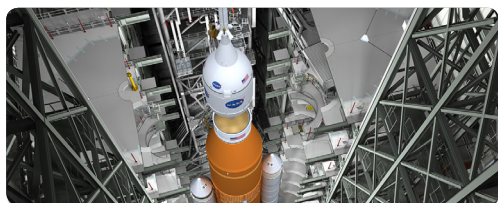




# GSDO

GROUND SYSTEMS  
DEVELOPMENT & OPERATIONS

EXPLORATION BEGINS HERE



## PROGRAM HIGHLIGHTS • NOVEMBER 2015

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>.

## GSDO Takes Education Outreach Efforts to Puerto Rico

NASA's Education Professional Development Collaborative (EPDC) and the Ground Systems Development and Operations Program (GSDO) at Kennedy Space Center held teacher workshops Nov. 9 and 13 at schools in Mayaguez and San Juan, Puerto Rico, and student workshops Nov. 10-13 at elementary, middle and high schools in Mayaguez, Villalba and Ceiba, Puerto Rico.

The theme of the workshops was "Constructing the Future of Deep Space

Exploration through the Engineering Design Process."

The workshops were led by EPDC Specialist Dr. Lester Morales, along with GSDO team members Jennifer Levitt, Ground Systems engineer; Jose Mayi-Rivas, design and analysis engineer; Alex Bengoa, Ground Systems integration engineer; Marvin Oyola, design engineer lead; and Ivette Aponte, engineering project control officer.

Teachers and students rotated through six focus areas presented by the GSDO team, including Space Launch System, Orion and GSDO; NASA and Technology; Day in the Life of a Scientist/Engineer at NASA; Careers at NASA; Mars and Beyond; and EPDC. Activities included construction of model rockets and a tower structure design challenge.

For their participation in the professional development workshops, the teachers earned a NASA Certificate of Attendance and six contact hours.



Students rush on stage to be part of a group photograph at the Centro Residencial de Oportunidades Educativas de Ceiba, or CROEC school, in Puerto Rico. Photo credit: NASA/Jennifer Levitt



Students at Escuela Libre De Musica-Ernesto Antonini middle school in Mayaguez, Puerto Rico, work as a team to complete the Space Launch System Engineering Design Challenge. Photo credit: NASA/Jennifer Levitt

# Ground Systems Team Spotlight

**Matthew Branch** is a mechanical engineer with Nelson Engineering on the Engineering Service Contract supporting the Ground Systems Development and Operations Program (GSDO) at Kennedy Space Center.

He is the lead design engineer for the Orion Service Module Umbilical (OSMU) that is currently being prepared for testing at the center's Launch Equipment Test Facility.



He works on the design, development, integration and testing of the OSMU that will provide commodities, such as power, communications, coolant, breathing air and purge gas, to the Orion service module and Launch Abort System.

"I really enjoy the opportunity to work closely with a small part of a very complex mission to return America to space from Kennedy," Branch said.

Branch began his career at Kennedy during the early days of the Constellation Program as an engineer on the Tilt-Up Umbilical Arm (TUUA). During the transition to the Space Launch System, he helped repurpose the TUUA design to serve as the OSMU.

"I've been blessed to work with a group of highly talented engineers and designers in the development of an umbilical system that is the first of its kind here at Kennedy," Branch said.

Most umbilicals for the Apollo pro-

gram swung away from the vehicle, and others for the space shuttle dropped down, but the OSMU will tilt up and away from the Space Launch System rocket and Orion spacecraft at liftoff.

Branch began his career at Kennedy as an intern with Arctic Slope Regional Corp. during the summer of 2006. He joined the company as a full-time engineer after graduation. He moved to Nelson Engineering in March 2011.

Branch's hometown is Cocoa, Florida. He earned a Bachelor of Science in mechanical engineering in 2007 from the University of Central Florida.

His first car was a 1998 black Volkswagen Beetle. His hobbies include camping, hiking, playing golf and ultimate Frisbee.

Branch has been married to his beautiful wife, Kristen, for seven years. They have three children: Micah, 6, Morgan, 3, and Caleb, 4 months. They have a yellow Labrador named Tanner, and a coop full of chickens that give them fresh eggs every day.

**Mike Chappell** is the associate program manager with Jacobs Technology on the Test and Operations Support Contract (TOSC), supporting the Ground Systems Development and Operations Program (GSDO) at Kennedy Space Center. He is the primary customer interface for TOSC and represents the office of the general manager.

As part of the TOSC leadership team, he provides management and integration across directorates to ensure the needs of the GSDO Program are met.

Chappell has worked at Kennedy for more than 30 years. He started as a planner for ground support systems in 1981 and held various positions within the Space Shuttle Processing Contract, including support test manager, orbiter test conductor, vehicle operations chief, and flow manager for space shuttle Atlantis and Ares I-X.

One of the achievements he is most proud of is being a part of the team that sent people into space and brought them home. He also was proud to be a part of the leadership team that



executed the offloads of the orbiters for final display in New York City, Los Angeles and Washington, D.C.

"My grandfather, father and mother all worked at Kennedy, so it was a natural for me to become interested in space," Chappell said. "I am the third generation in my family that has had a passion to be a part of our nation's space program and it's truly an honor."

Chappell's hometown is Talladega, Alabama. His parents moved to Florida when he was four years old. He graduated from Titusville High School. He received a Bachelor of Science in engineering technology in 1991 from the University of Central Florida in Orlando.

Chappell's first car was a 1963 two-door Plymouth that his father purchased brand new, and he still has it covered in the garage today.

Chappell's hobbies include bike riding and working out at the gym.

He married his best friend, Shannon, in August 2015. They have four children: Alexa, 22, Micah, 17, Noah, 14, and Sara, 11. Alexa is attending graduate school at the University of Florida. Micah is a senior at Titusville High School, and Noah and Sara are attending middle school at Park Avenue Christian Academy.

Two pets also reside in their home, a cat named Ruthie and a cocker spaniel named Lacey.



# Industry Spotlight: Reynolds, Smith & Hills

RS&H Inc. was founded in 1941 by engineers John F. Reynolds, George B. Hills, and architect Ivan H. Smith in order to support the military during war by designing military projects at the Banana River Naval Station, which later became Cape Canaveral Air Force Station, and Patrick Air Force Base.

Known at that time as Reynolds, Smith and Hills, the firm also worked with NASA in Huntsville, Alabama, when it moved to Kennedy Space Center (then Cape Canaveral) in 1962 to design the first mobile launcher for the Apollo Program. Since that time, RS&H has completed more than 1,000 projects for the center.

The company serves many markets, including aerospace, aviation, corporate, defense, health and science, and transportation, providing fully integrated architecture, engineering and consulting services.

"Our mission is to provide responsive and quality service to produce innovative, cutting-edge results for our clients," said Steve Moore, RS&H senior vice president and Aerospace & Defense practice director.

Currently, RS&H is working on several projects for the Ground Systems Development and Operations Program at Kennedy.

"At Launch Pad 39B, we have been heavily involved in the design process and reconfiguring the pad for the Space Launch System," Moore said. "This includes a new Lightning Protection System, and installation of liquid oxygen vaporizers and the ignition overpressure/sound suppression system."

RS&H also is providing design and engineering services during construction of the flame trench refractory system and main flame deflector, and refurbishment of the side flame deflectors.

The company recently completed the facility modifications design of the mobile launcher and is working with NASA and the Engineering Services contractor on the ground support equipment (GSE) installation design packages and providing construction administration for GSE installation on the mobile launcher.

More than 75 RS&H engineers, architects and technical sup-



*A view of elevator modifications on the surface of Launch Pad 39B, taken from one of the lightning protection towers. Photo credit: RS&H*

port workers are at the center, working primarily in three facilities: pad B, mobile launcher and Vehicle Assembly Building.

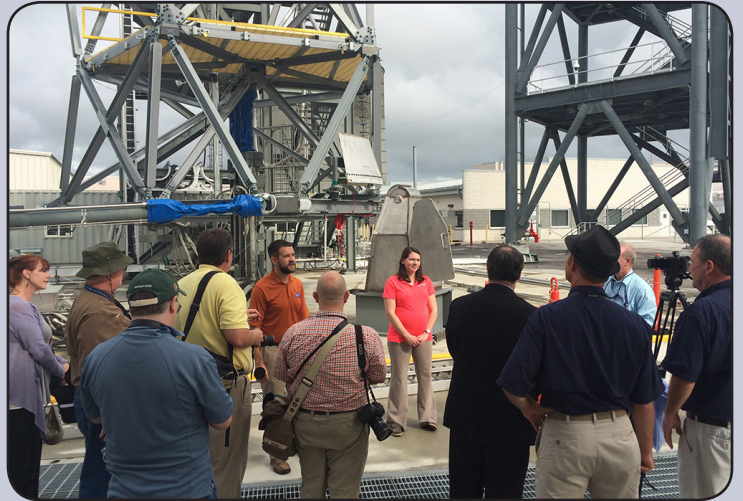
"Space truly is the final frontier, and being a part of something as historic and inspiring as the space program is exhilarating," Moore said. "Having the opportunity to assist Kennedy Space Center in preparing for future exploration missions gives us a feeling of great pride and privilege to be part of such important human endeavors."

Believing that knowledge always is the main goal of science, Moore's greatest hope is to see humans explore our solar system and tap into the abundance of knowledge that we could gain from our nearest celestial neighbors.

"Sending humans farther in space than we ever have before could help us unlock the mysteries of the universe," Moore said.



*Members of the media tour the Launch Equipment Test Facility on Dec. 1 at NASA's Kennedy Space Center in Florida. Above them is the Orion Service Module Umbilical being prepared for testing on Vehicle Motion Simulator 1. Photo credit: NASA/Amber Philman*



*Martin Grashik, left, NASA mechanical systems test engineer, and Jessica Witrick, with Orbital ATK, talk to members of the news media during a tour of the Launch Equipment Test Facility on Dec. 1 at NASA's Kennedy Space Center in Florida. Photo credit: NASA/Amber Philman*



# Employee Spotlight: Regina Spellman

Regina Spellman is the deputy project manager for the Mobile Launcher Element Integration Team in the Ground Systems Development and Operations Program at Kennedy Space Center.

She is responsible for the design and development of the mobile launcher (ML), including the structure and numerous subsystems that are located on the ML. Her primary focus for the last two years has been leading the design of the ground support equipment (GSE) installation, which includes designing the installation of all GSE and facility subsystems and all necessary infrastructure on the ML.

Spellman started working for NASA at Langley Research Center as a co-op student in 1988 and then became full time in 1992. Thirteen years later she transferred to Kennedy and has been here for 10 years.

She started at the very beginning of the Constellation Program and continued into GSDO. Having worked in development for most of her career, Spellman said this was an opportunity to not just build hardware, but to build a legacy.

"We are every day creating the future of the Kennedy Space Center and the U.S. space program," Spellman said.

Spellman said the coolest part of her



job is having the opportunity to interact with many different subsystem teams that have equipment on the ML.

"We get to interact with so many amazing people and see each of their significant contributions that collectively work together to achieve our one overarching goal," Spellman said.

One of the achievements she is most proud of in GSDO so far is when the ML GSE installation team, which includes the Engineering Services contractor and Reynolds, Smith & Hills Inc., completed its design and NASA was ready to go out on contract to implement it.

"The combined team completed this very challenging design, overcame many

obstacles and far exceeded all expectations," Spellman said. "Their collaborative spirit, hard work and dedication to this project was truly inspiring."

Spellman became interested in space as a young child. She loved taking things apart to figure out how they worked. All of the unknowns associated with space intrigued her. She bought herself a telescope when she was 12. She loved looking through it at the surfaces of the moon and wondering what it would be like to be looking back towards Earth.

Spellman grew up in Indianapolis, Indiana. She graduated with a Bachelor of Science in mechanical engineering from Purdue University in 1992. She earned a Master of Engineering in mechanical engineering from the University of Virginia in 1995 and a Master of Science in space systems from the Florida Institute of Technology in Melbourne, Florida, in 2008.

"Many people use the phrase, 'the sky's the limit,' but you don't really hear that phrase around NASA much. That's because, for us, it's not the limit; we go way beyond that. In fact, whether it's in space or here on Earth, NASA and so many others in the science and engineering fields are always pushing the boundary of what is possible," Spellman said.



*The second half of the H level work platforms for the Vehicle Assembly Building (VAB) High Bay 3 arrived Nov. 30 at the VAB at NASA's Kennedy Space Center in Florida. It was transferred to a work platform at the VAB west parking lot area. The platform was transported by Hensel Phelps from Sauer Co. in Oak Hill, Florida. It was fabricated by Steel LLC of Scottdale, Georgia, and assembled by Sauer. The Ground Systems Development and Operations Program is overseeing upgrades and modifications to the high bay to support processing of NASA's Space Launch System (SLS) and Orion spacecraft for the journey to Mars. A total of 10 levels of new platforms, 20 platforms altogether, will surround the SLS rocket and Orion spacecraft and provide access for testing and processing in High Bay 3. A contract to modify High Bay 3 in the VAB was awarded to Hensel Phelps Construction Co. of Orlando, Florida, in March 2014. Photo credit: NASA/Ben Smegelsky*