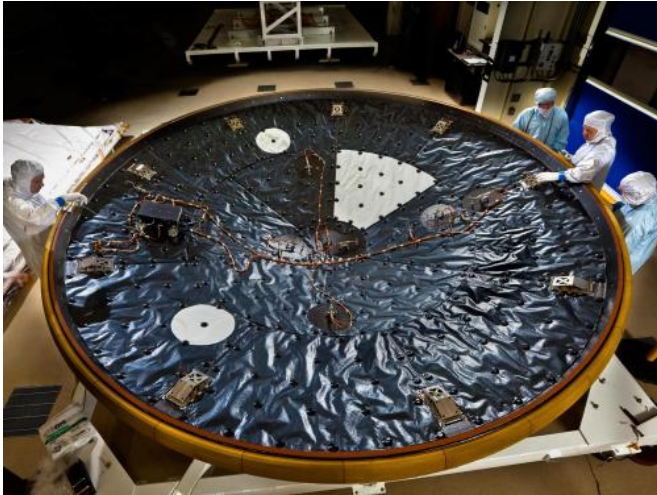


# Mission Success for MSL Entry, Descent, & Landing Instrument (MEDLI)

8 August 2012, by Rick Smith



Lockheed Martin installed the Langley-built MEDLI on the backside of MSL's aeroshell/heat shield. At almost 15 feet in diameter the aeroshell is the biggest ever built for a planetary mission. MEDLI is made up of two kinds of instruments (with seven sensors of each kind) that are installed in 14 places on heat shield. It will gather engineering data on aeroheating by using sensor plugs and pressure ports embedded into holes drilled in the spacecraft's aeroshell. (Lockheed Martin)

Mission success for the MSL Entry, Descent, & Landing Instrument (MEDLI) Suite. When the Curiosity rover touched down on the red planet Aug. 6 at 12:32 p.m. CDT, NASA MEDLI researchers were already cheering. The instrumentation payload, carried in the entry vehicle's heatshield, included an intricate array of sophisticated engineering sensors designed to measure heat, pressure and other conditions impacting the heatshield during atmospheric entry and descent. The shield is jettisoned prior to landing.

The MEDLI suite powered up successfully Aug. 5 during the Mars Science Laboratory's approach to Earth's nearest planetary neighbor. About an hour

before entry, descent and landing, the sensor suite's temperature stabilized at minus-20 degrees Fahrenheit, readying MEDLI for its journey through Mars' atmosphere. Real-time streaming data from the shield sensors was acquired through much of the vehicle's entry and descent -- barring the brief UHF-frequency communications blackout upon entry -- until Curiosity deployed its parachutes and jettisoned its heatshield. The rover touched down smoothly in Gale Crater to begin its two-year primary mission.

Only about 10 percent of MEDLI's data is now in the hands of the research team; the rest will be relayed by the Mars lander in coming days, and will be analyzed and published in the weeks and months ahead. The team's findings will help NASA engineers design safer, more efficient entry systems for future missions to Mars and other destinations -- missions carrying human crews as well as robotic explorers such as Curiosity.

MEDLI is one of NASA's Technology Demonstration Missions -- a series of advanced technology projects designed to validate and mature laboratory-proven technologies to flight-ready status, reducing costs and aiding our boldest missions of exploration and scientific discovery. To learn more about MEDLI, watch this NASA video.

MEDLI was designed and developed by NASA's Langley Research Center in Hampton, Va., in partnership with NASA's Ames Research Center in Moffett Field, Calif., and NASA's Jet Propulsion Laboratory in Pasadena, Calif. The project is supported by NASA's Aeronautics Research Mission Directorate and NASA's Human Exploration & Operations Mission Directorate.

Provided by NASA

APA citation: Mission Success for MSL Entry, Descent, & Landing Instrument (MEDLI) (2012, August 8) retrieved 19 January 2020 from <https://phys.org/news/2012-08-mission-success-msl-entry-descent.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.*