

Low Thrust Rocket Facility (Cell 21)

At the Low Thrust Rocket Facility (Cell 21), research activities include multi-compartment ignition techniques and in situ propellant and metallized propellant performance testing. The facility can be operated at either atmospheric or altitude exhaust conditions at thrust levels up to 100 lb. Cell 21 is shown in figure 8.

Gaseous hydrogen, gaseous methane, gaseous carbon monoxide, RP-1, liquid propane, and metallized propellants can be supplied to the facility. Gaseous oxygen is used as the oxidizer for all testing. A 50 000 SCF gaseous oxygen tube trailer supplies oxygen at a maximum flow rate of 0.10 pps at 1500 psig. Gaseous methane and carbon monoxide are supplied into a manifold system from K-bottle cylinders. The K-bottle capacity is 1200 SCF at pressures up to 1600 psig. Liquid fuel is supplied from eight 1-gal tanks with working pressures to 1500 psig. Metallized propellant fuels are fed to the cell at pressures to 1250 psig. Air-driven ejectors provide altitude capabilities.

A programmable logic controller is used to sequence valve operations. Data capabilities include a high-speed data acquisition system (100 channels) with an overall digitizing rate of 50 000 samples per second and a low-speed data acquisition system (111 channels) with a digitizing rate of approximately 80 samples per second.