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Spaceport News

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A star-spangled start to STS-121

Commander Lindsey delivers on promise for "an up-close-and-personal look at the rocket's red glare"

The Space Shuttle Discovery is now docked at the International Space Station after lifting off at 2:38 p.m. on July 4 from Kennedy Space Center, Fla. This was the first-ever space shuttle launch on Independence Day.

"We're absolutely thrilled to be safely back in space again and are looking forward to evaluating shuttle system ascent performance as soon as possible," said NASA Administrator Michael Griffin shortly after launch.

Discovery's mission, STS-121, is the second in NASA's Return to Flight sequence. Discovery's crew members - Commander Steve Lindsey, Pilot Mark Kelly, and Mission Specialists Mike Fossum, Lisa Nowak, Stephanie Wilson and Piers Sellers - will continue testing new safety equipment and procedures that were introduced on the first Return to Flight mission, STS-114, last summer.

The STS-121 mission also will bring a third crew member, European Space Agency astronaut Thomas Reiter, to the orbiting laboratory. The station has had two-person crews since May 2003.

They also will deliver equipment, supplies, experiments and spare parts to the station.

Two spacewalks are planned during Discovery's 12-day mission. If there is enough electrical power, the mission will be extended by one day and a third spacewalk will be added. Shuttle managers hope to make that decision by flight day six. Discovery is flying with new safety features for STS-121.

(See STS-121, Page 2)

SPACE SHUTTLE Discovery lifts off at 2:38 p.m. on July 4 from Launch Pad 39B on mission STS-121. The 12-day mission may be extended.

Jim Kennedy
Center Director

The Kennedy Update

Post-STS-121 launch and prelanding greetings, everyone. From the moment I greeted Commander Steve Lindsey and his crew at the Shuttle Landing Facility before launch, through Discovery's beautiful afternoon liftoff on July 4, I have never been more proud of the way our government and contractor employees have worked so hard to ensure mission success.

As the crew members wind down on their busy schedule, including two exciting spacewalks, and prepare for landing at KSC next week, I want to pass on the numerous congratulations I received from everybody, including NASA Administrator Mike Griffin and Vice President Dick Cheney, who flew in for the first launch attempt.

This launch marked the first use of Firing Room 4 in the Launch Control Center, a state-of-the-art facility that will be used for all future shuttle launches. Seeing our NASA team in action makes me, again, "KSC and Proud to Be!"

It was also exciting to learn the new names of the next generation of launch vehicles NASA will use to return to the moon and later travel to Mars. By naming the crew launch vehicle Ares I and the cargo launch vehicle Ares V, we honor the Apollo program's Saturn I and V rockets in a fitting way.

Later this year, the agency will unveil the name of the crew exploration vehicle, and I'm sure the name will truly reflect NASA's exploration mission.

As we focus on Discovery's landing, we can look ahead to the late August launch of Atlantis for STS-115. The crew has been training at Kennedy and also supported the STS-121 launch.

Be sure to take time out for yourself before the next shuttle launch and enjoy your family and friends. America is counting on us to continue the Vision for Space Exploration and I know we will be ready for the challenge.

While the center was busy preparing for the STS-121 mission, the Launch Services team was processing STEREO, short for Solar TErrestrial RElations Observatory, for its upcoming launch aboard a Delta II rocket from Launch Complex 17 on the Cape Canaveral Air Force Station. The science learned from this mission, set for July 30, will yield a better understanding of space weather that will ultimately help us all back here on Earth.

Along with watching these NASA missions progress, I was privileged to take part in two distinguished events as the Disability Awareness and Action Working Group (DAAWG) and the Black Employee Strategy Team (BEST) hosted gatherings to recognize the valuable contributions our diverse workforce adds to NASA.

"I have never been more proud of the way our employees have worked so hard to ensure mission success."

The DAAWG's luncheon gave employees a new outlook of how some workers handle their disabilities, including Randall Crosby, who operates the snack bar on the third floor of the Headquarters building. "When you see a disabled person, look at the person first and not just the disability," Randall so eloquently said.

At the BEST Barbecue, David Banks and his dedicated group served up good times and great food, all while employees and the summer students and faculty had a chance to get acquainted and build enduring friendships.

You should be proud of all your contributions as we continue to explore space, and thanks for all you do as we continue to build the NASA legacy.

Godspeed, Discovery.

STS-121 . . . *(continued from page 1)*

NASA developed new procedures to ensure gap fillers between the heat-shielding tiles stay in place and pose no hazard on re-entry. Technicians removed and replaced approximately 5,000 of the shuttle's 16,000 gap fillers prior to launch.

Technicians have also installed hardened tiles on Discovery's nose landing gear doors. The orbiter's main landing gear now has four larger, smoother tires that can withstand higher loads at landing than the previous tires.

Discovery's external tank, known as ET-119, was the first to fly without the protuberance air load (PAL) ramps. After detailed inspections, engineering analysis and testing, the Space Shuttle Program determined the PAL ramps were not necessary and it would be a safety improvement to remove the ramps. This is the biggest aerodynamic change to the tank in the shuttle's history.

Small foam ramps, known as extensions, were added to the ice/frost ramp locations where the PAL ramps used to be. For the latest information on the STS-121 mission, visit: **http://www.nasa.gov/shuttle**.

See pages 4-5 for more STS-121 photographs

THE STS-121 crew members display the spirit of the Fourth of July holiday with their flags as they stride out of the Operations and Checkout Building. Leading the way are Pilot Mark Kelly (left) and Commander Steven Lindsey (right). Behind them are Mission Specialists (second row) Lisa Nowak and Michael Fossum; (third row) Stephanie Wilson and Piers Sellers; and (at the rear) Thomas Reiter.

Firing Room 4 debuts for STS-121

By Charlie Plain
Staff Writer

When Space Shuttle Discovery lifted off on its STS-121 mission from Kennedy Space Center, the best view of the flight may have been from the new Firing Room 4.

Through its huge two-story windows, engineers watched the vehicle thunder into space while debuting NASA's most advanced control room ever. A firing room is what most people think of as "mission control" for launch.

"The firing rooms serve as the nerve center for the launch and orbiter processing," said NASA Test Director Ted Mosteller.

The Launch Control Center houses each of the four rooms. On launch day, a firing room is packed with upwards of 216 engineers at computer consoles, checking a space shuttle's systems to make sure everything is ready for launch.

It's within the room's walls that the test director polls the team for the famous "go/no go" for launch. When not being used for launch, firing rooms also monitor the health of orbiters Discovery, Endeavour and Atlantis while they're inside their hangars being prepared for upcoming missions.

The opening of Firing Room 4 concludes two years of renovation that dramatically reinvented the space. "Originally, this area was a little bit of office space, a conference room and a small firing room," said Mosteller.

The renovation of Firing Room 4 gave designers an opportunity to blast away from the past and build the ideal space shuttle launch control room. The first thing NASA did to develop the room was get the input of the engineers who will use it.

After compiling a wish list of features, NASA tested how well they would work. Rick Dawson, systems integration manager for the project, worked with a team that tried models of the room's new computer consoles on for size before moving ahead with manufacturing them. "We flew up to Calgary and set up a couple of the consoles and checked them out," said Dawson. "It saved us months of work." The end result of NASA's careful planning is a comfortably cool, quiet and well-organized room specifically suited for space shuttle launches.

FIRING ROOM 4 in the Launch Control Center is prepared for the STS-121 mission. The room underwent two years of renovations.

NASA names new rockets Ares I, Ares V

NASA announced on June 30 the names of the next generation of launch vehicles that will return humans to the moon and later take them to Mars and other destinations. The crew launch vehicle will be called Ares I, and the cargo launch vehicle will be known as Ares V.

"It's appropriate that we named these vehicles Ares, which is a pseudonym for Mars," said Scott Horowitz, associate administrator for NASA's Exploration Systems Mission Directorate in Washington. "We honor the past with the number designations and salute the future with a name that resonates with NASA's exploration mission."

The "I and V" designations pay homage to the Apollo program's Saturn I and Saturn V rockets, the first large U.S. space vehicles conceived and developed specifically for human space flight. The crew exploration vehicle, which will succeed the space shuttle as NASA's spacecraft for human space exploration, will be named later.

This vehicle will be carried into space by Ares I, which uses a single five-segment solid rocket booster, a derivative of the space shuttle's solid rocket booster, for the first stage.

A liquid oxygen/liquid hydrogen J-2X engine derived from the J-2 engine used on Apollo's second stage will power the crew exploration vehicle's second stage. The Ares I can lift more than 55,000 pounds to low Earth orbit.

Ares V, a heavy-lift launch vehicle, will use five RS-68 liquid oxygen/liquid hydrogen engines mounted below a larger version of the space shuttle's external tank, and two five-segment solid propellant rocket boosters for the first stage. The upper stage will use the same J-2X engine as the Ares I.

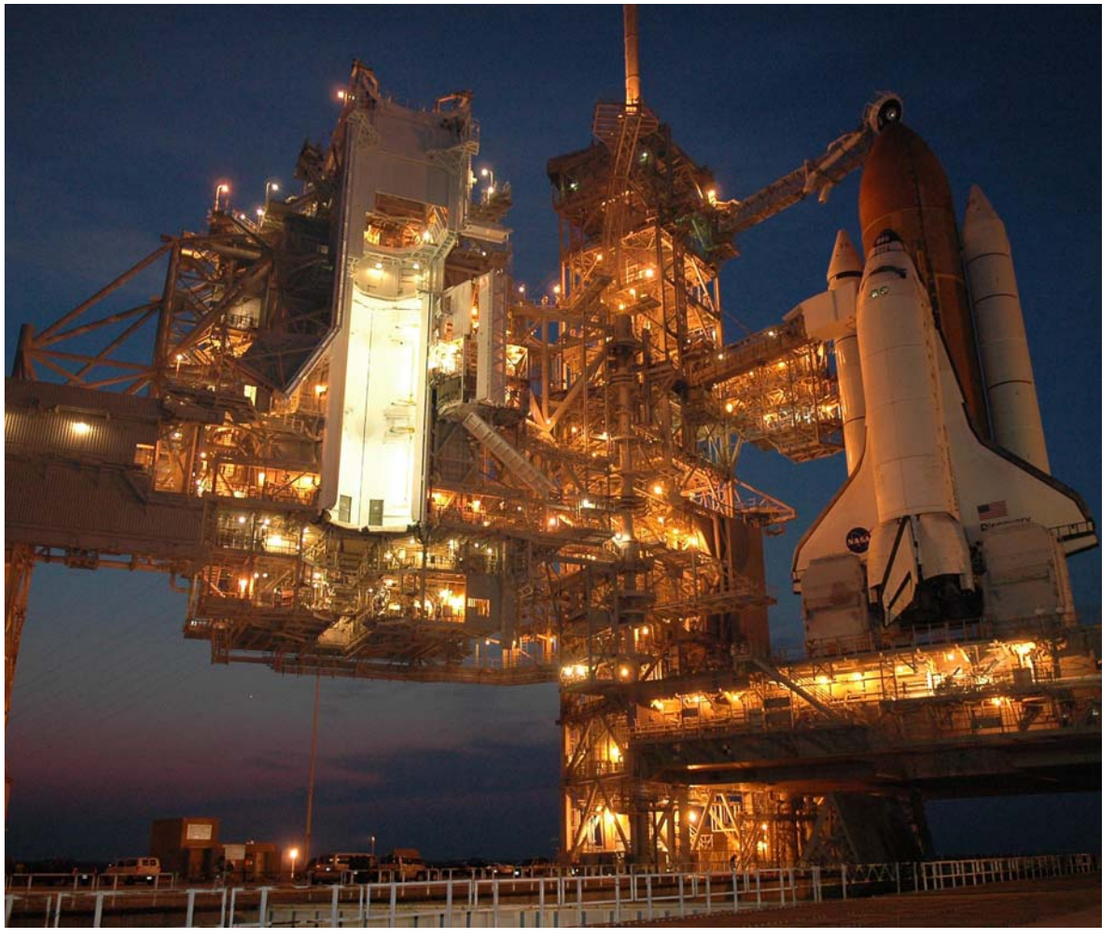
The Ares V can lift more than 286,000 pounds to low Earth orbit and stands approximately 360 feet tall. This versatile system will be used to carry into orbit cargo and the components needed to go to the moon and later to Mars.

THE CARGO launch vehicle (left) will be called Ares V and the crew launch vehicle will be called Ares I. The "I" and "V" titles pay homage to the Apollo program's Saturn I and Saturn V rockets. The crew exploration vehicle will be named later.

The world watches NASA return to

AFTER THEIR arrival at the Shuttle Landing Facility to get ready for launch, STS-121 Mission Specialist Thomas Reiter (left) and Commander Steven Lindsey are greeted (at right) by Kennedy Space Center Director Jim Kennedy and Shuttle Launch Director Mike Leinbach.

TRYING A third time for launch, the STS-121 crew before suiting up. Seated left to right are Mission Lindsey, and Mission Specialists Lisa Nowak, Ste



AGAINST A dimming sky after sunset, lights on the structures on Launch Pad 39B cast a warm glow on Space Shuttle Discovery. The rotating service structure at left was rolled back in preparation for launch July 4 on mission STS-121. Extending toward the cockpit of the shuttle is the orbiter access arm.

human space flight with STS-121

w gathers again for the traditional breakfast inside the Operations and Checkout Building Specialists Piers Sellers and Michael Fossum, Pilot Mark Kelly, Commander Steven phanie Wilson and Thomas Reiter.

SPACE SHUTTLE Discovery kicks off the Fourth of July fireworks with its own fiery display as it rockets into the blue sky on mission STS-121.

IN THE Orbiter Processing Facility at left, NASA Vehicle Manager Scott Thurston (far left) gives a personal tour to U.S. Vice President Dick Cheney (center) and his family. They are walking underneath the orbiter Atlantis. Walking next to Cheney is Shana Dale, NASA deputy administrator. Cheney flew to KSC on July 1 to view the first launch attempt of Space Shuttle Discovery on mission STS-121.
ABOVE, ON the Skid Strip at Cape Canaveral Air Force Station, U.S. Vice President Dick Cheney waves before entering Air Force One. Preceding him is his wife, Lynne.

CAMERAS ARE the accessory of the day at the Kennedy Space Center's Banana Creek viewing site. All eyes and lenses are focused on Launch Pad 39B and the successful launch of Space Shuttle Discovery on mission STS-121.

Former astronaut Helms leads 45th Space Wing

By Jennifer Wolfinger
Staff Writer

Former astronaut and current U.S. Air Force Brig. Gen. Susan Helms continued exploring new territory as she recently assumed the role of commander of the 45th Space Wing and director of the Eastern Range at Patrick Air Force Base.

She officially acquired the new role on June 21 during a formal change-of-command ceremony at the base, making her the wing's first female commander. Helms will be responsible for the Cape Canaveral Air Force Station's annual Delta and Atlas evolved expendable launch vehicle launches, which average 20 each year.

She will also assist with space shuttle launches and provide final approval for all launches on the Eastern Range.

Helms was selected by NASA in 1990. By the end of her 12-year NASA career, she had lived in space for a total of 211 days.

As an astronaut, she flew on shuttle missions STS-54 (1993), STS-64 (1994), STS-78 (1996), STS-101 (2000) and STS-102 (2001), in which she arrived at the International Space Station as a member of the Expedition 2 crew. She has logged 5,064 hours in space, including a world-record-setting spacewalk of 8 hours and 56 minutes.

During STS-54, Helms supported the deployment of the NASA Tracking and Data Relay Satellite (TDRS-F). She served as flight engineer for orbiter operations and was the primary remote manipulator system operator during the STS-64 mission.

She was payload commander and flight engineer during STS-78, the first mission to combine a full microgravity studies agenda and a comprehensive life science investigation.

Helms performed critical functional cargo block repairs and was responsible for the onboard computer network during the STS-101 mission. As an Expedition 2 crew member, she tested the Canadian-built space station robotic arm, and performed maintenance and experiments on the station.

She returned to the U.S. Air Force in 2002. Most recently, Helms served as deputy director of operations at the headquarters of the Air Education and Training Command at Randolph Air Force Base, Texas.

Prior to that, she was vice commander of the 45th Space Wing from June 2004 to February 2005.

Helms was born in Charlotte, N.C., but considers Portland, Ore., her hometown. Her predecessor, Brig. Gen. Mark Owen, now works for the Pentagon.

SUSAN HELMS, U.S. Air Force Brig. Gen., will command the 45th Space Wing.

NASA's STEREO view of the sun to forecast solar flares

NASA's new plans include returning to the moon — not just with robots, but with people too. In the decades ahead, we can expect to see habitats, greenhouses and power stations up there. Astronauts will be among the moondust and craters, exploring, prospecting and building.

On Jan. 20 of last year, though, there were no humans walking around on the moon. And it's a good thing. On that day, a giant sunspot named "NOAA 720" exploded. The blast sparked an X-class solar flare, the most powerful kind, and hurled a billion-ton cloud of electrified gas (a coronal mass ejection) into space.

Solar protons accelerated to nearly light speed by the explosion reached the Earth-moon system minutes after the flare; it was the beginning of a days-long "proton storm." Proton storms cause all kinds of problems.

They interfere with ham radio communications. They zap satellites, causing short circuits and computer reboots. Worst of all, they can penetrate the skin of space suits and make astronauts feel sick.

AT ASTROTECH Space Operations in Titusville, the deployed solar panel on the STEREO observatory "A" undergoes testing. STEREO, which stands for Solar Terrestrial Relations Observatory, consists of two spacecraft whose mission is to take measurements of the sun and solar wind in 3-D for the first time.

When the Solar TErrestrial RElations Observatory (STEREO) launches later this month from the Cape Canaveral Air Force Base, scientists expect to gain a better understanding of these events and improve warning time. The two STEREO spacecraft will image the sun and coronal mass ejections in 3-D for the first time to give scientists a better and more complete view of these events.

In fact, our current two-dimensional view even makes it hard to predict which direction the events are heading. STEREO's task is to learn more about what triggers these storms, how they move through the solar system, and what makes them tick.

In particular, the spacecraft will take a hard look at how and where these proton storms are triggered and how the solar activity that causes them builds up in the sun's atmosphere before exploding into space. This January storm came fast and "hard," with proton energies exceeding 100 million electron volts. These are the kind of high-energy particles that can do damage to human cells and tissue.

Here on Earth, however, no one suffered. Our planet's thick atmosphere and magnetic field protect us from protons and other forms of solar radiation. When the plodding coronal mass ejection arrived 36 hours after the initial blast and hit Earth's magnetic field, sky watchers in Europe saw the brightest auroras in years. Visit **www.nasa.gov** for information.

Summer students, employees enjoy BEST Barbecue

By Christy Jones
Student Intern

The Black Employee Strategy Team (BEST) held the 2006 BEST Barbecue June 23 at KARS Park I to welcome interns in summer programs through the Kennedy Space Center and Cape Canaveral Air Force Base and bring NASA employees together for some fun.

The event was moved this year from Kars II to Kars I to provide better facilities for more people. Stacie Smith, BEST Barbecue chairperson for the past five years, said about 275 people came this year compared to 200 attendants last year.

The interns, employees and their family and friends feasted on ribs, chicken, potato salad, baked beans, bread and an assortment of desserts while listening to upbeat music. Prizes were raffled off during the barbecue.

"It's great because you get an opportunity to hang out with a lot of people from other intern programs," said Zakiya Tomlinson, a summer intern at NASA.

Thunderstorms have threatened the barbecue for the past two years, but the sun was shining and there wasn't a rain cloud in sight for this year's festivities.

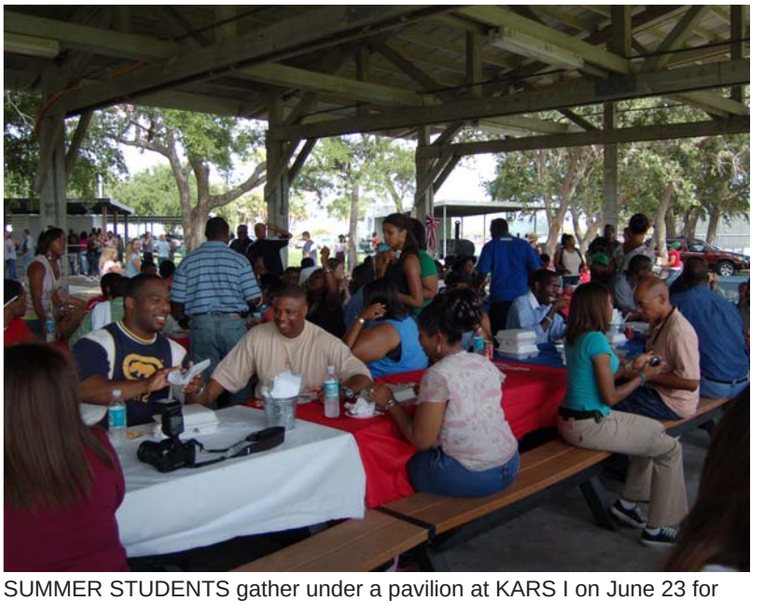
Cooks included Bruce Lockley, Thomas Cooper, Javan Banks, Joylene Hall, Al Jenkins and Mack McKinney, who started grilling in the morning to prepare for the crowd. Lockley said the secret to grilling is "seasoning and patience."

Eric Martin, who won first prize for the "Best Dessert" contest with his German chocolate cake, later said his wife found the recipe inside the package of a giant candy bar and he decided to try the recipe.

"It's not a cake you can rush together," he said. "It takes time to get it right."

KSC Director Jim Kennedy said the BEST Barbecue was an opportunity to show support for the center's diverse groups. "We don't just tolerate diversity, we cherish it," Kennedy said. "BEST is an example of a group that we cherish."

EMPLOYEES, SUMMER students and faculty and family members enjoy the 2006 BEST Barbecue held at KARS Park I.


SUMMER STUDENTS gather under a pavilion at KARS I on June 23 for the Black Employee Strategy Team's (BEST) Barbecue.


MEMBERS OF BEST, along with Center Director Jim Kennedy (second from right) voted Eric Martin's German chocolate cake as "Best Dessert."

Employees can communicate concerns through Shuttle Safety Hotline

The Space Shuttle Safety and Mission Assurance Office has a Shuttle Safety Hotline Web site, **http://sma.jsc.nasa.gov/sirma/hotline/**, which outlines the multiple routes employees can use to communicate and resolve space shuttle safety concerns.

Members of the work force are encouraged to discuss concerns with management or individuals identified on the Web site.

Shuttle safety concerns may also be submitted via the Space Shuttle Processing Hotline database at **http://sma.jsc.nasa.gov/sirma/hotline/input.asp** (employees can remain anonymous), or send e-mail to *jsc-sspmmt@mail.nasa.gov*.

Once a concern is entered, an analysis is made to determine if the issue can be resolved with short-term program action or if it represents a program risk. If applicable, a program risk will be entered into the risk database for tracking. During mission operations, safety concerns will be reported daily to the Mission Management Team.

The link to the Shuttle Safety Hotline is located on various Web sites, including **http://sspweb.jsc.nasa.gov/**, **http://sspweb.jsc.nasa.gov/mx** and **http://sma.jsc.nasa.gov/sirma.**

Disabled employees share experiences during DAAWG luncheon

By Linda Herridge
Staff Writer

Randall Crosby, owner of Crosby Snacks in the Kennedy Space Center Headquarters building, described the challenges of living with a disability and working at the center during a Disability Awareness Action Working Group (DAAWG) brown bag lunch on June 23.

But being legally blind has not kept him from enjoying his job and considering KSC an amazing place to work, he told the group gathered in the mission briefing room of the Operations and Support Building 2. The program was organized by Nicole Del Vesco, an accountant in the Chief Financial Officer's office and DAAWG co-chairperson.

"I have to pinch myself almost every day, even eight years later," Crosby said about working at the center.

Chief Financial Officer Susan Kroskey, who is executive advisor to the DAAWG, opened the luncheon by stating that increasing awareness about employees with disabilities in the work place is a very important DAAWG objective. "We are thrilled at the participation by the KSC government and contract management team in our awareness activities," Kroskey said.

Crosby learned about the snack bar/vending program managed by the Florida Division of Blind Services and came to KSC in 1998. He and his wife, Patti, just celebrated their 24th wedding anniversary. Crosby humorously referred to himself as a "project," much like the projects managed at KSC. "And Patti is the project team leader," Crosby said with a smile.

"When you see a disabled person, look at the person first and not just the disability," Crosby urged.

Christopher Brown, a United Space Alliance design engineer who has Tourette Syndrome, discussed misconceptions and symptoms of the neurological disorder that is hereditary and causes repetitive, involuntary movements and utterances.

Brown has two daughters; the seven-year-old has Tourette's, while the five-year-old is too young to be diagnosed with certainty. Brown's father was posthumously diagnosed with the syndrome.

CHRISTOPER BROWN, a United Space Alliance employee, addresses attendees at the Disability Awareness Action Working Group lunch.

Brown is a committee member of the Tourette Syndrome Association of Brevard and actively works to raise awareness and educate people about Tourette's. He said sufferers struggle to suppress the vocal and facial tics in public and the workplace, but there is no way to really control them.

Center Director Jim Kennedy and representatives from NASA and various contractor organizations also attended the program. Kennedy said, "I am KSC and proud to be, and I especially feel that during DAAWG meetings."

Kennedy said the center is thankful for the hard work of its employees, including those who are disabled. "We appreciate your candor," he said. "We are all equal here at KSC."

As dangerous lightning season peaks in July, use '30-30 rule'

Thunderstorm Capital. Lighting Alley. You've heard it all before, but did you know the peak of lightning season is in July? Fortunately, lightning safety is easy. No place outdoors is safe when thunderstorms are in the area. Lightning safety at Kennedy Space Center falls into two categories: on-duty and off-duty procedures.

When at KSC, listen for the lightning advisories announced over the public-address systems. A Phase-1 lightning advisory means lightning is expected within five nautical miles of the specified points with a desired lead time of 30 minutes.

A Phase-2 lightning advisory means lightning is imminent or occurring within this distance.

When outdoors, use the "30-30 Rule" to determine if you should be inside. If there is 30 seconds or less between lightning and its thunder, you should be inside. Stay inside for 30 minutes or more after the last thunder. The U.S. Air Force 45th Weather Squadron issues lightning advisories for five points at KSC: Launch Pads 39A and 39B, the Shuttle Landing Facility, the Vehicle Assembly Building and the Industrial Area.

LIGHTNING STRIKES illuminate the sky during a fireworks show.

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