Jan. 27 2014 Vol. 54, No. 2

Spaceport News

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

NASA/Tony Gray-Sandy Joseph

TDRS-L lights up the night on its way to orbit of Earth

The United Launch Alliance Atlas V rocket lifts off from Space Launch Complex 41 at Cape Canaveral Air Force Station carrying NASA's Tracking and Data Relay Satellite, or TDRS-L, to Earth orbit. Liftoff was at 9:33 p.m. EST. Story, Page 3.

Sierra Nevada Corp. to process, launch, land at Kennedy

By Steven Siceloff
Spaceport News

In the latest example of NASA Kennedy Space Center's transformation into a multi-user spaceport, Sierra Nevada Corporation (SNC) of Louisville, Colo., announced Jan. 23 steps it will take to prepare for a November 2016 orbital flight of its Dream Chaser spacecraft from Florida's Space Coast.

The announcement included the purchase of an Atlas V rocket from United Launch Alliance (ULA) for the launch, sharing the Operations and Checkout (O&C) development and testing facility with Lockheed Martin Space Systems, establishing an operation center at Kennedy and using the center's former Shuttle Landing Facility (SLF). The steps are considered substantial for SNC and important to plans by NASA and Space Florida for Kennedy's new availability to both commercial and government customers.

"Today's announcement is the latest major milestone in the transformation of the Kennedy Space Center into a 21st century launch complex, serving both private sector and government users," said NASA Administrator Charles Bolden. "I salute Kennedy Space Center Director Bob Cabana for his leadership in transitioning the Space Coast for the future, and applaud Sierra Nevada Corporation on their decision to carry out their ground-breaking work at Kennedy."

SNC said it plans to work with ULA to launch the company's winged Dream Chaser spacecraft into orbit from Space Launch Complex 41 at Cape Canaveral Air Force Station.

"SNC is thrilled to confirm a launch date for our country's return to orbital human spaceflight and the restart of human spaceflight operations from Florida's Space Coast," said Mark Sirangelo, corporate vice president and head of SNC's Space Systems. "We could not have done this without the spirit and engagement from our national and state governments, the best aerospace companies in the industry, and several major universities, which all hail from over 30 states. Together these passionate people will return our astronauts to space on American spacecraft and rockets launched from America's Space Coast right here in Florida."

The Dream Chaser spacecraft is designed to carry crew and critical cargo to destinations, as well as perform servicing and science in low-Earth orbit. SNC said it intends to complete

To **SNC**, Page 2

NASA/Kim Shiflett

Sierra Nevada Corporation (SNC) announces the steps the company will take to prepare for a November 2016 orbital flight of its Dream Chaser spacecraft from Florida's Space Coast during a news conference at Kennedy Space Center on Jan. 23. Participants are, from left, Michael Curie, NASA spokesman; Bob Cabana, director of Kennedy; Michael Gass, president and CEO of United Launch Alliance (ULA); Frank DiBello, president and CEO of Space Florida; Mark Sirangelo, corporate vice president and head of SNC Space Systems; Larry Price, Lockheed Martin Space Systems deputy program manager for NASA's Orion spacecraft; and Steve Lindsey, Dream Chaser program manager for SNC Space Systems.

From **SNC**, Page 1

Dream Chaser missions with a landing on the 3.5-mile runway at the SLF. Space Florida, which will operate the SLF in the future, will negotiate the terms and conditions for the runway's use with SNC.

"We are pleased to see continued growth of the state's investment into KSC facilities like the O&C," said Space Florida President Frank DiBello. "It is clear that the future of commercial space growth is happening right now in Florida and we couldn't be happier to work with companies like Sierra Nevada to realize their Florida-based expansion goals."

The company said it plans to prepare the Dream Chaser spacecraft in the high bay of the O&C building at Kennedy, with Lockheed Martin performing the work. The facility also is used for the development, assembly and testing of NASA's deep-space Orion spacecraft. Dream Chaser testing will take place without disrupting Orion, NASA's flagship human exploration vehicle.

"The O&C is a state-of-the-art facility that will greatly enhance Dream Chaser's future operations through an innovative co-use plan with Orion," said James H. Crocker, vice president and general manager, Civil Space, Lockheed Martin Space Systems, "The result will maximize efficiency for both the Dream Chaser spacecraft and Orion and will provide continuity for our highly trained, motivated and certified workforce."

SNC also plans to lease office space at Exploration Park, located just outside Kennedy's gates.

"We have been diligent in our efforts, and I consider this a strong vote of confidence from a company that expects to be a major force in the future of human spaceflight," said Bob Cabana, Kennedy center director. "Sierra Nevada Corporation will find in our workforce and facilities the same dynamic and professional people who have made successful missions from here for more than 50 years."

Cabana said SNC's involvement with the Florida spaceport shows the conversion to a 21st century spaceport is succeeding, although work remains to keep the transformation on pace.

"We are honored that Sierra Nevada Corporation has reserved a proven Atlas V to launch its first flight test in 2016," said Michael Gass, United Launch Alliance president and CEO. "With 42 successful missions spanning a decade of operational service, the commercially developed Atlas V is uniquely qualified to provide launch services for the Crew Transportation System. Because Atlas is already certified by NASA to fly the nation's most complex exploration missions, ULA is able to provide a wealth of flight data, design implementation, detailed system and subsystem analysis, qualification and certification documentation to support the Atlas V for human spaceflight."

The Dream Chaser spacecraft is deep into development of flight hardware and specific plans ranging from ground support equipment to what to include in a mission operations center.

"I had the privilege of piloting and commanding five space shuttle flights as a NASA astronaut," said Steve Lindsey, former NASA astronaut and SNC's senior director and Dream Chaser program manager. "This included the last flight of Discovery which was processed, launched, and on March 9, 2011, made its final landing at the SLF after 39 flights and 148 million space miles. Mark, the entire SNC Dream Chaser team, and I look forward to seeing Dream Chaser continue this legacy from Discovery when it flies in 2016."

More online

For more information about Sierra Nevada Corporation's Dream Chaser, visit: **http://www.SNCDreamChaser.com**

For more information about Kennedy, visit: **http://www.nasa.gov/Kennedy**

TDRS-L safely in geosynchronous orbit

By Steven Siceloff
Spaceport News

NASA's Tracking and Data Relay Satellite-L (TDRS-L), the 12th spacecraft in the agency's TDRS Project, is safely in orbit after launching at 9:33 p.m. EST on Jan. 23 aboard a United Launch Alliance Atlas V rocket from Cape Canaveral Air Force Station in Florida.

Ground controllers report the satellite -- part of a network providing high-data-rate communications to the International Space Station, Hubble Space Telescope, launch vehicles and a host of other spacecraft -- is in good health at the start of a three-month checkout by its manufacturer, Boeing Space and Intelligence Systems of El Segundo, Calif. NASA will conduct additional tests before putting TDRS-L into service.

"TDRS-L and the entire TDRS fleet provide a vital service to America's space program by supporting missions that range from Earth-observation to deep-space discoveries," said NASA Administrator Charles Bolden. "TDRS also will support the first test of NASA's new deep-space spacecraft, the Orion crew module, in September. This test will see Orion travel farther into space than any human spacecraft has gone in more than 40 years."

More online
For more information about TDRS, visit:
http://tdrs.gsfc.nasa.gov
To learn more about the many ways to connect and collaborate with NASA, visit:
http://www.nasa.gov/connect

The mission of the TDRS Project, established in 1973, is to provide follow-on and replacement spacecraft to support NASA's space communications network. This network provides high-data-rate communications. The TDRS-L spacecraft is identical to the TDRS-K spacecraft launched in 2013.

"This launch ensures continuity of services for the many missions that rely on the system every day," said Jeffrey Gramling, TDRS project manager at NASA's Goddard Space Flight Center, Greenbelt, Md.

The TDRS fleet began operating during the space shuttle era with the launch of TDRS-1 in 1983. Of the 11 TDRS spacecraft placed in service to date, eight still are operational. Four of the eight have exceeded their design life.

Boeing Space and Intelligence Systems completed the TDRS-L integration and testing at its satellite factory in El Segundo in November and launch processing began after the spacecraft arrived in Florida on Dec. 6.

TDRS-M, the next spacecraft in this series, is on track to be ready for launch in late 2015.

NASA's Space Communications and Navigation Program, part of the Human Exploration and Operations Mission Directorate (HEOMD) at the agency's Headquarters in Washington, is responsible for the space network. The TDRS Project Office at Goddard manages the TDRS development program. Launch management of the launch service for TDRS-L is the responsibility of HEOMD's Launch Services Program based at Kennedy. United Launch Alliance provided the Atlas V rocket launch service.

Herschel telescope detects water on dwarf planet

NASA News Report

Scientists using the Herschel space observatory have made the first definitive detection of water vapor on the largest and roundest object in the asteroid belt -- Ceres.

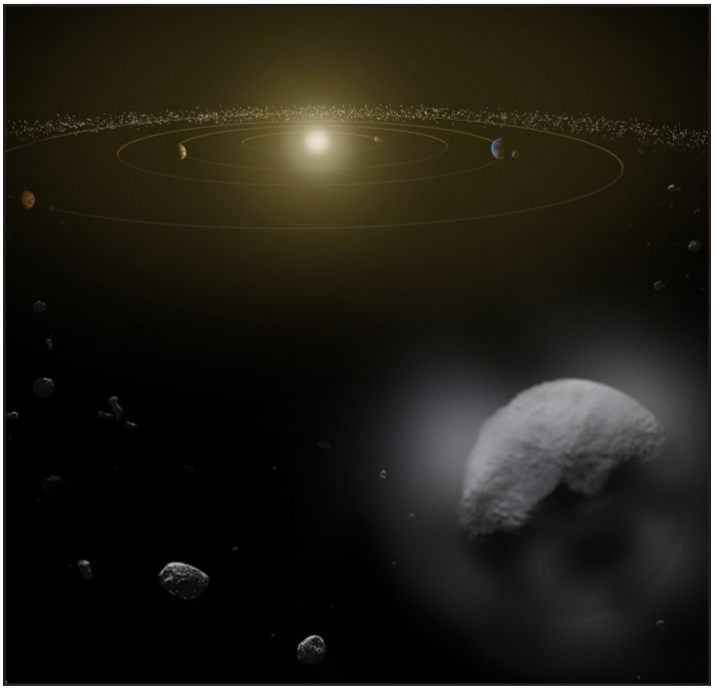
Plumes of water vapor are thought to shoot up periodically from Ceres when portions of its icy surface warm slightly. Ceres is classified as a dwarf planet, a solar system body bigger than an asteroid and smaller than a planet.

Herschel is a European Space Agency (ESA) mission with important NASA contributions.

"This is the first time water vapor has been unequivocally detected on Ceres or any other object in the asteroid belt and provides proof that Ceres has an icy surface and an atmosphere," said Michael Küppers of ESA in Spain, lead author of a paper in the journal Nature.

The results come at the right time for NASA's Dawn mission, which is on its way to Ceres now after spending more than a year orbiting the large asteroid Vesta. Dawn is scheduled to arrive at Ceres in the spring of 2015, where it will take the closest look ever at its surface.

Carol Raymond, the deputy principal investigator for Dawn at NASA's Jet Propulsion Laboratory in Pasadena, Calif., said, "We've got a spacecraft on the way to Ceres, so we don't have to wait long before getting more context on this intriguing result, right from the source itself."



ESA/ATG medialab

Dwarf planet Ceres is in the main asteroid belt, between the orbits of Mars and Jupiter, as illustrated in this artist's conception. For more, click on the photo.

Commercial Crew partners keep 2013 momentum going in 2014

By Steven Siceloff
Spaceport News

Several companies, working closely with NASA, ended 2013 with an impressive string of achievements to build on in 2014 as the American aerospace industry continues to develop and demonstrate commercial human spaceflight capabilities with the potential to support both commercial and government customers.

The year will be pivotal for NASA's Commercial Crew Program (CCP) as the agency looks to announce one or more awards by August for Commercial Crew Transportation Capability (CCtCap) contracts that will lead to operational crewed flights to the International Space Station. NASA intends to use new commercial systems to fly U.S. astronauts to and from the station within the next three years.

NASA's industry partners are pursuing ambitious milestones this year as CCP moves forward. The partners are Blue Origin, Boeing Space Exploration, Sierra Nevada Corporation (SNC) and Space Exploration Technologies (SpaceX).

"Our partners have steadily moved pieces from the drawing boards and computer screens to factory floors and test stands across the country," said Kathy Lueders, acting manager of CCP. "The new year offers exciting opportunities for these companies to demonstrate the reach and potential of their hard-earned innovations."

Blue Origin test-fired its BE-3 engine in 2013. It plans this year to review its assembly of a subscale propellant tank and conduct a review of the space vehicle's subsystems design.

With the completion of a detailed design review in 2013, Boeing continued to develop its spacecraft, the CST-100, confirming in this review the service module propulsion system was ready to move into the next phases: production and integration with the CST-100 spacecraft.

"Boeing's goal is to develop a safe and reliable commercial space transportation system and these reviews are vital to meet that goal," said Gennaro Caliendo, NASA's Integration Team lead for Boeing. "They help ensure that the spacecraft and its myriad systems will work together to accomplish challenging missions, which require the utmost attention to detail."

NASA worked with a team of engineers and designers from SNC in 2013 to review detailed certification and systems safety plans for its Dream Chaser Space System.

"The roadmap to understanding how safe and reliable a crew transportation system is takes a lot of details and dedication from all parties involved," said Cheryl McPhillips, NASA's Partner Integration Team lead for SNC. "When building a system that is to be trusted enough to carry humans into space, the most important part is building in safety from the start. SNC has made significant progress with its Dream Chaser to date."

SNC plans to build on that progress in 2014 with wind tunnel tests and further advancement of its innovative main propulsion and reaction control systems, and a second free-flight test of the Dream Chaser.

SpaceX's first commercial satellite launch on an upgraded Falcon 9 rocket gave NASA engineers an opportunity to review the vehicle's performance in flight following the Sept. 28 liftoff and ascent of the Falcon 9 v1.1 from Vandenberg Air Force Base in California. SpaceX anticipates using the upgraded rocket to launch humans to destinations in low-Earth orbit.

"With the upgrade from version 1.0 to a 1.1, SpaceX introduced a number of new systems including new engines, new software and new avionics," said Derek Hassmann, NASA Partner Integration Manager working with SpaceX. "The overall conclusion is that SpaceX is on the right track. The goal really isn't to judge their design, but to see how they cope with anomalies, see how they track their processes and control their hazards, and how they're able to deal with the unexpected."

The 2014 calendar for SpaceX includes increasingly detailed reviews of the company's integrated systems and progress on its ground systems. SpaceX will conduct two flights to test the Dragon's launch abort systems, powered by two SuperDraco thrusters that will push the Dragon into the sky instead of pulling the spacecraft up as previous launch abort systems have done.

Milestones achieved by CCP's partners are continuing to push commercial spacecraft and transportation system designs closer to reality. The successes of NASA and American aerospace companies are ushering in a new generation of space transportation capabilities, which will enable new opportunities for humans to live and work in space.

Blue Origin

Photo courtesy of the Blue Origin

Blue Origin test-fires a powerful new hydrogen- and oxygen-fueled American rocket engine at the company's West Texas facility.

Boeing

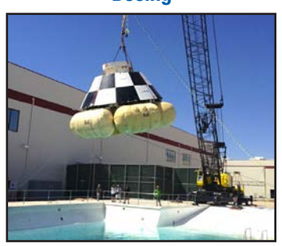


Photo courtesy of the Boeing Company

A mock-up of The Boeing Company's CST-100 spacecraft undergoes a simulated contingency water landing scenario.

Sierra Nevada Corporation

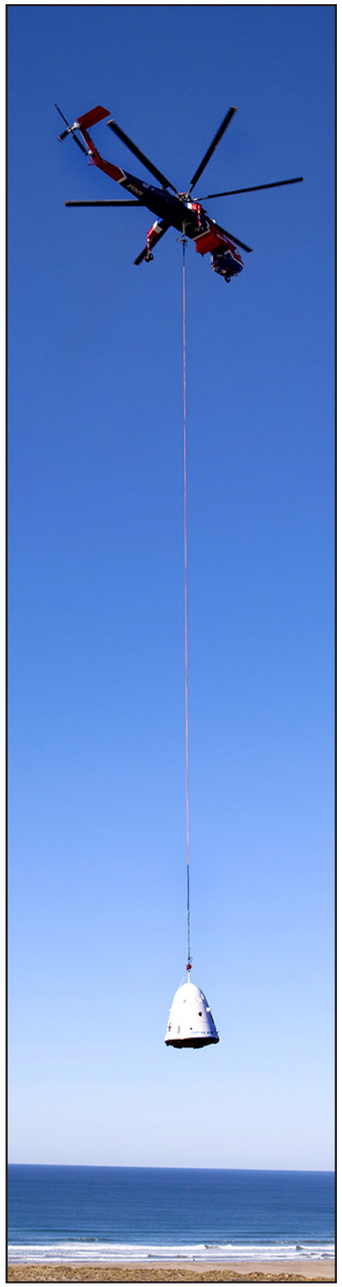
Photo courtesy of the Sierra Nevada Corporation

Sierra Nevada Corporation's Dream Chaser flight vehicle is lifted by a helicopter during a captive-carry flight test.

SpaceX

Photo courtesy of SpaceX

The Dragon mock-up used for the parachute drop tests is on display at SpaceX headquarters in Hawthorne, Calif.



NASA/Kim Shiflett

A SpaceX Dragon test article is lifted by an Erickson Sky Crane helicopter before a parachute deployment test Dec. 20 off the coast of Morro Bay, Calif.

SpaceX tests Dragon parachute system

By Stephanie Martin
Spaceport News

Engineers and safety specialists from NASA and Space Exploration Technologies (SpaceX) gathered in Morro Bay, Calif., in late December to demonstrate how the parachute system on the company's Dragon spacecraft would function in the event of an emergency on the launch pad or during ascent.

The test was part of an optional milestone under NASA's Commercial Crew Integrated Capability (CCiCap) initiative and approved by the agency in August. Through the Commercial Crew Program, SpaceX is one of NASA's commercial partners working to develop a new generation of U.S. spacecraft and rockets capable of transporting humans to and from low-Earth orbit from American soil. NASA intends to use such commercial systems to fly U.S. astronauts to and from the International Space Station.

The 12,000-pound test craft was lifted 8,000 feet above sea level by an Erickson Sky Crane helicopter and flown over the Pacific Ocean. Following Dragon's release, two drogue parachutes were released from the top of the spacecraft to slow its decent, before the three main parachutes deployed. The craft splashed down and was quickly recovered by the Sky Crane and carried back to shore.

"The parachute test is essential for the commercial crew effort because it helps us better understand how SpaceX's system performs as it safely returns crew," said Jon Cowart, NASA Partner Integration deputy manager working with SpaceX. "Like all of our partners, SpaceX continues to provide innovative solutions based on NASA's lessons learned that could make spaceflight safer."

During a normal spacecraft landing, the parachutes will be aided by the Dragon's SuperDraco thrusters to provide a soft controlled landing. This redundancy on both the parachutes and thrusters is designed to ensure safe landings for crews.

"SpaceX is working diligently to make the Dragon spacecraft the safest vehicle ever flown," said Gwynne Shotwell, president of SpaceX. "The parachute system is an integral part of Dragon's ability to provide a safe landing for nominal and abort conditions -- with this successful test we are well-positioned to execute a full end-to-end test of the launch escape system later this year."

The parachute test puts SpaceX a step closer to launch abort system tests. The company currently is manufacturing the spacecraft and rocket to be used for these flight tests.

SpaceX is on track to complete all 15 of its CCiCap milestones in 2014. All of NASA's industry partners, including SpaceX, continue to meet their established milestones in developing commercial crew transportation capabilities.

NASA/Kim Shiflett

The SpaceX Dragon test article splashes down following a test Dec. 20 over the Pacific Ocean, off the coast of Morro Bay, Calif. The test enabled SpaceX engineers to evaluate the spacecraft's parachute deployment system as part of a milestone under its Commercial Crew Integrated Capability agreement with NASA's Commercial Crew Program. To watch a video of the parachute test, click on the photo.

Hennessey Venom rockets down runway

By Steven Siceloff
Spaceport News

A major name in automotive development brought one of his exotic vehicles to the 3.5-mile-long runway at Kennedy Space Center recently to evaluate its aerodynamics and to see how the car would handle throughout its performance range.

"You can have the smartest engineers and designers, but until you get the car going out there on a runway, you don't know what the car's going to do," said John Hennessey, founder of Hennessey Performance and maker of the Hennessey Venom GT, a high-performance production sports car.

For taxpayers and consumers of exotic vehicles or everyday cars, testing in actual conditions pays off in numerous ways. Technology developed in all aspects of auto making routinely find their way into everyday cars, whether it be increased fuel efficiency or safety gear.

"Almost everything in cars has started in racing," said Johnny Bohmer, owner of Performance Power Racing in West Palm Beach. Performance Power Racing negotiated a Space Act Agreement with Kennedy in 2011 to perform aerodynamic and other research evaluations at the center's runway. He collaborates with companies like Hennessey to accomplish the testing, too. "It trickles down and all that stuff is information passed on to other people and everything trickles down into passenger cars. You've got to push boundaries to get results."

The Shuttle Landing Facility is one of only about a half dozen places in the world that has the kind of room and infrastructure to make test runs safely.

NASCAR and Le Mans teams also have tested their vehicles at the SLF recently. Built for the demands of the space shuttle, the runway is one of the longest in the world and extremely wide. It's also concrete, so there's no salt or sand to kick up into the cars as there is at other locations that often are ancient lakebeds or other natural surfaces.

"From a safety perspective, you have a lot more room to negotiate if there's a problem," Hennessey said. "You feel like this is really the safest place for what we've got to do."

The rules for the runway's use require legitimate and measurable engineering data collection that can be used for research and development, said David Cox, Kennedy's Partnership Development manager. There needs to be a strong research and development aspect to the test runs in order to justify the use of a unique, taxpayer-funded facility, he said.

"When Performance Power asked if they could do some testing with the Hennessey Venom GT, they said they needed to confirm some of the aerodynamic and suspension performance throughout the entire operating range of this production car and that really helps show that there's no safety concerns which could lead to a potential recall, which can be very expensive to the manufacturers," Cox said, "so that's really what we approved for the testing activities."

For Hennessey, the testing also is crucial to validating the safety of the car throughout its performance range.

Adjustments tend to be minute and based on feedback from the sensors that show things the driver and team can't see on their own.

"The data logging that he's doing, a human can't pick up," Bohmer said. "He has to do this because it's pretty much mandatory if you're a manufacturer that you know all the parameters. You can't sell something and not know what it can do."

Mechanics, engineers and driver Brian Smith, in jumpsuit, ready a Hennessey Venom GT for test runs on the 3.5-mile long runway at the Shuttle Landing Facility on Jan. 10.

NASA/Kim Shiflett

NASA/Ben Smegelsky

Participants in Kennedy's greenhouse gas emission reduction program charge their vehicles at designated program power outlets across the center. This program is part of a wide array of NASA initiatives designed to maximize sustainable operations and reduce the agency's footprint on Earth.

Greenhouse gas emission program thrives

By Steven Siceloff
Spaceport News

Early figures from a pilot program at Kennedy Space Center show that electric cars are reducing greenhouse gas emissions by a far greater amount than expected, according to the program's coordinator.

"The numbers are 10 times better than we thought we'd ever see," said Frank Kline with Kennedy's Sustainability office. "No one's ever done a pilot where you get actual numbers. It's always been estimates only."

The results are more than academic since all federal agencies are under a presidential order to reduce greenhouse gas emissions. For NASA, the goal is a 12.3 percent reduction by 2020. The executive order includes a category that judges how much gas is emitted from sources that are not controlled by the agency, including things ranging from the gases produced by an airliner carrying a NASA employee on assignment to the emissions from an employee's car during the daily commute.

"The biggest one is federal employee commutes -- that's the easiest target to go after," Kline said. "If we want to stop you from producing greenhouse gases, electric vehicles don't produce any greenhouse gases."

Even with electric cars, the reduction is not 100 percent because even though an electric car itself produces no emissions, the power plant that made the electricity produced greenhouse gases in the process.

"The average car puts out about a pound of carbon dioxide per mile," Kline said. "We're reducing that by 3/5ths by letting you plug in at the Kennedy Space Center."

NASA/Ben Smegelsky

The greenhouse gas emission reduction program coincides with a federal order for all agencies to reduce emissions by 12.3 percent by 2020. Above is an emissions reduction program outlet.

The program is working with 10 Kennedy workers who commute daily and plug in their cars at the center's charging stations. In return for receiving free charging, each of the workers fills out a spreadsheet each day documenting how many miles were driven and the road and traffic conditions.

"What we're trying to capture is fully electric plug-ins," Kline said. "The hybrid is not that different from gasoline-powered cars. It's better, but if you go electric, that's really where you see the bang for the buck. Fully electric is where we want to be."

Calculations made from that information is showing a dramatic reduction in the amount of emissions from the daily commute.

"The numbers are really insane," Kline said. " The program's first three months only cost $148, and we eliminated over 15,000 pounds of carbon dioxide into the atmosphere. Over a whole year, we'll save over 60,000 pounds and that's just with 10 drivers."

Considering the center employs some 8,000 people, the potential to significantly alter the amount of emissions from daily commutes by installing even a modest network of outlets is compelling, Kline said, and not very expensive.

"If you just put some infrastructure in and get people to plug in, you can do more to reduce carbon dioxide and you won't have to spend multi-million dollars," Kline said.

Looking up and ahead . . .

**** All times are Eastern***

Feb. 5
Mission: Progress 54
Launch Vehicle: Russian Soyuz
Launch Site: Baikonur Cosmodrome, Kazakhstan
Launch Time: TBD
Description: Progress 54 will deliver cargo and crew supplies to the International Space Station.

Feb. 22
Mission: SpaceX-3 Commercial Resupply Services flight
Launch Vehicle: Falcon 9
Launch Site: Cape Canaveral Air Force Station
Launch Pad: Space Launch Complex 40
Launch Time: TBD
Description: SpaceX-3 will be the third commercial resupply mission to the ISS by Space Exploration Technologies (SpaceX).

Feb. 27
Mission: Global Precipitation Measurement (GPM) Core Observatory
Launch Vehicle: H-IIA
Launch Site: Japan Aerospace Exploration Agency (JAXA) Tanegashima Space Center, Tanegashima Island, Japan
Launch Time: 1:07 to 3:07 p.m.
Description: GPM is an international satellite mission led by NASA and JAXA to provide next-generation observations of rain and snow worldwide.

March 25
Mission: Expedition 39
Launch Vehicle: Soyuz 38
Launch Site: Baikonur Cosmodrome, Kazakhstan
Launch Time: TBD
Description: Soyuz 38 will carry Russian cosmonauts Alexander Skvortsov and Oleg Artemyev, both Expedition 39/40 flight engineers, and NASA astronaut Steve Swanson, Expedition 39 flight engineer and Expedition 40 commander, to the International Space Station.

April 28
Mission: Progress 55
Launch Vehicle: Russian Soyuz
Launch Site: Baikonur Cosmodrome, Kazakhstan
Launch Time: TBD
Description: Progress 55 will deliver cargo and crew supplies to the International Space Station.

May 1
Mission: Orbital 2 Commercial Resupply Services flight
Launch Vehicle: Antares
Launch Site: Wallops Flight Facility
Launch Pad: Mid-Atlantic Regional Spaceport Pad-0A
Launch Time: TBD
Description: Orbital 2 will deliver cargo and crew supplies to the International Space Station.

May 28
Mission: Expedition 40
Launch Vehicle: Soyuz 39
Launch Site: Baikonur Cosmodrome, Kazakhstan
Launch Time: TBD
Description: Soyuz 39 will carry Russian cosmonaut Maxim Suraev, Expedition 40 flight engineer and Expedition 41 commander, along with NASA astronaut Reid Wiseman and European Space Agency astronaut Alexander Gerst, both Expedition 40/41 flight engineers, to the International Space Station.

To watch a NASA launch online, go to **http://www.nasa.gov/ntv**.

Scenes Around Kennedy

NASA/Tony Gray

Sherrita Crummell, a member of the Port St. Lucie gospel group Cho'Zion (pronounced "chosen"), sings and plays keyboard during the Black Employee Strategy Team (BEST) Martin Luther King Jr. Day Celebration in the KSC Training Auditorium on Jan. 23. Rev. Glenn Dames from St. James A.M.E. Church in Titusville was the guest speaker.

NASA/Cory Huston

NASA Associate Administrator Robert Lightfoot, right, discusses current and future initiatives for the agency and Kennedy Space Center, during an all-hands meeting Jan. 14 with Kennedy employees in the KSC Training Auditorium. Looking on are Center Director Bob Cabana and Langley Research Center Director Lesa Roe.

John F. Kennedy Space Center

Spaceport News

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