



GSDO

GROUND SYSTEMS
DEVELOPMENT & OPERATIONS

EXPLORATION BEGINS HERE



PROGRAM HIGHLIGHTS • MAY 2013

At NASA's Kennedy Space Center in Florida, the Ground Systems Development and Operations (GSDO) Program Office is leading the center's transformation from a historically government-only launch complex to a spaceport bustling with activity involving government and commercial vehicles alike. GSDO is tasked with developing and using the complex equipment required to safely handle a variety of rockets and spacecraft during assembly, transport and launch. For more information about GSDO accomplishments happening around the center, visit <http://go.nasa.gov/groundsystems>.

Upgraded Mobile Launcher will support SLS

NASA's Space Launch System (SLS) heavy-lift launch vehicle will be carried to Launch Pad 39B at Kennedy Space Center atop an upgraded mobile launcher (ML) for missions to a near-Earth asteroid, Mars and other new destinations in the solar system.

The agency has awarded a contract to J.P. Donovan Construction Inc. of Rockledge, Fla., to modify the ML, which is one of the key elements of ground support equipment that is being upgraded by the Ground Systems Development and Operations (GSDO) Program office at Kennedy to carry the SLS rocket for its first mission in 2017.



The work under the firm fixed-price contract will begin at the end of this month and is targeted to be completed in 18 months.

The ML that currently is positioned near the Vehicle

Assembly Building, was originally constructed in 2008 and 2009 for NASA's Ares I vehicle. Now it will be structurally modified to meet requirements for NASA's new mission.

Upgrades to the ML are part of Kennedy's efforts to expand its ground support infrastructure to support the SLS rocket and a variety of other launch vehicles.

For the complete story, visit <http://www.nasa.gov/exploration/systems/ground/ML-SLS.html>

Orion Crew Module Undergoes Static Loads Test

Completely surrounded by a massive 20-foot-high structure called the crew module static load test fixture, the Orion crew module is being put through a series of tests that simulate the massive loads the spacecraft would experience during its mission.

Orion is NASA's new exploration spacecraft, designed to carry humans farther into space than ever before. During its first flight test next year, Exploration Flight Test-1 (EFT-1), it will travel 3,600 miles into space and return to Earth. This will allow NASA to evaluate Orion's performance in preparation for future deep space journeys.

Lockheed Martin Space Systems began static loads



testing May 3 on the Orion EFT-1 crew module inside the Operations and Checkout (O&C) Building at Kennedy Space Center.

Technicians are using hydraulic cylinders to slowly apply pressure to various areas of the vehicle to simulate the loads it will be exposed to at different phases of the mission.

The tests will run throughout May and June, with different phases simulating launch, ascent, launch abort, launch abort system separation, reentry and landing. Lockheed Martin is conducting the tests based on a set of prototype flight requirements.

During the months and weeks leading up to the static tests, NASA and Lockheed Martin engineers and technicians configured Orion for its placement on the test fixture and staged the associated equipment and hardware that would be needed to verify Orion is one step closer to being flight ready.

The pressurized crew module is being put through a series of eight different load tests, each one taking up to three days to complete. Each test will focus on a different area of the crew module and require a different configuration of the hydraulic actuators attached to it.

For the complete story, visit http://www.nasa.gov/exploration/systems/mpcv/orion_undergoes_testing.html



Orion Ground Test Vehicle Undergoes Bolt Tests

Lockheed Martin engineers and technicians completed a second set of pyrotechnic bolt tests on the Orion ground test vehicle (GTA) in the Launch Equipment Test Facility (LETF) at Kennedy Space Center May 13-17. The first series of pyrotechnic tests was performed in the LETF in October 2012.

During the week, technicians individually tested five frangible, or breakable, nut detonations between the GTA and a launch abort system (LAS) retention and release mechanism. Each test took about four hours to set up and about 30 minutes to test.

The purpose of the LAS is to ignite its solid-fueled engines and lift Orion and its crew away from disaster in the unlikely event that the booster fails during the first part of the launch.

The GTA is being used for path finding operations, including simulated manufacturing and assembly procedures in the O&C.

For the complete story, visit http://www.nasa.gov/exploration/systems/mpcv/orion_pyro_bolt_test.html



At Launch Pad 39B, an aerial view shows the progress as construction workers remove crawler track panels from the pad's surface. The concrete surface beneath the panels and the catacomb roof below will be inspected for water damage and repaired. There are 176 panels, each weighing about 30,000 pounds that will be removed. Pad B is being refurbished by GSDO to support NASA's Space Launch Systems and a variety of other rockets and spacecraft.



NASA's Fourth Annual Robotic Mining Competition took place May 20-24 at the Kennedy Space Center Visitor Complex. Amanda DePreta was at the GSDO exhibit and provided information about the role of GSDO in the nation's space exploration initiatives.