



NASA Tests New Engine Controller for First Space Launch System Flight

NASA marked a critical milestone March 23 with a test of the first RS-25 engine controller that will be used on the first flight of the new Space Launch System (SLS), the world's most powerful rocket. The new controller or "brain" has the electronics that operate the engine and communicate with the SLS vehicle. Engine Controller Unit-2 (ECU-2) was installed on RS-25 development engine No. 0528 and test fired for 500 seconds on the A-1 Test Stand at Stennis Space Center near Bay St. Louis, Mississippi. Once test data is certified, the engine controller will be removed and installed on one of four flight engines that will help power the first integrated flight of



NASA engineers conduct a test of the first RS-25 engine controller that will be used on an actual Space Launch System flight on the A-2 Test Stand at Stennis Space Center on March 23. The RS-25 engine, with the flight controller, was test fired for a full-duration 500 seconds.

SLS and the Orion spacecraft.

This year, two more engine controllers for the first SLS mission will be tested on this development engine at Stennis, and then installed on flight engines. The fourth controller will be tested when NASA tests the entire core stage during a "green run" on the B-2 Test Stand at Stennis. That testing will involve installing the core stage on the stand and firing its four RS-25 flight engines simultaneously, as during a mission launch.

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Letter from Leadership

Team,



*Keith Hefner,
Michoud Director*

Looking back on the time since an F3 tornado touched down at Michoud on Tuesday, February 7, I am filled with a deep sense of gratitude that no one was seriously injured and how privileged I am to work alongside a team with such passion, dedication,

and unrelenting perseverance for this facility. It is clearly your spirit that has brought Michoud through the many challenges it has faced and will sustain it through the future.

I will never forget my second day on the job. I was with Malcolm in Washington, DC to attend a meeting our Louisiana stakeholders were hosting. My phone rang, and it was John Honeycutt, the Space Launch System Program Manager at Marshall, calling to tell me a tornado had struck Michoud.

I wanted to catch the next plane to New Orleans, but there were decisions that needed to be made quickly at NASA Headquarters in DC. We took over the War Room at Headquarters and had the Weather Channel and a map of Michoud on the screens tracking a second tornado which thankfully took a different path.

We then focused on accounting for all employees and determining the number of injured. We had several telecons and worked late into the night assessing the damage. We stayed in DC on Wednesday keeping abreast of the immediate response activities throughout the day before learning that afternoon of a possible snow storm headed for DC that could shut down air travel. Malcolm and I took a flight to Atlanta on Wednesday night and were at Michoud by 9 a.m. Thursday.

Driving down Old Gentilly Road, we saw trees uprooted and steel beams on a building across the road from Michoud that had been broken like a match stick. At Michoud, more than 100 cars were tossed on top of each other, turned upside down or thrown several

feet away from where they were parked. Nothing could prepare me for the damage to Building 350, home to the USDA National Finance Center. It was a total loss and displaced all 1,300 employees.

With The Emergency Operations Center at Michoud in full operation, we continued to assess the damage, calculate cost impacts, and prioritize repairs. Fortunately, there was no severe damage to SLS flight hardware, but several SLS manufacturing areas are still undergoing repairs. As repairs continue at Michoud, we are working with the USDA and other tenants to locate office space in other buildings. Experts from S3, NASA's Kennedy Space Center, and Headquarters helped us to reopen and make a plan moving forward.

We had tremendous support outside of Michoud as well with visits from Acting Administrator Robert Lightfoot, Marshall Center Director Todd May, House of Representatives Majority Whip Congressman Steve Scalise, Congressman Steven Palazzo, Senator John Kennedy's staff, Senator Bill Cassidy, Acting Agriculture Deputy Secretary Mike Young, and USDA Acting Chief Financial Officer Lynn Moaney.

I would like to thank everyone involved in the tornado recovery effort for working long and hard to get Michoud up and running again. You were prepared, knew what to do, and responded wholeheartedly. We are all indebted to you.

*- Keith Hefner,
Director of Michoud
Assembly Facility*

Editor's Note: If you have a question or topic, you'd like to see Keith address in his column, please email him at keith.hefner@nasa.gov.

NASA's Day of Remembrance



NASA's Michoud Assembly Facility Director Keith Hefner, payed tribute to the crews of Apollo 1 and space shuttles Challenger and Columbia, as well as other NASA colleagues, during the Day of Remembrance.

On Jan. 26, NASA's Day of Remembrance Ceremony was held here at the Michoud Assembly Facility in New Orleans.

Honored were the men and women, including the crews of Apollo 1 and space shuttles Challenger and Columbia, who lost their lives furthering space exploration. "One way to honor them is through this Day of Remembrance," said Michoud Center Director Keith Hefner.

During the ceremony, names of all the fallen were read aloud, and a banner honoring Apollo 1, Challenger and Columbia crews was unveiled and placed in the events area in Hero's Way.

New Engine Controller Test for SLS

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"This an important – and exciting – step in our return to deep space missions," Stennis Director Rick Gilbrech said. "With every test of flight hardware, we get closer and closer to launching humans deeper into space than we ever have traveled before."

The RS-25 engines that will help power the SLS vehicle on its first flights are former space shuttle main engines, built for NASA by Aerojet Rocketdyne. Four engines will fire simultaneously to provide 2 million pounds of thrust and operate in conjunction with a pair of solid rocket boosters to power the SLS launch.

Prior to a flight, performance specifications, such as the percentage of thrust needed, are pro-

grammed into the controller. The controller then communicates the specifications and monitors engine conditions to ensure they are being met, controlling such factors as propellant mixture ratio and thrust level.

Testing for the upgraded engines and new controllers is vital to ensure they will perform as needed within the operating parameters. For instance, space shuttle main engines operated at a maximum of 104.5 percent of power level capability. For SLS flights, the RS-25 engines must fire at 109 percent of capability. The engines also will operate with colder liquid oxygen and engine compartment temperatures, higher propellant pressure and greater exhaust nozzle heating.

Former NASA Employee Gravolet Tours JSC



NASA engineer Robert Gravolet worked at Michoud from 1990 -2016. He loved his job, but he retired after he was diagnosed with ALS (amyotrophic lateral sclerosis) two years ago. Since then he's been not only fighting for his life but also working to help others with the disease through Team Gleason. The Gleason Initiative Foundation is a non-profit corporation that helps provide individuals with neuromuscular diseases or injuries with leading-edge technology, equipment and services and creates public awareness about the disease. Former New Orleans Saints player Steve Gleason, who also suffers from ALS, started the foundation. Gravolet and his wife Rhonda, were in Houston, Texas, where Rob was working to promote ALS awareness during the Super Bowl. While there, they were joined by Gleason on a tour of NASA's Johnson Space Center. They met NASA astronauts Jeff Williams and Jeanette J. Epps, and Johnson Center Director Ellen Ochoa. Johnson is responsible for building the Orion spacecraft, and Orion's pressure vessel was built at Michoud. When Orion heads to deep space, Gravolet will have played a role in the mission.

Tornado Recovery at Michoud

On Feb 7, NASA's Michoud Assembly Facility was struck by an EF-3 tornado around 11:35 a.m. When the all-clear signal was given, the onsite Emergency Operations Team quickly assembled to put in place their comprehensive emergency plan. Teams began conducting damage assessments of buildings and facilities, and accounting for all employees. Crews started working to secure the perimeter and to evacuate all non-essential personnel, until normal operations could be resumed.

Fortunately, of the 3,500 employees on site, only a few minor injuries were sustained. "We are thankful for the safety of all the NASA employees and workers of onsite tenant organizations," acting NASA Administrator Robert Lightfoot said.

"Our hearts go out to our employees and the people in New Orleans who have suffered from this serious storm," Michoud Assembly Facility Director Keith Hefner added.

The major damage was to buildings and parked cars on site. The hardware and tooling for NASA's heavy-lift rocket, the Space Launch System (SLS), the Orion spacecraft and the Pegasus barge sustained limited damage from the storm. Manufacturing areas for SLS and Orion were without power, and buildings received substantial damage to roofs, walls, and other areas, all of which are under repair. Work in many areas has resumed over the last few weeks as power and utilities have been restored sitewide and temporary repairs have been completed.



NASA's Michoud Assembly Facility's Center Director, Keith Hefner, gets a site status update from members of the Emergency Operation team. This was one of the first chances Hefner had to interact with key personnel as his actual first day was the day prior to the tornado.



Acting NASA Administrator Robert Lightfoot, second from right, viewed Space Launch System hardware and tooling at NASA's Michoud Assembly Facility in New Orleans on (date). The hardware was undamaged from the tornado that hit the site Feb. 7. Lightfoot was joined by Michoud Director Keith Hefner, left; Jackie Nesselroad, the Boeing SLS manufacturing lead; Steve Doering, the SLS stages manager, and Todd May, far right, director of NASA's Marshall Space Flight Center.

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