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Spaceport News

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

Inside...

Cabana earns Debus Award

By Bob Granath
Spaceport News

The National Space Club Florida Committee presented Kennedy Space Center Director Bob Cabana with its prestigious Dr. Kurt H. Debus Award on April 27. A former U.S. Marine Corps aviator and NASA astronaut, Cabana was honored at the Debus Award dinner at Kennedy's visitor complex. Named for the spaceport's first director, the Debus Award was created to recognize significant achievements and contributions made in Florida to American aerospace efforts.

"Bob's devotion to his country and the U.S. space program has been exemplary," said National Space Club Florida Committee Chairman Jim McCarthy. "He started his career as a naval test pilot, became an astronaut and has most recently provided exceptional leadership as Kennedy's center director for safely flying the shuttle program into retirement."

NASA Administrator Charles Bolden was on hand at the event and also praised Cabana's work.

"I cannot say enough about the job Bob Cabana has done as the director of the Kennedy Space Center," Bolden said. "He's an incredible leader and that's why he's being recognized. He's an inspirational leader that people want to follow and be like."

CLICK ON PHOTO *NASA/Jim Grossmann*

National Space Club Florida Committee Chairman Jim McCarthy, left, presents the Dr. Kurt H. Debus Award to Kennedy's Director, Bob Cabana at the Kennedy Space Center Visitor Complex on April 27. For more, click on the photo.

Bolden noted that Cabana now is helping lead the Florida spaceport into the future.

"We are looking at new ways of doing business," he said. "We're trying to integrate more of industry into the work that we do here trying to bring in more private industry and convert the Kennedy Space Center into a multiuser facility. All that's come about because of Bob's can-do attitude."

The Debus Award was created by the space club's Florida Committee to recognize significant achievements and contributions made in Florida to American aerospace efforts. Kurt Debus' organization conducted launches of the early military missiles and space vehicles. His work included directing the design, construction and operation of the Saturn V launch facilities for the Apollo moon landing program.

In accepting the award, Cabana gave credit to the men and women who work at America's spaceport.

"It's not about me," he said. "It's about this truly amazing team here at Kennedy. I truly believe we are making our dreams a reality."

Atlantis sheds skin for June 29 opening

By Bob Granath
Spaceport News

Like a special gift being unwrapped, construction crews began removing 16,000 square feet of plastic shrink-wrap from space shuttle Atlantis on April 25 as work continues for the famed spacecraft's new $100 million home at the Kennedy Space Center Visitor Complex.

Atlantis has been enclosed in the plastic since November of last year to protect it from dust and debris during construction of the facility where it will be displayed.

"This is the next step in unveiling Atlantis," said Tim Macy, director of project development for Delaware North Companies Parks and Resorts at the visitor complex. "We should have it all off by late tomorrow afternoon."

As construction workers continued removing plastic, Macy explained that the crews are being methodical and meticulous in their work.

"This is a priceless artifact," he said. "It is incumbent upon us to take care of her."

CLICK ON PHOTO *NASA/Cory Huston*

Construction crews began removing 16,000 square feet of plastic shrink-wrap from space shuttle Atlantis on April 25 at the Kennedy Space Center Visitor Complex, as members of the media looked on.

Construction contines for the one-of-a kind, 90,000-square-foot educational attraction that will feature a 360-degree, multilevel view of Atlantis. The facility is scheduled to open to the public June 29.

"We're on schedule," said Macy. "We feel very comfortable about that now."

In mid-November, Atlantis was raised 30 feet off the ground and rotated 43.21 degrees to be displayed as if it were in space. Its portside wingtip is only 7.5 feet off the ground. Atlantis is being held in place by two support beams attached where the spacecraft was mounted atop the Shuttle Carrier Aircraft, a modified Boeing 747, for cross-country ferry flights.

"There's nothing else like this," Macy said. "The way it's shown to the public and presented is like no place else on Earth."

Once inside the exhibit, visitors will see Atlantis as it appeared in space with the payload bay doors opened and Atlantis' Canadarm remote manipulator system -- its robotic arm -- installed and extended.

"We have to take the plastic off to allow us to open the payload bay doors," Macy said. "We've never done this before, but we've got a great plan. We've got United Space Alliance guys who have worked on the shuttle for over 30 years, we have NASA oversight, we've got plenty of engineers, and we've got some really smart people working on this."

United Space Alliance was NASA's Space Program Operations Contractor, responsible for processing the shuttles between missions.

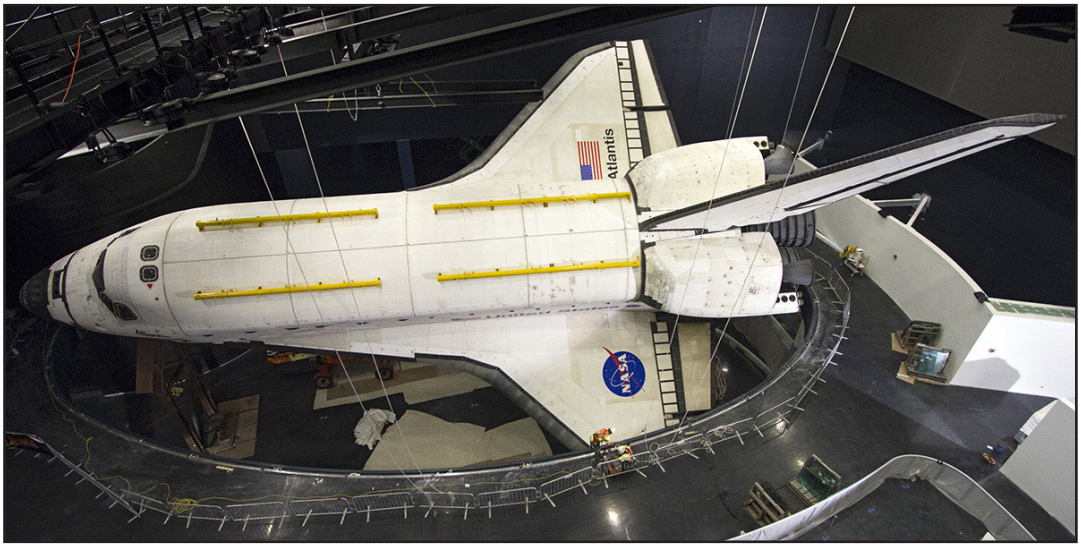
First flown in 1985, Atlantis' last flight, STS-135, was to the International Space Station and took place from July 8 to 21, 2011.

"She's had 33 missions in space and traveled over 12 million miles," Macy said, noting that Atlantis has had a stellar 26-year career.

Displays will tell the 30-year story of the entire Space Shuttle Program, including a focus on the contributions of thousands of people working behind the scenes. There will be great detail in the information available in the displays for visitors to enjoy.

"It will also be presented in a way that's entertaining," Macy said. "There are over 60 interactive exhibits. What we've learned is we have to entertain as we educate."

The exhibits and simulators will provide guests a never-before-experienced perspective on the shuttle's complex systems, components and capabilities, and is being designed for explorers of all ages.



NASA/Cory Huston

At the Kennedy Space Center Visitor Complex, construction crews removed 16,000 square feet of plastic shrink-wrap from space shuttle Atlantis on April 25. The spacecraft had been enclosed in the shrink-wrap since November 2012 to protect the artifact from dust and debris during construction of the 90,000-square-foot facility that houses Atlantis and its associated displays.

‘Reverse mentoring’ sessions create excitement

By Steven Siceloff
Spaceport News

The director of Kennedy Space Center did his impression of a chemical engineer and a launch controller and it wasn’t that bad, according to the two specialists watching over his efforts.

“I just had to say something once and he could put it all together,” said Anne Caraccio, who is part of a team developing a reactor to convert trash for deep space missions to usable propellants and other gases. “When I’m training interns or someone who’s coming in here for the first time, it usually takes me a couple days. He was just on the ball, he was interested. He would be a good researcher out here.”

Bob Cabana, a veteran astronaut now leading Kennedy, recently worked closely with Caraccio and Sam Harris, a Flight Operations engineer in NASA’s Launch Services Program, in the first of what Cabana hopes are a series of “reverse mentoring” sessions.

During the two sessions, each lasting about half a day, Cabana acted as a launch director during a Pegasus simulation with Harris and worked on the trash-to-gas reactor with Caraccio.

“It was chaotic,” Harris said of the launch simulation, which included several pretend problems for the launch team to work out. Harris had not done such a simulation on console before, where she was the one required to step into conversations and keep everything on track. Cabana, whose career includes time as the Capcom for shuttle flights, offered some advice. “He kept saying, ‘Own your net,’ and that was what I needed to build my confidence.”

NASA

Kennedy Center Director Bob Cabana listens as Anne Caraccio details the operations of a trash-to-gas reactor during a reverse mentoring session in a lab at Kennedy Space Center on April 24.

> *“Truthfully, I enjoyed sitting on console for a simulated Pegasus launch, and setting up and running an experiment in one of our labs. It’s a lot more fun than going to meetings and dealing with our budget challenges.”*
>
> **Bob Cabana**
> **Kennedy Space Center Director**

Cabana said the sessions told him he was right to expect skilled, excited workers.

“It confirmed what I already knew: that Kennedy has an extremely talented and dedicated workforce that is really enthused about the work they’re doing and the direction we’re headed,” Cabana said.

The goal of the reverse mentoring is to improve communications at the center, Cabana said. The participants also had a chance to talk with Cabana individually about center issues.

“It gives me the opportunity to hear from our folks in a non-threatening environment, to learn their concerns and allow them to ask questions of me,” he said. “It also gives me a chance to personally share the vision we have for Kennedy’s future to ensure it’s getting down to everyone. My intentions are to do whatever I can to improve communications and ensure everyone knows where we’re going, and how we’re going to get there, and that they understand their role in making us successful.”

The lab work included some unexpected complications for Cabana to work with, and Caraccio said he helped make the reactor work a bit better.

“The cooling system for one of our thermal electric coolers overheated because the cooling line failed, so he was head in the reactor saying, ‘This will fix it!’” she said. “He was optimizing our system. I’m glad we had a failure so he could see what research is really like. That’s how research goes, it’s fun.”

Both participants said the nerves they had at first faded quickly.

“I think I was more nervous of the fact that he was an astronaut and head of the Astronaut Office than that he was the center director,” Caraccio said. “I was more impressed that he was an astronaut coming to do hands-on technical work. That’s what was making me nervous. But then his personality totally took the nerves away.”

The center director didn’t spend his day answering emails or letting himself get distracted either, they said.

“He was fully engaged and I really appreciate that,” Harris said. “I didn’t expect it to be as beneficial an experience as it was. He was just as passionate as we were. He has the same concerns and the hopes we have for the center.”

Cabana said his goal is to continue the individual sessions and get the center’s senior leadership involved in similar efforts to keep communications open throughout the center.

“Truthfully, I enjoyed sitting on console for a simulated Pegasus launch, and setting up and running an experiment in one of our labs,” Cabana said. “It’s a lot more fun than going to meetings and dealing with our budget challenges. But mostly, I enjoyed the opportunity to interact one-on-one with some of our future leaders.”

Scenes Around Kennedy Space Center

NASA/Daniel Casper

Kennedy Space Center Associate Director Kelvin Manning addresses workers gathered in the KSC Training Auditorium during the National Day of Prayer on May 2. A praise and worship band performed during the event.

Photo courtesy of Robert Smith

Scott Kerr, who retired April 30 as the director of Ground Processing, is recognized by Kennedy Center Director Bob Cabana for his 25 years of service. Dr. Pat Simpkins will fill the vacancy created by Kerr's retirement.

NASA/Gary Thompson

Inside the Launch Control Center, the legacy flooring in Firing Room 2 has been removed, and wiring and conduits below the floor are being upgraded by the Ground Systems Development and Operations Program. Kennedy's Launch Complex 39 is transitioning to support multiple types of rockets and spacecraft.

NASA/Daniel Casper

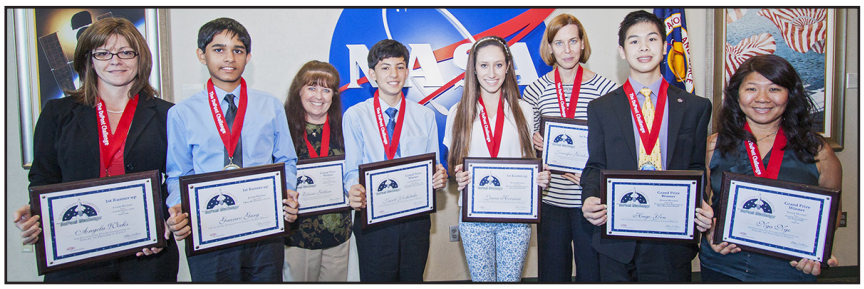
RC the Recycle Cat visited the Child Development Center April 25 at Kennedy Space Center to celebrate Earth Month at the center. The children were told why it's important to reduce, reuse and recycle, and shown what items to put into their curbside recycling bin.

NASA

Joyce Riquelme, top left, who retired April 30 as manager of the Center Planning and Development Office at Kennedy Space Center, overlooks as NASA and Sierra Nevada Corp. (SNC) Space Systems leaders sign a Space Act Agreement in July 2011. Sitting, from left, are NASA Administrator Charlie Bolden; Kennedy Center Director Bob Cabana; and Mark Sirangelo, head of SNC. Standing, from left, are Riquelme; and John Curry, director of SNC's Integration, Test and Operations.

DuPont essay winners visit, share story

By Frank Ochoa-Gonzales
Spaceport News



NASA/Jim Grossmann

The winning students of the 2013 DuPont Challenge Science Essay Competition and their teachers show off their awards after a ceremony at the Kennedy Space Center Visitor Complex on April 26. For more information on the challenge, click on the photo.

Gaurav Garg, a junior high school student from Katy, Texas, wants his dad to get a tattoo. Not one of those fire-breathing dragons, but a nano tattoo.

You see, Gaurav's dad has diabetes and by getting this particular tattoo he can monitor his sugar levels without having to prick a finger several times a day.

Gaurav wrote an essay and entered it into the DuPont Essay Challenge two years ago, but didn't make the final cut. So this time, he took a different approach. Gaurav decided to do some research and write "I Wish My Dad Got a Tattoo," a thought-provoking essay about this groundbreaking scientific development. It earned him a 2013 DuPont Essay Challenge award.

"I put a lot of work into this and I am grateful that it paid off this way," Gaurav said. "The key, I think, was that I made it personal."

Gaurav and three students from schools across the country, along with their teachers, received DuPont Challenge awards from Kennedy Space Center Associate Director Kelvin Manning and Marc Doyle, Dupont's global marketing and product director, during a recognition event at the Kennedy Space Center Visitor Complex's Debus Conference Facility on April 26. They were chosen from the more than 9,000 essays submitted.

"This program is outstanding," Manning said. "Thousands wrote a scientific essay and these four rose to the top. Their teachers and parents should be very proud."

The Education Programs Division of Kennedy's Education and External Relations Directorate arranged for the students, along with their parents and teachers, to tour the space center and its working facilities.

According to Lesley Fletcher, Kennedy's deputy division chief of Education, the center enjoys the opportunity to host these gifted students interested in science, technology, engineering and mathematics (STEM) careers.

"A lot of times when a student is involved in a competition such as this, it's the spark that leads to a degree in STEM," said Lesley Fletcher, Kennedy's deputy division chief of Education, "and programs such as this one allow us to be involved with these gifted students."

Since its inception 27 years ago, more than 200,000 students in grades seven through 12 from all 50 states and Canada have entered the competition by writing an essay about a scientific discovery, theory, event or technological application that has captured their interest.

The reward prizes total $100,000, including U.S. Savings Bonds for every winner and a special awards trip to Orlando that includes visits to Disney World and Kennedy for the top two students in each division, to be joined by a parent and sponsoring teacher.

Those four include senior division grand prize awardee Hugo Yen, a high school student from Fullerton, Calif., and first runner-up Laura Herman, a high school student in Fort Lauderdale, Fla.

"Winning this provides me more inspiration to continue my pursuit to always try and do better," said Hugo, who wrote an essay on solar tracking.

"I hope I can just continue to learn more about science."

The senior division includes grades 10-12.

"As I've been exposed to these amazing competitions and been recognized, it's meant so much to me." Laura said. "I love the ability to reach out and communicate."

Junior division winners (seventh- to ninth-grade) were grand prize winner Jacob Yoshitake a middle school student in San Diego, Calif., and Gaurav.

"I consider myself an all-around student and this competition combined my two favorite passions -- writing and science," Jacob said. "I want to use my writing skills to expose the non-stereotypical side of science."

The DuPont Essay Challenge honors space shuttle Challenger's STS-51L crew members who gave their lives while furthering the cause of exploration and discovery.

The DuPont Challenge is sponsored by its namesake, the DuPont Co. in collaboration with NASA, NBC Learn, Britannica Digital Learning, the Walt Disney Resort, National Science Teachers Association and A+ Media.

CLICK ON PHOTO

NASA/Jim Grossmann

Kennedy Space Center Associate Director Kelvin Manning addresses students, teachers, parents and VIPs during the 2013 DuPont Challenge Science Essay Competition awards ceremony at Kennedy's visitor complex April 26.

Last RCS pod arrives for Orion EFT-1

By Linda Herridge
Spaceport News

The last of eight reaction control system (RCS) pods for NASA's Orion Exploration Flight Test-1 (EFT-1) arrived this week at Kennedy Space Center's Operations and Checkout Building (O&C) from the manufacturer, Aerojet, in Redmond, Wash.

"Arrival of the final reaction control system pod marks a significant milestone as we prepare NASA's Orion crew module for its first flight test," said Glenn Chinn, the deputy manager of the Multi-Purpose Crew Vehicle Program in Kennedy's Orion Production Operations Office.

"The pods will provide the critical maneuvers necessary for Orion's re-entry into the Earth's atmosphere."

The first set of pods arrived at Kennedy on Feb. 18, with subsequent pods arriving March 11, and April 5 and 19.

The right-roll thruster pod with two rocket engines was the last to arrive, and joined the other seven pods already in the facility.

Before the pods were delivered to Kennedy, Aerojet put each of them through a series of tests, including proof pressure and leak, engine vibration, rocket engine hot fire acceptance and electrical functional testing.

Lockheed Martin will unpack and visually inspect all of the pods. Then technicians will add short propellant line segments and line brackets to each.

Beginning in June, the pods will undergo additional proof pressure and leak testing, valve leak testing and rocket engine functional testing. Aerojet will support processing activities that involve the rocket engine pods with procedure reviews, and on-site engineering and assembly support during installation and testing on the crew module.

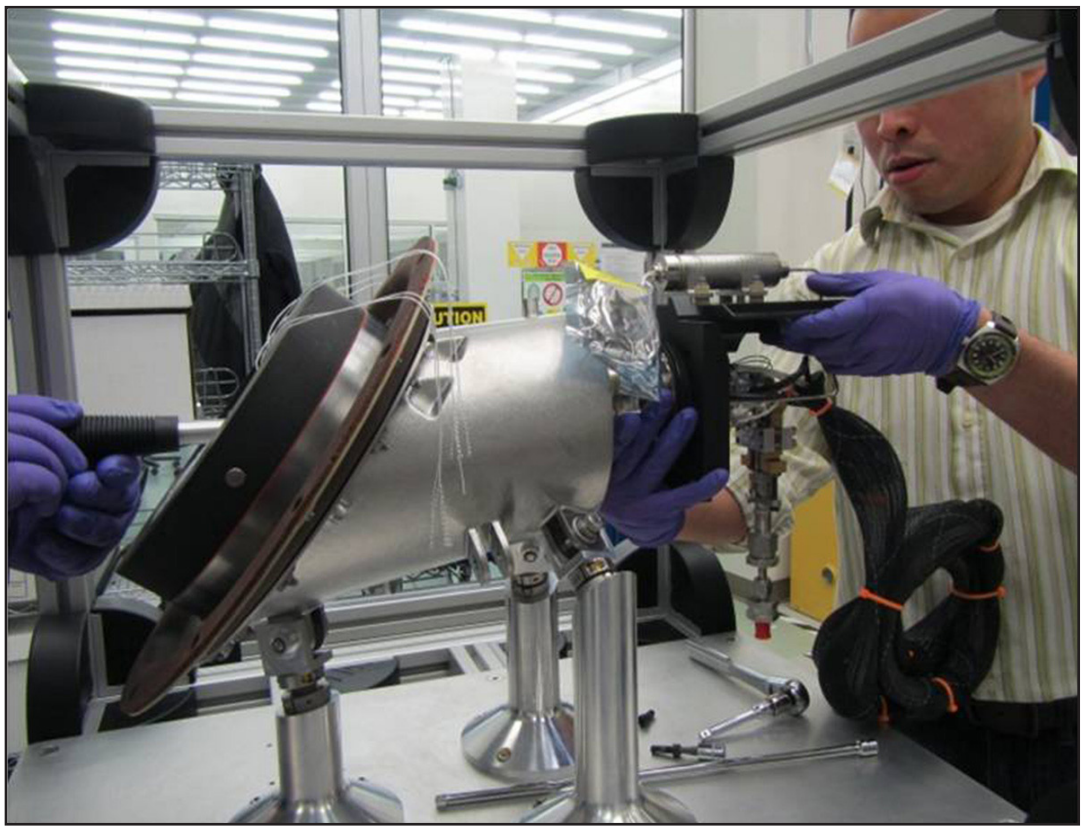


Photo courtesy of Aerojet

A technician works on a reaction control system pod at the Aerojet facility in Redmond, Wash. The pod is one of eight that will be installed on the Orion crew module for Exploration Flight Test-1 and provide the critical maneuvers necessary for re-entry into the Earth's atmosphere."

Aerojet Program Director for Human Space, Sam Wiley, said he can't wait for the RCS pods to be installed onto the crew module.

"We put our heart into our products and the installation work will wrap up more than three years of design and development activities," Wiley said. "We're ready to support EFT-1 for flight."

CLICK ON PHOTO *NASA/Dimitri Gerondidakis*

Astronaut Don Pettit watches as a technician works on the Orion crew module inside the Operations and Checkout Building high bay at Kennedy Space Center on March 21. For more information about Orion, click on the photo.

The pods and their engines will be installed in various locations on the Orion crew module.

Two of the single engine pods will be located in the crew module's forward bay, with the remaining pods located in the aft bay. Together they will provide full attitude control during Orion's re-entry and landing.

Orion is the exploration spacecraft designed to carry humans farther into space than ever before. The spacecraft will provide emergency abort capability, sustain crews during space travel and provide safe re-entry from deep-space return velocities.

Orion's first uncrewed test flight is scheduled to launch in 2014 atop a United Launch Alliance Delta IV heavy rocket. A second uncrewed flight test is scheduled for 2017 on NASA's Space Launch System rocket.

Workers turn in used electronic devices

By Bob Granath
Spaceport News

On their way to the moon in December 1968, the crew members of Apollo 8 became the first humans to leave low-Earth orbit. They brought back the first, complete "blue ball" images of their home planet, which many believe helped spark the environmental movement in the early 1970s. One element of that effort is to recycle items that would, otherwise, become polluting trash.

No photograph from Apollo 8 is more recognized than the Earthrise image taken by astronaut Bill Anders as the crew came around the moon immediately after entering lunar orbit.

Apollo 8 astronaut Jim Lovell put the view in simple perspective.

"The Earth, from here, is a 'grand oasis' in the big vastness of space," he said.

Renowned nature photographer Galen Rowell called the image "the most influential environmental photograph ever taken."

A little more than a year after the historic mission, the first Earth Day took place in the United States -- April 22, 1970. Growing out of that movement was an increased emphasis on the need to recycle. That effort is of growing importance with the ever-increasing amounts of obsolete electronic trash, or e-waste.

At Kennedy Space Center, employees are doing their part to recycle electronic gadgets that are becoming an important part of everyday life.

"We've been providing opportunities for Kennedy people to turn in old electronic products since 2007," said Frank Kline, Sustainability Group lead within the Environmental Management Branch of Center Operations. "It's been well received and we collect quite a bit each time."

NASA file/1968

The iconic earthrise photo taken by the crew of Apollo 8 was hailed by noted nature photographer Galen Rowell as "the most influential environmental photograph ever taken."

CLICK ON PHOTO NASA/Jim Grossmann

Amy Mangiacapra of Jacobs Technology, left, and Frank Klein of NASA's Environmental Management Branch, accept electronic products for recycling on the second day of the electronics collection event April 23 in the Vehicle Assembly Building parking lot. For more on Kennedy Space Center's Sustainability efforts, click on the photo.

On Earth Day, April 22, and the day after, Kennedy employees were given another opportunity to turn in electronic products no longer needed at home.

"We received items such as TVs, computers, VCRs, microwaves and cell phones," Kline said.

During the two-day recycle opportunity, more than 75 employees utilized this event to drop off items. All totaled, Kennedy collected 15 pallets, or about 6,000 pounds, of electronics.

According to the Consumer Electronics Association, Americans own, on average, 24 electronic products per household. The use of electronic products has grown substantially during the past two decades, changing the way and the speed in which communications, information and entertainment are received.

"As electronics fail or become obsolete, this stuff needs to be recycled or it winds up being buried in a landfill," Kline said. "In addition to the plastic and glass that is easy to see, many of these products contain lead, gold, lithium, you name it. As the stuff sits in the ground, the chemicals get into the water supply and we may wind up drinking it."

While some products are toxic, electronic products also are made from valuable resources and materials, including metals, plastics and glass, all of which require energy to mine or manufacture.

"As the products are crushed, the individual components are separated for reuse," said Kline. "Items such as gold and lead have value and make it economical to recycle. With the cost of land, it's more expensive to bury this stuff. It makes more sense to recycle than to fill up valuable real estate with a garbage dump."

Donating or recycling consumer electronics also conserves natural resources and avoids air and water pollution, as well as greenhouse gas emissions that are caused by manufacturing new materials.

Kline expressed appreciation to the volunteers who supported the recycling event in the Kennedy Industrial Area and VAB parking lot.

Kline noted that the next opportunity for Kennedy employees to drop off no-longer-needed electronics will be in November later this year.

NASA/Jim Grossmann

Approximately 6,000 pounds of electronics were turned in for recycling by Kennedy Space Center employees on April 22 and 23. For more about Earth Month, click on the photo.

Surface repairs begin at Launch Pad 39B

By Linda Herridge
Spaceport News

Repairing the panels on the surface of Launch Pad 39B and the catacomb roof below them is not a simple task. The pad is being prepared to launch NASA's newest rocket, the Space Launch System (SLS), and a variety of launch vehicles.

The pathway to the top of the pad supported the weight of the crawler-transporter that carried the Apollo/Saturn stack, and the space shuttle with external fuel tank and twin solid rocket boosters atop the mobile launcher platform (MLP). Now this pathway is being upgraded to support SLS and a variety of other launch vehicles.

"We have a number of construction projects going on in the same area, so coordination with various contractors will be the major challenge of the work," said Jose Perez Morales, the pad element senior project manager in the Ground Systems Development and Operations (GSDO) Program at Kennedy Space Center.

When each of the pads at Launch Complex 39 was constructed, the flame trench and deflector were built above the ground. The two main structures that divide the flame trench served as the platform to support the MLP and launch vehicle. The top of these structures is the roof of the catacombs on both sides of the flame trench.

The surface panels and catacomb roof are separated by two inches of sand and five inches of lightweight concrete. Over the years, water seeped through the panel joints and accumulated between the top of the catacomb roof and the bottom of the panels.

NASA

Last month, a Speegle Construction worker used a high-pressure hose to remove caulking from between the concrete panels on the surface of Launch Pad 39B.

Perez Morales said the water seeped into the concrete and caused it to crumble and some rebar corrosion. During a design review last year, Kennedy's Center Operations Directorate removed panels to test the structural integrity of the roof and determine the extent of damage to the concrete.

The work began Jan. 28 as specialists with the contractor Speegle Construction used power hoses to remove caulking between the giant panels. When that work is completed, the panels will be surveyed to determine their exact position for future reinstallation before they are removed.

There are 176 panels, each weighing about 30,000 pounds. Using a forklift, each panel will be lifted and set aside. All of the sand will be removed, and the structural roof of the catacomb will be repaired.

A special mat and drain system will be added on top of the roof to remove the water that seeps below the panels. New sand and lightweight concrete will be installed. Then the refurbished panels will be transported back to the pad and reinstalled.

Twelve new panels will be fabricated by the contractor to replace the ones that were damaged. The upgrades will take about a year to complete.

"The catacomb roof provides the structural capability to support the combined weight of the crawler, the mobile launcher and the vehicle as they are transported up the slope to the top of the pad," Perez Morales said. "This project will refurbish the structural roof to provide that capability for all future SLS and commercial launches."

SLS will first launch in 2017 on Exploration Mission-1. The flight test will send an uncrewed Orion vehicle around the moon.

NASA

During a design review last year, a concrete panel was removed and Speegle Construction workers tested the structural integrity of the catacomb roof below.

NASA Employees of the Month: May

NASA/Tony Gray

Employees of the Month for May are, from left, Jennifer M. Nufer, Launch Services Program; Russell L. Saylor, International Space Station and Spacecraft Processing Employee of the Quarter); Wayne A. Derbyshire, Chief Financial Officer; James C. Leagan, Information Technology and Communication Services (Employee of the Quarter); Timothy M. Bass, Chief Counsel; Stephen D. "Bo" Brown, Safety and Mission Assurance; Robert J. Glanowski, Procurement; Rosalie Santos-Ebaugh, Center Operations; and Virginia J. Ward, Engineering and Technology. Not pictured are Jerrace C. Mack, Ground Processing; Patrick Maloney, Engineering and Technology; and Penny L. Myers, Public Affairs.

Looking up and ahead . . .

**** All times are Eastern***

2013

May 28
Mission: Expedition 36/37
Launch Vehicle: Soyuz TMA-09M
Launch Site: Baikonur Cosmodrome, Kazakhstan
Launch Window: 4:31 p.m.
Description: Soyuz TMA-09M will carry three Expedition 36/37 crew members to the ISS.

June 5
Mission: ISS Automated Transfer Vehicle 4
Launch Vehicle: Ariane 5
Launch Site: Guiana Space Centre, French Guiana
Launch Pad: ELA-3
Description: The European Space Agency's ATV-4, also known as the "Albert Einstein," will deliver several tons of supplies to the ISS, docking with the Zvezda Service Module on the Russian segment of the station June 15.

June 26
Mission: Interface Region Imaging Spectrograph (IRIS)
Launch Vehicle: Pegasus XL
Launch Site: Vandenberg Air Force Base, Calif.
Launch Window: 10:25:04 to 10:30:04 p.m.
Launch Time: 10:27:34 p.m.
Description: IRIS is designed to provide significant new information to increase our understanding of energy transport into the sun's corona and solar wind and provide an archetype for all stellar atmospheres.

July 24
Mission: ISS Resupply
Launch Vehicle: ISS Progress 52
Launch Site: Baikonur Cosmodrome, Kazakhstan
Description: Progress 52 will carry supplies, hardware, fuel and water to the ISS.

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

NASA Spinoffs: Did You Know?

NASA/Kim Shiflett

Inspired by the technology that carried Neil Armstrong's words from the moon to NASA Mission Control, the 1960s airline industry developed a line of more compact and comfortable headsets for its pilots. Today those advancements continue to evolve in all forms of communications and telephone equipment. Above, United Space Alliance engineer Jennifer Guida rehearses procedures for the liftoff of space shuttle Discovery's final mission in Kennedy Space Center's Launch Control Center.

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

Spaceport News

John F. Kennedy Space Center
Public Affairs Directorate

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