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Statement of

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Subcommittee on Space, Science, and Competitiveness

Chairman Cruz, thank you for the opportunity to appear today to discuss NASA's public-private partnerships and enabling commercial space.

Since 1962, when it was formally established as NASA's Launch Operations Center, the Agency's John F. Kennedy Space Center (KSC) has helped set the stage for America's adventure in space. From the early days of Project Mercury, Gemini, and Apollo to the Space Shuttle and International Space Station (ISS) programs, from the Hubble Space Telescope to the Mars rovers, KSC enjoys a rich heritage in its vital role as NASA's processing and launch center.

Today, KSC is upgrading its ground systems in preparation for America's next great spaceflight endeavor—the exploration of deep space beyond low-Earth orbit with the Space Launch System and Orion. KSC's Ground Systems Development and Operations Program has transformed Launch Complex 39B to support the Space Launch System (SLS) heavy-lift vehicle and the Orion crew vehicle and the overall Exploration Systems Development work for human exploration of deep space. By the end of this calendar year, the construction of all the hardware and facilities necessary to support the processing and launch of the SLS and Orion will be complete and validation testing will ensue. The Orion spacecraft for Exploration Mission-1 is currently being built in the recently refurbished Operations and Checkout Building High Bay, and Launch Complex 39 will be ready to support the first test flight of the SLS and Orion in 2019.

In keeping with the history of terrestrial exploration, Government-led space exploration has enabled the rise of private sector space ventures that build off of Government-emplaced infrastructure. Since the end of the Space Shuttle Program in 2011, KSC has utilized public-private partnerships to establish itself as the Nation's premiere multi-user spaceport, supporting both Government and commercial flights to and from low-Earth orbit and beyond. With the extension of the International Space Station to at least 2024, the Commercial Crew Program is working diligently with our commercial providers, Boeing and SpaceX, to carry astronauts on flight tests to the Space Station from United States soil in 2018. Meanwhile, our Launch Services Program continues to procure and manage the commercial launch services needed to launch NASA's scientific, weather, and communications satellites, as well as robotic missions into the solar system and beyond. We have been successful in numerous commercial partnerships that have been instrumental in revitalizing underutilized facilities at no cost to NASA and taxpayers, while enabling commercial space operations.

NASA and KSC are moving forward into a new era of human spaceflight with activities in both low-Earth orbit and deep space, and we are committed to partnering with industry to enable commercial spaceflight companies to manufacture, process, and launch their systems from the Space Coast.

KSC's Philosophy on Public-Private Partnerships

Following the 2004 decision to end the Space Shuttle Program, it became clear that many of the facilities utilized to support the Shuttle would not be required to support SLS or Orion. Therefore, NASA conducted an assessment of the $2.7 billion worth of Shuttle assets to identify those we needed and those we did not. As a result of that assessment, KSC was able to determine which of those facilities should be demolished and which should be candidates for partnerships with outside entities. In 2010, KSC created what is now known as the Center Planning and Development (CPD) directorate to manage the strategic planning for this transition. CPD is tasked with developing partnering opportunities with Federal and non-Federal entities, including broadly announcing opportunities seeking partners to use KSC assets, as well as evaluating unsolicited partnership offers and ensuring that proposed partners offer value compatible with NASA's vision and strategic goals. Using this process, KSC was able to (1) leverage underutilized facilities to help U.S. companies develop new capabilities, reduce the cost of space activities, and create jobs on the Space Coast, while (2) preserving and revitalizing critical NASA assets by transitioning financial responsibility for those facilities to our partners.

KSC's Partnerships

Through a January 2011 Notice of Availability, NASA sought to identify potential outside interest in KSC assets that the Agency determined to be partially or fully available for other users at the conclusion of the Space Shuttle Program. The Notice sought to ensure broad awareness and visibility of the anticipated opportunities for partnerships between NASA and industry and other non-Federal public entities. NASA's purpose in pursuing such partnerships was to maximize utilization of KSC's unique infrastructure, while minimizing the Center's operations and maintenance (O&M) burden, and to enable commercial space operations.

KSC's partnership efforts have resulted in agreements of varying sizes with commercial entities, universities, as well as Federal, state, and local government for physical assets and services. The types of services range from providing launch sites to access to technical capabilities. KSC has been able to use our extensive launch vehicle and processing expertise to enhance the success of our commercial partners.

Looking across the KSC landscape, you can visually see the construction and modifications that Blue Origin, Boeing, Florida Power and Light (FPL), OneWeb, Space Florida, SpaceX, the U.S. Air Force and others have made to grow the industry on the Space Coast. Blue Origin is building a 750,000 square foot manufacturing facility, just outside of KSC's secure area in Exploration Park, which is about half the volume of our historic Vehicle Assembly Building.

All three former Orbiter Processing Facilities house new spacecraft, the former Shuttle main engine shop is being used by Boeing to manufacture the service modules for its CST-100 Starliner spacecraft, and the former Processing Control Center will be used to monitor on-site spacecraft manufacturing and processing and throughout mission phases.

FPL currently is using 60 acres of former orange grove as a solar field to produce 10 megawatts of power to supply the grid. As part of our agreement, FPL built a one-megawatt solar field for NASA to offset our energy costs. FPL is responsible for the O&M of the solar field for 30 years.

OneWeb Satellites is building a 150,000-square-foot factory in the Exploration Park. OneWeb, in partnership with Airbus' American branch, intends to build 2,000 satellites that will form a constellation capable of wirelessly connecting every portion of the world to the Internet.

SpaceX commenced launches from Launch Complex 39A in February of this year. Amidst launches, they are modifying the launch pad to support future commercial crew missions aboard the company's Crew Dragon, as well as future Falcon Heavy launches.

In 2013, NASA selected Space Florida to take over operations at the Shuttle Landing Facility (SLF). Through this partnership, KSC's 15,000-foot runway can be converted to accommodate a wide range of users, supporting Government and commercial needs, while removing NASA's responsibility to maintain the associated facilities.

NASA has also selected Orbital ATK to negotiate an agreement under which it will occupy and operate from Vehicle Assembly Building High Bay 2, and negotiations are underway to use other processing facilities. These facilities are some of the largest on KSC and contribute significantly to the Center's O&M costs. NASA seeks to build on that success by continuing to search for opportunities to partner with outside organizations to reduce Government costs and enable the aerospace industry.

International Space Station

As NASA's processing and launch center, KSC is the gateway to the Station along with the Wallops Flight Facility. NASA is continuing to develop initiatives to use the Station to enable increased commercial investment and to transition to more public-private partnership models. The Center for the Advancement of Science In Space manages the activities of the ISS National Laboratory to increase the utilization of the Space Station by other Federal entities and the private sector. National Laboratory partners can use the unique microgravity environment of space and the advanced research facilities aboard Station to enable investigations that may give them the edge in the global competition to develop valuable, high-technology products and services.

Under the original Commercial Resupply Services (CRS) contracts, our two commercial cargo partners, SpaceX and Orbital ATK, provide cargo deliveries to Station. Through CRS contract modifications, KSC has been able to provide processing support of Orbital ATK's fourth, sixth, and seventh Cygnus cargo resupply missions to the Space Station. This opportunity enabled Orbital ATK to capitalize on the Center's expertise and infrastructure while also enabling the use of an alternate launch vehicle for cargo resupply missions to enhance operational flexibility. KSC also is currently looking at future partnership opportunities with Sierra Nevada Corporation as part of the follow-on CRS-2 contract.

NASA's commercial crew providers, Boeing and SpaceX, are developing the Starliner and Crew Dragon spacecraft, respectively. These companies have made significant progress toward returning crew launches to the United States, and NASA anticipates having these capabilities in place by 2019 to regularly fly astronauts on operational missions safely to and from Station. The crew and cargo vehicles, as well as the launch vehicles developed by these providers, have the potential to support future commercial enterprises as well.

It is NASA's intention to transition low-Earth orbit operations to private platforms and capabilities enabled by commercial markets, academia, and Government agencies, including NASA, that have an interest in and need for research and activities there. NASA continues to seek ways to further commercialize operations on the International Space Station. The next payload processing contract, Research, Engineering, Mission and Integration Services or REMIS, will enable the design and conduct of science operations in low-Earth orbit by the commercial market. The contract is targeted to be awarded July 2017.

Deep Space

NASA looks forward to expanded partnerships as we leave low-Earth orbit and head for deep space. In August 2016, NASA selected six United States companies to help advance our mission to put humans deeper into our solar system by developing ground prototypes and concepts for deep space habitats.

Through the public-private partnerships enabled by Next Space Technologies for Exploration Partnerships-2, NASA and industry partners will expand commercial development of space in low-Earth orbit while also improving deep space exploration capabilities to support more extensive human spaceflight missions.

Expandable habitats are one such concept – they require less payload volume on the rocket than traditional rigid structures, and expand after being deployed in space to provide additional room for astronauts to live and work inside. The Bigelow Expandable Activity Module (BEAM) is the first human-rated expandable habitat to be tested in space. During its two-year demonstration attached to the Station's Tranquility port, crew members will routinely enter the habitat to take measurements and monitor its performance to help inform future designs of habitat systems. BEAM will be tested to see how it performs in the thermal environment of space and how it reacts to radiation, micrometeoroids and orbital debris.

Government and Industry

Public-private partnerships have worked well at KSC and across the Agency. In order for us as a Nation to be successful, we need both Government and commercial space exploration. For instance, industry's vital role in low-Earth orbit transportation has lowered development and launch costs, and enabled NASA to invest in uncharted territories, like new technologies and deep space exploration. The work we do together and the lessons learned that we share are essential for the United States space economy.

Conclusion

KSC is committed to successfully meeting NASA's mission requirements and continuing to grow in its role as a multi-user spaceport that launches NASA's deep space exploration missions and catalyzes the continued growth and development of the commercial space industry. The long-term strategy to expand United States access to space and stimulate the development of the domestic launch industry continues to gain traction and minimize operating costs. NASA remains committed to meeting our Nation's goals in deep space human exploration with careful stewardship of our critical resources and wise investment of taxpayer dollars. NASA is making strides toward these goals with KSC's transformation into a multi-user spaceport of the future, where both Government and commercial space operations can be conducted and support one another.

In all of human history only three nations (United States of America, Russia, and China) have launched humans into space. Today at the Kennedy Space Center, there are four United States commercial companies building systems to launch people from the Space Coast (Blue Origin with the Space Vehicle, Boeing with the CST-100 Starliner, Lockheed Martin with NASA's Orion, and SpaceX with the Crew Dragon). This is an amazing time for our Nation, and one that I am proud to say that we have enabled at KSC.