

Spaceport News

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



'We are designing, defining our future'

By *Steven Siceloff*
Spaceport News

Kennedy Space Center continues to transform into a world-class, multiuser spaceport but has plenty of steps to finish before the evolution is complete, the center's director told Kennedy employees Feb. 20.

"We are defining our future and there are not many chances in history when you get to do that," said Bob Cabana, Kennedy director. "We are going to make ourselves what we want to be."

During the center-televised all-hands meeting, Kennedy officials noted numerous changes in areas and organizations across the center as the future unfolds. From major contracts just starting to the removal of structures and facilities that are no longer needed, the Florida launch site is taking a number of steps to set itself up for emerging roles.

Kennedy's three resident programs have important parts to play in NASA's priority fields, Cabana said during the presentation. The Ground Systems Development and Operations Program is designing and building infrastructure for NASA's Space Launch System and Orion, while the Commercial

Crew Program continues to aid the development of commercial transportation to carry astronauts to the International Space Station. The ISS Ground Processing and Research Project Office also is based at Kennedy.

NASA's Launch Services Program was praised for its continuing role assuring the safe launch of the agency's scientific spacecraft, including the two missions launched this year.

Cabana also noted the priority role of the James Webb Space Telescope in the agency's planning.

The transition from an exclusively NASA launch site to a spaceport amenable to different spacecraft and rockets from commercial companies still offers plenty of challenges, the center director said. Specifically, the federal budget to NASA and Kennedy is not expected to increase in the near future and could be reduced in some areas. Also, the center is placing a premium on reducing bureaucracy and increasing efficiency.

"Regardless of what budget comes in the future, those are NASA's priorities and we play a key role in them," Cabana said.

To **ALL-HANDS**, Page 3



NASA/Dimitri Gerondidakis

Speaking at the annual Community Leaders Briefing on Feb. 21 at the Kennedy Space Center Visitor Complex, Center Director Bob Cabana explained that NASA has a great deal of work going on in support of current and future space program projects.

Cabana briefs leaders on latest endeavors

By *Bob Granath*
Spaceport News

On Feb. 21, Kennedy Space Center Director Bob Cabana and several members of his leadership team provided an update on current and future activities at the Florida spaceport. Their reports were part of the annual Community Leaders Briefing at the Kurt H. Debus Conference Center at the Kennedy Space Center Visitor Complex attended by local, state and U.S. government representa-

tives, along with individuals from business and industry.

Cabana explained that the space center has a great deal of work going on in support of current and future space program projects.

"NASA has three top priorities, SLS (Space Launch System), the International Space Station (ISS) -- and supporting it we need to have a commercial crew capability -- and the James Webb Space

To **LEADERS**, Page 2

Inside this issue...

Employee spotlight



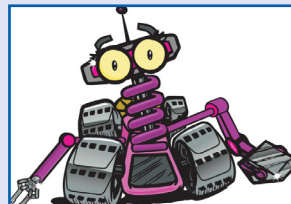
Page 2

ISS resupply mission



Page 3

Luna*Bot mascot



Page 5

Honor awards



Page 11

Habenicht helps build center's future team

By **Bob Granath**
Spaceport News

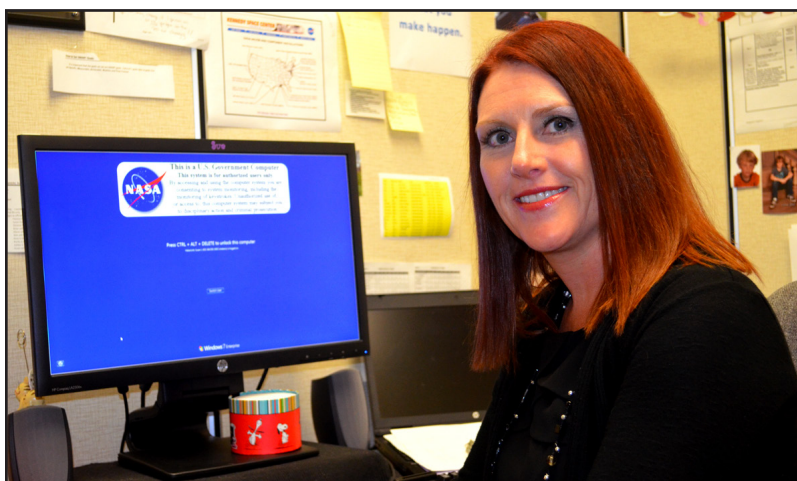
NASA Human Resources specialist Susan Habenicht has a daunting task. Each day she assists members of the Kennedy Space Center management team find the right people with the best skills to fill the needs of a spaceport transitioning from a historically government-only launch facility to a multiuser spaceport for both government and commercial customers.

Habenicht grew up on Long Island, N.Y., where she earned a bachelor's degree in business management at Molloy College in January, 1990.

"After graduation, I didn't put my education to use right away," Habenicht said. "I married and was a stay-at-home mom for about 11 years."

During 2001, she and her family moved to Florida's Space Coast.

"Four years after moving to Florida, I went to work for a contractor that supported the NASA Human Resources staffing office



NASA/Bob Granath

Shown here Feb. 14, NASA Human Resources specialist Susan Habenicht focuses primarily on supporting Kennedy Space Center's Engineering and Technology Directorate as its management is putting together a team to prepare the spaceport for future programs such as Orion and the Space Launch System.

here at Kennedy," Habenicht said. "I supported the intern program known as Pathways."

Two years after starting work at Kennedy, Habenicht accepted an offer to work for the space agency.

"It was an honor to be selected," she said. "I started as a Human Resources assistant and then became an HR specialist in 2009. The variety in our tasks keeps the job interesting, and NASA makes this

an exciting place to work."

Habenicht now focuses primarily on supporting Kennedy's Engineering and Technology Directorate as its management is putting together a team to prepare the spaceport for future programs such as Orion and the Space Launch System.

"We are spending time helping management in the various Engineering divisions optimize their staffing," she said.

Because of the nature of the work at Kennedy, the needs are often very specific.

"We have to make sure we help managers find people with the right skill set to fill their job openings," Habenicht said. "We often help job applicants with suggestions on how to prepare a resume. My most frequent suggestion is to be sure anyone reading it will understand their training, skills and experience."

Engineering and other disciplines in the space business tend to be technical. Habenicht said these unique skills must be explained so others understand what an applicant is capable of doing.

"We try to help people do the best job explaining their experience," Habenicht said.

Habenicht said that although her job is tough, it is also very satisfying.

"While some outside the space program seem surprised we are still in business, we do have a bright future," she said. "It is gratifying to know you are a part of the process to build the team that will take Kennedy well into the future."

From **LEADERS**, Page 1

Telescope," he said.

"At the Kennedy Space Center, our Ground Systems Development, Commercial Crew, ISS and Launch Services programs are an integral part of every one of those three top priorities," Cabana said.

Overviews with a theme of "Pushing the Boundaries" focusing on center operations were presented by leaders of four key organizations.

Josie Burnett, director of the International Space Station Ground Processing and Research Project Office, spoke of how Kennedy is supporting the orbiting laboratory.

"The space station is an extraordinary accomplishment and engineering achievement," she said. "We

are doing research today and every day making some incredible scientific discoveries."

Space station support currently managed by Burnett's team at Kennedy includes a group of engineers that is developing a plant habitat with a large growth chamber to learn the effects of long-duration microgravity exposure to plants in space.

As manager of the Commercial Crew Program's Partner Integration Office, Scott Thurston's organization is working to provide transportation to the space station and low-Earth orbit.

"Our ultimate goal is to purchase the ability to fly our astronauts to the International Space Station," he said.

The current Commercial Crew Integrated Capability agreements are designed to

encourage the development of transportation subsystems and represent the next phase in which industry partners develop crew transportation capabilities as fully integrated systems.

Cabana noted that Kennedy is making great strides in transitioning from a historically government-only launch facility to an affordable, sustainable, multiuser spaceport for both government and commercial customers. Much of that work is being supported by the Ground Systems Development and Operations, or GSDO, Program.

Ruth Gardner, Exploration Systems manager in GSDO, explained how Kennedy facilities are being updated to accommodate a wide variety of spacecraft.

GSDO has two main goals at Kennedy.

The objectives include establishing a multiuser spaceport for launching the next generation of rockets and spacecraft.

GSDO's efforts also are preparing infrastructure to support NASA's heavy-lift Space Launch System (SLS) rocket. SLS will launch cargo and the Orion capsule designed to take crews of up to four astronauts on missions to deep space.

Darren Bedell, System Integration manager in Kennedy's Launch Services Program (LSP), reported the program successfully launched two missions within the past three weeks.

An Atlas V rocket lifted off from Cape Canaveral Air Force Station on Jan. 30 with NASA's Tracking and Data Relay Satellite-K.

On Feb. 11, the Landsat Data Continuity Mission

was launched from Vandenberg Air Force Base in California. Bedell described the role of LSP as an agent matching spacecraft in need of transportation to space with the appropriate rocket.

"We are a broker buying launch services to ensure success for our customers," he said.

In summing up the reports, Cabana said that in a period of budget uncertainty he has challenged the Kennedy workforce to become more efficient and cost effective.

"To become the spaceport of the future, we've got to integrate commercial operations," he said. "We have to figure out how to be more efficient, we have to be more commercial-friendly, and we have to deliver in a timely manner."

SpaceX targets March 1 for next resupply launch

By Cheryl Mansfield
Spaceport News

The second International Space Station Commercial Resupply Services (CRS) flight by Space Exploration Technologies (SpaceX) is set for liftoff at 10:10 a.m. EST on March 1 from Space Launch Complex 40 at Cape Canaveral Air Force Station.

Carried by a Falcon 9 rocket, the Dragon spacecraft will ferry 1,268 pounds of supplies for the space station crew and for experiments being conducted aboard the orbiting laboratory.

The Falcon 9 and Dragon were manufactured at SpaceX headquarters in Hawthorne, Calif., and arrived at the Florida launch site by truck. The rocket, topped with the spacecraft, stands 157-feet tall.

The two-stage rocket uses nine engines to power the first stage, generating



NASA/Kim Shiflett

Solar array fairings are installed on the Space Exploration Technologies (SpaceX) Dragon spacecraft inside a processing hangar on Cape Canaveral Air Force Station in Florida on Jan. 15.

855,000 pounds of thrust at sea level, rising to nearly 1,000,000 pounds of thrust as Falcon 9 climbs out of Earth's atmosphere. One

engine powers the second stage to complete the climb to space. The 14.4-foot-tall Dragon spacecraft is capable of carrying more

than 7,000 pounds of cargo split between pressurized and unpressurized sections.

On March 2, Expedition 34 Commander Kevin Ford

and Flight Engineer Tom Marshburn of NASA are scheduled to use the station's robot arm to grapple Dragon following its rendezvous with the orbiting outpost. Ground commands will be sent to attach the spacecraft to the Earth-facing port of the station's Harmony module where it will remain for a few weeks while astronauts unload cargo. The crew then will load more than 2,600 pounds of experiment samples and equipment for return to Earth.

Dragon is scheduled for a parachute-assisted splash-down in the Pacific Ocean off the coast of Baja California on March 25.

This SpaceX flight is the second of at least 12 missions to the space station that the company will fly for NASA under the Commercial Resupply Services contract.

From **ALL-HANDS**, Page 1

"We still have a mission that we have to execute."

Some of the changes will shine a brighter light on projects at Kennedy that haven't always received a great deal of attention.

For example, research and technology programmatic roles and responsibilities at Kennedy are now managed by the Center Planning and Development Office, or CPDO, which recently became an independent organization.

"This demonstrates our commitment to research and technology by putting it all in one place, making it visible and allowing people to have a single front door for all of those kinds of activities," said Mario Busacca, chief of the Spaceport Planning Office.

One of the biggest changes of the past year could take place in about a week when the Test and Operations Support Contract begins. The contract, which will be managed by

former shuttle astronaut Andy Allen for Jacobs Technology, will provide Kennedy with spaceflight hardware processing and operations for NASA programs. Other government agencies and commercial entities also can call on the contract for work.

Nancy Bray, who serves as Kennedy's director of Center Operations and is the center's sustainability officer, said the center has seen

numerous cost savings from recent development. For example, the 1-megawatt solar electricity station in the Industrial Area is saving an average \$160,000 a year in power costs. Recent work on the NASA causeway also saved \$3 million by using concrete recycled from earlier demolition.

"Keep the ideas coming and we will do our best to implement them,"

Bray said.

Even with all the changes taking place, morale at Kennedy is quite high according to an Office of Personnel Management survey of federal workers. NASA as a whole was rated the top place to work in the federal government.

Kennedy scored 73.2 percent, up three points compared to 2011. Kennedy also scored in the third slot on diversity among 292 subagency components in the government, and No. 6 on fairness. The center's supervisors ranked seventh on the survey, and Kennedy came in at 13 for teamwork.

Tracy Anania Wetrich of the Human Resources Office said the center will focus on leadership at all levels during 2013 to improve the scores.

Noting that the changes at the center are not going to slow for some time as NASA aligns itself for ambitious exploration, Cabana said the center's workforce can make the transition effective with careful attention to detail and innovation.



NASA/Kim Shiflett

Kennedy Space Center Director Bob Cabana shares insight with workers at an all-hands meeting Feb. 20.

Scenes Around Kennedy Space Center



NASA/Frankie Martin

Sonny's Real Pit Bar-B-Q hosts its grand opening Feb. 19 in the Operations and Checkout Building (O&C) in the former O&C cafeteria. Sonny's serves breakfast and lunch during its hours of operation from 6:30 a.m. to 2:30 p.m. Breakfast is served until 10:30 a.m.



NASA/Jim Grossmann

CLICK ON PHOTO

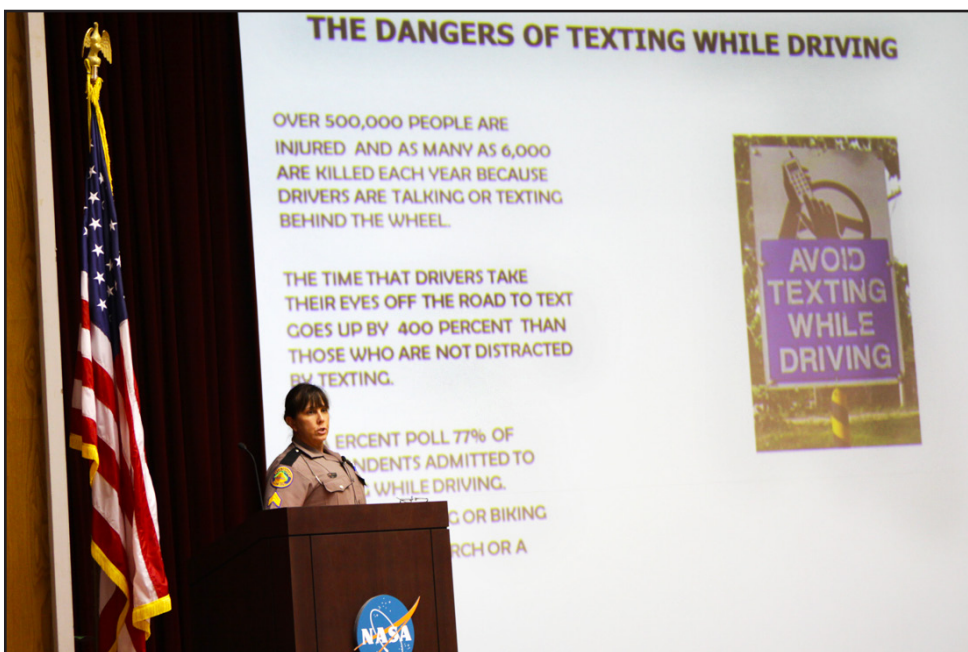
From left former astronaut Jon McBride, Delaware North President Rick Abramson (slightly hidden), and Kennedy Space Center Visitor Complex chief operating officer Bill Moore unveil the new logo of the Space Shuttle Atlantis exhibit Feb. 21 at the visitor complex. The exhibit opens June 29. To watch the exhibit take shape, click on the photo.



NASA/Frankie Martin

CLICK ON PHOTO

Various fluid interface connections are installed at Launch Pad 39B at Kennedy Space Center in February. New system connections include chilled water supply-and-return and conditioned air that will be used to provide the mobile launcher with the necessary commodities during launch operations. The Ground Systems Development and Operations Program office at Kennedy is overseeing upgrades and modifications to pad B to support the launch of NASA's Space Launch System heavy-lift rocket, and new Orion spacecraft, under development.



NASA/Jim Grossmann

CLICK ON PHOTO

Sgt. Kim Montes of the Florida Highway Patrol speaks to employees Feb. 19 during the KSC Safety and Health Days campaign, which runs through Feb. 28. The theme for the 2013 campaign is "Safety and Health in Your Organization," in which KSC departments developed customized programs and activities tailored toward the day-to-day hazards employees are likely to encounter on the job or at home.



Reader-submitted photo

Otto Fischer celebrated his retirement from the Bionetics Corp. on Feb. 8 with co-workers and friends at the Central Instrumentation Facility (CIF) at Kennedy Space Center. Fischer started working at Kennedy in 1981 as a calibration technician in the Standards and Calibration laboratories and devoted his entire 32-year career to metrology and these labs. During the latter half of his career, Fischer was a metrologist in the standards lab designing and performing complex measurements on pressure, vacuum and flow instruments. From left are Perry King, Bionetics S&C branch manager; Fischer; Bob McKay, Bionetics S&C metrology manager; and Ken Walla, ISC Laboratories Division manager.

Pink, purple Luna*Bot aims to inspire

By Frank Ochoa-Gonzales
Spaceport News

Students around the world are gearing up for NASA's fourth annual Lunabotics Mining Competition coming up May 20-24 at the Kennedy Space Center Visitor Complex.

Last year, 55 teams representing 28 states and eight countries competed in the event.

This year, the Education and External Relations Directorate hopes for even greater numbers as it reaches out to students, with an emphasis on elementary school-age girls.

And the group is going to try and do that with its newest member and mascot . . . Luna*Bot.

This robotic mascot will be used as an ambassador to promote the annual competition that takes place in a supersized sandbox filled with crushed basalt that has similar characteristics to lunar soil, called BP-1.

Luna*Bot was designed with most little girls' favorite colors in mind -- pink and purple.

"Luna has been invaluable in helping us to engage students in STEM-related (science, technology, engineering and mathematics) activities and create interest in the Lunabotics Mining Competition," said Bethanne Hull, Lunabotics Mining Competition supporting coordinator. "Our artist, Matthew Young, did an amazing job working the initial design concept into a mascot that has been well received."

Since her debut in December 2012, Luna*Bot has been seen in places as far away as Sydney, Australia, and the Arena of Nimes in France.

"Luna has been spotted in five countries and in some pretty unique places," Hull said. "It has been exciting for us

to see how our teams have taken the challenge and

really made it something remarkable."

Along with Luna*Bot, the 2013 Lunabotics team has issued a challenge . . . the Luna Worldwide Challenge. Entrants were asked to print out Luna and take pictures of her adventures. The instructions were to bring Luna and her activity sheets

to outreach events, upload photos to Facebook and Twitter for everyone to see (when uploading to Twitter use the hashtag #LunaWW), and share Luna with their friends and families to add to her adventures.

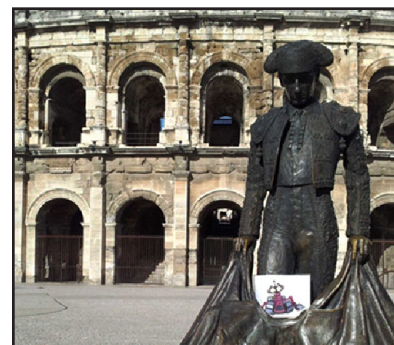
The mining competition is a university-level competition designed to engage and retain students in STEM.

NASA directly will benefit from the competition by encouraging the development of innovative lunar excavation concepts from universities, which may result in clever ideas and solutions that could be applied to an actual lunar excavation device or payload.

The challenge is for students to design and build a robotic excavator, called a Lunabot, that can mine and deposit a minimum of 10 kilograms of lunar simulant within 10 minutes. The complexities of the challenge include the abrasive characteristics of the BP-1, the weight and size limitations of the Lunabot, and the ability to telerobotically or autonomously control the Lunabot from a remote mission control center.

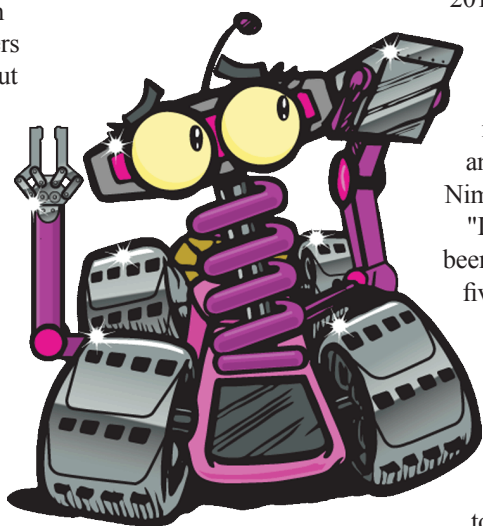
This year, the scoring for the mining category will not be based primarily on the amount of material excavated in the allowed time but instead will require teams to consider a number of design and operational factors such as dust tolerance and projection, communications, vehicle mass, energy/power use, and full autonomy.

Some 50 teams from across the world have registered to compete



NASA

Romain Charles, a flight engineer of the European Space Agency's MARS500 study, joined in the fun taking Luna*Bot to the Arena at Nimes, a beautiful Roman amphitheater built around 70 A.D.



Volunteers needed

NASA's fourth annual Lunabotics Mining Competition is in need of volunteers. This university-level competition will be held May 20-24 at the Kennedy Space Center Visitor Complex. Volunteers may register at

<http://www.nasa.gov/lunabotics>.

POC: Bethanne Hull,

bethanne.hull@nasa.gov

Video link

http://www.youtube.com/watch?v=QAVJtlav_6c&feature=youtu.be&a

Facebook

<http://www.facebook.com/Lunabotics>

for this year's grand prize, the Joe Kosmo Award for Excellence.

"I am always amazed at the camaraderie you see develop among the teams," Hull said. "It's really amazing to see such international cooperation at the university level."



NASA photos

Left: The Sydney Lunabotics Team shows off Luna*Bot on the skywalk of Sydney Tower Eye, the tallest building in Sydney. Right: Students from Instituto de Astrobiologia in Bogota, Colombia, took Luna*Bot with them on their Moon Night outreach event. Luna Worldwide Challenge entrants are asked to print out Luna and take pictures of her on their adventures.

Facelift prepares crawlerway for future

By Linda Herridge
Spaceport News

Several sections of the crawlerway that lead from the Vehicle Assembly Building (VAB) to Launch Complex 39 at Kennedy Space Center are getting a facelift to prepare to transport the agency's Space Launch System (SLS) rocket and future commercial spacecraft to the launch pads.

Led by the Ground Systems Development and Operations (GSDO) Program office at Kennedy, work is under way to refurbish the two 40-foot-wide pathways the crawler-transporter will travel as it carries the SLS from the VAB to the rocket's launch site at Launch Complex 39 Pad B. Portions of the pathway that lead from the turnoff from Pad B to Pad A also will be updated.

According to Sam Talluto, a GSDO senior project manager, it is the first time that the crawlerway's foundation will be repaired since



CLICK ON PHOTO

NASA/Jim Grossmann

A worker from Canaveral Construction in Mims, Fla., regrades a section of the crawlerway at Kennedy Space Center on Jan. 31. The crawlerway is being refurbished to improve the foundation and prepare it to support the weight of NASA's Space Launch System rocket and future commercial spacecraft to the launch pads. Workers are removing the original Alabama river rock and restoring the layer of lime rock below to its original depth. Then, new river rock will be added on top. The Ground Systems Development and Operations (GSDO) Program office at Kennedy is leading the center's transformation to safely handle a variety of rockets and spacecraft. For more information about GSDO, click on the photo.

it was constructed in the early 1960s. The top layer of river rock was removed and replaced as it wore down, but the lime rock foundations below it saw very little, if any, rework since the original installation.

The crawlerway can handle weights of up to 26 million pounds, but has become compacted from the weight of crawler-transporters carrying the Apollo/Saturn V rockets and space shuttles to the pads for launch.

Water drain-off issues developed from time to time during heavy rainstorms, including just before the rollout of the shuttle stack for the STS-130 mission in 2010 when heavy rains saturated areas of the crawlerway and

the crawler-transporter's tracks became coated in mud as it traveled to the pad.

"It's important to get the work completed now, while the center is upgrading its infrastructure," Talluto said.

Work is targeted for completion by June 2014.

Canaveral Construction of Mims, Fla., is handling the project. Beginning near Pad B, crews are removing all of the existing Alabama river rock and the top layer of the lime rock foundation.

Lime rock will be added to return the foundation to its original elevation and about 30,000 tons of new river rock will be added to return the top layer to its original eight to 12 inches in depth.

When the work is complete, the crawlerway, which has supported NASA's space program for 50 years, will be ready to handle the weight of a new breed of space vehicles, including commercial spacecraft and the towering SLS atop the crawler-transporter beside its mobile tower.

HTV-4 elements en route to Japan, space station

By Cheryl Mansfield
Spaceport News

Even though the structural elements of the International Space Station prepared in the processing facility at Kennedy Space Center are now in space, the team at Kennedy continues to support the orbiting laboratory in a number of ways.

As evidence of that support coupled with international cooperation, hardware destined for the space station just left Kennedy, headed for the Tanegashima Space Center in Japan. There it will be turned over to the Japan Aerospace Exploration Agency (JAXA) in preparation for launch on the H-II Transfer Vehicle 4 (HTV-4) mission this summer.

"We provide an on-site coordina-

tor at the JAXA launch site in order to help ensure the three elements arrived safely and to provide coordination between JAXA and NASA during installation into the JAXA launch vehicle," said Steve Bigos, Space Station Orbital Replacement Unit project manager at Kennedy.

The Kennedy team also completed the planning, processing and integration of unpressurized Orbital Replacement Units (ORU) for the Main Bus Switching Unit (MBSU) and Utility Transfer Assembly (UTA) -- both important elements for keeping the space station running.

"The Utility Transfer Assembly is a critical component of the S3 and P3 truss segments' Solar Alpha Rotary Joints. Its function is to pass electrical power generated by the solar arrays to the other ISS

elements and payloads," said Bigos.

"At Kennedy, we performed periodic maintenance tasks and installation of the MBSU and UTA ORUs onto their respective flight releasable adapter mechanism hardware and flight support equipment," Bigos said.

Also included in the shipment was the Space Test Program-Houston 4 (STP H-4) payload whose team performed development testing of their

payload using Kennedy's payload rack checkout unit and EXPRESS logistics carrier simulator. The STP H-4 contains seven experiments for investigating space communications, Earth monitoring and materials science.

The shipment to Japan for the HTV-4 launch continues the international cooperation that began during construction of the station, as the partner nations work together.



CLICK ON PHOTO

NASA/Jim Grossmann

The Japan-bound H-II Transfer Vehicle 4 elements depart from Kennedy Space Center on Feb. 20.

Israeli students visit, honor hometown hero

By **Bob Granath**
Spaceport News

As NASA paused on Feb. 1 to remember the astronauts who were lost on the space shuttle Columbia's STS-107 mission, students from the hometown of one of its crew members joined in the Day of Remembrance ceremonies at Kennedy Space Center.

Israeli Space Agency astronaut Ilan Ramon served as a payload specialist aboard Columbia with fellow crew members Rick Husband, William McCool, Michael Anderson, Kalpana Chawla, David Brown and Laurel Clark who perished when the shuttle broke apart during re-entry on Feb. 1, 2003.

Each year, junior and senior high school students from Be'er Sheva, Israel, make a trip to Kennedy to honor Ramon and draw inspiration from his efforts to explore.

"The students are very interested in Ramon's participation in the shuttle program," said Laura Colville, program manager for NASA's Educator Resource Center. "We also try to encourage them to stay in school and pursue higher educational opportunities. Educators in Israel, like America, encourage interest in STEM -- science, technology, engineering and mathematics."

Colville noted that the annual pilgrimage began a year after the Columbia accident.

"Since 2004, the scholars from



Ilan Ramon

Be'er Sheva have come to Kennedy so they can be here for the Columbia anniversary," she said.

This year there was a total of 44 students and three teachers

from Makif Gimel High School, Ramon's alma mater, and Makif Aleph High School that made the trip.

During their visit, the students participated in several educational programs and heard from speakers such as State Sen. Thad Altman, president and chief executive officer of the Astronauts Memorial Foundation (AMF) and former NASA astronaut Jon McBride, chairman of the AMF board of directors.

McBride told of his experiences as a U.S. Navy aviator, which included spending almost two years in Israel. He also spoke about his mission as a pilot on the STS-41G shuttle mission in October 1984.

"As a result of his time in Israel, Jon learned to speak Hebrew and was able to talk with many of the students in their language," Colville said.

At the Day of Remembrance ceremony, the young people heard Evelyn Husband-Thompson, widow of STS-107 commander Rick Husband, honor Ramon.

"Ilan was a tremendously gifted pilot and a colonel in the Israeli Air

Force," she said. "He humbly understood his unique place in history as Israel's first astronaut. He and his family blessed all of us (Columbia crew and families) by teaching us Jewish traditions."

Those traditions were not only rooted in the Bible, but also in the history of the modern state of Israel.

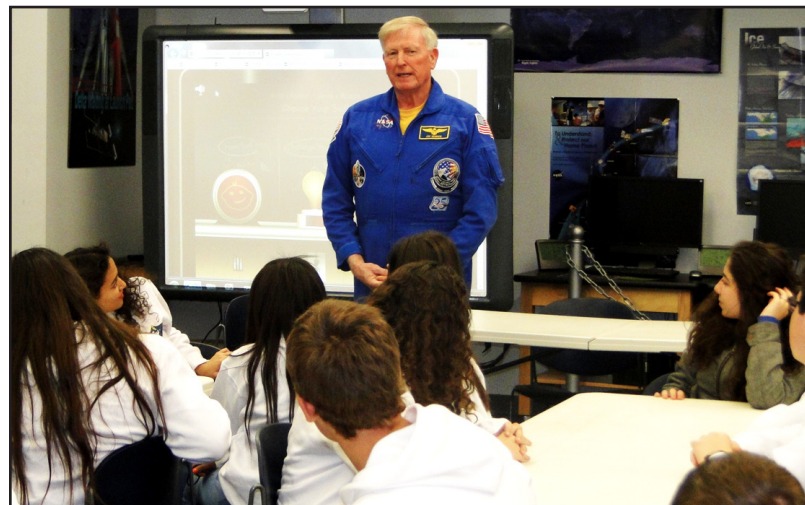
Ramon grew up in Be'er Sheva, a city of 185,000, with parents who were both victims of Nazi persecution. His father, Eliezer Wolferman, fled from Germany in 1935. Wolferman went on to fight in Israel's War of Independence between 1947 and 1949. Ramon's mother and grandmother were Holocaust survivors from Poland, having been in the

Auschwitz concentration camp. They immigrated to Israel in 1949.

In addition to attending the Day of Remembrance ceremony and learning about Ramon, the students toured the Florida spaceport, seeing the Apollo-Saturn V facility, the Vehicle Assembly Building, Launch Pad 39A and the Shuttle Landing Facility.

Colville noted that out of the 24 names on the Space Mirror Memorial at Kennedy's visitor complex, Ramon's is the only astronaut from another country.

"It's appropriate that the students could participate in this observance," Colville said. "They exhibited a great deal of national pride. We were glad to share in it."



NASA

Israeli high school students listen to former NASA astronaut Jon McBride, chairman of the Astronauts Memorial Foundation board of directors, during a visit Feb. 1. McBride shared his experiences as a pilot on the STS-41G shuttle mission. Having spent almost two years in Israel, McBride was able to talk with many of the students in Hebrew.

Delaware North shares visitor complex plan with space club

By **Linda Herridge**
Spaceport News

Space shuttle Atlantis displayed inside its new home and the Angry Birds Space Encounter will soon greet visitors to the Kennedy Space Center Visitor Complex.

Bill Moore, chief operating officer with Delaware North Companies Parks & Resorts, gave an update on the progress of new attractions and improvements at the visitor complex during

a presentation to National Space Club members and guests on Feb. 12.

Moore said construction continues on the Atlantis facility, with plans to remove about 16,000 feet of protective plastic wrap and open the shuttle's payload bay doors in May. The grand opening will be June 29.

"We're putting Atlantis in a new home so we can tell the story to others," Moore said.

"It's very fitting that the last shuttle to fly would end

up here at Kennedy Space Center."

Atlantis will be displayed in the largest building that Delaware North has ever built -- about 90,000 square feet -- according to Moore. Visitors will see Atlantis tilted at a 43.21 degree angle and about 67 feet off the ground for optimum viewing with its payload bay doors open. One of the shuttle's wings will be only about seven feet off the ground.

The attraction also will include an International Space

Station gallery, Hubble Space Telescope display, Atlantis cockpit simulator, children's play area, retail shop and more than 60 interactive exhibits.

Visitors will pass under actual-size replicas of two solid rocket boosters and an external tank to enter the building.

"We're not only celebrating the shuttle, but we're also telling the story of spaceflight here on the East Coast," Moore said.

Many construction jobs

were created, and Moore said about \$15.5 million could be generated annually in food, hotel stays and retail sales from the thousands of visitors to the complex.

The new visitor complex entryway near the Rocket Garden recently was completed and a new restaurant, the Rocket Garden Café, was added.

"We're not at the end of the program, we're at the beginning," Moore said. "America will not stop exploring."

New Doppler wind profiler to replace system near SLF

By Linda Herridge
Spaceport News

As NASA moves forward next year to place instruments on the International Space Station to take ocean-surface wind speed and direction measurements, the Ground Systems Development and Operations Program office at Kennedy Space Center has plans of its own to upgrade decades-old wind measurement equipment near the Shuttle Landing Facility (SLF).

The 50 megahertz Doppler Radar Wind Profiler (DRWP) Project team successfully completed a preliminary design review on Jan. 18. The team, working under Kennedy's Engineering Support Contract, has members from NASA, QuinetiQ North America and its subcontractor, DeTect Inc. of Panama City, Fla.

The DRWP currently is used to warn launch operators of potentially hazardous upper-air wind conditions not detected by weather balloons that are used as the primary day-of-launch wind system.

According to Dr. Frank Merceret, the director of research for Kennedy's Weather Office, the DRWP accurately measures wind speed



NASA/Jim Grossmann

The current radar wind profiler system was built in the 1980s and is located at the north end of the Shuttle Landing Facility on the east side of the runway. Its antenna comprises more than 100 wire dipoles and occupies about 3.7 acres of ground surrounded by an eight-sided fence.

and direction at 500-foot intervals from 6,000 to 60,000 feet in altitude every five minutes.

"The profiler has the advantage that it measures the winds 12 times faster than the balloons, and the measurements also are closer to the flight path of the vehicle," Merceret said.

The current system, built in the 1980s near the north end of the SLF on the east side of the runway, supports all launches on the Eastern Range. Its antenna comprises more than 100 wire dipoles and occupies about 3.7 acres of ground surrounded by an eight-sided fence.

The system's electronic components include the radar transmitter, receiver and computers which are housed in a trailer adjacent to the antenna. Merceret said that hardware in the system has become difficult to maintain because spare parts are no longer manufactured or available.

The existing profiler cannot be used as the primary upper-air wind instrument, Merceret explained, because it is not certified for that application. Because of its age, it cannot meet the stringent reliability and maintainability requirements for certification. Installation of the new instrument will permit launch

service providers who want to use the wind profiler, rather than balloons, as their primary wind source to certify it for that purpose.

The new system's antenna will replace the large array of wire dipoles with 640 three-element Yagi sensors in a staggered antenna array. Each Yagi will be mounted on a 10-foot-high pole and consist of three 10-foot-long aluminum tubes at right angles to the mounting pole.

The hardware and associated software systems will be designed, constructed and installed by DeTect Inc., which is building the National Wind Profiler Network for the National Oceanic and Atmospheric Administration (NOAA). Kennedy's system will largely be based on the NOAA design.

Merceret said this is to ensure off-the-shelf components will be available to support its maintenance for many years. The new system will replace the obsolete

electronics with state-of-the-art equipment.

The software will be replaced with modern, wind-finding algorithms, including an upgrade to the NASA-designed Median Filter First Guess wind-finding algorithm used on the existing DRWP.

"This is a major project," Merceret said. "The purpose is to provide the same or better, reliable and accurate wind profile data to Range Weather Operations and launch customers."

A critical design review will be completed by mid-April. The new system will

take seven months to install, with work to remove the old system starting in March 2014. Installation of the DRWP will be completed by October 2014.

Much of the old system hardware and spares will be shipped to Vandenberg Air Force Base in California, where an identical system is in use.

"This is a major project. The purpose is to provide the same or better, reliable and accurate wind profile data to Range Weather Operations and launch customers."

**Dr. Frank Merceret,
director of research for
Kennedy Space Center's
Weather Office**



NASA file/2006

A rawinsonde weather balloon sails into the sky after release from the Cape Canaveral forecast facility in Florida in 2006. The balloons are GPS-tracked and can collect data on atmospheric pressure, temperature, humidity, and wind speed and direction up to 100,000 feet.

Restoration to protect shoreline infrastructure

By **Bob Granath**
Spaceport News

In late October, one of the most destructive storms ever to hit the United States bashed the beaches of Brevard County in Florida, including the shoreline of NASA's Kennedy Space Center. Scientists are assessing damage along a 1.2-mile stretch of shoreline near Launch Pads 39A and 39B and developing restoration plans.

Hurricane Sandy damaged portions of the Caribbean and had serious impacts along the Southeastern and Mid-Atlantic states before delivering a devastating blow to the Northeast.

Constant pounding from hurricanes, such as Sandy, other weather systems and higher than usual tides, have destroyed sand dunes protecting the spaceport.

"The shoreline continues to move farther inland threatening critical portions of our infrastructure," said Don Dankert, a biological scientist in the NASA Environmental Management Branch of Center Operations. "The ocean is now less than a quarter of a mile from Launch Pads A and B. The ground under the railroad lines has been breached, and the line of erosion has moved dangerously close to the beach road. Additionally, we need to protect underground utilities near the beach road."

Originally built



NASA/Frankie Martin

Constant pounding from hurricanes, such as Sandy, other weather systems and higher than usual tides have destroyed sand dunes protecting the infrastructure at Kennedy Space Center, as seen here Feb. 19.

in the 1960s for the Apollo/Saturn V rockets that sent astronauts to the moon, the launch pads were modified in the late 1970s to support the Space Shuttle Program. Pad B is now being updated to support NASA's heavy-lift Space Launch System launch vehicle and Orion capsule. Pad A may be used in the future for commercial rockets.

"The pads are crucial to our future, and we've got to make sure we do all we can to protect them," Dankert said.

It doesn't take a direct hit from a hurricane to cause severe erosion on the beaches.

"When Sandy moved north past Florida, it was 220 miles off shore, but its effects were far-reaching," Dankert said. "The ocean pounds the beaches with higher tides and strong winds that rip away at the dunes, moving

the shoreline farther inland."

Dankert explained that Sandy was only the most recent blow to beaches along the Space Coast.

"During Kennedy's history, tropical weather has continued to batter our shoreline," he said. "Some pass by, and with some we've had a few direct hits. It's a constant battle to restore the dunes that hold off the weather-induced erosion."

Experts such as Dankert are busy developing a long-term plan to mitigate the constant battering from the environment. They hope to use some of the \$15 million included for NASA in the multi-billion-dollar Hurricane Sandy relief bill passed by Congress.

"Part of these funds will go to the NASA facility on Wallops Island on the coast of Virginia since they had a lot of damage too,"

he said. "Hopefully, we will be able to use some of that money to rebuild the sand dunes here."

Kennedy officials are hoping to bring in sand to replace the protective sand dunes on the beach that can serve as a buffer from tropical cyclones.

"A Dune Vulnerability Team was formed in 2009 to assess the condition of our shoreline and develop a strategy to provide long-term protection," Dankert said. "The DVT is a joint effort with NASA, U.S. Geological Survey, U.S. Army Corps of Engineers and the University of Florida. In addition to rebuilding the dunes, we needed to plant native vegetation on newly created dunes to provide soil stabilization and benefits to native wildlife."

Following a number of hurricanes and tropical storms dating back to 2004, repairs to the

primary dunes along Kennedy's beaches were required. A 15-foot-high, 725-foot-long secondary dune was completed in 2010 along the widest expanse between pads A and B. The new dune was the only stretch remaining intact after Hurricane Sandy.

"After rebuilding the dunes, we may remove the rail since it hasn't been used in years," Dankert said, "so we can protect the beach road and the launch pads which are crucial to Kennedy's future."

The space center's shoreline also is an important habitat for wildlife, including several endangered species.

"Losing portions of the Kennedy shoreline may have negative effects for species such as the Southeastern beach mouse, indigo

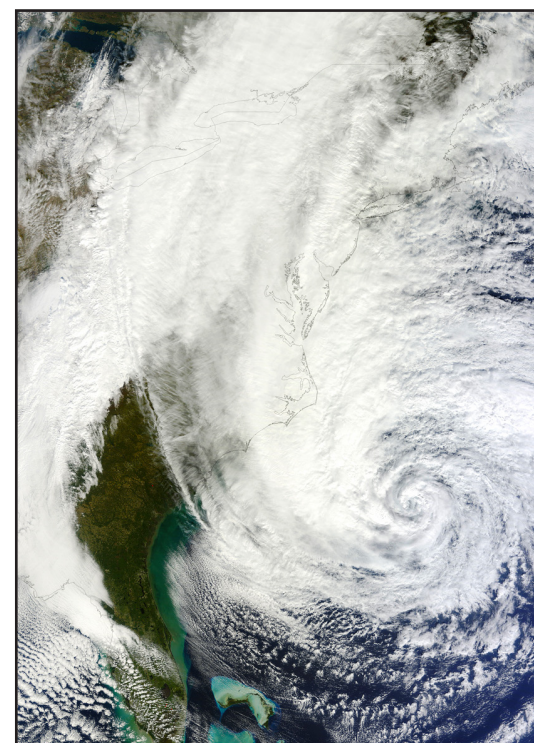
snakes and gopher tortoises," Dankert said. "Restoring the dunes will also help us protect these species."

Dankert noted that the rebuilt dunes also would block launch pad lighting on the beach, thus aiding nesting and hatchling sea turtles find their way to and from the ocean.

"The newly hatched sea turtles are disoriented by artificial light," he said. "We want to encourage them to head toward the sea."

According to Dankert, the funding to begin restoring the beach dunes comes at a crucial time for the Florida spaceport.

"Our beaches have been slowly eroding for years and the sooner we get started, the better," he said. "This will, at least, get us going."



NASA

The Moderate Resolution Imaging Spectroradiometer on NASA's Terra satellite captured this image of Hurricane Sandy on Oct. 28, 2012. At the time, Sandy was off the southeastern United States and spanned about 2,000 miles.

CST-100 reviews road to mission operations

By Bob Granath
Spaceport News

The Boeing Company's plans for its CST-100 spacecraft continue to firm up as the aerospace company works with NASA's Commercial Crew Program (CCP) to establish what will be needed to communicate with the spacecraft and recover it when it returns from a mission.

The capsule-shaped spacecraft is on track to launch to low-Earth orbit atop a United Launch Alliance Atlas V rocket from Florida's Space Coast around the middle of the decade. It is designed to hold enough crew members to allow the spaceship to operate as a taxi and lifeboat on missions to the International Space Station.

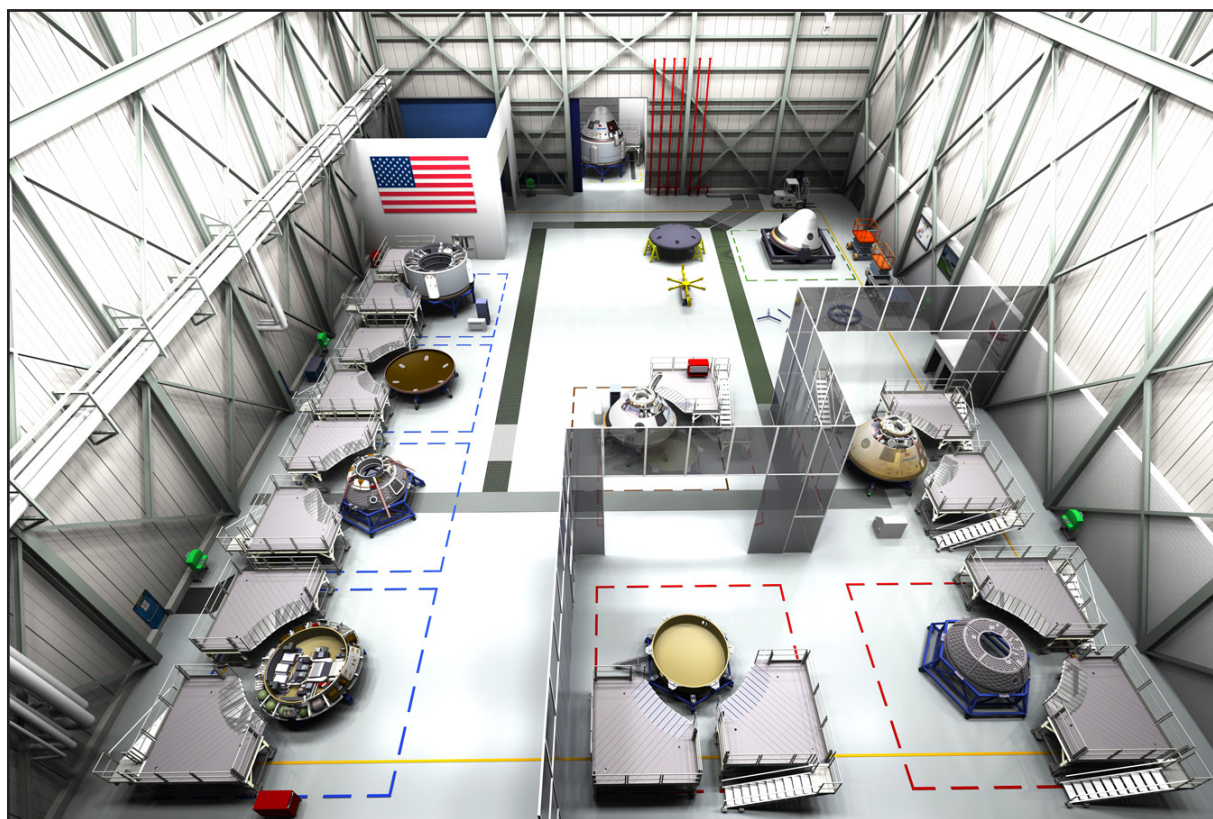
The company, one of three NASA is working with to establish a commercial industry to ferry astronauts to and from the orbiting laboratory, recently completed its fifth performance milestone and two in-depth reviews as part of the CST-100's development.

The latest review milestone under the funded Space Act Agreement with NASA during the Commercial Crew Integrated Capability (CCiCap) initiative at Boeing's facility in Titusville, Fla., established the baseline plan for the equipment and infrastructure needed to run spacecraft ground communications, and landing and recovery operations.

The company also completed back-to-back production design and "phase 1" safety reviews in November, which allowed agency managers and engineers to analyze safety and support systems being designed for the CST, short for Crew Space Transportation.

"The safety review showed some ways Boeing is mitigating and controlling hazards in the preliminary design review level of the integrated design," said Gennaro Caliendo of CCP's Partner Integration Office. "Boeing has a great deal of experience in the human spaceflight business and has been integral in helping develop future spacecraft for our national capability."

The third review covered Boeing's progress in developing the



Artist's image courtesy of The Boeing Company

Space Florida currently is renovating the former Orbiter Processing Facility-3 for the future of human spaceflight. Above, an artist's aerial image shows The Boeing Company's CST-100 processing high bay in the Commercial Crew and Cargo Processing Facility (C3PF) at Kennedy Space Center.

ground portions of mission operations software.

"It gave us an opportunity to look at how they are moving ahead and to provide input to their products," Caliendo said. "Innovation and ingenuity of commercial companies will be important, but since NASA will be purchasing a transportation service to the space station, we have requirements that companies eventually will have to meet if they plan on competing for services in the future."

The design of the CST-100 resembles NASA's legacy Apollo command and service modules. However, the CST-100 crew module is larger with a greater habitable interior with the capacity to carry up to seven astronauts or four astronauts and cargo, compared to the three sent on the lunar missions of the 1960s and '70s. It also is designed for reusability for up to ten missions.

The service module is considerably smaller than Apollo because it doesn't need a propulsion engine capable of getting it back from the moon. That also reduces the amount

of equipment and consumables necessary for exclusively low-Earth orbit missions.

Recent analyses of landing systems have taken place in Delamar Dry Lake in Nevada, proving the CST-100 can return to Earth with three parachutes, as was the case with Apollo. Just prior to landing, air bags will deploy on the bottom of the spacecraft allowing a safe touchdown on the ground. To add flexibility, the CST-100 also can return for a water landing.

Boeing currently is on schedule to complete a total of 19 milestones during the base period of its CCiCap agreement. The company will be designing both flight and ground systems hardware, writing and testing code for flight software, developing ground communications systems, and performing wind tunnel tests. All of the work leads up to a Critical Design Review scheduled for April 2014 prior to optional qualification and flight demonstration milestones.

"The CDR will be an integrated systems review," Caliendo said. "We'll be looking at how the space-

craft is integrated with the launch vehicle, ground systems, and everything needed to manufacture, process, launch, fly and return the CST-100."

Bill Lane, deputy partner manager in CCP's Partner Integration Office, said the recent reviews are ensuring that NASA's new initiative remains on track.

"These reviews provided the foundation of capsule production, processing and flight operations," Lane said. "The teams have worked very hard to identify hardware, software and mission operations requirements that will be necessary to ensure flight safety starting from the initial production and continuing through the full life-cycle of the capsule."

NASA's new CCiCap agreements follow two previous commercial endeavors by the agency to spur the development of crew transportation systems and subsystems. Work by NASA's industry partners during CCiCap will set the stage for a crewed orbital demonstration mission around the middle of the decade.

2012-13 KSC Honor Awards

NASA GROUP ACHIEVEMENT AWARDS

- CCP ULA Technical Discipline Team
- Commercial Crew Cost Estimating Team
- Commercial Crew integrated Capability (CCiCap) Performance Evaluation Profile (PEP)
- Commercial Crew Transportation Systems Requirement
- Crawler-Transporter 2 Modifications
- Crew Module Outreach Tour Transition Team
- Cryogenics Design and Development Team
- ELVIS 2 Source Evaluation Board Team
- Fire Protection Design and Construction Team
- Kennedy Educate to Innovate Volunteers
- KSC Commercial Space Strategy Team
- KSC International Space University Space Studies
- KSC-IT Mobile Development Team
- Looking Behind The Scenes
- Mars Science Laboratory
- Morpheus Propellants Loading Team
- Pegasus NuStar Communications and Telemetry Team
- Restore Propellant Transfer System Development
- Shuttle Landing Facility Area Development Team
- Shuttle T&R Data Team
- SLSL Water Main Break Lab Recovery Effort
- VAB Counterweight Well Access Improvement Team
- VAB Vertical Door Brake Addition Implementation



NASA/Jim Grossmann

Pete Nickolenko, center, accepts the 2012 Kennedy Space Center Director's Award from Director Bob Cabana and acting Deputy Director Michael Bolger on Feb. 15 at the visitor complex.

YOU MAKE A DIFFERENCE AWARD

- Sheila L. Frowiss
- Jael P. Lamothe
- Jeannette R. Lockman
- Robert J. Ruiz
- Margaret A. Truitt

KSC ENGINEER/SCIENTIST OF THE YEAR AWARD

- Timothy W. Widrick – Civil Servant Category
- Pravinkumar K. Asar – Contractor Category

KSC DIVERSITY & EQUAL OPPORTUNITY AWARD

- Kimberlyn B. Carter
- Edwin Martinez

KSC STRATEGIC LEADERSHIP AWARD

- Linda D. Euell

KSC EMPLOYEE OF THE YEAR AWARD

- David R. Ungar

KSC DIRECTOR'S AWARD

- Peter P. Nickolenko

SPEAKERS INSPIRE AWARD

- Stephen Ernest
- George Gabrielle

SMALL BUSINESS OFFICE AWARDS

- Small Business Prime Contractor of the Year Award**
- Millennium Engineering and Integration Company

ENVIRONMENTAL AWARDS

Environmental Individual Awards

- Lisa M. Ruffe
- William B. Simmonds

Small Business Subcontractor of the Year Award

- Dynamac Corporation

Environmental Team Awards

- Design and Construction of Lunar Landscape for the Testing of Morpheus Lander

Large Business Prime Contractor of the Year Award

- The Boeing Company

Small Business Advocate Procurement Team of the Year Award

- Kennedy Space Center Protective Services Procurement Development Team

SECRETARIAL EXCELLENCE AWARD

- Jennifer P. Horner – Civil Servant Category
- Melissa A. Swinson – Contractor Category

BEST OF KSC SOFTWARE AWARD

- Automated Utility Database Reporting and Information System (AUDRIS)

[To check out the event program, click here](#)

Future articles

Spaceport News will highlight those who received Kennedy Space Center's most prestigious awards in future editions.

Certificates of Appreciation

This award is intended to recognize contributions made by NASA employees, individual citizens, contractors, or public organizations to Kennedy Space Center endeavors.

- Michelle E. Amos
- Jeffery S. Beyer
- Timothy M. Bianchi
- James S. Bolton
- Steven E. Cain
- Amy C. Canfield
- Grant R. Cates
- Jeffrey A. Cheatham
- Michael K. Collins
- Jared F. Congiardo
- Michelle L. Crowe
- Susan E. Danley

- Michael C. Davis
- Bhupendra H. Deliwala
- William Denis
- Kenneth R. Ford
- Tara M. Francisco
- Gregory M. Galloway
- Sherry L. Gasaway
- Steven P. Gersten
- Amanda M. Gillespie
- Louis E. Goetz
- Leticia Gomez
- David L. Grau
- Philip A. Gvozdz
- Susan J. Habenicht
- Michael J. Hartnett
- Kay D. Heck
- Penelope A. Herbst
- Kenneth C. Hosterman
- Paul T. Hudson
- Danny K. Hunt
- John G. Ilgenfritz
- John J. Ippolito
- Anibal A. Karban
- Charla G. King
- Eric M. Kirby
- Steven W. Larchar

- Michael V. Le
- Roger H. Liang
- Jonathan E. Lisak
- Bryan R. Lutinski
- Kelli C. Maloney
- Alissa M. Matthews
- John E. McClelland
- David T. Miller
- Kevin L. Miller
- Sonia S. Miller
- David A. Mohler
- Kim M. Moore
- Robert E. Moore
- Roberta S. Nesworthy
- Rolando J. Nieves
- Kathleen L. O'Brady
- Frank E. Ochoa-Gonzales
- David W. Olsen
- Evelyn M. Orozco-Smith
- Kevin R. Panik
- Terry S. Parnell
- Robert M. Peacock
- Amber N. Philman
- Timothy A. Pirlo

- Laura Poliah
- Sue G. Preece
- Eric A. Reyier
- James C. Schick
- David M. Stark
- Kenneth J. Strite
- Derrick J. Thomas
- Vernon L. Thorp
- Christopher L. Torres
- Rhonda S. (Kistner) Tugg
- Stacie M. Turner
- Christine A. Vanaman
- Samuel G. Vaughn
- Gary J. Villa
- Thomas J. Villane
- James R. Wachter
- Richard T. Warren
- Angela R. Watkins
- Charles F. Wendling
- Douglas E. Willard
- Virginia M. Williams
- Tracy G. Young
- Richard J. Zeitler
- Christopher A. Zuber
- Lisa B. Zuber

NASA Spinoffs: Did you know?

X-ray technology is evolving with a lot of help from NASA.



Among the 2012 NASA spinoffs was an X-ray fluorescence scanner that detects the elemental composition of an object and is frequently used by museums to authenticate works of art. It also analyzes NASA spacecraft components.

In 1983, a portable X-ray instrument was developed by NASA. Called a Lixiscope -- Low Intensity X-Ray Imaging Scope -- it is a self-contained, battery-powered device that produces an instant image and uses less than one percent of the radiation required by conventional X-ray devices.



In 1977, NASA developed an X-ray filter to get a clearer image of Earth on Landsat missions. This technology now enables physicians to diagnose patients by allowing them to see the underlying tissue beyond the bone.



In 1967, NASA flew an X-ray telescope aboard Orbiting Solar Observatory-4 to study X-ray emissions from the sun's corona. Among the spinoffs were an X-ray scanner for medical use, a digital radiography diagnosis system for nondestructive testing of manufactured products and a system of load management for electric utilities.



For more about NASA Spinoffs, go to <http://www.nasa.gov/spinoffs>.



CLICK ON PHOTO

NASA/Kim Shifflett

ULA's Atlas V carries newest Landsat

NASA's Landsat Data Continuity Mission (LDCM) lifts off Space Launch Complex 3 at California's Vandenberg Air Force Base at 1:02 p.m. EST on Jan. 15 atop a United Launch Alliance Atlas V rocket. LDCM is the future of Landsat satellites. Like its predecessors, the Landsat 8 satellite will obtain valuable data and imagery to be used in agriculture, education, business, science and government. The Landsat Program provides repetitive acquisition of high-resolution, multispectral data of the Earth's surface on a global basis. The data returned from the Landsat spacecraft constitute the longest record of the Earth's continental surfaces as seen from space. For more information about the mission, click on the photo.

Looking up and ahead ...

** All times are Eastern*

March

Mission: Orbital Sciences Test Flight

Launch Vehicle: Antares

Launch Window: TBD

Launch Site: Wallops Flight Facility, Va.

Launch Pad: OA

Description: The Antares is scheduled for a test flight under NASA's Commercial Orbital Transportation Services agreement with the company.

March 1

Mission: SpaceX 2 Commercial Resupply Services flight

Launch Vehicle: Falcon 9

Launch Window: 10:10 a.m.

Launch Site: Cape Canaveral Air Force Station

Launch Pad: Space Launch Complex 40

Description: SpaceX CRS-2 will be the second commercial resupply mission to the International Space Station by SpaceX.

To watch a NASA launch online, go to <http://www.nasa.gov/ntv>.



John F. Kennedy Space Center

Spaceport News

Spaceport News is an official publication of the Kennedy Space Center and is published online on alternate Fridays by Public Affairs in the interest of KSC civil service and contractor employees.

Contributions are welcome and should be submitted three weeks before publication to Public Affairs, IMCS-440. Email submissions can be sent to KSC-Spaceport-News@mail.nasa.gov

Managing editor Candra Thomas
Assistant managing editor Stephanie Covey
Editor Frank Ochoa-Gonzales
Copy editor Kay Grinter

Editorial support provided by Abacus Technology Corp. Writers Group.

NASA at KSC is on the Internet at www.nasa.gov/kennedy

SP-2013-02-021-KSC