all modules in protect group?

If individual module only, go to step **26**.
If all modules in protect group, go to step **27**.

26 Enter **ALW-SWTOPROTN-EQPT::N-R-Sh-S**; using AID retrieved in step **3**, then go to step **28**.

27 Enter **ALW-SWTOPROTN-EQPT::N-R-Sh-S**; for protect module.

- 28** Did output return a COMPLD or DENY?
If COMPLD, go to step 5.
If DENY, go to step 38.
- 29** Enter **RTRV-ALM-EQPT::N;** for module in protection, using AID identified in step 21.
- 30** Are there alarms or events on module being protected?
If yes, refer to IXL-101 to resolve alarm or event, then go to step 3.
If no, go to step 31.
- 31** Enter **RTRV-EQPT::N-R-Sh-S;** for module in protection, using AID identified in step 21.
- 32** Does working module SST=PSI?
If yes, go to step 25.
If no, go to step 33.
- 33** Is module with TERM alarm an EP3?
If yes, go to step 34.
If no, go to step 35.
- 34** Check physical location of EP3 with TERM alarm.
Is an EP3 installed in slot to immediate left of EP3 in TERM alarm?
If yes, go to step 35.
If no, improper configuration. Protection scheme does not allow empty slots to left of last card in protection group; go to step 38.
- 35** Enter **RTRV-ALM-ALL::ALL;**
- 36** Are there any facility alarms or events on ports associated with module in TERM alarm?
If yes, go to step 37.
If no, go to step 38.
- 37** Is facility alarm or event more severe than TERM alarm?
If yes, refer to IXL-101 and clear facility alarm, then go to step 3.
If no, go to step 38.
- 38** Contact next level of technical support for assistance.
- 39** **STOP. This procedure is complete.**

TAP-118

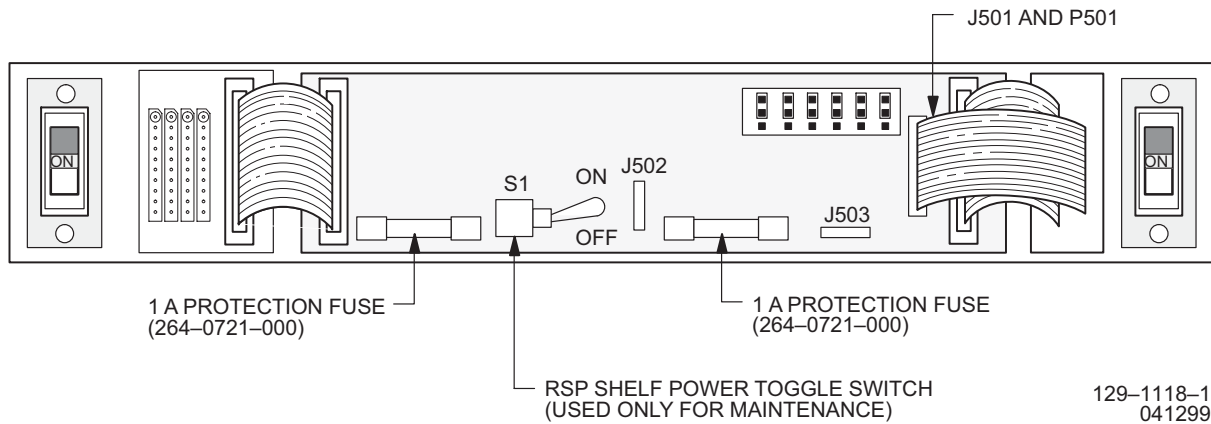
ALMCKT (RSP, RDU)

Provides procedure to isolate Rack Status Panel (RSP) circuit alarm problem to a power switch setting, a bad cable connection, or a bad fuse. Provides procedure to replace circuit alarm board in response to Rack Distribution Unit (RDU) ALMCKT.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Hazardous electrical potentials are present on RSP and RDU circuit board and power distribution block.
2	WARNING: Possibility of equipment damage. Do not bend or warp RSP/RDU front cover during removal or replacement.
3	Is ALMCKT against RSP or RDU? If RSP, go to step 4. If RDU, go to step 22.
4	Remove front cover of RSP.
5	Is RSP PWR switch (S1) set to OFF (down)? See figure 118-1. If yes, go to step 6. If no, go to step 7.
6	Set RSP PWR switch (S1) to ON (up). See figure 118-1.
7	Enter RTRV-ALM-EQPT::RSP;
8	Did output indicate that RSP ALMCKT alarm cleared? If yes, go to step 27. If no, go to step 9.
9	Is P501 (PN 694-9105-001) correctly plugged into J501? See figure 118-1. If yes, go to step 13. If no, go to step 10.
10	Correctly plug P501 into J501. See figure 118-1.
11	Enter RTRV-ALM-EQPT::RSP;

- 12** Did output indicate that RSP ALMCKT alarm cleared?
- If yes, go to step [27](#).
If no, go to step [13](#).
- 13** Is P502 (PN 695-2359-002) correctly plugged into J502 and is P503 (PN 695-2359-001) correctly plugged into J503? See figure [118-1](#).
- If yes, go to step [17](#).
If no, go to step [14](#).
- 14** Correctly plug P502 into J502 and plug P503 into J503. See figure [118-1](#).
- 15** Enter **RTRV-ALM-EQPT::RSP;**
- 16** Did output indicate that RSP ALMCKT alarm cleared?
- If yes, go to step [27](#).
If no, go to step [17](#).
- 17** Measure voltage across each fuse shown in figure [118-1](#).
- 18** Is voltage across each fuse 0 V dc?
- If yes, go to step [26](#).
If no, go to step [19](#).
- 19** Remove P502 from J502 and remove P503 from J503. Replace fuse(s). Plug P502 into J502 and plug P503 into J503. See figure [118-1](#).
- 20** Enter **RTRV-ALM-EQPT::RSP;**
- 21** Did output indicate that RSP ALMCKT alarm cleared?
- If yes, go to step [27](#).
If no, go to step [26](#).
- 22** Are cables correctly plugged into J502 and J503?
- If yes, go to step [26](#).
If no, go to step [23](#).

Figure 118-1. Rack Status Panel



- 23** Correctly plug P502 into J502 and plug P503 into J503.
- 24** Enter **RTRV-ALM-EQPT::RDU**;
- 25** Did output indicate that RDU ALMCKT alarm cleared?
If yes, go to step 27.
If no, go to step 26.
- 26** Contact next level of technical support for assistance.
- 27** **STOP. This procedure is complete.**

TAP-119

FA (CKB, Fuse, PDU, RDU, RSP)

Provides procedure to locate blown fuse or tripped circuit breaker.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Hazardous electrical potentials are present on Power Distribution Unit (PDU), Rack Status Panel (RSP), and Rack Distribution Unit (RDU) circuit board and power distribution block.
2	<i>WARNING: Possibility of equipment damage. Do not bend or warp RSP/RDU front cover during removal or replacement.</i>
3	Is FA alarm against PDU, RDU, or RSP? If RDU or RSP, go to step 4. If PDU, go to step 5.
4	FA alarm on RDU or RSP indicates a tripped circuit breaker. This might indicate a more serious problem; proceed with caution and locate circuit overload. Correct circuit overload, reset circuit breaker, then go to step 7.
5	FA alarm on PDU indicates a blown fuse. A blown fuse might indicate power converter protected by fuse is bad. Refer to the Introduction to locate fuse to power converter assignment. Replace power converter or repair circuit wiring as required, then replace blown fuse.
6	If FA alarm still exists, contact next level of technical support for assistance.
7	STOP. This procedure is complete.

TAP-120

CONTCOM Alarm (ACM, CIM, ICM, SIO)

Provides procedure to isolate ACM, CIM, ICM and SIO control bus interface failures to a faulty module.

GENERAL

This procedure asks you to enter an address N-1-2-S, where N=name of equipment and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot control bus cabling.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
3	Enter RTRV-EQPT::N-1-2-S ; against module in alarm. If state is IS, STBYC/OOS-AU, go to step 6. If state is IS, go to step 4.
4	Enter SW-DX-EQPT::CIM-1-2-S ; for ACM or CIM in alarm.
5	Did output return COMPLD or DENY? If COMPLD, go to step 6. If DENY, go to step 16.
6	Enter RMV-EQPT::N-1-2-S ; for module in alarm.
7	Did output return COMPLD or DENY, or did RMV command log you out? If COMPLD, go to step 9. If DENY, go to step 16. If logged out, go to step 8.

- 8 Enter **ACT-USER::UID:::PID**; (where UID=user's name and PID=user's password), then go to step 9.
- 9 Enter **RST-EQPT::N-1-2-S**; for module in alarm.
- 10 Did output return COMPLD or DENY?
 - If COMPLD, go to step 11.
 - If DENY, go to step 13.
- 11 Enter **RTRV-ALM-EQPT::ALL**;
- 12 Did CONTCOM alarm clear?
 - If yes, go to step 17.
 - If no, go to step 13.
- 13 Replace module that denied RST command:
 - If ACM, refer to DLP-137.
 - If CIM, refer to DLP-107.
 - If ICM, refer to DLP-132.
 - If SIO, refer to DLP-108.
- 14 Enter **RTRV-ALM-EQPT::ALL**;
- 15 Did CONTCOM alarm clear?
 - If yes, go to step 17.
 - If no, go to step 16.
- 16 Contact next level of technical support for assistance.
- 17 **STOP. This procedure is complete.**

TAP-121

RARFAIL Alarm (M16, M32, M40, SPB)

Provides procedure to isolate M16, M32, M40, or SPB processor communications failure to a faulty module.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot control bus cabling.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
3	Enter RTRV-ALM-EQPT::ALL ; and make note of retrieved AID.
4	Enter RMV-EQPT::N-R-Sh-S ; for module in alarm.
5	Did output return COMPLD or DENY? If COMPLD, go to step 6. If DENY, go to step 15.
6	Locate M16, M32, M40, or SPB with RARFAIL alarm. Unseat M16, M32, M40, or SPB that was logically removed in step 4.
7	After 10 seconds insert same M16, M32, M40, or SPB into slot.
8	Enter RST-EQPT::N-R-Sh-S ; for module in alarm.
9	Did output return COMPLD or DENY? If COMPLD, go to step 10. If DENY, go to step 12.

- 10 Enter **RTRV-ALM-EQPT::ALL;**
- 11 Did RARFAIL alarm clear?
 - If yes, go to step 16.
 - If no, go to step 12.
- 12 Replace M16 (refer to DLP-113), M32 (refer to DLP-138), M40 (refer to DLP-133), or SPB (refer to DLP-111).
- 13 Enter **RTRV-ALM-EQPT::ALL;**
- 14 Did RARFAIL alarm clear?
 - If yes, go to step 16.
 - If no, go to step 15.
- 15 Contact next level of technical support for assistance.
- 16 **STOP. This procedure is complete.**

TAP-122 INTERR Alarm

Provides procedure to analyze and display fault isolation data.

PREREQUISITE

Fault isolation must be on. Enter ALW-FL-EQPT; if required.

GENERAL

INTERR alarms are reported against equipment entity. The equipment entity with INTERR might be faulty or it might be receiving faulty data. This procedure provides guidelines on how to locate the problem, but it does not cover all possibilities. This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-ALM-EQPT::ALL;
4	Are there any equipment alarms other than INTERR? If yes, go to step 5 . If no, go to step 8 .
5	Clear alarm or event (refer to IXL- 101), then go to step 6 .
6	Enter RTRV-ALM-EQPT::ALL;
7	Did INTERR alarm(s) clear? If yes, go to step 22 . If no, go to step 8 .
8	Enter RTRV-FL-EQPT::N-R-Sh-S:::STNE; using AID retrieved in step 3 or 6 .

- 9** Input parameter STNE (Sectionalize Trouble Network Element) causes an output message indication of a suspect if one exists in fault location database.
- In output message, is STNE followed by module name(s) and location(s)?
- If yes, go to step [10](#)
If no, go to step [14](#).
- 10** If AID=CDB, a forced command is required only if RMV-EQPT returns a DENY. In this case, contact next level of technical support for assistance.
- Enter **RMV-EQPT::N-R-Sh-S**; using AID identified by STNE.
- 11** Replace suspect modules in order listed (refer to IXL-[103](#)).
- 12** Wait 5 minutes, then enter **RTRV-ALM-EQPT::ALL**;
- 13** Did INTERR alarm(s) clear?
- If yes, go to step [22](#).
If no, go to step [14](#).
- 14** Enter **RTRV-FL-EQPT::N-R-Sh-S:::DATA**; use AID retrieved in step [12](#).
- 15** Input parameter DATA causes an output message indication of a suspect if one exists in fault location database. Output message can point to module, data connection between modules, or facility problems. Data output message indicates type of problem.
- 16** Did output DATA message indicate an ALM, CULPRIT, HW, MT, OOS, or a timing or data facility suspect? Refer to 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ) for explanation of data messages.
- If ALM, CULPRIT, or HW, then go to step [17](#).
If MT, clear maintenance state (refer to IXL-[101](#)), then go to step [19](#).
If OOS, clear out-of-service state (refer to IXL-[101](#)), then go to step [19](#).
If data (D) suspect, troubleshoot and repair faulty data connection between modules, then go to step [19](#).
If facility (F) suspect, troubleshoot and repair faulty facility between modules, then go to step [19](#).
If timing (T) suspect, troubleshoot and repair faulty timing between modules, then go to step [19](#).
- 17** If AID=CDB, a forced command is required only if RMV-EQPT returns a DENY. In this case, contact next level of technical support for assistance.
- Enter **RMV-EQPT::N-R-Sh-S**; using AID identified by ALM, CULPRIT, or HW.

- 18** Replace modules logically removed in step [17](#) (refer to IXL-103).
- 19** Wait 5 minutes, then enter **RTRV-ALM-EQPT::ALL;**
- 20** Did INTERR alarm(s) clear?
 - If yes, go to step [22](#).
 - If no, go to step [21](#).
- 21** Contact next level of technical support for assistance.
- 22** **STOP. This procedure is complete.**

TAP-123

LOTRI Alarm (MCB)

Provides procedure to locate MCB that is not providing a valid timing reference to its mate MCB.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. Removing MCB on one copy could affect traffic if MCB, CDA, or CDB on other copy is failed, removed, or unplugged.
3	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
4	Enter RTRV-ALM-EQPT::ALL::,LOTRI;
5	Does one, both, or no MCB have LOTRI alarm? If one, go to step 8 . If both, go to step 20 . If none, go to step 6 .
6	Enter RTRV-COND-EQPT::ALL::LOTRI;
7	Does one, both, or no MCB have LOTRI alarm? If one, go to step 8 . If both, go to step 20 . If none, go to step 21 .
8	Enter RTRV-EQPT::MCB-x-y-1; where x=rack (2, 3, or 5) and y=shelf (1, or 3) of the MCB module with LORI alarm. Make note of the following fields in the output response to the command: CONSTAT=, HWSTATE=.
9	Does both the CONSTAT=field and HWSTATE=field indicate master or slave? If both indicate slave, go to step 20 . If both indicate master, go to step 10 . If one indicates master, and the other slave, go to step 20 .

- 10 Enter **RTRV-EQPT::MCB-x-x-1;** where x=rack (2, 3, or 5) and y=shelf (1, or 3) of the opposite copy MCB module (slave). Make note of the CLKDEST=field in the output response to the command.
- 11 CAUTION: Possibility of service interruption. Do not force remove a CDA that denied a normal removal. If there is a denial when attempting to remove a CDA in the following steps, go to step 20.

Enter **RMV-EQPT::CDA-x-y-1;** where x=rack and y=shelf of the CDA module listed in the CLKDEST=field.
- 12 Repeat step 11 for remaining CDAs listed in CLKDEST=field.
- 13 Did each CDA module removal result in a COMPLD response?

If yes, go to step 14.
If no, go to step 20.
- 14 The most likely cause of a LOTRI alarm on the master MCB, is the slave MCB failing to transmit the reference clock.

Replace the slave MCB (refer to DLP-112).
- 15 Enter **RTRV-EQPT::MCB-x-y-1;** where x=rack (2, 3, or 5) and y=shelf (1, or 3) of the MCB module that was just replaced. Make note of the following fields in the output response to the command: CONSTAT=, HWSTATE=.
- 16 Does both the CONSTAT=field and HWSTATE=field indicate master or slave?

If both indicate slave, go to step 17.
If both indicate master, go to step 20.
If one indicates master, and the other slave, go to step 20.
- 17 Enter **RST-EQPT::CDA-x-y-1;** for each CDA removed in steps 11 and 12, where x=rack and y=shelf of the CDA modules.
- 18 Enter **RTRV-ALM-EQPT::ALL;;;LOTRI;** then enter **RTRV-COND-EQPT::ALL;;;LOTRI;**
- 19 Did MCB LOTRI alarm or event clear?

If yes, go to step 21.
If no, go to step 20.
- 20 Contact next level of technical support for assistance.
- 21 **STOP. This procedure is complete.**

TAP-124

FWMISM Alarm

Identifies firmware mismatch (FWMISM) between installed MCB and system database. Provides procedure to correct FWMISM alarm.

GENERAL

This procedure asks you to enter R-S-1, where R is the rack number and S is the shelf number where MCB is located. For LMC 240 systems, copy 0 MCB is 5-3-1 and copy 1 MCB is 5-1-1. In all other LMC systems, copy 0 MCB is 2-3-1, and copy 1 MCB is 3-3-1.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-EQPT::MCB-R-S-1;
4	Does CONTSTAT=MASTER or SLAVE? If MASTER, go to step 11 . If SLAVE, go to step 5 .
5	CAUTION: Possibility of service interruption. If a RMV command is denied, do not force RMV the MCB. Enter RMV-EQPT::MCB-R-S-1;
6	Did output return COMPLD or DENY? If COMPLD, go to step 7 . If DENY, go to step 37 .
7	Enter RPGM-EQPT::MCB-R-S-1:::ALL;
8	Enter RST-EQPT::MCB-R-S-1;
9	Wait for MISC-1 alarm to clear, then enter RTRV-EQPT::MCB-R-S-1;

- 10** Does CLKSTAT=READY or NOT-READY?
- If READY, go to step [33](#).
If NOT-READY, wait an additional 5 minutes, enter **RTRV-EQPT::MCB-R-S-1**; and go to step [30](#).
- 11** User should enter **RTRV-EQPT::** against opposite copy MCB. Verify mate CLKSTAT=READY.
- 12** Enter **SW-DX-EQPT::MCB-2-3-1**;
Wait for COMPLD message, then go to next step.
- 13** CAUTION: Possibility of service interruption. If a RMV command is denied, do not force RMV the MCB.
- 14** Verify the MCB that is about to be removed is the slave and that it's mate is MASTER&READY.
- Enter **RMV-EQPT::MCB-R-S-1**;
- 15** Did output return COMPLD or DENY?
- If COMPLD, go to step [16](#).
If DENY, go to step [37](#).
- 16** Enter **RPGM-EQPT::MCB-R-S-1::ALL**;
- 17** Enter **RST-EQPT::MCB-R-S-1**;
- 18** Wait for system to clear MISC-1 alarm, then enter **RTRV-EQPT::MCB-R-S-1**;
- 19** Does CLKSTAT=READY or NOT-READY?
- If READY, go to step [33](#).
If NOT-READY, wait an additional 5 minutes, enter **RTRV-EQPT::MCB-R-S-1**; and go to step [30](#).
- 20** Enter **RTRV-STATE-EQPT::MCB**;
- 21** Is returned state for MCB with FWMISM alarm OOS-MA or OOS-AU?
- If OOS-MA, go to step [24](#).
If OOS-AU, go to step [22](#).
If IS, go to step [3](#).

- 22** CAUTION: Possibility of service interruption. If a RMV command is denied, do not force RMV the MCB.
- Enter **RMV-EQPT::MCB-R-S-1**; for MCB with FWMISM.
- 23** Did output return COMPLD or DENY?
- If COMPLD, go to step [24](#).
If DENY, go to step [37](#).
- 24** Enter **RPGM-EQPT::MCB-R-S-1::ALL**; for MCB with FWMISM.
- 25** Did output return COMPLD or DENY?
- If COMPLD, go to step [26](#).
If DENY, go to step [31](#).
- 26** Enter **RST-EQPT::MCB-R-S-1**; for MCB just reprogrammed.
- 27** Did output return COMPLD or DENY?
- If COMPLD, go to step [28](#).
If DENY, go to step [31](#).
- 28** Wait for MISC-1 alarm to clear, then enter **RTRV-EQPT::MCB-R-S-1**;
- 29** Does CLKSTAT=READY or NOT-READY?
- If READY, go to step [33](#).
If NOT-READY, wait an additional 5 minutes, enter
RTRV-EQPT::MCB-R-S-1; and go to step [30](#).
- 30** Does CLKSTAT=READY or NOT-READY?
- If READY, go to step [33](#).
If NOT-READY, go to step [31](#).
- 31** Enter **DGN-EQPT::MCB-R-S-1**;
- 32** Did MCB pass test phases 1-8?
- If yes, go to step [24](#). If operation fails again, refer to [DLP-112](#), and replace MCB.
If no, refer to [DLP-112](#), and replace MCB, go to step [38](#).

- 33** Enter **RTRV-ALM-EQPT::ALL;**
- 34** Is there a FWMISM alarm still present?
- If yes, go to step [3](#).
If no, go to step [35](#).
- 35** Enter **SW-DX-EQPT::MCB-R-S-1;** to verify MCB operation.
- 36** Was switch successful?
- If yes, wait for system to clear MISC-1 alarm, then go to step [38](#).
If no, go to step [37](#).
- 37** Contact next level of technical support for assistance.
- 38** **STOP. This procedure is complete.**

TAP-125

MISC-1 (MCB)

Identifies that slave Master Clock (MCB) is not ready to perform all of its functions. Provides procedure to clear MISC-1 alarm.

GENERAL

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot clock bus cabling. Reseat connection, or repair cable as required.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. Removing MCB on one copy could affect traffic if MCB, CDA, or CDB on other copy is failed, removed, or unplugged.
3	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Responding to a MISC event means monitoring condition to see if it clears or gets worse. If a MISC event elevates to an alarm, refer to IXL-101 for fault isolation. Has MCB with MISC-1 been installed for at least 30 minutes? If yes, go to step 7 . If no, go to step 5 .
5	Allow MCB 30-minute warm-up time.
6	Did MISC-1 alarm clear? If yes, go to step 16 . If no, go to step 10 .
7	Is there an MCB MISC-1 alarm? If yes, go to step 10 . If no, go to step 8 .
8	Enter RTRV-COND-EQPT::MCB;

- 9 Is there an MCB MISC-1 event?
If yes, go to step 10.
If no, go to step 16.
- 10 Replace MCB with MISC-1 (refer to DLP-112).
- 11 Enter **RTRV-ALM-EQPT::MCB;**
- 12 Is there an MCB MISC-1 alarm?
If yes, go to step 15.
If no, go to step 13.
- 13 Enter **RTRV-COND-EQPT::MCB;**
- 14 Is there an MCB MISC-1 event?
If yes, go to step 15.
If no, go to step 16.
- 15 Contact next level of technical support for assistance.
- 16 **STOP. This procedure is complete.**

TAP-126 SYNCEQPT Alarm (CDA, CDB, or MCB)

Provides procedure to isolate synchronization equipment failure (SYNCEQPT) alarm to a module that must be replaced.

GENERAL

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot clock bus cabling. Reseat connection or repair cable as required.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. Removing MCB, CDA, or CDB on one copy could affect traffic if MCB, CDA, or CDB on other copy is failed, removed, out of service, or unplugged.
3	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
4	Enter RTRV-ALM-EQPT::ALL::,SYNCEQPT;
5	Is SYNCEQPT alarm on MCB, CDA, CDB, or no SYNCEQPT alarm? If MCB, go to step 11. If CDA or CDB, go to step 23. If no SYNCEQPT alarm, go to step 6.
6	Enter RTRV-COND-EQPT::ALL::SYNCEQPT;
7	Is SYNCEQPT event on MCB, CDA, CDB, or no SYNCEQPT event? If MCB, go to step 11. If CDA or CDB, go to step 23. If no SYNCEQPT event, go to step 8.
8	Enter RTRV-ALM-ALL::ALL; then enter RTRV-COND-ALL::ALL;

- 9** Are any other alarms or events reported?
- If yes, go to step [10](#).
If no, go to step [32](#).
- 10** Refer to IXL-[101](#) to resolve other alarms or events, then go to step [32](#).
- 11** Enter **RTRV-EQPT::MCB-R-S-1**; for MCB in alarm, where R=rack, and S=shelf.
- 12** On screen display, does CONSTAT=MASTER or SLAVE?
- If MASTER, go to step [13](#).
If SLAVE, go to step [17](#).
- 13** Enter **SW-DX-EQPT::MCB-R-S-1**; for MCB in alarm.
- 14** Did output return COMPLD or DENY?
- If COMPLD, go to step [17](#).
If DENY, go to step [15](#).
- 15** Enter **RTRV-ALM-ALL::MCB**; then enter **RTRV-COND-ALL::MCB**;
- 16** Are any alarms or events on slave mate MCB?
- If yes, go to step [17](#).
If no, go to step [31](#).
- 17** Enter **RMV-EQPT::MCB-R-S-1**; for slave MCB in alarm.
- 18** Did output return COMPLD or DENY?
- If COMPLD, go to step [22](#).
If DENY, go to step [19](#).
- 19** Enter **RTRV-ALM-EQPT::ALL**; then enter **RTRV-COND-EQPT::ALL**;
- 20** Are any alarms or events reported on any equipment that is on opposite copy from slave clock?
- If yes, go to step [21](#).
If no, go to step [31](#).
- 21** MCB cannot be logically removed if there is a problem with opposite copy.
- Refer to IXL-[101](#) to resolve other alarms or events, then return to step [17](#) of this procedure.

- 22** Remove and replace slave MCB in alarm. Refer to DLP-112. Then, return to step 29 of this procedure.
- 23** Enter **RMV-EQPT::N-R-Sh-S**; for CDA or CDB in alarm. Use AID retrieved in step 4 or 6.
- 24** Did output return COMPLD or DENY?
 - If COMPLD, go to step 28.
 - If DENY, go to step 25.
- 25** Enter **RTRV-ALM-EQPT::ALL**; then enter **RTRV-COND-EQPT::ALL**;
- 26** Are any alarms or events reported on any equipment that is on opposite copy from CDA or CDB?
 - If yes, go to step 27.
 - If no, go to step 31.
- 27** Refer to IXL-101 to resolve other alarms or events, then go to step 23 of this procedure.
- 28** Remove and replace module in alarm CDA (refer to DLP-114) or CDB (refer to DLP-115).
- 29** Enter **RTRV-ALM-EQPT::ALL::,SYNCEQPT**; and obtain results, then enter **RTRV-COND-EQPT::ALL::,SYNCEQPT**;
- 30** Did SYNCEQPT alarm or event clear?
 - If yes, go to step 32.
 - If no, go to step 31.
- 31** Contact next level of technical support for assistance.
- 32** **STOP. This procedure is complete.**

TAP-127

TSI Alarm (M16, M32, M40)

Provides procedure to isolate Time Slot Interchange (TSI) alarm to a faulty M16, M32, or M40.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack, Sh=shelf, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. Removing M16, M32, or M40 on one side of matrix could affect traffic if CDA, CDB, IPB, M16, M32, MCB, or power group on other side of matrix is failed, removed, or unplugged.
3	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Enter RTRV-ALM-EQPT::N ; and make note of M16, M32, or M40 AID with TSI alarm.
5	Enter RTRV-STATE-EQPT::N-R-Sh-S ; using AID retrieved in step 4.
6	Is returned equipment state IS, IS-ANR, or OOS-AU? If IS or IS-ANR, go to step 12. If OOS-AU, go to step 7.
7	Enter RMV-EQPT::N-R-Sh-S ; using AID retrieved in step 4.
8	Did output return COMPLD or DENY? If COMPLD, go to step 9. If DENY, go to step 18.
9	Replace M16 (refer to DLP-113), M32 (refer to DLP-100), or M40 (refer to DLP-133).

- 10** Enter **RTRV-ALM-EQPT::N**;
- 11** Did TSI alarm clear?
- If yes, go to step [20](#).
If no, go to step [19](#).
- 12** Enter **RMV-EQPT::N-R-Sh-S**; using AID of M16/M32/M40 in alarm.
- 13** Did output return COMPLD or DENY?
- If COMPLD, go to step [14](#).
If DENY, go to step [18](#).
- 14** Replace M16/M32/M40 in alarm. If M16, refer to [DLP-113](#); if M32, refer to [DLP-138](#); if M40, refer to [DLP-133](#).
- 15** Enter **RTRV-ALM-EQPT::N**;
- 16** Did TSI alarm clear? (M16/M32/M40 may show IMPROPRMVL for approximately 2 minutes.)
- If yes, go to step [20](#).
If no, go to step [17](#).
- 17** Was module with TSI alarm already replaced in this procedure?
- If yes, go to step [19](#).
If no, go to step [9](#).
- 18** CAUTION: Possibility of service interruption. Service affecting. Do not remove M16, M32, or M40 that denied removal; doing so drops traffic. Go to step [19](#).
- 19** Contact next level of technical support for assistance.
- 20** **STOP. This procedure is complete.**

TAP-128

XIDMISM Alarm (Quad, Shelf)

Provides procedure to clear equipment alarms or events that might cause a cross-connect ID mismatch (XIDMISM) alarm. Identifies system signal path for STS-1, STS-3C, T3, T1, or VT1 associated with XIDMISM alarm. This procedure locates suspect equipment or facility problems and provides alarm-clearing information.

GENERAL

Do not do this procedure for transitory XIDMISM alarms. Protection switching, making new cross-connections, and poor signal conditions can cause transitory XIDMISM alarms.

STEP	PROCEDURE
1	Use this procedure as a guide to determine source of XIDMISM problem. XIDMISM can be caused by many different types of failures (modules, cabling, software), and resolution may require expertise beyond that described in this procedure. Contact next level of support if results you get from running this procedure are not clear to you, or if results differ from expected results described.
2	Enter RTRV-ALM-EQPT::ALL ; and wait for alarm report, then enter RTRV-COND-EQPT::ALL ;
3	Are there any equipment alarms or events? If yes, go to step 4. If no, go to step 8.
4	Are there any GTI alarms or events? If yes, go to step 19. If no, go to step 5.
5	Refer to IXL-101 and clear alarms or events other than XIDMISM, then go to step 6.
6	Enter RTRV-ALM-EQPT::ALL ; and wait for alarm report, then enter RTRV-COND-EQPT::ALL ;
7	Did XIDMISM condition clear? If yes, go to step 20 . If no, go to step 8.

- 8** Is XIDMISM against a shelf or a quadrant?

If against a shelf, enter **RTRV-XIDMISM::SHELF-R-Sh-1**; for shelf with XIDMISM alarm, then go to step 9.

If against a quadrant, enter **RTRV-XIDMISM::QUAD-R-Sh-S**; for quadrant with XIDMISM alarm, then go to step 9.

- 9** Did output return COMPLD followed by a report, or did it return COMPLD with no report?

If COMPLD followed by a report, go step 10.

If COMPLD with no report, go to step 19.

- 10** Make note of report generated by RTRV-XIDMISM command output.

RTRV-XIDMISM command output parameters can be all or some of the following. For details, refer to 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ):

- a. FROM (receive side of network with connection ID mismatch)
- b. TO (transmit side of network with connection ID mismatch)
- c. FROMTYPE (STS-1, STS-3C, T1, T3, TR, or VT1)
- d. TOTYPE (STS-1, STS-3C, T1, T3, TR, or VT1)
- e. I/O-AID (equipment AID detecting connect ID mismatch)
- f. XID0 (connect ID mismatch detected in copy 0, <No Value> no mismatch)
- g. XID1 (connect ID mismatch detected in copy 1, <No Value> no mismatch)

- 11** Enter **FLTLOC-PATH-AID::x,y**; where AID can be STS-1, STS-3C, T1, T3, or VT1, x=FROMTYPE, and y=TOTYPE reported in output of RTRV-XIDMISM command.

Troubleshooting aid: Enter FLTLOC-PATH on a sampling of STS-1s, STS-3Cs, T1s, T3s, or VT1s identified in step 10. Compare the different entries and look for a common module that is identified with a problem in the DATA output parameter. If a common module shows up on different paths, replace that module first.

Refer to the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ). Look at DATA output parameters for details on identifying equipment, data, or facility problems.

- 12** Check results from FLTLOC-PATH command.

Output of FLTLOC-PATH command indicates affected copy (copy with a problem, copy 0 or copy 1). Affected copy is at end of list. All actions must be confined to indicated COPY so active copy is not affected.

- 13** Are any M16, M32, M40, EP3, or O1B module problems identified in FLTLOC-PATH command DATA output parameter?
- If yes, go to step 14.
If no, go to step 19.
- 14** If more than one module is identified as a problem, replace modules in the following order (go to step 15):
- a. End stage (third stage) M16/M32
 - b. End stage (first stage) M16/M32
 - c. Center stage M16/M40
 - d. Transmit EP3 or O1B
 - e. Receive EP3 or O1B
- 15** Replace one module (refer to IXL-103) then go to step 16.
- 16** Is XIDMISM against a shelf or a quadrant?
- If against a shelf, enter **RTRV-XIDMISM::SHELF-R-Sh-1**; for shelf with XIDMISM alarm.
If against a quadrant, enter **RTRV-XIDMISM::QUAD-R-Sh-S**; for quadrant with XIDMISM alarm.
- 17** Did returned message indicate XIDMISM exists or that XIDMISM has cleared?
- If XIDMISM exists, go to step 18.
If XIDMISM has cleared, go to step 20.
- 18** Have all suspect modules been replaced?
- If yes, go to step 19.
If no, go to step 14 and replace next suspect.
- 19** Contact next level of technical support for assistance.
- 20** **STOP. This procedure is complete.**

TAP-129

DTLCKCPYFL (Shelf, Quad)

Provides procedure to clear a data lock copy fail.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack, Sh=shelf, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-ALM-EQPT::ALL;
4	Is there an IPU/SPB CONTR or CONTBUS alarm on same quad or shelf that has DTLCKCPYFL alarm? If yes, go to step 5 . If no, go to step 6 .
5	Clear alarm (refer to IXL-101), then go to step 8 .
6	Enter SW-DX-EQPT::N-Sh-S; for IPU or SPB in same quad or shelf as one with DTLCKCPYFL alarm.
7	Did output return COMPLD or DENY? If COMPLD, go to step 8 . If DENY, go to step 10 .
8	Enter RTRV-ALM-EQPT::ALL;
9	Did DTLCKCPYFL alarm clear? If yes, go to step 12 . If no, go to step 11 .

- 10** Indicates a problem with IPU or SPB. There should be an alarm against IPU or SPB.
If there is an alarm on IPU or SPB, refer to IXL-[101](#) and clear alarm, then go to step [8](#).
If there is no alarm on IPU or SPB go to step [11](#).
- 11** Contact next level of technical support for assistance.
- 12** **STOP. This procedure is complete.**

TAP-130

INHSDWX (CPU, IPU, SPB)

Provides procedure to clear a CPU, IPU, or SPB inhibit switch to duplex equipment alarm.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	Enter RTRV-ALM-EQPT::ALL;
2	Does module with INHSDWX alarm or its mate have an alarm other than inhibit alarm? If yes, go to step 3. If no, go to step 4.
3	Refer to IXL-101 and clear other alarms on module with INHSDWX alarm or its mate module.
4	Do you want to clear INHSDWX alarm? If yes, go to step 5. If no, go to step 11.
5	Enter ALW-SW-EQPT::N-R-Sh-S; for module with INHSDWX alarm.
6	Enter RTRV-ALM-EQPT::N-R-Sh-S;
7	Did INHSDWX alarm clear? If yes, go to step 12. If no, go to step 8.
8	Enter INH-SW-EQPT::N-R-Sh-S; then enter ALW-SW-EQPT::N-R-Sh-S; for module with INHSDWX alarm.
9	Enter RTRV-ALM-EQPT::N-R-Sh-S;

- 10 Did INHSWDX alarm clear?

If yes, go to step [12](#).
If no, go to step [11](#).
- 11 Contact next level of technical support for assistance.
- 12 **STOP. This procedure is complete.**

TAP-131

INHSWPR Event (DSI, ES1, EP3, HMU, LMU)

Provides procedure to clear an inhibit switch to protection event.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	Enter RTRV-ALM-EQPT::ALL ;
2	Are there any alarms on protect module that is in same group as working module with INHSWPR event? If yes, go to step 3. If no, go to step 4.
3	Refer to IXL-101 to resolve other alarms on protect module, then go to step 4.
4	Enter RTRV-COND-EQPT::ALL ;
5	Is INHSWPR condition reported on one module, a protection group, or entire system? If one module, go to step 6. If protection group, go to step 7. If entire system, go to step 8.
6	Enter ALW-SWTOPROTN-EQPT::N-R-Sh-S ; using address retrieved in step 4, then go to step 9.
7	Enter ALW-SWTOPROTN-EQPT::N-R-Sh-S ; using address of protect module, then go to step 9.
8	Enter ALW-SWTOPROTN-EQPT::ALL ;
9	Enter RTRV-COND-EQPT::ALL ;
10	Did INHSWPR condition clear? If yes, go to step 12. If no, go to step 11.

- 11 Contact next level of technical support for assistance.
- 12 **STOP. This procedure is complete.**

TAP-132

INHSWWK Event (DSI, ES1, EP3, HMU, LMU)

Provides procedure to clear an inhibit switch to protection event.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	Enter RTRV-ALM-EQPT::ALL ;
2	Are there any alarms on protect module that is in same group as working module with INHSWWK event? If yes, go to step 3. If no, go to step 4.
3	Refer to IXL-101 to resolve other alarms on protect module, then go to step 4.
4	Enter RTRV-COND-EQPT::ALL ;
5	Is INHSWWK condition reported on one module, a protection group, or entire system? If one module, go to step 6. If protection group, go to step 7. If entire system, go to step 8.
6	Enter ALW-SWTOPROTN-EQPT::N-R-Sh-S ; using address retrieved in step 4, then go to step 9.
7	Enter ALW-SWTOPROTN-EQPT::N-R-Sh-S ; using address of protect module, then go to step 9.
8	Enter ALW-SWTOPROTN-EQPT::ALL ;
9	Enter RTRV-COND-EQPT::ALL ;
10	Did INHSWWK condition clear? If yes, go to step 12. If no, go to step 11.

- 11 Contact next level of technical support for assistance.
- 12 **STOP. This procedure is complete.**

TAP-133

Lockout Condition (DSI, EP3, ES1, HMU, LMU)

Identifies and provides procedure to clear lockout condition.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	Enter RTRV-ALM-EQPT::ALL;
2	Are there other alarms on module with lockout condition? If yes, go to step 3. If no, go to step 4.
3	Refer to IXL-101 to resolve all other alarms or conditions, then go to step 6.
4	Enter RTRV-COND-EQPT::ALL;
5	Are any event conditions on module with lockout condition? If yes, go to step 3. If no, go to step 6.
6	Lockout occurs whenever there is an excessive amount of protection switching. Lockout does not automatically clear when excessive switches cease. Investigate reason for excessive protection switching.
7	Enter RTRV-EQPT::N-R-Sh-S; for module in alarm.
8	Did output indicate PROT STAT=MAIN SWITCHED? If yes, go to step 11. If no, go to step 9.
9	Enter INH-SWTOPROTN-EQPT::N-R-Sh-S; then enter ALW-SWTOPROTN-EQPT::N-R-Sh-S; for module with lockout alarm.

- 10 Did output return COMPLD or DENY?
If COMPLD, go to step 14.
If DENY, go to step 16.
- 11 Enter **RMV-EQPT::N-R-Sh-S**; for module in alarm.
- 12 Enter **RST-EQPT::N-R-Sh-S**; for module in alarm.
- 13 Did output return COMPLD or DENY?
If COMPLD, go to step 14.
If DENY, go to step 16.
- 14 Enter **RTRV-ALM-EQPT::N**; for module type in alarm.
- 15 Did lockout alarm clear?
If yes, go to step 17.
If no, go to step 16.
- 16 Contact next level of technical support for assistance.
- 17 **STOP. This procedure is complete.**

TAP-134

CONTBUS Alarm (IPU, SPB)

Provides procedure to isolate a control bus interface failure to a faulty module.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack, Sh=shelf, and S=slot location number of the equipment in the shelf.

Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot control bus cabling.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	<i>WARNING: Possibility of equipment damage. Possibility of damage to equipment. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
3	Enter RTRV-ALM-EQPT::ALL ; and make note of AID that has CONTBUS alarm.
4	Is CONTBUS alarm against IPU or SPB? If SPB, go to step 5 . If IPU, go to step 7 .
5	Enter DGN-EQPT::SPB-R-SH-S ; on active SPB.
6	Did result indicate a problem with the RI Bus? If yes, go to step 27 . If no, go to step 7 .
7	Enter RTRV-STATE-EQPT::N-R-Sh-S ; using AID retrieved in step 3 .
8	Is state IS? If yes, go to step 9 . If no, go to step 11 .

- 9 Enter **SW-DX-EQPT::N-R-Sh-S**; using AID retrieved in step 3.
- 10 Does output return COMPLD or DENY?
If COMPLD, go to step 11.
If DENY, go to step 13.
- 11 Enter **RMV-EQPT::N-R-Sh-S**; using AID retrieved in step 3.
- 12 Did output return COMPLD or DENY?
If COMPLD, go to step 18.
If DENY, go to step 13.
- 13 Enter **RTRV-EQPT::N-R-Sh-S**; using AID retrieved in step 3. Make note of MATEID=.
- 14 Enter **RTRV-STATE-EQPT::N-R-Sh-S**; using MATEID retrieved in step 13.
- 15 CAUTION: Possibility of service interruption. Do not remove IPU or SPB with CONTBUS alarm unless mate is in-service (IS).

Is state of mate module IS?

If yes, go to step 16.
If no, go to step 27.
- 16 CAUTION: Possibility of service interruption. Enter only AID of IPU or SPB with CONTBUS alarm.

Enter **RMV-EQPT::N-R-Sh-S::FRCD**; using AID retrieved in step 3.
- 17 Did output return COMPLD or DENY?
If COMPLD, go to step 18.
If DENY, go to step 27.
- 18 Locate and unseat IPU or SPB with CONTBUS alarm.
- 19 After 10 seconds, reseal module unseated in step 18.
- 20 Enter **RST-EQPT::N-R-Sh-S**; for IPU or SPB with CONTBUS alarm.
- 21 Did output return COMPLD or DENY?
If COMPLD, go to step 22.
If DENY, go to step 24.
- 22 Enter **RTRV-ALM-EQPT::ALL**;

- 23** Did CONTBUS alarm clear?

If yes, go to step [28](#).
If no, go to step [24](#).
- 24** Replace IPU or SPB with CONTBUS alarm (refer to [IXL-103](#)).
- 25** Enter **RTRV-ALM-EQPT::ALL;**
- 26** Did CONTBUS alarm clear?

If yes, go to step [28](#).
If no, go to step [27](#).
- 27** Contact next level of technical support for assistance.
- 28** **STOP. This procedure is complete.**

TAP-135

BKUPMEMS Alarm (OPD)

Provides procedure to locate problems with secondary OPD (optical disk) backup memory. Checks to see if power is applied and if cables are properly connected. If power and cables are functioning, this isolates problem to bad OPD.

GENERAL

This procedure asks you to enter an address as Sh-S, where Sh=shelf number and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot control bus cabling. Reseat connection or repair cable as required.

STEP	PROCEDURE
1	Are PST and PSF power switches set to ON? If yes, go to step 2. If no, go to step 5.
2	Check OPD power and data cable connections.
3	Are power and data cables properly connected? If yes, go to step 10. If no, go to step 4.
4	Connect power and data cable as required, then go to step 8.
5	Set power switches to ON.
6	Are power and data cables properly connected? If yes, go to step 8. If no, go to step 7.
7	Connect power and data cable as required.
8	Enter RTRV-ALM-ALL::ALL;

- 9 Did BKUPMEMS alarm clear?
- If yes, go to step 19.
If no, go to step 10.
- 10 Logically remove disk on same copy as OPD with BKUPMEMS alarm.
Enter **RMV-EQPT::DSK-1-Sh-S;**
- 11 When power supplies are set to OFF several MJ and MN alarms are generated. Ignore these alarms on APS rack.
- 12 Make sure you are powering down PSTs, not PSFs. PSTs are smaller than PSFs. When PST power switch is set to OFF, red ALM indicator lights. Also, green LED on DSK lights continuously.
- On same copy PSTs as OPD with BKUPMEMS alarm, set ON/OFF switch to OFF (UNLOCK).
- 13 On PSTs just turned off, set ON/OFF switch to ON (LOCK).
- 14 RST-EQPT command for DSK can take up to 20 minutes to complete.
- Restore disk on same copy as power supplies just recycled.
Enter **RST-EQPT::DSK-1-Sh-S;**
- 15 Did output return COMPLD or DENY?
- If COMPLD, go to step 16.
If DENY, go to step 20.
- 16 Did BKUPMEMS alarm clear?
- If yes, go to step 21.
If no, go to step 17.
- 17 Replace OPD assembly (refer to DLP-110).
- 18 Enter **RTRV-ALM-ALL::ALL;**
- 19 Did BKUPMEMS alarm clear?
- If yes, go to step 21.
If no, go to step 20.
- 20 Contact next level of technical support for assistance.
- 21 **STOP. This procedure is complete.**

TAP-136

CLKLCK0 or CLKLCK1 Alarm (CDA, CDB, MCB, OXB)

Provides procedure to isolate clock lock interface failure on Electrical-Optical Converter (EOC) shelf, SI48 shelf, end-stage shelf, center-stage shelf, I/O quadrant, or all shelves.

CLKLCK indicates that the modules in the shelf are locked to the clock on copy 0 or copy 1.

GENERAL

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot clock cabling. Reseat connection or repair cable as required.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
3	Enter RTRV-ALM-EQPT::ALL ; then observe report and make note of any CDB or OXB alarms.
4	Do alarms exist against any CDA, CDB, MCB, or OXB in shelf with CLKLCK alarm, or do alarms exist against any CDB or OXB in associated I/O or matrix? If yes, go to step 7 . If no, go to step 5 .
5	Enter RTRV-COND-EQPT::ALL ; then observe report and make note of any CDA, CDB, MCB, or OXB events.
6	Do events exist against any CDA, CDB, MCB, or OXB in shelf with CLKLCK alarm, or do events exist against any CDB or OXB in associated I/O or matrix? If yes, go to step 7 . If no, go to step 5 .
7	Clear CDA, CDB, MCB, or OXB alarm or event (refer to IXL-101), then go to step 8 .

- 8 Did CLKLCK alarm clear?
If yes, go to step 10.
If no, go to step 9.
- 9 Contact next level of technical support for assistance.
- 10 **STOP. This procedure is complete.**

TAP-138 PRCDRERR

Procedure error (PRCDRERR) identifies that software does not support provisioning of equipment.

STEP	PROCEDURE
1	Installed equipment is not supported. Check equipment configuration.
2	STOP. This procedure is complete.

TAP-139 FANEQPT Alarm (FAN)

Provides procedure to identify fan assembly that is not operating properly.

STEP	PROCEDURE
1	<p>A current sensor in blower/fan assembly detects improper fan operation, which causes a FANEQPT alarm. Alarm message does not indicate which of the three fans in blower/fan assembly is not working properly.</p> <p>Are all fans in alarmed fan assembly operating at approximately same speed?</p> <p>If yes, go to step 3. If no, go to step 2.</p>
2	<p>Are power leads plugged into individual fans?</p> <p>If yes, go to step 3. If no, go to step 6.</p>
3	<p>Are cables correctly plugged into J801, J802, J803, and J804 on side of PDU?</p> <p>If yes, go to step 5. If no, go to step 4.</p>
4	<p>Plug cables in correctly, then go to step 7.</p>
5	<p>Replace fan assembly (refer to DLP-122), then go to step 7.</p>
6	<p>Plug power leads into individual fans.</p>
7	<p>Enter RTRV-ALM-EQPT::ALL;</p>
8	<p>Did FANEQPT alarm clear?</p> <p>If yes, go to step 10. If no, go to step 9.</p>
9	<p>Contact next level of technical support for assistance.</p>
10	<p>STOP. This procedure is complete.</p>

TAP-140

BKUPMEMP Alarm (DSK)

Provides procedure to isolate a primary backup memory failure to missing power, a faulty cable, or a faulty module.

PREREQUISITES

Enter **RTRV-ALM-EQPT::ALL**; to check database fault. If you get a message indicating database CRC error detected, do not do this procedure. If both DSKs indicate a BKUPMEMP alarm and system goes to Limited mode, a data fault occurred. Contact the next level of technical support for assistance.

GENERAL

This procedure asks you to enter a disk address as Sh-S, where Sh=shelf number (shelf 3 for copy 0 and shelf 4 for copy 1) and S=equipment slot location (slot 1 for copy 0 and slot 2 for copy 1). Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-ALM-EQPT::ALL ; and make note of retrieved AID.
4	Are PST and PSF power switches set to ON? If yes, go to step 6. If no, go to step 5.
5	Set power switches to ON.
6	Enter RMV-EQPT::DSK-1-Sh-S ; for hard drive in alarm.
7	Enter RST-EQPT::DSK-1-Sh-S ; for hard drive in alarm. (Hard disk takes about 20 minutes to restore.)
8	Did output return COMPLD or DENY? If COMPLD, go to step 15. If DENY, go to step 9.

- 9 Verify that power and data cables make good connections.
- 10 Do power and data cables make good connection?
 - If yes, go to step 14.
 - If no, go to step 11.
- 11 Properly install power and data cable.
- 12 Enter **RST-EQPT::DSK-1-Sh-S**; for hard drive in alarm. (Response takes about 20 minutes.)
- 13 Did output return COMPLD or DENY?
 - If COMPLD, go to step 15.
 - If DENY, go to step 14.
- 14 Replace disk assembly (refer to DLP-110).
- 15 Enter **RTRV-ALM-EQPT::ALL**;
- 16 Did DSK BKUPMEMP alarm clear?
 - If yes, go to step 19.
 - If no, go to step 17.
- 17 Was DSK already replaced in this procedure?
 - If yes, go to step 18.
 - If no, go to step 14.
- 18 Contact next level of technical support for assistance.
- 19 **STOP. This procedure is complete.**

TAP-141

CTNEQPT Alarm (EOB, IOB, IPB, LMU, OXB, RPB, S3M)

Provides procedure to isolate CTNEQPT alarm to a module that must be reset or replaced.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. This procedure can remove an IOB, IPB, OXB, RPB, EOB, S3M or LMU from service. During this time the matrix is locked to a single working copy, which results in no protection. While matrix is locked, do not logically remove (RMV) or physically remove opposite copy IOB, IPB, OXB, RPB, EOB, S3M or LMU. Doing so causes a loss of traffic.
3	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Enter RTRV-ALM-EQPT::ALL ; and make note of AID that has CTNEQPT alarm.
5	Enter RMV-EQPT::N-R-Sh-S ; using AID retrieved in step 4.
6	Did output return COMPLD or DENY? If COMPLD, go to step 7. If DENY, go to step 14.
7	Enter RST-EQPT::N-R-Sh-S ; using AID retrieved in step 4.
8	Did output return COMPLD or DENY? If COMPLD, go to step 9. If DENY, go to step 11.
9	Enter RTRV-ALM-EQPT::N ; using equipment name (N) retrieved in step 4.

- 10 Did CTNEQPT alarm clear?
If yes, go to step 15.
If no, go to step 11.
- 11 Replace module with CTNEQPT alarm (refer to IXL-103).
- 12 Enter **RTRV-ALM-EQPT::N**; using equipment name (N) retrieved in step 4.
- 13 Did CTNEQPT alarm clear?
If yes, go to step 15.
If no, go to step 14.
- 14 Contact next level of technical support for assistance.
- 15 **STOP. This procedure is complete.**

TAP-142

CONTR Alarm (CPU, IPU, SPB)

Provides procedure to isolate CPU, IPU, or SPB control processor failure to a faulty module.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-ALM-EQPT::ALL ; and note AID with CONTR alarm.
4	Enter RTRV-STATE-EQPT::N-R-Sh-S ; using AID retrieved in step 3.
5	Is state IS? If yes, go to step 6. If no, go to step 8.
6	Enter SW-DX-EQPT::N-R-Sh-S ; using AID retrieved in step 3.
7	Did output return COMPLD or DENY? If COMPLD, go to step 8. If DENY, go to step 10.
8	Enter RMV-EQPT::N-R-Sh-S ; for module in alarm.
9	Did output return COMPLD or DENY? If COMPLD, go to step 15. If DENY, go to step 10.
10	CAUTION: Possibility of service interruption. Do not remove CPU, IPU, or SPB with CONTR alarm unless its mate is in-service (IS).

- 11 Enter **RTRV-STATE-EQPT::N-R-Sh-S**; for mate of module in alarm.
- 12 Is state IS?

If yes, go to step 13.
If no, go to step 24.
- 13 CAUTION: Possibility of service interruption. Enter only AID of CPU, IPU, or SPB with CONTR alarm.

Enter **RMV-EQPT::N-R-Sh-S::FRCD**; for module in alarm.
- 14 Did output return COMPLD or DENY?

If COMPLD, go to step 15.
If DENY, go to step 24.
- 15 Locate CPU, IPU, or SPB with CONTR alarm. Unseat module.
- 16 After 10 seconds, insert same module into slot.
- 17 Enter **RST-EQPT::N-R-Sh-S**; for module in alarm.
- 18 Did output return COMPLD or DENY?

If COMPLD, go to step 19.
If DENY, go to step 21.
- 19 Enter **RTRV-ALM-EQPT::ALL**;
- 20 Did CONTR alarm clear?

If yes, go to step 25.
If no, go to step 21.
- 21 Replace CPU (refer to DLP-106), IPU (refer to DLP-104), or SPB (refer to DLP-111).
- 22 Enter **RTRV-ALM-EQPT::ALL**;
- 23 Did CONTR alarm clear?

If yes, go to step 25.
If no, go to step 24.
- 24 Contact next level of technical support for assistance.
- 25 **STOP. This procedure is complete.**

TAP-143

IMPROPRMVL Alarm

Provides procedure to locate a module that was removed without first logically removing it, and to clear an IMPROPRMVL alarm caused by an improper removal.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Is IMPROPRMVL alarm declared on a module, fan, or PDU/RDU? If module, go to step 4 . If fan, go to step 7 . If PDU or RDU and PDU or RDU is physically present, this indicates a bus problem. Go to step 18 .
4	If there are several IMPROPRMVL alarms on modules in the APS shelf, including SBTs, clear SBT alarms first. Is there a module in slot with IMPROPRMVL alarm? If yes, go to step 5 . If no, go to step 6 .
5	Replace module (refer to IXL-103), then go to step 16 .
6	Install module (refer to IXL-103), wait 60 seconds, then go to step 16 .
7	Are cables correctly plugged into J801, J802, J803, and J804 on side of PDU? If yes, go to step 11 . If no, go to step 8 .
8	Correctly plug cables into jacks.
9	Enter RTRV-ALM-EQPT::ALL;

- 10 Did IMPROPRMVL alarm clear?
If yes, go to step 19.
If no, go to step 11.
- 11 Are cables plugged into fan assembly?
If yes, go to step 15.
If no, go to step 12.
- 12 Correctly plug cables into jacks.
- 13 Enter **RTRV-ALM-EQPT::ALL;**
- 14 Did IMPROPRMVL alarm clear?
If yes, go to step 19.
If no, go to step 15.
- 15 Replace fan assembly (refer to DLP-122), then go to step 16.
- 16 Enter **RTRV-ALM-EQPT::ALL;**
- 17 Did IMPROPRMVL alarm clear?
If yes, go to step 19.
If no, go to step 18.
- 18 Contact next level of technical support for assistance.
- 19 **STOP. This procedure is complete.**

TAP-144

Remove DATALCK1 Alarm (Shelf, Quad)

Provides procedure to isolate an I/O shelf, quad locked to a copy.

GENERAL

DATALCK1 indicates that an I/O shelf or quad is locked to copy 1 and problem is in copy 0.

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot data bus cabling. Reseat connection or repair cable as required.

STEP	PROCEDURE
1	Enter RTRV-ALM-EQPT::ALL ; then check for alarms on any OXB, EOB, IPB, M16, M32, or M40.
2	Enter RTRV-COND-EQPT::ALL ; then check for condition on any OXB, EOB, IPB, M16, M32, or M40.
3	Are there OXB, EOB, IPB, M16, M32, or M40 alarms or conditions in shelf with DATALCK alarm? If yes, go to step 4. If no, go to step 7.
4	Clear alarm or condition (refer to IXL-101), then go to step 5 of this procedure.
5	Enter RTRV-ALM-EQPT::SHELF ;
6	Did DATALCK alarm clear? If yes, go to step 10. If no, go to step 7.
7	Refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot data bus cabling. Reseat connection or repair cable as required.
8	Did DATALCK alarm clear? If yes, go to step 10. If no, go to step 9.

- 9 Contact next level of technical support for assistance.
- 10 **STOP. This procedure is complete.**

TAP-145

DBF or DBFFT (OPD)

Provides procedure to locate problems with database backup memory.

PREREQUISITES

Enter **RTRV-ALM-EQPT::ALL**; to check database fault. If you get a message indicating database CRC error detected, do not do this procedure. If both DSKs indicate a BKUPMEMP alarm and system goes to Limited mode, a data fault occurred. Contact the next level of technical support for assistance.

GENERAL

This procedure asks you to enter an address as Sh-S, where Sh=shelf number and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

If the problem is not in a module, refer to the 1631 SX LMC Engineering Support Documentation manual (PN 3AL45396AJ), and troubleshoot control bus cabling. Reseat connection or repair cable as required.

STEP	PROCEDURE
1	Enter RTRV-ALM-ALL::ALL ;
2	Did output indicate BKUPMEMS or BKUPMEMP alarm? If yes, go to step 3. If no, go to step 5.
3	Resolve BKUPMEMS (OPD) or BKUPMEMP (DSK) alarm (refer to IXL-101), then go to step 4.
4	Enter RTRV-ALM-ALL::ALL ;
5	Are there other alarms in system? If yes, go to step 6. If no, go to step 7.
6	Resolve alarms (refer to IXL-101), then go to step 7.
7	Enter ACT-DB-BACKUP::OPD-1-Sh-S ; for OPD with DBF or DBFFT in alarm. ACT-DB-BACKUP command can take up to 40 minutes to complete.

- 8 Was database backup successful?
If yes, go to step 26.
If no, go to step 9.
- 9 Make note of error messages.
- 10 Did database backup fail because a database backup is in progress?
If yes, go to step 11.
If no, go to step 14.
- 11 Do you wish to continue or cancel database backup in progress?
If cancel, go to step 12.
If continue, go to step 13.
- 12 Enter **CANC-DB-BACKUP**; then go to step 1.
- 13 Did database backup succeed?
If yes, go to step 26.
If no, go to step 15.
- 14 Did database backup fail because of a media problem?
If yes, go to step 17.
If no, go to step 15.
- 15 Enter **ACT-DB-BACKUP::OPD-1-Sh-S**; on other copy OPD (OPD that does not have DBF).
- 16 Did database backup succeed?
If yes, go to step 40.
If no, go to step 22.
- 17 Is there a disk in OPD?
If yes, go to step 19.
If no, go to step 18.
- 18 Put disk in OPD, then go to step 20.
- 19 Replace disk in OPD with known good disk.
- 20 Enter **ACT-DB-BACKUP::OPD-1-Sh-S**; for OPD with DBF or DBFFT alarm.

- 21 Did database backup succeed?
If yes, go to step 26.
If no, go to step 40.
- 22 Make note of error messages.
- 23 Compare error messages from OPD 1 and OPD 2.
- 24 Did you encounter same problem with OPD 1 and OPD 2?
If yes, go to step 25.
If no, go to step 40.
- 25 Resolve error messages, then go to step 1.
- 26 Did original DBF or DBFFT occur during automatic delayed activity scheduled backup?
If yes or uncertain, go to step 27.
If no, go to step 34.
- 27 Enter **RTRV-DA::ALL;**
- 28 Note order number for ACT-DB-BACKUP command that caused DBF or DBFFT event.
- 29 Enter **ACT-DA::x;** where x=order number for ACT-DB-BACKUP command.
- 30 Did database backup succeed?
If yes, go to step 34.
If no, go to step 31.
- 31 Problem could be how ACT-DB-BACKUP command is set up in delayed activation table. Reconstruct ACT-DB-BACKUP command for delayed activity.
- 32 Enter **ACT-DA::x;** where x=order number for ACT-DB-BACKUP command.
- 33 Did database backup succeed?
If yes, go to step 34.
If no, go to step 40.
- 34 Enter **RTRV-COND-EQPT::OPD;**

- 35** Did DBF or DBFFT event clear?
- If yes, go to step [41](#).
If no, go to step [36](#).
- 36** Do you wish to manually clear DBF or DBFF event?
- If yes, go to step [37](#).
If no, go to step [40](#).
- 37** Enter **CLR-ALM-EQPT::OPD-0-x:::z**; where x=1 or 2 and z=DBF or DBFFT, whichever you are clearing.
- 38** Enter **RTRV-COND-EQPT::OPD**;
- 39** Did DBF or DBFFT event clear?
- If yes, go to step [41](#).
If no, go to step [40](#).
- 40** Contact next level of technical support for assistance.
- 41** **STOP. This procedure is complete.**

TAP-146 DCCEQPT (DSB)

Provides procedure to clear a Data Communications Channel Equipment (DCCEQPT) alarm.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack, Sh=shelf, and S=slot location number of the DSB in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RMV-EQPT::DSB-R-Sh-S ; using AID of DSB in alarm.
4	Enter RST-EQPT::DSB-R-Sh-S ;
5	Did output return COMPLD or DENY? If COMPLD, go to step 7 . If DENY, go to step 6 .
6	Replace DSB with DCCEQPT alarm (refer to IXL-103).
7	Enter RTRV-ALM-EQPT::DSB ;
8	Did DCCEQPT alarm clear on this particular module? If yes, go to step 10 . If no, go to step 9 .
9	Was module replaced in step 6 ? If yes, go to step 12 . If no, go to step 6 .
10	Enter SW-DX-EQPT::DSB-Sh-S ; for DSB just replaced or restored.

- 11 Did output return COMPLD or DENY?
If COMPLD, go to step 13.
If DENY, go to step 12.
- 12 Contact next level of technical support for assistance.
- 13 **STOP. This procedure is complete.**

TAP-147

ITMIP

Indicates that the Installation Test and Maintenance Mode is set.

STEP	PROCEDURE
1	Do you want to clear ITMIP mode? If yes, go to step 2 If no, go to step 5
2	Enter STOP-ITMMODE::;
3	Did output return COMPLD or DENY? If COMPLD, go to step 5. If DENY, go to step 4.
4	Contact next level of technical support for assistance.
5	STOP. This procedure is complete.

TAP-148 RCVRY Alarm

Provides procedure to clear a RCVRY condition/alarm.

GENERAL

This condition indicates that a failure or improper removal of an MCB has occurred and the system has gone into recovery mode. This condition may be self-clearing in 1-2 hours depending on system size and configuration.

If the system completely recovers at least one matrix copy, then PM data collection, as well as facility alarm, GTI alarm, and PM threshold crossing reporting will resume.

STEP	PROCEDURE
1	This condition indicates that a failure or improper removal of an MCB has occurred and the system has gone into recovery mode. This condition may be self-clearing in 1-2 hours depending on system size and configuration. The system makes up to five iterations to recover. If after five iterations there are still faulted connections on both copies, the RCVRY alarm is set.
2	Has this condition/alarm been present for more than 2 hours? If yes, go to step 5. If no, go to step 3.
3	The system is still attempting to recover; wait until condition/alarm has been present for 2 hours.
4	Has RCVRY condition/alarm cleared? If yes, go to step 6. If no, go to step 5.
5	Contact next level of technical support for assistance.
6	STOP. This procedure is complete.

TAP-149

GT Level 1 Alarm (GT1)

Provides procedure to clear Generic Transport Interface (GTI) alarms.

PREREQUISITES

This procedure requires the following material:

- Office spare GTI cables
- Office spare green retainer clip
- Screwdriver with no. 1 Phillips head
- Pliers
- Flashlight or light magnifier
- Printer

GENERAL

GTI cable fault for GTI cable carrying an STM1 signal (GT1) effects the following equipment: G1EOB, G1EP3, G1ES1, G1IRPB, G1M16, G1M32, G1M40, G1MRPB, G1O1B, G1TGR, G1IOB, G1O4M, and G1S3M.

This procedure guides the operator through steps to identify and locate the two ends of the indicated cable, verify that cables are properly seated and have required retaining devices, and, if necessary, deploy a replacement cable.

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack, Sh=shelf number, and S=slot location number of the equipment in the shelf.

Refer to the 1631 SX LMC Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	Enter RTRV-ALM-EQPT::ALL;
2	If GT4 alarms are active in system, they must be cleared before GT1 alarms can be cleared. Are there GT4 alarms in system? If yes, go to step 3. If no, go to step 4.

- 3 Refer to TAP-150 to clear GT4 alarms. Then go to step 1.
- 4 Contact next level of technical support for assistance.
- 5 Log into system as system.

Enter **ACT-USER::user id::password;**
- 6 Print on-line function does not work when UID is in Video Display Terminal (VDT) mode. Print screen function can be used to capture printouts. Refer to 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ) for instructions to set up printer.

Connect printer to VDT using cable (PN 695-2329-001) (Revision C).
- 7 Enter **RTRV-ALM-EQPT::ALL;** to verify that GTI fault status is still in system.
- 8 Refer to IXL-101 to clear any other system alarms.
- 9 Enter **RTRV-GTI-STATUS::G1xxx-R-Sh-S-aa;** to verify connections on indicated cable.
- 10 Confirm location of suspect module identified in From Eqpt AID in output from step 9. Refer to 1631 SX LMC Address and Location Guide (PN 3AL47973AE).
- 11 Refer to IXL-103 for procedure to remove and replace suspect module.
- 12 Allow 20 minutes for GTI alarm to clear. Enter **RTRV-ALM-EQPT::ALL;** to verify GTI alarm cleared.
- 13 Does G1xxx/GTI alarm still exist?

If yes, go to step 14.
If no, go to step 31.
- 14 Confirm location of suspect module identified in To Eqpt AID in output from step 9. Refer to 1631 SX LMC Address and Location Guide (PN 3AL47973AE).
- 15 Refer to IXL-103 for procedure to remove and replace suspect module.
- 16 Allow 20 minutes for GTI alarm to clear. Enter **RTRV-ALM-EQPT::ALL;** to verify GTI alarm cleared.
- 17 Allow 20 minutes for GTI alarm to clear. Enter **RTRV-ALM-EQPT::ALL;** to verify GTI alarm cleared.

- 18 Does G1xxx/GTI alarm still exist?

If yes, go to step 19.
If no, go to step 31.
- 19 Confirm location of suspect cable or connection identified in step 9. Refer to 1631 SX LMC Address and Location Guide (PN 3AL47973AE).
- 20 Enter **RMV-EQPT::N-R-Sh-S**; to logically remove module identified in step 10.
- 21 Verify location of cable connections. Make note of part number of cables to be replaced. Refer to 1631 SX LMC Address and Location Guide (PN 3AL47973AE).
- 22 Obtain a GTI cable with same part number from office spare kit.
- 23 Unroll spare GTI cable and lay it out on floor, with proper orientation between two points to be connected.
- 24 ***WARNING: Possibility of equipment damage. Use care when disconnecting GTI cable assembly from backplane. Green retaining clips break easily. To release connector shell from green retaining clip, gently press green clip to right, while gently pulling cable and shell assembly out of retaining block.***
- 25 Remove both ends of cable from backplane connecting blocks, and make note of orientation of P1 (plug 1) and P2 (plug 2) on existing cable.
- 26 Use same P1/P2 orientation to connect replacement cable to backplane connectors.
- 27 Enter **RST-EQPT::N-R-Sh-S**; to logically restore module identified in step 10.
- 28 Allow 20 minutes for GTI alarm to clear. Enter **RTRV-ALM-EQPT::ALL**; to verify GTI alarm cleared.
- 29 Does GTI condition still exist?

If yes, go to step 30.
If no, go to step 13.
- 30 Contact next level of technical support for assistance.
- 31 **STOP. This procedure is complete.**

TAP-150

GT Level 4 Alarm (GT4)

Provides procedure to replace fiber optic cabling.

PREREQUISITES

This procedure assumes all modules associated with the faulted path have been eliminated as the source of the Generic Transport Interface (GTI) condition.

This procedure requires the following material:

- Office spare GTI cables
- Screwdriver with no. 1 Phillips head
- Small, needlenose pliers
- Flashlight
- Printer
- Fiber Optic Cleaning Kit (PN 126-3477-010)
- Source of clean dry air, dry nitrogen, or sprayable air (PN 126-3477-030)
- Fiberscope with proper connector adapters and 200X magnification
- Cletop¹, fiber cleaning tool, Model 14100500
- Optical meter

GENERAL

GTI cable fault location for GTI cable carrying an STM4 signal (GT4) effects the following equipment: G4EOB, G4OXB, and G4IOB.

This procedure guides the operator through steps to identify and locate the two ends of the indicated fiber, verify fibers are properly seated, clean the existing fiber, and, if necessary, deploy a replacement fiber.

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack, Sh=shelf number, and S=slot location number of the equipment in the shelf.

Refer to the 1631 SX LMC Address and Location Guide (PN 3AL47973AE) to determine module location and address.

1. Cletop is a registered trademark of NTT International.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CONNECTOR ON BACKPLANE OR END OF FIBER. Laser radiation is present when EOB 201 Electrical-Optical Converter (EOB)/OXB 102 Optical Transceiver (OXB) is plugged into shelf. Laser radiation may be present through fiber. Always use optical meter before examining fiber through fiberscope.
2	Contact next level of technical support for assistance.
3	Log into system as system. Enter ACT-USER::user id::password;
4	Print on-line function does not work when UID is in Video Display Terminal (VDT) mode. Print screen function can be used to capture printouts. Refer to 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ) for instructions to set up printer. Connect printer to VDT using cable (PN 695-2329-001) (Revision C).
5	Enter RTRV-ALM-ALL; to verify GTI cable alarm is still in system.
6	Refer to IXL-101 to clear any other system alarms.
7	Enter RTRV-GTI-STATUS::G4xxx-R-Sh-S-aa; to verify connections on indicated cable.
8	Confirm location of defective cable or connection. Refer to 1631 SX LMC Address and Location Guide (PN 3AL47973AE).
9	Locate module associated with copy with GTI cable condition. EOB 101/201 Electrical-Optical Converter (EOB) on Electrical-Optical Converter (EOC) rack 5 shelf 1, rack 10 shelf 1, rack 16 shelf 1, and rack 23 shelf 1=copy 0 EOB on EOC shelf, rack 4 shelf 1, rack 11 shelf 1, rack 17 shelf 1, rack 22 shelf 1=copy 1 EOB/OXB 101/102 Optical Transceiver (OXB) at I/O rack: N-R-Sh-1=copy 0 EOB/OXB at I/O rack: N-R-Sh-2=copy 1
10	Logically remove EOB/OXB modules associated with G4 alarm. This will cause a copy lock to good copy. Enter RMV-EQPT::EOB-R-Sh-S; Enter RMV-EQPT::N-R-Sh-S;
11	Remove rear EMI door from rack for EOBs just removed. OXB connections can be accessed by opening front shelf door.

- 12 Verify location of fiber connections on both ends.
- 13 Carefully push on blue shell of fiber housing at both racks.
- 14 Was a click heard?
 - If yes, go to step 15.
 - If no, go to step 19.
- 15 Restore EOB/OXB removed in step 10.
Enter **RST-EQPT::EOB-R-Sh-S;**
Enter **RST-EQPT::N-R-Sh-S;**
- 16 Allow 20 minutes for the GTI condition to clear. Enter **RTRV-ALM-ALL;** to verify GTI condition cleared.
- 17 Does GTI condition still exist?
 - If yes, go to step 18.
 - If no, go to step 57.
- 18 Logically remove EOBs/OXBs identified in step 10.
Enter **RMV-EQPT::EOB-R-Sh-S;**
Enter **RMV-EQPT::N-R-Sh-S;**
- 19 ***WARNING: Possibility of equipment damage. Modules contain static-sensitive devices. These devices can be damaged by static discharge. Refer to the [Introduction](#) for special handling instructions.***
- 20 Physically remove logically removed EOBs/OXBs.
- 21 At input/output (I/O) rack side, remove fiber connection from bulkhead. On EOBs, it may be necessary to use needlenose pliers to grab and pull blue plastic shell.
- 22 Meter fiber to verify there is no light transmission through fiber.
- 23 Clean fiber with Fiber Optic Cleaning Kit. A Cletop may be used if cleaning kit materials are not available.
- 24 Using fiberscope, verify fiber is clean.
 - If fiber is clean, go to step 25.
 - If fiber is dirty, go to step 23.
- 25 Reseat fiber connection into bulkhead.

- 26 At EOC shelf side, remove fiber connection from bulkhead. Use needlenose pliers to grab and pull blue plastic shell.
- 27 Meter fiber to verify there is no light transmission through fiber.
- 28 Clean fiber with Fiber Optic Cleaning Kit. A Cletop may be used if cleaning kit materials are not available.
- 29 Using fiberscope, verify fiber is clean.
- If fiber is clean, go to step 28.
If fiber is dirty, go to step 30.
- 30 Reseat fiber connection into EOC shelf bulkhead.
- 31 Physically reseat EOBs/OXBs removed in step 20.
- 32 Logically restore EOBs/OXBs.
- Enter **RST-EQPT::EOB-R-Sh-S;**
Enter **RST-EQPT::N-R-Sh-S;**
- 33 Allow 20 minutes for GTI condition to clear. Enter **RTRV-ALM-ALL;** to verify GTI condition cleared.
- 34 Does GTI condition still exist?
- If yes, go to step 35.
If no, go to step 57.
- 35 ***WARNING: Possibility of equipment damage. Observe fiber handling minimum bend radius of 1 inch.***
- 36 Obtain a fiber from office spare kit.
- 37 Unroll spare fiber and lay it out under associated fiber duct.
- 38 Verify location of fiber connections. Make note of connections to be replaced and any orientation of blue plastic fiber housings.
- 39 Install new fiber in fiber ductwork and fiber management system. Leave service loops at both ends of fiber to allow for connection to bulkheads.
- 40 Logically remove EOBs/OXBs identified in step 10.
- Enter **RMV-EQPT::EOB-R-Sh-S;**
Enter **RMV-EQPT::N-R-Sh-S;**

- 41 Physically remove logically removed EOBs/OXBs.
- 42 At I/O rack side, remove fiber connection from bulkhead. On EOBs, it may be necessary to use needlenose pliers to grab and pull blue plastic shell.
- 43 Meter newly installed fiber at I/O rack side to verify there is no light transmission through fiber.
- 44 Clean fiber with Fiber Optic Cleaning Kit. A Cletop may be used if cleaning kit materials are not available.
- 45 Using fiberscope, verify fiber is clean.

If fiber is clean, go to step 46.
If fiber is dirty, go to step 44.
- 46 Seat new fiber connection into I/O bulkhead.
- 47 At EOC shelf side, remove existing fiber connection from bulkhead. Use needlenose pliers to grab and pull blue plastic shell.
- 48 Meter newly installed fiber to verify there is no light transmission through fiber.
- 49 Clean fiber with Fiber Optic Cleaning Kit. A Cletop may be used if cleaning kit materials are not available.
- 50 Using fiberscope, verify fiber is clean.

If fiber is clean, go to step 51.
If fiber is dirty, go to step 49.
- 51 Reseat fiber connection into EOC shelf bulkhead.
- 52 Physically reseat EOBs/OXBs removed in step 41.
- 53 Logically restore EOBs/OXBs removed in step 40.

Enter **RST-EQPT::EOB-R-Sh-S;**
Enter **RST-EQPT::N-R-Sh-S;**
- 54 Allow 20 minutes for GTI condition to clear. Enter **RTRV-ALM-ALL;** to verify GTI condition cleared.
- 55 Does GTI condition still exist?

If yes, go to step 56.
If no, go to step 57.

56 Contact next level of technical support for assistance.

57 **STOP. This procedure is complete.**

DLP-100

Module Mechanical Removal and Replacement

Provides module mechanical removal and replacement procedure. This procedure does not cover O1B, OXB, DSK, OPD, PST, or PSF (refer to IXL-103).

PREREQUISITE

Do module logical removal first. This procedure covers only mechanical procedures. Refer to IXL-103.

GENERAL

This procedure asks you to enter an address as N-R-Sh-S, where N=name of equipment, R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

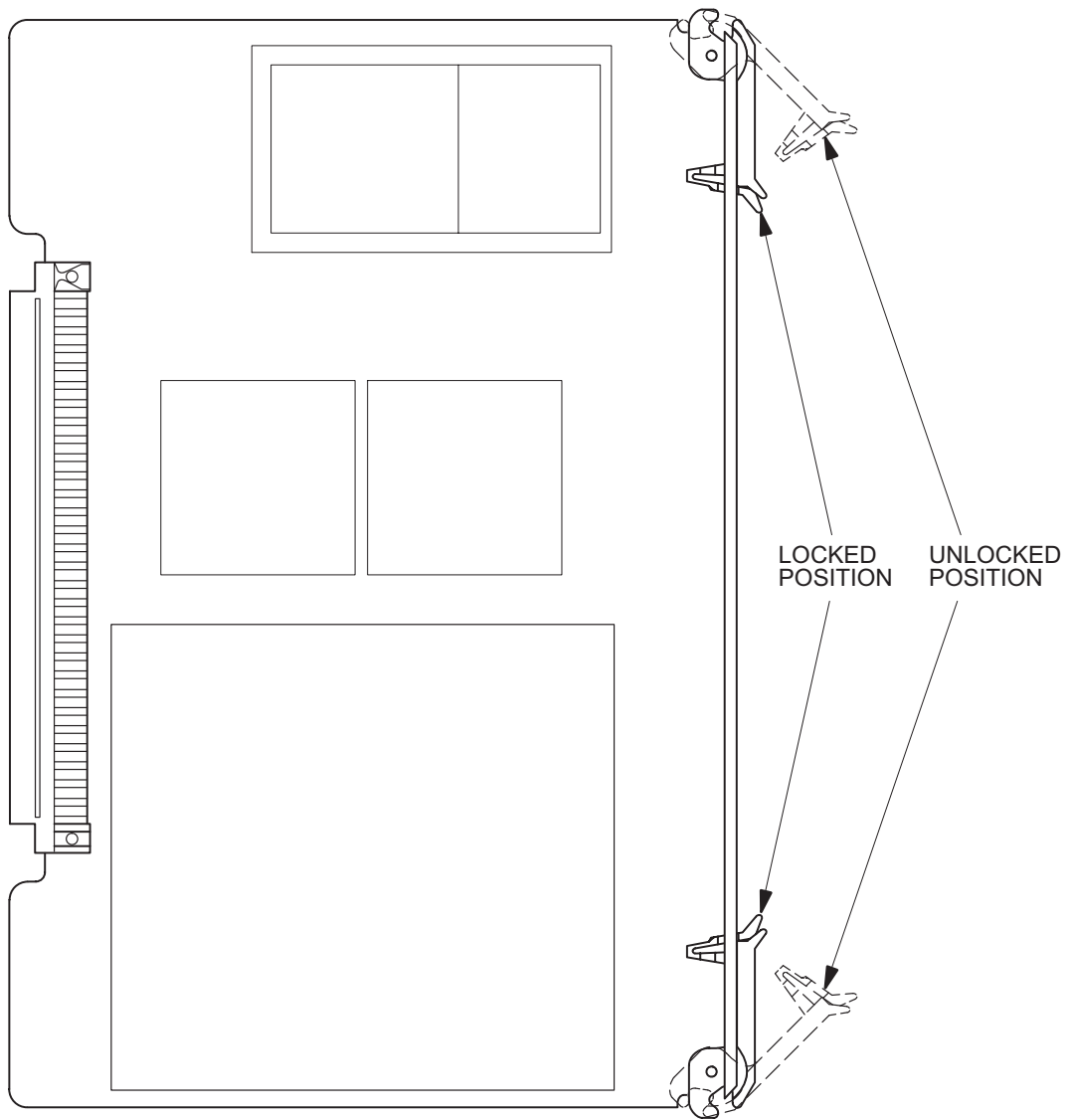
STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. Do not remove an in-service (IS) module. Removing a module in IS state causes a hit to, or a loss of traffic. Do applicable trouble clearing and logical replacement procedures before proceeding with this procedure.
3	<i>WARNING: Possibility of equipment damage. Possibility of damage to equipment. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	To gain access to equipment, rack doors must be opened or removed. To open, squeeze door releases on left and right side of doors, then swing open from the right. Once doors are open perpendicular to rack, they can be removed from their hinges by lifting them straight up.
5	Remove or install module. If removing, go to step 6 . If installing, go to step 8 .

- 6 Determine equipment state.

Enter **RTRV-STATE-EQPT::N-R-Sh-S**;

If IS or IS-ANR, refer to IXL-103 and locate applicable module replacement procedure.
If OOS-MA, OOS-AUMA go to step 7.
- 7 Unlock extraction tabs and remove module (see figure 100-1).
- 8 Ensure that tabs on replacement module are in unlocked position (see figure 100-1).
- 9 Slide module into slot engaging insertion/extraction tabs.
- 10 Press insertion/extraction tabs locking module into place.
- 11 Return to DLP that logically removed this module, then logically restore it.
- 12 **STOP. This procedure is complete.**

Figure 100-1. Insertion/Extraction Tabs



118-1377-1
012693

DLP-101

Filter Element Replacement

Provides procedure to replace filter element (PN 009-0249-090) for Administrative Processing System (APS) and asynchronous racks (PN 1AD10427001), and for SI48, end-stage, and center-stage racks.

GENERAL

Filter elements are at the bottom of each rack.

STEP	PROCEDURE
1	<i>WARNING: Possibility of equipment damage. Change filters as required to maintain air flow. Failure to maintain air flow through rack causes overheating and subsequent equipment damage.</i>
2	Check filters every 6 months. The APS and ASYNC metallic filter is vacuumed, then placed back into the rack. The MTX and SI48 non-metallic filter is replaced after 1 year.
3	Remove filter assembly front panel, and slide filter element out.
4	Does filter assembly need to be cleaned (in APS or ASYNC rack) or replaced (in MTX or SI48 rack), or has it been in service for 1 year? If yes, go to step 5. If no, go to step 6.
5	Clean (vacuum) or replace filter element, slide into slot and replace front panel. Go to step 7.
6	Install same filter element into slot and replace front panel.
7	STOP. This procedure is complete.

DLP-102 PST Replacement

Provides procedure to remove and install a 12 volt ES-16F-1 Power Supply (PST).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a PST has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the PST. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::PST-R-Sh-S ; then make note of PST state.
4	Retrieve state of mate PST to PST being replaced. Enter RTRV-STATE-EQPT::PST-R-Sh-S ; then make note of PST state.
5	Are both PSTs in IS state? If yes, go to step 7 . If no, go to step 6 .
6	Is PST being replaced in IS or OOS state? If OOS, go to step 7 . If IS, do not remove IS PST. Refer to IXL- 101 and troubleshoot OOS PST.

- 7 On PST being replaced, set PST power switch to OFF.
- 8 Remove PST.
- 9 Install replacement PST.
- 10 Set replacement PST power switch to ON.
- 11 Enter **RTRV-STATE-EQPT::PST-R-Sh-S;**
Verify replacement PST state of IS.
- 12 **STOP. This procedure is complete.**

DLP-103 PSF Replacement

Provides procedure to remove and install a 5/15V ES16C Power Supply (PSF).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a PSF has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the PSF. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::PSF-R-Sh-S;
4	Is returned state IS or OOS-MA? If IS, go to step 5 . If OOS-MA, go to step 7 .
5	Enter RMV-EQPT::PSF-R-Sh-S;
6	Did output return COMPLD or DENY? If COMPLD, go to step 7 . If DENY, go to step 12 . (RMV denies if mate PSF is out of service. Troubleshoot mate PSF. Refer to IXL- 101 .)

- 7 Set PSF ON/OFF switch to OFF (UNLOCK) and remove PSF.
- 8 Insert new PSF in slot.
- 9 Set ON/OFF switch on PSF being replaced to ON (LOCK).
- 10 Enter RST-EQPT::PSF-R-Sh-S;
- 11 Did output return COMPLD or DENY?
 - If COMPLD, go to step 13.
 - If DENY, go to step 12.
- 12 Contact next level of technical support for assistance.
- 13 **STOP. This procedure is complete.**

DLP-104

IPU Replacement

Provides procedure to replace ES-37E Interface Processing Unit (IPU).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an IPU has a state of IS-ANR or OOS-AU, perform trouble-clearing procedures before replacing the IPU. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Determine equipment state. Enter RTRV-STATE-EQPT::IPU-R-Sh-S ; for IPU being replaced. If state is IS, go to step 4 and switch IPU to standby copy. If state is IS,STBYC, go to step 6. If state is OOS-MA, go to step 8.
4	Enter SW-DX-EQPT::IPU-R-Sh-S ; for IPU being replaced. (CONTR alarm appears until cold start completes.)
5	Did output return COMPLD or DENY? If COMPLD, go to step 6. If DENY, go to step 14. (SW-DX denies if mate IPU is OOS.)

- 6 Enter **RMV-EQPT::IPU-R-Sh-S**; for IPU being replaced.
- 7 Did output return COMPLD or DENY?
 - If COMPLD, go to step 8.
 - If DENY, go to step 14.
- 8 Remove IPU from slot (refer to DLP-100).
- 9 Install replacement IPU into slot (refer to DLP-100).
- 10 Enter **RST-EQPT::IPU-R-Sh-S**; for IPU just replaced.
- 11 Did output return COMPLD or DENY?
 - If COMPLD, go to step 12.
 - If DENY, go to step 14.
- 12 Verify replacement IPU operation.

Enter **SW-DX-EQPT::IPU-R-Sh-S**; for IPU just replaced.
- 13 Did output return COMPLD or DENY?
 - If COMPLD, go to step 15.
 - If DENY, go to step 14 (problem with replacement IPU).
- 14 Contact next level of technical support for assistance.
- 15 **STOP. This procedure is complete.**

DLP-105

HMU Replacement

Provides procedures to replace ES-34A-1 23 Muldem (HMU).

PREREQUISITES

Read bulleted list before starting replacement procedure.

- Although these procedures are normally done to replace a failed (inactive) component, always verify component state before removal.
- If an HMU has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the HMU. Refer to IXL-101.

GENERAL

HMU Equipment States

For detailed state description, refer to Appendix G of the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ).

- a. When HMU is supporting traffic, it has a secondary state of SDEE.
- b. If HMU protection switching is inhibited, its secondary state is PSI.
- c. If HMU switch to working is inhibited, its secondary state is PRI.
- d. If HMU is not provisioned for service, its state is OOS-AUMA with various secondary state possibilities.

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.

- 3 Determine equipment state:

Enter **RTRV-STATE-EQPT::HMU-R-Sh-S;** for HMU being replaced.

If state is IS, go to step 4.
If state is IS,STBYH, go to step 6.
If state is OOS-MA,MT, go to step 8.
If state is OOS-AUMA,UAS, remove and replace HMU.
If state is OOS-AUMA,UEQ&UAS, install HMU if required.
- 4 Enter **SW-TOPROTN-EQPT::HMU-R-Sh-S;** for HMU being replaced.
- 5 Did output return COMPLD or DENY?

If COMPLD, go to step 6.
If DENY, go to step 14 (SW-DX denies if mate HMU is OOS).
- 6 Enter **RMV-EQPT::HMU-R-Sh-S;** for HMU being replaced.
- 7 Did output return COMPLD or DENY?

If COMPLD, go to step 8.
If DENY, go to step 14.
- 8 Remove HMU from slot (refer to DLP-100).
- 9 Install replacement HMU into slot (refer to DLP-100).
- 10 Enter **RST-EQPT::HMU-R-Sh-S;** for HMU just replaced.
- 11 Did output return COMPLD or DENY?

If COMPLD, go to step 12.
If DENY, go to step 14.
- 12 Verify replacement HMU operation:

Enter **SW-TOWKG-EQPT::HMU-R-Sh-S;** for HMU just replaced.
- 13 Did output return COMPLD or DENY?

If COMPLD, go to step 15.
If DENY, go to step 14 (problem with replacement HMU).
- 14 Contact next level of technical support for assistance.
- 15 **STOP. This procedure is complete.**

DLP-106 CPU Replacement

Provides procedure to replace ES-37N-1 Central Processing Unit (CPU).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a CPU has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the CPU. Refer to IXL-101.

GENERAL

This procedure asks you to enter S for CPU slot location, where S=1 for copy 0 and S=2 for copy 1.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::CPU-1-2-S; for CPU to be replaced.
4	Is returned state IS, IS,STBYC, or OOS-MA? If IS, go to step 5 . If IS,STBYC, go to step 9 . If OOS-MA, go to step 11 .
5	Entering a SW-DX-EQPT::CPU command on an in-service CPU results in you and any other users being logged out. Switch to other CPU. Enter SW-DX-EQPT::CPU-1-2-S;
6	Wait 30 minutes for INIT SYS message to clear (CL) then enter ACT-USER::UID:::PID;

- 7 Enter **RTRV-STATE-EQPT::CPU-1-2-S**; for CPU to be replaced.
- 8 Did RTRV-STATE-EQPT indicate that CPU is in IS,STBYC state?
 - If yes, go to step 9.
 - If no, go to step 17.
- 9 Enter **RMV-EQPT::CPU-1-2-S**; for CPU to be replaced.
- 10 Did output from RMV-EQPT return COMPLD or DENY?
 - If COMPLD, go to step 11.
 - If DENY, go to step 17.
- 11 Verify that OOS LED on CPU to be removed is lit.
- 12 Remove CPU (refer to DLP-100).
- 13 Install replacement CPU (refer to DLP-100).
- 14 Enter **RST-EQPT::CPU-1-2-S**; for CPU just replaced.
- 15 Did output from RST-EQPT return COMPLD or DENY?
 - If COMPLD, go to step 16.
 - If DENY, go to step 17.
- 16 Does OOS lamp go out after approximately 2 minutes?
 - If yes, go to step 18.
 - If no, go to step 17.
- 17 Contact next level of technical support for assistance.
- 18 **STOP. This procedure is complete.**

DLP-107 CIM Replacement

Provides procedure to replace ES-27E-2 Communications Interface Module (CIM).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a CIM has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the CIM. Refer to IXL-101.

GENERAL

This procedure asks you to enter S for CIM slot location, where S=3-7 for copy 0 and S=10-14 for copy 1. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::CIM-1-2-S; for CIM to be replaced.
4	Is returned state IS, IS,STBYC, or OOS-MA? If IS, go to step 5 and switch CIM to standby copy. If IS,STBYC, go to step 7. If OOS-MA, go to step 9.
5	Enter SW-DX-EQPT::CIM-1-2-S; for CIM to be replaced.
6	Did output return COMPLD or DENY? If COMPLD, go to step 7. If DENY, go to step 16.
7	Enter RMV-EQPT::CIM-1-2-S; for CIM to be replaced.

- 8 Did output return COMPLD or DENY?
If COMPLD, go to step 9.
If DENY, go to step 16.
- 9 Verify that OOS LED on CIM to be removed is lit.
- 10 Remove CIM (refer to DLP-100).
- 11 Install replacement CIM (refer to DLP-100).
- 12 Enter **RST-EQPT::CIM-1-2-S**; for CIM just installed.
- 13 Did output return COMPLD or DENY?
If COMPLD, go to step 14.
If DENY, go to step 16.
- 14 Enter **SW-DX-EQPT::CIM-1-2-S**; to verify replacement CIM operation.
- 15 Was switch successful?
If yes, go to step 17.
If no, go to step 16.
- 16 Contact next level of technical support for assistance.
- 17 **STOP. This procedure is complete.**

DLP-108

SIO Replacement

Provides procedure to replace ES-27H-1 Serial Input/Output module (SIO).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an SIO has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the SIO. Refer to IXL-101.

GENERAL

This procedure asks you to enter S for SIO slot location, where S=1 or 2 for copy 0 and S=8 or 9 for copy 1. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::SIO-1-2-S ; for SIO to be replaced.
4	Is returned state IS, IS,STBYC, or OOS-MA? If IS, go to step 5. If IS,STBYC, go to step 6. If OOS-MA, go to step 8.
5	If you are logged off after entering RMV command in step 6, then enter ACT-USER::UID::PID ;
6	Enter RMV-EQPT::SIO-1-2-S ; for SIO to be replaced.

- 7 Did output return COMPLD or DENY?
If COMPLD, go to step 8.
If DENY, go to step 13.
- 8 Verify that OOS LED on SIO to be removed is lit.
- 9 Remove SIO (refer to DLP-100).
- 10 Install replacement SIO (refer to DLP-100).
- 11 Enter **RST-EQPT::SIO-1-2-S**; for SIO just replaced.
- 12 Did output return COMPLD or DENY?
If COMPLD, go to step 14.
If DENY, go to step 13.
- 13 Contact next level of technical support for assistance.
- 14 **STOP. This procedure is complete.**

DLP-109

LMU Replacement

Provides procedures to replace a ES-33B-4 12 Muldem and ES-33D-1 12 Muldem (LMU).

PREREQUISITES

Read bulleted list before starting replacement procedure.

- Although these procedures are normally done to replace a failed (inactive) component, always verify component state before removal.
- If an LMU has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the LMU. Refer to IXL-101.

GENERAL

LMU Equipment States

For detail state description, refer to Appendix G of the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ).

- When LMU is supporting traffic, it has a secondary state of SDEE.
- If LMU protection switching is inhibited, its secondary state is PSI.
- If LMU switch to working is inhibited, its secondary state is PRI.
- If LMU is not provisioned for service, its state is OOS-AUMA with various secondary state possibilities.

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.

- 3 Determine equipment state:

Enter **RTRV-STATE-EQPT::LMU-R-Sh-S**; for LMU to be replaced.

If state is IS, go to step 4.
If state is IS,STBYH, go to step 12.
If state is OOS-MA, go to step 14.
If state is OOS-AUMA,UAS, remove and replace LMU.
If state is OOS-AUMA,UEQ&UAS, install LMU if required.
- 4 CAUTION: Possibility of service interruption. Do not remove an in-service (IS) module. Removing a module in IS state will result in a hit or a loss of traffic. Switch module in IS state to protect.
- 5 Determine protect LMU state. Enter **RTRV-STATE-EQPT::LMU-R-Sh-S**; for protect LMU.

If state is IS,STBYH, go to step 6.
If state is IS, protect module is busy protecting another LMU. Clear reason for protect being busy, then go to step 6.
- 6 Enter **SW-TOPROTN-EQPT::LMU-R-Sh-S**; for LMU to be replaced.
- 7 Did output return COMPLD or DENY?

If COMPLD, go to step 12.
If DENY, go to step 8.
- 8 Check to see if protection switching is inhibited. Enter **RTRV-STATE-EQPT::LMU-R-Sh-S**; for LMU to be replaced.

If a secondary state (SST) of PSI is reported, go to step 9.
If SST is not PSI, go to step 20.
- 9 Enter **ALW-SWTOPROTN-EQPT::LMU-R-Sh-S**; for LMU to be replaced, then go to step 10.
- 10 Enter **SW-TOPROTN-EQPT::LMU-R-Sh-S**; for LMU to be replaced.
- 11 Did output return COMPLD or DENY?

If COMPLD, go to step 12.
If DENY, go to step 20.
- 12 Enter **RMV-EQPT::LMU-R-Sh-S**; for LMU to be replaced.

- 13** Did output return COMPLD or DENY?

If COMPLD, go to step [14](#).
If DENY, go to step [20](#).
- 14** Remove LMU from slot (refer to [DLP-100](#)).
- 15** Install replacement LMU into slot (refer to [DLP-100](#)).
- 16** Enter **RST-EQPT::LMU-R-Sh-S**; for LMU just replaced.
- 17** Did output return COMPLD or DENY?

If COMPLD, go to step [18](#).
If DENY, go to step [20](#).
- 18** Verify replacement LMU operation. Enter **SW-TOWKG-EQPT::LMU-R-Sh-S**; for LMU just replaced.
- 19** Did output return COMPLD or DENY?

If COMPLD, go to step [21](#).
If DENY, go to step [20](#) (problem with replacement LMU).
- 20** Contact next level of technical support for assistance.
- 21** **STOP. This procedure is complete.**

DLP-110

DSK/OPD Replacement

Provides procedure to replace a disk assembly containing a Hard Disk Drive (DSK) and an Optical Disk Drive (OPD).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally accomplished to replace a failed (inactive) component, always verify component state before removal.
- If the system has an alarm resulting in a DSK/OPD state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the disk assembly. Refer to [IXL-101](#).

GENERAL

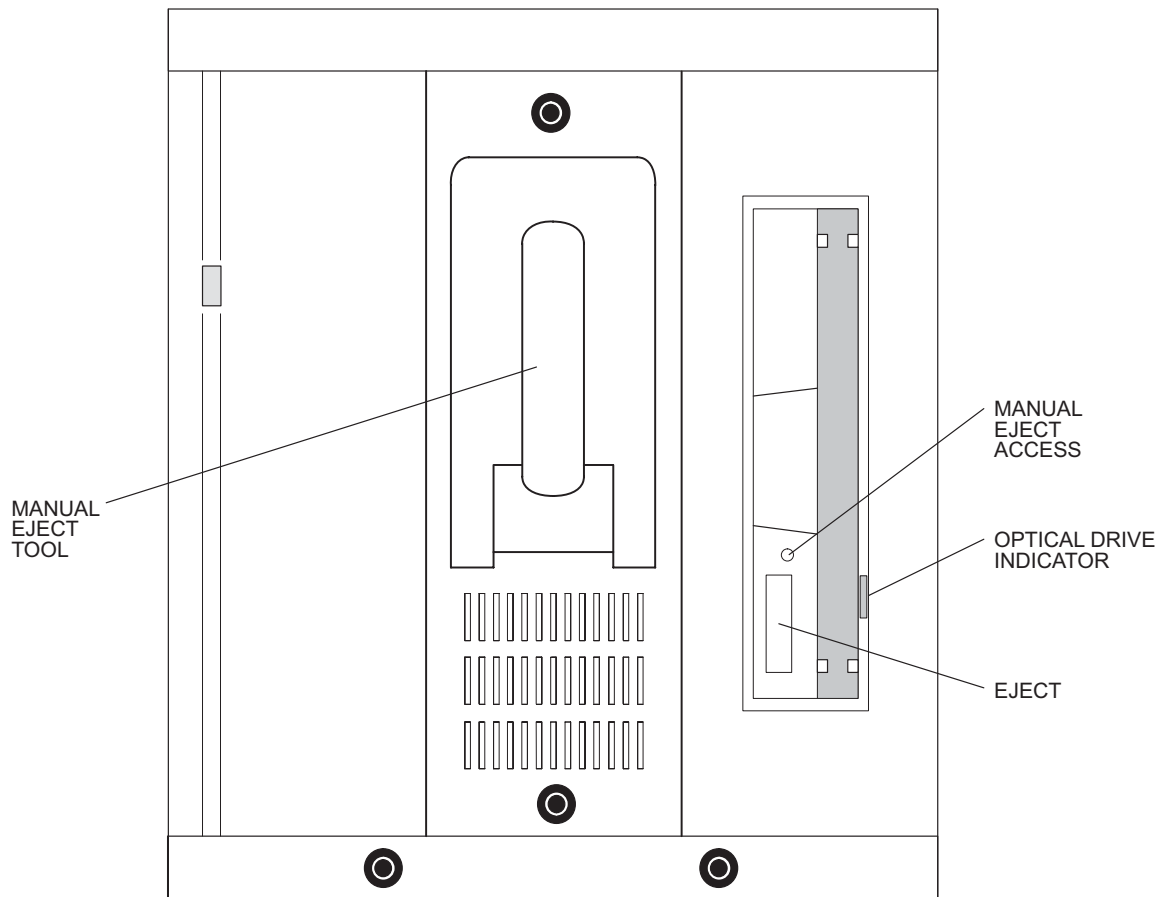
This procedure asks you to enter an address as Sh-S, where Sh=shelf number and S=slot location number of equipment in the shelf (where 3-1=copy 0 and 4-2=copy 1). Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	If media is present inside Optical Disk Drive, remove it. On Optical Disk Drive, press Eject button. See figures 110-1 and 110-2 .
4	Did media eject automatically from drive? If yes, remove the media then go to step 6 . If no, go to step 5 .

- 5 Manually eject media using Manual Eject Tool.
 - a. Remove the Manual Eject Tool from its holder on the Optical Disk Assembly. See figures [110-1](#) and [110-2](#).
 - b. Insert tool into Manual Eject Access of Optical Disk Drive and push inward until media ejects from drive. See figures [110-1](#) and [110-2](#).
 - c. Remove the media from the drive.
- 6 Enter **RTRV-STATE-EQPT::DSK;**
- 7 Is returned state of disk being replaced IS, IS,STBYC, or OOS-MA?
 - If IS or IS,STBYC, go to step [8](#).
 - If OOS-MA, go to step [9](#).
- 8 Enter **RMV-EQPT::DSK-1-Sh-S;** (command logically removes both DSK and OPD).
- 9 Enter **RTRV-STATE-EQPT::DSK;**
- 10 Is returned state OOS-MA for disk being removed and IS for other copy?
 - If yes, go to step [12](#).
 - If no, go to step [11](#).
- 11 **CAUTION:** Possibility of service interruption. Do not remove a DSK/OPD assembly when the state of the mate DSK is anything other than IS. Go to step [27](#).
- 12 Make sure you are powering down ES-16F-1 Power Supply modules (PSTs), not ES-16C-1 Power Supply modules (PSFs). PSTs are smaller than PSFs. When PST power switch is set to OFF, red ALM indicator lights. Also, green LED on DSK being replaced lights continuously.

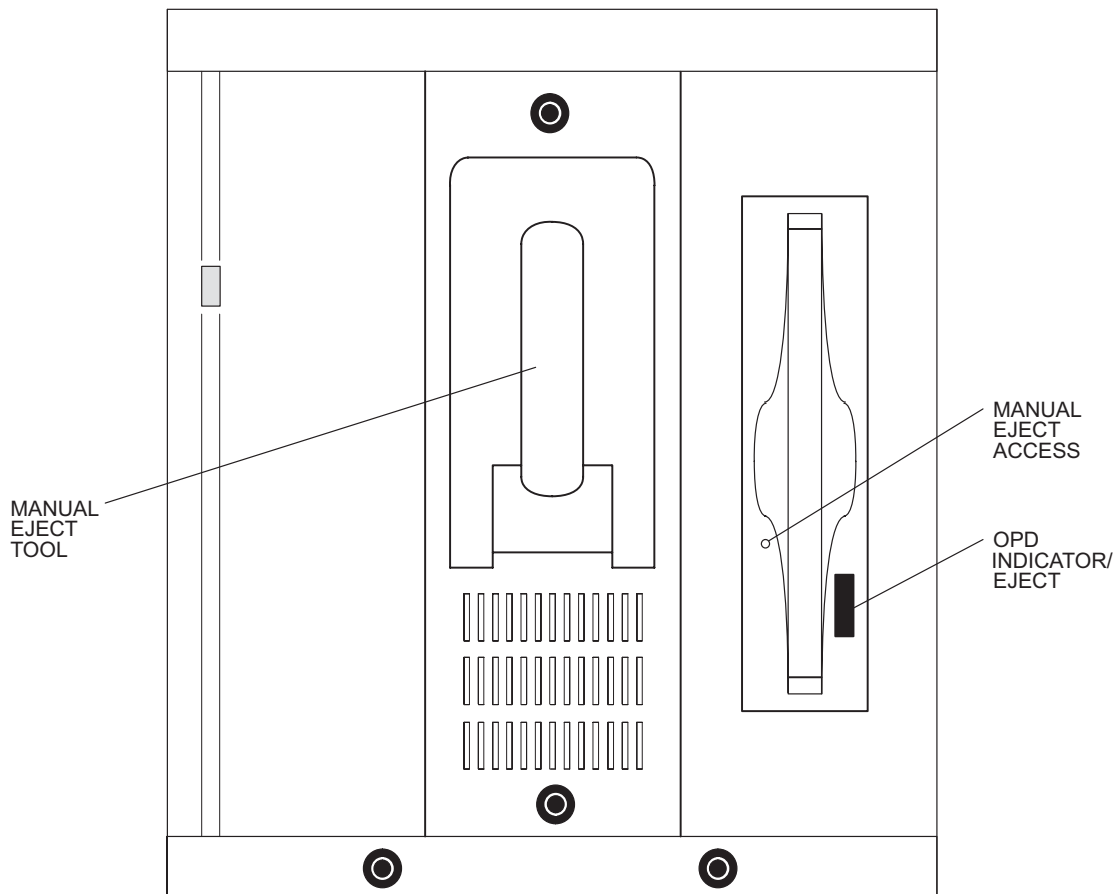
On the two PSTs on same copy (same shelf) as DSK/OPD assembly being replaced, set ON/OFF switch to OFF (UNLOCKED).
- 13 ***WARNING: Possibility of equipment damage. Possibility of damage to equipment. Support disk chassis during removal and installation to prevent damage to connecting cables.***
- 14 Loosen screws securing DSK/OPD assembly to shelf and carefully pull out DSK/OPD assembly until SCSI and power cables are exposed.
- 15 Disconnect brown 6-pin power plug from center of power cable assembly. Do not remove white 4-pin power plugs from drive units.

Figure 110-1. Optical Disk Drive (OPD) Front Panel Outline (PN 155-0165-020/030)



NOTE:
THE 5.25-INCH OPTICAL DISK ASSEMBLY IS MOUNTED USING
METRIC M3 (3mm) SCREWS.

129-0262-1
111395

Figure 110-2. Optical Disk Drive (OPD) Front Panel Outline (PN 155-0165-040)

NOTE:
THE 5.25-INCH OPTICAL DISK ASSEMBLY IS MOUNTED USING
METRIC M3 (3mm) SCREWS.

DG129-1159-1
080999

- 16** Disconnect SCSI ribbon cable from shelf backplane, then set DSK/OPD assembly aside.
- 17** While supporting replacement DSK/OPD assembly, connect SCSI ribbon cable to shelf backplane.
- 18** At center of power cable assembly, connect brown 6-pin power plug.
- 19** Feed SCSI ribbon cable and power cable back into shelf, then slide DSK/OPD assembly into shelf and secure by tightening captive screws.

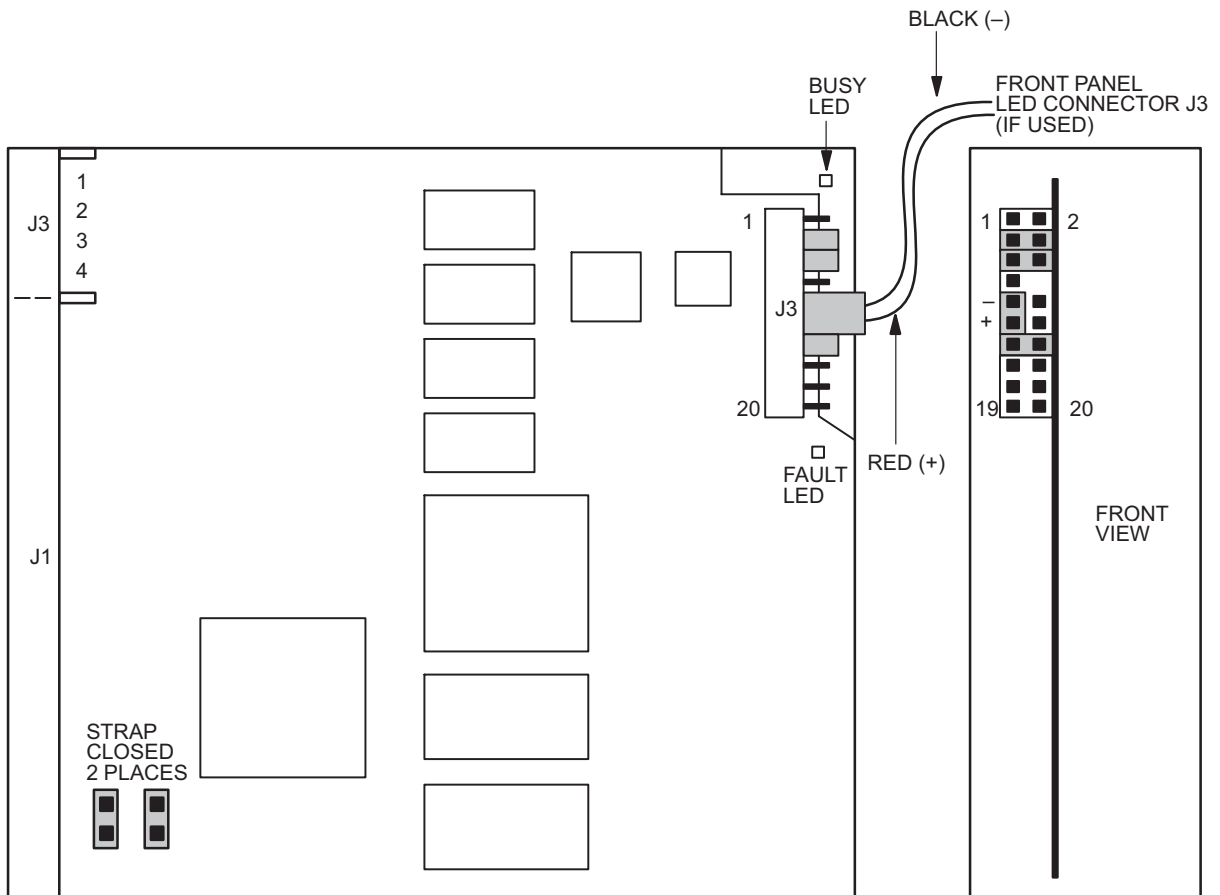
- 20** On same copy PSTs as replaced DSK/OPD assembly, set ON/OFF switch to ON (LOCK).
- 21** Enter **RST-EQPT::DSK-1-Sh-S;**

While DSK is restoring, BKUPMEMP displays on screen and both DSK LEDs blink continuously. Allow approximately 30 minutes for DSK to synchronize to active copy.
- 22** Did output return COMPLD or DENY?

If COMPLD, go to step [24](#).
If DENY, go to step [23](#).
- 23** If replacement DSK fails to restore, check SCSI and power connections. If SCSI and power connections are securely connected, check DSK/OPD strapping (see figures [110-3](#) through [110-7](#)). If SCSI and power connections and strapping are all intact, go to step [27](#).
- 24** Enter **RTRV-ALM-ALL::ALL;**
- 25** Are any alarms in system?

If yes, resolve alarms (refer to [IXL-101](#)), then go to step [26](#).
If no, go to step [26](#).
- 26** As required, install media in Optical Disk Drive.
 - a. Insert media in Optical Disk Drive then push inward until the drive pulls the media into it automatically.
 - b. Go to step [28](#).
- 27** Contact next level of technical support for assistance.
- 28** **STOP. This procedure is complete.**

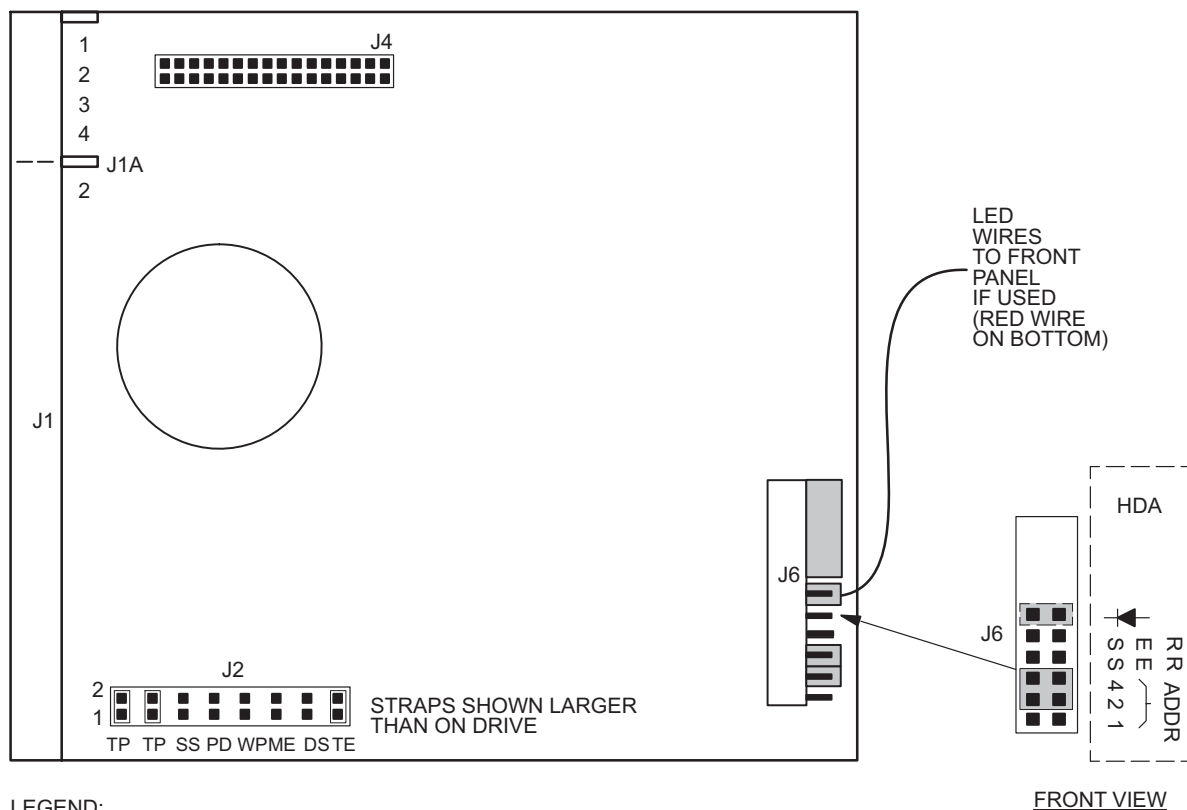
Figure 110-3. 9 GB DSK Strapping (Quantum)



NOTE:
JUMPERS/CONNECTORS ARE 2 mm METRIC CONNECTOR.

129-0547-1
090497

Figure 110-4. 9 GB DSK Strapping (Seagate)



LEGEND:

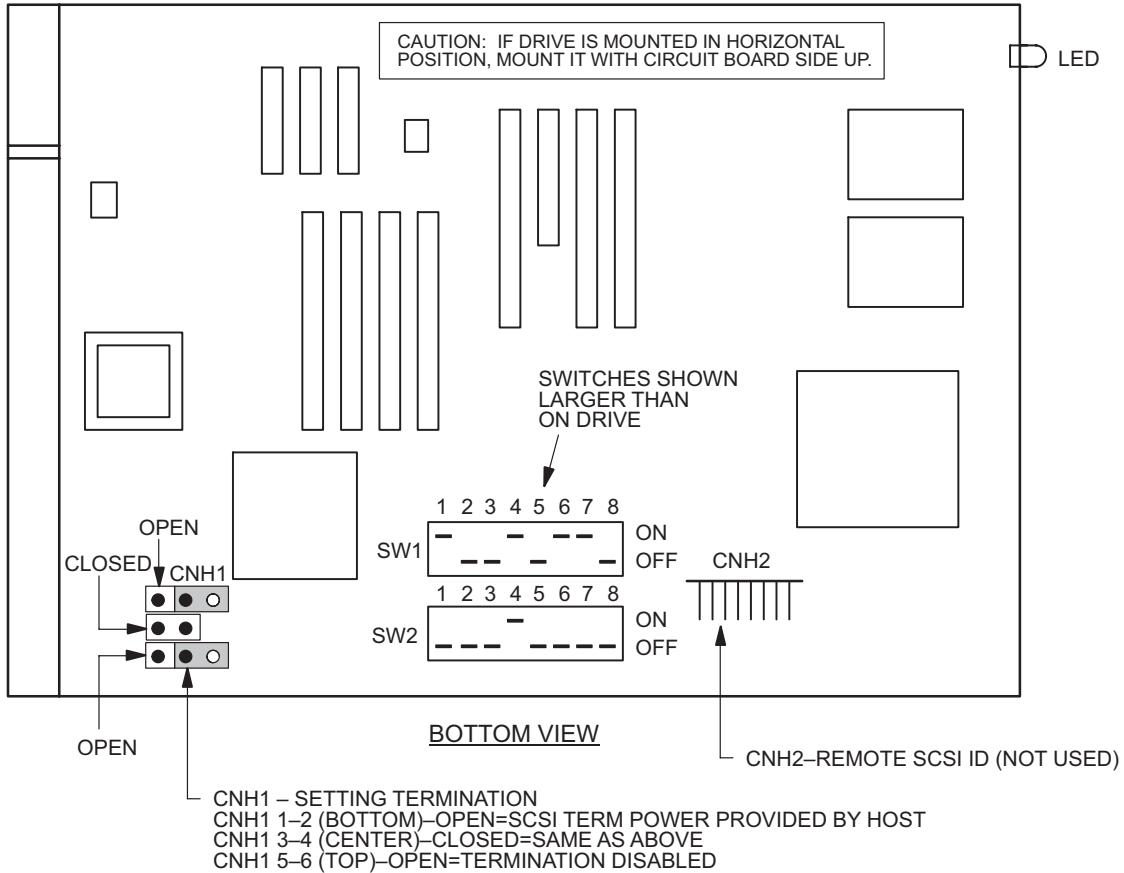
- TE- TERMINATION ENABLE-CLOSED=ENABLED
- DS- DELAY MPTOR START-OPEN=DISABLED
- ME- MOTOR START ENABLE-OPEN=ENABLED
- WP- WRITE PROTECT-OPEN=DISABLED
- PD- PARITY DISABLE-OPEN=ENABLED
- SS- RESERVED-OPEN
- TP- FROM DRIVE-CLOSED=ENABLED
- TP- TO BUS-CLOSED=ENABLED

NOTE:

JUMPERS/CONNECTORS ARE 2 mm METRIC CONNECTOR.

129-1216-1
052500

Figure 110-5. 230 MB OPD Strapping



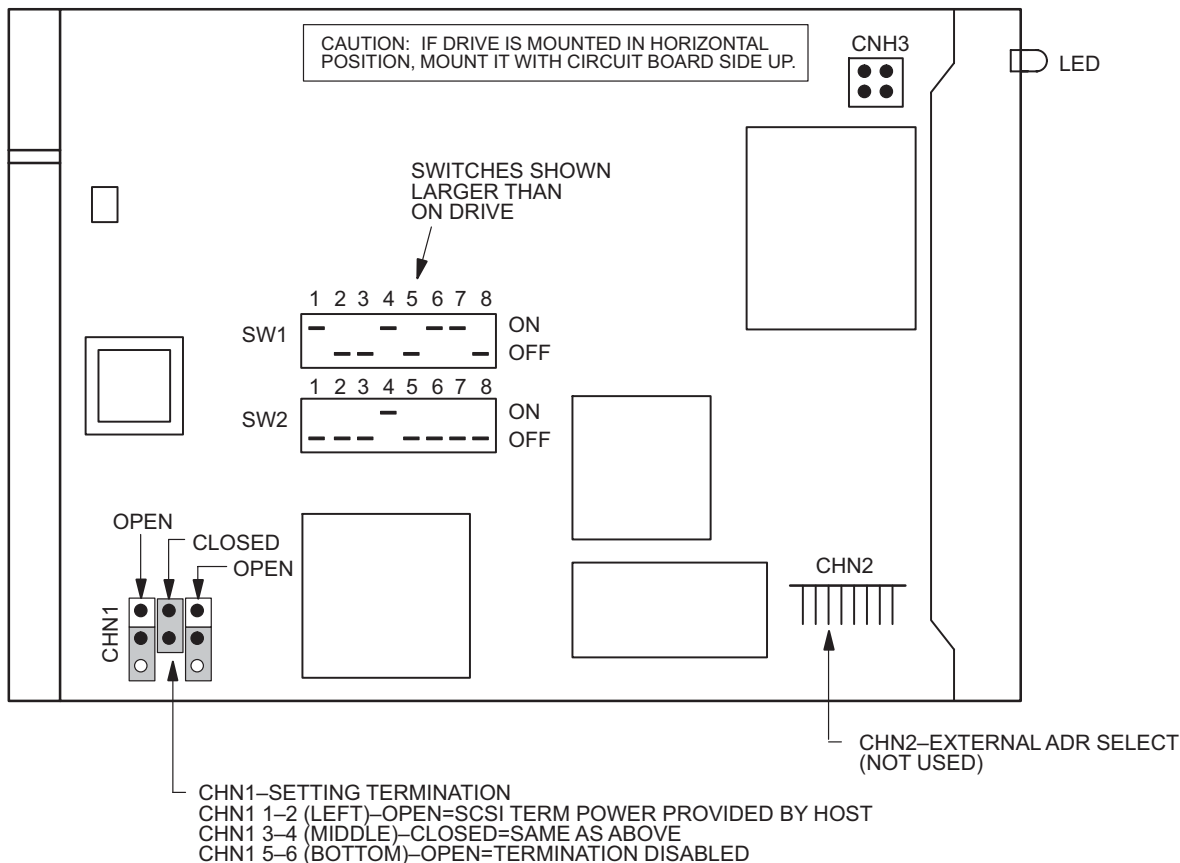
SWITCH NO.	1	2	3	4	5	6	7	8
SW1	ON	OFF	OFF	ON	OFF	ON	ON	OFF
SW2	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF

- SW1 SWITCH NO.
- 1-SCSI D BIT 3-ON=1 (BINARY 4)
 - 2-SCSI D BIT 2-OFF=0 (BINARY 2)
 - 3-SCSI D BIT 1-OFF=0 (BINARY 1)
 - 4-SCSI BUS PARITY-ON=ENABLED
 - 5-SYNC DATA REQUEST-OFF=HOST
 - 6-DEVICE TYPE-ON=MO
 - 7-SPINDLE AUTO STOP-ON=ENABLED
 - 8-LED MODE-OFF=NORMAL

- SW2 SWITCH NO.
- 1-WRITE CACHE MODE-OFF=DISABLED
 - 2-NOT USED
 - 3-MAC MODE-OFF=DISABLED
 - 4-WRITE VERIFY-ON=DISABLED
 - 5-SCSI TYPE-OFF=SCSI
 - 6-SDP (FOR NEXT)-OFF=DISABLED
 - 7-NOT USED
 - 8-FACTORY TEST (NOT TO BE USED BY USER)-OFF=DISABLED

124-1407-1
030501

Figure 110-6. 640 MB OPD Strapping (PN 155-0165-030)



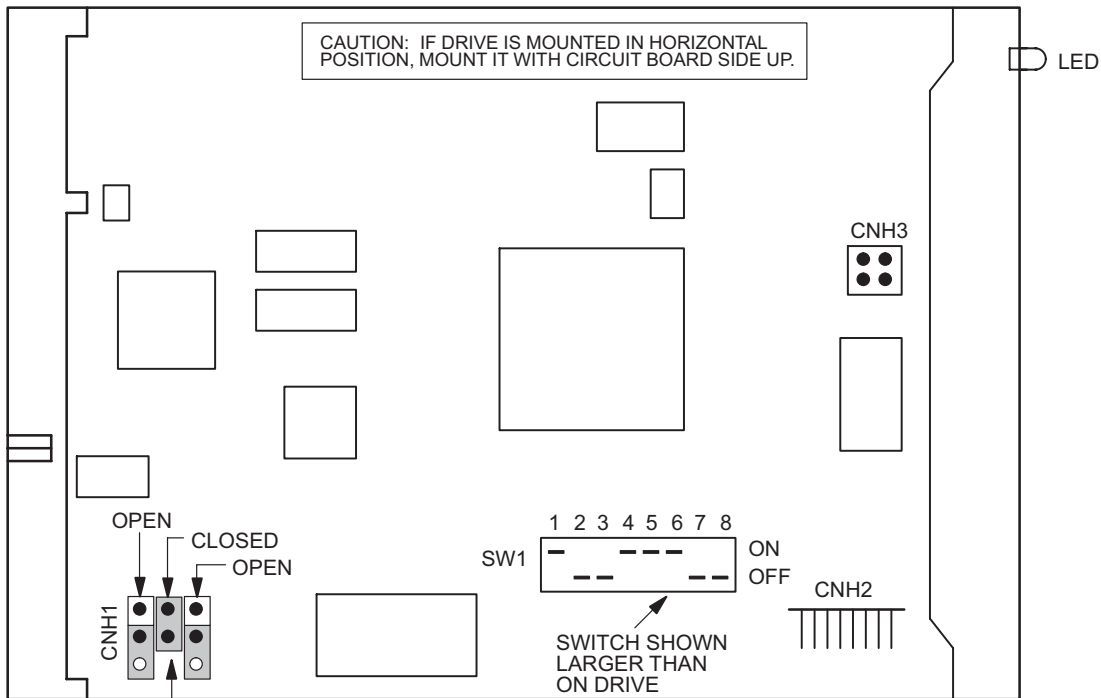
SWITCH NO.	1	2	3	4	5	6	7	8
SW1	ON	OFF	OFF	ON	OFF	ON	ON	OFF
SW2	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF

SW1 SWITCH NO.
 1—SCSI D BIT 3—ON=1 (BINARY 4)
 2—SCSI D BIT 2—OFF=0 (BINARY 2)
 3—SCSI D BIT 1—OFF=0 (BINARY 1)
 4—SCSI BUS PARITY—ON=ENABLED
 5—SCAM MODE—OFF=DISABLED
 6—DEVICE TYPE—ON=MO
 7—SPINDLE AUTO STOP—ON=ENABLED
 8—LED MODE—OFF=NORMAL

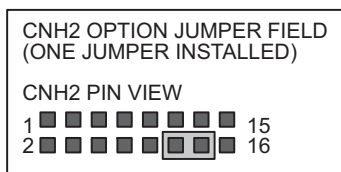
SW2 SWITCH NO.
 1—WRITE CACHE MODE—OFF=DISABLED
 2—SCSI TYPE 1—OFF=DISABLED
 3—MAC MODE—OFF=DISABLED
 4—WRITE VERIFY—ON=DISABLED
 5—SCSI TYPE—OFF=SCSI
 6—SAVE DATA POINTER MESSAGE—OFF=ENABLED
 7—DOWN LOAD MODE—OFF=DISABLED
 8—FACTORY TEST (NOT TO BE USED BY USER)—OFF=DISABLED

DG124-1573-1
030501

Figure 110-7. OPD Strapping, 640 MB (PN 155-0165-040)



CNH1—SETTING TERMINATION
 CNH1 1-2 (LEFT)—OPEN=SCSI TERM POWER SUPPLIED BY DRIVE=DISABLED
 CNH1 3-4 (MIDDLE)—CLOSED=SCSI TERM POWER SUPPLIED BY HOST=ENABLED
 CNH1 5-6 (BOTTOM)—OPEN=SCSI BUS TERMINATION=DISABLED



- CNH2 JUMPER NO.
- 1—CARTRIDGE IN SIGNAL
 - 2—SCSI ID 4
 - 3—EXTERNAL LED PLUS (+)
 - 4—SCSI ID 2
 - 5—EXTERNAL LED MINUS (-)
 - 6—SCSI ID 1
 - 7—EXTERNAL EJECT SWITCH
 - 8—GROUND
 - 9—DRIVE TYPE—OPEN=SCSI2
 - 10—SCAM MODE—OPEN=DISABLED
 - 11—MACINTOSH MODE—OPEN=DISABLED
 - 12—GROUND
 - 13—VERIFY MODE—OPEN=DISABLED
 - 14—SPINDLE AUTO-STOP—SHORTED=ENABLED
 - 15—SCSI TERMINATION ENABLE—OPEN=DISABLED
 - 16—GROUND

SWITCH NO.	1	2	3	4	5	6	7	8
SW1	ON	OFF	OFF	ON	ON	ON	OFF	OFF

- SW1 SWITCH NO.
- 1—SCSI ID BIT 3—ON=1 (BINARY 4)
 - 2—SCSI ID BIT 2—OFF=0 (BINARY 2)
 - 3—SCSI ID BIT 1—OFF=0 (BINARY 1)
 - 4—SCSI BUS PARITY—ON=ENABLED
 - 5—WRITE CACHE—ON=ENABLED
 - 6—DEVICE TYPE MODE—ON=OPTICAL MEMORY DEVICE
 - 7—DOWN LOAD MODE—OFF=NORMAL (NEVER TURN OFF)
 - 8—FACTORY USAGE ONLY—OFF=NORMAL (NEVER TURN ON)

129-1116-1
121102

DLP-111

SPB Replacement

Provides procedure to replace SPB 101/102/103 Satellite Processor (SPB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an SPB has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the SPB. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::SPB-R-Sh-S ; for SPB being replaced.
4	Is returned state IS, IS,STBYC, or OOS-MA? If IS, go to step 5 and switch SPB to standby copy. If IS,STBYC, go to step 7. If OOS-MA, go to step 9.
5	Enter SW-DX-EQPT::SPB-R-Sh-S ; (a CONTR alarm appears until cold start completes).
6	Did output return COMPLD or DENY? If COMPLD, wait for CONTR alarm to clear, then go to step 7. If DENY, go to step 15. (SW-DX denies if mate SPB is OOS.)
7	Enter RMV-EQPT::SPB-R-Sh-S ; for SPB being replaced.

- 8 Did output return COMPLD or DENY?
If COMPLD, go to step 9.
If DENY, go to step 15.
- 9 Remove SPB (refer to DLP-100).
- 10 Install replacement SPB (refer to DLP-100).
- 11 Enter **RST-EQPT::SPB-R-Sh-S**; for SPB just replaced. (Restore takes about 3 minutes.)
- 12 Did output return COMPLD or DENY?
If COMPLD, go to step 13.
If DENY, go to step 15.
- 13 Enter **SW-DX-EQPT::SPB-R-Sh-S**; for new SPB to verify new SPB operation. (A CONTR alarm appears until cold start completes. SW-DX takes about 3 minutes.)
- 14 Was switch successful?
If yes, go to step 16.
If no, go to step 15.
- 15 Contact next level of technical support for assistance.
- 16 **STOP. This procedure is complete.**

DLP-112

MCB Replacement

Provides procedure to replace a Master Clock (MCB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an MCB has a state of IS-ANR or OOS-AU, perform the appropriate trouble clearing procedures before replacing the MCB. Refer to IXL-101.

GENERAL

This procedure asks you to enter this address as R-Sh-1, where R=rack number, Sh=shelf, and 1=slot location number where MCB is located. For LMC 240 systems, copy 0 MCB is 5-3-1 and copy 1 MCB is 5-1-1. In all other LMC systems copy 0 MCB is 2-3-1, and copy 1 MCB is 3-3-1.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::MCB;
4	Is returned state for MCB being replaced IS or OOS-MA? If IS, go to step 5 . If OOS-MA, go to step 27 .
5	Is opposite copy MCB state also IS? If yes, go to step 8 . If no, go to step 6 .
6	CAUTION: Possibility of service interruption. Do not remove in-service (IS) MCB; doing so drops traffic. Go to step 7.

- 7 Determine state of opposite copy MCB. Repeat step 3 if necessary.
 - a. If OOS-MA, determine if MCB must be restored or replaced.
 - (1) If MCB must be restored, go to step 29.
 - (2) If MCB needs to be replaced, go to step 27.
 - b. If OOS-AU, go to step 22.
- 8 Enter **RTRV-EQPT::MCB-R-S-1**; for MCB in alarm, where R=2 for copy 0, and 3 for copy 1.
- 9 On screen display, does CONSTAT=MASTER or SLAVE?
 - If MASTER, go to step 10.
 - If SLAVE, go to step 15.
- 10 Enter **SW-DX-EQPT::MCB-R-S-1**; for MCB being replaced.
- 11 Did output return COMPLD or DENY?
 - If COMPLD, go to step 15.
 - If DENY, go to step 17.
- 12 Enter **RTRV-ALM-ALL::MCB**; then enter **RTRV-COND-ALL::MCB**;
- 13 Are any alarms or events on slave mate MCB?
 - If yes, go to 14.
 - If no, go to step 39.
- 14 Refer to IXL-101 to resolve other alarms or events. Then, return to step 10 of this procedure.
- 15 Enter **RMV-EQPT::MCB-R-S-1**; for MCB being replaced.
- 16 Did output return COMPLD or DENY?
 - If COMPLD, go to step 27.
 - If DENY, go to step 17.
- 17 CAUTION: Possibility of service interruption. Do not remove in-service (IS) MCB; doing so drops traffic.
- 18 Does DENY message indicate opposite copy MCB not ready?
 - If yes, go to step 19
 - If no, go to step 22.
- 19 Wait 30 minutes, then enter **RMV-EQPT::MCB-R-S-1**; for MCB being replaced.

- 20** Did output return COMPLD or DENY?
If COMPLD, go to step [27](#).
If DENY, go to step [21](#).
- 21** Does DENY message indicate problem on opposite copy MCB or any CDA?
If MCB, go to step [22](#).
If CDA, go to step [25](#).
If output message does not indicate an equipment problem, try this procedure from the beginning. If RMV command still fails, go to step [39](#).
- 22** Enter **RTRV-ALM-EQPT::MCB**; then check for opposite copy MCB alarm.
Enter **RTRV-COND-EQPT::MCB**; then check any opposite copy MCB event.
- 23** Are there any alarms or events on opposite copy MCB?
If yes, refer to [IXL-101](#), clear alarms or events, then go to step [3](#).
If no, go to step [24](#).
- 24** Is this an LMC 240 system?
If yes, go to step [27](#).
If no, go to step [25](#).
- 25** Enter **RTRV-ALM-EQPT::CDA**; then check for CDA alarm.
Enter **RTRV-COND-EQPT::CDA**; then check any CDA event.
- 26** Are there any alarms or events on any CDA?
If yes, refer to [IXL-101](#), clear alarms or events, then go to step [3](#).
If no, go to step [39](#).
- 27** Remove OOS-MA MCB (refer to [DLP-100](#)).
- 28** Install replacement MCB (refer to [DLP-100](#)).
- 29** Enter **RPGM-EQPT::MCB-R-S-1::ALL**; for MCB just replaced.
- 30** Did output return COMPLD or DENY?
If COMPLD, go to step [32](#).
If DENY, go to step [31](#).
- 31** Did RPGM-EQPT deny because firmware version already matches disk?
If yes, go to step [32](#).
If no, repeat step [29](#). If RPGM fails again, go to step [39](#).

- 32** Enter **RST-EQPT::MCB-R-S-1**; for MCB just replaced.
- 33** Did output return COMPLD or DENY?
- If COMPLD, go to step [34](#).
If DENY, wait 30 minutes, then repeat step [32](#). If RST-EQPT fails again, replacement MCB might be bad. Go to step [39](#).
- 34** Wait 15 minutes for replacement MCB warm-up, then enter **RTRV-EQPT::MCB-R-S-1**;
- 35** Does CLKSTAT=READY or NOT-READY?
- If READY, go to step [36](#).
If NOT-READY, wait an additional 15 minutes (total wait time 30 minutes), then repeat step [34](#). If CLKSTAT is still NOT-READY, replacement MCB might be bad. Go to step [39](#).
- 36** Enter **SW-DX-EQPT::MCB-R-S-1**; for new MCB to verify new MCB operation.
- 37** Was switch successful?
- If yes, go to step [40](#).
If no, to step [38](#).
- 38** Wait for system to clear any LOTRI, SYNCEQPT, or MISC-1 alarms (allow 30 minutes).
- If alarm clears within 30 minutes, go to step [36](#).
If alarm does not clear within 30 minutes, go to step [39](#).
- 39** Contact next level of technical support for assistance.
- 40** **STOP. This procedure is complete.**

DLP-113

M16 Replacement

Provides procedure to replace M16 101/201 Matrix (M16).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an M16 has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the M16. Refer to IXL-101 to locate alarms associated with IS-ANR or OOS-AU state.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. This procedure logically removes an M16 from service, then physically removes and replaces it. During this time the matrix is locked to a single working copy, which results in no protection. Do not logically remove (RMV) or physically remove opposite copy M16 or IPB 101 Internal Protect (IPB)/RPB 101 Ring Protect Board module (RPB). Doing so drops traffic.
3	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Enter RTRV-STATE-EQPT::M16-R-Sh-S ; for M16 being replaced.
5	Is returned state IS or OOS-MA? If IS, go to step 6. If OOS-MA, go to step 11.
6	Enter RMV-EQPT::M16-R-Sh-S ; for M16 being replaced.

- 7 Did output return COMPLD or DENY?

If COMPLD, go to step 11.
If DENY, go to step 8.
- 8 CAUTION: Possibility of service interruption. Do not remove M16 that denied removal; doing so drops traffic. Go to step 9 and check for alarms on opposite matrix copy.
- 9 Enter **RTRV-ALM-EQPT::ALL**; then check for alarms on any opposite copy M16, M40, IPB, RPB, EOB, or OXB.

Enter **RTRV-COND-EQPT::ALL**; then check for events on any opposite copy M16, M40, IPB, RPB, EOB, or OXB.

Are there alarms or events on any opposite copy M16, M40, IPB, RPB, EOB, or OXB?

If yes, refer to IXL-101 and resolve alarms or events, then return to beginning of this procedure.
If no, go to step 10.
- 10 Retry this procedure from beginning. If RMV command still fails, go to step 15.
- 11 Remove M16 (refer to DLP-100).
- 12 Install replacement M16 (refer to DLP-100).
- 13 Wait 5 minutes after installing M16 then enter **RST-EQPT::M16-R-Sh-S**; for M16 just replaced.
- 14 Did output return COMPLD or DENY?

If COMPLD, go to step 16.
If DENY, go to step 15 (likely problem with replacement M16).
- 15 Contact next level of technical support for assistance.
- 16 **STOP. This procedure is complete.**

DLP-114

CDA Replacement

Provides procedure to replace CDA 101 Central Clock Distribution module (CDA).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a CDA has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the CDA. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::CDA-R-Sh-S; for CDA being replaced.
4	Is returned state IS or OOS-MA? If IS, go to step 5 . If OOS-MA, go to step 14 .
5	Enter RMV-EQPT::CDA-R-Sh-S;
6	Did output return COMPLD or DENY? If COMPLD, go to step 14 . If DENY, go to step 7 .
7	CAUTION: Possibility of service interruption. Do not remove CDA that denied removal; doing so drops traffic. Go to step 8 and check for alarms or events on opposite clock copy.

- 8 Enter **RTRV-ALM-EQPT::CDB**; then check for alarms on any opposite copy CDB.
Enter **RTRV-COND-EQPT::CDB**; then check for events on any opposite copy CDB.
- 9 Refer to Address and Location Guide (PN 3AL47973AE) to determine module copy information.
- 10 Are there alarms or events on any opposite copy CDB?

If yes, refer to IXL-101 and resolve alarms or events, then go to step 3.
If no, go to step 11.
- 11 Enter **RTRV-ALM-EQPT::CDA**; then check for alarms on any opposite copy CDA.
Enter **RTRV-COND-EQPT::CDA**; then check for events on any opposite copy CDA.
- 12 Are there any alarms or events on opposite copy CDA?

If yes, refer to IXL-101 and resolve alarms or events, then go to step 3.
If no, go to step 13.
- 13 Retry this procedure from beginning. If RMV command still fails, go to step 18.
- 14 Remove CDA (refer to DLP-100).
- 15 Install replacement CDA (refer to DLP-100).
- 16 Enter **RST-EQPT::CDA-R-Sh-S**; for CDA just replaced.
- 17 Did output return COMPLD or DENY?

If COMPLD, go to step 19.
If DENY, go to step 18 (likely problem with replacement CDA).
- 18 Contact next level of technical support for assistance.
- 19 **STOP. This procedure is complete.**

DLP-115 CDB Replacement

Provides procedure to replace CDB 101/102/103 Clock Distribution module (CDB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a CDB has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the CDB. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	CAUTION: Possibility of service interruption. This procedure locks that async shelf to copy.
4	Enter RTRV-STATE-EQPT::CDB-R-Sh-S ; for CDB being replaced.
5	Is returned state IS or OOS-MA? If IS, go to step 6. If OOS-MA, go to step 14.
6	Enter RMV-EQPT::CDB-R-Sh-S ;
7	Did output return COMPLD or DENY? If COMPLD, go to step 14. If DENY, go to step 8.

- 8 CAUTION: Possibility of service interruption. Do not remove CDB that denied removal; doing so drops traffic. Go to step 9 and check for alarms or events on opposite clock copy.
- 9 Enter **RTRV-ALM-EQPT::CDB**; then check for alarms on any opposite copy CDB.
Enter **RTRV-COND-EQPT::CDB**; then check for events on any opposite copy CDB.
- 10 Refer to Address and Location Guide (PN 3AL47973AE) to determine module copy information.

Are there any alarms or events on opposite copy CDB?

If yes, refer to IXL-101 and resolve alarms or events, then go to step 4.
If no, go to step 11.
- 11 Enter **RTRV-ALM-EQPT::CDA**; then check for alarms on any opposite copy CDA.
Enter **RTRV-COND-EQPT::CDA**; then check for events on any opposite copy CDA.
- 12 Are there any alarms or events on opposite copy CDA?

If yes, refer to IXL-101 and resolve alarms or events, then go to step 4.
If no, go to step 13.
- 13 Retry this procedure from beginning. If RMV command still fails, go to step 18.
- 14 Remove CDB (refer to DLP-100).
- 15 Install replacement CDB (refer to DLP-100).
- 16 Enter **RST-EQPT::CDB-R-Sh-S**;
- 17 Did output return COMPLD or DENY?

If COMPLD, go to step 19.
If DENY, go to step 18 (likely problem with replacement CDB).
- 18 Contact next level of technical support for assistance.
- 19 **STOP. This procedure is complete.**

DLP-116

OXB Replacement

Provides procedure to replace an OXB 101 Optical Transceiver (OXB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an OXB has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the OXB. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CONNECTOR ON OXB. Laser radiation is present when fiber-optic connector is open and OXB is plugged into shelf. Refer to the Introduction for laser precautions.
3	CAUTION: Possibility of service interruption. This replacement procedure locks a copy to the remaining module. If a failure occurs to this locked copy during replacement procedure, service interruption will occur.
4	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
5	Enter RTRV-STATE-EQPT::OXB-R-Sh-S ; for OXB to be replaced.
6	Is returned state IS or OOS-MA? If IS, go to step 7. If OOS-MA, go to step 12.
7	Enter RMV-EQPT::OXB-R-Sh-S ;

- 8** Did output return COMPLD or DENY?
- If COMPLD, go to step [12](#).
If DENY, go to step [9](#).
- 9** CAUTION: Possibility of service interruption. Do not remove OXB that denied removal; doing so drops traffic. Go to step [10](#) and check for alarms or events on opposite matrix copy.
- 10** Enter **RTRV-ALM-EQPT::ALL**; then check for alarms on any opposite copy OXB, EOB, IPB, RPB, M16, M32 or M40.
- Enter **RTRV-COND-EQPT::ALL**; then check for events on any opposite copy OXB, EOB, IPB, RPB, M16, M32 or M40.
- 11** Are there alarms or events on any opposite copy OXB, EOB, IPB, RPB, M16, M32 or M40?
- If yes, refer to IXL-[101](#), clear alarms or events, then go to step [7](#).
If no, go to step [5](#) and retry this procedure. If OXB still denies a removal, go to step [36](#).
- 12** Enter **RTRV-EQPT::OXB-R-Sh-S**; for OXB being replaced.
- 13** Make note of output parameter OPTMATE= (EOB-R-Sh-S).
- 14** Enter **RMV-EQPT::EOB-R-Sh-S**; for EOB noted in step [14](#).
- 15** Did output return COMPLD or DENY?
- If COMPLD, go to step [18](#).
If DENY, go to step [16](#).
- 16** With OXB optical mate already removed, the RMV-EQPT command should have returned a COMPLD. It appears there are problems in both copies.
- Enter **RTRV-ALM-EQPT::ALL**; then check for alarms on any opposite copy OXB, EOB, IPB, RPB, M16, M32 or M40.
- Enter **RTRV-COND-EQPT::ALL**; then check for events on any opposite copy OXB, EOB, IPB, RPB, M16, M32 or M40.
- 17** Are there alarms or events on any opposite copy OXB, EOB, IPB, RPB, M16, M32, M40?
- If yes, refer to IXL-[101](#), clear alarms or events, then go to step [14](#).
If no, go to step [36](#).

- 18** EOB must be unseated just far enough to break electrical connection with backplane. Do not remove EOB. Do not slide EOB more than 1 inch out from seated position.

Physically locate EOB just logically removed (OOS indicator lit). Move insertion/extraction tabs to unlocked position. Slide EOB approximately 1 inch toward front of shelf to ensure that module's electrical connector disengages from backplane.

- 19** Mark OXB fiber-optic cable connection locations.
- 20** On OXB front panel, disconnect and remove fiber-optic cable.
- 21** Cover fiber-optic cable connector and OXB optical connectors with protective covers.
- 22** Slide OXB out of shelf and place in antistatic, protective container.
- 23** Slide replacement OXB part way into slot. Do not engage electrical connector with backplane.
- 24** Do not clean the fiber-optic connectors on OXB. Clean only fiber-optic cable connectors.

Clean fiber-optic cable connectors in accordance with local procedures or by doing the following steps.

Use Alcoa Fujikura PREP fiber connector cleaner (PN FCC-02-R) or equivalent.

- a. Open FCC-02R cleaner door and insert fiber-optic cable ferrule tip into slot 1. Apply firm pressure to rotate connector tip back and forth on upper portion of polyester film two or three times, followed by a smooth downstroke to bottom of slot.
 - b. Withdraw connector and immediately insert it into upper portion of slot 2. Slide connector one time to bottom of slot.
 - c. As each connector is cleaned, go to step [25](#) and connect fiber-optic cable to OXB.
- 25** Connect fiber-optic cable to OXB as marked in step [19](#). Go to step [24](#) and clean other fiber. When both fibers are connected, go to step [26](#).
- 26** Move OXB insertion/extraction tabs to unlocked position.
- 27** Slide OXB into shelf until it engages backplane connector.
- 28** Press tabs to lock module in place.
- 29** On EOB that was removed in step [18](#), move insertion/extraction tabs to unlocked position.

- 30 Slide EOB into shelf until it engages backplane connector.
- 31 Press tabs to lock EOB in place.
- 32 Enter **RST-EQPT::EOB-R-Sh-S**; for EOB just installed.
- 33 Did output return COMPLD or DENY?
 - If COMPLD, go to step 34.
 - If DENY, go to step 36.
- 34 Enter **RST-EQPT::OXB-R-Sh-S**; for OXB just replaced.
- 35 Did output return COMPLD or DENY?
 - If COMPLD, go to step 37.
 - If DENY, go to step 36 (it is likely that replacement OXB is bad or improperly seated).
- 36 Contact next level of technical support for assistance.
- 37 **STOP. This procedure is complete.**

DLP-117

P39 Replacement

Provides procedure to replace a P39 101 3V Power Converter (P39).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If you unseat and reseat a P39, wait 1 minute before reinserting it. If a P39 is reseated too soon, it may cause an overcurrent condition.
- If a P39 has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the P39. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-EQPT::P39-R-Sh-S; for P39 being replaced.
4	MAXIMUM: All power supplies in associated power supply group are in service and functional. MINIMUM: A minimum number of required power supplies in associated power supply group are in service and functional. OUT: There is an insufficient number of in-service and functional power supplies in associated power supply group. Does output parameter PGPL=MAXIMUM, MINIMUM, or OUT? If MAXIMUM, go to step 5. If MINIMUM, go to step 10. If OUT, go to step 8.

- 5 Enter **RMV-EQPT::P39-R-Sh-S**; for P39 being replaced.
- 6 Did output return COMPLD or DENY?
 - If COMPLD, go to step 13.
 - If DENY, go to step 7.
- 7 Repeat step 3 to verify PGPL=MAXIMUM. If PGPL=MAXIMUM, repeat step 5. If remove command fails again, go to step 17.
- 8 Was troubleshooting done to determine which P39 must be replaced?
 - If no, go to step 9.
 - If yes, go to step 10.
- 9 If power is less than minimum, enter **RTRV-ALM-EQPT::P39**;
Refer to IXL-101 and clear alarm(s), then return to step 3 of this procedure.
- 10 Enter **RTRV-STATE-EQPT::P39-R-Sh-S**; for P39 being replaced.
- 11 Is returned state IS or OOS-MA?
 - If IS, go to step 12.
 - If OOS-MA, go to step 13.
- 12 CAUTION: Possibility of service interruption. Do not remove an in-service P39. Power group is operating at minimum or below. Repeat step 9 for all P39s in same power group. Locate, remove, and replace P39s that are already in out-of-service state due to a failure.
- 13 Remove P39 (refer to DLP-100).
- 14 Install replacement P39 (refer to DLP-100).
- 15 Enter **RST-EQPT::P39-R-Sh-S**; for P39 just replaced.
- 16 Did output return COMPLD or DENY?
 - If COMPLD, go to step 18.
 - If DENY, go to step 17.
- 17 Contact next level of technical support for assistance.
- 18 **STOP. This procedure is complete.**

DLP-118

P56 Replacement

Provides procedure to replace a P56 101 5V Power Converter (P56).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If you unseat and reseat a P56, wait 1 minute before reinserting it. If P56 is reseated too soon, it may cause an overcurrent condition.
- If a P56 has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the P56. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-EQPT::P56-R-Sh-S; for P56 being replaced.
4	MAXIMUM: All power supplies in associated power supply group are in service and functional. MINIMUM: A minimum number of required power supplies in associated power supply group are in service and functional. OUT: There is an insufficient number of in-service and functional power supplies in associated power supply group. Does output parameter PGPL=MAXIMUM, MINIMUM, or OUT? If MAXIMUM, go to step 5. If MINIMUM, go to step 10. If OUT, go to step 8.

- 5 Enter **RMV-EQPT::P56-R-Sh-S**; for P56 being replaced.
- 6 Did output return COMPLD or DENY?
 - If COMPLD, go to step 13.
 - If DENY, go to step 7.
- 7 Repeat step 3 to verify PGPL=MAXIMUM. If PGPL=MAXIMUM, repeat step 5. If remove command fails again, go to step 17.
- 8 Was troubleshooting done to determine which P56 must be replaced?
 - If no, go to step 9.
 - If yes, go to step 10.
- 9 If power is less than minimum, enter **RTRV-ALM-EQPT::P56**;
Refer to IXL-101 and clear alarm(s), then return to step 3 of this procedure.
- 10 Enter **RTRV-STATE-EQPT::P56-R-Sh-S**; for P56 being replaced.
- 11 Is returned state IS or OOS-MA?
 - If IS, go to step 12.
 - If OOS-MA, go to step 13.
- 12 CAUTION: Possibility of service interruption. Do not remove an in-service P56. Power group is operating at minimum or below. Repeat step 10 for all P56s in same power group. Locate and replace P56s that are already in out-of-service state due to a failure.
- 13 Remove P56 (refer to DLP-100).
- 14 Install replacement P56 (refer to DLP-100).
- 15 Enter **RST-EQPT::P56-R-Sh-S**; for P56 just replaced.
- 16 Did output return COMPLD or DENY?
 - If COMPLD, go to step 18.
 - If DENY, go to step 17.
- 17 Contact next level of technical support for assistance.
- 18 **STOP. This procedure is complete.**

DLP-119

EP3 Replacement

Provides procedure to replace EP3 105/106 DS3 Standard Interface electronic plesiochronous module (EP3).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an EP3 has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the EP3. Refer to IXL-101.
- EP3 protection is 8:1. Possible reasons for EP3 not switching to protection follow:
 - Protect EP3 is already in use protecting another EP3.
 - Switch to protect is inhibited or protect module is bad.
 - Protection group is improperly configured; it does not have a minimum of two EP3s plus a protection EP3 with no empty slots between EP3s.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Is main or protect EP3 being replaced? If main, go to step 4. If protect, go to step 37.
4	Enter RTRV-EQPT::EP3-R-Sh-S ; for main EP3 being replaced.

- 5 Did output indicate PROT STAT=MAIN SWITCHED?
If yes, go to step 8.
If no, go to step 6.
- 6 Enter **SW-TOPROTN-EQPT::EP3-R-Sh-S;** for EP3 being replaced.
- 7 Did output return COMPLD or DENY?
If COMPLD, go to step 8.
If DENY, go to step 17.
- 8 Enter **RMV-EQPT::EP3-R-Sh-S;** for EP3 being replaced.
- 9 Did output return COMPLD or DENY?
If COMPLD, go to step 11.
If DENY, go to step 10.
- 10 Did RMV-EQPT deny because EP3 is already logically removed?
If yes, go to step 11.
If no, go to step 48.
- 11 Remove EP3 if present.
- 12 Insert new EP3 in slot and wait for inserted message.
- 13 Enter **RST-EQPT::EP3-R-Sh-S;**
- 14 Did output return COMPLD or DENY?
If COMPLD, go to step 15.
If DENY, go to step 48.
- 15 Enter **SW-TOWKG-EQPT::EP3-R-Sh-S;** for restored EP3.
- 16 Did output from SW-TOWKG return COMPLD or DENY?
If COMPLD, go to step 49.
If DENY, go to step 48.
- 17 Enter **RTRV-EQPT::EP3-R-Sh-S;** for protect EP3 (make note of output).

- 18** Did output parameter return PROSTAT= PROTECTING-[AID] or PROT-NOT-IN-USE?
If PROTECTING-[AID], go to step [25](#).
If PROT-NOT-IN-USE, go to step [19](#).
- 19** Did output return secondary state (SST)=PSI?
If yes, go to step [21](#).
If no, go to step [20](#).
- 20** Did output return secondary state (SST)=PRI?
If yes, go to step [21](#).
If no, go to step [33](#) and check physical location of EP3.
- 21** Allow protection switching on alarmed EP3s only or on all EP3s in protect group?
If all EP3s, go to step [22](#).
If alarmed EP3s, go to step [23](#).
- 22** Enter **ALW-SWTOPROTN-EQPT::EP3-R-Sh-S**; for protect EP3. Go to step [24](#).
- 23** Enter **ALW-SWTOPROTN-EQPT::EP3-R-Sh-S**; for alarmed EP3. Go to step [24](#).
- 24** Did output return COMPLD or DENY?
If COMPLD, go to step [6](#).
If DENY, go to step [48](#).
- 25** Enter **RTRV-EQPT::EP3-R-Sh-S**; for EP3 being protected (where Sh=shelf and S=slot of EP3 being protected).
- 26** Did output return secondary state (SST)=PRI?
If yes, go to step [30](#).
If no, go to step [27](#).
- 27** Enter **RTRV-ALM-EQPT::EP3-R-Sh-S**; for EP3 being protected.
After alarm report, enter **RTRV-COND-EQPT::EP3-R-Sh-S**; for EP3 being protected.
- 28** Are there alarms or events on EP3 being protected?
If yes, go to step [29](#).
If no, go to step [48](#).
- 29** Refer to IXL-[101](#) to resolve alarms and events, then return to this procedure.

- 30** Do you wish to allow switch to working on EP3 under protection?
If yes, go to step [31](#).
If no, go to step [48](#).
- 31** Use R-Sh-S for EP3 that is switched to protection.
Enter **ALW-SWTOWKG::EP3-R-Sh-S**;
- 32** Did output return COMPLD or DENY?
If COMPLD, go to step [3](#).
If DENY, go to step [48](#).
- 33** Check location of EP3 that failed to switch to protection.
- 34** Protection scheme does not allow empty slots to left of last card in protection group.
Is EP3 installed in slot immediately left of EP3 that failed to switch?
If yes, go to step [35](#).
If no, go to step [48](#) (EP3 must be installed and provisioned).
- 35** Enter **RTRV-ALM-EQPT::EP3-R-Sh-S**; for protect EP3.
After alarm report, enter **RTRV-COND-EQPT::EP3-R-Sh-S**; for protect EP3.
- 36** Are there alarms or events on protect EP3?
If yes, go to step [29](#).
If no, go to step [48](#).
- 37** Enter **RTRV-EQPT::EP3-R-Sh-S**; for protect EP3 being replaced.
- 38** Did output parameter return PROSTAT=PROTECTING-[AID] or PROT-NOT-IN-USE?
If PROTECTING-[AID], go to step [39](#).
If PROT-NOT-IN-USE, go to step [42](#).
- 39** Was inhibit switch to working, or alarm/event condition checked?
If yes, go to step [40](#).
If no, go to step [25](#).
- 40** Enter **SW-TOWKG::EP3-R-Sh-S**; for EP3 switched to protection.

- 41 Did output return COMPLD or DENY?
If COMPLD, go to step 42.
If DENY, go to step 48.
- 42 Enter **RMV-EQPT::EP3-R-Sh-S**; for protect EP3 being replaced.
- 43 Did output return COMPLD or DENY?
If COMPLD, go to step 44.
If DENY, go to step 48.
- 44 Remove protect EP3.
- 45 Install replacement protect EP3.
- 46 Enter **RST-EQPT::EP3-R-Sh-S**; for protect EP3 just replaced.
- 47 Did output return COMPLD or DENY?
If COMPLD, go to step 49.
If DENY, go to step 48.
- 48 Contact next level of technical support for assistance.
- 49 **STOP. This procedure is complete.**

DLP-120

IPB Replacement

Provides procedure to replace IPB 101 Internal Protect module (IPB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an IPB has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the IPB. Refer to IXL-101.

GENERAL

For a detailed description of states, refer to Appendix G of the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ).

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. This procedure logically removes an IPB from service then physically removes and replaces it. During this time, the traffic on that SI48 shelf is locked to a single working copy, which results in no protection. Do not logically remove (RMV) or physically remove opposite copy M16 or M32 Matrix module or IPB. Doing so drops traffic.
3	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
4	Enter RTRV-STATE-EQPT::IPB-R-Sh-S ; for IPB to be replaced.
5	Is returned state IS or OOS-MA? If IS, go to step 6. If OOS-MA, go to step 12.

- 6 Enter **RMV-EQPT::IPB-R-Sh-S;**
- 7 Did output return COMPLD or DENY?
 - If COMPLD, go to step 12.
 - If DENY, go to step 8.
- 8 CAUTION: Possibility of service interruption. Do not remove IPB that denied removal; doing so drops traffic. Go to step 9 and check for alarms or events on opposite matrix copy.
- 9 Enter **RTRV-ALM-EQPT::ALL;** then observe report and check for opposite copy IPB, M16, M32, M40, RPB, EOB, or OXB alarms.
 - Enter **RTRV-COND-EQPT::ALL;** then observe report and check for opposite copy IPB, M16, M32, M40, RPB, EOB, or OXB events.
- 10 Refer to Address and Location Guide (PN 3AL47973AE) to determine module copy information.
 - Are there alarms or events on opposite copy IPB, M16, M40, RPB, EOB, or OXB?
 - If yes, refer to IXL-101 and resolve alarms or events, then return to beginning of this procedure.
 - If no, refer to the following information, then go to step 11.
- 11 With opposite copy data path alarm and event free, there is no known reason for IPB being removed to deny the RMV command.
 - Do you wish to repeat this procedure?
 - If yes, go to step 1.
 - If no, go to step 16.
- 12 Remove IPB (refer to DLP-100).
- 13 Install replacement IPB (refer to DLP-100).
- 14 Enter **RST-EQPT::IPB-R-Sh-S;**
- 15 Did output return COMPLD or DENY?
 - If COMPLD, go to step 17.
 - If DENY, go to step 16 (it is likely that replacement IPB is bad or improperly seated).
- 16 Contact next level of technical support for assistance.
- 17 **STOP. This procedure is complete.**

DLP-121

DSI Replacement

Provides procedure to replace ES-30D-4 and ES-30J-1 DS1 Interface (DSI).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a DSI has a state of DSI IS-ANR or OOS-AU, perform appropriate trouble-clearing procedures before removing the DSI. Refer to IXL-101.

GENERAL

DSI Equipment States

For a detailed description of states, refer to Appendix G of the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ).

- If DSI protection switching is inhibited, its secondary state is PSI.
- If DSI switch to working is inhibited, its secondary state is PRI.
- If DSI is not provisioned for service, its state is OOS-AUMA with various secondary state possibilities.

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.

- 3 Determine equipment state:

Enter **RTRV-STATE-EQPT::DSI-R-Sh-S;** for DSI being replaced.

If state is IS, go to step 4.
If state is IS,STBYH, go to step 10.
If state is OOS-MA, go to step 12.
- 4 CAUTION: Possibility of service interruption. Do not remove an in-service (IS) module. Removing a module in IS state causes a hit to, or a loss of traffic. Switch module in IS state to protect.
- 5 Switch to protect requires protect DSI IS,STBYH state:

Enter **RTRV-STATE-EQPT::DSI-R-Sh-S;** for protect DSI.

If state is IS,STBYH, go to step 6.
If state is IS, protect module is busy protecting another DSI. Clear reason for protect being busy, then go to step 6.
- 6 Switch DSI being replaced to protection:

Enter **SW-TOPROTN-EQPT::DSI-R-Sh-S;**
- 7 Did output return COMPLD or DENY?

If COMPLD, go to step 10.
If DENY, go to step 8.
- 8 Check to see if protection switching is inhibited:

Enter **RTRV-STATE-EQPT::DSI-R-Sh-S;** for DSI being replaced.

If a Secondary State (SST) of PSI is reported, go to step 9.
If SST is not PSI, go to step 18.
- 9 Enter **ALW-SWTOPROTN-EQPT::DSI-R-Sh-S;** for DSI being replaced, then go to step 6.
- 10 Enter **RMV-EQPT::DSI-R-Sh-S;** for DSI being replaced.
- 11 Did output return COMPLD or DENY?

If COMPLD, go to step 12.
If DENY, go to step 18.
- 12 Remove DSI from slot.

- 13** Install replacement DSI into slot.
- 14** Enter **RST-EQPT::DSI-R-Sh-S;**
- 15** Did output return COMPLD or DENY?
 - If COMPLD, go to step [16](#).
 - If DENY, go to step [18](#).
- 16** Verify replacement DSI operation:
Enter **SW-TOWKG-EQPT::DSI-R-Sh-S;** for DSI just replaced.
- 17** Did output return COMPLD or DENY?
 - If COMPLD, go to step [19](#).
 - If DENY, go to step [18](#) (problem with replacement DSI).
- 18** Contact next level of technical support for assistance.
- 19** **STOP. This procedure is complete.**

DLP-122

Blower/Fan Assembly Replacement

Provides procedure to replace a blower or fan assembly.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
3	Are you replacing fan assembly in APS, asynchronous I/O, synchronous SI48, center-stage, or end-stage rack? If APS or asynchronous I/O rack, go to step 4. If synchronous SI48, center-stage, or end-stage rack, go to step 10.
4	Remove Interrack front trim panels and/or end guards by removing screws and lifting panels out.
5	Unscrew four screws that secure blower assembly and remove assembly from rack.
6	Disconnect blower assembly power harness J501/J502 from P501/P502.
7	On replacement blower assembly connect power harness J501/J502 to P501/P502.
8	<i>WARNING: Possibility of equipment damage. Ensure that power harness does not become pinched or kinked when inserting fan assembly.</i>
9	Insert replacement blower assembly into rack and secure with four screws. Go to step 18.
10	Remove fan cover and adjacent shelf doors (squeeze door releases on left and right sides of doors, then swing open from right and lift up to remove door).
11	Remove Interrack front trim panels and/or end guards by removing screws and lifting panels out.
12	Remove front angle trim on either side of equipment rack by removing screws that secure trim to shelves.

- 13 Disconnect power cables from both sides of fan.
- 14 Record intershelf grounding strap placement, if installed (straps are found only on older racks).
- 15 Remove four equipment rack screws that secure fan assembly and remove assembly from rack.
- 16 Insert replacement fan assembly into rack and secure with screws (attach grounding straps, if required).
- 17 Reconnect power cables on both sides of fan assembly.
- 18 Reinstall all previously removed trim, shelf doors, and covers.
- 19 **STOP. This procedure is complete.**

DLP-123

SBT Replacement

Provides procedure to replace ES-27J-1 System Bus Termination module (SBT).

PREREQUISITE

If an SBT has a state of IS-ANR or OOS-AU, perform appropriate trouble-clearing procedures before removing the SBT. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as S, where S=slot location of equipment. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	The APS shelf is divided into left and right sides (left side=copy 0 and right side=copy 1). When removing an SBT, active CPU, CIM/ACM, and SIO/ICM must be on opposite copy from SBT being removed. Is SBT being removed on left side (copy 0=slot 1 or 2) or right side (copy 1=slot 3 or 4) of APS shelf? If left side (copy 0), go to step 4. If right side (copy 1), go to step 5.
4	Look at front panel of CPU in left side of shelf. Is ACT green indicator lit? If yes, go to step 6. If no, go to step 8.
5	Look at front panel of CPU in right side of shelf. Is ACT green indicator lit? If yes, go to step 6. If no, go to step 8.
6	Enter SW-DX-EQPT::CPU-1-2-1 ; to switch to other CPU.

- 7 Wait for COMPLD message on terminal.
- 8 Enter **RTRV-STATE-EQPT::CIM/ACM-1-2-S**; for each CIM/ACM on same copy as active CPU (CIM/ACM 3, 4, 5, 6, and 7 for copy 0, or CIM/ACM 10, 11, 12, 13, and 14 for copy 1).
- 9 Is returned state IS or IS,STBYC?
 - If IS, go to step 12.
 - If IS,STBYC, go to step 10 and switch CIM/ACM.
- 10 Enter **SW-DX-EQPT::CIM/ACM-1-2-S**; for each CIM/ACM being switched.
- 11 Did output return COMPLD or DENY?
 - If COMPLD, go to step 12.
 - If DENY, go to step 23.
- 12 Enter **RTRV-STATE-EQPT::SIO**;
- 13 Is any SIO that is on the same copy as SBT being removed in the IS state?
 - If yes, go to step 14.
 - If no, go to step 20.
- 14 Enter **RMV-EQPT::SIO-1-2-S**; for each SIO being switched.
- 15 If you are logged off, enter **ACT-USER::UID::PID**;
- 16 Enter **RTRV-STATE-EQPT::ICM**;
- 17 Is any ICM that is on same copy as SBT being removed in IS state?
 - If yes, go to step 18.
 - If no, go to step 20.
- 18 Enter **SW-DX-EQPT::ICM-1-2-S**; for each ICM being switched.
- 19 Did output return COMPLD or DENY?
 - If COMPLD, go to step 20.
 - If DENY, go to step 23.
- 20 Look at front panels of CPU, CIMs/ACMs, and SIOs/ICMs that are on opposite copy of SBT being removed. Are green ACT indicators on each module lit?
 - If yes, go to step 21.
 - If no, redo this entire procedure.

- 21** Remove SBT (refer to DLP-100).
- 22** Install replacement SBT (refer to DLP-100) then go to step 24.
- 23** Contact next level of technical support for assistance.
- 24** **STOP. This procedure is complete.**

DLP-124

SWI Replacement

Provides procedure to replace ES-40C-1 DS1 Switch (SWI).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Traffic on all eight DS1 ports associated with quadrant (QUAD) where SWI is housed must be rolled before removing SWI.
- If an SWI has a state of IS-ANR or OOS-AU, perform appropriate trouble-clearing procedures before removing the SWI. Refer to IXL-101.

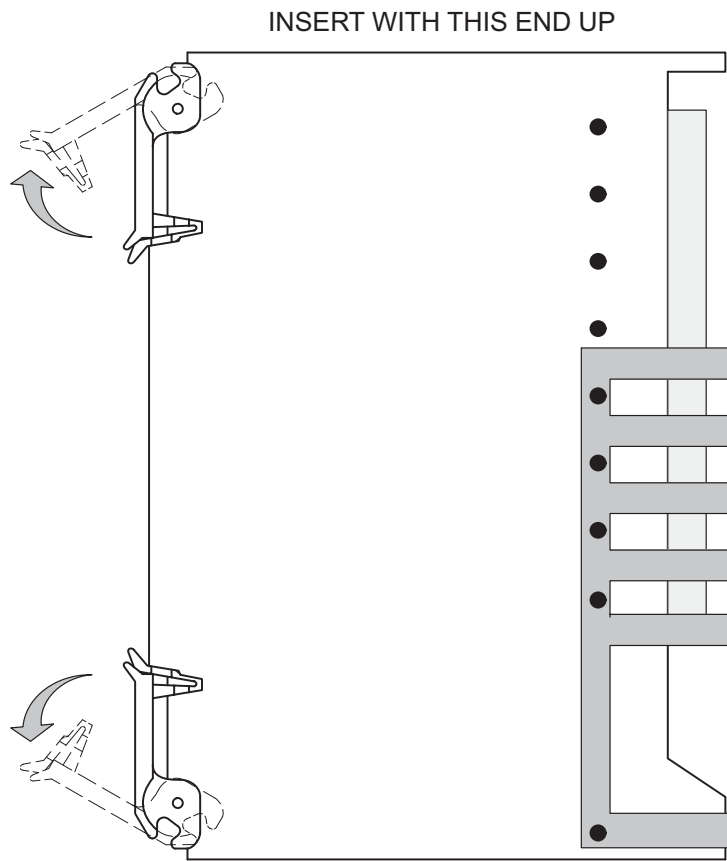
GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. Removal of SWI with traffic on any of its eight T1s causes a loss of these T1s, even if they are switched to protect.
3	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Determine if there is any traffic on DS1 ports associated with SWI being removed. Enter RTRV-EQPT::DSI-R-Sh-S ; for DSI where SWI is being replaced.
5	Look at output parameter PORT= and make note of DS1 ports.
6	Enter RTRV-CRS-T1::T1aaaaaa&&-aaaaaa ; where first aaaaaa=first T1 and second aaaaaa=last T1 listed at PORT=.

- 7 Are any ports cross-connected?
- If yes, refer to 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ), then roll cross-connects off ports in this QUAD.
If no, go to step 8.
- 8 Enter **RTRV-T1::T1-aaaaaa&&-aaaaaa**; where first aaaaaa=first T1 and second aaaaaa=last T1 listed at PORT= retrieved in step 4.
- Are all T1s in either OOS-MA or OOS-MA,UAS state?
- If yes, go to step 10.
If no, go to step 9.
- 9 Remove T1s from service:
- If all T1s retrieved in step 8 are in service (IS), enter **RMV-T1::-aaaaaa&&-aaaaaa**; where first aaaaaa=first T1 and second aaaaaa=last T1 listed at PORT= in step 8.
- If just some of the T1s retrieved in step 8 are IS, enter **RMV-T1::-aaaaaa**; where aaaaaa=T1 in service. Repeat for each T1 in service.
- 10 Remove DSI in front of SWI being replaced.
- 11 Removal of SWI requires an extractor (PN 694-8419-001) (Revision G).
- Insert DSI extractor (see figure 124-1) into space vacated by DSI just removed.
- 12 Engage DSI extractor with SWI. Press on tabs to lock in place.
- 13 Release tabs, then pull DSI extractor and SWI out of slot.
- 14 Disconnect DSI extractor from SWI with an unhooking motion.
- 15 While out of slot, connect removed DSI and replacement SWI.
- 16 Install DSI and SWI into slot.
- 17 Enter **RTRV-ALM-EQPT::SWI**;
- 18 Are there any alarms on SWI that were just installed?
- If yes, go to step 20.
If no, go to step 19.

Figure 124-1. DSI Extractor



120-1665-1
041995

19 Restore T1s into service:

If restoring all T1s in QUAD, enter **RST-T1::T1-96188-965-aaaaaa&&-aaaaaa**; where first aaaaaa=first T1 and second aaaaaa=last T1 listed at PORT= in step 5.

If restoring just some of the T1s, enter **RST-T1::T1-96188-965-aaaaaa**; where aaaaaa=T1 to go in service. Repeat for other T1s as required.

If T1 has not been provisioned, RST command fails. Refer to 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ), enter ports into service using ENT-T1 command, then go to step 21.

20 Contact next level of technical support for assistance.**21** If traffic was rolled in step 7, reestablish traffic as required.**22** **STOP. This procedure is complete.**

DLP-125

PRT Replacement

Provides procedure to replace ES-30C-1 DS1 Protect module (PRT).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- If a working DS1 Interface (DSI) is switched to protect, it must be switched back to working before removing the PRT.
- If a PRT has a state of IS-ANR or OOS-AU, perform appropriate trouble-clearing procedures before removing the PRT. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. If one DSI in associated quadrant is switched to protect, the protect DSI and PRT cannot be removed without dropping traffic. Traffic on protect must be switched back to working before protect DSI and PRT can be replaced.
3	<i>WARNING: Possibility of equipment damage. Possibility of damage to equipment. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Determine if protection is in use. Enter RTRV-EQPT::DSI-R-Sh-S ; for DSI plugged into PRT being replaced.
5	Look at output parameter PORTSTAT= If PORTSTAT=PORT-NOT-IN-USE, go to step 10. If PORTSTAT=PROTECTING-(AID), go to step 6.
6	Clear protection status by switching DSI to working. Enter SW-TOWKG-EQPT::DSI-R-Sh-S ; for DSI being protected.

- 7 Did output return COMPLD or DENY?

If COMPLD, go to step 10.
If DENY, go to step 8.
- 8 Check for an alarm or event on DSI that is switched to protection.

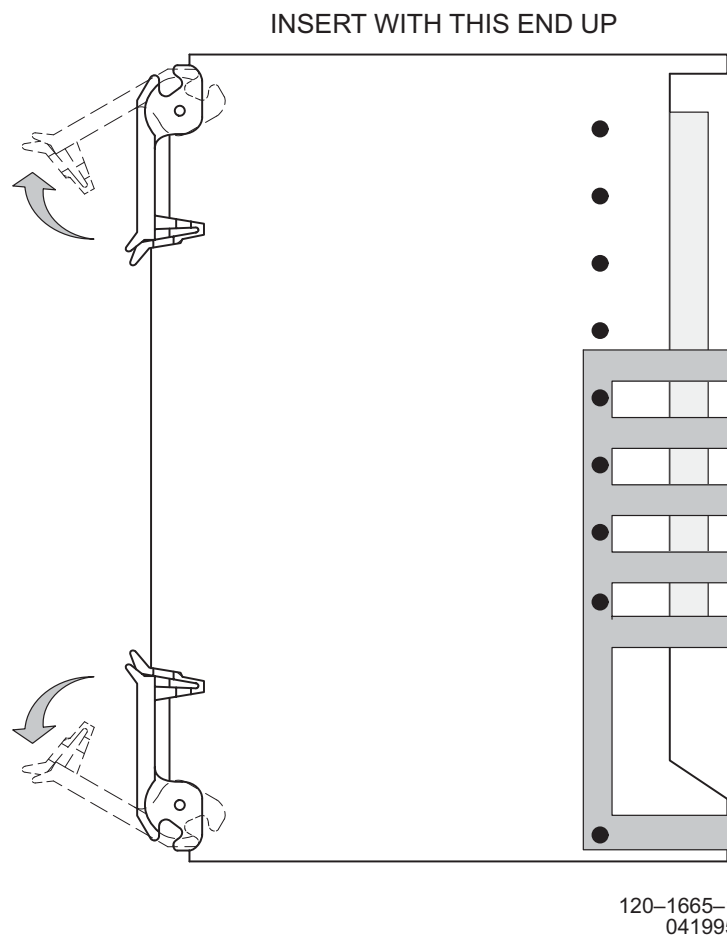
Enter **RTRV-ALM-EQPT::DSI**; then enter **RTRV-COND-EQPT::DSI**;
- 9 Are there alarms or events on DSI that are switched to protection?

If yes, refer to IXL-101 and clear alarm or event, then return to beginning of this procedure.
If no, go to step 23.
- 10 Enter **RMV-EQPT::DSI-R-Sh-S**; for DSI plugged into PRT being replaced.
- 11 Did output return COMPLD or DENY?

If COMPLD, go to step 12.
If DENY, go to step 23.
- 12 On DSI installed in front of PRT, open extraction tabs and slide DSI out of slot.
- 13 Removal of PRT requires a card extractor (PN 694-8419-001) (Revision G).

Insert DSI extractor (see figure 125-1) into space vacated by DSI just removed.
- 14 Engage DSI extractor with PRT. Press on tabs to lock in place.
- 15 Release tabs, then pull DSI extractor and PRT out of slot.
- 16 Disconnect DSI extractor from PRT with an unhooking motion.
- 17 While out of slot, connect removed DSI and replacement PRT.
- 18 Install DSI and PRT into slot.
- 19 Enter **RST-EQPT::DSI-R-Sh-S**; for DSI just installed with PRT.

Figure 125-1. DSI Extractor



- 20** Did output return COMPLD or DENY?
If COMPLD, go to step [21](#).
If DENY, go to step [23](#).
- 21** Enter **RTRV-ALM-EQPT::PRT**;
- 22** Are there alarms on PRT that were just installed?
If yes, go to step [23](#).
If no, go to step [24](#).
- 23** Contact next level of technical support for assistance.
- 24** **STOP. This procedure is complete.**

DLP-126

Turn Off System Power

Provides procedure to turn off all power in the 1631 SX LMC system. Performance of this procedure results in the system's inability to carry traffic. Recommend next level of support be consulted before performing this procedure. Refer to DLP-139 to restore system power.

STEP	PROCEDURE
1	Determine if complete system database backup should be performed. Refer to the 1631 SX LMC Quick Reference Manual (PN 3AL45393AJ) if necessary.
2	CAUTION: Possibility of service interruption. Performing the following steps results in the system's inability to carry traffic.
3	Enter STOP-OPS and press ; (semicolon) to execute.
4	Turn off APS rack, RSP circuit breakers A and B.
5	Turn off all PSTs on the APS rack.
6	Turn off all RDU circuit breakers on all asynchronous (DS1) racks. Turn off all PDU circuit breakers A1, A2, B1, and B2 on all center-stage, end-stage, SI48, and SI36 racks.
7	Turn off all PSFs on all asynchronous I/O racks.
8	If required, disconnect power feeds to the system at the A and B office Battery Distribution Fuse Bays (BDFB) by removing fuses or by turning off circuit breakers.
9	STOP. This procedure is complete.

DLP-127

EOB Replacement

Provides procedure to replace an Electrical-Optical Converter (EOB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an EOB has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the EOB. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CONNECTOR ON BACKPLANE. Laser radiation is present when OXB is plugged into shelf.
3	CAUTION: Possibility of service interruption. This replacement procedure locks a copy to the remaining module. If a failure occurs to this locked copy during replacement procedure, service interruption will occur.
4	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
5	Enter RTRV-STATE-EQPT::EOB-R-Sh-S ; for EOB to be replaced.
6	Is returned state IS or OOS-MA? If IS, go to step 7. If OOS-MA, go to step 13.
7	Enter RMV-EQPT::EOB-R-Sh-S ;

- 8** Did output return COMPLD or DENY?
- If COMPLD, go to step [13](#).
If DENY, go to step [9](#).
- 9** CAUTION: Possibility of service interruption. Do not remove EOB that denied removal; doing so drops traffic. Go to step [10](#) and check for alarms or events on opposite matrix copy.
- 10** Enter **RTRV-ALM-EQPT::ALL**; then check for opposite copy EOB, OXB, M16, M32, M40, IPB, or RPB alarms.
- Enter **RTRV-COND-EQPT::ALL**; then check for opposite copy EOB, OXB, M16, M32, M40, IPB, or RPB events.
- 11** Refer to Address and Location Guide (PN 3AL47973AE) to determine module copy information.
- Are there alarms or events on opposite copy EOB, OXB, M16, M32, M40, IPB, or RPB?
- If yes, refer to IXL-[101](#) and resolve alarms or events, then return to beginning of this procedure.
If no, go to step [12](#).
- 12** Retry this procedure from beginning. If RMV command still fails, go to step [19](#).
- 13** Move insertion/extraction tabs to unlocked position. Slide EOB out of shelf, install optical dust covers, and place in antistatic, protective container.
- 14** Remove optical dust covers from replacement EOB then slide EOB part way into slot.
- 15** Move insertion/extraction tabs to unlocked position, then slide EOB into shelf until it engages backplane connectors.
- 16** Press tabs to lock EOB in place.
- 17** Enter **RST-EQPT::EOB-R-Sh-S**;
- 18** Did output return COMPLD or DENY?
- If COMPLD, go to step [20](#).
If DENY, go to step [19](#) (replacement EOB is probably bad or improperly seated).
- 19** Contact next level of technical support for assistance.
- 20** **STOP. This procedure is complete.**

DLP-128

LT1, LT2, or LT5 Replacement

Provides procedure to replace ES-29A-1 LT1 Level Translator (LT1), ES-29E-1 LT2 Level Translator (LT2), or ES-29G-1 LT5 Level Translator (LT5).

PREREQUISITE

Notify users that Control Port (CPORT) will be down during LT1, LT2, or LT5 replacement.

GENERAL

This procedure asks you to enter an address as N-1-1-S, where N=LT1, LT2, or LT5 and S=slot location 1 through 6. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Remove cables and record location of each. Remove LT1, LT2, or LT5 from slot.
4	Plug new LT1, LT2, or LT5 into slot and connect cables.
5	Enter RTRV-STATE-EQPT::N-1-1-S ; for LT1, LT2, or LT5 just installed.
6	Is returned state IS or OOS-MA? If IS, go to step 10 . If OOS-MA, go to step 7 .
7	Enter ENT-EQPT::N-1-1-S ; for LT1, LT2, or LT5 just installed.
8	Did output return COMPLD or DENY? If COMPLD, go to step 10 . If DENY, go to step 9 .

- 9 Contact next level of technical support for assistance.
- 10 **STOP. This procedure is complete.**

DLP-129

LT4 or LT8 Replacement

Provides procedure to replace ES-29D-1 LT4 Level Translator (LT4) or LT8 101 LT8 Level Translator (LT8).

GENERAL

This procedure asks you to enter an address as N-1-1-S, where N=LT4 or LT8, S=slot location 7 through 16. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::LT4-1-1-S ; for LT4 or LT8 being replaced.
4	Is returned state IS or OOS-MA? If IS, go to step 5. If OOS-MA, go to step 6.
5	This procedure does not provide removal instructions for an in-service LT4 or LT8. Go to step 10.
6	Remove ACL cables and record location of each. Remove LT4 or LT8 from slot.
7	Plug new LT4 or LT8 into slot and connect ACL cables.
8	Enter ENT-EQPT::N-1-1-S ; for LT4 or LT8 just installed.
9	Did output return COMPLD or DENY? If COMPLD, go to step 11. If DENY, go to step 10.
10	Contact next level of technical support for assistance.
11	STOP. This procedure is complete.

DLP-130 Equipment Cleaning

Provides 1631 SX LMC equipment-cleaning instructions.

PREREQUISITE

An electrostatic-sensitive (ESS) certified vacuum cleaner is required.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Ensure power is removed before performing cleaning procedures which risk contact with hazardous electrical potentials.
2	<i>WARNING: Possibility of equipment damage. Comply with electrostatic-sensitive (ESS) device handling procedures (Introduction) when cleaning equipment. Do not use solvents, acids, or abrasives. Vacuum cleaners must be properly grounded and ESS certified. Use only low-velocity dry, oil-free air or dry nitrogen.</i>
3	CAUTION: Possibility of service interruption. Cleaning procedures should be scheduled to avoid service interruption.
4	Blow out and/or vacuum equipment interior as required.
5	Clean dust and dirt from exterior of equipment as required.
6	STOP. This procedure is complete.

DLP-131 Lamp Test

Provides 1631 SX LMC lamp test procedure.

GENERAL

Perform lamp test procedure for each equipment rack as required.

STEP	PROCEDURE
1	Press and hold lamp test button on Rack Status Panel (RSP), Rack Distribution Unit (RDU), or Power Distribution Unit (PDU) as required for 30 seconds. Observe all lamps on each module.
2	Did all LED indicators on each module light? If yes, go to step 3. If no, go to step 5.
3	Press ACO button on RSP. ACO indicator should remain on momentarily then extinguish. (If an alarm exists in system, ACO indicator does not extinguish until alarm clears.)
4	Is lamp test to be performed on other racks? If yes, go to step 1. If no, go to step 6.
5	If lamp test fails on entire rack, problem is in RSP, RDU, or PDU. If lamp test fails on one shelf only, problem is with IPU or SPB.
6	STOP. This procedure is complete.

DLP-132

ICM Replacement

Provides procedure to replace ES-27M-1 Intelligent Communications Module (ICM).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an ICM has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the ICM. Refer to IXL-101.

GENERAL

This procedure asks you to enter S for ICM slot location, where S=1 or 2 for copy 0 and S=8 or 9 for copy 1. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::ICM-1-2-S ; for ICM to be replaced.
4	Is returned state IS, IS,STBYC, or OOS-MA? If IS, go to step 5 and switch ICM to standby copy. If IS,STBYC, go to step 7. If OOS-MA, go to step 9.
5	Enter SW-DX-EQPT::ICM-1-2-S ; for ICM to be replaced.
6	Did output return COMPLD or DENY? If COMPLD, go to step 7. If DENY, go to step 16.
7	Enter RMV-EQPT::ICM-1-2-S ; for ICM to be replaced.

- 8 Did output return COMPLD or DENY?
If COMPLD, go to step 9.
If DENY, go to step 16.
- 9 Verify that OOS LED on ICM to be removed is lit.
- 10 Remove ICM (refer to DLP-100).
- 11 Install replacement ICM (refer to DLP-100).
- 12 Enter **RST-EQPT::ICM-1-2-S**; for ICM just installed.
- 13 Did output return COMPLD or DENY?
If COMPLD, go to step 14.
If DENY, go to step 16.
- 14 Enter **SW-DX-EQPT::ICM-1-2-S**; to verify replacement ICM operation.
- 15 Was switch successful?
If yes, go to step 17.
If no, go to step 16.
- 16 Contact next level of technical support for assistance.
- 17 **STOP. This procedure is complete.**

DLP-133

M40 Replacement

Provides procedure to replace M40 101 Matrix (M40).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an M40 has state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the M40. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. This procedure logically removes an M40 from service then physically removes and replaces it. During this time, the matrix is locked to a single working copy, which results in no protection. Do not logically remove (RMV) or physically remove opposite copy M40, M16 (end-stage) or IPB/RPB. Doing so causes a loss to traffic.
3	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Enter RTRV-STATE-EQPT::M40-R-Sh-S ; for M40 being replaced.
5	Is returned state IS or OOS-MA? If IS, go to step 6. If OOS-MA, go to step 11.
6	Enter RMV-EQPT::M40-R-Sh-S ; for M40 being replaced.

- 7 Did output return COMPLD or DENY?

If COMPLD, go to step 11.
If DENY, go to step 8.
- 8 CAUTION: Possibility of service interruption. Do not remove M40 that denied removal; doing so drops traffic. Go to step 9 and check for alarms on opposite matrix copy.
- 9 Enter **RTRV-ALM-EQPT::ALL**; then check for alarms on any opposite copy M40, M32, M16, IPB, RPB, EOB, or OXB.

Enter **RTRV-COND-EQPT::ALL**; then check for events on any opposite copy M40, M32, M16, IPB, RPB, EOB, or OXB.

Are there alarms or events on any opposite copy M40, M32, M16, IPB, RPB, EOB, or OXB?

If yes, refer to IXL-101, clear alarms or events, then go to step 4.
If no, go to step 10.
- 10 Retry this procedure from beginning. If RMV command still fails, go to step 15.
- 11 Remove M40 (refer to DLP-100).
- 12 Install replacement M40 (refer to DLP-100).
- 13 Wait 5 minutes after installing M40 then enter **RST-EQPT::M40-R-Sh-S**; for M40 just replaced.
- 14 Did output return COMPLD or DENY?

If COMPLD, go to step 16.
If DENY, go to step 15 (likely problem with replacement M40).
- 15 Contact next level of technical support for assistance.
- 16 **STOP. This procedure is complete.**

DLP-134

O1B Replacement

Provides procedure to replace an Optical Transceiver (O1B).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an O1B has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the O1B. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack, Sh=shelf, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CONNECTOR ON O1B. Laser radiation is present when fiber-optic connector is open and O1B is plugged into shelf.
3	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Enter RTRV-STATE-EQPT::O1B-R-Sh-S ; for O1B to be replaced.
5	Is returned state IS or OOS-MA? If IS, go to step 6. If OOS-MA, go to step 20.
6	Does IS have a secondary state of STBYH? If yes, go to step 17. If no, go to step 7.

- 7 Enter **RTRV-EQPT::O1B-R-Sh-S**; for O1B to be replaced.
- 8 Make note of PORT= number.
- 9 Enter **OPR-PROTNSW-OC3::R-Sh-aa::MAN**; where aa is OC-3 port number noted in step 8.
- 10 Did output return COMPLD or DENY?
 - If COMPLD, go to step 17.
 - If DENY, go to step 11.
- 11 Enter **RTRV-ALM-EQPT::O1B**; then check for alarms on mate O1B.
Enter **RTRV-COND-EQPT::O1B**; then check for events on mate O1B.

O1B mate pairs are: 2/3, 4/5, 6/7, and 8/9 (upper half-shelf),
11/12, 13/14, 15/16, and 17/18 (lower half-shelf).
- 12 Are there alarms or events on mate O1B?
 - If yes, refer to IXL-101, clear alarms or events, then go to step 4.
 - If no, go to step 13.
- 13 Enter **RTRV-EQPT::O1B-R-Sh-S**; for mate O1B.
- 14 Make note of PORT= number.
- 15 Enter **RTRV-ALM-OC3::OC3-dd**; then check for alarms on facility port associated with mate O1B.
Enter **RTRV-COND-OC3::OC3-dd**; then check for events on facility port associated with mate O1B.
- 16 Are there facility alarms or events on port associated with mate O1B?
 - If yes, refer to IXL-101, clear alarms or events, then go to step 4.
 - If no, go to step 34.
- 17 Enter **RMV-EQPT::O1B-R-Sh-S**; for O1B being replaced.
- 18 Did output return COMPLD or DENY?
 - If COMPLD, go to step 20.
 - If DENY, go to step 19.
- 19 CAUTION: Possibility of service interruption. Do not remove O1B that denied removal; doing so might drop traffic. Go to step 7, and follow steps to locate alarms or events that caused the remove equipment deny. If O1B still denies a remove command, go to step 34.

- 20 Move insertion/extraction tabs to unlocked position. Slide O1B approximately 2 inches toward front of shelf to ensure module electrical connector disengages from backplane.
- 21 **DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CABLE CONNECTORS. Laser radiation is present from far end.**
- 22 Mark O1B fiber-optic cable connection locations.
- 23 On O1B front panel, disconnect and remove fiber-optic cable.
- 24 Cover fiber-optic cable connectors and O1B optical connectors with protective covers.
- 25 Slide O1B out of shelf and place in antistatic, protective container.
- 26 Slide replacement O1B part way into slot. Do not engage electrical connector with backplane.
- 27 **DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CABLE CONNECTORS. Laser radiation is present from far end.**

Logically remove, then physically unseat far end optical transmitter.
- 28 Do not clean the fiber-optic connectors on O1B. Clean only fiber-optic cable connectors.

Clean fiber-optic cable connectors in accordance with local procedures or by doing the following steps.

Use Alcoa Fujikura PREP fiber connector cleaner (PN FCC-02-R) or equivalent.
 - a. Open FCC-02R cleaner door and insert fiber-optic cable ferrule tip into slot 1. Apply firm pressure and rotate connector tip back and forth on upper portion of polyester film two or three times, followed by a smooth downstroke to bottom of slot.
 - b. Withdraw connector and immediately insert it into upper portion of slot 2. Slide connector one time to bottom of slot.
 - c. As each connector is cleaned, go to step 29 and connect fiber-optic cable to O1B.
- 29 Connect fiber-optic cable to O1B as marked in step 22. Go to step 28 and clean other fiber. When both fibers are connected, go to step 30.
- 30 Move insertion/extraction tabs to unlocked position, then slide O1B into shelf until it engages backplane connector.
- 31 Press tabs to lock module in place.
- 32 Enter **RST-EQPT::O1B-R-Sh-S;** for O1B just installed.

33 Did output return COMPLD or DENY?

If COMPLD, go to step 35.

If DENY, go to step 34 (it is likely that replacement O1B is bad or improperly seated).

34 Contact next level of technical support for assistance.

35 **STOP. This procedure is complete.**

DLP-135

RPB Replacement

Provides procedure to replace RPB 101 Ring Protect Board (RPB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an RPB has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the RPB. Refer to IXL-101.

GENERAL

For a detailed description of states, refer to Appendix G of the 1631 SX LMC Commands and Messages manual (PN 3AL45392AJ).

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. This procedure logically removes an RPB from service, then physically removes and replaces it. During this time the traffic on that SI48 shelf is locked to a single working copy, which results in no protection. Do not logically remove (RMV) or physically remove opposite copy M16/M32 or RPB. Doing so drops traffic.
3	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
4	Enter RTRV-STATE-EQPT::RPB-R-Sh-S ; for RPB to be replaced.
5	Is returned state IS or OOS-MA? If IS, go to step 6. If OOS-MA, go to step 11.

- 6 Enter **RMV-EQPT::RPB-R-Sh-S;**
- 7 Did output return COMPLD or DENY?
 - If COMPLD, go to step 11.
 - If DENY, go to step 8.
- 8 CAUTION: Possibility of service interruption. Do not remove RPB that denied removal; doing so drops traffic. Go to step 9 and check for alarms or events on opposite matrix copy.
- 9 Enter **RTRV-ALM-EQPT::ALL;** then observe report and check for opposite copy RPB, M16, M32, M40, or EOB alarms.

Enter **RTRV-COND-EQPT::ALL;** then observe report and check for opposite copy RPB, M16, M32, M40, or EOB events.
- 10 Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

Are there alarms or events on opposite copy RPB, M16, M32, M40, or EOB?
 - If yes, refer to IXL-101 and resolve alarms or events, then return to beginning of this procedure.
 - If no, refer to the following information, then go to step 16.

With opposite copy data path alarm and event free, there is no known reason for RPB being removed to deny the RMV command. Retry this procedure from the beginning.
- 11 Remove RPB (refer to DLP-100).
- 12 Install replacement RPB (refer to DLP-100).
- 13 Enter **RST-EQPT::RPB-R-Sh-S;**
- 14 Did output return COMPLD or DENY?
 - If COMPLD, go to step 16.
 - If DENY, go to step 15 (it is likely that replacement RPB is bad or improperly seated).
- 15 Contact next level of technical support for assistance.
- 16 **STOP. This procedure is complete.**

DLP-136

DSB Replacement

Provides procedure to replace DSB 101 DCC Server Board (DSB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a DSB has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the DSB. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number and S=equipment slot location number in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::DSB-R-Sh-S ; for DSB being replaced.
4	Is returned state IS or OOS-MA? If IS, go to step 5 . If IS,STBYH go to step 7 . If OOS-MA, go to step 14 .
5	Enter SW-DX-EQPT::DSB-R-Sh-S ; for DSB being replaced.
6	Did output return COMPLD or DENY? If COMPLD, go to step 7 . If DENY, go to step 9 .
7	Enter RMV-EQPT::DSB-R-Sh-S ; for DSB being replaced.

- 8** Did output return COMPLD or DENY?
- If COMPLD, go to step [14](#).
If DENY, go to step [9](#).
- 9** CAUTION: Possibility of service interruption. Do not remove DSB that denied removal; doing so affects DCC and LAN communications. Go to step [10](#) and check for alarms or events on opposite copy DSB.
- 10** Enter **RTRV-ALM-EQPT::DSB**; then check for alarms on any opposite copy DSB.
Enter **RTRV-COND-EQPT::DSB**; then check for events on any opposite copy DSB.
- 11** Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.
- Are there any alarms or events on opposite copy DSB?
- If yes, refer to IXL-[101](#) and resolve alarms or events, then go to step [4](#).
If no, go to step [12](#).
- 12** Retry this procedure from beginning. If RMV command still fails, go to step [18](#).
- 13** Remove DSB (refer to DLP-[100](#)).
- 14** Install replacement DSB (refer to DLP-[100](#)).
- 15** Enter **RST-EQPT::DSB-R-Sh-S**;
- 16** Did output return COMPLD or DENY?
- If COMPLD, go to step [18](#).
If DENY, go to step [18](#) (likely problem with replacement DSB).
- 17** Contact next level of technical support for assistance.
- 18** **STOP. This procedure is complete.**

DLP-137

ACM Replacement

Provides procedure to replace ACM 101 Administrative Communications Module (ACM).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If a ACM has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the ACM. Refer to IXL-101.

GENERAL

This procedure asks you to enter S for ACM slot location, where S=3-7 for copy 0 and S=10-14 for copy 1. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::ACM-1-2-S ; for CIM to be replaced.
4	Is returned state IS, IS,STBYC, or OOS-MA? If IS, go to step 5 and switch ACM to standby copy. If IS,STBYC, go to step 7. If OOS-MA, go to step 9.
5	Enter SW-DX-EQPT::ACM-1-2-S ; for ACM to be replaced.
6	Did output return COMPLD or DENY? If COMPLD, go to step 7. If DENY, go to step 16.
7	Enter RMV-EQPT::ACM-1-2-S ; for ACM to be replaced.

- 8 Did output return COMPLD or DENY?
If COMPLD, go to step 9.
If DENY, go to step 16.
- 9 Verify that OOS LED on ACM to be removed is lit.
- 10 Remove ACM (refer to DLP-100).
- 11 Install replacement ACM (refer to DLP-100).
- 12 Enter **RST-EQPT::ACM-1-2-S**; for ACM just installed.
- 13 Did output return COMPLD or DENY?
If COMPLD, go to step 14.
If DENY, go to step 16.
- 14 Enter **SW-DX-EQPT::ACM-1-2-S**; to verify replacement ACM operation.
- 15 Was switch successful?
If yes, go to step 17.
If no, go to step 16.
- 16 Contact next level of technical support for assistance.
- 17 **STOP. This procedure is complete.**

DLP-138

M32 Replacement

Provides procedure to replace an M32 101 Matrix (M32).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an M32 has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the M32. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack, Sh=shelf number and S=equipment slot location number in the shelf.

Refer to the 1631 SX LMC Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	CAUTION: Possibility of service interruption. This procedure logically removes an M32 from service then physically removes and replaces it. During this time, the matrix is locked to a single working copy, which results in no protection. Do not logically remove (RMV) or physically remove opposite copy M32 or IPB 101 Internal Protect (IPB)/RPB 101 Ring Protect Board (RPB). Doing so drops traffic.
3	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
4	Enter RTRV-STATE-EQPT::M32-R-Sh-S ; for M32 101 Matrix (M32) being replaced.
5	Is returned state IS or OOS-MA? If IS, go to step 6. If OOS-MA, go to step 12.
6	Enter RMV-EQPT::M32-R-Sh-S ; for M32 being replaced.

- 7 Did output return COMPLD or DENY?

If COMPLD, go to step 12.
If DENY, go to step 8.
- 8 CAUTION: Possibility of service interruption. Do not remove M32 that denied removal; doing so drops traffic. Go to step 9 and check for alarms on opposite matrix copy.
- 9 Enter **RTRV-ALM-EQPT::ALL;**

Check for alarms on any opposite copy M16, M32, M40, IPB, RPB, EOB, or OXB.
- 10 Enter **RTRV-COND-EQPT::ALL;**

Check for events on any opposite copy M16, M32, M40, IPB, RPB, EOB, or OXB.

Are there alarms or events on any opposite copy M16, M32, M40, IPB, RPB, EOB, or OXB?

If yes, refer to IXL-101 and resolve alarms or events.
Then go to step 1.
If no, go to step 11.
- 11 Go to step 1 and retry this procedure. If RMV command still fails, go to step 16.
- 12 Remove M32. Refer to DLP-100.
- 13 Replace an M32 101 (PN 3AL45920AA) with a new M32 (PN 3AL45920AA). Replace an M32 201 (PN 3AL45920AB) with a new M32 (PN 3AL45920AB). Replace an M32 203 (PN 3AL45920AC) with a new M32 (PN 3AL45920AC). M32s (PN 3AL45920AA, PN 3AL45920AB, and PN3AL45920AC) are not interchangeable.

Install replacement M32. Refer to DLP-100.
- 14 Wait 5 minutes after installing M32, then enter RST-EQPT::M32-R-Sh-S; for M32 just installed.
- 15 Did output return COMPLD or DENY?

If COMPLD, go to step 17.
If DENY, go to step 16. Replacement M32 is probably bad.
- 16 Contact next level of technical support for assistance.
- 17 **STOP. This procedure is complete.**

DLP-139

Restore System Power

Provides procedure for restoring system power subsequent to having turned off system power following procedures in [DLP-126](#).

PREREQUISITE

Office/Station –48 V dc power must be available to the 1631 SX LMC system.

GENERAL

A delay in turning on same-copy power supplies may result in high frequency oscillation noise. If this noise occurs, turn off the power supplies and turn them on again.

STEP	PROCEDURE
1	Verify that all RSP and RDU circuit breakers A and B are turned off, and that all PDU circuit breakers A1, A2, B1, and B2 are turned off.
2	Following established local procedures, apply Office/Station –48V dc power source (BDFB) to the system.
3	Turn on all RDU circuit breakers A and B, and turn on all PDU circuit breakers A1, A2, B1, and B2.
4	Turn on all PSFs in all asynchronous I/O racks.
5	Turn on the APS RSP circuit breakers A and B.
6	Turn on all PSTs on the APS rack.
7	When the system reports Limited Mode (CID 1 only), enter START-OPS ;
8	When Login prompt appears, log in and wait for System Ready message. If necessary to check System Ready status, enter RTRV-PRMTR-NE ;
9	Clear system alarms as required. Refer to IXL-101 .
10	STOP. This procedure is complete.

DLP-140

ES1 Replacement

Provides procedure to replace ES1 101/102 STS-1 Interface (ES1).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an ES1 has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the ES1. Refer to IXL-101.
- ES1 protection is 8:1. Possible reasons for an ES1 not switching to protection follow:
 - Protect ES1 is already protecting another ES1.
 - Switch to protect is inhibited, or protect module is bad.
 - Protection group is improperly configured; it does not have a minimum of two ES1s plus a protection ES1 with no empty slots between ES1s.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack, Sh=shelf number and S=equipment slot location number in the shelf.

Refer to the 1631 SX LMC Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Is main or protect ES1 101/102 STS-1 Interface (ES1) being replaced? If main, go to step 4. If protect, go to step 36 .

- 4 Enter **RTRV-EQPT::ES1-R-Sh-S**; for main ES1 being replaced.
- 5 Did output from RTRV-EQPT indicate PROT STAT=MAIN SWITCHED?

If yes, go to step 8.
If no, go to step 6.
- 6 Enter **SW-TOPROTN-EQPT::ES1-R-Sh-S**; for ES1 being replaced.
- 7 Did output return COMPLD or DENY?

If COMPLD, go to step 8.
If DENY, go to step 17.
- 8 Enter **RMV-EQPT::ES1-R-Sh-S**; for ES1 being replaced.
- 9 Did output return COMPLD or DENY?

If COMPLD, go to step 11.
If DENY, go to step 10.
- 10 Is ES1 already logically removed?

If yes, go to step 11.
If no, go to step 47.
- 11 Physically remove ES1, if present. Refer to DLP-100.
- 12 Insert replacement ES1 in slot and wait for inserted message.
- 13 Enter **RST-EQPT::ES1-R-Sh-S**;
- 14 Did output return COMPLD or DENY?

If COMPLD, go to step 15.
If DENY, go to step 47.
- 15 Enter **SW-TOWKG-EQPT::ES1-R-Sh-S**; for restored ES1.
- 16 Did output return COMPLD or DENY?

If COMPLD, go to step 48.
If DENY, go to step 47.
- 17 Enter **RTRV-EQPT::ES1-R-Sh-S**; for protect ES1 (make note of output).

- 18** Did output parameter return PROSTAT=PROTECTING-[AID] or PROT-NOT-IN-USE?
If PROTECTING-[AID], go to step [24](#).
If PROT-NOT-IN-USE, go to step [19](#).
- 19** Did output return (SST)=PSI or (SST)=PRI?
If (SST)=PSI, go to step [20](#).
If (SST)=PRI, go to step [32](#).
- 20** Allow protection switching on alarmed ES1s only, or on all ES1s in protect group?
If all ES1s, go to step [21](#).
If alarmed ES1s, go to step [22](#).
- 21** Enter **ALW-SWTOPROTN-EQPT::ES1-R-Sh-S**; for protect ES1. Go to step [23](#).
- 22** Enter **ALW-SWTOPROTN-EQPT::ES1-R-Sh-S**; for alarmed ES1. Go to step [23](#).
- 23** Did output return COMPLD or DENY?
If COMPLD, go to step [6](#).
If DENY, go to step [47](#).
- 24** Enter **RTRV-EQPT::ES1-R-Sh-S**; for ES1 being protected (where Sh=shelf and s=slot of ES1 being protected).
- 25** Did output return secondary state (SST)=PRI?
If yes, go to step [29](#).
If no, go to step [26](#).
- 26** Enter **RTRV-ALM-EQPT::ES1-R-Sh-S**; for ES1 being protected.
After alarm report, enter **RTRV-COND-EQPT::ES1-R-Sh-S**; for ES1 being protected.
- 27** Are there alarms or events on ES1 being protected?
If yes, go to step [28](#).
If no, go to step [47](#).
- 28** Refer to IXL-[101](#) to resolve alarms and events. Then go to step [29](#).

- 29** Do you wish to allow switch to working on ES1 under protection?
- If yes, go to step [30](#).
If no, go to step [47](#).
- 30** Use R-Sh-S for ES1 that is switched to protection. Enter **ALW-SWTOWKG::ES1-R-Sh-S**;
- 31** Did output return COMPLD or DENY?
- If COMPLD, go to step [32](#).
If DENY, go to step [47](#).
- 32** Check location of ES1 that failed to switch to protection.
- 33** Protection scheme does not allow empty slots to left of last card in protection group.
- Is ES1 installed in slot immediately to left of ES1 that failed to switch?
- If yes, go to step [34](#).
If no, go to step [47](#). ES1 must be installed and provisioned.
- 34** Enter **RTRV-ALM-EQPT::ES1-R-Sh-S**; for protect ES1.
After alarm report, enter **RTRV-COND-EQPT::ES1-R-Sh-S**; for protect ES1.
- 35** Are there alarms or events on protect ES1?
- If yes, go to step [28](#).
If no, go to step [47](#).
- 36** Enter **RTRV-EQPT::ES1-R-Sh-S**; for protect ES1 being replaced.
- 37** Did output parameter return PROSTAT=PROTECTING-[AID] or PROT-NOT-IN-USE?
- If PROTECTING-[AID], go to step [38](#).
If PROT-NOT-IN-USE, go to step [41](#).
- 38** Was inhibit switch to working or alarm/event condition checked?
- If yes, go to step [39](#).
If no, go to step [24](#).
- 39** Enter **SW-TOWKG-EQPT::ES1-R-Sh-S**; for ES1 switched to protection.

- 40** Did output return COMPLD or DENY?
If COMPLD, go to step [41](#).
If DENY, go to step [47](#).
- 41** Enter **RMV-EQPT::ES1-R-Sh-S**; for protect ES1 being replaced.
- 42** Did output from RMV-EQPT return COMPLD or DENY?
If COMPLD, go to step [43](#).
If DENY, go to step [47](#).
- 43** Remove protect ES1.
- 44** Install replacement protect ES1.
- 45** Enter **RST-EQPT::ES1-R-Sh-S**; for protect ES1 just installed.
- 46** Did output return COMPLD or DENY?
If COMPLD, go to step [48](#).
If DENY, go to step [47](#).
- 47** Contact next level of technical support for assistance.
- 48** **STOP. This procedure is complete.**

DLP-141

ESA Replacement

Provides procedure to replace an ES-27B-1 DS1 Adapter, Left (ESA), or an ES-27F-1 DS1 Adapter, Right (ESA).

GENERAL

Refer to the 1631 SX LMC Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
3	Contact next level of technical support for assistance.
4	STOP. This procedure is complete.

DLP-142

IOB Replacement

Provides procedure to replace an IOB 101 I/O Optical Converter (IOB).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an IOB has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the IOB. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack, Sh=shelf number and S=equipment slot location number in the shelf.

Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CONNECTOR ON IOB 101 I/O Optical Converter (IOB). Laser radiation is present when fiber-optic connector is open and IOB is plugged into shelf. Refer to the Introduction for laser precautions.
3	CAUTION: Possibility of service interruption. This replacement procedure locks a copy to the remaining module. If a failure occurs to this locked copy during replacement procedure, service interruption will occur.
4	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
5	Enter RTRV-STATE-EQPT::IOB-R-Sh-S ; for IOB to be replaced.
6	Is returned state IS or OOS-MA? If IS, go to step 7 . If OOS-MA, go to step 12 .

- 7 Enter **RMV-EQPT::IOB-R-Sh-S**;
- 8 Did output return COMPLD or DENY?

If COMPLD, go to step 12.
If DENY, go to step 9.
- 9 CAUTION: Possibility of service interruption. Service affecting. Do not remove IOB that denied removal; doing so drops traffic. Go to step 10 and check for alarms or events on opposite copy.
- 10 Enter **RTRV-ALM-EQPT::ALL**; then check for alarms on opposite copy.
Enter **RTRV-COND-EQPT::ALL**; then check for events on opposite copy.
- 11 Are there alarms or events on opposite copy?

If yes, refer to IXL-101, clear alarms or events, then go to step 7.
If no, go to step 5 and retry this procedure. If IOB still denies a removal, go to step 36.
- 12 Enter **RTRV-EQPT::IOB-R-Sh-S**; for IOB being replaced.
- 13 Make note of output parameter OPTMATE= (EOB-R-Sh-S).
- 14 Enter **RMV-EQPT::EOB-R-Sh-S**; for EOB noted in step 13.
- 15 Did output return COMPLD or DENY?

If COMPLD, go to step 18.
If DENY, go to step 16.
- 16 With IOB optical mate already removed, the RMV-EQPT command should have returned a COMPLD. It appears there are problems in both copies.

Enter **RTRV-ALM-EQPT::ALL**; then check for alarms on opposite copy.
Enter **RTRV-COND-EQPT::ALL**; then check for events on opposite copy.
- 17 Are there alarms or events on opposite copy ?

If yes, refer to IXL-101, clear alarms or events, then go to step 14.
If no, go to step 36.

- 18** EOB must be unseated just far enough to break electrical connection with backplane. Do not remove EOB. Do not slide EOB more than 1 inch out from seated position.

Physically locate EOB just logically removed (OOS indicator lit). Move insertion/extraction tabs to unlocked position. Slide EOB approximately 1 inch toward front of shelf to ensure module electrical connector disengages from backplane.

- 19** Mark IOB fiber-optic cable connection locations.
- 20** On IOB front panel, disconnect and remove fiber-optic cable.
- 21** Cover fiber-optic cable connector and IOB optical connectors with protective covers.
- 22** Slide IOB out of shelf and place in antistatic, protective container.
- 23** Slide replacement IOB part way into slot. Do not engage electrical connector with backplane.
- 24** Do not clean the fiber-optic connectors on IOB. Clean only fiber-optic cable connectors.

Clean fiber-optic cable connectors in accordance with local procedures or by doing the following steps.

Use Alcoa Fujikura PREP fiber connector cleaner (PN FCC-02-R) or equivalent.

- a. Open FCC-02-R cleaner door and insert fiber-optic cable ferrule tip into slot 1. Apply firm pressure to rotate connector tip back and forth on upper portion of polyester film two or three times, followed by a smooth downstroke to bottom of slot.
 - b. Withdraw connector and immediately insert it into upper portion of slot 2. Slide connector one time to bottom of slot.
 - c. As each connector is cleaned, go to step [25](#) and connect fiber-optic cable to IOB.
- 25** Connect fiber-optic cable to IOB as marked in step [19](#). Go to step [24](#) and clean another fiber. When all fibers are connected, go to step [26](#).
- 26** Move IOB insertion/extraction tabs to unlocked position.
- 27** Slide IOB into shelf until it engages backplane connector.
- 28** Press tabs to lock IOB in place.

- 29 On EOB that was removed in step 18, move insertion/extraction tabs to unlocked position.
- 30 Slide EOB into shelf until it engages backplane connector.
- 31 Press tabs to lock EOB in place.
- 32 Enter **RST-EQPT::EOB-R-Sh-S**; for EOB just installed.
- 33 Did output return COMPLD or DENY?
 - If COMPLD, go to step 34.
 - If DENY, go to step 36.
- 34 Enter **RST-EQPT::IOB-R-Sh-S**; for IOB just replaced.
- 35 Did output return COMPLD or DENY?
 - If COMPLD, go to step 37.
 - If DENY, go to step 36 (it is likely that replacement IOB is bad or improperly seated).
- 36 Contact next level of technical support for assistance.
- 37 **STOP. This procedure is complete.**

DLP-143

O4M Replacement

Provides procedure to replace an OC-12 Muldem (O4M).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an O4M has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the O4M. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack, Sh=shelf, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CONNECTOR ON O4M. Laser radiation is present when fiber-optic connector is open and O4M is plugged into shelf.
3	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
4	Enter RTRV-STATE-EQPT::O4M-R-Sh-S ; for O4M to be replaced.
5	Is returned state IS or OOS-MA? If IS, go to step 6. If OOS-MA, go to step 20.
6	Does IS have a secondary state of STBYH? If yes, go to step 17. If no, go to step 7.

- 7 Enter **RTRV-EQPT::O4M-R-Sh-S**; for O4M to be replaced.
- 8 Make note of PORT= number.
- 9 Enter **OPR-PROTNSW-OC12::aa:::MAN**; where aa is OC-12 port number noted in step 8.
- 10 Did output return COMPLD or DENY?
 - If COMPLD, go to step 17.
 - If DENY, go to step 11.
- 11 Enter **RTRV-ALM-EQPT::O4M**; then check for alarms on mate O4M.
Enter **RTRV-COND-EQPT::O4M**; then check for events on mate O4M.

O4M mate pairs are: 2/3 (upper half-shelf), 11/12 (lower half-shelf).
- 12 Are there alarms or events on mate O4M?
 - If yes, refer to IXL-101, clear alarms or events, then go to step 4.
 - If no, go to step 13.
- 13 Enter **RTRV-EQPT::O4M-R-Sh-S**; for mate O4M.
- 14 Make note of PORT= number.
- 15 Enter **RTRV-ALM-OC12::OC12-dd**; then check for alarms on facility port associated with mate O4M.
Enter **RTRV-COND-OC12::OC12-dd**; then check for events on facility port associated with mate O4M.
- 16 Are there facility alarms or events on port associated with mate O4M?
 - If yes, refer to IXL-101, clear alarms or events, then go to step 4.
 - If no, go to step 34.
- 17 Enter **RMV-EQPT::O4M-R-Sh-S**; for O4M being replaced.
- 18 Did output return COMPLD or DENY?
 - If COMPLD, go to step 20.
 - If DENY, go to step 19.
- 19 CAUTION: Possibility of service interruption. Do not remove O4M that denied removal; doing so might drop traffic. Go to step 7, and follow steps to locate alarms or events that caused the remove equipment deny. If O4M still denies a remove command, go to step 34.

- 20 Move insertion/extraction tabs to unlocked position. Slide O4M approximately 2 inches toward front of shelf to ensure that module's electrical connector disengages from backplane.
- 21 **DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CABLE CONNECTORS. Laser radiation is present from far end.**
- 22 Mark O4M fiber-optic cable connection locations.
- 23 On O4M front panel, disconnect and remove fiber-optic cable.
- 24 Cover fiber-optic cable connectors and O4M optical connectors with protective covers.
- 25 Slide O4M out of shelf and place in antistatic, protective container.
- 26 Slide replacement O4M part way into slot. Do not engage electrical connector with backplane.
- 27 **DANGER: Possibility of personal injury. DO NOT LOOK INTO FIBER-OPTIC CABLE CONNECTORS. Laser radiation is present from far end.**
- 28 Do not clean the fiber-optic connectors on O4M. Clean only fiber-optic cable connectors.

Clean fiber-optic cable connectors in accordance with local procedures or by doing the following steps.

Use Alcoa Fujikura PREP fiber connector cleaner (PN FCC-02-R) or equivalent.
 - a. Open FCC-02R cleaner door and insert fiber-optic cable ferrule tip into slot 1. Apply firm pressure and rotate connector tip back and forth on upper portion of polyester film two or three times, followed by a smooth downstroke to bottom of slot.
 - b. Withdraw connector and immediately insert it into upper portion of slot 2. Slide connector one time to bottom of slot.
 - c. As each connector is cleaned, go to step 29 and connect fiber-optic cable to O4M.
- 29 Connect fiber-optic cable to O4M as marked in step 22. Go to step 28 and clean other fiber. When both fibers are connected, go to step 30.
- 30 Move insertion/extraction tabs to unlocked position, then slide O4M into shelf until it engages backplane connector.
- 31 Press tabs to lock module in place.
- 32 Enter **RST-EQPT::O4M-R-Sh-S**; for O4M just installed.

33 Did output return COMPLD or DENY?

If COMPLD, go to step [35](#).

If DENY, go to step [34](#) (it is likely that replacement O4M is bad or improperly seated).

34 Contact next level of technical support for assistance.

35 **STOP. This procedure is complete.**

DLP-144 OPD Cleaning

Provides procedure to clean the Optical Disk Drive (OPD).

GENERAL

When dust or cigarette smoke stains the lens actuator, performance of the whole drive may be affected. The lens actuator must be cleaned periodically using the head cleaner.

Alcatel does not recommend cleaning optical media due to difficulties of cleaning a media disk correctly, cost, and logistics of maintaining media cleaning kits. Alcatel recommends replacing the disk if there is difficulty in reading the media. The media should last for 2 to 6 months, depending on installation conditions.

The cleaning period differs depending on the installation conditions. The usual cleaning period for the drive assembly is once in six months.

STEP	PROCEDURE
1	Obtain Optical Drive Cleaning Kit (PN 155-0249-010).
2	Verify there is no disk installed in the drive assembly.
3	Insure power is turned on. Then, insert the head cleaner disk in the drive.
4	The disk will automatically eject when the cleaning process is complete.
5	STOP. This procedure is complete.

DLP-145

S3M Replacement

Provides procedure to replace an STS-3 Transmux Muldem (S3M).

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Although this procedure is normally done to replace a failed (inactive) component, always verify component state before removal.
- If an S3M has a state of IS-ANR or OOS-AU, perform the appropriate trouble-clearing procedures before replacing the S3M. Refer to IXL-101.

GENERAL

This procedure asks you to enter an address as R-Sh-S, where R=rack, Sh=shelf, and S=slot location number of the equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.
3	Enter RTRV-STATE-EQPT::S3M-R-Sh-S ; for S3M to be replaced.
4	Is returned state IS or OOS-MA? If IS, go to step 5 . If OOS-MA, go to step 19 .
5	Does IS have a secondary state of STBYH? If yes, go to step 16 . If no, go to step 6 .
6	Enter RTRV-EQPT::S3M-R-Sh-S ; for S3M to be replaced.
7	Make note of PORT= number.

- 8** Enter **OPR-PROTNSW-OC12::aa::MAN**; where aa is OC-12 port number noted in step [7](#).
- 9** Did output return COMPLD or DENY?
- If COMPLD, go to step [16](#).
If DENY, go to step [10](#).
- 10** Enter **RTRV-ALM-EQPT::S3M**; then check for alarms on mate S3M.
Enter **RTRV-COND-EQPT::S3M**; then check for events on mate S3M.
- S3M mate pairs are: 4/5, 6/7, and 8/9 (upper half-shelf), 13/14, 15/16, and 17/18 (lower half-shelf).
- 11** Are there alarms or events on mate S3M?
- If yes, refer to IXL-[101](#), clear alarms or events, then go to step [3](#).
If no, go to step [16](#).
- 12** Enter **RTRV-EQPT::S3M-R-Sh-S**; for mate S3M.
- 13** Make note of PORT= number.
- 14** Enter **RTRV-ALM-OC12::OC12-aa**; where aa is port number noted in step [13](#), then check for alarms on facility port associated with mate S3M.
Enter **RTRV-COND-OC12::OC12-aa**; where aa is port number noted in step [13](#), then check for events on facility port associated with mate S3M.
- 15** Are there facility alarms or events on port associated with mate S3M?
- If yes, refer to IXL-[101](#), clear alarms or events, then go to step [3](#).
If no, go to step [16](#).
- 16** Enter **RMV-EQPT::S3M-R-Sh-S**; for S3M being replaced.
- 17** Did output return COMPLD or DENY?
- If COMPLD, go to step [19](#).
If DENY, go to step [18](#).
- 18** CAUTION: Possibility of service interruption. Do not remove S3M that denied removal; doing so might drop traffic. Go to step [6](#), and follow steps to locate alarms or events that caused the remove equipment deny. If S3M still denies a remove command, go to step [23](#).
- 19** Remove S3M. Refer to DLP-[100](#).
- 20** Install replacement S3M. Refer to DLP-[100](#).
- 21** Enter **RST-EQPT::S3M-R-Sh-S**; for S3M just installed.

22 Did output return COMPLD or DENY?

If COMPLD, go to step [24](#).

If DENY, go to step [23](#) (it is likely that replacement S3M is bad or improperly seated).

23 Contact next level of technical support for assistance.

24 **STOP. This procedure is complete.**

DLP-146

Plug-compatible DSK/OPD Shuttle Replacement

This document provides the procedure to replace a plug-compatible Hard Disk Drive (DSK) shuttle or plug-compatible Optical Disk Drive (OPD) shuttle in the 1631 SX LMC system.

The procedure can be used to replace faulty units, or to replace existing units when conducting equipment upgrades.

PREREQUISITE

System must be equipped with plug-compatible DSK/OPD assembly.

GENERAL

This procedure asks you to enter an address as 1-Sh-S, where Sh=APS shelf number and S=slot location number of equipment in the shelf.

Refer to the 1631 SX LMC Address and Location Guide (PN 3AL47973AE) to determine DSK/OPD location and address.

STEP	PROCEDURE
1	DANGER: Possibility of personal injury. Modules can be installed or removed with rack power on. Hazardous electrical potentials are present; use extreme care when installing or removing modules with power on.
2	<i>WARNING: Possibility of equipment damage. Modules contain electrostatic-sensitive (ESS) devices. These devices can be damaged by static discharge. Refer to the Introduction for special handling instructions.</i>
3	Enter RTRV-ALM-EQPT::ALL ; Note any equipment alarms.
4	Enter RTRV-COND-EQPT::ALL ; Note any equipment conditions.
5	Resolve all possible equipment alarms and conditions. Refer to IXL-101 .
6	If this is a routine equipment upgrade (that is, there is no malfunction to correct), go to step 8 .
7	In the case of a malfunction, all alarms cannot be cleared at this point. Use the DSK/OPD equipment alarms to determine which shuttle must be replaced.

- 8 Perform a data base backup. Enter **ACT-DB-BACKUP::OPD-1-Sh-S::VERIFY**; (Sh=APS shelf number and S=slot location, 1 or 2, of the OPD to be used for the backup).

Do not use an OPD that is to be replaced for this backup.

The data base backup may require as long as one hour (or as long as 90 minutes if a new optical disk must be formatted).
- 9 CAUTION: Possibility of service interruption. Before physically removing a DSK or OPD, check the state of the DSK or OPD in the other copy and make sure that it is In Service (IS).
- 10 Enter **RTRV-STATE-EQPT::DSK**; and ensure that the other DSK (the one not being replaced) is IS. If not, go to step 42.
- 11 Enter **RMV-EQPT::DSK-1-Sh-S**; (where Sh=APS shelf number and S=slot number, 1 or 2, of the DSK in the same shelf as the OPD to be replaced). This removes from service the DSK associated with the OPD to be replaced.
- 12 Enter **RTRV-EQPT::DSK-1-Sh-S**; (where Sh=APS shelf number and S=slot number, 1 or 2, of the DSK removed from service in step 42), and confirm that the DSK is out of service.
- 13 Locate the two PSTs that are on the same shelf as the shuttle to be removed.
- 14 CAUTION: Possibility of service interruption. Only turn off the PSTs on the shelf with the unit to be replaced. If the PSTs on the IS shelf are turned off, a system reboot will be required. (The PSTs must be turned on again in order to start the reboot).
- 15 Set the ON/OFF switches of both PSTs to OFF (UNLOCK).
- 16 Observe that the green indicator on the DSK momentarily illuminates when the PSTs are turned off.
- 17 Observe that the following alarm messages are generated:
PST-1-Sh-S:MN,PWR,NSA,10-20,09-26-40,NEND,,, (where Sh=APS shelf number and S=PST slot number)
PST-1-Sh-S:MN,PWR,NSA,10-20,09-26-42,NEND,,, (where Sh=APS shelf number and S=PST slot number)
DSK-1-Sh-S:MJ,BKUPMEMP,NSA (where Sh=APS shelf number and S=DSK slot number)
- 18 Unlatch the lock on the front of the DSK shuttle or OPD shuttle to be removed. (Press and turn the gold shelf lock 1/4 turn counterclockwise.)

- 19 Remove the DSK shuttle or OPD shuttle from the shelf by pulling the shuttle handles.
- 20 Insert the replacement DSK shuttle or OPD shuttle completely into the slot. It may be necessary to lift the shuttle up slightly while inserting it, in order to properly seat in the connector.
- 21 ***WARNING: Possibility of equipment damage. Take care that the shuttle does not snag the cables inside the assembly.***
- 22 ***WARNING: Possibility of equipment damage. Do not force the shuttle into position.***
- 23 Turn the lock on the front of the shuttle 1/4 turn clockwise to lock the unit in place.

If the shuttle is incorrectly installed, the lock will not turn.
- 24 Set the ON/OFF switches of the two PSTs to ON (LOCK).
- 25 Observe that the green indicator on the DSK illuminates for a few seconds and then extinguishes.
- 26 Observe the following alarm clear messages:
PST-1-Sh-S:CL,PWR,NSA,10-20,11-13-04,NEND,,,, (where Sh=APS shelf number and S=PST slot number). PST-1-Sh-S:CL,PWR,NSA,10-20,11-12-08,NEND,,,, (where Sh=APS shelf number and S=PST slot number).
- 27 Restore the Out-of-Service (OOS) DSK shuttle to service. Enter **RST-EQPT::DSK-1-Sh-S;** (where Sh=APS shelf number and S=slot location, 1 or 2, of the OOS unit).

During restoration, the green indicator of the DSK blinks almost continuously. DSK-1-Sh-S Restore In Progress is displayed on the screen.

Up to one hour may be required for the DSK to synchronize to the active copy.
- 28 Observe that the alarm DSK-1-Sh-S:MJ,BKUPMEMP,SA (where Sh=APS shelf number and S=DSK slot number) clears when restoration completes.
- 29 Did DSK restoration complete in 10 minutes or less?

If yes, go to step 30.

If no, go to step 34.
- 30 Enter **RTRV-STATE-EQPT::DSK;**

- 31** Is DSK IS or OOS?
- If IS go to step [32](#).
If OOS, go to step [33](#).
- 32** Enter **RMV-EQPT::DSK-1-Sh-S**; (where Sh=APS shelf number and S=slot location, 1 or 2, of the OOS unit).
- 33** Enter **RST-EQPT::DSK-1-Sh-S**; (where Sh=APS shelf number and S=slot location, 1 or 2, of the OOS unit).
- 34** Enter **RTRV-ALM-EQPT::ALL**; Note any remaining equipment alarms.
- 35** Enter **RTRV-COND-EQPT::ALL**; Note any remaining abnormal equipment conditions.
- 36** If the shuttle replaced was a DSK (not an OPD), go to step [38](#).
- 37** Perform a data base backup, using the new OPD. Enter **ACT-DB-BACKUP::OPD-1-Sh-S::VERIFY**; (where Sh=APS shelf number and S=slot location, 1 or 2, of the OPD that was replaced). This verifies proper operation of the new OPD.
- 38** If this is a routine equipment upgrade, and additional shuttles are to be replaced, go to step [9](#).
- 39** Enter **RTRV-ALM-EQPT::ALL**; Note any equipment alarms.
- 40** Enter **RTRV-COND-EQPT::ALL**; Note any abnormal equipment conditions.
- 41** Resolve all equipment alarms and abnormal conditions. Refer to [IXL-101](#).
- 42** Contact next level of technical support for assistance.
- 43** **STOP. This procedure is complete.**

DLP-147

Remote Database Upload in Limited Mode

Provides 1631 SX LMC database upload from client machine to cross-connect using File Transfer Protocol (FTP) while system is in Limited mode.

PREREQUISITES

Read the following bulleted list before starting this procedure.

- Internet Protocol (IP) address of cross-connect available
- APS/LTX shelf equipped with ICM and LT5 modules for LAN connectivity. See figures 147-1 and 147-2 for location of ICMs and LT5s in APS/LTX shelf, and refer to table 147-A for required combination of modules for LAN connectivity.
- LAN physically connected to J1 of appropriate LT5 module.
- User has CID 1 access to cross-connect if LAN port is not already functional

Table 147-A. APS/LTX Shelf Equipage for CID 1 and LAN Support

CID	ICM/SIO MODULE	LTx MODULE	PROTOCOL
1	ICM or SIO, slot 1 or slot 8	LT1 or LT2	XON
3	ICM, slot 1 or slot 8	LT5	TCP
5	ICM, slot 1 or slot 8	LT5	TCP
6	ICM or SIO, slot 1 or slot 8	LT1, LT2, or LT5	XON
7	ICM, slot 2 or slot 8	LT5	TCP
9	ICM, slot 2 or slot 9	LT5	TCP
11	ICM, slot 2 or slot 9	LT5	TCP

GENERAL

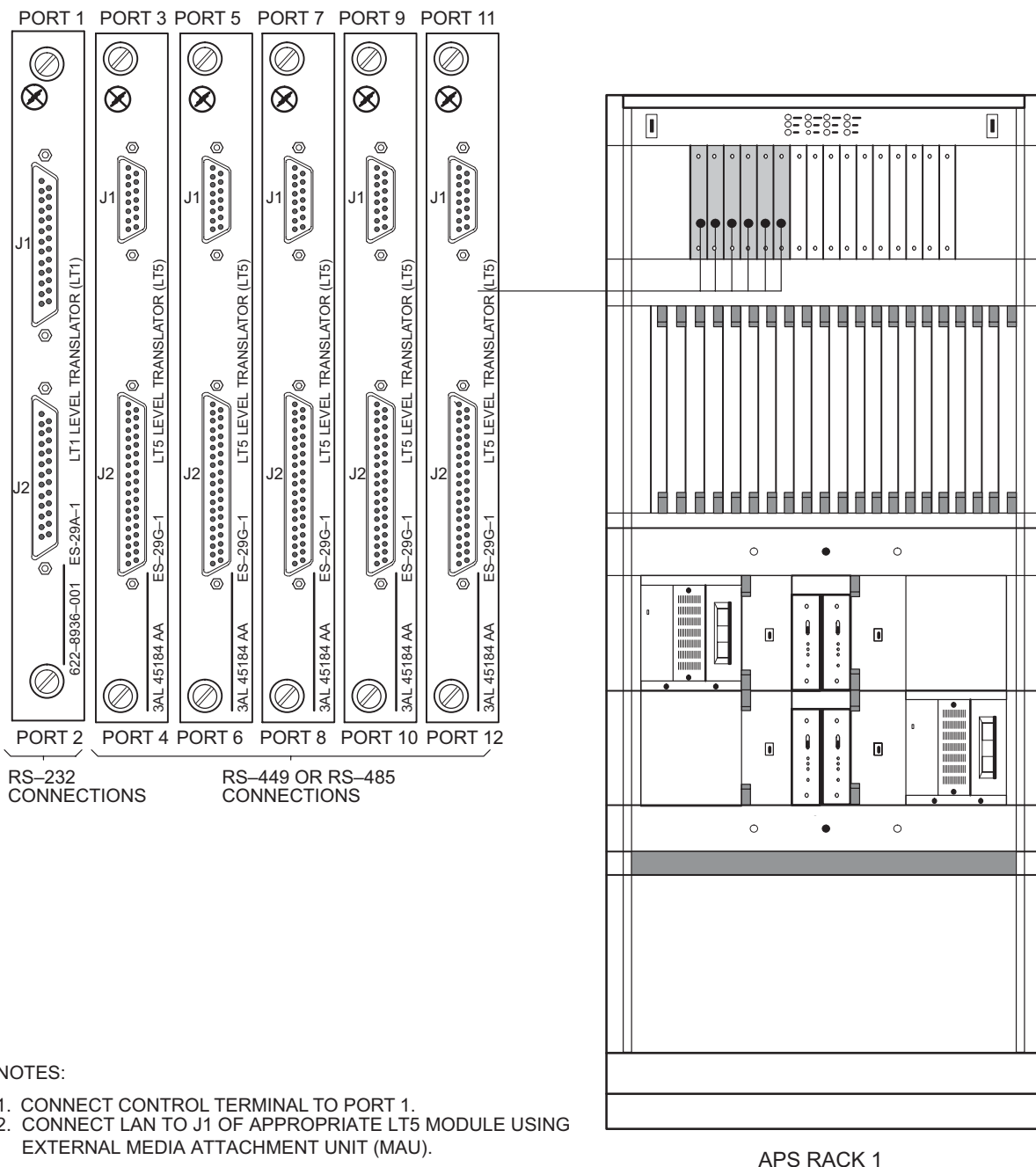
Setup of LAN port on cross-connect is stored in Limited mode database and need only be done once. In the event that the 1631 SX LMC autonomously goes into Limited mode on future occasions, recovery actions may be performed from a remote location using Telnet and FTP.

This procedure asks you to enter an address as R-Sh-S, where R=rack number, Sh=shelf number, and S=slot location number of equipment in the shelf. Refer to Address and Location Guide (PN 3AL47973AE) to determine module location and address.

RESTRICTIONS

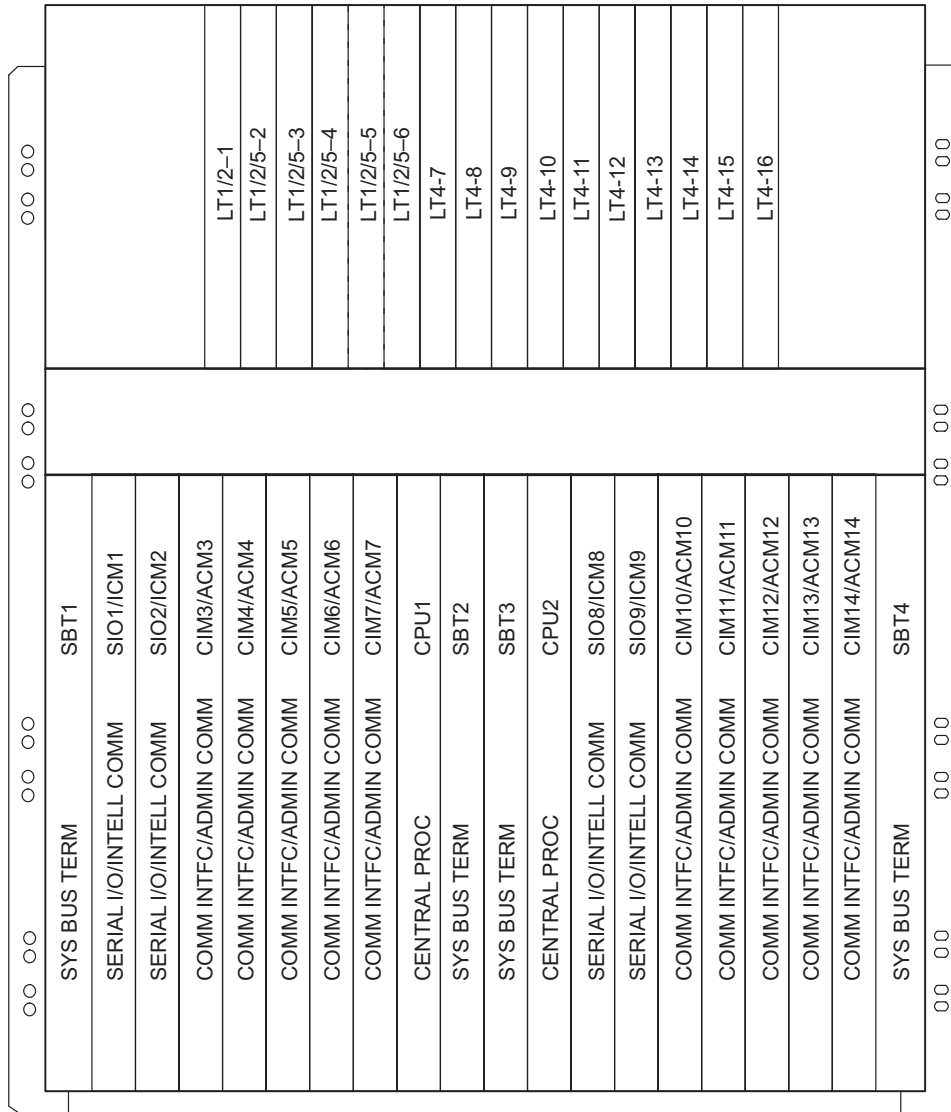
- Only 'system,' 'sysprint,' and 'alcatel' user accounts are able to log on to system in Limited mode.
- Only the default FTP account can be used while the system is in Limited mode (username= dbtransfer; password = ftpdb0).

Figure 147-1. Location of LT5 Modules in APS/LTX Shelf



129-1363-1
010797

Figure 147-2. APS/LTX Shelf



129-0046-1
022499

STEP	PROCEDURE
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Put System in Limited Mode

- 1 At the < prompt in the TL1 command window, enter **STOP-OPS**; then wait approximately 10 minutes after command is sent before attempting to regain access to system.
- 2 If LAN access to 1631 SX LMC in Limited mode was set up on a prior occasion, it need not be done again. The user may skip forward to step 18 to upload the database using FTP.

Is LAN access to 1631 SX LMC in Limited mode already set up and functioning?

If yes, go to step 18.

If no, go to step 3.

Retrieve CID Port Information

- 3 At the < prompt in the TL1 command window, enter **RTRV-CID** and then press **F7**.
- 4 Let CPORT field default to retrieve information for all existing CPORTs.
- 5 This command reports one line of data for each existing CPORT, as well as one line of data for each virtual channel for each X.25 CID provisioned into the system.

Press ; (semicolon) to execute.

Examine output and select appropriate CPORT to be set up for LAN access (3, 5, 7, 9, and 11).

Assign LAN Port Address

- 6 Although Internet Protocol (IP) addresses are normally written in Dotted Quad notation (divided using periods), the addresses entered in the following fields are divided using hyphens.

At the < prompt in the TL1 command window, enter **ENT-IP-PRMTR** and then press **F7**.
- 7 In CPORT field, enter physical CID port number.
- 8 In BRDCSTADR field, enter Broadcast IP address.
- 9 In GATEWAYADR field, enter Gateway address.
- 10 In NETMASK field, enter Netmask.

- 11 In IPADDR= field, enter IP address for LAN port using the format xxx-xxx-xxx-xxx.
- 12 Depending on local requirements, other optional fields may need to be specified.

Let remaining fields default to system-defined values.
- 13 Press ; (semicolon) to execute.
- 14 As required, set up routing for cross-connect. Refer to Quick Reference manual (PN 3AL45393AJ) for procedures to set up static or dynamic routing.

Restore CID Port

- 15 At the < prompt in the TL1 command window, enter **RST-CID** and then press **F7**.
- 16 In CPORT field, enter physical CID port number.
- 17 Press ; (semicolon) to execute.

Establish FTP Session between Client Machine and System

- 18 Open a shell tool or dos prompt on the client machine.
- 19 Each machine has an IP address and/or an alias name. The IP address has several digits. It should look something like **123.456.789.123**. An alias may look something like **svtlmc5**. A message should appear to let the user know that the FTP server is ready.

Establish an FTP session with the cross-connect (server) using the IP address or the alias name by entering **ftp <IP address>** or **ftp <alias name>**
- 20 Only sysadmin and alcatel users can access the system via act-user while in limited mode; only default FTP users can access the system via ftp while in limited mode (username = dbtransfer ; password = ftpdb0).
 - a. At Name or User prompt, enter **dbtransfer** then press **Return**.
 - b. At Password prompt, enter **ftpdb0** then press **Return**.
A message displays, indicating successful login.
- 21 At the FTP prompt, enter **ls** or **dir** and press the **Return** key to see the database backup filename.
- 22 Change the FTP file transfer type to binary.

At the FTP prompt, enter **type binary**

- 23** At the FTP prompt, execute a **put** command. For example, if the database file is named LMC5.010405n, the command would be **put LMC5.010405n**

The first four digits of the filename indicate the site, digits five and six indicate the year, digits seven and eight indicate the month, and digits nine and ten indicate the day of the month. The letter at the end of the filename indicates what hour the backup was done. These letters range from a-x, and correspond to hours 0-23, respectively.

Once the transfer is finished, the file is validated. Validation takes approximately five minutes to complete. A “Transfer Complete” message is received. It is helpful to have a TL1 window active in order to monitor the progress of the transfer. See figure 147-3 for a sample message progress report of a database download.

- 24** Avoid using the ABORT command to close the FTP connection.

After verifying the database has been transferred, close the FTP connection by entering **bye** or **quit** at the FTP prompt.

Establish Telnet Session between Client Machine and System

- 25** Open a shell tool or dos prompt on the client machine.
- 26** Each machine has an IP address and/or an alias name. The IP address has several digits. It should look something like **123.456.789.123**. An alias may look something like **svtlmc5**.

Establish a telnet session with the cross-connect (server) using the IP address or the alias name by entering **telnet <IP address>** or **telnet <alias name>**.

Restore Uploaded Database Backup File

- 27** Log on to system. At cursor, type **ACT-USER::uid::pid;**

where *uid* = user identification
pid = user password

Only ‘system’ and ‘alcatel’ user accounts are available in Limited mode.

- 28** At the prompt in the TL1 window, enter **RTRV-DB-LABEL** and press **F7** to determine integrity of the database.
- 29** In the AID field, enter **DSK-1-3-1** or **DSK-1-4-2**.
- 30** In the VER field, enter **VERIFY**.
- 31** In the DSKPTN field, enter **DBBK**.

- 32** Press ; (semicolon) to execute.
- 33** Did the command complete successfully, indicating a good database?
- If yes, go to step 34.
If no, go to step 18 to upload database again.
- 34** At the < prompt in the TL1 command window, enter **RESTORE-DB::DSK-1-x-y;**
where *DSk-1-x-y* = DSk-1-3-1 or DSK-1-4-2

Put System in Normal Mode

- 35** Return system to Normal mode. Enter **START-OPS;** then wait approximately 10 minutes after command is sent before attempting to connect to system.
- 36** **STOP. This procedure is complete.**

Figure 147-3. Sample Progress Message Report

```
LMC5 01-04-06 14:38:02
I 21459 REPT STAT
/* FTP DWLD DB File Starts... */
/* DSKMGR, main */
;
LMC5 01-04-06 14:38:03
I 21460 REPT STAT
/* FTP DWLD DB, Get File /pm/rdb/LMC5.010405n . */
/* DSKMGR, main */
;
LMC5 01-04-06 14:38:03
I 21461 REPT STAT
/* FTP DWLD DB File In Progress, Please Wait ... */
/* DSKMGR, main */
;
LMC5 01-04-06 14:38:35
I 21462 REPT STAT
/* FTP DWLD DB File In Progress... */
/* DSKMGR, FTP_IP */
;
LMC5 01-04-06 14:38:35
I 21463 REPT STAT
/* Next FTP DB In Progress Message In 2 Minutes. */
/* DSKMGR, FTP_IP */
;
LMC5 01-04-06 14:40:35
I 21465 REPT STAT
/* FTP DWLD DB File In Progress... */
/* DSKMGR, FTP_IP */
;
LMC5 01-04-06 14:40:35
I 21466 REPT STAT
/* Next FTP DB In Progress Message In 2 Minutes. */
/* DSKMGR, FTP_IP */
;
LMC5 01-04-06 14:41:39
I 21467 REPT STAT
/* FTP DWLD DB, DownLoad Completed. */
/* DSKMGR, main */
;
```

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