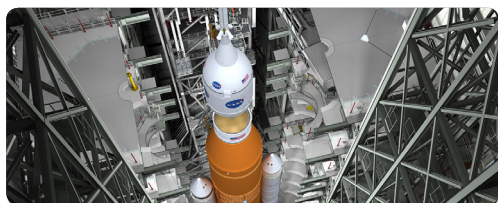




GSDO

GROUND SYSTEMS
DEVELOPMENT & OPERATIONS

EXPLORATION BEGINS HERE



PROGRAM HIGHLIGHTS • MAR/APR 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>.

NASA's 'Spaceport of Future' Reaches Milestone

NASA recently completed a major milestone on its journey to Mars and is ready to begin another phase of work on its spaceport of the future, where the next generation of astronauts will launch to Mars and other deep-space destinations.

The agency wrapped up a comprehensive and successful review of plans for the facilities and ground support systems that will process the Space Launch System (SLS) rocket and Orion spacecraft at NASA's Kennedy Space Center in Florida.

The Ground Systems Development and Operations Program (GSDO), responsible for processing SLS and Orion for flight and ensuring all systems and facilities are ready, completed its critical design review in December 2015. An independent assessment by a Standing Review Board was completed in January.

In the final step before actual fabrication, installation and testing of Kennedy's ground systems, the GSDO program and review board briefed the results of their assessments to NASA's Agency Program Management Council, led by Associate Administrator Robert Lightfoot.

"The team is working hard and we are making remarkable progress transforming our facilities," said Mike Bolger,



This artist concept depicts the SLS rocket rolling out of the VAB at NASA's Kennedy Space Center. Image credit: NASA/Marshall Space Flight Center

GSDO Program manager. "As we are preparing for NASA's journey to Mars, the outstanding team at Kennedy is ensuring that we will be ready to receive SLS and Orion flight hardware and process the vehicle for the first flight in 2018."

The heavy-lift rocket will be stacked in the Vehicle Assembly Building on the mobile launcher and roll out to Launch

Pad 39B atop a modified crawler-transporter. The Orion spacecraft will be fueled with propellants in the Multi-Payload Processing Facility at the center prior to stacking atop the rocket. The launch team will use the new command and control system in the firing room as the clock counts down to liftoff of SLS's first flight.

Pathfinder Operations Pave Way for SLS Processing

NASA's Space Launch System (SLS) rocket will be the most powerful in the world, and is the vehicle that will launch humans beyond low-Earth orbit and on to deep-space destinations as the agency continues its journey to Mars. The Ground Systems Development and Operations Program at Kennedy Space Center is preparing its workforce, facilities and ground support equipment to handle the processing requirements of the SLS rocket and Orion spacecraft for its launch.

A team of NASA engineers and Jacobs technicians and crane operators on the Test and Operations Support Contract are preparing for Exploration Mission 1 (EM-1) processing activities. Experienced personnel are leading the preparation effort using pathfinders, or test versions, of an aft skirt and two inert segments of a solid rocket booster (SRB) inside the Rotation, Processing and Surge Facility (RPSF) at Kennedy Space Center in Florida.

The aft skirt and booster segments are similar to those that will be used on the Space Launch System (SLS) rocket. At launch, the twin SRBs will provide more than 75 percent of the total SLS thrust and operate for about two minutes before separating from the core stage. The aft skirt is at the base of the booster and contains the system that will steer the booster nozzles.

"The RPSF was used for space shuttle booster segments," said acting NASA Integrated Operations Flow Manager David Diaz. "Upgrades and modification to the heritage test stands and work platforms recently were completed to accommodate the new aft booster assembly, and particularly the longer

nozzle."

The pathfinder operations are performed to help verify that the upgrades and modifications completed in the RPSF will support processing requirements for the aft skirt, SRB segments and the integrated aft booster assembly to ensure a smooth liftoff at launch.

"After we've completed pathfinder operations in the RPSF we will continue with additional testing operations in the Vehicle Assembly Building," said Kerry Chreist, project flow manager with Jacobs. "The crane operations in the RPSF will operate the cranes in both facilities."

To read the complete story, visit <http://go.nasa.gov/1SFR0Lz>.



Members of the news media watch March 1 as two cranes are used to lift one of two pathfinders, or test versions, of solid rocket booster segments for NASA's SLS rocket into the vertical position inside the Rotation, Processing and Surge Facility at NASA's Kennedy Space Center in Florida. Photo credit: NASA/Bill White



Inside the Rotation, Processing and Surge Facility high bay at NASA's Kennedy Space Center in Florida, engineers and technicians with Jacobs Engineering on the Test and Operations Support Contract monitor the progress Feb. 25 as two cranes are used in tandem to lift the first of two pathfinders, or test versions, of solid rocket booster segments for NASA's SLS rocket. Photo credit: NASA/Ben Smegelsky

Custom Equipment Required to Install New Platforms in VAB

A spreader bar weighing thousands of pounds and a wrench that is nearly four feet long are not the usual type of equipment you would carry in a toolbox or store in your garage. But they are among the larger-than-life specialized tools that are used by technicians and construction workers at Kennedy Space Center to prepare and install the giant work platforms in the Vehicle Assembly Building (VAB) for the agency's Space Launch System (SLS) rocket and Orion spacecraft.

In High Bay 3 of the VAB, 10 levels of work platforms, 20 platform halves altogether, will surround the SLS rocket and Orion spacecraft and provide access to process and prepare them for launch to deep-space destinations, such as the journey to Mars. Two sets of work platforms, the K-level and J-level platforms, recently were installed in the high bay, about 86 feet and 112 feet above the VAB floor, respectively.

During one of the platform installations, Allen List, an iron and rig foreman with S&R Enterprises of Harrisburg, Pennsylvania, a subcontractor to VAB general contractor Hensel Phelps, handled the 50-pound, nearly-four-foot-long wrench like a pro as he turned and tightened the large corbel pin locks, or rail bolts, that will keep the platform securely fastened to the structural steel of the high bay.

Along with the wrench, he also wore a tool belt that weighs about 45 to 50 pounds, plus the tether system that all of the construction workers are required to use when performing tasks above the ground level.

Tools such as the wrench and long pry bars were acquired from an industrial tool supplier, but Hensel Phelps and the architect of record, Reynolds, Smith and Hills, created several of the unusual tools specifically for the VAB work project.

"Some tools, like wrenches or pliers, have the same name as those you would find at other construction sites. The difference is the scale of the tools at Kennedy are much bigger," said Rebecca Baturin, VAB project engineer with the Ground Systems Development and Operations Program.

"It's an honor to help contribute to NASA's space program," List said. "Nowhere else in the country would we have the opportunity to contribute to something like the work we are doing in the Vehicle Assembly Building. This is a very exciting time."

Whether it is with a 4-foot wrench or a 15-ton spreader bar, Kennedy Space Center is well on its way to preparing the VAB High Bay 3 for the SLS rocket and Orion spacecraft and the agency's journey to Mars.

To read the complete story, visit <http://go.nasa.gov/1SFRPnz>.



Allen List, an iron and rig foreman with S&R Enterprises of Harrisburg, Pennsylvania, holds a nearly-four-foot-long, 50-pound wrench that he uses to tighten bolts during installation of the large work platforms inside VAB High Bay 3. S&R is a subcontractor to VAB general contractor Hensel Phelps. Photo credit: NASA/Ben Smegelsky



A construction worker, wearing safety gear and tethered to safety lines, works on one of the bolts during installation of the second half of the J-level work platforms April 15. Photo credit: NASA/Dimitri Gerondidakis

**View a short video of platform
installation in the Vehicle Assembly
Building at:
[https://www.youtube.com/
watch?v=YYgXNT6QCEw](https://www.youtube.com/watch?v=YYgXNT6QCEw)**

Going Up? New Work Platforms Taking Shape in Vehicle Assembly Building



A 250-ton crane is used to lower the second half of the K-level work platforms into High Bay 3 on March 7. The platform was secured about 86 feet above the VAB floor, on tower E of the high bay. The K work platforms will provide access to the SLS core stage and solid rocket boosters during processing and stacking operations on the mobile launcher. Photo credit: NASA/Dimitri Gerondidakis



The first half of the F-level work platforms for NASA's SLS rocket arrived at the VAB on March 8. Photo credit: NASA/Dimitri Gerondidakis

The Ground Systems Development and Operations Program is overseeing upgrades and modifications to VAB High Bay 3 to support processing of the Space Launch System (SLS) rocket and Orion spacecraft. A total of 10 levels of new platforms, 20 platform halves altogether, will surround the SLS rocket and Orion spacecraft and provide access for testing and processing to prepare for Exploration Mission 1 and NASA's journey to Mars.



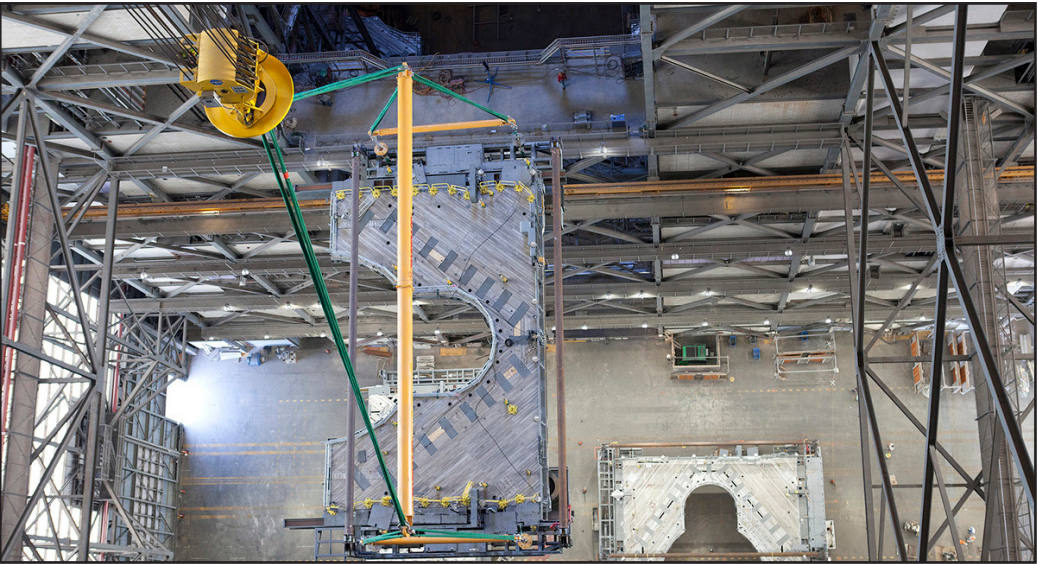
A view from below, in High Bay 3 inside the VAB shows three work platforms installed for NASA's SLS rocket. The lower platforms are the K-level work platforms. Above them are the J-level work platforms. A crane is lowering the second half of the J-level platforms for installation about 112 feet above the floor, or nearly 11 stories high. Photo credit: NASA/Dimitri Gerondidakis



Platform J-North is moved into the VAB on March 9. Photo credit: NASA



A heavy load transport truck arrives March 29 at the center's north entrance gate, carrying the second half of the F-level work platforms for the agency's SLS rocket. Photo credit: NASA/Ben Smegelsky



A view from high above inside the VAB shows the first half of the J-level work platforms for the agency's SLS rocket lifted by crane April 5 for installation in High Bay 3. Photo credit: NASA/Glenn Benson

Ground Systems Team Spotlight



Jody Sills is the Integrated Processing Solutions Project manager with Aerodyne Industries on the Test and Operations Support Contract (TOSC) at Kennedy Space Center. Her primary responsibilities include developing requirements to configure software products (i.e. TOSC versions of Maximo, Cradle, PeopleSoft and others) based on business processes and user needs, defining the integrated interfaces and user testing, and developing associated business processes.

Sills also is the Solumina functional lead and provides support to all users, including classroom training, and individual support and problem resolution.

Sills began her career at Kennedy in June 1988 on the Space Shuttle Program in flight crew systems engineering, and worked with the Astronaut Office at Johnson Space Center to configure the orbiter crew module for each mission, before moving on to a process integration function. This transition provided her with the skills needed for her job with TOSC supporting the Ground Systems Development and Operations Program (GSDO).

"The coolest part of my job is that it touches a little bit of everything and there is so much opportunity to get involved in different aspects of the program," Sills said. "I go to all of the different facilities, work with many different people, from the shop, to engineering, to upper management."

Sills became interested in aviation when she was a child. Her father was a member of the Experimental Aviation Association and she watched him build a small one-person biplane in their basement.

"I knew that I wanted to do something

in the aviation industry. I didn't know that my career would bring me to the space industry," Sills said. "I remember being riveted to our fuzzy, black and white television, watching an Apollo landing, and the first shuttle launch in high school, so it must have been my destiny."

Sills' hometown is Orange Village, Ohio, a suburb on the east side of Cleveland. She earned a Bachelor of Science in aeronautical and astronautical engineering in 1988 from Ohio State University.

She has been married to her husband, Ed, for 25 years, and they have a 13-year-old son, Jacob. They have two calico cats, Eva and CC (short for Cadillac Coupe deVille).

Her first car was a 1980 blue Dodge Omni. Her dad was an engineer for Chrysler so her family always had Chrysler cars while growing up.

Her hobbies include reading, traveling, needlework, and giving her husband a hard time when he insists on taking her hiking.

"My hopes for NASA are that we keep moving forward to the future when space exploration is a priority for the country and that we can meet our goals for human missions beyond Earth's orbit," Sills said.

Steve Gersten is the technical and administrative manager for the Control and Data Hardware Engineering and System Administration organizations on the Engineering Services Contract at Kennedy Space Center.

He manages a team of hardware engineers and system administrators who design, develop, deploy, test and sustain the Launch Control System hardware in the Launch Control Center Firing Rooms, the Multi-Payload Processing System, and the mobile launcher system in support of GSDO.

Gersten began his career at Kennedy 36 years ago as an electrical engineer with Computer Sciences Corp. He moved to Grumman Technical Services in 1983 and then to United Space Alliance in 1996, providing hardware and project engineering services to the Space Shuttle Launch Processing System for each.

"The coolest part of my job is seeing the hardware systems we envision come to fruition, and the team working together to design, procure, assemble and successfully activate these systems," Gersten said.

One of the achievements he is proud of is developing the new systems engineering console enclosures in Firing Room 1 for the Space Launch System. Some of the

consoles from Firing Room 4 were modified and repurposed for FR1, which saved a lot of design time and cost.

He first became interested in space when he was 11, during a family trip to Florida and Kennedy Space Center. That trip and viewing the Apollo 11 moon landing a few years later cemented his attrac-



tion to space exploration.

Gersten's hometown is Columbus, Georgia, just outside Fort Benning.

He earned a Bachelor of Science in electrical engineering in 1979 from Southern Polytechnic State University in Marietta, Georgia, and a Master of Science in technical management in 1994 from Embry-Riddle Aeronautical University in Daytona Beach, Florida.

He and his wife Cindy will celebrate their 36th anniversary in July. They have two daughters, Jennifer, 28, and Michelle, 25. They also have a cat named Jessie.

"She owns the house, but lets us stay there," Gersten joked.

His first car was a 1970 green AMC Gremlin. He installed a CB radio with two co-phased antennas on the roof rack and went by the CB handle "Colorado Kid," even though he had an FCC license ID.

Some of his hobbies include golfing and fly fishing. He and Cindy were lucky enough to attend the final round of the 2016 Masters Golf Tournament.

"My hope for NASA's future is success and renewed national interest in space exploration," Gersten said, "to keep a place at the table as the world leader in space-related technological development and accomplishment."

Employee Spotlight - Ed Stanton

Ed Stanton is a systems engineer in the Orion Production Operations group within the Ground Systems Development and Operations Program, and also is part of the Orion Program. The program is responsible for helping Lockheed Martin build the spacecraft.

Stanton has worked at Kennedy Space Center for almost 11 years. He began in the ISS Payload Processing Directorate, focusing on Node 2, and then moved over to the Orion Production Operations group, where he has been since 2007.

"The coolest part of this job is being able to walk out into the Operations and Checkout Building high bay and watch the Orion spacecraft come together," Stanton said. "Basically, it arrived as an empty shell, and then all the wires, cables and tubes, all the structures and thermal panels are added. It's an amazing feat. It's like a puzzle. All the pieces have to go on in a specific order."

His proudest achievement, to date, is seeing the launch of EFT-1 happen and watching the successful mission unfold.

"It was a great feeling to have been a part of the team that helped make that mission happen," Stanton said.

"I always wanted to work at Kennedy because this is the place where everything gets launched from. All the action



happens here," Stanton said.

Stanton is originally from Madison, Connecticut. He moved to Florida in July 2005 and has been here ever since.

He graduated from the University of Southern California in 1990 with a Bachelor of Science in aerospace and from the University of Houston in 1994 with a master's in mechanical engineering. Then he earned a second master's degree, in aerospace engineering, from the University of Southern California in 2002.

"My big hope for NASA's exploration missions is to have humans on the surface of the Red Planet. Then ultimately, an outpost on Mars would be an absolutely amazing feat," Stanton said.

His first car was a green station wagon that was nicknamed the "vacation-mobile," because it looked just like the station wagon in the

movie "Vacation."

He has one son, Austin, 21, who is attending college at the University of Southern California. He also has an Irish terrier named "Sheena."

Some of Stanton's hobbies include kiteboarding, windsurfing, wakeboarding, snowboarding, traveling, reading science fiction books and watching science fiction movies.



NASA's crawler-transporter 2 (CT-2) began its trek March 22 from the VAB to Launch Pad 39B at Kennedy Space Center to test recently completed upgrades and modifications to support NASA's journey to Mars. CT-2 moved along the crawlerway at no more than one mile per hour and completed its journey to the pad after numerous scheduled stops along the way to verify the operation of the completed upgrades. The Ground Systems Development and Operations Program oversaw upgrades to the crawler in the VAB. The crawler will carry the mobile launcher with Orion atop the SLS rocket to Pad 39B for Exploration Mission 1. CT-2 is one of two crawlers built in 1965 for the Apollo program and also carried space shuttles for 30 years. CT-1 and CT-2 have travelled more than 5,000 miles during their 50-plus years in service for NASA's space programs. Photo credit: NASA/ Kim Shiflett