NO. 1A AUTOMATIC MESSAGE ACCOUNTING

RECORDING CENTER (AMARC)

ACCEPTANCE TESTS

GENERIC 3

1. GENERAL

1.01 This section provides acceptance tests for the No. 1A AMARC (Generic 3) system.

1.02 The Equipment Test List is not affected by this issue.

1.03 The procedures in this section should be performed in the order given. If difficulties are encountered, refer to the IM/OM manual or other documentation referenced in this section. If any difficulties are caused by the hardware, contact the equipment manufacturer or Western Electric installation personnel. For software problems, contact the Western Electric regional Product Engineering Control Center (PECC).

1.04 *Lettered Steps:* A letter a, b, c, etc, added to a step number in any procedure of this section indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION/INPUT MESSAGE column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. SYSTEM PURPOSE AND DESCRIPTION

2.01 The No. 1A AMARC is a fully duplicated minicomputer system which receives and stores call information transmitted by a variety of sensing units (call data accumulator [CDA], billing data transmitter [BDT], electronic translation system [ETS], call data transmitter [CDT], and No. 3 Electronic Switching System [ESS]) located in central offices. The basic system configuration of two sets of six cabinets manufactured by Digital Equipment Corporation contains:

- PDP*-11/70 processor cabinet

- Memory cabinet

- Tape drive cabinet

- Basic asynchronous channel cabinet

- Expansion asynchronous channel cabinet

- Disk drive.

A control console is used to communicate with each processor.

2.02 The hardware also includes a set of processor interface cabinets manufactured by Western Electric. Data sets associated with the No. 1A AMARC are housed in a separate cabinet or cabinets.

2.03 Some of the commonly used execute commands, acknowledgment messages, and priority symbols used in this section include:

!	execute command
PF	printout follows
IP	in progress
NG	no good
OK	accomplished
M	manual action
tt	minutes after the hour
yz	processor state

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2.04 For all operations at the processor console, the keys should be set as follows:

POWER switch (with key lock)—POWER position to use the console; LOCK position to disable the console; OFF to remove power.

ADDRESS display select switch (8 positions)—CONS PHY (console physical) position

DATA display select switch (4 positions)—DATA PATHS position

LAMP TEST SWITCH (white)—Normal position

Control Switches

LOAD ADRS (load address)—Used during some procedures; if not used, should be normal.

EXAM (examine data)—Used during some procedures; if not used, should be normal.

DEP (deposit)—Should be normal.

CONT (continue)—Should be normal.

ENABLE/HALT—Used to stop processor by operating to HALT position. For the processor to run, switch must be in the normal (ENABLE) position.

S INST/S BUS CYCLE (single instruction/single bus cycle)—Should be in normal (S INST) position.

START—This key is used to load the program from tape or initialize the program. This key is also used with the LOAD ADRS and ENABLE/HALT keys in the following manner. Use the ENABLE/HALT key to halt the processor; set the console switches to the appropriate address; operate and release the LOAD ADRS key; release the ENABLE/HALT key; momentarily operate the START key to start the program executing the program. When the START key is released, it restores to its normal position, and the processor starts running.

2.05 Generic 3 of No. 1A AMARC applications provides for interfacing up to 16 I/O terminals through a flexport arrangement. Flexports are designated as FP00 through FP07 and FP10 through FP17. Flexports FP00 and FP01 are dedicated to the system console I/O terminals SC0 and SC1, respectively. SC0 is used for active processor messages and SC1 is used for standby or out-of-service processor messages. Manual isolation of a processor does not affect access to the system consoles by the other processor. Additional interfacing of SC1 allows communication between the processors and SC1 for performing diagnostics, loading the generic program, or entering NPD.

2.06 Refer to Section 201-900-103 for a complete description of the No. 1A AMARC System.

3. VERIFICATION OF HARDWARE

3.01 The operating company must verify that all ordered equipment has been delivered. The telephone company order list should be used as the controlling document. The equipment inspection may be made at time of delivery or after Western Electric personnel have completed installation. Particular care must be taken that all options have been applied as ordered.

3.02 Digital Equipment Corporation (DEC) personnel should supply a system layout (a hardware diagram of the system peripherals and their location on the UNIBUS*.) DEC should also specify which expander boxes contain the different peripherals. There is a location on top of the expander box where all peripherals can be listed along with their address and vectors.

3.03 At least one copy of all hardware documentation should be kept on site for future reference.

4. VERIFICATION OF SOFTWARE AND DOCUMENTATION

4.01 The following software items should be available on site:

- Stand alone copy (SACOPY) program tape (2 each)

- SACOPY data tape (2 each)

- Generic tape (2 each)

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- Diagnostic tape (2 each).

4.02 Several blank tapes to be used as backup for storing the nongeneric parameter data (NPD) should be available. Completed NPD forms for this system are required in Part 9 of this section.

4.03 At least one copy of the documents referenced in Part 13 of this section should be available at the AMARC site.

4.04 Sufficient magnetic tapes and RP06 disk packs to maintain a running system are required. The quantity of magnetic tapes required may be estimated by multiplying the maximum number of days turnaround time at the regional accounting office (RAO) times the estimated tape usage per day.

5. VERIFICATION OF DATA CIRCUITS

5.01 The telephone company data services group is responsible for the data circuits to the various sensors. They should have verified continuity between the AMARC center and the remote sensors.

5.02 The data sets are rack-mounted in the associated data cabinet. The 202T data sets are used for the primary data link for all AMARC-served sensors. The 212AR data sets are used as the "dial backup" sets with call data transmitters (CDT). The 202S data sets are used for all other "dial backup" facilities. Verify that all data sets are equipped with the desired options.

6. SYSTEM DIAGNOSTICS

6.01 Western Electric installation personnel have run the DEC diagnostics during their installation procedure. Complete system diagnostics should now be run to verify that all interfacing equipment performs as prescribed.

6.02 The generic 3 diagnostics are composed of four programs. These are:

- Asynchronous data set interface (async. dsif)— tests the hardware partition consisting of an isolation switching circuit, DZ11B multiplexer circuit, and associated cables.

- Asynchronous flexport (TTY) interface (flexport)—tests the hardware partition

consisting of an isolation switching circuit, DZ11B multiplexer circuit, and associated cables.

- Flexport (TTY) status interface (flxprt. status)—tests the hardware partition consisting of an isolation switching circuit, DR11C general purpose interface circuit, and associated cables.

- Alarm and Control Unit (alarm control)—tests the hardware partition which is the main interface between the processors.

6.03 Initially, the diagnostic programs should be transferred to a disk (Procedure A). The disk then may be used for this and subsequent runnings of the diagnostic programs (Procedures B and C).

A. Procedure for Loading Diagnostics Onto Disk

6.04 Loading the diagnostics from an out-of-service (OOS) processor onto the disk requires the use of two programs—the stand alone (SA) tape (TP-5P355-03) and the SA copy (SACOPY) data program tape (TP-5P355-04). The SACOPY program provides instructions to both the tape unit and disk. Instructions are provided for locating data on the tape that is to be written onto the disk. The SACOPY data program, which is loaded after the SACOPY program, is essentially the data which will be read and written onto the disk.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
1	With disk function disabled, verify that a disk pack is not installed and the spindle is stopped.	
2	Push operator cover straight back to fully expose drive spindle area. *Note:* A solenoid-operated latch locks the operator cover closed until spindle rotation has stopped.	
3	Remove disk pack bottom cover by squeezing bottom cover release mechanism.	
4	Place disk pack on spindle.	
5	Rotate disk pack top cover handle in a clockwise direction until it comes to a complete stop. Continue to rotate, even though cover may disengage, to ensure that full stop point is reached and pack-on switch is closed.	
6	Remove disk pack cover *carefully* to avoid damage to equipment. *Caution 1:* *Do not touch disk pack with hands.* *Caution 2:* *To avoid damage to the shroud, heads, disk pack, etc, do not allow cover to strike these areas during positioning of the cover over the disk pack.*	
7	Close operator cover.	

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
8	Reassemble disk pack top and bottom covers and store in designated area.	
9	Perform lamp test by depressing lamp test button located under front display panel of disk drive.	All disk drive lamps lighted.
10	Depress CONTROL A switch.	CONTROL A lamp lighted.
11	Place WRITE PROTECT switch in nonwrite protect mode.	
12	Depress START/STOP switch to START.	START indicator and DOOR LOCKED indicator lighted and disk pack starts to rotate. *Note:* If DOOR LOCKED indicator does not light, close door fully.
13	Mount SACOPY program tape onto associated tape drive.	
14	At processor console— Set console switches to 17773030 (octal).	
15	Depress LOAD ADRS key.	
16	Release HALT key.	
17	Depress START key.	Magnetic tape moves forward and message **"CORE MEMORY SIZE IS XXXK WORDS"** is printed on I/O terminal. The tape then continues to move forward for a few seconds and then rewinds. I/O terminal prints: **Stand Alone Copy/Verify Program Mode: copy, vrfy, or vcopy?**
18	Remove SACOPY program tape.	
19	Mount SACOPY diagnostic data tape onto associated tape drive up to load point.	
20	At SC0— Type: **vcopy** (CR)	RSP: **verified copy from:**
21	Type: **tm0** (CR)	RSP: **to:**
22	Type: **hp0 (CR)** (Specifies area on disk where data is to be printed.)	RSP: **hp0 No. of blocks: XXXX** Where **XXXX** = No. of blocks on data tape that will be read.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

SACOPY data tape begins to be read.

Note: Data tape will take approximately 20 minutes to be read. VCOPY will then read the tape for another 20 minutes and compare the data to that on the disk.

When tape has been read, message **no bad sectors on hp0** occurs. The tape rewinds and will be read again.

If disk is good, the following response will print:

Verify
No. of blocks: XXXX
No bad sectors on hp0
Next Copy/Verify Mode: copy, vrfy, or vcopy?

If disk is bad, the following response will print:
Mismatch = Block XXXXX,
Offset XX:
Source = XXXXXX, Dest = XXXXX
Proceed?

If disk is acceptable, the following response will print:
Bad sectors on hp0!
cyl track sector
xx   xx   xx

Note: When a bad disk is discovered, type **y** and depress CR key to continue testing, or type **n** and depress CR key to discontinue testing.

23a   If tape moves only a short distance and stops—
Verify disk is in proper mode.

24   At processor console—
Depress HALT key.

25   At disk drive—
Remove SACOPY data tape.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

Note: Disk pack is loaded with the diagnostics.

B. Procedure for Booting the Diagnostics From Disk to Out-of-Service (OOS) Processor

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
1	At disk drive— Depress CONTROL A switch.	CONTROL A lamp lighted.
2	Place WRITE PROTECT switch in nonwrite protect mode.	
3	At processor console— Set console switches to 17773000 (octal).	
4	Depress LOAD ADRS key.	
5	Release HALT key.	
6	Depress START key.	RSP: Four sets of numbers.
7	At associated SC1 terminal— Type: **DBO** (CR) CR = carriage return	RSP: **hpboot: hpboot 2**
8	Type: **unix.diag** (CR)	RSP: **unix.diag.** ***** No. 1A AMARC** **DIAGNOSTICS—1AAM3 Iss, 2.0***** **SYSTEM SIZE—72.1K ****** **AVAIL MEM=439.8K ***** **ENTER RUN LEVEL (0-7) =**
9	Type: **7** (CR)	RSP: **7** **INIT: SINGLE** **USER #MODE** **Password:** (Password is typed in at the following step.)
10	Type: **amarc** (CR)	RSP: "**#**" System has successfully booted up and is ready to start the diagnostics.
11	Type: **date mmddhhmmyy** (CR) *Note 1:* Where: mm is month number; dd is the day number in the month; hh is the hour number (24 hr. clock); mm is the minute number; yy is the year number. This will set the proper date and time.	

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

Note 2: Disk pack can be removed and stored for later use. Mark the disk pack legibly with "1AAM3 Diagnostics" for future reference.

12   Type: **diagnostics** (CR)

I/O terminal prints:
current date
Format: day of week, mm, dd, time, yy

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The following diagnostics are available:

No.	Program Name	
1	**async.dsif**	: **tests the Asynchronous Data Set Interface Unit**
2	**flexport**	: **tests the Asynchronous Flexport (TTY) Interface Unit**
3	**flxprt.status**	: **tests the Flexport (TTY) Status Interface**
4	**alarm.control**	: **tests the Alarm and Control Unit**

The diagnostics can be run in three different modes:

1. control parameter initialization mode or "init" mode

2. execute mode or "e" mode

3. quick mode or "q" mode

If you want more information about the different modes of operation type "help", otherwise type in the mode (init, e, or q) that you want to run the diagnostics. Note: Always hit the "return" key after each response.

Note: The monitor prints a "> " when waiting for a response.

Disk Pack Removal

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
13	With disk function disabled, operate the drive START/STOP switch to STOP.	READY and START lamps extinguished.
14	Wait for disk pack to come to a complete stop (approximately 20 seconds) before opening operator cover.	DOOR LOCKED indicator is extinguished.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

15   Push operator cover straight back to fully expose the disk pack.

Note: A solenoid-operated latch locks the operator cover closed until disk pack rotation has stopped.

Caution 1: Do not touch disk pack with hands.

Caution 2: To avoid damage to the shroud, heads, disk pack, etc, do not allow cover to strike these areas during positioning of the cover over the disk pack.

16   Very carefully position disk cover over top of disk pack.

17   Turn cover in a counterclockwise direction for two full turns so that cover becomes securely fastened to disk pack.

18   Remove disk pack by its top cover handle.

19   Immediately attach bottom cover to create a positive dust seal and store in a designated area.

20a   If another disk pack is not to be installed at this time, close and latch operator cover.

C. Performing Diagnostics

6.05 The diagnostic programs will be executed under control of the monitor, which provides three operation modes. These modes of operations are control parameter initialization, execute, and quick.

6.06 Each diagnostic has the capability of running alone and independently of any other diagnostic program. If for any reason control needs to be returned from the diagnostic program to the monitor, type the word **stop.**

6.07 When running the diagnostics, additional information may be obtained concerning modes of operation. The word **help** should be typed at the SC1 I/O terminal when additional information is required. Refer to Section 201-900-331 for a complete description of the information that is provided.

7. DISK INITIALIZATION

7.01 The purpose of initialization is to write information onto the disk which will allow the AMARC generic program to use the disk as a backup recording medium. This procedure must be done as part of the initial generic load operation. Initialization may also be required during new generic or new generic issue loads (growth) or when software in some way writes invalid data onto the disk with valid headers.

A. Disk Initialization Procedure

7.02 Initialization requires the use of two program tapes. The SACOPY program provides instructions to both the tape unit and the disk.

Instructions are provided for locating data on the tape that is to be written onto the disk. The SACOPY data program, which is loaded after the SACOPY program, is essentially the data which will be read and written onto the disk.

7.03 Refer to Section 201-900-330 if troubles are encountered while performing the disk initialization and zeroing routines.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

Disk Pack Restoral

1   With disk function disabled, verify that a disk pack is not installed and that spindle is stopped.

2   Push operator cover straight back to fully expose drive spindle area.

   Note: A solenoid operated latch locks the operator cover closed until spindle rotation has stopped.

3   Remove disk pack bottom cover by squeezing bottom cover release mechanism.

4   Place disk pack on spindle.

5   Rotate disk pack top cover handle in a clockwise direction until it comes to a complete stop. Continue to rotate, even though cover may disengage, to ensure that full stop point is reached and pack-on switch is closed.

6   Remove disk pack cover **carefully** to avoid damage to equipment.

   Caution 1:   Do not touch disk pack with hands.

   Caution 2:   To avoid damage to the shroud, heads, disk pack, etc, do not allow cover to strike these areas during positioning of the cover over the disk pack.

7   Close operator cover.

8   Reassemble disk pack top and bottom covers and store in designated area.

Disk Initialization

9   Depress lamp test switch located under front display panel of disk drive.   All disk drive lamps lighted.

10   Depress CONTROL A switch.   CONTROL A lamp lighted.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
11	Place WRITE PROTECT switch in nonwrite protect mode.	
12	Depress START/STOP switch to START.	START indicator and DOOR LOCKED indicator lighted and disk pack starts to rotate.
		Note: The disk drive will not start when the door is not closed securely. If DOOR LOCKED indicator is not lighted, close door fully. If DOOR LOCKED indicator is not lighted, but door is fully closed, push cover open and replace disk cover over disk unit and tighten disk securely. It is likely that the pack-on switch is not operated. Close door and repeat this step.
13	Mount SACOPY program tape onto associated tape drive up to load point.	
14	At processor console— Set console switches to 17773030 (octal).	
15	Depress LOAD ADRS key.	
16	Set all console switches to zero (all down).	
17	Release HALT key.	
18	Depress START key.	Magnetic tape moves forward and message **"CORE MEMORY SIZE IS XXXK WORDS"** is printed on I/O terminal.
		I/O terminal prints: **Stand Alone Copy Verify Program** **Mode: copy, vrfy, or vcopy?**
19	Remove SACOPY program tape.	
20	Mount SACOPY data tape onto associated tape drive up to load point.	
21	At SC0— Type: **vcopy** (CR)	RSP: **verified copy** **from**
22	Type: **tm0** (CR)	RSP: **to:**
23	Type: **HP12** (CR) (Specifies area on disk where data is to be printed.)	RSP: **hp12** **No. of blocks: XXXXX**
		Where **XXXXX** = No. of blocks of data that will be read.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

SACOPY data tape begins to be read.

Note: Data tape may take approximately 10 minutes to be read. VCOPY will then read the tape and compare the data to that on the disk.

When tape has been read, message **no bad sectors on hp0** occurs.
The tape rewinds and will be read again.

RSP: **Verify**
No. of blocks: XXXXX
no bad sectors on hp0
Next Copy/Verify Mode: copy, vrfy, or vcopy?

24a   If tape moves only a short distance and stops—
Verify that disk is in proper mode.

25   Depress HALT key.

26   Remove SACOPY data tape.

     Note: At this point, a small portion of the disk has now been restored. This will permit the rest to be restored when the generic program is loaded.

B. Zeroing the Disk Procedure

7.04   Zeroing the disk should always be performed in the initialization process. A program patch is used to zero the disk and run a disk check. The **RST DISK CHK** input message is used for this purpose. Using this message restores the disk function but not the tape backup function. Before the tape backup function is restored, all files are checked. Because of the conjunctive use of both the patch and the **RST DISK CHK** message, all data except unrecovered primary copy billing data encountered on the disk will be zeroed.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

1   Type: **RMV DISK!**
(Used to place AMARC disk file system in a state where some of the programs can access the disk.)

RSP: **PF**
(See IM—RMV DISK.)

MSG: **M tt yz REPT DISK RMV OK**
(See OM—REPT DISK RMV.)

2   Type: **IN MEM D 0 (XXXXXX) 000010!**
Where: **XXXXXX** = virtual octal address for symbolic _CHKZERR which is obtained from the load map of the associated generic program issue.
(Used to allow zeroing of the disk.)

RSP: **PF**
(See IM—IN MEM.)

MSG: **ADDRESS   OLD   NEW**
        XXXXX   000000   000010

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

3   Type: **RST DISK CHK!**
(Used to restore AMARC disk file system to service. All disk files will be checked before file system is put into service. This is the start of the disk zeroing and check program.)

RSP: **PF**
(See IM—RST DISK.)

MSG: **M tt yz REPT DISK CHK IP bbbbbb ccccc**
This message occurs when the disk check starts and every 3 minutes thereafter.
(See OM—REPT DISK CHK.)

Note: The disk zeroing and check program will run for approximately 1 hour before all of the following messages have been printed. Normal hourly printouts may interrupt these messages.

M tt yz REPT DISK CHK CMPOK 000000 000000
(See OM—REPT DISK CHK.)

M tt yz REPT DISK CMP READONE 000000 000000
(See OM—REPT DISK CHK.)

M tt yz REPT DISK CMP FILEOK 000000 000000
(See OM—REPT DISK CHK.)

M tt yz REPT DISK CHK CMPOK 000001 000000
(See OM—REPT DISK CHK.)

M tt yz REPT DISK CMP READONE 000001 000000
(See OM—REPT DISK CHK.)

M tt yz REPT DISK CMP FILEOK 000001 000000
(See OM—REPT DISK CHK.)

M tt yz REPT TAPDSK INITIALIZATION IP
(See OM—REPT TAPDSK INITIALIZATION IP.)

M tt yz REPT TAPDSK BILLING DATA NOT ON DISK
(See OM—REPT TAPDSK BILLING DATA.)
Disk zero and check procedure complete.

8. GENERIC LOAD PROCEDURE

8.01 For initial load of a system, begin with both processors halted and no tape on either tape drive. If the ACTIVE lamp is lighted on the main alarm, status, and maintenance panel of the processor interface cabinet for a particular processor, begin loading the program into this processor. If not lighted, either processor may be used for loading.

When the ACTIVE lamp is lighted on both sides, depress the HALT key on each processor and momentarily depress the START key at each processor. This will extinguish the ACTIVE lamp associated with this processor.

8.02 It is recommended that this part of the section be performed twice so that program loading and transfer can be tested for each processor.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
1	Verify that disk initialization (Part 7, Procedure A) has been performed.	
2	At processor console of system in which generic program is to be loaded— Depress HALT key.	
3	Mount No. 1A AMARC generic program magnetic tape (TP-5P355-01). *Note:* The "write-enable" ring should be removed from the reel.	
4	At tape drive— Depress LOAD key.	Tape winds onto take-up reel until load point is reached. LOAD lamp lighted.
5	Depress ONLINE key.	ONLINE and LOAD lamps lighted.
6	At processor console— Set console switches to 17773030 (octal).	
7	Depress LOAD ADRS key.	
8	Release HALT key.	
9	Depress START key.	Magnetic tape moves forward and the message **"CORE MEMORY SIZE IS XXXK WORDS"** prints at processor I/O terminal. The tape then continues to move forward for a few seconds and then rewinds. *Note:* Processor will automatically initialize after No. 1A AMARC generic program is loaded and messages are printed. A **REPT TAPE OOS** message also occurs. MSG: **tt REPT TAPDSK INITIALIZATION IP** (See OM—REPT TAPDSK INITIALIZATION IP.) MSG: **tt REPT TAPDSK BILLING DATA NOT ON DISK** (See OM—REPT TAPDSK BILLING DATA.)
	Note: No. 1A AMARC generic program is now properly loaded into memory of processor.	
10	To complete No. 1A AMARC generic tape removal— Depress tape RESET key, then depress REWIND key.	Tape totally rewinds onto upper reel.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
11	Remove tape.	
12	Zero disk. (See Part 7, Procedure B.)	
13	Referring to Program Document Index of associated No. 1A AMARC generic program (PG)— Locate cyclic redundancy check characters (memory location and contents).	
14	Set console switches to first memory location provided.	
15	Depress LOAD ADRS key.	
16	Depress EXAM key.	
17	Verify contents displayed against contents specified in appropriate drawing information of generic program (PG-).	Contents displayed match contents specified in appropriate drawing information of the generic program.
18	Repeat Steps 13 through 17 for each memory location provided in PG-.	
19a	If responses are not in agreement with PG- of generic program— Improper generic program was loaded.	
20b	If overwrites affecting this program exist— Set console switches to first absolute address specified on TWX.	
21b	Depress LOAD ADRS key.	
22b	Depress EXAM key.	Contents displayed match old data specified on TWX.
23b	Set console switches to new data to be inserted.	
24b	Lift DEP key.	
25b	Depress EXAM key.	Contents displayed match new data specified on TWX.
26c	If other addresses are specified— Repeat Steps 20b through 24b for each address specified on TWX.	
27d	If there are no overwrites affecting this program or any overwrites which do affect this program have been entered— Set console switches to 1000.	

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
28d	Depress LOAD ADRS key.	
29d	Release HALT key.	
30d	Depress START key.	RSP: None MSG: **tt INIT SYS x OOS, etc (See OM—INIT SYS.)
31d	At OOS processor I/O terminal— Type: **TEST DET 3!**	RSP: **PF** (See IM—TEST DET.) MSG: **M tt REPT DET PRG PASSED** (See OM—REPT DET PASSED.)
32e	If detection test 3 of Step 31d fails (REPT DET PRG FAILED)— Verify that overwrites were correctly inserted by examining each address specified on TWX. Correct any errors and repeat Steps 27d through 31d.	
33	At processor console— Depress HALT key.	
34	Mount new AMA tape fitted with a "write-enable" ring.	
35	Depress LOAD key.	LOAD lamp lighted.
36	Depress ONLINE key.	ONLINE, LOAD, and WRITE-ENABLE lamps lighted.

Running No. 1A AMARC Generic Program

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
37	At processor console— Set console switches to 1000.	
38	Depress LOAD ADRS key.	
39	Release HALT key.	
40	Depress START key.	No. 1A AMARC initialized and running. MSG: **tt INIT SYS x ACTIVE** (See OM—INIT SYS.)
	Note: No. 1A AMARC generic program now running in this processor.	
41	Restore all console switches.	

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

Note: Perform either Steps 42 through 50 or 51 through 55.

Load Procedures for Other Processor

42   At processor console of system in which generic program is to be loaded— Depress HALT key.

43   Perform disk initialization (Part 7, Procedure A).

44   Mount No. 1A AMARC generic program magnetic tape (TP-5P355-01).

Note: The "write-enable" ring should be removed from the reel.

45   At tape drive— Depress LOAD key.   Tape winds onto take-up reel until load point is reached. LOAD lamp lighted.

46   Depress ONLINE key.   ONLINE and LOAD lamps lighted.

47   At processor console— Set console switches to 17773030 (octal).

48   Depress LOAD ADRS key.

49   Release HALT key.

50   Depress START key.   Magnetic tape moves forward and the message **"CORE MEMORY SIZE IS XXXK WORDS"** prints at processor I/O terminal. The tape then continues to move forward for a few seconds and then rewinds.

Note: Processor will automatically initialize after No. 1A AMARC generic program is loaded and messages are printed. A **REPT TAPE OOS** message also occurs.

Copying No. 1A AMARC Generic Program From One Processor to Other Processor Via PTP Channel

51   At processor to be loaded with generic program— Depress HALT key.

52   At SC0— Type: **RMV PTP!**   RSP: **OK** (See IM—RMV PTP.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
53	At processor to be loaded— Release HALT key.	
54	Depress START key.	
55	At SC0— Type: **UPD MEM PRG!**	RSP: **PF** (See IM—UPD MEM PRG.) At OOS processor— MSG: ****tt INIT SYS x OOS**, etc (See OM—INIT SYS.) At active processor— MSG: **M tt UPD MEM PRG COMPLETE** (See OM—UPD MEM COMPLETE.)

Note: Both processors now running with No. 1A AMARC generic program.

9. PROCEDURE FOR LOADING NONGENERIC PARAMETER DATA (NPD)

9.01 Nongeneric parameters are those data which provide, for the No. 1A AMARC program, a description of the network to which a particular system is connected. For example, the number of communication channels connected to the No. 1A AMARC and whether a channel is single, double, or triple entry must be specified.

9.02 Initially, the NPD is entered into the No. 1A AMARC system via the input/output terminal. After all NPD data is entered, it is copied onto a magnetic tape so that, if the need arises, the data can be quickly restored to the system. Then, if the backup tape is used, only additions or deletions to the special number file would have to be made. These special numbers are compared to a current listing of special numbers and updated accordingly.

9.03 This procedure enters all NPD data required by the No. 1A AMARC. As NPD is being entered at the I/O terminal, all typed entries should be double-checked with the data on the NPD forms. Refer to Section 201-900-327 if troubles are encountered while performing this procedure.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
Stable Initialization		
1	At processor console of system to be initialized— Depress HALT key.	
2	Depress START key.	
3	Set console switches to 1000.	
4	Depress LOAD ADRS key.	
5	Release HALT key.	
6	Depress START key.	RSP: None

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

MSG: **tt **INIT SYS** x **OOS** 000003 bbbbbb ccccc dddddd eeeeee ffffff gggggg hhhhhh iiiiii jjjjjj kkkkkk llllll mmmmmm nnnnnn oooooo pppppp qqqqqq rrrrrr ssssss tttttt uuuuuu
(See OM—INIT SYS.)
tt **INIT TAPE AMA,** etc
(See OM—INIT TAPE.)
tt **RMV TAPE AMA, etc
(See OM—RMV TAPE AMA.)

Initial Entries Procedure

7	At SC1— Type: **RC ID aaaaaa!** (AMARC 6-digit identification number.)	RSP: **OK** (See IM—RC ID.)

8a — If single- or double-entry entities (or both), triple-entry No. 3 ESS entities, or triple-entity CDT entities are being served—
Type: **RC MR a b!**
(Specifies message-rate and/or input-entry format.)

9b — If serving double-entry step-by-step entities, triple-entry No. 3 ESS entities, or triple-entry CDT entities—
Type: **RC DB a!**
(Specifies detailed billing option to be used.)

RSP: **OK**
(See IM—RC DB.)

10 — For each multiplexer to be equipped—
Type: **RC MPX aa EQP!**
(Used to equip a DZ11 multiplexer in AMARC software where:
aa = DZ11 multiplexer number 00-13 octal.)

RSP: **OK**
(See IM—RC MPX EQP.)

11 — For each automatic calling unit (ACU) to be equipped—
Type: **RC ACU aa EQP!**
(Used to equip ACU in AMARC software where:
aa = ACU number 00-17 octal.)

RSP: **OK**
(See IM—RC ACU EQP.)

12 — For each dial backup data channel to be equipped—
Type: **RC DLP aab EQP cccc dd!**
(Used to equip a dial backup data channel in AMARC software where:
   aa = DZ11 multiplexer number 00-13 octal
   b = data channel number 0-7
   cccc = type of dial backup channel
   dd = ACU number 00-17 octal.)

RSP: **OK**
(See IM—RC DLP EQP.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
13	To equip flexport multiplexer— Type: **RC FLXMPX a EQP!** (Used to equip flexport multiplexer 1 where: **a** = multiplexer number = 1.) *Note:* Flexport multiplexer 0 is automatically equipped.	RSP: **OK** (See IM—RC FLXMPX EQP.)
14	For each flexport to be equipped— Type: **RC FLXPRT ab EQP cde ff!** (Used to equip flexport ports for communication and control where: **ab** = multiplexer and port numbers 02-17 [octal] **cde** = parameter indicator for the port **ff** = data set speed.)	RSP: **OK** (See IM—RC FLXPRT EQP.)
15	For each entity served— Type: **RC ENT aaa b ccccc d e!** (Specifies local office switching entity to be served and data associated with that entity.)	RSP: **OK** (See IM—RC ENT.)
16c	If serving double-entry step-by-step, triple-entry BDT, or triple-entry CDT entities— Type: **RC ENT aaa COC bbcc ddd e f!** (Specifies for the given switching entity the translation from a 2-digit calling central office identifier to a corresponding 3-digit central office code.)	RSP: **OK** (See IM—RC ENT COC.)
17d	If serving triple-entry BDT entities— Type: **RC ENT aaa RCDR b c dd!** (Specifies for the given switching entity the calling office index translation table for each recorder scan port in each BDT.)	RSP: **OK** (See IM—RC ENT RCDR.) RSP: **OK** (See IM—RC ENT COC.)
18d	Type: **RC ENT aa SPCOC bbcc CCSA ddd!** **RC ENT aa SPCOC bbcc TWX ddd!** **RC ENT aa SPCOC bbcc WATS ddd!** (Specifies for the given switching entity the special COC numbers to be assigned for billing CCSA, TWX, and WATS calls when their central office index [COI] is the same as for regular POTS subscribers.)	RSP: **OK** (See IM—RC ENT SPCOC.)
19d	If serving triple-entry BDT entities— Type: **RC ENT aaa SPMBI bb cc!** (Specifies for the given switching entity the formatting of call types of billing according to locally specified MBI codes.)	RSP: **OK** (See IM—RC ENT SPMBI.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

20   Type: **RC ENT aaa CGN b ccc!**
(Specifies for the given switching entity the 3-digit calling NPA codes and a corresponding 1-digit code calling NPA index.)

    Note: This message accepted by, but meaningless for, single-entry entities.

RSP: **OK**
(See IM—RC ENT CGN.)

21d   If serving triple-entry BDT entities—
Type: **RC ENT aaa CDN b ccc!**
(Specifies for the given switching entity the 3-digit called NPA codes corresponding to the 1-digit compressed codes received from BDT.)

RSP: **OK**
(See IM—RC ENT CDN.)

22e   If serving triple-entry CDT entities—
Type: **RC ENT aaa AUD bbbcccdddd e!**
(Enters and deletes data in the trunk audit table.)

RSP: **OK**
(See IM—RC ENT AUD.)

23e   Type: **RC ENT aaa TDL bbb c dd!**
(Enters data into the 10-digit local dialing translation table.)

RSP: **OK**
(See IM—RC ENT TDL.)

24e   Type: **RC ENT aaa NXX bbb c!**
(Specifies the NPA in which a particular NXX is located when the NXX is called from a CDT entity with either 7 or 1+7 digit dialing.)

RSP: **OK**
(See IM—RC ENT NXX.)

25f   If serving double-entry step-by-step entities—
Type: **RC ENT aaa TOC bc dddeee fg hhhjjj kl ppprrr!**
(Specifies the one, two, or three theoretical office codes associated with this switching entity.)

RSP: **OK**
(See IM—RC ENT TOC.)

26f   Type: **RC ENT aaa TCH b cc d eeeeeeeeee!**
(Specifies the theoretical office code thousands and hundreds digit entries.)

RSP: **OK**
(See IM—RC ENT TCH.)

27e   If serving triple-entry CDT entities—
Type: **RC ENT aaa OLC bb cccc dd e!**
(Specifies the message billing class and rate for an originating line class.)

RSP: None
(See IM—RC ENT OLC.)

28e   Type: **RC ENT aaa TLF bb!**
(Specifies the number of the highest trunk link frame equipped for a CDT controller.)

RSP: None
(See IM—RC ENT TLF.)

29e   Type: **RC ENT aaa DTK bb cc dddd!**
(Enters data into dedicated trunk table. This table is used to determine if CCSA or WATS trunks were used on a call.)

RSP: **OK**
(See IM—RC ENT DTK.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
30e	Type: **RC ENT aaa MSG bb ccc dd!** (Used to equip message-rate tables for customers whose OLC maps into an MBC of message rate.)	RSP: None (See IM—RC ENT MSG.)
31e	Type: **RC ENT aaa FLT bb ccc d!** (Used to equip flat-rate tables used by customers whose OLC maps into an MBC of flat rate or cover zone.)	RSP: None (See IM—RC ENT FLT.)
32e	Type: **RC ENT aaa BRI bb cc d e!** (Specifies local or nonlocal call treatment and bulk or detailed billing for a particular billing rate indicator [BRI] in the specified message rate billing table for the given CDT entity.)	RSP: **OK** (See IM—RC ENT BRI.)
33e	Type: **RC ENT aaa OBS bbbcccdddd e!** (Used to enter a telephone number to be complaint-observed into the complaint observed number table.)	RSP: **OK** (See IM—RC ENT OBS.)
34d	If serving triple-entry BDT entities— Type: **RC ENT aaa CCI b c!** (Specifies the WATS type for certain call class indices [CCI].)	RSP: **OK** (See IM—RC ENT CCI.)
35f	If serving double-entry step-by-step entities— Type: **RC DRT aaa bbb ccc!** (Specifies entry to be placed in digit reconstruction table for given switching entity.)	RSP: **OK** (See IM—RC DRT.)
36f	Type: **RC MBI aaa bccc d!** (Specifies an entry to one of the message billing index tables for given switching entity.)	RSP: **OK** (See IM—RC MBI.)
37g	If other switching entities are to be served— Repeat Steps 15 through 36f as required for each switching entity served. *Note 1:* It is not necessary that messages be repeated for each switching entity served in an ascending order of entity number. *Note 2:* Message in Steps 38 through 42f repeated for each equipped data channel. It is not necessary that messages be entered for each channel in an ascending order of channel number.	Same as Steps 15 through 36f.
38	Type: **RC CHL aab EQP ccc dd tttt eeeeeeeeeeee f!**	RSP: **OK** (See IM—RC CHL EQP.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
	(Used to equip a data channel from remote location.)	

Note: For No. 3 ESS, the dd, e....e, and f fields are not required. The next higher sequential channel (aab+1), called a dedicated backup, is equipped automatically with the RC CHL EQP message.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
39	Type: **RC CHL aab ESP ccc ddd!** (Specifies number of last equipped scan port on each of the input network/multiplexer units of the CDA served by this data channel or specifies the highest equipped trunk for each recorder scan port of each BDT. When used with No. 3 ESS, this message specifies the number of the highest equipped junctor.)	RSP: **OK** (See IM—RC CHL ESP.)

Note: Not used with single-entry entities.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
40e	If serving triple-entry CDT entities— Type: **RC CHL aab COL cc d!** (Specifies the trunk scan board column equipped on a CDT controller.)	RSP: **OK** (See IM—RC CHL COL.)
41h	If serving No. 3 ESS switching entity— Type: **RC CHL aab TID cccccc!** (Specifies the 6-digit base and control number for the specified No. 3 ESS office.)	RSP: **OK** (See IM—RC CHL TID.)
42f	If serving double-entry step-by-step entities— Type: **RC CHL aab MON cccc!** (Specifies calling line number used by the channel monitor for the given data channel.)	RSP: **OK** (See IM—RC CHL MON.)
43i	If other data channels are equipped— Repeat Steps 38 through 42f for each equipped data channel.	

Note: It is not necessary that messages be repeated in an ascending order of channel number.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
44	To enter expiration period of AMA billing tapes— Type: **RC EXP aaaa!** (Used to input the expiration period for AMA billing magnetic tapes where **aaaa** equals the expiration period in 0-9999 days.)	RSP: **OK** (See IM—RC EXP.)
45	With all parameters entered— Type: **TEST DET 4!**	RSP: **PF** (See IM—TEST DET.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
	(Used to perform NPD memory CRC check.)	MSG: **M tt REPT DET NPD PASSED** (See OM—REPT DET PASSED.)
46	Type: **TEST DET 6!** (Used to compute NPD CRC.)	RSP: **PF** (See IM—TEST DET.) MSG: **M tt REPT DET CMP PASSED XXXXXX** (See OM—REPT DET PASSED.) *Note:* **XXXXXX** is CRC computation (NPD CRC) computed for nongeneric data.

Making Magnetic Tape Backup

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
47	Mount a tape that has not been erased and is equipped with "write-enable" ring onto tape drive associated with OOS processor. *Note:* This tape will now be identified as the nongeneric data backup tape.	
48	At SC1— Type: **TEST DET 6!** (Used to compute NPD CRC computation.)	RSP: **PF** (See IM—TEST DET.) MSG: **M tt REPT DET CMP PASSED XXXXXX** (See OM—REPT DET PASSED.) *Note:* This produces an NPD CRC (**XXXXXX**) number of the nongeneric data now resident in memory.
49	Type: **RST TAPE NPW!** (Used to restore tape controller to service for outputting NPD from memory to backup tape.)	RSP: **PF** (See IM—RST TAPE NP [R] [W].) MSG: **M tt RST TAPE NPD aaaaaa b c** (See OM—RST TAPE NPD.)
50	Type: **OP RCTBL TAPE!** (Used to output [read] NPD onto a magnetic tape mounted on tape drive.)	RSP: **IP** (See IM—OP RCTBL TAPE.) Tape is moving. When tape ceases moving— Tape rewinds from lower to upper reel until load point is reached. Tape drive RESET lamp lighted. MSG: **M tt RMV TAPE NPD COPIED** (See OM—RMV TAPE NPD.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
		Note: NPD has been copied onto backup tape from recent change table in memory.
	Note: The following steps are used to verify the copy of the NPD onto magnetic tape.	
51	Remove tape from tape drive.	
52	Remove "write-enable" ring.	
53	Remount tape.	
54	Depress tape drive LOAD key.	Tape winds onto take-up reel until load point is reached. LOAD lamp lighted.
55	Depress ONLINE key.	ONLINE lamp lighted.
56	At OOS processor console— Depress HALT key.	
57	Depress START key.	
58	Set console switches to 1000 (octal).	
59	Depress LOAD ADRS key.	
60	Release HALT key.	
61	Depress START key.	RSP: None

MSG: **tt INIT SYS x OOS aaaaaa bbbbbb ccccc dddddd eeeee fffff gggggg hhhhhh iiiiii iiiiii kkkkkk llllll mmmmmm nnnnnn oooooo pppppp qqqqqq rrrrr ssssss ttttt uuuuuu (See OM—INIT SYS.) |
| 62 | At SC1— Type: **RST TAPE NPR!** (Restores tape controller to service for inputting NPD from the magnetic backup tape.) | RSP: **PF** (See IM—RST TAPE NP [R] [W].)

MSG: **M tt RST TAPE NPD aaaaaa b c** (See OM—RST TAPE NPD.) |
| 63 | Type: **IN RCTBL TAPE!** (Used to input [write] the recent NPD from previously made backup tape.) | RSP: **IP** (See IM—IN RCTBL TAPE.)

Tape is moving.

When tape ceases moving— MSG: **M tt RMV TAPE NPD RESTORED** (See OM—RMV TAPE NPD.) |

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
64	Type: **TEST DET 6!** (Used to compute NPD CRC computation.)	RSP: **PF** (See IM—TEST DET.) MSG: **M tt REPT DET CMP PASSED XXXXXX** (See OM—REPT DET PASSED.) *Note:* NPD CRC (**XXXXXX**) of this step should match NPD CRC computed in Step 48.
65	Remove NPD magnetic tape.	

System Initialization

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
66	Equip OOS system with an unerased AMA tape equipped with "write-enable" ring.	
67	At SC1— Type: **INIT SYS!** (Used to initialize the system.)	RSP: None MSG: ****tt INIT SYS x OOS aaaaaa bbbbbb ccccc dddddd eeeee fffff gggggg hhhhhh iiiiii jjjjjj kkkkkk lllll mmmmmm nnnnnn oooooo pppppp qqqqqq rrrrr ssssss tttttt uuuuuu** (See OM—INIT SYS.)
68	Type: **RST TAPE!** (Initializes tape unit, writes an ID burst on the newly mounted tape, and restores unit to service. This message also requests a transient memory update and system restoral.)	RSP: **PF** (See IM—RST TAPE.) In approximately 30 seconds— MSG: **tt UPD MEM TRN COMPLETE** (See OM—UPD MEM COMPLETE.) **M tt RST SYS n STANDBY** (See OM—RST SYS.) **M tt RST TAPE AMA tttttt ssssss mmmmmm rrrrrr cccccc iiiiii pppppp** (See OM—RST TAPE AMA.)
69	At SC0— Type: **SW SYS!** (Requests a switch of the status of the two systems.)	RSP: **PF** (See IM—SW SYS.) MSG: **M tt SW SYS 0 aaaaaa, 1 bbbbbb 000001** (See OM—SW SYS.) *Note:* Active processor has now been switched to standby mode.
70	At SC1— Type: **RMV SYS!** (Remove standby system from service.) *Note:* This standby processor was active processor the first portion of this procedure.	RSP: **PF** (See IM—RMV SYS.) MSG: **M tt RMV SYS n OOS 000001** (See OM—RMV SYS.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
71	At SC0—	RSP: **PF**
	Type: **UPD MEM NPD!**	(See IM—UPD MEM NPD.)
	(Used to update NPD from active to out-of-service system.)	
		MSG: **M tt UPD MEM aaa COMPLETE**
		(See OM—UPD MEM COMPLETE.)
72	At SC1—	RSP: **PF**
	Type: **TEST DET 4!**	(See IM—TEST DET.)
	(Used to perform NPD memory CRC check.)	
		MSG: **M tt REPT NPD PASSED**
		(See OM—REPT DET PASSED.)
73	Type: **TEST DET 6!**	RSP: **PF**
	(Used to compute NPD CRC computation.)	(See IM—TEST DET.)
		MSG: **M tt REPT DET CMP PASSED XXXXXX**
		(See OM—REPT DET PASSED.)
		Note: **XXXXXX** of this verification should match that computed in Step 46. This verifies that the NPD was properly transferred via the PTP channel.
	Note: Nongeneric parameters (except special numbers) for all entities served by the No. 1A AMARC have been entered. A copy of these parameters has been made on magnetic tape and verified.	

Entering Special Numbers

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
74	Mount a tape that has not been erased and is equipped with "write-enable" ring.	
75	At SC1—	RSP: **OK**
	To enter NPD special numbers—	(See IM—RC SPN.)
	Type: **RC SPN aaa bbb cccc d!**	
	To delete NPD special numbers—	MSG: None
	Type: **RC SPN aaa bbb cccc!**	
	Note: Repeat this step as required.	
76	When all special numbers have been entered—	RSP: **PF**
	Type: **TEST DET 6!**	(See IM—TEST DET.)
	(Used to compute NPD CRC number.)	
		MSG: **M tt REPT DET CMP PASSED XXXXXX**
		(See OM—REPT DET PASSED.)
		Note: This produces an NPD CRC (**XXXXXX**) number for the present NPD data which now includes special number data. This number should be recorded for reference.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
77	Type: **INIT SYS!** (Used to initialize the system.)	RSP: None MSG: ****tt INIT SYS x OOS aaaaaa bbbbbb ccccc dddddd eeeee fffff gggggg hhhhhh iiiiii iiiiii kkkkkk llllll mmmmmm nnnnnn oooooo pppppp qqqqqq rrrrrr ssssss tttttt uuuuuu** (See OM—INIT SYS.)
78	Type: **RST TAPE!** (Initializes tape unit, writes an ID burst on the newly mounted tape, checks for an empty tape, and restores unit to service. This message also requests a transient memory update and system restoral.)	RSP: **PF** (See IM—RST TAPE.) In approximately 30 seconds— MSG: **tt UPD MEM TRN COMPLETE** (See OM—UPD MEM COMPLETE.) **M tt RST SYS n STANDBY** (See OM—RST SYS.) **M tt RST TAPE AMA tttttt ssssss mmmmmm rrrrrr ccccc llllll pppppp** (See OM—RST TAPE AMA.)
79	At SC0— Type: **SW SYS!** (Requests a switch of the status of the two systems.)	RSP: **PF** (See IM—SW SYS.) MSG: **M tt SW SYS 0 aaaaaa, 1 bbbbbb 000001** (See OM—SW SYS.) *Note:* Active processor has now been switched to standby mode.
80	Type: **RMV TAPE!** (Used to dismount a tape from magnetic tape drive and remove tape controller from service.)	RSP: **PF** (See IM—RMV TAPE.) MSG: **M tt REPT TAPBKU DISK BEING USED TO RECORD BILLING DATA (STANDBY MODE)** (See OM—REPT TAPBKU DISK BEING USED TO RECOVER BILLING DATA.) Tape rewinds from lower to upper reel until load point is reached. Tape drive RESET lamp lighted. *Note:* Standby processor now removed from service.
81	At tape drive— Depress REWIND key.	Tape totally rewinds from lower to upper reel.
82	Remove AMA tape from tape drive.	
83	Mount a tape that has not been erased and is equipped with "write-enable" ring.	

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

84   At SC0—
Type: **UPD MEM NPD!**
(Used to update NPD from active to OOS system.)

RSP: **PF**
(See IM—UPD MEM NPD.)

MSG: **M tt UPD MEM NPD COMPLETE**
(See OM—UPD MEM COMPLETE.)

85   At SC1—
Type: **TEST DET 6!**
(Used to compute NPD CRC.)

RSP: **PF**
(See IM—TEST DET.)

MSG: **M tt REPT DET CMP PASSED XXXXXX**
(See OM—REPT DET PASSED.)

Important: NPD of this step should match NPD CRC computed on other processor from Step 76.

86   Type: **INIT SYS!**
(Used to initialize system.)

RSP: None

MSG: ****tt INIT SYS x OOS aaaaaa bbbbbb ccccc dddddd eeeeee fffff gggggg hhhhhh iiiiii jjjjjj kkkkkk llllll mmmmmm nnnnnn oooooo pppppp qqqqqq rrrrrr ssssss tttttt uuuuuu**
(See OM—INIT SYS.)

87   Type: **RST TAPE!**
(Initializes tape unit, writes an ID burst on the newly mounted tape, checks for an empty tape, and restores unit to service. This message also requests a transient memory update and system restoral.)

RSP: **PF**
(See IM—RST TAPE.)

In approximately 30 seconds—

MSG: **tt UPD MEM TRN COMPLETE**
(See OM—UPD MEM COMPLETE.)

M tt RST SYS n STANDBY
(See OM—RST SYS.)

M tt RST TAPE AMA tttttt ssssss

Set Date and Time

88   Establish a telephone connection to a precise time announcement machine if not already established. See Section 030-125-501 for information on and connection to precise time announcement.

Note 1: Do not type execute command ! in the following step.

Note 2: All values entered are decimal.

89   At SC0—
Type: **SET CLK DATE mmddyy,TIME hhmmss**

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

(Request to set system clock date and/or time.)

Note: The date and/or time chosen for the SET CLK input message should be some reference time point within 45 seconds ahead in relation to audible time machine.

90   Making note of precise time to be announced— When precise time tone heard which matches SET CLK date and/or time of Step 89

Type: !
(System time updated to real time and request made for printout of system date and time.)

RSP: **PF**
(See IM—SET CLK.)
At active I/O terminal—

(M)   **tt yz SET CLK**   **TIME:HH:MM:SS.T**   **DATE:MM/DD/YR**
     tt yz CURRENT :   **hh:nn:ss.t**   **mm/dd/yy**
     tt yz REQUESTED: **hh:nn:ss.t**   **mm/dd/yy aaa....bbb...**
     tt yz CHANGES :   **ccc...**
     tt yz YOU HAVE 30 SECONDS TO RESPOND BY TYPING:
     tt yz SET CLK OK! IF YOU ARE SATISFIED, OR
     tt yz SET CLK CANCEL! IF YOU ARE NOT SATISFIED

(See OM—SET CLK.)

Note: The current time printed in output message is time that existed when execute command ! was typed followed by request for time and/or date change.

Note: Response of Step 91j or 92k must take place within 30 seconds after the printing of the previous output message. If a time-out should occur (SET CLK TIMOUT), return to Step 89 and repeat procedure.

91j   If satisfied with clock setting—
Type: **SET CLK OK!**
(Clocks of both processors are updated to the requested time and date.)

RSP: **PF**
(See IM—SET CLK OK.)
At both I/O terminals—
MSG: **M tt OP CLK mm/dd/yy hh:mm:ss.a**
(See OM—OP CLK.)

92k   If an error is recognized in output message of Step 90—
Type: **SET CLK CANCEL!**
(Clock change request canceled.)

RSP: **OK**
(See IM—SET CLK CANCEL.)
At both I/O terminals—
MSG: **M tt OP CLK mm/dd/yy hh:mm:ss.a**
(See OM—OP CLK.)

93k   Return to Step 89 and repeat procedure.

9.04   Using the system input manual (IM) or Section 201-900-327, perform a dump of all

NPD tables in memory. Translate and compare this data for sequence and completeness against

the original NPD forms. An NPD dump should be made and filed each time the NPD is changed.

10. VALIDATION OF GENERIC WITH SENSORS

10.01 Verify with the appropriate central office personnel that all sensors are ready to

work with the No. 1A AMARC. The system should be in a normal duplex mode with disks enabled. Perform the following procedures to verify various miscellaneous portions of the AMARC system.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

Restoring Channels

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
1	At SC0— Type: **INH WM CHL aab!**	RSP: **OK** (See IM—INH WM CHL.)
2	Repeat Step 1 for each channel equipped.	

Disk Panel and Alarm, Status, and Maintenance Panel Tests

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
3	On left front side underneath display panel of RP06 disk— Depress white button switch. *Note:* Switch not labeled.	All lamps on the front panel of the RP06 disk lighted. *Note:* Note any unlighted lamps and notify maintenance personnel.
4	At main alarm, status, and maintenance panel— Depress TEST LAMPS & AUDIBLE key.	All lamps on the main alarm, status, and maintenance panel lighted. Critical audible alarm sounds. *Note:* Should lamps fail to light when the TEST LAMPS & AUDIBLE key is depressed, a problem may exist in the switch, monitor, and display circuit pack (TN196) of the alarm and control unit. If replacing the circuit pack does not correct the problem, refer to SD-5P013.
5	Release TEST LAMPS & AUDIBLE key.	Lamps and audible alarms will correctly indicate current status of the No. 1A AMARC. *Note:* If an alarm occurs while the test key is depressed, it will be indicated when the key is released.
6a	If equipped with auxiliary alarm, status, and maintenance panel— Depress TEST LAMPS & AUDIBLE key.	All lamps on the auxiliary alarm, status, and maintenance panel lighted. Critical audible alarm sounds. *Note:* Should lamps fail to light when the TEST LAMPS & AUDIBLE key is depressed, a problem may exist in the switch, monitor, and display circuit pack (TN196) of the alarm

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

and control unit. If replacing the circuit pack does not correct the problem, refer to SD-5P013.

7a   Release TEST LAMPS & AUDIBLE key.

Lamps and audible alarms will correctly indicate the current status of the No. 1A AMARC.

Note: If an alarm occurs while the test key is depressed, it will be indicated when the key is released.

System Switch

8   At SC0—
Type: **SW SYS!**
(Request switch of systems—standby to active and active to standby.)

RSP: **PF**
(See IM—SW SYS.)

MSG: **M tt SW SYS 0 aaaaaa**
(See OM—SW SYS.)

Processor Isolation and Interface Circuit Isolation

9   At SC1—
Type: **RMV TAPE!**
(Used to dismount a tape from magnetic tape drive and remove tape controller from service.)

RSP: **PF**
(See IM—RMV TAPE.)

In approximately 30 seconds—
MSG: **tt REPT TAPBKU DISK BEING USED TO RECORD BILLING DATA (STANDBY MODE)**
(See OM—REPT TAPBKU DISK BEING USED TO RECOVER BILLING DATA.)

M tt RMV TAPE AMA tttttt ssssss mmmmmmm rrrrrr llllll pppppp
(See OM—RMV TAPE AMA.)

Tape rewinds from lower to upper reel until load point is reached.
Tape drive RESET lamp lighted.

10   Type: **RMV SYS!**
(Used to remove standby system from service.)

RSP: **PF**
(See IM—RMV SYS.)

MSG: **M tt RMV SYS n OOS 000001**
(See OM—RMV SYS OOS.)

11   At OOS processor being isolated—
Depress HALT key.

12   At main alarm, status, and maintenance panel—
Operate associated PROCESSOR key to ISOLATE and momentarily depress EXECUTE key.

Associated NORMAL lamp extinguished.
Associated PROCESSOR ISOLATE lamp lighted.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

Note: Processor is now isolated.

Isolating Processor Interface

13   At main alarm, status, and maintenance panel— Operate associated INTERFACE key to ISOLATE and momentarily depress EXECUTE key.   Associated NORMAL lamp extinguished. Associated INTERFACE ISOLATE lamp lighted.

Note: Processor interface is now isolated.

Restoring Processor Interface

14   At OOS processor— Verify HALT key depressed. (Processor halted.)

15   Depress START key. (Causes reset signal to be sent to all peripheral devices in OOS processor.)

16   At main alarm, status, and maintenance panel— Operate associated INTERFACE key to RESTORE and momentarily depress EXECUTE key.   Associated NORMAL lamp lighted and lamp for INTERFACE ISOLATE extinguished.

Restoring Isolated Processor

17   At OOS processor isolated— Verify HALT key depressed. (Processor halted.)

18   Depress START key. (Causes reset signal to be sent to all peripheral devices in OOS processor.)

19   At main alarm, status, and maintenance panel— Operate associated PROCESSOR key to RESTORE and momentarily depress EXECUTE key.   Associated NORMAL lamp lighted and lamp for PROCESSOR ISOl ' '·' extinguished.

20   At OOS tape drive— Depress ONLINE key.   ONLINE, LOAD, and WRITE-ENABLE lamps lighted.

21   At SC1 Type: **INIT SYS!** (Request initialization of system.)   RSP: None

MSG: ****tt INIT SYS x OOS,** etc (See OM—INIT SYS.) ****tt REPT TAPE OOS,** etc, message also occurs. (See OM—REPT TAPE AMA.)

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

Note: Exclamation point (!) will not print.

22 Type: **RST TAPE!**
(Initializes tape unit, writes an ID burst on the newly mounted tape, checks for an empty tape, and restores unit to service. This message also requests a transient memory update and system restoral.)

RSP: **PF**
(See IM—RST SYS.)

Within 2 minutes—
At both system I/O terminals—
MSG: **tt UPD MEM TRN COMPLETE**
(See OM—UPD MEM COMPLETE.)
M tt RST SYS n STANDBY
(See OM—RST SYS.)
M tt RST TAPE AMA, etc
(See OM—RST TAPE AMA.)

Note: Should the output message not print on both system I/O terminals, repeat this step.

Emergency System Switch Test

23 Disable disk function at active system.

24 At tape drive of active system—
Operate RESET button.

System switches (active processor becomes OOS, standby processor switches to active). Refer to IM/OM for explanation of messages.

25 Restore OOS processor to standby state.

Data Set Dial Backup

26 At data set of a polling channel—
Operate RT button.

Channel switches automatically to dial backup. Analyze messages using IM/OM.

27 Restore channel of Step 26 to its primary link.

Isolation Override

28 At main alarm, status, and maintenance panel—
Operate one ISOLATION OVERRIDE key to ACTIVATE.

Associated processor NORMAL lamp extinguished. Associated PROCESSOR ISOLATE lamp lighted.

29 Operate ISOLATION OVERRIDE key to RELEASE.

Associated processor PROCESSOR ISOLATE lamp extinguished. Associated processor NORMAL lamp lighted.

30 Repeat Steps 28 and 29 for other processor.

31 At SC0—
Type: **ALL WM ALL CHL!**

RSP: **OK**

32 Repeat Steps 8 through 31.

10.02 The system may now be left on-line until the AMA tape is validated. During this time, other system operations should be tried to familiarize AMARC personnel with the system.

11. VALIDATION OF DATA COLLECTION ON AMA TAPE

11.01 This part of the section suggests a method of testing the entire system by making test calls and recording the billing information on AMA tapes. Local requirements should be considered when determining what validation procedures are to be used.

11.02 For this test, the system is operated in normal duplex mode. The writing of a tape by each processor is required in order to validate the complete system. A "clean" tape should be mounted on each tape unit for this test. Printouts from prior to and during the validation period should be retained until all discrepancies are resolved.

11.03 It is usually a function of the accounting department to:

- Determine the type of validation to be performed

- Perform the data check and formulate results

- Inform AMARC personnel of the results and any unexplainable discrepancies.

When the accounting department has prescribed the number, type, and duration of the test calls, establish forms to keep track of all such information.

11.04 Since the central office in which the test sensor is located actually makes the test calls, coordination with personnel there is required. That office's time source should be synchronized with the AMARC system time. The central office should keep accurate records during the test call period. As a minimum, these records should indicate:

- Type of call

- Calling and called numbers

- Connect and disconnect times

- Notations for any situation occurring during the call.

11.05 While the test calls are being made, AMARC personnel should exercise all billing functions of the system. These include collecting call data on both AMA tapes and disk units by using the following procedures. Record the time at which each change in recording medium is made.

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
1	When approximately one quarter of the validation is completed, at SC0— Type: **RMV TAPE!** (Switches recording of call data to backup disk.)	RSP: **PF** In approximately 30 seconds— MSG: **tt REPT TAPBKU** **DISK BEING USED TO RECORD BILLING DATA (STANDBY MODE)** (See OM—REPT TAPBKU DISK BEING USED TO RECOVER BILLING DATA.)
2	At active tape drive— Remove tape from active tape drive and store for shipment to accounting department.	
3	Mount a clean AMA tape.	
4	Depress LOAD key.	
5	Depress ONLINE key.	

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
6	When approximately one-half of the validation is complete, at SC0— Type: **RST TAPE!** (Transfers data that has been accumulating on disk to tape.)	RSP: **PF** MSG: **M tt yz REPT TAPE AMA TAPE RESTORED** (See OM—REPT TAPE AMA.) MSG: **tt yz REPT BILLING DATA RECOVERY FROM DISK** (See OM—REPT BILLING DATA RECOVERY FROM DISK.)
7	Disable disk drive on active system after the billing data has been transferred to the tape.	
8	At SC0— Type: **RMV TAPE!** (Forces a system switch and previously active system goes to OOS.)	RSP: **PF** MSG: **tt yz RMV SYS n OOS**
9	At OOS tape drive— Mount a clean tape.	
10	Depress LOAD key.	
11	Depress ONLINE key.	
12	At SC1— Type: **RST TAPE!** (Restores OOS system to standby.)	RSP: **PF** MSG: **M tt yz REPT TAPE AMA TAPE RESTORED** (See OM—REPT TAPE AMA.) MSG: **tt yz REPT SYS STA**, etc (See OM—REPT SYS STA.)
13	When approximately three-fourths of the validation is complete, at SC0— Type: **RMV TAPE!** (Switches recording of call data to backup disk.)	RSP: **PF** In approximately 30 seconds— MSG: **tt REPT TAPBKU DISK BEING USED TO RECORD BILLING DATA (STANDBY MODE)** (See OM—REPT TAPBKU DISK BEING USED TO RECOVER BILLING DATA.)
14	When all validation has been completed— Mount a clean tape on active tape drive.	
15	Depress LOAD key.	
16	Depress ONLINE key.	
17	At SC0— Type: **RST TAPE!** (Transfers data that has been accumulating on disk to tape.)	RSP: **PF** MSG: **M tt yz REPT TAPE AMA TAPE RESTORED** (See OM—REPT TAPE AMA.)
18	At SC0 and SC1— Type: **RMV TAPE!**	

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)

19   Forward all tapes used to the accounting department marked with the sequence and the times during which they were used.

12. PREPARING THE SYSTEM FOR LIVE BILLING

12.01 When all tests have been completed to the satisfaction of AMARC and accounting department personnel and the billing data has been validated, the No. 1A AMARC is ready for cutover.

12.02 Refer to the documents referenced in Part 13 of this section for routine or trouble locating information required during normal operation of the system.

12.03 Depending on local conditions, consideration may be given to establishing plans for notifying personnel when a failure occurs or handling other emergency situations. Refer to Section 201-900-010 for information on management of the system.

13. LIST OF REFERENCES

13.01 The following listing provides information and/or test requirements for the No. 1A AMARC.

SD & CD NO.	TITLE
5P006-01	No. 1A AMA Recording Center Application Schematic
5P007-01	No. 1A AMA Recording Center Data Set Connection Cabinet Circuit
5P009-01	No. 1A AMA Recording Center Data Set Interface and Auxiliary Function Unit Circuit
5P010-01	No. 1A AMA Recording Center Data Set Connection Unit Circuit
5P012	No. 1A AMA Recording Center Processor Interface Cabinet Circuit
5P016	No. 1A AMA Recording Center Supplementary Processor Interface Cabinet Circuit

SECTION	TITLE
201-900-010	No. 1A Automatic Message Accounting Recording Center (AMARC) Operation, Maintenance, and Management
201-900-102	230A Repeater for Use with No. 1 and No. 1A Automatic Message Accounting Recording Center (AMARC) Description
201-900-309	Operator Analysis of Step-by-Step Channel Troubles No. 1 and No. 1A Automatic Message Accounting Recording Center (AMARC)
201-900-310	Operator Analysis of BDT Channel Troubles No. 1 and No. 1A Automatic Message Accounting Recording Center (AMARC)
201-900-313	Operator Analysis of No. 5 Crossbar ETS and LAMA-C Channel Troubles No. 1 and No. 1A Automatic Message Accounting Recording Center (AMARC)
201-900-314	Operator Analysis of No. 3 ESS Channel Troubles No. 1 and No. 1A Automatic Message Accounting Recording Center (AMARC)
201-900-315	Operator Analysis of Call Data Transmitter (CDT) Channel Troubles No. 1A Automatic Message Accounting Recording Center (AMARC)
201-900-320	Software Growth Procedures No. 1A Automatic Message Accounting Recording Center (AMARC)
201-900-321	Routine Procedures No. 1A Automatic Message Accounting Recording Center (AMARC)