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Spaceport News

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INSIDE . . .

Discovery goes up, crew inspects pad

By Steven Siceloff
Spaceport News

NASA/Sandra Joseph - Kevin O'Connell

Brilliant flames illuminate the sky over Launch Pad 39A at Kennedy Space Center as space shuttle Discovery roars toward space on the STS-128 mission. Liftoff from Launch Pad 39A was on time at 11:59 p.m. EDT. The 13-day mission will deliver more than 7 tons of supplies, science racks and equipment, as well as additional environmental hardware to sustain six crew members on the International Space Station. The equipment includes a freezer to store research samples, a new sleeping compartment and the COLBERT treadmill.

If you've ever wondered what a launch pad looks like right after the space shuttle thunders off into space, there's a team of engineers to ask.

Called the postlaunch inspection team, they head out to the launch pad to instantly appraise damage at the pad and look for debris. They look over every part of the launch complex, despite the fresh layer of exhaust residue left by the solid rocket boosters.

"You see a lot of scorched metal, some bent," said Jeff Painter, who has seen launch pads after liftoffs for more than 20 years.

Because the elevators are not working after launch, the engineers have to take the stairs all the way up the fixed service structure.

"There's definitely a chemical, metallic smell," said Tom Carlon, who's been on the inspection team for two years.

Wildlife trekking back in only adds to the surreal atmosphere, such as the time a group of piglets was heading to the launch pad's surface at the same time as the inspection team.

The team also examines the tank and shuttle after a scrub to see if any ice formations persist after the super-cold propellants are drained. The team has gotten considerable practice with that inspection regimen, including once with Discovery leading up to the launch of STS-128.

Photo courtesy of John Seaman/United Space Alliance

The postlaunch inspection team, made up of engineers who specialize in certain areas of the launch pad, often find scorched metal and melted plastic after launch.

"It's kind of awe-inspiring because it's just the vehicle and just you," said Eric Linderman, the leader of the postlaunch team.

Discovery launched to the International Space Station on Aug. 28 just moments before midnight.

Looking over the launch pad after a shuttle liftoff used to be akin to developing a catalog of destruction. Melted speakers would wrap around poles or columns in the launch tower, drink containers tucked away and forgotten would be jarred loose and strewn about, and a few tools, such as wire brushes, would be found on the launch pad or in the blast zone.

Things have changed, though, and now far fewer things are left behind to get tossed around in the exhaust of a launching shuttle's 7 million pounds of flame and turbulence. There's still the occasional melted speaker, however.

Linderman said the group found no left-behind items at the launch pad after Endeavour climbed into orbit for the STS-127 mission. That was a first for the Space Shuttle Program. There were a few items that were blasted loose by the exhaust.

Any item found during

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Emergency Response Team adds new officers

for NASA

Kennedy Space Center's Emergency Response Team's 12 new officers recently completed basic tactical operations certification at NASA's Law Enforcement Training Academy at Kennedy.

By Linda Herridge
Spaceport News

Keeping workers and space launch assets safe is a top priority at Kennedy Space Center. To that end, the center's Emergency Response Team, or ERT, recently recruited 12 new officers.

According to Kennedy Protective Services Special Agent Roger Langevin, the team was reduced when the Joint Base Operations Services Contract, or JBOSC, split last October and some of the officers chose to work for Securiguard Inc. at Cape Canaveral Air Force Station.

"The ERT is on duty 24/7," Langevin said. "It was necessary to replace the number of ERT members lost after the JBOSC split to maintain our ERT capability at Kennedy."

ERT Commander Dan Magetteri said the group's main responsibility is to provide response and resolution to crisis situations that are above and beyond the capabilities of Kennedy's patrol officers. They also protect astronauts, workers, dignitaries, NASA launch assets and flight hardware.

"We have the best trained and best equipped team in Brevard County and along most of the Eastern Seaboard," Magetteri said. "The ERT responds as a team with rapid deployment."

The ERT members were selected from within and outside Kennedy and have similar law enforcement backgrounds and skills.

The team completed basic tactical operations certification at NASA's Law Enforcement Training Academy at Kennedy, where all NASA security officers are trained.

According to Magetteri, basic ERT training includes operating tactical gear, crisis resolution steps, building clearing techniques, weapons handling skills and competency and physical fitness.

Magetteri served for 21 years in the Albuquerque, N.M., police department before coming to Kennedy in 2006. He became ERT commander in 2007.

Kennedy's ERT, formerly called SWAT, has been in existence since 1979. Stories about the ERT have appeared in the Florida SWAT Association's tactical response magazine and Black Hawk International's publications.

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the inspection gets evaluated to find out where it came from and why it came loose. The idea is to prevent the same thing from coming loose during a future launch. Loose items can ricochet around the pad area and potentially impact the shuttle as it climbs off the pad.

Eight engineers, all volunteers, make the trip to the pad. They generally wear shorts and T-shirts beneath the mandatory white flame-retardant coveralls. Helmets and tethers complete the outfits depending on where they are working at the pad complex.

"You might think that nighttime is a relief," said team member Kurt Stresau. "But eight months out of the year, the mosquitoes make sure you are quickly disillusioned."

But don't think they don't enjoy it.

"Not a lot of people get to do this," Carlon said.

Richard Villanueva took part in his first inspection during the STS-127 launch, which included four tankings before it launched. That meant five chances for the team to go out and look over Endeavour.

"For me, it was just a great chance to learn," Villanueva said. "Just the whole experience of getting to go out there, not knowing what to expect and learning from the experience of everybody else."

Split into two teams, it takes two to three hours to complete the survey, which includes looking for signs of dented piping or loose bricks inside the flame trench.

Each of the engineers knows a specific area of the launch pad and evaluates that area closely during the inspection.

When it's finished, they can offer a conclusive report of what items broke loose, what should be replaced or moved to a different part of the pad, and what damage parts of the pad incurred, such as the hold-down posts that connect the boosters to the launch platform.

The inspections are so detailed in part because the information will go back to more than 35 organizations, directorates and companies that can't go out and look at the launch pad firsthand with the team.

The team itself is made up of engineers from NASA, United Space Alliance, Boeing and Lockheed Martin.

There are a few surprises for the group, but the most consistent shock is that the launch pad survives incredibly well despite forces far stronger than most buildings face.

"You have a steel structure a half-mile from the ocean and it's been there for 40 years and you're setting a controlled explosion off on it," Painter said.

For Linder, the best part of the whole inspection is getting back to the office to write the report.

The group gathers around a desk and before long some of the snacks and candy that had been tucked inside desks fuels a couple hours of camaraderie.

"I guess it's the fellowship," Linderman said.

That feeling is shared by others on the team.

"It's dirty, it's hot, it's smelly and it's fun," Stresau said.

New antenna may reveal more clues about lightning

Launch scrubs are nothing new here at Kennedy Space Center. In fact, there have been 116 space shuttle scrubs; 72 for technical reasons and 45 for inclement weather.

During the summer, bad weather, particularly lightning, seems to strike as the countdown clock nears zero. Maybe it's because Kennedy and Cape Canaveral Air Force Station are well within what meteorologists call, "Lightning Alley."

Of course, NASA already can locate lightning strikes when they hit the ground with the Cloud to Ground Lightning Surveillance System, or CGLSS, and the National Lightning Detection Network. The agency also can locate lightning channels in a cloud with the Lightning Detection and Ranging Network, or LDAR II.

But according to Professor Tom Marshall of the University of Mississippi, humans have yet to truly figure out lightning.

So Marshall, and one of his senior students, Lauren Vickers, visited Kennedy recently to test a new antenna that might someday measure the level of individual lightning flashes and their return strokes, thus giving launch managers information that might make their "go-no go" decisions easier . . . decisions that might save money.

"We're trying to extend some measurement of cloud-to-ground lightning here at Kennedy," Marshall said. "We may find a return stroke is larger, and therefore, one for us to target."

The strength of these strokes might someday determine if future launch vehicles, such as Ares I, must undergo testing if lightning strikes nearby.

"What Professor Marshall's work is going to enable us to do is determine more precisely than we can now exactly where charges are located in clouds and how big those charges are when lightning strikes," said Dr. Frank Merceret, director of research for the Kennedy Weather Office. "The problem lies in the fact that NASA does not know where the charge center is located in the clouds.

"The Lightning Advisory Panel (LAP), which develops and recommends our lightning launch commit criteria (LLCC), has been wrestling with that issue for quite some time and his project may give the panel information that will help provide more accurate lightning readings before a launch."

A launch vehicle traveling through an anvil cloud, a cloud mostly made of ice that forms on top of thunderstorms, can trigger lightning at much lower electric field levels than natural lightning requires. This triggered lightning can damage vehicles or its cargo. In 1987, an Atlas-Centaur rocket was destroyed when its launch triggered such lightning.

To prevent such accidents, the LLCC -- a strict set of lightning avoidance rules -- was modified by the LAP.

The LAP, which is made up of top lightning experts from various government agencies and academia, continues to review and modify those criteria for both the Eastern and Western ranges.

Although some launch weather guidelines involving shuttles and expendable rockets may differ because a distinction is made for the individual characteristics of each, the LLCC are identical for all vehicles.

"If the shuttle is on the launch pad and a lightning strike occurs nearby, we need to know the distance from the shuttle and the intensity of the lightning to determine if there are any possible effects on the vehicle. If the lightning was close enough and intense enough, operations, including a launch, will be delayed so the team can ensure the shuttle was not damaged," said Kathy Winters, shuttle launch weather officer.

During shuttle launch countdowns, weather forecasts are provided by the U. S. Air Force Range Weather Operations Facility at Cape Canaveral beginning at launch minus three days in coordination with the NOAA National Weather Service Space Flight Meteorology Group, or SMG, at the Johnson Space Center in Houston. These include weather trends and possible effects on launch day.

A formal prelaunch weather briefing is held on launch minus one day to discuss specific weather conditions for all areas of shuttle operations.

Launch weather forecasts, ground operations forecasts and launch weather briefings for the mission management team and the shuttle launch director are prepared by the shuttle launch weather officer.

Forecasts that apply after launch are prepared by SMG. These include all emergency landing forecasts and end-of-mission forecasts presented to the flight director and mission management team.

Did you know?

The basic weather launch commit criteria on the pad at liftoff that must be met are: temperature, wind, precipitation, lightning (and electric fields with triggering potential), clouds, supporting table, range safety cloud ceiling and visibility constraints.

NASA/Jim Grossmann

University of Mississippi Professor Tom Marshall hopes to someday get several more new antenna lightning detectors. Marshall says more detectors would provide invaluable data.

NASA/Jim Grossmann

University of Mississippi Professor Tom Marshall and senior Lauren Vickers, say they hope their lightning tests using a newly desinged antenna can produce results NASA can use for future launches.

Scenes Around Kennedy Space Center

NASA/Jack Pfaller

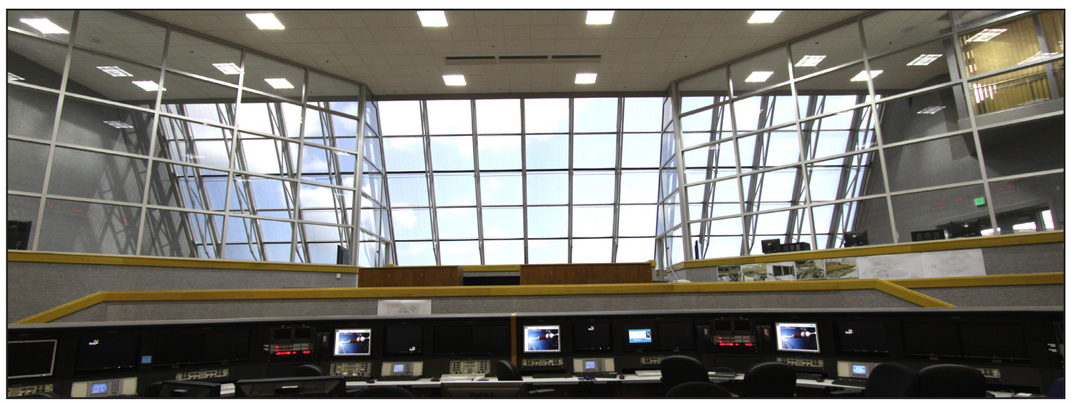
Space shuttle Endeavour's main engine No. 1 is moved out of Orbiter Processing Facility-2 on Aug. 18 after removal from the shuttle at Kennedy Space Center. Engine removal is part of the post-landing processing; engine No. 2 was removed Aug. 17. Endeavour's next mission is STS-130, targeted for Feb. 4, 2010.

NASA/Jack Pfaller

A worker removes the forward reaction control system, or FRCS, from space shuttle Endeavour's forward fuselage nose area. The FRCS provides the thrust for rotational maneuvers and for small velocity changes along the orbiter axis. Endeavour will take the Tranquility module and Cupola to the International Space Station next year.

NASA/Jim Grossmann

Technicians watch closely as the pump module orbital replacement unit is lowered onto the Express Logistics Carrier-1, or ELC-1, for installation in the Space Station Processing Facility at Kennedy Space Center. The carrier is part of the STS-129 payload on space shuttle Atlantis, which will deliver two spare gyroscopes, two nitrogen tank assemblies, two pump modules, an ammonia tank assembly to the International Space Station later this year.



NASA/Jack Pfaller

Firing Room 1 in the Launch Control Center now has a clear view of the Launch Complex 39 area at Kennedy Space Center. The new windows were installed outside of the existing windows, enclosing the space formerly occupied by the louver system. They were then sealed and tested prior to removal of the old windows. Installation began in September 2008 and is expected to be complete by mid-spring 2010. Work will pause for each space shuttle launch to avoid mission interference.

NASA/Kim Shiflett

Technicians begin a functional test on the orbital docking system on space shuttle Atlantis in Kennedy Space Center's Orbiter Processing Facility-1. The STS-129 mission bound for the Internaional Space Station is targeted for Nov.12.

Spaceport News wants your photos, story 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

for NASA

NASA Exchange Accountant Ellie Brady, and son, John, attend her retirement coffee celebration Aug. 13 in the Headquarters Building at Kennedy Space Center.

Vulture trackers salivate at learning opportunity

Eric Stolen's job at Kennedy Space Center is for the birds . . . turkey vultures, to be exact.

The NASA Environmental Management Branch, in collaboration with Dynamac Corp., the Merritt Island National Wildlife Refuge, and the USDA National Wildlife Research Center, has started a project to improve our understanding of vulture populations at Kennedy.

According to Stolen, for years Kennedy has had vulture concerns, such as damage to property or defecation on bleachers and other common areas. Another concern, of course, is that the vultures can get in the way of launches and landings.

"For years there's been a desire to reduce the number of vultures at Kennedy," Stolen said. "But we have no way of knowing how many vultures live here."

So, black vultures and turkey vultures are being fitted with satellite GPS and radio transmitters, which will allow biologists to track their movements, activity patterns and habitat use.

The black vultures roost in large numbers and are considered the bigger nuisance. Turkey vultures fly at low altitudes and are the bigger risk to aircraft.

Stolen says there are two groups of vultures: old world and new world. The old world types include hawks and eagles. The new world vultures are closely related to storks. The ones we have at Kennedy are of the new world variety.

Report vultures

Kennedy workers are being asked to report all sightings of tagged vultures, including: 1) Tag ID, 2) time, 3) location, 4) number of vultures, and 5) a brief description of the activity (e.g., roosting, loafing on the ground, feeding at a carcass).

Contact Eric Stolen at: (321) 476-4119; eric.d.stolen@nasa.gov or by mail - DYN-2 Kennedy Space Center, FL 32899.

NASA/Jim Grossmann

Team members are tagging vultures with white-wing tags on their right wings. Each tag has a unique three-letter code that will help biologists identify the vultures.

NASA/Jim Grossmann

Eric Stolen secures one of the many vultures his team has captured for tagging. The tags hopefully will allow biologists to study population dynamics and movement patterns during the next five years.

"The neat thing about new world vultures is they have a good sense of smell," Stolen said.

There currently are 30 black vultures with radio transmitters and two black vultures with satellite GPS transmitters.

In addition, up to 250 vultures will be tagged with white-wing tags on their right wings, each with a unique three-letter code. These tags will allow biologists to study population dynamics and movement patterns throughout the next three to five years.

Stolen says these efforts will improve our understanding of vulture populations at Kennedy, allowing managers to better assess the risk to flight operations and other mission critical activities, as well as better manage nuisance vulture problems. The wing tags are clearly visible on perched birds and can be read using binoculars.

Because of the vultures' large population at Kennedy, Stolen reiterates that the vultures are an important part of the environment we share.

"Because there are so many (vultures) in the geographic area they travel in, we are never going to eliminate them from Kennedy, we're going to have to live with them.

"We can alter our behavior much more easily than we can alter their behavior."

Remembering Our Heritage

Federal Women's Program has come a long way

By Kay Grinter
Reference Librarian

Affirmative action for women was in its infancy during the Apollo era.

President John F. Kennedy established the Commission on the Status of Women in 1961, the same year he challenged the nation to land a man on the moon. The commission was tasked to study and report on women's issues, which included employment, education, and Social Security and income tax laws.

In 1967, Executive Order 11375 added gender to other prohibited forms of discrimination. The Office of Personnel Management responded by establishing the Federal Women's Program, or FWP, to stimulate the recruitment, selection, training and advancement of women in the federal government.

Most women who worked at Kennedy Space Center in 1967 were secretaries or in other clerical/support-type positions. Kennedy's Personnel Office reported to NASA Headquarters on the makeup of the center's work force in response to Congressional inquiry.

Mary Driver King joined the National Advisory Committee for Aeronautics, or NACA -- NASA's predecessor -- at Langley Field in 1956 before transferring to Kennedy. She credits breaking out of the typing pool to the fact that she couldn't type very well. The supervisor of the pool's typists called her into his office. "I thought I was going to be fired," King said.

Instead, he suggested that she might be better suited for a position in the Personnel Office. The typing required was primarily filling in the blanks on forms, a task that demanded attention to detail rather than speed.

Her move into Personnel placed her in position for advancement in the work force as a personnel staffing specialist and for appointment in October 1968 as Kennedy's first FWP coordinator.

At the time, there were 700 women in Kennedy's federal work force, 14 of them, like King, having been with NASA almost since the agency's beginning in 1958.

As FWP coordinator, King spearheaded the charter of a Federally Employed Women chapter and the organization of an FWP Working Group, which met once a month to brainstorm ideas on how to advance opportunities for women at Kennedy.

The Specialty Training for Entry Professionals, or STEP, program also was initiated by the Personnel Office. It provided an avenue for clerical and secretarial employees to advance into professional administrative positions in procurement, safety and resources management.

Meanwhile, Mae Morris Walterhouse transferred to Kennedy in 1964, working as a secretary in Center Director Kurt Debus' office, and later as a program management specialist in the Photographic Branch of Documentation Support.

Walterhourse had become very involved with FEW, and she said she felt she became less popular when she asked Personnel to provide her statistics of women and men in Kennedy's work force, comparing grade and education within the same job series, i.e., comparing apples with apples.

"I was too outspoken," Walterhouse recalled. "I was the 'Bella Abzug' of KSC. I ruffled feathers."

When the responsibility for the FWP was moved into Kennedy's Equal Opportunity Office in 1975, the job of full-time FWP manager was advertised, and Walterhouse was selected.

That same year, Walterhouse initiated the Brown Bag Study Program, following a survey made primarily among Kennedy's female federal employees. The program offered three academic undergraduate credit courses taught by instructors of Brevard Community College. The courses were held around noon so that participants could eat lunch while attending class. About 90 employees -- both men and women -- completed the courses offered the first term.

Walterhouse was accepted to participate in the 1976-77 Career Development Program at NASA Headquarters, the same year she was elected as national president of FEW.

Pat Lowry was Kennedy's third FWP manager, serving from 1977 to 1993 when she retired.

Today, 738 women make up the federal work force at Kennedy. Twenty-two percent of those hold professional positions in sciences and engineering, a testament to the success of the program. The FWP manager's position currently is conducted as a collateral duty in the Office of Diversity and Equal Opportunity by Rob Grant, the office's assistant manager.

Celebrate Women's Equality Day

Women's Equality Day, which was instituted by Rep. Bella Abzug (D-N.Y.), is observed Aug. 26. The day, which celebrates a woman's right to vote, was granted by the passage of the 19th Amendment to the United States Constitution in 1920.

NASA file/1968

The Federal Women's Program or FWP, Working Group of 1968, included, from left, Librada Russell, Bonnie Degelen, Mary King, Sue Weissenegger, Ellen Horn, Sandy Davenport, Sue Crandell, and Jerre Smith. Not shown is group member Ann Montgomery. King was Kennedy Space Center's first FWP coordinator.

NASA Employees of the Month: September

NASA/Gina Mitchell-Ryall

Employees of the month for September are, from left: Phillip Coffin, Procurement Office; Jose Amador, Constellation Project Office; Luke Catella, Safety and Mission Assurance Directorate; Michele Smith, Engineering Directorate; Paul Atkins, Engineering Directorate; Jeffrey Skaja, Launch Vehicle Processing Directorate; and Michael Seay, Information Technology and Communications Services. Not pictured are: Tonya Fuentes, Chief Counsel; Michele Burch, Center Operations; and Diana Calero, Launch Services Program.

Looking up and ahead . . .

Sept. 10	Discovery Landing/Shuttle Landing Facility; 7:06 p.m. EDT
Late August	Launch/CCAFS: Atlas V, PAN; 4:55 p.m. EDT
September TBD	Launch/CCAFS: Atlas V, Commercial Payload; TBD
Sept. 15	Launch/CCAFS: Delta II, STSS Demo; TBD
Sept. 30	Launch/CCAFS: Delta IV, WGS SV-3; 7:38 p.m. EDT
Targeted for Oct. 31 (Pending HQ Final Approval)	Launch/KSC: Ares I-X flight test; 7 a.m. EDT
Targeted for Nov. 12	Launch/KSC: Atlantis, STS-129; 4:22 p.m. EST
Planned for Nov. 23	Landing/KSC Shuttle Landing Facility: TBD
No earlier than Nov. 12	Launch/CCAFS: Delta IV, GOES-P; TBD
No earlier than Dec. 4	Launch/CCAFS: Atlas V, SDO; TBD
No earlier than Dec. 10	Launch/CCAFS: WISE; TBD
Early 2010	Launch/CCAFS: Atlas V, OTV; TBD
Target Feb. 4, 2010	Launch/KSC: Endeavour, STS-130; 6:20 a.m. EST
Target Feb. 10, 2010	Launch/CCAFS: Delta IV, GPS IIF-1; TBD
Target March 18, 2010	Launch/KSC: Discovery, STS-131; 1:08 p.m. EDT
No earlier than April 1, 2010	Launch/VAFB: Taurus, Glory; TBD
Target May 14, 2010	Launch/KSC: Atlantis, STS-132; 3:05 p.m. EDT
Target May 23, 2010	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; TBD
Target July 29, 2010	Launch/KSC: Endeavour, STS-133; 8:45 a.m. EDT
Target Sept. 16, 2010	Launch/KSC: Discovery, STS-134; 1 p.m. EDT
Targeted for Fall 2011	Launch/CCAFS: Atlas V, Mars Science Laboratory; TBD

WORD ON THE STREET

The postlaunch inspection team handles some pretty dirty objects at the launch pad. What is the dirtiest job you've ever had to do?

"Clear a path deep in the woods so a dump truck could get wood."

Theo Bonner, with EG&G

"Girl Scout camp cooking without a vent to take the smoke out."

Zabrina Wichers, with Millennium Engineering and Integration Co.

"Records . . . going into an old building and pulling out records."

Rose Austin, with NASA

"Change the diapers of my four daughters and seven grandchildren. I'm a lucky woman."

Julie Shally, with NASA

"Clean every possible bodily fluid as a nurse . . . I've done it."

Helen Shoemaker, with Dynamac Corp.

John F. Kennedy Space Center

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