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Statement of
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Subcommittee on Space, Aeronautics and Related Sciences
Committee on Commerce, Science and Transportation
United States Senate

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear today to discuss the transition of NASA's workforce at Kennedy Space Center (KSC) as the Space Shuttle Program approaches retirement at the end of FY 2010 and NASA embarks on returning Americans to the Moon and opening up the way to other destinations in our solar system with the new Constellation Program. The transition from Space Shuttle to Constellation over the next few years provides a rare opportunity to reinvent NASA and reinvigorate the Nation's space exploration capabilities. NASA is executing the first major change in United States civil space policy in 35 years with bipartisan Congressional support of the NASA Authorization Act of 2005 (P.L. 109-155). I believe that this Act remains the finest policy framework for United States civil space activities that I have seen in forty years, and I thank this Subcommittee for its leadership role in crafting this legislation.

NASA's budget is sufficient to support a broad variety of excellent space programs, but it cannot support all of the potential programs all of our stakeholders would wish for us to execute. Balanced choices must be made, but they cannot continually be remade and revisited if there is to be steady progress toward our common, defined objectives. As the Columbia Accident Investigation Board noted, and as stakeholders acknowledged in ensuing policy debates, it would have been far worse to continue with the prior lack of strategic direction for human space flight, to continue dithering and debating and inevitably widening the gap between Shuttle retirement and the availability of new systems.

There have been suggestions that NASA extend Space Shuttle operations beyond FY 2010, but this would have serious budgetary and schedule repercussions for the Constellation program. The cost of continuing to support Shuttle operations beyond 2010 would be about $2.7 to 4.0B per year. The substantial funding for such an approach would come out of the Constellation Program, disrupting its schedule and delaying the initial operational capability of the Orion Crew Exploration Vehicle. In addition, the Constellation architecture is designed to take advantage of Space Shuttle infrastructure, production capabilities, and workforce once they are no longer needed for flying the Shuttle. If the Shuttle were kept flying past its planned retirement date, these capabilities could not be released for Constellation's modification and use. It will also be extremely difficult to keep the Shuttle workforce engaged if Shuttle fly-out is extended. Ending Shuttle operations on a planned date known well in advance is much easier for the workforce and planning than having a floating end date. Keeping the Shuttle system operational past September 30, 2010, would only compound the problem of getting Constellation into service, exacerbate the gap in NASA human space launch capabilities, and delay America's return to the Moon. Not moving forward or

delaying exploration capabilities would be more deleterious to the KSC workforce than the current plans. The KSC community will benefit directly from the lunar activities.

NASA's focus is on safely flying the Space Shuttle to complete assembly of the International Space Station (ISS) and honor our commitments to our international partners prior to retiring the Shuttle in 2010, while bringing the new Constellation systems online by 2015 or sooner. Through this period, NASA's greatest asset will continue to be its people – the thousands of individuals across the country in both government and industry who conceive, design, build, operate, and manage an ambitious program of space exploration on behalf of the Nation. Our greatest challenge over the next several years will be managing this extremely talented, experienced, and geographically dispersed workforce as we transition from operating the Space Shuttle to utilizing the ISS as a National Laboratory, and expanding our reach to the Moon, Mars, and beyond. We must work as carefully as possible to preserve the engineering and technical skills we need to carry out these efforts and minimize impacts to our workforce, both at KSC and at other Agency and contractor facilities across the Nation. These are our people. We need them to carry out our mission, and we care for their well being.

Transition Challenge and Response

NASA remains committed to the concept of "ten healthy Centers," and still plans to spend generally the same amount on human spaceflight labor nationwide, but our workforce will need to transition from primarily operations to development work. NASA does not yet have all the answers for carrying out this complex transition safely and effectively; however, we have been actively dealing with these issues for the past several years and working on them each and every day. Our best tool to retain employees is to provide meaningful and challenging work. We are doing this now through the challenging and exciting ISS assembly missions. Looking towards the future, we are working hard to give people an opportunity to transition the skills learned flying the Shuttle to the design and operation of the next generation of vehicles, through work sharing, retraining, job rotations, and other mechanisms.

Today, a large portion of the Agency's skilled civil servant and contractor workforce is focused on the safety of ongoing mission operations. Much of the experience and expertise within this workforce is required for the Constellation program to succeed. However, the effects of the transition will not be the same for everyone. While approximately 80 percent or more of NASA's budget will continue to pay for the purchase of contractor products, goods, and services, the nature of the work being done will change. NASA's human spaceflight workforce will shift from a focus primarily on operating spacecraft to a new recurring cycle of spacecraft development and operations. NASA recognizes and values the dedication of its Space Shuttle workforce and will leverage this resource, where feasible, by engaging those men and women in the challenging future work that capitalizes on their unique skills and abilities to the maximum extent practical.

We will keep the Congress informed as we know more, award more contracts, or assign new roles and responsibilities to the NASA Centers most affected by the retirement of the Space Shuttle, such as KSC and the Michoud Assembly Facility (MAF) in Louisiana. The entire NASA management team takes the displacement of lives and skills very seriously as we wind down the Shuttle program. We will ensure that critical skills are retained to carry out the exciting missions before us. We are already ensuring that the lessons learned by the people operating NASA's complex systems will be captured by allowing these people to work on the new Constellation systems. As one example of this commitment, the personnel supporting Shuttle launch will help to launch the first test flight of Ares (Ares-1-X), scheduled for next year.

NASA Opportunities at KSC

KSC has always played a vital role in human and robotic space exploration, and will continue to do so, for both NASA and the emerging commercial space sector. With the planned retirement of the Space Shuttle following flyout of the current flight manifest by September 30, 2010, and planned initial operational capability of the new Ares I Crew Launch and Orion Crew Exploration vehicles in the Constellation Program in 2015, this four-and-a-half-year gap in NASA human space launch capability will be anything but quiet at KSC. During this period, the flurry of activity at KSC will include: lunar requirements development; facilities, operations, and vehicle planning; new construction and extensive modifications to existing infrastructure; robust systems testing and evaluation; operations and launch procedures and checklist development; extensive training; large scale systems processing and integration; and, vigorous production -- all of which will engage our skilled workforce. In addition, important transition and retirement work associated with Shuttle equipment and facilities will contribute to the continuity of employment between fly-out of the Shuttle and the initial flight of Orion.

It is important to recognize that in the near-term future, there will be fewer jobs at KSC. One example of how we have mitigated this is with Orion assembly at the Operations and Checkout building at the Center. In addition, we have assigned significant lunar roles to the Center, though the benefits of this will not be felt in the immediate future. The near-term mix of tasks that NASA is planning to execute will involve more work going to design contractors located around the Nation, and less work going to operations contractors at KSC. We are working with state and county officials to help bring in non-NASA work.

Enabling Workforce Transition through Retraining and Incentives

Many members of the KSC aerospace workforce will need to transition from launch operations and Shuttle Orbiter ground processing to development, assembly, integration and test activities for our Constellation systems. Over the past year, NASA has made a concerted effort to share workforce among multiple programs, particularly Shuttle, ISS, and Constellation, enabling people to build crossover skills. The effort, known as Workforce Synergy, enables the Constellation Program to progress while ensuring that the critical skills necessary to safely and efficiently execute the remaining Space Shuttle missions (complete assembly of the ISS and service the Hubble Space Telescope). On the civil service side, NASA is tracking workforce time on Space Shuttle, ISS, and Constellation, and the analysis has revealed that more than half of our human spaceflight civil servants are working on more than one program. This encourages the transfer of lessons learned, the incorporation of operations needs into design, and demonstrates to the workforce that they will have future work on the Constellation Program as Shuttle is retired.

NASA is providing the tools, training, and time for workers to gain experience and skills on new processes we know we will implement for Orion and Ares. NASA is applying these new processes required for Constellation into Shuttle processing now, to provide skill and experience that the workforce will need to do future work on Constellation. This will be real, hands-on experience that will qualify workers for future work. Examples include:

- The United Space Alliance (USA) Shuttle Program Operations Contract (SPOC) workforce is being used by Constellation to process the Ares I-X vehicle for the first Constellation test flight, scheduled for spring-summer 2009. The Ares I-X flight will be conducted with the help of many contractor personnel from the Space Shuttle workforce.

- For STS-120, a single Solid Rocket Booster was stacked one segment at a time to gather engineering information on the Mobile Launch Platform for Ares I-X.

- On STS-118, the Shuttle *Endeavor* was powered up during operations and check-out using a new "paperless" process as a test of future procedures for the Orion.

As part of its efforts to cooperatively work transition issues with state and local officials, on May 27, 2008, NASA signed a non-reimbursable Space Act Agreement with the Brevard Workforce Development Board (BWDB) with the objective of preparing Brevard County's highly skilled contractor workforce for the transition from Shuttle to the Constellation Program. These efforts will enhance the BWDB's mission to retain, strengthen, and expand the county's aerospace contractor workforce. Under the terms of the agreement, NASA will participate in initiatives of the board's Aerospace Career Development Committee, meet with the board to provide workforce data, provide a representative to serve as an ex-officio member of the BWDB Board of Directors, and collaborate in the development of space workforce training and assistance initiatives. The BWDB will work in support of existing and future KSC missions through cooperation in requirements planning and implementation of training and other initiatives to assist in the development of needed new skills and capabilities, and meet with KSC senior leaders periodically to educate and inform them on their program of work.

NASA is also working with contractors to enable them to implement incentive programs to retain skilled employees as the Agency approaches transition. Examples include:

- NASA is advised that United Space Alliance (USA) has established two programs for employees impacted by Shuttle transition. The Enhanced Severance Pay program will provide USA employees who are laid off a minimum of four weeks' pay and maximum of 26 weeks' pay, depending on years of service, subject to policy criteria. The Shuttle Program Operations Contract (SPOC) Completion Bonus, which is additive to Enhanced Severance Pay, will provide SPOC employees with critical/essential skills who are laid off with a minimum of 15 weeks' pay and maximum of 26 weeks' pay, depending on years of service. More than 6,000 USA employees (~4,000 of whom are at KSC) meet the "critical/essential skill" criteria.

- On April 30, 2008, NASA announced a modification of the Lockheed Martin Space Systems External Tank contract which will provide incentives to eligible contractor personnel to ensure mission success and construction of the remaining External Tanks to support the Space Shuttle through its retirement. The contract modification is valued at $39.5M.

- On June 10, 2008, NASA announced a modification of the Pratt & Whitney Rocketdyne (PWR) Space Shuttle Main Engine (SSME) contract to incorporate an employee retention incentive plan to ensure that critical skills are retained to enable the safe fly-out of the Space Shuttle fleet. The modification is valued at $16.8M.

KSC Future Role in Human Spaceflight

KSC is already taking a leading role in many areas of the Agency's future human spaceflight program, including:

- Supporting Exploration experiments on the ISS.

- Constellation program integration and support for safety, reliability and quality assurance (SR&QA); systems engineering and integration; and test and evaluation. This effort supports integrated hazards analysis and preliminary hazard analysis; Risk Management, and quality assurance for the Constellation Program.

- KSC ground operations activities include project management and integration; responsibility for achieving all Agency ground operations objectives allocated to the launch and landing sites; leading design, development, test and engineering, and logistics activities for all ground processing, launch and recovery systems; and serving as lead for ground processing, launch and landing operations planning and execution. On June 6, 2008, NASA selected contractors for a fabrication of ground support equipment for Constellation and other space programs at KSC. The multiple award indefinite-delivery indefinite-quantity contract has a maximum value of $400 million during a basic five-year ordering period with the potential to be extended for as much as one year past the end of the ordering period. Several Florida companies, including Engravers Metal Fabricators of Cocoa; TJ Inc. of Christmas; Precision Fabricating & Cleaning Co., Inc. of Cocoa; Coastal Steel, Inc. of Cocoa; Met-Con, Inc. of Cocoa; Samson Metal & Machine of Lakeland; and Specialty Maintenance and Construction of Lakeland, were awarded contracts as part of this award, along with companies from other states.

- KSC will provide contractor oversight for the Orion ground processing effort, including ground support equipment, and will lead the launch operations and recovery support during design, development, test and engineering; as well as perform prime contractor oversight and independent analysis.

- KSC will support work that will be done under a contract awarded on June 12, 2008 for the design, development, and production of a new space suit system for Constellation astronauts.

- For the Ares I, KSC will lead ground processing, launch operations and recovery support during design, development, test and engineering; as well as lead launch operations planning and execution for Ares I-X and other flight demonstrations.

- In support of the 2009 Ares I-X test flight, as well as other flight demonstrations, NASA started the construction of facilities modifications to KSC in 2007. KSC is modifying equipment and facilities used most recently by the Space Shuttle, such as Launch Control Center Firing Room One, and Launch Pad 39B, to prepare for Constellation testing.

- Other construction of facilities (CoF) projects to be carried out as part of the Agency's transition activities include modifications to the Operations and Checkout building, the Vehicle Assembly Building (VAB), and the Multi-Payload Processing Facility (MPPF). Constellation's facility requirements continue to evolve in parallel with flight hardware maturity. As project offices are created and move into manufacturing and processing, facilities requirements are being identified, evaluated, and requested. The contractor workforce that will be associated with construction of facilities projects has not been included in the "Workforce Transition Strategy – Initial Report." At this time, NASA cannot estimate the number of contractor personnel to be associated with the various CoF projects, in part because Agency bases its contract awards on open competitions that do not stipulate workforce numbers. In addition, the full scope of CoF activities in support of Constellation is not yet known.

Further into the future, KSC will support lunar architecture work for the Constellation Program system engineering; ground operations, and assembly for Orion and Ares I Low Earth Orbit operations phase;

Ares V ground processing, launch operations and recovery support during design, development, test and engineering; final assembly of and ground processing support for human lunar lander; and lunar surface habitat management and integration. Additionally, KSC will be the NASA lead for lunar surface *in situ* resource utilization systems and support surface systems logistics concepts, all of which are vital to our Exploration success.

Therefore, given the exciting and varied amount of work that is in KSC's future, it is clear that NASA is not going out of business at KSC; rather, this transition will enable a new line of NASA business at KSC as the Center increases its involvement with Exploration activities that will be pursued for decades to come.

Launch Services Program

As we prepare for the future of human space flight, it is important to remember that KSC has also been key to launching NASA's robotic explorations of the Earth and space, and this will continue through the transition from Shuttle to Orion and beyond. The Agency's Launch Services Program (LSP) has maintained a success rate of 98.8 percent since 1987. LSP supports NASA science missions, as well as the launch of National Oceanic and Atmospheric Administration spacecraft (e.g., Geosynchronous Operational Environmental Satellites), Department of Defense spacecraft (e.g., Global Positioning System and Defense Support Program), and commercial satellites (e.g., GeoEye 1).

Commercial Space Activity at KSC

In addition to playing a key role in the Constellation Program, KSC will support commercial space activity. NASA is actively encouraging the growth of a new, robust, commercially-based space economy through the Commercial Orbital Transportation Services (COTS) project. From the beginning, NASA has considered COTS to be an investment in space commercialization, and with that investment, there were inherent risks associated with stimulating a market capability that is in its infancy. Therefore, NASA is providing $500 million as "seed money" to spur the commercial space industry to develop and demonstrate commercial orbital transportation services. It is also important to understand that NASA is only one investor in the overall demonstration of commercial cargo services. The commercial space companies (and their other private investors) are the largest investors because they stand to reap the financial benefits of developing a proven commercial space transportation capability that they can sell to other non-NASA customers.

Both of the funded COTS Phase 1 partners, SpaceX and Orbital Sciences Corp., plan to demonstrate cargo mission capabilities to the ISS in calendar year 2010. NASA has identified ISS commercial cargo requirements in the 2010-11 timeframe, and the Agency is in the process of procuring commercial cargo services through the ISS Commercial Resupply Services acquisition. The Request For Proposals (RFP) for these services was released on April 14, 2008, with an award expected by the end of 2008.

By investing in U.S. private industry through COTS, NASA is facilitating development of reliable, cost-effective access to low Earth orbit (LEO). The intent is to create a market environment in which commercial space transportation services are available to Government and private sector customers. The availability of safe, reliable and economical service to LEO will help NASA achieve the Nation's goals of retiring the Space Shuttle and building a new space transportation system.

In addition to COTS, the possibility of leasing land to one or more commercial entities to develop and operate a Commercial Vertical Launch Complex (CVLC) on KSC property is being considered.

Enhanced Use Leasing (EUL)

NASA's use of Enhanced Use Leasing (EUL) improves the Agency's performance by allowing it to recover asset values, reduce operating costs, improve facility conditions, and improve mission effectiveness. It also opens up opportunities for commercial vendors who can make effective use of NASA facilities and equipment at the Agency's Centers, including KSC. NASA encourages the use of its facilities by other agencies, industries, and universities (e.g., Space Shuttle Landing Facility). NASA's Centers have begun to develop enhanced use leases for their underutilized real property, and KSC and Ames Research Center (ARC) have participated in an EUL demonstration program that will likely continue to result in lease awards in FY 2009. NASA will continue to provide a fiscal year report to Congress on the progress of its use of enhanced use lease authority.

Iran, North Korea and Syria Nonproliferation Act (INKSNA) Relief

In order to minimize impacts to NASA's workforce, it is essential that the Agency transition from the Space Shuttle to Constellation as quickly and as smoothly as possible. One key element of this effort is the extension of relief from the Iran, North Korea and Syria Nonproliferation Act (INKSNA) to enable the Agency to purchase Russian services beyond 2011. On April 11, 2008, the Administration submitted a proposed amendment to Congress to extend the exception for payments to Russia for Soyuz crew transportation and rescue services until the Orion Crew Exploration Vehicle reaches Full Operational Capability or a U.S. commercial provider of crew transportation and rescue services demonstrates the capability to meet ISS mission requirements. In addition, the amendment would enable NASA to purchase Russian-unique equipment and capabilities, such as sustaining engineering and spares, through the operational life on the ISS. This is essential to maintain an American presence onboard to sustain and utilize the ISS. Continued operation of the Station is also important for the developing cargo resupply commercial market. We look forward to working with the Congress on enactment of this crucial legislation.

Conclusion

NASA continues to make steady progress in managing its challenges, including the critical challenge of transitioning our Shuttle workforce to exciting new projects. The Agency has assigned leadership roles and responsibilities for exploration and science missions to NASA's ten field Centers across the country in order to help restore the core technical capabilities across the Agency as we transition from the Space Shuttle to new capabilities. Thanks to its dedicated, highly skilled aerospace workforce, Kennedy Space Center will continue to play a key role in launching both human and robotic space missions, as it has since it was established in July of 1962 as the Launch Operations Center.

In a short span of years, we have already taken long strides in the formulation of strategies and programs that will take us back to the Moon and on to Mars and other destinations in our solar system. These efforts will result in tremendous opportunities for those interested in becoming involved in space exploration and development at KSC, in both the federal and commercial space sectors.

Chairman Nelson, with your support and that of this Subcommittee, we are making the right strategic choices for our Nation's space program. Again, thank you for the opportunity to appear before you today. I would be pleased to respond to any questions that you may have.