



## Feature

### Orion Teamwork Pays Off

01.14.13

Using its experienced workforce and state-of-the-art facilities, NASA's Kennedy Space Center in Florida is working with private companies to ensure the future of U.S. space exploration stays on course. By bringing contracted work to Kennedy, NASA is providing a means to expedite Orion work from months to build and ship across the nation, to mere days.

NASA employees and Lockheed Martin contractors are working side by side in a revamped area of Kennedy's Operations and Checkout Building. Their goal is to prepare NASA's Orion spacecraft for its first launch, Exploration Flight Test-1, or EFT-1, in 2014. Orion is designed to take American astronauts farther into space than ever before.

Colocating contractors on-site provides the advantage of having center personnel and facilities readily available. Because of this cooperative effort, the Orion team is achieving its scheduled milestones for assembly and checkout of the spacecraft ahead of schedule.

"This new and unique working relationship, in essence having a Lockheed Martin factory within a NASA facility, has allowed us to leverage Lockheed's strength in building spacecraft and the strength of our Kennedy workforce in providing world-class services and facilities," said Scott Wilson, manager of production operations for the Orion Program, and the offline processing and infrastructure development for the Ground Systems Development and Operations Program.

In preparation for EFT-1, a number of processing milestones have been set to make sure the spacecraft is ready for launch. Engineers and technicians from a number of different areas at Kennedy are lending their help by providing solutions to issues that arise during the on-site assembly and preparation.

Upcoming milestones will include testing the structure of the crew module, powering up the vehicle for the first time, completing the assembly and subsystem installations for the crew module, service module and launch abort system, and finally, joining the crew and service modules together.

"We are extremely proud of the exceptional effort the team has demonstrated in preparing the Orion crew module for a recent critical pressurization test. This test was a key milestone in our march toward orbital flight in 2014," Wilson said.

The materials and processing division possesses numerous capabilities that provide unique solutions to unusual or urgent problems that arise during spacecraft preparation. One example comes from the Space Shuttle Program.

"One of the unique capabilities here at Kennedy is the ability to fabricate, install and repair thermal tiles," said Terri Holbert, project lead engineer for Assembly, Integration and Production. "The team that performed this work for the space shuttle is now executing the tile build for Orion."

Other areas that have contributed to Orion's preparation are labs that offered dimensional analysis of hardware, materials testing and evaluation, and chemical analysis; a prototype shop that provided mechanical design, fabrication and rapid prototyping; and the Launch Equipment Test Facility that executed a pyrotechnics test on the tiles.

In the end, the ultimate goal is Orion's uncrewed flight test aboard a Delta IV Heavy rocket. The flight will take the spacecraft on a two-orbit journey, reaching an altitude of about 3,600 miles above the Earth's surface -- more than 15 times farther than the International Space Station's orbital position -- and sending it farther than any human-rated spacecraft has gone since the Apollo program.

**Cheryl L. Mansfield**  
NASA's John F. Kennedy Space Center

Find this article at:

[http://www.nasa.gov/exploration/systems/mpcv/orion\\_Eftprep.html](http://www.nasa.gov/exploration/systems/mpcv/orion_Eftprep.html)



Image above: Inside the Operations and Checkout Building, a birdcage tool along with work platforms surround the Orion Exploration Flight Test 1 crew module.

Image credit: NASA/Charisse Nahser  
[View larger image](#)



Image above: Inside the Operations and Checkout Building high bay, a technician attaches a crane to the Orion Exploration Flight Test 1 crew module so that it can be moved.

Image credit: NASA/Kim Shiflett  
[View larger image](#)



Image above: The Orion Exploration Flight Test 1 crew module undergoes proof pressure testing at the Operations and Checkout Building.

Image credit: NASA/Ben Smegelsky  
[View larger image](#)



Image above: Jim Niehoff, a Mechanical Engineering Technician with the NASA Prototype Development Laboratory, is one of many Kennedy Space Center employees working alongside Lockheed Martin to ensure the future of U.S. space exploration.

Image credit: NASA/Jim Grossmann  
[View larger image](#)