

NASA Tests Newest Free-Flying Robotic Lander: Mighty Eagle



NASA's new robotic lander, the Mighty Eagle

When NASA's Mars rover Curiosity began its entry, descent and landing sequence two weeks ago, the success of the mission hinged on what was known as the "[7 minutes of terror](#) [1]" -- a period during which NASA was out of touch with the vehicle, relying on its autonomous landing sequence to successfully touch down on the surface.

In flight tests completed this week at NASA's Marshall Space Flight Center in Huntsville, Ala., the vehicle flew to an altitude of 30 feet, where it identified an optical target painted on the ground about 21 feet away, and descended to the location for a safe landing.

"This is huge. We met our primary objective of this test series -- getting the vehicle to seek and find its target autonomously with high precision," said Mike Hannan, a controls engineer in Marshall's Engineering Directorate. "We're not directing the vehicle from the control room. Our software is driving the vehicle to think for itself now. From here, we'll test the robustness of the software to fly higher and descend faster, expecting the lander to continue to seek and find the target."

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The 4-foot by 8-foot, 700-pound Mighty Eagle lander is a low-cost test-bed prototype that NASA says will help advance the technologies needed to develop a new generation of small, affordable, smart, versatile robotic landers capable of achieving scientific and exploration goals throughout the solar system.

As the program has advanced over the past two years, the team has completed more than 25 flights that have proved the effectiveness of the lander's flight systems and demonstrated guidance, navigation, and control algorithms.

With this week's culmination in a successful autonomous free flight target identification and landing, NASA says the vehicle will now serve as a aerial test platform for the demonstration of new algorithms and additional flight sensors.

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