BUILDINGS 205, 206 AND OBSERVATION BLOCKHOUSE

BUILDING 205 FLOOR PLAN

Building 205 is located approximately 170 feet northeast of the Rocket Engine Test Facility (RETF). It was built in 1968. The dimensions of Building 205 are 1,170 square feet. The building is constructed with a frame of pipe uprights that are welded to channel iron cross members. Light steel I-beams support the roof. The exterior walls are constructed with opaque fiberglass panels, while translucent fiberglass panels cover the roof.

The significance of Building 205 lies in its relationship to the reactant distribution system for the RETF. Building 205 housed a compressor and an automated control system used to pressurize helium gas to 6,000 psi for distribution throughout the complex. Liquid oxygen boils at -183°C, which makes pumping and distribution of this substance difficult. Mechanical pumps available at the time for handling cryogenic fluids were not designed for forced liquid oxygen at high flow rates into test engines. To force liquid oxygen through the piping system and into test engines, the designer of RETF developed a pumping system powered by pressurized helium gas supplied by the compressor in Building 205. An inlet at the top of the main liquid oxygen outlet pipe was located below the liquid level. Control valves admitted pressurized helium at 4,000 psi that flowed at up to 3.5 pounds per second into the tank and forced liquid oxygen into the test rig.

BUILDING 206 FLOOR PLAN

Constructed in 1968, Building 206 was part of the gas distribution system for the Rocket Engine Test Facility (RETF). This building housed a liquid nitrogen vaporizer and a gas storage tank. This building covers 597 square feet and is sheathed in corrugated metal panels. Ventilation was an important consideration in the design of the building, as a vent was incorporated into the roof along the full length of the ridge line. Louvered vents on the gable ends of the building provided additional ventilation. A rolling shutter door about 16 feet wide on the building's gable end allowed access to the interior and machinery. An isolated control room featured a small window through which operators monitored the machinery bay. The control room had a switchboard of 12 explosion-proof switches for operating the machinery.

A nitrogen vaporizer essentially functions as a heat exchanger. Liquid nitrogen flows through a network of pipes, the external surfaces of which are largely exposed. Fumes draw ambient air over the exterior surface of the piping. The liquid nitrogen in the pipes then warms and boils to form gaseous nitrogen, which is then piped to 6,000 psi and piped throughout the RETF complex.

During the early years of operation at the RETF, technicians and engineers relied on direct observation of engine firing tests to supplement instrument readings. One observation post was a large periscope in the terminal room of Building 202, which was adjacent to the test cell. A second viewing location was the Observation Blockhouse, which was a plain reinforced concrete bunker located approximately 260 feet north of the test cell. The blockhouse protected observers from flying debris in case of catastrophic engine failure during testing.

Built from 1955-1957, the Observation Blockhouse covers 132 square feet, and its reinforced concrete walls are 6 inches thick. Observers entered the bunker through a door in the north elevation. A ladder next to this door led to the roof. The south elevation has a heavy recessed thick glass window that measures approximately 4 feet in diameter and is divided into two sections by a vertical mullion. The window is about 18 inches high and allows observers stationed inside the blockhouse to watch engine tests in Building 202. The blockhouse was equipped with an intercom system, emergency communication, and a telephone system to allow two-way contact with test stand engineers. The blockhouse also had a small switch panel with an "open" button positioned below the observation window.

While there is photographic evidence that a closed-circuit television system was installed in the test cell as early as 1957, observers in the blockhouse were still used to supplement electronic and video data. In 1972, however, RETF staff installed an additional closed-circuit television camera on top of the blockhouse. Additional lights installed in Building 202 enabled viewers in the RETF Building 100 control room to observe tests on a monitor. These modifications reduced the need for station observers in the blockhouse. As sensors, instrumentation, and computerized data reduction became more sophisticated, the information that could be provided by observers in a protected area was limited, and use of the blockhouse became increasingly rare.