



National Aeronautics and Space Administration



# LAGNIAPPE

John C. Stennis Space Center

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[www.nasa.gov/centers/stennis](http://www.nasa.gov/centers/stennis)

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## Welcome to 2016!



A highlight of 2015 offers a perfect welcome to the new year – a sunlit image of Earth returned by a NASA camera on the Deep Space Climate Observation satellite (DSCOVR).



**Goal – \$182,000**

**To-date – \$146,835**

**(80.7% of goal)**

\*as of 1/15/16

*“I want to congratulate our Stennis team on another great year in 2015 with many highlights, such as the exceptionally successful RS-25 test series.”*

From the desk of  
**Rick Gilbrech**

Director, Stennis Space Center



I hope everyone made the most of the somewhat “soggy” holiday break. Even though the weather was not cooperative, it was still a great opportunity to visit with friends and family, share time with our loved ones and recharge our batteries for the busy year ahead. I want to congratulate our Stennis team on another great year in 2015 with many highlights, such as the exceptionally successful RS-25 test series. We completed a perfect seven-for-seven, full-duration test series despite running very challenging engine profiles. Also of major note were the completion of the A Test Complex and B Test Complex High Pressure Industrial Water pipe replacement and the continued progress on the B-2 Test Stand modifications for the Space Launch System core-stage testing planned for 2017. We also awarded and are implementing the new joint Stennis/Michoud Assembly Facility contract known as SACOM or Synergy Achieving Consolidated Operations and Maintenance, beginning February 1. We saw the departure of my former deputy, Jerry Cook, and welcomed our own Randy Galloway as the new Stennis deputy director. But enough of 2015 –what lies ahead in 2016?

During a recent senior leadership strategy session, we collectively arrived at our top three goals for 2016:

- 1) **Remain** the nation’s premier rocket test center
- 2) **Expand** our frontiers in known and new areas
- 3) **Develop** our workforce and NASA’s future leaders

Let’s break it down a bit. Goal 1 is staying on top of our game in the area that is right in our historic wheelhouse. That means we deliver on all our NASA, Department of Defense and commercial test requirements. Goal 2 will require us to streamline some of our operations to be more cost effective and efficient,

which is a major outcome expected of the SACOM initiative. Competitive pricing for commercial customers and innovative, non-traditional ideas are being explored to make sure we are postured for success. We also expect our restricted airspace expansion to be approved and operational in the summer time-frame which could open new opportunities for the site. Finally, we need to concentrate and continue to draw talented new workers into our Stennis family and develop our early career workforce. This will be done on many fronts, including in-line hands-on work assignments as well as internal and external detail opportunities. We will also capitalize on the NASA leadership development programs like NASA FIRST (Foundations of Influence, Relationships, Success and Teamwork), the System Engineering Leadership Development Program, the Mid-Level Leadership Program and the Senior Executive Service Candidate Development Program. We need future leaders who will be groomed and gain the experience to take our children to Mars much in the same way our forerunners enabled Americans to land on the moon.

We will celebrate many important anniversaries in 2016, including the 50th anniversary of the first Saturn stage test at Stennis, the 40th anniversary of the Navy’s presence here and the 10th anniversary of the NASA Shared Services Center. As part of the celebration, I have invited an old Stennis family friend to return as the Lagniappe guest columnist. I know you will enjoy hearing from him during this very exciting year. I look forward to being a part of it with you in 2016!

*Rick*



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Access monthly copies at: [www.nasa.gov/centers/stennis/news/publications/index.html](http://www.nasa.gov/centers/stennis/news/publications/index.html)

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# Spinoff 2016 highlights NASA technologies

**N**ASA technology is everywhere, turning trash into oil, saving women from a deadly complication of childbirth and putting the bubbles in beer. These technologies and more are featured in the 2016 edition of NASA's annual *Spinoff* publication, highlighting the many places NASA shows up in daily life and the aeronautics and space programs where the innovations got their start.

"Today, there are many new technologies being developed at NASA, and we are hard at work accelerating the rate at which they end up in the hands of companies and organizations that can put them to use in spinoff applications," NASA Chief Technologist David Miller said.

Among other things, *Spinoff 2016* highlights how NASA scientists helped develop a commercial kiln that turns waste plastic into useful petroleum products; how G-suits used by pilots and astronauts have been adapted to save women suffering from postpartum hemorrhage; and how a system designed to transform the Martian atmosphere into rocket fuel is helping microbreweries recapture carbon dioxide and carbonate beer.

*Spinoff 2016* features three Stennis-related items:

- Software developed by Applied Geosolutions Inc., which uses data from Earth-imaging satellites to provide critical information about worldwide rice production. The system is helping stabilize world rice markets and enable farmers to use more sustainable irrigation practices.
- A StormWinds algorithm program developed by WorldWinds Inc., which uses remote sensing tech-

nologies to model and depict storm surges. The program helps community leaders and residents prepare for storms, such as hurricanes threatening the Gulf Coast, and even help homeowners file insurance claims following a disaster.

- A helium recapture system developed by Sustainable Innovations LLC that uses reverse fuel cell technology to filter, clean and pressurize hydrogen previously lost during production processes. The H2RENEW device will help recapture helium during the rocket engine-testing process and aid such industries as glass, steel and silicon manufacturers as well.

Published annually since 1976, *Spinoff* offers an in-depth look at technologies that improve various areas of life and contribute to the country's economic growth. The book also includes a "Spinoffs of Tomorrow" section that highlights 20 technologies available for licensing and partnership opportunities. Two Stennis products are featured in the section.

*Spinoff* is a part of the agency's Technology Transfer Program, which is charged with finding the widest possible applications of NASA technology through partnerships and licensing agreements with industry, ensuring that NASA's investments in its missions and research find secondary applications that benefit the nation and world.

Print and digital versions of *Spinoff 2016* are available at: <http://spinoff.nasa.gov>. An iPad version of the book, including shortened versions of the stories, multimedia and interactive features, is available for download in Apple iTunes. For more information about NASA's Technology Transfer Program, visit: <http://technology.nasa.gov>.

## NASA officials visit Stennis for All Hands

NASA Associate Administrator Robert Lightfoot (center), Deputy Associate Administrator Lesa Roe and Stennis Director Rick Gilbrech address NASA employees during an onsite All Hands session Jan. 14. The NASA leaders briefed participants on the progress of a new agency operating model to ensure NASA has the right mix of people and assets to carry its mission forward. For additional information on the operating initiative, visit: <http://go.usa.gov/cnHMx>.



# Stennis testing supports Orion spacecraft

It is widely known that rocket engines tested at Stennis Space Center will launch NASA's new Space Launch System (SLS) on its missions. What is not so widely known is that the south Mississippi center also is contributing to the propulsion system that will power the Orion crew vehicle once it leaves Earth's atmosphere and separates from the SLS.

Last fall, Stennis engineers completed a series of tests on a subscale diffuser system, providing valuable data for the final development testing of the engines that will provide the power Orion needs for deep-space missions.

"Full-scale engine testing at Stennis obviously receives a lot of attention," Stennis Director Rick Gilbrech said. "But as this subscale test series shows, the center is at work in a number of ways to support the next great era of space exploration. These are exciting times as we prepare for unprecedented missions to such destinations as an asteroid and Mars."

In late October, Stennis engineers concluded a subscale diffuser test series that recorded 38 hot fires for a total of 172.46 seconds. Data gathered from the testing of the subscale configurations now will be used to build a full-scale diffuser chamber at NASA's White Sands Test Facility near Las Cruces, New Mexico, which will be used to provide a simulated space environment during an actual hot fire test series of the Orion service module propulsion system.

The diffuser system is needed to test the Propulsion Qualification Model (PQM) that will power the Orion spacecraft in space. Orion is being built as the exploration vehicle for NASA's upcoming deep-space missions. Launched atop SLS, the spacecraft will carry mission crew members to space, provide emergency abort capability, sustain crew members during exploration missions



NASA engineers conduct a subscale diffuser test on the E-2 Test Stand at Stennis Space Center during the fall of 2015.

and provide crew members with safe re-entry to Earth.

Orion will need propulsion capabilities during the missions to maneuver and ensure proper trajectory, which is where the PQM comes into play. The test article consists of the heritage Shuttle Orbital Maneuvering System Engine, eight auxiliary engines, and 12 reaction control engines, together which provide the necessary propulsion and control capabilities to successfully operate in space.

The testing activities at Stennis were designed to gather data on how the full-scale diffuser needed to be configured in order to support the testing of the PQM. The test series involved firing a low-power thruster horizontally through a scaled-down nozzle extension and diffuser. Data was gathered on the

performance of several subscale diffuser design configurations so full-scale diffuser design details could be finalized in support of actual fabrication. Tests were conducted on the E-3 Test Stand at Stennis across a number of days in September and October, 2015.

"The data sets have been analyzed, and the results indicate the subscale testing were successful in gathering the necessary information for the full-scale White Sands diffuser design," said Danny Allgood, a NASA test engineer at Stennis who served as the project's analysis engineer for this E-3 Test Stand campaign. "Conducting tests on a smaller scale here at Stennis helps ensure that proper decisions are made in the final design of the full scale assembly. This sub-scale testing approach helps engineers and managers define key parameters, confirm design

operability and efficiency, and eliminate wasted cost as the configuration increases in size and complexity."

NASA is building the SLS rocket to power missions deeper into space than ever before. Stennis Space Center is testing the RS-25 engines that will help power the SLS core stage on launch. Once the engines are tested, Stennis will test the SLS core stage in a four-engine configuration on the B-2 Test Stand. This core stage assembly will then be shipped to Kennedy Space Center to be used on the first uncrewed SLS mission, Exploration Mission-1, in 2018.

For more about the SLS Program, visit: <https://www.nasa.gov/sls>.

For information about the Orion spacecraft, visit: <https://www.nasa.gov/orion>.

## NASA in the News

### NASA research could save airlines billions

The nation's airlines could realize more than \$250 billion dollars in savings in the near future thanks to green-related technologies developed and refined by NASA's aeronautics researchers during the past six years. These new technologies, developed under the purview of NASA's Environmentally Responsible Aviation (ERA) project, could cut airline fuel use in half, pollution by 75 percent and noise to nearly one-eighth of today's levels. "If these technologies start finding their way into the airline fleet, our computer models show the economic impact could amount to \$255 billion in operational savings between 2025 and 2050," said Jaiwon Shin, NASA's associate administrator for aeronautics research. Created in 2009 and completed in 2015, ERA's mission was to explore and document the feasibility, benefits and technical risk of inventive vehicle concepts and enabling technologies that would reduce aviation's impact on the environment. Project researchers focused on eight major integrated technology demonstrations falling into three categories – airframe technology, propulsion technology and vehicle systems integration. For more information about NASA aeronautics research, go to: <http://www.nasa.gov/aeronautics>.

### Space agency reaches new heights in 2015

In 2015, NASA explored the expanse of the solar system and beyond, and the complex processes of Earth, while also advancing the technologies for the journey to Mars and new aviation systems as the agency reached new milestones aboard the International Space Station (ISS). "It was a fantastic year that brought us even closer to Mars," NASA Administrator Charles Bolden said. The year's space highlights included such things as flybys of Pluto, dwarf planet Ceres and Saturn moon Enceladus; identification of the first near-Earth-size planet in the habitable zone around a sun-like star 1,400 light-years away; installation of the first of 18 flight mirrors for NASA's James Webb Space Telescope; celebration of the 25th anniversary of NASA's Hubble Space Telescope; discovery of the strongest evidence yet that liquid water flows intermittently on present-day Mars; development of the core capabilities required to send astronauts to Mars in the 2030s; and celebration of the 15th year of continuous human presence aboard the ISS. For more about NASA's missions, research and discoveries, visit: <http://www.nasa.gov>.

### NASA orders second Boeing crew mission to ISS

NASA took an important step Dec. 18 to establish regular crew missions that will launch from the United States to the International Space Station with the order of its second post-certification mission from Boeing Space Exploration of Houston. "Once certified by NASA, the Boeing CST-100 Starliner and SpaceX Crew Dragon each will be capable of two crew launches to the station per year," said Kathy Lueders, manager of NASA's Commercial Crew Program. "Placing orders for those missions now really sets us up for a sustainable future aboard the International Space Station." This is the third in a series of four guaranteed orders NASA will make under the Commercial Crew Transportation Capability contracts. Boeing and SpaceX received their first orders in May and November, respectively, and have started planning for, building and procuring the necessary hardware and assets to carry out their first missions for the agency. Commercial crew missions to the space station will restore America's human spaceflight capabilities and increase the amount of time dedicated to scientific research. For more information about NASA's Commercial Crew Program, visit: <http://www.nasa.gov/commercialcrew>.

Access all NASA news releases online at: <http://go.usa.gov/3j3KW>.

# Curiosity rover transmits compelling view of Martian dune



NASA's Curiosity rover has returned compelling views of the downwind side of a Martian dune. The view combines multiple telephoto-lens images from the rover's Mast Camera (Mastcam) to reveal fine details of the downwind face of "Namib Dune."

The site is part of the dark-sand "Bagnold Dunes" field along the northwestern flank of Mount Sharp. Images taken from orbit have shown that dunes in the Bagnold field move as much as about three feet per Earth year.

Sand on this face of Namib Dune has cascaded down a slope of about 26 to 28 degrees. The top of the face is about 13 to 17 feet (above the rocky ground at its base).

The downwind side of a sand dune displays textures quite different from those seen on other surfaces of the dune. Compare the left photo, for example, to a windward surface of nearby "High Dune" at right. As on Earth, the downwind side of these Martian dunes has a steep slope called a slip face, where accumulating sand flows in mini-avalanches down the face.

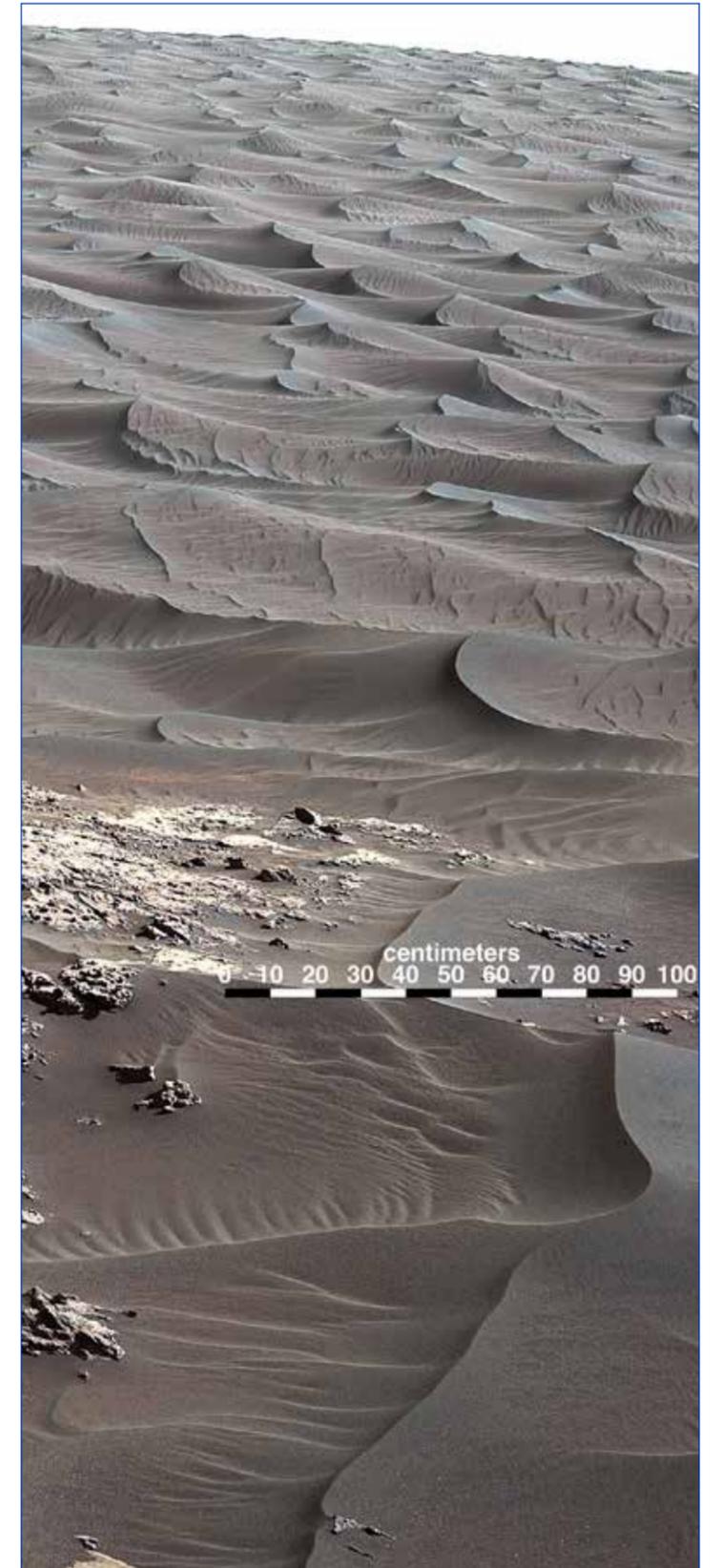
The component images of the mosaic view on the left were taken on Dec. 21, 2015, during the 1,200th Martian day, or sol, of Curiosity's work on Mars. The mission's examination of dunes in the Bagnold field, along the rover's route up the lower slope of Mount Sharp, is the first close look at active sand dunes anywhere other than Earth.

The component images of the mosaic view on the right were taken on Nov. 27, 2015, during the 1,176th Martian day of the Curiosity mission. It features a superimposed scale bar of 100 centimeters (3.3 feet) in the middle distance.

Both images are presented with a color adjustment that approximates white balancing, to resemble how the sand would appear under daytime lighting conditions on Earth.

Malin Space Science Systems, San Diego, built and operates the rover's Mastcam. NASA's Jet Propulsion Laboratory, a division of the California Institute of Technology, Pasadena, manages the Mars Science Laboratory Project for NASA's Science Mission Directorate, Washington. JPL designed and built the project's Curiosity rover.

For more on Curiosity, visit <http://www.nasa.gov/msl> and <http://mars.jpl.nasa.gov/msl>.



# 2016 – Celebrating the ‘Moment of Truth’

*Note: For more than 50 years, NASA’s John C. Stennis Space Center has played a pivotal role in the success of the nation’s space program. This month’s Lagniappe provides a glimpse into the history of the south Mississippi rocket engine test center.*

The 1960s were crucial years during the first decade of the establishment of John C. Stennis Space Center. In 2015, dating back 50 years at NASA’s Mississippi Test Facility (MTF), 1965 was termed “The Year to Get Ready.” Now, year 2016 will reflect on two anniversaries – when 50 years ago, 1966 was deemed the “Moment of Truth” at MTF for the first test of the Saturn V booster, and the upcoming 55th anniversary of NASA’s announcement to establish a national rocket engine test site in Hancock County, Mississippi, in October 1961.

President John F. Kennedy’s May 25, 1961, speech to a special joint session of Congress subsequently set the pace for America’s entry into the space race. He said, “I believe this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the Earth.”

Landing astronauts on the moon required a place to test the large rocket engines that would propel them on that journey. U.S. Sen. John C. Stennis was a strong supporter and advocate of the American space program. He answered President Kennedy’s space exploration challenge by recommending the establishment of a rocket engine test facility in his home state of Mississippi. Just six months after Kennedy’s speech on Oct. 25, 1961, NASA announced the Mississippi Test Operations, a national rocket test site, would be built in Hancock County.

Construction of the \$260 million rocket testing facility hit its peak during 1965. MTF reached operational status Oct. 17, 1965, when the first rocket ever to arrive at MTF completed its 17-day journey from California to Hancock

County, Mississippi. Designated S-II-T, the rocket was an all-systems test version of the S-II second stage of the Saturn V space exploration vehicle. The million-pound-thrust, liquid-hydrogen fueled booster was used in MTF’s first mission of developmental testing.

At the beginning of 1966, major construction projects – the S-II Vertical Checkout and Storage Building, the huge Components Service Facility, a second S-II test stand and the 407-foot-tall S-1C dual test tower – were to be

completed during the year. The highly complex propellant systems and instrumentation, which conducted static firings and gathered valuable data from the boosters, were being readied and checked out for 1966 firings. Developmental testing of the S-II and testing of the first S-II flight stages were major accomplishments as part of the Saturn V space exploration vehicle.



The first static firing of Saturn V’s second stage, S-II-T, on April 23, 1966, at Mississippi Test Facility had a test duration of 18 seconds.

April 23 will mark the 50th anniversary of the historical first static firing of Saturn V’s second stage prototype, S-II-T, in 1966. The S-II-T performed well on its first run; the A-2 Test Stand and supporting facilities demonstrated their readiness; and Mississippi officially entered the Space Age.

During the early 1970s, MTF’s test stands grew quiet. Many believed they never would be used again. The Apollo Program, that carried humans to the moon and back, began to wind down. Less than a decade old, the future of MTF was uncertain. During those brief years, MTF leaders had assembled a tremendous team of engineers and workers. From the ground up, against the toughest of conditions and deadlines, that team built a test site in amazing fashion out of woodland and swamp.

Operating under the guidance of the George C. Marshall Space Flight Center in Huntsville, Alabama, MTF engineers conducted the last Saturn booster test about four years later – Oct. 30, 1970, the 29th S-II stage firing.

## Office of Diversity and Equal Opportunity

# Innovation is a result of diversity and inclusion

*The following article was written by Don Beckmeyer, Stennis Space Center Strategic Business Development Manager*

As I was contemplating my thoughts about diversity and inclusion and what I would cover in this article, I turned to the Internet to do a bit of research. What I discovered and what really caught my attention was the way different age groups think of diversity and inclusion and the manner in which it is being embraced and taken to another level.

According to a study entitled “*The Radical Transformation of Diversity and Inclusion; The Millennial Influence*” by Deloitte University and the Billie Jean King Leadership Initiative, there exists a generation gap that suggests that the Millennial generation (also known as Gen Y, born 1980-95) views inclusion very differently than previous generations. Being the most diverse generation in history, they are much more concerned with cognitive diversity, or diversity of thoughts, ideas and philosophies, and with solving business problems through a culture of collaboration. For Millennials, inclusion is not just about getting a diverse group of people in the room. It is about connecting individuals, forming teams, collaborating and capitalizing on a variety of perspectives in order to solve problems.

In the study, 3,726 respondents of mixed ages, genders, races/ethnicities and orientations provided further information about the viewpoints between age groups. Respondents in the Generation X (born 1964-79) and Baby Boomer (born 1946-63) groups commonly define diversity as representation of, and fairness to, all individuals and their various identifiers of gender, race, religion, ethnicity and sexual orientation. While older generations aim to ensure that the mix of people on a team accounts for all of the above identifiers, Millennials look past these identifiers to focus on the knowledge, experience and

unique insights each individual brings forth.

As we look into the future, Millennials are increasingly rejecting the current diversity and inclusion models that were created over 30 years ago. In the survey, Millennials say that programs aimed at diversity and inclusion should instead focus on improved business opportunities and outcomes as a result of the acceptance of individualism, collaboration, teamwork and innovation.

At NASA/Stennis Space Center Millennials make up less than 20 percent of the workforce today, but according to the study, 10 years from now they could comprise nearly 75 percent of the workforce. Certainly, some adjustments will need to be made as we move forward and transition from the Baby Boomers and Gen Xers to Millennials. A good start to retaining our Millennials is to practice cognitive diversity whenever practical, which fosters innovation.

Innovation is happening today in the commercial space launch industry with vertical takeoff and landing of booster stages that can be re-used and rocket engine development using alternative fuels. NASA’s mission to send humans to Mars in the 2030s is driving innovation in in-space propulsion methodology and many other areas. At Stennis Space Center, we are innovating new high-speed video camera technology, rocket plume deflector technology and more.

Just as the Baby Boomers were innovative in their own way to put humans on the moon and return them safely, we will progressively rely on our Gen Xers and Millennials to put humans on Mars and return them safely, ... unless of course, they would rather stay there.

## Hail & Farewell

### NASA bids farewell to the following:

David Del Santo	Security Officer	Center Operations Directorate
Don Griffith	Supply Manager Specialist	Center Operations Directorate

### And welcomes the following:

Carl Clark	Student Trainee/Public Affairs	Office of Communications
Belfield Collymore	Contract Specialist	Office of Procurement
Jeffrey Renshaw	Attorney-Advisor	Office of the Chief Counsel
Timothy Rustine	Student Trainee/Engineering & Architecture	Safety & Mission Assurance Directorate

# Stennis holds kickoff event for 2016 FIRST Robotics season

Nineteen teams from Florida, Louisiana and Mississippi high schools traveled to Stennis Space Center on Jan. 9 for the kickoff of the 2016 *FIRST*<sup>®</sup> (For Inspiration and Recognition of Science and Technology) Robotics season.

Participants watched a broadcast from *FIRST*<sup>®</sup> headquarters in New Hampshire, featuring *FIRST*<sup>®</sup> founder Dean Kamen, to learn their 2016 competition challenge. Teams also received parts kits they will use to build robots for the challenge.

The competition seeks to inspire students to pursue careers in science, technology, engineering and mathematics (STEM). Teams are given identical parts kits and six weeks to build robots to compete in scheduled tournaments.

This year's "*FIRST*<sup>®</sup> STRONGHOLD<sup>SM</sup>" game will feature a playing field of fortifications and towers. During competitions, Alliances of three robots each will seek to score points by breaching their opponents' fortifications, weakening their tower with boulders and capturing the opposing tower. During the final 20 seconds of the Quest, robots may surround and scale the opposing tower in order to capture it.

Over 180 students, mentors and officials visited Stennis for the kickoff, the 12th year that the rocket engine test facility has hosted the season-opening event. More than 75,000 high-school students on over 3,100 teams at 114 venues around the globe joined the 2016 Kickoff via live broadcast hosted by Comcast NBCUniversal.

"One of the amazing things about *FIRST*<sup>®</sup> is that everyone involved gets more out of it than they put into it," Kamen said during his message to open the 2016 season. "The kids get opportunities they'd never get elsewhere; it might give them career options they'd never thought about. The teachers see kids who become passionate about learning and the relevance of technology and math. The corporations are creating their own futures. Most of what I get out of it is being part of an incredible community. We get to be part of a group that is creating the future of the world."



NASA Deputy Associate Administrator for Education Roosevelt Johnson (above photo) speaks to students during the kickoff event for the 2016 *FIRST*<sup>®</sup> season. The event featured broadcast messages from various leaders, including NASA Administrator Charles Bolden and instructions about this year's "*FIRST*<sup>®</sup> STRONGHOLD<sup>SM</sup>" competition. At the conclusion of the event, team participants picked up kits they will use to build robots during the next six weeks (top right photo). Teams will use those robots to compete in various events during the spring.

The kickoff event at Stennis provides an opportunity to capitalize on the excitement by sharing highlights of the NASA mission, answering technical questions and providing general tips on robotics that may be used for strategy sessions, Stennis Director of Education Katrina Emery said.

During this year's event, NASA Deputy Associate Administrator for Education Roosevelt Johnson shared an inspiring message and a NASA 2016 Look Ahead video that highlights NASA mission and activities for year. He also underscored the need of more students to pursue STEM (science, technology, engineering and mathematics) studies and careers to help NASA realize its long-term goal of reaching Mars. Technical questions were fielded by NASA engineers Bo Clark and Wendy Holladay, along with Chuck Dickerson and Eddie Milton with the U.S. Corps of Engineers. *FIRST*<sup>®</sup> Regional Director for Louisiana and Mississippi Carolyn Arthurs shared news about upcoming changes to the Bayou Regional and BLAST (Building Louisiana Science and Technology Inc.) event for the 10th anniversary year, and special recognition was given to Pearl River County Robotics team for their work with Nicholson Elementary School in winning the Samsung Solve for Tomorrow Challenge.

NASA and Stennis Space Center support *FIRST*<sup>®</sup> Robotics Competition with mentors, volunteers and contributions. The 2016

Bayou Regional *FIRST*<sup>®</sup> Robotics Competition is scheduled at the Pontchartrain Center in Kenner, Louisiana, on March 16-19.

For additional information about *FIRST*<sup>®</sup> Robotics and the upcoming season, visit: <http://www.firstinspires.org/>.

For information about "*FIRST*<sup>®</sup> STRONGHOLD<sup>SM</sup>" game, visit online at: <http://www.firstinspires.org/node/3651>.

For information about the Bayou Regional competition in Louisiana, visit: <http://www.frccbayouregional.com>.

To view the NASA 2016 Look Ahead video presented during the kickoff event, visit: [https://youtu.be/4nC3FeWiH\\_8](https://youtu.be/4nC3FeWiH_8)



## Stennis hosts Energy Council members

Members of the The Energy Council, a non-profit group of legislators and regulators from 12 energy-producing member U.S. states and four Canadian provinces, visited NASA's Stennis Space Center on Dec. 4 to tour facilities and learn about ongoing work at the rocket engine test site. The council has

been in existence for 37 years for the purpose of sharing and learning about challenges and opportunities faced by the oil and gas industry. Council members visited the Mississippi Gulf Coast to attend the 2015 Global Energy and Environmental Issues Conference in Biloxi.