FAA | AST Commercial Space Transportation

COMSTAC

Afternoon

September 16, 2024

Federal Aviation Administration

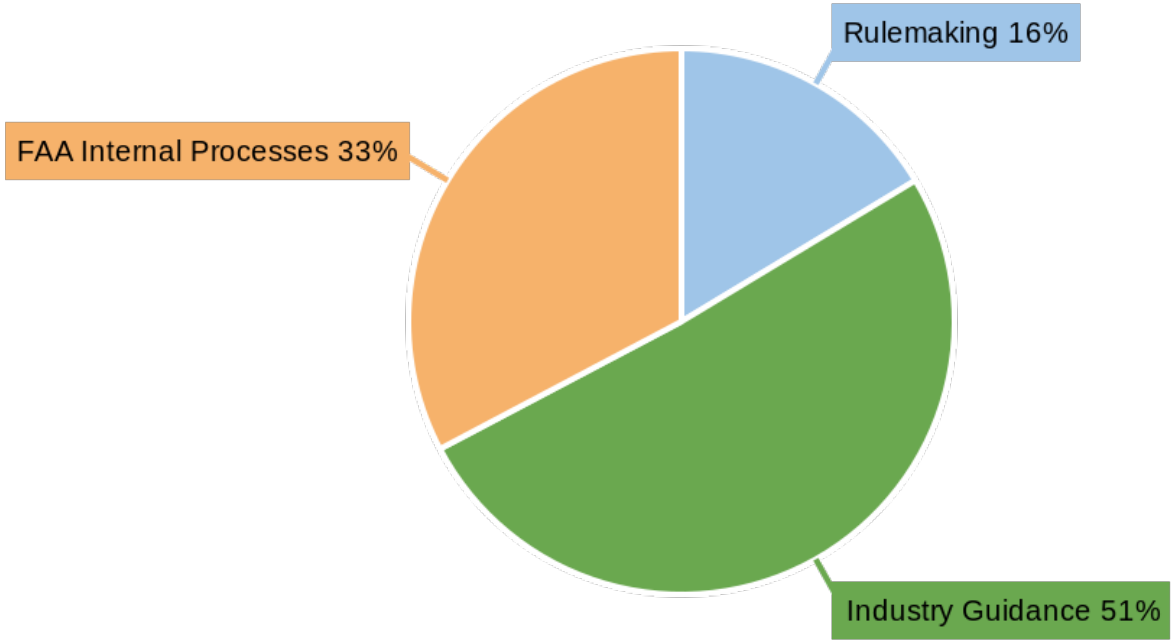
Afternoon Agenda

1:15 – 2:00:	**FAA brief on COMSTAC recommendations, ACs, and Rules**
2:00 – 3:45:	**Around the table discussion on future taskings**
3:45 – 3:50:	**Public Comment Period**
3:50 – 4:00:	**Closing Comments**
4:00:	**Adjournment**

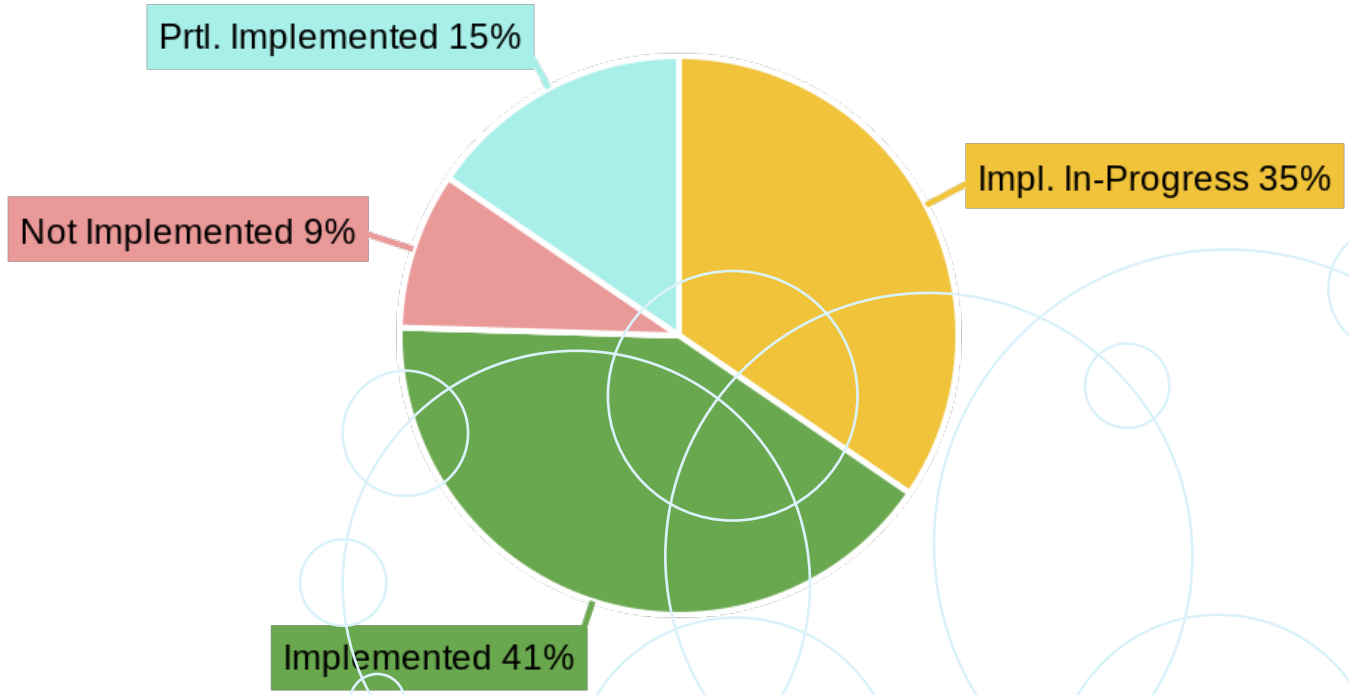
COMSTAC Recommendations, ACs and Rules Update

COMSTAC Recommendations Overview

FAA Categories 2018-Present



Recommendation Status 2018-Present



Recommendation and Response

Recommendation (April 2024)	Response
Infrastructure Funding: Update the Space Transportation Infrastructure Matching (STIM) Grants Program by changing the maximum Federal share from 50 percent to 90 percent (to be consistent with what is done for Airport Grants) and by deleting the requirement for a 10 percent private sector match. • Increase the program funding level to $100 million per year. • Prioritize grant awards based on the project benefit to the National Spaceport Network in terms of Safety, Capacity, Efficiency, and Resiliency.	The FAA gave a presentation to Congress on the differences between the STIM grant program and other DOT grant programs (requirement for 50% match, cap on award amount, etc.) in October of 2023. We have answered various technical assistance requests from Congress on the topic since and have highlighted these differences when asked. The FAA also continues to work on prioritizing spaceport infrastructure investment through the work of the National Spaceport Interagency Working Group.

Recommendation and Response

Recommendation (April 2024)	Response
AC 450.45-1 Space Nuclear Systems:	
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 is actively involved in working with all the nuclear energy-engaged Departments and Agencies within the U.S. The Interagency Nuclear Safety Review Board, (INSRB) is an interagency (DoD, DOE, DoS, DoT, EPA, NASA, NRC) board that serves as part of the checks and balances of the Presidentially directed processes portfolio for launches of spacecraft containing space nuclear systems.
The FAA should develop a strong collaborative relationship with the NRC.	
The FAA should address challenges with procuring insurance for launches of space nuclear systems.	Request additional details on this recommendation. What are the challenges should the FAA address that are within our statutory authority?

Recommendation and Response

Recommendation (April 2024)	Response
AC 450.45-1 Space Nuclear Systems (cont.):	
The FAA should adopt a framework for finalizing an SNS payload review ahead of a launch or reentry licensing decision within a specific timeframe.	Part 450 provides for a stand-alone payload review prior to the launch operator submitting a license application. This will ensure that the SNS operator has time to fully disclose information and work to obtain a favorable payload review.
The FAA should allow for the launch of radioactive materials in small quantities without requiring overly burdensome safety analysis. This could yield valuable insights without increasing public risk.	The AC was written to be scalable to the risk. Under the current framework for very small quantities with appropriate safety, there is not a burdensome amount of information required to be submitted.

Recommendation and Response

Recommendation (April 2024)	Response
Part 450 Solutions:	
The FAA should reinvigorate its efforts to publish Advisory Circulars (AC) that address aspects of the Part 450 regulations.	Publication of Advisory Circulars (ACs) is an on-going priority for the FAA
The 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.	Means of compliance and methodologies will likely be a significant topic in the Part 450 SpARC. We are also focused on increasing regulatory clarity for applicants.
The FAA should expeditiously move forward with the Part 450 SpARC.	We expect the charter to be signed soon and will send letters of invitation as quickly as possible afterward
The FAA should engage meaningfully and consistently with FAA applicants and interested parties to define clear goals for regulatory reform.	AST is engaging with COMSTAC, the SpARC, and individual applicants to obtain clear pain points for regulatory reform efforts.

Recommendation and Response

Recommendation (April 2024)	Response
Human Space Flight Occupant Recommended Practices:	
The 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.	After the 460 SpARC work is completed, we will consider hosting a discussion on the Recommended Practices document.
Until a revision or a retraction is issued, AST should clarify intent of document to guide any use by new and existing entrants.	The document is intended to create a dialogue among, and perhaps consensus of, government, industry, and academia on practices that will support the continuous improvement of the safety of launch and reentry vehicles designed to carry humans. The document can also be used to help identify subject areas that could benefit from industry consensus standards. The document is not regulatory in nature.
COMSTAC recommends a revision or retraction of the 2023 Recommended Practices for Space Flight Participant Occupant Safety.	

Recommendation and Response

Recommendation (May 2023)	Response
Industry Consensus Standards: As the SWG continues to review its recommendation for how voluntary consensus standards can be used as a means of compliance with performance-based requirements, initial findings are that: • In addition to industry standards, means of compliance for future performance-based requirements should include government standards and other unique means of compliance developed by an individual applicant.	Government standards are used as means of compliance (MOC). The FAA would publish as a MOC industry unique MOCs that have been accepted if industry does not claim those MOCs as proprietary. If a MOC is deemed by the industry stakeholder to be proprietary, then the FAA will not be able to publish it.

Recommendation and Response

Recommendation (May 2023)	Response
Human Spaceflight:	
The FAA should detail how it analyzes the readiness indicators outlined in the report and provide more thorough substantiation of the agency's findings regarding the industry's readiness to implement.	The readiness indicators are being discussed within the part 460 SpARC. The FAA plans to readdress the indicators after the SpARC.
The FAA should continue to encourage current efforts to develop industry consensus standards through the devotion of resources and incentives for operators to participate.	The FAA continues to dedicate resources to the development of industry consensus standards and when a standard can be used to show compliance to a requirement, we will publish guidance appropriately.
The FAA should prioritize updating the 2014 Recommended Practices for Human Space Flight Occupant Safety document, including COMSTAC review, prior to taking further action.	On Dec. 4th, 2023, DFO tasked COMSTAC to provide observations and recommendations on the recommended practices and we received feedback at the April 23rd, 2024, meeting.

Recommendation and Response

Recommendation (May 2023)	Response
Human Spaceflight (cont.):	
The FAA should continue collaboration with COMSTAC and industry partners to determine the HSF SpARC's scope, participants, and pace.	The SpARC is underway and is expected to complete its final recommendations report in the fall of 2024. This activity is independent of COMSTAC.
Should additional activity be required with respect to HSF, the FAA should seek additional resources.	The FAA has requested through appropriate channels, an increase to coincide with additional actions. The FAA will continue to monitor and plan for additional resources once the learning period sunsets.
In a limited resource environment, the FAA should ensure that activities in this area should not negatively impact the FAA's ability to manage the current and expected increase in launch and reentry licensing activity and other current statutory duties of the office.	The resources for HSF OS work is different than the resources for launch and reentry licensing as well as the resources for the Office of Spaceports

Recommendation and Response

Recommendation (Regulatory Working Group)	Response
The FAA should clarify and as needed amend Part 450 to address challenges with requirements that are distinct to launch or reentry. The FAA should prioritize Part 450 clarification through guidance and policy balanced with reforms.	FAA/AST has requested the Transportation Secretary to charter a part 450 SpARC to obtain industry recommendations on updating part 450. This will allow us to gather detailed industry feedback on changes and updates that are needed to provide a better streamlined licensing process while maintaining the focus on public safety. As of 16 September, there are a total of 22 ACs published on the FAA/AST website with 15 more being actively worked.

New Advisory Circulars in FY24

AC 413.13-1 Guidance on Submitting a Complete Enough and Complete Application for a Vehicle Operator License (New in FY24)
AC 413.5-1 Pre-Application (Close to Issuance in FY24)
AC 450-45-1 Launch and Reentry of Space Nuclear Systems (New in FY24)
AC 450.101-1B High Consequence Event Protection (Revised in FY24)
AC 450.115-1B High Fidelity Flight Safety Analysis (Revised in FY24)
AC 450.115-2 FSA Methodology Rigor (Close to Issuance in FY24)
AC 450.117-1 Trajectory Analysis for Normal Flight (New in FY24)
AC 450.137-1 De Minimus FFBO Hazard (New in FY24)
AC 450.139-1 Toxic Hazards (New in FY24)
AC 460.15-1 Human Factors Considerations in Commercial Space Flight (New in FY24)

Current Advisory Circulars in FY24

AC 450.3-1 Definition of Launch and Scope of a Vehicle Operator License
AC 450.31-1 Applying for FAA Determination on Policy or Payload Reviews
AC 450.103-1 Safety System Program
AC 450.107-1 Hazard Control Strategies
AC 450.108-1 Flight Abort Rule Development
AC 450.109-1 Flight Hazard Analysis
AC 450.110-1 Physical Containment as a Hazard Control Strategy
AC 450.123-1 Population Exposure Analysis
AC 450.141-1A Computing Systems and Software
AC 450.161-1 Control of Hazard Areas
AC 450.167-1 Tracking for Launch and Reentry Safety Analysis
AC 450.169-1 Launch and Reentry Collision Avoidance Analysis
AC 450.173-1 Mishap Plan – Reporting, Response, and Investigation Requirements
AC 450.179-1 Ground Safety

Upcoming Advisory Circulars

1. AC 450.143-2 Safety Critical Systems Non-FSS
2. AC 450.121-1 Breakup Modeling (Causes of Breakup)
3. AC 460.45-1 Informed Consent (Human Space Flight)
4. R 450.117-1A Trajectory Analysis for Normal Flight
5. R 450.161-1 Control of Hazard Areas
6. 450.133-1 Airspace and Waterborne Vessel Hazard Areas
7. 450.131-1 Probability of Failure
8. R 450.137-2A FFBO Analysis
9. 450.135-1 Debris Risk Metrics
10. R 450.121-1B Breakup Modeling (expansion)
11. 450-119-1 Malfunction Trajectory Analysis
12. R 450.121-1C Yield from Propellant/Tank Impacts
13. 450.113-1 Flight Safety Analysis: Levels of Fidelity
14. 450.135-2 Consequence Modeling
15. 450.121-2 Debris Risk Propagation
16. 450.110-1 Physical Containment as a Hazard Control Strategy
17. R 450.139-1 Toxic Hazards Analysis and Thresholds
18. R 450.123-1A Population Exposure
19. R 450.121-1D Structural Analysis for High Fidelity Flight Safety Analysis
20. R 450.115-1C High Fidelity Flight Safety Analysis
21. 450.115-TBD Medium Fidelity Flight Safety Analysis
22. 450.143-1 Reduced Rigor Flight Safety Systems
23. R 450.107-1 Hazard Control Strategies Determination
24. R 453.TBD Launch Collision Avoidance
25. R 440.17-1A Reciprocal Waiver of Claims Requirements

Additional Advisory Circulars

1.	AC 450.135-1	Debris Risk Metrics
2.	AC 450.137-1	FFBO Analysis
3.	AC 450.121-1	Inert Debris
4.	AC 450-119-1	Malfunction Trajectory Analysis
5.	AC 450.121-1	Yield from Propellant/Tank Impacts
6.	AC 450.113-1	Flight Safety Analysis: Levels of Fidelity
7.	AC TBD	Hybrid Vehicles
8.	AC 450.135-2	Consequence Modeling
9.	AC 450.121-2	Debris Risk Propagation
10.	AC 450.110-1	Physical Containment as a Hazard Control Strategy
11.	AC 450.139-1	Toxic Hazards Analysis and Thresholds
12.	AC 450.123-1A	Population Exposure (REVISION)
13.	AC 450-121-1	Structural Analysis for High Fidelity Flight Safety Analysis
14.	AC 450.115-1A	High Fidelity Flight Safety Analysis (REVISION)
15.	AC 450.115-TBD	Medium Fidelity Flight Safety Analysis
16.	AC 450.143-1	Safety Critical Systems
17.	AC R 450.107-1	Hazard Control Strategies Determination

Rulemaking Activities

- Commercial Space Launch Competitiveness Act (CSLCA)
  - *This rule incorporates various changes required by the United States Commercial Space Launch Competitiveness Act of November 2015.*
  - *Expect publication of final rule forthcoming in the next few weeks.*
- Orbital Debris rule
  - *We are still working through comments to the NPRM*

Public Comment

Future COMSTAC Tasking Discussion

Closing Remarks