

NASA's Marshall Center Successfully Tests 48-inch Solid Rocket Motor

25 March 2005

A scaled-down version of the Space Shuttle's Reusable Solid Rocket Motor was successfully tested March 24 at NASA's Marshall Space Flight Center in Huntsville, Ala. The 28-second firing tested a 48-inch-diameter, modified NASA motor. Space Shuttle's solid rocket motors are periodically tested to ensure they can withstand environments similar to those generated by an actual motor during flight. For example, the motor's insulation materials must withstand chamber gas temperatures that reach 5,652 degrees Fahrenheit during a Shuttle launch.

Testing a sub-scale version of the Shuttle's Solid Rocket Motor is a versatile, quick-turnaround and low-cost way to determine the performance of new materials and instrumentation. Test results will be used to evaluate the performance of internal replacement insulation materials in the aft dome of the motor. The best performing insulation candidate will be tested in a full-scale motor test firing in July 2006.

The test is expected to further evaluate the performance of the Intelligent Pressure Transducer, a gauge which samples motor pressure 25 times faster than instruments now used.

The test, replicating launch conditions, is part of the Shuttle program's ongoing verification of components, materials and manufacturing processes required by the Space Shuttle Program and the Reusable Solid Rocket Motor Project Office at the Marshall Center.

"Testing continues to be a key element to the success of the Solid Rocket Motor, providing valuable information on design, process and material changes," said Jody Singer, manager of the Reusable Solid Rocket Motor Project Office.

Engineers from the Marshall Center Engineering Directorate and Shuttle Reusable Solid Rocket

Motor Project Office conducted the test. ATK Thiokol of Promontory, Utah, manufactures the Shuttle's Solid Rocket Motor. The motor test -- used to qualify any proposed changes to the motor -- is a stepping stone to a Flight Support Motor test performed at ATK Thiokol's Test Services facility in Promontory.

At 126 feet long and 12 feet in diameter, the Shuttle's Reusable Solid Rocket Motor is the largest solid rocket motor ever flown and the first designed for reuse. During its two-minute burn at liftoff, each motor generates an average thrust of 2.6 million pounds. During Space Shuttle flights, Solid Rocket Motors provide 80 percent of the thrust during the first two minutes of flight.

APA citation: NASA's Marshall Center Successfully Tests 48-inch Solid Rocket Motor (2005, March 25) retrieved 14 October 2019 from <https://phys.org/news/2005-03-nasa-marshall-center-successfully-inch.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.