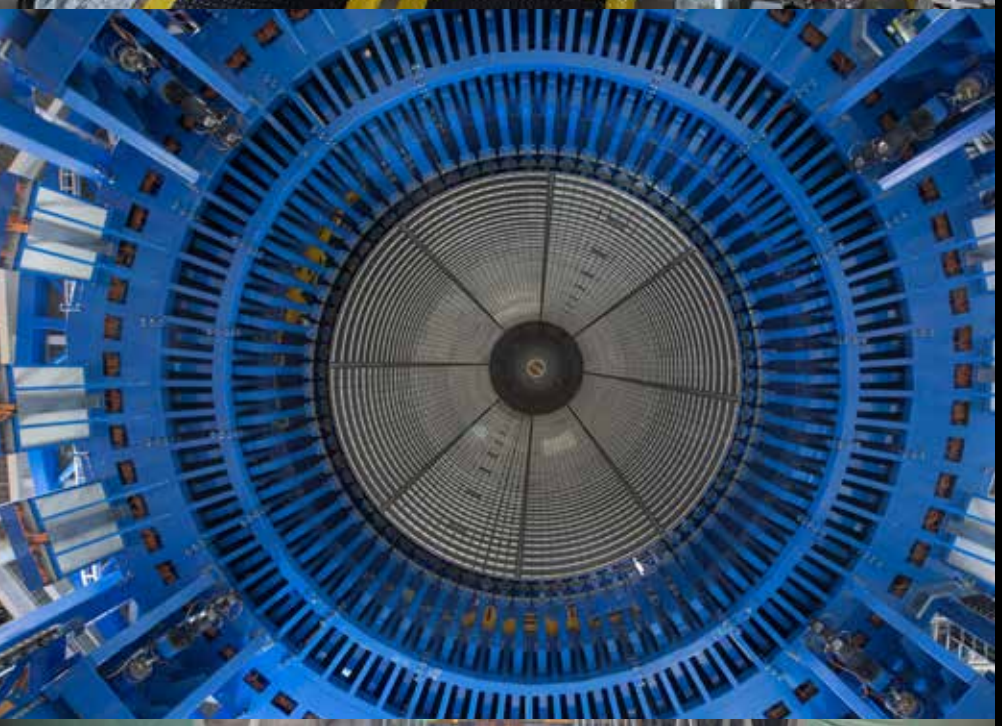

National Aeronautics and Space Administration

ESD

Exploration Systems Development

Combined Monthly Report July 2016


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ORION

JULY 2016

NOW THIS IS COOL!

ORION'S EM-1 HEAT SHIELD ASSEMBLY COMPLETED

In mid-July, the Orion team completed the heat shield structure for NASA's Exploration Mission-1 (EM-1) at Lockheed Martin's Space Systems Company Waterton facility near Denver. The completed structure then underwent static loads testing, proving it can endure the 350,000-pound load the spacecraft will experience during its next flight beyond the moon and back.

At 16.5 feet in diameter, the heat shield for Orion Exploration Flight Test-1 (EFT-1) was the largest composite heat shield ever built. And now, the team has completed the second. The structure is comprised of a titanium sub-structure joined with an advanced high-temperature resin and graphite fiber laminate coated with an ablative thermal protection system required to survive re-entry thermal conditions and water landing impacts.

The EFT-1 heat shield exceeded performance expectations, withstanding temperatures well in excess of 4,000 degrees Fahrenheit as Orion blasted through Earth's atmosphere at 20,000 mph and enduring the strains of a dynamic water impact landing. After a picture perfect landing in the Pacific Ocean, the Orion recovery team held the spacecraft at sea for a "heat soak" test to ensure the heat shield would remain water tight long after splashdown.

Since EFT-1, the Orion team has improved production and performance of the heat shield based on data collected from the first space flight. The EM-1 heat shield has been optimized to shed more than 1,250 pounds from the EFT-1 structural design. In addition, the team has been able to reduce the EM-1 heat shield fabrication cost and schedule by as much as 30 percent, with an additional 15 percent cost and schedule reduction anticipated for the Exploration Mission-2 (EM-2) heat shield due to streamlined tooling and lean manufacturing processes. The team is already coordinating the logistics for a static test article build, which will be the model for the EM-2 heat shield.

The heat shield skeleton assembly process involves match drilling 205 individual parts and inserting fasteners in more than 1,200 holes. This is followed by skin-to-skeleton mating operations requiring 3,000 additional holes and fasteners across the entire structure. A dedicated team of manufacturing engineers stayed the course, working around-the-clock over several months to deliver the EM-1 heat shield assembly on time and under cost. The completed structure will be shipped to NASA's Kennedy Space Center in late August for final assembly and integration onto the Orion spacecraft.

Related Videos:

Meet Orion heat shield engineer Molly White:
bit.ly/2b0O3UW

See and hear the Orion launch and entry experience:
bit.ly/2aPZccs

ROCKY EXERCISE DEVICE IS A REAL KNOCKOUT!

While engineers across NASA and industry are working to build the Orion spacecraft and Space Launch System rocket that will venture to deep space, NASA's Human Research Program team is building a compact, action-packed exercise device to maintain crew strength during multiyear missions in microgravity.

As astronauts travel beyond the Earth and moon on the journey to Mars, keeping them healthy in space will be critically important. They will need to be in top physical form when they arrive at their destination so they can effectively pioneer new frontiers and must also be able to quickly readjust to Earth's gravity upon their return home.

The design team took the necessary elements of exercise equipment needed to keep astronauts healthy and fit in space and made them exponentially smaller, lighter and more robust, while still providing a healthy dose of benefits for the crew. The result was ROCKY, the Resistive Overload Combined with Kinetic Yo-Yo Device developed by Zin Technologies of Middleburg Heights, Ohio.

Astronauts will be able to use the device like a rowing machine for aerobic activity and for strength training with loads of up to 400 pounds to perform exercises such as squats, deadlifts and heel raises, as well as upper body exercises like bicep curls and upright rows. The device can be customized with specific workouts for individual astronauts. It will also incorporate the best features from a second device evaluated during the selection process called the Device for Aerobic and Resistive Training, or DART, developed by TDA Research in Denver, under NASA's Small Business Innovation Research Program.

ROCKY will get its first in-space warm up on Exploration Mission-2, the first crewed mission with Orion and SLS. Once Orion is in orbit, the crew seats will be stowed away to provide more interior space for the astronauts inside.

Read the full story at:
bit.ly/ROCKY_Orion

ORBITAL ATK LIGHTS UP NEW IGNITOR

At an historic solid rocket manufacturing and test facility in Elkton, Maryland, Orbital ATK's Upper Stages and Controls team completed a key milestone in the development of the Attitude Control Motor (ACM) for NASA's Orion spacecraft Launch Abort System (LAS).

On June 22 and 23, with Lockheed Martin and NASA on hand, the team successfully completed a series of four static tests on an improved igniter. The test met the required temperature ranges and performed as expected, despite a deliberately inserted error input from the ignition train.

Watch Attitude Control Motor Test Video: **bit.ly/2aSoBSX**

Using data from the successful Orion Pad Abort (PA-1) flight test in 2010, the Orbital ATK team has made the system's unique igniter even more robust by enlarging its throat and increasing its mass flow rate and total energy content. In order for any of that advanced technology to function, a simple but robust ignition train must get the ball rolling, and the ACM's igniter has to light at any time and altitude.

NASA's Langley Research Center manages the launch abort system program with partners and team members including NASA's Marshall Space Flight Center, Lockheed Martin and Orbital ATK. In the event of an emergency during launch or ascent, a powerful launch abort motor -- made by Orbital ATK in Utah – pulls the Orion spacecraft off the Space Launch System (SLS) to propel it out of harm's way. To keep the crew module on the right path, a fast reacting control system is needed to provide variable thrust in any direction. Enter the Attitude Control Motor, or ACM.

Orbital ATK worked with Lockheed Martin to develop the ACM, which has two critical functions. In a mission abort scenario, it must first steer the Launch Abort System and crew module away from the launch vehicle. Then, once cleared from hazards, the ACM orients the crew module for safe parachute deployment.

Watch Pad Abort-1 Flight Test: bit.ly/2bmAocQ

The ACM consists of a solid-propellant gas generator, with eight proportional valves equally spaced around the circumference of the three-foot-diameter motor. In combination, the valves can exert up to 7,000 pounds of steering force to the vehicle in any direction upon command from the crew module. The valves are controlled by a redundant power and control system.

Working under the direction of prime contractor Lockheed Martin, Orbital ATK has continued to develop and test the ACM to meet the most demanding operating parameters. In addition to the 2010 pad abort test, Orbital ATK has performed several successful sub-scale and full-scale ground tests on the ACM, supplied the inert unit which flew as part of Orion's first test flight, Exploration Flight Test-1 (EFT-1) in 2014, and last year concluded a series of high-thrust valve tests, including a successful over-pressure test, HT-10.

The success of the ACM igniter tests confirms that this key subsystem will move onto critical design review in August. The new igniter design will be used on the next ACM development motor test, HT-11, later this calendar year, and will support the ACM qualification tests and EM-2 flight delivery scheduled for 2017.

Watch HT-10 Test Video: bit.ly/2b0TRha

ORION TEAM FORMS PROTECTIVE BOND

A crucial part of preparing NASA's next Orion spacecraft for flight has begun as technicians bond thermal protection system (TPS) tiles to panels that will be installed on the spacecraft's back shell and forward bay cover. The silica tiles are an advanced version of those used on the space shuttle and will protect Orion's crew from the searing heat of re-entry that can reach 5,000 degrees Fahrenheit during return from deep-space missions.

The first integrated mission of NASA's Space Launch System (SLS) rocket with Orion, Exploration Mission-1, or EM-1, will lift off from Launch Complex 39B at NASA's Kennedy Space Center in Florida. On the mission, the spacecraft will venture 40,000 miles beyond the orbit of the moon, farther than any spacecraft built for humans has ever traveled, testing the systems needed for the agency's journey to Mars. The mission will conclude with Orion re-entering the Earth's atmosphere at 25,000 mph and then slowing down to a gentle splashdown in the Pacific Ocean.

The bonding process began in July and will continue over several months. The work is taking place in the high bay of the Neil Armstrong Operations and Checkout Building where assembly of the Orion crew module's pressure vessel, or underlying structure, has been taking place since it arrived at the Florida spaceport in February. The newly designed tiles incorporate a stronger coating called "toughened uni-piece fibrous insulation," or TUFI coating, and will also be covered with an aluminized coating that improves on-orbit thermal control of the vehicle and gives Orion its shiny new look.

Read the full story at: **bit.ly/OrionTileBonding**

In the Neil Armstrong Operations and Checkout Building at NASA's Kennedy Space Center, technicians have begun bonding thermal protection system tiles to the nine panels that will cover the Orion crew module for the agency's first unpiloted flight test with the Space Launch System (SLS) on the agency's Journey to Mars.

Technicians prepare to bond thermal protection system tiles on the Orion crew module for the agency's Exploration Mission-1 flight with the Space Launch System (SLS) rocket. Orion requires about 1,300 tiles. Many of the Orion tiles are standard, except for those which fit around windows, thrusters or antennae. Along with the spacecraft's heatshield, the tiles will protect Orion from the 5,000 degree Fahrenheit heat of re-entry.

TO DREME, TO FLY

Learn more about them at:
DREME Foundation: bit.ly/2aPjJIG
Bronze Eagles: bronzeagles.com

Orion engineers Kat Coderre (left) and Darrel Gaines helped to inspire future generations of aviators and space explorers through several STEM engagement events in July. The Community Science Fair of the Dr. Ronald E. McNair Educational (DREME) Science Literacy Foundation was held at Houston Community College and presented science, technology, engineering, and math (STEM) information as well as career awareness and preparation in an exciting hands-on learning atmosphere for the public. More than 200 middle and high school students participated in this year's fair.

The annual Bronze Eagles Fly-In gave more than 100 kids the opportunity to learn about flight, space exploration and the thrill of being airborne. The Bronze Eagles of Texas Flying Club promotes aviation to inner-city and disadvantaged youth. Through fly-ins and educational outreach, the club fosters an awareness of careers in aviation and contributions made by black aviators, and encourages students to stay in school and pursue positive avenues. The club has chapters in several cities in Texas and is an affiliate of the Black Pilots of America.

These events expose students from all across Houston to the excitement of engineering and exploration.

IT'S OSHKOSH BY GOSH!

NASA's Orion and Space Launch System (SLS) team members supported space-themed exhibits and panel presentations at EAA Airventure Oshkosh 2016 in Wisconsin July 25-31. The Oshkosh event is one of the world's largest air shows and attracts more than 500,000 visitors annually. More than 7,300 participants attended the seven presentations hosted by the Orion and SLS industry team and more than 25,000 people visited the exhibits.

The team extended their reach well beyond Wisconsin through social media chats and posts, featuring hashtags and handles such as #GeeksAtMars and #OSH16.

NASA's deep space team members from NASA's Glenn Research Center and Marshall Space Flight Center joined the four prime SLS and Orion contractors to support Journey to Mars displays and host forums with special guests including current astronaut Mike Hopkins, as well as former space flight veterans Charlie Precourt, Brian Duffy and Kent Rominger. Forums included former astronauts sharing their insights alongside astronaut hopefuls about working in space, how to become an astronaut and careers in space exploration. Special panel presentations included Women in Space – Redefining Glamour, Star Trek – Fact vs. Fiction, and The Journey to Mars Has Begun.

Supporting the four prime contractors Aerojet Rocketdyne, Boeing, Lockheed Martin and Orbital ATK, are numerous suppliers from all across the United States. Current suppliers in Wisconsin include ATI Metals (Ladish Company) in Cudahy; Marine Travelift in Sturgeon Bay; Amorim Cork Composites in Trevor; and Hentzen Coatings in Milwaukee.

To explore the network of companies in 49 states supporting deep space missions, visit the SLS and Orion supplier map at:
www.nasa.gov/externalflash/ESDSuppliersMap

Read more at: **bit.ly/NASA_OshKosh**

FOLLOW THE PROGRESS OF NASA'S NEW SPACECRAFT FOR HUMAN EXPLORATION:

NASA's Orion Blog . . . . **Blogs.NASA.gov/Orion**

Twitter . . . . . **Twitter.com/NASA_Orion**

Facebook. . . . . **Facebook.com/NASAOrion**

Flickr . . . . . **Flickr.com/NASAOrion**

Google+ . . . . . **Plus.Google.com/+NASAorion**

AUGUST

Clean room operations begin at KSC

Docking hatch crew testing at JSC

Water impact testing at LaRC

OMS-E arrives at White Sands for testing

Engineers and astronauts conducted testing in a representative model of the Orion spacecraft at NASA's Johnson Space Center in Houston to gather the crew's feedback on the design of the docking hatch and on post-landing equipment operations. The testing, shown here with astronauts Stephanie Wilson, Karen Nyberg and Rick Mastracchio (L to R), was done to evaluate the equipment used during egress to ensure that a fully suited crew member carrying survival equipment can get out of the spacecraft through the docking hatch if necessary.

National Aeronautics and Space Administration

JULY 2016

SPACE LAUNCH SYSTEM HIGHLIGHTS

MASSIVE SLS TANK HARDWARE COMPLETED AT MICHOUD

NASA COMPLETES WELDING ON SLS FUEL TANK TEST ARTICLE

ABOVE: *A qualification test article for the SLS liquid hydrogen tank is lifted off the Vertical Assembly Center after final welding at Michoud Assembly Facility in New Orleans. This giant tank isn't destined for space, but it will play a critical role in ensuring the safety of future explorers. The liquid hydrogen qualification article closely replicates flight hardware and was built using identical processing procedures. SLS will have the largest cryogenic fuel tanks ever used on a rocket. The liquid hydrogen tank – along with a liquid oxygen tank – are part of the SLS core stage. The core stage is made up of the engine section, liquid hydrogen tank, intertank, liquid oxygen tank and forward skirt. As four qualification articles of the core stage hardware are manufactured, they will be shipped on the Pegasus barge from Michoud to NASA's Marshall Space Flight Center in Huntsville, Alabama, for structural loads testing.*

RIGHT SIDE: *Dr. Renee Horton, third from left, lead metallic and weld engineer for the SLS core stage, shows NASA Administrator Charles Bolden, second from left, the liquid hydrogen tank qualification test article in the world's largest welding tool, the Vertical Assembly Center, at Michoud. Now that welding is finished, the liquid hydrogen tank hardware, standing at more than 130 feet tall, will be outfitted with sensors to record important data. It will be tested in a new, twin-tower test stand currently under construction for the tank at the Marshall Center. Structural loads testing ensures that these huge structures can withstand the incredible stresses of launch.*

NASA COMPLETES FIRST ROUND OF COMPOSITE SHELL BUCKLING TESTS WITH A BANG

Kathryn Guelde and Ashley Holladay, right, of Aerie Aerospace, LLC, work to install the structural test article for the first series of composite tests at the Marshall Center for the Shell Buckling Knockdown Factor Project. The project is focused on developing and validating new analysis-based design guidelines for building safer and lighter space structures. Designing lighter rockets will allow launch vehicles to carry larger payloads – landers, equipment, habitats, food, water and supplies – paramount to allow humans to travel to deep space destinations, including Mars, where quick resupply is not possible. NASA successfully completed the first series of high-tech composite tests in late spring as a large cylindrical barrel was tested to failure under extreme compressive loads of almost 900,000 pounds. The testing was conducted at Marshall's Load Test Annex, where construction is underway on steel reaction towers and fixtures that will be used for structural loads testing on the SLS core stage intertank and engine section.

SPACEFLIGHT PARTNERS:
UTC Aerospace Systems

LOCATION:
Rockford, Illinois

NUMBER OF EMPLOYEES: *210*

WHAT THEY DO FOR SLS:
The Rockford branch of UTC Aerospace Systems supports SLS by supplying hydraulic power with auxiliary power units for testing and flight of the core stage and boosters.

RS-25 ENGINE FIRES UP FOR NEW TEST SERIES

RS-25 engine testing fired up July 14 at NASA's Stennis Space Center near Bay St. Louis, Mississippi. A 650-second test was conducted July 29 on the A-1 test stand. The test series will provide valuable performance data on the new engine controller and operating parameters needed for launch of the SLS.

'FLYING IN' TO THE FUTURE OF SPACEFLIGHT

A visitor at EAA AirVenture Oshkosh "builds" his own SLS. The event, called the "world's greatest aviation celebration," is an annual gathering of aviation enthusiasts at Wittman Regional Airport in Oshkosh, Wisconsin. SLS, Orion and industry partners were on hand to recognize local supplier companies and showcase the technologies that will launch humans into deep space.

FOLLOW THE PROGRESS OF NASA'S NEW LAUNCH VEHICLE FOR DEEP SPACE:

NASA SLS Rocketology Blog....blogs.nasa.gov/Rocketology

Twitter.....Twitter.com/NASA_SLS

Facebook.....Facebook.com/NASASLS

Flickr.....Flickr.com/NASASLS

Google+.....Plus.Google.com/+NASASLS

Tumblr.....nasasls.tumblr.com

COMING IN AUGUST:

EM-1 booster aft segment cast

RS-25 testing continues at Stennis

Chicago Air and Water Show

National Aeronautics and Space Administration

GSDO
GROUND SYSTEMS
DEVELOPMENT & OPERATIONS

EXPLORATION BEGINS HERE



PROGRAM HIGHLIGHTS • JULY/AUG 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 Reaches Platform Milestone for Space Launch System

Installation of new work platforms for NASA's Space Launch System (SLS) rocket and the journey to Mars reached the halfway point in July inside the Vehicle Assembly Building (VAB) at the agency's Kennedy Space Center in Florida.

Prior to rolling out to the launch pad, the rocket and Orion spacecraft will come together in the VAB for processing and assembly. Five of the ten levels of platforms are in place in High Bay 3, all part of the massive amount of work going on inside the iconic building to accommodate SLS and Orion.

"This is a key milestone for NASA and the Ground Systems Development and Operations Program," said Mike Bolger, GSDO program manager at Kennedy.

The F North and South platforms were lifted by crane from the transfer aisle floor of the VAB, slowly raised into position, and attached to rail beams on the south and north walls of the high bay on July 15 and 19, respectively. The rail beams provide structural support and contain the drive mechanisms to retract and extend the platforms.

When all of the platforms are installed, a total of 10 levels of work platforms, 20 platform halves altogether, will surround the SLS rocket and Orion spacecraft and provide access for testing and processing for the uncrewed Exploration Mission 1 and deep-space missions, including the journey to Mars.

A heavy-lift crane lifts the first half of the F-level work platforms, F south, for NASA's Space Launch System (SLS) rocket, from the floor of the Vehicle Assembly Building (VAB) at Kennedy Space Center on July 15. Photo credit: NASA/ Bill White

"This is a significant accomplishment in the production and installation of the platforms for High Bay 3," said Jose Perez Morales, VAB Element Project manager.

It takes about four hours to lift and install each of the platforms. They weigh between 300,000 and 325,000 pounds, and measure about 38 feet long and close to 62 feet wide.

Construction workers with VAB general contractor Hensel Phelps, subcontractors S&R, Steel LLC and Sauer Inc., and the Kennedy Test and Operations Support Contract contractor Jacobs are performing the work.

"It's another giant leap for the GSDO Program as we prepare Kennedy Space Center to support the agency's journey to Mars," Bolger said.

To read the complete story, visit http://go.nasa.gov/2aafm05.

Ground Systems Team Spotlight

Vicki Ketterer is an integration engineer with Jacobs on the Test and Operations Support Contract (TOSC) at Kennedy Space Center. Her responsibilities include integrating the requirements between the hardware providers, such as United Launch Alliance and Boeing, with the TOSC engineers to ensure that the requirements are correct and workable. Currently, her work focuses on the Interim Cryogenic Propulsion Stage and main engines of NASA's Space Launch System rocket.

Ketterer has worked at Kennedy for more than 29 years. She previously worked in the Space Shuttle Program as a quality engineer, working with the thermal protection system and conducted structural inspections. She moved on to orbiter structures engineering and finished her space shuttle career in the program office as a project engineer.

Vicki Ketterer

"The coolest part of my job is working on our nation's space program and being able to see spaceflight hardware that very few people get to see up close and personal," Ketterer said.

One of the achievements she is most proud of is receiving a Space Flight Awareness Award in 2007 for her work on Endeavour's return to flight modifications.

Ketterer became interested in space when she was in grade school.

"We watched the Apollo launches in the early 1970s, plus my parents took us to the Kennedy Space Center Visitor Complex and we saw Enterprise on top of a 747 aircraft," Ketterer said. "I got a job here, and the rest is history."

Ketterer's hometown is Pittsburgh, Pennsylvania. She moved to Florida in 1987.

She earned a bachelor's degree in chemical engineering from Penn State University, and a master's in systems management from Florida Tech.

Her first car was a 1984 dark blue Pontiac Sunbird. It was a car from her father's company so she got a good deal on it.

"Every once in a while it made a very loud squealing noise when I started it, so I unintentionally scared a lot of people as they walked by," Ketterer said.

Her interests include traveling to as many places as possible, hiking, learning to sail, and participating in Toastmasters.

She and her husband, Kirk, have been married almost 25 years.

"I'd better plan a great trip for our anniversary," Ketterer said.

Sean Whyard is a mechanical engineer with SGT Inc. on the Engineering Services Contract at Kennedy Space Center. He is the lead design engineer for the mobile launcher fluids and electrical installation. He has worked at Kennedy nearly three years.

He supports the Ground Systems Development and Operations Program by assisting in the design and preparation of the mobile launcher so that it is ready for the new Space Launch System rocket for future missions launching from Pad 39B.

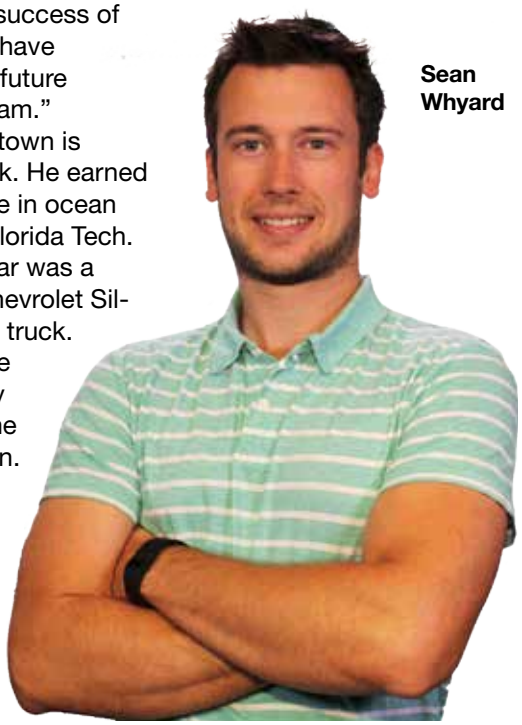
"As someone who grew up in the midst of the Space Shuttle Program, being a part of the next generation of space exploration is exciting," Whyard said. "Every day we are closer to establishing the new foundation from which the next big step will be made."

One of his most memorable times was when he and his team received a NASA Group Achievement Award in 2015 for their work on the mobile launcher.

"I'm extremely honored and proud to be a part of an amazing team, who in our time together, have made me a better person, both professionally and personally," Whyard said. "The success of this project was achieved through the sum of its parts."

Whyard became interested in space at a young age. "Who didn't dream of becoming an astronaut?" His interest peaked during his college years, as he was so close to the space center and watched space shuttle launches from his dorm room.

"I consider myself lucky to be part of it. I want to be able to contribute to the continuation of this legacy and see NASA achieve the next steps for humans to exlore deep space," Whyard said. "Each person here is vital to the success of this mission, and I have high hopes for the future of our space program."



Sean Whyard

Whyard's hometown is Southold, New York. He earned a bachelor's degree in ocean engineering from Florida Tech.

Whyard's first car was a 1988 cherry red Chevrolet Silverado Z71 pickup truck. His hobbies include carpentry, masonry and welding, and he is an avid fisherman. When he has the time, he designs and builds custom fishing rods.

He married his wife, Vanessa Martins, on April 30 of this year.

Industry Spotlight - Tillett Heavy Haul

During his 40 years in business, veteran truck driver Walter "Skip" Tillett, with Tillett Heavy Haul in Titusville, Florida, would say that he's transported some pretty large items for his customers, including NASA. But nothing compares to his recent hauling job.

Since early 2015, Tillett has transported 14 of the 20 new massive work platforms for NASA's Space Launch System (SLS) rocket to the Vehicle Assembly Building (VAB) at Kennedy Space Center in Florida. Safely transporting the platforms is critical for NASA as the agency continues to make progress preparing the center to launch SLS and the Orion spacecraft that will take humans on to deep space.

"We started working on the transport planning phase in July 2014," Tillett said. "We are very excited to be hauling the platforms that are being installed in the historic VAB."

Skip has made the 29-mile trek from Sauer Corp. in Oak Hill, Florida, to the center, each time with an escort provided by the Brevard County Sheriff's Office. Sauer is assembling the platforms. The company is a subcontractor to Hensel Phelps in Orlando, Florida, who is the general contractor for VAB High Bay 3, where the new platforms are being installed. Tillett is a subcontractor to Sauer.

There is more to the job though than just carrying the platforms to their final destination. The platforms are very large, nearly 40 feet wide, and they must be able to clear any obstacles on the right of way during the trip to Kennedy.

"It is a little bit of a challenge each time," Tillett said. "We use a specialty trailer, which is basically a dolly system, to pick up each platform."

When the platform is in place on top of the dolly, the job of centering it and securing it comes next. Counterweights are used to level the platform for the trip.

Walter "Skip" Tillett, with Tillett Heavy Haul in Titusville, Florida, stands near his truck after hauling Platform D South from Sauer Inc. in Oak Hill, Florida, to Kennedy Space Center. Photo credit: NASA/ Ben Smegelsky

"We work very closely with the Brevard County Sheriff's Office motor unit, who do an awesome job directing traffic and providing an escort," Tillett said. "We also alert Kennedy security and local authorities, and we try to notify the community to avoid traffic issues."

Tillett is no stranger to Kennedy. He's hauled a variety of loads to and from the center over the years. Some that come to mind include hauling load test pieces to Cape Canaveral Air Force Station in 2001, hauling an aft skirt for a booster from the center to Salt Lake City, Utah, in 2002, and transporting a piece of load test hardware for the top of the Orion launch escape system from Kennedy all the way to Sacramento, California, in 2008.

Most recently, he hauled work stands, hardware and 20-foot I-beams to the mobile launcher area.

"Being long-time residents of Titusville and with the space program being an integral part of our community, it is a privilege to be able to contribute what we can to NASA's space program and the journey to Mars," Tillett said.

He and his wife, Susan, are owners of the hauling company. She runs the office, while Skip drives the truck.

NASA's Ground Systems Development and Operations Program is overseeing the upgrades and modifications to the high bay to support processing of the SLS rocket and Orion spacecraft.

Check out the VAB platform installation midpoint in 360-degree view at: https://www.youtube.com/watch?v=at3cCCstD2Q

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

Employee Spotlight - Liliana Villarreal

Liliana Villarreal is manager of Spacecraft and Offline Operations for the Ground Systems Development and Operations Program at Kennedy Space Center.

She leads the team that will be responsible for the Orion and payload offline operations prior to integration with the Space Launch System rocket. This includes offline final assembly, testing and servicing of the Orion spacecraft and payloads as required. The group also is responsible for the maintenance of the ground support equipment and the facilities that will be needed to complete these operations.

Villarreal began working at Kennedy in 2000 for The Boeing Company. She was a mechanical/handling and access engineer supporting assembly missions for the International Space Station (ISS). In 2007, she moved to the NASA Operations team under the ISS Program. During the Kennedy reorganization in 2014, she moved to GSDO as an integration operations manager, and then moved into her current role about a year ago.

"The coolest part of my job is being part of history in the making. Eventually when we get to Mars, we will look back and know this is where it all started and that we were part of it," Villarreal said.

She was born in Cartagena, Colombia, and moved with her family to Miami, Florida, when she was 10. She earned a Bachelor of Arts and a master's degree in aerospace engineering from Georgia Tech. She also has a master's in management of technology from the University of Miami.

Her first car was a 1965 289 V8 Ford Mustang, candy apple red.

"It had no air conditioning and was quite the gas guzzler," Villarreal said, "but it was a major reason why I got asked out in high school."

Villarreal's hobbies include reading, running, going to the beach, taking her children to the movies or to Disney World, and at least once a year, she reorganizes or redecorates areas of her home.

She is engaged to Tim O'Hare, and they are planning a fall wedding.

Villarreal has two children, Miguel, 16, and Sabrina, 18. They have a dog, a pug named Daenerys, named for Villarreal's favorite television series, "Game of Thrones." They also have a long-haired tuxedo cat named Snowball.

Prentice Washington, left, senior element program manager for Communications Development at Launch Pad 39B, received the prestigious Silver Snoopy Award during a ceremony on July 26. At right is Mike Bolger, GSDO Program manager. Photo credit: NASA

Courtney Stern, the NASA lead operational engineer for the Orion Landing and Recovery team in the Engineering Directorate, received a Space Flight Awareness Award on June 27 in Ogden, Utah, the day before the QM-2 firing in Promontory, Utah. With her during the ceremony, from left are NASA astronaut Jim Kelly, Kennedy Space Center Director Bob Cabana, and Bill Hill, deputy associate administrator for Exploration Systems Development. Photo credit: NASA