

Spaceport News

John F. Kennedy Space Center - America's gateway to the universe



NASA begins next chapter with Orion arrival

By Steven Siceloff
Spaceport News

The Orion capsule that will make the first flight test into space was celebrated Monday morning as the cornerstone of a new era of exploration for America's space program.

The spacecraft's aluminum-alloy crew pressure module arrived at NASA's Kennedy Space Center in Florida on Friday, June 29, where it will be built up into a fully functioning spacecraft ahead of a test flight slated for 2014.

"This starts a new, exciting chapter in this nation's great space exploration story," said Lori Garver, NASA deputy administrator. "Today we are lifting our spirits to new heights."

Orion will be the most advanced spacecraft ever designed. It will provide emergency abort capability, sustain astronauts during space travel and provide safe re-entry from deep space.

The 2014 uncrewed flight, called Exploration Flight Test-1, or EFT-1, will be loaded with a wide variety



NASA/Kim Shifflett

of instruments to evaluate how the spacecraft behaves during launch, in space and through the searing heat of re-entry. Later Orion spacecraft will take astronauts on missions to destinations far beyond Earth, such as to an asteroid and Mars.

Designed with astronauts in mind, Orion will take crews beyond low Earth orbit for the first time since 1972, when Apollo 17 completed the last moon landing. The Space Launch System, or SLS -- a gigantic rocket akin to the Saturn V that launched the Apollo spacecraft -- is being developed to launch future Orion missions to deep space. The first launch of the SLS, with Orion atop, is targeted for 2017.

Astronaut Rex Walheim, who flew on the final space shuttle mission and has had a leading role in the development of Orion, said the capsule can be the principal spacecraft for 30 years of human exploration of the solar system.

Life support equipment have seen significant improvements in size and capabilities. "The systems on this spacecraft, it's bigger than Apollo and it has to stay in space longer than Apollo, so it has to be better than Apollo," said Bob Cabana, director of Kennedy and a former shuttle commander.

For now, the focus for NASA and Lockheed Martin, the spacecraft's builder, is on preparing this capsule for space in 2014. During the EFT-1 mission, a

"Ladies and gentlemen, we're going to Mars," proclaimed U.S. Sen. Bill Nelson, who joined Garver and other officials to welcome the Orion spacecraft. "We know the Orion capsule is a critical part of the system that's going to take us there."

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Firing Room 3 launch consoles find new homes

By Linda Herridge
Spaceport News

A biomedical console that once was in Launch Control Center (LCC) Firing Room 3 at Kennedy Space Center now is on display at the Coca-Cola Space Science Center at Columbus State University in Georgia.

The science center also will receive artifacts from other NASA centers, including a launch pad escape basket, orbiter window, orbiter wing leading edge, shuttle tire, and a space shuttle main engine nozzle.

"Having artifacts from NASA will improve our ability to enhance educational and visitor experiences by showing technology first hand to those that would not otherwise encounter it," said Lance Tankersley, planetarium director of the science center.

Tankersley said the university was founded in 1958, the same year as NASA, at the insistence of the local community. The Coca-Cola Space Science Center serves as one of the university's outreach centers for the purpose of inspiring



NASA

Lance Tankersley, planetarium director of the Coca-Cola Space Science Center at Columbus State University in Georgia, left, and others assist with the removal of the biomedical console from the Kennedy Space Center's Firing Room 3 in March.

ongoing exploration and discovery.

LCC Transition and Retirement Project Lead Debbie Awtonomow said preparing consoles and other space shuttle artifacts for dissemination to universities and museums is all part of ongoing transition and retirement activities.

To date, United Space Alliance launch processing system workers have packaged and readied all of the firing room's 64 consoles, racks of equipment, the

master console and associated launch processing systems, and furniture.

Awtonomow said that all of the artifacts have been listed in a historical database and that there is a requestor priority list. The internal review is government entities, including other NASA

centers. The external review includes universities and museums.

In May, the Public Affairs console was delivered to the Kennedy Space Center Visitor Complex where it will be readied for permanent display along with space shuttle Atlantis.

The Smithsonian Museum in Washington, D.C., is hoping for three launch consoles and the Launch Director's console. The Space Walk of Fame in Titusville is making room for a set of three main floor consoles and a smaller console from the test conductor's row.

Museum President Charlie Mars said the smaller console will be displayed in the room with the Atlas Centaur consoles from Launch Pad 36.

"From the Kennedy launch perspective, those consoles are the workhorses that controlled the processing, loading and launching of the shuttles," Mars said.

"Any of the thousands of NASA and contractor personnel involved with those consoles will be able to look at them and experience the many memories of their proud accomplishments."

Mars said visitors to the museum will have the opportunity to sit in front of a console and imagine the thrill of controlling a part of the many operations required to launch.

Awtonomow said the center is working hard to find homes for all of the consoles, but any not requested will be excessed and transported to Ransom Road for public auction.

After the firing room is emptied, it will be turned over to the Ground Systems Development and Operations (GSDO) Program. Old Apollo and shuttle era equipment and wiring under the floors will be removed as the room is converted to a spaceport command and control system development laboratory.

"It's very sad to see these items go, but it's good to see them going to good homes where shuttle education will continue," Awtonomow said.

Watch a video

To watch a video of the Coca-Cola Space Science Center staff unloading the BIO/MED console that came from Kennedy Space Center's Firing Room 3, go to www.youtube.com/watch?v=NUVoVPPS9gk&feature=player_detailpage.

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Delta IV Heavy rocket from United Launch Alliance will lift the spacecraft into orbit. Its second stage will remain attached to the capsule and will be fired to raise the Orion's orbit to 3,600 miles, about 15 times higher than the International Space Station. The mission will only last a few hours, long enough to make two orbits before being sent plunging back into the atmosphere to test it at deep-space re-entry speeds.

Assembly at Kennedy will take place in the high bay of the Operations and Checkout Building, or O&C. The O&C was refurbished extensively in 2006 and has been outfitted with large fixtures and

tools to turn the aluminum shell of Orion into a functioning spacecraft complete with avionics, instrumentation and heat shield.

The space-bound Orion was welded at NASA's Michoud Assembly Facility in New Orleans, in the same factory that built the external tanks for space shuttle missions.

NASA's Ground Services Development and Operations Program, or GSDO, oversaw development of the mobile launcher that will provide a launch pad for the SLS and Orion missions. The program also refurbished Launch Pad 39B, designing a new pad structure emphasizing flexibility.

"A vehicle can come in any shape and any size and be able to launch

from this pad," said Pepper Phillips, manager of the GSDO program.

The Orion program, based at Johnson Space Center in Houston, calls on multiple NASA centers to team up for the missions, including EFT-1.

"Ultimately, we're going to fly as one big team," said Dave Beaman, Space Launch System spacecraft and payload integration manager based at Marshall Space Flight Center in Huntsville, Ala. "The fact that we're two separate programs, and having the GSDO program here at Kennedy, it gets some early coordination going and gives a chance to iron out some wrinkles."

Although EFT-1 will be launched aboard a Delta IV Heavy rocket, it

will use a stage adapter design that also will connect the Orion to the SLS.

"You want to make a part that can be designed for the Orion flight, as well as the SLS flights, so you only have to design it once," Beaman said. "We'll get flight data on the performance, which really helps."

The spacecraft arrived at Kennedy nearly 50 years to the day that the center was born. Garver said both occasions give NASA a great chance to set future milestones that will be as celebrated as those already achieved.

Garver said, "It's a great day and great way to celebrate 50 years of success and talk about 50 years in the future,"

Space leaders challenge ISU students for bold ideas

By **Rebecca Regan**
Spaceport News

As NASA continues to foster commercial capabilities to launch astronauts to low Earth orbit, students of the International Space University's 25th annual Space Studies Program are being challenged to come up with new and innovative destinations, experiments and business models to keep the path to space sustainable for future generations.

Kennedy Space Center hosted a Commercial Space Initiatives panel

July 3 for the international graduate students who are in Brevard County, Fla., for two months to sharpen their knowledge of space-related activities.

The first panel session included Lisa Colloredo, associate program manager of NASA's Commercial Crew Program (CCP), along with Commercial Crew Development Round 2 (CCDev2) partners Chuck Hardison of The Boeing Co., Andy Aldrin of United Launch Alliance, Scott Henderson of Space Exploration Technologies Corp., and Kent Rominger

of Alliant Techsystems Inc.

Each of the partner representatives talked about their company's plans to make their systems safe enough to launch NASA astronauts to the International Space Station around the middle of the decade. Once those systems are certified to fly, the companies will be able to market their rockets and spacecraft to other customers to send people or experiments into the weightlessness of space.

"We really believe that once the capabilities to low Earth orbit are there, there will be the stimulation of other markets," said Colloredo.

"It's hard to predict what markets might flourish, but we're relying on people like you, entrepreneurs, for new businesses to materialize once spaceflight is more affordable."

The second panel included Mark Bontrager, vice president of Spaceport Operations at Space Florida, and Tom Engler, NASA's deputy manager of Kennedy's Planning and Development Office. Both talked about how the center and the state are preparing for these emerging markets and encouraged the students to keep expanding their goals for space.

Commercial crew partners taking giant strides

The Boeing Co.



Pratt and Whitney Rocketdyne completed a series of tests on a thruster destined for Boeing's CST-100 spacecraft at NASA's White Sands Test Facility in Las Cruces, N.M., June 18-21. Twenty-four OMAC system thrusters, short for orbital maneuvering and attitude control, would give the CST-100 the ability to maneuver in space and on its trip back through Earth's atmosphere. They also would allow the spacecraft and its crew to separate from its launch vehicle quickly if an emergency were to occur during launch or ascent.

Blue Origin



Blue Origin conducted a system requirements review (SRR) of its Space Vehicle on May 15 and 16 in Kent, Wash., to assess the spacecraft's ability to meet safety and mission requirements, and evaluate the technical readiness of the design, the concept of operations, the feasibility of project development plans, and planned verification activities. The review also included results from recently completed wind tunnel tests of the biconic shape, validating the vehicle's aerodynamic design, stability and cross-range.

Sierra Nevada Corp.



SNC completed a test of the nose landing gear for its full-scale Dream Chaser engineering flight test vehicle June 25. The evaluation is an important milestone to prepare for an upcoming free flight of the Dream Chaser Space System later this year. The test evaluated the impact the nose landing gear will experience to ensure a safe runway landing of the Dream Chaser during the approach and landing tests and future test flights. Dream Chaser's main landing gear was tested earlier in the year.

SpaceX



SpaceX conducted a Concept Baseline Review (CBR) of its Dragon capsule June 14, at its headquarters in Hawthorne, Calif. During the review, the company provided details about each phase of a potential NASA mission, including plans to modify its launch pad to support crewed missions, how Dragon would dock with the station, how much weight Dragon could handle and power it would consume, and prospective ground landing sites and techniques. The company also outlined crew living arrangements aboard the spacecraft.

Alliant Techsystems Inc.



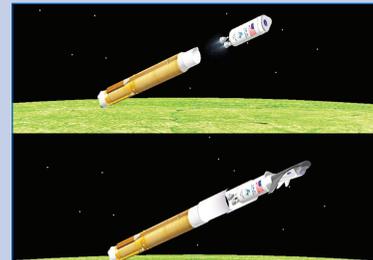
ATK's Liberty launch vehicle passed a Program Status Review (PSR) to complete the final milestone under Commercial Crew Development Round 2 (CCDev2) on July 11. The Liberty team presented NASA with a design analysis cycle status, system requirements, software status, flight test plan, system safety review, ground processing certification plan and schedule for initial operation capability.

Excalibur Almaz Inc.



EAI completed its Commercial Crew Development Round 2 (CCDev2) partnership with NASA's Commercial Crew Program on June 19. Since October 2011, NASA has reviewed the design of the company's human spacecraft concept, its systems requirements and compatibility with launch vehicle alternatives, as well as plans to test and integrate the spacecraft in advance of a crewed launch.

United Launch Alliance



ULA held two reviews in July as part of the milestones to be met under its Commercial Crew Development Round 2 (CCDev2) partnership with NASA. Agency technical experts and ULA design and development engineers looked at how to define and test the Atlas V rocket for human spaceflight needs, as well as cost, schedule, risk, technology readiness, operational concept and other system constraints.

Groundbreaking ushers in new liquid hydrogen test site

By Linda Herridge
Spaceport News

Kennedy Space Center's Engineering Directorate recently broke ground on a new test site that could help reduce the cost of ground hydrogen processing operations for a variety of commercial launch vehicles and NASA's next exploration vehicles.

Located northeast of the Hypergolic Maintenance Facility, the Ground Operations Demonstration Unit Liquid Hydrogen (GODU LH2) test site will be used to test advanced liquid hydrogen systems. The main component of the site, the storage tank, is targeted to be ready by August. A cryogenic refrigerator will be delivered in April 2013.

"The groundbreaking is the start of a transition of a facility once used to support NASA's Space Shuttle Program that will now help support advanced development concepts in hydrogen and



NASA/Dimitri Gerondidakis

Cryogenics and systems engineers break ground June 25 on the Ground Operations Demonstration Unit Liquid Hydrogen (GODU LH2) test site near the Hypergolic Maintenance Facility at Kennedy Space Center in Florida. From left are Johnny Nguyen, Fluids Test and Technology Development branch chief; Emily Watkins, engineering intern; Jeff Walls, ESC Cryogenics Test Lab engineer; Kelly Currin, systems engineer; Stephen Huff and Rudy Werlink, cryogenics engineers; Angela Krenn, systems engineer; Doug Hammond, command and control engineer in the electrical division; William Notardonato, GODU LH2 project manager; and Kevin Jumper, ESC Cryogenics Test Lab manager.

energy," said GODU LH2 Manager Bill Notardonato.

Funded by NASA's Advanced Exploration Systems Program, the GODU LH2 test site has the potential to provide support to the Launch Services Program, the Space Launch System, Ground Systems Development and Operations and human exploration beyond low Earth orbit.

Wesley Johnson is a cryo-

genics engineer in the center's Cryogenic Test Laboratory. He said a goal of the GODU test site is to become more energy efficient, and in the long run, more cost efficient, in how cryogenic propellants are handled.

"If Kennedy is to become a multiuser spaceport that serves government and commercial launches, then we will have to become cost and efficiency conscience,"

Johnson said. "This project has the potential to help any launch program to lower the costs and improve the servicing of propellants to the launch vehicle."

Johnson said the hope is that the facility will allow for the demonstration of cost and energy efficient storage and transfer of liquid hydrogen during processing, loading, launch and spaceflight.

According to Notardonato,

the original 33,000-gallon tank was acquired from the old Titan Launch Complex 41 at Cape Canaveral Air Force Station in Florida. The directorate is negotiating with United Launch Alliance to acquire a flight-weight Centaur tank for a more accurate representation of the loading demonstration. A refrigeration unit will be integrated into the storage tank.

The pneumatic system is from Launch Complex 20, with the hydrogen transfer and vent lines coming from Edwards Air Force Base in California.

After construction is complete, the tank will be used to demonstrate liquid nitrogen processing for about a year, followed by demonstration testing of liquid hydrogen.

Notardonato said the goal is to process liquid hydrogen with as little waste as possible, thereby proving economical ground cryogenics operations.

Center's waste reduction efforts earn recycle award

By Cheryl Mansfield
Spaceport News

As government, business and industry look for ways to advance their sustainability programs, those efforts at Kennedy Space Center recently received recognition at a statewide conference in Florida.

At the Recycle Florida Today's annual conference and exhibition in June, the space center received the "Waste Reduction" award from the group's board.

What made the center's efforts outstanding was that the sustainability team members not only recycled materials that would have otherwise ended up in the landfill, but also garnered excess supplies through a donation project that benefited six surrounding Brevard County public schools, helping the teachers meet the students' needs.



NASA/Gianni Woods

Kennedy Space Center was recognized at the Recycle Florida Today's annual conference and exhibition in June for offering free school supplies to public and charter school teachers from the surrounding counties on Oct. 31, 2011.

"There were 293 teachers who eagerly snapped up the surplus supplies from our excess offices supplies donation project," said Alice Smith, KSC recycling and sustainable acquisition program manager. "The supplies' estimated value was \$115,000. It was a win-win situation."

But the center's four-member delegation to the conference did more than just collect the award. "We came back with ideas on developing a material recycling facility and organic recycling," said Smith. "We brought back ideas and contacts from the exhibitors on balers, containers, plastic recy-

cling, electronic recycling and more."

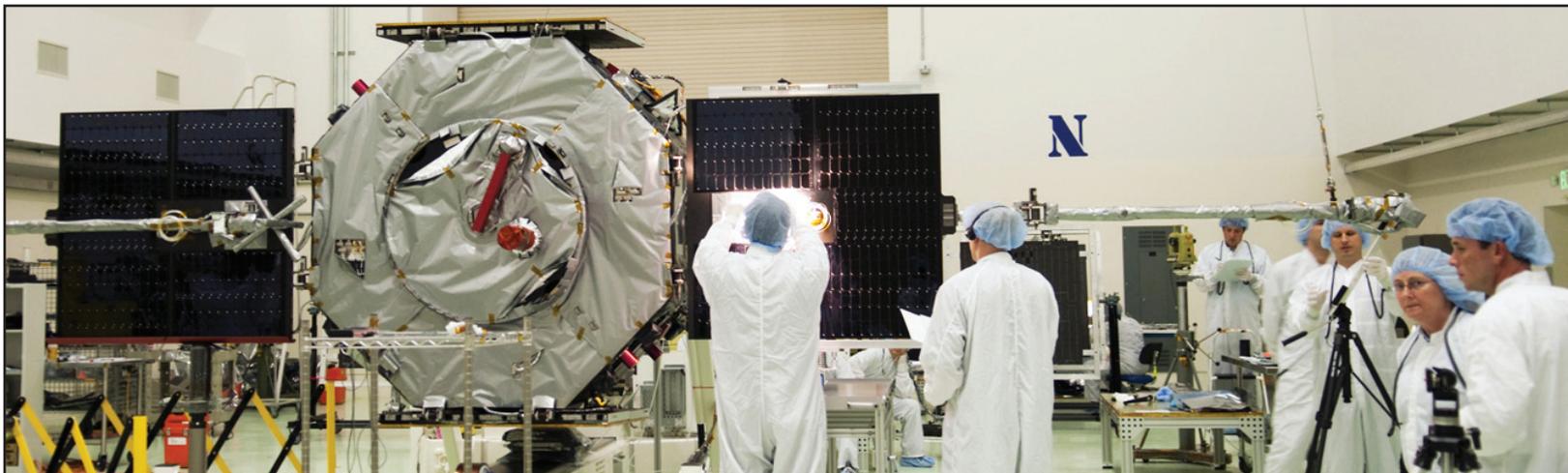
The three-day program featured workshops on recycling, material recycling facilities, organics, trends and legislation.

"Colleges gave case studies on recycling efforts, there was a workshop showcasing reuse efforts through rehabilitative programs and community art projects, and another focusing on construction and demolition," explained Smith. "We looked at recycling progress, where we stand now, and what the future holds."

The space center has been a member of the Recycle Florida Today organization since 2006.

The group serves as a professional association that helps its members improve their recycling techniques through education, research and exchange of ideas.

Scenes Around Kennedy Space Center



CLICK ON PHOTO

NASA/Charisse Nahser

Technicians perform a solar array illumination test after the Radiation Belt Storm Probes, or RBSP, spacecraft A solar arrays and magnetometer boom were deployed July 6 inside the Astrotech payload processing facility near Kennedy Space Center. Deploying these components is a standard procedure to ensure they work properly on Earth before they head into space. NASA's RBSP mission will help us understand the sun's influence on Earth and near-Earth space by studying the Earth's radiation belts

on various scales of space and time. The boom will provide data of the electric fields that energize radiation particles and modify the structure of the inner magnetosphere. RBSP will begin its mission of exploration of Earth's Van Allen radiation belts and the extremes of space weather after its launch aboard a United Launch Alliance Atlas V rocket. Launch is targeted for Aug. 23. For more information on the mission, click on the photo.



CLICK ON PHOTO

NASA/Kim Shiflett

Steady progress is made on the construction of the hazard field for the Project Morpheus lander near the Shuttle Landing Facility, or SLF, at Kennedy Space Center on July 5. Testing of the prototype lander has been ongoing at NASA's Johnson Space Center in Houston in preparation for its first free flight. For more information on Project Morpheus, click on the photo.



CLICK ON PHOTO

NASA/Frankie Martin

United Space Alliance technicians completed spray-painting simulated orbital maneuvering system, or OMS, pods onto space shuttle Endeavour on July 3 inside Orbiter Processing Facility-2 at Kennedy Space Center. The work is part of the transition and retirement of the remaining space shuttles, Endeavour and Atlantis. Endeavour is being prepared for public display at the California Science Center in Los Angeles. Its ferry flight to California is targeted for mid-September. Endeavour was the last space shuttle added to NASA's orbiter fleet. Over the course of its 19-year career, Endeavour spent 299 days in space, traveled more than 122 million miles and carried 173 astronauts into space during 25 missions. For more information on the shuttles' transition, click on the photo.



CLICK ON PHOTO

NASA/Kim Shiflett

Kennedy Space Center Director Bob Cabana accepts a resolution in honor of Kennedy's 50th anniversary from the Brevard County Commission on July 10 in the Brevard County Board Room in Viera, Fla. For more on Kennedy's 50th anniversary, click on the photo.

Engineer's past triumphs pave way to future

By Bob Granath
Spaceport News

Herb Rice joined NASA the year astronauts first left Earth for the moon. As one of the longest tenured employees at the Kennedy Space Center, he is now part of the team that is preparing to send humans even farther into space.

Starting work with NASA in 1968, Rice contributed to the Apollo, space shuttle and International Space Station (ISS) programs. Today, he is helping prepare for future programs such as the Ground Systems Development and Operations, Space Launch System, and Orion.

The past 44 years has seen many changes in America's space agency, but Rice believes the biggest difference is the advances in computers.

"Apollo had amazingly few computer systems and no micro-processors," he said. "The Saturn V avionics were huge. We didn't even think about the weight of avionics when planning for the shuttle."

Rice believes NASA is headed in the right direction for the future.

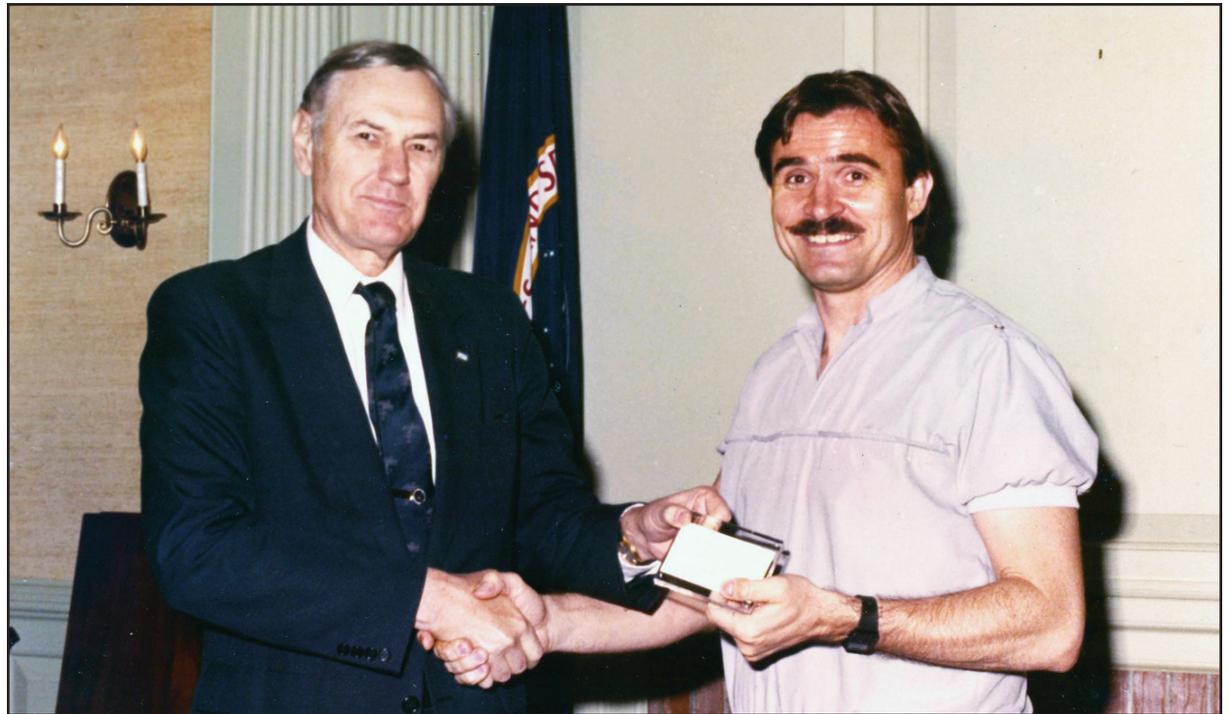
"Transitioning to commercial companies the job of getting crews to the space station and low Earth orbit is a good idea," he said. "NASA's job has always been exploration – going beyond. I believe that's what we should be doing."

Growing up in Louisa, Ky., a small town on the state line with West Virginia, Rice was one of many young Americans who were inspired by the fledgling space race that began in 1957 with the launch of Sputnik.

"I was fascinated with rockets and wanted to build and launch my own," said Rice. "Some of my models launched successfully, but I also had a few blow up."

Rice's story is reminiscent of Homer Hickam's in his book, "Rocket Boys." The narrative relates growing up in a West Virginia coal mining town, and Hickam's pursuit of amateur rocketry while dreaming of working in America's space program.

After Hickam's memoir was made into the movie "October Sky," some of Rice's friends and relatives



NASA file

NASA Administrator James Beggs, left, presents an award to Herb Rice for his work in support of the Spacelab program during the 1980s.

told him both the book and motion picture mirrored his own experience. Like Hickam, Rice would end up with a career with NASA.

At Kentucky's Morehead State University, Rice earned degrees in math and physics and went on to earn a master's in nuclear physics at the University of Kentucky. Shortly afterward he heard NASA was looking for engineers and quickly applied.

"I was offered a job at Kennedy during the summer of 1967," he said. "I started the next year."

Rice began at a pivotal period for the then 10-year-old space agency. NASA was still recovering from the loss of three astronauts in the Apollo 1 fire while preparing for the first flights to the moon.

"I started in the Design Engineering Directorate," he said. "We were restructuring the environmental

control system to use nitrogen along with oxygen in the crew cabin of the Apollo spacecraft."

By the end of 1968, Apollo 7 and Apollo 8 had both flown successfully.

During Rice's second year with the space agency, President John F. Kennedy's goal to land on the moon was achieved July 20, 1969.

"It was like one non-stop party all up and down Brevard County after Apollo 11 landed," Rice said. "That whole period was fun. We all knew we were a part of something historic."

As Apollo neared completion and with the space shuttle on the horizon, Rice began work as a section chief on an automated, computer-controlled system for the firing rooms.

During 1983, Rice transferred to the NASA shuttle payload organization at Kennedy. He explained that

one aspect of the work was integrating payloads from various countries.

"We had payloads and experiments from France, Italy and Japan, as well as other countries," he said. "We had to ensure all of the equipment was compatible. That was interesting, working with representatives of agencies from different nations."

That international collaboration served Rice well. In the early 1990s, his career focus moved to the space station.

"I spent the next seven to eight years as the Information Technology consultant for the ISS Payload Directorate."

Rice is now working in the Ground Systems Development and Operations program helping develop the Space Launch System, an advanced heavy-lift launch vehicle that will provide a new capability for human exploration beyond low Earth orbit.

"I'm coordinating radio frequency agreements between Kennedy, Johnson Space Center and Marshall Space Flight Center," he said. "This is to ensure the flight vehicles can communicate with ground control rooms while at the pad and during flight."



"I was fascinated with rockets and wanted to build and launch my own. Some of my models launched successfully, but I also had a few blow up."

**Herb Rice,
NASA engineer**

Telstar opened era of global satellite television

By **Bob Granath**
Spaceport News

For out of this world TV coverage you need out of this world technology. Since the 1960s, NASA partnerships with commercial companies has enabled world-wide coverage of international events such as Queen Elizabeth II's Diamond Jubilee and the Olympics. While global TV coverage is common today, it is a technology born the day Telstar was launched 50 years ago this summer.

Telstar 1 was the first satellite capable of relaying television signals from Europe to North America. The 171-pound, 34.5-inch sphere loaded with transistors and covered with solar panels was placed in orbit by a Delta rocket launched from Cape Canaveral on July 10, 1962.

"Liftoff came at 2:35 a.m.," said John Neilon, NASA's deputy launch director for the Telstar mission. "It was also the first launch attempt," he noted since it frequently took several tries in those days.

Once in a 3,503-mile by 593-mile elliptical orbit, the first tests confirmed the spacecraft was functioning properly.

History was made just hours after Telstar's launch when it relayed the first live television pictures to France – a U.S. flag waving outside the Andover, Maine, receiving station. Telstar later broadcast the first live transatlantic television seen by American TV viewers. In addition to television broadcasts, Telstar also relayed telephone calls, data transmissions and picture facsimiles.

"We were pretty excited when it worked," Neilon said. "Today, you expect things to work. Back then, we 'hoped' it would work. I was really proud to be a part of it."

Neilon was Bob Gray's deputy director of Unmanned Launch Operations for over ten years and succeeded Gray as director in 1970. Neilon later served as Kennedy Space Center's director of Shuttle Payload Operations, retiring in 1986 after 28 years with NASA.

President John F. Kennedy had high praise for "our American communications satellite" launched during the "heat" of the Cold War.



NASA file/1964

Shown is a Telstar 1 satellite used at the Parade of Progress show at the public hall in Cleveland, Ohio, in 1964.

"This (is an) outstanding symbol of America's space achievements," the president said.

The international impact of technical success was immediate. A U.S.

Information Agency poll showed that Telstar was better known in Great Britain than Sputnik had been in 1957.

While commercially sponsored spacecraft are now widely accepted, Telstar was the first privately financed satellite. Bell Laboratories designed and built the spacecraft which was paid for by the American Telephone and Telegraph Corp., under a NASA-AT&T agreement.

The Goddard Space Flight Center had oversight for the project for NASA.

While watching live broadcasts now seems commonplace, that convenience was not the case when Queen Elizabeth's coronation took place in London's Westminster Abby on June 2, 1953. American TV crews recorded the event, then developed and edited film while

on an aircraft headed to New York from London. The film was aired on American television later that same day.

By contrast, Telstar led to television broadcasts as events happened on other continents.

"Telstar is the best known of all (communications satellites) and is probably considered by most observers to have ushered in the era of satellite communications," wrote Leonard Jaffe, director of the NASA's Satellite Communications Program in 1966.

The era of "live via satellite" TV opened opportunities for news coverage regularly from almost any place on the globe thanks to Telstar's communications satellite successors. Elections, wars, sporting events -- on any continent -- are now viewed instantly around the world.

Telstar's limitation was that it was available for broadcasts for only about 18 minutes at a time as its orbit passed over the Atlantic Ocean.

The much larger communications satellites of today are placed in a geosynchronous orbit 22,300 miles above the Earth. This results in the spacecraft staying over the same point on the Earth's surface, allowing for constant television communications between continents.

Telstar was just slightly larger than a beach ball. On the other hand, the satellite receiving stations in Andover, Maine; Pleumeur-Bodou, France; and Goonhilly Downs, Great Britain, were enormous.

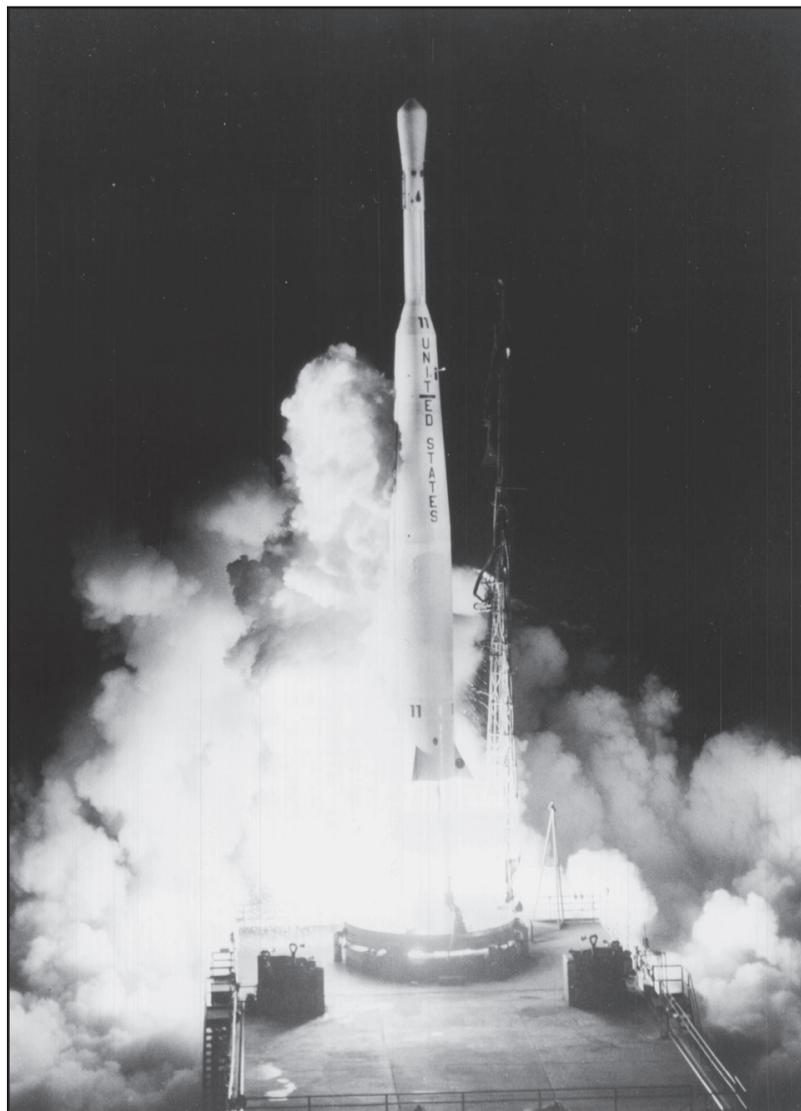
"I had a chance to go up to Andover and see that antenna," Neilon said. "The size of that thing was really something to see."

The Andover horn antenna was seven stories high and weighed 340 tons.

Compare that to satellite antennas the size of an umbrella atop many homes bringing in signals from today's commercial TV satellites.

When the Summer Olympics begin July 27, millions will be watching around the world "live via satellite."

That technology began a half-century ago with a beach ball-size spacecraft named Telstar.



NASA file/1962

A Thor/Delta 316 launches with the Telstar 1 satellite from Cape Canaveral Air Force Station's Space Launch Complex 17B on July 10, 1962.



Photos by NASA/Jim Grossmann

Barbecue spotlights 'Diversity at its Best'

By *Stephanie Covey*
Spaceport News

The sounds of smooth jazz filled the air as 220 Kennedy employees and Air Force personnel enjoyed barbecue ribs and chicken at the 12th annual KSC BEST BBQ at KARS Park I on June 22. The event was sponsored by Kennedy's Black Employee Strategy Team (BEST).

"The 2012 BEST barbecue welcomed all incoming interns to Kennedy with fun and family



flair," said Sonya Plummer, the event's Master of Ceremonies. This year's theme, "Diversity at its Best," celebrated the accomplishments of the shuttle workforce, highlighted the history of the Kennedy BEST barbecue, and welcomed summer students and faculty.

Jazz saxophonist Tony Wynn provided the music.

Several games and activities were played during the barbecue including cornhole, a multi-player chess showcase, an intern scavenger hunt, a cake walk, spades and Wii tournaments.



In celebration of Kennedy Space Center's 50th anniversary, enjoy this vintage photo . . . FROM THE VAULT



NASA file/1962

President John F. Kennedy visits Cape Canaveral on Sept. 11, 1962. Among the VIPs accompanying him are Launch Operations Center Director Kurt Debus (in front of the president) and Vice President Lyndon B. Johnson (behind the president).

Looking up and ahead . . .

* All times are Eastern

Aug. 2	USAF Launch/Vandenberg Air Force Base (SLC-3E): Atlas V (AV-033), NROL-36 Launch window: TBD
Aug. 23	NASA Launch/Cape Canaveral Air Force Station (SLC-41): Atlas V-401, Radiation Belt Storm Probes (RBSP) Launch window: 4:08 to 4:28 a.m.
Oct. 4	USAF Launch/Cape Canaveral Air Force Station (SLC-37B): Delta 4, GPS 2F-3 Launch window: TBD
Oct. 25	USAF Launch/Cape Canaveral Air Force Station (SLC-41): Atlas V, OTV 3 Launch window: TBD



John F. Kennedy Space Center

Spaceport News

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