simulation is used to debug the launch-vehicle checkout facilities. There is one breadboard for the S-IB vehicle and one for the S-V vehicle.

The S-IB breadboard contains two RCA 110A computers, one used to generate test sequences and control the ESE, the other to receive and process the telemetry. Also included is an RCA 110 used to generate inputs that simulate the functions of the spacecraft Acceptance Checkout Equipment (ACE) computer interface as it exists at KSC. There is also a DEE 6 computer as part of the system. To facilitate software checkout of the system, there are two additional RCA 110A computers used off-line to assemble and to debug programs.

Instrument Unit, Saturn V breadboard.- The S-V IU breadboard facility consists of two RCA 110A, two DEE 6, and two DDP 224 computers. The system functions in the same manner as the S-IB IU breadboard described above.

3.2.2 Manned Spacecraft Center

At MSC, the principal checkout functions are concerned with the verification and development of the spacecraft and its subsystems. These functions utilize three ACE stations. The first of these is an experimental ACE station. It is used in systems design of future checkout techniques and in the certification and checking out of current computer programs. It is similar to the ACE stations at KSC, but does not have the full range of electronic support equipment and only has a partial control room. The other two ACE stations are used for environmental chamber checkout of the Command and Service Module (CSM) and for the LM. The spacecraft is placed in the chamber and subjected to conditions as found in space. Various tests such as leak tests, pressure tests, equipment checks, and so forth, are conducted using the computers in the same manner as KSC.

3.2.3 Kennedy Space Center

Computers are used at KSC to control checkout of the functional systems associated with the launch vehicles and their associated spacecraft prior to mission launch. At the Saturn Launch Complexes (Pads 34, 37, and 39), MSFC designed systems containing two linked RCA 110A computers perform the real-time analysis of test parameters from the vehicle stages. The results are used as inputs to a display driven by a DDP 224 computer (located at the S-V complex) or to memory tube displays (located at S-IB complexes) for evaluation by the test engineers in the blockhouse. These computers permit test personnel to monitor