



v. 990 NAVIGATION SYSTEM

The 990 NAV sub-system of the CMS III performs all navigation tasks. The system navigates in real-time from raw range data supplied by external radio positioning systems (RPS). The raw, unfiltered ranges are passed by the 990 NAV system to the 980B computer for recording on magnetic tape and for printing on the ADL printer. Filtered position and velocity data are also passed to the 980B for use by the line control program, resident within the 980B software.

The 990 NAV is configured with twelve 32 bit parallel interfaces, called multisensors. The multisensor interfaces provide the system with the capability of reading up to twelve ranges simultaneously. The 990 NAV system is also capable of using satellite, gyro and sonar data.

The 990 NAV navigation software comprises five major elements, these being range processing, system definition, multi-way fix computation, dead reckoning and fix/dead reckoning integration.

The range processing software is used to filter each range and derive a velocity for each range. Each range is processed independently, in accordance with a set of twelve masks entered by the operator. This allows filter characteristics to be individually tailored to each range, independently of the other ranges. The range processing software also produces statistical quality control data with respect to each range.

The system definition portion of the program allows the operator to define navigation systems. A system in 990 NAV terms is defined by selecting any combination of two to four ranges. The selected ranges are usually from the same physical navigation equipment, but a 990 NAV system could easily use four ranges from four different navigation systems, if required. Up to three such systems may be defined.

The filtered ranges are passed to the multi-way fix algorithm which generates fixes for each defined system, along with statistical quality control data. The range velocity data is passed to the dead reckoning routines, which compute filtered velocities and azimuths for each defined system.