

TIME REFERENCE SYSTEM

The time reference system consists of an electronic timer, a time correlation buffer, an event timer, an elapsed time clock, a GMT clock, and an Accutron clock.

An interface exists between the time reference system and the digital command system, the digital computer, the rendezvous radar, and the data transmission system.

The *electronic timer* counts elapsed time in $\frac{1}{8}$ -second increments from liftoff through impact; it counts time-to-retrograde from liftoff to zero in $\frac{1}{8}$ -second increments; and it counts time to equipment reset in $\frac{1}{8}$ -second increments. These times (except elapsed time) may be updated from the ground by the digital command system or by the crew via the manual data insertion unit.

The electronic timer has a crystal controlled time reference accurate to 35 parts in 1 million for a 24-hour period. Stability over a 3-hour period is 1 part in 1 million at $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$. The timer is mounted behind the center instrument panel.

To prevent inadvertent or premature countdown to retrofire, the electronic timer is provided with a lockout feature. It will not accept any time to go to retrofire update of less than 128 seconds.

The *time correlation buffer* accepts elapsed time and clock information from the electronic timer and provides outputs to the voice tape recorder and the two biomedical tape recorders. Information to the recorders from the time correlation buffer is updated every 2.4 seconds. It provides serial data and clock data outputs to a buffer register every 2.4 seconds.

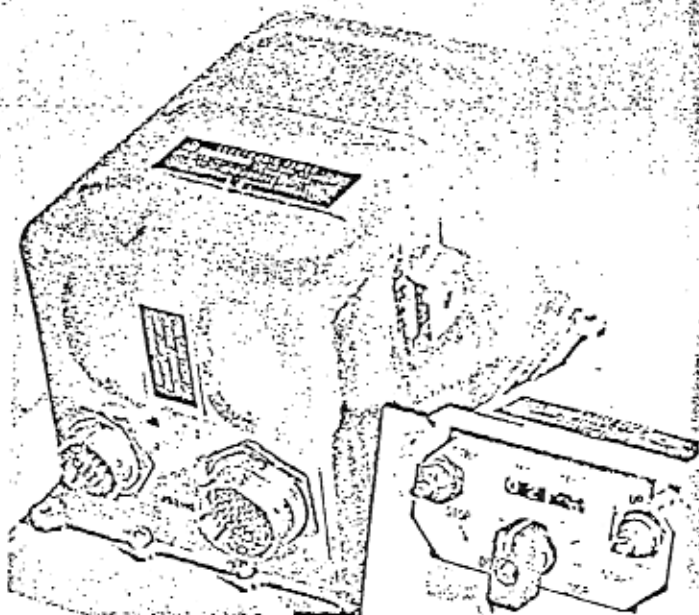
A *digital elapsed time clock* is mounted on the center panel and is interfaced with the electronic timer. Accuracy of the two is identical. The digital elapsed time clock starts automatically at launch and has a total ground elapsed time (GET) readout capability of 999 hours, 59 minutes and 59

seconds. The unit may be stopped, run forward or reversed by the crew.

The *event timer* provides a cockpit time display in minutes and seconds to a maximum of 59 minutes and 59 seconds. This display permits countup and countdown timing by the astronauts. The display may be manually positioned or it may be started by face-mounted switching or independent electrical remote signal. The unit operates completely independent of the electronic timer.

The *spacecraft GMT clock* displays Greenwich Mean Time in hours and minutes. Launches are conducted at Cape Kennedy on GMT. The clock includes an additional minute hand and a second

D4C15576



Gemini Time Reference System is built by Conduction Corporation.

hand which may be stopped and reset to zero mechanically at any time. A calendar day display is also provided.

The Accutron clock displays Greenwich Mean Time in hours, minutes, and seconds.