

**Statement of
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Before the

**Subcommittee on Space and Aeronautics
Committee on Science and Technology
U.S. House of Representatives**

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss NASA's workforce.

Implementing the President's Vision for Space Exploration clearly represents a great management challenge, now and for many years to come. In particular, the retirement of the Space Shuttle, the completion of the International Space Station, and the development of the multiple elements of the Constellation Program involve a daunting series of transitions both programmatic and institutional in nature. The issues associated with these transitions are complex and our planning, already well underway, will be an iterative, evolutionary process featuring tight integration between these efforts and NASA's ongoing Science and Aeronautics Programs.

The NASA Workforce Strategy, submitted to the Congress in April 2006, laid the foundation for the actions the Agency must take to maintain the knowledge base of the current workforce, as well as broaden, reinvigorate, and acquire new skills necessary to accomplish NASA's Exploration, Science and Aeronautics missions. The document articulates three principles underlying our workforce strategy: building and sustaining ten healthy Centers; maximizing the use of NASA's current human capital capabilities; and evolving to a more flexible, scalable workforce. We remain committed to these principles and view them as essential to mission success. Our comprehensive plan for managing NASA's current and future workforce is based on these principles, and we have developed three primary goals to implement them.

- The first goal is to understand mission requirements, both near- and long-term, to enable the identification and matching of needed skills to program tasks through a robust, comprehensive workforce planning process.
- The second goal is to align the skills in the workforce with mission needs by strengthening technical and leadership excellence and by reshaping the existing workforce.
- The third goal is to enable more effective and efficient human resources operations through the delivery of comprehensive and authoritative workforce information for decision-making through integrated human resources, financial and other business support systems.

Recently, both the National Academy of Public Administration (NAPA) and the National Research Council (NRC) released reports of recommendations for addressing our overall workforce challenges, as well as for addressing more specific issues relating to the aforementioned transitions. To a large degree, these reports confirm our assessments of the challenges facing us in the workforce arena and validate the actions that we have initiated to address the most critical and encompassing issues. All of the information, findings and recommendations contained in the reports will continue to inform implementation of our basic workforce strategy, and will help ensure that we remain focused on the key issues.

Below, I have highlighted some of the key initiatives we've undertaken over the past year in support of implementing the Workforce Strategy through the stated goals.

Understand the Mission Requirements

Workforce Planning

Implementation of the Vision for Space Exploration requires an especially strong workforce planning capability—a capability that will allow Centers and the Agency to identify and assess areas of workforce risk so that viable solutions to mitigate those risks can be developed and implemented.

Recognizing that it is critical that all levels of management be involved in workforce planning, the Agency's first Workforce Planning Governance Structure was established in January 2007. The Governance Structure comprises key management officials from across the Agency who, in collaboration with the human resources community, work together to identify Agency workforce risks and develop solutions to workforce issues as soon as they emerge.

We have also integrated and synchronized workforce planning with the development of program and project budgets. This new approach—planning and integration among all levels of management—helps NASA determine the best application of workforce to projects as they proceed from formulation through development and mission operations. With an enhanced workforce planning capability, NASA will be better able to determine the demand for, and supply of, workforce skills based on current and projected work requirements and to identify areas of potential risk in matching workforce to work. This will allow more time to develop strategies to mitigate these risks. In addition, we've enhanced our ability to analyze workforce data necessary to support effective workforce planning. We have begun to develop measures to monitor multiple dimensions of workforce capability at the Centers and to identify areas of strengths and weaknesses.

Shuttle Workforce Transition

With the retirement of the Shuttle in 2010, NASA will shift from the current primary focus on operations to one in which we develop new systems, with the capability for human space exploration missions to the Moon, on to Mars and beyond.

These changes have significant workforce implications – for both civil servants and contractors. The nature of the work will change as we transition from Shuttle operations to research and development-focused activities like planning, design, development, testing and verification for Constellation systems. This presents unique challenges to the Agency. NASA must retain the skills necessary to safely execute

the remaining Shuttle missions, manage the transition of skilled Shuttle employees into Constellation development, and retain skills between FY2010 and FY2015 necessary to safely execute Constellation flight operations.

The National Research Council noted that “NASA has undertaken a commendable top-down analysis of current agency needs and the skill levels of its current workforce that the committee believes is an excellent first step” (Finding 1). We acknowledge that more work is needed, though. As the Constellation Systems Requirements Reviews are completed this year, NASA will gain a much clearer understanding of the demand for future workforce skills, which will form the foundation for making any future decisions.

We are engaged in many initiatives to manage this transition. We are striving to give our employees opportunities to build on their existing skills by moving appropriate work packages across the Centers to match resident workforce skills, by building “virtual” project teams within and across Centers, and by offering temporary details. Through such initiatives, many employees will be prepared to easily transition into new positions when the exploration systems development work comes on-line. We are developing a mapping of current available skills among the Shuttle workforce with the skills we will need for future work so that we can better plan and implement workforce reassignments. We are supporting retraining to ensure that employees have the skills to be successful in the new work. We are making good use of temporary and term appointments to get the flexibility to better align to the time-phased workload.

As we work through this transition, NASA remains committed to working with our industry, supplier, and research partners to minimize disruption, upheaval, and economic impact, while maximizing support vital for Shuttle missions and program requirements. A Shuttle Human Capital Council convened recently to bring together the civil service and contractor Human Resources Directors to surface and address common workforce issues, share best practices in resolving issues, and strengthen the human capital network.

Workforce Flexibilities

In March 2007, NASA submitted legislative proposals to the Subcommittee to provide the Agency with additional workforce flexibilities to better implement the transition from the Space Shuttle era to the new era of exploration.

Several years ago, NASA gained important new workforce flexibilities through the enactment of the NASA Flexibility Act of 2004. Those flexibilities have made a difference already, and will be vitally important to the Agency over the coming years in competing for top talent and maintaining the knowledge base of the workforce. However, the authorities in the NASA Flexibility Act represent, for the most part, tools for attracting and retaining high-quality employees. They do not address a different—but equally critical—human capital challenge: managing attrition in a strategic, effective, and compassionate manner. The need for attrition management tools is particularly important to NASA as we face the challenges associated with retaining Shuttle skills through completion of the Program, and then effectively transitioning that workforce.

In many cases, skill misalignments can be addressed by retraining or reassigning the employees whose skills cannot be utilized effectively in their current assignments. NASA has been aggressive in this regard over the past several years with hundreds of people now productively and enthusiastically engaged in the Constellation Program. But not all skill misalignments can be resolved by retraining and redeployment. Furthermore, NASA historically has had an exceptionally low attrition rate, rendering reshaping of the workforce difficult and slow.

As such, NASA needs to manage attrition in a targeted manner to achieve better alignment of the workforce with the mission without creating unwanted losses, skill imbalances, and disruption in the general workforce. But that is not the only objective. The *method* by which attrition is achieved is just as important. NASA must manage attrition in a way that does not demoralize the workforce, create an environment of uncertainty, generate a lack of trust in management, or stimulate the departure of the workforce the Agency needs to retain. If attrition is not managed in the right way, NASA's outstanding image as a leading employer of choice will be eroded, resulting in a long-term negative impact on the Agency's ability to attract and retain the workforce it needs.

NASA has submitted proposals for two new workforce authorities in its legislative package—a conversion incentive and temporary continuation of coverage of health benefits—in order to manage attrition more effectively and strategically. The conversion incentive would allow the Administrator to pay a permanent employee a monetary incentive for voluntarily converting to a time-limited appointment. The purpose of this financial incentive is to offset the risk the employee assumes by giving up the right to continued permanent employment. The incentive may not exceed \$25,000 or 25 percent of the employee's annual salary, whichever is less, for each 12 month period of service for which the incentive is paid. Unlike a buyout, an employee who converts to a term appointment and receives the conversion incentive is not precluded from securing full time federal employment and retaining the incentive.

This authority is particularly tailored to managing the Shuttle workforce. A conversion incentive serves as both an incentive for the employee to remain with the program to the date needed by management (similar to the concept of a retention incentive) while allowing management to plan for an orderly release of employees on a defined date without the need to resort to involuntary actions such as a reduction-in-force.

The other workforce provision in the legislative proposals, the temporary continuation of coverage of health benefits, would permit NASA to pay the government's share of the Federal Employees Health Benefits premiums for certain NASA employees who elect temporary continuation of health benefits coverage upon separation from NASA. Eligible employees would be those who are separating because their positions are being eliminated. This provides a "soft landing" benefit to employees who desire continued health coverage while they seek other employment and are not otherwise eligible for the Federal health benefits without paying the full cost of the premiums. We believe that this benefit will expand the pool of employees who would be willing to resign voluntarily from the Agency.

Align the Workforce with the Mission

NASA is filled with highly educated, dedicated employees at all levels who love what they do and are inspired by the challenging and exciting environment. Our current diverse workforce represents a wealth of skills and valuable experience. In order for the Agency to accomplish its aggressive mission, it is critical that this workforce be aligned with the mission by strengthening the technical and leadership excellence of our employees and by reshaping the workforce to better serve future mission requirements. In addition, as more of our experienced employees reach retirement eligibility, it is imperative that we attract and develop the new talent that is needed to implement the Agency's Exploration, Science and Aeronautics missions. To do so, we must create, sharpen, and use all the tools that are needed to enable current and future employees to support the work of this Agency.

Technical and Leadership Excellence

One of our challenges is to strengthen the technical and leadership excellence of the NASA workforce. In so doing, we have a number of tools at our disposal to ensure that our workforce continues to excel technically and that we are building “bench strength” in both our technical disciplines as well as in our leadership roles.

To strengthen technical excellence, the Office of the Chief Engineer supports NASA’s field centers in workforce retraining and in current and future workforce skill development through its Academy of Program/Project and Engineering Leadership (APPEL), the NASA Engineering Network (NEN), and the NASA Engineering Safety Center (NESC) Academy. These programs are designed to both develop and enhance the professional knowledge of NASA program/project managers and engineers at all career levels; to capture and transfer knowledge from seasoned program/project managers and engineers across NASA as well as from industry, academia, and international partners; and to ensure that lessons learned are captured for the next generation.

In order to build leadership “bench strength”, we have developed a corporate, integrated approach to leadership development. NASA has created a leadership strategy which is used both agency-wide and at the Centers as a framework for designing and implementing leadership programs. This framework provides continuity through succession planning and executive development - creating a skilled pipeline for leadership within NASA. It includes a variety of components: workforce planning and analysis, career paths, formal agency-wide leadership development programs, formal and informal coaching and mentoring programs, and leadership training. Many of these Programs are supplemented by Center-level development activities. Our formal Agency-wide programs reflect a life cycle approach to leadership development with programs targeting entry, mid and senior level employees as they prepare for leadership responsibilities.

Reshaping of the Workforce

Another challenge is to reshape the existing workforce to better serve current and future requirements. This involves not only some reductions in aggregate workforce size, but also a build up in areas of greater need and reduction in areas that are surplus to evolving mission requirements.

The use of buyout/early out authority to encourage voluntary attrition has been critical to NASA workforce reshaping. Since the start of FY 2004, over 1300 employees in targeted areas of surplus took buyouts or early outs. This is over one-third of the total attrition of 3500 during this period. We continue to monitor this program to ensure that experienced employees with needed and critical skills are not leaving the Agency and that the safety of the Space Shuttle or the International Space Station is not compromised.

To replace normal attrition and strengthen areas with increased requirements, we have hired nearly 2500 employees with a range of experiences and skills. Of this number, 700 are workers hired either directly out of colleges and universities, or shortly thereafter. NASA Centers make good use of programs such as the student employment program and the Federal Career Intern Program to recruit new talent into the Agency. NASA Centers have cooperative education program (co-op) agreements in place with multiple universities. Across the Centers, we have maintained a constant average of 450 students participating in the co-op Program. These students have an opportunity to get “hands-on” experience in their technical field, and to demonstrate their abilities on the job. The best of them are converted to entry level engineers, scientists and business professionals upon graduation. The Federal Career Intern Program also has allowed us to hire recent college graduates. The fact that these interns are brought in as term

appointments, with the ability to convert them to permanent positions, provides additional flexibility in managing our workforce. Of the 700 entry level hires, 400 have been outside hires and the other 300 are conversions from either our co-op pool or from temporary or term appointments.

We are also refining our recruitment strategy by conducting more targeted recruitment on mission critical occupations and with underrepresented groups; working with NASA's Office of Education to enhance and expand student programs that can serve as a pipeline into our workforce; and developing partnerships and relationships that can be beneficial in future recruitment efforts.

The tools provided by the NASA Flexibility Act of 2004 continue to be vitally important as we reshape our workforce. They provide targeted solutions to multiple challenges – the need to recruit new talent and the need to leverage the talent of the current workforce. Along with the government wide flexibilities, they provide over a dozen tools that include enhanced recruitment, relocation and retention bonuses, expanded use of term appointments, pay authority for critical positions, and enhanced travel and annual leave benefits for new hires. We make use of the full range of these flexibilities and find that combining them to create incentive packages tailored to the needs of specific candidates has been a particularly successful strategy.

Enable Effective and Efficient Human Resources Operations

To effectively manage change while attending to our critical resource, our people, NASA must leverage information technology to provide more responsive, reliable information to support decision making.

Workforce Information Systems

Our current human resources information systems (HRIS) environment is quite robust, providing automated solutions for the majority of our human capital programs, and providing a wealth of information to managers and workforce planners. NASA is working toward full integration of the HRIS environment and improvement of capabilities that will provide the full range of information required to most effectively manage our changing environment.

Over the years, NASA has invested in a number of Agency-wide systems such as our Staffing and Recruitment System and our Competency Management System (CMS). CMS enables NASA to assess the demand for, and supply of, workforce skills based on current and projected work requirements. CMS captures the competencies for every civil service position and multiple personal competencies for each individual NASA employee. Management of personal competencies enables the identification of expertise across the agency and provides the capability to integrate this information for use in planning the workforce.

Competencies are the common thread that tie the elements of workforce management together. CMS is a relatively new system that we are continually working to improve. By integrating CMS with other workforce planning tools, we are able to not only identify the critical current and future competency gaps and surpluses, but we can weave that competency information throughout the workforce management process.

Recognizing the almost limitless possibilities of information technology (IT), NASA is converging business systems, expanding access to managers, supervisors, and employees, and increasing the capabilities of tools and applications. These efforts will form a Human Capital Information Environment (HCIE) that will provide a foundation for total business systems integration, foster Agency-wide collaboration, provide tools and information to assist our management team in their strategic planning

efforts, and provide near real-time comprehensive information to enable and inform decision-making at all levels.

Developing an HCIE is the first step in instituting a fully integrated, strategically focused, business environment for online, near real-time access to reliable, comprehensive information that managers need for rapid and accurate decision-making. The HCIE will interoperate seamlessly with NASA's financial management authoritative data repository (ADR), and provide dependable integrated workforce and financial information to all organizational elements. A common, robust data repository will remove the need for redundant systems because the ADR will furnish the wealth of information needed to meet the demands of this mission-driven, project-oriented Agency.

Information will be presented through a secure, web-based workforce services portal accessible from the user's desktop computer, enabling managers to formulate workforce plans and manage employees; manage and plan based on workforce indicators, including competency, demographic and trending information; and conduct analyses and run reports using common and timely information. The initial operating capability for HCIE is planned for the summer of 2007 with final implementation during the Fall of 2008. The capabilities of HCIE are enormous, limited only by our ingenuity in identifying the boundless ways in which information can be woven together to drive decisions and enable success.

Summary

In implementing the NASA Workforce Strategy and associated workforce management goals, NASA is positioning itself to deal effectively with the critical issues now facing the Agency on an integrated, Agency-wide basis. NASA is putting in place approaches that not only will alleviate the Agency's current imbalances, but also provide a structure that allows such issues to be resolved in the future as part of a deliberate, systematic process. To quote the NASA Administrator, "...it is clear that an understanding of the broad issues, the big picture, is so much more influential in determining the ultimate success or failure of an enterprise than is the mastery of any given technical detail. The understanding of the organizational and technical interactions in our systems, emphatically including the human beings who are a part of them, is the present-day frontier of both engineering education and practice." The foundation that NASA is building is a big picture view that will facilitate and institutionalize long-term planning and Agency-level coordination. As stated in the NRC report, though, some of the issues NASA faces are "not unique to NASA" and require "a national approach" to solve them. NASA plans to be in the forefront in developing such approaches.

Last year NASA presented its Workforce Strategy which outlined the steps to manage the transitions associated with implementing the Agency's Exploration, Science and Aeronautics missions. Since then, we have made significant progress, with specific human capital initiatives aimed at three key goals: understanding mission requirements, aligning workforce to mission, and enabling effective and efficient human resources operations. The NRC and NAPA reports confirm the actions we've initiated, and will continue to inform further implementation of the Strategy.

I would be please to respond to any questions the Subcommittee may have.