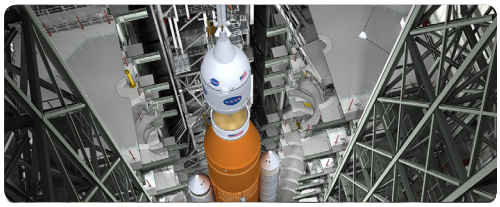
National Aeronautics and Space Administration

GSDO
GROUND SYSTEMS
DEVELOPMENT & OPERATIONS

EXPLORATION BEGINS HERE



PROGRAM HIGHLIGHTS • FEBRUARY 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.*

# Blackwell-Thompson Named Launch Director

The first flight of a Space Launch System, or SLS, rocket carrying the Orion spacecraft on an unpiloted mission to lunar orbit and back now has its launch director. Veteran spaceflight engineer Charlie Blackwell-Thompson will helm the launch team at NASA's Kennedy Space Center for the first flight test of a space system designed to carry astronauts into deep space before making a landmark journey to Mars.

Her selection as launch director means she will be the first woman to oversee a NASA liftoff and launch team.

"A couple of firsts here all make me smile," Blackwell-Thompson said. "First launch director for the world's most powerful rocket -- that's humbling. And I am honored to be the first female launch director at Kennedy Space Center. So many amazing women that have contributed to human spaceflight, and they blazed the trail for all of us. I feel extremely blessed. I also know being the launch director comes with a whole lot of responsibility. I have a healthy respect for just how important this job is."

That first flight, known as Exploration Mission-1, or EM-1, will be an important flight test before carrying astronauts, and Blackwell-Thompson said there is no shortage of planning, simulations and adaptations ahead in the next three years as the American space agency gets ready to launch the first rocket powerful enough to enable human exploration into deep space.

"I remember when I walked into Firing Room 1 during a tour before I was hired many years ago, and one of the guys said if you take this job you will sit here at this console," Blackwell-Thompson said. "I was amazed at even being in the firing room, and the thought of being on the launch team then was unbelievable. So take that feeling and fast forward to getting the opportunity to walk into Firing Room 1 as the launch director for the SLS/Orion vehicle; that is something very special."

That tour led to a post with The Boeing Company as a payload flight software engineer that saw Blackwell-Thompson lead test and avionics checkouts for numerous spacecraft and systems that were later launched on the space shuttle. She joined NASA as a test director in 2004 and oversaw different aspects of the launch countdown for launches from 2005 until the shuttle fleet was retired in 2011.

A holder of numerous patents, Blackwell-Thompson has worked in NASA's Ground Systems Development and Operations Program as launch and countdown planning has developed for the SLS and Orion systems.

To read the complete story, visit http://go.nasa.gov/1KV1Vv9.

# GSDO: OUTreach and ABOUT

*NASCAR driver Carl Edwards gets settled behind the wheel of a Mine-Resistant Ambush-Protected vehicle Feb. 11 at Launch Pad 39B at Kennedy Space Center in Florida. Edwards toured the space center to promote the Feb. 21 Daytona 500 race in which he was driving. Photo credit: NASA/Bill White*


*In the Space Shuttle Atlantis exhibit facility March 1 at the Kennedy Space Center Visitor Complex, a guest is briefed on work taking place in the Florida spaceport's Ground Systems Development and Operations Program. This followed a presentation by Center Director Bob Cabana who updated community leaders on current and future activities at the space center. Photo credit: NASA/Kim Shiflett*

*A United States flag and a poem by Dr. Maya Angelou went on display at various locations around Kennedy Space Center. In this photo, they are surrounded by NASA and contractor workers in the Vehicle Assembly Building. The U.S. flag was presented to NASA on behalf of the men and women of Lockheed Martin by Marilyn Hewson and Rick Ambrose. Along with the flag, the Angelou Family "Cage Foundation" gifted NASA a plaque of Dr. Angelou's writing, "A Brave and Startling Truth," which NASA Administrator Charlie Bolden accepted on behalf of the agency. Both the flag and the plaque were flown on the Orion Exploration Flight Test-1 on Dec. 5, 2014. The two items are a traveling exhibit that will spend a month at each NASA center. The flag and poem will remain on display in the main lobby of Kennedy's Headquarters Building until March 11.*

View the ESD quarterly video: "Preparing America for Deep Space Exploration Episode 12: Built for Exploration" at:

**http://www.nasa.gov/exploration/systems/ground/index.html**

# Industry Spotlight: L&H Industrial

L&H Industrial is a 52-year-old company headquartered in Gillette, Wyoming, with offices on five continents. The company's main focus is on mining equipment. However, it also is involved in oil and gas, railroads, power generation, and special projects for related industries.

At Kennedy Space Center, L&H completed two major renovations on crawler-transporter 2 (CT-2) in the Vehicle Assembly Building (VAB).

"We are very excited about being a major part of two crawler-transporter projects that needed to be completed in order to support NASA's Space Launch System rocket," said Bill Schroyer, P.E., L&H engineering manager.

The first project was the traction roller assembly upgrade. The contract was awarded in October 2012, and the company completed the work in May 2014.

The CT traction roller assemblies (TRAs) are the parts in the track system that hold the weight of the entire machine. The 11-rollers-per-side frame are supported in the base of the side frame and ride on top of the crawler's track shoes. There are 22 rollers per truck, which includes two side frames.

The TRAs needed to be replaced with a new modified TRA designed by NASA's Ames Research Center in Moffett Field, California, to be able to handle the additional weight of the Space Launch System rocket. L&H manufactured the components for the new TRAs and pieces to modify the side frames. While manufacturing was underway, L&H removed half of the original 88 TRAs from CT-2. The side frames were modified, and the bores were all field machined to new exacting tolerances. Dimensional audits were performed on all of the field machining prior to installation of the newly manufactured TRA components.

After the first 44 TRAs were installed, CT-2 was tested to verify that all of the components were functioning as designed. The crawler was driven along the crawlerway, around two maximum angle turns, and then returned to VAB High Bay 2. Identical work was completed on the remaining 44 TRAs. This entire process took about 1.5 years from the time manufacturing began.

*L&H field service mechanic Josh Martin crouches to remove the inner cover from the traction roller assembly on crawler-transporter 2 on June 19, 2013. L&H field service mechanic John Robertson directs the forklift that is coming in with a fixture to bolt the cover and support its weight for removal. Photo credit: L&H/Bill Schroyer*

*L&H field service workers Mike Kretzschmar and Josh Martin remove the outer shaft adapter from the traction roller assembly on crawler-transporter 2 inside the Vehicle Assembly Building at Kennedy Space Center. There are 88 traction roller assemblies on the crawler-transporter. Photo credit: NASA*

The second CT-2 project involved Propel transmission work and was completed in 2015. NASA's TOSC contractor, Jacobs Engineering, removed the transmission shaft assemblies and input housings with bevel gears from the crawler and sent them to L&H Industrial in Wyoming, where the assemblies were rebuilt. The process included disassembly, cleaning and removing contamination, non-destructive inspection, measurement inspection, corrosion protection, reassembly, and final inspection prior to shipment back to Kennedy.

While this work was completed, a small crew of L&H workers arrived at Kennedy to audit the bores in the transmission housings. The company provided on-site repairs of the bores, if they were deemed out of compliance, by a team of Vencore, L&H and NASA engineers and technicians.

About 14 L&H workers were on-site performing the field work on the crawler, while more than 50 workers manufactured components in Wyoming.

"Walking into the Vehicle Assembly Building each day felt very humbling," Schroyer said. "It was a great honor for all of us to work in a place and with people that are a major part of past and future space travel."

# Ground Systems Team Spotlight

**Tiffany Osborne** is a section chief with Jacobs Engineering on the Test and Operations Support Contract at Kennedy Space Center. Her responsibilities include overseeing the system engineers and technicians within her department that handle operations and maintenance of cranes, doors, platforms and logistics


equipment.

Osborne's group supports the Ground Systems Development and Operations Program in several ways.

"We currently are providing operational support in the Vehicle Assembly Building (VAB) for one of the 325-ton cranes, to assist with installation of the new work platforms for NASA's Space Launch System," Osborne said.

Osborne's group also operates all of the VAB doors and will provide crane operational support for Exploration Mission-1 processing activities in the VAB and the Rotation, Processing and Surge Facility (RPSF).

They also will handle booster stacking, core stage mating and Orion mating to the SLS rocket in the VAB and provide all of the SLS platform operational support.

One of the accomplishments Osborne is most proud of is returning to college to obtain her bachelor's degree in organizational management from Warner University in Lake Wales, Florida, while working full time and raising a family.

She has worked at Kennedy for 15 years. Her previous employer was United Space Alliance, where she started as an administrative assistant and held several different positions in planning and scheduling before joining the cranes, doors and platforms department.

Osborne's hometown is Titusville. Her first car was a 1980 silver Honda Accord.

She is married to her husband, Gary Osborne, who also works for Jacobs. They have three daughters, Hanna, 20, Jessica, 19, and Rebekah, 18. Two mixed-breed dogs, named Bella and Lady, keep them company.

Her hobbies include watching sports, especially collegiate sports, with football and softball being her favorites. She also enjoys outdoor activities and is interested in traveling now that her children are grown.

**Lorena Secrease** is a mechanical design engineer with Nelson Engineering Company on the Engineering Services Contract (ESC) at Kennedy Space Center.

Her group's work to support the Ground Systems Development and Operations Program includes design, development, testing and integration of the Space Launch System's (SLS) launch accessories, such as umbilical arms and stabilizers.

Until recently, Secrease was the ESC lead mechanical design engineer for the SLS vehicle stabilizer system. Her primary responsibilities included integrating the multidiscipline design elements that make up the vehicle stabilizer system.

"I had the privilege of working with a talented team of designers and engineers that were tasked with taking the Space Launch System stabilizer system design from concept through detail design and into fabrication," Secrease said.

She is very proud of seeing designs of mechanical systems that she has worked on in support of the space program come to life.

"There are no words to explain the feeling I experience when hardware starts leaping off the computer monitor and drawings and becomes reality," Secrease said. "I'm looking forward to seeing our designs center stage with the SLS vehicle at the 2018 launch."

Secrease began her engineering career at Kennedy with United Space Alliance in 2005. She also worked for ASRC supporting the university-affiliated Spaceport Technology Development Contract. She also supported the Constellation Program as a mechanical design engineer for ground support equipment.

Secrease's hometown is Union City, New Jersey. Her parents moved to Orlando, Florida, when she was 16. She has planted roots in Central Florida ever since.

Secrease earned a Bachelor of Science in aerospace engineering from

the University of Central Florida in Orlando in 2005.

Her first car was a 1997 Ford Explorer in a "fun" purple color.

Secrease has been married for nine years to her husband, Jeff. They have a son, Evan, 5, and they are expecting another baby in about three months.

Her hobbies include sewing, bike riding and attending baseball games. "Go Rays!"

# Employee Spotlight - Lauren Price

Lauren Price is a ground systems mechanical engineer in the Engineering Directorate at Kennedy Space Center. She oversees the operations, maintenance and new designs of large, ground system-type equipment, including cranes, heavy equipment, access platforms, powered doors and temporary scaffolding systems for the Ground Systems Development and Operations Program.

Price started working at Kennedy as a cooperative education student in January 2001. She started in the Shuttle Processing Directorate working on ground systems, including cranes, doors and platforms.

"The coolest part of my job is being able to see the Vehicle Assembly Building every day, and go into that building whenever I want to," Price said. "It's such an icon of NASA and of human spaceflight. And there's so much history associated with it. It's really a special place."

Price said the achievement she's most proud of in supporting GSDO is that she gets to work with a really cool team that provides temporary access to spacecraft and launch vehicles for their processing, and for the Exploration Flight Test-1 mission that launched in December 2014. Her team provided access to the Orion spacecraft for its processing, with planning for it starting about a year in advance.

Price originally is from Louisville, Kentucky. She earned a Bachelor of Science and Master of Engineering in mechanical engineering.

"NASA's journey to Mars is really exciting," Price said. "We've been to low-Earth orbit a lot and I think it's time to start looking beyond that. It will be amazing seeing launches of people from Kennedy. It's going to be wonderful again."

Price's first car was a 1997 black Toyota Celica GT convertible. She hated it at first because it had manual transmission. But once she got used to it she loved it and has gone out of her way ever since to purchase only manual cars.

Her parents live in Louisville, while a younger sister lives in Lexington. Her hobbies include running, working out, and traveling to ride roller coasters. She has a cat named Babalu.

Her fiancé Cory and she are planning a February 2017 wedding in Orlando.

*Inside the Rotation, Processing and Surge Facility high bay at Kennedy Space Center in Florida, two cranes are used in tandem to lift the first pathfinder, or test version, of a solid rocket booster segment for NASA's Space Launch System (SLS) rocket and move it away from the railcar Feb. 25. The booster segment will be lifted into the vertical position and secured on a test stand. The Ground Systems Development and Operations Program and Jacobs Engineering, on the Test and Operations Support Contract, will conduct a series of lifts, moves and stacking operations using the booster segments, which are inert, to prepare for the first flight of Orion atop the SLS rocket. The pathfinder boosters arrived at Kennedy from Orbital ATK in Utah aboard an Iowa Northern train contracted by Goodloe Transportation of Chicago. Photo credit: NASA/Ben Smegelsky*