NASA Successfully Completes Solid Rocket Motor Test

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NASA's Space Shuttle program successfully fired its first Production Rate Motor Tuesday, Aug. 16, at a Utah test facility. The two-minute static, or stationary, firing of the rocket motor was performed at ATK Thiokol, an Alliant Techsystems company, in Promontory, north of Salt Lake City.

The firing of the Production Rate Motor was one of several annual tests conducted by the Reusable Solid Rocket Motor Project Office at NASA's Marshall Space Flight Center to qualify any proposed changes to the rocket motor and to guarantee that new materials meet safety requirements. These annual tests closely replicate a Space Shuttle launch.

The Aug. 16 test demonstrated process, material and design changes made to the Reusable Solid Rocket Motors produced during the past two years.

The motor firing also will allow NASA to further evaluate the performance of new sensors that read and retain detailed information - much faster than instruments now used - on pressures generated in the motor during a Shuttle launch.

"Testing such as this is important to ensure continued quality and performance," said Jody Singer, manager of the Reusable Solid Rocket Motor Project, part of the Space Shuttle Propulsion Office at the Marshall Center.

The test satisfied 48 objectives, including the evaluation of new sensors, or Intelligent Pressure Transducers. Produced by Stellar Technology, of Amherst, N.Y., the transducers also were tested earlier this year on a modified motor at the Marshall Center.

In addition to evaluating the performance of the new sensors, the test also monitored an operational pressure transducer recently qualified for flight and flown on STS-114: Space Shuttle Return to Flight launched July 26.

These transducers, also made by Stellar Technology, help determine the time of separation of the Solid Rocket Boosters from the Orbiter.

The Production Rate Motor test also will allow NASA and ATK Thiokol engineers to further examine a more environmentally friendly insulation material and to gather information on a pressure-sensitive adhesive that may soon be used on the motor's joints.

Another objective of the test was to assess the performance of the propellant bore - the hole down the middle - of the rocket motor. When a motor is ignited, a controlled burn begins down its middle, creating the motor's thrust.

The test results will show how motors react during the first few seconds following ignition and provide engineers more information on the firing stability of motors - crucial information for human spaceflight.

Additionally, a powerful X-ray was used during the test to scrutinize how the motor nozzle performs during launch and ascent.

Static firings are part of the ongoing verification of components, materials and manufacturing processes required by the Space Shuttle program.

Test data will be analyzed and the results for each objective provided in a final report. Following the test, the motor's metal casings and its nozzle components will be refurbished for reuse.