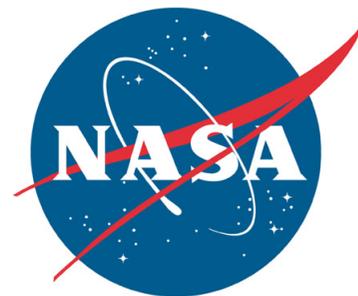


Spaceport News



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

Emotions galvanize Firing Room 4

By Steven Sicheloff
Spaceport News

The realities of exacting, hard work required to launch a space shuttle and the sensation of anticipation meet in the firing rooms on launch day.

"It's electric," said Charlie Blackwell Thompson, chief of the NASA Test Director's Office. "You see all kinds of emotions when you're in the room."

With Endeavour's STS-134 mission about to get under way, the launch team assembled in Firing Room 4 at the Launch Control Center on April 26 and began with the countdown. However, on launch morning, engineers detected a failure in one of two heater circuits associated with Auxiliary Power Unit 1. The engineers at Kennedy set out on an

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CLICK ON PHOTO

NASA

Space shuttle Endeavour sits on Launch Pad 39A after the rotating service structure (RSS) is moved away April 28. The structure provides weather protection and access to the shuttle while it awaits lift off on the pad. RSS "rollback," as it's called, began at 11:58 p.m. EST and wrapped up at 12:32 a.m. April 29. Launch is planned for no earlier than May 2 at 2:33 p.m. Endeavour and its six-member STS-134 crew will deliver the Alpha Magnetic Spectrometer-2 (AMS) and Express Logistics Carrier-3 to the International Space Station. To follow the countdown, click on the photo or go to www.nasa.gov/intv.

NASA awards CCDev2 contracts

By Steven Sicheloff
Spaceport News

NASA awarded approximately \$270 million to four commercial companies April 18 to continue development of commercial rockets and spacecraft capable of safely flying astronauts into orbit and to the International Space Station. The award was the second phase of the agency's Commercial Crew Development effort, known as CCDev2.

"We're committed to safely transporting U.S. astronauts on American-made spacecraft and ending the outsourcing of this work to foreign governments," NASA Administrator Charlie Bolden said. "These agreements are significant milestones in NASA's plans to take advantage of American ingenuity to get to

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STS-133 crew reflects on mission, unique shuttle program

By Rebecca Regan
Spaceport News

Appreciating space shuttle Discovery and its many accomplishments was a common theme during the vehicle's final spaceflight, the STS-133 crew members said during a crew return event at Kennedy Space Center on April 18.

"Think about how miraculous it is that you can bring a vehicle back on its 39th mission after nearly 30 years of operation, land it on the runway, and there be absolutely nothing wrong with it," STS-133 Commander Steve Lindsey said to Kennedy workers gathered in the Training Auditorium. "I mean, that is just a testimony to the work that you all do."

"I can't thank you enough from the bottom of my heart for Discovery and all you've done for us . . . when we launch off that launch pad, we launch with no worries because we know you've poured everything you have into it," Lindsey added.

Lindsey and his five crewmates -- Pilot Eric Boe and Mission Specialists Alvin Drew, Nicole Stott, Steve Bowen and Michael Barratt -- flew Discovery on a 13-day mission to the International Space Station to



CLICK ON PHOTO

The STS-133 crew members sign autographs and talk to workers April 18 in the Training Auditorium at Kennedy Space Center. From left, are Mission Specialists Nicole Stott, Alvin Drew, Steve Bowen and Michael Barratt, Pilot Eric Boe and Commander Steve Lindsey. For more photos of the crew return event or the milestones leading up to the STS-133 launch at Kennedy, click on the photo.

NASA/Kim Shifflett

deliver Express Logistics Carrier-4, or ELC-4, and the Permanent Multipurpose Module, or PMM, packed with equipment, experiments and supplies.

Stott, who used to work for the shuttle program at Kennedy, talked the lead spacewalkers through their tasks outside the station and told mission control in Houston, "We're doing really well. They've been following instructions exception-

ally well today . . . as I boss them around."

Stott, being quite the instructor, even taught Kennedy's Center Director Bob Cabana, veteran of four shuttle flights, something years ago. "Nicole taught me how to land the space shuttle when she was a flight engineer on the Shuttle Training Aircraft," Cabana said.

"And that was no easy task, right?"

"No," Stott replied to a laughing audience.

STS-133 also delivered the station's first humanoid astronaut helper called Robonaut 2, or R2. Even though they didn't assist R2 out of its container, they did feel an odd sense of camaraderie with the machine.

"We had a running joke that you'd wake up at night and Robonaut might be behind you getting ready to get you," Boe joked. "Hopefully a lot of us will get another opportunity to go up in space and see him at work."

"He's waiting for you, Eric," Stott jokingly added.

Toward the end of the event, a worker asked the crew what it felt like to take Discovery on such a historic flight, which not only marked its final but also a full year in space.

"Discovery leaves an incredible legacy . . . the challenges for the next ship that takes that name, it's going to have a tough act to follow," Barratt said. "It better go far and just do an incredible job."

Following the event at Kennedy, about 350 employees, and their friends and families, mingled with the crew members at a local restaurant in Cape Canaveral, Fla.

From FIRING ROOM, Page 1

exhaustive process to try to find the problem and fix it during the countdown.

The flight team in Houston also lent their brainpower to the situation, but the system is critical for controlling the shuttle at landing and the teams wanted to make sure they knew what caused the problem and how to fix it before going ahead with the countdown.

Shuttle Launch Director Mike Leinbach called off the April 29 attempt at 12:16 p.m., a few minutes before the astronauts would start strapping into Endeavour's flight deck.

The system that failed is important because heaters are required to keep the APUs' hydrazine from freezing on orbit. The problem might be associated with a Load Control Assembly, which is a switchbox, located in the aft end of Endeavour, or an electrical short in the wires leading into or out of the switchbox.

Liftoff is planned for no earlier than May 2 at 2:33 p.m.

Endeavour will carry the Alpha Magnetic Spectrometer to the International Space Station during the two-week flight.

The six veteran astronauts of STS-134, led by Commander Mark Kelly, have worked with the launch team several times on previous launch days and during countless training sessions.

Greg H. Johnson is the pilot for the mission, while Michael Fincke, Greg Chamitoff, Drew Feustel and European Space Agency astronaut Roberto Vittori are mission specialists.

The firing rooms are the control center for the launch team from the time a shuttle lands through its processing for flight and into its next countdown and launch. Even when a shuttle is months away from its next mission, there still is a group in one of the firing rooms overseeing its progress.

"You're not going to find this anywhere else in the world," said Roberta Wyrick, an orbiter test conductor for United Space Alliance whose first mission in that role came in 1981 on STS-2, the second shuttle flight.

Although those involved are well-rehearsed for the countdown, launch day does not feel like a final exam, but game day, Blackwell Thompson said.

"It doesn't matter what launch it is, nine minutes and counting, my heart's beating faster," Wyrick said.

The team is as large as it is because the shuttle systems are enormously complex, and fixing one problem has a potential to cause other problems.

"I don't think you can have one expert," Wyrick said. "I don't think you can have someone who has all the knowledge."

The people who oversee the countdown generally come out of the ranks of the specialists. Blackwell Thompson worked with payload systems before becoming a NASA test director, or NTD, and Wyrick worked with the ground launch sequencer, which is the computer software system that controls the last 45 minutes of the countdown and launch.

After launch, many of the controllers remain at their consoles to begin the critical steps to make the launch pad safe.

"If you're the one in charge of the launch, there are still things to do," Wyrick said. "It's not like it's over."

Controllers say they never get complacent about a launch or countdown or just work to get through them. That may be why so many of them have worked in the firing rooms for decades.

Blackwell Thompson said, "For many of us, this is our life's work."

Kennedy showcases current, future work

By Linda Herridge
Spaceport News

While Kennedy Space Center continues its work to complete NASA's final two space shuttle launches it also is gearing up for the future. As space shuttle Endeavour sat perched on Launch Pad 39A for its final mission, more than 100 media representatives were shuttled to various locations around the center for a "Now and Future" showcase tour April 27.

Inside Orbiter Processing Facility-2, NASA Transition and Retirement Flow Director Stephanie Stilson briefed the media on the work being done to prepare the vehicle for display with the Smithsonian.

Standing beneath the orbiter, Stilson said Discovery is being safed of all hazardous materials, including removal of all pyrotechnics, hypergolics, ammonia, freon and water. The orbiter maneuvering system (OMS) pods, forward reaction control system (FRCS) and three main engines have been removed.

Stilson said the OMS pods and the FRCS will be sent to the Johnson Space Center White Sands Test Fa-



NASA/Jack Pfaller

Discovery's NASA Flow Director Stephanie Stilson briefs the media April 27 on the work being done to prepare the vehicle for display at the Smithsonian National Air and Space Museum's Udvar-Hazy Center in Chantilly, Va.

city in Las Cruces, N.M., for full decommissioning. They will be returned to Kennedy and reinstalled on Discovery.

"The work is actually similar to preparing for the next flight," Stilson said. "But this time it's like watching your child go off to college."

Surrounded by several levels of platforms, and with the engines removed, technicians gained access to the aft compartment to remove other items for safing such as the auxiliary power units.

Stilson said the museum wants the vehicle to remain as authentic as possible.

"On the outside Discovery will look like it's just rolling over to the Vehicle Assembly Building," Stilson said.

Stilson said that the vehicle should be ready for the Smithsonian in the February 2012 timeframe.

It will be attached to the Shuttle Carrier Aircraft using the mate/demate device at Kennedy's Shuttle Landing Facility (SLF) for the ferry flight.

At the SLF midfield, Deputy Manager of NASA's Center Planning Office Jim Ball talked about the work in progress to retain the landing facility and runway for use by both private companies and other government agencies in space transportation and related support activities hosted at Kennedy.

He said the SLF is just one example of how facilities built for and used by the Space Shuttle Program can be re-purposed to provide a

continuing value to America's space initiatives and NASA's mission.

"Kennedy is well on its way to becoming a multi-user launch complex serving both government and commercial programs and projects," Ball said. "For more than a year now, we have been working with the nation's space launch industry on how to transform the center and best enable the provision of services to government and commercial users."

Ball said the future will see a diversity of launch systems being accommodated at Kennedy, including orbital and suborbital flights. This diversity of launch systems and customers is expected to result in higher flight rates than what the space coast has seen in many years.

At Launch Pad 39B, Pad Senior Project Manager Jose Perez-Morales provided an update on the demolition and upgrade work that began in June 2010.

"Demolition of the pad structures are about 55 percent complete," Perez-Morales said. "And we have made repairs to the infrastructure, including removal and upgrade of cables and electronic equipment."

He said shuttle and Apollo era cables were replaced with fiber optic cables. Five floors of the fixed service structure have been removed. Final demolition of that structure and the rotating service structure should be completed by July.

Installation of new fiber optic instrumentation cables, electrical ground support equipment for future vehicle use, a hazardous gas system and ground special power should be completed by September.

"Future development will include refurbishment of the flame trench and installation of a new flame deflector," Perez-Morales said. "We are looking into the possibility of making the flame deflectors movable or interchangeable."

Other work to accommodate future launch vehicles could include modification and refurbishment of the ignition overpressure and sound suppression systems, installation of a new pad surface to the mobile launcher elevators, refurbishment of the environmental control system and HVAC systems, ground cooling system and emergency egress system.

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low Earth orbit, so we can concentrate our resources on deep space exploration."

The goal of the program is to have a human-capable certified spacecraft flying by the middle of the decade, said Phil McAlister, acting director of Commercial Spaceflight Development. The agency also intends that development costs will be cheaper because the launchers and spacecraft can split the price

between commercial and government uses.

For the second round of agreements, proposals selected were:

- Blue Origin: \$22 million. Blue Origin is working on a space vehicle design development for their biconic "New Shepard" spacecraft, designed to take off and land vertically.
- Sierra Nevada Corp.: \$80 million. Sierra Nevada is designing a lifting body called "Dream Chaser."
- Space Exploration

Technologies (SpaceX): \$75 million. SpaceX plans to use the award to develop an escape system for a crewed version of its Dragon capsule, an uncrewed version of which already has flown.

- The Boeing Company: \$92.3 million. The Boeing Company will continue development of the CST-100 crew capsule, including maturation of the design and integration of the capsule with a launch vehicle.

The selection was

based on how far the awards would move the companies toward their goals and the business plans of each project, McAlister said.

"We should have an exciting 12 months," said Ed Mango, program manager of the Commercial Crew Program at Kennedy Space Center. "I believe this effort will help close the gap in U.S. human spaceflight."

The space shuttle fleet will be retired this summer after two more missions and NASA is counting on a new

commercially developed spacecraft to take over the work of carrying astronauts into low Earth orbit. The agency also is hoping to save on development and operational costs by partnering with the commercial industry.

As the companies continue their development plans under the agreement guidelines, McAlister said the next step for NASA is to refine the strategy for the next round of development.

Bright light shines on emergency generator concept

By Steven Siceloff
Spaceport News

Some of the same technology that let walkways stretch over space shuttles in their processing hangars has the potential to bring electricity to a stricken area after engineers at Kennedy Space Center developed a portable truss that deploys solar panels which generate 5 kilowatts of peak power.

Strong enough to power a small house without air conditioning, the portable generators can make electricity as long as the sun shines on their blue-black solar cells. The prototype has a bank of batteries to store energy for short periods of no sun. A larger battery bank or backup conventional generator could be used to cover longer sunless periods.

"The portable solar generator would allow us to take advantage of the several days of clear weather you get after a hurricane comes through an area," said Jim Fletcher, a former staff engineer with United Space Alliance (USA). "The concept's based on the fact that you would pre-position it."

The truss demonstrator was unfurled recently in the Vehicle Assembly Building parking lot, where it drew a steady line of visitors. At 45-feet long, the prototype has a central area for electronics and the like with trusses extending out on each side. A second unit has solar panels and a battery bank.

While the solar cells convert the sunlight into electricity, Fletcher said the truss is the unique aspect of the project because it enables large solar arrays to be deployed from relatively small trailers. Each of the four 21-foot-long



NASA/Jim Grossmann

The portable solar power generator prototype is unfurled in front of the Vehicle Assembly Building on April 6 to display its operation. This portable truss that deploys solar panels is strong enough to power a small house without air conditioning.

trusses, with seven panels nestled inside, retracts into a 17.5-inch space. That kind of flexibility reduces the number of people needed to make it operational and also minimizes the impact of bringing it into a damaged area.

"It is novel technology," Fletcher said. "I don't know of any other trusses that do what this does."

The idea is getting a lot of attention from emergency planners for several reasons, particularly because the generator doesn't have to be refueled every few hours. The energy is basically free from the sun.

"I can see this evolving to a very popular means because it's cheap," said Wayne Kee, chief of Kennedy's Emergency Management Office. "To see it in a portable configuration, that was one of those 'Aha!' moments. It could potentially provide power to light up an area for

rescue of victims, provide power to cook meals, power a medical triage area and operate computers and other electronic equipment. Plus it is portable and can be taken virtually anywhere."

The prototype took about 18 months to build because work was lower priority than shuttle processing. The solar panels were paid for with energy rebates from FPL as a result of energy savings efforts at Kennedy.

NASA owns the prototype and Kee said it could be tested in a variety of situations at the center, although he will not depend on it for this hurricane season because it is still in prototype phase. The prototype is slated to be used at the USA generator shop at Kennedy where it will stand unfurled to provide solar power to the facility.

The project comes at a time of energy innovation at Kennedy. The center recently opened two

solar farms that are creating electricity. Also, some of the same companies that have readied the space shuttle fleet for flight are considering the feasibility of a Kennedy SpacEnergy Center that would be a hub of innovation using space workers to engineer and develop alternative energy solutions in addition to their conventional space-related duties.

The solar power generator project is a bit of a natural fit for Kennedy because extendible solar arrays are common on the many spacecraft that technicians process at the center. For the truss design, though, Fletcher looked to an extendible design used on the ground. USA and a Tennessee company, Merrifield Engineering Inc., developed a deployable truss mechanism to provide access over a shuttle payload bay inside an orbiter processing facility.

"This truss is a cousin to that," Fletcher said.

With enough interest, Fletcher said the generators could be mass-produced near Kennedy and then sold to emergency management agencies, relief organizations or other customers. In the meantime, though, the NASA/USA Launch Equipment Shop that built the first prototype needs another few weeks to complete it. Another three or four are needed to test its electrical functionality after that, Fletcher estimated.

The solar power generators can be used to produce electricity in non-disaster situations, too, because they do not burn gas or other fuel, and can be unfurled beside a building during normal times to produce electricity in non-disaster situations.

"It's designed to be functional nearly 100 percent of the time," Fletcher said.

For instance, Fletcher said they could be plugged into a school that is used as a storm shelter. On most days, the generator would provide 40 kilowatt-hours of energy, or more, to the school. The generator can be folded up as a storm nears, then re-opened after the storm is gone, providing perhaps the only source of electricity to the shelter.

With upgraded solar panels already on the market and the ability to add several more feet to the truss, Fletcher said a generator could produce twice as much peak power, 10 kilowatts.

"I can see us building another prototype or two," Fletcher said about the next step for the concept. "And then hopefully it will be commercially manufactured, since it lends itself to mass production."

Scenes Around Kennedy Space Center



CLICK ON PHOTO

NASA/Jack Pfaller

Workers monitor an overhead crane as it lowers shuttle Discovery's right-hand orbiter maneuvering system, or OMS, pod toward a transporter in Orbiter Processing Facility-2 at Kennedy Space Center on April 23. It then will be moved to the Hypergol Maintenance Facility. The removal is part of Discovery's transition and retirement processing. Work performed on Discovery is expected to help rocket designers build next-generation spacecraft and prepare the shuttle for future public display. To view a retrospective video about Discovery, click on the photo.



CLICK ON PHOTO

NASA/Kim Shifflett

Kennedy Space Center Library staff members hand out information and give demonstrations on how to access the new on-line library April 14 in the Headquarters Lobby. Staff members include Beverly Bush, Lori Uffner, Elaine Liston, Donna Atkins and Tricia Miller. To access the library's website, click on the photo. Or, you can follow the library on Twitter at <http://twitter.com/KSCLibrary>.



NASA/Jim Grossmann

Crews continue to clear land and prepare for the construction of a new road at the Exploration Park site near the Space Life Sciences Laboratory (SLSL) at Kennedy Space Center on April 19. The first phase will encompass 60 acres just outside Kennedy's security gates. Nine buildings will provide 350,000-square feet of work space, including educational, office, research and lab, and high-bay facilities. Each building is expected to be certified in the U.S. Green Building Council's Leadership in Environmental and Energy Design (LEED). The SLSL will be the anchor for the park, which is expected to open its first new facility in early 2012.



NASA/Jack Pfaller

CLICK ON PHOTO

Technicians guide the pump module assembly plate as it is lowered toward the Lightweight Multi-Purpose Experiment Support Structure Carrier, or LMC in the Space Station Processing Facility at Kennedy Space Center on April 22. The module assembly will be used to secure the return of a failed ammonia pump module in shuttle Atlantis' payload bay. Atlantis and its payload are being prepared for the STS-135 mission, which will deliver the Raffaello multi-purpose logistics module packed with supplies, logistics and spare parts to the International Space Station. STS-135 is targeted to launch June 28, and will be the last spaceflight for the Space Shuttle Program. To learn more about the mission, click on the photo.



NASA/Jack Pfaller

Smoke rises from a smoldering brush fire southeast of the Turn Basin at Kennedy Space Center on April 27. The fire was spotted near Kennedy's Press Site about three miles away from Launch Pad 39A. Florida Fish and Wildlife reported the fire was contained without incident.

Weather system upgrade to provide better launch criteria

By Rebecca Regan
Spaceport News

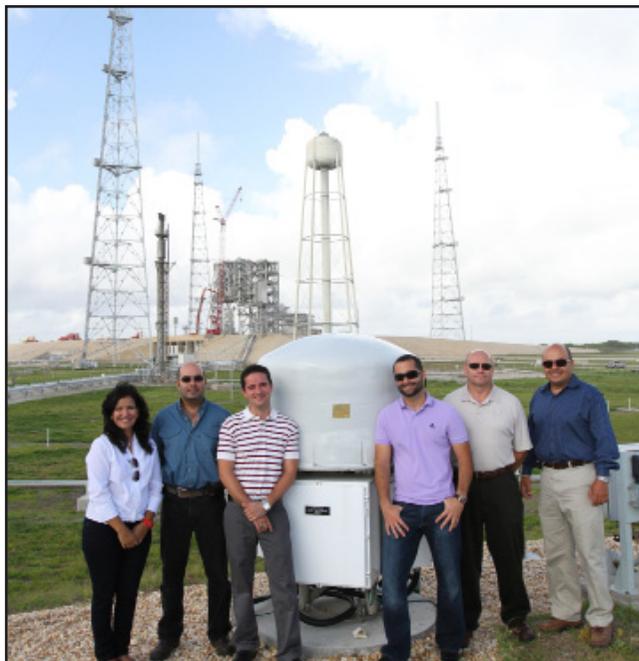
Launch pads on Florida's Atlantic Coast face some of the most extreme weather conditions of any launch complex. Everything from lightning and hail to hurricanes and occasional frost make it important to meteorologists to get accurate data to back up their decisions. If they don't, acceptable launch windows could be missed, or worse, unnecessary risks could be taken.

A new comprehensive weather instrumentation system on Launch Pad 39B at Kennedy Space Center is providing up-to-the-second and extremely accurate measurements at different locations and altitudes. The improvements are expected to produce increasingly detailed launch criteria that could lead to more on-time liftoffs for a variety of rockets in the future.

Gary Snyder with NASA and Dr. Carlos Mata with Team QNA were the lead design engineers of the Weather Subsystem, which is composed of two subsystems -- meteorological and lightning. Dr. Frank Merceret, John Madura and Jennifer Wilson with Kennedy's Weather Office provided technical expertise to make sure the meteorological subsystem was well designed to support a variety of launch pad operations in the future. It took about two years to design and install the sophisticated system, which currently is in a final testing phase.

"The team produced a high-quality product that NASA can rely on for collecting accurate meteorological conditions," said Snyder.

The Weather Subsystem begins with a seemingly familiar sight at the space



NASA/Cory Huston

The Weather Subsystem's design team stands in front of a B-dot sensor at Kennedy Space Center's Launch Pad 39B on April 27. From left, are Tatiana Bonilla, Angel Mata, Emmanuel Navedo, Israel Marrero, Gary Snyder and Dr. Carlos Mata.

center -- a whole lot of steel. Strategically located around the pad perimeter are three, 500-foot towers that hold up 100-foot fiberglass lightning masts. Between each mast is a host of catenary wires that will shield vital launch hardware from direct lightning strikes.

State-of-the-art sensors installed on four levels of each tower -- starting from the bottom, they are known as levels A, B, C and D -- measure wind speed, wind direction, temperature and relative humidity. Two more meteorological stations to measure rain precipitation and rain accumulation will be installed in the coming months.

"Each tower has the same setup, the idea being that depending on the direction of the wind, we can always rely on at least one tower's worth of measurements," Mata said. "You don't want to be taking wind measurements with the tower in the way."

The stations are even smart enough to operate on their own, which can be ben-

eficial when strong tropical storms or hurricanes impact the Space Coast and most workers evacuate the area.

The pad perimeter is equipped with nine down-conductors, as well as four B-dot and five D-dot stations. Simply put, these instruments can identify whether lightning struck and where, what its strength was and how much disruption it caused.

"The lightning system is event-driven and very fast," said Mata. "So, even though we are monitoring at all times, we only record when we detect direct lightning strikes in the immediate vicinity."

In order to operate at such a fast rate of speed, sensors around the pad perimeter are monitored by high-speed transient video and data recorders housed in the Pad Terminal Connection Room, or PTCR, a basement-type area below the surface of the pad.

"Lightning is a very difficult thing to accurately measure because the phenomena associated with

lightning tends to disrupt the instrumentation and corrupt the data that is trying to be captured," Snyder said. "Previous systems have historically produced erroneous data and have failed at the worst times."

Above Level D on the towers, six high-definition cameras, two at the base of each mast, record when triggered to capture high-speed video and give meteorologists and vehicle engineers a complete narrative of lightning events. Those images come in full-color, too, which is far different than the grainy black-and-white images previously available.

Mata explained that the differences in this weather instrumentation system compared to that of a space shuttle launch pad are sophistication, precision and fidelity.

"For the very first time, we're going to have measurements at many different heights and much taller -- 457 feet, 6 inches," Mata said. "We only had two 60-foot weather towers with shuttle, so whenever we were trying to determine winds up above, data had to be extrapolated."

While removing shuttle-specific components from pad B to make it more versatile for future launch systems, construction crews brought down an 80-foot lighting mast and its associated catenary wires from the fixed service structure. During the shuttle program, the legacy lightning instrumentation system triggered warnings and transient recorders if nearby lightning was strong enough, but it still didn't provide the accuracy meteorologists and engineers expect to see with the new system.

Launch controllers will receive one more benefit from this new system during

those all-important count-downs -- zero electromagnetic interference, or EMI. This means the sensors are not susceptible to EMI from bird trackings and watercraft radars, which can produce false data. Instead, the system will only track weather events.

Kennedy's Weather Office is working to share this new data with the U.S. Air Force's 45th Weather Squadron at nearby Patrick Air Force Base, which provides weather services and "go" or "no-go" decisions for launches based on weather constraints.

Jose Perez-Morales, pad B's senior project manager, and Regina Spellman, deputy project manager, said it took dozens of technicians to prototype, fabricate and install the components, enclosures and cables needed to complete the system.

"Deploying the Weather Subsystem at pad B in such a short time was a challenge," Perez-Morales said. "The early deployment will provide enough time to collect real weather data and validate the system for use in future programs."



NASA

The new lightning instrumentation system at Launch Pad 39B can identify whether lightning struck and where, what its strength was and how much disruption it caused. This strike was captured by the system's high-speed cameras during a storm on March 30.

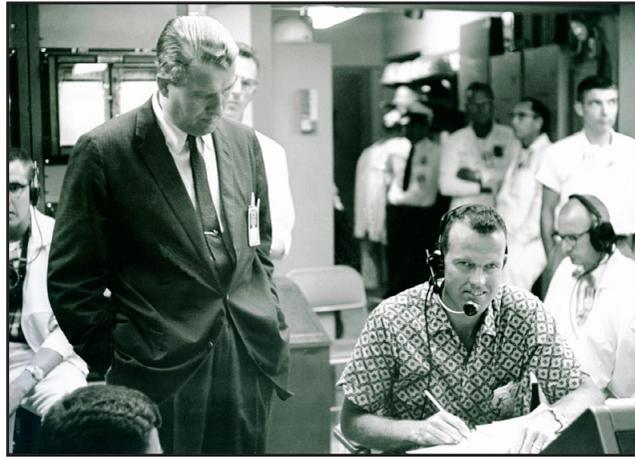
Event to mark 50th anniversary of Mercury/Freedom 7 launch

By Linda Herridge
Spaceport News

Fifty years ago, on May 5, 1961, astronaut Alan Shepard Jr. became the first American in space when he lifted off in the Freedom 7 capsule atop the Mercury-Redstone 3 rocket at 9:34 a.m. EST.

At about two seconds after launch, Shepard could be heard relaying information about the health of his spacecraft and his own physiological status: "Ahh, roger, liftoff and the clock is started . . . all systems are go!"

His 15-minute, 28-second suborbital flight, which began from Launch Complex 5/6 at Cape Canaveral Air Force Station (CCAFS) in Florida, marked the country's demonstration that people can leave Earth, live, work and travel in space.



CLICK ON PHOTO

NASA file/1961

Dr. Wernher von Braun, astronaut L. Gordon Cooper and other workers participate in the recovery operation of Freedom 7 on May 5, 1961. The mission was a 15 1/2-minute-suborbital test flight that put the first American astronaut in space. Check out photos, videos, mission overviews and astronaut profiles from NASA's Mercury Program, by clicking on the photo.

To celebrate this historic achievement, NASA, the U.S. Air Force, private industry and a dozen space and community organizations are joining to honor the people who made it possible, taking a look back at

the benefits it brought to the world, and looking ahead to what the future may bring.

"This first step by Alan Shepard in flying Freedom 7 is as important to our history as those first steps to explore the land that became the United States," said Kennedy Space Center Director Bob Cabana.

Brig. Gen. Ed Wilson, commander of the 45th Space Wing, stressed the importance of the cooperative efforts of the many government organizations, private companies and people from every walk of life that "have strengthened the very core of our country."

The celebration will take place May 5, at 9 a.m., at the original launch pad site, which is at the Air Force Museum on CCAFS. About 600 NASA, Air Force, and contractor personnel who were involved in the early space programs, as well as their families, community leaders and other dignitaries were invited to attend the anniversary ceremony.

A pre-show video presentation will feature interviews with many Mercury workers, including Ike Rigell, chief of the electrical network systems; Jack King,

former chief of Public Information for Kennedy; and Sam Beddingfield, launch team mechanical engineer.

Hugh Harris, retired Kennedy Public Affairs director, is chairperson of the Space Community Anniversary Committee and said there are several objectives for the celebration.

"Honoring the people who made it work is always No. 1 and we expect 300 workers from that era and their family members to attend," Harris said. "Using the magnifying glass of time to place the event in a historical perspective and realizing the way in which our world was changed also are important."

Hundreds of people spent a combined total of at least a year preparing the Mercury-Redstone rocket and the Freedom 7 capsule for its suborbital flight. Preparing for the flight also included the development of an automatic escape system, vehicle control during insertion, in-flight monitoring, retrofire and re-entry maneuvers, and landing and recovery procedures.

"Perhaps most important is to inspire young people," Harris said. "There is probably no career that is more satisfying than one in science and technology. Not only is it exciting and fun but the future of our country depends upon our maintaining our leadership role."

Speakers joining Cabana are Lt. Gen. Susan Helms, commander of the 14th Air Force; Mercury astronaut Scott Carpenter; Shepard's three daughters, Laura Churchley, Julie Jenkins and Alice Wackerman; Bob Moser, chief test conductor for the launch; Paul Donnelly, spacecraft manager; Jay Barbree, NBC space reporter; King; and NASA Administrator Charlie Bolden.

Members of the original launch team will be on hand to show people through the complex's refurbished blockhouse before and after the event.

A corvette parade, featuring 20 to 30 astronauts, will be held May 7 in Cocoa Beach, Fla., starting at the glass bank building, at 4th Street North, at 9:34 a.m., the same time Alan Shepard launched into space, and circle Cocoa Beach City Hall.



CLICK ON PHOTO

NASA file/1961

A Mercury-Redstone rocket lifts off from Launch Complex-5 at Cape Canaveral Air Force Station on May 5, 1961. On top of the rocket is the Freedom 7 capsule with astronaut Alan Shepard Jr. aboard. To watch Shepard as he takes flight and communicates with flight controllers, click on the photo.



NASA file/1961

Astronaut Alan Shepard Jr. makes his way from the elevator to the clean room atop the service tower where he was inserted into his Mercury space capsule nicknamed Freedom 7. Participate in an interactive press conference from NASA's Mercury Program, by clicking on the photo.

Favorite space shuttle memories

More memories and photos will be available on Kennedy Space Center's Facebook page.



"Seeing Atlantis from all different angles as well as from the top of the tower during a familiarization activity."

-- Jeffrey Kohler, Team QNA



"Many hours working among good people . . . especially at sun sets and sun rises far out at sea recovering solid rocket boosters. Next to being on orbit, I think ships at sea are our most photogenic assests."

-- Manuel de Leon, United Space Alliance



"Sitting in the payload bay of Atlantis for helium tank work in August 2007."

-- John Frazer, Boeing



"My favorite moment was 73 seconds after Discovery's liftoff on Sept. 29, 1988. I breathed a sigh of relief . . . Discovery had passed the point in its mission at which, on Jan. 28, 1986, 32 months earlier we lost Challenger."

-- Al Jenkins, NASA



"Most rewarding part of my job . . . office views like this and so many more extraordinary opportunities."

-- Katrine Stelges, United Space Alliance



"That majestic moment when the shuttle begins its ascent."

-- Linda Mohr, United Space Alliance



"All great things must come to an end. It will be a sad day when the last wheels touch the ground."

-- Nancy Carmichael, URS Federal Services



"Being a part of the Final Inspection Team (FIT) and working with all the great people at the pad during launch countdowns."

-- Patrick Renna, Millenium Engineering and Integration



"Giving an opportunity to the next generation, like Sabrena Yedo, now an aerospace engineer with NASA's Launch Services Program."

-- Peter Checklick, NASA



"I will never forget watching the capture and repair of the Hubble Space Telescope . . . truly amazing to me."

-- Victoria Deem, United Space Alliance



"The most exhilarating experience ever . . . sitting in Endeavour's commander seat!"

-- Curtis Byrd, Innovative Health Applications



"I'll miss working close to a space vessel in those stylish green suits!"

-- Linda Herrera, Boeing



"This is the exceptional Kennedy Space Center team that verified Enterprise fit for ferry flight."

-- Slade Peters, NASA



"The eagerness of the work force to learn from their mistakes, improve the systems and honor our fallen heroes by launching Discovery on two Return to Flight missions."

-- Diane Larose, URS Federal Technical Services



"Sharing final rollover of Endeavour with my son, Jeremy Schwarz, and the pilot and the mission specialist of STS-134."

-- Denise Schwarz, United Space Alliance



"Walking into the Vehicle Assembly Building and seeing the shuttle just hanging there."

-- Holly Carreras, United Space Alliance



"After 30 plus years of shuttle support I finally got to hold Atlantis myself."

-- Robert Koenn, NASA



"My favorite memory is installing experiments in the Spacelab-3 Module using the MVAK on the launch pad."

-- Terrence Oshea, NASA



"I am most proud of my work at Kennedy Space Center when I see this spectacular site."

-- Tina Vanover, Millenium Engineering and Integration Co.



"First time I was an engineer supporting the vertical orbiter stack in the Vehicle Assembly Building."

-- Susan Danley, NASA



"Being a part of the STS-1 turnaround team at the Dryden Flight Research Center hangar in Area A."

-- Ronald Phelps, NASA



John F. Kennedy Space Center

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