FAA | AST Commercial Space Transportation

COMSTAC

April 23, 2024

Federal Aviation Administration

Agenda (1 of 2)

9:00 – 9:05: Welcome Remarks by DFO, Brian Verna

9:05 – 9:10: COMSTAC Chair Welcome Remarks

Remarks

9:10 – 9:30: Mr. Kelvin B. Coleman, Associate Administrator,
Office of Commercial Space Transportation

COMSTAC Discussion and Deliberation

9:30 – 10:30: TASK #1: Space nuclear systems advisory circular and space policy directive 6

10:30 – 10:45: BREAK

10:45 – 11:45: TASK #2: Part 450 solutions

11:45 – 12:15: TASK #3: Human space flight occupant recommended practices

12:15 – 12:30: TASK #4: Safety frameworks using consensus standards

Agenda (2 of 2)

12:30 – 1:15: LUNCH BREAK

1:15 – 1:45: TASK #5: Commercial space transportation research alliance

1:45 – 2:15: TASK #6: Infrastructure funding

2:15 – 2:30: BREAK

FAA Briefing to COMSTAC

2:30 – 3:30: Response to open COMSTAC recommendations, advisory circular (AC) and policy updates, future of licensing

3:30 – 3:40: Public Comment Period

3:40 – 3:50: COMSTAC Recommended Taskings for Fall Meeting

3:50 – 3:55: Closing remarks by COMSTAC Chair and Vice-Chair

3:55 – 4:00: Closing remarks and Adjournment by DFO Brian Verna

Kelvin B. Coleman

Associate Administrator, Office of Commercial Space Transportation

Regulatory Working Group

April 23, 2024

Regulatory Working Group Task 1

Provide any observations, findings, or recommendations on AC 450.45-1, Space Nuclear Systems.

Also, what recommendations can the COMSTAC provide to the FAA to ensure FAA contributes to Space Policy Directive 6 (SPD-6)?

Space Nuclear Systems - Findings

- As noted in SPD-6, “the Nuclear Regulatory Commission (NRC) has statutory authority under the AEA for licensing and regulatory safety and security oversight of commercial nuclear activities taking place within the United States.” (Sec. 4(h)
- SPD-6 also notes that the Secretary of Transportation, consistent with 51 U.S.C. 50904, has responsibility for payload reviews that “may be conducted as part of a license application review or may be requested by a payload owner or operator in advance of or apart from a license application.” (Sec. 4(e)).
- In comments regarding the AC, a critical issue the industry identified for the FAA is the need for expedited decision-making processes. Industry consistently indicated the need for a framework in which the FAA commits to finalizing an SNS payload review ahead of a launch or reentry licensing decision within a specific timeframe.
- Department of Transportation (DOT) has taken actions to establish thresholds below which nuclear materials can be transported on various modes of transport, such as aircraft, buses, and trains, without the need for performance tested packaging, approval from the Nuclear Regulatory Commission (NRC), or special authorization from the DOT, particularly for devices containing radioactive material of activities less than 0.001 x A2.

Space Nuclear Systems - Observations

- The FAA published Advisory Circular (AC) § 450.45-1 on October 20, 2023, to provide guidance to applicants when space nuclear systems (SNS) are present on a launch or reentry vehicle. The AC provides a means of compliance and guidance for applicants proposing to launch or reenter SNS for meeting the requirements for a safety review under § 450.45 as well as those seeking a payload determination for SNS under 14 CFR § 450.43.
- The FAA would benefit from collaborating with NRC, given that NRC-licensed SNS will be subject to FAA approval as payloads and for launch and reentry operations.
- The commercial space industry would benefit from clarification regarding which agency (if any) has licensing authority with respect to an SNS' ability to operate in-space or on celestial bodies.

Space Nuclear Systems - Recommendations

- The FAA should develop a strong collaborative relationship with the Nuclear Regulatory Commission (“NRC”).
- The FAA should explore with NRC, DOE, and the rest of the Interagency which agency (if any) has authority for licensing the operation of Space Nuclear Systems (“SNS”) once they are in space.
- The FAA should engage meaningfully with experts and companies developing space nuclear systems to make updates to AC 450.45-1.
- The FAA should adopt a framework for finalizing an SNS payload review ahead of a launch or reentry licensing decision within a specific timeframe.
- The FAA should allow for the launch of radioactive materials in small quantities without requiring overly burdensome safety analysis could yield valuable insights without increasing public risk.
- The FAA should address challenges with procuring insurance to for launches of space nuclear systems.

Break

Regulatory Working Group Task 2

Provide FAA suggested fixes to specific Part 450 requirements. The FAA provided the RWG with a priority list.

Part 450 Task – Findings

- The FAA's list of focus areas reflects many industry concerns regarding Part 450 regulations needing improvement.
- Almost half of the Advisory Circulars for the Part 450 regulations remain unpublished.
- Approval of Means of Compliance (MOC) has been extremely difficult under Part 450.

Part 450 Task - Observations

- The COMSTAC supports the FAA's announced plans to initiate a Space Advisory Rulemaking Committee to gain industry inputs into challenges with Part 450 and clear recommendations for changes.
- In reviewing the ACs that have been published, members have identified significant typos and aspects that fail to provide clarity. Those who have submitted comments on, and suggested revisions to, ACs have not seen any updates published.
- The FAA's approach to MOC has required applicants to expend significant resources developing new, bespoke models to be Part 450 compliant, often in the absence of any published guidance by FAA on the requisite subjects.
- It is unclear what metrics play into MOC approval under 14 CFR § 450.35. Applicants report significant frustration with the FAA's lack of transparency regarding the FAA's assessment and approval process for MOC.

Part 450 Recommendations

- The FAA should engage meaningfully and consistently with FAA applicants and interested parties to define clear goals for regulatory reform.
- The FAA should reinvigorate its efforts to publish Advisory Circulars (ACs) that address aspects of the Part 450 regulations.
- FAA should evaluate a change to its policy and regulations to address the significant challenges with its Means of Compliance review and methodologies for Flight Safety Analyses.
- The FAA should expeditiously move forward with the Part 450 SpARC.

Tasks 3 & 4

Safety Working Group

April 23, 2024

Task 3: *Review the 2023 Recommended Practices for Space Flight Participant Occupant Safety and provide any observations, findings, or recommendations to this document (continued)*

Observations: The FAA AST Recommended Practices for Human Spaceflight Occupant Safety V2 is an initial effort to clarify and guide human space flight occupant safety within the commercial space industry ahead of a future regulatory framework. Industry via COMSTAC or otherwise was not consulted ahead of it's release.

Task 3: *Review the 2023 Recommended Practices for Space Flight Participant Occupant Safety and provide any observations, findings, or recommendations to this document (continued)*

Findings: COMSTAC has serious concerns on the 1) purpose, 2) content, and 3) intent of use of this document.

1. The purpose of the document is unclear as the title indicates recommended practices for SFP occupant safety, however, the scope of the document as written spans vehicle design, manufacturing, and other broader system safety topics. In addition, topics that directly affect SFP health and safety such as medical reviews and radiation exposure, were omitted.
2. The content of the document is prescriptive and not consistent. There is evidence of prescriptive requirements pulled from multiple existing sources that may not be applicable to all operators in industry. In addition, the content also introduces concerns about potential conflicts with Part 450 requirements.
3. The intent of the document is unclear whether this is truly intended to be guidelines or a framework for future regulation. The intent has important implications on operator use.

Task 3: *Review the 2023 Recommended Practices for Space Flight Participant Occupant Safety and provide any observations, findings, or recommendations to this document (continued)*

Recommendations:

COMSTAC recommends a revision or retraction of the *2023 Recommended Practices for Space Flight Participant Occupant Safety*.

FAA AST should host a discussion on the scope of what human occupant safety entails before future guideline revisions are released. This could be held within the existing SpARC or another forum but it is recommended that discussion occur after the initial Part 460 SpARC work is complete for guidance and deconfliction.

Until a revision or a retraction is issued, FAA AST should clarify intent of document to guide any use by new and existing entrants.

Task 4: *Research possible frameworks that use industry consensus standards as a means of compliance for performance-based safety requirements and provide recommendations on how the commercial space industry might use similar frameworks.*

Observations: COMSTAC notes that there is currently a SpARC effort on Part 460 that may be looking at a range of topics to include potential future frameworks for human occupant safety.

Recommendations: In an effort to avoid duplicative work, COMSTAC recommends that this tasker be addressed in partnership with the SpARC.

Lunch Break