

## DATE AND TIME CHANGE PROCEDURES NO. 1 AUTOMATIC MESSAGE ACCOUNTING RECORDING CENTER (AMARC)

### 1. GENERAL

**1.01** This section provides information and procedures for performing No. 1 AMARC date and/or time change. Also, procedures are provided for performing clock compensation in systems utilizing the Generic 4 or 5 program.

**1.02** This section is reissued to update the procedures for Generic 4 and 5 programs.

**1.03** The following procedures are provided in this section.

**A. Date and Time Change:** This procedure provides a method for changing the date and/or time either simultaneously or separately of the No. 1 AMARC.

**B. Time Drift Compensation:** This procedure provides a method for applying plus or minus compensation to correct for drift in the active and standby system real-time clocks. This procedure is applicable to Generic 4 and 5 programs only.

**1.04** System responses that occur as a result of an input message entry are designated in the procedures of this section as RSP. In addition, output messages that occur as a result of an input message are designated in the procedures of this section as MSG. If system response or output messages are invalid, refer to Input Message Manual (IM) and Output Message Manual (OM) for analysis of failure messages to determine possible cause of trouble. Reference is made within parentheses in this section to either the IM or OM messages as they are referenced in the associated table of contents of the IM or OM.

**1.05** Reference should be made to the No. 1 AMARC IM/OM manuals for detailed

explanations of input and output messages where the need arises.

**1.06** Execute commands, acknowledgment messages, and priority symbols are used in the procedures of this section. Some of the most commonly used are:

! = execute command

PF = printout follows

M = manual action

tt = minutes after hour.

Other symbols used and their explanations may be obtained in Section B of both the IM and OM.

**1.07** Examination of the IM and OM are required for explanation of the variable fields of the input and output messages. Reference is made within parentheses to the input or output message as it appears in the IM or OM.

**1.08** While performing the procedures of the section, various other output messages may be printed due to time period or configuration of the system. Any automatic output messages *not* associated with a trouble condition may be disregarded. Any trouble conditions generated by the system either automatically or in response to an input message request should be analyzed using the IM and OM before continuing with the procedure.

**1.09** The active processor used for this procedure can be determined by the lamps located atop the data set control and connection (DSCC) cabinet or by typing the input message REPT SYS!

### NOTICE

Not for use or disclosure outside the  
Bell System except under written agreement

1.10 Information provided in parentheses is either supplemental information describing action that is taking place or reference information.

**Example:** The reference information (such as IM-RMV TAPE) is intended for direction to the Input Message Manual table of contents to the message RMV TAPE for obtaining variable field data, clearing trouble conditions, etc. Likewise (OM-RMV TAPE) is intended for direction to the Output Message Manual table of contents to the message RMV TAPE for obtaining information.

1.11 ♦Generic 4 and later program applications provide for a functional I/O terminal arrangement feature. When this feature is enabled, the terminal normally associated with processor 0 is dedicated to the active processor and becomes the alerting terminal. The other terminal normally associated with processor 1 is dedicated to the standby processor and becomes the analysis terminal. All active system input and output messages are entered and printed out at the alerting terminal. All input and output messages for the standby system are entered and printed out at the analysis terminal. To determine if the I/O terminals are in the functional mode before beginning a procedure in this section, a REPT SYS! input message is entered at either terminal for a REPT SYS STA report. Provided in this report is the state of the I/O terminals.♦

1.12 **Lettered Steps:** A letter a, b, c, etc, added to a step number in Part 2 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 procedure. Where a condition does not apply, all steps designated by that letter should be omitted.

## 2. PROCEDURES

### A. ♦Date and Time Change

#### Preliminary Requirements and Information for Performing Date and Time Change Procedure♦

2.01 Date and time are stored in the system memory and are automatically updated by

the system clock and associated software. Since the date and time are used as part of the automatic message accounting (AMA) tape entry for each billable call, ♦this data♦ must be accurate.

2.02 The current date and time, as recorded by the system, can be ascertained by performing the time check procedure as outlined in Section 201-900-301.

2.03 The time change procedure of this section should be performed when, through a check of the time in accordance with Section 201-900-301, it is found that real time and system time are not in agreement, or for standard and daylight saving time adjustments.

2.04 The date and/or time for this procedure can be set by typing in date and/or time of a near future time (in relation to real time) and waiting until the tone of time announcement machine is heard that matches the time set. Then activate the execute command !.

2.05 Date and/or time changes made on an active processor are automatically transferred to a standby processor.

2.06 A check of the date and time should be made after performing a date and/or time setting change procedure. This can be accomplished by retaining the established time machine connection and performing the time check procedure of Section 201-900-301.

2.07 Special entries are made on the AMA tape at noon and midnight. Furthermore, at midnight the date is automatically advanced. Therefore, the clock should **not** be set back over midnight or noon. Should the clock be found to be fast and immediate correction would mean setting the clock back over either boundary, it is recommended that the time change be delayed until the correct time has passed noon or midnight.

**Example:** If the correct time is 23:30:00 but the AMARC clock indicates 00:30:00, wait until the AMARC clock indicates 01:01:00 before correcting.

2.08 In the following procedure, an unconditional (UCL) input can be used to set time/date on a standby or out-of-service (OOS) processor if

necessary. (SET CLK UCL DATE mmddy, TIME hhmmss !).

the input message. The following input format should be used:

**2.09** Date and time may be changed simultaneously or separately. To change date and time simultaneously, the following input format should be used:

To change date only:

SET CLK DATE mmddy !

To change time only:

SET CLK TIME hhmmss !

SET CLK DATE mmddy, TIME hhmmss !

When it is desired to change the date or time independently, omit the unwanted parameter from

Reference should be made to the input message SET CLK for further details.

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

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

2	At active processor I/O terminal— Type: SET CLK DATE mmddy, TIME hhmmss (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 in near future in relation to audible time machine. If the time is more than 45 seconds in the future, the I/O terminal program will time out, giving a system response of ?T. This can be avoided by depressing the I/O terminal space bar one or more times until the time announcement is less than 45 seconds from the time to be set via the I/O terminal.

3	Making note of precise time to be announced— When precise time tone heard which matches SET CLK date and/or time of Step 2— Type ! (System time updated to real time and request made for printout of system data and time.)	
---	---	--

RSP:PF (See IM—SET CLK.)  
MSG:  
M tt OP CLK mmddy, TIME hhmmss  
(See OM—OP CLK.)

*Note:* The time printed in output message is precise time that occurred when execute command ! was typed.

4	Compare precise time announcement reference point to output message printout.	
---	---	--

<b>STEP</b>	<b>ACTION/INPUT MESSAGE</b>	<b>RESPONSE (RSP)/MESSAGE (MSG)</b>
-------------	-----------------------------	-------------------------------------

Time match—No settings or adjustments required. Perform time check procedure of Section 201-900-301.

Time mismatch—Repeat this procedure using new time reference until time match obtained.

**B. Time Drift Compensation****Preliminary Requirements and Information for Performing Time Drift Compensation**

**2.10** This procedure is applicable to No. 1 AMARC with Generic 4 or later program. For Generic 3 or earlier program, this procedure does not apply.

**2.11** This procedure provides a method of applying time drift compensation to the AMARC clock. Extreme caution is necessary when entering a compensation factor since incorrect data can result in misbilling.

**2.12** Performing this procedure places the active processor in a simplex operating mode; therefore, this procedure should be performed as quickly as possible. If the active processor fails before system restoral after performing this procedure, abandon this procedure and immediately proceed to the emergency procedures in Section 201-900-303.

**2.13** Compensation for clock drift is applied to an OOS processor only. This compensation is entered at the OOS system I/O terminal. Clock compensation for a processor is entered with the nongeneric parameter data (NPD) input message RC CLK COMP. This message specifies the processor that compensation is applied to and the required clock compensation factors. If both processors require clock drift adjustments, the RC CLK COMP message for one processor is entered and verified at the I/O terminal of the system placed OOS. Then the appropriate RC CLK COMP message for the other processor is entered and verified at the OOS system I/O terminal.

**2.14** Clock drift is verified by performing time check procedures as outlined in Section 201-900-301. When drift occurs, the amount and

direction are determined over a 24-hour period. The drift is converted into a number of 1/10-second intervals and applied as plus or minus compensation to the OOS processor.

**Example:** If the system clock loses 3 seconds in a 24-hour period, this would be thirty 1/10-second intervals. If previous compensation has not been entered, then the compensation factor entered is +30.

**2.15** If only one clock requires compensation, this can be entered on an OOS system by specifying which processor the compensation applies to in the input message RC CLK COMP. When the OOS system is restored to standby, a system switch is performed and the previous active system (now standby) is made OOS. The new NPD is then updated to the OOS processor using the input message UPD MEM NPD. This insures that the NPD is identical for each processor. The OOS system is then restored to standby.

**2.16** When performing procedures and it is determined that both system clocks require compensation adjustments, one system is kept active while the other is placed OOS for clock correction. After the respective clock compensation factors are entered for each processor, the OOS system is restored to standby and a system switch is performed. The previous active system (now standby) is placed OOS, and the NPD is updated from the active to the OOS processor using the input message UPD MEM NPD. Both processors now contain clock compensation data for their respective clocks. The OOS system is then restored to standby.

**2.17** After compensation is applied for clock drift, a system time check is again performed using time check procedures of Section 201-900-301. System time setting is accomplished by using Procedure A of this section.¶

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
1	Perform time check procedure of Section 201-900-301.	
2	Determine amount of time that clock is gaining or losing over a 24-hour period for each processor.  <i>Note:</i> Clock compensation may be applied for a maximum of 20 seconds error. When either clock consistently and consecutively drifts more than 8.6 seconds in a 24-hour period, consult DEC maintenance personnel.	
3	Convert time drift for clock into number of 1/10-second intervals and record for later use. (See IM—RC CLK COMP.)  <i>Note:</i> The number of 1/10-second intervals is the system clock compensation factor. This compensation factor is preceded by a plus sign if the clock is losing time and by a minus sign if the clock is gaining time.	
4	At active or standby system I/O terminal— Type: <b>DUMP MEM NPD CLK!</b> (Requests the decimal dump of the clock compensation factor in memory for each processor.)	<b>RSP:PF</b> (See IM-DUMP MEM NPD CLK.)  <i>Note:</i> The compensation factor prints out for each processor.
5a	If compensation factor is zero in memory of the processor requiring clock compensation— Go to Step 7.	
6b	If a compensation factor exists in memory of the processor requiring clock compensation— Take the appropriate clock compensation factor found in Step 3 and make the proper adjustments to the compensation found in Step 4 for the corresponding clock. Go to Step 7. (See IM-RC CLK COMP.)  <i>Note:</i> The adjusted compensation factor is an algebraic sum of the new compensation required and the compensation already in memory for the processor clock.	
7	Make standby system OOS by performing appropriate procedure in Section 201-900-302.	
8a	If compensation factor is zero in memory of processor requiring clock compensation— At OOS system I/O terminal, enter appropriate	<b>RSP:OK</b> (See IM-RC CLK COMP.)

SECTION 201-900-305

STEP	ACTION/INPUT MESSAGE	RESPONSE (RSP)/MESSAGE (MSG)
	clock compensation found in Step 3 using RC CLK COMP input message for the processor.	
9b	If a compensation factor exists in memory of the processor requiring clock compensation— At OOS system I/O terminal, enter appropriate clock compensation found in Step 6b using RC CLK COMP input message for the processor.	RSP:OK (See IM-RC CLK COMP.)
10	At OOS system I/O terminal— Type: <b>DUMP MEM NPD CLK!</b> (Requests the decimal dump of the clock compensation factor in memory for each processor).  <b>Note:</b> New compensation factor for correcting system clock drift is verified in memory.	RSP:PF (See IM-DUMP MEM NPD CLK.)  <b>Note:</b> The correction factor prints out for each processor. The clock compensation factor should agree with that entered in Step 8a or 9b.
11c	If new compensation factor is not in memory, repeat Steps 8a through 10.	
12d	If other system requires clock compensation, repeat Steps 8a through 10.	
13	Restore OOS system to standby using appropriate procedure in Section 201-900-302.	
14	Switch standby system to active using appropriate procedure in Section 201-900-302.	
15	Make standby system OOS by performing appropriate procedure in Section 201-900-302.	
16	At active system I/O terminal— Type: <b>UPD MEM NPD!</b> (Used to update NPD from active to OOS system.)	RSP:PF (See IM-UPD MEM NPD.)  MSG:M tt UPD MEM <del>aaa</del> COMPLETE (See OM-UPD MEM COMPLETE.)
17	Perform Step 10 and return to Step 18.	
18	Restore OOS system to standby using appropriate procedure in Section 201-900-302.	