

NASA Glenn Research Center – Next Steps

Congress has passed the NASA Authorization legislation without addressing several issues that are of critical importance to both the short-term and long-term viability of the NASA Glenn Research Center and the State of Ohio. These issues are outlined below with specific recommendations on how they should be addressed in the FY11 appropriations legislation to be considered before the end of the year.

EXPLORATION TECHNOLOGY DEVELOPMENT:

Funding currently allotted by the Senate Authorization Bill is insufficient to advance Exploration Technology Development (ETD). The Senate Authorization Bill authorized \$250 million for this effort. The current draft of the Senate Appropriations bill appears to further reduce funding for this critical effort by appropriating only \$150 million for ETD in FY11.

The House Compromise Bill had set funding at \$300 million for FY11.

Going forward, innovation in NASA exploration missions will require a robust and properly funded technology development program in order to accomplish our nation's exploration goals. Overall leadership for Exploration Technology Development has not been assigned. Previously, in the President's Budget Request roll-out, Glenn had been assigned a leadership role for Exploration Technology Development and Demonstration (*a major element of Exploration Technology Development*), evident of Glenn's capability to lead the agency's ETD program.

Recommendations:

- **Funding of at least \$250 million should be appropriated for ETD in FY11.**
- **Lead responsibility for ETD should be assigned to NASA Glenn.**

SPACE ENVIRONMENTAL TESTING:

The Senate Bill contained no language supporting Plum Brook Station including completion of modifications and utilization of the Space Power Facility, language on utilization of the B-2 facility or a runway at Plum Brook. Language supporting completion of the A-3 facility at Stennis was included in the Senate Authorization Bill.

The House Compromise Bill also failed to address completion and utilization of Plum Brook.

Given its unique world-class capability, NASA would be best served to perform qualification and acceptance environmental testing at the NASA Plum Brook Station Space Power Facility for space vehicles developed for exploration.

Recommendations:

Language in the Appropriation bill(s) should:

- 1. Complete the modifications to Space Power Facility;**
- 2. Direct Space Environmental Testing to Plum Brook Station for NASA and commercial space industries, and;**
- 3. Encourage cross-agency utilization by Air Force Space Command, DOD, NRO, and others.**

INTERNATIONAL SPACE STATION:

Operation of the International Space Station (ISS) is extended in the Senate Bill to at least 2020. Funding for ISS utilization in life and physical sciences was not specified in the Senate Bill.

Operation of the ISS is extended in the House Compromise Bill, consistent with the Senate Bill. It also authorized \$75 million in FY11 for life and physical science research.

Full utilization of the ISS for life and physical sciences will provide a major return on the significant U.S. and International investments in this unique facility. Additionally, based on current contributions to the ISS, Glenn is the NASA Center best positioned to maximize the capability for physical science research on the International Space Station. By developing and manifesting new inserts for the Glenn-developed Combustion Integrated Rack and the Fluid Integrated Rack, Glenn can lead NASA's efforts to provide researchers with new uses for the racks and inserts in microgravity research. It is critical that sufficient funds be appropriated for these areas.

Recommendation:

- **Funding of *at least* \$75 million in FY11 for life and physical sciences with substantial growth in future years.**
- **Direct NASA to develop and manifest new inserts for the Combustion Integrated Rack and the Fluids Integrated Rack.**

HEAVY LIFT LAUNCH VEHICLE ROLES AND RESPONSIBILITIES:

The Senate Bill contained no language directing NASA to utilize expertise and capabilities of Centers for the Space Launch System as intended for Ares V and previously used for Ares I.

The House Compromise bill was likewise silent.

Previously, Glenn had major roles and responsibilities in Ares I and further leadership was planned for Ares V that included substantial funding, workforce utilization and acquisition authority for Glenn. Based on previous experience and prior expertise, Glenn is the most capable NASA Center to lead the design, development and acquisition/build of the power system, thrust vector controls system, payload shroud, flight instrumentation, and hazardous gas-purge systems for any launch vehicle developed by NASA.

Recommendation:

- **Language in the Appropriations bill(s) is imperative to support utilization of Glenn expertise and capabilities in development of the heavy lift launch vehicle.**

CONTINUATION OF THE SHUTTLE PROGRAM:

The Senate Bill contained language authorizing the continuation of the Shuttle program through the remainder of FY11, including an addition shuttle flight and stand-by requirements.

The House Compromise Bill did not include this provision.

The Senate bill's requirement does not designate a funding source, nor specify which programs may be eliminated or reduced in order to accomplish these activities. This amounts to an unfunded mandate of \$500 million or more.

Recommendation:

- **The Appropriations bill(s) must include language that prevents the 'raiding' of program funding important to the Glenn Research Center and Plum Brook Station (including, but not limited to ETD, Space Technology, Plum Brook Station modifications and Space Environmental Testing, full utilization of ISS, and Heavy Launch) in order to fund an additional Shuttle flight.**

CRITICAL, LONG TERM PRIORITIES

In addition to the five critical issues identified above (*ETD, Space Environmental Testing, ISS, Heavy Launch Vehicle, and additional shuttle flight*), there are also a number of critical, longer term priorities that will benefit Glenn and Ohio IF properly funded and planned for, including: *Solar Electric Propulsion, Unified Nuclear Program Office, and Cryogenic Upper Stage/Transfer Stage*. These opportunities (described below) **MUST** be pursued in earnest, beginning with the FY11 appropriations process. The Greater Cleveland Partnership has previously advocated for elements of these items since the President's Budget Request for FY11 was initially released in February 2010.

Solar Electric Propulsion: A Solar Electric Propulsion (SEP) stage has significant potential to reduce launch mass for human exploration architectures while also increasing the science return for robotic mission. As the world-class leader in development of electric propulsion including the NEXT ion propulsion system and as NASA's lead Center for service module design and development, the Glenn Research Center is strategically positioned to lead the design, development and acquisition/build of SEP capability for all NASA architectures.

Unified Nuclear Program Office: NASA human and robotic missions require nuclear power to support science and habitats for high-power missions far from the sun. In order to optimize the critical interface with the Department of Energy, Glenn Research Center would be most capable to lead a Unified Nuclear Program Office in efforts to provide the core skills/leadership for the design, development and acquisition/build of radioisotope and fission surface power systems.

Cryogenic Upper Stage/Transfer Stage: Future space exploration will require high performance cryogenic stages to execute maneuvers to rendezvous with objects in space. The Glenn Research Center has the capability and expertise to lead the design, development, acquisition/build and operation of any cryogenic upper stage or transfer stage developed for exploration.