

NASA successfully tests five-segment solid rocket motor

September 9 2011, By Dan Kanigan



NASA and ATK's five-segment solid rocket motor fires during Development Motor-3 test in Promontory, Utah, on Sept. 8. Credit: ATK

NASA and ATK Space Systems successfully completed a two-minute, full-scale test of Development Motor-3 (DM-3), Thursday, Sept. 8. DM-3 is NASA's largest and most powerful solid rocket motor ever designed for flight.

The stationary firing of the development solid [rocket motor](#) was conducted at the ATK test facility in Promontory, Utah. ATK Space Systems is the prime contractor. DM-3 is the third in a series of development motors and the most heavily instrumented [solid rocket](#) motor in NASA history with a total of 37 test objectives measured through more than 970 instruments.

Prior to the static test, the solid rocket motor was heated to 90 degrees

Fahrenheit to verify and assess [motor performance](#) at [high temperatures](#) during the full-duration test. This series of testing will certify the motor to fly at temperature ranges between 40-90 degrees Fahrenheit. Initial test data showed the motor performance met all expectations.

"Ground testing at temperature extremes is crucial to furthering our understanding of solid rocket propulsion," said Alex Priskos, first stage manager for Ares Projects at NASA's Marshall Space Flight Center in Huntsville, Ala. "These tests will help us build better, more capable solid rocket motors and will allow America to maintain its leadership in this important technical capability."

The solid rocket motor is designed to generate up to 3.6 million pounds of thrust, or lifting power, at launch. Information collected from this test, together with data from earlier development motor tests, will be evaluated to better understand solid rocket propulsion performance, reliability and design.

Although similar to the solid [rocket boosters](#) that helped power the [space shuttle](#) to orbit, the five-segment development motor includes several upgrades and technology improvements implemented by NASA and ATK engineers. Motor upgrades from a shuttle booster include the addition of a fifth segment, a larger nozzle throat, and upgraded insulation and liner. The motor cases are flight proven hardware used on shuttle launches for more than three decades.

The solid rocket motor is managed by NASA's Marshall Space Flight Center in Huntsville, Ala.

Provided by JPL/NASA

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