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Spaceport News

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Last external fuel tank arrives for STS-134 mission

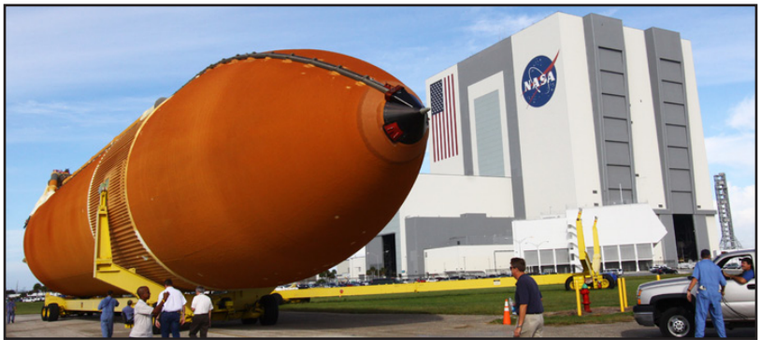
By Linda Herridge
Spaceport News

If external fuel tanks could talk, then NASA's last fuel tank, ET-122, would have many stories to tell as it traveled aboard the Pegasus barge from the Michoud Assembly Facility in New Orleans and arrived at Kennedy Space Center earlier this week. The tank was moved to the Vehicle Assembly Building Tuesday morning ahead of inclement weather passing through the area.

"We offloaded the tank and transferred it into VAB high bay 4 to begin its receiving inspection and checkout," said Aly Mendoza, who is the NASA external tank and solid rocket booster manager. "It is scheduled to be mated to the solid rocket boosters on Nov. 18."

After receiving Return to Flight modifications, weathering through a hurricane and undergoing several months of repairs, ET-122 is designated to help launch what currently is the last planned space shuttle mission, STS-134. The flight to the International Space Station is targeted for February 2011.

It's been a very long wait for ET-122 since Lockheed Martin workers completed it at Michoud and signed it over to NASA in November 2002. Because there was no room at Kennedy to store the tank, it was pressurized and placed into storage at Michoud.



NASA/Jack Pfaller

The Space Shuttle Program's final external fuel tank, ET-122, moves from the turn basin to the Vehicle Assembly Building. The tank arrived at Kennedy aboard the Pegasus barge on Sept. 28 , completing a 900-mile sea journey from NASA's Michoud Assembly Facility in New Orleans.

John DesForges is the ET-122 project manager with Lockheed Martin at the Michoud facility. He estimated that about 500 workers helped prepare the tank for the STS-134 mission.

"We had some challenges," DesForges said. "The Columbia accident stopped all ET shipments to Kennedy."

During Return to Flight operations in 2003 and 2004 following the shuttle Columbia accident, ET-122 was modified the same as its predecessor in Michoud's Assembly Facility. Ramps and bipod fittings were removed. The tank flange closeout between the intertank and the liquid hydrogen line also was removed. Ice frost ramp extensions were added to the liquid hydrogen proturberance air loads (PAL) ramps. An ET camera system and internal electrical harnesses were installed.

Then, Hurricane Katrina hit the area in August 2005, leaving behind extensive damage to the building where ET-122 was stored.

Three weeks after the hurricane, DesForges was able to go back to Michoud and inspect and assess the damage to the tank. The team proposed a restoration plan that was approved by NASA in November 2008.

"It was a very unique operation. NASA said it was the largest salvage operation of a human-rated spacecraft," DesForges said.

Repairs were made to the liquid oxygen tank and the intertank. Damaged foam was removed and the metal was inspected using non-destructive evaluation methods (NDE), including X-ray and ultrasound. Workers reapplied primer to the surface and then reapplied foam.

DesForges said scratches and gouges and few dents were found in the intertank, which joins the liquid oxygen and liquid hydrogen tanks together. The structure was repaired, following NDE, and then foam was reapplied.

Mendoza said ET-122's arrival was a very sentimental day.

"The excitement of the tank offload is foreshadowed by the sadness of ET-122 being the last tank," Mendoza said. "It brings home the reality that the nation's Space Shuttle Program is soon coming to an end."

NASA/Jack Pfaller

ET-122 is the only tank to have its own insignia commemorating its history. The insignia is located outside of the intertank acess door.

Inside this issue . . .

Emerging technologies may fuel revolutionary launcher

By Steven Siceloff
Spaceport News

As NASA studies possibilities for the next launcher to the stars, a team of engineers from Kennedy Space Center and several other field centers are looking for a system that turns a host of existing cutting-edge technologies into the next giant leap spaceward.

An early proposal has emerged that calls for a wedge-shaped aircraft with scramjets to be launched horizontally on an electrified track or gas-powered sled. The aircraft would fly up to Mach 10, using the scramjets and wings to lift it to the upper reaches of the atmosphere where a small payload canister or capsule similar to a rocket's second stage would fire off the back of the aircraft and into orbit. The aircraft would come back and land on a runway by the launch site.

Engineers also contend the system, with its advanced technologies, will benefit the nation's high-tech industry by perfecting technologies that would make more efficient commuter rail systems, better batteries for cars and trucks, and numerous other spinoffs.

It might read as the latest in a series of science fiction articles, but NASA's Stan Starr, branch chief of the Applied Physics Laboratory at Kennedy, points out that nothing in the design calls for brand-new technology to be developed. However, the system counts on a number of existing technologies to be pushed forward.

"All of these are technology components that have already been developed or studied," Starr said. "We're just proposing to mature these technologies to a useful level, well past the level they've already been taken."

NASA

An artist's concept shows a potential design for a rail-launched aircraft and spacecraft that could revolutionize the launch business. Early designs envision a 2-mile-long track at Kennedy Space Center, shooting a Mach 10-capable carrier aircraft to the upper reaches of the atmosphere. Then, a second stage booster would fire to lift a satellite or spacecraft into orbit.

For example, electric tracks catapult rollercoaster riders daily at theme parks. But those tracks call for speeds of a relatively modest 60 mph -- enough to thrill riders, but not nearly fast enough to launch something into space. The launcher would need to reach at least 10 times that speed over the course of two miles in Starr's proposal.

The good news is that NASA and universities already have done significant research in the field, including small-scale tracks at NASA's Marshall Space Flight Center in Huntsville, Ala., and at Kennedy. The Navy also has designed a similar catapult system for its aircraft carriers.

As far as the aircraft that would launch on the rail, there already are real-world tests for designers to draw on. The X-43A, or Hyper-X program, and X-51 have shown that scramjets will work and can achieve remarkable speeds.

The group sees NASA's field centers taking on their traditional roles to develop the Advanced Space Launch System. For instance, Langley Research Center in Virginia, Glenn Research Center in Ohio and Ames Research Center in California would work on different elements of the hypersonic aircraft. Dryden Research Center in California, Goddard Space Flight Center in Maryland and Marshall would join Kennedy in developing the launch rail network. Kennedy also would build a launch test bed, potentially in a 2-mile long area parallel to the crawlerway leading to Launch Pad 39A.

NASA

Different technologies to push a spacecraft down a long rail have been tested in several settings, including this Magnetic Levitation (MagLev) System evaluated at NASA's Marshall Space Flight Center. Engineers have a number of options to choose from as their designs progress.

Because the system calls for a large role in aeronautic advancement along with rocketry, Starr said, "essentially you bring together parts of NASA that aren't usually brought together. I still see Kennedy's core role as a launch and landing facility."

The Advanced Space Launch System is not meant to replace the space shuttle or another program in the near future, but could be adapted to carry astronauts after unmanned missions rack up successes, Starr said.

The studies and development program could also be used as a basis for a commercial launch program if a company decides to take advantage of the basic research NASA performs along the way. Starr said NASA's fundamental research has long spurred aerospace industry advancement, a trend that the advanced space launch system could continue.

For now, the team proposed a 10-year plan that would start with launching a drone like those the Air Force uses. More advanced models would follow until they are ready to build one that can launch a small satellite into orbit.

A rail launcher study using gas propulsion already is under way, but the team is applying for funding under several areas, including NASA's push for technology innovation, but the engineers know it may not come to pass. The effort is worth it, however, since there is a chance at revolutionizing launches.

"It's not very often you get to work on a major technology revolution," Starr said.

Discovery rollout delights employees, families and friends

By Rebecca Sprague
Spaceport News

Like a Broadway star, space shuttle Discovery soaked up the limelight during its move from the Vehicle Assembly Building to Launch Pad 39A on Sept. 20.

Resembling a holiday parade, about 1,200 Kennedy Space Center employees, and their families and friends, marked their spots on the grass with blankets and folding chairs, ready to catch a glimpse of the shuttle.

Any spot was a good one, though, as Discovery, attached to its solid rocket boosters, external fuel tank and mobile launcher platform, stood at more than 200 feet tall. Positioned atop the massive crawler-transporter and illuminated by bright xenon lights, it moved slowly down the crawlerway.

Stephanie Stilson, Discovery's NASA flow director, watched the milestone move from the top of the Press Site mound. She said the flow team should be proud of their spacecraft, which is targeted to launch Nov. 1 on the STS-133 mission to the International Space Station.

"With this being the last roll out for Discovery, it's bittersweet," Stilson said. "I've been working with this team for 11 missions now and have always been impressed by their professionalism and dedication."

Tom Young and his wife, Angie, both United Space Alliance workers, brought their three children along to watch the move. Tom is an orbiter element integration engineer and has worked for the Space Shuttle Program for 10 years, and Angie is a project lead for the Orion capsule.

"It's really great to bring our children out to an event like this," Tom Young said. "They are all really enjoying it."

Their daughters, Alexandra and Samantha Stedman, fourth- and second- graders respectively, watched in awe as the shuttle crawled past them. Even one-year-old Preston, who is still crawling himself, seemed to enjoy the show sitting on top of his dad's shoulders.

"When I was in the third grade, I visited Kennedy Space Center and decided at that point that I wanted to work for NASA . . . and here I am lucky enough to do it," Stilson said.

Kennedy Center Director Bob Cabana also made his way through the crowd.

"Hi, I'm Bob. I work here," Cabana said to a group of children sprawled out on a blanket and wearing their mini-sized STS-133 T-shirts. A pretty modest statement coming from a man who has piloted Discovery on two missions and keeps the center running smoothly.

Dressed in their blue flight suits, NASA astronauts Barry Wilmore, Dorothy Metcalf-Lindenburger, Mike Massimino and Gregory C. Johnson did a little inspiring of their own, by answering questions, posing for pictures and signing autographs. Event organizers also passed out laminated cards with pieces of payload bay liner from STS-125, the final shuttle mission to NASA's Hubble Space Telescope.

There have been many events and tributes planned to show appreciation and gratitude to Kennedy's shuttle processing team for all its accomplishments. These include orbiter processing facility tours, the Vehicle Assembly Building wall signing, KSC Family Day, group photos during rollover and the employee photo mosaic.

Chris Comstock, a life sciences project manager for the International Space Station with NASA, brought along three family members who recently moved to the Space Coast from Ohio.

When asked what they thought about Discovery, they answered in unison, "Holy moly," "Amazing," and "Really cool."

Comstock said he plans to obtain a causeway pass so he and his family can get an up-close-view of Discovery launching to the space station for the last time.

"We're looking forward to bringing our families to wherever the final position of Discovery is, whether a museum or the Smithsonian," Stilson said. "But until then, we're going to make sure we have a good last mission with STS-133."

NASA/Mic Miracle

Bathed in bright xenon lights, space shuttle Discovery makes its nighttime trek, known as "rollout," from the Vehicle Assembly Building to Launch Pad 39A at Kennedy on Sept. 20. Discovery reached the pad early in the morning of Sept. 21. Targeted to liftoff Nov. 1, Discovery and its STS-133 crew will take the Permanent Multipurpose Module packed with supplies and critical spare parts, as well as Robonaut 2, to the International Space Station.

"We're looking forward to bringing our families to wherever the final position of Discovery is, whether a museum or the Smithsonian," Stilson said. "But until then, we're going to make sure we have a good last mission with STS-133."

Stephanie Stilson,
Discovery's NASA
flow director

NASA/Charisse Nahser

About 20,000 employees treated their families and friends to a fun-filled day of open facilities, exhibits and demonstrations during the 2010 KSC Family Day/Take Our Children to Work Day on Sept. 25.

2010 KSC FAMILY DAY/ TAKE OUR CHILDREN TO WORK DAY

NASA/Charisse Nahser

Tours in the Launch Complex 39 Area included the Vehicle Assembly Building, Space Shuttle Main Engine Shop and Orbiter Processing Facility-2, which is where shuttle Endeavour is being prepared for the Space Shuttle Program's final planned mission to the International Space Station. Tours in the Industrial Area included the Space Life Sciences Laboratory, the Parachute Refurbishment Facility and the Space Station Processing Facility.

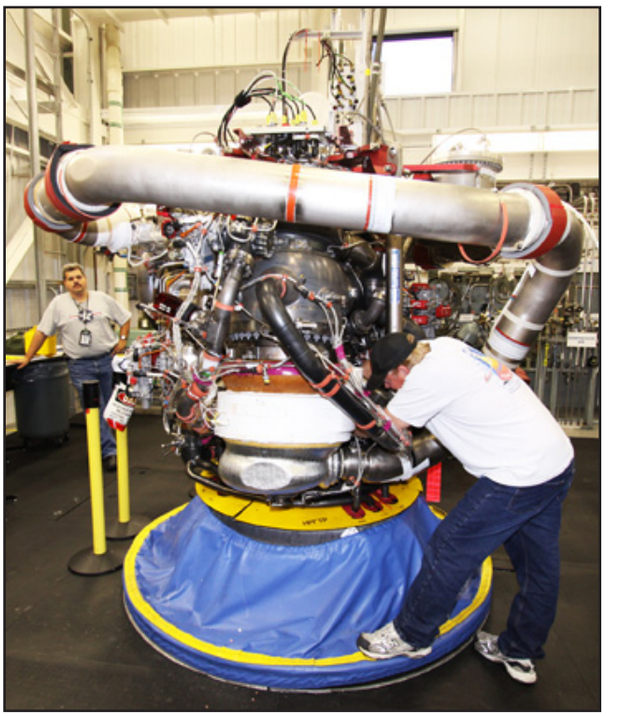
NASA/Charisse Nahser

Families and friends of employees got to board the Liberty Star solid rocket booster retrieval ship docked at the Turn Basin. Guests also had the opportunity to leave their mark on banners around the center and see a section of the wall inside the Vehicle Assembly Building designated as a tribute to the Space Shuttle Program.

Scenes Around Kennedy Space Center

NASA/Kim Shiflett

Kennedy Space Center and Brevard Workforce host a job fair Sept. 15 in Kennedy's Operations Support Building II and Space Station Processing Facility to help center employees with future planning and placement as the Space Shuttle Program comes to an end. Recruiters included federal, state and local government agencies and organizations, as well as private companies from across the country.



NASA/Jack Pfaller

One of six space shuttle main engines is prepared for the STS-134 and STS-335 missions in the Space Shuttle Main Engine Processing Facility at Kennedy on Sept. 17.

NASA/Jim Grossmann

Workers of Superior Solar LLC in Longwood, Fla., prepare to install more than 300 solar panels on the roof of the Propellants North Administrative and Maintenance Facility at Kennedy on Sept. 20. The facility is striving to qualify for the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Platinum certification.

NASA/Kim Shiflett

Empty fire blanket holders and 20 contour chairs remain in the blast-resistant "rubber room" beneath Launch Pad 39B at Kennedy on Sept. 16. The room is a steel dome floating on rubber isolators and was used as an escape route during the Apollo Program in case of an emergency. It has since been abandoned for use by astronauts, but throughout the years nature found its way inside, including raccoons, snakes, birds and even a bobcat and opossum.

NASA/Jim Grossmann

Construction crews begin to lay sand, reinforcing steel and large wooden mats under the rotating service structure of Kennedy's Launch Pad 39B on Sept. 10 to protect the structure's concrete from falling debris during deconstruction. Starting in 2009, the structure at the pad was no longer needed for the Space Shuttle Program, so it is being restructured for future use. The new design will feature a "clean pad" for rockets to come with their own launcher, making it more versatile for a number of vehicles.

Spaceport News wants your photos, ideas

Send photos of yourself and/or your co-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.

Also, if you have a good story idea chime in. Send your story ideas or photos to:

KSC-Spaceport-News@mail.nasa.gov

Collaborative deputy receives Center Director's Award

By Rebecca Sprague
Spaceport News

As a rising star at Kennedy Space Center, Laura Govan has helped create one of NASA's greatest engineering marvels in the sky.

"You can see the International Space Station fly overhead at night and I was fortunate to be part of the station team when that star was born," Govan said.

In the late 90s, Govan was the technical integration lead for a team that performed a critical ground test to assemble and electrically connect four of the first station elements before assembly in orbit.

Today, she is the deputy for program management in the International Space Station and Spacecraft Processing Directorate. She recently won the Center Director's Award for her work in managing the budget, contracts, checkout, assembly and processing of station elements.

"The second part of my job includes representing the directorate at some of the center forums where we strategize and plan for our transition from assembly and shuttle operations to fully utilizing the station with experiments and research," she said.

Govan graduated with a bachelor's in electrical engineering from Texas A&M University, joined the space agency in 1989, and later received a master's in engineering management from the University of Central Florida.

In addition to her work with space station, she has been a contracting officer technical representative (COTR) and a source board member. She has worked with NASA's Tracking and Data Relay Satellites, orbiter communications, and payloads, including Spacehab.

"One of the cool things with Spacehab was that I was able to work the first five-minute launch window for STS-63," Govan said.

She's also worked in the International Space Station and Spacecraft Processing Business Office as chief, at Headquarters in the Office of Spaceflight, and in the Mission Operations Directorate at Johnson Space Center.

"I've been able to cover a lot of different areas . . . technical, engineering, integration and business. There's never been a dull moment."

Just as the marvel in orbit took collaboration to build, Govan said building a collaborative team on the ground is just as important.

"I like to get everyone's ideas together and really find the best path because any individual idea is not going to be as strong as getting together as a team and talking through it," she said. "It's important to create an environment where everyone can contribute and use their strengths."

As for her award, Govan said she really has to give credit to her team for receiving the honor.

"This award is recognition for all of the people, their hard work, dedication and contributions to the space station," Govan said. "It is the teamwork that has made the station so successful."

Vehicle crash prompts personal safety evaluation

By Rebecca Sprague
Spaceport News

A recent vehicle crash on the NASA Causeway that ended with a compact car upside down in the Indian River has many re-evaluating their own vehicle safety. And since we live in Florida, which has lakes, ponds, rivers and swamps at nearly every turn, there are some things we can do to protect ourselves, and each other, as drivers.

Driver safety

Abide by Kennedy Space Center's "On the Road, Off the Phone" policy, even while driving off center.

If you must communicate via cell phone, utilize a hands-free device.

Avoid e-mailing and texting while driving.

Keep distractions to a minimum.

Maintain a safe distance between vehicles.

Calling for help

If on center, dial **867-7911** in an emergency situation.

"It's especially important to dial 867-7911 when using a cell phone on center so that the phone call comes directly to the 911 Protective Services Control Center for immediate assessment and dispatch of closest resources," said Candice Norman, dispatch manager with Space Gateway Support. "If the 911 call is initially received elsewhere, precious time and information may be lost during the transfer."

To reach a dispatcher on center, in a non-emergency situation, call **867-7627**.

What to keep in your vehicle

Items to have on hand are a sharp blade to cut a seatbelt, a warning light or flare, and a whistle.

Two first-aid kits that are accessible from the front and back seats also should be readily available. Each should contain antiseptic, cleanser and ointment packets, bandages, scissors, tweezers, gauze, instant cold packs, latex gloves and a first aid guide.

David Seymour, a chief with NASA Fire/Rescue, said he and his coworkers carry a spring-loaded center punch that looks like a mechanical pencil and can shatter a window in a split second.

"Windshields on newer vehicles are laminated to keep you inside in the event of a crash," Seymour said. "That makes them harder to break, so the best bet is to use a center punch on a side window, if a vehicle escape is necessary."

Preparing for an emergency

Jessica Sapp with the Occupational Health Facility said Innovative Health Applications LLC offers cardiopulmonary resuscitation (CPR), automated external defibrillator (AED), first-aid and bloodborne pathogen courses for workers who need them to perform their job at the space center.

"We recommend that you take some of these courses in your local communities," Sapp said. "CPR refresher courses, especially, should be taken every two years."

Emergency contact info

The Florida Department of Highway Safety and Motor Vehicles recommends that you register an emergency contact using your driver's license number at **www8.hsmv.state.fl.us/eci/**.

It's also good to program the acronym "ICE" (In Case of Emergency) with an emergency contact into your cell phone to help paramedics, police and firefighters on scene reach someone in an emergency situation.

Commended for bravery

Several Space Coast workers jumped in the water to help rescue the driver and passengers of the sinking vehicle and are commended for their bravery:

David Stark with NASA
Tim Van Nes with Science Applications International Corp.
Tom Coffy with Abacus Technology Corp.
Shawn Proctor with the Department of Defense at Cape Canaveral Air Force Station
David Fraine with United Space Alliance
Brint Bauer with ASRC Aerospace
Richard Dixon with Government Contracting Resources Inc. /Indyne Inc. at the Cape
John Heberer with Boeing Space Operations

Remembering Our Heritage

Assembly and Refurbishment Facility finishes shuttle duties

By Kay Grinter
Reference Librarian

NASA/Kim Shiflett

United Space Alliance employees gather and hold up a banner at a Sept. 28 ceremony held to commemorate the move from Kennedy's Assembly Refurbishment Facility (ARF) to the Vehicle Assembly Building (VAB) of the Space Shuttle Program's final solid rocket booster structural assembly -- the right-hand forward.

A significant milestone in the Space Shuttle Program was met when the final solid rocket booster assembly rolled out of Kennedy Space Center's Assembly and Refurbishment Facility for delivery to the Vehicle Assembly Building.

Before the shuttle program, solid rocket boosters (SRB) had never been used with a crewed vehicle in either the U.S. or the Soviet Union.

Space shuttle historian Dennis R. Jenkins, author of "Space Shuttle: The History of the National Space Transportation System," explained: "It was a controversial decision at the time, but it was based on economics. When the shuttle program was approved by then President Richard Nixon, it had about a $5 billion limit for all development costs. Solids were the only way NASA stood a chance to stay within budget."

The right-hand forward assembly for STS-335 was set to move out of the west high-bay door of the manufacturing building, wrapping up all planned assembly and testing of SRBs in the facility for the program on Sept. 28 but weather delayed the move. As of presstime, the move was rescheduled for Sept. 30. STS-335 is the launch-on-need flight for the last planned shuttle mission, STS-134.

Until 1986, the solid motor segments were delivered by rail into a low bay of the Vehicle Assembly Building (VAB). All elements of the boosters were processed, tested and assembled in the bay.

Those elements included the nose cap, frustum, forward skirt, avionics and electronics, separation subsystem, range safety subsystem, systems tunnel, forward and aft integrated electronic assemblies, external tank attach ring and attach struts, aft skirt assembly, thermal curtains, thrust vector control system and thermal protection subsystem.

The pilot, drogue and main parachutes were washed, dried, repaired and repacked into clusters in the Parachute Refurbishment Facility, and then transported to the VAB low bay where they were installed.

Each aft skirt assembly thrust vector control system was hot-fired in the Hypergolic Maintenance Facility behind the Operations and Checkout Building.

However, a separate, dedicated facility for SRB processing was needed. There were nine shuttle launches in 1985. The VAB low bay was not adequate to achieve NASA's desired launch rate of up to 24 per year.

In March 1985, NASA broke ground for a new SRB processing facility in Launch Complex 39, a discreet distance from the VAB. The new facility was dubbed the Assembly and Refurbishment Facility (ARF).

Photo courtesy of Dennis R. Jenkins

A solid rocket booster segment is delivered by rail to the low bay of the Vehicle Assembly Building before the Assembly and Refurbishment Facility was built.

United Space Alliance's director of program management, Jim Carleton, has logged 32 years in the SRB program and was chief of SRB forward assembly for the USBI Booster Production Co. when the facility was completed. Its certificate of occupancy was issued July 25, 1986.

"The facility was originally going to be called the Booster Assembly and Refurbishment Facility," Carleton recalled, "but as you can see, the acronym didn't sound too appealing, so it was renamed."

Most of the booster elements remaining in the VAB after the Challenger accident in January 1986 were moved into the new facility where they were disassembled. Any component with a shelf-life was replaced.

"At that time, the ARF had the two largest gantry robots in the world and were used to apply the thermal protection system," Carleton said. "There are larger robots used in industry today, but our robots have been upgraded and are still in use."

The first pieces of flight hardware transferred from the ARF to the VAB were the aft skirts and forward assemblies for STS-26R, the Return to Flight mission after Challenger.

One set of booster assemblies for a shuttle flight planned from Space Launch Complex-6 at Vandenberg Air Force Base also was processed in the ARF and transported to California aboard a C-5A cargo plane. After the Challenger accident, the boosters were disassembled, and the assemblies were returned to Kennedy for flight on another mission.

The employees who work in the ARF are proud of the contribution they have made to each shuttle launch.

"At 3 million pounds apiece, the majority of the thrust for launch is provided by the SRBs," Carleton said. "To us, the orbiter is just the hood ornament."

In response to the question of what's in store for the ARF after the shuttle program, Carleton replied, "We hope the ARF will have a future processing SRBs in a yet-to-be-determined heavy-lift program."

Nobel Prize winner to address AMS

Nobel Prize Laureate Professor Samuel Ting will discuss the Alpha Magnetic Spectrometer (AMS), which is scheduled to fly on space shuttle Endeavour's STS-134 mission, from 11 a.m. to noon Oct. 13 in the Kennedy Training Auditorium. The AMS is a Department of Energy sponsored payload involving a collaboration of 500 scientists, physicists and technicians from 16 countries. AMS will be mounted on the S3 Truss of the International Space Station. Its mission, for the duration of the life of the station, will be to search for antimatter and to study cosmic radiation. Ting, of the Massachusetts Institute of Technology, is the principle investigator for AMS. POC: Gisele Altman, 867-4000

Upcoming events . . .

Oct. 8 The Disability Awareness and Action Working Group hosts its 10th annual National Disability Employment Awareness Month event: 9 to 10 a.m. in the Training Auditorium:
POC: Nicole DelVesco, **nicole.j.delvesco@nasa.gov**

Oct. 15 2010 Hispanic Heritage Luncheon; 11 a.m. to 1 p.m. in the Debus Center at the KSC Visitor Complex; For employees and their families and friends; Tickets are $20
POC: Ana Stark, 861-3735 or **ana.r.stark@nasa.gov**, and Edgardo Santiago-Maldonado, 867-8794 or **edgardo.santiago-maldonado-1@nasa.gov**

Oct. 23 CFC Kick-off Event Featuring the 'Tour de KSC'; 8 a.m. to noon; KSC Visitor Complex; Tickets are available. in Headquarters, OSB II, SSPF, O&C, CIF and NSLD.
For more, go to **http://tourdeksc.ksc.nasa.gov/index.htm**

Oct. 30 KSC Fall Flea Market; 8:30 a.m. to 4 p.m.; KARS Park I, 1300 East Hall Road; All KSC and CCAFS employees invited
POC: Annette Myers, 867-0431

Looking up and ahead . . .

Targeted for Oct. 19	Launch/CCAFS: Delta IV Heavy, NROL-32; TBD
Targeted for Nov. 1	Launch/KSC: Discovery, STS-133; 4:40 p.m. EDT
No Earlier Than Nov. 8	Launch/CCAFS: SpaceX Falcon 9, COTS-1; Launch Window 9 a.m. to 1 p.m. EST
Early 2011	Launch/VAFB: Taurus, Glory; TBD
Targeted for Jan. 22, 2011	Launch/CCAFS: Atlas V, SBIRS GEO-1; TBD
Targeted for February	Launch/CCAFS: Atlas V, GPS IIF-2; TBD
Targeted for Feb. 26, 2011	Launch/KSC: Endeavour, STS-134; 4:04 p.m. EST
No Earlier Than April 14	Launch/CCAFS: SpaceX Falcon 9, Dragon C2; TBD
No Earlier Than June 6	Launch/CCAFS: SpaceX Falcon 9, Dragon C3; TBD
Aug. 5, 2011	Launch/CCAFS: Atlas V, Juno; Launch Window 11:54 a.m. to 12:24 p.m. EDT
Aug.15, 2011	Launch/Reagan Test Site: Pegasus, NuSTAR; TBD

WORD ON THE STREET

What did you like most about Family Day?

"I really liked being able to see the space shuttle up close after working here at KSC many years ago."

Avis Westbrooks-Smokes,
guest of Dexter Westbrooks II, with NASA

"The SRB recovery ship, Liberty Star. I had never been on it and it was something really neat to see."

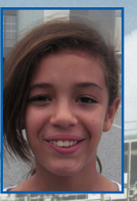
Eddie Laudat,
with Low Voltage Engineering

"Walking into the VAB was incredible. That big, empty space and the height . . . there's no beams connecting it from side to side."

Alex Cadet,
guest of Angela Cadet, with NetLander Inc.

"I really enjoyed seeing space shuttle Discovery up close and on the launch pad. I've never been that close to a shuttle."

Jack Clodfelter,
guest of Diane Gray with Abacus Technology Corp.



"Getting on Liberty Star was awesome. The engine room sure had a lot of technology. And the lifeboat was cool."

Samantha Vidal,
guest of Benny Aviles, with Brevard Achievement Center

John F. Kennedy Space Center

Spaceport News

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