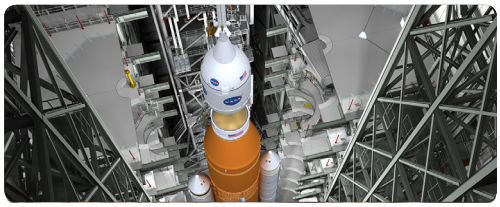
National Aeronautics and Space Administration

GSDO GROUND SYSTEMS DEVELOPMENT & OPERATIONS

EXPLORATION BEGINS HERE



PROGRAM HIGHLIGHTS • MAY 2016

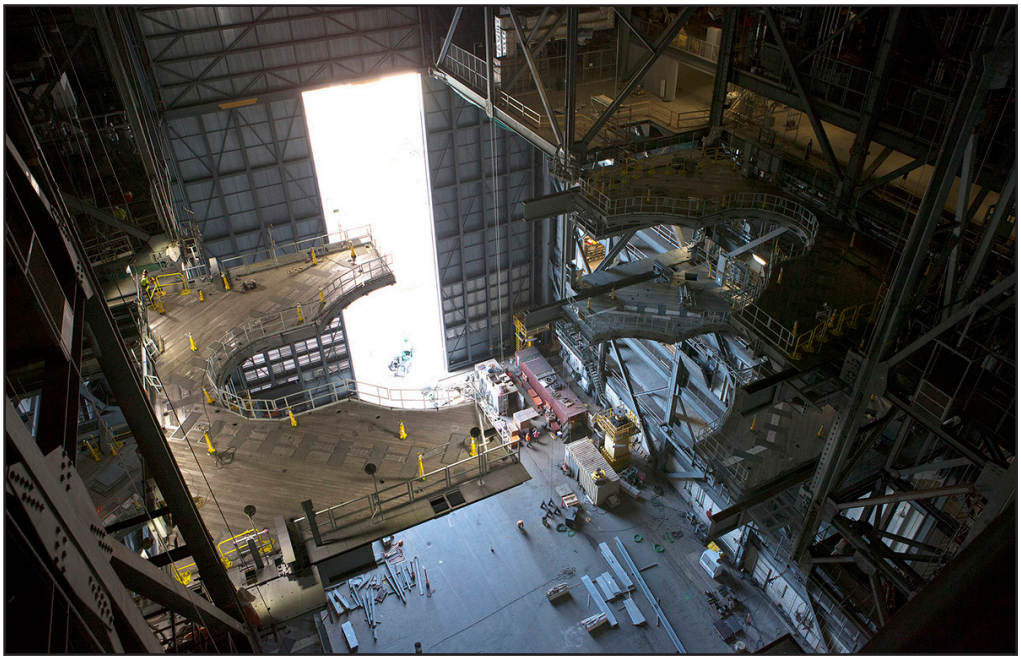
At NASA's Kennedy Space Center in Florida, the Ground Systems Development and Operations (GSDO) Program Office is leading the center's transformation from a historically government-only launch complex to a spaceport bustling with activity involving government and commercial vehicles alike. GSDO is tasked 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://www.nasa.gov/groundsystems.

First Work Platforms Tested for Space Launch System

Kennedy Space Center is one power step closer to processing the agency's Space Launch System (SLS) for its first flight, Exploration Mission 1 (EM-1) and NASA's journey to Mars. During a preliminary test April 28, the two J-level work platforms installed on the north and south sides of Vehicle Assembly Building High Bay 3, where the SLS will be prepared for launch, were successfully activated to test their functionality and simulate how they will surround the massive rocket on the mobile launcher.

"It was an amazing sight to look down and watch as the platform smoothly extended out into the open air of High Bay 3," said Mike Bolger, Ground Systems Development and Operations Program (GSDO) manager. "As each half of the J platforms slowly extended, I couldn't help but think forward to the day when the SLS core stage and boosters will fill the void between the platform halves."

The J-level work platforms are just one of 10 levels of platforms that will surround the SLS rocket and Orion spacecraft in the high bay. The platforms will extend and retract and will have the capability to be adjusted up or down as required to give engineers and technicians access to various areas of the giant rocket, twin solid rocket boosters, Orion and its launch abort system during processing and testing.



For the first time, one of the new work platforms in High Bay 3 inside the Vehicle Assembly Building was powered on April 28. Lights illuminate one half of the J-level platforms as the platform is extended. A preliminary test of both J platforms was completed to verify each platform's push chain system, roller system and electrical connections. In view below is one of the K-level platforms. Photo credit: NASA/Kim Shiflett

Each of the platform halves are about 62 feet wide and 38 feet long and weigh between 300,000 and 325,000 pounds. The J-level platforms are located about 112 feet above the VAB floor, or nearly 11 stories high, and will provide access to the SLS booster.

As additional platforms are installed in High Bay 3, they will undergo the same testing to ensure all of the platforms are ready for the first launch.

To read the complete story, visit http://go.nasa.gov/1XhBuIM.

Upgrades to Launch Pad 39B Flame Trench in Work

NASA's Space Launch System (SLS) rocket and Orion spacecraft will roar into deep space from Launch Pad 39B at the agency's Kennedy Space Center in Florida. Before the most powerful rocket in the world takes flight, the Ground Systems Development and Operations (GSDO) Program continues making significant upgrades and modifications to the historic pad to accommodate the new rocket's shape and size. Exploration Mission 1 (EM-1) will be the first of many missions of SLS and Orion as the agency prepares for its journey to Mars.

In June 2015, NASA awarded a contract to J.P. Donovan Construction of Rockledge, Florida, to upgrade the flame trench and provide a new flame deflector. This system is critical to safely containing the plume exhaust from the massive rocket during launch. Construction workers have been busy, removing old adhesive material and preparing the walls on the north side of the trench for brick installation.

Construction workers now are preparing the north side of the flame trench to withstand temperatures of up to 2,000 degrees Fahrenheit at launch of the rocket's engines and solid rocket boosters. Approximately 100,000 heat-resistant bricks, in three different sizes, will be secured to the walls using bonding mortar in combination with adhesive anchors.

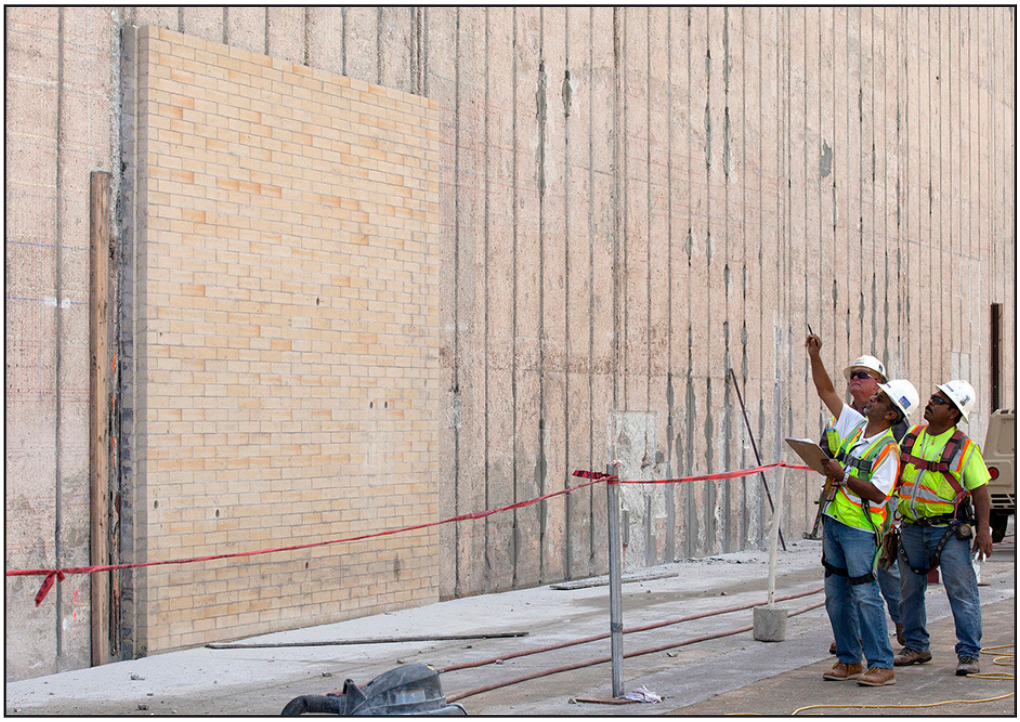
The new flame deflector will be positioned about six feet south of the shuttle-era flame deflector's position. The north side of the deflector will be protected by a NASA standard coating. The south side of the deflector will not be slanted and will have no lining. The new design will provide easier access for inspection, maintenance and repair.

The two side flame deflectors, repurposed from space shuttle launches, will be refurbished and reinstalled at pad level on either side of the flame trench to help reduce damage to the pad and SLS rocket.

To read the complete story, visit http://go.nasa.gov/1Y75QxX.

GSDO is Go for Launch with a new Facebook Page. Check it out at: https://www.facebook.com/NASAGOforlaunch/

Construction workers with J.P. Donovan of Rockledge, Florida, prepare to attach new heat-resistant bricks to one of the concrete walls on the north side of the flame trench at Launch Pad 39B on April 14. The Pad B flame trench is being refurbished to support the launch of NASA's Space Launch System rocket. The Ground Systems Development and Operations (GSDO) Program at Kennedy is helping transform the space center into a multi-user spaceport and prepare for Exploration Mission 1, deep-space missions, and the journey to Mars. Photo credit: NASA/Kim Shiflett



Construction workers with J.P. Donovan of Rockledge, Florida, inspect the concrete walls of the north side of the flame trench at Launch Pad 39B on April 14. New heat-resistant bricks have been attached with epoxy mortar to a section of the flame trench wall. Photo credit: NASA/Kim Shiflett

Industry Spotlight - PRAXAIR

Praxair was originally founded in 1907. The company's name, adopted in 1992, is from the Greek word "praxis," or practical application, and "air," their primary raw material.

Praxair's headquarters is in Danbury, Connecticut, with a local production facility in Mims, Florida. About 26,000 employees work in more than 50 countries around the world. It was the first company in North America to commercialize cryogenically separated oxygen.

At Kennedy Space Center, Praxair provides liquid hydrogen, liquid oxygen and various packaged gas products. Praxair will supply liquid hydrogen and oxygen for prelaunch test and launch support at Launch Pad 39B for NASA's Space Launch System rocket and the agency's journey to Mars.

The company's goals are to manage their current and future contracts with NASA, and work with NASA and its contractors in support of all missions, both current and future.

"Our goal is to exceed NASA's expectations through critical mission support, continually redefining our capabilities and ability to provide flawless support," said Doreen Heal, Praxair's director of Government Programs.

The PRAXAIR liquid hydrogen (LH2) truck arrives April 28 at the liquid hydrogen tank at Launch Pad 39B at NASA's Kennedy Space Center in Florida. PRAXAIR and engineers and technicians on the Test and Operations Support Contract will review procedures and prepare for a fit check of the new LH2 transfer flex hose. Photo credit: NASA/Frankie Martin

Over the century of its existence, Praxair has led the development of processes and technologies that have revolutionized the industrial gases industry. According to Heal, the company introduced the first distribution system for liquid gas in 1917, and developed onsite gas supply by the end of World War II. In the 1960s, Praxair introduced non-cryogenic means of air separation, and since then has continued to introduce innovative applications technologies for various industries.

"Praxair is very proud of our long and rich history with NASA and the space program. We have been a supplier to Kennedy Space Center from the Apollo era through the last space shuttle launch," Heal said. "We look forward to supporting the dedicated men and women of NASA with their research and vision of future space exploration, and pushing the boundaries of existing space knowledge, not only making our planet more productive, but our universe as well."

Engineers and technicians on the Test and Operations Support Contract go over procedures with liquid hydrogen (LH2) provider PRAXAIR April 28 to prepare for a fit check of the new LH2 transfer flex hose at Kennedy Space Center's Launch Pad 39B. LH2 provider PRAXAIR connected the transfer flex hose from its LH2 truck to the LH2 tanker to confirm that the hose fits and functions properly. The Ground Systems Development and Operations Program is overseeing upgrades and modifications to Pad 39B to support processing of the first integrated launch of the Space Launch System rocket and Orion spacecraft for Exploration Mission 1 and NASA's journey to Mars. Photo credit: NASA/Frankie Martin

Employee Spotlight - Elkin Norena

Elkin Norena is the project engineer for the Range Safety Checkout System, Radio Frequency and Telemetry System and Weather Instrumentation System in the Engineering Directorate at Kennedy Space Center. He is responsible for the management and delivery of various mobile launcher subsystems to support the first integrated launch of the Orion spacecraft and the Space Launch System rocket on Exploration Mission 1 for the Ground Systems Development and Operations Program.

Norena arrived at Kennedy in 2005 and worked for United Space Alliance as an orbiter electrical engineer. He also worked as a mechanical engineer specializing in the orbiter docking system, and then with NASA as an electrical engineer for the space shuttles' solid rocket boosters and external tank.

"The most exciting part of my job is getting to see the systems that will be used for launch go from paper to reality, and being involved in the major decisions that will drive the future of the program," Norena said.

The achievement he is most proud of is meeting and making lasting connection with a vast group of experienced people and working alongside them toward this common goal.

"I wanted to be part of a team that helps develop and operate the next generation of human spaceflight," Norena said. "I look forward to the day we will break the deep-space barrier for humanity and find more new amazing discoveries to enrich our lives here on Earth."

Norena's hometown is Teaneck, New Jersey. His parents moved to Orlando, Florida, when he was 15. He graduated from the University of Central Florida (UCF) in 2003, with a bachelor's degree in computer engineering. He returned to UCF and earned a Master's in Business Administration in 2009.

His first car was a 1991 red Honda Accord that started all of his car troubles.

He and his wife, Jessica, met at UCF. They celebrated their ten-year anniversary in April. They have two daughters, Emma, 6, and Raquel, 5.

Some of his hobbies include tinkering with old and new technology (home entertainment and drones), finding crazy deals, like an LCD television for under $100, and spending time with his family.

One of the Orbital ATK aft skirts for NASA's Space Launch System's solid rocket booster is on its way to Hangar AF at Cape Canaveral Air Force Station in Florida on April 25 to be stripped and painted. Photo credit: NASA