March 21, 2008

Vol. 48, No. 6

Spaceport News

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

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

Engine move directors give launch big boost

Installation process requires trust among crew to get job done right

By Linda Herridge
Staff Writer

Mike Cosgrove and Tim Dickson, two Pratt Whitney Rocketdyne engine move directors, watched with anticipation early March 11 as the clock ticked down to the launch of space shuttle Endeavour on the STS-123 mission.

They cheered and felt a great sense of accomplishment as the shuttle's three main engines ignited to help lift the vehicle off Launch Pad 39A for its journey to the International Space Station.

A great deal of planning and coordination goes into preparing NASA's three orbiters for launch, including engine installation. Each 7,800-pound engine delivers about 490,000 pounds of thrust at liftoff, so it's critical that they are installed properly.

Four move directors direct the installation and removal of the main engines at the Orbiter Processing Facility, the Vehicle Assembly Building or on the launch pads, said Cosgrove, manager and lead move director in the Space Shuttle Main Engine Processing Facility.

"It doesn't get any better than working on large rocket engines and being part of the Kennedy shuttle launch team," Cosgrove said.

He's been at Kennedy for 23 years and has a background in aircraft engineering along with an MBA from Embry Riddle Aeronautical University and an airframe and powerplant mechanics license.

The engines are transferred, one at a time, from the engine facility on a Hyster heavy lift truck to the orbiter processing facility. A team of space shuttle main engine technicians, quality inspectors and a move director coordinate the process to lift each engine and mate them to the orbiter.

NASA/Jack Pfaller

Technicians Tim Dickson and Mike Cosgrove work together on a Hyster forklift to maneuver space shuttle main engine No. 1 into place on space shuttle Endeavour inside Orbiter Processing Facility Bay 3 in preparation of the STS-123 mission. Each engine takes about eight hours to install.

For the STS-123 mission engine installation, Dickson, who is a combustion devices engineer, was at the top of the lift assembly as each engine was guided into the aft compartment of Endeavour by an installer table assembly.

"It's a very satisfying and rewarding experience," said Dickson, whose background is in aircraft maintenance and restoration. "I was proud of the job everyone involved accomplished for this mission."

During the eight-hour installation process, multiple adjustments are made along the way to align the engine and critical clearances are monitored as it is mated to the orbiter.

Installation team members perform individual tasks within the aft compartment of the orbiter as the move director ensures a successful and safe installation process.

Cosgrove said being part of the launch team at Kennedy is a one-of-a-kind experience.

"Successfully preparing the main engines for each mission requires trust that each teammate brings his best effort and the perseverance to get it done right," Cosgrove said. "If we can infuse these qualities into the new program, it will endure."

NASA/Jim Grossman

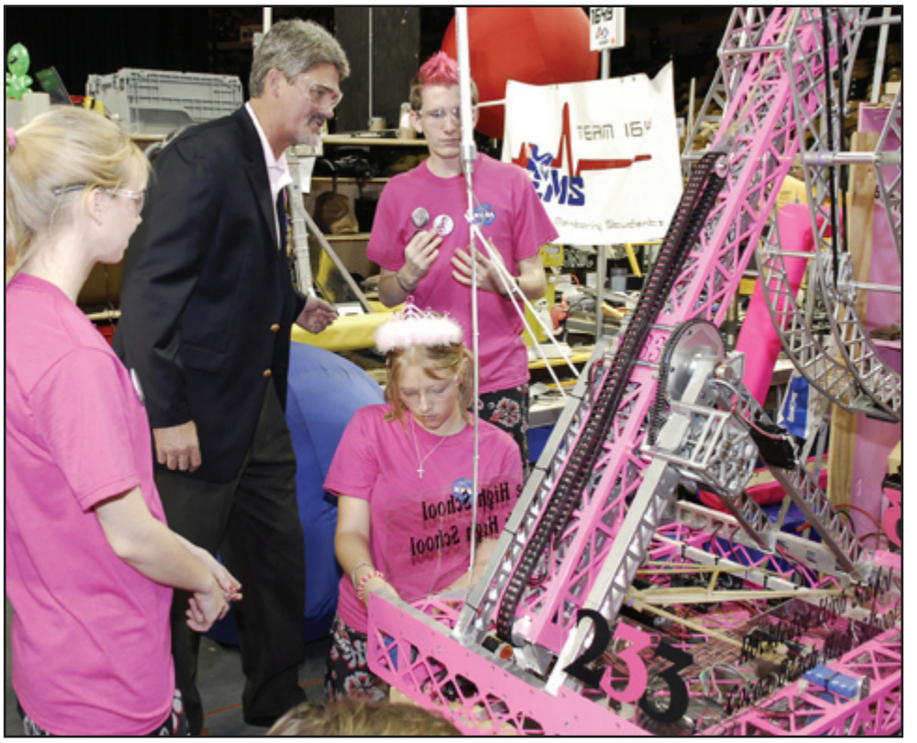
Liftoff of space shuttle Endeavour on the STS-123 mission lights up Launch Pad 39A on March 11. The crew will deliver the first section of the Japan Aerospace Exploration Agency's Kibo laboratory and the Canadian Space Agency's two-armed robotic system to the International Space Station.

Pink Team takes home FIRST Robotics gold

By Jennifer Wolfinger
Staff Writer

With music blaring, and students cheering and wearing team colors, the fanfare at the March 14 regional FIRST robotics competition was fitting for an athletic event. However, the FIRST, or For Inspiration and Recognition of Science and Technology, competition is actually a varsity sport for the mind.

After much preparation, the nation's budding technology leaders converged in Orlando at the University of Central Florida arena to showcase their talents. Using a standard kit of parts and set of rules, students and their mentors spent six weeks solving a common robotics problem. The robots they built were used to compete in the competition, where they gained points by accomplishing tasks such as lifting a large ball onto scaffolding and circling the course. The winners will compete at the FIRST Championship in Atlanta, Ga., April 17-19.



NASA/Kim Shiflett

Kennedy Center Director Bill Parsons visits with the Pink Team, which won the regional FIRST robotics competition and the Regional Engineering Inpiration Award. The Bionic Tigers from Cocoa High took home the Underwrites Laboratory Industrial Safety Award.

Because Kennedy Space Center leaders value this intellectual challenge and experience, the center sponsored two teams (Pink and Bionic Tigers) with many employees also mentoring other teams in the region. Comprising students from Cocoa Beach, Rockledge and Viera high schools, the Pink Team (233) came in first and also won the Regional Engineering Inspiration Award. The Bionic Tigers Team (1592) from Cocoa High School received the Underwriters Laboratory Industrial Safety Award.

"The center benefits by helping to prepare the future science, technology, engineering and mathematics work force, and showing students that engineering can be fun," said Dr. Lesley Garner, Kennedy's higher education programs specialist.

The total teams competing at Florida's regional competition grew from 46 to 60, with eight teams from Brevard County schools. Overall, more than 37,500 high-school students on more than 1,500 teams from Brazil, Canada, Chile, Israel, Mexico, the Netherlands, the U.K., and every state in the U.S. are participating in this year's competition. With this type of growth, next year's regional will be one of the largest in the U.S. and will require two playing fields.

During a luncheon, several educational and technology leaders, including Kennedy's Center Director Bill Parsons, emphasized the importance of the competition, which was founded in 1989.

"Every time I attend an event like this, I'm amazed by the talent of the young people, and feel good about the future of Florida's high-tech work force," Parsons said.

For more information about FIRST, visit www.usfirst.org.

NASA hands out George M. Low Awards at PM Challenge

By Steve Siceloff
Staff Writer

NASA honored four aerospace companies with the George M. Low Award, the agency's top prize for quality and technical performance.

The four companies were: Lockheed Martin Mission Services of Houston; Sierra Lobo Inc. of Milan, Ohio; Pratt & Whitney Rocketdyne Inc. of Canoga Park, Calif.; and ASRC Aerospace Corp. of Cape Canaveral.

Each company receives a trophy that includes an embedded medallion made from material that flew to the moon on the Apollo 11 mission.

The award was established in 1985 to promote management excellence and improvement in NASA's contractor community. It was named in 1990 for George M. Low, a pioneer in NASA's early days whose tenure included serving as deputy administrator from 1969 to 1976.

The presentation capped the Project Management Challenge Conference in Daytona Beach, a two-day event highlighting project management's impact on NASA's mission success. With NASA's Kennedy Space Center as the host center, the Launch Services Program sponsored the conference. About 1,300 people attended the event, which was themed "Reach Higher."

The 2007 Low Awards encompassed several business categories: Large business service: Lockheed Martin Mission Services; Small business service: Sierra Lobo; Large business product: Pratt & Whitney Rocketdyne; and Small business product: ASRC Aerospace Corp.

NASA also recognized four other finalists: Boeing Space Operations Co., Cape Canaveral; Oceaneering International, Houston; Space Systems Division at Jacobs Engineering, Huntsville, Ala.; and National Institutes of Aerospace, Hampton, Va.

Several individuals were honored with Quality and Safety Achievement Recognition awards that highlight exemplary performance in contributing to quality or safety: Michael Sampson, NASA's Goddard Space Flight Center; Melonie Scofield, Goddard Space Flight Center; Russell Bakes of ATK Launch Systems of Brigham City, Utah; and Thelma Cox, Stennis Defense Contract Management Agency, New Orleans.

KARS 1 conference room gets a facelift

By Jennifer Wolfinger
Staff Writer

Technology enables Kennedy Space Center employees to remain connected to their work demands and colleagues around the clock. But thanks to the recently refurbished conference room at the Kennedy Athletic, Recreation and Social Park 1, they now have a haven to focus on a goal uninterrupted.

The NASA Exchange Council prompted the changes in an effort to meet the center's training and meeting needs.

The much-needed refurbishment project included updating everything from flooring and cabinets to paint and vanities in order to make the room appropriate for official business. By improving the existing building to create a training facility, the center was able to save money as well.

NASA/Kevin O'Connell

Kennedy Center Director Bill Parsons uses ceremonial scissors to cut the ribbon between Human Resource Director Tracy Anania (to his right) and Exchange Operations Manager Annette Dittmer (leaning on the fence) to signifying the recent refurbishment of the conference room at the Kennedy Athletic, Recreation and Social Park 1.

"Organization managers like that employees can get away from the work site and have a productive meeting or conference without interruption. Also, to use other facilities, such as hotels, costs a lot of money and requires a lot of driving time. The KARS Park conference room is in a convenient location that's set in a relaxing and beautiful park," said Maria Smith, associate exchange operations manager within the Human Resources Office.

The facility, which now offers wireless features, can be used by Kennedy's civil servant and contractor employees. The room accommodates 50 people and is open from 7:30 a.m. to 5 p.m. It is at KARS 1 off Hull Road.

According to Smith, because of thoughtful planning and teamwork, the actual work was completed in two weeks. In addition to this project, the NASA Exchange contributes to the efficiency, welfare and morale of Kennedy personnel. It operates five retail stores, two barber shops, a service station, a child development center and two recreational parks.

Make a reservation

To reserve the conference room, call 321-867-0431 or visit **http://nasaexchange.ksc.nasa.gov/kars/index.cfm**

NASA groups earn ADDY honors

Members from NASA-External Relations, JBOSC Graphics and Public Affairs Writer's organizations were awarded the American Advertising Federation ADDY Award on March 8.

Graphic designer's Beverly Bragg and Michael Marks, including the project lead Andres Adorno, were awarded a Gold honor in the category of Site, Exterior. Graphic designer Jerry Forney and public affairs writer Linda Herridge won a Silver honor in the category for Poster, Single. The ceremony was organized by the Space Coast Advertising Federation and took place at the Brevard Community College's Planetarium in Cocoa, Fla.

The ADDY Awards Competition is the largest and most comprehensive creative competition in advertising, honoring creative excellence in nearly every area of the industry. It is the only major national competition with three rigorous levels of judging - local, regional and national. With more than 60,000 entries a year, the ADDY Awards represent the true spirit of creative excellence by recognizing all forms of advertising from all forms of media.

Kennedy's ADDY winners advance to regional level to compete with other winners from AFF's fourth district.

In addition to winning, each design submitted into the competition was developed under strict NASA Style Guidelines having been reviewed and approved through the Communications Material Review Process. One of the ADDY award entries, the KSC Display, designed and developed by Bragg and Adorno, also was selected as one of "NASA's Best Designs" by a CMR judging committee to celebrate the creativity and hard work of the designers and graphic teams around the agency.

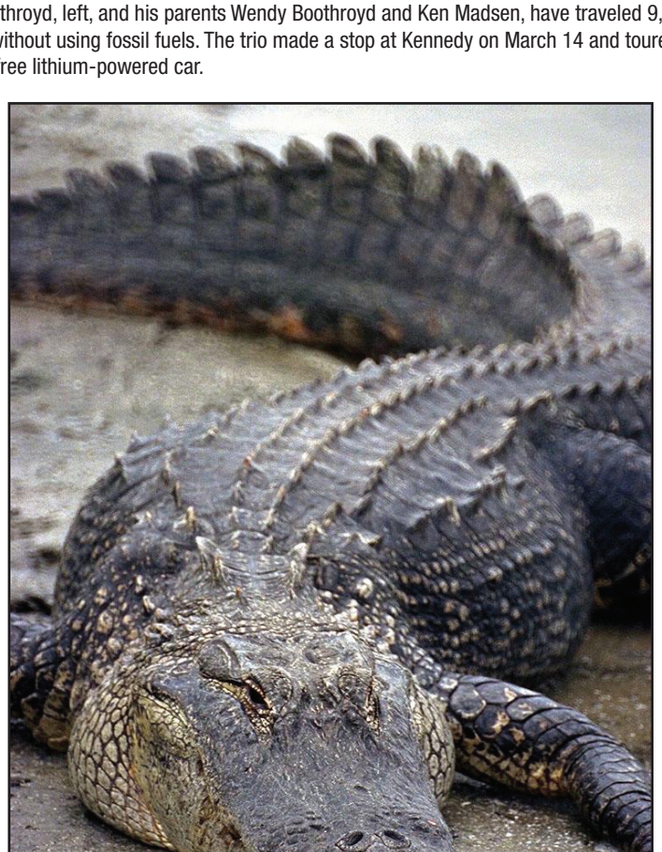
NASA

From left: Michael Marks, Beverly Bragg, Andres Adorno, Linda Herridge and Jerry Forney.

Scene around Kenn

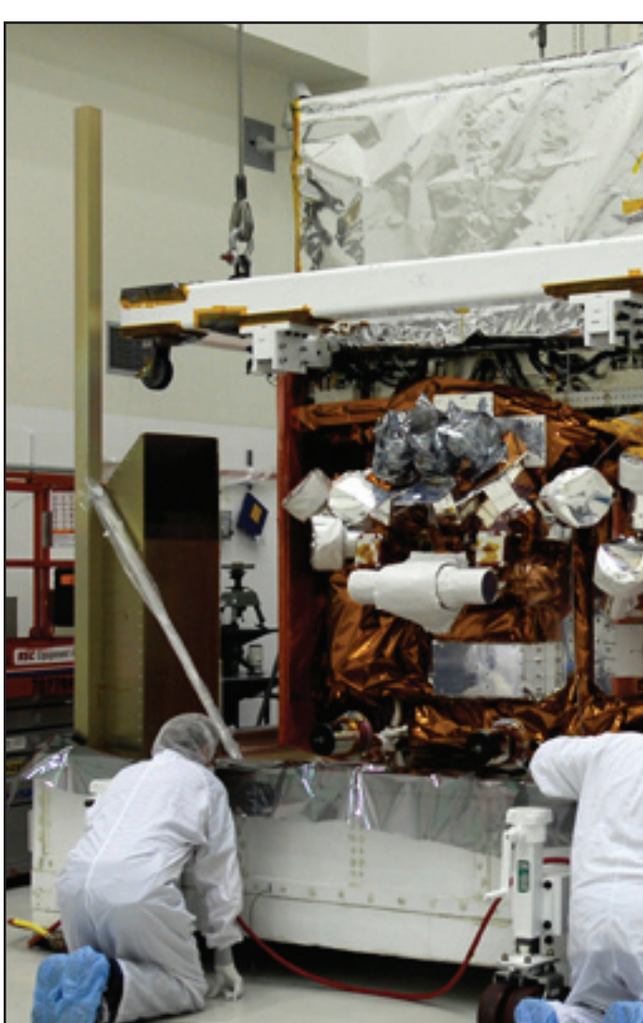
NASA/Dimitri Gerondidakis

Malkolm Boothroyd, left, and his parents Wendy Boothroyd and Ken Madsen, have traveled 9,770 miles of a 12,000 trip without using fossil fuels. The trio made a stop at Kennedy on March 14 and toured the center in a fossil fuel-free lithium-powered car.

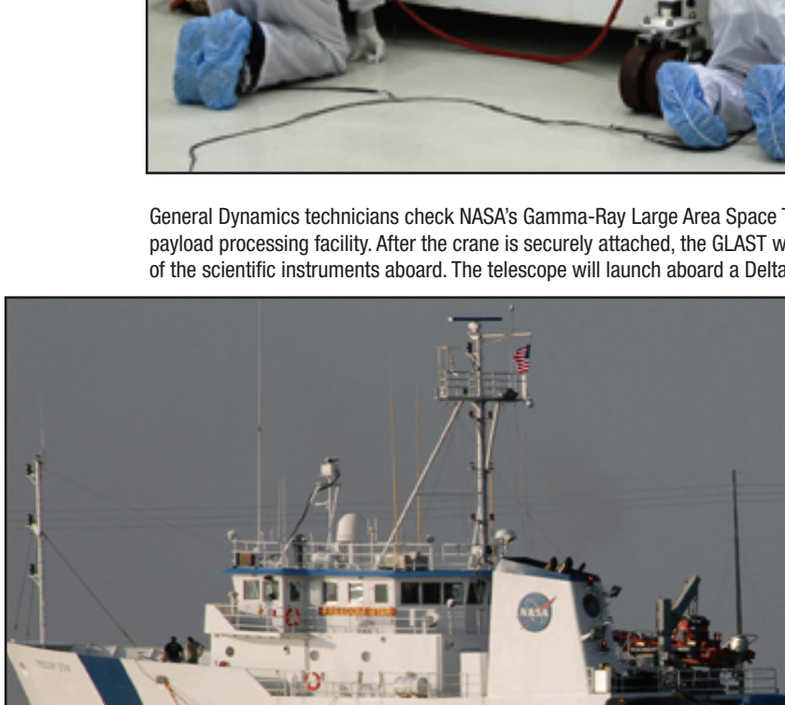


NASA

An alligator rests on the bank of a creek at Kennedy.



General Dynamics technicians check NASA's Gamma-Ray Large Area Space T payload processing facility. After the crane is securely attached, the GLAST w of the scientific instruments aboard. The telescope will launch aboard a Delta



The Freedom Star, one of NASA's solid rocket booster retrieval ships, tows a solid rocket booste shuttle Endeavour, which launched on the STS-123 mission on March 11. The boosters splash

nedy Space Center

NASA/Kim Shiflett

Telescope (GLAST) as an overhead crane is lowered over in the Astrotech
ill be lifted and moved to a work stand in the facility for a complete checkout
a II rocket May 16 from Cape Canaveral Air Force Station.

NASA/Jack Pfaller

er to Hangar AF at Cape Canaveral Air Force Station. The booster is from space
onto the Atlantic Ocean about seven minutes after liftoff.

NASA/Kim Shiflett

NASA Flow Director for space shuttle Endeavour, Ken Tenbusch, left, holds the tie cut by Shuttle Launch Director Mike Leinbach after the successful launch of Endeavour. The tie-cutting is a tradition for first-timers.

NASA

Wild pigs stop near the Kennedy Press Site on their daily foraging rounds.The pigs are believed to be descendants from those brought to Florida by the early Spanish explorers. Without many predators other than human, the pigs have flourished in the surrounding environment.

Spaceport News wants your photos

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.

Kennedy All-American Picnic needs you

After a busy start to 2008, NASA and contractor employees can share their excitement and pride in working at Kennedy Space Center during the picnic on March 29 at KARS Park I, off of Hall Road on Merritt Island.

Whether it's shaking hand with a NASA astronaut and getting an autograph, enjoying the many interesting booths and displays set up around the park grounds, or socializing with family and friends, there will be plenty to enjoy on this day of fun and excitement.

Scheduled events include live entertainment, a children's carnival, a car and motorcycle show, lunch, the popular Chili Cookoff and much more.

Of course, the picnic needs volunteers, KSC All-American Picnic chairman, Jack Fox said.

The picnic committee needs volunteers the day of the picnic for everything from parking patrollers to ring-toss referees.

Employees or family members who are ages 16 and older and who volunteer two hours or more of their day will receive a free KSC All-American Picnic baseball cap, be entered into a drawing for prizes and receive a discounted admission ticket.

To volunteer, call Sandy Walsh at 867-4255, Liz Vasquez at 867-8251 or Sam Talluto at 867-3092 or visit the Web site at http://kscpicnic.ksc.nasa.gov and sign up before all the good spaces are gone.

Dessert Contest

Are you famous for making a dessert? Enter the first annual Dessert contest at the KSC All-American Picnic and see how it stands up against the competition. Enter in either the Cake, Pie, Cookie or Candy category at **http://kscpicnic.ksc.nasa.gov/index.html**. For more information, call Ric Hurt at 867-4898.

NASA file

Food will be served from 11 a.m. to 2 p.m. and will include hamburgers, hot dogs, ice cream, cotton candy, popcorn and snow cones.

Some families' roots run deep at Kennedy

By Jennifer Wolfinger
Staff Writer

Families branch out along different paths, but a few have planted roots at Kennedy Space Center.

For Otto Baker, what he once considered his playground is now the land Kennedy occupies, and what subsequent generations of his family now call a "playground for the mind."

According to the Titusville, Fla. resident, he and his parents lived on land south of Playalinda before it was needed for the emerging space program. His father, Charles, was an iron worker who helped build the Vehicle Assembly Building and various Cape Canaveral launch pads. With his father still working, Baker joined the aerospace work force in 1957 at Patrick Air Force Base, and came to Kennedy to work in construction management in 1977.

After filling many roles, he currently works for United Space Alliance, or USA, as a senior engineer. His experiences and stories showcased the possibilities of the space program to his children.

His eldest son, Todd, began working at Kennedy in 1979, and now works for USA. His youngest son, Mitch, followed in the early 1980s and is a Boeing employee. Rounding out the family presence at Kennedy is a son-in-law, two daughters-in-law, a grandson, and a granddaughter who once served as a co-op student.

"One of the big things in the early days was going to the moon and I was part of that, and now my family is here, and they're going to be part of something very big, too. I hope they can look back and say they helped go to the moon, Mars and beyond," Baker said.

With a father leading the way and some sibling peer pressure, the Berman family has contributed to the space program for more than four decades.

In 1966, NASA Safety and Occupational Health Specialist Brad Berman's father, Bernard, relocated his family from New York to Titusville for a fresh start and to accept a logistics position at Kennedy. He worked in logistics at the center from 1966 to 1970.

Before Brad Berman acquired his current role, he served as a summer aide in 1971 at age 17, and started a summer trend. His sister, Jerilyn Huneycutt, followed in 1972. Three other siblings then applied for similar positions, and eventually, his nephew. Jerilyn is currently an administrative specialist with the Center Operations Directorate.

Their brother Terry is a USA structures manager, and another brother, Steve, was with Planning Research Corp. until he joined the military. His retired step-mother, Marge, was Kennedy's Personnel Operations Branch chief in the 1990s.

"I would like future generations of my family to be here to witness our return to the moon and the maiden voyage to Mars," Berman said.

Combined, Edward Ryan Jr. and his father, Edward, have more than 70 years of family experience with the space program. They didn't originate in Brevard County, but in New Jersey in the late 1930s.

After voluntarily working on the development of a liquid fuel rocket engine for a customer at the auto shop he worked at, Ryan Sr. was hired to work as an engineering assistant to develop engines, including the 6000c-4. This engine eventually would propel the Bell X-1 flight that first broke the sound barrier. His subsequent work with aerospace contractors led him to the Space Coast in 1963 to test a new guidance system.

In 1969, Ryan Jr. pursued a career in rocket engine mechanics via the Air Force, and was assigned to Vandenberg Air Force Base, Calif., where he worked on many launches.

Upon his military retirement in 1987, he joined Kennedy as an instructor for environmental safety and health training for workers including close-out crews and astronauts, and has supported about 750 crewed and uncrewed launches so far.

"When Neal Armstrong walked on the moon, my father had more than 30 years experience in the industry. My decision to enter this career was largely due to the influence of my father," said Ryan, an InDyne, Inc. employee.

Ryan hopes the family tree continues to grow at Kennedy, perhaps with a grandchild of his supporting the next era of space exploration.

Vanguard 1 celebrates 50 years in Earth's orbit

By Anita Barrett
Staff Writer

Remembering Our Heritage

The fact that the Soviet Union had won the race to get a satellite into space first was enough to make grown men and women in America cry.

Vanguard team member Skip Mackey remembers being stunned and somewhat disbelieving.

"I remember setting up a makeshift antenna on the roof of Hangar S to prove to ourselves that it was real. I remember the first pass, when the characteristic 'beep-beep-beep' came out of the receiver. We all had tears in our eyes. It was real all right."

The late Helen Evans, a secretary with the Vanguard Operations Group, once said, "We were all blue. But we knew we would 'show them' when we launched Vanguard and so just kept working."

And show them they did as Vanguard 1 has performed about 200,000 orbits of the Earth compared to Sputnik's 1,440.

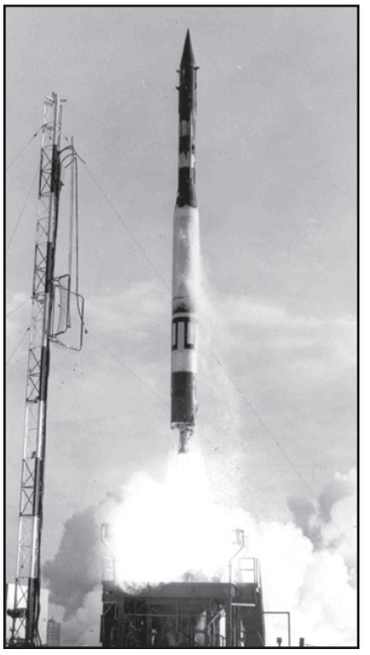
And little did they know that Vanguard 1 would become the "oldest known piece of debris in space for a long time to come," according to Nicholas L. Johnson, chief scientist in the NASA Orbital Debris Program Office at Johnson Space Center.

Vanguard 1, which launched on March 17, 1958, carried a 3.25-pound, 6.4-inch-diameter spherical tracking satellite made of aluminum to study the effects of the environment on a satellite and its systems in Earth's orbit. It also was used to obtain geodetic measurements through orbit analysis.

Vanguard was selected in August 1955 by a committee formed under Donald Quarles. The Viking rocket proved its ability to carry an 852-pound payload 158 miles into space, when the Navy launched it May 24, 1954. Objectives of Project Vanguard were to develop and procure a satellite-launching vehicle; to place at least one satellite in orbit around the Earth; to accomplish one scientific experiment; and to track its flight to demonstrate the satellite actually attained orbit. The latter was especially important.

"(After) the Navy got the go-ahead . . . it didn't leave much time, especially with no priority," said John Neilon, who was a member of the Data Processing Section of the Vanguard Operations Group. His primary job was getting two radars installed and ensuring their successful operation for apogee prediction.

"They had no facilities at Cape Canaveral and were competing for services with people who did have them. However, in a remarkable instance of inter-service cooperation, facilities were found - not always deluxe - and the Air Force agreed to share Complex 18, which was a two-pad complex being built for the Thor program."



NASA file

The Vanguard rocket was designed as a three-stage vehicle using a modified Viking rocket as first stage, an Aeroject second stage and a solid-fueled Altair third stage.

"The Sputnik was a real disappointment to us, but, of course, we kept working," Neilon said.

With another Russian launch of Sputnik II in November, the decision was made to attempt to launch a satellite into orbit around the Earth on the next available Vanguard, known as TV-3.

On Dec. 6, 1957, TV-3 exploded on Cape Canaveral Launch Pad 18A about two seconds after liftoff.

A second failure occurred Feb. 5, 1958.

Finally, TV-4, carrying the Vanguard 1 satellite, lifted into orbit March 17, 1958.

Vanguard was the first U.S. rocket designed for the specific purpose of launching satellites, and represented the first program on Cape Canaveral not tied to a weapons system. It was also the first space craft to use solar cells for power.

While it carried no experiments, the solar-powered transmitters on board allowed for precise tracking, which led to the discovery that the Earth is pear-shaped. In all, three Vanguards were successfully launched from Cape Canaveral.

Original estimates had Vanguard's orbit lasting for 2,000 years. That estimate was changed to 1,000, but solar-radiation pressure and atmospheric drag during high levels of solar activity decreased its expected lifetime to only about 240 years.

The battery-powered transmitter stopped operating in June 1958 when the batteries ran down.

The solar- powered transmitter operated until May 1964 - when the last signals were received in Quito, Ecuado.

Vanguard was not the first U.S. satellite to reach space, of course. The Army Ballistic Missile Agency successfully launched Explorer I aboard a four-stage version of its Redstone missile on Jan. 31, 1958.

LSP launches Web site for future 'Rocket Scientists'

By Linda Herridge
Staff Writer

A new education Web site designed for the Launch Services Program will go live soon on the NASA portal. The site, "Rocket Scientists," contains entertaining and educational features for kindergarten to 12th-grade students. It also provides excellent educational resources for teachers.

Site focuses on teachers, students

Check out the new LSP Web site at:
www.nasa.gov/centers/kennedy/technology/LSP.html

The new Web site took two years to make, according to project manager Gloria Murphy of the Education Programs and University Research Division of the External Relations Directorate.

Tiffany Nail, a launch services specialist with LSP, said the site is a collaborative effort by the education office, LSP and the Information Technology group.

"It was developed so that students, as well as teachers, can learn more about the program," Nail said.

The site includes interactive features such as an LSP mission life cycle video, an online coloring book and word search puzzles, Murphy said.

Special features include videos showcasing the engineers describing their daily duties, Rocket Science 101 — where children can assemble a rocket on-screen — and links to the LSP Photo Gallery and the LSP Firing Room.

Another page takes teachers to an educator resource area with lesson plans for science, technology, engineering and mathematics.

"I am excited to give students the opportunity to learn about the work that the NASA LSP engineers do here at Kennedy," Murphy said.

WORD ON THE STREET

Do you ever take time to look up at the stars, the International Space Station or the Hubble Telescope?

"Once I looked at the space station because we knew it was flying over us."

Brekke Scholtens, cryogenics research engineer with NASA

"I try to catch the ISS every time it flies by. I check the schedule a lot."

Earnestine Aaron, programmer/ analyst with InDyne Inc.

"Yes. I especially like to look at the stars because of their beauty."

Stacy Combs, financial teller with KSC Federal Credit union

"I've tried to catch them but I haven't been able to catch it just right."

Albert Owens, computer analyst with InDyne Inc.

"I live beachside, so I often take time to look up at the stars, particularly Orion."

Robbie Coffman, cryogenics engineer with NASA

NASA

Space Day highlights industry

Deputy Center Director Janet Petro and Astronaut Tom Marshburn discuss the Constellation Program with Florida Speaker of the House Marco Rubio during Florida Space Day in Tallahassee on March 6. A group of about 20 space-related businesses and interests joined the annual event to promote the space industry's value as an economic engine.

Looking up and ahead

Sat., March 22 5:43 to 5:44 a.m.	Endeavour, ISS sighting	Approach: 15 degrees above NNE Departure: 17 degrees above NE
Sun., March 23 6:05 to 6:08 a.m.	Endeavour, ISS sighting	Approach: 49 degrees above NNW Departure: 10 degrees above SE
Sun., March 23 8:48 to 8:49 p.m.	Endeavour, ISS sighting	Approach: 10 degrees above SSW Departure: 19 degrees above S
Mon., March 24 6:28 to 6:30 a.m.	Endeavour, ISS sighting	Approach: 19 degrees above SW Departure: 10 degrees above S
Mon., March 24 9:10 to 9:12 p.m.	Endeavour, ISS sighting	Approach: 10 degrees above WSW Departure: 34 degrees above W
Tue., March 25 7:57 to 8:02 p.m.	Endeavour sighting	Approach: 10 degrees above SSW Departure: 10 degrees above ENE
Tue., March 25 9:34 to 9:35 p.m.	Endeavour sighting	Approach: 12 degrees above NW Departure: 12 degrees above NW
Wed., March 26 8:20 to 8:23 a.m.	Endeavour sighting	Approach: 38 degrees above W Departure: 10 degrees above NNE
Wed., March 26	Endeavour landing scheduled for 8:33 p.m.	
March 29	KSC All-American Picnic	
Target April 14	Launch/CCAFS: Atlas V, ICO G1; 4:12 to 5:12 p.m.	
Target May 16	Launch/CCAFS: Delta II, GLAST; 11:45 a.m. to 1:40 p.m.	
Target May 25	Launch/KSC: Discovery, STS-124; at 7:26 p.m.	
Target June	Launch/CCAFS: Delta II, GPS 2R-20 (M7); TBD	
Target Aug. 2	Launch/CCAFS: Atlas V, WGS SV 2; TBD	
Target Aug. 28	Launch/KSC: Atlantis, STS-125; 9:38 p.m.	
Target September	Launch/CCAFS: Delta II, GPS 2R-21 (M8); TBD	
Target Oct. 16	Launch/KSC: Endeavour, STS-126; TBD	
Target Oct. 28	Launch/CCAFS: Atlas V, LRO; TBD	
Target November	Launch/CCAFS: Atlas V, AEHF 1; TBD	
Target Dec. 4	Launch/KSC: Discovery, STS-119; TBD	
Target Feb. 16, 2009	Launch/CCAFS: Delta II, Kepler	
TBD	Launch/CCAFS: Delta IV-H, NROL-26; TBD	
TBD	Launch/CCAFS: Delta IV, GOES-O; TBD	
TBD	Launch/CCAFS: Atlas V, SDO; TBD	
TBD	Launch/CCAFS: Atlas V, GPS 2F-1; TBD	
TBD	Launch/CCAFS: Delta IV, WGS SV 3; TBD	

John F. Kennedy Space Center

Spaceport News

Spaceport News is an official publication of the Kennedy Space Center and is published on alternate Fridays by External Relations in the interest of KSC civil service and contractor employees.

Contributions are welcome and should be submitted three weeks before publication to the Media Services Branch, IDI-011. E-mail submissions can be sent to **KSC-Spaceport-News@mail.nasa.gov**

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Editorial support provided by InDyne, Inc. Writers Group.
NASA at KSC is on the Internet at www.nasa.gov/centers/kennedy
USGPO: 733-049/600142