

Office of Commercial Space Transportation

Draft Established Practices for Human Space Flight Occupant Safety

Presented to: COMSTAC

By: Randy Repcheck

Date: September 24, 2013



Federal Aviation
Administration



Outline

- **Purpose of the Teleconference**
- **Questions and Answers**
- **Way Ahead**



Purpose of the Teleconference

- On July 31, 2013, we submitted to COMSTAC a draft document on Established Practices for Human Space Flight Occupant Safety for its review and comment.
- On September 23rd, we submitted to COMSTAC a revised version of the document that provides rationale for each established practice.
- In this teleconference, we will introduce the document through questions and answers, obtain early feedback from COMSTAC members, and discuss a way ahead.

Questions and Answers

1) What is the purpose of the draft established practices?

- To share our thoughts about what occupant safety measures have historically proven to be worthwhile for most human space flight system concepts.
 - As part of our mandate to encourage, facilitate, and promote the continuous improvement of the safety of launch and reentry vehicles designed to carry humans.
- Ultimate goal of our effort is to gain the consensus of government, industry, and academia.
- The outcome of this effort may –
 - Serve as a starting point for a future rulemaking, and
 - Help the industry develop future consensus standards.

Questions and Answers (cont.)

2) How did we develop the draft established practices?

- We reviewed existing government and private sector requirements and standards.
- Chose to primarily use NASA's requirements and guidance for its Commercial Crew Program as our guide.
 - Purpose was not to copy NASA's requirements, but to use them as a means to capture relevant safety concepts.
- We also consulted with -
 - COMSTAC
 - Civil Aerospace Medical Institute
 - Center of Excellence for Commercial Space Transportation
 - NASA

Questions and Answers (cont.)

3) What is the document's scope?

- Occupant safety only.
 - Public safety and mission assurance are not directly addressed.
- Orbital and suborbital flights.
- Orbital rendezvous and docking, long duration flights, extravehicular activity, and any flights beyond earth orbit are not explicitly covered.
- Period of coverage - from when occupants are exposed to vehicle hazards prior to flight through when they are no longer exposed to vehicle hazards after landing.

Questions and Answers (cont.)

4) What level of safety and level of care does the document address?

- No specific level of safety (risk) due to wide variety of systems and flight profiles likely in the near future.
- Two levels of care are articulated in the document:
 - Occupants should not experience an environment during flight that would cause death or serious injury (this is a low bar).
 - The level of care for flight crew when performing safety critical operations is increased to the level necessary to perform those operations.
- In an emergency the same level of care is not expected to be maintained - only a reasonable chance of survival.

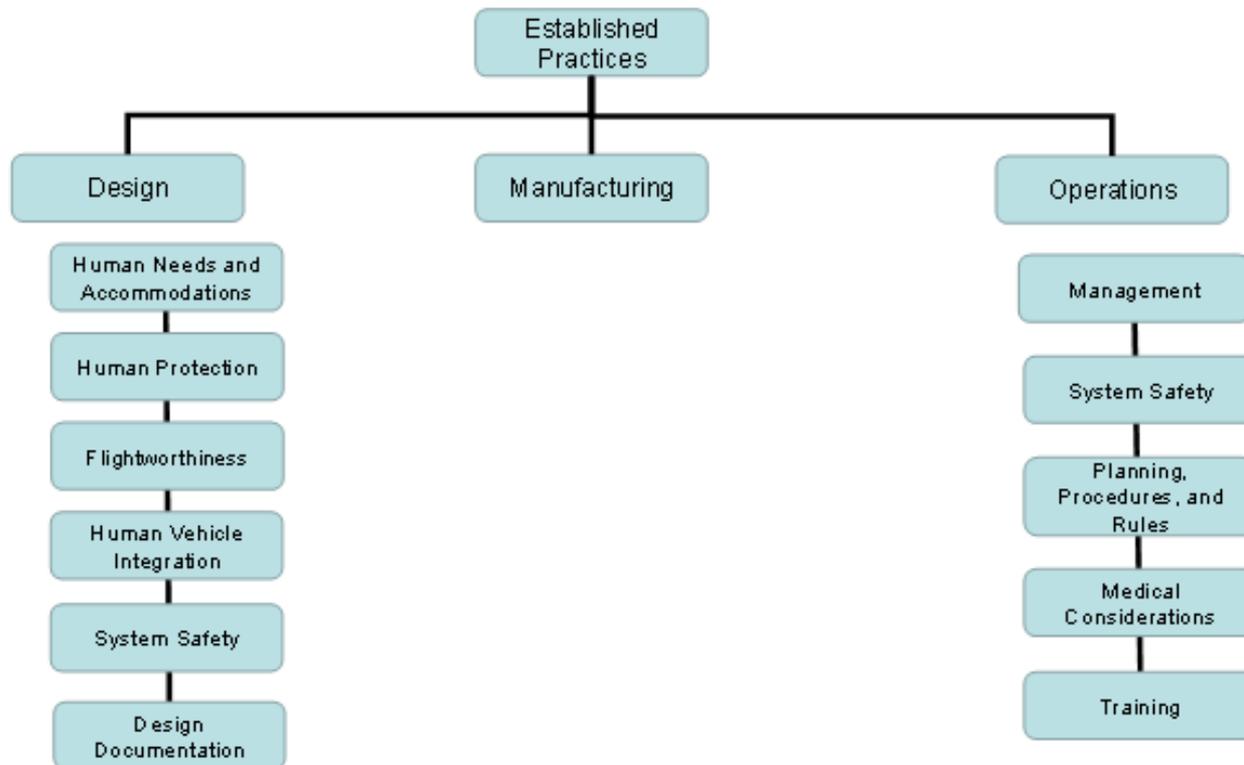
Questions and Answers (cont.)

5) What assumptions did we make?

- Any orbital vehicle -
 - Will stay on orbit for a maximum of 2 weeks, and
 - Can return to earth in under 24 hours if necessary.
- Each member of the flight crew is safety critical.
- Space flight participants may be called upon to perform limited safety critical tasks.
- Clean sheet philosophy - no other regulations act to protect occupants from harm.

Questions and Answers (cont.)

6) How are the practices organized?



Questions and Answers (cont.)

7) For COMSTAC: How can this effort by AST benefit you?

- How can we improve the established practices document?
- How can we assist the industry to identify or develop the appropriate standards necessary to govern human space flight safety?
- Other ideas?

Way Ahead

- We would like COMSTAC comments by the end of CY 2013.
- COMSTAC meeting in October could be opportunity to discuss the draft in more detail.
- Additional telecons can be scheduled.