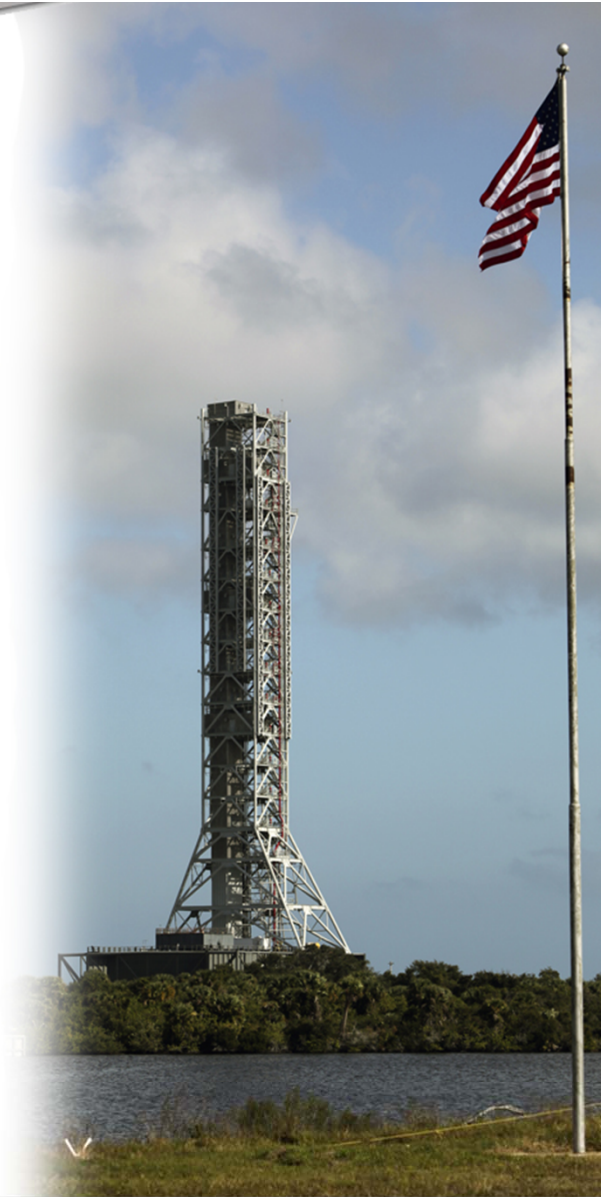


National Aeronautics and Space Administration

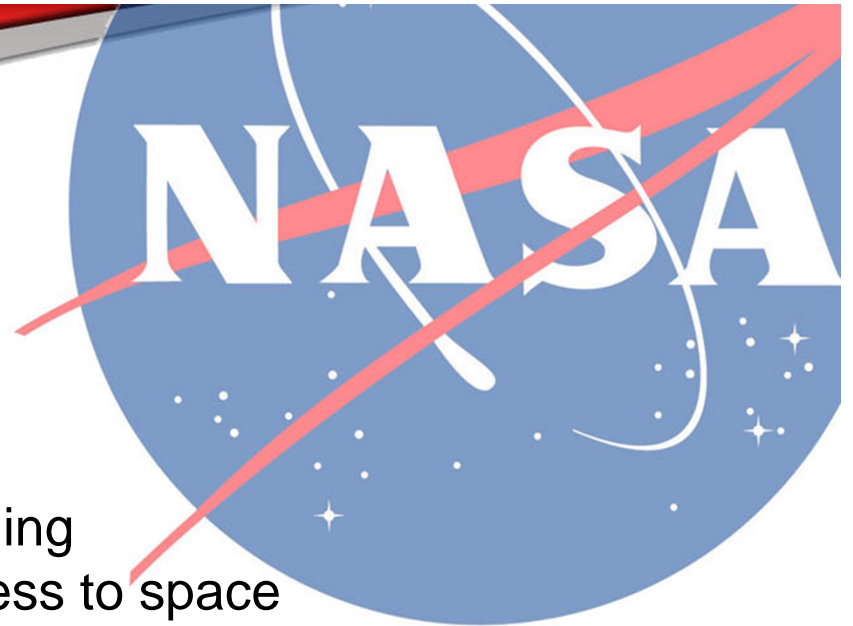


Kennedy Space Center

- **Vision:** KSC is the world's preeminent launch complex for government and commercial space access, enabling the world to explore and work in space.
- **Mission:** KSC safely manages, develops, integrates, and sustains space systems through partnerships that enable innovative, diverse access to space and inspires the Nation's future explorers.



KSC's Vision & Mission



- Goal 1:** Ensure mission success by enabling government and commercial access to space
- Goal 2:** Develop, operate, and sustain a robust launch and payload processing complex for all providers
- Goal 3:** Conduct research and develop technology representative of KSC expertise to enable NASA mission success
- Goal 4:** Provide flexible, cost effective institution to enable success
- Goal 5:** Inspire, engage & educate through enriching programs, internships, & partnerships

KSC's Goals



KSC Programs

2012



NuStar - Nuclear Spectroscopic Telescope Array



RBSP – Radiation Belt Solar Probes

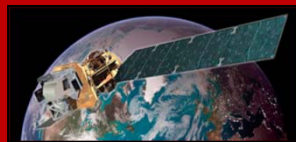


IRIS – Interface Region Imaging Spectrograph



TDRS K – Tracking and Data Relay System

2013



LDCM – Landsat Data Continuity Mission



OCO 2 - Orbiting Carbon Observatory



MAVEN - Mars Atmosphere and Volatile Evolution

2014



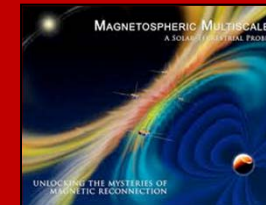
Jason-3



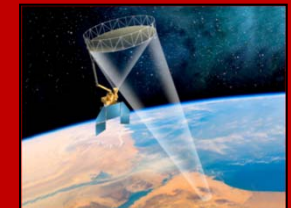
GEMS – Gravity and Extreme Magnetism Small Explorer



TDRS L – Tracking and Data Relay System



MMS – Magnetospheric MultiScale



SMAP – Soil Moisture Active Passive

Launch Services Program

Blue Origin



Boeing



Sierra Nevada



SpaceX



ATK



Excaltibur Almaz

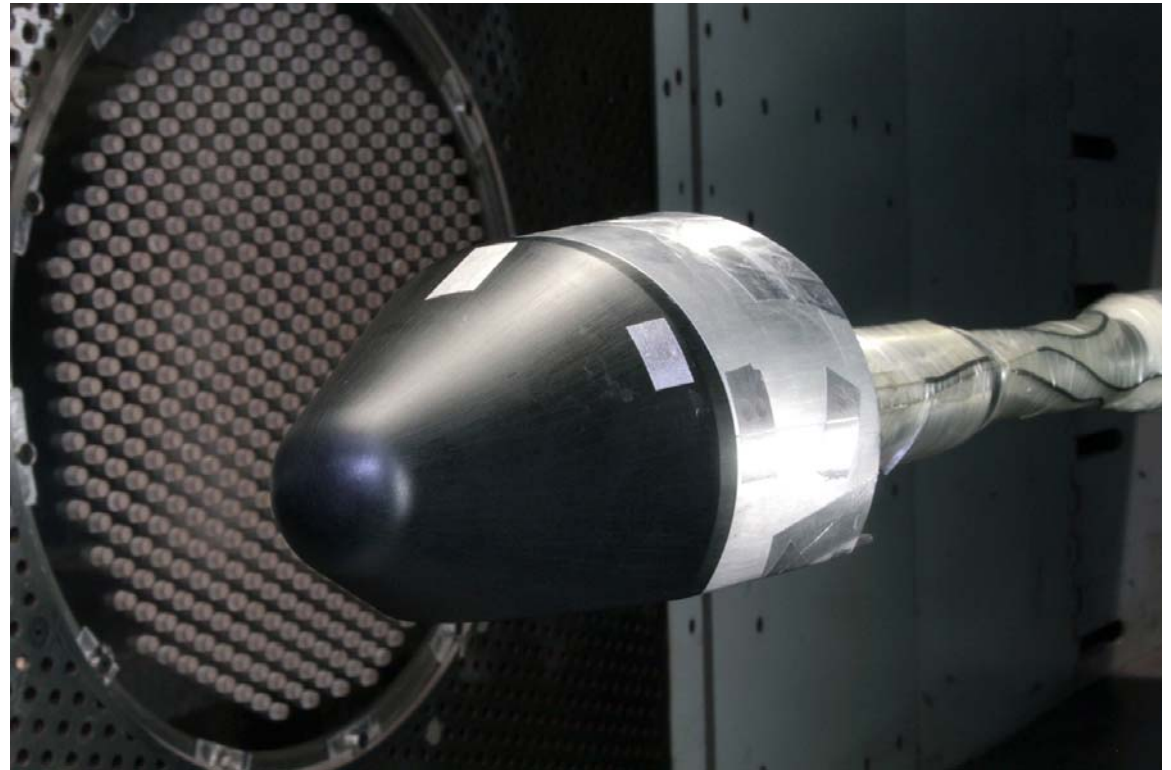


ULA

Commercial Crew Program



- **Spacecraft:**
Reusable Biconic
Space Vehicle
- **Launch Vehicle:**
Reusable Booster
System



Blue Origin

- **Spacecraft:**
CST-100



- **Launch Vehicle:**
Atlas V



Boeing

- **Spacecraft:**
Dream Chaser
- **Launch Vehicle:**
Atlas V



Sierra Nevada Corporation

- **Spacecraft:**
Dragon capsule

- **Launch Vehicle:**
Falcon 9

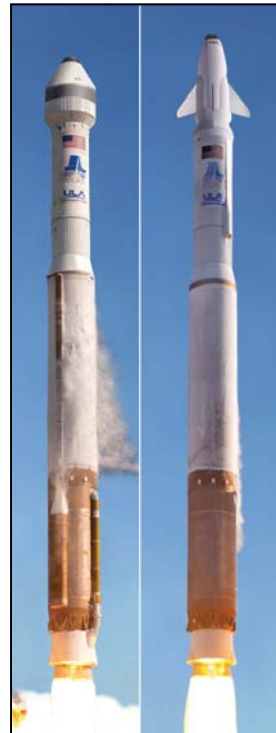


SpaceX

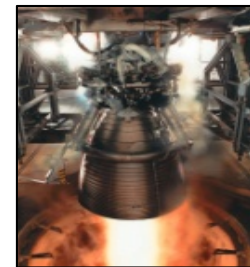
**Excalibur
Almaz**



ULA



ATK



Unfunded Space Act Agreements



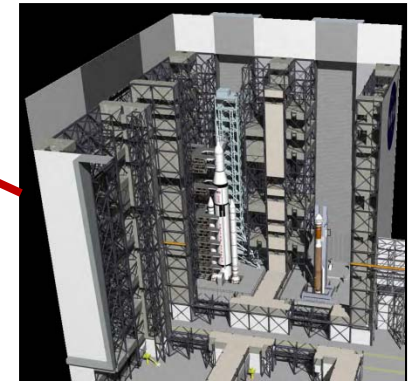
Clean pad Flexible
Launch Capability



Shuttle pad configuration



Mobile Launcher

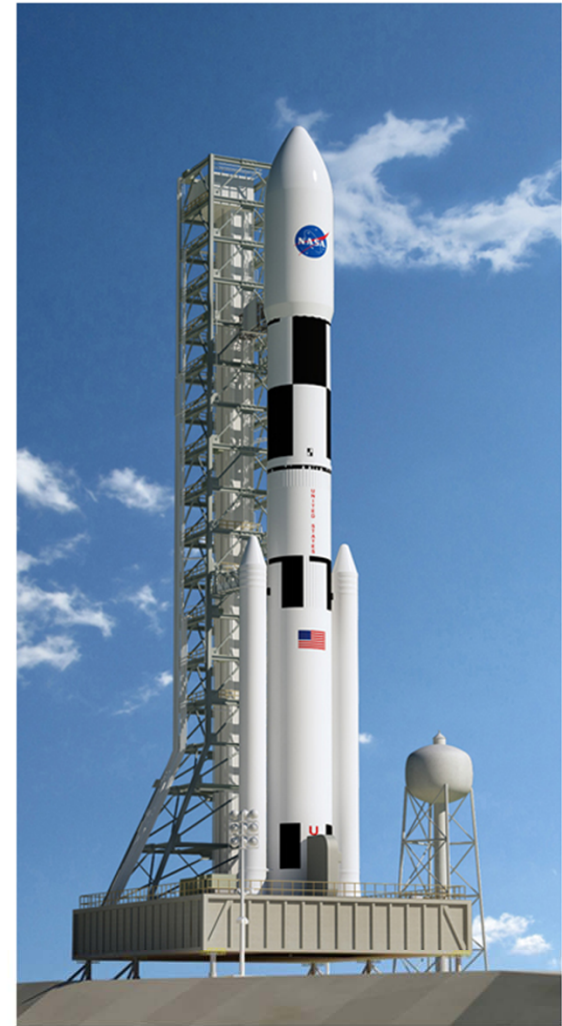


Multi-use
Integration (VAB)

Ground Systems Development & Operations Program

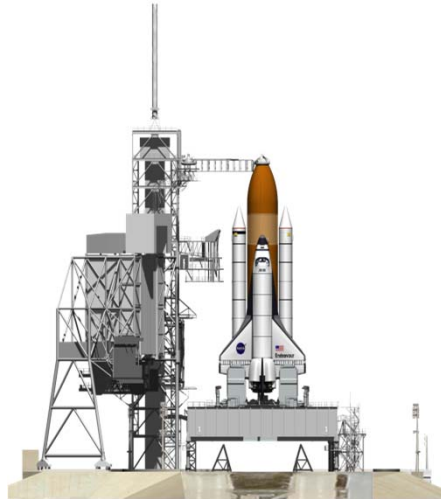


Mobile Launcher



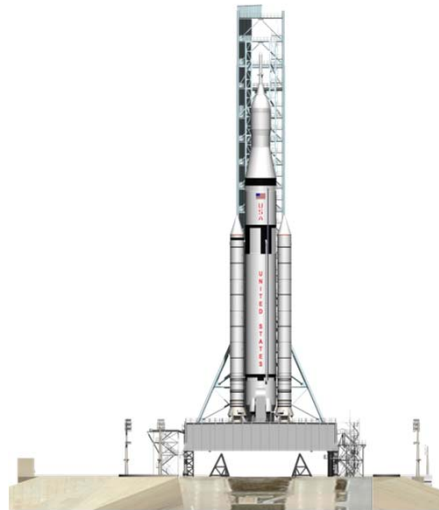
Human Exploration

Space Shuttle



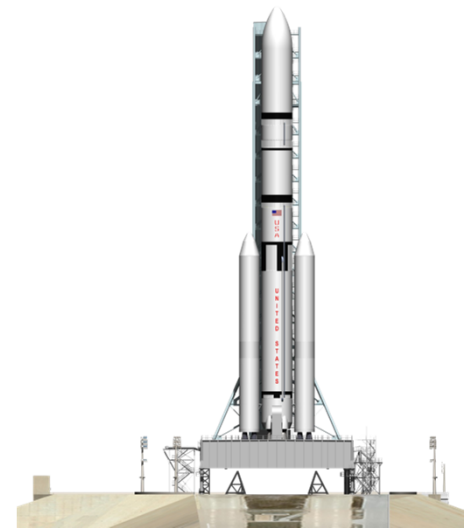
STS
LEO 24t

Initial Design



Block 1 / 1A
LEO 70t -105t

Evolved Design



Block 2
LEO 130t

Space Launch System (SLS)

**Block 1
(70t)**



**Block 1A
(105t)**



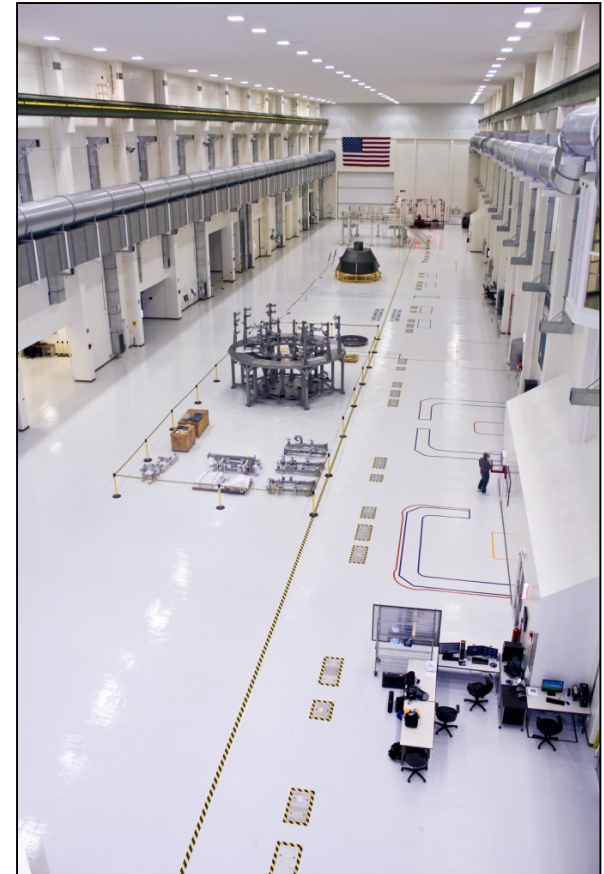
**Block 2
(130t)**



SLS Details



Processing in the Operations and Checkout Building



Multi Purpose Crew Vehicle / Orion



Diversifying Partnerships—Center Planning & Development Office



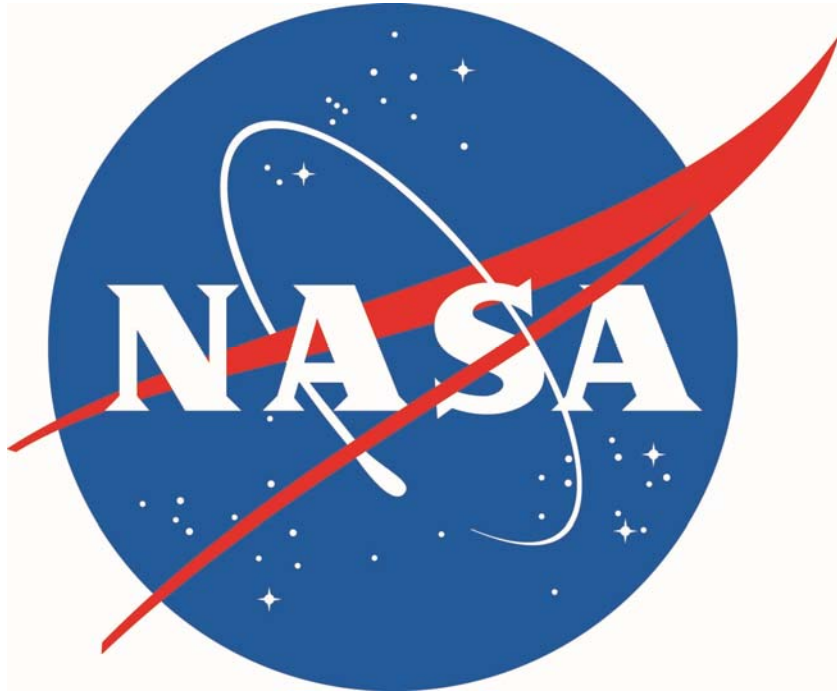
Space Florida OPF 3 Agreement



Exploration Park



Visitor Complex





Slide 1—Title Slide

Among 2011's many accomplishments, we safely retired the Space Shuttle Program after 30 incredible years; completed the International Space Station and are taking steps to enable it to reach its full potential as a multi-purpose laboratory; and helped to expand scientific knowledge with missions like Aquarius, GRAIL, and the Mars Science Laboratory.

Responding to national budget challenges, we are prioritizing critical capabilities and divesting ourselves of assets no longer needed for NASA's future exploration programs. Since these facilities do not have to be maintained or demolished, the government saves money. At the same time, our commercial partners save money because they do not have to build new facilities. It is a win-win for everyone.

Moving forward, 2012 will be even more historically significant as we celebrate the 50th Anniversary of Kennedy Space Center.

In the coming year, KSC will facilitate commercial transportation to low-Earth orbit and support the evolution of the Space Launch System and Orion crew vehicle as they ready for exploration missions, which will shape how human beings view the universe.



- **Vision:** KSC is the world's preeminent launch complex for government and commercial space access, enabling the world to explore and work in space.
- **Mission:** KSC safely manages, develops, integrates, and sustains space systems through partnerships that enable innovative, diverse access to space and inspires the Nation's future explorers.

KSC's Vision & Mission

Slide 2—KSC's Vision & Mission

While NASA's Vision is to lead scientific and technological advances in aeronautics and space for a Nation on the frontier of discovery
KSC's vision is to be the world's preeminent launch complex for government and commercial space access, enabling the world to explore and work in space.



Slide 3—KSC's Goals

We will accomplish our vision by focusing on our 5 goals:

Goal 1: Ensure mission success by enabling government and commercial access to space

Goal 2: Develop, operate, and sustain a robust launch and payload processing complex for all providers

Goal 3: Conduct research and develop technology representative of KSC expertise to enable NASA mission success

Goal 4: Provide flexible, cost effective institution to enable success

Goal 5: Inspire, engage & educate through enriching programs, internships, & partnerships



Slide 4—KSC Programs

Our goals not only support NASA's mission, but ensure that KSC will remain an integral part of our future space program.

KSC has always been an operational center with one program office for NASA - the **Launch Services Program**.

As LSP processes payloads for our science missions and others that use expendable rockets, their expertise has proven invaluable, especially now that KSC has added two new programs - **The Commercial Crew Program** and the **Ground Systems Development & Operations Program**.

Commercial Crew is benefitting from LSP's experience by using the LSP model for Systems Engineering & Integration (SE&I) analysis, insight, and certification process.

The Ground Systems Development & Operations Program is responsible for modernizing our facilities to accommodate multiple commercial and government customers.

All of us at KSC are committed to making these programs successful. The growth and achievements of these programs will likely result in significant expansion in the Space Coast's space industry.

2012	 NuStar - Nuclear Spectroscopic Telescope Array	 RBSP – Radiation Belt Solar Probes	 IRIS – Interface Region Imaging Spectrograph	 TDRS K – Tracking and Data Relay System	
2013	 LDCM – Landsat Data Continuity Mission	 OCO 2 - Orbiting Carbon Observatory	 MAVEN - Mars Atmosphere and Volatile Evolution		
2014	 Jason-3	 GEMS – Gravity and Extreme Magnetism Small Explorer	 TDRS L – Tracking and Data Relay System	 MMS – Magnetospheric MultiScale	 SMAP – Soil Moisture Active Passive
Launch Services Program					

Slide 5—Launch Services Program (LSP)

LSP continues to act as a broker to match the payload with a specific rocket in order to ensure mission success.

LSP has launched 69 missions to date with more than 20 in-flow or future missions planned.

Among their recent successes are September’s GRAIL launch from Cape Canaveral, which sent twin spacecraft to the moon to precisely measure and map variations in the moon's gravitational field, and the November launch of the Mars Science Laboratory (MSL).

The Curiosity rover is the largest yet--the size of a Mini Cooper car with 10 scientific instruments.

After a 352-million-mile journey, Curiosity will land this August to investigate whether the region has ever offered conditions favorable for microbial life, including the chemical ingredients for life.



Slide7– Commercial Crew Program (CCP)

The commercial crew program is new for us, and we are leveraging off of the successful LSP to best fit the needs and requirements of the Agency to get crew safely to Low-Earth Orbit (LEO).

Each program being co-located at KSC affords the agency the maximum amount of synergy across each of these two programs.

This will enable KSC to be the lead center for the Agency for human space flight.

The Commercial Crew Program is designed to manage commercial space activities that will develop and demonstrate human spaceflight capabilities.

Our goal is to turn over transportation to Low-Earth Orbit to our commercial partners, freeing NASA to explore the outer depths of our solar system.

We are developing a viable commercial space industry, which will keep and create jobs in the U.S., retain our technical expertise, and provide synergies in our national launch investments.

Last year, we awarded four Space Act Agreements (SAAs) as part of the CCDev2 effort.



- **Spacecraft:**
Reusable Biconic
Space Vehicle
- **Launch Vehicle:**
Reusable Booster
System



Blue Origin

Slide 8—Blue Origin

April 2012

More than 180 wind tunnel tests validated the company's analysis of the Space Vehicle's aerodynamics during descent through the atmosphere and the ability to change its flight path, which could increase the number of available landing opportunities and enhance the vehicle's emergency return capability.

Received \$22 million as part of CCDev2.

The Crew Transportation System is comprised of a reusable biconic space vehicle launched first on an Atlas V launch vehicle, then on Blue Origin's own Reusable Booster System.

During CCDev2, Blue Origins is working to mature the space vehicle design through a Systems Requirement Review, mature the Pusher Escape System, and accelerate engine development for their Reusable Booster System.

Future work includes a Pusher Escape Ground Firing and Reusable Booster System Engine Thrust Chamber Assembly Test.



Slide 9—Boeing

KSC-2012-2691 (05/02/2012) --- DELAMAR DRY LAKE BED, Nev. – The Boeing Company's CST-100 crew capsule floats to a smooth landing beneath three main parachutes over the Delamar Dry Lake Bed near Alamo, Nev. This is the second parachute test that Boeing performed under its partnership with NASA's Commercial Crew Program CCP. The first showed the parachute system's deployment scheme worked and that it could be re-packed and re-used for this second test. In 2011, NASA selected Boeing during Commercial Crew Development Round 2 (CCDev2) activities to mature the design and development of a crew transportation system with the overall goal of accelerating a United States-led capability to the International Space Station.

Boeing was awarded \$92.3 million as part of CCDev2.

Their commercial Crew Transportation System comprises the reusable CST-100 spacecraft, launch services, and ground systems.

CST-100 is compatible with multiple launch vehicles, but Boeing has announced their intention to launch the first CST-100 flight on an Atlas V.

The CST-100 capsule is reusable for up to 10 missions.

During CCDev2, Boeing is working to mature their commercial crew transportation system through the preliminary design review and perform developmental tests.

Boeing has been through several reviews, including the completion of Landing Air

Bag Drop Demonstration #1.

They are working toward an Orbital Maneuvering and Abort Control Hot Fire Test, among other milestones.

- **Spacecraft:**
Dream Chaser
- **Launch Vehicle:**
Atlas V



Sierra Nevada Corporation

Slide 10—Sierra Nevada

LOUISVILLE, Colo. -- Sierra Nevada Corporation (SNC) Space Systems successfully completed a "captive carry test" of its full-scale Dream Chaser orbital crew vehicle Tuesday, marking a new milestone in the company's effort to develop transportation for astronauts to low Earth orbit and the International Space Station.

During the test, the Dream Chaser flight vehicle was carried under an Erickson Air-Crane helicopter to assess the vehicle's aerodynamic flight performance, which will allow additional flight tests in the future. The helicopter flew for approximately an hour near the Rocky Mountain Metropolitan Airport in Jefferson County, Colo.

The Dream Chaser is designed to carry as many as seven astronauts to space. It is the only spacecraft under CCDev2 that is winged and designed to land on a conventional runway. Data from the test will provide SNC an early opportunity to evaluate and prove hardware, facilities and ground operations in preparation for approach and landing tests scheduled for later this year.

"The successful captive carry flight test of the Dream Chaser full scale flight vehicle marks the beginning of SNC's flight test program, a program that could culminate in crewed missions to the International Space Station for NASA," said Steve Lindsey, former NASA astronaut and head of Dream Chaser's flight operations for SNC.

Additional milestones leading up to the test included evaluating the performance of the main landing gear selected for use on the Dream Chaser flight vehicle, an interface test to demonstrate the release mechanism between the spacecraft prototype and the heavy-lift helicopter, and a thorough flight test readiness review with engineers, technical experts and representatives from SNC and NASA.

Sierra Nevada was awarded \$80 million as part of CCDev2.

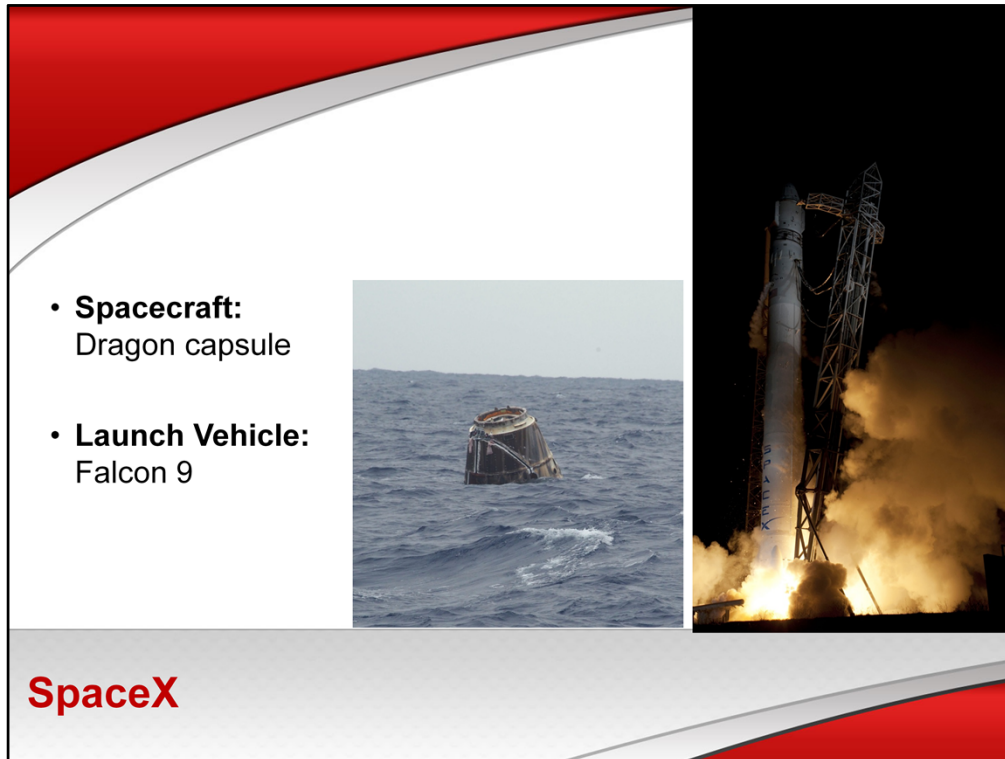
The Dream Chaser is a reusable, piloted lifting body derived from the NASA HL-20, and is planned to launch on an Atlas V.

Sierra Nevada will fabricate an atmospheric flight test vehicle, conduct analysis and risk mitigation, and conduct significant hardware testing.

During CCDev2, Sierra Nevada is working to mature the Dream Chaser crew transportation system design through a preliminary design review with some subsystems to critical design review.

Sierra Nevada's accomplishments to date include opening their Vehicle Avionics Integration Laboratory that will allow them to test all avionic systems on the Dream Chaser.

They are working toward several tests including a captive carry interface and landing gear test.



Slide 11—SpaceX

On May 31, 2012, SpaceX's Dragon capsule splashed down in the Pacific Ocean at 11:42 a.m. EDT a few hundred miles west of Baja California, Mexico, marking a successful end to the first mission by a commercial company to resupply the International Space Station.

Dragon's journey to the space station was SpaceX's second demonstration mission under NASA's Commercial Orbital Transportation Services (COTS) Program.

Following a series of tests of its maneuverability and abort systems, the capsule was grappled and berthed to the space station by the crew members of Expedition 31 aboard the orbiting complex.

In the next several weeks, NASA will evaluate the Dragon capsule's mission performance to close out remaining COTS milestones. Once that work is completed NASA and SpaceX will set the target date for the company's first full cargo mission.

A new era in U.S. commercial spaceflight

The capsule delivered to the station 1,014 pounds of supplies including experiments, food, clothing and technology. On its return trip to Earth, the capsule carried science experiments that will be returned to researchers

hoping to gain new insights provided by the unique microgravity environment in the station's laboratories. In addition to the experiments, Dragon returned a total of 1,367 pounds of hardware and cargo no longer needed aboard the station.

SpaceX was awarded \$75 million in CCDev2.

Their Crew Transportation System is based on the existing Falcon 9 launch vehicle and Dragon spacecraft, which have been designed since inception for crew carriage with relatively minimal modification.

Both the longest-lead and most safety-critical system is the Launch Abort System (LAS).

SpaceX is working to mature the flight-proven Falcon 9/Dragon transportation system focusing on developing an integrated, side-mounted LAS.

When you look at who has launched a capsule into orbit and returned it to Earth, you have Russia, the United States, China, and now SpaceX. They are the only commercial company to do this, while it has taken three Government agencies.

Their future work for CCDev2 includes LAS testing and a concept baseline review.

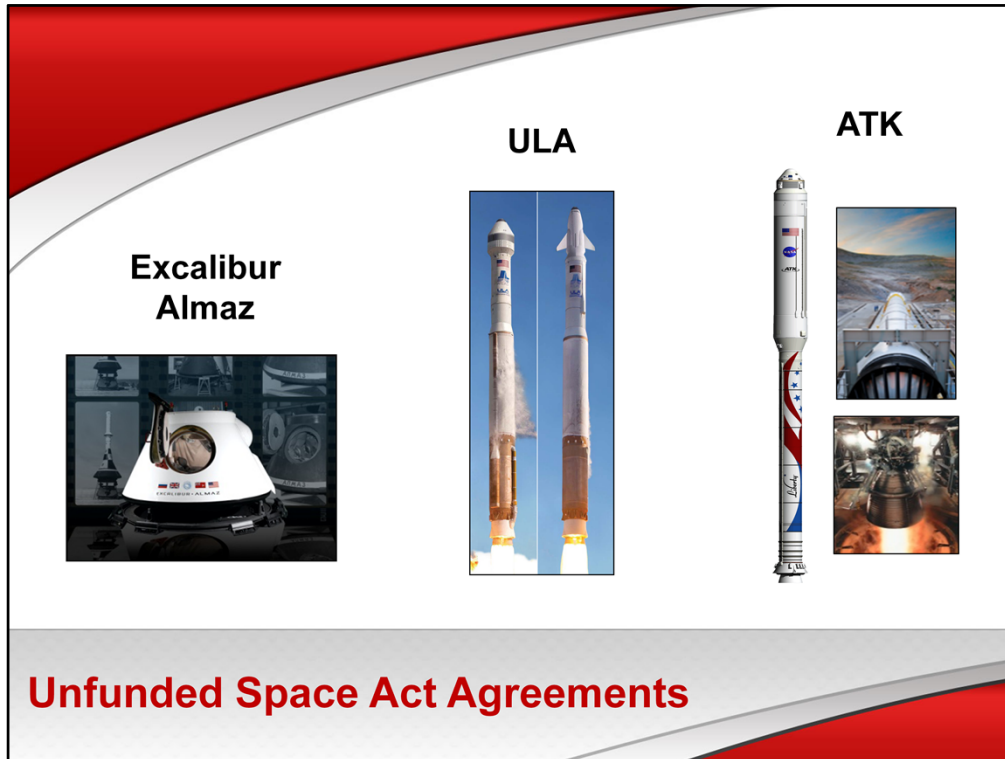
SpaceX is also involved in the Commercial Orbital Transportation System, or COTS, program, which will eventually use commercial companies to fly resupply missions to the International Space Station.

They flew their first flight on June 4, 2010, and their first COTS demonstration flight on December 8, 2010.

SpaceX was supposed to launch its second Commercial Orbital Transportation Services (COTS) demo flight a week from today, but it will be delayed until at least the end of March so they can perform more tests to ensure the flight is a success. Their Dragon spacecraft will do a fly-by of the space station, and then will rendezvous with the ISS before returning to Earth.

Although our funding for Commercial Crew isn't as much as we had hoped, we are committed to transporting American astronauts on American-made spacecrafts.

These Space Act Agreements allow us to take advantage of American ingenuity to get to low-Earth orbit, allowing NASA to concentrate on the Space Launch System and Orion programs, which will enable exploration of the outer reaches of space.



Slide 12—Unfunded Space Act Agreements

In addition to the four funded Space Act Agreements, there are also 3 companies working with NASA through unfunded Space Act Agreements. This means they are able to work with NASA, but do not receive money for their development.

ULA is looking to review and evaluate the human certification plan for the Atlas V and mature the related design to a System Requirements Review.

ATK is developing the Liberty Launch Vehicle, which includes an ATK five-segment solid rocket motor as a first stage. They are looking to mature the design of the Liberty through technical integration meetings and design reviews.

Excalibur Almaz is advancing its commercial crew space transportation systems concepts with NASA's participation in milestone and technical review briefings and project status briefings provided in conjunction with milestone reviews.



Slide 13—Ground Systems Development & Operations Program

As you know, KSC has traditionally been a one-system launch complex and was dedicated to Shuttle. But that is changing. Through the Ground Systems Development & Operations Program, KSC is moving forward to build a multi-user launch complex.

Investments in this program focus on development of the ground systems required to support both SLS and Orion missions, as well as providing common infrastructure for other government and commercial users.

We will partner with the Department of Defense, state and federal agencies, and commercial entities to prioritize and modernize launch assets, and provide the capability to support production, processing, and recovery of space systems. Commercial capabilities will include test support, small sounding rockets, horizontal launch, and recovery.

Updating our facilities allows us to support NASA’s goal of exploring beyond LEO with an evolvable heavy lift vehicle and crew capsule, while enabling commercial space.

Many of the tasks being done to update the infrastructure are those that can’t be seen. For example, while it seems like Launch Complex 39B is simply being demolished as the Rotating Service Structure (RSS) and Fixed Service Structure (FSS) are removed, underneath the surface it looks brand new. All of the copper wire has been removed and replaced with fiber optics.

We are taking a multi-use approach – the right fit for the right mission, launch, vehicle, and manifest.

We are trying to be as flexible and generic as possible.

Tight economic times and restricted budgets require us to leverage investments to optimize the use of space system infrastructure and reduce the overall cost of spaceflight to both the government and commercial sectors.

Ground Systems Development & Operations concepts support both NASA and commercial users through a multi-use Launch Pad and Integration capabilities.

Funding synergy enables KSC ground system designers to creatively support multiple users, both government and commercial.

Program or user unique requirements are funded by the user – 21CSGP is responsible and funded for SLS/MPCV development and is integral to their success!

Operations and maintenance costs shared by the user – reduces the cost to SLS/MPCV by sharing infrastructure costs.

Reduces footprint and life cycle costs of operating NASA programs, further enabling continuous development vs. operations and maintenance of existing systems.

The program also provides significant job creation potential as commercial users locate manufacturing, production, and launch site processing activities at or near KSC.



Mobile Launcher



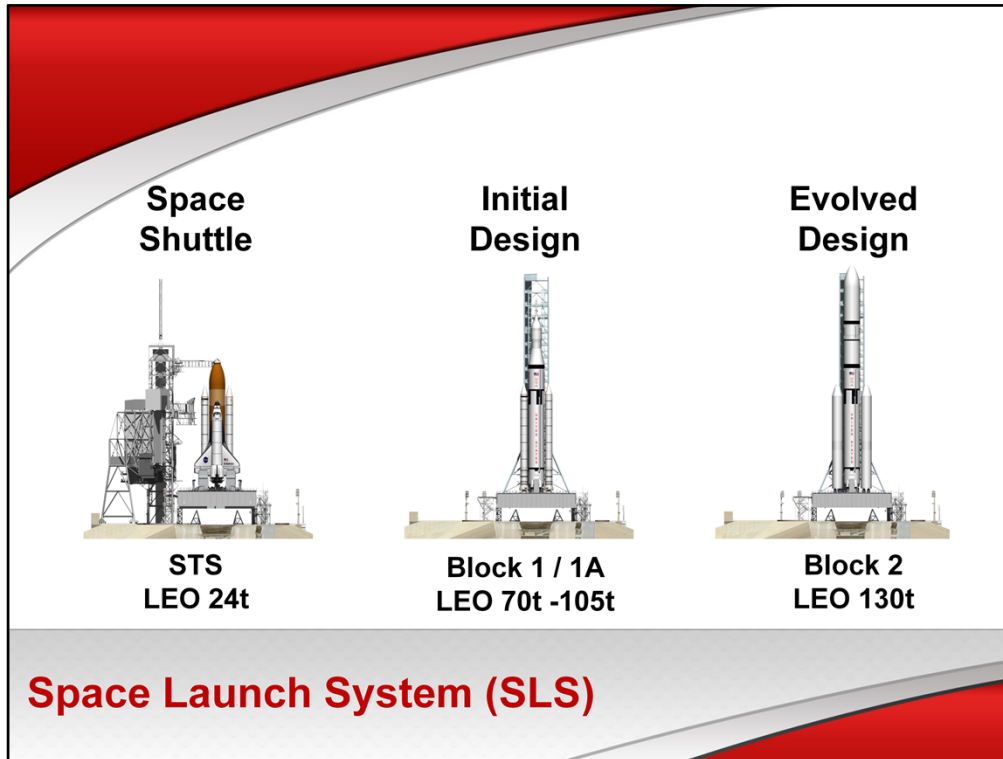
Human Exploration

Slide 15—Human Exploration

Picture Left: The Multi-Purpose Crew Vehicle being assembled and tested at Lockheed Martin's Vertical Testing Facility in Colorado.

Human exploration is dependent on a new space exploration system. As announced September 14th, NASA has selected the design of its new heavy lift rocket, the Space Launch System (SLS), which is the cornerstone for our future human space exploration.

The SLS will carry the Orion crew vehicle and cargo for missions beyond LEO.



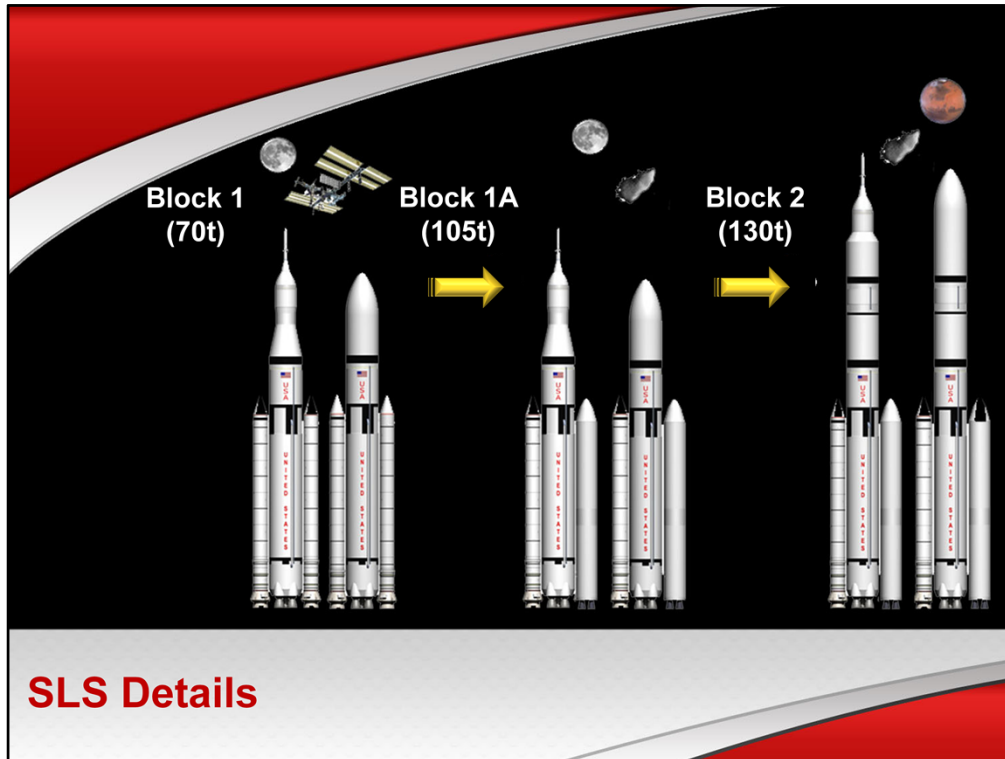
Slide 16—Space Launch System (SLS)

The decision to use this heavy-lift rocket is based on NASA’s analysis to reduce costs, increase flexibility, and leverage the U.S. leadership in this technology. It will provide an entirely new capability for human exploration beyond Earth orbit. It will also back up commercial and international partner transportation services to the International Space Station.

As you can see from this comparison, it is quite a bit larger than the Shuttle. It is an evolvable vehicle that will have an initial lifting capacity of 70 metric tons, more than double any operational vehicle today, and eventually have a lifting capability of 130 metric tons. This is more than any past or present vehicle. Designed to be flexible for crew or cargo missions, the SLS will be safe, affordable, and sustainable, to continue America’s journey of discovery from the unique vantage point of space.

In the crew configuration, the SLS will transport the Multi-Purpose Crew Vehicle to entirely new destinations beyond Earth orbit, continuing America’s human exploration of space.

It will also be able to carry cargo, equipment, and science experiments to destinations beyond Earth-orbit.



Slide 17—SLS Details

The SLS will take advantage of Shuttle-heritage hardware.

It will use a liquid hydrogen and liquid oxygen propulsion system, where Space Shuttle Main Engines (RS-25) in stock will provide the core propulsion and the J-2X engine, now in testing, is planned for use in the upper stage as the vehicle is evolved.

Using the same fuel system for the core and the upper stage reduces costs and leverages U. S. state-of-the-art technologies.

Five-segment solid rocket boosters, now in testing, will be used for the initial flights, while advanced boosters will be competed for the evolved capability.

As the vehicle evolves, so will the destinations.

Block 1 will be able to travel to the ISS, as a backup for commercial providers and international partners, as well as the Moon.

Block 1A will be able to travel to the Moon and a Near Earth Asteroid.

And Block 2 will be the rocket that will get us to a Near Earth Asteroid and Mars.



Slide 18—Orion Multi Purpose Crew Vehicle

The Orion crew vehicle will be developed to carry a crew to orbit, provide emergency abort capability, sustain the crew while in space, and provide safe re-entry for deep space return velocities.

The Orion Multipurpose Crew Vehicle test article, called EFT1, is already in work. Processing for Orion will be done at Kennedy’s Operations and Checkout (O&C) building. The state of Florida provided \$35 million for refurbishments to the O&C highbay for Orion processing.

Orion features dozens of technology advancements and innovations that have been incorporated into the spacecraft’s subsystem and component design.

The first developmental flight or mission is targeted for 2017, with additional flights taking us to asteroids and eventually Mars.



Diversifying Partnerships—Center Planning & Development Office

Slide 19 – Diversifying Partnerships—Center Planning & Development Office

Partnerships are critical to the future of KSC, and to the vitality of the Space Coast. KSC’s Center Planning and Development Office (CPDO) is actively seeking ways to collaborate with commercial entities.

Their mission is to retain KSC’s highly trained aerospace workforce and facility assets by attracting new businesses to establish a presence on or near KSC.

With a focus on commercial agreements, CPDO currently has numerous partnership agreements already signed or in discussion.

CPDO has signed agreements with 11 entities.

CPDO is negotiating agreements with 14 other entities.

CPDO is holding discussions with 51 other entities.

With all of our CCDev partners, we have established agreements to provide KSC engineering services, use of KSC facilities, and loan of government property.

Sierra Nevada entered into an agreement with KSC for engineering services.

SpaceX has entered into an agreement for use of a telemetry building and use of center capabilities, and has expressed interest in use of LC39 facilities.

ATK is interested in office space and potential use of booster processing facilities.

Orbital Tech has entered into an agreement for loan of government property.

As we move forward, partnerships – with other countries, commercial entities, non-profit organizations, and the local community – will be an important part of everyday life at KSC.

This represents a major change in the way we do business, but it is a change that we need to make to achieve success.



Space Florida OPF 3 Agreement

Slide 20 –Space Florida OPF 3 Agreement

The recent historic agreement with Space Florida for use of Orbiter Processing Facility 3 (OPF-3) by Boeing to manufacture and test their CST-100 spacecraft is just one of CPDO's accomplishments.

On October 31st, NASA transferred the hangar officially called Orbiter Processing Facility Bay 3 (OPF3) to Space Florida.

This is a 15-year use permit deal.

Space Florida, in turn, will lease OPF3 to the Boeing Company to manufacture and test the company's Crew Space Transportation (CST-100) spacecraft.

This partnership is expected to bring about 500 jobs back to KSC.

The CST-100 is a reusable capsule-shaped spacecraft consisting of a crew module and a service module.

Capable of transporting up to seven (7) people or combination of people and cargo.

Compatible with a variety of launch vehicles including ATK Liberty, SpaceX Falcon 9, and ULA Atlas V and Delta IV.

Supports crew transportation requirements for International Space Station (ISS) and Bigelow Aerospace planned private space station – the Orbital Space Complex.

Equipped to remain docked in orbit for up to six (6) months.

Boeing also announced that its Commercial Crew program will be headquartered at KSC.

This is a step toward KSC's future of being a multi-user space complex.

A vibrant multi-use spaceport is to the 21st Century, what the airport was to the 20th Century – an invaluable transportation hub that supports government needs while promoting economic development and commercial markets beyond Earth's atmosphere.



Slide 21 — Exploration Park

In June 2010, we broke ground on Exploration Park, which will be a mixed-use technology and commerce park developed by Space Florida.

The state has provided more than \$7 million in funding to construct the park's infrastructure.

The first building is anticipated to open later this year.

Space Florida has partnered with The Pizzuti Companies to develop Exploration Park.

Phase 1 is a 60-acre parcel expected to include eight new buildings totaling 315,000 square feet.

KSC's existing Space Life Sciences Laboratory (SLSL) will be incorporated into the park.

The Park will facilitate other new laboratories and high bay capabilities.

Phase 2 will consist of an additional 139 acres adjacent to Phase 1.

Exploration Park is expected to have a positive impact on KSC and the Space Coast by:

- Creating high-paying research and development and high-technology business jobs;

- Expanding access to and use of capabilities of SLSL, which provides a direct operational connection to the International Space Station (ISS);

- Attracting tenants that foster the growth and development of a sustainable and world leading aerospace industry in Florida;

- Promoting the development and use of technologies that contribute to space exploration and the preservation of the Earth's environment;

Offering close proximity to the launch and payload processing operations of KSC and neighboring Cape Canaveral Air Force Station outside the Center's gate-controlled access area.



Visitor Complex

Slide 22— KSC Visitor Complex

The Visitor Complex is making huge changes necessary to become the new home of Space Shuttle Atlantis.

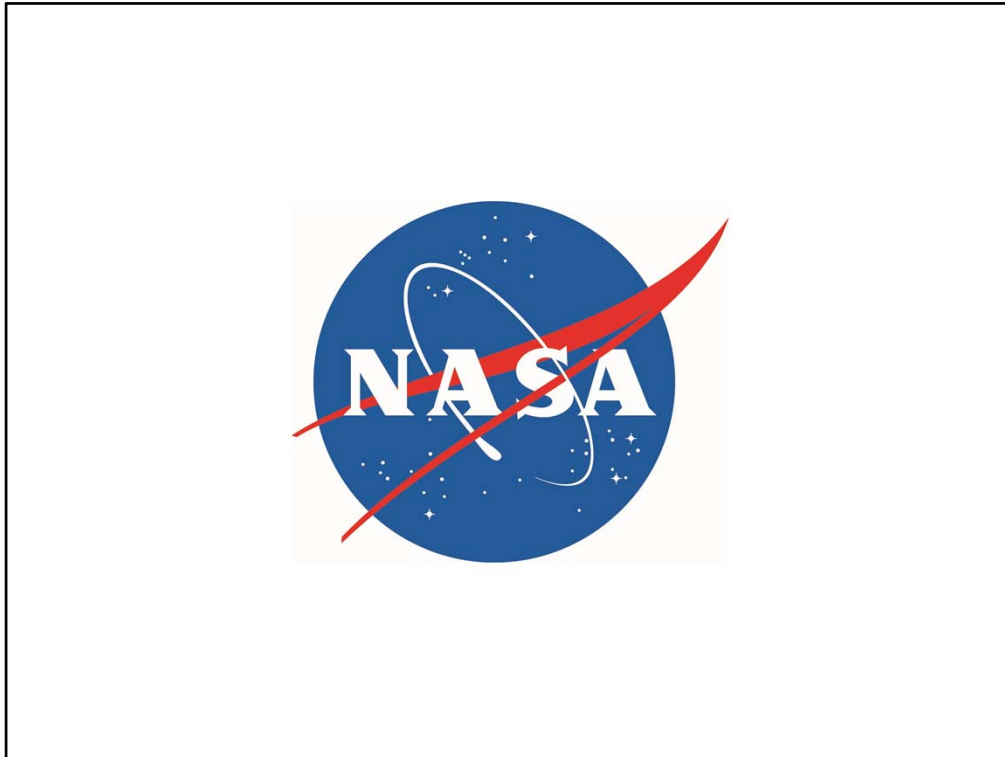
This artist's rendition gives you an idea of how Atlantis will "fly" once again.

We celebrated the ground breaking earlier this month of the new 60,000 square foot structure that will give visitors an "up-close and personal" view of one of the most amazing machines ever built.

Before the Atlantis exhibit opens in 2013, the Visitor Complex itself will undergo other changes as well.

The entrance will be moved so guests will travel through the rocket garden giving them a look at NASA's impressive spacecraft history.

The U.S. Astronaut Hall of Fame will also be relocating to the complex providing visitors with a view into the human side of space exploration.



Slide 23—Conclusion

This past year saw the end of Shuttle, but the announcements of NASA's crew module, Orion, and heavy-lift rocket, the SLS, as well as the establishment of the Commercial Crew Program.

We have been going to low Earth orbit for the past 50 years and are using this experience to work with commercial companies to perform this function.

NASA is taking the next step in human exploration, beyond low Earth orbit.

This will free NASA resources to develop the systems necessary to travel to a Near Earth Asteroid, the Moon, Lagrange Points, and eventually Mars.

At KSC, we are positioning ourselves to become a multi-user launch complex and everything we are working on is bringing us closer to achieving this goal.

The potential exists for a re-vitalization of Florida's Space Coast through the continued expansion of the Launch Services Program, growth of the Commercial Crew Program, and development of the Ground Systems Development & Operations Program.

All of us are committed to the success of these programs and the success of NASA's future space exploration.

We have a busy, but very bright future ahead of us and KSC is looking forward to playing an integral part in the next era of human space exploration.

The future is SLS, Ground Systems Development & Operations Program, and the Commercial Crew Program; and the future is here.

Key Talking Points:

- **NASA has an approved budget of \$17.8 billion.**
- KSC is poised to become the spaceport of the future – the premier launch facility for government and commercial space access - transforming from a Government- and program-focused, single user launch complex to a diverse capability-centric and cost effective multiuse spaceport enabling both Government and commercial space providers.
- The **Kennedy Space Center Visitor Complex** will undergo massive changes, including the addition of a new 60,000 square foot structure to house Space Shuttle Atlantis.
- In June 2010, we broke ground on **Exploration Park**, which will be a mixed-use technology and commerce park developed by Space Florida.
 - Phase 1 is a 60 acre parcel expected to include eight new buildings totaling 315,000 square feet adjacent to the SLSL.
 - It is expected to bring new business to the KSC area, creating high-paying research and development and high-technology business jobs.
- While KSC is not typically viewed as a research center, KSC has a track record of filing patents in the mechanical and electrical arenas, and is branching into environmental, polymer, chemical, and software patents.
 - **Patents filed by Fiscal Year:**
 - FY08 – 8 patents
 - FY09 – 13 patents
 - FY10 – 5 patents
 - Number of patents pending: 34
- As announced September 14th, NASA has selected the design of its new heavy lift rocket, the **Space Launch System (SLS)**, which is the cornerstone for our future human space exploration.
- The SLS will carry the **Multi Purpose Crew Vehicle (MPCV)** and cargo for missions beyond Low-Earth Orbit (LEO).
- KSC has always been an operational center with one program office - the **Launch Services Program (LSP)** for NASA. KSC's LSP will continue to process payloads for our science missions and others that use expendable rockets. (5 launches in 2012.)
- KSC will now handle three programs with the addition of two new programs - **The Commercial Crew Program** and **21st Century Ground Systems Program (21CGSP)**.
- The **Commercial Crew Program** is designed to manage commercial space activities that will develop and demonstrate human spaceflight capabilities. Our goal is to turn over transportation to LEO to our commercial partners, freeing NASA to explore the outer depths of our solar system.
- Our **21st Century Ground Systems Program** is responsible for modernizing our facilities to accommodate multiple commercial and government customers.
- Investments in the 21CGSP focus on the ground system development required to support SLS and MPCV while also leveraging common system infrastructure for other government and commercial users.

- **KSC's Center Planning and Development Office (CPDO)** has a mission to retain our highly trained aerospace workforce and facility assets by attracting new businesses and establishing partnerships.
 - CPDO has signed agreements with 11 entities.
 - CPDO is negotiating agreements with 14 other entities.
 - CPDO is holding discussions with 51 other entities.
 - On October 31st, NASA transferred the hangar officially called **Orbiter Processing Facility Bay 3 (OPF3)** to Space Florida, which will lease it to Boeing. Boeing plans to assemble their commercial space capsule there.
 - A vibrant multi-use spaceport is to the 21st Century what the airport was to the 20th Century – an invaluable transportation hub that supports government needs while promoting economic development and commercial markets beyond Earth's atmosphere.
 - KSC will be the space complex of the future for government and commercial access.
 - We are changing to make it a reality. Thank you.
-

NASA BACKGROUND INFORMATION:

- **NASA AUTHORIZATION ACT:**
 - In the NASA Authorization Act of 2010, the agency's priorities were reshaped.
 - Five strategic goals
 - Strategic Goal 1: Extend and sustain human activities across the solar system.
 - Strategic Goal 2: Expand scientific understanding of the Earth and the universe in which we live.
 - Strategic Goal 3: Create the innovative new space technologies for our exploration, science, and economic future.
 - Strategic Goal 4: Advance aeronautics research for societal benefit.
 - Strategic Goal 5: Enable program and institutional capabilities to conduct NASA's aeronautics and space activities.
- **NASA'S FY 2012 BUDGET: (Source: "NASA 2012 Budget Funds JWST," Space News, 11/18/11):**
Funding Highlights:
 - Funded at \$17.8 billion for 2012.
 - Budget signed into law by President Obama on November 18, 2011.
 - Approved budget is 5% below what the President requested in February 2011.
 - \$3.8 billion for human space exploration.
 - \$30 million below 2011 level.
 - Included in this is \$1.8 billion for SLS and \$1.2 billion for Orion Multi Purpose Crew Vehicle (MPCV).
 - \$4.2 billion for space operations.
 - \$1.3 billion below 2011 level
 - Includes International Space Station (ISS) and Shuttle Program
 - \$5.1 billion for science programs
 - \$155 million above 2011 level
 - Includes \$529.6 million for JWST

Speaker: Robert Cabana

- Commercial Crew funded at \$406 million
- Earth Science funded at \$1.77 billion
- Planetary Science funded at \$1.5 billion
- Astrophysics funded at \$672 million
- \$581.7 million set aside for NASA's robotic Mars exploration program

FUTURE OF KSC: KSC will diversify through partnerships that will utilize our existing capabilities for full life-cycle activities.

- 5 overarching goals:
 - Ensure mission success by providing government and commercial access to space.
 - Develop, operate, and sustain a robust launch complex for all providers.
 - Conduct research and technology development to enable mission success.
 - Provide a robust institution to enable success.
 - Inspire, engage and educate through enriching programs, internships and mutually beneficial partnerships.
- Commercial ventures are going to play a substantial role in the future of NASA, KSC and the U.S. space program, and KSC realizes that bolstering the commercial space industry will help to ensure NASA's continued success.
- In conjunction with commercial providers, also critical to the success of Florida's Space Coast and the Central Florida area are the cultivation and growth of public and private sector business development initiatives.
- The Center Planning and Development Office (CPDO) provides increased management of KSC institutional resources in response to Shuttle transition and retirement and adds a heightened focus on commercial space opportunities.

CULTURE CHANGE - KSC will transform from a government- and program-focused, single user launch complex to a diverse, more capability-centric and cost-effective multiuse spaceport, enabling both government and commercial space providers.

- KSC has been reorganized to:
 - Encourage the proper Center institutional capabilities to support upcoming missions, programs and projects
 - Prepare the Center to maintain its prominence as the world's spaceport
 - Foster engineering, technology, science and technical expertise
 - Allow KSC to better support its customers – both private and public
- Under the FY 2012 NASA budget, KSC will continue on the path established over the past year and institute programmatic changes including:
 - Creation of a new **21st Century Ground Systems Program (21CGSP):**

- KSC's 21st Century Ground Systems Program will modify our facilities for NASA to explore beyond LEO with an evolvable heavy lift vehicle (SLS) and crew capsule (MPCV) while also enabling commercial space. (Orion MPCV will be processed at KSC)
- This approach to human space exploration will allow us to reach a range of destinations that includes near-Earth asteroids, the Moon, Lagrange points, the moons of Mars, and eventually Mars itself
- Partner with Department of Defense (DoD), state and federal agencies, and commercial entities to prioritize and modernize launch assets, and provide capability to support production, processing, and recovery of space systems
- The **Space Launch System (SLS)** program will develop the heavy lift vehicle that will launch the crew vehicle, other modules and cargo for these missions.
- The SLS will carry the **Multi Purpose Crew Vehicle or Orion**, and cargo for missions beyond LEO
- SLS will use a liquid hydrogen and liquid oxygen fuel system. The decision is based on NASA's analysis to reduce costs, increase flexibility, and leverage the U.S. leadership in this technology.
 - Initial lift capability of 70-100mT evolvable to 130mT
 - Shuttle main engines will provide core propulsion with a J2X engine for upper stage
 - Capability to lift the MPCV and be a backup system for ISS crew and cargo delivery
- The **Orion Multi-Purpose Crew Vehicle (MPCV)** program develops the vehicle that will carry the crew to orbit, provides emergency abort capability, sustains the crew while in space, and provides safe re-entry from deep space return velocities.
- Spacecraft to serve as the primary crew vehicle for missions beyond LEO capable of conducting regular in-space operations (rendezvous, docking, extravehicular activity)
- The Orion MPCV test article, called EFT1, is already in work.
 - Processing for Orion will be done at Kennedy's Operation and Checkout (O&C) building.
 - The state of Florida provided \$35 million for refurbishments to the O&C highbay for Orion processing.
- First developmental flight or mission is targeted for 2017, with additional flights taking us to asteroids and eventually Mars.
- KSC will take the lead in some areas of technology capabilities with assistance from other NASA centers. These capabilities include life sciences and habitation systems, space launch and suborbital technologies and tracking, timing, communications, and navigation technologies.
- Establishment of a new **Commercial Crew Program Office** to support the shift to utilizing commercial transportation services for ISS resupply and maintenance.
- KSC's Commercial Crew Program is already driving significant competition in developing new technologies and deriving new American made vehicles for low-Earth-orbit transportation.

LAUNCH SERVICES PROGRAM (LSP):

- KSC's Launch Services Program (LSP) will continue to process payloads for our science missions and others that use expendable rockets.
- Responsible for acquisition and program management of expendable launch vehicle (ELV) missions.
- Launched over 65 missions since Program inception in 1998.
 - 5 launches planned for 2012.
- Concurrently working on over 35 future missions

COMMERCIAL CREW PROGRAM:

- NASA established Commercial Crew Program Office at KSC to manage commercial space activities that will develop and demonstrate human spaceflight capabilities
- Goal is to turn over transportation to LEO to our commercial partners, freeing NASA to explore outer depths of solar system
- Awarded four Space Act Agreements in April 2011 as part of CCDev2 effort. The goal is to accelerate the availability of U.S. commercial crew transportation capabilities and reduce the gap in American human spaceflight capability. Through this activity, NASA also may be able to spur economic growth as potential new space markets are created.
 - **Blue Origin**, Kent, Wash., **\$22 million**, Mature biconic shape capsule spacecraft design to System Requirements Review (SRR), pusher escape ground and flight testing, and engine pump and thrust chamber testing.
 - **Sierra Nevada Corporation**, Louisville, Colo., **\$80 million**, Dream Chaser piloted lifting body crew transportation system design maturation to Preliminary Design Review (PDR) and component testing.
 - **Space Exploration Technologies (SpaceX)**, Hawthorne, Calif., **\$75 million**, Evolve Dragon capsule and Falcon 9 launch vehicle into crew version with focus on side-mount LAS engine design maturation and partner-funded crew accommodation prototype.
 - **The Boeing Company**, Houston, Texas, **\$92.3 million**, CST-100 capsule spacecraft design maturation to Preliminary Design Review (PDR) and launch vehicle integration.
- Three Unfunded SAAs:
 - **Alliance Techsystems (ATK)**, Magna, Utah, Mature the design of the Liberty rocket through technical integration meetings and design reviews.
 - **United Launch Alliance (ULA)**, Denver, Colorado, Review and evaluate the human certification plan for the Atlas V and mature the related design to an SRR level.
 - **Excalibur Almaz, Houston, Texas**, Perform reviews of systems requirements status, launch vehicle compatibility, testing plans and status, and overall status of the design, operational and facilities plans, and integration status.

- Integrated Design Contract
 - The draft Request for Proposal (RFP) was released on Sept 19, 2011 along with a draft set of Program Technical requirements (CCT -1100 series).
 - CCP conducted a Pre- Solicitation Conference with industry on Oct 5. Forty one Industry companies, 3 government agencies and 3 congressional representatives were represented by the approximately 170 attendees at the conference. Comments to the draft RFP were due back to CCP on Oct 20. Comments to the Program Technical Requirements were due back to CCP on Oct 14. CCP plans to release the final RFP on December 19.
 - In developing a recommendation for the Agency for the Integrated Design phase, the CCP evaluated numerous options using SAAs and contracts. Several key limitations of SAAs were discovered:
 - NASA could not levy certification requirements, they could only be reference. NASA was also not allowed to tie milestone progress and payments to compliance, formally evaluate compliance or non-compliance, nor approve tailoring, exemptions, or waivers for future phases.
 - NASA could not formally accept the verification of requirements using SAAs, which is necessary for certification
 - Data and performance in the Integrated Design phase must be available to NASA for the transition to the Development, Test, Evaluation, and Certification phase and the SAA has data rights limitations.
 - These limitations led the program to consider a non-traditional fixed priced contract incorporating the best features of a contract and SAA for the IDC phase.
- The Commercial Crew Program is designed to accommodate a diverse group of people (e.g., astronauts, international partner personnel, scientists, spaceflight participants) for a variety of reasons (i.e. ISS Operations, science, research, tourism)
- A successful Commercial Crew Program will:
 - Transform human spaceflight for future generations
 - Result in safe, reliable, cost effective crew transportation to LEO and in support of ISS
 - Free NASA's limited resources for beyond-LEO exploration
 - Reduce reliance on foreign systems

21ST CENTURY GROUND SYSTEMS PROGRAM (21CGSP): TRANSFORM THE FLORIDA LAUNCH AND RANGE COMPLEX TO THE SPACEPORT OF CHOICE:

- 21CGSP Goal - Transform the Florida Launch and Range Complex by implementing a focused set of investments creating the spaceport of choice
- Flexible approach to meet needs of commercial, civil, and national security enterprises
 - NASA's Space Launch System/Multi-Purpose Crew Vehicle

Speaker: Robert Cabana

- Commercial launch including test support, small sounding rockets, horizontal launch, and recovery
- Commercial Crew Development Program, and Heavy Lift
- Unique government needs
- Investments made through 5 product lines:
 - Launch Infrastructure Modernization
 - Environmental Remediation & Technologies
 - Offline Manufacturing, Processing & Recovery Systems
 - Range Interface & Control Services (RI&CS)
 - Mission Focused Modernization
- 21CGSP concepts support both NASA and commercial users through a multi-use Launch Pad and Integration capabilities.
 - Funding synergy enables KSC ground system designers to creatively support multiple users, both government and commercial.
 - Program or user unique requirements are funded by the user – 21CGSP is responsible and funded for SLS/MPCV development and is integral to their success!
 - Operations and maintenance costs shared by the user – reduces the cost to SLS/MPCV by sharing infrastructure costs.
 - Reduces footprint and life cycle costs of operating NASA programs, further enabling continuous development vs. operations and maintenance of existing systems.
- Passed a milestone when the 21st Century Ground Systems Program's Mission Concept Review was completed in December, 2011.
 - The 355-foot-tall mobile launcher completed a historic trip to the redone Launch Pad 39B in December when workers moved it into place for tests. After two weeks at the pad, the ML was driven back to its park site beside the Vehicle Assembly Building atop one of the two crawler-transporters.
 - Launcher provides capability to launch a variety of types of rockets and is the base for the SLS.

CENTER PLANNING AND DEVELOPMENT OFFICE (CPDO):

- Mission is to facilitate the retention of skilled aerospace workforce and attract new business.
- Responsibilities include:
 - Partnership Development - Identify commercial and other government agency partnership opportunities & negotiate and secure agreements that support NASA KSC goals and objectives to establish full life-cycle commercial space partners
 - Currently working with over 80 companies for various types of support – engineering, technology assistance, operations assistance, processing, and launch facilities

- Established agreements with all CCDev partners for KSC to provide engineering services, use of KSC facilities, and loan of government property
 - Sierra Nevada entered into an agreement with KSC for engineering services
 - SpaceX entered into an agreement for use of a telemetry building and use of center capabilities, and has expressed interest in use of LC39 facilities
 - ATK is interested in office space and potential use of booster processing facilities
 - Orbital Tech entered into an agreement for loan of government property
- CPDO works with space-related industries, as well as service-related industries (e.g. those that process payloads, pack parachutes, etc.)
- CPDO has signed agreements with 11 entities.
- CPDO is negotiating agreements with 14 other entities.
- CPDO is holding discussions with 51 other entities.
 - These agreements cover various types of support – engineering, technology assistance, operations assistance, processing, and launch facilities.
- KSC will continue to look for new ways to market these areas and work with commercial partners, the local community, non-profit organizations, and government entities.
- Spaceport Planning – Develop Center infrastructure, land use, real estate strategies and long range planning
 - Teaming with Space Florida in 10 market areas (Space transportation & technologies support systems; Satellite systems & payloads; Ground & operations support systems; Agriculture, climate, & environmental monitoring; Civil protection & emergency management; ISS & human life services; Communications, cyber security & robotics; Adventure tourism; Clean energy; & Advanced materials & new products)
 - In June 2010, broke ground on Exploration Park, a mixed-use technology and commerce park in development by Space Florida
 - The state has provided over \$7 million in funding to construct the park’s infrastructure, which should be completed by the end of 2011.
 - First building is anticipated to open in 2012.
 - Space Florida has partnered with The Pizzuti Companies to develop Exploration Park.
 - Phase 1 is a 60 acre parcel expected to include eight new buildings totaling 315,000 square feet.
 - KSC’s existing Space Life Sciences Laboratory (SLSL) will be incorporated into the park.
 - The Park will facilitate other new laboratories and high bay capabilities.
 - Phase 2 will consist of an additional 139 acres adjacent to Phase 1.
 - Exploration Park is expected to have a positive impact on KSC and Space Coast by:

- Creating high-paying research and development and high-technology business jobs
- Expanding access to and use of capabilities of SLSL, which provides a direct operational connection to the ISS
- Attracting tenants that foster the growth and development of a sustainable and world leading aerospace industry in Florida
- Promoting the development and use of technologies that contribute to space exploration and the preservation of the Earth's environment
- Offering close proximity to the launch and payload processing operations of KSC and neighboring Cape Canaveral Air Force Station outside the Center's gate-controlled access area
- Technical Integration - Develop and manage an integrated center approach to maximize use of underutilized Center resources (land, facilities, tech capabilities)
 - As an example of the types of partnerships that CPDO brings to KSC, on October 31st, NASA transferred the hangar officially called Orbiter Processing Facility Bay 3 (OPF3) to Space Florida.
 - This is a 15-year use permit deal.
 - Space Florida, in turn, will lease OPF3 to The Boeing Company to manufacture and test the company's Crew Space Transportation (CST-100) spacecraft.
 - This partnership is expected to bring about 500 jobs back to KSC.
 - The CST-100 is a reusable capsule-shaped spacecraft consisting of a crew module and a service module.
 - Capable of transporting up to seven (7) people or combination of people and cargo.
 - Compatible with a variety of launch vehicles including ATK Liberty, SpaceX Falcon 9, and ULA Atlas V, and Delta IV.
 - Supports crew transportation requirements for ISS and Bigelow Aerospace planned private space station – the Orbital Space Complex.
 - Equipped to remain docked in orbit for up to six (6) months.
 - Boeing also announced that its Commercial Crew program will be headquartered at KSC.
 - This is a step towards KSC's future of being a multi-user space complex.

KENNEDY SPACE CENTER VISITOR COMPLEX:

- Visitors to Kennedy Space Center Visitor Complex are split 50/50 between International & Domestic.
 - 1.5 million visitors to KSC
 - 81% are from out-of-state
 - KSCVC employs 725 employees
 - Business visitors and tourists expended \$6.4 million locally
- Design has started on the 10-year master plan, which will incorporate immersive thematic zones for "kids" of all ages.

- 60,000 square-foot home for Space Shuttle Atlantis will break ground in 2012 and open in 2013
- Costs, total for 10-year Master Plan: \$350 Million
 - Entry Experience: \$15,000,000
 - Orbiter Home: \$94,100,000
 - Food and Beverage: \$2,050,000
 - LC39 Upgrades: \$5,250,000
 - Vapor Trail / Main Retail: \$8,650,000
 - Tour Embarkation: \$4,625,000
 - Legacy – 2 phases: \$57,250,000

TECHNOLOGY CAPABILITIES (NE):

- The Research & Technology Management Board at KSC has worked with the Senior Management team to determine the eight technology development capability areas of expertise in which the Agency relies upon KSC expertise to fulfill technological needs. These are:
 1. Storage, Distribution and Conservation of Fluids (Cryogenics, Liquids, Gases)
 2. Materials for Life Cycle Optimization
 3. Life Sciences & Habitation Systems
 4. Remediation and Ecosystem Sciences
 5. In-Situ Resource Utilization and Surface Systems
 6. Life Cycle Optimization of Products, Projects, and Programs
 7. Space Launch and Suborbital Technologies
 8. Tracking, Timing, Communications (TT&C) and Navigation Technologies
- **Partnerships with Other Centers** - Diversify KSC through partnerships with other NASA Centers that will utilize our existing capabilities for full life-cycle activities
 - KSC is working with centers in the following areas (one example given for each):
 - NE – projects with ARC, SSC, GRC, JSC, & MSFC
 - KSC is the lead on 3 Advance Exploration Systems (AES) projects within the Agency which allows collaboration with other NASA Centers.
 - IT – projects with MSFC, SSC, LaRC, JSC, GRC
 - Working with all Centers on new ACES contract (ODIN replacement)
 - FA – projects with JSC, MSFC, LaRC, SSC
 - FA is collaborating with JSC and MSFC with Programmatic, Engineering, SMA and Health & Medical technical authority to support the CCDev 2 effort. Planning similar support during next phase of design for the Crew Transportation System
 - VA – projects with JSC, MSFC, SSC

- VA has a technical task agreement (TTA) with MSFC for MSFC to manage and maintain a resident office at the ULA-Delta Launch Vehicle factory in Decatur, Alabama. They also provide technical support for launch vehicle certification.
 - S&MA – projects with JSC, MSFC, SSC,
 - SMA is supporting the Safety Review Team for the SSC A1 and A2 Test stands, including review of Critical Design review packages, Hazard Analyses, and other documents related to the modifications necessary to support engine testing of the J-2X engine.
 - UB – projects with GRC, MAF/MSFC, JSC
 - UB is assisting GRC with the SCAN Testbed Payload in performing Export Control Guidelines.
- While KSC is not typically viewed as a research center, KSC has a track record of filing patents in the mechanical and electrical arenas.
 - Most of our patents are filed on technology that was innovated for “fixes” for Shuttle or the ground support equipment.
 - We have had some outstanding environmental patents, and we have some interesting polymer patents that are in the patenting process.
 - Now, using the on-going work in our labs, we are branching into chemical patents.
 - We are also filing more patents on software, which traditionally we used to copyright.
 - Patents filed by Fiscal Year:
 - FY08 – 8 patents
 - FY09 – 13 patents
 - FY10 – 5 patents
 - Number of patents pending: 34

SHUTTLE PROGRAM END/REDUCTION OF WORKFORCE:

- **ECONOMIC IMPACT OF NASA IN FLORIDA:** (Source: 2010 Economic Impact Report)
 - Administration approved \$15 million for Brevard County Workforce assistance through a National Emergency Grant. Half of the funds have been reviewed and remainder is expected sometime between FY11 and FY12 (HQ Message, 7/19/11)
 - **Workforce:** (Sources: Historical (2010 Econ Impact Report), Current and Government Estimated (Charles Abell, BA)

Historical			Current – as of 9/30/2011	
1968 - Peak of Apollo program	25,000		Civil Servants	2,178
1976	< 10,000		Contractors	5,464

Historical			Current – as of 9/30/2011	
1986	15,000		Construction Workers	184
1992	18,000		Tenants	1,028
2008	15,000		Total People Working at KSC:	8,854

a. Workforce Transition: (Source: Tracy Anania, Director of KSC HR, 06/07/11)

- i. Nearly 62 out of every 1,000 Space Coast residents is an engineer – one of the highest concentrations in the U.S.
- ii. Projected loss of 7,000 – 9,000 direct, and an additional loss of 12,000 – 16,000 indirect jobs.
- iii. Established the KSC Shuttle Workforce Council to help employees prepare and find future employment.
- iv. Over 1,500 employees have been counseled through office visits, one-on-one resume assistance labs, and trained in courses developed by NASA HR in federal Web site navigation, federal and private sector resume writing, and interview skills.
- v. Partnering with Brevard Workforce for current & future job opportunities.
- vi. Partnering with OPM to encourage Federal agencies to offer job opportunities.
- vii. NASA has sponsored two major “live” job fairs, two virtual job fairs and several job showcases for Federal & private sector employers.
 - 1. More than 6,000 employees and their family members have participated in these events
 - 2. A 508-compliant website was created to facilitate virtual job fair

KSC Workforce Placement Efforts: (Source: Matthew Bzura, BA, 8/10/11)

Date	Recruiting Employers	Attendees	Results	KSC HR sponsored Preparation Activities (Number of Individuals Reached)
June 24-25, 2010	Federal – 17 Private - 30	Total – 3,146 On-site – 2,550 Off-site – 596	36 Interviews 26 Job Offers	Walk-in resume lab – 490 WTO Appts – 429 Training Courses – 389
Sept 15-16, 2010	Federal – 5 Private – 39	Total – 903 On-site – 618 Off-site – 285	56 Interviews 29 Job Offers	Walk-in resume lab – 61 WTO Appts – 562 Training Courses – 511
April 6, 2011	Boeing Showcase	Total – 382	35 Interviews	
June 22, 2011	Boeing Showcase	Total – 206	64 Interviews	

Speaker: Robert Cabana

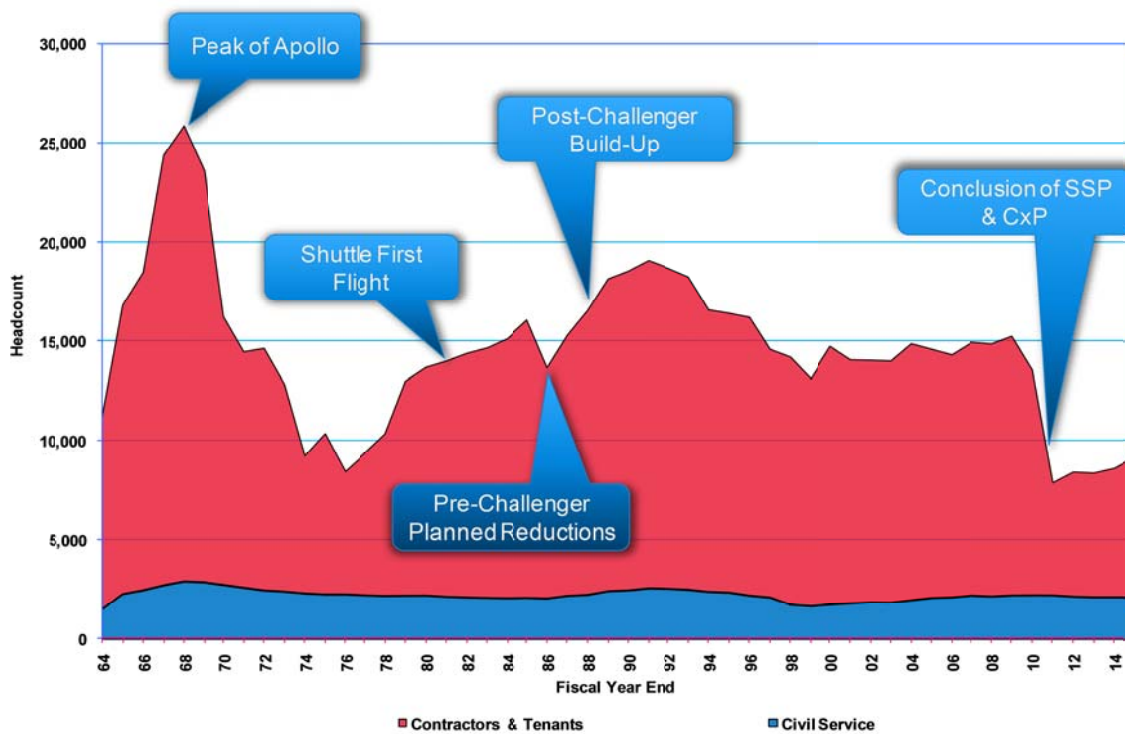
Date	Recruiting Employers	Attendees	Results	KSC HR sponsored Preparation Activities (Number of Individuals Reached)
July 20, 2011	FAA Showcase	Total – 318		
October 26, 2011	Federal Resume Writing Class	Total – 32 Veterans	5 Veterans got interviews with Federal agencies	

Job Fairs:

- Some workers have had to leave the area to find employment
 - Potential to create a loss of critical skills and core competencies, which could impact ability to support programs and commercial contracts

- b. Changes in Employee Numbers:** (Source: Tracy Anania, Director of KSC HR, 06/10/11)
 - i. During the last year, 5,000 contractor employees have been laid off from KSC
 - ii. KSC is projected to be at a full operational workforce of approximately 10,000 within the 2016 – 2017 timeframe (contingent on Heavy Lift/SLS being ready for flight operations).
 - iii. Approximately 300 laid-off employees have been placed in new positions. (Source: Tracy Anania, Director of KSC HR, 06/10/11 – Number is difficult to estimate because there is no formal means of reporting this.)

c. KSC Historical Workforce Levels:



- **Background on the projected data:**

- **Civil Servants:**

- Based off of our current FTE ceiling numbers through FY15.
 - Headcount is above the FTE number due to student and other non-fulltime positions.

- **Contractors:**

- Due to low number of contractors at the start of FY12, predicting modest gains through FY15.
 - This number currently includes 21st Century, MPCV, GPD, and SLS estimates based on the Authorization Bill from last Fall and standard KSC contracts not expected to change significantly.
 - Data includes construction contractors and tenants

- **Expenditures**

- \$1.8 billion in direct and indirect expenditures by NASA in Florida

- **Earnings**

- \$1.1 billion in wages earned by KSC workers
 - Average salary = \$83,000 (Twice the average salary as all other Brevard Co. workers)

- **Total Economic Impact**

- \$4.1 billion to state of Florida
 - \$2.2 billion household income
 - 33,000+ jobs

Speaker: Robert Cabana

- \$450 million federal/state/local taxes generated
- Each NASA job resulted in additional 1.26 jobs across Florida
 - Each \$1.00 in NASA wages yielded \$2.09 total income

INTERNATIONAL SPACE STATION (ISS) MANAGEMENT:

- Center for Advancement of Science in Space (CASIS) has been selected to manage the International Space Station U.S. National Laboratory
 - CASIS is independent, non-profit entity sponsored by Space Florida and will employ 15-25 people
 - CASIS will increase station use to maximize public's return on investment by managing its diversified research and development portfolio based on needs for basic and applied research in a variety of fields
 - CASIS will identify opportunities for non-NASA uses linking scientific review and economic value, and will match potential research and development opportunities with funding sources
 - CASIS will increase awareness among schools and students about using the station as a learning platform
 - Multilateral Coordination Board for ISS met and discussed how to use space station as test bed for technologies that will enable missions beyond LEO
 - Research benefits everyone from vaccine development to advanced propulsion technologies