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Spaceport News

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

www.nasa.gov/centers/kennedy/news/snews/spnews_toc.html

Stott returns on final station, shuttle rotation

By Cheryl Mansfield
Spaceport News

When the wheels of space shuttle Atlantis touch down to end the STS-129 mission, astronaut Nicole Stott will complete a first and a last.

Kennedy Space Center will welcome her home as its first former employee to live and work aboard the International Space Station. Stott's return also will mark another significant event -- the last time a station crew member will travel to or from the orbiting laboratory aboard a space shuttle. Upcoming crews will launch from and return to Earth aboard Russian Soyuz spacecraft.

Stott joined the space station's six-person crew when she launched aboard shuttle Discovery in August during the STS-128 mission. Trading places with astronaut Timothy Kopra, she became the Expedition 20 flight engineer as she began her three-month stint aboard the station.

Her launch came more than two decades after she began her NASA career at Kennedy -- a career that brought her high-level experience with both the shuttle and the station.

Before heading to space this summer, the Clearwater, Fla., native talked about her time at Kennedy.

"After growing up in Florida and seeing shuttles launch while I was at university, I got a job at Kennedy Space Center in shuttle operations," Stott said. "I mean, what cooler place could you be working? And every step of the way there, I was just thrilled with the jobs I had."

She began her 10-year career at Kennedy in 1988, working in the shuttle program as an operations engineer in an orbiter processing facility. She subsequently worked as convoy commander, leading the group of specialized vehicles that meet and "safe" each shuttle upon landing. She also served as shuttle Endeavour's flow director, seeing that the shuttle was processed and ready for launch.

Stott described her career at Kennedy with enthusiasm.

"I'm working on a

See **STOTT,** Page 4

NASA/Kim Shiflett

Nicole Stott is the first former Kennedy employee to live aboard the International Space Station. She is the final station crew member to fly to or from the station aboard a space shuttle.

NASA/Jim Grossmann

Center Director Bob Cabana, left, Sunpower Program Office Senior Manager Roderick Roche, and FPL Vice President and Chief Development Officer Eric Silagy, flip the switch, marking the addition of 5 acres of solar panels to the Kennedy Solar Energy Center.

Future brighter as Kennedy welcomes new solar facility

By Steven Siceloff
Spaceport News

Kennedy Space Center turned a shade greener Nov. 19 with the addition of 5 acres of electricity-producing solar panels to the spaceport's power grid.

The Kennedy Solar Energy Center is the first of two new power facilities being built at Kennedy that use solar panels to convert sunlight into electricity. The process creates no carbon emissions and requires no fuel, such as oil or natural gas, to generate power.

It is the first large-scale power plant of its kind at a NASA center, and part of a small but growing solar infrastructure under development in Florida.

"We are taking a leadership role in supporting an important national goal and that's to increase America's energy independence while protecting the climate," said Center Director Bob Cabana.

A ceremony commissioning the first of two power plants also offered a glimpse at future projects that could include a permanent renewable energy research and development facility proposed for Kennedy. A plan to build solar panels on up to 500 acres of fallow agricultural land is under consideration depending on the environmental and economic feasibility.

For now, the solar farms under construction help show the way for electricity generation.

Built in the center's Industrial Area south of the Vertical Integration Facility, the solar farm is large enough to create one megawatt of electricity, or enough to power 110 homes. For Kennedy, the power output equates to about 1 percent of the center's electricity uses.

A second, much larger, solar energy complex is under construction in a former citrus grove at the south end of the center. That location will produce 10 megawatts of electricity and is scheduled to be finished in April 2010.

It will be plugged into FPL's network and

See **SOLAR,** Page 6

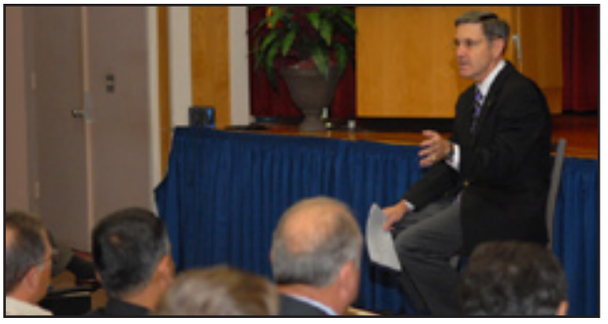
Cabana: Safety, patience will pay off

There is no crystal ball to predict the exact future of Kennedy Space Center, but during an Employee Update on Nov. 13, Center Director Bob Cabana was sure about one thing -- NASA management is working hard to make sure the right work is headed to Florida's Space Coast.

Cabana said the key to ushering in a new spaceflight program is to safely carry out the remaining space shuttle missions.

"I know that's a challenge for the team to know that a lot of us are going to be without jobs when the shuttle ends," Cabana said. "Yet, it still requires an unbelievable amount of attention to detail and focus to continue to fly safely up until that point."

Cabana talked about the recommendations made by the Review of U.S. Human Space Flight Plans Committee, better known as the Augustine Commission, regarding NASA's future budget, exploring beyond low Earth orbit, supporting commercial spaceflights and extending the life of the International Space Station.



NASA/Kim Shiflett

Center Director Bob Cabana discusses the future of Kennedy Space Center at an Employee Update on Nov. 13 in the Training Auditorium.

Perhaps the most exciting new endeavor for the center would be the development of an Exploration Park that would work in tandem with the space station.

"If we can get our Exploration Park going and that becomes a research facility and an engineering development facility, we can have payloads processed or developed out there," Cabana said. "We're working with the state of Florida to help make that happen."

He also discussed moving the center's perimeter gate after the shuttle retires, so that the Space Life Sciences Lab is more accessible to researchers from industries and universities across the country and around the world.

While it appears the Orion spacecraft is the capsule of choice for NASA's future exploration and Kennedy is the prime launch site, the vehicle that will be processed and lift off from the center is under discussion. Those vehicles include Ares rockets, a shuttle-derived vehicle and even commercial vehicles.

"Although we don't know a lot, I think what we do know is good and we're preparing for it," Cabana said. "I want you to know that the team here at KSC is doing an outstanding job. You can see it in all that we've accomplished this last year, and all the progress that we've made in the last year preparing for the future."

Editor's note

The research and development facility proposed for Exploration Park, announced at the Nov. 19 solar power event (*see Page 1*) could result in at least 50 high-salary science and engineering positions permanently established at Kennedy by SunPower and other Florida Power & Light partners.

It also has the potential to bring with it, a nearby solar panel manufacturing facility, and as many as 1,000 new construction jobs.

FPL and Kennedy have initiated environmental studies and a plan to support the project, which could be initiated before the end of 2010.

No Boundaries winning team tours Spaceport

Sometimes when high school seniors team up to do a project, one person does all the work while the others sit back and enjoy the easy grade. That's not the case with the winning team of the 2009 No Boundaries competition.

In fact, team members Julie Iuliano, Jean Xin, Tatiana Barry and Kaitlyn Doubek consider each other best of friends and did their individual best to not let their team down.

"The way it all came together was really nice," Barry said. "We all took care of our own little part and it came together really well."

NASA collaborated with USA TODAY on the education initiative to encourage students to explore careers in science, technology, engineering and math, while learning about NASA.

The group from Prairie School in Racine, Wis., topped a field of 151 entries representing more than 500 students. Their winning research project on astrobiology included the creation of a Web site, **http://web.prairieschool.net/astrobiology/**.

Xin came up with the idea of a Web site and knew from the beginning that it needed to be relevant to teenagers.

"We based it on a DNA theme," Xin said. "Our topic just seemed so promising and interesting."

The top award carried with it a $2,000 prize. Their ultimate reward came in the form of a VIP tour Nov. 10-12 of Kennedy Space Center facilities, including Launch Pad 39A where space shuttle Atlantis was awaiting liftoff and the Space Station Processing Facility where station components are prepared for launch.

The team and its sponsoring teacher, Dr. Jean Weaver, also had an opportunity to present their award-winning project to NASA staff.

Doubek, who composed all the music for the Web site, didn't make the trek down to Kennedy. Instead, she used her share of the prize money to buy some music composition software.

The team members who did make it told Spaceport News they hope to get into a college soon. Xin wants to get into MIT or the University of Chicago; Iuliano has applied for enrollment at the University of Dayton and St. Louis University; and Barry hopes to get into Vanderbilt University or the University of Wisconsin-Madison.

NASA/Jack Pfaller

The winners of the 2009 No Boundaries competition, from left, are: Dr. Jean Weaver, Julie Iuliano, Jean Xin, Tatiana Barry, and not pictured, Kaitlyn Doubek.

Teamwork key to Tranquility transfer

By Cheryl Mansfield
Spaceport News

The last major component set to be added to the International Space Station, the Node 3 module known as Tranquility, was officially transferred from the European Space Agency to NASA during a ceremony Nov. 20.

Inside the cavernous Space Station Processing Facility, officials from the two cooperating space agencies took the opportunity to reflect on the nearly completed station and its role in future space exploration.

"Station is truly a phenomenal engineering accomplishment, but as important as all that hardware is on orbit, what it really is, it's the unity of all of us as partners," said Bob Cabana, Kennedy's director and a former astronaut who commanded the first space station construction mission. "All those different cultures coming together and working together as one for the betterment of not just our own countries, but our world, and preparing us to go beyond low Earth orbit to explore in space."

The pressurized node will provide additional room for crew members and many of the space station's life support and environmental control systems already on board. These systems include air revitalization, oxygen generation and water recycling.

A waste and hygiene compart-

See **NODE 3,** Page 6

NASA/Kim Shiflett

Bernardo Patti, head of the European Space Agency's space station program, left, and Michael Suffredini, NASA's program manager for the International Space Station, shake hands after signing the Node 3 Transfer of Ownership on Nov. 20.

Inventors' new astronaut glove designs garner applause

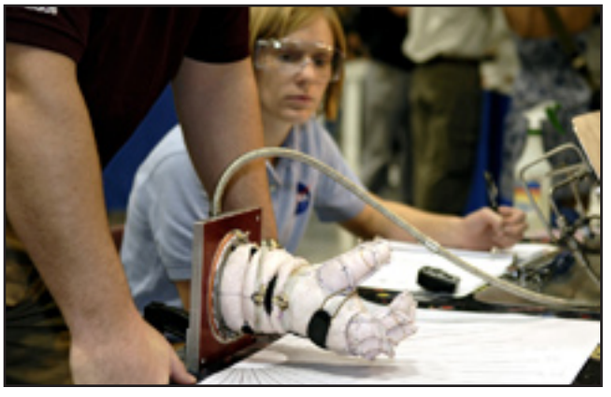
By Anna Heiney
Spaceport News

Two independent inventors answered NASA's call for innovative new designs for the next generation of astronaut gloves. Today's spacewalkers have to contend with bulky gloves that stiffen when pressurized, making it tough to grip and flex while completing tasks in the vacuum of space.

Peter Homer and Ted Southern put their prototypes to the test during NASA's 2009 Astronaut Glove Challenge, held Nov. 19 at the Astronaut Hall of Fame in Titusville, Fla., near Kennedy Space Center.

Homer, an engineer from Southwest Harbor, Maine, was awarded $250,000 after placing first. Southern, a sculpture major at New York's Pratt Institute, earned second place and $100,000.

The ultimate goal of the Astronaut Glove Challenge is to improve the current design, resulting in a stronger and more flexible glove that will reduce the hand fatigue experienced by astronauts working in space.



NASA/Kim Shiflett

This newly designed glove is one of the entries in the 2009 Astronaut Glove Challenge, part of NASA's Centennial Challenges Program, at the Astronaut Hall of Fame near Kennedy.

For the first Astronaut Glove Challenge held in 2007, competitors supplied only the inner pressure-restraining layer. The outer layer, which provides protection against extreme temperatures and micrometeoroids, was an added requirement this year. Representatives from NASA and the agency's spacesuit contractor, ILC Dover, observed and noted the gloves' performances in a series of three tests.

The competitor inserted his gloved arm and hand into a depressurized glove box for the dexterity and flexibility test, completing cycles of movements and tasks, such as gripping a handle, using tools, flexing the hand and wrist, and touching the tip of the thumb to the tip of each finger.

In the joint force test, test operators from ILC Dover sealed and pressurized each glove to 4.3 pounds per square inch of internal pressure, then tugged it through its full range of motion while measuring the amount of force each movement required.

Finally, the gloves' strength capabilities were measured in the burst test. Test operators sealed the glove and filled it with water, slowly increasing the pressure. Competitors, judges and other spectators leaned forward, watching the glove for signs of weakness or rupture.

The event was sponsored by Secor Strategies LLC of Titusville, Fla., and non-profit Volanz Aerospace of Owings, Md., managed the event for NASA.

"Both of you did better than the (current) Phase VI glove, and you both get applause for that," said Alan Hayes, Volanz Aerospace chairman. "The test results were incredibly close."

Both Homer and Southern began working on the project in spring 2006 and competed in the first Astronaut Glove Challenge. Homer took home $200,000 after winning that event. After the 2007 challenge, Southern teamed up with former competitor Nikolay Moiseev.

Prior to the challenge, competitors were in the dark about who else would participate or what their designs might be.

"You're sort of developing in the vacuum of your own little world," Homer said. "You're hoping that you're going far enough with your design. And then there's the aspect of, 'Who am I going to be going up against?' I didn't know Ted was competing until we walked in and saw each other."

The Astronaut Glove Challenge is one of six Centennial Challenges prize competitions managed by NASA's Innovative Partnerships Program.

First-time shuttle launch spectators all atwitter

It's probably a vivid memory etched in your brain... your first space shuttle launch as a Kennedy Space Center employee. The ground rumbles, car alarms screech, and for a few moments everyone around you is silent until clapping and whistling erupts in unison.

It's a once-and-a-lifetime experience that 101 "Tweeters" shared with the world of social-networking during space shuttle Atlantis' launch on its STS-129 mission Nov. 16.

The "Tweet up" event allowed NASA to share the excitement of a shuttle launch with a whole new audience -- Tweeters came from 21 states and four countries -- with an estimated 150,000 followers.

Catherine Qualtrough from North Carolina, who goes by @CatherineQ on Twitter, typed, "FEELING the launch was amazing. Sound wave strong and you feel it in your chest."

Louis Suarato from New York, also known as @LouisS, typed, "The most amazing experience of my life! The vibration goes through your body, engulfs you & you feel like part of the shuttle."

After the adrenaline of launch slowed down, some Tweeters took the time to respond to questions from their loyal followers.

"Yes, it was LOUD. The shockwaves shook my body for 8-10 seconds or more from 500 feet to about 5,000 feet," typed Chris Floyd, @cmfloyd, from California.

Others even described the emotional aspect of the event.

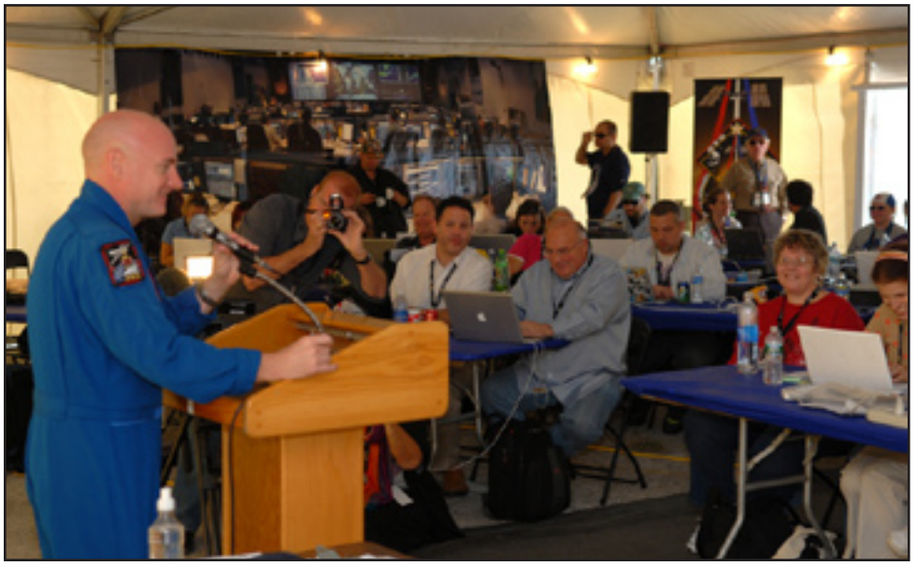
"Saw more than a few teary eyes after the launch before it got too blurry to see," typed Chris Bridges, @cabridges, from Orange City, Fla.

NASA opened registration for the event Oct. 16 on the Web and had an overwhelming response. The 100 slots available, plus an additional 50 backup slots, were scooped up in less than 20 minutes. From there, a team of about 30 people from Kennedy and NASA Headquarters began planning for the Tweeps arrival.

"I'm really proud of the team who has been working on the Tweet up," said NASA Headquarters Public Affairs Officer John Yembrick, who moderated the event. "We didn't hire anyone new for this; everyone who has contributed has done so in addition to their already busy schedules. We've had support from IT, NASA TV, NASA photo, security and more."

The dedicated team provided the launch enthusiasts with wireless Internet, a cozy tent outside the NASA News Center, a tour of Kennedy facilities, and a chance to talk with shuttle technicians, engineers, astronauts and managers, as well as plenty of goodies to take home.

"Souvenirs galore to bring home. NASA gave us a press kit with lots of stuff. Videos, emblems, pins etc. Most honored 2 get the STS129 patch," typed Floyd.



NASA/Jim Grossmann

Astronaut Scott Kelly addresses the participants of Kennedy's first Tweet up, which was held to share the excitement of a space shuttle launch with a new audience. Kelly, slated to command the International Space Station next year, has a Twitter account (@StationCDRKelly) and is sharing his perspective with the Twitter community as he trains around the world.

From **STOTT,** Page 1

space shuttle. I'm on the runway for landing . . . I'm in the control center where we're launching the shuttle. I mean, it didn't seem like it could get any cooler than that," Stott said. "And fortunately, I had people that I considered to be mentors that I worked with there."

It was during her final two years at Kennedy that she joined the Space Station Hardware Integration Office.

That position took her to Huntington Beach, Calif., where she worked as the NASA project lead for space station truss elements under construction at a Boeing facility.

Having experience with both shuttle and station hardware preparation, NASA selected Stott as an astronaut in July 2000.

Nine years later, she reflected on her own launch aboard a shuttle and residency on the space station.

"Up until the point of starting work at Kennedy Space Center with NASA, it never crossed my mind that being an astronaut was a possibility. And once I started working there and meeting the people that worked there, and seeing astronauts come through and seeing what they did when they were there -- working with the hardware or getting their colleagues ready to fly -- it became more real to me," Stott said. "And then having people encourage me was, I think, the big step to actually getting here."

While other employees from Kennedy have gone on to become astronauts too, Stott's time living and working aboard the station, coupled with her shuttle and station processing work, makes her experience unique.

As the STS-129 mission ends and the landing convoy she once commanded surrounds Atlantis on the runway, Stott's journey will have come full circle, from Kennedy to space, and back home again.

Nicole Stott's Space Station Blog

Launch: "2 words: Woo Hoo!! These words were exclaimed by me (maybe multiple times) through the ginormous smile on my face as we left the pad. And oh by the way, you don't just leave the pad. You get kicked off the pad! The engines light and you feel the rumble, 6 seconds later the solid rocket boosters light and you are literally kicked off the pad and you have no doubt that you are going someplace fast! "

Spacewalking: "I still can't believe I had the opportunity to step outside and spend 6 hours working outside of the comfortable protection of our space station."

Earth: "I have never been able to look at a picture of the Earth from space and not feel a sense of awe. Well let me just say that this is another case of the picture not doing the reality justice. The Earth, our planet, is indescribably beautiful . . . Every time I look out one of our windows I am surprised by some new and beautiful discovery."

Read more of Stott's reflections from space at: **http://blogs.nasa.gov/cm/blog/1831**

Shuttle Landing Facility team ready for anything

By Steven Siceloff
Spaceport News

NASA's Shuttle Landing Facility, or SLF, was built for the space shuttle, but it also has hosted an international assortment of gigantic transport aircraft, fighter jets, race cars and even off-course skydivers.

Someone watching from the control tower might in one day see astronauts diving at the runway in a Shuttle Training Aircraft, NASA security helicopters sweeping the area, or a mosquito aircraft spraying near the launch pad perimeter. They also can find themselves making room on the runway for the occasional stray private pilot.

Such is life as an air traffic controller at one of the world's longest runways.

"You never know what's going to happen next," said Ron Feile, who oversees the air traffic control and operations at the SLF for EG&G.

Built a few miles west of the shuttle launch pads at Kennedy Space Center, the landing strip was built for such a unique mission that it may be hard to think of it as an airport. But that's what it is, just ask the folks who man the control tower 100 feet above the 3-mile-long, concrete runway.

"You're always vigilant, you're always on your toes," said Ken Hooks, who has been working as an air traffic controller since 1968.

The control tower at the SLF is relatively new and offers some of the best views around of the spaceport. Standing inside the glass enclosure at the top of the tower, controllers have the same gear that other airports use to monitor and regulate aircraft moving around the area. The space is split between a NASA-focused controller and one who works for the Air Force.

The controllers oversee rectangles of airspace running far north of Kennedy down to Port Canaveral. If something is flying inside any of the areas, the controllers want to know what it is.

"You'll have all these small little aircraft that are in here and have official business, but you need to know who they are, where they are and what they're doing," Hooks said.

The assortment of aircraft picks up greatly for launches and landings, Feile said. That is when the Kennedy helicopters patrolling the launch pads are joined by Air Force H-60 search-and-rescue helicopters from Patrick Air Force Base and several NASA aircraft. Also, astronauts not on the flight crew for launch fly T-38s and Gulfstream II aircraft on weather reconnaissance missions around the launch site.

The controllers also scan the area for weather concerns and monitor the shuttle servicing convoy and security forces so they can move around the area safely. The tower typically goes into launch or landing mode two days before a liftoff or the end of a mission.

The tower controllers have a wealth of procedures and resources to call on in case someone breaks the cardinal rules of the airspace, particularly on launch day.

For instance, a private aircraft flew near the space center during a shuttle countdown in 2005 and had to be escorted to a landing by Air Force fighters.

When there is not a shuttle on the pad or landing, there still is plenty to see and do at the SLF. For instance, a skydiver and his tandem jumping partner were blown off course one day by a storm. They landed on a grass strip between the SLF runway and the canal -- a point 12 miles from their intended landing zone.

There also was a pilot from the Midwest ferrying an airplane who mistook the 15,000-foot-long shuttle runway for the much smaller landing strip at Merritt Island Airport to the south.

In such cases, the uninvited pilots or skydivers are questioned by Kennedy's security forces before they are allowed to leave. The Federal Aviation Administration also can get involved depending on the circumstances.

The runway is large enough to host any airplane in the world, so it occasionally is called on for a potential emergency airliner landing, though none have taken place.

Intruders on the runway are not always human, either.

Since the SLF is inside the Merritt Island Wildlife Refuge, animals of all sorts routinely make their way onto the runway and have to be chased off. Alligators, snakes and turtles may not seem particularly menacing to a multimillion-dollar aircraft, but hitting one of the creatures during a takeoff or landing could easily destroy the landing gear on an astronaut's T-38 jet.

So if a controller spots an animal on the tarmac, a van or truck is dispatched to scare them away. A truck approaching an alligator from behind is normally enough encouragement to send the creature into the neighboring grass or a canal.

Lately, the vehicles on the runway have taken on unusual shapes as the space agency has cleared the way for more commercial uses of the facility when the shuttles aren't using it.

Starfighters Inc., a company that flies supersonic F-104 aircraft, has begun using the SLF for commercial spaceflight training and related missions.

While cutting-edge aircraft and spacecraft are part of the regular scenery at the SLF, vehicles that never leave the ground are becoming more common at the runway.

NASCAR and Formula 1 racing teams have been wringing out their road rockets on the runway to tweak designs. Tractor-trailers also are trying new aerodynamic profiles in search ways to save fuel and money.

As one of the SLF workers who handles operations at the runway, Goldy McKnight says, "We're very diverse out here."

Follow the shuttle landing blog online

As of presstime, space shuttle Atlantis was scheduled to land Nov. 27 at 9:44 a.m. EST. As the crew of STS-129 embarks on their journey home to the Shuttle Landing Facility, Kennedy's Web team will be blogging from the air traffic c ontrol tower for the first time.
Follow along with all the exciting landing milestones at:
www.nasa.gov/mission_pages/shuttle/launch/landing_blog.html.

Helicopters with medical personnel arrive at the Shuttle Landing Facility before space shuttle Discovery's landing.

Space shuttle Endeavour rolls past the air traffic control tower, which is about 100 feet above the 3-mile-long runway.

The Virgin Atlantic Airways GlobalFlyer aircraft, piloted by Steve Fossett, touches down at the Shuttle Landing Facility.

The U.S. Navy's Blue Angels rehearse before the 2008 KSC Visitor Complex Space and Air Show.

Engineer who helped send Glenn into space remembered

By Steven Siceloff
Spaceport News

Thomas O'Malley, a legendary engineer responsible for launching the first American into orbit, died of pneumonia Nov. 6 in Cocoa Beach, Fla., at age 94.

Working for General Dynamics' Convair division, O'Malley played major roles in the conversion of the Atlas missile into a rocket safe enough for the first astronauts.

Thomas O'Malley

O'Malley is perhaps best known as the man who pushed the button to launch the Atlas rocket that carried astronaut John Glenn into orbit on Feb. 20, 1962.

That was the first time an American orbited the Earth.

Later, North American Aviation called on O'Malley to help get the company's Apollo command module launch operations back on track following the Apollo 1 fire where astronauts Command Pilot Virgil "Gus" Grissom, Senior Pilot Ed White and Pilot Roger Chaffee lost thier lives in 1967.

The redesigned command module made its first flight safely in October 1968.

O'Malley also was instrumental in launch operations for Skylab, Apollo-Soyuz and the space shuttle as a vice president at North American, which became Rockwell International.

O'Malley was born Oct. 15, 1915, in Montclair, N.J.

He graduated from the Newark College of Engineering in 1936 with a bachelor's in mechanical engineering.

He was married for 65 years to the former Anne Arneth and had two sons, Thomas Jr. and James; daughter Kathleen; three grandchildren and two great-grandchildren.

NASA/Jim Grossmann

NASA's first large-scale solar power generation facility is ready for operation at Kennedy. The facility is the first element of a major renewable energy project currently under construction.

From **SOLAR,** Page 1

distributed to utility customers.

"The fuel for this is always free," said Eric Silagy, FPL vice president and chief development officer. "Solar power is ready to take center stage here in the sunshine state."

SunPower Corp. designed and built the facility by mounting 3,344 panels atop 1,183 piers. The structures are designed to withstand 130 mph winds.

Compared with a conventionally fueled power plant, the solar energy center is relatively simple. All the panels have to do is let the sun hit them to produce current. It can be monitored remotely and its maintenance needs are expected to be quite small, said Roderick Roche, senior manager in SunPower's program office.

The panels are tilted 20 degrees facing south. Their greatest energy producing time will be in April, from 11 a.m. to noon. Predictably, January conditions are the least favorable for power generation, but that won't stop the panels from working even in the winter.

Jim Ball, program manager for Center Development at Kennedy, said it would take a tremendous amount of new solar facilities to fulfill all of the center's electricity requirements, but that may become possible as the technology improves and new efficiencies develop.

"We're in the right place at the right time," Ball said.

From **NODE 3,** Page 3

ment and the COLBERT treadmill also will be relocated from other areas of the station.

"ISS is the first necessary step in human's exploration beyond low Earth orbit," echoed Michael Suffredini, NASA's program manager for the International Space Station.

Tranquility was built for NASA by Thales Alenia Space in Turin, Italy, under contract to the European Space Agency. The module was part of ESA's barter agreement, in return for NASA delivering the Columbus laboratory to the station.

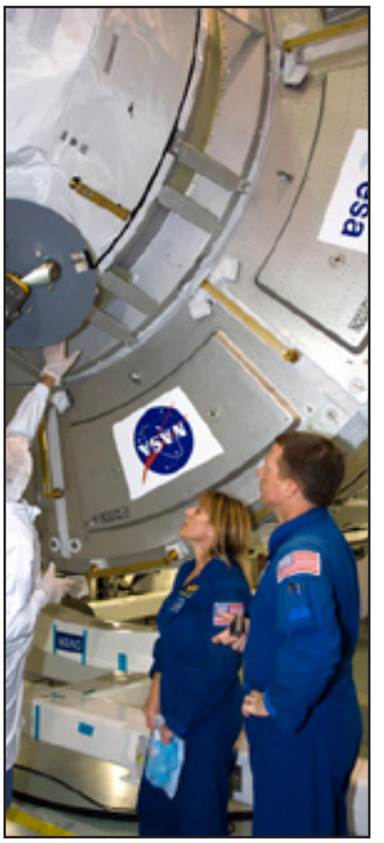
"The goal of tomorrow is to use this station, this beautiful achievement, to the maximum extent," said Bernardo Patti, head of the European Space Agency's space station program. "Now the ISS is becoming a full development program and it will be used as a platform to support an exploration program. We have all the ingredients to make that a success. We have the talent, we have the experience, and we have all the passion and the ideas."

Spanning about 22 feet in length and 14 feet in diameter, the node arrived at Kennedy aboard an Airbus "Beluga" aircraft in May 2009, and has been undergoing processing at Kennedy ever since.

"It's been an outstanding team collaboration between Thales Alenia Space, NASA and ESA," said Sonia Ferrer, ESA's Node 3-Cupola Product Assurance and Safety manager.

Tranquility's connection point on the station will be on the Earth-facing side of the Unity node. The new component will provide an additional docking point for space shuttles and other crew vehicles visiting the station. Attached to Tranquility will be Cupola, a unique work module with six windows on the sides and one on top.

Tranquility and Cupola are set for delivery to the station early next year during space shuttle Endeavour's STS-130 mission.



NASA/Kim Shiflett

STS-130 Mission Specialist Kathryn "Kay" Hire, middle, and Pilot Terry Virts Jr., right, check out Cupola, which will be attached to Tranquility, during their Crew Equipment Interface Test on Nov. 5 in the Space Station Processing Facility.

Remembering Our Heritage

Aerospace archaeologists 'dig' Spaceport's past

By Kay Grinter
Reference Librarian

Thomas Penders, the cultural resource manager for the U. S. Air Force 45th Space Wing's Civil Engineer Squadron, is not afraid to get his hands dirty.

The archaeologist for the squadron, Penders is one of about only 20 professional archaeologists in the burgeoning field of aerospace archaeology.

The responsibilities of the cultural resource manager encompass all the historic launch complexes, cemeteries, and launch-related buildings on Patrick Air Force Base, Cape Canaveral Air Force Station, and their related areas, such as the Malabar Training Annex. He shares information with Kennedy Space Center's Historic Preservation Officer Barbara Naylor.

Penders also is the facility manager of the Cape Canaveral Lighthouse and has oversight of all World War II facilities and Cold War buildings at Patrick.

An aerospace archaeologist's pursuit is to find, document, recover and preserve sites important in aerospace history. Although primarily missile crash sites, structures and facilities used in the space program also are included.

One such site that Penders has been studying on Cape Canaveral is a crater left by a Jupiter missile accident more than 50 years ago.

Photo courtesy of U.S. Air Force

Thomas Penders of the Space Wing's 45th Civil Engineer Squadron holds a piece of ancient pottery uncovered at the Little Midden site.

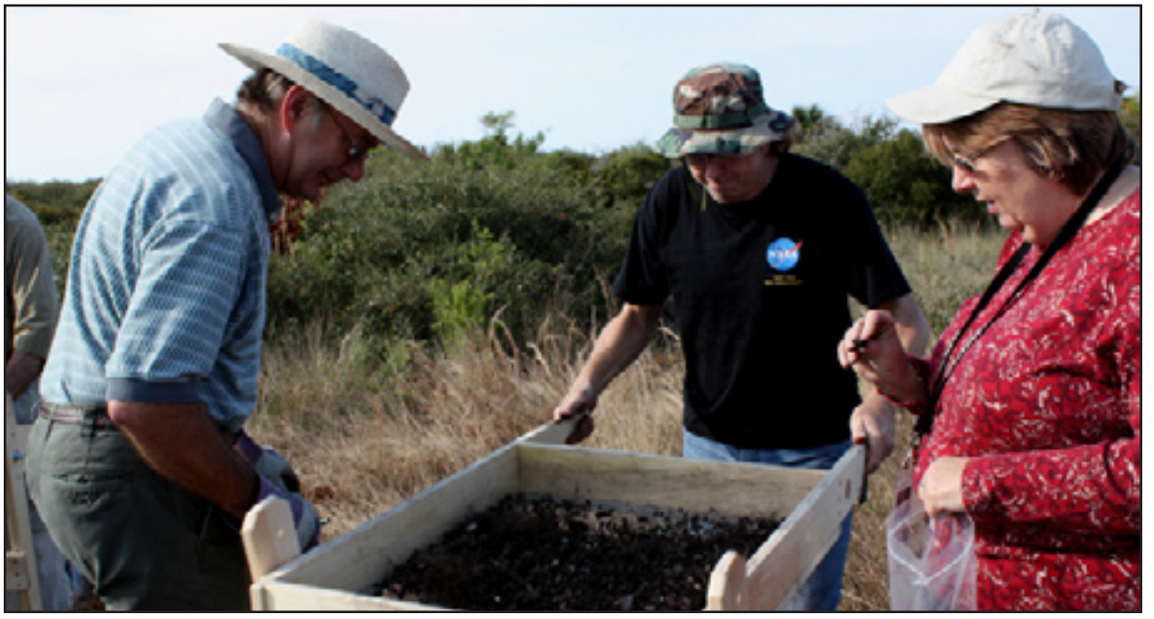


Photo courtesy of U.S. Air Force

From left, Dale Hawkins, Timothy Kozusko and Elaine Williams sift through dirt and stones for artifacts at the Little Midden archeological site at Cape Canaveral earlier this year.

Almost all the fragments identified are from the lower and middle interior areas of the missile.

In a more traditional archaeological excavation, Penders and a group of volunteers from the Indian River Anthropological Society, a local chapter of the Florida Anthropological Society, have been working a site on Cape Canaveral called Little Midden, found in 2006. Named after the heaps of earth and artifacts that were left by ancient dwellers, Little Midden is a 7,500-square-foot patch of soil one-and-a-half-feet deep.

Unfortunately, the site was partially destroyed during the 1960s when the area was used to process meteorological rockets. Remnants of their infrastructure are still visible among the undergrowth.

"It appears that the rocket processing facility destroyed part of the site," Penders said. "Some of the midden material was removed and used to stabilize some unpaved roads nearby. We are left with a small snapshot of what was once a significantly larger site."

With much of the history already lost, the goal now is to extract as much remaining information as possible by painstakingly filtering shovelfuls of dirt, shells and roots to recover the 500 to 1,000-year-old shards of pottery, stone tools, and even shark's teeth and vertebrae.

"There are numerous middens at Cape Canaveral, but not many with the number of atypical artifacts as we are seeing here from our excavations to date," Penders said. "The animal bones suggest the site may have been used for a temporary seasonal camp, but the artifacts suggest there may have been a more permanent settlement here at one time."

All artifacts discovered at the Little Midden site will be kept at Cape Canaveral. Once the current excavation is finished, a report will be sent to the Florida State Historic Preservation Office. The Air Force then will be allowed to develop the property if needed.

Another rather unique site under evaluation is the Sarah site, named for the woman who identified it in 2008 during the annual scrub jay census. Sarah had attended a presentation Penders made at the Space Coast Birding Festival.

Located near the north boundary of Cape Canaveral Air Force Station, the Sarah site is a large site that has not been impacted by development or previous investigations. At first, the site was thought to be a relatively small scatter of prehistoric artifacts, but recent analysis suggests the site could be one mile long. This midden site promises to be an important site and identifying its significance and boundaries is under way.

The artifacts found so far include check-stamped pottery, an indication that the site dates to the Malabar II Period, from AD 750 to 1565, as well as animal bones, shell tools, and a ship's spike that may date to a time of early European contact.

A small percussion cap from a black powder rifle also found is direct evidence of the mid-19th century homestead known to have existed there.

"We have a lot more testing to do before we can make any final assumptions about the site," Penders said.

In the meantime, Penders is working on a paper on the Jupiter missile site, which he will be presenting at a conference of the Society for Historical Archaeology in January.

More online

For more information on the Indian River Anthropological Society and its projects, visit **http://www.nbbd.com/npr/archaeology-iras/**.

NASA/Jim Cain

Guest speaker, Rita Willcoxon, director of Launch Vehicle Processing, addresses employees during the Senior Secretarial Team Fall Social on Nov. 19 in the Operations and Checkout Building's Mission Briefing Room. The annual event is a networking, team-building activity open to all civil servant and contractor secretaries and their supervisors.

Launching Leaders, Space Club host networking event

Kennedy Space Center Launching Leaders and the National Space Club of Florida are joining for a networking event Dec. 3 from 4 to 7 p.m. at Fish Lips' upper deck in Port Canaveral. The event is open to the public but RSVPs must be received by Nov. 30. Admission is $5. To sign up for the networking event, e-mail **ladonna.j.neterer@boeing.com** or call **321-383-6135**. Admission includes food, drinks and surprises. For more information on the NSC, visit **www.nscfl.org**.

Looking up and ahead . . .

Planned for Nov. 27	STS-129 landing/KSC Shuttle Landing Facility: 9:44 a.m. EST
Targeted for Dec. 2	Launch/CCAFS: Delta IV, WGS SV-3; Window 7:21 to 8:41 p.m. EST
Dec. 9	Launch/VAFB: WISE; Window: 9:10 to 9:23 a.m. EST
Targeted for Feb. 2	Launch/CCAFS: Falcon 9, Window 11 a.m. to 3 p.m. EST
No earlier than Feb. 3	Launch/CCAFS: Atlas V, SDO; 10:53 to 11:53 a.m. EST
Targeted for Feb. 4	Launch/KSC: Endeavour, STS-130; 5:52 a.m. EST
No earlier than Feb. 25	Launch/CCAFS: Delta IV, GOES-P; TBD
Targeted for March 18	Launch/KSC: Discovery, STS-131; 1:34 p.m. EDT
Targeted for May	Launch/CCAFS: Delta IV, GPS IIF-1; TBD
Targeted for May 14	Launch/KSC: Atlantis, STS-132; 2:28 p.m. EDT
Targeted for May 23	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; TBD
Targeted for July 29	Launch/KSC: Endeavour, STS-134; 7:51 a.m. EDT
Targeted for Sept. 16	Launch/KSC: Discovery, STS-133; 11:57 a.m. EDT
No earlier than Oct. 1	Launch/VAFB: Taurus, Glory; TBD
Targeted for Fall 2011	Launch/CCAFS: Atlas V, Mars Science Laboratory; TBD

WORD ON THE STREET

Where do you see America's space program in five years?

"It depends what the folks in Washington do. I'd like NASA to get back to the moon."

Gavin Oglesby, with BAE Systems

"It depends on what the president tells us based on his decision . . . pending the Augustine report."

Grady McCoy, with NASA

"Hopefully we'll be up and going with space exploration and a new space vehicle."

Tom Nguyen, with NASA

"Hopefully it still will be progressing and Constellation will be doing well."

Alexandra Gavakis, with KSC Credit Union

"It depends a lot on our relationship with China . . . hopefully we can have a working relationship."

Michael Farrell, with BAE Systems

John F. Kennedy Space Center

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