

**Fall 2018 REDAC**  
**Subcommittee:** NAS Operations  
**DFO Name:** Francisco Bermudez

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**FINDINGS AND RECOMMENDATIONS**

**Human Factors**

**General Observation**

During the fall 2018 NAS Operations REDAC meeting, the subcommittee committee was briefed by the NextGen Enterprise Human Factors office on the FY2021 proposed portfolio for Budget Line 1A11B0. The Enterprise Human Factor Development program provides integrated guidance on human performance considerations to concept development, validation, and implementation teams.

**Finding:** The subcommittee applauds the FAA in directing research toward systemic human factors considerations and defining best practices and related standards to ensure new concepts and technologies are accepted and effective. However, the process for determining which topics to pursue appears to be fragmented and lacks a cohesive top-down strategy. For example, effective air traffic management will become increasingly important as operations evolve from traditional tactical ATC to more strategic TBO flow management, yet ATM human factors research has not been identified as a priority. Additionally, it is not clear that the products produced through human factors research are communicated and disseminated in an effective manner to the broad set of FAA programs that may need that information.

**Recommendation:** The FAA should develop a clear top-down strategy for identifying and prioritizing human factors research that spans existing acquisition programs as well as future NextGen initiatives. This strategy should extend beyond tactical air traffic control to include complex collaborative air traffic management considerations in the future TBO environment. A more effective process for cataloguing and disseminating human factors research products should also be defined and implemented.

**Commercial Space Transportation**

**General Observation**

During the Fall 2018 NAS Operations REDAC meeting, the subcommittee committee was briefed by the Office of Commercial Space Transportation (AST) for Budget Line A.11N. AST regulates the civil, military, and commercial sectors of the space program to ensure the protection of the public, property and national security and to encourage, facilitate, and promote U.S. commercial space transportation.

This R&D portfolio addresses four reclassified research areas: (1) Aerospace Access and Operations, (2) Aerospace Vehicles, (3) Human Operations and Spaceflight, and (4) Industry Innovation.

**Finding:** Today, integration of commercial space operations into the NAS is managed using existing traffic management tools. Given the rapid projected growth in commercial space operations, this

methodology is not sustainable moving forward. To date there has been little focus on analysis of flights, whether pre- or post operations, to identify ways to decrease the size and timeframe of blocked airspace. Airspace operators are counting on near-term development activities for new procedures and tools to help support more efficient integration of commercial space operations. The subcommittee acknowledges there has been positive effort to enhance coordination through initial investments at ATCSCC with prototype space operation integration tools. Inclusion of data sharing services via SWIM will enable all NAS users to better plan operations. Identification of appropriate services and establishment of community best practices, like CDM, will foster industry collaboration engagement with FAA. This issue extends beyond technical considerations to also include policy decisions regarding the relative priority for access to airspace when contested between commercial space operators and commercial air carriers. Some of these policy decisions may be informed by recommendations made by Aviation Rulemaking Committee focused on Airspace Access Prioritization, which have not yet been released.

**Recommendation:** The FAA should accelerate its investment in near-term solutions (not requiring new tools) to minimize operational impact of commercial space launches on all NAS users. Investment in research for longer term solutions, such as TBO and integration R&D related to surveillance, aircraft separation, and airspace management during space operations needs to be accelerated. Technology, data, and processes should be developed for objectively mediating the relative costs and priorities between space and air operations requesting access to the same airspace.

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## **ACTION ITEMS**

The NAS Operations Subcommittee appreciates the updates provided by the FAA briefing teams in the following topics, and requests that these items be included in upcoming Subcommittee meetings:

### **New ATM Requirements**

Topics of interest to the Subcommittee include the following:

- Can the FAA team share an overview of the requirements currently developed or in development for TBO operations in the NAS, as applied initially to commercial and business aviation?
- Does the FAA have plans to work with NASA Glenn Research Center (for example) regarding spectrum requirements, network performance standards, and related regulatory challenges for data comm related to TBO?

### **Operations Concept Development and Infrastructure**

- Can the FAA team report on opportunities to extend ongoing scenario-based concept analysis by applying machine learning techniques on a large scale to digital archives of surveillance data, TMIs and weather?

### **UAS**

- What information can the FAA team share regarding work with NASA and the aeronautics community in assessing the transfer of UAS airspace architectures and procedures technologies and systems into the needs of the evolving Urban Air Mobility operational needs?

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### **INFORMATIONAL BRIEFINGS FOR NEXT MEETING**

- NASA – ATMx (Air Traffic Management – Exploration) program overview, with insights into FAA roles.
- NASA Urban Air Mobility (UAM) Grand Challenges Program overview, with insights into FAA roles.
- Propose that we invite Pentastar Aviation on the topic of UAS industrial applications and related R&D needs.
- Civil Aerospace Medical Institute Aerospace Human Factors Research Division