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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

Solder fix fuels optimism for STS-122 launch

By Steve Siceloff
Staff Writer

Innovation described the space shuttle when it first lifted off its launch pad almost 27 years ago, and the spacecraft still requires innovations in other forms to keep it ready for orbit.

The latest ingenuity came about as NASA was trying to figure out why a connector that passes electrical signals through the wall of the external tank was acting up. The faulty connector is suspected of forcing the postponement of two launch attempts for space shuttle Atlantis on mission STS-122.

The prevailing thought is that there is some movement inside the connector that causes some of the 37 metal pins to stop touching the metal inside the sockets. This breaks the electrical current running through the connector and causes the flight computers to pick up false signals from the sensors.

The sensors gauge when liquid hydrogen inside the tank gets too low to keep running the shuttle's three main engines.

While tests still were under way to determine why the connection was breaking, a group of engineers who work on Atlas rockets already had an idea of how to fix the shuttle's issue.

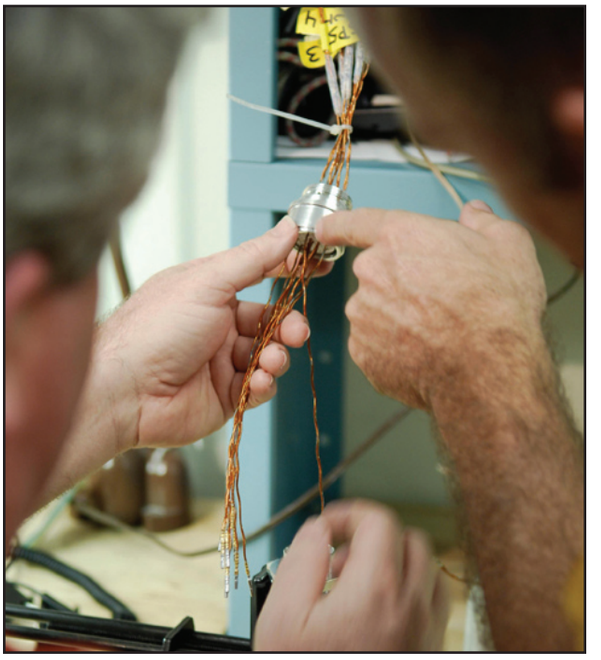
James Whelan, an electrical and avionics systems manager for the United Launch Alliance's Atlas program, said a tanking test performed on Atlantis showed a problem similar to one he worked on in 1994 with the Centaur stage of a Titan-Centaur rocket. The solution then was to permanently solder the connecting pins and the socket so the electrical current could not be broken.

There were signs that approach would work on the shuttle.

"When the tanking test led the team directly to the connector, that's when it really clicked for a lot of people," Whelan said. "That kind of came together quickly."

Bob Arp and Kevin Wyckoff, both ULA aerospace technicians, performed the careful soldering.

The work was not confined to Kennedy Space Center, where Atlantis remains poised on its launch pad in anticipation of carrying the European-built Columbus laboratory to the International Space Station.



NASA/Kim Shiflett

Aerospace technicians with United Launch Alliance inspect an electrical wiring harness that has been inserted into a replacement feed-through connector, during preparations to solder the pins to the socket of the connector that will be installed in the external fuel tank for space shuttle Atlantis' STS-122 mission.

NASA/George Shelton

Lloyd Johns of Lockheed Martin attaches the replacement feed-through connector in the engine cutoff, or ECO, sensor system to the internal connector on space shuttle Atlantis' external tank. The pins in the replacement connector have been precisely soldered to create a connection that allows sensors inside the tank to send signals to the computers onboard Atlantis.

Much of the testing on the failed connector and the redesigned system was done at NASA's Marshall Space Flight Center in Huntsville, Ala.

Space Shuttle Program managers at Johnson Space Center in Houston also played a large role in deciding the direction of the repair and analyzing the results.

Stephen Swichkow, NASA's external tank and solid rocket booster electrical branch chief at Kennedy, said establishing the design and getting the work done in only a few weeks showed the agency's determination and motivation.

"Normally it would take six months to a year to do the design process," Swichkow said, "and we accomplished that in about two weeks."

Whelan said, "It's been great that we can kind of cross company lines."

NASA is targeting Feb. 7 at 2:45 p.m. EST to launch Atlantis on its STS-122 mission.

For more about the space shuttle, go to **www.nasa.gov/shuttle**

NASA, Daytona 500 mark 50th milestones

Astronaut celebrates at fan festival by taking several laps around speedway

Astronaut Andrew Feustel joined hundreds of fans at NASCAR's Preseason Thunder Fan Fest on Jan. 8 at Daytona International Speedway in Daytona Beach, Fla. The appearance was in celebration of this year as NASA's 50th anniversary and the speedway's 50th running of the Daytona 500.

Feustel, a NASCAR fan, took laps in an official track vehicle traveling more than 100 mph. That's not nearly as fast as the 17,500 mph he'll travel on his upcoming space shuttle flight.

Feustel also toured the speedway's garages and talked with pit crews. He teamed up with NASCAR driver Kurt Busch, discussing racing and flying in space. He also met briefly with other drivers, including Casey Mears, Matt Kenseth and Carl Edwards, as well as members of the public and media.

For more photos, go to **www.nasa.gov/topics/technology/features/nasanascar**

In addition to participating in the fan festival, NASA will fly three Daytona 500 flags aboard STS-122. Speedway officials had planned to wave one of the flags to begin the 2008 installment of the Daytona 500, with the other presented to the winning driver. NASA will keep the third.

Feustel will fly on space shuttle Atlantis' mission to repair the Hubble Space Telescope. That shuttle launch currently is targeted for August.

NASA/George Shelton

NASCAR driver Kurt Busch, left, talks to astronaut Andrew Feustel, who participated in NASCAR's Preseason Thunder Fan Fest at Daytona International Speedway. Feustel's appearance celebrates NASA's 50th anniversary and the speedway's 50th running of the Daytona 500 in February.

NASCAR starter flags to launch aboard shuttle Atlantis

By Steve Siceloff
Staff Writer

A trio of flags from the Daytona 500 held at Daytona International Speedway in Florida, will set speed marks of their own as they race to more than 17,000 mph aboard space shuttle Atlantis.

The green starter's flags are tucked inside the shuttle for the STS-122 mission to the International Space Station. One of the flags was expected to begin the 2008 installment of what NASCAR calls the "Great American Race," while another will be presented to the winning driver. NASA will keep the third.

Drivers and their crews have been known to pause at the race track to watch a shuttle streak into space on a plume of fire and smoke. The track is less than 100 miles from the shuttle launch pads.

Over the years, technology developed for the space program has found many uses on Earth, even helping NASCAR drivers stay safe and increase their performance.

The same material that protects the shuttle from extreme temperatures when it re-enters the atmosphere protects NASCAR drivers from the heat of their high-performance engines.

NASA and astronauts often pack mementoes aboard shuttle flights to commemorate historical events, mark milestones and celebrate achievements. The effort brings awareness of the space agency to a wider audience and gives people a chance to see a tangible sign of exploration.

The manifest of commemorative cargo takes on a bit of a European accent during STS-122 because the Columbus laboratory the Atlantis crew will install on the space station was developed and built in Europe.

The cutting-edge research module will be used by institutions based in Europe to study space and the effects of weightlessness.

The special items for European representatives include dozens of fabric patches for the Columbus program, a host of decals and 20 flags representing the European Space Agency. More than 500 pins representing the STS-122 mission also are stowed inside Atlantis.

The seven crew members packed a number of items of their own, usually representing schools they attended or units they served in.

There even is a deflated football from the University of Richmond's Athletic Department. Mission Specialist Leland Melvin attended the University of Richmond and played professional football before joining NASA.

The items are packed to take up very little room inside lockers onboard Atlantis. Commemorative items also are chosen to weigh very little, but carry a big impact upon their return to Earth.

STS-120 crew shares experience of mission

By Tanya Nguyen
Staff Writer

A thunderous applause greeted five astronauts of mission STS-120 as they took center stage Jan. 8 at Kennedy Space Center, returning home to where their mission began in October aboard space shuttle Discovery.

Donned in blue jumpsuits, the crew members met with Kennedy workers in the Training Auditorium to discuss their mission and share experiences in space.

Commander Pam Melroy led the group as she briefly introduced Pilot George Zamka and Mission Specialists Scott Parazynski, Douglas Wheelock and Paolo Nespoli. Absent from the group were Mission Specialists Stephanie Wilson and Daniel Tani, who currently resides at the International Space Station and will return to Earth on Atlantis' upcoming mission, STS-122.

NASA/Jim Grossman

Discovery Pilot George Zamka happily signs an autograph for a Kennedy employee.

Melroy commended the audience members for their collaborative work in making the mission successful.

"We really owe a huge debt of thanks to you, everybody at the Kennedy Space Center, everybody who plays a part in launching a shuttle," Melroy said before asking employees to give themselves a round of applause.

The astronauts entertained the crowd with a film highlighting their 15-day mission in space aboard the station, even giving viewers a bird's-eye view of how Parazynski repaired a damaged solar array on the station.

"It worked out really nicely," Parazynski said of the footage that showed him armed with three tools, removing a portion of the ripped panel and installing cufflink-like devices to mend the array.

Although the astronauts had a mission to complete, they always made time to admire the view of Earth below.

Zamka said he caught awe-inspiring glimpses of smoke from burning wildfires in southern California that resembled a large swath of clouds. He said he saw the majesty of the Alps in Europe and Himalaya mountains in Asia.

"The mountains reached right up. It's almost as if you can touch them up there," Zamka said.

The 15-minute film ended with the astronauts' safe return to Earth, but viewers were further treated to a reel filled with bloopers of crew members working, eating and having a good time in weightlessness.

Members of the audience took turns asking the crew questions, ranging from solar repairs, to the emotions felt upon leaving the hatch for a spacewalk, to the type of meals eaten in space.

"You are right on the edge of all your senses," Wheelock said, describing how he felt while embarking on a spacewalk. "There is a big 'wow' factor when you first come out of the hatch."

Food takes on a different form in space as it's prepared before launch in "meals ready to eat," or MREs. These were essentially developed by the military for service members.

Melroy said eating MREs created by NASA was a welcome treat.

"Probably the biggest change that's happened is instead of using military MREs, which we used to do, we actually have our own food but we use the same factories and the same process," Melroy said. "We mix our own ingredients and our own processes."

Mike Wetmore, NASA's associate director for engineering and technical operations, gave each of the astronauts a commemorative silver coin at the close of the hourlong presentation. They returned the gesture by giving him a frame holding pictures taken during the flight and a patch that flew on Discovery.

During the mission, Discovery's crew installed Harmony, a connecting module that will provide links for European and Japanese laboratory modules in future spaceflights to the station.

U.S. Astronaut Hall of Fame grows by four

By Elaine M. Marconi
Staff Writer

Astronauts Robert D. Cabana and Bryan D. O'Connor, along with former astronauts John E. Blaha and Loren J. Shriver, will be added to an elite list of U.S. Astronaut Hall of Fame members that includes Neil Armstrong, John Glenn, Alan Shepard, Jim Lovell, Sally Ride and John Young.

The 2008 inductees were selected by a committee of former NASA officials and flight controllers, journalists, historians and Hall of Fame astronauts.

NASA/SSC

Robert D. Cabana, director of the John C. Stennis Space Center.

NASA/Bill Ingalls

Bryan D. O'Connor, NASA's chief of Safety and Mission Assurance.

With four space shuttle missions to his credit, Cabana was the commander of the first International Space Station assembly mission. He is the director of NASA's Stennis Space Center in Mississippi.

O'Connor was shuttle pilot on mission STS-61B on which three communication satellites were deployed, and commander of STS-40, the first shuttle mission dedicated to life science studies. He now serves NASA as the chief of Safety and Mission Assurance with responsibility for the safety, reliability, maintainability and quality assurance of all NASA programs.

Over the span of 17 years, Blaha flew on five shuttle missions and set the American men's record for time in space during his four months on orbit. Blaha retired from NASA in 1997 and is active in private industry.

Shriver, a veteran of three shuttle flights, commanded the STS-31 mission to deploy the Hubble Space Telescope and served at Kennedy Space Center as the Launch and Payload Processing deputy director from 1997 to 2000.

This esteemed assembly is the seventh group of space shuttle astronauts named to the U.S. Astronaut Hall of Fame and brings the number of inductees to 70.

A public ceremony to commemorate the veteran astronauts will be May 3 at the Kennedy Visitor Complex.

Scene around Kenn

NASA/Kim Shiflett

Members of the STS-124 crew get a close look at equipment on the Japanese Experiment Module, called Kibo, in the Space Station Processing Facility at Kennedy Space Center. Crew members are at Kennedy for a crew equipment interface test that includes familiarization with tools and equipment that will be used on the mission.

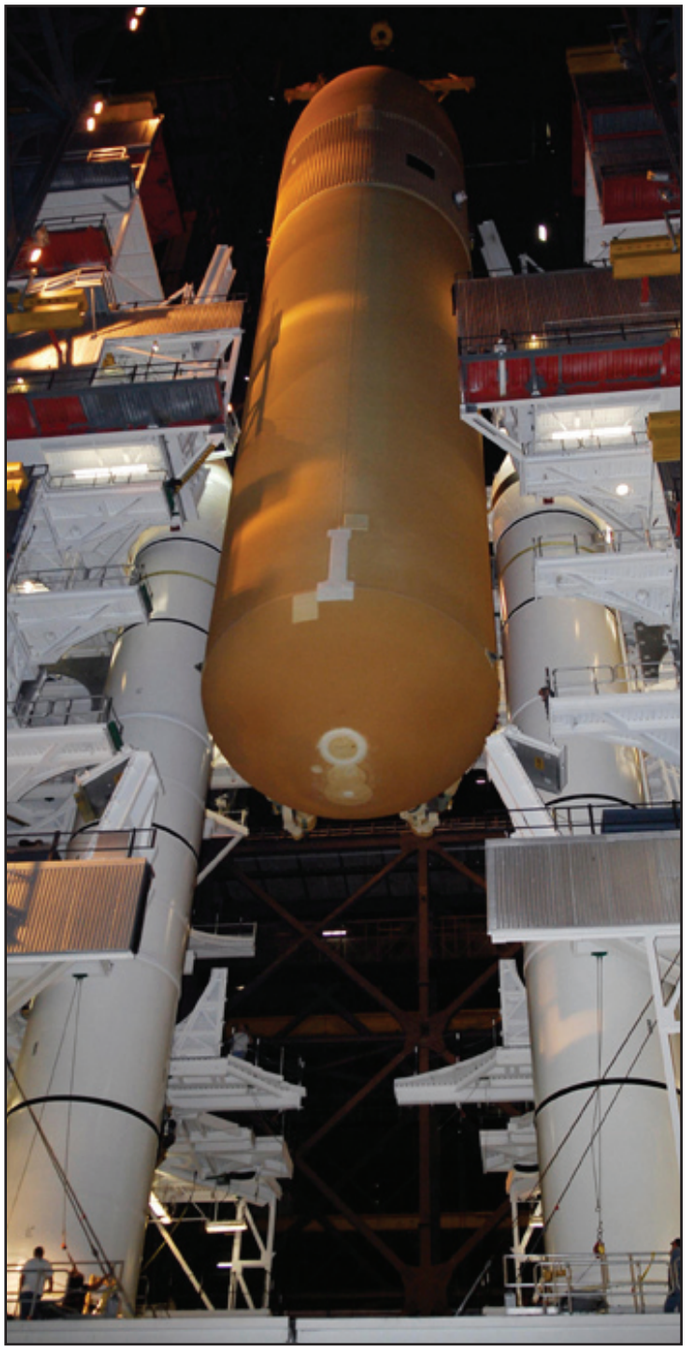
Reader-submitted photo

Adam Sluis and Amanda Grinter watch orbiter Endeavour roll to the Vehicle Assembly Building.

Reader-submitted photo

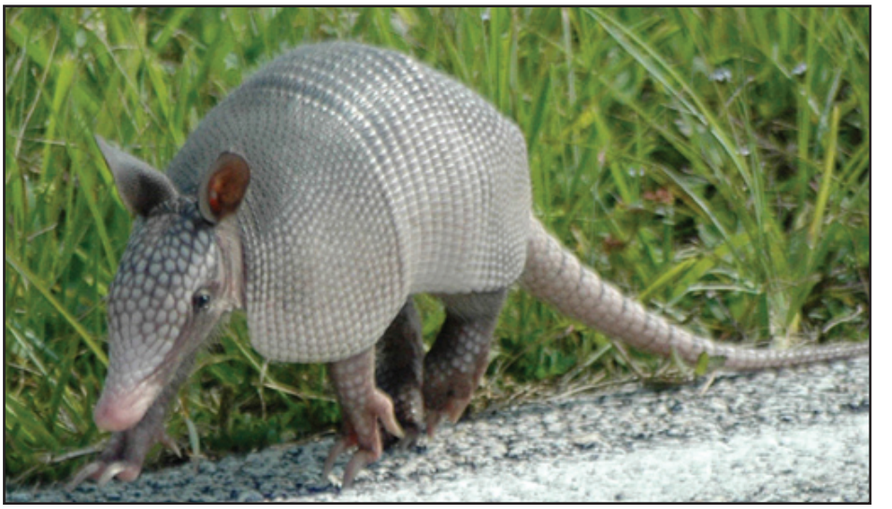
InDyne cable technicians Bill White, left, and Brian Murphy prepare to use pressurized air to "blow" fiber-optic cable through the underground communication duct system on Kennedy. The use of pressurized air allows the fiber-optic cable to ride a cushion of air up to 8,000 feet.

nedy Space Center



NASA/Kim Shiflett

The suspended external tank is mated between the solid rocket boosters installed on the mobile launcher platform in high bay 1 of the Vehicle Assembly Building at Kennedy Space Center. The STS-123 mission is targeted for launch on Endeavour in mid-March.



NASA/George Shelton

A baby nine-banded armadillo makes its way along the roadside near Launch Pad 39A. Introduced to Florida in the early 1900s, this species is found statewide in areas with dense ground cover and sandy soil. Nine bands of plates cover the body from shoulder to hip and 12 bands cover the long tail. It has a small, tapered head and snout and a long tongue. Its ears are long and hairless.

Reader-submitted photo

InDyne cable technician Joshua Ballew, installs fiber optic cable in the communications tunnel beneath Launch Pad B.

NASA/George Shelton

A young alligator crosses a road near the railroad tracks at Kennedy Space Center.

Spaceport News wants your photos

Send unique story ideas and interesting photos of workers in action for possible publication. Photos should include a short caption describing what's going on, with names and job titles, from left to right. Send e-mail to **KSC-Spaceport-News@mail.nasa.gov**.

Crew films Emergency Response Team in action

By Tanya Nguyen
Staff Writer

A camera crew arrived at Kennedy Space Center early Jan. 11, but it wasn't here to shoot a movie or a high-profile event.

The Texas-based trio came to film a training video featuring the newly installed pop-up targets at the security training center's practice range, and to record officers training at the shoot house, a facility where they perform drills to clear a building of hostages or armed criminals.

"The video will help law enforcement and security personnel with their antiterrorism training," said Anthony Burden, a producer for the Texas Television production company who also produces stories for PBS affiliates.

And who better to show off their training skills and make use of the new equipment than members of NASA's Emergency Response Team, federal officers who undergo extensive yearlong training at the facility.

"We go through scenarios that are based on real life, things that have happened," Officer Tom Parks said.

The practice drills began at the shoot house where a makeshift walkway hung overhead, providing a bird's-eye view inside the building.

With a camera rolling, the five officers assumed their positions as they huddled close to the shoot house. The men, dressed in camouflage gear, slowly entered the building one by one with weapons drawn.

They strategically moved from one room to the next, each time yelling "Clear" before they came upon a room with wooden targets. Plastered on the targets was a picture of half a man's body with an angry face staring back at them.

The officers fired at the face using live ammunition, making sure the bullets struck above the man's chest. After the last round was fired, the officers pretended to remove a hostage and arrest a criminal.

The officers were evaluated by Frank Repass, who spent 25 years with the Orlando Police Department. He critiqued their marksmanship skills and praised them for their efforts.

"It's a fun way to train," Repass said. "Most officers that go through these courses, they love it, they enjoy it."

But Repass didn't allow the men to rest on their laurels.

He had them go through the drill again but this time using a flash grenade, ammunition that explodes and releases thick plumes of smoke. An officer tossed a grenade into the first room and the team swarmed inside after the explosion. They repeated the drill twice.

Repass gave them a five-minute break before proceeding to the nearby practice range, a facility that features shooting lanes with new pop-up targets -- the focal point of the training video.

The officers assumed their positions as the camera started recording.

On cue, they fired at the pop-up targets in unison and went through rounds of ammunition before reloading their firearm and starting over.

The pop-ups, which make up the pneumatic target system, are connected to a timer designed to pop them up at any given moment. It forces an officer to use quick reflexes when aiming and shooting at targets.

"The pneumatic system demands that they use the fundamentals of hitting the target," Repass said.

And because the pop-ups are made with impenetrable armored steel plates, officers don't have to replace targets each time they're done shooting. All Repass has to do is spray paint over the area marked up by a bullet.

The pneumatic target system is considered by Repass to be a better system than paper targets, which officers used for shooting practice until last year when the new mechanism arrived.

He likened the target system to an arcade game in which a mole's head pops up through random holes and a player has a split second to hit it before the head disappears into the holes again.

He said racking up points takes concentration and forces a player to focus on the game.

Hundreds of bullet casings littered the ground by the time the officers were done.

The camera crew conducted a short interview with Repass and called it a day.

Their next stop was Port St. Lucie, where they were to visit the facility that makes the pop-up targets.

The center touts a state-of-the-art range that involves training with laser guns. The security center is also available to law enforcement officers from various levels of the government, including agents from the FBI and the Bureau of Alcohol, Tobacco and Firearms.

NASA/Jack Pfaller photos

Above: Range master Frank Repass, left, watches over five officers of the Emergency Response Team as they prepare to enter the wooden shoot house Jan. 11. Training at the shoot house teaches the men how to sharpen their skill and techniques in clearing buildings of hostages or armed criminals. **Right:** An armed officer fires at a makeshift wooden target inside the shoot house. The shooting practice hones their marksmanship skills when confronted by a criminal.

Explorer 1 zoomed into space race 50 years ago

By Kay Grinter
Reference Librarian

Remembering Our Heritage

America sprinted into the space race 50 years ago on Jan. 31, 1958, with the launch of Explorer I, America's first satellite. The Soviet Union had taken the lead in October 1957 with the launch of Sputnik I, the first artificial satellite to orbit the Earth.

Ike Rigell, president of the local NASA Alumni League chapter, reflected, "Rocketry was a new field and those who gravitated toward it were young, confident and not afraid of failure."

After attempts failed to ready the Vanguard rocket to carry the first American satellite, the effort was transferred to the Army Ballistic Missile Agency, or ABMA. A modified version of the Redstone rocket had been developed by the ABMA for use with upper stages designed by the Jet Propulsion Laboratory. The new vehicle, called the Jupiter C, had been launched successfully in a high-altitude re-entry project. The remaining Jupiter C hardware was in storage in Huntsville, Ala.

Norman Perry was an engineering technician in the ABMA's Prototype Shop where the Jupiter C was built. "The vehicle was flown to the Cape, and I was surprised to find it back in the shop the next morning," he recalled. The breathing system, installed in the rocket's fuel tanks during transport, could not compensate for the plane's steep descent onto the Skid Strip. "The fast change in pressurization caused the rocket's skin to wrinkle. A technician was busy hammering out the ripples with a rubber mallet."

An engineer in the Missile Firing Laboratory, Rigell had responsibility for the electrical network system for Explorer I, including the logic circuitry in the rocket and the control consoles in the blockhouse. "The written countdown procedure was only a few pages," Rigell explained. "We were so familiar with the rocket's systems, we did not need a detailed script. The control panel operators, in close proximity in the small blockhouse, could make changes as necessary on the spot."

A view of the bottom half of the Jupiter C launch vehicle during prelaunch activities for the launch of the Explorer 1 satellite.

Explorer I event

Enjoy a 50th-anniversary celebration of Explorer I at the Radisson Resort in Cape Canaveral on Jan. 31. Registration and a reception will begin at 5 p.m., followed by dinner at 6 p.m. The cost is $30 per person.

For reservations or additional information, contact NASA Alumni League Special Events Coordinator Norman Perry at 321-267-0168 (*Nperry143@aol.com*) or Harry Shockey at 321-636-5878 (*hpjshockey@cfl.rr.com*).

As the launch campaign began, the weather was bitter cold and high-velocity, upper-level winds caused delays two days in a row.

Harry Shockey, an ABMA mechanical technician on Pad 26, was a veteran of Snark, Bomarc and Matador launches and an original "Pad Rat."

"The wire on the engine cover of my Renault broke on my way home one night. It was so cold, I had to stop to plug up the air intakes. I cut a pair of fishing pants in half and stuffed the cloth into the holes. I drove back to work that way the next day," he said.

NASA file photos

Firing room (mission control) personnel prepare for the launch of Explorer I.

On the night of Jan. 31, the countdown picked up for the third launch attempt despite another unfavorable weather forecast.

Terry Greenfield, an ABMA electrical engineer, was in the firing room for launch. Now ASRC's chief engineer for electrical ground systems for the Constellation Project at Kennedy Space Center, he recalled: "I was responsible for spinning up the tub with the upper stages on the Jupiter C. We energized the spin system using a DC power generator installed under the pad. Control was transferred to the vehicle's power supply before takeoff. Back then, we used the term 'takeoff,' rather than 'liftoff' like we do today."

Another ABMA electrical engineer, Milt Chambers, was also in the firing room. An active member of the NASA Alumni League, he recalled: "The Jupiter C used a modified German V-2 autopilot, with the pitch gyro replaced by an air-bearing gyro. I set up the integrating accelerometer that gave the cut-off signal when the Jupiter C reached the right velocity. A slight delay was caused on launch night by a false measurement indicating the rudders on the vehicle were vibrating."

After a visual inspection of the rocket and all other measurements being nominal, the "firing command" was given. Takeoff came at 10:48 p.m. EST. The rocket was renamed Juno I after launch.

Analysis of the data transmitted back to Earth from the scientific instruments on Explorer I confirmed the existence of a radiation belt around Earth, as predicted by Dr. James A. Van Allen of the University of Iowa.

Eight months after the Explorer I launch, the National Aeronautics and Space Administration, America's civilian space agency, was established on Oct. 1.

WORD ON THE STREET

Where do you plan to watch the launch of STS-122?

"Outside of the Headquarters Building . . . I'll be here."

Inna Hinson, NASA program analyst

"From the operation television facility in the LCC."

Jeff VanPelt, Director of Imagery Services for KICS contract

"At KARS Park where the public can now view launches."

Tom Cook, management analyst

"From the Industrial Area because I'll be working a 12-hour shift."

Jerry Mobley, communication technician

"The Banana River VIP site with several of my co-workers."

Betty Kegley, acting Kennedy records manager

Service to mark fifth anniversary of Columbia accident

The Astronauts Memorial Foundation will host a ceremony at the Space Mirror Memorial at the Kennedy Space Center Visitor Complex to honor the space shuttle Columbia crew of STS-107 on the fifth anniversary of the Columbia accident at 10 a.m. Feb. 1.

The public is invited to attend and will be carried live on NASA Television.

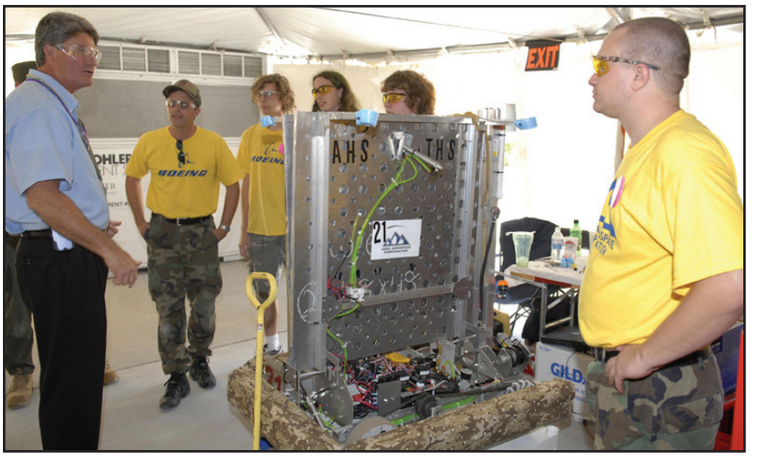
The Astronauts Memorial Foundation honors and memorializes astronauts who have sacrificed their lives for the nation and the space program.

The Visitor Complex will provide flowers for ceremony guests and visitors throughout the day to place at the memorial.

For more information, call 321-449-4400 or visit **www.kennedyspacecenter.com**.

Don't forget! *Spaceport News* wants your photos, feedback

Do you have an exciting photo taken at Kennedy Space Center or a great idea for a story? *Spaceport News* wants you to share it. We want to highlight the people and places that make up the spaceport. Photos should include a short caption with the names and job titles of those pictured, from left to right, and be at least 300 dpi. Send them to ***KSC-Spaceport-News@mail.nasa.gov.***



NASA/Kim Shiflett

2008 FIRST Robotics Competition set for March 13-15

Kennedy Space Center Director Bill Parsons, left, talks to students from Titusville, Fla., about their robot during last year's FIRST robotics event at the University of Central Florida Arena. The university will host the 2008 FIRST Robotics Competition from March 13-15. The competition is an exciting, multinational contest that teams professionals and young people to solve an engineering design problem in an intense and competitive way. For more information, go to **www.floridafirstregional.com**.

Looking ahead

Space Station sighting	7:07-7:09 a.m. Saturday, Jan. 26	Approach: 10 degrees above SSW Departure: 28 degrees above SSE
Target Feb. 7	Launch from KSC: Atlantis, STS-122; at 2:45 p.m.	
Target mid-March	Launch from KSC: Endeavour, STS-123	
March 21	Launch from CCAFS: Atlas V - Mission: ICO G1	
Target March 13	Launch from CCAFS: Delta II - Mission: GPS IIR-19	
Target April 24	Launch from KSC: Discovery, STS-124; at 8:26 a.m.	
March 29	KSC All-American Picnic	
Target May 16	Launch from CCAFS: Delta II - Mission: GLAST	
Target July 16	Launch from CCAFS: Delta II - Mission: STSS Demo	
Target July 20	Launch from CCAFS: Delta IV - Mission: GOES-O	
Target Aug. 7	Launch from KSC: Atlantis, STS-125; at 8:24 a.m.	
Target Sept. 18	Launch from KSC: Endeavour, STS-126; at 8:08 p.m.	
Oct. 28	Launch from CCAFS: Atlas V - Mission: LRO/LCROSS	
Target Dec. 1	Launch from CCAFS: Atlas V - Mission: SDO	
Target Feb. 16, 2009	Launch from CCAFS: Delta II - Mission: Kepler	

John F. Kennedy Space Center

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