Air and Space Integration

Impact and Risk to Aviation from Space Hazards

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Panel 3 Risks Posed to Civil Aviation and Suborbital Operations
U.S. Spaceports
Commercial/Government/Private Launch Sites

Key
- U.S. Federal Launch Site-6
- Non-Federal FAA-Licensed Launch Site-8
- Owned by University of Alaska Geophysical Institute-1
- Sole Site Operator-3

* Other spaceports have been proposed by: Alabama, Colorado, Georgia, Hawaii, Puerto Rico, and multiple locations in Texas and Florida.
Air and Space Traffic

Current Approach: Accommodation

• Generally, the FAA protects aircraft against potential hazards posed by launch and reentry vehicles using preemptive airspace closures (i.e., segregated airspace)
  • Relatively large, static volumes of airspace (i.e., aircraft hazard areas) are closed in advance of a launch, reentry, or amateur rocket operation to protect air traffic from hazards of vehicle failures, including falling debris

• Tactical and responsive approaches to airspace management are applied on a limited basis
Launch Protected Areas
Future Approach: Integration

- Generally, launch and reentry vehicles and aircraft will share airspace
  - Air traffic management will focus on preventing collisions between vehicles and aircraft (i.e. separation) rather than collisions between aircraft and falling debris (i.e. segregation)

- Exceptions will be made for activities that have a relatively high likelihood of failing in a manner that produces falling debris or otherwise posing elevated risk to other National Airspace System (NAS) users
  - Examples include research and development, flight test, and planned hardware jettisons
Airspace Management Planning during periods of heavy traffic

Gap may allow increased airspace efficiency during launch

Aircraft kept out of AHA for 25 minutes

Cape Canaveral, Florida
Impact to Aviation

• Unplanned Debris
  – May reenter over busy air traffic routes.
    • Notification received and an Advisory issued if needed.
    • Notification may be too short for any action.
Impact to Aviation

• Space Weather
  – May create a hazardous environment due to loss of communications, power and GPS capabilities.

• Nextgen solutions will provide 4D trajectories (Longitude, Latitude, Altitude and Time) that may eventually be useful to space vehicles.
Questions?

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