

A-1 Test Stand

These are very busy days for historic Stennis facility





Stennis launches 2016 Combined Federal Campaign See pages 8-9 y dear friend Theopolis Turkey is visiting me for a few weeks. It is an annual trip for him. I think he figures my Mississippi swamp home is a safe haven this time of year. Ark!

Whatever the reason, it is always good to see him. It is the only time each year we get to visit, so there is lot of catching up to do. "Catching up" – that's the word we use for telling tall tales about the good old days and just all-around good-natured lying about our lives. You know, just to make them a little more colorful. Ark!

Inevitably, we get around to the time Theo and yours truly set off in my '63 green Plymouth convertible to share Thanksgiving with the family at the old homestead. It was a grand time. Everyone came – those who never had left the area, cousins who had left and sworn they never would return, uncles and aunts whose jobs had taken them reluctantly away, nieces and nephews off at college. Some, like me, brought friends.

We gathered in one place. No one could sit at the dining room table because it was covered with the food dishes everyone had carried with them. You had to walk around the great big table, loading your plate, then wander through the house or out onto the porch to find an unoccupied chair or a step or even a nearby yard stump where you could sit and eat.

It was quite a sight. There was a lot of laughing, and ever few minutes, you would hear someone goodnaturedly protest, "Now, that's not exactly how it happened." It reminds me of all the times we carve out here at Stennis to gather together, like Family Day each fall, Old Timers' Day each spring or the casual Cypress House gatherings just about every afternoon.

Everyone mingles together – civil servants, contractors, whoever. At times, we reminisce, recall others, laugh at good old days past, just enjoy sharing in each other's story. However, we also understand that we are sharing together in a larger NASA story, one that is being written right now by every one of us, one that builds on those good old days and promises to lead us on the adventure of a lifetime.

When you are giving thanks this year for all the good people and things in your life, take some time to remember that. Happy Thanksgiving to all – and pass the pumpkin pie!



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November 2016

FULFILLING NASA'S EXPLORATION MISSION



NASA completes welding on massive SLS fuel tank

Welding is complete on the largest piece of the core stage that will provide the fuel for the first flight of NASA's new rocket, the Space Launch System (SLS), with the Orion spacecraft in 2018. The core stage liquid hydrogen tank has completed welding on the Vertical Assembly Center at NASA's Michoud Assembly Facility in New Orleans. Standing more than 130 feet tall, the liquid hydrogen tank is the largest cryogenic fuel tank for a rocket in the world. The liquid hydrogen tank and liquid oxygen tanks are part of the core stage – the "backbone" of the SLS rocket that will stand at more than 200 feet tall. The tanks will hold 733,000 gallons of propellant and feed four RS-25 engines to produce a total of 2 million pounds of thrust. This is the second major piece of core stage flight hardware to finish full welding at Michoud. The core stage flight engine section completed welding in April. More than 1.7 miles of welds have been completed for core stage hardware. Traveling to deep space requires a large rocket that can carry huge payloads, and SLS will have the capacity needed to carry crew and cargo for future exploration missions, including NASA's Journey to Mars.

FULFILLING NASA'S EXPLORATION MISSION

No such thing as 'down time' when it comes to A-1 Test Stand work at Stennis

ost people probably think little about what happens on a rocket engine test stand between test firings, such as the current period of time on the A-1 Test Stand at Stennis Space Center. If they do consider the subject, many may suppose not much goes on during those days.

They would be very wrong.

"We are very busy right now," A-1 Test Director Jeff Henderson said. "And we're going to stay very busy for the rest of this year and all of next year. There's a lot always going on here."

The A-1 Test Stand at Stennis has been designated to test the RS-25 engines that will help power NASA's new Space Launch System. The responsibility involves both developmental testing to make sure the former space shuttle main engines will perform at the levels needed for the new vehicle and flight testing to help certify engines for use on actual missions.

The last RS-25 engine test performed on the stand occurred Aug. 18. The next test currently is not scheduled until the middle of January 2017. The scheduling has provided an extended "down time" for the stand team, with Henderson explaining that the term refers to a break in test activity not an absence of all activity at the facility.

It only takes a cursory look at the A-1 Test Stand short- and long-term operations projects list to confirm that fact. The list for just the remainder of this calendar year includes more than two dozen items. Another full page includes longer-term items, monthly needs and topics slated for further consideration. The master schedule for the stands runs to five pages of small type and covers all aspects of stand operation.

That is par for the course at the stand, where activity typically can roughly be divided into four key areas – pre-test preparation, post-test actions, regular maintenance and special projects. A checklist for pre-test activity focuses on a range of areas, including stand systems and facility configuration. Each engine test features its own set of parameters, conditions and sequences that engineers use to collect performance data. That means the test team can spend days and even weeks preparing the stand and engine for those specifics. It also means the pre-test checklist usually is several dozen pages long with 500 or more separate items.

Following a test, there is another multipage checklist for securing the engine and stand, inspecting both and addressing any needs that are identified. Data also is examined for any test anomalies – instances when the engine or stand did not perform as expected – that must be investigated.

In the midst of that work, there is regularly scheduled – and necessary – maintenance of the stand and its systems to perform. This includes inspections, systems tests, repairs, all of the same sort of things one would include in maintenance of a personal vehicle.

In fact, Henderson likes to use that as a comparison. Imagine your spouse or child is heading on a cross-country car trip, and your responsibility is to make sure the vehicle is ready for the journey. You cannot just assume it will perform fine; you will want to do all you can to make sure it will. Likewise, if the vehicle is to be driven in different conditions, perhaps in very hot or very cold weather, there will be special consideration given to certain areas. It is all the same for the stand. As test parameters change, operators must make sure they are anticipating all areas of possible concern.

But wait, as the television hawkers say, that is not all. In addition to pre- and post-test details and regular maintenance of the stand, consider that the facility itself is 50 years old and counting. That



Personnel at the A-1 Test Stand at Stennis perform some of the many maintenance and special project tasks that must be completed during down times between tests. These range from systems checks to upkeep work needed to maintain the 50-year-old stand in the best working condition. In the top right photo, A-1 Test Director Jeff Henderson (right) reviews work under way on the stand's thrust measurement system.

fact alone generates a whole other list of special items and areas to examine and upgrade as needed, just as one would do in preparing an older car for a trip. So, the projects list includes numerous items that begin with words like "upgrade," "replace" or "improve." For instance, one project now under way involves repositioning piping valves to improve an original operating design.

Henderson said he sees no end in sight for the usefulness of the stand. "They built it in a hurry back then, but they built it right," he said of the structure. "Right now, we are already planned out for testing to 2022."

That includes a busy 2017. Three tests are scheduled early in the year to complete the current series, which has largely focused on performance of a new controller that operates as the "brain" of the RS-25 engine. The early firings will each feature a different controller, all being tested for installation on flight engines for actual missions. Following those tests, another RS-25 engine will be installed on the stand for a new test series. Testing of engines will continue through the upcoming year.

"Looking ahead, we just don't have another break like the one we're in right now, so we're working at a fevered pace to get projects completed," Henderson said. With the looming test schedule, plans call for a second shift to be added at the stand next year so maintenance and special projects can be completed at night.

Who would have guessed there was so much to do during "down time?"





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Pegasus barge leaves from Stennis for Michoud

The Pegasus barge that will carry the SLS core stage between NASA centers departed Stennis Space Center on Nov. 1 to return to Michoud Assembly Facility in New Orleans. Sometime next year, the barge is expected to return with the core stage for NASA's new Space Launch System (SLS) vehicle. The stage will be tested on the B-2 Test Stand prior to its

use on the first SLS flight – Exploration Mission-1. Pegasus was specially designed and built in 1999 to transport the large external tanks used by the space shuttle from Michoud to Kennedy Space Center in Florida. It was modifed for the SLS core stage, which The 213-foot-tall, 27.6-foot-diameter core stage will be the longest item ever shipped by a NASA barge.

B-2 work proceeds

A work crew at the B-2 Test Stand at Stennis Space Center pour the first concrete for the reinforced tarmac needed to support the core stage of NASA's new Space Launch System (SLS) vehicle Oct. 27. The tarmac project is one of the final major construction efforts remaining in the renovation of the stand to prepare it for SLS core stage testing. Since the SLS stage is larger and heavier than the Apollo stages originally tested on the stand, a reinforced tarmac was needed. Additional concrete pours are under way to complete the tarmac prior to year's end. All other renovation work also is on a good completion schedule.



Page 7

FULFILLING NASA'S EXPLORATION MISSION



Curiosity finds and examines meteorite on Mars

The dark, smooth-surfaced object at the center of this Oct. 30, 2016, image from the Mast Camera (Mastcam) on NASA's Curiosity Mars rover was examined with laser pulses and confirmed to be an iron-nickel meteorite. The grid of shiny points visible on the object resulted from that laser zapping by Curiosity's Chemistry and Camera (ChemCam) instrument. The meteorite is about the size of a golf ball. It is informally named "Egg Rock,"

for a site in Maine. Locations around Bar Harbor, Maine, are the naming theme for an area on Mars' Mount Sharp that Curiosity reached in October. Iron-nickel meteorites are a common class of space rocks found on Earth, and previous examples have been found on Mars, but Egg Rock is the first on Mars to be examined with a laser-firing spectrometer. For more about Curiosity, visit http://www.nasa.gov/msl and http://mars.jpl.nasa.gov/msl.

NASA in the News

NASA launching small satellites

Beginning this month, NASA is launching a suite of six next-generation, Earth-observing small satellite missions to demonstrate innovative new approaches for studying our changing planet. These small satellites range in size from a loaf of bread to a small washing machine and weigh from a few to 400 pounds. Their small size keeps development and launch costs down as they often hitch a ride to space as a "secondary payload" on another mission's rocket - providing an economical avenue for testing new technologies and conducting science. Smallsatellite technology has led to innovations in how scientists approach Earth observations from space. These new missions, five of which are scheduled to launch during the next several months, will debut new methods to measure hurricanes, Earth's energy budget, aerosols, and weather. "(Small satellites) give us the opportunity to test new technological innovations in space and broaden the involvement of students and researchers to get hands-on experience with space systems," said Thomas Zurbuchen, associate administrator of NASA's Science Mission Directorate. For video and animations of small satellite projects, visit: http://svs.gsfc.nasa.gov/12411. For more information, visit: http://www.nasa.gov/smallsats.

Search for exoplanets widens

Via a NASA-led citizen science project, eight people with no formal training in astrophysics helped discover what could be a fruitful new place to search for planets outside our solar system – a large disk of gas and dust encircling a star known as a circumstellar disk. A paper, published in The Astrophysical Journal Letters and co-authored by eight citizen scientists involved in the discovery, describes a newly identified red dwarf star, AWI0005x3s, and its warm circumstellar disk, the kind associated with young planetary systems. Most of the exoplanets, which are planets outside our solar system, that have been imaged to date dwell in disks similar to the one around AWI0005x3s. The disk and its star are located in what is dubbed the Carina association – a large, loose grouping of similar stars in the Carina Nebula approximately 212 light years from our sun. Its relative proximity to Earth will make it easier to conduct follow-on studies. Since the launch of NASA's Disk Detective website in January 2014, approximately 30,000 citizen scientists have performed roughly two million classifications of stellar objects, including those that led to this discovery. To learn more about how to participate in NASA projects, visit: http://www.nasa.gov/solve. Access all NASA news releases online at: http://go.usa.gov/3f3KW.

Pages 8-9

LAGNIAPPE

Stennis launches 2016 CFC giving campaign – sets \$145,000 goal

Stennis Space Center employees launched their annual **Combined Federal Campaign** (CFC) effort Oct. 25 with a kickoff ceremony that featured remarks from Stennis Deputy **Director Randy Galloway** (page 1 photo) and other leaders of the giving effort. Following the kickoff event, Stennis employees were able to gather information about area service organizations supported by CFC gifts. Exhibitors included such organizations as the Heart 2 Heart Cardiovascular Initiative. the Land Trust for Mississippi Coastal Plains, Hancock County Food Pantry, Hope Haven Children Services, Friends of the Animal Shelter in Hancock County, Habitat for Humanity, the Diabetes Foundation of Mississippi, United Way, Wild at Heart Rescue and the Emergency Shelter for Children. The kickoff event also included refreshments, music and an opportunity for participants to take photos with photos with Schooner the Seagull, the Biloxi Shuckers baseball team mascot. There will be a number of CFCsponsored charities at the event, providing information about their organizations. Stennis announced a goal of \$145,000 for this year's campaign. CFC is the largest annual workplace charity effort in the nation. Leaders of the 2016 Stennis effort include (right photo, I to r): Brian Hartley, Stennis CFC co-chair and an information technology specialist with the Naval Oceanographic Office; Ken Newton, NASA Shared Services Center director of service delivery; U.S. Air Force Col. Jay Fisher, cochair representative, Greater Mississippi CFC; U.S. Navy Capt. Rich Delgado, chief of staff, Commander, Navy Meteorology and Oceanography Command; and Galloway. They are displaying this year's campaign theme, "Show Some Love.'







Goal - \$145,000 To-date - \$36,297 (25% of goal) *as of 11/14/16





November 2016

Page 10-11

LAGNIAPPE

Stennis hosts employee events as part of NASA-wide Agency Innovation Mission Day



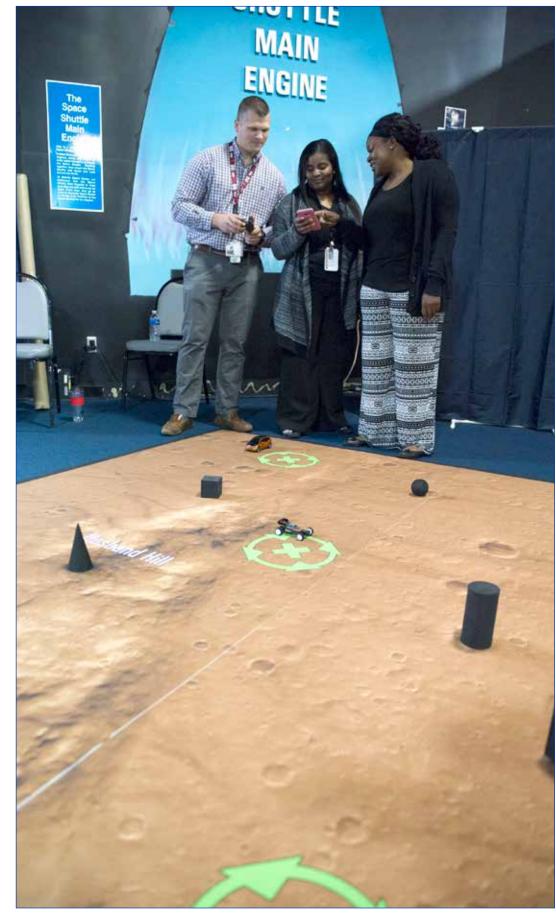
Stennis participated in the NASA-wide Agency Innovation Mission (AIM) Day on Nov. 1 with a variety of exhibits and events. The AIM emphasis was planned to celebrate innovation done by NASA team members and to promote innovation in order to advance NASA's human exploration mission. During the emphasis, the entire agency was connected together in real time, with team members across the country learning and innovating alongside each other. AIM Day was the culmination of a months-long effort by the Foundations of Influence, Relationships, Success and Teamwork (FIRST) leadership class



of 2016 with the support and guidance of NASA's senior management council. Stennis events included a technology showcase, training, networking events, a Chopped Food Innovation Challenge (chili cookoff), a Star Build Innovation game, a Kick Start competition and the NASA 2100 AIM Challenge. In addition to opening remarks from Stennis Director Rick Gilbrech (top left photo), participants viewed a live presentation by NASA Deputy Administrator Dava Newman (top right photo) on the importance and benefits of innovation. They then had the opportunity to tour exhibits and learn about various innovation efforts.







November 2016

2012 – INFINITY Science Center opens its doors

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 NASA and the south Mississippi rocket engine test center.

In January, 2004, then-Stennis Director Thomas Donaldson (Rear Adm., USN, Ret.) announced an overall strategic plan for Stennis Space Center that included developing a national science, technology, and education center on Interstate 10 near the Mississippi Welcome Center. The science center would bring science, technology, engineering, and mathematics to the people of south Mississippi and Louisiana, with primary focus on the school children of the area.

The project soon became known as INFINITY, and was a multimillion dollar effort planned by Mast, Inc., a public-private partnership between NASA and a group of Mississippi business leaders, to develop and build the education center.

On November 20, 2008 the development and planning

of the INFINITY Science Center reached its first milestone, the official groundbreaking for construction. "At a time when our nation faces a critical need for scientists, engineers, and technicians, INFINITY is designed to spark an interest in thousands of students of all ages," Apollo 13 astronaut and Biloxi native Fred Haise explained at the ceremony.

On April 11, 2012, the ribbon was cut and INFINITY Science Center opened its doors to the public. Through exhibits, school field trips, and camps, the 70,000-squarefoot center inspires people of all ages, over 60,000 of them since the center opened.

The latest wonder at INFINITY is the Saturn V first stage rocket booster that was scheduled to launch Apollo 19 before the mission was cancelled. Visitors can now see the massive rocket booster up close and get a better understanding of how the United States put a human on the moon. The Saturn V display tells the story of the Apollo missions and how "if you wanted to get to the moon, you had to go through south Mississippi."



Community leaders from Mississippi and Louisiana break ground for the new INFINITY at NASA Stennis Space Center facility during a Nov. 20, 2008, ceremony. The shovel and hard hat in the foreground were placed in memory of Leo Seal Jr., a Mississippi bank executive who served as chair of INFINITY Science Center Inc. from 2001 until his death shortly before to the groundbreaking ceremony.

Office of Diversity and Equal Opportunity This school shows – climate makes a real difference

This article was adapted from an article by Kat Lonsdorf for Mississippi Public Broadcasting.

Very day at Weiner Elementary School starts with a dance party, usually to *Best Day of My Life* by American Authors, and that is before the 7:50 a.m. bell even rings. Then comes the morning assembly, where all 121 students and the staff gather for 20 minutes in the cafeteria of the school in Weiner, Arkansas. They sing songs and learn about an artist, a musician and an international city of the week, and they celebrate birthdays. A lucky student is crowned Student of the Day.

That assembly and the many other things this school does to create a sense of community and happiness is part of what experts call school climate. A study recently published in the *Review of Educational Research* suggests that school climate is something educators and communities should prioritize, especially as a way to bridge the elusive achievement gap.

And here is the biggest takeaway: There is no link between school climate and socio-economic status. In other words, there are plenty of happy schools in low-income neighborhoods, too.

"Obviously, you need to have a great math teacher that can teach math, but those social and emotional connections really help in the academic area, too," said Ron Avi Astor, a professor at the University of Southern California and a co-author of the study. "That creates a lot of opportunities for the low-income schools," by giving reformers more tools to think about, he said.

When Pam Hogue took over as Weiner Elementary's principal three years ago, tardiness was a problem. Enrollment was down. The community was losing faith in its public schools. Weiner is a rural town with a population of less than 700. A majority of the kids come from farming families, soybeans and rice mostly, and more than 99 percent receive free or reduced-price lunch.

Hogue sat down with a faculty team to envision the school they wanted, a school with the tagline – "A great place to be a kid." Now, students are rarely late (no one wants to miss out on that assembly). Average attendance is 99.93 percent this year. And most importantly, Hogue said, people in the school, the students and the staff, are happy.

The potential payoffs are big, said Joaquin Tamayo, director of strategic initiatives at the U.S. Department of Education. There is still a lot of work to be done in terms of defining, and measuring, a school's climate. A great school culture in the Bronx, for example, might require different resources than a school like the one Pam Hogue runs in northeast Arkansas.

But the new study's co-author, Ron Avi Astor, said the best schools transcend the culture of the community around them. They may differ in design, but they can feel very similar. "They kind of see themselves as vehicles to change society, that these kids are going to go out and not just reflect where they came from and who they are, but change all that," he said. "And those are the most exciting schools."

Pam Hogue said she sees school climate as a launching point, a way to catapult kids toward opportunities outside their immediate environment.

"What we want to do is give our kids not only the skills but also the attitudes, things like confidence to choose where they go in their life," Hogue said. "I want them to have the skills and the confidence to make that change."



Page 14-15

Stennis hosts select community college scholars for 4-day STEM-focused workshop

ntennis Space Center recently hosted the Fall 2016 NASA Community College Aerospace Scholars (NCAS) program.

A NASA STEM-engagement program, NCAS brings together students attending community colleges in areas with large minority and underrepresented populations who are interested in pursuing STEM studies and a possible STEM career "an authentic NASA experience" and to encourage them in their continued studies. The agencywide program started at NASA's Johnson Space Center in Houston and is now hosted at eight NASA centers twice a year, fall and spring. Nationally, there were 754 fall participants in the online course, with 541 invited to complete the site workshop at a NASA center, representing 388 community colleges. 2016 had a record number of women participating in the program.

The Stennis four-day workshop was held at INFINITY Science Center on Oct. 17-20 for 37 select community college students who successfully completed a five-week online course. During the on-site workshop, students were divided into four teams representing fictitious companies competing to earn a Mars exploration contract with NASA. Team members had to assume product development team roles and responsibilities, develop and test a prototype rover, manage a budget, and develop and present a plan for communications and outreach. Students committed long days to work collaboratively to meet their team goals and individual responsibilities.

"We've eaten together, we've worked together, we've cried together," explained Sturgis Baxter from Northeast Mississippi Community College in Booneville. "We've also been angry together. That was one of the many privileges that we had as a team."

The highlight of the week was the team robotic challenges in which students competed using their prototype vehicles to collect rocks and other items on a simulated planetary terrain. Stennis engineers and educators served as mentors for the four student teams.

The Stennis workshop schedule also featured a host of guest speakers providing additional information on Stennis, NASA mission planning, and education and career goal setting and preparation. Freddie Douglas III, director of the Stennis Safety and Mission Assurance Directorate; Howard Convers, a NASA engineer at Stennis; Mark





Moody, lead, Rocket Propulsion Test Program Office at Stennis, and Chris Copelan, education specialist, Office of Education, all provided concrete examples of how success and commitment to their educational paths and the challenges they face in reaching for their goals set them up for success. Students also learned about pursuing additional opportunities for internships, fellowships and scholarships at NASA centers from Joy Smith, the NASA internships, fellowships and scholarships lead in the Office of Education.

One of their favorite parts was touring Stennis facilities, including the Aerojet Rocketdyne engine assembly facility and the A-1 Test Stand.

Student response to the event was overwhelming, said Kelly Martin-Rivers, the STEM engagement activity manager for the NCAS effort at Stennis. "The students particularly were amazed with the tour, especially the scope, meticulous attention, and detail that goes into the work here," she said. "They all wished to have another day to learn and



(Top left) Freddie Douglas speaks to community college students during their four-day NASA Community College Aerospace Scholars Program workshop at INFINITY Science Center.

(Top center) NCAS participants stand at the base of the A-1 Test Stand, one of their stops during a tour of Stennis facilities.

(Top right) Members of an NCAS student team discuss strategy during one of the two days of robotic competition

(Bottom left) NCAS student team members celebrate the performance of their robotic vehicle during the highlight competetion of their workshop. (Bottom right) Mentor Christine Powell (center) talks with NCAS students during a team planning session for the robotic competition.

> absorb even more. Multiple students immediately applied for NASA internships."

Robert Rutherford, a student from Clackamas Community College in Oregon City, Oregon, expressed his gratefulness to the NCAS Program, noting the "ability to communicate the need for community college students at NASA has given me new strength, inspiring myself and many others to take the next steps on the journey to NASA."

November 2016





Not only is the program designed to benefit the participating students and encourage completion of their studies, NASA relies on them to "take back what they've learned and champion it in their schools, so that their classmates and other students may benefit from the experience as well," Martin-Rivers added.

For more on the NCAS Program and NASA education, visit: https://nas.okstate.edu/ncas/ and https://www.nasa.gov/education.



Faces of Stennis

Each month, Lagniappe will feature employees at Stennis Space Center whose work enables the center to fulfill its mission as the nation's largest rocket engine test center. This month's employees are highlighted on the following two pages.



Larry Pigott

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Larry Pigott had been a federal civil servant since 1971 and a NASA employee since 1981 when he was approached in 1992 at Michoud Assembly Facility in New Orleans about becoming a Marshall Space Flight Center technical representative, based at Stennis Space Center, for space shuttle main engines. For someone who cannot remember ever not thinking about trains, airplanes and rockets, the decision was easy. "I thought for about five minutes and asked myself, 'Who in the world would turn down that kind of offer?" Pigott said. He did not even have to relocate, just commute north instead of south. Twentyfour years later, the Bogalusa native remains at Stennis, providing technical support for NASA's Rocket Propulsion Test Program Office, which manages all of the agency's propulsion test facilities. Now a resident of Pearl River, Louisiana, and Tallahassee, Florida, Pigott said he loves the opportunity to do interesting work on a variety of projects and the chance

he has had to become part of an extended Stennis family. In fact, that is the proudest aspect of his work at Stennis and a major difference with his other experiences in the federal sector. "I am convinced the proudest moment or moments were, and continue to be, when managers and peers focus on accepting each other as team players with emphasis on trust," he said. "It is not what I have done in my job that is my proudest regarding my work, but what NASA has taught me by

> providing a safe and non-threatening environment for me to perform my best." It is no surprise that Pigott is excited about the future, by the way NASA – and Stennis – continues to build on the public credibility that has been established over the past 50 years, by the strong leadership of NASA management teams and by the work under way to send astronauts to Mars, including testing the engines that will help make such a trip possible.

John Schreck

John Schreck considers Templeton, Iowa, his hometown because that is where his family moved after his father retired from the U.S. Army in 1982. Several years later, Schreck followed very closely in his father's footsteps, traveling a similar path by enlisting to serve 21 years in the U.S. Air Force. After retiring from the military as an electronics technician in 2008, Schreck spent the next six years working as a defense contractor as a resident of Latimer, Mississippi. His last job before arriving at Stennis three years ago was working at the U.S. Air Force Special Operation Command at Hurlburt Field, an Air Force installation near Pensacola, Florida. At Stennis, Schreck fills multiple roles as a realty specialist, scientific and technical information manager, center export control representative and the ground maintenance monitor for the Synergy-Achieving **Consolidated Operations**

and Maintenance (SACOM) contract. Schreck said working with colleagues onsite is the one of the best things about his Stennis experience. Given his most previous position in Florida, it is no surprise he also welcomes the chance to end his days by returning home to family every night. Schreck is proud of his work and is widely recognized as the Stennis subject matter expert regarding export control. Looking to the future, he

> is excited about NASA's new Space Launch System vehicle, which is being developed to carry humans deeper into space than ever before. The core stage and engines that will enable those missions are being tested at Stennis. Fittingly, Stennis also tested the engines that powered Schreck's most earliest space-related memory – the launch of the very first space shuttle mission with orbiter Columbia in April 1981.