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DMS-10 Family

600-Series Generics

Maintenance and Test Manual - Part 1 of 2

08.02
For Generic 602.20 Standard August 2006

NORTEL

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Contents

Section 1: Introduction

Scope and purpose of this publication

The *Maintenance and Test Manual* contains procedures used for clearing problems and maintaining the system hardware and software in the DMS-10 switch. This manual is designed for use with the *Maintenance Diagnostic Input Manual* (297-3601-506), which lists the individual maintenance overlays and their commands.

The *Output Message Manual* (OMM) is also used with this document. The OMM contains the system output messages associated with system message codes that display on data terminals in an office, as well as output messages associated with the CPU Miscellaneous pack display codes. Each message listing includes, when appropriate, a reference to a procedure in the *Maintenance and Test Manual* used to clear the problem described in the message.

Organization

This NTP, in two parts, comprises the following sections:

- Introduction: general information about this manual and a User Guide
- Emergency Procedures (EPs): procedures used for returning power to the switch after a major power outage or other catastrophic event
- General Procedures (GPs): procedures used in basic man-machine interactions with the switch
- Routine Procedures (RPs): procedures that the craftsperson should perform at regular intervals for the proper maintenance of the switch
- Maintenance Procedures (MPs): procedures that are used as required during ordinary switch maintenance
- Trouble Procedures (TPs): procedures that are used to clear system hardware troubles, usually in response to system-printed messages
- Index: index to the procedures, organized by hardware components, by maintenance categories, and by procedure number

User guide

Individual procedures are identified by a two-letter code and a four-digit identification number (for example, EP 0006 or TP 2510). The code and identification number are located at the top outer corner of each page.

The procedures are arranged in groups according to function and system location. Each group is assigned a two-letter identification code and a particular range of numbers. The number ranges for each group of procedures is as follows:

- Emergency Procedures EP 0001 - EP 0099
- General Procedures GP 0100 - GP 0499
- Routine Procedures RP 0500 - RP 0999
- Maintenance Procedures MP 1000 - MP 1999
- Trouble Procedures TP 2000 - TP 9998

Information location

Information in the *Maintenance and Test Manual* may be located by using either the *Output Message Manual* (OMM) reference or the index reference.

When an output message is received, the *Proc. No.* (procedure number) column in the OMM should be checked to determine if a procedure number is associated with that message. The associated procedure number directs the craftsperson to the correct procedure in the *Maintenance and Test Manual*. If a procedure number is not referenced, or if the craftsperson needs to manipulate a specific hardware component that is not associated with an output message, the index can be used to locate procedures that pertain to the hardware component.

Note: *In the OMM, references to procedures in the Proc. No. column do not show a space between the procedure prefix (TP, MP, RP, GP, EP) and the procedure number. For example, TP 7009 appears as TP7009. Because a space does appear between the procedure prefix and procedure number in all instances in the DMS-10 NTPs, a space must be inserted between the procedure prefix and procedure number when a procedure is being searched for in the CD-ROM version of the NTPs on Helmsman.*

Section 2: Emergency procedures

Description

Emergency Procedures (EPs) are designed to assist the craftsperson in responding to a catastrophic event, such as a loss of power to the entire DMS-10 switch. When this occurs, operating company personnel must respond quickly because call processing has been interrupted and revenue is being lost. Therefore, emergency troubleshooting and the restoration of power and call processing to the DMS-10 switch are the most critical operations a craftsperson can perform.

Organization

The EPs have been placed at the beginning of this manual so that they are easy to locate for emergency troubleshooting.

The following is a list of the EPs in this section:

- Power-Up Procedure EP 0006
- Dead System Recovery Procedure EP 0009
- Power-Down Procedure EP 0010
- Manual Emergency Recovery Procedure EP 0012
- Retrieve Billing Data from System Disk EP 0013

The recovery of system power and call processing are addressed differently in these procedures because different situations can cause a service-affecting loss of power, whether it be to the Common Equipment bay (CE-3) alone or to the entire system.

Power-up (cold start) procedure for full size DMS-10 (EP 0006)

This procedure allows the craftsperson to bring up the switch from a cold start.

Dead system recovery procedure (EP 0009)

This procedure is in response to audible and/or visible alarms on the DMS-10 switch that indicate a “dead system” condition. EP 0009 is presented as a flow chart so that the craftsperson is more easily directed through the steps of the procedure, and questions are asked of the craftsperson as he/she proceeds to determine when switch initialization and recovery occur.

Power down procedure (EP 0010)

This procedure allows the craftsperson to quickly remove all power from the switch.

Manual system software reload procedure (EP 0012)

This procedure is a forced, manual SYSLOAD that must be used when the system fails to recover automatically from a fault condition.

Retrieve billing data from system disk (NT8T90) procedure (EP 0013)

This procedure allows the craftsperson to retrieve any billing data from the system disk (NT8T90).

Power-up (cold-start) procedure for the full-size DMS-10

This procedure is used to recover from a total loss of power to all equipment on a 500 Series DMS-10 system.

1) Set the Alarm Silence switch on the Alarm Display Panel to the Silence position.

2) Set the Remote switch on the Alarm Display Panel to the Disable position.

3) Turn off/remove the circuit breakers/fuses in the Power Plant that provide A and B power to the Power Distribution Panel.

Note: *A label or other indication should be placed on the circuit breakers that are turned off in this step to help identify which breakers will be turned on when applying power to the DMS-10.*

4) Ensure the ac input circuit breakers for all rectifiers in the Power Plant are in the ON position.

5) Verify that commercial ac power is restored to the main ac circuit breaker panel and to the rectifiers.

6) Verify the dc output of each rectifier.

> ***Caution:*** Batteries may be in a partially discharged condition at this time and may demand dc current at a level that approaches the maximum output capacity of the rectifiers. This demand should begin to decrease in a few minutes as the batteries are charged. If the maximum output capacity of the rectifiers is indicated, do not re-apply power to the DMS-10 until the current demand begins to decrease.

7) Turn off all circuit breakers in the Power Cooling Modules of the CE bays. Remove ONLY the Fan fuses from the Power Cooling Module for all equipped CE Bays.

8) Turn off all circuit breakers on the Power Distribution Panel (equipped in a PE-XX or a ME-XX bay).

9) Turn off the circuit breakers in the circuit breaker panel at the top of J0T80A-1 “tall” PE Bays (if equipped).

10) Turn off the wing-mounted circuit breakers for all DCM, SCM, OCM, MPU, and DCI shelves that are so equipped

Note: *These shelves are typically equipped with wing-mounted circuit breakers when provisioned in J0T30A-1 or J0T30E-1 PE Bays.*

11) Turn off all circuit breakers on the Frame Supervisory Panel in all equipped LCE bays. Remove the 48V, +15V, and +5V fuses for all shelves equipped in the LCE Bay.

Note: *It is not necessary to remove the fuses from the Frame Supervisory Panel at the top of the LCE Bays, only remove the 48V, +15V, and +5V fuses from the fuse panel above each Line Concentrating Array (LCA) Shelf.*

12) Turn off all circuit breakers on the front of the Frame Supervisory Panel in all equipped SCE bays.

13) Turn off all circuit breakers on the front of the Modular Supervisory Panel in all equipped MVIE/MVDD bays. Also turn off the Fan switch.

14) Remove the fuses from all Miscellaneou Equipment.

15) Operate the Enable/Disable or On/Off switch on *all* packs so equipped to the Disable or Off position in the following bays:

- PE Bays
- SCE/MVIE Bays
- CE-01 Bay
- CE-03 Bay

16) AMA System:

- Billing Media Converters (BMCs): Remove the fuses at the top of the Miscellaneous Equipment (ME) bay. Open the BMC covers and push the pushbutton circuit breaker (labeled 8.5V 15A) on the internal power supplies. The circuit breaker should be in the off or out position.

- Magnetic Tape Units (MTUs): Turn off the circuit breakers at the top of the MT-1 bay and remove the tape from each drive.

- 1600-bpi AMA System: Remove the AMA tape from the tape drive. Press the Reset Button and the Logic On button, both located on the upper left- hand corner of the tape drive. Turn off the two circuit breakers labeled “Shelf 3 left” and “Shelf 3 right” on the Power Cooling Module. Operate the toggle switch on the Power Converter pack (NT3T89) to the DISABLE (down) position.

17) Turn on/insert the circuit breakers/fuses in the Power Plant that provide A and B power to the Power Distribution Panel. Verify that nominal office voltage (-48 vdc to -53 vdc) is present on the bus bars located on the rear of the Power Distribution Panel (equipped in a PE-XX or a ME-XX bay).

18) Turn on all wired circuit breakers on the DMS-10 Power Distribution Panel, proceeding from left to right.

Note: *Some circuit breakers may trip immediately after being turned on. If this occurs, turn the circuit breaker on a second time. If the breaker fails to remain on, corrective action is required.*

19) CE Bays: Insert the Fan fuses into the Power Cooling Module for all equipped CE Bays and ensure the Fans begin operating.

20) Turn on the circuit breakers in the Power Cooling Modules for the equipped shelves in all CE bays.

Note: *Some NT3T19 Power Converter circuit packs are equipped with a Reset button on the face plate. This button will be pressed before proceeding to the next step. If this is a Classic Network switch equipped with an IOI shelf in the CE-03 Bay, momentarily operate the Enable switch to the Reset position on the face plate the NT3T89 Power Converter in slot 1.*

21) LEDs will be illuminated for one or more circuit packs in each shelf equipped in the CE Bays. If no LEDs are on in a shelf, verify proper voltage to each 5/12V Converter pack (NT3T19) for each affected shelf per Table 0006- A.

Table 0006-A	
Back Plane Pin	**Voltage**
60 A/B	+5 vdc
45 A/B	+12 vdc
49 A/B	-12 vdc
26 A/B	-48 to -53 vdc
31 A/B	battery return

22) J0T80A-1 “tall” PE Bays: Turn on the circuit breakers in the circuit breaker panel at the top of J0T80A-1 “tall” PE Bays (if equipped).

Note: *Some NT3T19 Power Converter circuit packs are equipped with a Reset button on the face plate. If the NT3T19 Power Converter circuit packs in the DCM, SCM, OCM, MPU, or DCI shelves in the J0T80A-1 “tall” PE Bay have this Reset button, press it before proceeding to the next step.*

23) Turn on the wing-mounted circuit breakers for all DCM, SCM, OCM, MPU, and DCI shelves that are so equipped.

Note: *Some NT3T19 Power Converter circuit packs are equipped with a Reset button on the face plate. If NT3T19 Power Converter circuit packs in the DCM, SCM, OCM, MPU, or DCI shelves with wing-mounted circuit breakers have this Reset button, press it before proceeding to the next step.*

24) Turn on all circuit breakers on the Frame Supervisory Panel of all LCE bays. Insert the +5V, +15V, and 48V fuses, in that order for all equipped shelves in the LCE bay.

25) SCE Bays: Ensure the Fans in the bottom of the bay are operating.

- Unseat the NT6X80.

- Operate the Enable switch on the Power Converter pack (NT2X70) to the ENABLE position.

- Simultaneously press the Reset button on the Power Converter pack (NT2X70) and operate Circuit Breaker 5 (labeled 18) to the on position. Verify that the Converter Fail LEDs are off and that the LED located under Circuit Breaker 5 is off.

- Repeat the previous step for the following Circuit Breakers (CB):

  CB 2 (labeled 32) located on Shelf 3

  CB 4 (labeled 51) located on Shelf 4

  CB 1 (labeled 65) located on Shelf 5.

- Verify that the Converter Fail LEDs are off and that the Frame Fail Lamp is off.

- Seat the NT6X80.

26) MVIE Bays: Operate the Fan switch in the MSP to the ON position. Ensure the Fans start running.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 1, slot 1, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB01-16-01 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 1, slot 1, operate the circuit breaker labeled CB01-16-01 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 1, slot 26, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB03-16-26 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 1, slot 26, operate the circuit breaker labeled CB03-16-26 to the ON position.

- If a NTMX79AA Power Converter circuit pack is equipped in shelf 2, slot 2, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB05-30-02 to the ON position.

- If a NTMX79AA Power Converter circuit pack is equipped in shelf 2, slot 13, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB07-30-13 to the ON position.

- If a NTMX79AA Power Converter circuit pack is equipped in shelf 2, slot 14, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB08-30-14 to the ON position.

- If a NTMX79AA Power Converter circuit pack is equipped in shelf 2, slot 25, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB06-30-25 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 3, slot 1, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB02-44-01 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 3, slot 1, operate the circuit breaker labeled CB04-44-01 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 3, slot 26, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB04-44-26 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 1, slot 26, operate the circuit breaker labeled CB04-44-26 to the ON position

- Observe that the FAIL LEDs on the affected Power Converters are OFF.

27) MVDD Bays: Operate the Fan switch in the MSP to the ON position. Ensure the Fans start running.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 1, slot 1, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB01-16-01 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 1, slot 1, operate the circuit breaker labeled CB01-16-01 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 1, slot 26, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB03-16-26 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 1, slot 26, operate the circuit breaker labeled CB03-16-26 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 2, slot 1, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB02-30-01 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 2, slot 1, operate the circuit breaker labeled CB02-30-01 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 2, slot 26, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB04-30-26 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 2, slot 26, operate the circuit breaker labeled CB04-30-26 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 3, slot 1, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB05-44-01 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 3, slot 1, operate the circuit breaker labeled CB05-44-01 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 3, slot 26, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB07-44-26 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 3, slot 26, operate the circuit breaker labeled CB07-44-26 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 4, slot 1, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB06-58-01 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 4, slot 1, operate the circuit breaker labeled CB06-58-01 to the ON position.

- If a NTMX72AA Power Converter circuit pack is equipped in shelf 4, slot 26, press and hold the Reset button on the face plate of this pack and operate the circuit breaker labeled CB08-58-26 to the ON position. If a NTMX72AB Power Converter circuit pack is equipped in shelf 4, slot 26, operate the circuit breaker labeled CB08-58-26 to the ON position.

- Observe that the FAIL LEDs on the affected Power Converters are OFF.

28) ME Bays: Ensure that all Miscellaneous Equipment has been powered up.

29) Operate the Enable or On/Off switch on all circuit packs to the ENABLE or ON position, except the NT3T70 System Bus Controller circuit packs in CORE 0 and CORE 1 and the NT2T13/NT2T41 Peripheral Controller circuit packs in the PE shelves.

Note: *Ensure the HD0 LED on the NT8T90 circuit pack in CORE 0 and the HD1 LED on the NT8T90 circuit pack in CORE 1 are illuminated before proceeding to the next step.*

30) Operate the Enable switch to the ENABLE position on the NT3T70 circuit pack in CORE 0 to the ENABLE position. Verify that a 201 code is displayed on the NT3T98 circuit pack in CORE 0 before proceeding to the next step.

31) After 201 is displayed on the NT3T98 in CORE 0, perform the following:

- Operate the Enable switch to the ENABLE position on the NT3T70 circuit pack in CORE 1 to the ENABLE position.

- Operate the Enable switch on the NT2T13/NT2T41 circuit packs in the PE shelves to the ENABLE position. Verify that no power fail LEDs on the NT2T42 packs are lit. If an LED is lit, replace that pack. If NT2T12 circuit packs are equipped in the PE shelves, press the RESET button on each of these packs.

- Operate and release the Ringing Generator Reset switch twice on the front of the Alarm & Ringing Module.

32) CORE 0 will SYSLOAD. Numerous codes will be displayed on the face plate of the NT3T98 circuit pack in CORE 0 during the SYSLOAD. If necessary, refer to the Output Message Manual in the NTP 297-3601-903 to interpret these codes. The time required for the SYSLOAD to complete will vary somewhat depending on the site and the generic that is equipped but will generally last about 15 minutes.

Note: *Patches will not be automatically loaded during a SYSLOAD from cold switch. Patches must be loaded and applied manually after the SYSLOAD and the INITIALIZATION routine have been completed.*

33) When SYSLOAD is complete, a DONE VERS 50X Issue 10 message should be printed on the maintenance terminal and the system will INITIALIZE, which may take up to 1 minute to complete.

34) If, upon completion of SYSLOAD, none of the maintenance terminals will communicate with the system, momentarily operate and release the Utility Interrupt switch on the Alarm and Ringing Module. This will enable all disabled TTYs.

35) Reset date and time.

36) Check for messages at the TTY indicating that the LCM shelves have been returned to service and that all remotes are in service.

37) Dial tone should be restored to the office. Verify that each Line Concentrating Equipment (LCE) shelf and each Peripheral Equipment (PE) shelf has dial tone. Originate a call from each LCE and Peripheral shelf.

38) AMA system:

- BMC: Push the pushbutton circuit breaker on the internal power supplies. The circuit breaker should be in the on or in position. Restore service according to local office guidelines.

- If a Mag Tape (MT) Bay is equipped, operate the circuit breakers at the top of the bay to the ON position and mount new tapes on each drive and restore service according to local office guidelines. Refer to MP 1280.

- 1600- bpi AMA System: Turn on the two circuit breakers labeled "Shelf 3 left and Shelf 3 right" on the Power Cooling Module. Operate the toggle switch on the Power Converter pack (NT3T89AC) to the ENABLE (up) position. Press the Logic On button. Mount new AMA tape on the tape drive and restore service according to local office guidelines. Press the On-line button. Refer to MP 1280.

39) To verify that billing is occurring, place several toll calls and verify that call routing has occurred. Observe billing hardware for indications of proper system operation as follows:

- MTU: Tape will move.

- 1600 bpi AMA System: Disk drive LED will turn on and off.

- BMC: LED will turn on and off.

Note: *If traffic is at a low period, these indications may not occur.*

40) Patches should be manually loaded and applied in overlay program UPDT at this time per the following:

- List the Unapplied Patches using the LUP command.

- Load the Unapplied Patches using the LP 1 x command. X = the last patch listed in response to the LUP command.

- If Generic 502.10 is equipped, apply the patches in the following order:

  AP 1 7

  AP 8

  AP 9 X (X = the last patch listed in the response to the LUP command.)

- If any other generic is equipped, apply the patches using AP 1 X (X = the last patch listed in response to the LUP command.)

41) Ensure that the PMS System, ACT tester, and PEPR packs (if equipped) have been downloaded.

42) Clear all system and hardware alarms.

43) Unlock the Remote switch on the Alarm Display Panel from the Disable position.

Dead system recovery procedure

1) Check for power and dial tone.

Note: *This procedure is used when the catastrophic audible alarm is on, the red catastrophic LED on the Alarm Display Panel is lit, or the user cannot get a response from any of the maintenance terminals. This procedure is not designed to cover every possible trouble situation, but is a guide to bringing the switch back to service as quickly as possible.*

2) Determine whether power is present in the switch.

If power	Go to
is present	step 3
is not present	EP 0006

3) Determine whether dial tone is present in the switch.

If dial tone	Go to
is present	step 71
is not present	step 4

4) Load Overlay IOD by entering: OVLY IOD <CR>

5) Disable the SCSI Bus I/O and Disk Drive pack (NT8T90) by entering: DSBL IOI IMED <CR>

6) Manually initialize the system by pressing the Man Int contact switch on the active NT3T98 System Processor pack.

7) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 71
did not initialized and recover	step 8

8) Attempt to sysload the system from hard disk HD0 by simultaneously operating the ENABLE and RELOAD switches on the Alarm and Ringing shelf.

9) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 71
did not initialized and recover	step 10

10) Manually disable the hard disk HD0 by turning the switch on the NT8T90 IOI/disk pack on the Core 0 shelf to the OFF position.

Note: *Enable the disk when the system has recovered.*

11) Attempt to sysload the system from hard disk HD1 by simultaneously operating the ENABLE and RELOAD switches on the Alarm and Ringing shelf.

12) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 71
did not initialized and recover	step 13

13) Manually disable the hard disk HD0 by turning the switch on the NT8T90 IOI/disk pack on the Core 1 shelf to the OFF position.

14) Insert a known good copy of a system optical disk into the magneto optical (MO) drive.

Note: *A system optical disk contains the current generic load along with the most current office and custom calling data. Allow the MO drive to perform a self-test, as indicated by the green "activity" LED. Wait for five seconds after the LED is extinguished.*

15) Attempt to sysload the system from the MO by simultaneously operating the "Enable" and "Reload" switches on the Alarm and Ringing shelf.

16) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 71
did not initialized and recover	step 17

17) Insert another known good copy of a system optical disk into the magneto optical (MO) drive.

Note: *A system optical disk contains the current generic load along with the most current office and custom calling data. Allow the MO drive to perform a self-test (indicated by the green "activity" LED. Wait for five seconds after the LED is extinguished.*

18) Attempt to sysload the system from the MO by simultaneously operating the "Enable" and "Reload" switches on the Alarm and Ringing shelf.

19) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 71
did not initialized and recover	step 20

20) Remove the optical disk from the MO drive and unseat both NT8T90 packs from the Core shelves. (MP 1250)

21) Initiate a system reload with no boot devices present by simultaneously operating the “Enable” and “Reload” switches on the Alarm and Ringing shelf.

22) Observe the codes on the active NT3T98 hex display. The codes indicate the recovery function that is currently executing. Refer to the table below for hex codes that display during sysload. In this case, with both NT8T90 packs removed, the hex display should advance to code 224. Since the system will not be able to find a boot device, an NT3T70 step will occur (CPUs will switch activity) and the system should restart the sysload in the new state.

display code
10X: performing low level recovery tests ***Note:*** *Due to fast test execution, 10X codes may not be observed.*
201 - 20A: performing destructive memory tests
224: looking for a boot device (HD0, HD1, MO0)
225: loading operating system programs
222: initializing operating system
510: loading all other programs ***Note:*** *Due to loading time required, code 510 may display for several minutes*
520: start loading office date ***Note:*** *If TTY IO is possible, a SYS000 message should display at all TTYs*
540: loading configuration record office date
543 or 544: loading all other office data
D0X: performing system initialization tests

display code
600: system initialization finished ***Note:*** *If a problem affecting TTY IO is found, one of the following hex codes will display; in this case, code 600 will not display at the completion of initialization.*
601: IO interrupt is stuck at the active CPU. No SDI type TTY IO is possible.
605: Call Store allocation failed
3A0: all SDI type TTYs are disabled
38x: TTY x is disabled
39x: TTY 16 + x is disabled

23) Determine whether the hex code, 224 displays and the system has restarted the sysload on the mate CPU.

If the system	**Go to**
has restarted the sysload on the mate CPU	step 24
has not restarted the sysload on the mate CPU	step 28

24) Insert another known good copy of a system optical disk into the magneto optical (MO) drive.

Note: *A system optical disk contains the current generic load along with the most current office and custom calling data. Allow the MO drive to perform a self-test (indicated by the green "activity" LED. Wait for five seconds after the LED is extinguished.*

25) Reinsert both NT8T90 packs. Do NOT enable the hard disk on the NT8T90 packs; leave the switch on the NT8T90 packs in the OFF position.

26) Attempt to sysload the system from the MO by simultaneously operating the "Enable" and "Reload" switches on the Alarm and Ringing shelf.

27) Determine whether the system Initialized and recovered.

If the system	**Go to**
Initialized and recovered	step 71
did not initialized and recover	step 28

28) Observe the NT3T98 display codes and refer to the *Output Message Manual.*

29) Determine whether the NT3T98 packs are switching activity back and forth.

If the NT3T98 packs	Go to
are switching activity back and forth	step 30
are not switching activity back and forth	step 31

30) Unseat both NT3T98 System Processor packs. Wait 5 seconds and then reseat both packs.

Note: *This step results in a reset of the system calendar clock and real time clock. Thus, the date and time must be reset when the system recovers.*

31) Initiate a system reload with no boot devices present by simultaneously operating the “Enable” and “Reload” switches on the Alarm and Ringing shelf.

32) Determine whether the output messages indicate that a SYSLOAD is in progress.

If a SYSLOAD	Go to
is in progress	step 40
is not in progress	step 33

33) Replace the NT3T71 pack connected to the maintenance terminal (MP 1250).

34) Repeat Steps 20 through 26.

35) Determine whether the output messages indicate that a SYSLOAD is in progress.

If a SYSLOAD	Go to
is in progress	step 40
is not in progress	step 36

36) Remove the NT3T71 pack installed in step 33 and replace with the original NT3T71 pack (MP 1250).

37) Replace the NT3T71 pack on the other CPU shelf.

38) Repeat Steps 20 through 26.

39) Determine whether the output messages indicate that a SYSLOAD is in progress.

If a SYSLOAD	Go to
is in progress	step 40
is not in progress	step 41

40) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 71
did not initialize and recover	step 43

41) Remove the NT3T71 pack installed in step 3 and replace with the original NT3T71 pack. (MP 1250)

42) Repeat Steps 20 through 26.

43) On any SDI or DSDI pack (NT3T09 or NT3T80), operate the Enable switch to the DISABLE position, and unseat the pack from the shelf.

44) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 49
did not initialize and recover	step 45

45) Reseat the SDI or DSDI pack (NT3T09 or NT3T80) and operate the Enable switch to the ENABLE position.

46) Determine whether steps 43 and 44 have been performed with all SDI and DSDI packs (NT3T09 or NT3T80).

If the steps	Go to
have been performed with all SDI and DSDI packs	step 48
have not been performed with all SDI and DSDI packs	step 47

47) Repeat steps 43 and 44 with all other SDI and DSDI packs (NT3T09 and NT3T80).

48) Manually initialize the system by pressing the Man Int button on active CPU.
Go to step 52.

49) Replace the SDI or DSDI pack (NT3T09 or NT3T80) that allowed SYSLOAD to occur when unseated
(MP 1254).

50) Load Overlay IOD by entering: OVLY IOD <CR>

51) Enable all SDI or DSDI packs by entering: ENBL TTY *n* <CR>
Go to step 71.

52) Operate the Enable switch on one of the Magnetic Tape Controller (MTC) packs (NT3T10) to the DISABLE position. Unseat pack from shelf.

53) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 54
did not initialize and recover	step 71

54) Replace the NT3T10 pack that, when unseated, allowed SYSLOAD to occur (MP 1250).
Go to step 71.

55) Reseat the NT3T10 pack unseated in step 54 and operate the Enable switch to the ENABLE position.

56) Operate the Enable switch on the other Magnetic Tape Controller (MTC) pack (NT3T10) to the DISABLE position. Unseat pack from shelf.

57) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 54
did not initialize and recover	step 58

58) Reseat the NT3T10 pack unseated in step 56 and operate the Enable switch to the ENABLE position.

59) On an idle IOBE pack (NT3T72), operate the Enable switch to the DISABLE position and unseat the pack. Note any changes to system. If no changes occur, reinsert the pack, operate the Enable switch to the ENABLE position, and perform the same operation to the remaining idle IOBE packs. If system begins to SYSLOAD when an IOBE is unseated, then proceed to the next step.

60) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 61
did not initialize and recover	step 62

61) Replace the IOBE (NT3T72 pack that, when pulled from the shelf, allowed the system to SYSLOAD (MP 1258).
Go to step 71.

62) Operate the Enable switch on the active System Bus Controller (SBC) pack NT3T70) to the DISABLE position and unseat pack from shelf. Repeat Step 61 for the remaining IOBE packs.

63) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 64
did not initialize and recover	step 65

64) On the System Bus Controller (NT3T70), operate the Enable switch to the ENABLE position.
Go to step 61.

65) On the CPU that does not display the appropriate message, operate the Enable switches on all packs to the DISABLE position.

Note: *The NT3T98 should display 1FF, 270, 271, 272, and 251.*

66) Simultaneously operate the Enable and Reload switches on the Alarm and Ringing Module to perform a SYSLOAD.

67) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 71
did not initialize and recover	step 68

68) Check the DIP-switch settings and toggle-switch positions of all replaced packs. Load another tape. Try to SYSLOAD again.

69) Determine whether the system Initialized and recovered.

If the system	Go to
Initialized and recovered	step 71
did not initialize and recover	step 71

70) Contact the next level of support to determine the next course of action.

71) Refer to the TTY printouts and the *Output Message Manual*.

72) This procedure is complete.

Power down procedure

1) Determine whether the current situation provides time to back up office data.

If	Go to
there is time to back up office data	step 2
there is not time to back up office data	step 3

2) Perform an Equipment Data Dump (MP 1010).
Go to step 4.

3) Turn down the main power circuit breakers, A and B, on the PE-1 bay.

4) This procedure is complete.

Manual system software reload procedure

1) Load Overlay IOD by entering: OVLY IOD <CR>
2) Disable the SCSI Bus I/O and Disk Drive pack (NT8T90) by entering: DSBL IOI IMED <CR>
3) At the J0T72 Alarm and Ringing Shelf, hold up the ENABLE switch.
4) While holding up the ENABLE switch, momentarily push up the RELOAD switch.
5) Release the ENABLE switch.
6) This procedure is complete.

Retrieve billing data from system disk (NT8T90)

1) Load Overlay IOD by entering: OVLY IOD <CR>

2) Determine the status of the IOI system by entering: STAT IOI <CR>

3) If one of the NT8T90 devices is enabled, proceed to Step 6.

4) Operate the ENBL/DSBL switch on the NT8T90 to the ENBL position.

5) Enable the device by entering: ENBL <*device*> <CR>

6) Abort Overlay IOD by entering: ****

7) Load Overlay CNFG by entering: OVLY CNFG <CR>

8) Obtain the DMS-10's IP address by entering: QUE ENET <CR>

If DMS-10 subnet	Go to
is functional	step 9
is not functional	step 10

9) Connect a portable laptop computer to a free port on the hub using an ordinary Ethernet patch cable. Proceed to Step 11.

10) Attach an Ethernet crossover cable from the NT3T84 paddle card behind the active CPU (NT3T98) to a portable laptop computer.

11) From the laptop, establish an FTP session to the DMS-10 switch using the IP address obtained in Step 8.

Note: *The portable laptop computer should be configured with a static IP address on the same subnet as the DMS-10. If uncertain, use the IP address reported as IDLE by QUE ENET in Step 8.*

12) When the name prompt appears, enter: ibsruser <CR>

13) When the password prompt appears, enter: <*ibsruser_password*> <CR>

14) Set the transfer mode to binary.

15) Determine the filenames available for transfer by using the FTP LIST or NLST command.

16) Individually transfer files by using the FTP RETR command.

17) Repeat Steps 15 and 16 until no files remain.

18) Exit FTP session.

19) Detach the Ethernet cable.

20) Transport billing data to collection center.

21) This procedure is complete.

Section 3: General procedures

Description

General Procedures (GPs) are the most basic, everyday procedures that the craftsperson must know in order to perform elementary maintenance tasks at a data terminal. These are the procedures that describe how to log in to the system, how to load an overlay so that a given task can be performed, and how to log out of the system. In addition, other procedures that the craftsperson uses repeatedly are provided in this section.

Organization

The first subset of GPs are the simple man-machine interface procedures every craftsperson must know to communicate with the DMS-10 switch. They are:

- Log In GP 0100
- Load an Overlay Program GP 0103
- Abort and Log Out GP 0106

The remaining GPs describe basic maintenance terminal tasks, such as querying alarms and requesting trouble status reports.

Log in

1) Turn on terminal power.

2) Enter: **** Prints: !

3) Enter: LOGI <CR>

4) Determine whether the message, IOS003 INAPT displays.

If IOS003 INAPT	Go to
displays	step 5
does not display	step 6

5) You are already logged in.
Go to step 11.

6) Enter: password <CR>

7) Determine whether the message, IOS015 displays.

If IOS015	Go to
displays	step 8
does not display	step 9

8) Password is invalid; obtain valid password.
Go to step 3.

9) Determine whether the task to be performed is included in printout LOGI authorized tasks.

If the task	Go to
is included	step 11
is not included	step 10

10) Your password does not allow performance of your task. Logout by entering: LOGO <CR> and obtain correct password.
Go to step 3.

11) This procedure is complete.

Load overlay program

1) Enter: OVLY <CR>

2) Determine whether the message, OVL000 displays.

If OVL000	Go to
displays	step 5
does not display	step 3

3) Enter: OVLY *mnemonic* <CR>

4) Determine whether the overlay activated.

If the overlay	Go to
activated	step 14
did not activate	step 9

5) Determine whether the system response is for a DMO overlay or for a MTCE overlay.

If the system response	Go to
is for a DMO overlay	step 6
is for a MTCE overlay	step 7

6) Refer to the DMO compatibility table (See NTP 297-3601-300, chapter 2).

7) Determine whether the overlay status is SYS or BKGD.

If the overlay status	Go to
is SYS or BKGD	step 11
is not SYS or BKGD	step 8

Note: *An Overlay status can be one of the following:*
BKGD - the system has loaded a scheduled, time-of-day overlay;
SYS- the overlay has been requested by a system routine;
TTY - an overlay that was manually loaded from a terminal .

8) Wait for the TTY task to complete.
Go to step 1.

9) Determine whether the message, OVLXXX ABRT displays.

If OVLXXX ABRT	Go to
displays	step 10
does not display	step 13

10) Wait until the other task is finished.
Go to step 1.

11) Enter: OVLY *mnemonic* IMED <CR>
Go to step 5.

12) Determine whether the overlays currently running are compatible with the requested overlay.

If the overlays	Go to
are compatible	step 3
are not compatible	step 10

13) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

14) This procedure is complete.

Abort and log out

1) Abort the overlay by entering: ****

2) Log out by entering: LOGO <CR>

3) This procedure is complete.

Query alarms

1) Load ALO overlay by entering: OVLY ALO <CR>

2) Enter: LIST ALM <CR>

3) Determine whether the message, ALO001 displays.

If ALO001	Go to
displays	step 4
does not display	step 5

4) Enter: ****
Go to step 7.

5) Enter: ****

6) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

7) This procedure is complete.

System fault assessment

1) List troubles by entering LIST TRB <CR>

2) Determine whether any TRBXXX messages other than TRB000 or TRB001 display.

If messages other than TRB000 or TRB001	Go to
display	step 3
do not display	step 16

Note: *Troubles should be cleared according to priority: 1) power faults; 2) control; 3) network; 4) peripherals.*

3) Determine whether the message displaying is TRB015.

If the message displaying	Go to
is TRB015	MP 2518
is not TRB015	step 4

4) Load the overlay indicated in the message.

5) Obtain the status of the device indicated in the message by entering: STAT *device location* <CR>

6) Determine whether the device status is DSBL, SMB, or SMOF.

If the status	Go to
is DSBL, SMD, or SMOF	step 7
is not DSBL, SMD, or SMOF	step 8

7) Busy or disable the device indicated by entering: BUSY/DSBL *device location* <CR>

8) Test the device indicated in the message by entering: TEST *device location* <CR>

9) Determine whether the device passed the test.

If the device	Go to
passed the test	step 10
did not pass the test	step 39

10) Return to Service or Enable the device by entering: RTS/ENBL *device location* <CR>

11) Obtain the status of the device indicated in the message by entering: STAT *device location* <CR>

12) Determine whether the device is in service.

If the device	Go to
is in service	step 13
is not in service	step 39

13) Test the device indicated in the TRB message by entering: TEST *device location* <CR>

14) Determine whether the device passed the test.

If the device	Go to
passed the test	step 15
did not pass the test	step 39

15) Determine whether all of the trouble indicators have been cleared.

If all trouble indicators	Go to
have been cleared	step 16
have not been cleared	step 3

16) Load Overlay CKT by entering: OVLY CKT <CR>

17) Obtain a list of all line and trunk faults in the system by entering: LIST ALL FALT <CR>

18) Determine whether any faults are displayed.

If any faults	Go to
are displayed	step 19
are not displayed	step 26

19) Determine whether the faulty device is a TRK or DTRK.

If the faulty device	Go to
is a TRK or DTRK	TP 5150
is not a TRK or DTRK	step 20

20) Determine whether the faulty device is an NT2T46.

If the faulty device	Go to
is an NT2T46	TP 5002
is not an NT2T46	step 21

21) Determine whether the faulty device is an NT2T70 or NT2T74.

If the faulty device	Go to
is an NT2T70 or NT2T74	TP 5173
is not an NT2T70 or NT2T74	step 22

22) Determine whether the faulty device is a line.

If the faulty device	Go to
is a line	step 23
is not a line	step 24

23) Load Overlay PED (**** OVLY PED <CR>) and enter the appropriate TEST, BUSY, and RTS commands.
Go to step 40.

24) Determine whether the faulty device is a receiver.

If the faulty device	Go to
is a receiver	TP 5113
is not a receiver	step 25

25) Determine whether the faulty device is a CAMA Position Signaling pack (CPSC).

If the faulty device	Go to
is a CAMA Position Signaling pack (CPSC)	TP 5150
is not a CAMA Position Signaling pack (CPSC)	step 26

26) If needed, load Overlay CKT by entering: OVLY CKT <CR>

27) Obtain a list of all man-made-busy lines and trunks in the system by entering: LIST ALL MMB <CR>

28) Determine whether any devices are listed.

If any devices	Go to
are listed	step 18
are not listed	step 29

29) Load Overlay ALO by entering: OVLY ALO <CR>

30) Obtain a list of all alarm indications by entering: LIST ALM <CR>

31) Determine whether either of the messages, ALO051 or ALO050 displays.

If either ALO051 or ALO050	Go to
displays	step 32
does not display	step 40

32) Clear the alarm indications by entering: CLR CAT/MAJ/MIN ALL <CR>

33) List alarms by entering: LIST ALM <CR>

34) Determine whether either of the messages ALO051 or ALO050 displays.

If either ALO051 or ALO050	Go to
displays	step 35
does not display	step 40

35) Abort Overlay ALO by entering: ****

36) Load the overlay indicated in the ALM message.

37) Obtain the status of all devices associated with the overlay.

38) Look for any disabled or busied devices. Refer to the index in NTP 297-3601-511, *Maintenance and Test Manual* for trouble clearing procedures. Go to step 40.

39) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

40) This procedure is complete.

Adjust time delay before ac restoral in an Outside Plant Module

1) The NT5C90DB rectifier assembly consists of a rectifier power shelf and two module MRP25 series rectifiers. Looking at the power shelf from the front of the OPM, to the right of the rightmost rectifier (rectifier 1) is a blank filler panel held in place by two screws. Behind this panel is a knob labeled “K1.” This knob controls the time delay (in seconds) before ac power restoral to the OPM. The K1 knob can be set at any position between 1 and 6. NTI recommends that the K1 knob be set to position 6. This adjustment can be performed at any time, by hand, and without special precautions being taken.

Note: *This procedure applies to NT8X01AC/BC OPM cabinets with NT5C90DB rectifier assemblies.*

2) This procedure is complete.

Section 4: Routine procedures

Description

Routine Procedures (RPs) are designed for routine maintenance activities such as cleaning the fan filter in a bay or rotating and updating the system tapes. All of these tasks are procedures that require periodic attention. When appropriate, recommended intervals for performing the RPs are shown in Table 4-Table 4-A: below.

Table 4-A:
Recommended intervals for routine procedures

Routine task	Interval	Number
Clean aluminum mesh or non-woven fiber fan filter	Bimonthly	RP 0503
Rotate and update system tapes	1 week	RP 0506
Clean Magnetic Tape Unit (800- or 1600-BPI tape)	1 month	RP 0512
Clean and lubricate the recorded announcement machine	1 month	RP 0518
Replace batteries on Digital Recorded Announcement (DRA) pack (NT2T85)	2 years	RP 0521
Perform Outside Plant Access Cabinet (OPAC) routine maintenance tasks	See procedure	RP 0525
Perform Outside Plant Module (OPM) routine maintenance tasks	See procedure	RP 0525
Electrical inspection of Outside Plant Module (OPM) batteries	6 month	RP 0528
Outside Plant Subscriber Module (OPSM) system test and fault identification	1 month	RP 0530
Check Outside Plant Subscriber Module (OPSM) batteries	1 month	RP 0532
Clear Outside Plant Subscriber Module (OPSM) drain holes	1 month	RP 0533
Check Outside Plant Subscriber Module (OPSM) status	6 months	RP 0534
Lubricate Outside Plant Subscriber Module (OPSM) door hinges	6 months	RP 0535
Clean Outside Plant Subscriber Module (OPSM) filter	6 months	RP 0536
Clean Outside Plant Subscriber Module (OPSM) damper exhaust filter	Bimonthly	RP 0537

Table 4-A: (Continued) **Recommended intervals for routine procedures**		
Routine task	**Interval**	**Number**
Perform Outside Plant Subscriber Module (OPSM) routine maintenance tasks	See procedure	RP 0538
Inspect Remote Switching Center (RSC-S) cooling unit filters	2 months	RP 0540
Inspect wrist strap grounding cords	each visit to cabinet	RP 0541
Replace Remote Switching Center (RSC-S) cooling unit filters	12 months	RP 0542
Test Remote Switching Center (RSC-S) power converter voltage	2 years	RP 0543
Test Star Hub converter voltages	6 months	RP 0544
Clean the media head on the Magneto-Optical Mini-Disk Unit (NT4T32BA)	6 months	RP 0552

Clean aluminum mesh or non-woven fiber fan filter

1) Grasp the fan filter handle and slowly slide the filter out.

2) Remove the excess dust and lint (vacuum or rap dirty side down).

3) Determine whether the filter is an aluminum mesh filter or a non-woven fiber filter.

If the filter	Go to
is aluminum mesh	step 4
is non-woven fiber	step 9

4) Clean the filter by flushing it with warm water from both sides.

Note: *If the filter is extremely dirty, fill a container with warm water, add a mild detergent, and move the filter about in the solution.*

5) Rinse clean and allow to dry (rap filter to remove excess water).

6) Apply an air filter enhancement formula to improve the DMS-10 air filter's dust-catching capabilities.

7) Slide filter back into position.

8) Determine whether there are additional filters to be cleaned.

If	Go to
there are additional filters to be cleaned	step 1
there are no additional filters to be cleaned	step 13

9) Do not attempt to wash this filter with soap and water or any aromatic solvent.

10) Vacuum the filter.

11) If the vacuuming is not sufficient, replace the filter with a new one.

Note: *Any of the following fan filters can be ordered by the customer or ordered as a ship loose item on the D283 or D286 spec, as shown: ED1T04-60G1, metallic mesh filter - 10M (D283); ED1T04-60G3, filter basket assembly with disposable element - 10M (D283); ED1T04-60G4, disposable filter element - 10M (D283); ED1T04-60G5, metallic mesh filter (D283); ED1T04-60G6, disposable synthetic fiber filter (D283); ED1T04-60G7, air filter assembly with disposable element (D286); ED1T04-60G8, air filter element (D286); A0344437, air filter element - SCE bay (D286)*

12) Slide the filter back into position.
Go to step 8.

13) This procedure is complete.

Rotate and update system Magneto Optical cartridges

1) Contact the office's technical support group, and make sure the office patch list is up to date for all devices.

2) Dump the office data onto the present working MO drive cartridge. (MP 1010)

Note: *The cartridges should be rotated and updated at least once a month, or weekly if the office is visited that often.*

3) Abort the overlay by entering: ****

4) Load overlay IOD by entering: OVLY IOD <CR>

5) Disable the present cartridge in the MO unit by entering: DSBL MO0 <CR>

6) Test the data on the present cartridge by entering: TEST MO0 <CR>

Note: *If any cartridge shows signs of data errors, replace the cartridge.*

7) Remove the present cartridge from the MO unit by entering: EJCT MO0 <CR>

8) Insert the cartridge to be updated into the MO drive.

9) Wait until the lights on the MO drive are no longer illuminated.

10) Enable the MO drive by entering: ENBL MO0 <CR>

11) Abort the overlay by entering: ****

12) Dump the office data onto the backup cartridge (MP 1010).

13) Abort the overlay by entering: ****

14) Contact the office's technical support group, and make sure the current office patch list is installed on the MO device.

15) Verify that the current patch list is correctly installed on all devices.

16) Load overlay UPDT by entering: OVLY UPDT <CR>

17) Verify the patches installed on each device by entering:
PKG LIST HD0 INST <CR>
PKG LIST HD1 INST <CR>
PKG LIST MO0 INST <CR>

18) The packages listed on each device should match. If the listings do not agree, contact your technical support group to correct the problem.

19) This procedure is complete.

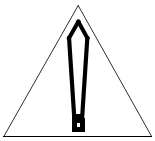
Clean a magnetic tape unit (800- or 1600-bpi tape)

Note: *This procedure is intended for use with the Cook Model 2200 800-bpi tape drive and the Control Data Corporation 1600-bpi tape drive. For more detailed information on tape drive cleaning refer to the drive manufacturers manual. The Control Data tape drive requires cleaning of the tape head, EOT/BOT sensor, hub pads, tape cleaner and air bearings every eight hours of actual tape operation.*

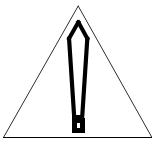
1) Determine whether the tape is an 800-bpi or 1600-bpi tape.

If the tape	Go to
is an 800-bpi tape	step 2
is a 1600-bpi tape	step 5

2) Using a lint-free cloth moistened with isopropyl alcohol, clean the capstan, tape rollers, tape guides, end-of-tape/ beginning-of-tape sensors, and tape heads.



CAUTION
Do not use unapproved cleaners such as methyl or ethyl alcohol, toluene, acetone, or trichloro-ethylene, which can damage the tape or drive.

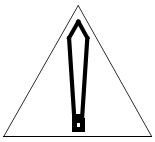


CAUTION
Use solvent only in a properly ventilated area. Avoid prolonged breathing of vapor and contact with skin or clothing. Use disposable gloves during cleaning.

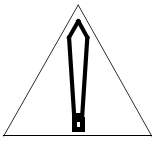
3) Brush away any tape particles that may be on the front panel.

4) Clean face, holes, and inside of tape cleaner, using a cotton swab moistened with isopropyl alcohol.
Go to step 8.

5) Clean the tape head, two air bearings, and three hub pads with a lint-free cloth moistened with isopropyl alcohol. Be sure that the foil area, guide springs, and both tape guides are cleared of any oxide or dirt build-up.



CAUTION
Do not use unapproved cleaners such as methyl or ethyl alcohol, toluene, acetone, or trichloro-ethylene, which can damage the tape or drive.



CAUTION
Use solvent only in a properly ventilated area. Avoid prolonged breathing of vapor and contact with skin or clothing. Use disposable gloves during cleaning.

Note: *If any cartridge shows signs of data errors, replace the cartridge.*

6) Brush away any dust or dirt that may accumulate on the tape drive housing, tape deck, or dust cover.

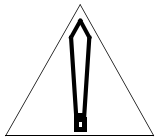
7) Remove dirt or oxide from the end-of-tape/beginning-of-tape sensor surfaces and the tape cleaner blades with a foam swab moistened with isopropyl alcohol.

8) This procedure is complete.

Clean and lubricate the recorded announcement machine

1) Pull out each of the four buttons and remove the front control panel.

2) Operate the motor switch to OFF position.



CAUTION
When the motor switch is turned to the OFF position, customers who are on the recording will be cut off and customers who call will receive a no-ring condition.

3) Pull the head mounting bars out and rotate clockwise.

4) Clean the record band and sound heads with lint-free cloth.

5) Return the head mounting bars by rotating counter-clockwise

6) Fill the applicators with silicone 550 fluid.

7) Operate the motor switch to ON position.

8) Replace the front cover on the control panel.

9) Add a few drops of Gulf Harmony 53 or Stanoil 35 to the oil fill caps on the motor assembly.

10) This procedure is complete.

Replace batteries on Digital Recorded Announcement (DRA) trunk pack (NT2T85)

1) Remove Digital Recorded Announcement Trunk pack (DRA) from PE shelf and place on nonconductive flat surface.

2) Operate position 7 of DIP Switch S1 to the OFF position.

3) Using a nonconductive flat instrument, remove battery or batteries from holder(s). Discard old battery/batteries.

Note 1: Avoid displacing spring contact any more than the minimum necessary to remove batteries.

Note 2: The NT2T85AA pack uses two batteries and the NT2T85AB pack uses one battery.

4) Using a voltmeter, check new battery or batteries to ensure that each is at a minimum of 3V.

5) If each new battery is not at least 3V, discard and replace.

6) Noting polarity (positive side up), place new battery or batteries in holder(s).

7) Operate position 7 of DIP Switch S1 to the ON position.

8) Place DRA pack back in PE shelf and record message as outlined in MP 1325.

9) This procedure is complete.

Perform Outside Plant Access Cabinet (OPAC) routine maintenance tasks

Table 0525-A
OPAC routine maintenance tasks

Maintenance item	Operation	Recommended interval
Door alarms	Open the door. Press door switch and verify that the door alarm is cancelled. ***Note:*** *There is no alarm for the side door.*	Each visit to the cabinet
Fan alarms	Remove fuses (F01-06, located in slots 8/9 of the MSP), immobilize fan blades, and then reinstall the fuses.	Each visit to the cabinet
Rectifier adjustment	Using a meter with at least .2% accuracy, measure the rectifier output voltage. OPACs equipped with Eagle-Picher batteries (CF6V50FR-S6) should be set to -52 Vdc, +/- 0.3 V. If the voltage is not within the specifications, adjust it to the correct voltage.	Each visit to the cabinet
Batteries (physical inspection)	Inspect battery terminals, connectors, floor, and shelves for evidence of moisture or corrosion. If there is evidence of moisture or corrosion, remove all battery packs from the affected shelf or floor area, clean the affected areas with a solution of baking soda and water until there is no foaming, thoroughly dry all cleaned areas, and replace battery packs in the floor or shelf storage.	Every 6 months
System ground	Check all system ground connections. Measure the ground resistance, using locally approved methods (must be $\leq$ 25 ohms).	As required by local instructions
Air filters (located in the air induction and heat exchanger roof overhangs, both front and rear of the cabinet)	Clean and replace	As often as every 2 months, but no longer than every 6 months or as required, depending on cabinet location and conditions.

Table 0525-A (Continued)
OPAC routine maintenance tasks

Maintenance item	Operation	Recommended interval
Dust	The OPAC must be vacuumed to prevent the buildup of electrostatic discharges caused by dust. Use a vacuum cleaner with an induction-wound (brushless) motor, and use plastic or rubber attachments. (Series-wound motors cause electromagnetic interference and metal attachments could cause electrical short circuits.) Battery operated vacuum cleaners may be used. Vacuum the inside of the OPAC cabinet each time the OPAC filters are inspected. Do not bump any part of the internal equipment and avoid any metal to metal contact.	Every 6 months
Intake and exhaust fans operation	Adjust the fan thermostat located on the ac compartment bulkhead in the electronics compartment to 29 ° C (85° F). Verify operation of the intake fans. Adjust the thermostat to 31 ° C (88° F) to verify operation of the exhaust fans. Verify both banks of fans turn off when the temperature falls below 29° C +/- 5 ° C (85° F).	Each visit to the cabinet
Heaters	Cool the low-temperature switch (LTS-1) located on the lower part of the bulkhead facing the ac compartment in the electronics compartment with spray coolant. Verify the heater elements turn on at +5° C +/- 2.8° C (41° F +/- 5 ° F) and turns off at +15° C +/- 2.8° C (59° F +/- 5 ° F).	12 months
Low-temperature alarm	Actuate the low-temperature alarm by spraying the sensor with coolant. The sensor turns on at 0° C (32° F), and turns off at +5° C (41° F). Verify that the alarm is operational. The low-temperature sensor is in the electronics compartment on the bulkhead facing the ac compartment, below the fan thermostat.	12 months
High-temperature alarm	Actuate the high-temperature alarm by blowing hot air (for example, from a heat gun) on the high-temperature sensor for approximately 10 to 15 seconds. The sensor is located in the ceiling of the OPAC, on the OPAC equipment side, between fans 5 and 6. The sensor turns on at 60° C (140° F).	12 months
Door hinges	Lubricate	Every 4 months or as required
Paint Finish	Brush or spray with matching polyurethane paint.	As required

Perform Outside Plant Module (OPM) routine maintenance tasks

Note: *When performing maintenance during inclement weather, an enclosed tent should be used if the OPM cabinet is opened. The Pelsue Model 6508B Series or equivalent tent with a built-in ventilator/heater port is recommended. When the tent is placed over the cabinet, normal maintenance procedures on both the main and end-access compartments can be performed.*

Table 0527-A
OPM routine maintenance tasks

Maintenance item	Operation	Recommended interval
Door alarms	Depress door switch and verify that the door alarm is cancelled.	Each visit to the cabinet
Fan alarms	Switch off one fan unit at a time and verify fan alarms at the host switch.	Each visit to the cabinet
Batteries (physical inspection)	Visually inspect batteries for acid seepage at terminals and for connector corrosion. For C&D batteries, re-torque the terminals to 25 in-lbs. For Gates-Cyclon and YUASA batteries, check the connectors for tightness, and tighten if necessary. If moisture or corrosion exists, remove all battery packs from the affected shelf and clean the affected areas with a solution of baking soda and water. Continue cleaning until there is no foaming of the cleaning solution when it is applied. Thoroughly dry all cleaned areas and replace the battery packs onto the shelf.	3 months
Batteries (electrical inspection)	This operation is performed using commands in Overlay RBCD (refer to the NTP entitled *Maintenance Diagnostic Input Manual* (297-3601-506)). Refer to RP 0528 for further instructions.	3 months
System ground	Check all system ground connections. Measure the ground resistance, using locally approved methods (must be $\leq$ 25 ohms).	3 months
Air filters	Clean and replace	6 months or as required, depending on cabinet location
Heaters	Cool the low-temperature thermostat located in the Environmental Control Unit (ECU) and verify that the heaters become warm.	12 months
Low-temperature alarms sensor	Actuate the low-temperature alarm by spraying the sensor with freon. Verify that the alarm is operational. The low-temperature sensor is in the ECU.	12 months

Table 0527-A (Continued)
OPM routine maintenance tasks

Maintenance item	Operation	Recommended interval
Door hinges	Lubricate	As required
Paint Finish	Brush or spray with DMS maple brown polyurethane paint.	As required

Electrical inspection of Outside Plant Module (OPM) batteries

Note: *Using a voltmeter with an accuracy of 0.2% or greater, measure the rectifier output voltage at the OPM site. If the voltage is not -52 Vdc (+/ -0.3), adjust the rectifier voltage as needed and balance the two currents from the two rectifiers. If the rectifier voltage is low, wait 24 hours before beginning this procedure.*

1) Be sure that no power failures have occurred at the OPM site within the last 24 hours. If an AC failure longer than 5 minutes occurs at any time during this procedure, start over at Step 1.

2) Load Overlay RBCD by entering: OVLY RBCD <CR>

3) Place battery string pair 0-4 on the charge bus for at least 6 hours by entering: BSPR CHRG *site* LCE *b pr* <CR>

4) Open circuit battery string pair 0-4 for at least 1 hour by entering: BSPR OPEN *site* LCE *b pr* <CR>

5) Return battery string pair 0-4 to load bus by entering: BSPR LOAD *site* LCE *b pr* <CR>

6) Place battery string pair 1-5 on the charge bus for at least 6 hours by entering: BSPR CHRG *site* LCE *b pr* <CR>

7) Open circuit battery string pair 1-5 and 0-4 for at least 6 hours by entering: BSPR OPEN *site* LCE *b pr* <CR>

8) Using a voltmeter with an accuracy of 0.2% or greater, measure the voltage of battery strings 0, 1, 4, and 5 at the OPM site

Note: *Perform the voltage measurement at the battery terminals (TB5) located on rear wall, not on the NT8X02 BCC card.*

9) Determine whether the the voltage of any string is less than 50.4 Vdc (80% capacity).

If the voltage	Go to
is less than 50.4 Vdc (80% capacity)	step 10
is not less than 50.4 Vdc (80% capacity)	step 17

10) The battery string should be measured one battery pack at a time.

Note: *Nortel suggests using a Midtronics 2600 Battery Tester to measure each battery pack. This meter will show what percentage capacity remains in each battery. The suggested test gear (Midtronics 2600) is not absolutely required. Without it, the entire battery strings will have to be replaced, instead of single battery packs.*

11) Determine whether any battery packs in the string of four measure less than 80% capacity.

If any battery packs	Go to
measure less than 50.4 Vdc (80% capacity)	step 12
do not measure less than 50.4 Vdc (80% capacity)	step 17

Note: *If the Midtronics 2600 Battery Tester is not available, replace the entire battery string if it measures less than -50.4 Vdc (80% capacity).*

12) Determine whether more than two battery packs in the string measure less than 80% capacity.

If more than two battery packs	Go to
measure less than 50.4 Vdc (80% capacity)	step 16
does not measure less than 50.4 Vdc (80% capacity)	step 13

13) Replace the battery packs that measure less than 80% capacity.

Note: *For disposal of Yuasa batteries that have failed, contact the NTI Regional Warranty Manager.*

14) Determine whether the remaining batteries in the string measure 90% capacity or better.

If the remaining batteries	Go to
measure 90% capacity or better	step 17
do not measure 90% capacity or better	step 15

15) Replace the remaining batteries in the string. This procedure is complete.

Note: *For disposal of Yuasa batteries that have failed, contact the NTI Regional Warranty Manager.*

Go to step 17.

16) Replace the entire battery string.

Note: *For disposal of Yuasa batteries that have failed, contact the NTI Regional Warranty Manager.*

17) Place battery string pairs 0-4 and 1-5 on the load bus by entering: BSPR LOAD *site* LCE *b pr* <CR>

18) Repeat Steps 1 through 17 on battery string pairs 2-6 and 3-7.

19) This procedure is complete.

Outside Plant Subscriber Module (OPSM) system test and fault identification

1) At the OPSM, press the (TEST) switch on the faceplate of the OPSM Cabinet Controller pack (NT9Y00)

Note: *This routine procedure should be performed once every month.*

2) Determine whether the LED display panel indicates **“**.8**”**.

If the LED display panel	Go to
indicates **“**.8**”**	step 3
does not indicate **“**.8**”**	MP 1341

3) Determine whether each of the LED display's 7 segments lit sequentially to indicate the start of a test series.

If the LED display segments	Go to
lit sequentially	step 4
did not light sequentially	MP 1341

4) Determine whether the LED display shows each of the codes, in sequence, listed in Table RP 0530-A.

If the LED display	Go to
shows the codes in the table	step 5
do not show the codes in the table	MP 1341

5) Determine whether the (STATUS) LED lit after each separate test.

If the LED	Go to
lit after each test	step 7
did not light after each test	step 6

6) Determine whether more than 6 minutes elapsed since the beginning of the last separate test.

If the LED	Go to
lit after each test	MP 1341
did not light after each test	step 5

7) Determine whether after the NT9Y00 completes all tests, the (STATUS) LEDs indicate a fault by being lit (red).

If the LEDs	Go to
are lit	step 8
are not lit	step 12

8) Determine whether the OPSM failed all tests.

If the OPSM	Go to
failed all tests	MP 1341
did not fail all tests	step 9

9) Press the (STAT) switch and record the fault code displayed.

10) Repeat Step 9 until a "-" is displayed.

11) Clear OPSM faults in accordance with TP 7078.

12) This procedure is complete.

Table 4-B:
OPSM cabinet controller display panel codes

Code	Test	Open OPSM
0	All satisfactory	Yes
1	Right Circulation Fan	No
2	Center Circulation Fan	Yes
3	Left Circulation Fan	Yes
4	Exhaust Fan	Yes
5	Right Heat Exchanger Fans	No
6	Left Heat Exchanger Fans	No
7	A/D Converter	Yes
8	Equipment Heater	Yes
9	Battery Heater	Yes
A	Damper	Yes
b	Lower Equipment Temperature Sensor	Yes
C	Upper Equipment Temperature Sensor	Yes
d	Battery Temperature Sensor	Yes
E	Battery String #1	Yes
F	Battery String #2	Yes
G	Battery String #3	Yes
H	Over Temperature	Yes
J	Under Temperature	Yes
-	End	Yes

Check Outside Plant Subscriber Module (OPSM) batteries

1) Inspect all batteries for corrosion and leakage.

Note: *This routine procedure should be performed once every month.*

2) Determine whether the batteries are in good physical condition.

If the batteries	Go to
are in good physical condition	step 3
are not in good physical condition	step 4

3) Inspect all battery trays for stains.
Go to step 5.

4) Remove faulty battery by:
(a) Disconnecting appropriate circuit breaker on Power and Maintenance Module (PMM)
(b) Disconnecting leads of battery and insulating them temporarily
(c) Removing battery.
Go to step 3.

5) Determine whether the battery trays are in good condition.

If the batteries	Go to
are in good physical condition	step 6
are not in good physical condition	step 12

6) Replace batteries as necessary.

7) Reconnect leads as necessary.

8) Check that all cable connections are secure.

9) Tighten any loose connections.

10) Disconnect the three battery circuit breakers on Power and Maintenance Module (PMM).

11) Measure each of the three battery strings with a meter (at least 2% accuracy), at the battery string.

12) Determine whether the voltage measurement is greater than -50.5 Vdc.

If the voltage measurement	Go to
is greater than -50.5 Vdc.	step 13
is not greater than -50.5 Vdc.	TP 7086

13) Reconnect any disconnected circuit breakers.

14) Perform RP 530.

15) This procedure is complete.

Clear Outside Plant Subscriber Module (OPSM) drain holes

1) Insert a pipe cleaner in first hole and withdraw it.

> ***Note 1:*** This routine procedure should be performed once every month.
>
> ***Note 2:*** Eight drainage holes are located in the base of the OPSM: four holes are at the front and four are at the rear. The holes are located on either side of the fork lift channels at the bottom edge.

2) Repeat Step 1 until all debris is removed from the hole.

3) Repeat Steps 1 and 2 for the remaining seven holes.

4) This procedure is complete.

Check Outside Plant Subscriber Module (OPSM) status

1) Log in at the Host switch, using the Maintenance password (GP 0100).

Note: *This routine procedure should be performed once every six months.*

2) Enter: LIST TRB <CR>

3) Determine whether any troubles are listed for the OPSM.

If troubles	Go to
are listed for the OPSM	step 5
are not listed for the OPSM	step 4

4) Log off by entering: LOGO <CR>
Go to step 13.

5) Load DED overlay by entering: OVLY DED <CR>, then enter: STAT RSLM *site* RSE *b s* <CR>. Note Trouble Messages, then abort overlay and log off by entering: **** LOGO <CR>

6) Take replacement hardware or test procedure(s), or both, appropriate for the Trouble Message(s) to that OPSM.

7) Determine whether any LED on the OPSM cabinet Controller pack (NT9Y00) is lit.

If an LED	Go to
is lit	step 8
is not lit	TP 7078

8) Determine whether the FAILED LED on the OPSM cabinet Controller pack (NT9Y00) is lit.

If the FAILED LED	Go to
is lit	step 9
is not lit	step 10

9) Replace the OPSM Cabinet Controller pack (NT9Y00).
Go to MP 1341.

10) Determine whether the STATUS LED is green.

If the STATUS LED	Go to
is green	step 13
is not green	step 11

11) Press the “STAT” switch and record the fault code displayed.

12) Repeat Step 11 until a “-” is displayed.
Go to RP 0530.

13) Press the “STAT” switch and verify that no faults are set. A “0" should be shown on the LED display.

14) Determine whether the MAJ LED or CAT LED on the Frame Supervisory Panel is lit.

If the MAJ LED or CAT LED	Go to
is lit	step 16
is not lit	step 15

15) The OPSM is fault free.
Go to RP 0530.

16) If MAJ LED on FSP is lit, check to see if the Cabinet Controller is fully seated, and the microswitch is aligned properly to meet the rear edge of the card.

17) Refer to maintenance terminal printouts and the Output Message Manual (OMM) to clear fault.

18) This procedure is complete.

Lubricate Outside Plant Subscriber Module (OPSM) door hinges

1) Open the front door of the OPSM cabinet

Note: *This routine procedure should be performed once every month.*

2) Apply two drops of light lubricating oil to each sliding surface of the door hinges.

3) Close and open the door several times to allow the oil to penetrate.

4) Wipe off excess oil and close the door.

5) Repeat Steps 1 through 4 for both the rear door and the side door.

6) This procedure is complete.

Clean Outside Plant Subscriber Module (OPSM) filter

1) Open the front door of the OPSM cabinet

Note: *This routine procedure should be performed once every month.*

2) Remove the filter unit.

3) Clean the filter unit (RP 0503).

4) Reinsert filter unit.

5) Close doors of cabinet.

6) This procedure is complete.

Clean Outside Plant Subscriber Module (OPSM) damper exhaust filter

1) Remove the two hex nuts and their washers.
2) Clean the filter unit (RP 0503).
3) Replace the hex nuts and washers.
4) This procedure is complete.

Perform Outside Plant Subscriber Module (OPSM) routine maintenance tasks

Note: *When performing maintenance during inclement weather, an enclosed tent should be used if the OPSM cabinet is opened. The Pelsue Model 6508B Series or equivalent tent with a built-in ventilator/heater port is recommended. When the tent is placed over the cabinet, normal maintenance procedures on both the main and end-access compartments can be performed.*

Table 0538-A
OPSM routine maintenance tasks

Maintenance item	Operation	Recommended interval
Cabinet control and alarm	Press the 9Y00 test button (keep pressed for approximately 1 second). During the test, the back and battery doors must be closed. If the status LED is red at the end of the test, press the status button to display faults. The test lasts approximately 15 minutes.	Each visit to the cabinet
Door alarms	Depress, or pull out to lock position, each door switch and verify that the door alarm is cancelled.	Each visit to the cabinet
High-temperature alarm sensor	Place the LV disc switch (on the PMM) in the DSBL position. Activate the high- temperature alarm (9Y00 status display H) by placing a trouble light by the sensor for 5 minutes. ***Note:*** *The test will take one minute to set and one minute to clear.*	12 months
Low-temperature alarm sensor	Activate low temperature alarm (9Y00 status display J) by shorting pins 20 and 21 on connector J5 on the Power Maintenance Module. ***Note:*** *The test will take one minute to set and one minute to clear.*	12 months
System ground	Check all system ground connections.	As required by local instructions.
Dust	Vacuum accumulated dust particles from the OPSM cabinet.	6 months, more frequently if required by local conditions
Fan filters	Clean and inspect	Bimonthly
Fan filters	Replace	12 months
Battery connection	Visually inspect and manually check each lug for tightness.	12 months

Table 0538-A (Continued) **OPSM routine maintenance tasks**		
Maintenance item	**Operation**	**Recommended interval**
Sensor testing	Heat or cool relevant sensor according to information in Table 0538-B. ***Note:*** *The use of Freon spray will result in sensor damage*	12 months

Table 0538-B **Device activation points**			
Device	**On**	**Off**	**Sensor Location**
Circulation fans	50° C	45° C	Top
Exhaust fan	45° C	40° C	Top
Damper	43° C	36° C	Top
Cabinet heater	30° C	35° C	Bottom
Battery heater	0° C	5° C	Side

Inspect Remote Switching Center (RSC-S) cooling unit filters

WARNING: Do not reach in more than 6 inches beyond the upper lip of the air-intake grille. If you do, your fingers may contact the rotating blades of the cooling unit fans.

1) On the Modular Supervisory Panel (MSP), set the FAN ALARM OVERRIDE switch to the ON position.

2) If frame trim panels overlap the side edges of the intake grille, go to step 3. If frame trim panels do not overlap the side edges of the intake grille, go to step 5.

3) Remove the frame trim panels.

4) Grip both sides of the grille and pull it towards you to detach the grille from the magnetic catches. Go to step 6.

5) Gently pry upper half of the grille away from the frame to remove the grille.

6) Go to a work area outside of the room containing the switching system and clean the grille using a dust cloth or a vacuum cleaner.

7) If the filter surfaces appear dirty, go to step 11. If the filter surfaces appear clean, go to step 8.

8) Shine a trouble light through the filter. If the light is visible through the filter, go to step 9. If the light is not visible through the filter, go to step 11.

9) Reinstall the filter in the grille.

10) Reinstall the filter and grille assembly in the frame. Go to step 21.

11) If the filter part number is A0344437, go to step 12. If the filter part number is P0558302, go to step 15. If the filter part number is P0623539, go to step 18.

12) Get the replacement filter material.

13) Trim a new filter to fit around the magnetic latches using the old filter as a guide.

14) Install the filter and grille on the frame. Go to step 21.

15) At an area outside the room containing the switching system, vacuum the filter.

16) Install the filter and grille on the frame. Go to step 21.

17) At an area outside the room containing the switching system, remove excess dirt and lint by rapping the dirty side down, or by vacuuming.

18) Wash the filter in soap and water.

19) Rinse the filter and allow it to dry thoroughly before reinstalling it.

20) Install the filter and grille on the frame. Go to step 21.

21) On the front of the MSP, set the FAN ALARM OVERRIDE switch to OFF.

22) This procedure is complete.

Inspect wrist strap grounding cords

1) Obtain an ohmmeter.

2) Detach the grounding cord from the wrist strap.

3) Measure the resistance between opposite ends of the grounding cord with the ohmmeter. If the resistance is between 800 Kohms and 1200 Kohms, go to step 4. If the resistance is not between 800 Kohms and 1200 Kohms, go to step 5.

4) You may use the grounding cord and wrist strap assembly. Assemble the wrist strap to the grounding cord. Go to step 6.

5) Discard the entire assembly. DO NOT ATTEMPT TO USE IT.

> **WARNING: *Risk of Electrocution***: The grounding cord is safe to use only if its resistance measures higher than 800 Kohms. A lower resistance exposes the wearer to the risk of electrocution if equipment short-circuits while the wrist strap is being worn.
>
> **CAUTION: *Damage to electronic equipment***: A grounding cord that has a resistance higher than 1200 Kohms is unable to conduct static charges to ground adequately. It will not protect sensitive electronic equipment against build-ups of potentially damaging static charges.

6) This procedure is complete.

Replace Remote Switching Center (RSC-S) cooling unit filters

1) On the Modular Supervisory Panel (MSP), set the FAN ALARM OVERRIDE switch to the ON position.

2) If the frame trim panels overlap the side edges of the intake grille, go to Step 3. If the frame trim panels do not overlap the side edges of the intake grille, go to Step 5.

3) Remove the frame trim panels.

4) Grip both sides of the grille and pull it towards you to detach the grille from the magnetic catches. Go to Step 6.

5) Gently pry the upper half of the grille away from the frame to remove the grille.

6) Go to a work area outside the room containing the switching system and remove the filter from the grille.

7) If necessary, trim the new filter to fit around the magnetic latches using the old filter as a pattern.

8) Install the grille and the new filter onto the cooling unit.

9) On the front of the MSP, set the FAN ALARM OVERRIDE switch to OFF.

10) This procedure is complete.

Test Remote Switching Center (RSC-S) power converter voltage

1) Obtain a dc voltmeter.

2) Measure the voltage at the test points on the faceplates of all NTMX72AA power converters in the RSC-S frame.

3) The voltages must be within 2% of the nominal values printed on the NTMX72AA faceplate. Compare the voltages measured in Step 2 with the acceptable voltage ranges given below:

Test point voltage	Acceptable range
+12 V	+11.76 to +12.24 V
-12 V	-12.24 V to -11.76 V
+5 V	+4.9 V to +5.1 V
-5V	-5.1 V to -4.9 V

If the test point voltages are within the acceptable range, go to Step 5. If the test point voltages are not within the acceptable range, go to Step 4.

4) Replace the NTMX72AA power converter as directed in MP 1343. On returning to this procedure, go to Step 5.

5) This procedure is complete.

Test Star Hub converter voltages

1) Obtain a dc voltmeter.

2) Measure the voltage at the test points on the faceplates of both NT6X53 power converters in the Star control shelf.

3) The voltages must be within 2 percent of the nominal values printed on the NT6X53 power converters in the Star Control shelf. Compare the voltages measured with the acceptable voltage ranges shown in the table located at the end of this procedure and determine whether the test point voltages are within the acceptable range.

If the test point voltages	Go to
are within the acceptable range	step 5
are not within the acceptable range	step 4

4) Replace the NT6X53 power converter (MP 1580).

5) This procedure is complete.

Test point voltage	
Voltage	**Acceptable range**
+5.25 V	+5.00 V to + 5.50 V
+15 V	+14.25 V to + 15.75 V

Clean the media head on the Magneto-Optical Mini-Disk Unit (NT4T32BA)

Prerequisites:

- Have on hand the head cleaning kit (CPC A0734395)
- Check the cleaning brush to make sure it is intact and operable by opening the shutter of the head cleaner. If the tip of the brush is open, use a new head cleaner.

1 Remove the media cartridge (optical disk) from the drive by pressing the Eject button on the drive. (See ***Note 1***.)

2 Insert the head cleaner into the drive.

3 The head cleaner is automatically loaded and the cleaning process begins. (See ***Note 2***.)

4 When the cleaning is complete, the head cleaner is automatically unloaded.

5 Remove the head cleaner from the drive by pressing the Eject button on the drive.

6 Re-insert the media cartridge.

AND

****
****

Note1:
If the drive power is off, the media cartridge will not eject. Power on the drive and eject the media cartridge to continue with this procedure.

Note 2:
Cleaning time is less than 15 s.

Section 5: Maintenance procedures

Description

Maintenance Procedures (MPs) are performed by the craftsperson as a part of proper DMS-10 maintenance. However, unlike Routine Procedures, they are not performed regularly and, therefore, do not have recommended intervals assigned to them. The procedures include:

- software maintenance procedures
- hardware maintenance procedures
- test procedures

500-Series System reload (SYSLOAD) procedure

Note 1: THE SYSTEM RELOAD PROCEDURE MUST BE PERFORMED BY PERSONNEL THOROUGHLY FAMILIAR WITH DMS-10 OPERATION AND MAINTENANCE.

Note 2: A SYSLOAD causes a complete service interruption for several minutes. For this reason, a SYSLOAD should be performed during a low traffic period.

Note 3: A Split-Core Reload (MP 1037) will accomplish many of the same goals as a SYSLOAD, and will result in a much shorter service interruption. If you are not certain that a SYSLOAD is required, contact Nortel or your next level of support for assistance.

Note 4: The DMS-10 should be equipped with two maintenance terminals; one terminal should be configured on CORE 0 and the other terminal should be configured on CORE 1.

Note 5: This procedure documents how to perform a planned SYSLOAD under normal conditions. If certain steps cannot be completed successfully, a fault condition may exist that could interfere with proper recovery after the SYSLOAD. In this case, **do not proceed with this procedure**. Contact Nortel or your next level of support for assistance.

1) Read the above notes carefully. Do not proceed until you have met all applicable requirements.

2) Using procedure MP 1010, perform an equipment data dump to *all* devices. If any device cannot be dumped successfully, determine the cause of the problem and resolve it before continuing with this procedure. *Failure to dump successfully to all devices prior to initiating a SYSLOAD may result in the loss of office or billing (AMA) data.*

3) Load overlay IOD and disable the disk subsystem by entering the command DSBL IOI IMED. Ensure that the response IOD001 is received before continuing with this procedure. *Failure to disable the disk subsystem prior to initiating a SYSLOAD may result in the loss of office or billing (AMA) data.*

4) Load overlay CED and enter the command SYSL. The system will prepare for the SYSLOAD, output any errors, print a warning message, and ask you to confirm your input. Respond affirmatively to initiate the SYSLOAD, or negatively to cancel the SYSLOAD request and back out of this procedure.

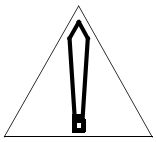
If your answer is	Go to
Y	step 7
N	step 5

5) Load overlay IOD and enable the disk subsystem by entering the command ENBL IOI.

6) STOP. This procedure is complete.

7) The SYSLOAD has now been initiated. The hexadecimal display panel on one of the System Processor packs (NT3T98) should display a series of 3-digit codes, indicating the progress of the SYSLOAD. An individual code may be displayed for a fraction of a second or several minutes, depending on the activity it represents. In particular, the codes 510 and 515 may each be displayed for several minutes. Consult the Output Message Manual for the meanings of individual codes.

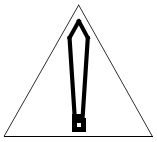
If the hex display on the active NT3T98	Go to
is displaying a normal progression of 3-digit codes	step 12
is displaying nothing	step 8
appears to be “stuck” at an invalid code	step 8



CAUTION
The following step is not executed during an ordinary execution of this maintenance procedure.

8) Simultaneously operate the Enable and Reload switches on the Alarm Display Panel of the Alarm and Ringing Module Shelf (J0T72B).

If the hex display on the CORE 0 NT3T98	Go to
is displaying a normal progression of 3-digit codes	step 12
is displaying nothing	step 9
appears to be “stuck” at an invalid code	step 9



CAUTION
The following step is not executed during an ordinary execution of this maintenance procedure.

9) Simultaneously operate the Enable and Changeover switches on the Alarm Display Panel of the Alarm and Ringing Module Shelf (J0T72B).

If the hex display on the CORE 1 NT3T98	Go to
is displaying a normal progression of 3-digit codes	step 12
is displaying nothing	step 10
appears to be “stuck” at an invalid code	step 10

10) Contact technical support immediately.

11) STOP. This procedure has failed. Support personnel will instruct you on how to restore service.

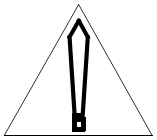
12) Wait for the message SYS000 to be printed to one or more maintenance terminals. Note: under some circumstances, the TTY ports associated with one or more maintenance terminals will be disabled after a SYSLOAD. To ensure that you receive the SYS000 message, you should view the terminal connected to the Maintenance Interface port on CORE 0 and the terminal connected to the Maintenance Interface port on CORE 1.

Depending on the patch level of the system, 15 minutes or more may elapse between entering the SYSL command and receiving the SYS000 message. Be sure that you have waited long enough before proceeding. In particular, if the green activity light on one of the NT8T90 SCSI Bus I/O and Disk Drive packs or the NT4T32 Magneto-Optical Drive is flashing rapidly, the SYSLOAD is still in progress.

If SYS000	Go to
is displayed	step 13
is not displayed	step 10

13) Wait for the message INI000 to be printed to one or more maintenance terminals. Note: under some circumstances, the TTY ports associated with one or more maintenance terminals will be disabled after a SYSLOAD or initialization. To ensure that you receive the INI000 message, you should view the terminal connected to the Maintenance Interface port on CORE 0 and the terminal connected to the Maintenance Interface port on CORE 1.

If INI000	Go to
is displaying	step 15
is not displaying	step 14



CAUTION
The following step is not executed during an ordinary execution of this maintenance procedure.

14) Check the system for dial tone. In rare cases, both Maintenance Interface ports will be disabled after a SYSLOAD or initialization. It is possible that service has been restored even though no output has been received. Go to step 10.

15) Check the system for dial tone.

If dial tone	Go to
is present	step 16
is not present	step 10

16) If a CCD100 or a CCD001 message was not received, use overlay CCTB to load Custom Calling Data into system memory.

17) Evaluate and correct system faults and alarms (GP 0123). Use the resident command LIST TRB to list problems in the office. Load overlay ALO and use the command LIST ALM to list alarms in the office. Contact technical support if necessary.

18) Refer to the TTY printouts and the *Output Message Manual* to determine whether any further actions are necessary. If so, take these actions before proceeding to the next step.

19) This procedure is complete.

Perform 500-Series IOI device equipment data dump procedure

Note 1: The purpose of this procedure is to ensure that IOI devices (HD0, HD1, and MO0) are properly updated with all data necessary to allow a smooth recovery in case of a SYSLOAD (MP 1000) or Split-Core Reload (MP 1037). Necessary data includes office data, custom calling data, billing data, logs, and patches.

Note 2: It is recommended that equipment data dumps be performed on a daily basis to guard against data loss in the event of an unplanned SYSLOAD. If desired, an automatic daily EDD can be scheduled via the CHG OVLY prompting sequence in overlay CNFG.

1) Load overlay IOD by entering OVLY IOD at the # prompt.

2) Ensure that the IOI device(s) to be dumped are in-service by entering the command ENBL IOI at the > prompt. Wait for the response to this command to be output.

If the response begins with	Go to
IOD001	step 4
something else	step 3

3) Follow the procedure suggested by the error message you received to resolve any problems. Performing the command STAT IOI to get more information on the status of all IOI devices might also be helpful. Consult the *Output Message Manual* for further instructions. If still unable to resolve problems, contact next level of support. When problems are resolved, proceed to step 4.

4) Abort overlay IOD and load overlay UPDT by entering **** OVLY UPDT.

5) To update data on all IOI devices (recommended), enter the command DUMP ALL. To update data on a single device (for example, when updating multiple magneto-optical disks in a single session), enter the command DUMP *device* where *device* is HD0, HD1, or MO0.

6) A number of messages will be output during the DUMP. If necessary, consult the *Output Message Manual* to verify that no errors have been reported. If errors are reported, take the recommended actions to resolve them.

Note: *After overlay UPDT finishes dumping office data, it will automatically abort itself and schedule overlay CCTB to dump custom calling data. At this time, the # prompt will be displayed. Enter <CR> to put the TTY into output mode, so that the resulting CCD messages are displayed. The dump is not complete until the message CCD001 is observed*

7) If you wish to update additional magneto-optical disks at this time, go to step 9. Otherwise, go to step 8.

8) STOP. This procedure is complete.

9) Load overlay IOD by entering **** OVLY IOD.

10) Disable the magneto-optical disk MO0 using the command DSBL MO0. Wait for the response to this command to be output.

If the response is	Go to
IOD001	step 14
IOD875	step 11

11) Disable the magneto-optical disk MO0 using the command DSBL MO0 IMED.

12) Enable the hard disk HD0 using the command ENBL HD0.

13) Enable the hard disk HD1 using the command ENBL HD1.

14) Eject the magneto-optical (MO) disk from the NT4T32 MO Disk Drive by using the command EJCT MO0. Physically remove the magneto-optical disk from the NT4T32 MO drive and put it aside.

15) Verify that the next MO disk to be updated is NOT write-protected. There is a write-protect sliding switch on one corner of the disk. This sliding switch should be positioned such that it blocks the write-protect "hole" in the disk. Do not proceed to the next step until the next MO disk to be updated is NOT write-protected. The DMS-10 disk subsystem does not support write-protected media.

16) Insert the next MO disk to be updated into the NT4T32 MO disk drive. Wait until the activity light on the NT4T32 MO disk drive ceases to flash (approximately five seconds) before proceeding.

17) Go to step 2.

Load custom calling data to a 500-Series IOI device

1) Determine which IOI device is active by entering: STAT IOI <CR>

2) Load Overlay CCTB by entering: OVLY CCTB <CR>

3) Load custom calling data by entering: LOAD (device) (TN) <CR>

   Note 1: The data may be loaded by physical terminal number. If TN is not entered, the data has been loaded by directory number.

   Note 2: CCD001 prints out when custom calling data has loaded successfully. If CCD001 does not appear, refer to the *Output Message Manual*.

4) This procedure is complete.

Switch line to standby circuit

1) Load Overlay STBL by entering: OVLY STBL <CR>

2) Switch line circuit by entering: SWCH LINE PE *b s p u* <CR>

3) Restore line circuit by entering: RSTR LINE PE *b s p u* <CR>

4) Determine whether the message, SBL001 displays.

If SBL001	Go to
displays	step 6
does not display	step 5

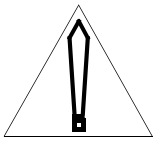
5) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

6) This procedure is complete.

Disk formatting procedure

1) Load overlay IOD by entering **** OVLY IOD <CR>. Ensure the device to be formatted is disabled by entering DSBL *device* <CR>, where *device* is HD0, HD1, or MO0.

2) Format the 500-Series Generic disk by entering: FRMT *device* <CR>



CAUTION
This command destroys all data on the disk or tape; do not leave a device that is formatting unattended. If the switch initializes during this procedure, formatting stops and the device is left only partially formatted. This command cannot be aborted by the user.

3) Load overlay IOD by entering **** OVLY IOD <CR>. Perform a BKUP to the newly formatted device by entering BKUP *source device destination device* <CR>, where *destination device* is the newly formatted device, and *source device* is HD0, HD1, or MO0. Wait for the BKUP command to complete before proceeding.

4) Load overlay IOD by entering **** OVLY IOD <CR>. Test the newly formatted device by entering TEST *device* <CR>. Wait for the TEST command to complete before proceeding. If any faults are indicated, refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

5) Load overlay IOD by entering **** OVLY IOD <CR>. Enable the newly formatted device by entering ENBL *device* <CR>.

6) This procedure is complete.

500-Series Split-Core Reload procedure

Note 1: THE SPLIT-Core Reload PROCEDURE MUST BE PERFORMED BY PERSONNEL THOROUGHLY FAMILIAR WITH DMS-10 OPERATION AND MAINTENANCE.

Note 2: The Split-Core Reload procedure should not be used to perform a software generic upgrade. Specific Installation Methods (IM) are used for generic upgrades. The following requirements must be met before this procedure is performed:

- If the DMS-10 system is equipped with a magneto optical drive, it is recommended that at least two System Data cartridges for the current software generic and issue are on site.
- An *Output Message Manual* for the current software generic must be on site.

Note 3: Regardless of the reason for the Split-Core Reload procedure being performed, the following apply:

- The Split-Core Reload procedure should be run only during low traffic periods.
- Although either CPU can be used, this procedure follows the NTI recommendation that the Split-Core Reload procedure should be performed on CPU 1.
- The DMS-10 should be equipped with two maintenance terminals; one terminal should be configured on CPU 0 and the other terminal should be configured on CPU 1.
- Performing this procedure with only one maintenance terminal is *not* recommended. If the single-terminal method is attempted, the craftsperson must be prepared to move the TTY cable physically from the Maintenance Interface port on CPU 0 to the Maintenance Interface port on CPU 1 at various times during the procedure.

Note 1: TTY 0 is always assigned on CPU 0 and TTY 1 is always assigned on CPU 1. If only one TTY is equipped, the baud rate and option plug settings on the Maintenance Interface packs for TTY 0 and TTY 1 must be identical and must match the requirements of the maintenance terminal.

Note 2: This procedure documents how to perform a Split-Core Reload under normal conditions. If certain steps cannot be completed successfully, a fault condition may exist that could interfere with proper recovery. In this case, **do not proceed with this procedure**. Contact Nortel or your next level of support for assistance.

DO NOT ATTEMPT TO PERFORM THIS PROCEDURE UNLESS ALL OF THE ABOVE APPLICABLE REQUIREMENTS HAVE BEEN MET.

1) Perform System Fault Assessment (GP 0123)

2) Determine whether all alarms, troubles (TRB), and faults are cleared.

If all alarms, troubles, and faults	Go to
are cleared	step 3
are not cleared	GP 0123

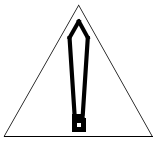
3) Load Overlay NED by entering: OVLY NED <CR>

4) Perform one cycle of NED testing by entering: TEST ALL <CR>

5) Clear all network faults by performing the appropriate maintenance or test procedures.

6) Determine whether all network problems are cleared.

If all network problems	Go to
are cleared	step 7
are not cleared	step 5



CAUTION
Do not continue with this procedure unless specially advised by a Nortel representative that it is possible to do so with the alarm(s) uncleared. If a decision is made to continue, make a record of the alarms so that they can be resolved later.

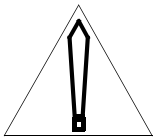
7) Abort Overlay NED and load Overlay DED by entering : **** OVLY DED <CR>

8) Perform one complete test cycle of DED by entering: TEST ALL <CR>

9) Clear all digital equipment faults by performing the appropriate maintenance or test procedures.

10) Determine whether all digital equipment problems are cleared.

If all digital equipment problems	Go to
are cleared	step 11
are not cleared	step 9



CAUTION
Do not continue with this procedure unless specially advised by a Nortel representative that it is possible to do so with the alarm(s) uncleared. If a decision is made to continue, make a record of the alarms so that they can be resolved later.

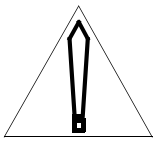
11) Abort Overlay DED and load Overlay SED by entering : **** OVLY SED <CR>

12) Perform one cycle of SED testing by entering: TEST ALL <CR>

13) Clear all service equipment problems by performing the appropriate maintenance procedure.

14) Determine whether all service equipment problems are cleared.

If all service equipment problems	Go to
are cleared	step 15
are not cleared	step 13



CAUTION
Do not continue with this procedure unless specially advised by a Nortel representative that it is possible to do so with the alarm(s) uncleared. If a decision is made to continue, make a record of the alarms so that they can be resolved later.

15) Abort Overlay SED and load Overlay UPDT, by entering: ****OVLY UPDT <CR>

16) Using procedure MP 1010, perform an equipment data dump to *all* devices. If any device cannot be dumped successfully, determine the cause of the problem and resolve it before continuing with this procedure.

Failure to dump successfully to all devices prior to initiating a Split-Core Reload may result in the loss of office or billing (AMA) data.

17) Determine whether the dump was successful.

If the dump	Go to
was successful	step 18
was not successful	step 59

18) Determine whether a clean dump of custom calling data has been performed.

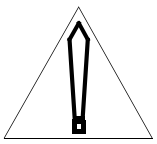
If a clean dump	Go to
has been performed	step 19
has not been performed	step 59

19) Abort current overlay and load CED overlay by entering: **** OVLY CED <CR>

20) Perform a complete core test by entering: TEST ALL <CR>

21) Determine whether any control equipment failures or error messages exist.

If any failures or error messages	Go to
exist	step 22
do not exist	step 23



CAUTION
All control equipment problems must be corrected before this procedure can be continued; otherwise, switch performance may be severely degraded.

22) Clear all control equipment problems by performing the appropriate maintenance procedures. Go to step 23.

23) Take the appropriate steps to place the switch in the state shown in Table 1037-A, by entering the commands, STAT CORE <CR>, SWCH CORE <CR> (if necessary), STAT CLK <CR>, and SWCH CLK <CR> (if necessary).

24) Determine whether the switch is in the states shown in Table 1037-A.

If the switch	Go to
is in the states shown	step 26
is not in the states shown	step 25

25) Do not continue until the state of the switch matches exactly that shown in Table 1037-A. Go to step 23.

26) Abort Overlay CED and load Overlay IOD by entering: **** OVLY IOD <CR>

27) Disable any Serial Data Interface (SDI), Dual Serial Data Interface (DSDI), Dual Integrated Modem, or Maintenance Interface pack provisioned on the inactive core by entering the commands STAT TTY <CR>, DSBL TTY n <CR>, STAT SMDI <CR>, and DSBL SMDI n <CR>.

Note 1: The normal location of a DSDI or Maintenance Interface pack is CE-3, shelves 2 and 3.

Note 2: If an SDI, DSDI, Maintenance Interface, or Dual Integrated Modem pack provisioned as a part of the inactive core is not disabled, the Split-Core Reload procedure will be aborted automatically (at a later step) by overlay CED.

28) Disable IOI shelf by entering the commands, STAT IOI <CR> and DSBL IOI IMED <CR>

29) Abort Overlay IOD and load Overlay CED by entering: ****OVLY CED <CR>

30) Obtain the status of the Core by entering: STAT CORE <CR>

31) Determine whether the switch is in the states shown in Table 1037-A.

If the switch	Go to
is in the states shown	step 33
is not in the states shown	step 32

32) Do not continue until the state of the switch matches exactly that shown in Table 1037-A. Go to step 33.

33) Initiate the Split-Core Reload by entering SPLD <CR>. The system will ask you to confirm your input. Respond affirmatively to initiate the Split-Core Reload.

34) Determine whether the following message displays:

IDLE CORE NOW SPLIT FROM THE CALL PROCESSING SYSTEM

IDLE CORE LOADING (SEE ICP MESSAGES FOR LOADING STATUS)

If the message	Go to
displays	step 35
does not display	step 58

35) Abort overlay CED by entering ****.

36) When the # prompt is displayed, enter <CR> to put the TTY into output mode. This will enable the ICP messages to be displayed.

37) Monitor the TTY output for a series of ICP messages. The first several messages will be similar to the following:

```
ICP001 HEX 201 CPU 1 BASE THUR  20/06/02  22:31:36
ICP001 HEX 202 CPU 1 BASE THUR  20/06/02  22:31:45
ICP001 HEX 203 CPU 1 BASE THUR  20/06/02  22:31:54
ICP001 HEX 204 CPU 1 BASE THUR  20/06/02  22:32:04
ICP001 HEX 205 CPU 1 BASE THUR  20/06/02  22:32:21
```

The last several messages will be similar to the following:

```
ICP001 HEX 510 CPU 1 BASE THUR  20/06/02  22:33:20
ICP001 HEX 2D0 CPU 1 BASE THUR  20/06/02  22:38:13
ICP001 HEX 515 CPU 1 BASE THUR  20/06/02  22:38:13
ICP001 HEX 520 CPU 1 BASE THUR  20/06/02  22:38:15
ICP001 HEX 540 CPU 1 BASE THUR  20/06/02  22:38:15
ICP002 SYS 000  22:38:15
ICP001 HEX 543 CPU 1 BASE THUR  20/06/02  22:38:16
ICP003 GENERIC 503 ISSUE 10 WI REL  22:38:17
ICP001 HEX 2FF CPU 1 BASE THUR  20/06/02  22:38:20
```

38) Wait for the final ICP001 message (ICP001 HEX 2FF) to be displayed. When it is displayed, verify that the 3-digit hexadecimal display on the inactive NT3T98 is displaying 2FF.

If the final hexadecimal display	Go to
is 2FF	step 39
is not 2FF	step 58

39) Load overlay CED by entering **** OVLY CED <CR>. Perform a CPU Changeover by entering CHGO <CR>. The system will prepare for the CPU Changeover, output any errors, and ask you to confirm your input. Respond affirmatively to initiate the CPU Changeover.

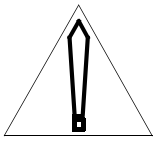
Note: *The CHGO command causes the DMS-10 to switch to the inactive core and run the software loaded by step 33. This will result in an initialization.*

40) If only one TTY is used, move the TTY cable from the Maintenance Interface port on the formerly active core to Maintenance Interface port on the newly active core.

41) After initialization is complete, log in (GP 0100).

42) Determine whether the system is processing calls.

If the system	Go to
is processing calls	step 44
is not processing calls	step 43



CAUTION
The following step is not executed during an ordinary execution of this maintenance procedure.

43) Load overlay CED by entering **** OVLY CED IMED <CR>. Perform a CPU Changeover by entering CHGO <CR>. The system will prepare for the CPU Changeover, output any errors, and ask you to confirm your input. Respond affirmatively to initiate the CPU Changeover. Go to step 58.

44) Determine whether the message, CCD100 displays.

If the message, CCD100	Go to
is displaying	step 46
is not displaying	step 45

45) Manual loading of CCTB data is required.

46) Load overlay CED from the terminal communicating with the inactive core by entering: OVLY CED <CR>

47) Exit the one-bus mode by entering: EXIT 1BUS <CR>

48) Determine whether the EXIT 1BUS procedure was successful.

If the EXIT 1BUS procedure	Go to
was successful	step 49

If the EXIT 1BUS procedure	Go to
was not successful	step 58

49) Enable the system clock by entering: ENBL CLK *n* <CR>

50) Determine whether the system is equipped with sync clock.

If the system	Go to
is equipped with sync clock	step 51
is not equipped with sync clock	step 54

51) Disable the sync clock by entering: DSBL SYNC <CR>

52) Test the sync clock by entering: TEST SYNC <CR>

53) Return sync clock to service by entering: ENBL SYNC <CR>

54) Abort Overlay CED and load Overlay IOD by entering: ****OVLY IOD <CR>

55) Obtain status of the TTY and enable all devices disabled during this procedure, including the IOI shelf and any maintenance terminals.

56) Determine whether any error messages display.

If any error messages	Go to
display	step 59
do not display	step 57

57) Perform System Fault Assessment (GP 0123) to ensure that the system is operating properly. Go to step 60.

58) Contact Nortel for assistance. Go to step 60.

59) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

60) This procedure is complete.

Table 1037-A
System states for Split-load

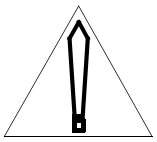
Device	State
Active Core (normally, CORE0)	ACTV, FLTS = IOI
Inactive Core (normally, CORE1)	GOOD

Install, remove, or replace an ISDN Drawer Controller (IDC) card

1) Load Overlay DED by entering: OVLY DED <CR>

2) Busy the lDC by entering: BUSY IDC (*site*) LCE/RSC/RSE *b s lsg* <CR>

3) Release the line drawer from the shelf by pressing latch at bottom of drawer and sliding drawer out.



CAUTION
When removing circuit packs:
- ALWAYS wear a wrist strap or touch frame ground before handling packs.
- DO NOT handle packs by the contacts or components.
- DO NOT set packs down on any surface other than the shipping carton.
- DO NOT handle packs near apparatus such as motors or transformers.
- Store packs in maintenance spares storage (MSS) frame.

4) Replace the IDC (MP 1250).

5) Download the current IDC firmware by entering : DNLD IDC *(site)* LCE/RSC/RSE *b s lsg* <CR>

6) Switch the inactive Flash Memory bank status to active by entering: SWME IDC *(site)* LCE/RSC/RSE *b s lsg* <CR>

7) Copy the active Flash Memory bank contents to the inactive bank by entering: CPME IDC *(site)* LCE/RSC/RSE *b s lsg* <CR>

8) Test the IDC by entering: TEST IDC *(site)* LCE/RSC/RSE *b s lsg* <CR>

9) Determine whether the IDC passed the test.

If the IDC	Go to
passed the test	step 10
did not pass the test	step 12

10) Return busied IDC to service by entering: RTS IDC *(site)* LCE/RSC/RSE *b s lsg* <CR>

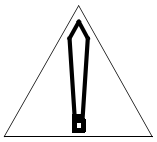
11) Ensure that the IDC has returned to service by entering: STAT IDC *(site)* LCE/RSC/RSE *b s lsg* <CR>
Go to step 13.

12) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

13) This procedure is complete.

Remove and install circuit pack

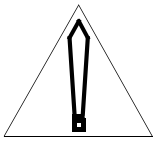
1) If not already done, busy or software disable the pack, if applicable.



CAUTION
When an NT4T04/NT8T04 pack is being removed, it is possible that a circuit breaker on an LCMC connected to this pack may be tripped. Therefore, the NT4T04/ NT8T04 pack should be removed only during a low traffic period.

Note: *See the NTP entitled Maintenance Diagnostic Input Manual (297-3601-506) for commands used to busy or software disable the pack.*

2) Operate the Enable switch if equipped, to the DISABLE position.



CAUTION
When removing circuit packs:
- ALWAYS wear a wrist strap or touch frame ground before handling packs.
- DO NOT handle packs by the contacts or components.
- DO NOT set packs down on any surface other than the shipping carton.
- DO NOT handle packs near apparatus such as motors or transformers.
- Store packs in maintenance spares storage (MSS) frame.

3) Grasp the top and bottom latch assemblies and simultaneously rotate the top latch up and the bottom latch down until the pack is unseated from the shelf backplane.

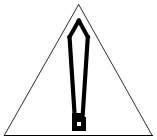
4) Holding the pack by the faceplate edges, pull the pack along the guides until the pack is clear of the shelf.

5) Place pack in a protective anti-static shipping carton.

6) Determine whether a new pack is to be installed.

If a new pack	Go to
is to be installed	step 7
is not to be installed	step 19

7) Remove circuit pack from storage location.



CAUTION
When removing circuit packs:
- ALWAYS wear a wrist strap or touch frame ground before handling packs.
- DO NOT handle packs by the contacts or components.
- DO NOT set packs down on any surface other than the shipping carton.
- DO NOT handle packs near apparatus such as motors or transformers.
- Store packs in maintenance spares storage (MSS) frame.

8) Set circuit pack DIP switches, if any, in accordance with settings in NTP 297-3601-316, *DIP Switch Settings for Printed Circuit Packs*; failure to do so can cause a system reload.

9) Operate the Enable switch if equipped, to the DISABLE position.

10) Hold circuit pack by faceplate edges, with components on right-hand side.

11) Place pack edges into upper and lower guides of desired position on shelf.

12) Slide pack along guides into shelf until faceplate of pack is positioned approximately 50.8 mm (2 inches) in front of shelf.

13) Grasp top and bottom latch assemblies by the plastic hinges.

14) Rotate latch assemblies to a horizontal position.

15) Push pack into shelf. Pack stops 12.7 mm (1/2 inch) from locked position.

16) Simultaneously rotate top latch down and bottom latch up. Pack locks into place with latches flush with pack faceplate.

17) Operate Enable switch to the ENABLE position, if pack is equipped.

18) Return the pack to service, or if applicable, return to the procedure that sent you here to test and/or return the pack to service.

Note: *See the NTP entitled Maintenance Diagnostic Input Manual (297-3601-506) for commands used to busy or software disable the pack.*

19) This procedure is complete.

Replace Peripheral Shelf Controller (PSC1) pack (NT2T41)

1) Load Overlay DED by entering: OVLY DED <CR>
2) Busy the PE shelf by entering: BUSY PSHF PE *b s* <CR>
3) Replace PSC1 (MP 1250).
4) Return PE shelf to service by entering: RTS PSHF PE *b s* <CR>
5) This procedure is complete.

Replace 5/12 V Converter pack (NT3T19AF) on CPU, Network, CPU/ Network, or CNI Module shelf

1) Determine whether the faulty 5/12 V Converter is located on a CPU shelf or on either a CPU/Network shelf or CNI Module shelf.

If the faulty 5/12 V Converter	Go to
is located on a CPU shelf	step 3
is located on a CPU/Network shelf or CNI Module shelf	step 2

2) Load the appropriate overlays and busy or software disable all applicable packs on the shelf powered by the faulty 5/12 V Power Converter (NT3T19).

Note 1: When the 5/12 V Converter LED has failed, the FAIL LED lights and TTY messages indicate failed and switched memory, network, or CPU packs.

Note 2: Table 2100-A in TP2100 shows slot positions powered by each 5/12 V Power Converter. Refer to NTP 297-3601-506 for overlay commands used to manipulate the packs.

Go to step 23.

3) Load Overlay CED by entering: OVLY CED <CR>

4) Obtain the status of the CPU by entering: STAT CORE <CR>

5) Determine whether the Core associated with the faulty 5/12 V Converter pack is idle.

If the Core associated with the faulty 5/12 V Converter	Go to
is idle	step 7
is not idle	step 6

6) Switch CPUs by entering: SWCH CORE <CR>

7) Abort current overlay and load Overlay IOD by entering: ****OVLY IOD <CR>

8) Disable any TTYs on the idle CPU shelf by entering: DSBL TTY *n* <CR>

9) Abort Overlay IOD and load Overlay CED by entering: **** OVLY CED <CR>

10) Obtain the status of the Network clock on the idle CPU by entering: STAT CLK <CR>

11) Determine whether the idle CPU Network clock is ACTV.

If the idle CPU Network clock	Go to
is ACTV	step 12
is not ACTV	step 13

12) Switch Network clocks by entering: SWCH CLK <CR>

13) Obtain the status of the sync clock by entering: STAT SYNC <CR>. Ensure that the status of the sync clock off of the CPU requiring maintenance is in STBY mode.

14) Enter the 1BUS mode by entering: SPLT CORE <CR>

15) Determine whether the message, CED001 displays.

If CED001	Go to
displays	step 16
does not display	step 46

16) Move the Enable switches on the inactive Central Processor pack (NT3T98) and on the local inactive I/O Bus Extender pack (NT3T72) to the DISABLE position.

17) Operate the Enable switch on all packs powered by the faulty power converter to the DISABLE position.

18) Unseat from the backplane all packs powered by the suspected faulty power converter.

Note: *Table 2100-A in TP2100 shows slot positions powered by each 5/12 V Power Converter. Refer to NTP 297-3601-506 for overlay commands used to manipulate the packs.*

19) Switch the breaker for the faulty 5/12 V Power Converter to the OFF position, if breaker has not already tripped.

20) Replace the 5/12 V Power Converter pack (MP1250).

21) Operate the circuit breaker for the replaced power converter to the ON position.

22) Momentarily press the reset button to enable the 5/12 V Power Converter pack.

23) If the converter fails to recover and extinguish its faceplate LED, then attempt to reset it by switching the appropriate breaker OFF and back ON again.

24) Momentarily press the reset button to enable the 5/12 V Power Converter pack.

25) Determine whether the converter recovered.

If the converter	Go to
recovered (green LED is on)	step 26
did not recover (red LED is on)	TP 2100

26) Reseat all packs that were unseated from the shelf.

27) Operate the Enable switch on the applicable packs to the ENABLE position.

28) Determine whether the breaker holds and the converter faceplate LED remains off.

If	Go to
the breaker holds and the green LED is on	step 29
the breaker doesn't hold and the red LED is on	TP 2100

Note: *Table 2100-A in TP2100 shows slot positions powered by each 5/12 V Power Converter. Refer to NTP 297-3601-506 for overlay commands used to manipulate the packs.*

29) For DMS-10 Classic Networks, all idle remote NT3T72 family codes AC/AD/AE (AE, release 07 or earlier) must be reseated. The faceplate LEDs on the idle NT3T72 packs will be lit. Remote NT3T72 packs can be located on CPU shelves, CPU/Network shelves, Network shelves, or GPIO shelves.

30) Exit the one-bus mode by entering: EXIT 1BUS <CR>

Note: *Entering the EXIT 1BUS command could cause a SYSLOAD, which causes an interruption to the DMS-10 switch operation.*

31) Determine whether the system exited from one-bus mode.

If the system	Go to
exited from one-bus mode	step 32
did not exit from one-bus mode	step 46

32) Enable Network Clock by entering: ENBL CLK *n* <CR>

33) Determine whether the system is equipped with sync clock.

If the system	Go to
is equipped with sync clock	step 34
is not equipped with sync clock	step 44

34) Determine the status of the sync clock by entering: STAT SYNC <CR>

35) Determine whether the sync clock is man-made busy.

If the sync clock	Go to
is man-made busy	step 37
is not man-made busy	step 36

36) Disable the sync clock by entering: DSBL SYNC <CR>

37) Test the sync clock by entering: TEST SYNC <CR>

38) Determine whether the sync clock passed the test.

If the sync clock	Go to
passed the test	step 39
did not pass the test	step 46

39) Enable sync clock by entering: ENBL SYNC <CR>

40) Test CPU by entering: ENBL CORE <CR>

41) Determine whether the CPU passed the test.

If the CPU	Go to
passed the test	step 42
did not pass the test	step 46

42) Perform a cycle of Control Equipment diagnostics by entering: TEST ALL <CR>

43) Determine whether the diagnostics passed.

If the diagnostics	Go to
passed	step 44
did not pass	step 46

44) Abort Overlay CED and load Overlay IOD by entering: **** OVLY IOD <CR>

45) Enable the disabled maintenance terminal by entering: ENBL TTY *n* <CR>
Go to step 47.

46) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

47) This procedure is complete.

Replace 5/12 V Converter pack (NT3T19) on a DCI shelf

1) Load Overlay DED by entering: OVLY DED <CR>

2) Obtain status of the NT4T09 (SRI) packs by entering: STAT SRI ALL <CR>

Note: *Both NT3T19 packs on a shelf are connected to all NT4T09 packs on the shelf. Power sparing circuitry is present on the NT4T09 packs.*

3) Determine whether all of the NT4T09 packs are in service.

If the NT4T09 packs	Go to
are in service	step 4
are not in service	step 15

4) Determine whether all of the subscriber links (SRLK) are in service.

If the SRLKs	Go to
are in service	step 5
are not in service	step 15

5) Test all of the subscriber links by entering: TEST SRLK ALL <CR>

6) Determine whether all of the subscriber links (SRLK) passed the test.

If the SRLKs	Go to
passed the test	step 7
did not pass the test	step 15

7) On the wing of the DCI shelf, operate the circuit breaker labeled "CONV POS *n*" to the OFF position.

Note: *If the NT3T19 pack in position 1 is to be replaced, operate the circuit breaker labeled "CONV POS 1"; if the pack in position 24 is to be replaced, operate the circuit breaker labeled "CONV POS 24".*

8) Replace the NT3T19 5/12 V Power Converter pack (MP1250).

9) On the wing of the DCI shelf, operate the circuit breaker disabled in step 9 to the ON position.

10) Test all of the subscriber links by entering: TEST SRLK ALL <CR>

11) Determine whether all of the subscriber links (SRLK) passed the test.

If the SRLKs	Go to
passed the test	step 12
did not pass the test	step 15

12) Obtain status of the NT4T09 (SRI) packs by entering: STAT SRI ALL <CR>

13) Determine whether all of the NT4T09 packs are in service.

If the NT4T09 packs	Go to
are in service	step 14
are not in service	step 15

14) Determine whether all of the subscriber links (SRLK) are in service.

If the SRLKs	Go to
are in service	step 16
are not in service	step 15

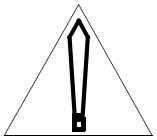
15) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

16) This procedure is complete.

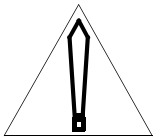
Replace Serial Data Interface (SDI) pack (NT3T09) or Dual Serial Data Interface (DSDI) pack (NT3T80)

1) Load Overlay IOD by entering: OVLY IOD (IMED) <CR>

2) Determine which terminals are connected to the SDI or DSDI pack and disable these terminals by entering: STAT <TTY, DAS, IOI, SMDI> <CR> and then DSBL <TTY, DAS, IOI, SMDI> *n* <CR>



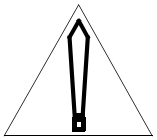
CAUTION
If the terminal being used is connected to the SDI or DSDI pack to be replaced, log off, change terminals, and log back on.



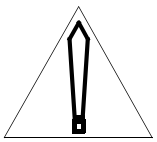
CAUTION
If an NT3T80 is being replaced, both ports must be disabled before the card is removed or an initialization may occur.

3) Operate enable switch to DISABLE position.

4) Replace pack (MP 1250).



CAUTION
CPU 0 must be active before a pack is inserted into Network shelf slots 6, 7, 8, 11, 12, 16, 17, or 19. CPU 1 must be active before a pack is inserted into Network shelf slots 4, 5, 9, 10, 13, 14, 15, or 18.



CAUTION
An outage can occur if pack switch settings aren't set correctly. Refer to NTP 297-3601-316, *DIP Switch Settings for Printed Circuit Packs and Balance Networks* for the correct settings.

5) Operate enable switch to ENABLE position.

6) Enable the devices that were disabled in Step 3 by entering: ENBL <TTY, DAS, IOI, SMDI> *n* <CR>

7) This procedure is complete.

Install, remove, or replace an LCE line card (LPK) or a Bus Interface Circuit (BIC) card

1) Determine whether the pack being manipulated is an LPK or BIC.

If the pack	Go to
is an LPK	step 5
is a BIC	step 2

2) Load Overlay DED by entering: OVLY DED <CR>

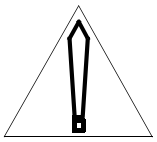
3) Busy the line drawer by entering:

For a non-RSLE/RSLM site: BUSY LSGD (*site*) LCE *b s lsg* <CR>

For an RSLE/RSLM site: BUSY LSGD *site* RSE *b s lsg* <CR>

Note: *To change all BICs in an LCM shelf, one line drawer should be finished before proceeding to another one in order to minimize the lines out of service. If service is not an issue, busy the LCM controller by entering: BUSY LCMC (site) LCE/RSE b s <CR>*

4) Release the line drawer from the shelf by pressing latch at bottom of drawer and sliding drawer out.



CAUTION
When removing circuit packs:
- ALWAYS wear a wrist strap or touch frame ground before handling packs.
- DO NOT handle packs by the contacts or components.
- DO NOT set packs down on any surface other than the shipping carton.
- DO NOT handle packs near apparatus such as motors or transformers.
- Store packs in maintenance spares storage (MSS) frame.

Go to step 8.

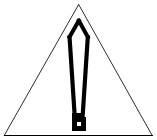
5) Load Overlay PED by entering: OVLY PED <CR>

6) Busy the line pack by entering:

For a non-RSLE/RSLM LPK: BUSY LPK (*site*) LCE *b s lsg l* <CR>

For an RSLE/RSLM LPK: BUSY LPK *site* RSE *b s lsg l* <CR>

7) Release the line drawer from the shelf by pressing latch at bottom of drawer and sliding drawer out.



CAUTION
When removing circuit packs:
- ALWAYS wear a wrist strap or touch frame ground before handling packs.
- DO NOT handle packs by the contacts or components.
- DO NOT set packs down on any surface other than the shipping carton.
- DO NOT handle packs near apparatus such as motors or transformers.
- Store packs in maintenance spares storage (MSS) frame.

8) Determine whether a device is to be removed.

If a device	Go to
is to be removed	step 9
is not to be removed	step 13

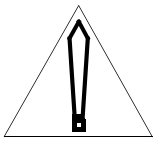
9) Determine whether the pack being manipulated is an LPK or BIC.

If the pack	Go to
is an LPK	step 12
is a BIC	step 10

10) Grasp the top and bottom latch assemblies and simultaneously rotate the top latch up and the bottom latch down until the pack is unseated from the shelf backplane.

11) Slide BIC out of upper and lower guides in the drawer.
Go to step 13.

12) Pull the Line Pack from the circuit pack connector.



CAUTION
Line packs may be hot. Use line pack removal tool to remove pack.

13) Determine whether the device is to be replaced or installed.

If the device	Go to
is to be installed or replaced	step 15
is not to be installed or replaced	step 14

14) Lock drawer in LCM shelf by sliding drawer in and pressing latch at the bottom of the drawer.

Note: *If changing all BICs in an LCM shelf and the LCM controller has been busied, return the LCM controller to service by entering: RTS LCMC (site) LCE/RSE b s <CR>*

Go to step 35.

15) Determine whether the pack being installed or replaced is an LPK or BIC.

If the pack	Go to
is an LPK	step 18
is a BIC	step 16

16) Grasp top and bottom latch assemblies by the plastic hinges and rotate top latch up and bottom latch down until latches are horizontal.

17) Slide BIC into the drawer and operate latches to lock BIC into place. Go to step 20.

18) If equipped, set DIP switches on the replacement pack as shown in the NTP entitled *DIP-Switch Settings for Printed Circuit Packs and Balance Networks* (297-3601-316).

19) Insert the line pack into the appropriate connector in the line drawer.

20) Lock line drawer into LCM shelf by sliding drawer in and pressing latch at bottom of drawer.

Note: *If the line pack installed is a new subscriber line, refer to SOP 0028 in section 3 of the NTP entitled Data Modification Manual (297-3601-311) for information on how to declare the new subscriber line.*

21) Determine whether the pack being manipulated is an LPK or BIC.

If the pack	Go to
is an LPK	step 22
is a BIC	step 27

22) Test the line pack by entering:

For a non-RSLE/RSLM LPK (OVLY PED): TEST LPK (*site*) LCE *b s lsg l* <CR>

For an RSLE/RSLM LPK (OVLY PED): TEST LPK *site* RSE *b s lsg l* <CR>

23) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 24
did not pass the test	step 34

24) Return the line pack to service by entering:

For a non-RSLE/RSLM LPK: RTS LPK (*site*) LCE *b s lsg l* <CR>

For an RSLE/RSLM LPK: RTS LPK *site* RSE *b s lsg l* <CR>

25) Obtain the status of the line card by entering:

For a non-RSLE/RSLM line pack: STAT LPK (*site*) LCE *b s lsg l* <CR>

For a RSLE/RSLM line pack: STAT LPK *site* RSE *b s lsg l* <CR>

26) Determine whether the line pack is in service.

If the pack	Go to
is in service	step 35
is not in service	step 34

27) Test the BIC by entering:

For a non-RSLE/RSLM BIC: TEST LCM (*site*) LCE *b s LSGL* <CR>

For an RSLE/RSLM BIC: TEST LSG *site* RSE *b s lsg* <CR>

28) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 29
did not pass the test	step 34

29) Return the line drawer to service by entering:

For a non-RSLE/RSLM LSGD: RTS LSGD (*site*) LCE *b s lsg* IMED <CR>

For an RSLE/RSLM LSGD: RTS LSGD *site* RSE *b s lsg* IMED <CR>

Note: *If changing all BICs in an LCM shelf and the LCM controller has been busied, return the LCM controller to service by entering: RTS LCMC (site) LCE/RSE b s <CR>*

30) Determine whether the message, "line communication failure" displays.

If the message	Go to
displays	step 31
does not display	step 32

31) Determine whether the pack being manipulated is an LPK or BIC.

If the pack	Go to
is an LPK	step 5
is a BIC	step 2

32) Obtain the status of the line subgroups in the line drawer to ensure that all line packs are in service by entering:

For non-RSLE/RSLM line subgroups: STAT LSG (*site*) LCE *b s lsg* <CR>

For RSLE/RSLM line subgroups: STAT LSG *site* RSE *b s lsg* <CR>

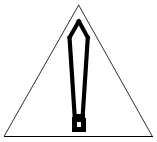
33) Determine whether all line subgroups are in service.

If all line subgroups	Go to
are in service	step 35
are not in service	step 34

34) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

35) This procedure is complete.

Replace system disk (NT8T90) or magneto optical drive unit (NT4T32BA)



CAUTION
Disabling the primary device disables all devices. Before you disable the primary device, refer to MP 1010 for instructions on updating the primary device or all devices.

1) Load Overlay IOD by entering: OVLY IOD <CR>

2) Determine the status of the IOI system by entering: STAT IOI <CR>

3) Determine whether the unit being replaced is a magneto-optical disk drive (NT4T32BA) or a SCSI Bus and I/O Disk Drive pack (NT8T90).

If the unit being replaced	Go to
is an NT4T32BA	step 4
is an NT8T90	step 14

4) Disable MO0 (NT4T32BA) by entering: DSBL MO0 IMED <CR>

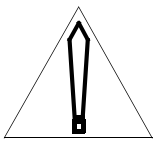
5) Disable HD1 by entering DSBL HD1 IMED <CR>. Ensure that HD0 is enabled by entering ENBL HD0 <CR>.

6) Eject the magneto-optical cartridge by entering EJCT MO0 <CR>.

7) Remove the cartridge from the NT4T32BA.

8) Operate the On/Off switch on the NT4T32BA to the Off position.

9) Ensure the ON/OFF switch on the replacement NT4T32BA is in the OFF position. Verify that the DIP switches on the replacement NT4T32BA are set correctly. Refer to NTP 297-3601-316. Remove the current NT4T32BA from the shelf and install the replacement NT4T32BA.



CAUTION
If the DIP switches on the replacement NT4T32BA are not set correctly, serious problems will be observed later in this procedure. Commonly, HD1 will start behaving abnormally. If the IOI is disabled and then enabled, MO0 will show as NOT FOUND.

10) Operate the On/Off switch on the NT4T32BA to the On position.

11) Insert the cartridge and wait for the disk to settle. (Activity LED light goes out.)

12) Enable HD1 and MO0 by entering ENBL IOI <CR>. Go to step 48.

13) Using procedure MP 1010, perform an equipment data dump to *all* devices. Verify that the dump has completed before proceeding.

Note: *If this procedure is being executed because one hard drive is faulty, this drive may be omitted from the equipment data dump.*

14) Load overlay CED by entering **** OVLY CED <CR>.

15) Enter the command STAT CORE <CR>. Determine whether the NT8T90 to be replaced is on the idle CORE.

If the target NT8T90	Go to
is on the idle CORE	step 17
is on the active CORE	step 16

16) Switch to the idle CORE by entering SWCH CORE <CR>.

17) Determine whether the system is in one-bus mode.

If the system	Go to
is in one-bus mode	step 30
is not in one-bus mode	step 18

18) Load overlay IOD by entering **** OVLY IOD <CR>.

19) Disable any Serial Data Interface (SDI), Dual Serial Data Interface (DSDI), Dual Integrated Modem, or Maintenance Interface pack provisioned on the inactive core by entering the commands STAT TTY <CR>, DSBL TTY *n* <CR>, STAT SMDI <CR>, and DSBL SMDI *n* <CR>.

Note: *The normal location of a DSDI or Maintenance Interface pack is CE-3, shelves 2 and 3.*

20) Disable the IOI system by entering the command DSBL IOI IMED <CR>.

21) Abort overlay IOD by entering ****.

22) Load overlay CED by entering OVLY CED <CR>.

23) Ensure that the system is using the MAC address on the active core by entering the command RSET MAC <CR>.

Note: *CED001 and CED785 are acceptable responses to the RSET MAC command.*

24) Obtain the status of the Network clock by entering: STAT CLK <CR>

25) Determine whether the idle CORE Network clock is ACTV.

If the idle CORE Network clock	Go to
is ACTV	step 26
is not ACTV	step 27

26) Switch Network clocks by entering: SWCH CLK (IMED) <CR>

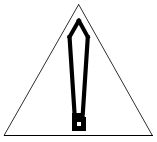
27) Enter one-bus mode by entering: ENTR 1BUS <CR>

28) Determine whether the message CED001 displays.

If CED001	Go to
displays	step 30
does not display	step 29

29) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.
Go to step 27.

30) Operate the ON/OFF switch on the NT8T90 to be replaced to the OFF position. Ensure the ON/OFF switch on the replacement NT8T90 is in the OFF position. Verify that the DIP switches and jumper settings on the replacement NT8T90 are appropriate for the NT8T90 it is replacing. Refer to NTP 297-3601-316.

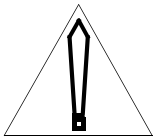


CAUTION
If the replacement NT8T90 is jumpered incorrectly, serious problems will be observed later in this procedure. If the NT8T90 that is *not* being replaced is HD0 (BUS A), ensure that the replacement NT8T90 is jumpered to be HD1 (BUS B). If the NT8T90 that is *not* being replaced is HD1 (BUS B), ensure that the replacement NT8T90 is jumpered to be HD0 (BUS A).

31) Remove the NT8T90 to be replaced and install the replacement NT8T90. Ensure that the replacement NT8T90 is firmly seated.

32) Operate the ON/OFF switch on the replacement NT8T90 to the ON position.

33) Enter DNLD IOI at this point a DNLD IOI should be performed to insure the 8T90 has the correct firmware.



CAUTION
If the green LEDs on the NT8T90s currently in the system both indicate HD0, or if they both indicate HD1, operate the ON/OFF switch on the replacement NT8T90 to the OFF position, remove it from the shelf, and verify the jumper settings as described above.

34) Abort current overlay and load Overlay CED by entering: **** OVLY CED <CR>

35) Exit the one-bus mode by entering: EXIT 1BUS <CR>

36) Determine whether the system exited one-bus mode.

If the system	Go to
exited one-bus mode	step 37
did not exit one-bus mode	step 36

37) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.
Go to step 32.

38) Enable Network Clock by entering: ENBL CLK *n* <CR>

39) Determine whether the system is equipped with sync clock.

If the system	Go to
is equipped with sync clock	step 39
is not equipped with sync clock	step 40

40) Return the inactive sync clock to service by entering the commands DSBL SYNC <CR>, TEST SYNC <CR>, and ENBL SYNC <CR>.

41) Load overlay IOD by entering **** OVLY IOD <CR>

42) Enable any TTYs, *et cetera*, that were disabled earlier by entering the commands STAT TTY <CR>, ENBL TTY *n* <CR>, STAT SMDI <CR>, and ENBL SMDI *n* <CR> as appropriate.

43) Return the IOI system to service by entering ENBL IOI <CR>

44) Determine the status of the newly installed device by entering STAT IOI <CR>

If the status is	Go to
NOT FOUND	Contact technical support
FRMT REQD	step 45
something else	step 46

45) Format the newly installed device by entering FRMT *device* <CR>. Wait for the FRMT command to complete before proceeding.

46) Load overlay IOD by entering **** OVLY IOD <CR>. Perform a BKUP to the newly installed device by entering BKUP *source device destination device* <CR>, where *destination device* is the newly installed device, and *source device* is either the other hard drive (HD*n*) or the magneto optical drive MO0. Wait for the BKUP command to complete before proceeding.

47) Load overlay IOD by entering **** OVLY IOD <CR>. Ensure that the newly installed device is enabled by entering ENBL *device* <CR>.

48) Load overlay CED by entering **** OVLY CED <CR>. Test the inactive CORE by entering ENBL CORE <CR>. If the test fails, refer to the TTY printouts and the *Output Message Manual* to determine how to proceed.

49) This procedure is complete.

Replace Maintenance Interface pack (NT3T71)

1) Log on to the maintenance terminal that is not connected to the faulty Maintenance Interface pack

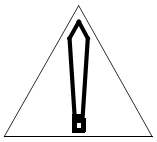
2) Load Overlay IOD by entering: OVLY IOD <CR>

3) Obtain the status of the maintenance terminals by entering: STAT TTY <CR>

4) Determine whether the maintenance terminal connected to the faulty Maintenance Interface pack is disabled.

If the maintenance terminal	Go to
is disabled	step 6
is not disabled	step 5

5) Disable the terminal connected to the faulty NT3T71 pack by entering: DSBL TTY *n* <CR>



CAUTION
Never disable both NT3T71 packs.

6) Abort Overlay IOD and load Overlay CED by entering: **** OVLY CED <CR>

7) Determine whether the Maintenance Interface pack terminal is on the idle CPU shelf.

If the terminal	Go to
is on the idle CPU shelf	step 10
is not on the idle CPU shelf	step 8

8) Switch CPUs by entering: SWCH CORE <CR>

9) Verify the CPU switch by entering: STAT CORE <CR>

10) Obtain the status of the Network clock on the shelf requiring maintenance by entering: STAT CLK <CR>

11) Determine whether the network clock is idle.

If the network clock	Go to
is idle	step 13

If the network clock	Go to
is not idle	step 12

12) Switch the Network clock by entering: SWCH CLK <CR>

13) Load Overlay IOD by entering: **** OVLY IOD <CR>

14) Disable the IOI by entering: DSBL IOI IMED <CR>

15) Load Overlay CED by entering: **** OVLY CED <CR>

16) Enter 1BUS mode by entering: ENTR 1BUS <CR>

17) Remove the Maintenance Interface pack and install a new pack (MP1250).

18) Exit 1BUS mode by entering: EXIT 1BUS <CR>

19) Determine whether the system exited one-bus mode.

If the system	Go to
exited one-bus mode	step 20
did not exit one-bus mode	step 29

20) Enable the Network clock by entering: ENBL CLK *n* <CR>

21) Determine whether the system is equipped with sync clock.

If the system	Go to
is equipped with sync clock	step 22
is not equipped with sync clock	step 25

22) Disable sync clock by entering: DSBL SYNC <CR>

23) Test sync clock by entering: TEST SYNC <CR<

24) Enable sync clock by entering: ENBL SYNC <CR>

25) Determine whether all of the clocks are enabled.

If all clocks	Go to
are enabled	step 26
are not enabled	step 29

26) Abort Overlay CED and load Overlay IOD by entering: **** OVLY IOD <CR>

27) Return the IOI system to service by entering: ENBL IOI <CR>

28) Enable any TTYs disabled earlier by entering: ENBL TTY *n* <CR>
Go to step 30.

29) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

30) This procedure is complete.

Replace I/O Bus Extender (IOBE) pack (NT3T72)

1) Load Overlay CED by entering: OVLY CED <CR>

2) Enter: STAT XTDR <CR>

3) Determine whether the IOBE is idle.

If the IOBE	Go to
is idle	step 5
is not idle	step 4

4) Enter: SWCH CORE <CR>

5) Obtain the status of network clock by entering: STAT CLK <CR>

6) Determine whether the active network clock is on the idle CPU.

If the active network clock	Go to
is on the idle CPU	step 7
is not on the idle CPU	step 8

7) Enter: SWCH CLK <CR>

8) Abort Overlay CED and load Overlay IOD by entering: **** OVLY IOD <CR>

9) Disable the TTY, on the idle core, by entering: DSBL TTY *n* <CR>

10) Disable the IOI system by entering: DSBL IOI IMED <CR>

11) Abort Overlay IOD and load Overlay CED by entering: **** OVLY CED <CR>

12) Enter 1BUS mode by entering: ENTR 1BUS <CR>

13) Determine whether the network in the switch being worked on is a DMS-10 Classic network or a DMS-10EN (expanded) network. If the network is equipped with NT8T04 packs, then the network is DMD-10EN (CNI).

If the network	Go to
is a DMS-10 Classic network	step 14
is a DMS-10EN network	step 19

14) Determine whether a local NT3T72 pack is being replaced. The local NT3T72 is the CPU bus extender, while the remote bus extender is the network/gpio extender.

If a local NT3T72	Go to
is being replaced	step 15
is not being replaced	step 19

15) Operate the Enable switch on the IOBE faceplate to the DISABLE position and unplug all idle NT3T72 packs associated with the idle CPU. The faceplate LEDs on the idle NT3T72 packs will be lit. NT3T72 packs can be located on a CPU, CPU/Network, Network, or GPIO shelf.

16) Replace the local NT3T72 pack and insert the pack into the shelf.

Note: *Ensure that the pack DIP switches are set correctly. Refer to NTP 297-3601-316, DIP Switch Settings for Printed Circuit Packs and Balance Networks.*

17) Replace any additional NT3T72 packs at this time.

18) Insert the remaining NT3T72 packs into the shelf and operate the Enable switches on the packs to the ENABLE position.
Go to step 21.

19) Operate the Enable switch on the IOBE faceplate to the DISABLE position and replace the pack (MP 1250). Repeat this step for each remote NT3T72 pack being replaced. The faceplate LED will be lit on the inactive bus extenders.

Note: *Ensure that the pack DIP switches are set correctly. Refer to NTP 297-3601-316, DIP Switch Settings for Printed Circuit Packs and Balance Networks.*

20) Operate the Enable switch on the faceplate of each NT3T72 pack that was replaced to the ENABLE position.

21) Exit 1BUS mode by entering: EXIT 1BUS <CR>

22) Determine whether the system exited one-bus mode.

If the system	Go to
exited one-bus mode	step 23
did not exit one-bus mode	step 40

23) Enable the Network clock by entering: ENBL CLK *n* <CR>

24) Abort Overlay CED and load Overlay IOD by entering: **** OVLY IOD <CR>

25) Enable the TTY previously made busy by entering: ENBL TTY *n* <CR>

26) Enable the IOI system by entering: ENBL IOI <CR>

27) Abort Overlay IOD and load Overlay CED by entering: **** OVLY CED <CR>

28) Enable the cores by entering: ENBL CORE <CR>

29) Determine whether the system is equipped with sync clock.

If the system	Go to
is equipped with sync clock	step 30
is not equipped with sync clock	step 34

30) Disable the sync clock by entering: DSBL SYNC <CR>

31) Test sync clock by entering: TEST SYNC <CR>

32) Enable the sync clock by entering: ENBL SYNC <CR>

33) Determine whether the test was passed.

If the	Go to
test was passed	step 34
test was not passed	step 40

34) Test extenders by entering: TEST XTDR <CR>

35) Test and switch CPUs by entering: TEST ALL <CR>

36) Determine whether the test was passed.

If the	Go to
test was passed	step 37
test was not passed	step 40

37) Abort Overlay CED by entering: **** <CR>

38) Enter: LIST TRB <CR>

39) Determine whether any trouble messages display.

If trouble messages	Go to
display	step 40
do not display	step 41

40) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

41) This procedure is complete.

Replace Alarm Processor pack (NT3T53)

1) Load Overlay ALO by entering: OVLY ALO <CR>

2) Enter: BUSY ALPK CE 3 5 2 <CR>

3) Operate the Enable switch on the Alarm Processor pack to the DISABLE position.

4) Replace pack (MP 1250).

5) Operate the Enable switch on the Alarm Processor pack to the ENABLE position.

6) Enter: RTS ALPK CE 3 5 2 <CR>

7) Determine whether the message, ALO001 displays.

If ALO001	Go to
displays	step 9
does not display	step 8

8) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

9) This procedure is complete.

Replace Alarm Signal Distribution pack (NT3T54)

1) Load Overlay ALO by entering: OVLY ALO <CR>

2) Enter: BUSY ALPK CE 3 5 2 <CR>

3) Determine whether the red LED on the Alarm Processor pack lights.

If the LED	Go to
lights	step 5
does not light	step 4

4) The Alarm Processor pack is faulty; replace the pack. (MP 1262)
Go to step 13.

5) Operate the Enable switch on the Alarm Processor pack to the DISABLE position.

6) Unseat, but do not remove, the Alarm Processor pack.

7) Replace the Alarm Signal Distribution pack (MP 1250).

8) Reinsert the Alarm Processor pack.

9) Operate the Enable switch on the Alarm Processor pack to the ENABLE position.

10) Enter: RTS ALPK CE 3 5 2 <CR>

11) Determine whether the message, ALO001 displays.

If ALO001	Go to
displays	step 13
does not display	step 12

12) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

13) This procedure is complete.

Replace Ringing and Alarm Control pack (NT3T55)

1) Load Overlay ALT by entering: OVLY ALT <CR>

2) Enter: BUSY 0 <CR>

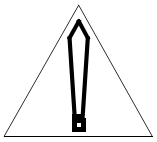
3) Determine whether the red LED on the Alarm Processor pack lights.

If the LED	Go to
lights	step 5
does not light	step 4

4) The Alarm Processor pack is faulty; replace the pack. (MP 1262)
Go to step 15.

5) Operate the Enable switch on the Alarm Processor pack to the DISABLE position.

6) Operate the Enable switch on the Ringing and Alarm Control pack to the DISABLE position.



CAUTION
Ringing will be lost in the PE bays when the NT3T55 is disabled and removed. Thus, the NT3T55 should be replaced only during a low-traffic hour.

7) Replace the Ringing and Alarm Control pack (MP 1250).

8) Operate the Enable switch on the Ringing and Alarm Control pack to the ENABLE position.

9) Operate the Enable switch on the Alarm Processor pack to the ENABLE position.

10) Enter: RTS 0 <CR>

11) Determine whether the message, ALT001 displays.

If ALT001	Go to
displays	step 12
does not display	step 14

12) Abort ALT overlay and load ALO overlay by entering: **** OVLY ALO <CR>

13) Reset Ringing Generator by entering: RSET RING <CR>
Go to step 15.

14) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

15) This procedure is complete.

Replace a Digitone or Multifrequency Receiver pack

1) Load Overlay SED by entering: OVLY SED <CR>

2) Busy the Multifrequency or Digitone Receiver pack by entering:

BUSY MFPK PE *b s p* <CR>

or:

BUSY DTPK PE *b s p* <CR>

3) Replace the receiver pack (MP 1250).

4) Return the Multifrequency or Digitone Receiver pack to service by entering:

RTS MFPK PE *b s p* <CR>

or:

RTS DTPK PE *b s p* CR>

5) This procedure is complete.

Replace analog trunk circuit pack

1) Load Overlay PED by entering: OVLY PED <CR>

2) Determine whether either circuit on the pack is an incoming or two-way trunk.

If either circuit	Go to
is an incoming or two-way trunk	step 3
is not an incoming or two-way trunk	step 4

3) Determine whether the trunk is arranged for remote-make-busy.

If the trunk	Go to
is ready for remote-make-busy	step 4
is not ready for remote-make-busy	step 5

4) Busy the circuit pack by entering: BUSY PEPK PE *b s p* <CR>
Go to step 6.

5) Call the far-end office to make the trunk busy.

6) Replace the circuit pack (MP 1250).

7) Return the pack to service by entering: RTS PEPK PE *b s p* <CR>

8) Determine whether either circuit on the pack was made busy at the far-end office.

If either circuit	Go to
was busied at the far end	step 9
was not busied at the far end	step 10

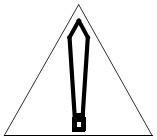
9) Call the far-end office to release the busy state.

10) This procedure is complete.

Replace Universal Tone Receiver (UTR) pack (NT4T02)

1) Load Overlay SED by entering: OVLY SED <CR>

2) Busy the UTR pack (NT4T02) by entering: BUSY UTPK CE *b s p* <CR>



CAUTION
Busying the UTR pack (NT4T02) causes a reduction in traffic capacity of all pushbutton lines and multifrequency incoming trunk calls.

3) Replace the UTR pack (NT4T02) (MP 1250).

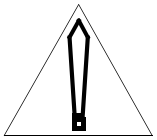
4) Test the new UTR pack (NT4T02) by entering: TEST UTPK CE *b s p* <CR>

Note: *Testing the UTR pack (NT4T02) may take 2 to 3 min to complete.*

5) Determine whether SED402 prints out.

If SED402	Go to
prints	step 6
does not print	step 9

6) Busy the Tone and Digit Sender pack by entering: BUSY TDS CE *b s p* <CR>



CAUTION
Busying the Tone and Digit Sender pack (NT4T04) causes a reduction in traffic capacity of all lines and multifrequency outgoing trunks.

7) Return the Tone and Digit Sender pack (NT4T04) to service by entering: RTS TDS CE *b s p* <CR>

8) Test the UTR pack (NT4T02) by entering: TEST UTPK CE *b s p* <CR>

Note: *Testing the UTR pack (NT4T02) may take 2 to 3 min to complete.*

9) Determine whether SED100 displays, indicating all channels passed the test.

If SED100	Go to
displays	step 10
does not display	step 11

10) Return the UTR pack (NT4T02) to service by entering: RTS UTPK CE *b s p* <CR>
Go to step 12.

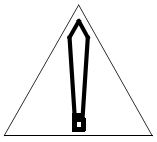
11) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

12) This procedure is complete.

Replace Power Converter pack (NT6X53)

1) Load Overlay DED by entering: OVLY DED <CR>

2) If the red "Converter Fail" faceplate LED on the faulty Power Converter pack (NT6X53) is lit, obtain the status of the Line Concentrating Module Controller (LCMC) associated with the NT6X53 by entering: STAT LCMC (*site*) LCE/IE *b s* <CR>; then go to step 5. If the red faceplate LED is not lit, go to step 3.



CAUTION
Because of the potential for electrostatic discharge, a wrist strap connected to the wrist strap grounding point on the frame supervisory panel should be worn while the measurements are being taken.

3) This precautionary step is performed to determine the load-sharing capability of the two NT6X53 power converters. The converters supporting the LCM must have closely-matched voltage output capability to ensure that taking a unit out of service will not compromise LCM redundancy. Before replacing the faulty NT6X53 pack, it will be necessary to replace the mate pack if it has an unacceptably low voltage output capability. This will ensure that when the faulty NT6X53 pack is taken out of service for replacement, the mate NT6X53 pack will be able to carry the power load for the shelf. Obtain a digital voltmeter with measurement accuracy to 0.01 volts and then measure the voltage between the +5 V and COMMON faceplate test jacks of both NT6X53 packs in the LCM module.

4) If the difference between the voltage readings of the two NT6X53 packs is not more than 0.20V (200 millivolts), obtain the status of the Line Concentrating Module Controller (LCMC) associated with the faulty NT6X53 by entering: STAT LCMC (*site*) LCE/IE *b s* <CR>; then go to step 5. If the difference between the voltage readings of the two NT6X53 packs is more than 0.20 V (200 millivolts), and if the faulty unit has the higher of the two readings, obtain the status of the Line Concentrating Module Controller (LCMC) associated with the NT6X53 with the lower of the two readings by entering: STAT LCMC (*site*) LCE/IE *b s* <CR>; then go to step 5.

5) If the status of the LCMC is MMOF or SMOF, go to step 8.

6) Busy the LCMC by entering: BUSY LCMC (*site*) LCE/IE *b s* <CR>

7) Place the LCMC offline by entering: OFFL LCMC (*site*) LCE/IE *b s* <CR>

8) Turn off the circuit breaker in the Frame Supervisory Panel for the shelf.

Note: *Circuit breakers CB1 through CB4 (labeled 04, 21, 38, and 55) correspond to shelves 1 through 4, respectively. Circuit breakers CB5 and CB6 (labeled RG0 and RG1) correspond to ringing generators 1 and 2, respectively.*

9) Replace the Power Converter pack (MP 1250).

10) Reset the circuit breaker.

Note: *Circuit breakers CB1 through CB4 (labeled 04, 21, 38, and 55) correspond to shelves 1 through 4, respectively. Circuit breakers CB5 and CB6 (labeled RG0 and RG1) correspond to ringing generators 1 and 2, respectively.*

11) Measure the voltage between the +5 V and COMMON faceplate test jacks of both NT6X53 packs in the LCM module.

12) If the difference between the voltage readings of the two NT6X53 packs is more than 0.20 V (200 millivolts), then contact the next level of support before continuing with this procedure. If the difference between the voltage readings of the two NT6X53 packs is not more than 0.20 V, then go on to step 13.

13) Busy the LCMC by entering: BUSY LCMC (*site*) LCE/IE *b s* <CR>

14) Download the LCMC by entering: DNLD LCMC (*site*) LCE/IE *b s* <CR>

15) Return the Line Concentrating Module to service by entering: RTS LCMC (*site*) LCE/IE *b s* <CR>This procedure is complete.

16) Test the LCMC by entering: TEST LCMC (*site*) LCE/IE *b s* <CR>

17) If the LCMC doesn't pass the test, refer to the TTY for additional information.

18) If the NT6X53 just replaced is not the faulty NT6X53 that was originally to be replaced, obtain the status of the Line Concentrating Module Controller (LCMC) associated with the faulty NT6X53 by entering: STAT LCMC (*site*) LCE/IE *b s* <CR>; then go to step 5. If the NT6X53 just replaced is the faulty NT6X53 that was originally to be replaced, then this procedure is complete.

19) This procedure is complete.

Replace Peripheral Control 1 (NT2T12)

1) Load Overlay DED by entering: OVLY DED <CR>
2) Busy the PE shelf by entering: BUSY PSHF PE *b s* <CR>
3) Operate Enable switch on PC1 to DISABLE position.
4) Operate switch on PC2 to OFF position
5) Replace PC1 (MP 1250).
6) Operate switch on PC2 to ON position.
7) Operate Enable switch on PC1 to ENABLE position.
8) Press reset button on PC1.
9) Return PE shelf to service by entering: RTS PSHF PE *b s* <CR>
10) This procedure is complete.

Replace Peripheral Control 2 (NT2T13)

1) Load Overlay DED by entering: OVLY DED <CR>
2) Busy the PE shelf by entering: BUSY PSHF PE *b s* <CR>
3) Operate the On/Off switch on the PC2 pack to the Off position.
4) Switch Enable switch on PC1 to DISABLE.
5) Replace PC2. (MP 1250)
6) Switch Enable switch on PC1 to ENABLE.
7) Operate the On/Off switch on PC2 to the On position.
8) Press reset button on PC1.
9) Return PE shelf to service by entering: RTS PSHF PE *b s* <CR>
10) This procedure is complete.

Replace Peripheral Shelf Converter (PSC2) pack (NT2T42)

1) Load Overlay DED by entering: OVLY DED <CR>

2) Obtain status of mate peripheral shelf by entering: STAT PSHF PE *b s* <CR>

3) Determine whether the status display indicates which peripheral shelf is sparing the faulty PE shelf converter.

If the display	Go to
indicates the PE shelf sparing the converter	step 4
does not indicate the PE shelf sparing the converter	step 6

4) Busy faulty Peripheral Shelf Converter 2 (PSC2) by entering: BUSY PSC2 PE *b s* <CR>

5) Determine whether the PSC2 is busy.

If the PSC2	Go to
is busy	step 6
is not busy	step 12

6) Pull out the -48V SIG BAT fuse for the shelf on which the PSC2 pack is located. The fuse is located in the Bay Supervisory Panel.

7) Replace the PSC2 pack. (MP 1250)

8) Push in the -48 V SIG BAT fuse.

9) Return Peripheral Shelf Converter 2 (PSC2) to service by entering: RTS PSC2 PE *b s* <CR>

10) Determine whether this procedure is being performed as the result of a reference to it from a different maintenance/trouble procedure.

If the procedure	Go to
is being performed as the result of a reference	step 11
is not being performed as the result of a reference	step 13

11) Return to the procedure that sent you here.
Go to step 13.

12) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

13) This procedure is complete.

Replace Dual Ringing Generator pack (NT3T59) or Ringing Monitor pack (NT3T27)

1) Determine whether the pack to be replaced is associated with Ringing Generator 1 (RG1) or 2 (RG2).

If the pack is a	Go to
RG 1	step 2
RG 2	step 3

2) Remove the T1 and T2 fuses from the Fuse Alarm Panel.

Note: *All fuses are located in the Fuse Alarm Panel, which is located on the front right side of the Alarm and Ringing Module.*

3) Remove the T3 and T4 fuses from the Fuse Alarm Panel.

Note: *All fuses are located in the Fuse Alarm Panel, which is located on the front right side of the Alarm and Ringing Module.*

4) Remove the associated Ringing Generator fuse.

5) Remove the associated Ringing Monitor fuse.

6) Determine whether the pack to be replaced is a Dual Ringing Generator pack (NT3T59) or a Ringing Monitor pack (NT3T27).

If the pack is a	Go to
Ringing Generator (NT3T59)	step 8
Ringing Monitor (NT3T27)	step 7

7) Replace the Dual Ringing Monitor pack (NT3T27) (MP 1250). Go to step 9.

8) Replace the Dual Ringing Generator pack (NT3T59) (MP 1250).

9) Replace the Ringing Monitor fuse that was removed earlier.

10) Replace the Dual Ringing Generator fuse that was removed earlier.

11) Replace the T1 and T2 or T3 and T4 fuses previously removed.

12) Load Overlay ALO by entering: OVLY ALO <CR>

13) Reset the Dual Ringing Generator pack (NT3T59) alarm by entering: RSET RING <CR>

14) This procedure is complete.

Replace peripheral equipment pack

1) Load Overlay PED by entering: OVLY PED <CR>

2) Busy the pack by entering: BUSY PEPK PE *b s p* <CR>

3) Replace the pack (MP 1250).

4) Determine whether the pack is an ac Tester or a PMS pack.

If the pack	Go to
is an ac Tester or PMS pack	step 5
is not an ac Tester or PMS pack	step 8

5) Abort Overlay PED and load Overlay MPD by entering: **** OVLY MPD <CR>

6) Download an ac Tester pack by entering: DNLD ACT<CR> ; download a PMS pack by entering: DNLD PMS *(site)* <CR>

7) Determine whether the message, MPD001 displays.

If MPD001	Go to
displays	step 14
does not display	step 13

8) Determine whether the pack is a Peripheral Processor pack.

If the pack	Go to
is a Peripheral Processor pack	step 10
is not a Peripheral Processor pack	step 9

9) Return the pack to service by entering: RTS PEPK PE *b s p*
Go to step 14.

10) Abort Overlay PED and load Overlay DNLD by entering: **** OVLY DNLD <CR>

11) Download the Peripheral Processor by entering: DNLD PE *b s p* <CR>

12) Determine whether the message, DLD001 displays.

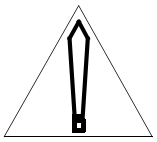
If DLD001	Go to
displays	step 14
does not display	step 13

13) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

14) This procedure is complete.

Replace REM Alarm pack (NT2T47)

1) Remove SC/SD fuse on NT2T26 pack.



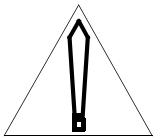
CAUTION
The REM alarm pack could be damaged if this fuse is not removed prior to removal of the pack.

2) Replace REM Alarm pack (NT2T47) (MP 1250).

3) Install SC/SD fuse on NT2T26 pack.

4) This procedure is complete.

Replace 5/12 V Converter pack (NT3T19) on GPIO shelf



CAUTION

Circuit packs on the same side as the NT3T19 pack to be replaced must be disabled and unplugged prior to removing power from the NT3T19 Power Converter circuit pack. The field technician must visually inspect the GPIO shelf to determine actual packs equipped. The circuit pack types that must be disabled/unplugged include: NT3T09 (Serial Data Interface); NT3T10 (Magnetic Tape Controller); NT3T50 (Data Link Controller); NT3T72 (Input/Output Bus Extender); NT3T80 (Dual Serial Data Interface); NT3T90 (Input/Output Interface); NT3T93 (Dual Integrated Modem); NT4T16 (LAN/CPU Interface); NT4T32BA (Magneto-optical drive). In addition, each of these packs must be in the disabled state prior to either operating the ENBL/DSBL switch on the pack or removing the pack from the GPIO shelf; otherwise, an Initialization may result.

Note: *The following are GPIO shelf slot positions powered by each NT3T19 pack:*

Slot Positions for left side NT3T19	*Slot Positions for right side NT3T19*
2, 3, 4, 5, 6, 7, 8, 9, 10, 11	*12, 13, 14, 15, 16, 17, 18, 19, 20*

The procedure outlined below can be performed on either side of the shelf, but only on one side at a time. Therefore, specific slot number designations for packs do not appear in any of the steps. The craftsperson should determine the positions of the packs to be operated on in the procedure by referring to the slot position numbers shown above.

1) Load Overlay CED by entering: OVLY CED <CR>

2) Obtain status of the bus extenders by entering: STAT XTDR <CR>

3) Determine whether the status of all of the packs is GOOD.

If the status of the packs	Go to
is GOOD	step 4
is not GOOD	step 143

4) Test the I/O Bus Extenders by entering: TEST XTDR <CR>

5) Determine whether the message, CED001 displays.

If CED001	Go to
displays	step 6
does not display	step 143

6) Abort Overlay CED by entering: ****

7) Determine whether an NT3T09 pack is provisioned.

If an NT3T09 pack	Go to
is provisioned	step 8
is not provisioned	step 21

8) Load Overlay IOD by entering: OVLY IOD <CR>

9) Determine if there is an SDI port assigned as a Digital Alarm Scanner (DAS) interface by entering: STAT DAS <CR>

10) Determine whether the DAS port is assigned.

If the DAS port	Go to
is assigned	step 11
is not assigned	step 12

11) Disable the DAS port by entering: DSBL DAS <CR>

12) Determine if there is an SDI port assigned as a Simplified Message Desk Interface (SMDI) by entering: STAT SMDI <CR>

13) Determine whether an SMDI port is assigned.

If an SMDI port	Go to
is assigned	step 14
is not assigned	step 15

14) Disable each SMDI by entering: DSBL SMDI *n* <CR>

15) Determine if there are teletypes assigned to an NT3T09 / NT3T80 / NT3T93 by entering: STAT TTY <CR>

16) Determine whether a TTY is assigned.

If a TTY	Go to
is assigned	step 17
is not assigned	step 18

17) Disable each TTY port by entering: DSBL TTY *n* <CR>

18) After ensuring that the LEDs on the NT3T09/NT3T80/NT3T93 packs are illuminated, operate the ENBL/DSBL switch on each pack to the DSBL position.

19) Unplug each of the packs and pull them approximately 1 inch away from the back plane.

Note: *It is not necessary to disconnect the cables from the rear of the GPIO shelf.*

20) Abort Overlay IOD by entering: ****

21) Determine whether an NT3T10 pack is provisioned.

If an NT3T10 pack	Go to
is provisioned	step 22
is not provisioned	step 41

22) Load Overlay MTD by entering: OVLY MTD <CR>

Note: *Follow local customer practices for treatment of AMA billing data when an upgrade is to take place.*

23) Determine whether the system is equipped with a BMC or AMATPS billing system.

If the system	Go to
is equipped with a BMC or AMATPS system	step 24
is not equipped with a BMC or AMATPS system	step 30

24) Determine whether the NT3T10 pack is in active state.

If the NT3T10 pack	Go to
is in active state	step 25
is not in active state	step 26

25) Place the NT3T10 in the inactive state by entering: SWCH AMA <CR>

26) Release the inactive MTU by entering: RLSE MTU *n* AMA <CR>

27) Disable the off-line MTU by entering: DSBL MTU *n* <CR>

28) Obtain the status of the MTUs by entering: STAT MTU <CR>

29) Operate the ENBL/DSBL switch on the NT3T10 to the DSBL position and pull the pack approximately one inch away from the back plane.

30) Determine whether the system is equipped with a magnetic tape drive billing system.

If the system	Go to
is equipped with a magnetic tape drive billing system	step 31
is not equipped with a magnetic tape drive billing system	step 40

31) Determine whether the NT3T10 pack is in active state.

If the NT3T10 pack	Go to
is in active state	step 32
is not in active state	step 33

32) Place the NT3T10 in the inactive state by entering: SWCH AMA <CR>

33) Release the inactive MTU by entering: RLSE MTU *n* AMA <CR>

34) Operate the ON-LINE button and REWIND button on the selected MTU. Verify that the MTU is off-line by entering: STAT MTU <CR>

35) Remove the tape from the tape drive and prepare for shipment to the downstream processing center.

36) Disable the off-line MTU by entering: DSBL MTU *n* <CR>

37) Obtain the status of the MTUs by entering: STAT MTU <CR>

38) Determine whether the MTU is in the MAN DSBL state.

If the MTU	Go to
is in the MAN DSBL state	step 39
is not in the MAN DSBL state	step 36

39) Operate the ENBL/DSBL switch on the NT3T10 to the DSBL position and pull the pack approximately one inch away from the back plane.

40) Abort Overlay MTD by entering: ****

41) Determine whether an NT3T50 pack is provisioned.

If an NT3T50 pack	Go to
is provisioned	step 42
is not provisioned	step 49

42) Load Overlay IOD by entering: OVLY IOD <CR>

43) Obtain the status of the Data Link Controllers (DLC) by entering: STAT DLC <CR>

44) Disable each DLC by entering for each DLC: DSBL DLC *n* IMED <CR>

45) Obtain the status of the DLCs by entering: STAT DLC <CR>

46) Determine whether all of the DLCs are disabled.

If all DLCs	Go to
are disabled	step 47
are not disabled	step 44

47) Operate the ENBL/DSBL switch on each NT3T50 pack to the DSBL position and pull the packs approximately one inch away from the back plane.

48) Abort Overlay IOD by entering: ****

49) Determine whether an NT3T90 pack is provisioned.

If an NT3T90 pack	Go to
is provisioned	step 50
is not provisioned	step 59

50) Load Overlay MTD by entering: OVLY MTD <CR>

51) Obtain the status of the 1600 bpi tape system by entering: STAT LIOI <CR>

52) Determine whether any NT3T90 packs are active and enabled.

If any NT3T90 packs	Go to
are active and enabled	step 53
are not active and enabled	step 55

53) Place the NT3T90 packs in the inactive state by entering for each: SWCH LIOI <CR>

54) Disable the NT3T90 packs by entering for each: DSBL LIOI *n* <CR>

55) Obtain the status of the 1600 bpi tape system by entering: STAT LIOI <CR>

56) Determine whether any NT3T90 packs are disabled.

If any NT3T90 packs	Go to
are active and enabled	step 57
are not active and enabled	step 54

57) Pull each of the NT3T90 packs approximately one inch away from the back plane.

58) Abort Overlay MTD by entering: ****

59) Determine whether an NT4T16 pack is provisioned.

If an NT4T16 pack	Go to
is provisioned	step 60
is not provisioned	step 73

60) Load Overlay LED by entering: OVLY LED <CR>

61) Obtain the status of the LAN equipment by entering: STAT LAN <CR>

62) Determine whether any NT4T16 packs are active.

If any NT4T16 packs	Go to
are active	step 63
are not active	step 64

63) Place the NT4T16 packs in the inactive state by entering for each: SWCH LAN <CR>

64) Busy and offline the NT4T16 packs by entering for each: BUSY LCI *b s p* <CR>

65) After ensuring that the faceplate LED on each NT4T16 is illuminated, pull each of the packs approximately one inch away from the back plane.

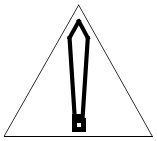
66) Abort Overlay LED by entering: ****

67) Determine whether an NT4T32BA Magneto-optical drive is provisioned.

If an NT4T32BA	Go to
is provisioned	step 68
is not provisioned	step 73

68) Load Overlay IOD by entering: OVLY IOD <CR>

69) Disable the NT4T32BA Magneto-optical drive by entering: DSBL MO0 <CR>



CAUTION
Disabling the primary device disables all devices. Systems equipped with AMADNS billing will begin buffering billing records. Ensure that another device is enabled quickly to continue storing billing records.

70) Operate the ENABLE switch on the NT4T32BA Magneto-optical drive to the DISABLE position.

71) Unplug the NT4T32BA Magneto-optical drive.

72) Abort Overlay IOD by entering: ****

73) Load Overlay CED by entering: OVLY CED <CR>

74) Determine which NT3T72 pack is inactive on the same side of the GPIO shelf as the NT3T19 to be replaced. An inactive pack is identified by the illuminated LED on the face plate.

75) Operate the ENBL/DSBL switch to the DSBL position on the inactive NT3T72 pack.

76) Operate the ENBL/DSBL switch to the DSBL position on the active NT3T72 pack on the same side of the shelf as the NT3T19 to be replaced (the LED is not illuminated on this pack's face plate).

77) Pull each of the NT3T72 packs approximately one inch away from the back plane.

78) On the Power and Cooling Module for the bay, operate the circuit breaker for the appropriate side of the GPIO shelf (shelf 1) to the OFF position.

79) Replace the NT3T19 Power Converter pack (see MP 1250).

Note: *Before replacing the NT3T19 Power Converter, ensure that all of the I/O packs located on the same side of the shelf as the NT3T19 to be replaced are disabled and unplugged from the back plane.*

80) On the Power and Cooling Module for the bay, operate the circuit breaker turned off in step 78 to the ON position.

81) Reinsert the NT3T72 packs and operate the ENBL/DSBL switches on the packs to the ENBL position.

82) Obtain the status of the NT3T72 packs by entering: STAT XTDR <CR>

83) Test the NT3T72 packs by entering: TEST XTDR <CR>

84) Determine whether the message, CED407 displays.

If CED407	Go to
displays	step 85
does not display	step 143

85) Abort Overlay CED by entering: ****

86) Determine whether any NT3T09/NT3T80/NT3T93 packs are provisioned.

If NT3T09/NT3T80/NT3T93 packs	Go to
are equipped	step 87
are not equipped	step 99

87) Reinsert the NT3T09 / NT3T80 / NT3T93 packs and operate the ENBL/ DSBL switches on the pack face plates to the ENBL position.

88) Load Overlay IOD by entering: OVLY IOD <CR>

89) Determine if there is an SDI port assigned as a Digital Alarm Scanner (DAS) interface by entering: STAT DAS <CR>

90) Determine whether a DAS port is assigned.

If a DAS port	Go to
is assigned	step 91
is not assigned	step 92

91) Enable the DAS port by entering: ENBL DAS <CR>

92) Determine if there is an SDI port assigned as a Simplified Message Desk Interface (SMDI) by entering: STAT SMDI <CR>

93) Determine whether an SMDI port is assigned.

If a DAS port	Go to
is assigned	step 94
is not assigned	step 95

94) Enable the SMDI port by entering: ENBL SMDI *n* <CR>

95) Determine if there are teletypes assigned to an NT3T09 / NT3T80 / NT3T93 by entering: STAT TTY <CR>

96) Determine whether a TTY is assigned.

If a DAS port	Go to
is assigned	step 97
is not assigned	step 98

97) Enable each TTY by entering: ENBL TTY *n* <CR>

98) Abort Overlay IOD by entering: ****

99) Reinsert the NT3T10 pack and operate the ENBL/DSBL switch on the pack face plate to the ENBL position.

100) Load Overlay MTD by entering: OVLY MTD <CR>

101) Obtain the status of the MTUs by entering: STAT MTU <CR>. Verify that the MTU is in the MAN DSBL state.

102) Enable the MTU by entering: ENBL MTU *n* <CR>

103) Determine whether the switch is equipped with a BMC or AMATPS billing system.

If the switch	Go to
is equipped with a BMC or AMATPS system	step 104
is not equipped with a BMC or AMATPS system	step 107

104) Obtain the status of the MTUs by entering: STAT MTU <CR>

105) If the MTU is in RLSE state, seize the MTU by entering: SEIZ MTU *n* <CR>

106) Obtain the status of the MTUs by entering: STAT MTU <CR>
Go to step 108.

107) Determine whether the switch is equipped with a magnetic tape drive billing system.

If the switch	Go to
is equipped with a magnetic tape drive billing system	step 109
is not equipped with a magnetic tape drive billing system	step 108

108) Abort Overlay MTD by entering: ****
Go to step 115.

109) Load Overlay MTD by entering: OVLY MTD <CR>

110) Obtain the status of the MTUs by entering: STAT MTU <CR>

111) Ensure that a new tape is installed on the tape drive and press the ON-LINE button.

112) Obtain the status of the MTUs by entering: STAT MTU <CR>

113) Verify that the MTU is in RLSE state and then seize the MTU by entering: SEIZ MTU *n* <CR>

114) Abort Overlay MTD by entering: ****

115) Determine whether the switch is equipped with an NT3T50 pack.

If the switch	Go to
is equipped with an NT3T50 pack	step 116
is not equipped with an NT3T50 pack	step 122

116) Reinsert the NT3T50 pack and operate the ENBL/DSBL switch on the pack face plate to the ENBL position.

117) Load Overlay IOD by entering: OVLY IOD <CR>

118) Disable an NT3T50 pack by entering: DSBL DLC *n* IMED <CR>

119) Enable an NT3T50 pack by entering: ENBL DLC *n* <CR>

Note: *Repeat steps 118 and 119 for each NT3T50 pack.*

120) Obtain the status of the NT3T50 packs by entering: STAT DLC <CR>

Note: *The NT3T50 packs may return a status of system-made-busy (SMB) at this time. If this is the case, wait approximately 2 minutes and repeat this step. It may also be necessary to coordinate efforts at both the local and far-end sites in order to return the data links to service. Refer to NTP 297-3601-506, Overlay IOD, for information concerning returning data links to service.*

121) Abort Overlay IOD by entering: ****

122) Determine whether the switch is equipped with an NT3T90 pack.

If the switch	Go to
is equipped with an NT3T90 pack	step 123
is not equipped with an NT3T90 pack	step 128

123) Reinsert the NT3T90 pack.

124) Load Overlay MTD by entering: OVLY MTD <CR>

125) Obtain the status of the 1600 BPI tape system by entering: STAT LIOI <CR>

126) Switch the activity status of the NT3T90 by entering: SWCH LIOI <CR>

127) Abort Overlay MTD by entering: ****

128) Determine whether the switch is equipped with an NT4T16 pack.

If the switch	Go to
is equipped with an NT4T16 pack	step 129
is not equipped with an NT4T16 pack	step 144

129) Reinsert the NT4T16 pack.

130) Load Overlay LED by entering: OVLY LED <CR>

131) Obtain the status of the LAN equipment by entering: STAT LAN <CR>

132) Busy the NT4T16 pack by entering: BUSY LCI CE 3 1 *p* <CR>

133) Return the NT4T16 pack to service by entering: RTS LCI CE 3 1 *p* <CR>

134) Test the NT4T16 pack to service by entering: TEST LCI CE 3 1 *p* <CR>

135) Abort Overlay LED by entering: **** <CR>

136) Determine whether the switch is equipped with an NT4T32BA Magneto-optical drive.

If the switch	Go to
is equipped with a Magneto-optical drive	step 137
is not equipped with a Magneto-optical drive	step 144

137) Insert the NT4T32BA Magneto-optical drive.

138) Operate the ENABLE switch on the NT4T32BA Magneto-optical drive to the ENABLE position.

139) Load Overlay IOD by entering: OVLY IOD <CR>

140) Enable the NT4T32BA Magneto-optical drive by entering: ENBL MO0 <CR>

141) Request the status of the NT4T32BA Magneto-optical drive by entering: STAT IOI <CR>

142) Determine whether the NT4T32BA Magneto-optical drive is active.

If the Magneto-optical drive	Go to
is active	step 144
is not active	step 143

143) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

144) This procedure is complete.

Replace AMA tape (800- or 1600-bpi tape)

1) Determine whether the tape is an 800-bpi or 1600-bpi tape.

If the tape	Go to
is an 800-bpi tape	step 2
is a 1600-bpi tape	step 44

2) Load Overlay MTD by entering: OVLY MTD <CR>

3) Obtain the MTU status by entering: STAT MTU <CR>

4) Determine whether the status of the tape to be replaced is ACTV.

If the status of the tape	Go to
is ACTV	step 5
is not ACTV	step 9

5) Switch the active and inactive tapes by entering: SWCH AMA <CR>

6) Determine whether the message, MTD001 displays.

If MTD001	Go to
displays	step 7
does not display	step 75

7) Place the MTU in a released state by entering: RLSE MTU *n use* <CR>

Note: *n is the number of the MTU and can be 0 through 3. use is the intended use of the tape and can be AMA (billing) or UTIL (utility).*

8) Obtain the MTU status by entering: STAT MTU <CR>

9) Determine whether the status of the MTU is INAC or RLSE.

If the status of the MTU	Go to
is INAC	step 10
is RLSE	step 12

10) Look at the error messages to determine if the MTU is inactive because of a fault or oversight.

11) Determine whether a fault condition exists.

If a fault condition	Go to
exists	step 75
does not exist	step 7

12) Place the tape drive offline by pressing the ON-LINE button. The ON-LINE lamp will go out.

13) Press the REWIND button.

14) If the tape stops at the load point, press the REWIND button again.

15) Open the dust cover.

16) Manually rewind the tape leader onto the supply reel.

17) Pull out the hub clamp knob.

18) Remove the supply reel.

19) If necessary, clean the tape unit. (RP 0512)

20) Determine whether the MTU is being reloaded.

If the MTU	Go to
is being reloaded	step 21
is not being reloaded	step 76

21) Place a write-enable ring into the rear recessed portion of the tape reel.

22) Place the tape reel on the hub.

23) Push in the hub clamp knob.

24) Thread the tape.

25) Wind three or four turns on the take-up reel.

26) Press the LOAD switch.

27) Ensure the tape is correctly positioned on the rollers and guides.

28) Press the LOAD switch.

29) Close the dust cover.

30) Press the ON-LINE switch.

31) If not already loaded, load Overlay MTD by entering: OVLY MTD <CR>

32) Obtain the MTU status by entering: STAT MTU <CR>

33) Determine whether the status of the MTU is DSBL.

If the status of the MTU	Go to
is DSBL	step 35
is not DSBL	step 34

34) Determine whether the ON-LINE light is lit.

If the ON-LINE light	Go to
is lit	step 37
is not lit	step 36

35) Enable MTU *n* by entering: ENBL MTU *n* <CR>

36) Press the ON-LINE button.

37) Determine whether the tape on the tape drive is a scratch tape.

If the tape	Go to
is a scratch tape	step 38
is not a scratch tape	step 39

38) Return to referencing procedure
Go to step 76.

39) Determine whether the tape is configured for Bellcore format.

If the tape	Go to
is configured for Bellcore format	step 40
is not configured for Bellcore format	step 42

40) Place the MTU in a released state by entering: RLSE MTU *n use* <CR>

41) Test MTU *n* by entering: TEST MTU *n* <CR>

42) Seize MTU *n* for use by the DMS-10 by entering: SEIZ MTU *n* (header) <CR>

43) Determine whether the message, MTD001 displays.

If MTD001	Go to
displays	step 76
does not display	step 75

44) Load Overlay MTD by entering: OVLY MTD <CR>

45) Obtain the AMA tape (NTRA) status by entering: STAT LIOI <CR>

46) Determine whether the status of the AMA tape is RLSE.

If the status	Go to
is RLSE	step 48
is not RLSE	step 47

47) Release the tape by entering: AMA RLSE <CR>
Go to step 45.

48) Open the dust cover.

49) Press the outer ring surrounding the button of the supply reel hub. Place your hands on the reel so they are aligned with the recesses in the tape deck.

50) Remove the supply reel.

51) Close the dust cover.

52) If necessary, clean the tape unit. (RP 0512)

53) Determine whether a 1600-bpi tape is being reloaded.

If the MTU	Go to
is being reloaded	step 54
is not being reloaded	step 76

54) Determine whether write operations will be performed on this tape.

If write operations	Go to
will be performed on this tape	step 55
will not be performed on this tape	step 56

55) Place a write-enable ring into the rear recessed portion of the tape reel.

56) Determine whether the 500 VA inverter is powered on.

If the 500 VA inverter	Go to
is powered on	step 58
is not powered on	step 57

57) Place the switch located on the inverter in the ON position.

58) Determine whether the tape drive is powered on.

If the tape drive	Go to
is powered on	step 60
is not powered on	step 59

59) Move the red toggle switch at the top right corner of the tape drive to the ON position.

60) Mount the supply reel onto the hub so the reel is against the rear flange.

61) Press the inner button on the face of the supply reel hub.

62) Thread the tape.

63) Wind three or four turns on the take-up reel.

64) Close the dust cover.

65) Press the LOAD/REWIND switch.

66) When the tape is loaded and the BOT indicator is illuminated, press the ON-LINE switch.

67) Load Overlay MTD by entering: OVLY MTD <CR>

68) Obtain the AMA system status by entering: STAT LIOI <CR>

69) Determine whether at least one disk drive is enabled (ENBL).

If a disk drive	Go to
is enabled	step 70
is not enabled	step 75

70) Test the AMA tape by entering: TEST NTRA <CR>

71) Determine whether the message, MTD001 displays.

If MTD001	Go to
displays	step 72
does not display	step 75

72) Determine whether the tape is to be seized in order for billing data to be dumped to it.

If the tape	Go to
is to be seized	step 73
is not to be seized	step 76

73) Seize the tape for use by the DMS-10 by entering: AMA SEIZ header <CR>

74) Determine whether the message, MTD001 displays.

If MTD001	Go to
displays	step 76
does not display	step 75

75) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

76) This procedure is complete.

Replace 5/12 V Converter pack (NT3T19) on a DCM shelf

1) Remove the right-hand filler panel from the bay in which the NT3T19 pack to be replaced resides.

2) Load Overlay DED by entering: OVLY DED <CR>

3) Obtain status of the DCMs equipped in the office by entering: STAT DCM ALL <CR>

4) For the selected DCM shelf, busy the DCMs located on the same side of the shelf as the NT3T19 pack to be replaced.

   Note: *If a DCM is being used as a digital data link, messages will be printed indicating a loss of DLC communication. Loss of a DLC results in a major (MAJ) alarm for duplex DLCs and a catastrophic (CAT) alarm if a simplex DLC is used.*

5) Unplug the NT2T32 Carrier Interface circuit pack, NT2T30 Network Interface circuit packs, and the NT2T31 Signaling Converter circuit packs, all located on the same side of the shelf as the NT3T19 pack to be replaced.

6) On the wing of the DCM shelf, operate the circuit breaker labeled "CONV POS *n*" to the OFF position.

   Note: *If the NT3T19 pack in position 1 is to be replaced, operate the circuit breaker labeled "CONV POS 1"; if the pack in position 24 is to be replaced, operate the circuit breaker labeled "CONV POS 24".*

7) Replace the NT3T19 5/12 V Power Converter pack (MP1250).

8) On the wing of the DCI shelf, operate the circuit breaker disabled earlier to the ON position.

9) Insert the NT2T31 Signaling Converter circuit packs, the NT2T30 Network Interface circuit packs, and the NT2T32 Carrier Interface circuit pack, that were unplugged earlier.

   Note: *Numerous IPM messages may be generated at this time. These messages may either be ignored, or interrupted by using the !!!! or %%%% commands.*

10) Test each DCM and return it to service, one at a time, by entering: TEST DCM PE *b s p* <CR> (and then, if the test passes) RTS DCM PE *b s p* <CR>.

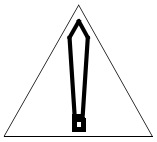
Note: *About 1 minute is required for each DCM test. Each DCM may also require a few moments to fully establish communication with the far end. Therefore, DCM alarm messages may be set and cleared after the RTS DCM command is issued. If a DCM is used as a digital data link, additional messages will display as DLC communication is restored and DLC alarms are cleared.*

11) Obtain the status of all DCMs equipped in the office. Ensure that the DCMs just returned to service have an INS ENBL status.

12) Abort Overlay DED by entering: ****

13) This procedure is complete.

Replace System Processor pack (NT3T98) or System Bus Controller pack (NT3T70)



CAUTION
Do not disable the System Bus Controller unless it is to be replaced. Replacing the System Bus Controller is likely to cause an Initialization; therefore, this procedure should be performed only during low-traffic periods, if this is possible. In addition, MLI packs (NT4T05) may go to a System-Made-Busy (SMB) state when replacing the System Bus Controller.

1) Log on to a maintenance terminal that is not connected to a port on the CORE shelf requiring maintenance.

2) Load Overlay IOD by entering: OVLY IOD IMED<CR>

3) Obtain the status of the maintenance terminals by entering: STAT TTY <CR>

4) Determine whether the maintenance terminal configured on the CORE requiring maintenance is disabled.

If the maintenance terminal	Go to
is disabled	step 6
is not disabled	step 5

5) Disable the maintenance terminal by entering: DSBL TTY *n* <CR>

6) Disable any additional TTY terminals configured on the CORE requiring maintenance by entering: DSBL TTY *n* <CR>

7) Obtain the status of the SMDI ports by entering: STAT SMDI <CR>

8) Only disable SMDI ports configured on the CORE requiring maintenance by entering: DSBL SMDI *n* <CR>

9) Abort Overlay IOD by entering: ****

10) Load Overlay CED by entering: OVLY CED IMED <CR>

11) Obtain the status of the CORE by entering: STAT CORE <CR>

12) Determine whether the CORE requiring maintenance is active.

If the CORE	Go to
is active	step 13
is not active	step 14

13) Switch COREs and verify the switch by entering: SWCH CORE <CR> and then STAT CORE <CR>

14) Abort Overlay CED by entering: ****

15) Load Overlay IOD by entering: OVLY IOD IMED <CR>

16) Disable the IOI by entering: DSBL IOI IMED <CR>

17) Abort Overlay IOD by entering: ****

18) Load Overlay CED by entering: OVLY CED IMED <CR>

19) Determine whether the idle CORE's network clock is active: STAT CLK <CR>

If the idle CORE's network clock	Go to
is active	step 20
is not active	step 21

20) Switch Network clocks by entering: SWCH CLK <CR>

21) Enter the 1BUS mode by entering: ENTR 1BUS <CR>

If CED001	Go to
is received	step 24

If CED612	Go to
is received	step 22

If the system response	Go to
is not CED001 or CED612	step 56

22) Reset MAC chip on active processor by entering: RSET MAC <CR>

23) Enter the 1BUS mode by entering: ENTR 1BUS <CR>

If a CED001	Go to
is received	step 24

If the system response	Go to
is not CED001	step 56

24) Operate the Enable switches on the following packs on the idle CORE to the DISABLE position:

- NT3T98 System Processor pack
- NT3T72 Local I/O Bus Extender pack
- NT3T71 Maintenance Interface pack
- NT3T47 Synchronous Clock pack

25) Determine which pack is being replaced.

If the pack being replaced	Go to
is an NT3T98	step 28
is an NT3T70	step 26

26) Replace the System Bus Controller (SBC) pack (NT3T70) on the idle shelf using MP 1250.

Note: *If an NT3T70BB or greater vintage pack is being provisioned, ensure that the DIP switches for the NT3T70 pack are set accordingly. See NTP 297-3401-316, DIP Switch Settings for Printed Circuit Packs and Balance Networks.*

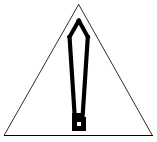
27) After replacing the idle SBC pack (NT3T70), go to step 29.

28) Replace the System Processor pack (NT3T98) on the idle shelf using MP 1250.

29) Operate the Enable switches on the following packs on the idle CORE to the ENABLE position.

- NT3T98 System Processor pack
- NT3T72 Local I/O Bus Extender pack
- NT3T71 Maintenance Interface pack
- NT3T47 Synchronous Clock pack

30) Exit the 1BUS mode by entering: EXIT 1BUS <CR>



CAUTION
Entering the EXIT 1BUS command could cause a SYSLOAD, which causes an interruption to the DMS-10 for 7 to 20 minutes.

31) Determine whether the system exited from one-bus mode.

If CED001	Go to
is received with no fault messages	step 32

If the system	Go to
did not exit from one-bus mode, or fault messages were seen	step 56

32) Enable the Network Clock by entering: ENBL CLK *n* <CR>

33) Determine whether the system is equipped with a sync clock.

If the system	Go to
is equipped with a sync clock	step 34
is not equipped with a sync clock	step 33

34) Determine whether the sync clock is man-made busy.

If the sync clock	Go to
is man-made busy	step 36
is not man-made busy	step 35

35) Disable the sync clock by entering: DSBL SYNC <CR>

36) Test the sync clock by entering: TEST SYNC <CR>

37) Determine whether the test passed.

If the test	Go to
passed with no fault messages	step 38
did not pass, or fault messages were seen	step 56

38) Enable sync clock by entering: ENBL SYNC <CR>

39) Abort Overlay CED by entering: ****

40) Load Overlay IOD by entering: OVLY IOD IMED <CR>

41) Enable the IOI system by entering: ENBL IOI <CR>

42) Determine if the IOI system enabled by entering: STAT IOI <CR>

If the IOI system	Go to
enabled with no fault messages	step 43
did not enable, or fault messages were seen	step 56

43) Abort Overlay IOI by entering: ****

44) Load Overlay CED by entering: OVLY CED IMED <CR>

45) Test CORE by entering: ENBL CORE <CR>

46) Determine whether the test passed.

If the test	Go to
passed with no fault messages	step 47
did not pass, or fault messages were seen	step 56

47) Perform a cycle of Control Equipment diagnostics by entering: TEST ALL <CR>

48) Determine whether the test passed.

If the test	Go to
passed with no fault messages	step 49
did not pass, or fault messages were seen	step 56

49) Abort Overlay CED by entering: ****

50) Load Overlay IOD by entering: OVLY IOD <CR>

51) Enable the disabled maintenance terminals by entering: ENBL TTY *n* <CR>

52) Enable the disabled SMDI ports by entering: ENBL SMDI *n* <CR>

53) Abort Overlay IOD by entering: ****

54) Perform System Fault Assessment Procedure to ensure system integrity (GP 0123).

55) Leave the CORE with the replaced pack active for 24 hours and monitor closely.

56) Refer to the TTY printouts and the Output Message Manual to determine the next course of action.

57) This procedure is complete.

Prepare a 1600-bpi tape drive for replacement

Note: *This procedure does not provide details for tape drive replacement. Refer to the manufacturer's manual for the steps required to troubleshoot or replace the tape drive.*

1) Load Overlay MTD by entering: OVLY MTD <CR>

2) Obtain the 1600-bpi AMA system status by entering: STAT LIOI <CR>

3) Determine whether Disk B is disabled.

If Disk B	Go to
is disabled	step 5
is not disabled	step 4

Note: *Disk B must be disabled before the power to the tape drive is turned off because both devices are on the same bus.*

4) Disable Disk B by entering: DSBL DISK B <CR>

5) Remove the tape from the tape drive.

6) Turn the tape drive power off by moving the red toggle switch at the righthand corner of the tape drive to the OFF position.

7) Turn the 500 VA inverter power off by moving the power switch on the inverter to the OFF position.

8) Replace the tape drive. Refer to the manufacturer's manual for the required steps.

9) Reinstall the tape on the tape drive.

10) Turn the 500 VA inverter power on by moving the power switch on the inverter to the ON position.

11) Turn the tape drive power on by moving the red toggle switch at the right corner of the tape drive to the ON position.

12) Enable the disk drive that was disabled by entering: ENBL DISK A/B <CR>

13) This procedure is complete.

Replace input/output interface (LIOI) pack (NT3T90) in a 1600-bpi AMA system

1) Load Overlay MTD by entering: OVLY MTD <CR>

2) Determine the status of the NT3T90 packs by entering: STAT LIOI <CR>

3) Determine whether the NT3T90 pack to be replaced is active.

If the NT3T90	Go to
is active	step 4
is not active	step 5

4) Switch IOI activity to disable the NT3T90 pack by entering: SWCH LIOI <CR>

5) Disable the standby NT3T90 pack by entering: DSBL LIOI *n* <CR>

6) Replace the NT3T90 pack. (MP 1250)

7) Enable the new NT3T90 pack by entering: ENBL LIOI *n* <CR>

8) Obtain the status of the NT3T90 pack by entering: STAT LIOI <CR>

9) Determine whether the NT3T90 pack status is good.

If the NT3T90 status	Go to
is good	step 11
is not good	step 10

10) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

11) This procedure is complete.

Replace DS30-A Interface pack (NT8X18) in an SCE bay

1) Load Overlay DED by entering: OVLY DED <CR>

2) Enter: STAT SCSC *(site)* SCE *b s* or STAT SCUC *(site)* SCE *b s* <CR>

3) Determine whether the pack to be replaced is on the ACTV side.

If the pack to be replaced	Go to
is on the active side	step 4
is not on the active side	step 5

4) Enter: SWCH SCSC *(site)* SCE *b s* or SWCH SCUC *(site)* SCE *b s* <CR>

5) Abort Overlay DED and load Overlay NED by entering: **** OVLY NED <CR>

6) Man-make busy a PELP on the STBY side by entering: BUSY PELP CE *b s p l* <CR>

7) Determine whether all PELPs on the STBY side have been busied.

If all PELPs on the STBY side	Go to
have been busied	step 8
have not been busied	step 6

8) Replace the DS30A Interface pack (MP 1250).

9) Return a busied PELP to service by entering: RTS CE *b s p l* <CR>

10) Determine whether all PELPs have been returned to service.

If all PELPs	Go to
have been returned to service	step 11
have not been returned to service	step 9

Replace EDCH (NTBX02) pack

1) Load Overlay DED by entering: OVLY DED <CR>

2) Busy the EDCH pack by entering: BUSY EDCH MVIE *b s p* <CR>

3) Remove the EDCH pack and replace it with the new EDCH pack (MP 1250).

4) Download the EDCH pack by entering: DNLD EDCH MVIE *b s p* (NEW/OLD) <CR>

5) Test the EDCH pack by entering: TEST EDCH MVIE *b s p* <CR>

6) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 8
did not pass the test	step 7

7) Contact the next level of technical support for assistance.

8) Return the EDCH pack to service by entering: RTS EDCH MVIE *b s p* <CR>

9) This procedure is complete.

Seize 800-bpi magnetic tape unit

1) Load Overlay MTD by entering: OVLY MTD <CR>

2) Seize MTU *n* by entering: SEIZ MTU *n* (header) <CR>

Note: *Header may be:*
HDR - all three labels will be placed on tape
NHR2 - HDR2 will be placed on tape
NEXP - the DMS-10 will not validate the tape expiration date.
HDR must be used alone. NHR2 and NEXP may be used together.

3) This procedure is complete.

Replace LAN/CPU Interface (LCI) pack (NT4T16)

1) Load Overlay LED by entering: OVLY LED <CR>

2) Busy the LCI pack by entering: BUSY LCI CE *b s p* <CR>

3) Replace LCI pack (MP 1250)

Note: *Ensure that the DIP switches on the pack are set correctly (see the NTP entitled DIP Switch Settings for Printed Circuit Packs and Balance Networks (297-3601-316).*

4) Return the LCI pack to service by entering: RTS LCI CE *b s p* <CR>

Note: *The return-to-service command may take several minutes to execute, depending on the status of the other packs associated with the Local Area Network (LAN).*

5) This procedure is complete.

Replace LAN Shelf Controller (LSC) pack (NT4T18)

1) Load Overlay LED by entering: OVLY LED <CR>

2) Busy the LSC pack by entering: BUSY LSC CE/P *b s p* <CR>

3) Replace LSC pack (MP 1250).

4) Return the LSC pack to service by entering: RTS LSC CE/PE *b s p* <CR>

   Note: *The return-to-service command may take several minutes to execute, depending on the status of the other packs associated with the Local Area Network (LAN).*

5) This procedure is complete.

Replace LAN Application Controller (LAC) pack (NT4T20)

1) Load Overlay LED by entering: OVLY LED <CR>

2) Busy the LAC pack by entering: BUSY LAC CE/PE *b s p* <CR>

3) Replace LAC pack (MP 1250)

Note: *Ensure that the DIP switches on the pack are set correctly (see the NTP entitled DIP Switch Settings for Printed Circuit Packs (297-3601-316).*

4) Return the LAC pack to service by entering: RTS LAC CE/PE *b s p* <CR>

Note: *Downloading the LAC during the return-to-service command may take up to one minute to complete.*

5) This procedure is complete.

Replace 5/12 V Converter pack (NT3T19) on a Messaging shelf

1) Load Overlay LED by entering: OVLY LED <CR>

2) Obtain status of the LAN equipment by entering: STAT LAN <CR>

3) Verify the proper operation of the LAN equipment by entering: TEST LAN <CR>

4) Determine whether all of the LAN equipment passed the test.

If the LAN equipment	Go to
passed the test	step 5
did not pass the test	step 28

5) Refer to the status report obtained in step 2 and determine whether the NT4T18 Lan Shelf Controller (LSC) pack located on the same side of the shelf as the NT3T19 to be replaced is active. If this pack is active, switch the LAN by entering: SWCH LAN <CR>

6) Abort Overlay LED and load Overlay SND by entering: **** OVLY SND <CR>

7) Busy the signaling network links controlled by the NT4T20 LAN Application Controller (LAC) packs located on the same side of the shelf as the NT3T19 to be replaced by entering: BUSY SNL *n x* <CR>.

Note: *Repeat this step for each link controlled by LAC packs located on this side of the shelf.*

8) Abort Overlay SND and load Overlay LED by entering: **** OVLY LED <CR>

9) Busy and turn offline the first NT4T20 LAC pack on the same side of the shelf as the NT3T19 to be replaced by entering: BUSY LAC CE/PE *b s p* <CR> (and then) OFFL LAC CE/PE *b s p* <CR>. Verify that the LED on the faceplate of the pack is illuminated.

Note: *Repeat this step for each LAC pack located on this side of the shelf.*

10) Busy and turn off-line the NT4T18 LAN Shelf Controller (LSC) pack located on the same side of the shelf as the NT3T19 to be replaced by entering: BUSY LSC CE/PE *b s p* <CR> (and then) OFFL LSC CE/PE *b s p* <CR>. Verify that the faceplate LED is illuminated.

11) Obtain status of the LAN equipment by entering: STAT LAN <CR>

12) Verify that the packs located on the same side of the shelf as the NT3T19 to be replaced are off-line.

13) Unplug all of the packs located on the same side of the shelf as the NT3T19 to be replaced except the NT3T19 pack.

14) Locate the circuit breaker that supplies power to the NT3T19 pack to be replaced and operate the breaker to the OFF position.

Note: *The List 1 version of the J1T65A-1 shelf has circuit breakers located on the wing of the shelf; List 2 and 3 versions of the shelf use circuit breakers located on the Frame Supervisory Panel or Power Distribution Panel in the bay.*

15) Replace the NT3T19 5/12 V Power Converter pack (MP1250).

16) Operate the circuit breaker disabled in step 14 to the ON position.

17) Press the RESET button on the faceplate of the NT3T19 pack just replaced.

18) Insert all of the packs unplugged in step 13. Ensure that the pack faceplate LEDs are illuminated.

19) Busy and return to service the NT4T18 LAN Shelf Controller (LSC) pack located on the same side of the shelf as the NT3T19 to be replaced by entering: BUSY LSC CE/PE *b s p* <CR> (and then) RTS LSC CE/PE *b s p* <CR>. Verify that the faceplate LED is illuminated.

20) Busy, download, and return to service the NT4T20 LAC packs located on the same side of the shelf as the NT3T19 to be replaced by entering: BUSY LAC CE/PE *b s p* <CR> (and then) DNLD LAC CE/PE *b s p* <CR> (and then) RTS LAC CE/PE *b s p* <CR> for each pack. Verify that the LEDs on the faceplates of the packs are illuminated.

21) Abort Overlay LED and load Overlay SND by entering: **** OVLY SND <CR>

22) Return to service the signaling network links controlled by the NT4T20 LAN Application Controller (LAC) packs located on the same side of the shelf as the NT3T19 to be replaced by entering: RTS SNL *n x* <CR>

23) Abort Overlay SND and load Overlay LED by entering: **** OVLY LED <CR>

24) Obtain status of the LAN equipment by entering: STAT LAN <CR>

25) Verify that the packs located on the same side of the shelf as the NT3T19 to be replaced are in service.

26) Verify the proper operation of the LAN equipment by entering:
TEST LAN <CR>

27) Determine whether all of the LAN equipment passed the test.

If the LAN equipment	Go to
passed the test	step 29
did not pass the test	step 28

28) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

29) This procedure is complete.

Replace fan unit

1) Remove fuse for fan unit to be replaced.

2) Remove the screws on each side of the Power and Cooling Module (PCM).

3) Pull open front panel of PCM. Panel is hinged at bottom.

4) Three fan units are located side-by-side. If a side fan unit is to be replaced, the center fan unit must be removed first.

5) Remove the screws holding the fan unit.

6) Pull the unit out in front of PCM.

7) Unplug the wiring from the unit being removed.

8) If necessary, repeat Steps 5 through 7 for the side fan unit.

9) Plug in the wiring for the fan unit being replaced.

10) Install the new fan unit in place of the unit removed.

11) If necessary, repeat Steps 9 and 10 for the center fan unit.

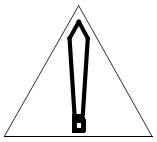
12) Close front panel of PCM. Replace screws.

13) Replace fuse for replaced fan unit

14) This procedure is complete.

Replace six-loop terminator (NT2T33) pack

1) Load Overlay DED by entering: OVLY DED <CR>



CAUTION
In order for the Six loop terminator pack to be replaced, all of the Digital Carrier Modules on the affected shelf must be taken out of service and power removed from the shelf. This procedure should only be performed during low traffic periods, if possible.

2) Busy all Digital Carrier Modules (DCMs) on the shelf by entering: BUSY DCM (*site*) PE *b s p* <CR>

3) Unseat all packs from the shelf except the 5/12 V Converter and NT2T33 pack.

4) Turn down the circuit breakers for the shelf on which the suspected faulty NT2T33 pack is located.

5) Remove the NT2T33 pack and replace with a known good pack.

6) Reseat all DCM packs.

7) Reset the circuit breakers for the DCM shelf.

8) Test one of the DCMs on the shelf by entering: TEST DCM (*site*) PE *b s p* <CR>

9) Determine whether the DCM passed the test.

If the DCM	Go to
passed the test	step 12
did not pass the test	step 12

10) Return the DCM to service by entering: RTS DCM (*site*) PE *b s p* <CR>

11) Repeat steps 7 through 12 for the remaining DCMs on the shelf, until all are returned to service.

12) Go to step 13.

13) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

14) This procedure is complete.

Remove or replace a Bus Terminator pack (NT4T07)

1) Busy all packs located on the same Network shelf as the faulty Bus Terminator Pack

2) Determine whether the switch is configured with a 1600-bpi system, a magnetic tape unit, or a BMC system.

If the switch	Go to
is configured with a 1600-bpi system, an MTU, or a BMC system	step 3
is not configured with a 1600-bpi system, an MTU, or a BMC system	step 9

3) Load Overlay MTD by entering: OVLY MTD <CR>

4) Determine whether the switch is configured with a 1600-bpi system, a magnetic tape unit, or a BMC system.

If the unit configured	Go to
is an MTU or a BMC system	step 6
is a 1600-bpi system	step 5

5) Disable the NT3T90 by entering: DSBL LIOI *n* (EMER) <CR>
Go to step 9.

6) For 800-bpi systems, switch active status to inactive AMA unit by entering: SWCH AMA <CR>

7) For 800-bpi systems, release the MTU from DMS-10 switch control by entering: RLSE MTU *n use* <CR>

8) Disable the NT3T10 by entering: DSBL MTU *n* <CR>

9) Abort overlay MTD by entering: **** <CR>

10) Place all network shelf packs in man-made-busy state.

11) Place all network shelf toggle switches in the disable position.

12) Replace Bus Terminator Pack (MP1250)

13) Load Overlay CED by entering: **** OVLY CED <CR>

14) Test bus extenders by entering: TEST XTDR <CR>

15) Determine whether the message, CED407 displays.

If CED407	Go to
displays	step 16
does not display	step 23

16) Abort overlay CED by entering: **** <CR>

17) Place all network shelf toggle switches in the enable position.

18) Return to service all packs located on the Network shelf

19) Load overlay MTD by entering: OVLY MTD <CR>

20) For 800-bpi systems, switch active status to inactive AMA unit by entering: SWCH AMA <CR>

21) For 800-bpi systems, seize the MTU for DMS-10 switch control by entering: SEIZ MTU *n* <CR>

22) If equipped, enable the NT3T90 by entering: ENBL LIOI *n* <CR>, or enable the NT3T10 by entering: ENBL MTU *n* <CR>
Go to step 24.

23) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

24) This procedure is complete.

Replace a DS-30A Interface pack (NT4T04)

1) Load Overlay NED by entering: OVLY NED <CR>

2) Obtain the status of the DS-30A pack by entering: STAT D3A CE *b s p* <CR>

3) Busy the DS-30A pack by entering: BUSY D3A CE *b s p* <CR>

4) Place the DS-30A pack in the OFFLINE state by entering: OFFL D3A CE *b s p* <CR>

5) Replace the DS-30A pack (MP1250).

6) Busy the DS-30A pack by entering: BUSY D3A CE *b s p* <CR>

7) If the pack is an NT4T04AL (or later series), download the pack by entering: DNLD D3A CE *b s p* <CR>

8) Return the pack to service by entering: RTS D3A CE *b s p* <CR>

9) Test the DS-30A pack by entering: TEST D3A CE *b s p* <CR>

10) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 12
did not pass the test	step 11

11) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

12) This procedure is complete.

Replace a Multiplex Loop Interface (MLI) pack

1) Load Overlay NED by entering: OVLY NED <CR>

2) Obtain the status of the MLI pack by entering: STAT MLI CE *b s p* <CR>

3) Obtain the address of the Digital Carrier Modules (DCM) or Digital Signal Interface (DSI) modules served by the Peripheral Equipment Loops (PELP) of the MLI pack to be replaced by entering:
STAT PELP CE *b s p l* <CR>

4) Abort Overlay NED and load Overlay DED by entering: ****OVLY DED <CR>

5) Busy either the DCMs served by the MLI pack to be replaced by entering BUSY DCM PE *b s p* <CR> or the DSIs served by the MLI pack by entering BUSY DSI CE *b s p* <CR>

6) Abort Overlay DED and load Overlay NED by entering: **** OVLY NED <CR>

7) Busy the MLI pack to be replaced by entering: BUSY MLI CE *b s p* <CR>

8) Place the MLI pack into the offline state by entering: OFFL MLI CE *b s p* <CR>

9) Replace the MLI pack (MP 1250).

10) If the MLI pack is downloadable (see NTP 297-3601-150 for more information), download the pack by entering: DNLD MLI CE *b s p* <CR>

11) Busy the MLI pack by entering: BUSY MLI CE *b s p* <CR>

12) Return the MLI pack to service by entering: RTS MLI CE *b s p* <CR>

13) Test the MLI pack by entering: TEST MLI CE *b s p* <CR>

14) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 15
did not pass the test	step 17

15) Abort Overlay NED and load Overlay DED by entering: **** OVLY DED <CR>

16) Return the busied DCMs or DSIs to service by entering either RTS DCM PE *b s p* <CR> or RTS DSI CE *b s p* <CR>
Go to step 18.

17) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

18) This procedure is complete.

Adjust balance network for balance improvement

Note: *This procedure is used when cable records are inaccurate, when cable characteristics are outside the range of a compromise setting, or when the given setting produces singing on the trunk or line. If a colocated repeater is used, then use a 2T25 board. The following procedure is not necessary if a 2T25 board is used. Required test equipment consists of the following: Nortel Networks 80-pin Extender board (PO552468), return-loss measuring set, Wiltron Model 9041 or equivalent, two patch cords - one with a 310-type plug and one with a 309-type plug.*

1) Determine whether the circuit to be adjusted is an incoming or two-way trunk.

If the circuit to be adjusted	Go to
is an incoming or two-way trunk	step 2
is not an incoming or two-way trunk	step 3

2) Call the far-end office to make the trunk busy.

3) Busy the peripheral pack. (TP 5000)

4) Remove circuit pack from shelf (MP 1250).

5) Plug extender board into shelf.

6) Plug circuit pack into extender board.

7) Verify that correct balance network is installed

Note: *H88 Loaded Cable: QNB65A; Nonloaded Cable: QNB65BD66; Loaded Cable: QNB65C*

8) Return pack to service (TP 5000).

9) Determine whether the circuit is an outgoing trunk.

If the circuit	Go to
is an outgoing trunk	step 10
is not an outgoing trunk	step 11

10) Connect four-wire test trunk to quiet termination via outgoing trunk (MP 1530).

11) Have a craftsperson at the far end dial the four-wire test trunk number.

12) Connect return-loss measuring set to four-wire test trunk (transmit to JK1 and receive to JK2).

13) Observe echo return loss (ERL).

14) Using tables in the NTP entitled *DIP-Switch Settings for Printed-Circuit Packs and Balance Networks* (297-3601-316), select next highest values of resistance and capacitance, and adjust balance network.

15) Observe ERL.

16) Determine whether ERL increased.

If ERL	Go to
increased	step 17
did not increase	step 19

17) Continue to increase resistance and capacitance until a maximum ERL is reached and passed. Reset to maximum.

18) Decrease capacitance and resistance until a maximum ERL is reached and passed. Reset to maximum.

19) Release connection (MP 1530) or have far-end craftsperson release connection.

20) Busy circuit under test (TP 5000).

21) Remove circuit pack from extender board.

22) Remove extender board.

23) Reinstall circuit pack.

24) Return peripheral pack to service (TP 5000).

25) Disconnect return-loss set.

26) This procedure is complete.

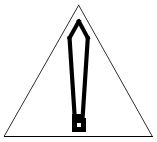
Replace a Network pack (NT4T06)

1) Load Overlay NED by entering: OVLY NED <CR>

2) Obtain the status of the Network pack by entering: STAT NWPK CE *b s p* <CR>

3) Busy the Network pack by entering: BUSY NWPK CE *b s p* <CR>

4) Place the Network pack in offline state by entering: OFFL NWPK CE *b s p* <CR>



CAUTION
For systems configured with paired network packs located in slots 18 and 19 of a Network shelf, busy the mate network pack before taking the faulty Network pack offline and replacing it, by entering: BUSY NWPK CE *b s p* <CR>.

5) Replace the Network pack (MP 1250)

6) Busy the Network pack by entering: BUSY NWPK CE *b s p* <CR>

7) Return the Network pack to service by entering: RTS NWPK CE *b s p* <CR>

8) Test the Network pack by entering: TEST NWPK CE *b s p* <CR>

9) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 11
did not pass the test	step 10

10) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

11) This procedure is complete.

Replace a Conference pack (NT4T03)

1) Load Overlay NED by entering: OVLY NED <CR>

2) Obtain the status of the Conference pack by entering: STAT CNF CE *b s p* <CR>

3) Busy the Conference pack by entering: BUSY CNF CE *b s p* <CR>

4) Place the Conference pack in offline state by entering: OFFL CNF CE *b s p* <CR>

5) Replace the Conference pack (MP 1250)

6) Busy the Conference pack by entering: BUSY CNF CE *b s p* <CR>

7) Return the Conference pack to service by entering: RTS CNF CE *b s p* <CR>

8) Test the Conference pack by entering: TEST CNF CE *b s p* <CR>

9) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 11
did not pass the test	step 10

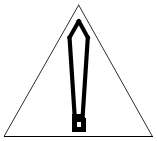
10) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

11) This procedure is complete.

Replace Tone and Digit Sender pack (NT4T01)

1) Load Overlay SED by entering: OVLY SED <CR>

2) Busy the Tone and Digit Sender (TDS) pack by entering: BUSY TDS CE *b s p* <CR>



CAUTION
Busying the TDS causes a reduction in traffic capacity of all lines and MF outgoing trunks.

Note: *Busying the TDS will also cause the Universal Tone Receiver (UTR) pack to go into man-made-busy state. The UTR will automatically return to service when the newly installed TDS is returned to service.*

3) Take the TDS pack offline by entering: OFFL TDS CE *b s p* <CR>

4) Remove the TDS pack (MP 1250).

5) Install a new TDS pack (MP 1250).

6) If the new TDS pack is downloadable (see NTP 297-3601-150 for more information), download the pack by entering: DNLD TDS CE *b s p* <CR>

7) Busy the new TDS pack by entering: BUSY TDS CE *b s p* <CR>

8) Test the new TDS pack by entering: TEST TDS CE *b s p* <CR>

9) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 10
did not pass the test	step 11

10) Return the TDS to service by entering: RTS TDS CE *b s p* <CR>
Go to step 12.

11) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

12) This procedure is complete.

Set switches on loop trunk and extended range line circuit packs

1) Set switches on circuit pack and select balance networks according to the NTP entitled *DIP-Switch Settings for Printed-Circuit Packs and Balance Networks* (297-3601-316).

2) Plug balance network into circuit pack.

3) Determine whether the balance network is an NT2T25AA.

If the balance network	Go to
is an NT2T25AA	step 11
is not an NT2T25AA	step 4

4) Determine whether adequate cable records are available.

If adequate cable records	Go to
are available	step 5
are not available	step 6

5) Set switches on balance network according to NTP 297-3601-316. Go to step 7.

6) Set switches on balance network using the compromise setting table.

7) Determine whether the trunk is an outgoing trunk.

If the trunk	Go to
is an outgoing trunk	step 8
is not an outgoing trunk	step 9

8) Make a test call to a quiet termination (MP 1530). Go to step 10.

9) Have craftsperson at far-end make a test call to a quiet termination.

10) Determine whether the trunk or line sings.

If the trunk or line	Go to
sings	MP 1300
is not sing	step 11

11) This procedure is complete.

Replace a 5/12 V Power Converter pack (NT3T89) on an Input/Output Interface (IOI) shelf

1) Load Overlay IOD by entering: OVLY IOD <CR>

2) Obtain status of the IOI disk subsystem by entering: STAT IOI <CR>

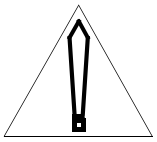
3) Determine which NT3T89 needs to be replaced.

If	Go to
the right-hand NT3T89 needs to be replaced	step 19
the left-hand NT3T89 needs to be replaced	step 4

4) Determine which device is currently the primary device.

If	Go to
HD0 is the primary device	step 7
HD1 is the primary device	step 5

5) Disable the HD1 device by entering: DSBL HD1 IMED <CR>



CAUTION
Disabling the primary device disables all devices. Systems equipped with IBSR billing will begin buffering billing records until the next device is enabled.

6) Make the HD0 device the primary device by entering: ENBL HD0 <CR> Go to step 9.

7) Disable the NT4T32BA Magneto-optical (MO) drive by entering: DSBL MO0 <CR>

8) Disable HD1 on Bus B by entering: DSBL HD1 <CR>

9) Operate the ENABLE switch on the NT4T32BA MO drive to the DISABLE position.

10) Disable the left-side 5/12 V Power Converter pack (NT3T89) by operating the ENABLE switch to the DISABLE position.

11) Unplug the NT4T32BA MO drive.

12) Remove the 5/12 V Power Converter pack (NT3T89) (MP 1250)

13) Install a new 5/12 V Power Converter pack (NT3T89) (MP 1250)

14) Insert the NT4T32BA MO drive.

15) Enable the 5/12 V Power Converter pack (NT3T89) by operating the ENABLE switch to the ENABLE position.

16) Operate the ENABLE switch on the NT4T32BA to the ENABLE position.

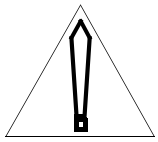
17) Enable HD1 by entering: ENBL HD1 <CR>

18) Enable MO0 by entering: ENBL MO0 <CR>
Go to step 31.

19) Determine whether HD0 is currently the primary device.

If HD0	Go to
is the primary device	step 20
is not the primary device	step 23

20) Disable the HD0 device by entering: DSBL HD0 IMED <CR>



CAUTION
Disabling the primary device disables all devices. Systems equipped with IBSR billing will begin buffering billing records until the next device is enabled.

21) Make the HD1 device the primary device by entering: ENBL HD1 <CR>

22) Enable MO0 by entering: ENBL MO0 <CR>
Go to step 24.

23) Disable HD0 by entering: DSBL HD0 <CR>

24) Disable the right-side 5/12 V Power Converter pack (NT3T89) by operating the ENABLE switch to the DISABLE position.

25) Remove the 5/12 V Power Converter pack (NT3T89) (MP 1250)

26) Install a new 5/12 V Power Converter pack (NT3T89) (MP 1250)

27) Enable the 5/12 V Power Converter pack (NT3T89) by operating the ENABLE switch to the ENABLE position.

28) Disable the HD1 device by entering: DSBL HD1 <CR>

29) Enable HD0 by entering: ENBL HD0 <CR>

30) Enable MO0 by entering: ENBL MO0 <CR>

31) This procedure is complete.

Replace Flash Memory pack (NT7X05)

1) Load Overlay DED by entering: OVLY DED <CR>

2) If an NT7X05 pack is to be replaced in the standby SCM-10S/SCM-10U, busy the standby SCM-10S/SCM-10U control complex, by entering: BUSY SCSC/SCUC <CR> If the NT7X05 pack to be replaced is in the active SCM-10S/SCM-10U, go to step 7.

3) Replace the NT7X05 pack in slot 15 on the NT6X0201 Controller Array shelf made busy in the previous step (see MP 1250).

4) Return to service the standby SCM-10S/SCM-10U control complex by entering: RTS SCSC/SCUC <CR>

5) Enter the appropriate version command to determine whether the version of the download file on the NT7X05 is the file specified in software by entering: VERS SCSC/SCUC <CR> If the correct download file exists in the NT7X05, the installation of this pack is complete.

6) If the correct download file is not in the NT7X05, as determined through the previous step, download the pack by entering: DNLD 7X05 <CR>

7) If an NT7X05 pack is to be replaced in the active SCM-10S/SCM-10U, switch the status of the two SCM control complexes by entering: SWCH SCSC/SCUC <CR>

8) Busy the standby SCM-10S/SCM-10U control complex by entering: BUSY SCSC/SCUC <CR>

9) Replace the NT7X05 pack in slot 15 on the NT6X0201 Controller Array shelf made busy in the previous step (see MP 1250).

10) Return to service the standby SCM-10S/SCM-10U control complex by entering: RTS SCSC/SCUC <CR>

11) Enter the appropriate version command to determine whether the version of the download file on the NT7X05 is the file specified in software by entering: VERS SCSC/SCUC <CR> If the correct download file exists in the NT7X05, the installation of this pack is complete.

12) If the correct download file is not in the NT7X05, as determined through the previous step, download the pack by entering: DNLD 7X05 <CR>

13) This procedure is complete.

Adjust Time-of-Day clock

Note: *This procedure is used to adjust the Time-of-Day clock in switches equipped with a charging system. Its purpose is to correct clock drifts and to enable yearly daylight-savings-time changes. The answer times of any in-progress billing registers are adjusted at the same time, but only with the TMAD command.*

1) Determine whether the switch is equipped with AMA.

If the switch	Go to
is equipped with AMA	step 3
is not equipped with AMA	step 2

2) Use TIME and DATE commands to change time. See the NTP entitled *Maintenance Diagnostic Input Manual* (297-3601-506)
Go to step 10.

3) Call a time-reference recording or have available an accurate time source that can be used as a reference.

4) Enter: TIME <CR>

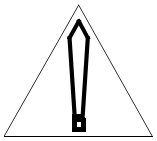
5) Determine whether the times agree.

If the times	Go to
agree	step 10
do not agree	step 6

6) Determine whether the times are in the same 24-hour period.

If the times	Go to
are in the same 24-hour period	step 7
are not in the same 24-hour period	step 8

7) Use commands TIME *hh mm ss* and DATE *day dd mm yyyy* to adjust the time.



CAUTION
When the TIME command is used, any in-progress billing registers will not be updated.

Go to step 10.

8) Set the date by entering: DATE *day dd mm yyyy* <CR> Set TMAD by entering: *hh mm ss* <CR>

9) The printout will tell the time difference and give the prompt ">". If the time difference is correct, enter: YES <CR>

10) This procedure is complete.

Replace a Subscriber Remote Interface pack (NT4T09) with a DSI module

1) Load Overlay DED by entering: OVLY DED <CR>

2) Using the BUSY command, busy the remote unit's (OPM/OPAC/OPSM/ RSLE/RLCM) controllers.

3) Busy the SRI pack by entering: BUSY SRI PE *b s p* <CR>

4) Abort Overlay DED and load Overlay NET by entering: ****OVLY NET <CR> In prompting sequence SRI (prompt TYP = SRI) change the SRI pack to the DSI module (NT6X50/NT4T24) (REQ = CHG; PACK = 6X50). Refer to NTP 297-3601-311, *Data Modification Manual*, for more information.

5) Remove the NT4T09 pack to be replaced and then install the NT6X50 pack in the same slot. Install the NT4T24 in the adjacent lower-numbered slot. For example, if the NT4T09 currently occupies slot 6, replace it with the NT6X50 pack and then install the NT4T24 pack in slot 5.

6) Move the ED1T57-01 cable from the NT4T09 backplane to the NT4T24 backplane (pin 1 of the connector plugs onto pin 41A).

7) Abort Overlay NET and load Overlay DED by entering: ****OVLY DED <CR>

8) Test the new SRI (DSI module) by entering: TEST SRI PE *b s p* <CR>

9) If the test doesn't pass, perform the necessary corrective procedures. If the test passes, return the SRI to service by entering: RTS SRI PE *b s p* <CR>

10) Using the RTS command, return the remote unit's (OPM/OPAC/OPSM/ RSLE/RLCM) controllers to service.

11) This procedure is complete.

Replace LAN Shelf Controller paddleboard (NT4T19)

1) Load overlay LED and busy the affected LAN Controller Interface pack (NT4T16) by entering: BUSY LCI CE/PE *b s p* <CR>

2) If the replacement NT4T19 is an AB, or later, vintage pack, remove the T-connector from the NT4T19 paddleboard. Do not disconnect the ED1T68 cable(s) from the T-connector.

3) Remove the NT4T19 paddleboard from the J1T65A-1 Messaging shelf (see MP 1250).

4) Using NTP 297-3601-316, *DIP Switch Settings for Printed Circuit Packs and Balance Networks*, ensure that the DIP switches on the replacement NT4T19 paddleboard are set correctly.

5) Install the new NT4T19 pack on the J1T65A-1 Messaging shelf.

6) If the replacement NT4T19 is an AB, or later, vintage paddleboard, connect the T-connector to the BNC connector on the replacement paddleboard in the same manner that the T-connector was connected to the BNC connector on the NT4T19 that was replaced.

7) Enable the LAN Controller Interface pack (NT4T16) by entering: RTS LCI CE/PE *b s p* <CR>

8) This procedure is complete.

Add a recording to the Audichron Model HQI-112 Recorder Announcer

1) Insert the headset into the operator headset jack on the front panel.

2) Select the channel selector switch to the desired channel.

3) Operate the mode switch to erase.

4) Determine whether message being created is 6.5 seconds or 14 seconds long.

If the message	Go to
is 6.5 seconds long	step 6
is 14 seconds long	step 5

5) When the CP2 lamp has been lit and then extinguished, immediately operate the mode switch to record.
Go to step 7.

6) When the CP1 lamp has been lit and then extinguished, immediately operate the mode switch to record.

7) Speak into the headset transmitter (Observe the speech level peak at 0 on the VU [volume-unit] meter).

8) Determine whether message being created is 6.5 seconds or 14 seconds long.

If the message	Go to
is 6.5 seconds long	step 10
is 14 seconds long	step 9

9) At the end of dictation, operate the mode switch to playback. The dictation must end prior to the lighting of the CP2 lamp.
Go to step 11.

10) At the end of dictation, operate the mode switch to playback. The dictation must end prior to the lighting of the CP1 lamp.

11) Monitor the newly recorded channel with the headset receiver.

12) This procedure is complete.

Erase a recording from the Audichron Model HQI-112 Recorder Announcer

1) Insert the headset into the operator headset jack on the front panel.

2) Select the channel selector switch to the desired channel.

3) Operate the mode switch to erase.

4) Determine whether message being created is 6.5 seconds or 14 seconds long.

If the message	Go to
is 6.5 seconds long	step 6
is 14 seconds long	step 5

5) Allow the CP2 lamp to light, extinguish and light again. At this point operate the mode switch to playback.
Go to step 7.

6) Allow the CP1 lamp to light, extinguish, light, extinguish and light again. At this point operate the mode switch to playback.

7) Monitor the newly recorded channel with the headset receiver.

8) This procedure is complete.

Record message on the Digital Recorded Announcement (DRA) pack (NT2T85)

1) Load Overlay TLT by entering: OVLY TLT <CR>

2) Enter: SEL PE *b s p u* <CR> where *u* must equal 1 to record the message.

3) Determine whether messages identify the NT2T85 as the device under test.

If the NT2T85	Go to
is the device under test	step 5
is not the device under test	step 4

4) Locate a different DRA trunk pack to be recorded.
Go to step 2.

5) Determine whether recording is performed locally (in the central office).

If recording	Go to
is performed locally	step 7
is not performed locally	step 6

6) Dial the REMOTE VAXS number from the remote location.
Go to step 8.

7) Enter: V DN dn <CR>

Note: *For switch settings controlling battery backup and message length, see the NTP entitled DIP Switch Settings for Printed Circuit Packs (297-3601-316).*

Go to step 13.

8) Determine whether two tone bursts followed by quiet termination sound and the message, REMOTE VAXS ESTABLISHED? displays.

If	Go to
the tone bursts sound and the message displays	step 11
the tone bursts do not sound and the message does not display	step 9

9) Determine whether Reorder tone is heard.

If	Go to
Reorder tone is heard	step 12
Reorder tone is not heard	step 10

10) Look up message in the Output Message Manual, then refer to the TLT section in the NTP entitled *Maintenance Diagnostic Input Manual* (297-3601-506).
Go to step 2.

11) Enter: T <CR>

If	Go to
the printout shows TALKING	step 18
the printout does not show TALKING	step 2

Go to step 18.

12) Build REMOTE VAXS route.

Note: *Refer to the NTPs entitled Data Modification Order Input Manual (297-3601-311) and Maintenance Diagnostic Input Manual (297-3601-506) for information on REMOTE VAXS and declarations.*

Go to step 19.

13) Determine whether the printout shows that the maintenance phone is VAXS.

If	Go to
the maintenance phone is VAXS	step 15
the maintenance phone is not VAXS	step 14

14) Enter: V DROP <CR>
Go to step 7.

15) Enter: C DN *dn* <CR> or C LCE *b s lsg u* <CR>

Note: *dn is the number of the maintenance phone, and LCE b s lsg u is the physical location of the maintenance phone.*

16) Determine whether the printout shows CONN phone.

If	Go to
the printout shows CONN	step 18
the printout does not show CONN	step 17

17) Enter: CAN <CR>

Go to step 15.

18) Enter: REC QUE <CR>

19) Determine whether the printout displays the message, NO DUT.

If	Go to
the printout displays the message	step 2
the printout does not display the message	step 20

20) Determine whether the printout displays the message, NO VAXS.

If	Go to
the printout displays the message	step 5
the printout does not display the message	step 21

21) Enter: REC SET <CR>

22) Determine whether the printout displays the message, BAD PE LOC.

If	Go to
the printout displays the message	step 2
the printout does not display the message	step 23

23) Determine whether the printout displays the message, NO CONNECTION.

If	Go to
the printout displays the message	step 15
the printout does not display the message	step 24

24) Determine whether a tone burst is heard in the VAXS phone.

If	Go to
a tone burst is heard	step 26
a tone burst is not heard	step 25

25) Enter: REC DROP <CR>
Go to step 2.

26) RECORD ACTV Green LED on pack is lit; playback will commence automatically after recording. Begin message to be recorded.

27) Determine whether recorded message is present.

If the recorded message	Go to
is present	step 29
is not present	step 28

28) Enter: D <CR>
Go to step 2.

29) Enter: REC DROP <CR>

30) Busy the pack and then return it to service.

31) Determine whether recorded message is present.

If the recorded message	Go to
is present	step 2
is not present	step 32

32) This procedure is complete.

Play back message on the Digital Recorded Announcement (DRA) pack (NT2T85)

1) Load Overlay TLT by entering: OVLY TLT <CR>

2) Enter: S PE *b s p u* <CR>

Note: *Selecting one of the four units will result in the same message. PE b s p u is the physical location of the DRA.*

3) Determine whether messages identify the NT2T85 as the device under test.

If the NT2T85	Go to
is the device under test	step 5
is not the device under test	step 4

4) Locate a different DRA pack to test.
Go to step 2.

5) Determine whether recording is performed locally (in the central office).

If recording	Go to
is performed locally	step 13
is not performed locally	step 6

6) Dial the REMOTE VAXS number from the remote location.

7) Determine whether two tone bursts followed by quiet termination sound and the message, REMOTE VAXS ESTABLISHED? displays.

If	Go to
the tone bursts sound and the message displays	step 8
the tone bursts do not sound and the message does not display	step 10

8) Enter <CR>

9) Enter: T <CR>
Go to step 28.

10) Determine whether Reorder tone is heard.

If	Go to
Reorder tone is heard	step 12
Reorder tone is not heard	step 11

11) Look up message in the Output Message Manual, then refer to the TLT section in the NTP entitled *Maintenance Diagnostic Input Manual* (297-

3601-506).
Go to step 2.

12) Build REMOTE VAXS route.

Note: *Refer to the NTPs entitled Data Modification Order Input Manual (297-3601-311) and Maintenance Diagnostic Input Manual (297-3601-506) for information on REMOTE VAXS and declarations.*

Go to step 15.

13) Enter: V DN *dn* <CR> or Enter: V PE *b s p u* <CR>

Note: *dn is the number of the maintenance phone, and PE b s p u is the physical location of the maintenance phone.*

14) Determine whether the printout shows that the maintenance phone is VAXS.

If	Go to
the maintenance phone is VAXS	step 16
the maintenance phone is not VAXS	step 15

15) Enter: V DROP <CR>
Go to step 14.

16) Enter: C DN *dn* <CR> or C LCE *b s lsg u* <CR>

Note: *dn is the number of the maintenance phone, and LCE b s lsg u is the physical location of the maintenance phone.*

17) Determine whether the printout shows CONN phone.

If	Go to
the printout shows CONN	step 19
the printout does not show CONN	step 18

18) Enter: CAN <CR>
Go to step 16.

19) Enter: REC QUE <CR>

20) Determine whether the printout displays the message, NO DUT.

If	Go to
the printout displays the message	step 2
the printout does not display the message	step 21

21) Determine whether the printout displays the message, NO VAXS.

If	Go to
the printout displays the message	step 5
the printout does not display the message	step 22

22) Enter: REC PLAY <CR>

23) Determine whether the printout displays the message, NO CONNECTION.

If	Go to
the printout displays the message	step 16
the printout does not display the message	step 24

24) Determine whether a recorded message is present.

If the recorded message	Go to
is present	step 25
is not present	step 27

25) Enter: REC DROP <CR>

26) Determine whether more DRA packs have messages to be played back.

If	Go to
there are more DRA packs that have messages to be played back	step 2
there are no more DRA packs that have messages to be played back	step 31

27) Enter: REC DROP <CR>
Go to step 30.

28) Determine whether the message, TALKING? displays.

If the message	Go to
displays	step 19
does not display	step 29

29) Go on-hook with remote telephone.
Go to step 6.

30) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

31) This procedure is complete.

Validate Digital Recorded Announcement trunk pack (NT2T85)

1) Verify recorded message (MP 1330).

2) Determine whether the recorded message is present.

If the message	Go to
is present	step 4
is not present	step 3

3) Record DRA trunk pack (MP 1325).
Go to step 2.

4) This procedure is complete.

Replace the Power Converter pack (NT2X70) and Link Control Card pack (NT6X73) and/or DS-1 Interface pack (NT6X50) on the Host Interface Equipment (HIE) shelf

1) Load Overlay DED by entering:
OVLY DED <CR>

2) Obtain the status of the Line Concentrating Module Controllers served by the HIE shelf by entering: STAT LCM *site* LCE *b s* <CR>

3) If only a NT6X73 card is being replaced, go to step 18. If only a NT6X50 card is being replaced, go to step 22.

4) Busy the Subscriber Remote Interface Link (SRLK) associated with the Power Converter (NT2X70 pack) to be replaced by entering: BUSY SRLK PE *b s p u* <CR>

Note: *The SRLK(s) printed under the first LCMC in response to the STAT LCM command is associated with the Link Control Card (LCC) in Position 17. The SRLK(s) printed under the second LCMC is associated with the LCC in Position 18. See Table 1335-A for a list of equipment associated with each Power Converter pack.*

5) Operate the Power ON/Off switch on the faceplate of the NT2X70 pack to the OFF position.

6) Determine whether the associated circuit breaker on the Frame Supervisory Panel (FSP) trips and the Frame Fail LED on the FSP lights.

If	Go to
the breaker trips and the LED lights	step 7
the breaker doesn't trip and the LED doesn't light	step 15

7) Unseat the LCC (NT6X73) pack associated with the Power Converter to be replaced. Refer to Table 1335-A.

8) Replace the Power Converter pack, and if necessary, the Link Control Card pack and/or the DS-1 Interface pack (MP 1250). Before replacing the NT6X50 pack, refer to Table 1335-A to ensure that it is the pack associated with the Power Converter being replaced.

9) Operate the Power On/Off switch on the faceplate of the Power Converter pack to the On position.

10) *At the same time,* depress the Reset button on the pack faceplate and operate the circuit breaker on the FSP to the ON position. Refer to Table 1335-A for the appropriate circuit breaker.

11) If the LCC was not replaced, insert the LCC unseated in step 7.

12) Return to service the SRLK(s) busied in step 4 by entering: RTS SRLK PE *b s p u* <CR>

13) Determine whether the SRLK(s) return to service.

If the SRLK(s)	Go to
returned to service	step 14
did not return to service	step 16

14) Ensure that LCMs are in service by entering: STAT LCM *site* LCE *b s* <CR>
If the LCMs are in service then go to step 17.

15) Operate the circuit breaker for that pack to the Off position. Refer to Table 1335-A for the appropriate circuit breaker.
Go to step 7.

16) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

17) This procedure is complete.

18) Busy the LCM controller that is associated with the LCC (NT6X73). Refer to Table 1335-A.

19) Replace the LCC (NT6X73) pack.

20) Return to service the LCM controller.

21) This procedure is complete.

22) If the DS-1 interface pack (NT6X50) is a signaling link to a LCM controller, busy the controller.

23) Busy the links associated with the (NT6X50) DS-1 interface pack to be replaced.

24) Replace the pack.

25) Return to service the links serving the pack.

26) If the LCM controller was busied, the return to service the LCM controller.

27) This procedure is complete.

Table 1335- **Equipment associated with HIE Power Converter packs (NT2X70)**	
Power Converter in Position 22	**Power Converter in Position 25**
Link Control Card (LCC) (NT6X73), Position 18 (serves LCMC 1 - 2 in an RLCM; serves LCMC 1 - 3 in an OPM/OPAC)	Link Control Card (LCC) (NT6X73), Position 17 (serves LCMC 1 - 1 in an RLCM; serves LCMC 1 - 2 in an OPM/OPAC)
DS-1 Interface pack (NT6X50), Position 20	DS-1 Interface pack (NT6X50), Position 19
Circuit Breaker 4 (CB4) for OPMs	Circuit Breaker 1 (CB1) for OPMs
Circuit Breaker 5 (CB5) for OPACs	Circuit Breaker 7 (CB7) for OPACs

Replace a circuit pack on the Enhanced Subscriber Carrier Module Access (ESMA) shelf

Note: *This procedure is used for replacing the following packs on the ESMA shelf: CLASS Modem Resource pack (NT6X78), Universal Tone Receiver pack (NT6X92), Cellular Application Processor pack (NTAX74), Enhanced ISDN Processor pack (NTBX01), Enhanced D-channel Handler pack (NTBX02BA), PCM Signaling pack (NTMX73), Time Switch pack (NTMX75), and DS-60 Extension pack (NTMX79AB). For a procedure used to replace the Power Converter pack (NTMX72), see MP 1343. For a procedure used to replace the Dual DS-1 Interface pack (NTMX81), see MP 1344.*

1) Load Overlay DED by entering: OVLY DED <CR>

2) Locate the faulty pack and determine that the pack is on the inactive unit by entering: STAT ESMC *site* MVIE *b s* <CR>

Note: *Unit 0 packs are located in positions 1 - 13 of the ESMA shelf. Unit 1 packs are located in positions 14 - 27 of the ESMA shelf.*

3) Determine whether the pack is located on the inactive unit.

If the pack	Go to
is located on the inactive unit	step 5
is not located on the inactive unit	step 4

4) Switch the status of the two ESMA units by entering: SWCH ESMC *site* MVIE *b s p* (IMED) <CR>

5) Busy the controller on the inactive unit containing the pack to be replaced by entering: BUSY ESMC *site* MVIE *b s p* (IMED) <CR>

6) Replace the pack (MP 1250).

Note: *When replacing an NTMX73 pack, ensure that the DIP switch on the pack is set correctly. See NTP 297-3601-316, DIP Switch Settings for Printed Circuit Packs and Balance Networks for more information.*

7) Determine whether the replaced pack is an NT6X78.

If the pack	Go to
is an NT6X78	step 10
is not an NT6X78	step 8

8) Determine whether the replaced pack is an NTAX74, NTBX01, NTMX75, or NTMX73.

If the pack	Go to
is an NTAX74, NTBX01, NTMX75, or NTMX73	step 9
is not an NTAX74, NTBX01, NTMX75, or NTMX73	step 13

9) Download the ESMC by entering: DNLD ESMC MVIE *b s p* <CR>
Go to step 13.

10) Return the ESMC to service by entering: RTS ESMC MVIE *b s p* IMED <CR>

11) Download the CMR by entering: DNLD CMR *site* MVIE *b s p* <CR>

Note: *When downloading the CMR, the physical location to enter is the same as that of the processor pack serving the CMR.*

12) Busy the ESMC by entering: BUSY ESMC MVIE *b s p* <CR>

13) Test the inactive unit by entering: TEST ESMC *site* MVIE *b s p* <CR>

14) Determine whether the unit passed the test.

If the unit	Go to
passed the test	step 15
did not pass the test	step 19

15) Determine whether the unit is an NTAX74.

If the unit	Go to
is an NTAX74	step 16
is not an NTAX74	step 17

16) Download the eeprom on the NTAX74 by entering: DNLD AX74 *site* MVIE *b s p* IMED <CR>

17) Return to service the inactive unit by entering: RTS ESMC *site* MVIE *b s p* (IMED) <CR>

18) Determine whether the unit returned to service.

If the unit	Go to
returned to service	step 20
did not return to service	step 19

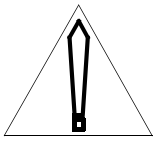
19) Contact the next level of technical support for assistance.

20) This procedure is complete.

Replace Digroup Control pack (NT6X52)

1) Load Overlay DED by entering: OVLY DED <CR>

2) This precautionary step is performed to determine the load-sharing capability of the two NT6X53 power converters. The converters supporting the LCM must have closely-matched voltage output capability to ensure that taking a unit out of service will not compromise LCM redundancy. Before powering down a NT6X53 pack, it will be necessary to replace the mate pack if it has an unacceptably low voltage output capability. This will ensure that when the designated NT6X53 pack is powered down, the mate NT6X53 pack will be able to carry the power load for the shelf. Obtain a digital voltmeter with measurement accuracy to 0.01 volts and then measure the voltage between the +5 V and COMMON faceplate test jacks of both NT6X53 packs in the LCM module.



CAUTION
Because of the potential for electrostatic discharge, a wrist strap connected to the wrist strap grounding point on the frame supervisory panel should be worn while the measurements are being taken.

3) If the difference between the voltage readings of the two NT6X53 packs is not more than 0.20V (200 millivolts), obtain the status of the Line Concentrating Module Controller (LCMC) associated with the NT6X53 to be powered down by entering: STAT LCMC (*site*) LCE *b s* <CR>; then go to step 4. If the difference between the voltage readings of the two NT6X53 packs is more than 0.20 V (200 millivolts), and if the unit to be powered down has the higher of the two readings, obtain the status of the Line Concentrating Module Controller (LCMC) associated with the NT6X53 with the lower of the two readings by entering: STAT LCMC (*site*) LCE *b s* <CR>; then go to step 4.

4) If the status of the LCMC is MMOF or SMOF, go to step 7.

5) Busy the LCMC by entering: BUSY LCMC (*site*) LCE *b s* <CR>

6) Place the LCMC offline by entering: OFFL LCMC (*site*) LCE *b s* <CR>

7) Turn off the circuit breaker in the Frame Supervisory Panel for the shelf.

Note: *For RSC-S, circuit breakers CB1 through CB4 (labeled 04, 21, 38, and 55) correspond to shelves 1 through 4, respectively. Circuit breakers CB5 and CB6 (labeled RG0 and RG1) correspond to ringing generators 1 and 2, respectively.*

8) If the NT6X53 that has been powered down is on the same shelf as the NT6X52 pack that is being replaced, then replace the NT6X52 (see MP 1250); otherwise, replace the NT6X53 (MP 1271).

9) Reset the circuit breaker.

Note: *For RSC-S, circuit breakers CB1 through CB4 (labeled 04, 21, 38, and 55) correspond to shelves 1 through 4, respectively. Circuit breakers CB5 and CB6 (labeled RG0 and RG1) correspond to ringing generators 1 and 2, respectively.*

10) Measure the voltage between the +5 V and COMMON faceplate test jacks of both NT6X53 packs in the LCM module.

11) If the difference between the voltage readings of the two NT6X53 packs is more than 0.20 V (200 millivolts), then contact the next level of support before continuing with this procedure. If the difference between the voltage readings of the two NT6X53 packs is not more than 0.20 V, then go on to step 12.

12) Download the LCMC by entering: DNLD LCMC (*site*) LCE *b s* <CR>

13) Return the Line Concentrating Module to service by entering: RTS LCMC (*site*) LCE *b s* <CR>

14) Test the LCMC by entering: TEST LCMC (*site*) LCE *b s* <CR>

15) If the LCMC passes the test, and if the NT6X52 was replaced in step 8, this procedure is complete. If the LCMC doesn't pass the test, refer to the TTY for additional information. If the NT6X53 was replaced in step 8, then enter STAT LCMC *(site)* LCE *b s* <CR> for the mate of the LCMC just tested and then go to step 4.

16) This procedure is complete.

Replace Remote Maintenance Module (RMM) Power Converter pack (NT2X06 or NT2X09)

1) Determine whether the red “Converter Fail” LED on the Power Converter pack (NT2X06) faceplate is lit.

If the LED	Go to
is lit	TP 7067
is not lit	step 2

2) Disable the packs on the RMM shelf.

3) Move the ON/OFF toggle switch on the power converter pack to the OFF position (this step removes output from the Power Converter pack).

4) Determine whether the circuit breaker for the RMM shelf trips and the MAJ LED on the FSP/MSP lights.

If	Go to
the breaker trips and the LED lights	step 6
the breaker doesn't trip and the LED doesn't light	step 5

Note: *Circuit breakers:*
RSC-S (MSP): CB01
OPM (FSP): CB05
OPAC (MSP): CB09 1:05-17

5) Move the circuit breaker for the RMM shelf to the OFF position.

6) Pull out the RMM Control pack (NT6X74) so that the faceplate is about an inch from the shelf.

7) Replace the Power Converter pack (MP 1250).

8) Move the ON/OFF toggle switch on the Power Converter pack to the ON position.

9) While pressing the Reset button on the pack just replaced (NT2X06 and NT2X09), move the circuit breaker for the RMM shelf (CB5 on the FSP) to the ON position.

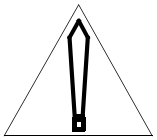
10) Push in the RMM Control pack (NT6X74) that was pulled out from the shelf.

11) Restore RMM packs to the desired state.

12) This procedure is complete.

Replace Outside Plant Subscriber Module (OPSM) Cabinet Controller pack (NT9Y00)

1) Operate the switch marked “LV DISC” to the “DSBL” position



CAUTION
Failure to deactivate the “LOW VOLTAGE DISCONNECT” circuit will cause the RSLM to be disconnected when the new NT9Y00 pack is inserted.

Note: *This switch is located on the Power and Maintenance Module (PMM) (J9Y03).*

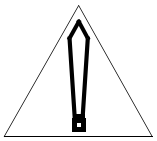
2) Remove the OPSM Cabinet Controller pack (NT9Y00) from the Power and Maintenance Module (PMM) (MP 1250).

3) Set DIP switch on the new OPSM Cabinet Controller pack (NT9Y00) to the proper position (see NTP 297-3601-316).

4) Insert the new pack (MP 1250).

Note: *When inserting the new pack, be sure the microswitch mounted on the backplane is fully depressed when the pack is fully seated. If necessary, re-align the microswitch to contact rear edge of pack. The major alarm lamp (on FSP) and BATF alarm (at host) will set if the switch is not aligned properly.*

5) Operate the switch marked “LV DISC” to the “ENBL” position



CAUTION
If the PMM is provided with a warning label, then failure to test the new pack or to wait 15 seconds BEFORE activating the “LOW VOLTAGE DISCONNECT” circuit will disconnect power to the OPSM and may damage RSLM packs.

Note: *This switch is located on the Power and Maintenance Module (PMM) (J9Y03).*

6) Test the new OPSM Cabinet Controller pack (RP 0530).

7) This procedure is complete.

Replace a circuit pack on the Remote Cluster Controller (RCC2) shelf

Note: *This procedure is used for replacing the following packs on the RCC2 shelf: CPP Message Protocol Circuit pack (NT6X69), CLASS Modem Resource pack (NT6X78), Universal Tone Receiver pack (NT6X92AA), PCM Signaling pack (NTMX73AA), DS-30A Interface pack (NTMX74AA), Time Switch pack (NTMX75AA), and Unified Processor pack (NTMX77AA). For a procedure used to replace the Power Converter pack (NTMX72AA), see MP 1343. For a procedure used to replace the Dual DS-1 Interface pack (NTMX81AA), see MP 1344.*

1) Load Overlay DED by entering: OVLY DED <CR>

2) Locate the faulty pack and determine that the pack is on the inactive unit by entering: STAT RSCS *site* RSC 1 1 CSPS <CR>

Note: *Unit 0 packs are located in positions 1 - 13 of the RCC2 shelf. Unit 1 packs are located in positions 14 - 27 of the RCC2 shelf.*

3) Determine whether the pack is on the inactive unit.

If the pack	Go to
is on the inactive unit	step 5
is not on the inactive unit	step 4

4) Switch the status of the two RSC-S units by entering: SWCH RSCC *site* RSC 1 1 *p* (IMED) <CR>

5) Busy the controller on the inactive unit containing the pack to be replaced by entering: BUSY RSCC *site* RSC 1 1 *p* (IMED) <CR>

6) Replace the pack (MP 1250).

Note: *When replacing an NTMX73 pack, ensure that the DIP switch on the pack is set correctly. See NTP 297-3601-316, DIP Switch Settings for Printed Circuit Packs and Balance Networks for more information.*

7) Determine whether the pack is an NT6X78 pack.

If the pack	Go to
is an NT6X78	step 10
is not an NT6X78	step 8

8) Determine whether the pack is an NTMX77, NTMX75, or NTMX73.

If the pack	Go to
is an NTMX77, NTMX75, or NTMX73	step 9
is not an NTMX77, NTMX75, or NTMX73	step 13

9) Download the RSCC by entering: DNLD RSCC *site* RSC *b s p* <CR> Go to step 13.

10) Return the RSCC to service by entering: RTS RSCC *site* RSC *1 1 p* IMED <CR>

11) Download the CMR by entering: DNLD CMR *site* MVIE *b s p* <CR>

Note: *When downloading the CMR, the physical location to enter is the same as that of the processor pack serving the CMR.*

12) Busy the RSCC by entering: BUSY RSCC *site* RSC *b s p* <CR>

13) Test the inactive unit by entering: TEST RSCC *site* RSC *1 1 p* <CR>

14) Determine whether the pack passed the test.

If the pack	Go to
passed the test	step 15
did not pass the test	step 19

15) Determine whether the pack is an NTMX77 pack.

If the pack	Go to
is an NTMX77	step 16
is not an NTMX77	step 17

16) Download the eeprom on the NTMX77 by entering: DNLD MX77 *site* RSC 1 1 *p* IMED <CR>

17) Return to service the inactive unit by entering: RTS RSCC *site* RSC *1 1 p* IMED <CR>

18) Determine whether the unit returned to service.

If the unit	Go to
returned to service	step 20
did not return to service	step 19

19) Contact the next level of technical support for assistance.

20) This procedure is complete.

Replace a Power Converter pack (NTMX72)

1) Load Overlay DED by entering: OVLY DED <CR>

2) Locate the faulty pack and determine that the pack is on the inactive unit by entering: STAT RSCS *site* RSC 1 1 FULL <CR>

3) Determine whether the pack is on the inactive unit.

If the pack	Go to
is on the inactive unit	step 5
is not on the inactive unit	step 4

4) Switch the status of the two RSC-S units by entering: SWCH RSCC *site* RSC 1 1 *p* (IMED) <CR>

5) Busy the controller on the inactive unit containing the pack to be replaced by entering: BUSY RSCC *site* RSC 1 1 *p* (IMED) <CR>

6) Power down the Power Converter pack by setting the POWER switch to the OFF position.

7) Replace the pack (MP 1250)

8) Power up the Power Converter pack by setting the POWER switch to the ON position. Set the POWER switch to RESET when setting the circuit breaker to the ON position.

Note: *Circuit breakers: CB07-06-01: MX72 located in position 1; CB09-06-26: MX72 located in position 26.*

9) Test the inactive unit by entering: TEST RSCC *site* RSC 1 1 *p* <CR>

10) Determine whether the unit passed the test.

If the unit	Go to
passed the test	step 11
did not pass the test	step 13

11) Return to service the inactive unit by entering: RTS RSCC *site* RSC 1 1 *p* (IMED) <CR>

12) Determine whether the unit returned to service.

If the unit	Go to
returned to service	step 14
did not return to service	step 13

13) Contact the next level of technical support for assistance.

14) This procedure is complete.

Replace a Dual DS-1 Interface pack (NTMX81)

1) Load Overlay DED by entering: OVLY DED <CR>

2) Determine the location of a possible faulty link on the C-side by entering: STAT SRLK ALL <CR>

3) Determine the location of a possible faulty link on the P-side by entering: STAT DS1L ALL <CR>

4) Abort Overlay DED and load Overlay NET by entering: **** OVLY NET <CR>

5) Correlate the PELP to the faulty link by entering QUE SRI ALL <CR> and then examining the resulting display.

Note: *The two tables located at the end of this procedure should be used to determine the NTMX81 to be removed: after having identified whether the faulty link is a C-side or P-side link, match the link number with the NTMX87 slot number and the NTMX81 packlet slot number in the appropriate table.*

6) Abort Overlay NET and load Overlay DED by entering: **** OVLY DED <CR>

7) Busy both links of the faulty packlet. For each C-side link, enter: BUSY SRLK PE/CE *b s p u* <CR>. For each P-side link, enter: BUSY DS1L *site* RSC 1 1 *p u* <CR>

8) Replace the packlet (MP 1250).

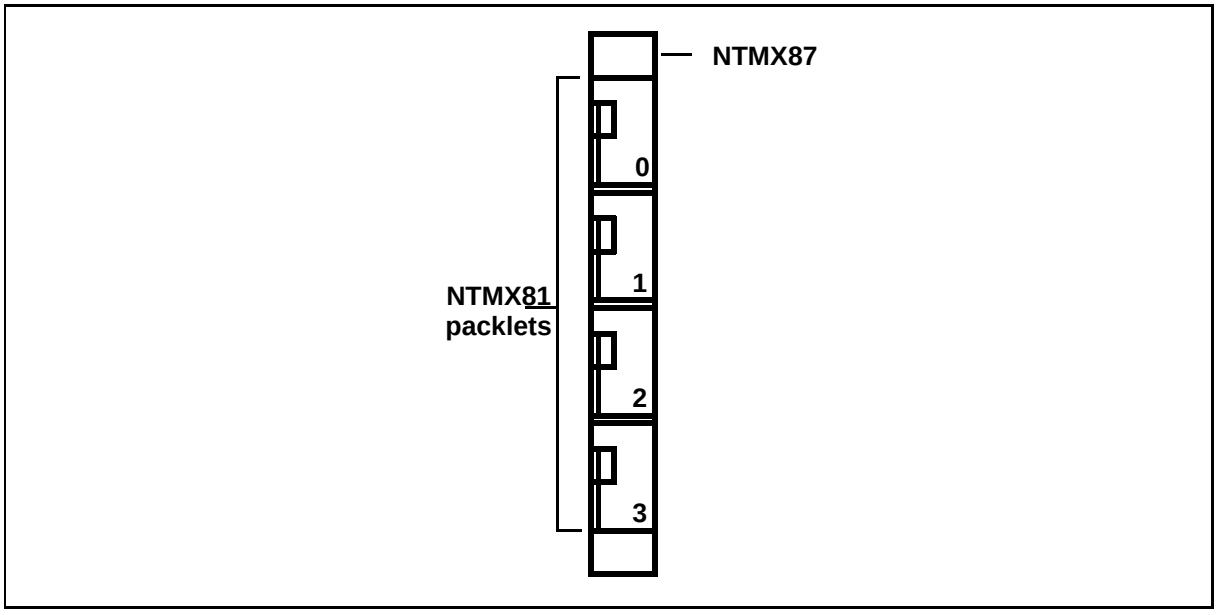
Note: *Before installing the new NTMX81, ensure that the DIP switches on the pack are set correctly. For more information, see NTP 297-3601-316, DIP Switch Settings for Printed Circuit Packs and Balance Networks.*

9) Return to service the two links busied in step 7. For each C-side link, enter: RTS SRLK PE/CE *b s p u* <CR>. For each P-side link, enter: RTS DS1L *site* RSC 1 1 *p u* <CR>

10) Determine whether the pack returned to service. If the pack returned to service, go to step 12. If the pack did not return to service, go to step 11.

11) Contact the next level of technical support for assistance.

12) This procedure is complete.



DS-1 link to NTMX81 slot position matrix - C-side		
NTMX81 packlet slot position in NTMX87	**NTMX87 slot 9**	**NTMX87 slot 19**
0	1 2	1 2
1	3 4	3 4
2	5 6	5 6
3	7 8	7 8

DS-1 link to NTMX81 slot position matrix - P-side			
NTMX81 packlet slot position in NTMX87	**NTMX87 slot 12**	**NTMX87 slot 14**	**NTMX87 slot 16**
0	1 2	1 2	1 2
1	3 4	3 4	3 4
2	5 6	5 6	5 6
3	7 8	NA	7 8

Local or Remote Recording on Cognitronics 16XX-Series Platforms

Note: *Immediate Dial should be specified as the method of incoming pulsing on the trunk group used for the Cognitronics interface (prompt STPL = IMDI, prompting sequence OUT or 2WAY of Overlay TG). For more information, see NTP 297-3601-311, Data Modification Manual.*

1) Load Overlay TLT by entering: OVLY TLT <CR>

2) Enter: SEL PE *b s p u* <CR> (trunk connection to Cognitronics 16XX)

3) Connect a Digitone telephone to a line selected for VAXS or for a maintenance DN.

4) Determine whether the printout shows the selected PE as the device under test.

If the printout	Go to
shows the selected PE as the device under test	step 6
does not show the selected PE as the device under test	step 5

5) Verify that a valid trunk pack is provisioned in the location selected and then enter: SEL PE *b s p u* <CR>
Go to step 4.

6) Determine whether recording is performed locally (in the central office).

If recording	Go to
is performed locally	step 8
is not performed locally	step 7

7) Dial the remote VAXS number from the remote location.
Go to step 14.

8) Determine whether the DN to be used for the test is a VAXS DN.

If the DN	Go to
is a VAXS DN	step 9
is not a VAXS DN	step 22

9) Enter: VAXS DN *number* <CR>

10) Determine whether the printout indicates that the maintenance telephone is a VAXS telephone.

If the maintenance telephone	Go to
is a VAXS telephone	step 11
is not a VAXS telephone	step 12

11) Enter: T <CR>
Go to step 23.

12) Enter: V DROP <CR>

13) Select a different DN
Go to step 9.

14) Determine whether two tone bursts followed by quiet termination sound and the message, REMOTE VAXS ESTABLISHED? displays.

If	Go to
the tone bursts sound and the message displays	step 18
the tone bursts do not sound and the message does not display	step 15

15) Determine whether Reorder tone is heard.

If	Go to
Reorder tone is heard	step 17
Reorder tone is not heard	step 16

16) Look up message in the Output Message Manual, then refer to the TLT section in the NTP entitled *Maintenance Diagnostic Input Manual* (297-3601-506).
Go to step 5.

17) Build REMOTE VAXS route.

Note: *Refer to the NTPs entitled Data Modification Order Input Manual (297-3601-311) and Maintenance Diagnostic Input Manual (297-3601-506) for information on REMOTE VAXS and declarations.*

Go to step 7.

18) Enter: T <CR>

19) Determine whether the printout displays, TALKING.

If	Go to
TALKING displays	step 21
TALKING does not display	step 20

20) Place the remote VAXS telephone on-hook.
Go to step 7.

21) Enter: SEIZ <CR>
Go to step 28.

22) Enter: C DN <CR>
or
C LCE *b s lsg u* <CR>

23) Determine whether the printout displays, TALKING or CONNECTED.

If	Go to
TALKING or CONNECTED displays	step 27
TALKING or CONNECTED does not display	step 24

24) Enter: CAN <CR>

25) Select a different DN.

26) Determine whether the DN to be used for the test is a VAXS DN.

If the DN	Go to
is a VAXS DN	step 9
is not a VAXS DN	step 22

27) Take the VAXS or maintenance telephone off-hook and enter: SEIZ <CR>

28) Determine whether the printout displays, NOT SEIZED.

If NOT SEIZED	Go to
displays	step 30
does not display	step 29

29) Determine whether the printout displays, DUT, OFHK, DUT ONHG, TLT001 SEIZED.

If DUT, OFHK, DUT ONHG, TLT001 SEIZED	**Go to**
displays	step 31
does not display	step 30

30) Enter: D <CR>; then place the VAXS or maintenance telephone on-hook
Go to step 5.

31) Determine whether the Cognitronics recorded menu was heard.

If the Cognitronics menu	**Go to**
was heard	step 34
was not heard	step 32

32) Enter: D <CR>; then place the VAXS or maintenance telephone on-hook

33) Inspect the operation of the Cognitronics unit and the trunk setup. Go to step 5.

34) Enter: <password> #

35) Determine whether the Cognitronics recorded menu was heard.

If the Cognitronics menu	**Go to**
was heard	step 37
was not heard	step 36

36) Enter: D <CR>; then place the VAXS or maintenance telephone on-hook Go to step 5.

37) Follow the recorded menu instructions for creating messages and announcements.

38) Determine whether the recording session is finished.

If the recording session	**Go to**
is finished	step 39
is not finished	step 37

39) Enter: D <CR>; then place the VAXS or maintenance telephone on-hook.

40) This procedure is complete.

Note: *Busying the TDS will also cause the Universal Tone Receiver (UTR) pack to go into man-made-busy state. The UTR will automatically return to service when the newly installed TDS is returned to service.*

Switch Core

1) Load Overlay CED by entering: OVLY CED <CR>

2) Enter: SWCH CORE <CR>

Note: *If a fault exists in the standby Core, the command SWCH CORE will result in output message CED144 mask. The mask mnemonic specifies the core fault.*

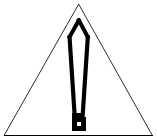
3) Determine whether the Cores switched.

If the Cores	Go to
switched	step 13
did not switch	step 4

4) Determine whether the message, CED111 displays.

If CED111	Go to
displays	step 5
does not display	step 6

5) Enter: ALLW SWCH <CR>



CAUTION
Never enter ALLW SWCH before determining why INH SWCH was invoked; the system may Initialize or SYSLOAD.

Go to step 3.

6) Determine whether the message, CED140 displays.

If CED140	Go to
displays	step 7
does not display	step 8

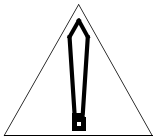
7) Read fault code of hexadecimal display on the Core CPU **(**NT3T98). Go to step 12.

8) Determine whether a CED144 mask displays.

If a CED144 mask	Go to
displays	step 13
does not display	step 12

9) Enter: SWCH CORE mask <CR>

Note: *The command SWCH CPU mask instructs the program to ignore one or more of these faults and switch CPUs.In order to ignore a fault, use the same mnemonic that followed the CED144 message. For example, if the printout is CED144 IOI, enter:*
SWCH CORE IOI.



CAUTION
Carefully analyze any faults indicated by the CED144 message before forcing a CPU switchover; otherwise, the system may Initialize or SYSLOAD.

10) Determine whether the Cores are switched.

If the Cores	Go to
are switched	step 13
are not switched	step 12

11) Enter: STAT CORE <CR>

12) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

13) This procedure is complete.

Connect tone

1) Load Overlay SED by entering: OVLY SED <CR>

2) Enter: GIVE *tone* CE *b s p DN* <CR> See the GIVE *tone* description in NTP 297-3601-506, Overlay SED, for tones; CE *b s p* is the location of the Tone and Digit Sender (TDS) packs; and DN is a local (intraoffice) seven-digit number (three digits, space, four digits)

3) Determine whether the message, *tone* TONE SENT TO DN: DN displays.

If the message	Go to
displays	step 4
does not display	step 7

4) Go off hook and listen to the tone (lasts for 25 seconds).

5) Determine whether additional tones are to be tested.

If additional tones	Go to
are to be tested	step 6
are not to be tested	step 8

6) Return to Step 2 for additional tone tests.

7) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

8) This procedure is complete.

Test Digitone Receiver

1) Choose a telephone set that has a Digitone pad.

2) Load Overlay TLT by entering: OVLY TLT <CR>

3) Determine whether the system is configured with DTMF.

If the system	Go to
is configured with DTMF	step 4
is not configured with DTMF	step 7

4) Connect a patch cord between the transmit jack of the two-wire test trunk (2WTT) and the receive jack of the four-wire test trunk (4WTT).

5) Give the Digitone location by entering: DTRT PE *b s p* <CR>

6) Generate Digitone digits by entering: OPLS DGT *digits* (ANI) <CR> (Type a space between digits; read printout to determine if digits were received).
Go to step 11.

7) Specify the device to be tested by entering: SEL PE *b s p u* <CR> (where PE *b s p* u is the location of the chosen telephone set).

8) Collect all digits received by Digitone receiver to be tested by entering: COL DGT PE *b s p u* <CR> (where PE *b s p u* is the location of the Digitone receiver to be tested).

9) Go off-hook and dial numbers on the Digitone pad, one at a time.

10) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

Note: *The maintenance terminal prints digits as they are dialed. If no printout appears during dialing, go on-hook and off-hook, then dial again. Several attempts may be needed before system selects desired Digitone receiver.*

11) This procedure is complete.

Manually test Subscriber Remote Interface (SRI) pack or SRI link

1) Load Overlay MTD by entering: OVLY MTD <CR>

2) Replace working tape with a scratch tape (MP 1280).

3) Test Magnetic Tape Unit *n* by entering: TEST MTU *n* <CR>

4) Determine whether the MTU passed the test.

If the MTU	Go to
passed the test	step 5
did not pass the test	step 6

5) Replace scratch tape with a working tape (MP 1280).
Go to step 7.

6) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

7) This procedure is complete.

Test 800-bpi Magnetic Tape Unit (MTU)

1) Load Overlay MTD by entering: OVLY MTD <CR>

2) Replace working tape with a scratch tape (MP 1280).

3) Test Magnetic Tape Unit *n* by entering: TEST MTU *n* <CR>

4) Determine whether the MTU passed the test.

If the MTU	Go to
passed the test	step 5
did not pass the test	step 6

5) Replace scratch tape with a working tape (MP 1280).
Go to step 7.

6) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

7) This procedure is complete.

Test Universal Tone Receiver (UTR) pack (NT4T02)

1) Load Overlay SED by entering: OVLY SED <CR>

2) Test the UTR by entering: TEST UTPK CE *b s p* <CR>

3) Determine whether the message, SED100 displays for each channel on the pack.

If the message	Go to
does display for each channel on the pack	step 5
does not display for each channel on the pack	step 4

4) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

5) This procedure is complete.

Test station ringer

1) Determine whether the line is a coin line.

If the line	Go to
is a coin line	step 2
is not a coin line	step 4

2) Determine whether dial tone sounds first.

If dial tone	Go to
sounds first	step 4
does not sound first	step 3

3) Go off hook, deposit coin, and listen for dial tone.
Go to step 5.

4) Go off-hook and listen for dial tone.

5) Dial the station ringer access code (for example, 57) and the last five digits of the directory number of the telephone being tested. Listen for dial tone.

6) Momentarily depress and release the hook switch.

7) Go on-hook and listen for ringing.

8) Go off-hook. Listen for SDSC tone as specified in configuration record.

9) Go on-hook.

10) Determine whether a ringer test is to be performed again.

If the test	Go to
is to be performed again	step 4
is not to be performed again	step 11

11) This procedure is complete.

Test station ringer

Note: *This procedure applies to switches that are configured with the Meridian Business Sets (MBS) feature and M5000-Series business sets. The station ringer test tests the display and keys of the M5000-Series set.*

To prepare for the test, with the handset on hook and all LCD indicators off, press the prime directory number key and dial the 3- to 14-digit access code. The access code consists of a 1- to 7-digit number assigned by the telco followed by the last 2 to 7 digits of the prime directory number assigned to the telephone being tested. If the prime directory number is dialed incorrectly, a reorder tone is connected to the speaker on the telephone set; to disconnect the call, press the release key. If the prime directory number is dialed correctly, all LCD indicators on the set, except the LCD associated with key 9, are turned on, and the procedure in Table 1506-A may be performed.

Table 1506-A
Perform station ringer testing on M5000-Series business set

Step	Action	Response Observed
1	Handset off hook	All LCDs flash
2	Handset on hook	All LCDs wink
3	Handset off hook	All LCDs on
4	Handset on hook	All LCDs off
5	Dial pad key 1	LCD 1 on (digit will be echoed on the set display)
6	Dial pad key 2	LCD 2 on (digit will be echoed on the set display)
7	Dial pad key 3	LCD 3 on (digit will be echoed on the set display)
8	Dial pad key 4	LCD 4 on (digit will be echoed on the set display)
9	Dial pad key 5	LCD 5 on (digit will be echoed on the set display)
10	Dial pad key 6	LCD 6 on (digit will be echoed on the set display)
11	Dial pad key 7	LCD 7 on (digit will be echoed on the set display)
12	Dial pad key 8	LCD 8 on (digit will be echoed on the set display)
13	Dial pad key 9	LCDs 1 & 8 on (digits will be echoed on the set display)
14	Dial pad key 0	LCDs 2 & 8 on (digits will be echoed on the set display)
15	Dial pad key *	All LCDs on (digits will be echoed on the set display)
16	Dial pad key #	All LCDs off (digits will be echoed on the set display)

Table 1506-A (Continued)
Perform station ringer testing on M5000-Series business set

Step	Action	Response Observed
17	Feature key *n(n)* This step should be performed for each feature key located on the base set and for each operational key located on add-on units connected to the set.	LCD associated with the feature key pressed *on*
18	Release key	LCDs 2 & 8 on
19	Hold key	Dial tone, LCDs 1 - 5 on
20	Volume up	Volume up
21	Volume down	Volume down
22	Handset off hook	Dial tone at handset
23	Handset on hook	Dial tone at speaker, LCD 12 on, LCDs 1 - 10 wink
24	Hold key	1 second of buzz tone (alert B), LCDs 6 - 10 on, all other LCDs off
25	Hold key	Ringing
26	Volume up	Volume up
27	Volume down	Volume down
28	Hold key	If M5009 or M5112, the display clears and the test is finished. If M5209 or M5312, LCDs 2, 3, and 4 flash indicating that a circuit test is running. No keys should be pressed during the circuit test. When the test is completed, LCDS 1 - 9 will turn on and two numbers separated by a slash (/) will display on the LCD display. The two numbers are the count of the messages received (left number) and the messages sent (right number, as defined for the office in Overlay CNFG); the two numbers should be equal. If the two numbers are not equal, and LCDs 1, 2, and 8 only are on, the test has failed. An incomplete test is indicated by LCDs 1, 2, and 8 winking.
29	Hold key	Display clears

Test station ringer (Datapath Line Card data unit)

Note: *This procedure applies to switches that are configured with the Datapath Line Card feature. The station ringer test verifies the correct operation of the dial pad, function keys and indicator lamps. As with the existing station ringer test, no terminations will be allowed during the test.*

To run the test, ensure first that all LED indicators off (with the exception of the Status LEDs), then press the DN key and dial the station ringer test access code plus the the directory number of the assigned data unit. If the correct directory number was dialed, all of the LEDs are turned on, and the procedure in Table 1507-A may then be performed.

Feature keys 4 and 5 are not included in the test sequence since these correspond to the ALTERNATE and SETTINGS keys on the data unit, used for configuring options at the data unit. Feature key 7 is also not included, because it is reserved for future use.

Table 1507-A
Perform station ringer testing on Datapath Line Card data unit

Step	Action	Response Observed
1	Dial pad key 1	LED 0 on
2	Dial pad key 2	LED 1 on
3	Dial pad key 3	LED 2 on
4	Dial pad key 4	LED 3 on
5	Dial pad key 5	LED 6 on
6	Dial pad key 6	LEDs 0 and 1 on
7	Dial pad key 7	LEDs 0 and 2 on
8	Dial pad key 8	LEDs 0 and 3 on
9	Dial pad key 9	LEDs 0 and 3 wink
10	Dial pad key 0	LEDs 0 and 3 flash
11	Dial pad key *	All LEDs on
12	Dial pad key #	All LEDs off
13	Feature key 0 (DN)	LED 0 on
14	Feature key 1	LED 1 on
15	Feature key 2	LED 2 on
16	Feature key 3	LED 3 on
17	Feature key 6	LED 6 on
18	Release key	DT and LED 0-3 on

Table 1507-A (Continued)
Perform station ringer testing on Datapath Line Card data unit

Step	Action	Response Observed
19	Volume up	None
20	Volume down	None
21	Release key	1 second of buzz tone and LED 6 on
22	Release key	test complete (call dropped)

Update SCM-10S or SCM-10U static data

1) Load Overlay DED, if it is not already loaded, by entering: OVLY DED <CR>.

2) Busy the standby controller by entering: BUSY SCUC SCE *b s* <CR> or BUSY SCSC SCE *b s* <CR>.

3) Return the standby controller to service by entering: RTS SCUC SCE *b s* <CR> or RTS SCSC SCE *b s* <CR>.

4) Switch controller activity by entering: SWCH SCUC SCE *b s* <CR> or SWCH SCSC SCE *b s* <CR>.

5) Make the desired changes to the static data.

6) Busy the standby controller (the controller placed in standby mode in step 4) by entering: BUSY SCUC SCE *b s* <CR> or BUSY SCSC SCE *b s* <CR>

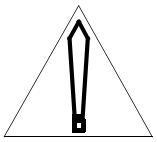
7) Return the standby controller to service by entering: RTS SCUC SCE *b s* <CR> or RTS SCSC SCE *b s* <CR>

8) Switch controller activity by entering: SWCH SCUC SCE *b s* <CR> or SWCH SCSC SCE *b s* <CR>.

9) This procedure is complete.

Adjust PE Ringing Generator output voltage

1) Remove the fuses for the RG1 and MON1 packs.



CAUTION
One PE ringing generator must remain in service at all times to provide ringing for PE lines. Ensure that only the fuses for one ringing generator are absent at any one time. If the shelf is equipped with wiring option Z, ensure that the +48V supply fuse is also removed.

Note: *The fuse block is immediately above the alarm display LED. If the +48V fuse option is provided, this fuse is located above the audible silence LED and should also be removed.*

2) At the back of the Alarm Display Panel, locate the barrier strips.

3) At the SF barrier strip, locate the wire (which can be on terminals 7, 8, or 9) coming out of the cable form.

4) Disconnect the wire from the terminal.

5) Using a continuity tester, ensure that there is continuity between the end of the wire and the terminal of relay T-RG specified in Table 1510-A for the lead.

6) Reconnect the lead to the appropriate terminal for the desired voltage (See Table 1510-B)

Note: *The leads for the ringing monitor remain on terminal 8.*

7) Repeat the previous steps for the MF barrier strip of RG-1.

8) Reinsert the fuses for RG-1 in the fuse block.

9) Repeat the entire process for RG-2.

10) This procedure is complete.

Table 1510-A
Terminal and LED designation

Pack	Frequency	Barrier strip number	Relay T-RG terminal
RG1	SF	BS-1	6L
RG1	MF	BS-2	3L
RG2	SF	BS-4	4L
RG2	MF	BS-3	1L

Table 1510-B
Barrier strip terminal voltage

Frequency range (Hz)	Barrier strip terminal voltage (RMS)		
	7	8	9
16.66 to 20	82.5	95	110
25 to 30	90	105	120
33.33 to 42	100	115	130
50 to 66.66	110	125	140

Perform a rotary dial speed test

1) Listen for dial tone at the customer station.

2) From the customer station, dial the DN assigned to dial speed test.

3) Listen for a second dial tone.

4) Dial digit 0, listen for tone(s) and refer to note (See **Note 1**).

   Note: *Results of the Dial Speed Test: One burst of high tone-slow; two bursts of high tone-normal; three bursts of high tone-fast; 120 ipm overflow? 0 wasn't dialed; repeat test.*

5) Determine whether the test is to be repeated.

If the test	Go to
is to be repeated	step 6
is not to be repeated	step 7

6) Dial 1, then 0.

7) This procedure is complete.

Test Digitone dial

1) Determine whether the line being tested is a coin line.

If the line	Go to
is a coin line	step 2
is not a coin line	step 4

2) Determine whether the line being tested is a semi post-pay line.

If the line	Go to
is a semi post-pay line	step 4
is not a semi post-pay line	step 3

3) Go off-hook, deposit coin, and listen for dial tone.
Go to step 5.

4) Go off-hook and listen for dial tone.

5) Dial the station ringer access code (for example, 57) and the last five digits of the directory number of the telephone being tested. Listen for dial tone.

6) Dial: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, *, # Listen for dial tone during keying.

7) Determine whether one or two silent periods were received after the last digit was dialed.

If the number of silent periods received	Go to
is one	step 8
is two	step 9

8) Not all digits received or received out of sequence; clear trouble before proceeding.
Go to step 6.

9) Dial any digit except 1. Listen for a silent period after the digit is dialed.

10) Determine whether the Digitone test is to be performed again.

If the test	Go to
is to be performed again	step 6
is not to be performed again	step 11

11) Go on-hook.

12) This procedure is complete.

Locate tip and ring cable pair using the Dialable Cable Locator Tone feature

Note: *Before this procedure can be performed, the Dialable Cable Locator Tone feature must be installed in the DMS-10. For a procedure used to set up this feature, see Service Order Procedure (SOP) 0098 in NTP 297-3601-311, entitled Data Modification Manual. For additional information about this feature, see NTP 297-3601-105, entitled Features and Services Description.*

1) Dial the Dialable Cable Locator Tone access code, determined in SOP 0098, followed by the DN of a station in the same HNPA and rate center.

2) Begin checking for the tip and ring cable pair. When the cable pair has been found, a trace tone will be heard (Note that the trace tone is applied to the cable pair only for the number of minutes determined in SOP 0098).

3) Hookflash twice to stop the tone.

4) This procedure is complete.

Remove battery from a line using the Silent Switchman feature

Note:*Before this procedure can be performed, the Silent Switchman feature must be installed in the DMS-10. For a procedure used to set up this feature, see Service Order Procedure (SOP) 0103 in NTP 297-3601-311, entitled Data Modification Manual. For additional information about this feature, see NTP 297-3601-105, entitled Features and Services Description.*

1) Dial the Silent Switchman access code, determined in SOP 0103, from a station in the same HNPA.

2) Listen for busy tone on that line; the tone will be heard for 10 seconds. The line will then be silent for the number of seconds determined in SOP 0103 before dial tone is restored.

3) If additional maintenance time is required, repeat the procedure. No hookflash is required before step 1 is performed.

4) This procedure is complete.

Monitor trunk

1) Load Overlay TLT by entering: OVLY TLT <CR>
2) Select the device to be monitored by entering: SEL PE *b s p u* <CR> (If the device is call- processing busy, TLT will respond with prompt BUSY MODE).
3) Enter: MON <CR> (The call is monitored over the craftsperson's phone).
4) This procedure is complete.

Circuit validation test for ISUP trunks

1) Load Overlay TLT by entering: OVLY TLT <CR>

2) Identify the trunk to be tested by entering: SEL PE *b s p u* <CR>

3) Perform the circuit validation test for the selected trunk by entering: CVT <CR>

4) Determine whether the test passed (message TLT920 displays).

If the test	Go to
passed	step 6
did not pass	step 5

Note: *To make a test call over the trunk, use MP 1530.*

5) Contact far-end office to resolve configuration problem. Go to step 2.

6) This procedure is complete.

Make test call on a selected trunk

Note: *This procedure will connect the test telephone to a test trunk or to another telephone set by way of a specified trunk.*

1) Load Overlay TLT by entering: OVLY TLT <CR>
2) Identify the trunk to be tested by entering: SEL PE *b s p u* <CR>
3) If other than the craftsperson's phone, identify the source (test telephone) by entering: CONN PE *b s p u* <CR> or by entering: CONN LCE *b s lsg l* <CR>
4) Identify called number and outpulse digits (type a space between digits) by entering: OPLS DP/MF/DGT/ISUP *digits* (ANI) (COT) <CR>
5) Lift handset on test telephone.
6) Restore handset on test telephone.
7) Release connection by entering: DROP <CR>
8) This procedure is complete.

Using Overlay TLT, adjust the transmission levels of two- or four-wire test trunks

1) From the office records, determine the location of the test trunk pack and the maintenance panel jacks.

2) Check the test trunk pack DIP-switch settings against Table 1535-A.

3) Load Overlay TLT by entering: OVLY TLT <CR>

4) Connect a patch cord between the test trunk jack in the maintenance panel and the level meter.

5) Select trunk type to be tested (2WTT is a two-wire test trunk, 4WTT is a four-wire test trunk) by entering: SEL *trunk type* <CR>

6) Connect the trunk under test to a test tone by entering: CONN TONE TEST <CR>

7) Adjust the D/A potentiometer on the test trunk faceplate to the desired level

Note 1: The two-wire test trunk (2WTT) and the four-wire test trunk (4WTT) transmission levels must be adjusted before using them as a reference for the other trunks in the system.

Note 2: Refer to Figure 1535-1 for potentiometer location.

8) Drop the connection by entering: DROP <CR>

9) Connect patch cords between the test trunk jacks in the maintenance panel and the level meter.

10) Select the trunk type to be tested (2WTT is a two-wire test trunk and 4WTT is a four-wire test trunk) by entering: SEL *trunk type* PE *b s p u* <CR>

11) Connect the test trunk to the trunk under test by entering: CONN *trunk type* <CR>

12) Adjust the A/D potentiometer on the test trunk faceplate to the desired level.

Note: *Refer to Figure 1535-2 for potentiometer location.*

13) Drop the connection established in Step 11 by entering: DROP <CR>

14) This procedure is complete.

Table 1535-A **Switch settings and adjustment levels for analog trunk packs**		
	Option switches closed	**Adjustment level (dBm)**
Toll Connecting	5, 2	0
Other Facility Loss > 2dB	6, 3	-1
Other Facility Loss < 2dB	7, 4	-2
Recorded Announcement	7, 4	-2
Test	7, 4	-2

Figure 5-1: D/A adjustments for test trunks

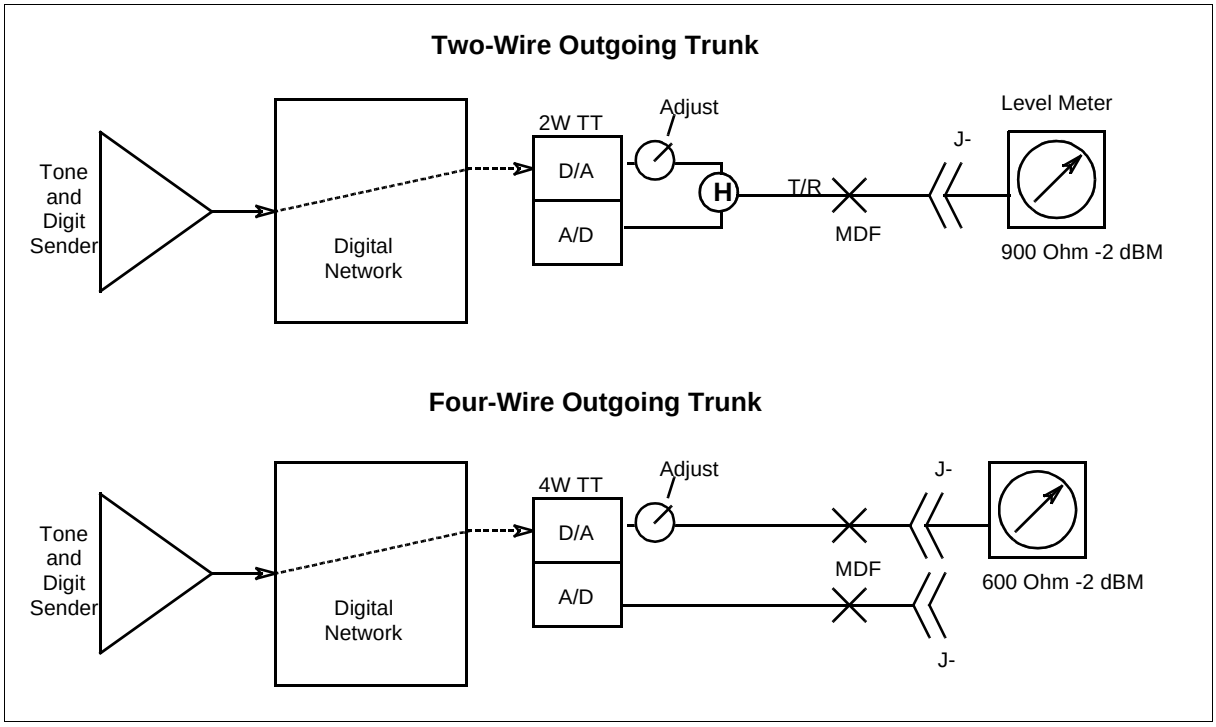
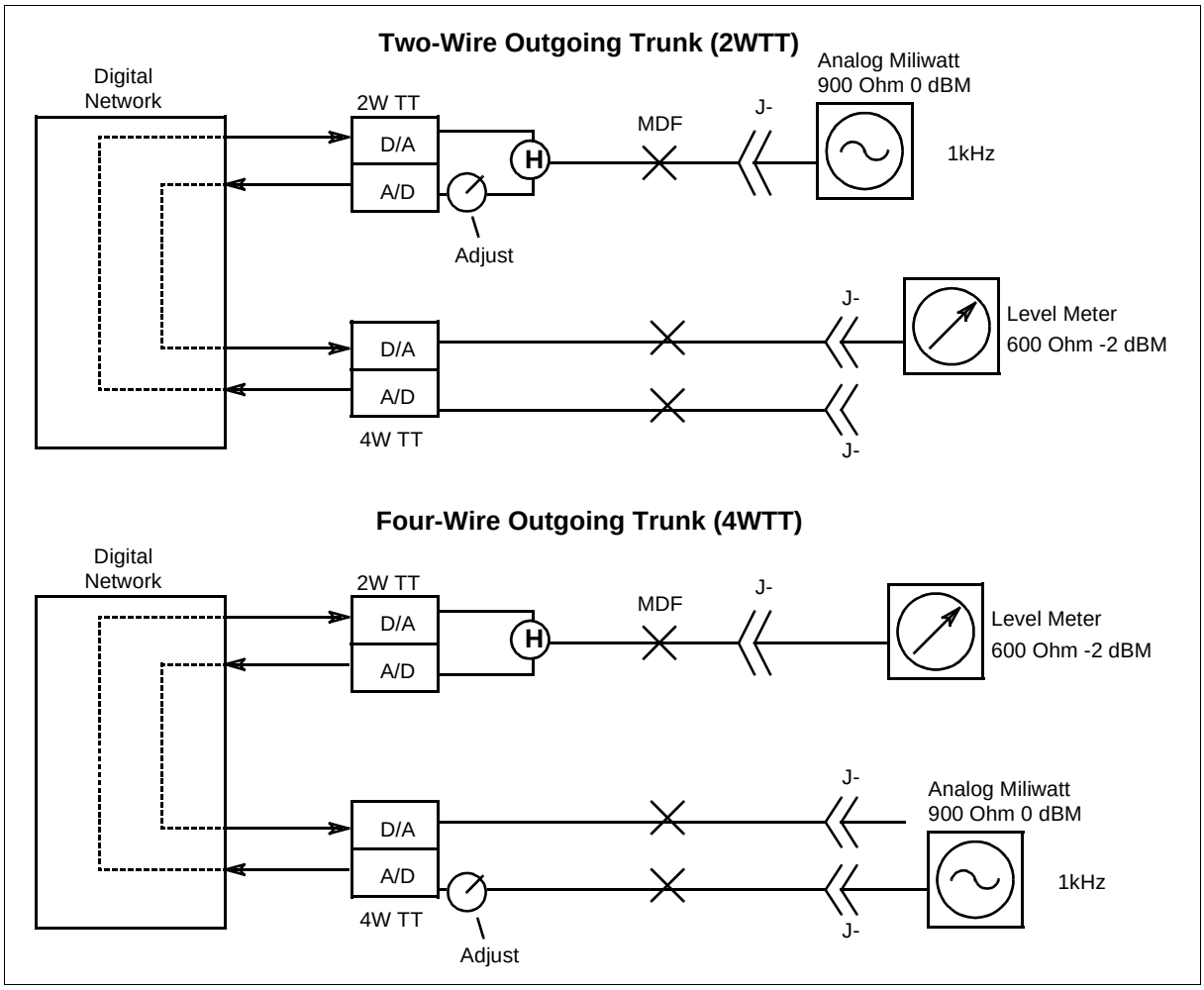


Figure 5-2: A/D adjustments for test trunks



Using Overlay TLT, adjust the transmission levels of two- or four-wire trunks

1) Load Overlay TLT by entering: OVLY TLT <CR>

2) Check the trunk pack DIP-switch settings against Table 1540-A.

3) Select the trunk to be tested by entering: SEL PE *b s p u* <CR>

4) Establish a metallic access between the trunk specified in Step 3 and a jack on the maintenance jack panel by entering: JACK <CR>

5) Connect the test trunk to the trunk specified in Step 3 by entering: CONN type <CR> (type is 2WTT for a two-wire trunk and 4WTT for a four-wire trunk).

6) Connect patch cords between the level meter, the analog milliwatt supply, and the maintenance jack provided in Step 4.

7) Adjust the potentiometer on the pack under test.

Note: *Refer to Figure 1540-1 for potentiometer location*

8) Drop the connection established in Step 5 by entering: DROP <CR>

9) Select the trunk to be adjusted by entering: SEL PE *b s p u* <CR>

10) Establish a metallic access between the trunk specified in Step 9 and a jack on the maintenance jack panel by entering: JACK <CR>

11) Establish a digital path between the test trunk *trunk type* and the trunk selected in Step 9 by entering: CONN *trunk type* <CR> (2 WTT is a two-wire trunk, 4WTT is a four-wire trunk).

12) Connect patch cords between the level meter, the analog milliwatt supply, and the maintenance jack reported available in Step 10.

13) Adjust the potentiometer on the pack under test.

Note: *Refer to Figure 1540-2 for potentiometer location.*

14) Drop the connection established in Step 11 by entering: DROP <CR>

15) This procedure is complete.

Table 1540-A
Switch settings and adjustment levels for analog trunk packs

	Option switches closed	Adjustment level (dBm)
Toll Connecting	5, 2	0
Other Facility Loss > 2dB	6, 3	-1

Table 1540-A (Continued) **Switch settings and adjustment levels for analog trunk packs**		
	Option switches closed	**Adjustment level (dBm)**
Other Facility Loss < 2dB	7, 4	-2
Recorded Announcement	7, 4	-2
Test	7, 4	-2

Figure 5-3: D/A adjustments for outgoing trunks

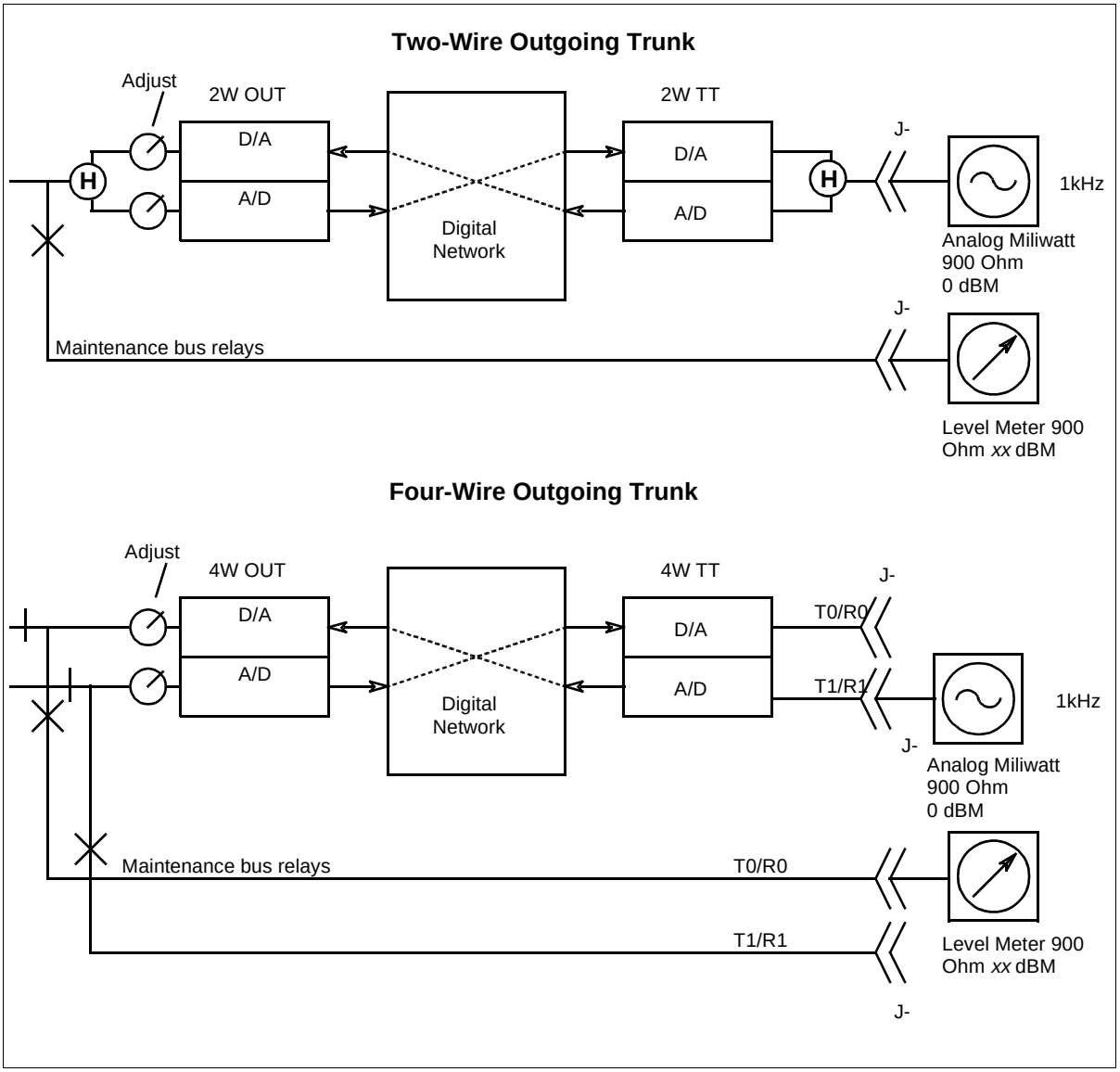
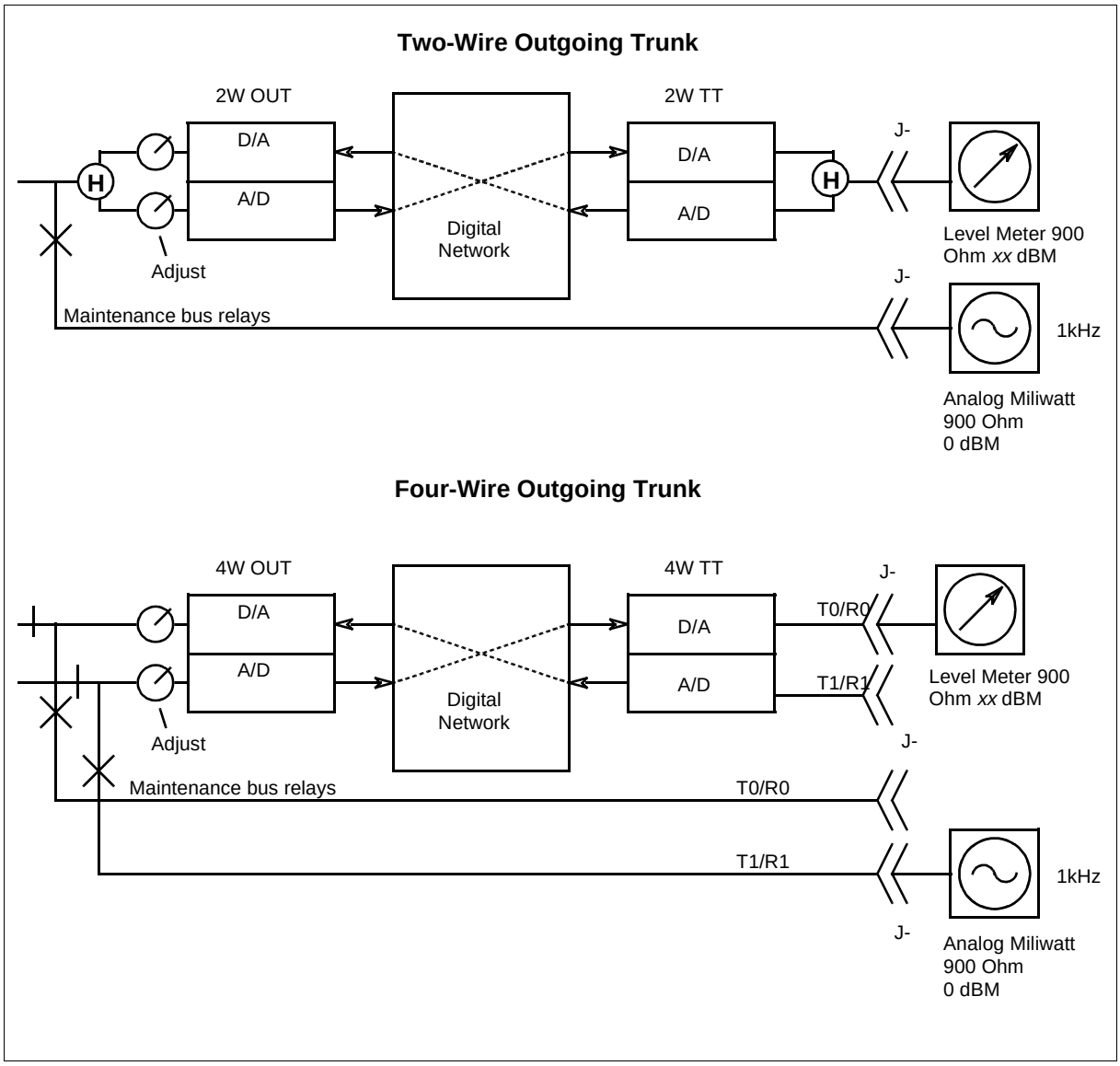


Figure 5-4: A/D adjustments for outgoing trunks



Measure transmission loss or noise of a trunk

1) Load Overlay TLT by entering: OVLY TLT <CR>

2) Select the trunk to be tested by entering: SEL PE *b s p u* <CR>

3) Determine whether the "noise" or "loss" transmission characteristic is to be measured.

If	Go to
noise is to be measured	step 9
loss is to be measured	step 4

4) Outpulse the access number for the tone source at the far-end office by entering: OPLS *a b c d e f g* <CR>

5) Determine whether the switch is equipped with an AC tester.

If the switch	Go to
is equipped with an AC tester	step 8
is not equipped with an AC tester	step 6

6) Connect the trunk under test to a two- or four- wire test trunk by entering: CONN 2WTT/4WTT <CR> (2WTT if the trunk under test is a two-wire trunk; 4WTT if the trunk under test is a four-wire trunk).

7) Connect a transmission loss measuring set to the jackfield, and perform measurements.
Go to step 14.

8) Measure the transmission loss by entering: POWR FLAT (REP *n*) <CR>
Go to step 14.

9) Outpulse the access number for quiet termination at the far-end office by entering: OPLS *a b c d e f g* <CR>

10) Determine whether the switch is equipped with an AC tester.

If the switch	Go to
is equipped with an AC tester	step 13
is not equipped with an AC tester	step 11

11) Connect the trunk under test to a two- or four-wire test trunk by entering: CONN 2WTT/4WTT <CR> (2WTT if the trunk under test is a two-wire trunk; 4WTT if the trunk under test is a four-wire trunk).

12) Connect a transmission loss measuring set to the jackfield, and perform measurements.
Go to step 14.

13) Measure the transmission noise by entering: POWR CMSG (REP *n*) <CR>

14) Release connection by entering: DROP <CR>

15) This procedure is complete.

Connect Badger Cl614 to test outgoing trunk

1) Load Overlay TLT by entering: OVLY TLT <CR>
2) Select the trunk to be tested by entering: SEL PE *b s p u* <CR>
3) Connect this trunk to a specified Badger test trunk by entering: CONN PE *b s p u* <CR>
4) Seize the trunk to be tested by entering: SEIZ <CR>
5) Outpulse the digits of the far-end test line access number by entering: OPLS DP *digits* <CR>
6) Perform Badger trunk tests. Badger console restrictions can be found in the NTP entitled *General Maintenance Information* (297-3601-500).
7) Drop the connection established in Step 3 by entering: DROP <CR>
8) Repeat Steps 2 through 7 for each trunk to be tested.
9) This procedure is complete.

Connect a Badger Cl614 to test incoming trunk

1) Load Overlay TLT by entering: OVLY TLT <CR>
2) Specify the incoming trunk to be tested by entering: SEL PE *b s p u* <CR>
3) Establish a connection between the trunk to be tested and the specified Badger test trunk by entering: CONN PE *b s p u*
4) Perform Badger trunk tests. Badger console restrictions can be found in the NTP entitled *General Maintenance Information* (297-3601-500).
5) Drop the connection established in Step 3 by entering: DROP <CR>
6) Repeat Steps 2 through 5 for each trunk to be tested.
7) This procedure is complete.

Set up Remote Office Test Line (ROTL) test

1) Load Overlay PED by entering: OVLY PED <CR>

Note: *The ROTL testing system cannot be used to test digital trunks on the Digital Synchronous Interface (DSI).*

2) Obtain the status of the AC Tester (ACT) by entering: STAT PEPK PE *b s* 2 <CR>

3) Determine whether the ACT is busy.

If the ACT	Go to
is busy	step 4
is not busy	step 6

4) Abort Overlay PED and load Overlay MPD by entering: **** OVLY MPD <CR>

5) Download the ACT by entering: DNLD ACT <CR>

6) Connect a ROTL test set to the MDF tip and ring pins of any directory number in the ROTL directory number's rate treatment package.

7) On the ROTL test set, dial the DN being intercepted to the ROTL route.

8) When test-progress tone is heard from the DMS-10 ROTL, use priming information from Table 1560-A for further testing.

9) This procedure is complete.

Table 1560-A
Priming formats for DMS-10 ROTL

ROTL command	Digits transmitted to ROTL
Transmission Testing: 100 Test Line (TL) 102TL 105TL	 KP,0,0,0, TUT, digits, ST KP,0,2,0, TUT, digits, ST KP,0,5,0, TUT, digits, ST
Override Man-Made-Busy: 100TL 102TL 105TL	 KP,1,0,0, TUT, digits, ST KP,1,2,0, TUT, digits, ST KP,1,5,0, TUT, digits, ST
Long-Term Balance	KP,4,0,0, TUT, digits, ST
Long-Term Balance, Man-Made-Busy Override	KP,4,1,0, TUT, digits, ST
Remote Maintenance-Make-Busy	KP,5,0,0, TUT, ST
Remote Return-to-Service	KP,5,1,0 TUT, ST
Individual Trunk Status	KP,5,2,0, TUT, ST
Trunk Group Status by Trunk	KP,5,3,0, TUT, ST

Table 1560-A (Continued) **Priming formats for DMS-10 ROTL**	
ROTL command	**Digits transmitted to ROTL**
Trunk Group Status by Trunk Group	KP,5,4,0, TG, ST
Security Call Back Request	KP,5,5 ID, ST
Connection Appraisal Tests: 100TL 102TL 105TL	 KP,6,0, digits, ST KP,6,2, digits, ST KP,6,5, digits, ST

Legend:

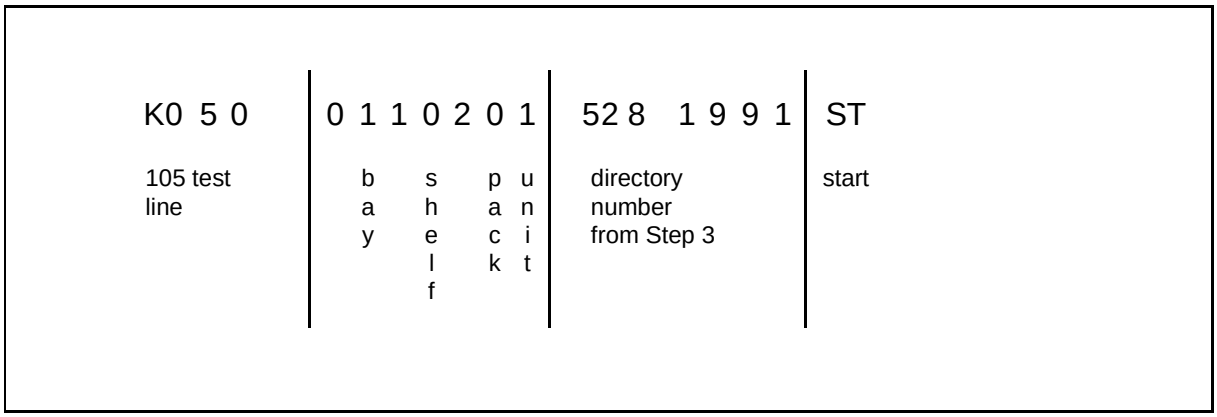
TUT = location (bbsppuu) of the trunk under test. TUT must always be seven digits in the following format: two-digit bay (bb), one-digit shelf (s), two-digit pack (pp), two-digit unit (uu).

digits = directory number assigned to test line

ID = security call-back number used to define the automatic or manual test source. Refer to Overlay CNFG (CROT), ID digit. Digits 0 through 9 are valid.

TG = two-digit trunk group number

Figure 5-5: Sample Priming



Perform line card cut over

Note: *Refer to the NTP entitled Maintenance Diagnostic Input Manual (297-3601-506) for the command formats.*

1) Using overlay PED, test the line cards to be placed in service.

2) If World Line Cards (NT6X17BA or NT6X18BA) are to be placed in service, disable over-voltage reporting for the site using overlay CNFG (SITE), prompt OVDI (see NTP 297-3601-311, *Data Modification Manual*).

3) Using overlay PED, issue the CUT OVER command.

4) Install the cutoff strap.

5) Perform any necessary cross-connection to the MDF.

6) As required by operating company procedures, perform board-to-board testing.

7) Cut cables.

8) Remove the cutoff strap.

9) Reenable over-voltage reporting for the site (see step 2).

10) This procedure is complete.

Correct one way transmission on SCM-10S and SCM-10U after power up

1) Load Overlay DED by entering: OVLY DED <CR>

2) Determine whether the office has an SCM-10S or SCM-10U.

If the office	Go to
has an SCM-10S	step 3
has an SCM-10U	step 16

3) Determine the status of the SCM-10S by entering: STAT SCSC SCE *b s*

4) Switch the SCM-10S shelves by entering: SWCH SCSC SCE *b s*

5) Busy the SCM-10S by entering: BUSY SCSC SCE *b s*

6) Place the SCM-10S shelf in the offline state by entering: OFFL SCSC SCE *b s*

7) Reseat the NT6X80 pack on the SCM-10S shelf.

8) Busy the SCM-10S by entering: BUSY SCSC SCE *b s*

9) Download the SCM-10S shelves by entering: DNLD SCSC SCE *b s*

10) Determine whether the download was successful.

If the download	Go to
was successful	step 11
was not successful	step 30

11) Return the SCM-10S shelf to service by entering: RTS SCSC SCE *b s b s p* <CR>

12) Determine whether the shelf returned to service.

If the shelf	Go to
returned to service	step 13
did not return to service	step 30

13) Switch the shelves by entering: SWCH SCSC SCE *b c*

14) Perform test to verify that no one way transmission exists (MP1530)

15) Determine whether one-way transmission still exists.

If one-way transmission	Go to
still exists	step 29
does not exist	step 31

16) Determine the status of the SCM-10U by entering: STAT SCU SCE *b s*

17) Switch the SCM-10U shelves by entering: SWCH SCUC SCE *b s*

18) Busy the SCM-10U by entering: BUSY SCUC SCE *b s*

19) Place the SCM-10U shelf in the offline state by entering: OFFL SCUC SCE *b s*

20) Reseat the NT6X80 pack on the SCM-10U shelf.

21) Busy the SCM-10U by entering: BUSY SCUC SCE *b s*

22) Download the SCM-10U shelves by entering: DNLD SCUC SCE *b s*

23) Determine whether the download was successful.

If the download	Go to
was successful	step 24
was not successful	step 30

24) Return the SCM-10U shelf to service by entering: RTS SCUC SCE *b s*

25) Determine whether the shelf returned to service.

If the shelf	Go to
returned to service	step 26
did not return to service	step 30

26) Switch the shelves by entering: SWCH SCUC SCE *b c*

27) Perform test to verify that no one way transmission exists (MP1530)

28) Determine whether one-way transmission still exists.

If one-way transmission	Go to
still exists	step 29
does not exist	step 31

29) Contact the next level of technical support for assistance.

30) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

31) This procedure is complete.

Apply or remove XPM controller patches

1) Load Overlay DED by entering: OVLY DED <CR>
2) Determine the status of the XPM unit (SCM-10S, SCM-10U, RSC-S) to which the patch is to be applied or from which it is to be removed by entering the appropriate “STAT” command.
3) Busy the XPM unit to which the patch is to be applied or from which which it is to be removed by entering the appropriate “BUSY” command.
4) Enter the appropriate “APPL” command to apply the patch or the appropriate “REMV” command to remove the patch.
5) Return the XPM to service by entering the appropriate “RTS” command.
6) This procedure is complete.

Replace DS30-A Interface pack (NT8X18) in an MVIE bay

1) Load Overlay DED by entering: OVLY DED <CR>

2) Enter: STAT ESMC *(site)* MVIE *b s p* <CR>

3) Determine whether the pack to be replaced is on the ACTV side.

If the pack	Go to
is on the ACTV side	step 5
is not on the ACTV side	step 6

4) Enter: SWCH ESMC *(site)* MVIE *b s p* <CR>

5) Abort Overlay DED and load Overlay NED by entering: **** OVLY NED <CR>

6) Man-make busy a PELP on the STBY side by entering: BUSY PELP CE *b s p l* <CR>

7) Determine whether all PELPs on the STBY side have been made busy.

If the PELPs	Go to
have been made busy	step 8
have not been made busy	step 6

8) Replace the DS30A Interface pack (MP 1250).

9) Return a busied PELP to service by entering: RTS CE *b s p l* <CR>

10) Determine whether all PELPs have been returned to service.

If the PELPs	Go to
have been returned to service	step 11
have not been returned to service	step 10

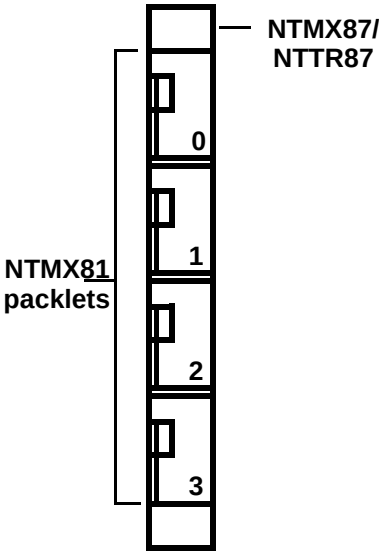
11) This procedure is complete.

Replace a Dual DS-1 Interface pack (NTMX81) in an ESMA or in a Star Hub

1) Load Overlay DED by entering: OVLY DED <CR>

2) Busy the faulty link and its mate link by entering: BUSY DS1L *site* MV HUBE *b s p u* <CR>

Note: *To determine the number of the mate link of the faulty link, subtract "1" from the link number if it is even or add "1" to the link number if it is odd. After identifying the faulty link, use tables MP1573-A, MP1573-B, and MP1573-C and the following pack illustration to determine the NTMX81 to be removed by matching the link number with the NTMX87/ NTTR87 slot number and the NTMX81 packlet slot number.*



3) Replace the pack (MP 1250).

Note: *Before installing the new NTMX81, ensure that the DIP switches on the pack are set correctly. For more information, see NTP 297-3601-316, DIP Switch Settings for Printed Circuit Packs and Balance Networks for more information.*

4) Return to service the two links busied in step 2 by entering: RTS DS1L *site* MV HUBE *b s p u* <CR>

5) Determine whether the pack returned to service.

If the pack	Go to
returned to service	step 7
did not return to service	step 6

6) Contact the next level of technical support for assistance.

7) This procedure is complete.

Table 1573 - A
DS-1 link to NTMX81 slot position matrix - Extension shelf

NTMX81 packlet slot position in NTMX87	NTMX87 slot 4/23	NTMX87 slot 6/21	NTMX87 slot 8/19
0	24 25	32 33	40 41
1	26 27	34 35	42 43
2	28 29	36 37	44 45
3	30 31	38 39	46 47

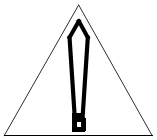
Note: *An ESMA that resides on shelf 1 of the bay is connected to the lower part of the extension shelf (NTMX81 slots 4, 6, 8). An ESMA that resides on shelf 3 is connected to the higher part of the extension shelf (NTMX81 slots 23, 21, 19).*

Table 1573 - B
DS-1 link to NTMX81 slot position matrix - Main shelf

NTMX81 packlet slot position in NTMX87	NTMX87 slot 12	NTMX87 slot 14	NTMX87 slot 16
0	0 1	16 17	8 9
1	2 3	18 19	10 11
2	4 5	20 21	12 13
3	6 7	22 23	14 15

Table 1573 - C **DS-1 link to NTMX81 slot position matrix - Main shelf**		
NTMX81 packlet slot position in NTTR87	**NTTR87 slot 8**	**NTMX87 slot 16**
0	0 1	8 9
1	2 3	10 11
2	4 5	12 13
3	6 7	14 15

Replace Manual Control Center pack (NT3T56)



CAUTION
This procedure should be performed only during a low traffic period. Observe the precautions for circuit pack handling during replacement as described in MP 1250 of this book.

1) Load Overlay CED by entering: OVLY CED <CR>

2) Enter STAT CPU and ensure that CPU 0 is active and that the system is not in 1 bus state.

3) Load Overlay ALO by entering: OVLY ALO <CR>

4) At the Alarm and Ringing shelf in the CE-03 bay, open the alarm status panel door.

5) Busy the Manual Control Center pack (NT3T53) by entering: BUSY ALPK CE 352<CR>

6) Disable the Alarm Processor (NT3T53) pack by operating the ENBL/ DSBL switch to the DSBL position.

7) Disengage the Alarm Signal Distributor (NT3T54) pack in position 3 from the backplane. If equipped with the Alarm Signal Distributor (NT3T54) pack in position 4, disengage from the backplane.

8) Disable the Ringing and Alarm Control (NT3T55) pack by operating the ENBL/DSBL switches on those packs to the DSBL position.

9) Carefully remove the bay cable attached to connector G on the wing panel of the J0T72 shelf in position 5. (See Note 1).

10) Remove the -48AD fuse from its holder on the door of the alarm status panel. (See Note 1) .

11) Carefully remove the ribbon cable connected to one end of the NT3T56 pack.

Note: *Determine which end the arrow is on the ribbon cable.*

12) Carefully remove all nuts that secure the NT3T56 circuit pack to the alarm status display panel door and then remove the pack.

13) Replace the NT3T56 pack using the nuts that were removed earlier.

14) Carefully install the ribbon cable that was removed earlier on the NT3T56 pack.

Note: *Ensure that the arrow on the cable and the arrow located on the NT3T56 pack match.*

15) Carefully re-attach cable to connector G on the wing panel of the J0T72 shelf. (See Note 1).

16) Carefully re-insert fuse -48AD into its holder on the alarm status panel door. (See Note 1).

17) Re-insert the NT3T54 packs into positions 3 and 4 pack, respectively back into the shelf backplane.

18) Enable the NT3T53 and NT3T55 packs by operating the ENBL/DSBL switches on those packs to the ENBL position.

19) Load Overlay ALO by entering: OVLY ALO <CR>

20) Enter BUSY ALPK CE 352 and RTS ALPK CE 352.

21) Close the alarm status panel door.

22) If a RNG2 fault indication displays, enter RSET RING to clear it.

23) This procedure is complete.

Note: *If a CPU switch or initialization occurs, load OVLY CED and switch CPU activity so that CPU 0 is active and not in 1BUS.*

Install a Digital Recorded Announcement (DRA) pack (NT2T85)

Note: *This procedure provides the steps necessary for installing a new NT2T85 pack for the first time.*

1) The on-board battery supply has been plugged into the NT2T85 pack before shipping and the dip-switches on the pack have been set at the factory to save the life of the batteries. Refer to NTP 297-3601-316, *DIP Switch Settings for Printed Circuit Packs and Balance Networks* and set the DIP switches on the pack to activate the batteries.

Note 1: If the batteries on the NT2T85 have been activated and there is loss of power to the shelf, any message recorded on the pack remains stable for the life of the batteries. If the batteries have not been activated and there is a loss of power to the shelf, the message is lost and must be re-recorded.

Note 2: To replace a battery on an NT2T85 pack, refer to procedure RP 0521 in this NTP.

2) Refer to NTP 297-3601-316, *DIP Switch Settings for Printed Circuit Packs and Balance Networks* and set the DIP switches on the pack for the desired recorded message length.

3) Insert the new NT2T85 into the PE shelf (Refer to MP 1250).

4) Assign the NT2T85 pack in the DMS-10 switch (see Overlay CPK (PACK), in NTP 297-3601-311, *Data Modification Manual*).

5) Assign the pack to a trunk group (see Overlay TG (OUT), in NTP 297-3601-311, *Data Modification Manual*).

6) Assign a trunk to the trunk group (see Overlay TRK (TRK), in NTP 297-3601-311, *Data Modification Manual*).

7) Load Overlay PED by entering: OVLY PED <CR>

8) Obtain the status of the pack by entering: STAT PEPK *(site)* PE *b s p* <CR>

9) If the pack is busy (MMB or SMB), return the NT2T85 pack to service by entering: RTS PEPK *(site)* PE *b s p* <CR>

10) Refer to MP 1325 and record a message on the NT2T85 pack.

11) This procedure is complete.

Replace a Digital Recorded Announcement (DRA) pack (NT2T85)

Note: *This procedure provides the steps necessary for replacing an existing NT2T85 pack.*

1) The on-board battery supply has been plugged into the NT2T85 pack before shipping and the dip-switches on the pack have been set at the factory to save the life of the batteries. Refer to NTP 297-3601-316, *DIP Switch Settings for Printed Circuit Packs and Balance Networks* and set the DIP switches on the pack to activate the batteries.

Note 1: If the batteries on the NT2T85 have been activated and there is loss of power to the shelf, any message recorded on the pack remains stable for the life of the batteries. If the batteries have not been activated and there is a loss of power to the shelf, the message is lost and must be re-recorded.

Note 2: To replace a battery on an NT2T85 pack, refer to procedure RP 0521 in this NTP.

2) Refer to NTP 297-3601-316, *DIP Switch Settings for Printed Circuit Packs and Balance Networks* and set the DIP switches on the pack for the desired recorded message length.

3) Load Overlay PED by entering: OVLY PED <CR>

4) Busy the pack to be replaced by entering: BUSY PEPK *(site)* PE *b s p* <CR>

5) Remove the NT2T85 to be replaced from the shelf (Refer to MP 1250).

6) Insert the replacement NT2T85 into the shelf (Refer to MP 1250).

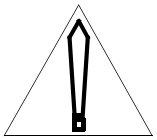
7) Obtain the status of the pack by entering: STAT PEPK *(site)* PE *b s p* <CR>

8) If the pack is busy (MMB or SMB), return the NT2T85 pack to service by entering: RTS PEPK *(site)* PE *b s p* <CR>

9) Refer to MP 1325 and record a message on the NT2T85 pack.

10) This procedure is complete.

Replace Remote Controller pack (NTTR77)



CAUTION
This procedure should be performed only during a low traffic period and when the mate NTTR77 is in service.

1) Load Overlay DED by entering: OVLY DED <CR>

2) Busy the Remote Controller pack (NTTR77) by entering: BUSY HUBC (*site*) HUBE *b* 3 7 or 17 <CR>

3) Remove the NTTR77 pack and replace it with a known good pack (MP 1250).

4) Check the loadfile version in the flash memory of the NTTR77 by entering: VERS HUBC *(site)* HUBE *b* 3 7 or 17 <CR>

5) Determine the status of the loadfile version. If the command failed, go to step 12. If the version, without an asterisk (*) at the end, displayed, go to step 8. If the version, with an asterisk (*) at the end, displayed, go to step 6.

6) Download the NTTR77 by entering: DNLD HUBC *(site)* HUBE *b* 3 7 or 17 <CR>

7) Determine whether the NTTR77 downloaded successfully. If the NTTR77 downloaded, go to step 8. If the NTTR77 did not download, go to step 12.

8) Test the NTTR77 pack by entering: TEST HUBC (*site*) *b* 3 7 or 17 <CR>

9) Determine whether the pack passed the test. If the pack passed the test, go to step 10. If the pack did not pass the test, go to step 12.

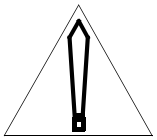
10) Return the NTTR77 to service by entering: RTS HUBC (*site*) *b* 3 7 or 17 <CR>

11) Determine whether the pack returned to service. If the pack returned to service, go to step 13. If the pack did not return to service, go to step 12.

12) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

13) This procedure is complete.

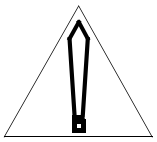
Replace Universal Maintenance pack (NTTR73)



CAUTION
Presume the suspected faulty pack to be bad. Reinstalling a faulty Converter pack can permanently damage packs powered by it.

1) Load Overlay PED by entering: OVLY PED <CR>

2) Busy the suspected faulty Universal Maintenance pack (NTTR73) by entering: BUSY UMP (*site*) *b* 3 11 or 13 <CR>



CAUTION
Busying the pack will fail if there is not at least one in-service Universal Maintenance pack in the Star Hub.

3) Remove the suspected faulty NTTR73 pack and replace it with a known good pack (MP 1250).

4) Check the loadfile version in the flash memory of the NTTR73 by entering: VERS UMP *(site) b* 3 11 or 13 <CR>

5) Determine the status of the loadfile version. If the command failed, go to step 12. If the version, without an asterisk (*) at the end, displayed, go to step 8. If the version, with an asterisk (*) at the end, displayed, go to step 6.

6) Download the NTTR73 by entering: DNLD UMP *(site) b* 3 11 or 13 <CR>

7) Determine whether the NTTR73 downloaded successfully. If the NTTR73 downloaded, go to step 8. If the NTTR73 did not download, go to step 12.

8) Test the NTTR73 pack by entering: TEST UMP (*site*) *b* 3 11 or 13 <CR>

9) Determine whether the pack passed the test. If the pack passed the test, go to step 10. If the pack did not pass the test, go to step 12.

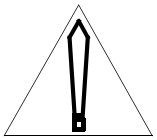
10) Return the NTTR73 to service by entering: RTS UMP (*site*) *b* 3 11 or 13 <CR>

11) Determine whether the pack returned to service. If the pack returned to service, go to step 13. If the pack did not return to service, go to step 12.

12) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

13) This procedure is complete.

Replace 6X60 Ringing Generator pack (NTTR60)



CAUTION
This procedure should be performed only during a low traffic period and when the mate NTTR77 is in service.

1) Load Overlay DED by entering: OVLY DED <CR>

2) Busy the 6X60 Ringing Generator pack (NTTR60) by entering: BUSY LRNG (*site*) HUBE *b* 3 1 or 22 <CR>

3) Remove the NTTR60 pack and replace it with a known good pack (MP 1250).

Note 1: When the NTTR60 pack is removed, the corresponding breaker will turn down. After the pack is replaced, turn the breaker up.

Note 2: Ensure that the switch settings on the replacement pack match those on the pack that was removed. Refer to NTP 297-3601-316, *DIP Switch Settings for Printed Circuit Packs and Balance Networks* for more information.

4) Determine whether the pack can be tested. If the mate NTTR77 is in service, go to step 5. If the mate NTTR77 is not in service, go to step 7; the ringer will be tested automatically when step 7 is performed.

5) Test the NTTR60 pack by entering: TEST LRNG (*site*) *b* 3 1 or 22 <CR>

6) Determine whether the pack passed the test. If the pack passed the test, go to step 7. If the pack did not pass the test, go to step 9.

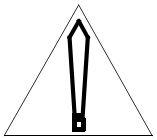
7) Return the NTTR60 to service by entering: RTS LRNG (*site*) *b* 3 1 or 22 <CR>

8) Determine whether the pack returned to service. If the pack returned to service, go to step 10. If the pack did not return to service, go to step 9.

9) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

10) This procedure is complete.

Replace LCM Power Converter pack (NT6X53) located in a Star Hub



CAUTION
This procedure should be performed only during a low traffic period and when the mate NTTR77 is in service.

1) Load Overlay DED by entering: OVLY DED <CR>

2) Busy the Remote Controller pack (NTTR77) associated with the power converter pack to be replaced by entering: BUSY HUBC (*site*) HUBE *b* 3 *s* <CR> (if the unit being replaced is in slot 3 or 5, it is associated with unit 0 and s = 7; if the unit is in slot 18 or 20, it is associated with unit 1 and s = 17).

3) Remove the NT6X53 pack and replace it with a known good pack (MP 1250).

Note: *When the NT6X53 pack is removed, the corresponding breaker will turn down. After the pack is replaced, turn the breaker up.*

4) Test the NTTR77 pack by entering: TEST HUBC (*site*) *b* 3 7 or 17 <CR>

5) Determine whether the pack passed the test. If the pack passed the test, go to step 6. If the pack did not pass the test, go to step 8.

6) Return the NTTR77 to service by entering: RTS HUBC (*site*) *b* 3 7 or 17 <CR>

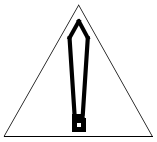
7) Determine whether the pack returned to service. If the pack returned to service, go to step 9. If the pack did not return to service, go to step 8.

8) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

9) This procedure is complete.

Replace Circuit Breaker and Talk Battery Filter card (NTTR76)

1) Obtain a replacement card. Make sure that the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.



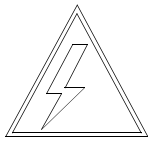
CAUTION
This procedure contains directions to offline half of the Star Hub. Since placing half of the Star Hub in an offline state seriously affects subscriber service, this procedure should be performed only during a low traffic period.

DANGER
Risk of electrocution
Some terminals inside the Frame Supervisory Panel (FSP) have an electrical potential of -48 V dc. Remove all jewelry before replacing a card in the FSP. Do not touch any terminal inside the FSP.

2) Load Overlay DED by entering: OVLY DED <CR>

3) At the Frame Supervisory Panel (FSP), power down the ringing generators, power converters, line drawers, and NTTR73 UMP in the control shelf by setting the circuit breakers listed in the table at the end of this procedure to the OFF position for this NTTR76 card.

4) Using a slot screwdriver, unscrew the two screws located in the upper left and right hand corners of the FSP front panel.



WARNING
Static electricity damage
Wear a wrist strap connected to the wrist strap grounding point on the FSP while handling cards. This precaution protects the cards against damage caused by static electricity.

5) Swing the FSP front panel downward to expose the interior of the FSP and the cards located on the back of the FSP front panel.

6) With the FSP front panel open, locate the NTTR76 Circuit Breaker and Talk Battery Filter cards. Using the illustration at the end of this procedure, determine the correct card to remove, based on whether the problem is related to the A or the B feed or to a defective circuit breaker. Note in the illustration that the card labeled "A" relates to the A feed and the card labeled "B" relates to the B feed.

7) Remove the appropriate NTTR76 card by performing the following steps:

a. Disconnect the four cable connectors on the NTTR76 card.

b. Using a Phillips head screwdriver, unscrew the five Phillips head screws and remove the screws, lock washers, and flat washers that secure the metal cover and NTTR76 card to the back of the FSP front panel.

c. Carefully remove the NTTR76 card.

d. Place the card that was removed in an electrostatic discharge (ESD) protective container.

e. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card just removed.

8) Install the new NTTR76 card by performing the following steps:

a. Install the new card.

b. Install the five Phillips head screws, lock washers, and flat washers in the metal cover and NTTR76 card to secure the card to the back of the FSP front panel.

c. Reconnect the four cable connectors on the NTTR76 card that were disconnected earlier.

9) Close the FSP front panel and secure it by tightening the two screws located in the upper left and right hand corners of the panel.

10) Restore power to the unit's ringing generators, power converters, line drawers, and UMP cards by setting the breakers that were turned OFF earlier to the ON position.

11) Determine if there are any blown fuses on the FSP front panel.

If	Go to
there are no blown fuses	step 12
there are blown fuses	step 16

12) Test the Star Hub Control Shelf by entering: TEST HUBC (*site*) HUBE *b s* <CR>

13) Determine whether the Star Hub Control Shelf passed the test.

If the shelf	Go to
passed the test	step 14
did not pass the test	step 15

14) Send any faulty cards for repair.
Go to step 17.

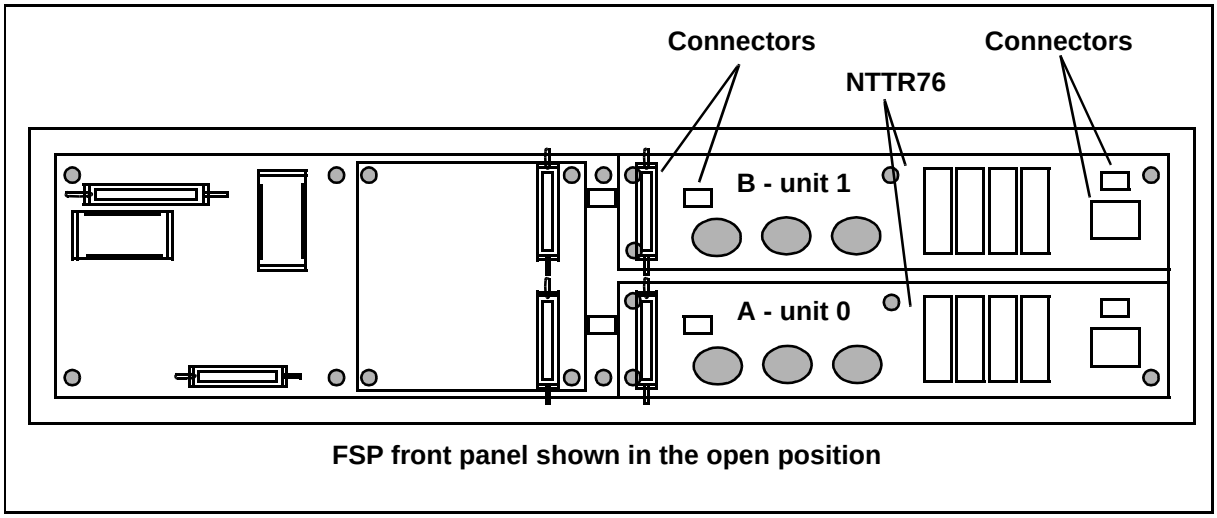
15) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

16) Contact the next level of technical support for assistance.

17) This procedure is complete.

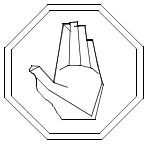
Circuit Breakers		
Label	**Unit Number**	**Purpose**
PS00, slot 3	0	NT6X53 power converter, slot 3
PS01, slot 5	0	NT6X53 power converter, slot 5
Ring0, slot 1	0	NTTR60 ringing generator, slot 1
Talk A	0 and 1	Talk battery A feed to the 9 line drawers, 1-4 and 9-13 and to two UMP cards, in unit 0/1, slot 11/13
PS10, slot 20	1	NT6X53 power converter, slot 20
PS11, slot 18	1	NT6X53 power converter, slot 18
Ring1, slot 22	1	NTTR60 ringing generator, slot 22
Talk B	0 and 1	Talk battery B feed to the 9 line drawers, 5-8 and 14-18 and to two UMP cards, in unit 0/1, slot 11/13

Figure 5-6: Star Hub Control shelf (NTTR86) - Frame Supervisory Panel NTTR74/NTTR75/ NTTR76 -card locations



Replace Alarm card (NTTR74)

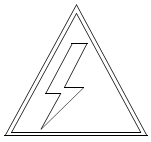
1) Obtain a replacement card. Make sure that the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.



DANGER
Risk of electrocution
Some terminals inside the Frame Supervisory Panel (FSP) have an electrical potential of -48 V dc. Remove all jewelry before replacing a card in the FSP. Do not touch any terminal inside the FSP.

2) Load Overlay DED by entering: OVLY DED <CR>

3) Using a slot screwdriver, unscrew the two screws located in the upper left and right hand corners of the FSP front panel.



WARNING
Static electricity damage
Wear a wrist strap connected to the wrist strap grounding point on the FSP while handling cards. This precaution protects the cards against damage caused by static electricity.

4) Swing the FSP front panel downward to expose the interior of the FSP and the cards located on the back of the FSP front panel.

5) With the FSP front panel open, and using the illustration at the end of this procedure, locate the NTTR74 Alarm card.

6) Remove the NTTR74 card by performing the following steps:

a. Disconnect the two cable connectors on the NTTR74 card and note the connector numbers.

b. Using a Phillips head screwdriver, unscrew the four screws that connect the NTTR74 and NTTR75 cards.

c. Carefully remove the alarm card by grasping the card with both hands. Gently pull with a rocking motion until the pins on the underside of the alarm card are clear of the connector between the alarm card and the NTTR75 Maintenance and Fuse card.

d. Place the card that was removed in an electrostatic discharge (ESD) protective container.

e. Obtain a replacement card with the same product equipment code (PEC), including suffix, as the card just removed.

7) Install the new NTTR74 card by performing the following steps:

a. Install the new card, positioning it to correctly align the pins to the connector on the NTTR75 card in the location from which the alarm card was removed.

b. Gently press the card in place on the connector and re-install the four screws that connect the NTTR74 and NTTR75 cards.

c. Reconnect the two cable connectors on the NTTR74 card that were disconnected earlier.

8) Close the FSP front panel and secure it by tightening the two screws located in the upper left and right hand corners of the panel.

9) Test the Star Hub Control Shelf by entering: TEST HUBC (*site*) HUBE *b s* <CR>

10) Determine whether the Star Hub Control Shelf passed the test.

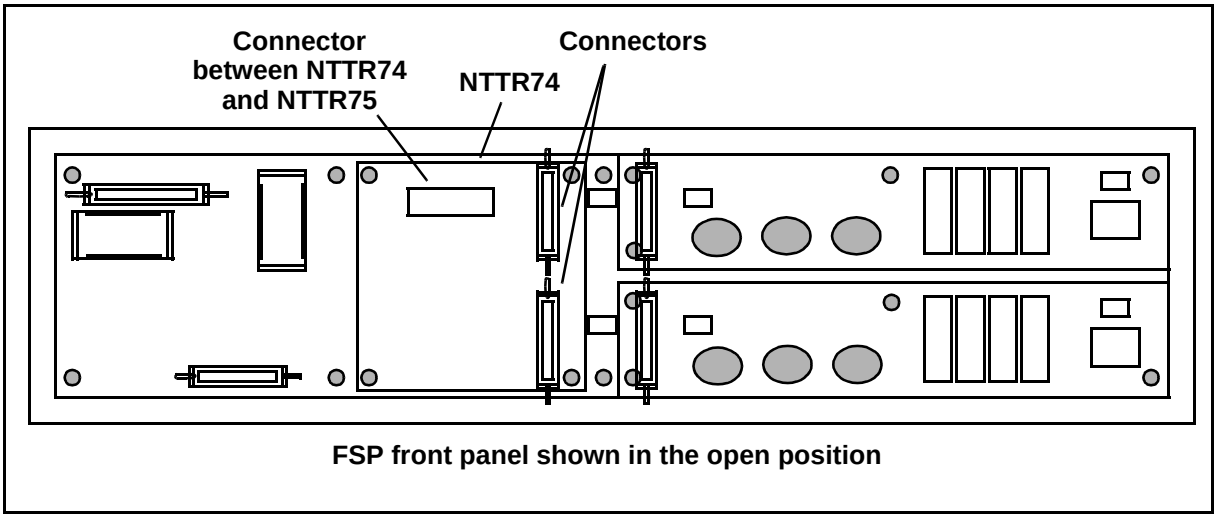
If the shelf	Go to
passed the test	step 11
did not pass the test	step 12

11) Send any faulty cards for repair.
Go to step 13.

12) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

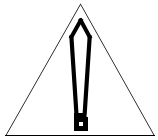
13) This procedure is complete.

Figure 5-7: Star Hub Control shelf (NTTR86) - Frame Supervisory Panel circuit card locations



Replace Maintenance and Fuse card (NTTR75)

1) Obtain a replacement card. Make sure that the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.



CAUTION
This procedure contains directions to offline the Star Hub. Since placing the Star Hub in an offline state seriously affects subscriber service, this procedure should be performed only during a low traffic period.

DANGER
Risk of electrocution
Some terminals inside the Frame Supervisory Panel (FSP) have an electrical potential of -48 V dc. Remove all jewelry before replacing a card in the FSP. Do not touch any terminal inside the FSP.

2) Load Overlay DED by entering: OVLY DED <CR>

3) Place each Remote Controller pack (NTTR77) at the site offline, in turn, by entering: OFFL HUBC (*site*) HUBE *b s p* <CR>

4) At the Frame Supervisory Panel (FSP), power down the ringing generators, power converters, line drawers, and NTTR73 UMP in the control shelf by setting the circuit breakers listed in the table at the end of this procedure to the OFF position.

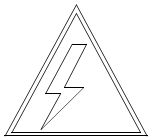
5) At the Frame Supervisory Panel (FSP), use a fuse puller to remove the following fuses:

- one -48 V alarm and battery supply (ABS) fuse
- one -48 V LED
- two -48 V to NTTR73 (UMP) packs
- eight ringing voltage to line drawers
- 18 -48 V to line drawers
- 18 +15 V to line drawers

- 18 +5 V to line drawers

  Note: *Store and group the fuses by size to simplify reinstallation into the replacement card.*

6) Using a slot screwdriver, unscrew the two screws located in the upper left and right hand corners of the FSP front panel.



WARNING
Static electricity damage
Wear a wrist strap connected to the wrist strap grounding point on the FSP while handling cards. This precaution protects the cards against damage caused by static electricity.

7) Swing the FSP front panel downward to expose the interior of the FSP and the cards located on the back of the FSP front panel.

8) With the FSP front panel open, and using the illustration at the end of this procedure, locate the NTTR75 Maintenance and Fuse card.

9) Remove the NTTR75 card by performing the following steps:

a. Disconnect the two cable connectors on the NTTR74 card and note the connector numbers.

b. Using a Phillips head screwdriver, unscrew the four screws that connect the NTTR74 card with the NTTR75 card.

c. Carefully remove the alarm card by grasping the with both hands. Gently pull with a rocking motion until the pins on the underside of the alarm card are clear of the connector between the alarm card and the NTTR75 Maintenance and Fuse card.

d. Place the card that was removed in an electrostatic discharge (ESD) protective container.

e. Disconnect the four cable connectors on the left half of the NTTR75 card and note the connector numbers. Then disconnect the two talk battery cables on the right end of the card, noting the connector labels.

f. Using a Phillips head screwdriver, unscrew the six screws and then remove the screws, the lock washers and the flat washers that secure the NTTR75 card to the back of the FSP front panel.

g. Carefully remove the NTTR75 card.

h. Place the card that was removed in an electrostatic discharge (ESD) protective container.

i. Obtain a replacement card with the same product equipment code (PEC), including suffix, as the card just removed.

10) Install the new NTTR75 card by performing the following steps:

a. Install the new card, positioning it to correctly connect the cable connectors that were disconnected earlier.

b. Install the six Phillips head screws, lock washers, and flat washers in the NTTR75 card to secure it to the back of the FSP front panel.

c. Reconnect the four cable connectors and the two talk battery cables on the NTTR75 that were disconnected earlier.

d. Install the NTTR74 card, positioning it to correctly align the pins to the connector on the NTTR75 card in the location from which the alarm card was removed.

e. Gently press the card in place on the connector and re-install the four screws that connect the NTTR74 and NTTR75 cards.

f. Reconnect the two cable connectors on the NTTR74 card that were disconnected earlier.

11) Close the FSP front panel and secure it by tightening the two screws located in the upper left and right hand corners of the panel.

12) Restore power to the unit's ringing generators, power converters, line drawers, and UMP cards by setting the breakers that were turned OFF earlier to the ON position.

13) Install the fuses in the FSP front panel that were removed earlier.

14) Determine if there are any blown fuses on the FSP front panel.

If	**Go to**
there are no blown fuses	step 15
there are blown fuses	step 20

15) Return each Remote Controller pack (NTTR77) at the site that was made busy earlier to service, in turn, by entering: RTS HUBC (*site*) HUBE *b s p* <CR>

16) Test the Star Hub Control Shelf by entering: TEST HUBC (*site*) HUBE *b s* <CR>

17) Determine whether the Star Hub Control Shelf passed the test.

If the shelf	Go to
passed the test	step 18
did not pass the test	step 19

18) Send any faulty cards for repair.
Go to step 21.

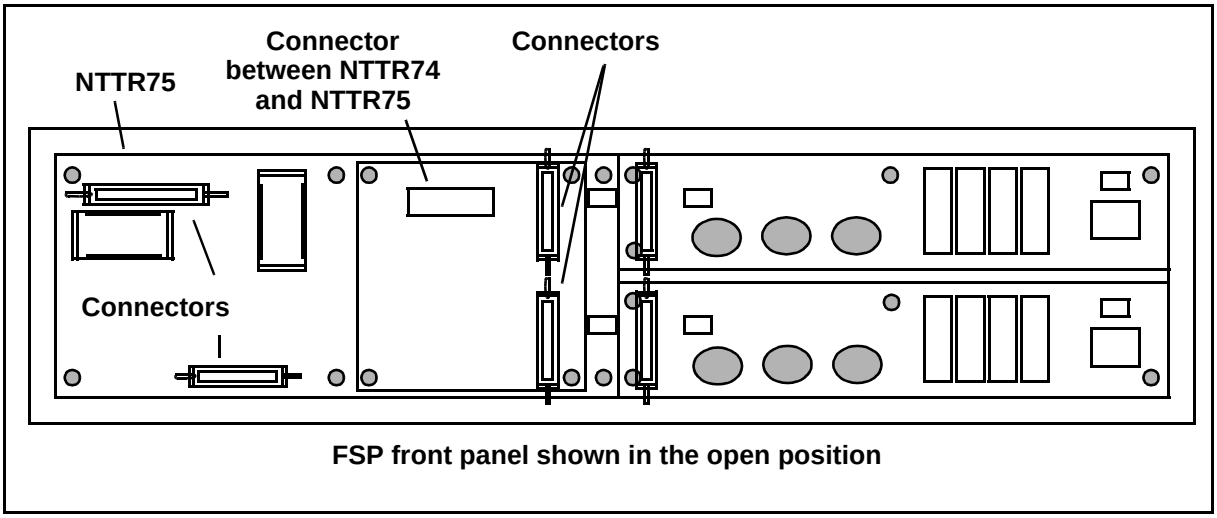
19) Refer to the TTY printouts and the *Output Message Manual* to determine the next course of action.

20) Contact the next level of technical support for assistance.

21) This procedure is complete.

Circuit Breakers		
Label	**Unit Number**	**Purpose**
PS00, slot 3	0	NT6X53 power converter, slot 3
PS01, slot 5	0	NT6X53 power converter, slot 5
Ring0, slot 1	0	NTTR60 ringing generator, slot 1
Talk A	0 and 1	Talk battery A feed to the 9 line drawers, 1-4 and 9-13 and to two UMP cards, in unit 0/1, slot 11/13
PS10, slot 20	1	NT6X53 power converter, slot 20
PS11, slot 18	1	NT6X53 power converter, slot 18
Ring1, slot 22	1	NTTR60 ringing generator, slot 22
Talk B	0 and 1	Talk battery B feed to the 9 line drawers, 5-8 and 14-18 and to two UMP cards, in unit 0/1, slot 11/13

Figure 5-8: Star Hub Control shelf (NTTR86) - Frame Supervisory Panel NTTR74/NTTR75/ NTTR76 card locations



Ethernet Switch replacement procedure.

1) Load overlay CED by entering OVLY CED <CR>.

2) Check the status of the ethernet switches by entering STAT ES <CR>.

3) If the the unit to be replaced is not in the DSBL state, enter DSBL ES *n* <CR>. *n* is 0 or 1

Note: *If both Ethernet Switches are disabled, all lines served by PGIs would experience a service outage. Verify the other unit is left enabled.*

4) Load overlay IOD by entering OVLY IOD <CR>

5) Disable the ESCI of the unit to be replace by entering DSBL ESCI n <CR>.

6) Replace the ES unit (see installation method).

7) When the new switch has been replaced, cabled, and powered, enable the ESCI by entering ENBL ESCI *n* <CR> in OVLY IOD.

8) Check the software and firmware versions on this unit by entering VERS ES <CR> in OVLY CED.

9) If the actual and expected versions don't match, download the unit by entering the DNLD ES *n* SW|FW DFLT <CR>. The download will take about 4 to 5 minutes and includes a software reset of the unit.

10) Enable the ES unit by entering ENBL ES *n* <CR>.

Replace NT6X36 in LCE-type frames

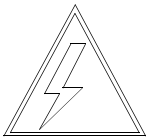
1) Obtain a replacement card. Make sure the replacement card and the card you replace have the same PEC and PEC suffix.

DANGER

Risk of electrocution

Some of the terminals inside the Frame Supervisory Panel (FSP) have an electrical potential of -48 V dc. Make sure you remove all jewelry before replacing a card in the FSP. Do not touch any terminal inside the FSP.

2) Unscrew the slotted nut on the left of the FSP.



WARNING

Static electricity damage

Wear a wrist strap connected to the wrist strap grounding point onto handle circuit cards. The wrist strap grounding is on a Frame Supervisory Panel (FSP). The wrist strap protects the card against static electricity damage.

3) Open the FSP.

4) Remove the card.

5) Insert the replacement alarm and control card (Caution must be exercised when the NT6X36 alarm card is replaced. The card must be inserted and removed with uniform pressure on the edge of the card. Any rocking motion that angles the card in the slot must be avoided).

6) Close the FSP.

7) Tighten the slotted nut on the FSP.

8) Return to the maintenance procedure that directed you to this procedure and continue as directed.

Section 6: Index

Symbols

Numbers-

A

B

C

D

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M

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S

T

W

X

DMS-10 Family

600-Series Generics

Maintenance and Test Manual - Part 1 of 2

NTP number: NTP 297-3601-511P1
Release: 08.02
For Generic 602.20
Status: Standard
Date: August 2006