

NASA's Response to:

"Preparing for the High Frontier – The Role and Training of NASA Astronauts in the Post-Space Shuttle Era"



Flight Crew Operations Directorate

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Recommendation 2.1 (Part A)

- Recommendation
 - The factor for uncertainty used in the model to determine minimum staffing requirements for the astronaut corps should be increased above the current 25%, which is inadequate to provide sufficient flexibility to reliably meet the current flight manifest requirements.
- Response
 - Concur.
 - ⦿ 50% margin of uncertainty was found to be adequate to support ISS and Space Shuttle manifests.
 - ⦿ Several efficiencies led to the decision to reduce the uncertainty margin from 50% to 25%.
 - ⦿ However, time has shown that even with these gained efficiencies, there are still many challenges that continue to contribute to the uncertainty.
 - ⦿ The Flight Crew Operations Directorate (FCOD) will increase the uncertainty factor in future astronaut corps size calculations to a number that will ensure an adequate astronaut corps size in support of NASA's human spaceflight missions.



Recommendation 2.1 (Part B)

- Recommendation

- In addition to Task 1, the Astronaut Office should maintain the staff required to accomplish Tasks 2 through 6, as listed in Finding 2.1A.

Task 1: Provide well-trained spaceflight operators to support the NASA flight manifest.

Task 2: Provide ground support personnel for unique tasks required to support the NASA flight manifest.

Task 3: Provide support for new program development, ranging from development of relatively small payloads and equipment, to development of whole new spaceflight designs.

Task 4: Provide operational knowledge and corporate memory of human spaceflight.

Task 5: Provide for collaboration with other governmental and private organizations as needed and directed by NASA.

Task 6: Provide support for public and educational outreach to society.

- Response

- Concur. With the increase in the uncertainty factor, it is expected that the astronaut corps size will moderately increase, and therefore, more astronauts will be available to support Tasks 2 through 6.



Recommendation 2.2

- Recommendation

- FCOD should continue to serve as a national resource for U.S. human spaceflight experience and knowledge that is:
 - ⦿ Maintained to ensure appropriate staffing and training of the astronaut corps in support of the ISS manifest.
 - ⦿ Applied to the future development of NASA human spaceflight and exploration activities.
 - ⦿ Available to the emerging commercial space industry and the FAA.
 - ⦿ Applied to support authorized agreements with international partners.

- Response

- Concur.
 - ⦿ Astronauts have been providing engineering and operational support since 1959 to help ensure safe and efficient operations due to their knowledge and perspective derived from actual flight experience.
 - ⦿ The astronaut corps support through evaluation, testing and development of new vehicle designs and hardware; training and operations development; and operations of space vehicles along with missions tasks.
 - ⦿ The astronaut corps will continue their future involvement in any NASA effort that advances human spaceflight, including the expansion of permanent human presence beyond low Earth orbit.



Recommendation 3.3

- Recommendation
 - To ensure continued safety and mission success, NASA should maintain a spaceflight readiness training program that includes high-performance aircraft.
- Response
 - Concur. Since 1959, high-performance aircraft have been a critical component in the training of astronauts to operate as a team member in a highly dynamic, fast-changing and sometimes unpredictable environment, with real-world, life-dependent consequences.
 - FCOD will continue to use high-performance aircraft as part of the astronaut training curricula in the future.



Recommendation 3.4

- Recommendation
 - NASA should retain the T-38N fleet for spaceflight readiness training and should fund the fleet at a level commensurate with the projected required size of the post-Space Shuttle astronaut corps.
- Response
 - Concur. Spaceflight readiness training is critical to the success and safety of a spaceflight crew's performance, and as such, the T-38N fleet will continue to be funded at a level commensurate with the projected size of the astronaut corps.



Recommendation 3.5

- Recommendation
 - NASA should continue to monitor training methods and technologies in related fields for possible ways to enhance the astronaut selection and training process.
- Response
 - Concur. As part of our commitment for continual improvement and financial responsibility, FCOD will continue to seek out cost-effective enhancements to training and astronaut selection.