

The East Test Area at Marshall Space Flight Center has five major test stands, each of which has two or more test positions, not counting the SSME and RD-180 engine test facilities in the West Test Area. These research and development facilities are capable of testing high pressure pumps, both fuel and oxidizer, injectors, chambers and sea-level engine assemblies, as well as simulating deep space environments in the 12, 15 and 20 foot vacuum chambers. Liquid propellant capabilities are high pressure hydrogen (liquid and gas), methane (liquid and gas), and RP-1 and high pressure LOX. Solid propellant capability includes thrust measurement and firing capability up to 1/6 scale Shuttle SRB segment.

In the past six months MSFC supported multiple space access and exploration programs in the previous six months. Major programs were Space Exploration, Shuttle External Tank research, Reusable Solid Rocket Motor (RSRM) development, as well as research programs for NASA and other customers.

At Test Stand 115 monopropellant ignition testing was conducted on one position. At the second position multiple ignition/variable burn time cycles were conducted on Vacuum Plasma Spatter (VPS) coated injectors. Each injector received fifty cycles; the propellants were LOX Hydrogen and the ignition source was TEA. Following completion of the monopropellant test series the stand was reconfigured to support ignition testing on a LOX Methane injector system.

At TS 116 a thrust stand used to test Booster Separation Motors from the Shuttle SRB system was disassembled and moved from Chemical Systems Division's Coyote Canyon plant to MSFC. The stand was reassembled and readied for BSM testing. Also, a series of tests was run on a Pratt & Whitney Rocketdyne Low Element Density (LED) injector engine. The propellants for this engine are LOX and LH2.

At TS 300 the 20 foot vacuum chamber was configured to support hydrogen testing in the Multipurpose Hydrogen Test Bed (MHTB) test article. This testing, which went 24/7 for fourteen consecutive days, demonstrated long duration storage methods intended to minimize losses of propellant in support of the Space Exploration Initiative. The facility is being converted to support similar research using liquid methane.

The 12 foot chamber at TS 300 was used to create ascent profiles (both heat and altitude effects) for foam panel testing in support of the Shuttle External Tank program.

At TS 500, one position was in build-up to support ATK Thiokol research into the gas dynamics associated with high pressure flow across the propellant joint in segmented solid rocket motors. The testing involves flowing high pressure gas through a 24" motor case. Initial tests will be conducted with simulated aluminum grain, followed by tests using actual propellant. The second position at TS 500 has been in build-up for testing a LOX methane thruster manufactured by KT Engineering.

At the Solid Propulsion Test Area (SPTA), the first dual segment 24" solid rocket motor was fired for ATK Thiokol in support of the RSRM program. A new axial thrust measurement stand was designed and fabricated for this testing. Real Time Radiography (RTR) will be deployed to examine nozzle erosion on the next dual segment motor.

The Test Cells remained busy firing Solid Fuel Torch motors for ATK Thiokol. These development programs examine ply-lifting effects in the nozzle and insulator char effects in others. Some of these tests deploy RTR and others utilize fibre optic instrumentation to look inside the motor during the firing. Other testing in the Test Cells involves hybrid GOX and solid fuel motors.