

NASA's Suborbital Crew Program

-A new approach to risk assessment and flight readiness of human tended suborbital space systems

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Lessons Learned from NASA COTS and Commercial Crew applied to Suborbital Crew Program

NASA's experiment in Commercial Orbiting Transportation System (COTS) undoubtedly will be considered one of the crowning achievements for NASA in the last 20 years. The lessons learned over the last 17 years has proven that "experimentation" in Programs, Procurement and Processes has been critical in the space renaissance economic boom that the industry has seen within the last 10 years.

It is with this basis and demonstrated success that NASA should be "experimenting" with new approaches for bringing commercial capabilities on-line faster and sooner, through experimentation of new risk management processes and safety review approaches. The new NASA Suborbital Crew Program offers a unique opportunity to demonstrate new approaches for flight risk assessments for human spaceflight for researchers and human tended missions. These new approaches can offer a better approach to opening the market to unknown potential, similar to the original COTS Program "Experiment".

Effective Risk Management for Human Spaceflights

It is imperative that new processes and approaches continue to be tried in order to expand the opportunities for researchers, Principle Investigators, and others wanting to develop new ideas, systems and solutions in the human spaceflight realm. Critical to this expansion is NASA's approach to risk management, especially

when it applies to human spaceflight missions. Current established processes for such NASA Programs as Artemis, and even NASA's Commercial Crew Program; have at times been mired in old established processes that has delayed schedules, impact development costs and may at times had no attributable impact to improving flight safety. New approaches to human spaceflight risk management should be experimented, evaluated and tracked against a commercial applied safety management system approach.

One such approach is leveraging a commercial 'tailored' safety case approach that has been effectively applied to other safety critical industries such as oil exploration, nuclear industry, and the transformational air-mobility industry. Since these systems have been developed privately, NASA needs to take a demonstrated evidenced based approach to determine risk, and provide a level of safety insight for

This presentation will provide a historical context from lessons learned during the development of NASA's COTS Program, Cargo Resupply to Commercial Crew. Leveraging and applying new approaches, such as the Safety Case approach for NASA's Suborbital Crew Program will be discussed and how such an approach can be leveraged further for safe and effective human tended suborbital commercial services research and flights.

Summary

Highlight a risk management approach that NASA can apply to privately developed suborbital systems that meets the intent of NASA's Human Spaceflight Safety and Mission Assurance requirements.

