



THE FRONT PAGE

KSC's front door to Business Development and Research and Technology

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Pg 2



Pg 3



Pg 5

Center Planning and Development (CPD) is the "front door" for partnerships with NASA's John F. Kennedy Space Center (KSC).

We are developing the world's premier spaceport for government and commercial space industries using comprehensive resource planning and partnerships.

For more information about CPD, visit <http://kscpartnerships.ksc.nasa.gov/>.

Agency's OK deploys Master Plan

The NASA Authorization Act of 2010 directed a new way of doing business at all NASA centers and drove the need for an update to the Kennedy Space Center Master Plan (MP). Forward steps were taken in the creation of a KSC Future Development Concept (FDC) (<http://fdc.ksc.nasa.gov/>) including Kennedy's facilitation of a charrette that included stakeholders from KSC, NASA Headquarters, other NASA centers, the commercial space industry, and federal, state and local entities.

After the agency's approval of the FDC in January 2012, two more years of hard work, led by a committed team of KSC planning personnel, aided by center and programmatic working groups, a planning consultant, and external stakeholders led to the completion of the KSC 20-year Master Plan and its subsequent approval by NASA Headquarters in May.

Guided by the Master Planning Steering Group, chaired by the deputy center director, thorough consideration for Kennedy's core mission and programmatic requirements were kept in the forefront during the creation of the MP. The team also worked toward the end of enabling non-NASA partners to have as much operational flexibility, while transforming from a monolithic NASA program field installation to a multi-user spaceport on federal property.

Another goal was to find the best way to reduce Kennedy's overall footprint by divesting current assets -- without eliminating possible future mission and program requirements. The plan also continues Kennedy's ongoing "leaner and greener" efforts such as: increasing on-site renewable energy; replacing older inefficient buildings; and developing more efficient processes to support commercial customers.

Although the MP is a 20-year plan, Kennedy's

transition is not exactly time-specific. The progression of Kennedy's evolution and land uses depends largely on federal funding, economic influences and financial commitment from non-NASA entities. The MP provides the framework on future decision-making of Kennedy's land use. The Future Land Use Map indicates possible dedicated districts for additional launch and landing areas, research and development, renewable energy, administration, support services, recreation, and operational buffers. In May, Center Planning and Development solicited inputs on a [Request for Information](#) from non-NASA entities on the types of uses that could be accommodated at the spaceport.

Pioneering a Web-based format, the center MP is organized into three primary components, which together communicate the future plan for Kennedy. The first section, Planning Background, explains the input that went into preparing the plan, why the plan was prepared, and gives a description of the overall planning process. The second segment, Planning Conditions, includes information about Kennedy's current conditions and variables that may influence future planning.

Lastly, the Future Development Plan describes Kennedy's desired end state, including the necessary steps and corresponding planning strategies, initiatives and actions that will enable our transformation into a multi-user spaceport.

This 20-year MP describes Kennedy's future state and provides supporting business-focused implementation and operating frameworks necessary to enable this historic transformation.

By Gisele Altman and Trey Carlson

The Master Plan is available at:
<http://masterplan.ksc.nasa.gov/>

Message from CPD Management

In May of this year, the KSC Master Plan was approved by NASA Headquarters. The question you may ask is: "And?" Well the "and" is that this plan sets the framework for what KSC will be doing for the next 20 years. That's a long time, but given the sorts of things that the KSC team does, it really is not that long.

But it is different from the way that we used to do business -- very different! We will be sharing the effort of bringing humans into the "final frontier." We can no longer do that by ourselves. We need to partner not only with other government entities, as we have with the International Space Station, but with a myriad of commercial entities. And they do business in a different manner and sometimes at a different pace than NASA has historically operated.

All of this amounts to a major change in culture for the center. And as we all know, change is hard, especially when the KSC Team has been so successful over the years. In light of that success, the question arises, "Why Change?" The answer is because, things are different. Budgets are tighter, resources are more limited and the policies that direct us are changing.

Yet I see evidence of change every day. Increasingly folks across the entire spectrum of the KSC workforce are not only accepting these changes, but are actively seeking to find new and better ways of doing business. Keep it up, Kennedy! It bodes well for our new and even brighter future.

-- Mario Busacca,
Chief, Spaceport Planning Office



Kennedy Space Center Master Planner Trey Carlson provides an overview of the updated KSC Master Plan.

Don Dankert, program manager for the Centerwide Environmental Impact Statement, explains that the National Environmental Policy Act requires all federal agencies to consider possible impacts to the environment during project planning.



Spaceport Planning Office Chief Mario Busacca describes the possible actions that could take place as Kennedy Space Center transitions to a multi-user spaceport.

Offices of Kennedy Environmental, Master Planning conduct scoping meetings in Titusville, Volusia County

Compiled by Gisele Altman

The purpose of the scoping meetings was to solicit comments from the public, agencies and other interested parties (right). At both events, after the presentation, audience members lined up to share their opinions. Participant's comments are officially recorded (below).





Karen Thompson, NASA's chief technologist at Kennedy Space Center (left) and Janet Petro, Kennedy's deputy director (right) honored engineers, scientists and researchers who developed 20 of the latest innovative technologies at Kennedy Space Center during a Patent Recognition Ceremony at the Kennedy Learning Institute on June 9.

Patent Award Luncheon

Smart coatings, aerogel composites and hydrogen-sensing tape are just three of the 20 innovative technologies developed at Kennedy Space Center that received U.S. patents within the last four years. The 35 engineers, scientists and researchers who developed them were honored by the center's Technology Transfer Office on June 9 during a Patent Recognition Ceremony at the Kennedy Learning Institute. The last recognition event was held in 2010.

Mike Lester, from the Technology Transfer Office, said it is time to recognize the researchers who have achieved patents in the last several years and acknowledge the tremendous innovations going on in research and technology at the center.

"The technologies you have developed represent years of hard work," said Janet Petro, Kennedy's deputy director. "NASA is moving forward and the new technologies being developed help the agency and stimulate the economy."

Luz Calle, a NASA research materials engineer in the Engineering and Technology Directorate, and Wenyan "Wendy" Li, a research scientist with QinetiQ North America on the Engineering Services Contract, received their patent recognition for developing "Coatings and Methods for Corrosion Detection and/or Reduction," or smart coatings.

Calle said receiving the patent for this technology was a long and difficult process.

"Methods and Systems for Advanced Spaceport Information Management" was invented by Phillip Meade and Judith "Charlie" Blackwell-Thompson, both engineers in the Ground Processing Directorate, in conjunction with NASA and The Boeing Company.

The patent is for methods and systems that reduce the time, cost and rework associated with the test and checkout of a payload over its lifecycle through the use of a distributed command

and control architecture, according to Meade.

Blackwell-Thompson said one of the takeaways from this patent is that it allows flight and ground software to be tested together and early in the life cycle so that any issues are not repeated.

"Color Changing Materials for Hydrogen Detection" was invented by Luke Roberson, Janine Captain, Martha Williams, Trent Smith and LaNetra Tate, and is just one example of many Kennedy-developed technologies crossing over to the commercial world.

The project was led by principle investigator Dr. Luke Roberson, a research scientist in the Materials Sciences Division.

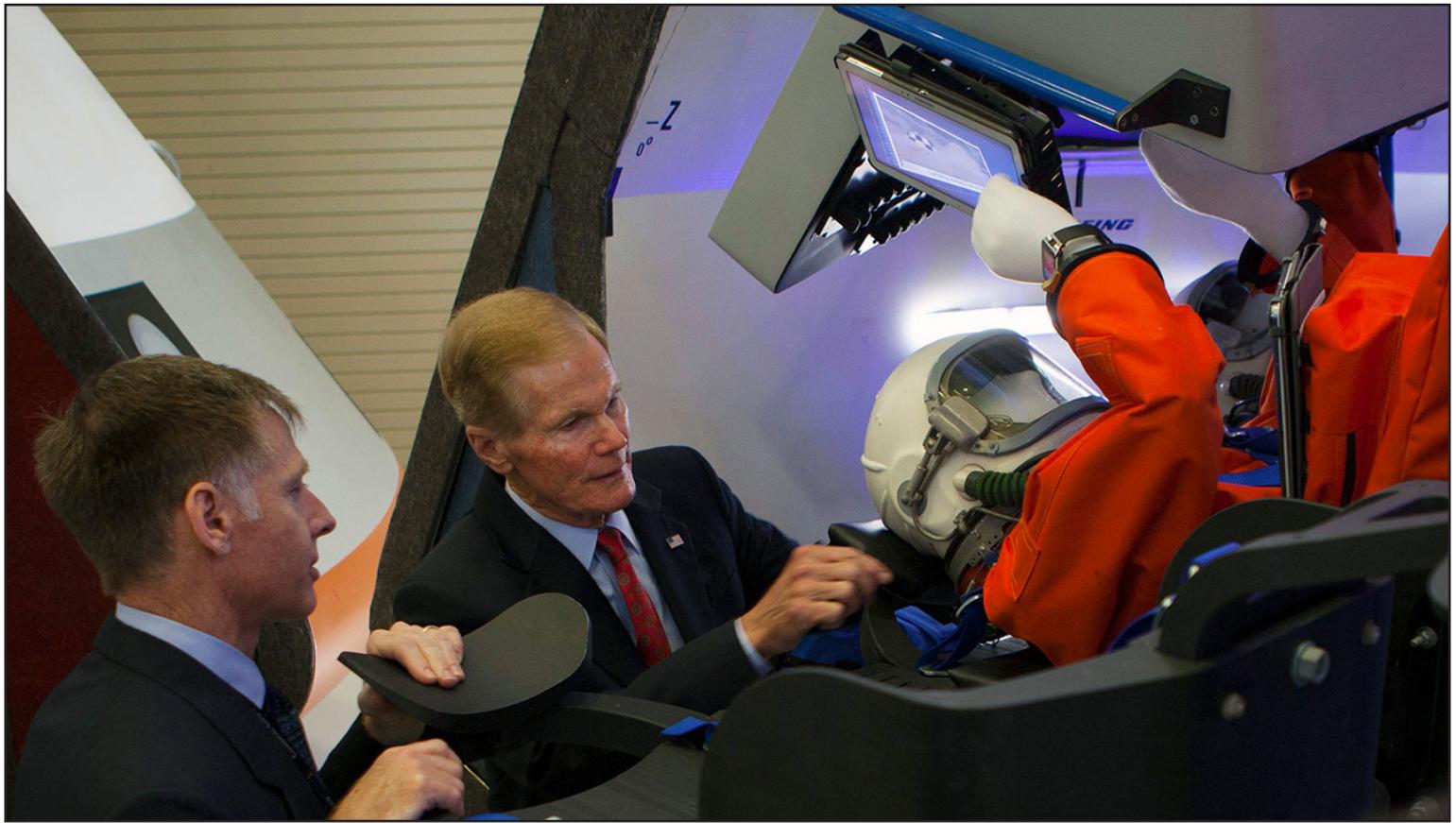
Applications of the chemochromic color-changing sensor were developed for leak detection on the launch pad to visually notify technicians of hydrogen leaks. Tape versions of the detector were applied to the space shuttle orbiter midbody umbilical unit during fueling operations for the STS-117, STS-118, STS-120, STS-122 and STS-123 missions.

Williams, the lead polymer scientist and founder of the Polymer Science and Technology Laboratory in the Materials Science Division of the Engineering and Technology Directorate, said the overarching theme of technology development is to bring technical solutions to real problems and technology gaps identified by NASA.

The hydrogen detection tape was licensed to the University of Central Florida (UCF) in January 2014. The university, in turn, spun off a company, HySense Technology LLC, to bring the technology to consumers.

David Makufka, manager of Kennedy's Technology Transfer Office said the research and technology work performed at the center is critical for meeting NASA's missions, including the technology transfer mission.

By Linda Herridge



U.S. Sen. Bill Nelson (center) and former astronaut Chris Ferguson survey a mockup of the CST-100 spacecraft under development by The Boeing Company during a ceremony detailing Boeing's plans to use Orbiter Processing Facility-3 as a manufacturing hub for the capsule-shaped spacecraft. Photo credit: NASA/Kim Shifflett

Boeing unveils CST-100 processing plans

NASA partner's event highlights continued transformation of KSC to multi-user spaceport

Kennedy Space Center took another step down the path of transformation June 9, when The Boeing Company unveiled detailed plans to convert a shuttle processing facility into an assembly hub for the company's next generation of crewed spacecraft.

Speaking inside the former engine shop of the spacious Orbiter Processing Facility-3 at Kennedy, U.S. Sen. Bill Nelson of Florida said Boeing's plans demonstrate that the only place in the nation to have launched people into orbit remains well-positioned to serve the future of space exploration, too.

"This is a celebration of a

great public-private partnership," Nelson said, "the public sphere in local, state and federal with the private sector. And what you see is the result, which was one of the goals we set in (the) NASA bill in 2010."

Boeing anticipates building its CST-100 up from a pressurized crew compartment into a fully operational spacecraft inside the OPF. The company is developing the CST-100 spacecraft in partnership with NASA's Commercial Crew Program under its Commercial Crew Integrated Capability agreement (CCiCap).

"We're transitioning this facility into a world class manufacturing facility," said John Mulholland, Boeing's program manager for the CST-100. "With (a) 50,000-square-foot processing facility, it's going to allow us to process up to six CST-100s at once."

The facility was leased by

Kennedy to Space Florida in October 2011, a few months after the retirement of NASA's space shuttle fleet. The facility was one of three processing halls built to service and maintain the shuttles between missions.

Since then, the ramps, platforms and specialized equipment for the shuttles has been moved out to make room for the machinery needed to ready the CST-100 spacecraft for flight. The main hangar has plenty of room to process several spacecraft at once, with adjoining sections of the building well-suited to process other systems such as engines and thrusters before they are integrated into the main spacecraft.

Many facilities in addition to OPF-3 have been retooled or refurbished with new uses in mind. Launch Complex 39B and a high bay in the Vehicle Assembly

Building have been overhauled for the Space Launch System rocket and Orion spacecraft, for example. Nor are the users confined to NASA. Several structures built for the space agency now are being operated by commercial firms.

Boeing's John Elbon, vice president and general manager of Boeing Space Systems, said the company settled on the OPF-3 for its new generation spacecraft to keep production as close to the launch site as possible and to take advantage of the aerospace-focused workforce in the area.

"I have a tremendous respect for the disciplined culture, the hard work of the people here at the space center," Mulholland said. "I can't say enough about how proud I am of the team that's building the CST-100."

By Steven Siceloff

NASA SEEKS INPUT ON KENNEDY LAND USE

NASA's Kennedy Space Center conducted market research on the potential lease and development of land assets that will enable the center to continue its transformation to a multi-user spaceport.

The transformation is based on effectively utilizing land assets identified in the 2013-2032 Master Plan.

Kennedy issued a Request for Information (RFI) to identify potential partnership opportunities for the expansion of non-NASA launch operations and launch support functions at Kennedy, activities related

to the assembly and processing of payloads or launch vehicles, and additional ventures that encourage activities in space.

The RFI closed July 11.

If NASA determines that it is in the government's best interest to make vacant land available, formal competitive announcement(s) will be issued at a later date. Competitive announcement(s) would provide all potential respondents a fair opportunity to propose and request land for development.

Sierra Nevada Corporation currently has a lifting-body spacecraft named the Dream Chaser under development. The company is working toward making the spacecraft a multi-mission space utility vehicle for crewed and uncrewed transportation to low-Earth orbit, as well as international and commercial space applications. As announced at Kennedy Space Center in January of this year, SNC is working with large and small businesses to meet its initial launch goal of 2016 from Florida's Space Coast.

SNC is headquartered in Sparks, Nevada, and is one of America's fastest growing private companies. Its Space Systems business division is based in Louisville, Colorado, and designs and manufactures advanced spacecraft, space vehicles, rocket motors, spacecraft subsystems and components for the U.S. government, commercial customers and the international market. SNC has participated in more than 400 successful space missions through delivery of more than 4,000 systems, subsystems and components. SNC maintains a reputation for rapid, innovative, and agile technology solutions in electronics aerospace, avionics space, propulsion, and micro-

PARTNER SPOTLIGHT

Sierra Nevada Corporation

satellite, aircraft, communications systems and solar energy. With more than 3,000 people in 30 locations in 16 states, SNC is the top woman-owned federal contractor in the United States.

Most recently, SNC announced the expansion of the Dream

Chaser's dream team by including Craig Technologies in the development of the spacecraft's space system. Craig, which is also a woman-owned, minority-owned, service-disabled veteran-owned small business, will support SNC in areas of design engineering,

development and manufacturing.

Craig's nationally recognized Aerospace and Defense Manufacturing Center, in Cape Canaveral, Florida, is ISO 9001/AS9100 Certified and ITAR registered and compliant.

Craig leads nationwide operations in more than 20 different states with offices in Huntsville, Alabama, and Orlando, Florida.

**Portions of a joint SNC/Craig Technologies news release were compiled to create this product.*



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For more about Kennedy Space Center's Planning and Development, go to <http://kscpartnerships.ksc.nasa.gov/>