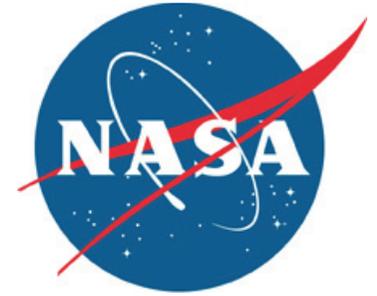


Spaceport News

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

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



STS-122 crew returns with vivid stories

By Steve Siceloff
Staff Writer

Six of the seven astronauts who installed the European-built Columbus laboratory on the International Space Station returned to NASA's Kennedy Space Center on April 17 and brought with them some amazing descriptions of liftoff and the jarring ride into space.

Mission Specialist Rex Walheim did not notice the "twang" of launch on his first flight in 2002, so he was determined to watch space shuttle Atlantis' nose push forward

slightly when the main engines ignited during the launch of his STS-122 mission in February.

But the swaying was not the gentle move forward and back before the twin solid rocket boosters ignited that Walheim expected. Instead, the three main engines on the back of Atlantis rattled the whole orbiter, just as they do on every launch.

"Suddenly you're riding a wild animal," Walheim said. He punctuated his description with a pantomime of holding onto handles near his seat and the best audible impersonation of the



NASA/Cory Huston

Mission Specialist Rex Walheim signed autographs and shared his experiences of the STS-122 mission.

shaking sound he heard. "You realize this is it."

Commander Steve Frick echoed the sentiment.

"It's amazing when

the main engines just shake you up and then the solids just throw you in the air."

A few seconds later, when the shuttle made its regular roll to put the orbiter on its back for the climb into orbit, Walheim said he noticed more sensations that people don't expect when they see what looks like a gentle turn from the ground.

"You know what the end of a cracking whip feels like," he said.

First-time flier Leland Melvin described an energetic pace just after passing through the phase of liftoff known as maximum dynamic pressure. As planned, the shuttle's engines throttled down so the air that built up around the shuttle at high speeds wouldn't damage it. Once through, the engines throttled back up to full speed and pushed Atlantis up to 17,500 mph.

"It felt like I was in

"It felt like I was in a human slingshot pulled back about a mile and then let go."

***Leland Melvin,
first-time space
shuttle flier and
STS-122 Mission
Specialist***

a human slingshot pulled back about a mile and then let go," Melvin said.

Frick said the ride didn't necessarily end when Atlantis reached orbit.

"(With the acceleration of launch), you're pushing to breathe," he said. "Then it's like a roller coaster at the top of a hill, just before you start the big drop, but it doesn't drop, it just keeps going."

European astronaut Hans Schlegel unbuckled quickly from his lower level seat and raced to the upper deck to film the external fuel tank after it was jettisoned. He found himself in a weightless world he last encountered in 1992 as a member of shuttle Columbia's STS-55 crew.

"I realized, hey, your



NASA/Cory Huston

Having completed their successful 13-day mission to the International Space Station, STS-122 Commander Steve Frick, left, Pilot Alan Poindexter, and Mission Specialists Leland Melvin, Rex Walheim, Hans Schlegel and Stanley Love share stories, photos and videos of their mission during a presentation on April 17.

See **STS-122** Page 8

Relevance of space exploration highlights Future Forum

By Jennifer Wolfinger
Staff Writer

As part of the yearlong Future Forum program marking NASA's 50th anniversary, space leaders converged at the University of Miami on April 18 to discuss how space exploration has advanced science, engineering, technology, education and the economy in local communities and the nation.

NASA Deputy Administrator Shana Dale presented the keynote address to launch the daylong event at the university's BankUnited Center. She explained that aside from the obvious spaceflight milestones the agency has accomplished, NASA has another side that involves contributing to the "space economy."

"Space is pervasive in our lives, invisible yet critical to so many aspects of our daily activities and well-being. In fact, the space economy impacts just about every aspect of how we live, work and play—from weather and climate monitoring



NASA/Kim Shiflett

From left, astronaut Carl Walz, Donna E. Shalala, president of the University of Miami; Florida Gov. Charlie Crist and NASA's Deputy Administrator Shana Dale were at the luncheon at NASA's Future Forum in Miami.

to space-based security applications that keep us safe. When we use our GPS units to keep us from getting lost, withdraw cash from an ATM or listen to satellite radio, we experience the benefits of the space economy," Dale said.

While NASA's mission isn't to stimulate the economy, improve health-care and medical research, or advance environmental

understanding, Dale said NASA still makes significant contributions to these areas through inspiration, innovation and discovery. According to her, each is interdependent, but combine to create a formula for future growth, prosperity and improved quality of life, and their relationship forms the essence of the space economy.

"Exploration of space demands that we push the

limits of knowledge, technology and precision in ways that we could not have originally imagined – and the benefits go far beyond our space exploration mission," she said.

Florida Gov. Charlie Crist discussed how space exploration gives Floridians a more competitive economy and better quality of life. He also announced a

partnership between state-funded Space Florida and SPACEHAB. They plan to use the International Space Station's national laboratory designation and the Space Life Sciences Lab at Kennedy Space Center to carry out research.

"Florida is committed to fostering a thriving aerospace industry and is quickly becoming known as one of the nation's top biotech centers," Governor Crist said. "The partnership reinforces our dedication to the biotech industry. This is an exciting opportunity to stimulate progress in this new market and in Florida's economy."

Astronaut Carl Walz, director of the Advanced Capabilities Division in NASA's Exploration Systems Mission Directorate, also participated by summarizing the agency's plans to return to the moon and explore beyond.

STS-122 mission Commander Steve Frick addressed participants during lunch. The event also included three panel discussions focused on inspiration, innovation and discovery.



NASA/Kim Shiflett

Russell Romanella, left, director of International Space Station and Spacecraft Processing at Kennedy Space Center, moderates a panel presenting "Pushing the Limits of Knowledge To Inspire New Generations" during NASA's Future Forum in Miami on April 18. Others on the panel include, from left, Dr. James Tien, dean of engineering

at the University of Miami; Dennis Mills, with UTC/Pratt Whitney Rocketdyne; Jim Halsell, former astronaut; Robert Atlas, director of NOAA's Atlantic Oceanographic and Meteorological Laboratory; and Jack Horkheimer, executive director of the Miami Space Transit Planetarium. The forum focused on how space exploration benefits Florida's economy.

Less than a year remains before Ares I-X test flight

By Linda Herridge
Staff Writer

It is less than a year before NASA tests the launch of the Ares I-X vehicle from Launch Pad 39B at Kennedy Space Center. The launch, targeted for April 15, 2009, will herald the beginning of the agency's new exploration mission, even as the center continues space shuttle launches to complete the International Space Station and prepares facilities for the future.

Carol Scott, Kennedy's Ares I-X project manager, said the primary flight test objective is to demonstrate control of a vehicle dynamically similar to the Ares I/Orion. Other objectives include performing an in-flight separation/staging event between the first and upper stages, and demonstrating assembly and recovery of a new Ares I-like first stage element at Kennedy.

"The test vehicle will leverage Atlas, space shuttle and U.S. Air Force Peacekeeper heritage as much as possible," said Jon Cowart, who is Kennedy's ground systems manager for Ares I-X. Cowart is leading efforts to modify and prepare facilities for Ares I-X processing. These include the Vehicle Assembly Building, Pad 39B, the Hazardous Maintenance Facility, and Hangar AF at Cape Canaveral Air Force Station, Fla.

Cowart said modifications in the VAB include installing a new air purge system and access stands and removing the C-North platform—the highest platform that currently surrounds the external



NASA image

The Ares I-X, shown in an artist conception, is at least 100 feet taller than the space shuttle at the pad. A 110-foot extension structure will be added beneath the current lightning mast to raise it.

tank, to make room for the taller Ares I-X.

At Launch Pad 39B, modifications are underway on the gaseous oxygen vent arm to allow access to the vehicle. Two new access arms will be added, one on the rotating service structure and one on the payload changeout room.

The Ares I-X is at least 100 feet taller than the space shuttle at the pad. Cowart said a 110-foot extension structure will be added beneath the current lightning mast to raise it up.

New panels and

valves will be installed in the Hazardous Maintenance Facility so that the roll control system can be loaded with hydrazine propellant and then transferred to the VAB. Modifications will be made to Hangar AF, at Cape Canaveral Air Force Station, to accept the five-segment first stage retrieved after launch

A new ground control system, called the ground communication, command and control system, will be installed in the mobile launch platform. It will serve as the bridge between the Launch Control

Center and the launch pad during countdown to launch.

Tassos Abadiotakis is the Launch Vehicle Processing Ares I-X ground operations manager. He will oversee assembly, integration, and testing of ground support equipment with the launch vehicle.

Abadiotakis said Ares I-X flight hardware will begin arriving this fall. The ground operations team is working very hard to plan, prepare and process the Ares I-X hardware, he said.

The peacekeeper roll control system will arrive from Marshall Space Flight Center and four solid rocket booster segments, loaded with propellant, will arrive from ATK in Utah, in September. In October, the upper stage simulator will arrive from Glenn Research Center, Ohio, followed by the crew module and launch abort simulator from Langley Research Center, Va., in November. The inert fifth SRB segment will arrive from ATK in December.

Abadiotakis said there are challenges to processing and stacking the Ares I-X inside the VAB in parallel with shuttle processing and Constellation program development.

"As the processing plan matures and we get closer to hardware deliver, the team will be ready to execute the assembly, test

and launch of the vehicle," Abadiotakis said.

More than 900 development flight instrumentation sensors, or DFIs, will cover the Ares I-X test vehicle to measure pressure, stress, temperature and other conditions during vehicle launch, separation and return.

Tassos said the purpose of the flight is to collect data in a timely manner so that the results can be used to inform the Constellation Program of any necessary design changes.

Scott said preparations for this test flight have already provided benefits to the Constellation Program by evaluating operability concepts such as offline hyper-servicing, paperless work control systems and minimal pad flow.

The Ares I-X critical design review will be complete by June 12. Hardware manufacturing is underway to support shipments to Kennedy in the fall. Procedures are being developed, ground systems modifications are in the implementation phase and Kennedy personnel are preparing to support the hardware acceptance reviews this summer.

"We will be ready when hardware arrives," Scott said. "Assembly and launch is what we do best, and we have a fantastic team in place to make it happen."

What's ahead

The peacekeeper roll control system will arrive from Marshall Space Flight Center and four solid rocket booster segments, loaded with propellant, will arrive from ATK in Utah, in September. In October, the upper stage simulator will arrive from Glenn Research Center, Ohio, followed by the crew module and launch abort simulator from Langley Research Center, Va., in November. The inert fifth SRB segment will arrive from ATK in December.

Scene around Kenn



NASA/Kim Shiflett

Russell Romanella, left, director of International Space Station and Spacecraft Processing at Kennedy Space Center, former NASA Deputy Administrator Alan Lovelace (far right), Dr. Lee Scherer and his wife, Sheryn, visit the O&C High Bay Area to be used as the Orion manufacturing area.



Towed on its 76-wheeled orbiter transporter, space shuttle Discovery begins its turn away

Spaceport News wants your photos

You are encouraged to send unique story ideas and exciting photos of workers in action for possible publication. Photos should include a short caption with the names and job titles, from left to right. Send e-mail to

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NASA/Kim Shiflett

Kennedy's Center Director Bill Parsons and former director Dr. Lee Scherer share a moment during a visit on April 24.

Kennedy Space Center



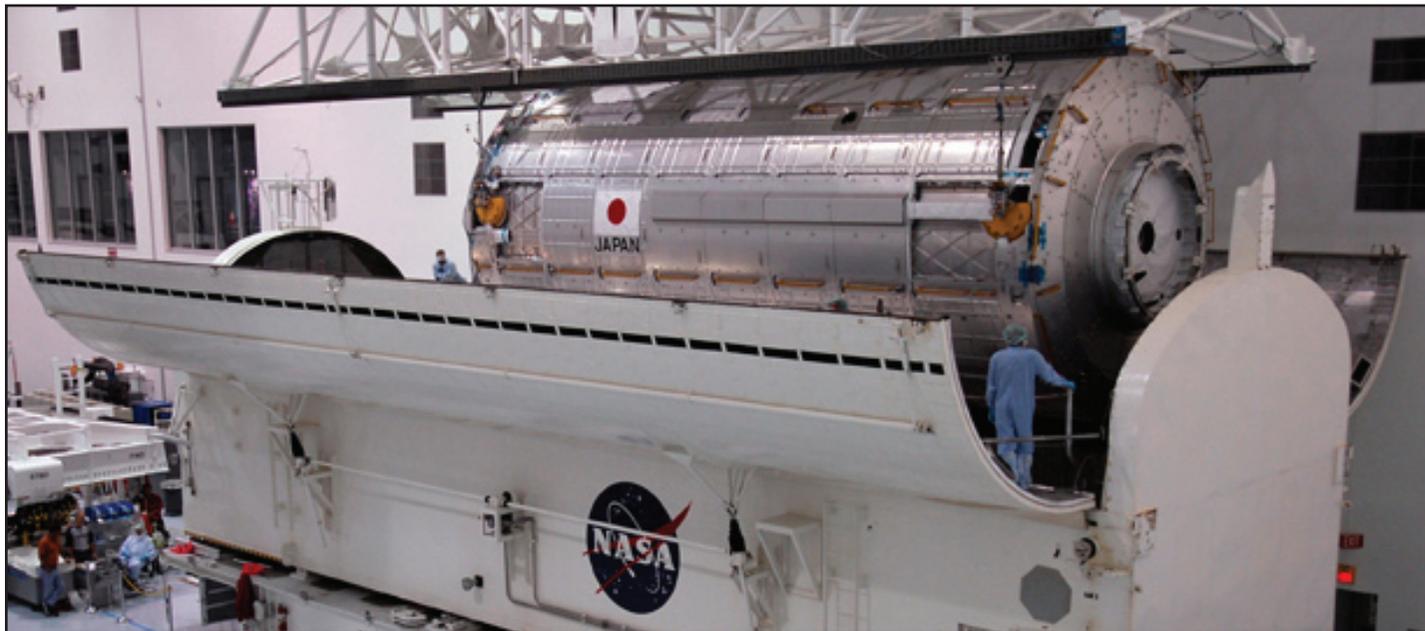
NASA/Troy Cryder

from the Orbiter Processing Facility to roll over to the Vehicle Assembly Building at Kennedy.



NASA/Kim Shifflett

General Dynamics technicians, sitting beneath the Gamma-ray Large Area Space Telescope, or GLAST, carefully position a high-gain antenna under the spacecraft as they prepare to install it on the spacecraft in the Astrotech payload processing facility near Kennedy.



An overhead crane lowers the Kibo Japanese Experiment Module - Pressurized Module into the payload canister in the Space Station Processing Facility at Kennedy. The canister delivered the module, part of the payload for space shuttle Discovery's STS-124 mission, to Launch Pad 39A on April 29.

NASA/Kim Shifflett

Brig. Gen. Helms becomes 19th Debus Award recipient

By Kay Grinter
Reference Librarian

"I'm a better person for having visited space, and I think everybody ought to get a chance to do it." These words were spoken by U.S. Air Force Brig. Gen. Susan J. Helms said as she accepted the Debus Award from the National Space Club Florida Committee on April 19. The banquet was held, appropriately, in the Dr. Kurt H. Debus Conference Facility at Kennedy Space Center's Visitor Complex.

A former astronaut, Helms is the commander of the 45th Space Wing at Patrick Air Force Base, Fla., and the 19th recipient of the annual award. She was singled out

as a pioneer among her peers in her support of the commercial launch industry, fostering an attitude and spirit of cooperation on the Space Coast with the lease of Launch Complex 40 on Cape Canaveral Air Force Station, Fla., to Space Exploration Technologies, also known as SpaceX.

The Debus Award was created by the Florida Committee to honor the efforts of those associated with launch vehicles, spacecraft operations, ground support services, range activities, space education and spaceport research and development in Florida. It is named for Kennedy Space Center's first director, Dr. Kurt H. Debus, who served from July 1962 to November 1974.

Ten previous Debus Award

honorees attended the banquet including the 2001 recipient, former astronaut, retired Air Force Maj. Gen. and former Kennedy Space Center Director Roy Bridges, Jr.

As Bridges introduced Helms, he commended her for her commitment to everything she does. He recalled her preparation for her residence aboard the International Space Station as a member of the Expedition 2 crew with a story that he warned the audience he may have embellished just slightly. Helms sold her house, gave away her possessions, and even put her pets up for adoption, he said, to demonstrate her total dedication to her assignment.

A veteran of five spaceflights, Helms logged 211 days on orbit and completed an eight-hour, 56-minute spacewalk, which remains the current world record.

As she accepted the award, Helms said that she was "overwhelmed" by the honor and credited the men and women of the 45th Space Wing for their part in making her an effective leader. She sited their willingness to institute change in the processes and procedures required to support the launches from the Eastern Range and predicted a bright future for the



NASA file

U.S. Air Force Brig. Gen. Susan J. Helms still holds the record for the longest spacewalk (eight hours, 56 minutes).

Space Coast.

Each honoree is presented with a small copy of the Debus Award Trophy, a stainless steel kinetic sculpture dubbed "Ribbon of Space."

The designer of the trophy, contemporary artist Elijah David Herschler of Santa Barbara, Calif., was in the audience this year for the first time since 1991.

Past Debus Award recipients

1990 George F. Page	1999 Edward A. O'Connor, Jr.
1991 Lyle J. Holloway	2000 Ernie Briel
1992 Forrest McCartney	2001 Roy Bridges
1993 Bill Nelson	2002 Rick Abramson
1994 Robert B. Sieck	2003 Adrian Laffitte
1995 George Faenza	2004 John "Tip" Talone
1996 Lee Solid	2005 Richard Beagley
1997 Dr. Maxwell King	2006 Jim Kennedy
1998 JoAnn Morgan	2007 Bruce Melnick

Kennedy forms team to address culture survey results

By Jennifer Wolfinger
Staff Writer

A team of Kennedy Space Center organizational development specialists has been working since 2006 to gain a better understanding of and develop positive solutions for some negative work force opinions about management honesty, communication and support.

These employee attitudes were identified during a 2006 NASA Agency Culture Survey conducted by NASA's chief historian. The 2007 NASA Agency Culture Survey was developed based on the results of the 2006 survey, as well as

focus groups that occurred at several centers during the 2007 summer.

The organizational development team includes Marty Parker, Clay Yonce, Laura Gallaher, Paul Condon and Tim Ferris, and is supervised by Stacie Phillips. Gallaher pointed out that the project is important because management needs a forum to hear from a large portion of employees, who management recognizes as their most important resource.

All centers participated in the 2007 survey which resulted in an agency-wide average response rate of 29.8 percent. At Kennedy, 30.78

percent of the civil service work force responded, which according to Yonce, was a large enough response rate to provide them with useful information.

"Like Kennedy Center Director Bill Parsons, other members of the Senior Management Council have taken the results of the survey very seriously. They see the results as valuable and have begun addressing areas of concern as well as celebrating areas of success," Yonce said.

Based on the survey results and the three key areas, Kennedy's efforts will focus on finding ways for employees to feel free to raise dissenting opinions

without fear of it having a negative impact on their career; methods for the center's administrative processes to run smoothly and more efficiently; allowing workers to do their jobs well, and outlets for honest and direct communication with management.

"Being honest in our responses to the survey provides all of us an opportunity to be part of the change," Ferris said.

Kennedy's International Space Station/Spacecraft Processing, Launch Services Program, Launch Vehicle Processing and Chief Financial Officer directorates were identified by NASA as four

of the nine model organizations. Agency benchmarking team members currently are identifying questions to determine why these organizations were rated so highly and intend to share best practice findings across NASA. The team's report is scheduled to be presented in June 2008 to agency management.

"Sharing survey results and developing action plans with employees and implementing changes are all important parts of the process," Parker said. "Employees want to know that their feedback is heard and that positive changes are made as a result of their participation in the survey."

Cooper's Mercury flight was 'end of the beginning'

By Kay Grinter
Reference Librarian

The "end of the beginning" of America's manned space program came 45 years ago on May 16 with the splashdown of the Faith 7 capsule in the Pacific Ocean. Aboard was U.S. Air Force Maj. Gordon Cooper, who had completed 22 orbits of Earth in 34 hours and 20 minutes during the sixth and final manned Mercury mission.

Liftoff of Mercury-Atlas 9 from Pad 14 on Cape Canaveral was delayed a day to 8:04 a.m. May 15. General Dynamics' lead engineer for the Atlas-Centaur launch vehicle in 1963 was Murphy Wardman. "Bucket Milikin was lead for the Mercury-Atlas," Wardman said, "but since we had such a small crew, we supported each other. Although I was assigned primarily to the Atlas-Centaur, I helped Bucket run procedures on the Mercury rocket."

NASA alumnus Sam Beddingfield concurred. He was a mechanical engineer on all six manned Mercury capsules. "I met Gus Grissom while I was stationed at Wright-Patterson Air Force Base. He talked me into working in the space program," Beddingfield mused. "NASA had 33 people at the Cape when I was hired. 'We don't have a mechanical engi-

Remembering Our Heritage

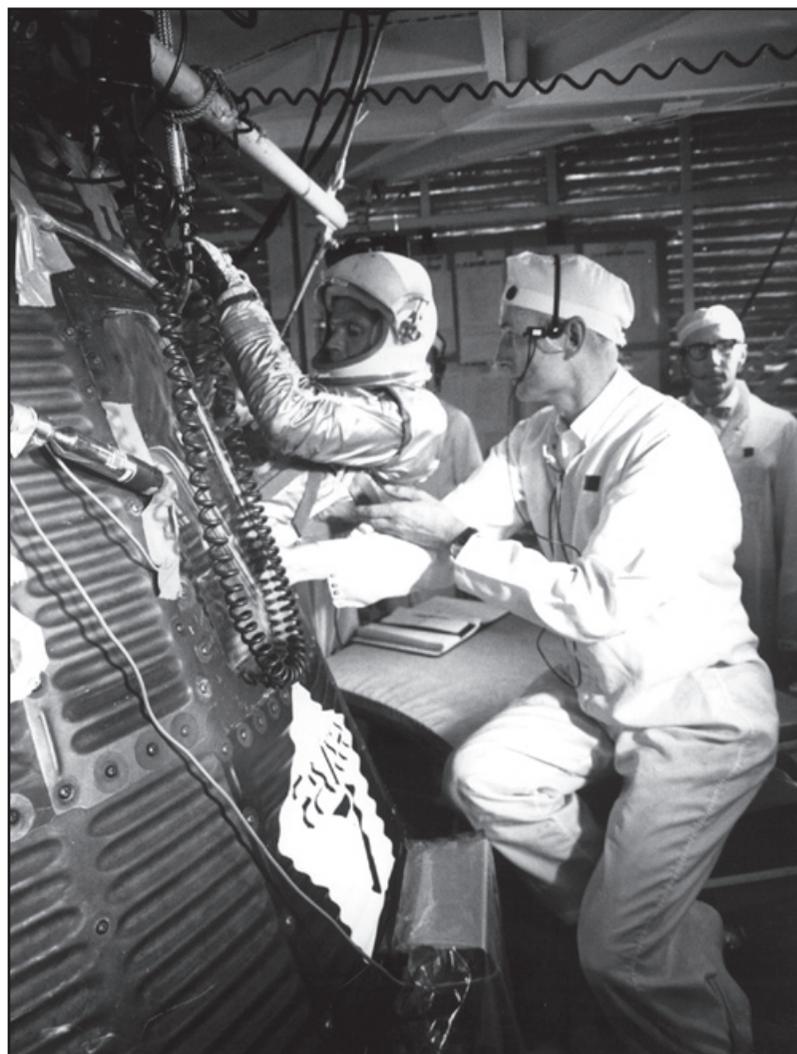
Want to learn more?

Visit the U.S. Space Walk of Fame Foundation and Museum, 4 Main St., Titusville, to see artifacts from the Mercury Program or hear more stories about the early days at Kennedy. The museum is open from 10 a.m. and 5 p.m. Monday through Friday. For more information, call 321-264-0434.

neer, so you are it,' they said." By comparison, NASA civil servants numbered 1,510 at Kennedy Space Center in 1964 as the Gemini Program ramped up.

Charlie Mars was assigned to the same spacecraft engineering group. "Our cubicles were in the Hangar S annex, just north of Hangar AF where the solid rocket boosters are washed after recovery today," he recalled. "I sat right against a barred window. We were so cramped that my boss, Bill Criddle, had to get up and move if I wanted to leave the room." Cooper and the other Mercury astronauts stayed in quarters in Hangar S before their flights.

A NASA stabilization control engineer, Welby Risler, worked on the capsules for the early Mercury flights. By the time of Cooper's



NASA file

Astronaut Gordon Cooper is assisted into his "Faith 7" spacecraft during a preflight simulated mission.

flight, he was assigned to the Apollo Program and was supporting the Little Joe and other launches from the White Sands Missile Test Range in New Mexico. "A 90 percent concentrated hydrogen peroxide was the propellant used in the Mercury capsule thrusters for attitude control to point the spacecraft in the right direction," he explained. "It was the same thing that women used to bleach their hair but in much weaker concentrations."

Beddingfield knew Gordon Cooper but explained, "We all knew Cooper. NASA just didn't have that many astronauts." Cooper and Grissom were among the seven Mercury astronauts NASA selected in April 1959; nine pilot astronauts were chosen in the second group in September 1962.

"Cooper was a very good pilot and loved to fly the F-106,"

Beddingfield said. "Whenever he arrived, he would buzz the river by Patrick Air Force Base, where the planes were kept, especially if he knew somebody was in a boat out in the river. It was his way of letting them know he was here."

Cooper continued to design and test new aircraft until late in his life. "I get cranky if I don't fly at least three times a month," he told a reporter when he was 71. Cooper was 77 when he died in 2004.

Wardman, Beddingfield and Mars are volunteers at the U.S. Space Walk of Fame Foundation and Museum in Titusville, Fla.

To see artifacts from the Mercury Program or hear more stories about the early days at the space center, stop by the museum between 10 a.m. and 5 p.m. Monday through Friday at 4 Main St. For more information, call 321-264-0434.



NASA file

Astronaut Gordon Cooper arrives at the top of the gantry during a preflight simulated mission, a few days before his scheduled 22-orbit flight on "Faith 7."

NASA Employees of the Month: May



NASA

From left to right: First Row: Tony Killiri, Information Technology & Communication Services; Susan D. Sitko, Engineering Directorate; Patricia Hyland, Procurement Office; Bernadette Brightman-Merrell, ISS & Spacecraft Processing Directorate; Fernan Rodriguez, Launch Services Program; and Dean Schaaf, Launch Vehicle Processing Directorate. Second row: Robert J. Frostrom, Engineering Directorate; Chi Yeh, Safety & Mission Assurance Directorate; Mike Galluzzi, Launch Integration; and Sudhir Mehta, Center Operations. Third row: Alex J. Bengoa, Constellation Project Office; Mike Van Houten, Human Resources Development Office; and Matthew Jimenez, Chief Financial Office.

From STS-122, Page 1

body knows this," he said. "It was really a great feeling to be back."

After docking to the International Space Station two days later, the crew set about installing Europe's space-based laboratory.

Melvin had the duty of reaching into Atlantis' payload bay with the space station's robot arm to pull out the 23-foot-long module and place it gently onto a space station hatch. With no direct sight of the arm and module, Melvin relied on three video monitors as he navigated Columbus around the station and shuttle complex and locked it into place.

"My video game skills helped me out a lot on this," he said. "It was a beautiful, beautiful moment."

Stanley Love, also making his first flight during the STS-122 mission, had some moments of his own, particularly opening the hatch and heading outside on his first spacewalk.

"It was going to be 200 miles down and watch that first step," he said.

Love, Walheim and Schlegel conducted three spacewalks during the mission to outfit Columbus and service a couple components on the outside of the space station. Then it was time to leave.

Pilot Alan Poindexter used small jets on Atlantis to back away from the station and then fly around it.

"It flies better than the simulator," he said.

To other crew members, the jolt of the thrusters was apparent.

"It sounds like cannons going off," Walheim said.

Once back on Earth, the pull of space didn't release its grip on the astronauts quickly.

"You do feel real heavy. It's wobbly. You're doing the "Big Foot" turn," Walheim said, demonstrating by turning his whole body slowly before walking again.

The sensation should have been more severe for astronaut Dan Tani, who rode onboard Atlantis for his return home after four months on the space station. But Frick said Tani bounded out of Atlantis and "was doing better than I was."

Kennedy hosts Walter Reed Experience

Kennedy Space Center hosts the Walter Reed Experience, a dynamic and uplifting program recognizing the advancement of this technology and the achievements of our veterans and active duty personnel, from 10 to 11:30 a.m. May 15 in the Training Auditorium.

Dennis Clark, President of Point Health Systems, will be the keynote speaker and will share a first-hand account of care-planning strategies and treatment for returning wounded veterans from Iraq and Afghanistan.

Hear their amazing stories of courage and success in the face of tremendous personal sacrifice.

For more information, call Bonni McClure at 867-2569.

Looking up and ahead

Sat., May 3 5:48 to 5:51 a.m.	ISS sighting	Approach: 10 degrees above WNW Departure: 10 degrees above N
Sun., May 4 4:39 to 4:40 a.m.	ISS sighting	Approach: 17 degrees above NNE Departure: 14 degrees above NNE
Mon., May 5 5 to 5:01 a.m.	ISS sighting	Approach: 12 degrees above NNW Departure: 11 degrees above N
Target May 31	Launch/KSC: Discovery, STS-124; at 5:02 p.m.	
Target June 15	Launch/VAFB: Delta II, OSTM/Jason II; 4:47 EDT	
Target June 30	Launch/CCAFS: Delta II, GPS 2R-20 (M7); TBD	
Target Aug. 6	Launch/CCAFS: Atlas V, WGS SV 2; TBD	
Target Aug. 28	Launch/KSC: Atlantis, STS-125; 9:38 p.m.	
Target Oct. 16	Launch/KSC: Endeavour, STS-126; TBD	
Target Oct. 28	Launch/CCAFS: Atlas V, LRO; 6:55 a.m.	
Target Nov. 5	Launch/CCAFS: Delta IV, GOES-0; TBD	
No earlier than Dec. 1	Launch/CCAFS: Atlas V, SDO; TBD	
Target Dec. 4	Launch/KSC: Discovery, STS-119; TBD	
Target Feb. 16, 2009	Launch/CCAFS: Delta II, Kepler; TBD	
TBD	Launch/CCAFS: Delta II, GLAST; TBD	



John F. Kennedy Space Center

Spaceport News

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