SECTION 2.8

END-TO-END TESTING

2.8   END-TO-END COMPATIBILITY TESTS AND SIMULATIONS

2.8.1   Compatibility Tests

The end-to-end compatibility test encompasses the entire chain of payload operations that will occur during all mission modes in such manner as to ensure that the system will fulfill mission requirements. The mission environment shall be simulated as realistically as possible and the instruments shall receive stimuli of the kind they will receive during the mission. The RF links, ground station operations, and software functions shall be fully exercised. When acceptable simulation facilities are available for portions of the operational systems, they may be used for the test instead of the actual system elements.

Network Directorate simulation facilities are a constrained resource and their use by the payload project must be negotiated.

The specific environments under which the end-to-end test is conducted and the stimuli, payload configuration, RF links, and other system elements to be used must be determined in accordance with the characteristics of the mission.

2.8.2   Mission Simulations

After compatibility between the network and the user facility have been demonstrated, data flow tests shall be performed that exercise as much of the total system as possible. Once the data flow paths have been verified, mission simulations are enacted to validate nominal and contingency mission operating procedures and to provide for operator training. To provide ample time for checkout of the project operating control center (POCC), it is essential that users take part in mission simulations from the early stages.

Mission simulations are the combined responsibility of the mission operations manager and the network support managers, and shall involve all participating elements and operating personnel (from project and support elements).

Information describing the network data simulation equipment capabilities can be found in PSS and SOC Guide for TDRSS and GSTDN Users, STDN No. 101.6 (see 1.7.5). Information describing DSN is contained in the Deep Space Network/Flight Project Interface Design Handbook (1.7.6).