

AMARS  
NO. 1A AUTOMATIC MESSAGE ACCOUNTING RECORDING CENTER  
(NO. 1A AMARC)  
GENERIC 2 TO GENERIC 3 RETROFIT PROCEDURE  
(UPGRADE TO DUPLEX GENERIC 3 OPERATION)

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <u>GENERAL INFORMATION</u>                                                                                                                                                                                                                                                                                                              | 1.04 The TELCO should arrange to have their data facilities personnel available to disconnect the 'Y' connectors and connect the Generic 3 modem cables at the data set cabinet or authorize Western Electric to perform these operations. |
| 1.01 The procedures in Handbook Section 214A, 214B, 214C and 214D must be completed prior to starting the tests in this handbook section. In addition, the receipt of a good Generic 2/Generic 3 tape comparison and the authorization to proceed to Generic 3 must be received from the RAO before proceeding with this handbook section. | 1.05 Incorrect responses to the following tests, when the generic program is executing can be examined by referring to the Input and Output Manuals (IM/OH) for the appropriate generic issue.                                             |
| 1.02 The TELCO should arrange to have their craft personnel available for inputting messages and switching channels to dial-up or authorize Western Electric to perform these operations.                                                                                                                                                  | 1.06 <u>Cabling</u>                                                                                                                                                                                                                        |
| 1.03 The TELCO should arrange to have DEC or maintenance personnel present to make cable connections in the DEC equipment or authorize Western Electric to perform these operations.                                                                                                                                                       | 1.061 In connecting a cable to the male connector on the DEC circuit board, the triangle on the cable (female) connector should be inserted to mate with the "A" designation on the circuit board.                                         |
|                                                                                                                                                                                                                                                                                                                                            | 1.062 In connecting a cable to the male connector on the transition panel, the triangle on the cable (female) connector should be inserted to mate with the triangle designation stamped on the panel.                                     |

- 1.063 When connecting cables to the backplane, the triangle on the connector should always be on the bottom.
- 1.07 This handbook section was written for a fully equipped No. 1A AMARC Phase II (Generic 2). If not fully equipped, than this handbook section must be modified accordingly.
- 1.08 At the point of cutover, the procedure is to have the Generic 2 and Generic 3 in CPU0 and CPU1, respectively. The procedure in this handbook section removes an entity at a time via manual input on the Generic 2 processor (billing with the earlier generic), and immediately restoring those channels on the Generic 3 processor. A loss of billing will occur on all CDA channels from the time of channel removal with the earlier generic until 90 seconds after the Generic 3 processor starts polling. When the Generic 3 program initializes at startup, all BDT recorders will be initialized. This can take up to seven minutes, during which time some calls may be blocked in the office to which the BDT is connected. For this reason, it is emphasized that the cutover should be performed at a low traffic hour. All BDT and CDA calls in progress in the earlier generic will be properly terminated, but will be undertimed. Most calls in progress during the processor conversion will be lost.
- 1.09 Before any work is started, the procedure to be followed should be reviewed, revised if necessary, for local office conditions and approved by the local operating company representative.
2. RECORDS AND REQUIREMENTS
- 2.1 The Test Trouble Record forms (SD-97-1313 and SD-97-1315) should be used to record all troubles which may be encountered when executing the tests in this handbook section.
3. TEST EQUIPMENT
- 3.1 One ITE-5632 digital multimeter (or equivalent).
- 3.2 One ITE-5237B Oscilloscope (or equivalent).
- 3.3 Input and Output manuals, IM/OM, for the associated Generic 2 and Generic 3 program issues.
- 3.4 SPP-832 Spare Packs Package for Generic 3
- 3.5 Disk Packs
- 3.51 One RP06 disk pack containing the Generic 3 Diagnostics (created in Handbook 59, Section 214C).
- 3.52 If the RP06 disk packs for recording Generic 3 AMA data are different than the disk packs used for recording Generic 2 AMA data (determined by the TELCO), than the following RP06 disk packs are required.
- 1) The RP06 disk pack mounted on the system at Paragraph 14 in Handbook 59, Section 214C and removed from the system at Paragraph 6 of Handbook 59, Section 214D.
  - 2) One additional RP06 Disk Pack.
- 3.6 Magnetic Tapes
- 3.61 Several clean IBM standard label tapes (1600 BPI, labels written in EBCDIC code) for use in recording Generic 3 AMA data (obtained from the TELCO).
- 3.62 One Generic 3 NPD tape produced by the procedure in PA-5P355-01. This tape was used in Handbook 59, Section 214C.
- 3.63 One Generic 3 Program Tape (TP-5P355-01).
- 3.64 If the RP06 disk packs used for Generic 3 AMA data is different than the disk pack used for Generic 2 AMA data (determined by the TELCO), than the following two tapes are required.
- 1) One SACOPY PROGRAM tape (TP-5P355-03).
  - 1) One SACOPY AMA DATA tape (TP-5P355-04).
- 3.7 Overwrites to the Generic 3 program issue, if any. Handbook 59, Section 208 can be used as a reference for installing generic program overwrites.
4. INITIAL STATUS
- 4.1 Request the TELCO craft personnel to:
- 4.11 Inhibit the functional teletype feature, if enabled.
- 4.12 Configure the system such that CPU0 is ACTIVE and CPU1 is out-of-service, if not already in that configuration.

- 4.13 Remove the AMA billing tape from CPU1, if not already removed.

**NOTE:** This tape may contain billing data. The tape should have its 'write enable ring' removed.

- 4.14 Remove the PTP on both processors, if not already removed.

- 4.15 Depress the 'HALT' key on CPU1.

- 4.16 DEC ISOLATE CPU1 using the 'B' cabinet isolation panel.

- 4.17 Turn power off to CPU1.

- 4.18 On CPU0, monitor all 5 trouble categories using the following input message for each.

INPUT: MON TBL X!  
where X = 1 through 5

5. CONFIGURE CPU1 FOR PHASE III

5.1 CPU1 System Console Connection

- 5.11 Disconnect the M6AS cable labeled "to J9 connector 230A CPU1" from connector "A" on the SH11 circuit pack in the OPWR/FLT unit location 02-098. Into this "A" connector on the SH11 circuit pack, connect cable CB23.

- 5.12 Disconnect the BC05C-50 cable from the M25A cable, labeled "to J7 connector 230A CPU1," that is located in the area of the J1P040D cabinet ALM unit. Connect the BC05C-50 cable, just disconnected, to the J1P040D cabinet ALM unit location 02-080.

5.2 Cable CPU1 panel for Phase III

- 5.21 Disconnect the CPU1 Generic 2 Phase II cables as listed in Tables 1 and 2 from the back side of the panels in the J1P040K and J1P040L cabinets, respectively.

TABLE 1

Cable Designation	Panel Connector Desig.
CA30-X	CA30-X J5B 00DZ11B
CA31-X	CA31-X J6B 01DZ11B
CA32-X	CA32-X J7B 02DZ11B
CA33-X	CA33-X J8B 03DZ11B
CA36-X	CA36-X J3B 00DN11DA
CA37-X	CA37-X J4B 01DN11DA
CA46-X	CA46-X J3D 02DN11DA
CA47-X	CA47-X J4D 03DN11DA

where X = CPU #

TABLE 2

Cable Designation	Panel Connector Desig.
CA40-X	CA40-X J5B 04DZ11B
CA41-X	CA41-X J6B 05DZ11B
CA42-X	CA42-X J7B 06DZ11B
CA43-X	CA43-X J8B 07DZ11B
CA56-X	CA56-X J3D 04DN11DA
CA57-X	CA57-X J4D 05DN11DA
CA50-X	CA50-X J5B 10DZ11B
CA51-X	CA51-X J6B 11DZ11B
CA52-X	CA52-X J7B 12DZ11B
CA53-X	CA53-X J8B 13DZ11B

where X = CPU #

- 5.22 Connect the CPU1 Generic 3 Phase III cables as listed in Tables 3 and 4 to the back side of the panels in the J1P040K and J1P040L cabinets, respectively.

TABLE 3

Cable Designation	Panel Connector Desig.
CB70-X CPUX 00DZ11B	CA30-X J5B 00DZ11B
CB71-X CPUX 01DZ11B	CA31-X J6B 01DZ11B
CB72-X CPUX 02DZ11B	CA32-X J7B 02DZ11B
CB73-X CPUX 03DZ11B	CA33-X J8B 03DZ11B
CB40-X CPUX 00DN11DA	CA36-X J3B 00DN11DA
CB41-X CPUX 01DN11DA	CA37-X J4B 01DN11DA
CB42-X CPUX 02DN11DA	CA46-X J3D 02DN11DA
CB43-X CPUX 03DN11DA	CA47-X J4D 03DN11DA

where X = CPU #

TABLE 4

Cable Designation	Panel Connector Desig.
CB74-X CPUX 04DZ11B	CA40-X J5B 04DZ11B
CB75-X CPUX 05DZ11B	CA41-X J6B 05DZ11B
CB76-X CPUX 06DZ11B	CA42-X J7B 06DZ11B
CB77-X CPUX 07DZ11B	CA43-X J8B 07DZ11B
CB44-X CPUX 04DN11DA	CA56-X J3D 04DN11DA
CB45-X CPUX 05DN11DA	CA57-X J4D 05DN11DA
CB78-X CPUX 10DZ11B	CA50-X J5B 10DZ11B
CB79-X CPUX 11DZ11B	CA51-X J6B 11DZ11B
CB80-X CPUX 12DZ11B	CA52-X J7B 12DZ11B
CB81-X CPUX 13DZ11B	CA53-X J8B 13DZ11B

where X = CPU #

6. CPU1 DZ11 DIAGNOSTICS

6.1 Remove CPU1 RPO6 Disk Pack

- 6.11 Depress the START/STOP switch on the disk drive to the STOP position.

6.12 When the 'DOOR LOCKED' lamp extinguishes, slide the door open.

6.13 Place the top portion of the disk pack cover over and onto the disk.

6.14 Turn the handle on the disk pack cover counter clockwise until clicking sounds can be heard.

6.15 Lift the disk pack straight up and out of the disk drive.

6.16 Install the bottom cover onto the disk pack and store the disk pack.

**NOTE:** This disk pack may be reinstalled in the drive later in this handbook section (determined by TELCO).

6.2 Mount the RPO6 disk pack for diagnostic use onto the disk drive on CPU1.

6.21 Remove the bottom portion of the disk pack cover.

6.22 Place the disk pack with the top portion of the disk pack cover into the disk drive.

6.23 Turn the handle on the disk pack cover clockwise until it stops. Do not overtighten.

6.24 Lift the disk pack cover straight up and out of the disk drive.

6.25 Close the door securely on the disk drive.

### 6.3 Perform a lamp test at the disk drive

6.31 Depress the lamp test button located under the front display panel.

6.32 Observe that all disk drive lamps are lighted.

### 6.4 Disk Drive Control Functions

6.41 Depress the 'CONTROL A' switch to the 'CONTROL A' position. Observe that the 'CONTROL A' lamp is lighted.

6.42 Place the 'WRITE PROTECT' switch to the NON-WRITE PROTECT mode.

6.43 Ensure that lap plug 0 is installed in the disk drive on CPU1.

### 6.5 Start the Disk Drive on CPU1

6.51 Depress the START/STOP switch on the disk drive to the START position.

6.52 Observe that the START indicator and the DOOR LOCKED indicator are lighted and the disk pack starts to rotate.

**NOTE:** The disk drive will not start if the door is not closed securely and the DOOR LOCKED lamp is not lighted.

### 6.6 Boot the Diagnostics

6.61 Set the console switches on CPU1 to 17773000. Then depress the LOAD ADDR key.

6.62 Set the SWR keys to zero, all down.

6.63 Place the ENABLE/HALT key to enable.

6.64 Depress the START key. A response will be typed on the System Console; a group of numbers followed by a '\$'.

6.65 Input the following in capital letters:

INPUT: DBO (Return key)

RESPONSE: hpboot:hpboot

hpboot2:

**NOTE:** All other inputs will be made in small letters when running the diagnostics.

6.66 INPUT: unix.diag (Return key)

A response will be printed indicating that the No. 1A AMARC diagnostics have been selected.

6.67 Input the following for the run level request:

INPUT: 7 (Return key)

RESPONSE: INIT:SINGLE USER MODE

PASSWORD:

6.68 Input the following for the password request. (The characters will not be echoed back on this input.)

INPUT: amarc (Return key)

RESPONSE: #

6.69 Input the following to select the diagnostics.

INPUT: diagnostics (Return key)

A response will be printed indicating that the diagnostics were requested with a list of all available diagnostic programs. The operating system will enter into a conversational mode of operation. All necessary run information will be printed on the TTY.

- 6.7 Execute DZ11 Diagnostics CPU1
- 6.71 Enter the quick mode of operation.
- INPUT: q (Return key)
- An appropriate response will be obtained.
- 6.72 Verify at the Main Alarm Control and Display Panel that CPU1 is in the PROCESSOR ISOLATE state and that CPU0 is not in the PROCESSOR or INTERFACE ISOLATE state. Place in the appropriate states, if necessary.
- 6.73 Start the DZ11 diagnostics for multiplexors 00 through 13, if fully equipped.
- INPUT: async.dsif -d 00 13 (Return key)
- A response indicating that all DZ11 multiplexors have passed. If a failure is obtained, detailed trouble analysis will be required. Input the message 'examples' to obtain trouble shooting analysis information.
- 6.74 After all the DZ11 diagnostics have passed, terminate the diagnostic program.
- INPUT: mon (Return key)  
stop (Return key)  
sync (Return key)
- An appropriate response will be obtained.
- 6.75 Halt CPU1 by placing its HALT/ENABLE key to the HALT position.
7. LOAD GENERIC 3 INTO CPU1
- 7.1 Initial Set-up
- 7.11 Remove the RPO6 Diagnostic disk pack from the disk drive on CPU1 in the same manner as Paragraph 6.1.
- 7.12 Install the RPO6 Generic 3 AMA disk pack into the disk drive on CPU1 in the same manner as Paragraphs 6.2 through 6.5. Note: The disk pack to be used for Generic 3 AMA data is to be determined by the TELCO. If an RPO6 disk pack was initialized in Handbook 59, Section 214C, Paragraph 14; use that disk.
- 7.13 Disconnect cable CB23 from the "A" connector on the SH11 circuit pack in the OPWR/FLT unit location 02-098. Into this "A" connector on the SH11 circuit pack, connect cable CB21.
- 7.14 Place or verify that CPU1 is in the NORMAL state from the Main Alarm Control and Display Panel.
- 7.15 Turn off the  $\pm 12$  volt power supplies associated with CPU0 in the J1P040V-1 List 1 and List 2 cabinets.
- 7.16 Request that the data facilities personnel connect all the dedicated channel data set modem cables from the J1P040V-1 List 1 and List 2 cabinets into the 'Y' cables at the data set cabinet.
- 7.17 The DEC or maintenance personnel are required to perform this step. Connect coaxial cable CB20-1 labeled 'CPU1 DMC11-TRMT' to the transmit connector on the DMC11 in CPU1. Connect coaxial cable CB21-1 labeled 'CPU1 DMC11-RCV' to the receive connector on the DMC11 in CPU1.
- 7.18 Place the CAPS LOCK key on TTY-1 to the CAPS LOCK position.
- 7.2 Load the Generic 3 Program
- 7.21 Mount the Generic 3 Program tape onto the tape drive on CPU1. Be sure that the tape does not have a 'write enable ring' installed. Verify that the tape is ON LINE and at LOAD POINT.
- 7.22 Set the console switches on CPU1 to 17773030. Then depress the LOAD ADDR key.
- 7.23 Set the console switches on CPU1 to zeros - all down.
- 7.24 Place the ENABLE/HALT key on CPU1 to ENABLE.
- 7.25 Depress the START key on CPU1. The magnetic tape should move forward to read the program. When the program has been read in, the tape will rewind and an initialization message will be printed.
- 7.26 Remove the Generic 3 tape from the tape drive on CPU1.
- 7.27 If there are any overwrites to the Generic 3 program issue, insert them into CPU1 only at this time. Refer to Handbook 59, Section 208, if necessary.
- 7.28 Remove the PTP using TTY-1.
- INPUT: RMV PTP!

## 7.29 On TTY-1:

TYPE: TEST DET 3!

A response indicating that the test passed should be obtained.

8. LOAD GENERIC 3 NPD INTO CPU1

8.1 Mount the Generic 3 NPD tape without a 'write enable ring' on the tape drive on CPU1. Verify that the tape is ON LINE and at LOAD POINT.

8.2 Halt CPU1 by placing its HALT/ENABLE key to HALT, then depress the START key with the HALT key still depressed.

8.3 On the CPU1 console; load address 1000, release the HALT key, then depress the START key. An initialization message should be printed on TTY-1.

8.4 Input the following messages on TTY-1.

INPUT: RST TAPE NPR UCL!  
IN RCTBL TAPE!

The tape should move forward to load in the NPD data. After the tape has been read an appropriate acknowledgment message will be printed.

8.5 Verify that the NPD tape has been loaded correctly by inputting the following on TTY-1.

INPUT: TEST DET 4!

A test passed message should be obtained. If a test failure message is obtained, restart this procedure at Paragraph 8.2.

8.6 Calculate a CRC value for the NPD data by inputting the following on TTY-1.

INPUT: TEST DET 6!

A response will be obtained containing a CRC value. This CRC value will be used later in this handbook section.

8.7 Remove the Generic 3 NPD tape from the tape drive on CPU1.

9. START POLLING ON GENERIC 3 CPU19.1 Initial Setup

9.101 Mount a Generic 3 standard label AMA tape with a 'write enable ring' on the tape drive on CPU1. Verify that the tape is ON LINE and at LOAD POINT. The WRITE ENABLE lamp should also be illuminated.

9.102 Set the date and time accurately on the Generic 3 processor by inputting the following on TTY-1:

SET CLK UCL DATE mmddy,TIME hhnss!

where: mm = month (01-12)

dd = day

yy = year

hh = hour (00-23)

nn = minutes

ss = seconds

9.103 Initialize the Generic 3 processor with all channels removed by inputting the following on TTY-1.

INPUT: INIT SYS.CHL!

An initialization message will be printed.

9.104 Input the following on TTY-1.

INPUT: RST TAPE UCL.

9.105 Again, set the date and time accurately on the Generic 3 processor in the same manner as in Paragraph 9.102.

9.106 Obtain a report of the system status on the Generic 2 CPU by inputting the following using TTY-0.

INPUT: REPT SYS!

A response indicating the status of the Generic 2 system will be obtained. Identify any discrepancies of NPD and the real world before continuing; using the information from the printout.

0 = up and polling

1 = not equipped

2 = channel on dialup

3 = manually removed

4 = automatically removed

8 = equipped as a dialup

9.107 Remove half the dialups from the Generic 2 side by inputting the following on TTY-0.

INPUT: RMV DLP 000!

RMV DLP 020!

RMV ACU 0!

RMV ACU 1!

9.108 Request the data facilities personnel to remove the modem cables for the Generic 2 dialups and ACU's just removed at the data set cabinet, then connect the associated modem cables from the Generic 3 system.

- 9.109 Restore these dialup on the Generic 3 system by inputting the following on TTY-1.

INPUT: RST DLP 000!  
RST DLP 001!  
RST ACU 0!  
RST ACU 1!

- 9.110 Monitor the 5 trouble types on the Generic 3 system by inputting the following, one at a time, for each trouble type using TTY-1.

INPUT: MON TBL X!

where X = 1 through 5

9.2 Start Polling on CPU1

- 9.21 Remove all in-service entities on the Generic 2 processor one at a time and then immediately restore on the Generic 3 processor.

Note 1: More than one channel may be associated with one entity.

Note 2: All calls in progress will be terminated, preventing complete loss of billing on those calls when the processors are switched.

- 9.211 To remove a channel, input the following for each channel associated with one entity using TTY-0.

INPUT: RMV CHL aab!

where: aa = multiplexor #  
b = channel on the mux.

- 9.212 After all channels have been removed for one entity, restore all the channels for that entity by inputting the following for each channel associated with that entity using TTY-1.

INPUT: RST CHL aab!

where: aa = multiplexor #  
b = channel on the mux.

- 9.213 Repeat Paragraphs 9.211 and 9.212 until all active entities have been removed from the Generic 2 side and restored on the Generic 3 side.

9.3 Recover Remaining Billing on the Generic 2 CPU

- 9.31 Put the Generic 2 processor through the midnight sequence by inputting the following using TTY-0:

SET CLK UCL TIME 235945!

Note 1: The midnight sequence will start in 15 seconds.

Note 2: This will empty the tape output buffers onto tape with all the call records.

- 9.32 Remove the Generic 2 AMA tape after the midnight printout has completed and the Generic 2 AMA tape is no longer moving forward. Input the following using TTY-0.

INPUT: RMV TAPE UCL!

- 9.33 Remove the Generic 2 AMA tape from the tape drive on CPU0, remove its 'write enable ring' and mark the tape to alert the accounting center that an artificial midnight label appears at the end of this tape. There will be no entries after this label.

9.4 Remaining Steps

- 9.41 Depress the HALT key on CPU0; and while the HALT key is still down, depress the START key. This will turn the ACTIVE lamp off on the DSIAF panel on the 'B' cabinet.

- 9.42 Request the data facilities personnel, to plug in all remaining dial-up and ACU modem cables at the data set cabinet.

- 9.43 Restore all the remaining dialups and ACU's on the Generic 3 system. Input the following for each of these dialups and ACU's using TTY-1.

INPUT: RST DLP XXX!  
RST ACU Y!

where: XXX = dial-up number  
Y = ACU number

- 9.44 Using the isolation panel on the 'B' cabinet, place CPU0 into the DEC ISO-LATE state.

10. CONFIGURE CPU0 FOR PHASE III

10.1 CPU0 System Console Connection

- 10.11 Disconnect the M6AS cable labeled "to J9 connector 230A CPU0" from the "A" connector on the SH11 circuit pack in the OPWR/FLT unit location 02-090. Into this "A" connector on the SH11 circuit pack, connect cable CB23.

- 10.12 Disconnect the BC05C-50 cable from the M25A cable, labeled "to J7 connector 230A CPUO," that is located in the area of the J1P040D cabinet ALM unit. Connect the BC05C-50 cable, just disconnected, to the J1P040D cabinet ALM unit location 02-016.
- 10.2 Cable CPUO Panel for Phase III
- 10.21 Disconnect the CPUO Generic 2 Phase II cables as listed in Tables 1 and 2 from the back side of the panels in the J1P040K and J1P040L cabinets, respectively.
- 10.22 Connect the CPUO Generic 3 Phase III cables as listed in Tables 3 and 4 to the back side of the panels in the J1P040K and J1P040L cabinets, respectively.
- 10.3 Disconnect Generic 2 Phase II Modem Cables
- 10.31 Request the data facilities personnel to disconnect all the Generic 2 Phase II data set modem cables from the 'Y' cables at the data set cabinet.
- 10.4 Restore Power in the V Cabinet
- 10.41 Turn on the ±12 volt power supplies associated with CPUO in the J1P040V-1 List 1 and List 2 cabinets.
11. CPUO DZ11 Diagnostics
- 11.1 Repeat Paragraphs 6.1 through 6.75 using CPUO and its associated TTY.
12. LOADING THE GENERIC 3 PROGRAM ON CPUO
- 12.1 Initial Set-Up
- 12.11 Request the DEC or maintenance personnel to make the following connections to the DMC11 in CPUO. Connect coaxial cable CB20-0 labeled 'CPUO DMC11-TRMT' to the transmit connector on the DMC11 in CPUO. Connect coaxial cable CB21-0 labeled 'CPUO DMC11-RCV' to the receive connector on the DMC11 in CPUO.
- 12.12 Remove and store the RP06 Diagnostic disk pack from the disk drive on CPUO. Install the RP06 disk pack for Generic 3 AMA data into the RP06 disk drive on CPUO (see IMPORTANT NOTE below). Per-

form a lamp test on the drive. Start the disk drive on CPUO. Refer to Paragraphs 6.1 through 6.52, if necessary.

IMPORTANT NOTE: The disk pack, used for Generic 3 AMA data may be a different one than the disk pack used for Generic 2 AMA data. This is a decision for the Telco. Be sure to have the proper disk pack installed before proceeding. The disk to be used MUST NOT contain any AMA billing data.

12.2 Mount and Load SACOPY Program Tape

12.21 Mount the SACOPY Program Tape (TP-5P355-03), without a 'write enable ring', onto CPUO's tape drive. Verify that the tape is ON LINE and at LOAD POINT.

12.22 Loading the SACOPY Program Tape

12.221 Set console switches on CU-0 to 17773030. Then depress LOAD ADDR key.

12.222 Set the SWR keys to zero - all down.

12.223 Place the ENABLE/HALT key to ENABLE.

12.224 Depress the START key. The magnetic tape should move forward and the message:

CORE MEMORY SIZE IS XXXK WORDS

is typed on the processor terminal. The tape then continues to move forward for a few seconds then rewinds.

NOTE: XXXK is the core memory size.

12.225 The following message will be printed on the processor terminal:

STAND ALONE COPY/VERIFY PROGRAM MODE:  
COPY, VRFY, OR VCOPY?

12.226 Remove the SACOPY program tape by depressing the 'RESET' key then the 'REWIND' key and then remove the tape from the tape drive.

12.3 Mount and Load SACOPY AMA DATA Tape

12.31 Mount the SACOPY AMA DATA Tape (TP-5P355-04), without a 'write enable ring' on CPUO's tape drive. Verify that the tape is ON LINE and at LOAD POINT.

## 12.32 On CPUO's TTY:

TYPE: VCOPY (CR)  
 RESPONSE: VERIFIED COPY  
 FROM:  
 TYPE: TH0 (CR)  
 RESPONSE: TO:  
 TYPE: HP12 (CR)

NOTE: (CR) means the carriage return key.

12.33 The SACOPY DATA tape will begin to be read. The tape may take several minutes to be read. When the tape has completed being read, the tape will rewind. The tape will then be read a second time and will rewind. The following will be typed on the terminal during the process:

NO. OF BLOCKS: XXX  
 NO BAD SECTORS ON HP12  
 VERIFY  
 NO. OF BLOCKS: XXX  
 NO BAD SECTORS ON HP12  
 NEXT COPY/VERIFY  
 MODE: COPY, VRFY, OR VCOPY?

where XXX = some numerical value.

12.34 Halt CU-0 by placing the HALT/ENABLE key to the HALT position.

12.35 Remove the SACOPY DATA tape from the tape drive by depressing the 'RESET' key then the 'REWIND' key and then remove the tape from the tape drive.

12.4 Load the Generic 3 Program into CPUO

12.41 CPUO should still have its HALT key in the HALT position. With the HALT key on CPUO in the HALT position, depress and release the START key. Place the ENABLE/HALT key on CPUO to the ENABLE position.

12.42 Place or verify that CPUO is in the NORMAL NON-ISOLATED state from the Main Alarm Control and Display Panel.

12.43 Using CPU1's TTY:

TYPE: UPD MEM PRG!  
 RESPONSE: PF

12.44 When the Generic program has been loaded into CPUO, the following will occur:

On CPU1's TTY:

M tt yz UPD MEM PRG COMPLETE

On CPUO's TTY, the same output messages as were printed on CPU1's TTY when the Generic program was loaded from tape into CPU1.

12.45 Verify that the Generic program was loaded correctly. Input the following on CPUO's TTY:

INPUT: TEST DET 3!

A response indicating that the test passed should be obtained.

12.5 Load NPD Data into CPUO

12.51 Using CPU1's TTY:

TYPE: UPD MEM NPD!  
 RESPONSE: M tt yz UPD MEM NPD COMPLETE

12.52 Verify that the NPD data was loaded correctly. Input the following on CPUO's TTY:

INPUT: TEST DET 4!

A response indicating that the test passed should be obtained.

12.53 Calculate a CRC value for the NPD data by inputting the following on CPUO's TTY:

INPUT: TEST DET 6!

A response will be obtained containing a CRC value. Compare this CRC value with the CRC value obtained when the NPD data was loaded into CPU1 (refer to Paragraph 8.6). The CRC values should be the same.

12.54 Initialize CPUO by inputting the following on CPUO's TTY:

INPUT: INIT SYS!

An initialization message will be obtained.

12.6 Standard Generic 3 System Console Arrangement

12.61 The steps in this paragraph should be executed when the active CPU's TTY is not printing any essential report information. The Telco should be consulted, to verify that no essential report information is presently being printed on the Active CPU's TTY.

- 12.62 Presently, cable CB21 is connected to the "A" connector on the SH11 circuit pack in the OPWR/FLT unit location 02-098, and cable CB23 is connected to the "A" connector on the SH11 circuit pack in the OPWR/FLT unit location 02-090. These cable connections need to be reversed. The final configuration will be as follows: cable CB21 should be connected to the "A" connector on the SH11 circuit pack in the OPWR/FLT unit location 02-090; cable CB23 should be connected to the "A" connector on the SH11 circuit pack in the OPWR/FLT unit location 02-098.
13. TN102 HARDWARE FUNCTIONAL TESTS
- 13.1 General
- 13.11 Disregard alarms generated when disengaging TN102 circuit packs for testing purposes. Retire the alarms as necessarily. Billing should not be affected.
- 13.12 Except where indicated, the general procedure for this paragraph is as follows. The green NORMAL LEDs on the Main Alarm Control and Display Panel should be illuminated. Without removing power, disengage the indicated TN102 circuit pack, the green NORMAL LED associated with the TN102's processor side on the Main Alarm Control and Display Panel should extinguish. Without removing power, reengage the TN102 circuit pack and the associated green NORMAL LED on the Main Alarm Control and Display panel should illuminate.
- 13.2 CPU1 Active and CPU0 OOS Tests
- 13.21 Do the general procedure using the TN102 at TTY-08-054 associated with CPU0.
- 13.22 Do the general procedure using the TN102 at 1ASYN-08-122 associated with CPU0 (Note: Use the same location in the OASYN unit if the 1ASYN unit is not equipped.)
- 13.23 Do the general procedure using the TN102 at 2ASYN-08-122 associated with CPU0 (Note: Use the same location in the 1ACU unit if the 2ASYN unit is not equipped).
- 13.24 Request the TELCo to place onto dial back-up any active polling channel on channels as follows:
- A) Channels 070 through 077 if a 1ASYN unit is equipped, or
- B) Channels 030 through 037 if a 1ASYN unit is not equipped.
- 13.25 Do the general procedure using the TN102 at 1ASYN-08-138 associated with CPU1 (Note: Use the same location in the OASYN unit if the 1ASYN unit is not equipped).
- 13.26 Request the TELCo to restore the channels placed onto dial back-up in Paragraph 13.24.
- 13.27 Request the TELCo to place onto dial back-up any active polling channel on channels 130 through 137, if the 2ASYN unit is equipped. If the 2ASYN unit is not equipped, request the TELCo to switch any channel using ACU17 to a different ACU, and remove the dial-up channel associated with ACU17 using the RNV DLP command.
- 13.28 Do the general procedure using the TN102 associated with CPU1 at the location as follows:
- A) 2ASYN-08-138 if a 2ASYN unit is equipped, or
- B) 1ACU-08-138 if a 2ASYN unit is not equipped.
- 13.29 Request the TELCo to restore the channels or dial-up port affected in Paragraph 13.27.
- 13.3 CPU1 Active and CPU0 ISLT Tests
- 13.31 Halt CPU0 and place it into the PROCESSOR ISOLATE state. On the Main Alarm control and Display Panel, the red isolate LED above the Processor Isolate switch should illuminate and the green NORMAL LED for CPU0 should extinguish.
- 13.32 Without removing power, disengage the TN102 circuit pack at TTY-08-054. The red isolate LED above the Processor Isolate switch should extinguish. Without removing power, reengage the TN102 circuit pack and the red isolate LED above the Processor Isolate switch should illuminate.

13.34 Release the CPU0 from the PROCESSOR ISOLATE state, release the HALT key if still depressed and depress the continue key.

13.4 Restore CPU0 to Standby

13.41 Mount a Generic 3 standard label AMA tape with a 'write enable ring' on the tape drive on CPU0. Verify that the tape is ON LINE and at LOAD POINT. The 'WRITE ENABLE' lamp should also be illuminated.

13.42 Using 'System Console 1' input the following:

INPUT: RST TAPE!  
RESPONSE:

Both TTY's:

M tt yz UPD MEM TRN COMPLETE  
M tt yz RST SYS 0 STANDBY

System Console 1:

M tt yz RST TAPE AMA ...

NOTE: It takes several minutes to achieve the STANDBY state.

3.5 CPU1 Active and CPU0 STBY Tests

13.51 Repeat the procedures listed in Paragraph 13.22 and Paragraph 13.23.

14. Isolation Tests

14.1 Verify that the green NORMAL LED for CPU0 and CPU1 are illuminated at the Main Alarm Control and Display Panel.

14.2 Attempt to place CPU0, first, into the PROCESSOR ISOLATE state, then, into the INTERFACE ISOLATE state. No change in state should occur.

NOTE: Especially take note of the TN216 circuit pack.

14.3 Attempt to place CPU1, first, into the PROCESSOR ISOLATE state, then, into the INTERFACE ISOLATE state. No change in state should occur.

NOTE: Especially take note of the TN216 circuit pack.

15. Zero the Disk on CPU0

15.1 Remove the PTP on both sides by inputting the following on both System Consoles:

INPUT: RMV PTP!  
RESPONSE: OK

15.2 On System Console 1:

TYPE: RMV DISK!  
RESPONSE: PF  
M tt yz REPT DISK RMV OK

15.3 Obtain the virtual octal address of the mnemonic "\_\_\_CHKZERO" from the load map. On System Console 1:

TYPE: IN MEM D 0 XXXXXX 10!  
RESPONSE: PF  
M tt yz ADDRESS OLD NEW  
XXXXXXXX 000000 000010

NOTE: XXXXXX is the virtual address of \_\_\_CHKZERO.

15.4 Start the disk zeroing and check program. Input the following on System Console 1:

TYPE: RST DISK CHK!  
RESPONSE: PF  
M tt yz REPT DISK CHK IP bbbbbb ccccc

NOTE 1: bbbbbb and ccccc are data fields.

NOTE 2: The above response will occur at the start of the disk check and approximately every 3 minutes thereafter.

15.5 When all of the following messages have been printed on System Console 1, the disk zeroing and check procedure has been completed.

M tt yz REPT DISK CHK CHPOK 000000 000000  
M tt yz REPT DISK CHK READONE 000000 000000  
M tt yz REPT DISK CHK FILEOK 000000 000000  
M tt yz REPT DISK CHK CHPOK 000001 000000  
M tt yz REPT DISK CHK READONE 000001 000000  
M tt yz REPT DISK CHK FILEOK 000001 000000  
M tt yz REPT TAPDSK INITIALIZATION IP  
M tt yz REPT TAPDSK BILLING DATA NOT ON DISK

NOTE 1: The disk zeroing and check program will run for approximately 1 hour before all the above messages have been printed.

NOTE 2: The above messages may be interrupted by the normal hourly print-out. For details of the hourly print-out see the OP CLK message in the output manual.

15.6 Wait till all the printouts listed in Paragraph 15.5 have been obtained before proceeding. Restore the PTP by inputting the following on System Console 0:

INPUT: RST PTP!

A response indicating that the PTP has been restored will be obtained. A transient memory update will also occur.

## 16. DIAL-UP TESTS - CPU1 ACTIVE

16.1 Each equipped dial-up will be tested for its call processing ability. The tests in this paragraph should be performed by the TELCo.

16.11 Remove all equipped dial-ups except the one under test by typing the following on system console 0 for each:

Input: RMV DLP XXX!

Response: tt yz RMV DLP XXX ZZZZ

Where: XXX = dial-up channel number  
ZZZZ = 202S or 212A

16.12 Manually request dial-up by typing the following message on system console 0:

Input: SW CHL YYY DLP!

Response:

M tt yz SW CHL YYY DLP XXX ZZZZ OK TYPE  
000

Where: XXX = dial-up channel number  
under test

ZZZZ = 202S or 212A

YYY = channel number being  
switched to dial backup.

16.13 Verify that calls are being processed for the channel on dial-up. Input, on System Console 0, the following message twice, with a short wait interval in between, and verify that the traffic counter is incrementing.

Input: OP CNT CHL YYY!

Where: YYY = Channel number on dial  
backup.

16.14 Remove the channel from dial-up by typing the following on system console 0:

Input: RST CHL YYY!

Response: tt yz RST CHL YYY

Where: YYY = channel number

16.15 If more dial-up channels are to be tested, remove the dial-up just tested and restore the next dial-up to be tested.

Input: RMV DLP XXX!

Response: tt yz RMV DLP XXX ZZZZ

Input: RST DLP YYY!

Response: M tt yz RST DLP YYY ZZZZ

Where: XXX = dial-up channel just  
tested

YYY = next dial-up channel to  
be tested

ZZZZ = 202S or 212A

16.16 If more dial-up channels are to be tested, repeat Paragraphs 16.12 through 16.16.

16.17 Restore all equipped dial-ups that are presently out-of-service by typing the following on system console 0 for each:

Input: RST DLP XXX!

Response: M tt yz RST DLP XXX ZZZZ

Where: XXX = dial-up channel number  
ZZZZ = 202S or 212A

## 17. SYSTEM SWITCH TESTS

17.1 Request the TELCo to perform a system switch by inputting the following on System Console 0:

Input: SW SYS!

Response: Appropriate system switch  
printouts

NOTE 1: The RETIRE ALARMS button may need to be depressed after the switch occurs.

NOTE 2: The TELCo may want to remove the tape on the new STANDBY processor.

17.2 The systems should have switched. CPU0 should now be ACTIVE and CPU1 should now be STANDBY. Verify this status at the Main Alarm Control and Display Panel. Also verify that the green NORMAL LED for CPU0 and CPU1 is illuminated at the panel.

17.3 Attempt to place CPU1, first, into the PROCESSOR ISOLATE state, then, into the INTERFACE ISOLATE state. No change in state should occur.

NOTE: Especially take note of the TN216 circuit pack.

- 17.4 Attempt to place CPU0, first, into the PROCESSOR ISOLATE state, then, into the INTERFACE ISOLATE state. No change in state should occur.
- NOTE: Especially take note of the TN216 circuit pack.
18. ADDITIONAL TN102 HARDWARE FUNCTIONAL TESTS
- 18.1 General
- 18.11 The general procedure described in Paragraph 3.11 and Paragraph 3.12 apply to this paragraph section, also.
- 18.2 CPU0 Active and CPU1 SBY Tests
- 18.21 Do the general procedure using the TN102 at TTY-08-070 associated with CPU1.
- 18.22 Do the general procedure using the TN102 at 1ASYN-08-138 associated with CPU1 (Note: Use the same location in the OASYN unit if the 1ASYN unit is not equipped).
- 18.23 Do the general procedure using the TN102 at 2ASYN-08-138 associated with CPU1 (Note: Use the same location in the 1ACU unit if the 2ASYN unit is not equipped).
- 18.3 CPU0 Active and CPU1 OOS Tests
- 18.31 Request the TELCo to place the Standby into the out-of-service state.
- 18.32 Repeat the procedures associated with CPU1 indicated in Paragraph 18.22 and Paragraph 18.23.
- 18.33 Request the TELCo to place onto dial back-up any active polling channel on channels as follows:
- A) Channels 070 through 077 if a 1ASYN unit is equipped, or
- B) Channels 030 through 037 if a 1ASYN unit is not equipped.
- 18.34 Do the general procedure using the TN102 at 1ASYN-08-122 associated with CPU0 (Note: Use the same location in the OASYN unit if the 1ASYN unit is not equipped).
- 18.35 Request the TELCo to restore the channels placed onto dial back-up in Paragraph 13.24.
- 18.36 Request the TELCo to place onto dial back-up any active polling channel on channels 130 through 1376, if the 2ASYN unit is equipped. If the 2ASYN unit is not equipped, request the TELCo to switch any channel using ACU17 to a different ACU, and remove the dial-up channel associated with ACU17 using the RMV DLP command.
- 18.37 Do the general procedure using the TN102 associated with CPU0 at the locations as follows:
- A) 2ASYN-08-122 if a 2ASYN unit is equipped, or
- B) 1ACU-08-138 if a 2ASYN unit is not equipped.
- 18.38 Request the TELCo to restore the channels or dial-up port affected in Paragraph 18.36.
- 18.4 CPU0 Active and CPU1 ISLT Tests
- 18.41 Halt CPU1 and place it into the PROCESSOR ISOLATE state. On the Main Alarm Control and Display panel, the red isolate LED above the Processor Isolate switch should illuminate and the green NORMAL LED for CPU1 should extinguish.
- 18.42 Without removing power, disengage TN102 circuit pack at TTY-08-070. The red isolate LED above the Processor Isolate switch should extinguish. Without removing power, reengage the TN102 circuit pack and the red isolate LED above the processor Isolate switch should illuminate.
- 18.43 Release CPU1 from the PROCESSOR ISOLATE state, release the HALT key if still depressed and depress the CONTINUE key.
- 18.5 End TN102 Hardware Functional Tests
- 18.51 Request the TELCo to restore the OOS CPU to STANDBY.
19. DIAL-UP TESTS - CPU0 ACTIVE
- 19.1 Request the TELCo to repeat the steps in Paragraph 16.

NOTE: System Console 0 is always associated with the ACTIVE processor.

20. UNCONDITIONAL SYSTEM SWITCH TESTS

20.1 Request the TELCo to perform an unconditional switch by inputting the following on System Console 1:

Input: SW SYS UCL!  
Response: Appropriate unconditional system switch printouts.

20.2 After the switch occurs, request the TELCo to input the following on System Console 1 to clear the emergency switch indication:

Input: INIT EMG!

A response indicating that the emergency switch indication has been cleared should be obtained.

NOTE: After the switch occurs, the TELCo may want to remove the TAPE on the new STANDBY system.

20.3 At the Main Alarm Control and Display Panel, retire the alarms, if necessary, and verify that CPUO indicates a STANDBY state and CPU1 indicates an ACTIVE state. Also verify that the green NORMAL LED for CPUO and CPU1 are illuminated.

20.4 Request the TELCo to repeat the unconditional switch by repeating Paragraphs 20.1 and 20.2.

20.5 At the Main Alarm Control and Display Panel, retire the alarms, if necessary, and verify that CPUO indicates an ACTIVE state and CPU1 indicates a STANDBY state. Also verify that the green NORMAL LED for CPUO and CPU1 are illuminated.

21. CONCLUSION

21.1 This is the end of the tests for this handbook section. The Telco will want to observe the system operation. The length of time will be determined by the Telco. When the Telco is satisfied with the system operation, Western Electric will be called to complete the Generic 2 to Generic 3 retrofit procedure. Handbook 59, Section 214F will be used for the final steps in the retrofit procedure.

Manager, Product Engineering  
Control Center

Reason for Reissue:  
To include TN102 hardware functional tests.