CHECKING AND RESETTING SYSTEM CLOCK

NO. 1 ELECTRONIC SWITCHING SYSTEM

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1. GENERAL

1.01 This section gives procedures for changing the time of the system clock to comply with the building master clock. Also covered is the legal time change from standard time to daylight saving time and vice versa in the No. 1 ESS. No procedure is necessary for leap year changes as these changes are performed automatically by the ESS program.

1.02 This section is reissued to show that the time of day printed in response to PT-TIME-. is the time the message comes out of the output message buffer (paragraph 2.01).

This reissue does not affect the Equipment Test List (ETL).

1.03 The time of the system clock should be checked:

(a) Daily

(b) ***Immediately*** after phase or heavy interrupt activity to prevent AMA billing errors and loss of EADAS data.

A loss of time in the system clock could be caused by interrupts, EA phases, and other factors. If the system clock is as much as five seconds ahead or as much as five seconds behind the master clock time, (paragraph 2.01) the system clock should be updated as described in Part 2.

1.04 In offices that are unattended during the hours of a desired time change, the procedures outlined below can be performed from the remote maintenance TTY.

1.05 Because of program considerations, the system clock should ***not*** be changed during the following time periods:

(1) ***On*** the hour or ***on*** the half hour

(2) If the time change will pass the hour or half hour. For example, do not reset the clock before the hour if the time change will move the clock past the hour.

The reason for this restriction is that programmed routines scheduled within these time periods will not be performed or will be performed twice, dependent upon whether the clock is set forward or backward, respectively. These routines include such items as switching AMA recording, switching ringing and tone plants, automatic trunk testing, and certain audit programs.

Time changes should be made during light traffic periods.

CAUTION: More than one time change in a 24-hour period can cause problems with the accounting programs which process AMA tapes.

1.06 Additional information about the input messages described in Part 2 is found in the input message manual IM-1A001.

1.07 The following abbreviations are used in this section:

AMA	Automatic Message Accounting
EA	Emergency Action
EADAS	Engineering and Administrative Data Acquisition System
ESS	Electronic Switching System
ETL	Equipment Test List
TTY	Teletypewriter

2. CLOCK CHECKING PROCEDURES

A. Clock Checking Message

2.01 At the building master clock (Section 030-125-501) which has been checked against a precise time source, perform the following:

(1) Simultaneously:

(a) Start a stopwatch precisely at the beginning of any minute, and

(b) Record the building master clock time.

(2) Check the time of the system clock by:

(a) Typing the following input message on the maintenance TTY:

PT-TIME-.

(b) ▶Stop the stop watch as soon as the maintenance TTY starts to print the system clock date and time of day.

Note 1: Normal response to PT-TIME-. is OK followed by system clock date and time of day. The printed time is the time that the message comes out of the output message buffer.

Note 2: It is possible that PT-TIME-. could be typed and an unrelated message come out of the buffer before the time of day. If the watch is stopped on the intervening message, repeat the procedure.

Note 3: Time is in terms of the 24-hour clock. For example, 3:00 P.M. is 15:00 on the 24-hour clock.◀

2.02 Perform the following:

(1) Add the previously recorded building master clock time to the expended time recorded on the stop watch.

(2) Compare the sum determined above to the systems printout of the systems time.

(3) Update the system clock (paragraph 3.01).

B. Alternate Clock Checking Message

2.03 An alternate method of printing the system clock time which gives the time to the tenths of a second may be used if desired. Type the following message on the maintenance TTY:

T-READ-00122aa 01.

aa = 56 (2-wire) or

= 42 (4-wire)

This message causes the system to print out the contents of the call store word which contains the system time. The system response to this input is ØK followed by:

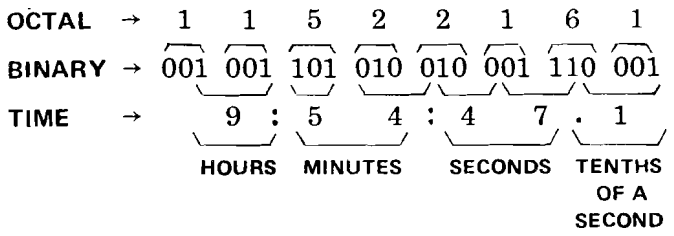
TW02
aaaaaaaa

aaaaaaaa = Octal representation of the contents of the word whose address is 12256 (2-wire) or 12242 (4-wire).

The octal representation must be broken down to determine the time. For example, suppose the following output is received:

TW02
11522161

This is converted to binary and laid out and decoded as shown below to obtain the time as 9:54:47.1.



3. CLOCK CORRECTING PROCEDURES

A. Clock Advance Message

3.01 Whenever the system clock is slightly slower than the actual time, use the CLK-ADVANCE message method to correct the time. To do so, type in the following message:

CLK-ADVANCE-aaa.

aaa = The number of seconds the clock is to be advanced (000-999)

The clock will be advanced by aaa seconds beginning when the period (.) is typed.

3.02 The system will respond with ØK followed by the corrected time. The system will also make entries of the old and corrected times on the AMA tape. The restrictions listed in paragraph 1.05 which apply to the CLK-SET- message also apply to the CLK-ADVANCE- message.

B. Clock Set Message

3.03 The CLK-SET- message is used to set the system clock to the exact time and date and may be used to advance or retard the clock. System clock time changes are performed using the following input message typed on the maintenance TTY:

CLK-SET-aa bb cccc ddd ee ff gg.

aa = The month (01-12)

bb = The date (01-31)

cccc = The year

ddd = The day of the week (SUN, MON, TUE, WED, THRU, FRI, or SAT)

ee = The hour of the day (00-23) (See Note 3 in paragraph 2.01.)

ff = The minute (00-59)

gg = The second (00-59)

Example

3.04 For example, if it is desired to set the clock to Tuesday, November 16, 1965, 11:18 and 20 seconds P.M., the input message would appear as:

CLK-SET-11 16 1965 TUE 23 18 20.

This message is processed by the system when the period (.) is typed at the end of the message. Thus, it is essential that the period be typed at the exact time specified in the message. To accomplish this, the message (except for the period) should be typed during the minute before the time specified in the message. Then the period should be typed at the exact time. However, the message will be invalid if a character is not typed within 45 seconds of another character. Therefore, the period should be typed within 45 seconds after the second (gg) in the format shown in paragraph 3.03 is typed. If more than a 45-second delay is required between the typing of the second (gg) and the period, a space should be typed before the 45 seconds elapse. Each time a space is typed, a new 45 second time-out period is begun. For example, if it is desired to advance the clock one hour at 8:17, the following procedure should be used:

(1) Shortly before 8:17 (at approximately 8:16 preferably) the CLK-SET message except

for the period is typed specifying the time as 9:17.

(2) At exactly 8:17 the period is typed. However, if more than 45 seconds will elapse between the completion of step (1) and this step, a space should be typed in shortly before 45 seconds elapse and shortly before increments of 45 seconds elapse, until the period is typed.

3.05 Whenever this message is used, the system will automatically make an entry on the AMA tape showing the time before and after the clock was changed. In addition, the system will normally print out the updated time on the maintenance TTY. In some cases the printout will not occur immediately; however, later time-of-day printouts will reflect the change.

4. SPECIAL PROCEDURES FOR DAYLIGHT SAVING TIME

A. Time Change From Standard To Daylight Saving Time

4.01 Do ***not*** perform a time change from standard to daylight saving time when the time (before changing) is on any hour or between any of the hours listed below.

Caution: Each morning at 2:30 A.M. plant measurements are collected and printed. If the clock is advanced past this time, neither action will occur. As a result, the next days measurements will reflect counts for a 47-hour period (missed measurements plus 23-hour period measurement). It is recommended that the time of the system clock not be advanced or decreased until the 2:30 A.M. plant measurements have been collected and printed. If the updating time is near 2:30 A.M., the system should be updated after 2:30 A.M.

1:25 A.M. to 3:01 A.M. (See Caution)

3:25 A.M. to 4:35 A.M.

10:59 P.M. to 12:05 A.M.

4.02 To perform the time change from standard to daylight saving time during an appropriate hour (paragraph 4.01), proceed as follows:

(1) Construct the appropriate TTY message (paragraph 3.03) to advance the clock by one hour.

(2) Type the TTY message on the maintenance TTY making sure that the period is typed at the exact time specified in the message (paragraph 3.04).

(3) Check the time of day printout that follows the input message to insure that the message was typed correctly (paragraph 3.05).

(4) If this change was performed between the hours of 1:00 to 2:00 A.M., the consolidation of the recent change area (automatically performed at 2:00 A.M.) will not have been performed. To cause the consolidation to be performed, type in the following input message:

RC-UPDATE-.

4.03 In accordance with local instructions, notify the traffic department that a time change has been made and the time that the change was made. This notification is necessary because traffic measurements may have been affected by the time change.

B. Time Change From Daylight Saving Time To Standard

4.04 Do ***not*** perform a time change from daylight saving time to standard when the time (before changing) is on any hour or between any of the following hours:

1:59 A.M. to 3:31 A.M. (See Caution in paragraph 4.01)

4:29 A.M. to 5:31 A.M.

11:59 P.M. to 1:01 A.M.

4.05 To perform the time change from daylight saving time to standard during an appropriate hour (paragraph 4.04), proceed as follows:

(1) Construct the appropriate TTY message to set the clock back by one hour (paragraph 3.03).

(2) Type the TTY message on the maintenance TTY making sure that the period is typed at the exact time specified in the message (paragraph 3.04).

(3) Check the time of day printout that follows the input message to insure that the message was typed correctly (paragraph 3.05).

4.06 In accordance with local instructions, notify the traffic department that a time change has been made and the time that the change was made. This notification is necessary because traffic measurements may have been affected by the time change.