



INTERNATIONAL FEDERATION OF  
PROFESSIONAL AND TECHNICAL ENGINEERS  
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**Testimony of Gregory J. Junemann**  
**President, International Federation of Professional &  
Technical Engineers, AFL-CIO & CLC**

*Prepared For:*

**House Subcommittee on Space & Aeronautics**

*Hearing:*

***The NASA Workforce: Does NASA Have the Right  
Strategy and Policies to Retain and Build the  
Workforce It Will Need?***

*Delivered by:*

*Dr. Lee Stone, Legislative Representative NASA Council of IPFTE locals*

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Thank you Chairman Calvert and ranking member Udall for providing the International Federation of Professional and Technical Engineers, NASA's largest Union, this opportunity to present our perspective on the workforce challenges facing NASA today. It is an honor for me to represent IFPTE and to stand in for President Junemann, who could not make it because today he is with his son, a Marine who has returned from Iraq for just a few days.

IFPTE's primary interest in testifying today is to provide forceful advocacy for maintaining the broad technical excellence and independence of NASA's civil service workforce that has served the Agency well for decades. Last January, we believe that NASA took a wrong turn in its workforce management and planning. We hope that, after careful consideration of the facts presented here today, the Sub-Committee will support an urgently-needed course correction. Indeed, the new Administrator appears poised to steer HR in a better direction. We hope that this hearing will prove to be the turning point.

IFPTE fully endorses the "ten healthy Centers" philosophy put forward by Dr. Griffin. This firm endorsement of Field Centers, together with appropriate re-invigoration of NASA's commitment to Aeronautics, Scientific Research, and cutting-edge Technology Development will make for a healthy Agency. Since last February, NASA's Human Resources (HR) however has remained engaged in an ongoing downsizing effort, inconsistent with ongoing programmatic planning, with inadequate attention to the long-term mission needs of the Agency.

#### Recent history:

In July of 2002, then-Administrator O'Keefe testified to the Full Committee that NASA was facing a looming workforce crisis because its core technical staff was rapidly nearing retirement and had not been properly replenished over the years. He asked for, and was granted, several changes to Title 5 that afforded him new authorities. These new powers were specifically designed to retain and postpone the retirement of NASA's technical staff so that they might serve as mentors while the Agency aggressively recruited the next generation of young scientists and engineers. This was a good plan, and IFPTE endorsed Chairman Boehlert's Flexibility Act to give NASA management the tools they requested to implement that plan.

Rather than moving forward with hiring this urgently-needed next generation of scientists and engineers, NASA actually proceeded in the opposite direction:

- In February of 2005, NASA management testified before this Committee that there would be workforce stability and that there would be no layoffs for two years. Meanwhile, senior management had just approved and initiated a workforce transformation plan designed to reduce NASA's civil service complement by 2,673 employees (co-incidentally the number of retirement eligible employees) through increasingly aggressive tactics, culminating in a Reduction-In-Force (RIF) before the end of FY2006 (Appendix A). Rather than working to retain its Apollo-era engineers and scientists, the plan targeted retirement eligible staff for buyouts and pressured them to retire.
- Frustrated by the legal requirement that 75% of the Flexibility Act bonus money is reserved for technical staff, management barely used the new flexibilities at all. Meanwhile, on average, they provided larger bonuses to their Senior Executive Service employees than any other federal Agency (Appendix B). They also made little effort to use their new authorities to recruit new technical employees or to convert term employees

to permanent status.

- Since February of 2005, threats of RIFs and/or forced relocation have been openly used to accelerate attrition with little regard to the skills being lost. In the several rounds of buyouts performed over the last two years, employees with skills listed as “critical needs” were offered buyouts. Many talented and experienced NASA employees left and the morale and productivity of those who remained were seriously harmed.
- Further evidence of the lack of thought in this process can be seen in the fact that the “critical needs” list has changed dramatically since its inception (Appendix C). Many skills deemed critical in 2004 are now listed as excess capacity and vice versa (e.g. Human Factors was deemed critical and slated for growth in 2004, yet in 2005 became slated for reduction; Computational Fluid Dynamics and Rotorcraft were slated for near-elimination in 2004, but are now highlighted in NASA’s new Aeronautics Program).

In the NASA Authorization Act of 2005, Congress once again called on NASA management to provide a coherent and thoughtful “Workforce Strategy” that the Science Committees could use to guide their oversight of the Agency’s realignment in support of the Vision for Space Exploration. The plan delivered to Congress was however seriously deficient. IFPTE provided two analyses of the draft submitted to us: one providing traditional “consultation” on policy weaknesses in the Strategy (Appendix D) and a second that addresses the failure of the document to meet the minimum standards set forth in the Authorization Act (Appendix E). Unfortunately, despite our input, NASA management did not modify their draft in any substantive way before delivering it to you. The bottom line is that while there are a number of legitimate ways of overseeing a workforce transformation that could be the focus of discussion here, NASA’s Workforce Strategy simply does not have sufficient content to engender that discussion. Indeed, even last week’s announcement of the Constellation “Work Assignments,” an essential component of the ten Healthy Centers philosophy, did not have any concrete manpower and budget estimates associated with them. Two months after Congress explicitly asked for delivery of these key workforce numbers, NASA management continues to work the issue and has not given an indication when those numbers will be provided.

#### NASA’s Workforce Strategy – April 2006:

IFPTE’s response to the Draft Workforce Plan identified three key general issues at the core of the problem with their current HR activities.

First and foremost, full-cost recovery of civil service salary is the key driver of the current crisis:

- When NASA claimed to convert over to “full-cost accounting” in FY04, it actually converted over to a full-cost recovery system that allowed distant program managers to siphon salary and facilities money away from the Field Centers. By giving so much power to program managers who have little interest in preserving institutional capabilities, labor and facility costs were low-balled to increase the manager’s discretionary spending. This precipitated two crises: 1) key facilities went bankrupt and 2) uncovered capacity was born. The Agency has recently taken care of the former problem by establishing the Shared Capability Assets Program (S-CAP) to fund otherwise “uncovered” facilities, in response to key language in the Authorization Act. Unfortunately, the analogous threat to NASA’s intellectual capabilities and corporate knowledge remains unaddressed.

- It is a fallacy that uncovered capacity (personnel not funded directly by program funds or by “good” G&A) is idle or unneeded capacity. Program managers are using what was once civil service salary money to pay for procurement and that, in turn, makes Center management divert money that once was available to pay for programmatic activities to increase the Center G&A needed to pay for the “uncovered” salaries. The net effect of this circular juggling act is the creation of the false perception that there is a mass of civil servants who are not performing useful work and are not needed. Uncovered capacity keeps increasing, despite all the recent downsizing activities. Last November, HR told IPFTE that there were only 850 uncovered employees left. In December, about 350 took a buy-out or early-out. Yet, HR now claims that the uncovered capacity is back up to 1,000. How can this be? Uncovered capacity is a fiction, an arbitrary number created by management’s desire to convert people into money to pay for the short-term financial needs created by unfunded programmatic mandates (i.e. moving up the CEV delivery date to 2012 or earlier).
- The conversion to “full-cost accounting” has paradoxically provided no useable accounting data on actual cost. Program management first almost arbitrarily assigns a work group a list of charge numbers (Work Breakdown Structures or WBSs) ostensibly representing the various programs (and/or G&A) supporting the employees in that group. Employees are then instructed by line management to log their fixed ration for each pay period regardless of what work was actually performed. This process is required by the Integrated Financial Management System that creates hundreds of salary bins that need to be precisely spent (or funds will run out or be left over). Thus, the false accounting of work is simply a regurgitation of management’s fictitious workforce planning. This is closely related to NASA’s ongoing inability to cleanly pass a financial audit.
- The assignment of work is then done completely independently, such that some activities are performed yet don’t show up on the books (e.g., some employees tasked to work on the Smart Buyer Project were not provided a charge number so they charged time elsewhere) and some “work” is charged that is not actually performed (e.g. upper-level line managers routinely charge their time to programs although they generally perform no programmatic work. This is used as a means to artificially reduce Center G&A).
- The bottom line is that NASA’s bizarre version of “full-cost accounting” does not account for the work its employees are actually performing. The false data generated can neither be used to make NASA more efficient/effective, nor to do any rational financial or workforce planning.

Second, HR has is relying overwhelmingly on term positions.

- Of the 1,426 outside hires since the beginning of FY2005, only 403 were full-time permanent employees, leaving 1,023 employees likely to be separated from the Agency in 2-6 years.
- The decision to offer term or permanent status should be based on a careful technical analysis of the job requirements and of the long-term need for the relevant skills, but no such analysis is happening. Employees are hired in as terms simply to undermine the civil-service tenure process; many are slated for long-term employment, but are simply not hired as “perms.”

- The extensive use of term positions is threatening the quality of our technical staff. The best and brightest new scientist and engineering graduates are being wooed by MIT, Johns Hopkins, Stanford, Cal Tech, UC Berkeley and many other high caliber academic institutions. All premier academic institutions offer tenure. In the past, NASA has been able to get its fair share of these candidates because it offered a similar package of benefits and a similarly excellent intellectual environment. Term positions, together with full-cost accounting and the large-scale de-scoping of NASA's in-house Research & Technology programs, hinder NASA's ability to recruit the best talent. If tenure were a bad idea, elite academic institutions would have abandoned it years ago.
- Tenure is the foundation of intellectual freedom. Permanent civil service employees are more likely to summon the courage to speak truth to power and perhaps save the Agency from another catastrophe. Term employees, or even uncovered permanent employees under the threat of RIF and forced to plead for a charge number, are much more vulnerable to the pressure to go with the flow. They might remain silent at that crucial moment, which is one of the major concerns brought to light by the Columbia Accident Investigation Board.
- Tenure is the foundation of institutional memory. Mission success, especially at an Agency that is embarking on a 30 year mission to get to Mars and back, will be put at considerably increased risk if its technical staff is constantly turning over. We need the same young engineers, who design and test the Crew Exploration Vehicle, to be available as older engineers when NASA is facing some as-yet-unforeseen technical problem down the road.

Third, NASA has based its plan on a poorly implemented, improperly interpreted, and ill-defined Competency Management System (CMS).

- HR CMS analysis does not distinguish between 100 employees who have 5% of their salary uncovered (a healthy situation) from 95 fully covered and 5 fully uncovered employees (a less healthy one). Given that people are not easily sliced, the competency numbers are a priori not particularly useful for determining or forecasting "uncovered" capacity.
- The CMS dictionary vocabulary is vague, overlapping, continuously under-revision, and at odds with the vocabulary used for the Critical Needs List. Some competencies are so vague as to be useless (e.g., "Program Management" – program success depends on having specific skills tailored to the specific program, and not generic ones). What is the difference between the "Power and Propulsion" competencies that we plan on increasing and the "Advanced In-Space Propulsion" and "Power Systems" competencies that we plan on decreasing (both on p. 18 of the Workforce Strategy)?
- When the CMS was first presented to the Union in April of 2003, we were told that there would be multiple, multidimensional databases (that would include the primary and a series of secondary competencies of current positions, current employees, future demand, etc.) and that most of these databases would be validated and certified by the end of FY03. Three years later, HR is still only using the primary competency of the least useful "position" database, which contains very little information about the skills and capabilities of the current workforce.

In addition to these key flaws above, HR's Workforce Strategy simply does not provide the information about NASA's workforce sought by Congress under the Authorization Act (see Appendix E) nor does it provide an analysis of NASA's management structure.

#### Balancing NASA's workforce:

NASA has experienced an accelerating increase in the proportion of non-clerical administrative positions, even excluding SES (see Appendix F). NASA now has only 2.1 scientists & engineers for every administrative position. This is clearly unbalanced. Any successful, competitive, private-sector institution would be looking to streamline its management structure long before it would look to eliminate technical experts and R&D employees. Current HR practices are however only making a bad situation worse (All of the numbers below come from NASA's Workforce website).

- Of the 403 full-time permanent employees hired since the beginning of FY2005, only 90 (22%) were scientists or engineers while 299 (74%) were non-clerical administrative.
- Of the 1,905 full-time permanent employees lost since the beginning of 2005 (Note: >10% attrition over 20 months), 906 (48%) were scientists or engineers while only 646 (34%) were non-clerical administrative. This is reflective of a random attrition model, as opposed to a properly controlled attrition model that encourages retention of technical skills.
- NASA has given 981 buyouts since the beginning of FY2005, 455 (46%) to scientists and engineers but only 272 (28%) to non-clerical administrative employees, again reflective of a skills-blind downsizing effort.
- NASA management has been limiting the hiring of rank-and-file technical employees (i.e. many Centers have been working under a near-total hiring freeze) while increasing the hiring of administrative positions (e.g., up to 600 new financial/business management positions are foreseen on p. 16 of their Workforce Strategy, independent of the hiring going on at the NSSC).

IFPTE fully believes that NASA benefits from the synergy generated by its combined federal and private-sector workforce. We believe that NASA has already achieved a reasonably healthy balance between its current full-time permanent civil-servant workforce of 16,664 and an "in-house" contractor workforce of around 40,000. There has already been a nearly 30% decrease from the civil service compliment in FY94, which was 23,695, yet NASA now has much more on its plate. Any further decrease in the civil service component below the current ratio of more than 2.1 contractors for every civil servant puts mission success at risk, leaving NASA incapable of proper technical monitoring and overseeing its contractor efforts (see the Columbia Accident Investigation Board final report).

The Agency needs to engage more scientists, engineers, and technicians, and fewer managers, deputy managers, associate managers, and assistant managers. NASA's dedicated technical workforce at all of its Centers, both civil servant and contractor, stands ready, willing, and able to support NASA's missions.

### Attrition:

Attrition needs to be controlled, not blindly accelerated. If NASA does absolutely nothing, its workforce will soon fall below the 16,000 contemplated by the aggressive downsizers (Appendix D). Just to maintain the reduced workforce levels projected in the Workforce Strategy, NASA must perform an intelligent combination of aggressive recruitment and carefully targeted voluntary separations. The Workforce Strategy should focus on a hiring plan, not last year's layoff plan that is still working its way through its timelines, impeded only by the RIF-moratorium in the Authorization Act of 2005.

### Work transfers:

Administrator Griffin deserves considerable praise for realizing that all of NASA Centers should share in the work opportunities provided by the Constellation program, according to their capabilities and facilities. This idea, however, has been difficult to implement fully, and is ultimately only a short-term solution.

- Two successive attempts to shift work from over-funded to under-funded Centers have not fully come to fruition. We urge Administrator Griffin to persevere in this critical effort to achieve the budgetary balance needed to support ten healthy Centers. The Exploration Centers must forge greater collaboration with the other Field Centers in order to progress beyond the current crisis and ultimately to make NASA stronger.
- The Constellation work assignments are largely short-term technical oversight tasks for hardware development programs, with the lion's share of the work ultimately being handed over to the private sector. These assignments do not cover many of the Agency's world-class scientists and technology developers, whose innovative research is critical for the long-term health of the Agency and the ultimate success of the Vision for Space Exploration. Visible investment in such self-initiated research and development (R&D) is also essential for recruiting and retaining the best and brightest young minds, interested in cutting-edge research. Even more importantly, after the current flurry of spacecraft designing is over, many employees could find themselves "uncovered" once again. The only sustainable solution is for NASA to reverse its current trend of severe cuts to its Aeronautics, Exploration Research and Technology, and Science programs and to resurrect and maintain a strong cross-cutting R&D effort that benefits all missions.

### Technical Independence:

The reason that all premier Universities continue to embrace tenure as a key component of their workforce planning is that, not only does this allow them to compete successfully for the best new talent, but also because it is a proven path to academic freedom and credibility. In the federal sector, comparable civil-service protections translate into the ability to speak truth to power. Tenured NASA engineers and scientists continue to face the potential threat of reprisal for expressing technical views that are at odds with management. Recently, we have witnessed evidence that the Public Affairs Office has altered or suppressed scientific expression on the Big Bang, climate change, and astronaut survivability. While we applaud the new Administrator's repudiation of such behavior, it remains obvious to many that speaking out still has its price. NASA still needs to improve on this. Full-cost recovery of salary, RIF threats, and term hiring only serve to undermine the independence of NASA's technical experts. Successful policies and missions rest on a solid backbone of truthful, reliable, fearless data gathering and analysis by experts, who are shielded from political or financial pressure.

## Recommendations:

In order to move forward and better support all of NASA missions, IFPTE would like to submit the following recommendations for NASA management:

- 1. Pledge not to lay-off any NASA employees in the foreseeable future.**
  - Civil Servant employees must once again feel respected and valued.
  - The best and brightest young engineering and science graduates need once again to see NASA as a great career move, comparable to accepting a job at a premier academic or private-sector research institution (e.g., MIT or Google).
  
- 2. Request legislation to allow limited, targeted, enhanced buy-out authority.**
  - Many non-critical employees would like to retire immediately, but need to stay on a few more years for financial reasons. A more reasonable compensation package would greatly help NASA and would save the tax payer a lot of money in only a couple of years.
  - The industry standard is one year's pay, which is much more than NASA's \$25,000.
  
- 3. Reject the failed policy of full-cost recovery of civil service salary.**
  - Set up a salary equivalent to the S-CAP account to cover 25% of all technical employees' time. This would more honestly cover training, outreach, proposal writing, center-supported high-risk high-payoff pilot research, Space Act agreements that don't involve salary, and other management assignments that are currently falsely assigned to programs.
  - This would not only eliminate the false uncovered problem once and for all, but would also empower line managers who currently feel disenfranchised by "full-cost."
  
- 4. Embrace genuine and auditable full-cost accounting (not full-cost recovery).**
  - Require that all employees log their time accurately reflecting the work performed as assigned by one's supervisor, instead of back-filling what center or program management wants to see.
  - Use the honest data acquired to perform valid workforce planning (indeed by noting the deviation between predicted and actual work hours performed in each category, one can improve the financial and workforce planning processes).
  - Require all managers to charge their salary to an appropriate G&A account, unless they actually perform technical work for a program. This frees up program dollars to support actual programmatic work and properly logs increasing G&A costs so that they can be properly identified and controlled.
  - Require a clean audit of any full-cost accounting before allowing NASA to make fundamental, irreversible decisions based upon that accounting.

**5. Re-embrace NASA's Aeronautics, Science, and Technology missions.**

- See IFPTE's letter to Dr. Marburger for our analysis of the FY07 budget's adverse impacts on NASA science and technology capabilities (Appendix G)
- See IPFTE's letter to Chairman Shelby and ranking member Mikulski with our FY07 appropriations recommendations (Appendix H). Since this letter, NASA has effectively cancelled the current Robotic Lunar Exploration Program (RLEP) program and re-channeled the funds into a new Lunar Precursor and Robotic Program, which appears to be shifting its focus to the development of the Lunar Surface Access Module (Appendix I). This conversion of Science funds into mostly hardware design, development, and validation funds represents an additional cut of as much as \$134.6 million to the FY07 Science budget.

In conclusion, IFPTE is greatly encouraged by Dr. Griffin's recent effort to distribute Constellation work more fairly and intelligently across the Centers. We also praise his decision to reject many of the technical decisions of his predecessor and to keep more of NASA's technical work in-house. We now ask that he complete the healing process by rejecting his predecessor's ill-advised workforce plan and embrace a forward-thinking approach whereby all NASA's career employees can once again feel like full stakeholders in NASA's Vision. Let us work together to do the world-class Aeronautics, Science, and Exploration work that the American people deserve and expect of us. NASA employees all across the Agency are ready, willing, and more than able to do so, if simply given the chance.

Finally, we would also like to thank Chairman Boehlert for his long and dedicated career of public service. He has done great things for the American people and for NASA. On behalf of the many thousands of NASA employees that we represent, IFPTE thanks him and wishes him well in the next phase of his life. The nation is losing one of its wisest lawmakers.

Once again, Chairman Calvert and ranking member Udall, IFPTE thanks you very much for the opportunity to bring these important issues to your attention.