

NASA AEROSPACE SAFETY ADVISORY PANEL

National Aeronautics and Space Administration

Washington, DC 20546

Lieutenant General Susan J. Helms, *Chair*

May 31, 2025

The Honorable Janet Petro
Acting Administrator
National Aeronautics and Space Administration
Washington, DC 20546

Dear Ms. Petro:

The Aerospace Safety Advisory Panel (ASAP) held its 2025 Second Quarterly Meeting in-person at NASA's Johnson Space Center, April 15-17, 2025, with the public meeting on April 17, 2025. We greatly appreciate the participation and support that were received from NASA's leadership, the subject matter experts, and the support staff.

The Panel submits the enclosed Minutes resulting from the public meeting for your consideration.

Sincerely,



Susan J. Helms, Lt Gen (Ret), USAF

Chair

Enclosure

AEROSPACE SAFETY ADVISORY PANEL

Public Meeting

April 17, 2025

Hybrid

2025 Second Quarterly Meeting Report

ASAP Panel Member Attendees

Lieutenant General Susan J. Helms, USAF (Ret), Chair

Mr. William Bray (*virtual*)

Dr. Amy Donahue

Mr. Paul S. Hill

Ms. Katharina McFarland

Mr. Charlie Precourt

Mr. Kent Rominger

Dr. Mark N. Sirangelo

Dr. Richard S. Williams, MD, FACS

ASAP Staff and Support Personnel Attendees

Ms. Carol Hamilton, NASA ASAP Executive Director

Ms. Lisa Hackley, NASA ASAP Administrative Officer

Ms. Ashley Mae, Tom & Jerry, Inc, Technical Writer

[Appendix A – Teleconference Attendees](#)

Ms. Carol Hamilton, Aerospace Safety Advisory Panel (ASAP) Executive Director, called the meeting to order at 3:00 p.m. central standard time (CST) and welcomed everyone to the ASAP's Second Quarterly Meeting of 2025, held at the National Aeronautics and Space Administration's (NASA) Johnson Space Center (JSC). The Federal Register notice provided an opportunity for public input; however, no submissions were received. Ms. Hamilton clarified that while public comments would be permitted at the meeting's conclusion, questions would not be entertained. With this, she handed the meeting over to Lieutenant General (LTG) Susan Helms, the ASAP Chair.

LTG Helms expressed appreciation to Acting Center Director Mr. Steven Koerner and Chief of Safety, Mr. Willie Lyles, for their warm welcome and support during the visit. Although the Panel previously visited JSC in January, the decision was made to return to take advantage of an improved opportunity for face-to-face discussions with key personnel involved in critical programs. This meeting marked the beginning of ASAP's deeper examination into how contract and acquisition instruments are being utilized to manage risk across NASA's evolving business models, including the Commercial Crew Programs and Artemis.

Ms. Katharina McFarland addressed the insights gained from ongoing discussions with NASA directors and program staff, emphasizing that mission safety risks are closely linked to the agency's contracting approaches with industry. These conversations revealed valuable lessons

learned, highlighting opportunities to strengthen future efforts. Key takeaways included the importance of understanding industry incentives, ensuring that government personnel have the necessary skills and availability to engage effectively, and maintaining clarity around requirements and budget structures. Applying these lessons will enhance NASA's ability to support mission success.

In mid-February, ASAP members, Mr. Kent Rominger and Mr. Charlie Precourt, received an online briefing on the X-59 Low Boom Flight Demonstration (LBFD) project, followed by an in-person visit to Lockheed Martin's Palmdale facility and NASA Armstrong Flight Research Center. The initial briefing covered the Quiet Supersonic Technology (QUEST) mission, X-59 project objectives, progress, future milestones, and an overview of airworthiness, safety status, and risk management. During their visit, they observed the X-59 aircraft, toured operational and simulation facilities, and participated in simulator exercises. Discussions at NASA Armstrong were open and candid, addressing hazard analysis, developmental challenges, flight controls, and the first flight timeline.

Key observations highlighted that the X-59 demonstrates cutting-edge innovation in minimizing sonic boom effects, using advanced design features such as a small T-tail control surface to diffuse shock waves. While the program has faced technical challenges, no significant risks remain, and the development team continues to address new challenges diligently. Test pilots from NASA and Lockheed Martin are coordinating effectively, and the aircraft's novel vision system, required due to the absence of a forward window, appears manageable with appropriate backups in place. Collaborative efforts between NASA and Lockheed Martin were described as strong and well-functioning, and established safety protocols are being rigorously followed in preparation for first flight.

Mr. Rominger and Mr. Precourt emphasized that the X-59 project represents a continuation of the historic X-plane program tradition and has the potential to significantly impact future commercial supersonic overflight by dramatically reducing sonic boom disturbance. Planned future testing will involve collecting community response data across different regions to inform industry models for scaled-up, passenger-carrying aircraft. Overall, the Panel expressed strong support for the program's progress and looks forward to the X-59's first flight later this year.

Mr. Paul Hill discussed the briefing on the results of NASA's 2023 safety culture survey which is conducted approximately every two years to assess workforce perceptions regarding safety, reporting, and organizational culture. Dr. Tracy Dillinger provided a historical overview to the Panel, noting the survey's origins in 2004 in response to an ASAP recommendation to gather employee feedback as a means of strengthening NASA's safety culture. The survey's primary goal is to identify indicators of a culture that values open reporting, a just environment, and engaged leadership. It is aligned with ASAP's ongoing focus on integrating internal feedback into agency strategy and accountability.

Mr. Hill noted that, while NASA's overall safety culture remains strong and positive, survey responses to behavior-specific questions revealed opportunities for improvement, particularly regarding behaviors that encourage open communication about risks and strategy. ASAP

recommended refining future survey questions to deliberately address both positive and negative behaviors to provide deeper insight to leadership. Regular administration of the survey was also emphasized as a critical risk mitigation tool, helping to detect early signs of cultural drift and informing corrective action. Mr. Hill further highlighted that NASA's safety culture must be understood as a set of everyday behaviors, both of the workforce and leadership, rather than as a separate or abstract concept. Reference was made to the 2024 ASAP Annual Report, which contains a comprehensive definition and discussion of what constitutes a healthy safety culture in practice.

Mr. Hill then directed the discussion to the Commercial Crew Program (CCP) as the ASAP had conducted a fact-finding discussion with the program, though most details remain non-public. Recent operational updates included the successful splashdown of Crew-9, notably returning Captain Butch Wilmore and Captain Suni Williams, and the ongoing Crew-10 mission, whose spacecraft remains healthy. Crew-10's planned return in July is expected to mark NASA's first West Coast splashdown for a crewed mission, pending final certification reviews. This change reduces public risk by ensuring Dragon trunk jettison occurs after the deorbit burn, over the ocean instead of land. Due to the International Space Station (ISS) traffic management needs, the launch of Crew-11 has been moved up by approximately one month.

In parallel, NASA and Boeing continue to address in-flight anomalies (IFAs) from Starliner's crewed flight test. NASA has not yet determined whether the next Starliner mission will be crewed, with further analyses and testing ongoing throughout the summer. Several specialized teams were formed to investigate hardware, software, and certification deficiencies, including the STAR team (Starliner Test and Anomalies Review), a senior review panel, and data review and corrective action teams. The Panel reviewed findings related to the service module thermal environment, thruster failures, and broader Starliner development issues, but these findings are not yet publicly releasable.

The ASAP reiterated concerns about the tendency to treat contractors as "partners" rather than vendors in commercial service contracts, emphasizing that this mindset can introduce biases that delay problem detection and resolution. The Panel urged NASA's CCP to study this effect and incorporate management lessons into future commercial procurement strategies agency-wide, as well as in other parts of the federal government. These considerations will also inform ASAP's broader review of contract structures, authorities, responsibilities, risk management, and safety oversight.

Mr. William Bray addressed the Moon to Mars (M2M) Program. The Panel met with Dr. Lori Glaze, Acting Associate Administrator for the Exploration Systems Development Mission Directorate (ESDMD), and Mr. Amit Kshatriya, M2M Program Manager, along with their teams. Discussions focused on directorate priorities, M2M architecture progress, Artemis flight testing, and associated safety and technical risks. The Panel found the dialogue informative, transparent, and encouraging.

The M2M architecture continues to mature through a periodic review process involving industry, academia, and international partners. The release of Revision B of the architectural definition

document and the continuation of annual collaborative workshops reflects strong progress. Mr. Bray praised the architecture's flexibility, noting it provides a disciplined systems engineering approach for identifying and mitigating risks early, which is essential for the success of the complex Artemis mission set and broader deep-space exploration goals.

Program updates highlighted steady progress. For Artemis II, technical issues are being addressed without major showstoppers, and the mission remains on track for a planned early 2026 launch. Recent milestones include booster stacking, service module integration, and the initiation of flight readiness certification, along with successful crew recovery rehearsals. Artemis III preparations are advancing, particularly with fabrication and qualification activities for the Orion heat shield and spacesuit development. While the Starship Human Landing System (HLS) Flight Test 8 investigation continues, SpaceX and NASA continue to prepare for Flight Test 9. The cooperative relationship between NASA and SpaceX was noted as strong and essential to future success. Starship HLS remains a critical path item for the successful execution of Artemis III.

Mr. Bray emphasized that managing the launch cadence across all missions remains a significant challenge to the M2M Program. Nevertheless, the M2M program's technical and engineering discipline across multiple Artemis missions demonstrates commendable focus and momentum. ASAP also acknowledged Blue Origin's progress with New Glenn and looks forward to further developments.

Additionally, Mr. Bray commended the close integration of NASA's Human Research Program with the M2M effort, highlighting the importance of low Earth orbit experimentation to reduce risks for lunar and deep space missions. Overall, ASAP praised the M2M team's progress under Mr. Kshatriya's leadership, noting that the program's new organizational structure significantly improved NASA's ability to manage the integrated risk picture across the complex exploration campaign. The Panel reaffirmed the critical importance of maintaining this holistic, disciplined approach as NASA advances toward its Moon and Mars objectives.

Dr. Mark Sirangelo led the discussion of the Commercial Low Earth Orbit (LEO) Development Program (CLDP) status, activities, and future plans for the Commercial LEO Destinations (CLD) initiative. NASA's overarching goal remains a seamless transition between the end of ISS operations and the beginning of continuous human operations aboard new commercial space stations.

Current CLDP contractors are progressing well, with five phase one milestones completed on schedule in 2025 and additional milestones tracking favorably. The planned acquisition timeline for phase two includes an industry day in May 2025, draft RFP (Request for Proposal) issuance in the third quarter, final RFP release later in the year, and contract award by summer 2026. Regarding transition planning, NASA aims for initial operational capability of CLD providers by December 2029, continuous crew operations by December 2030, and full operational capability by December 2031.

Dr. Sirangelo also noted the successful technical interchange meeting (TIM) held earlier this year, which demonstrated strong industry engagement, with over 140 attendees from 20 companies. ASAP reaffirmed the critical importance of establishing a safe, fully funded, and operational CLD

infrastructure to ensure a continuous U.S. human presence in LEO and to support the broader goal of Mars exploration.

However, the Panel emphasized that significant challenges remain, including the need for timely contracting authority, adequate program funding, and development of a complete ecosystem that includes redundant U.S. launch providers and human-rated station capabilities. Given the impending ISS end-of-life, ASAP stressed that urgency and full support across stakeholders are essential to meeting transition objectives without a gap in human presence in LEO. The Panel commended NASA for its progress in creating a more detailed and actionable plan in response to earlier ASAP recommendations and found the session to be highly positive and productive.

Dr. Richard Williams reviewed the increasing risks facing the ISS program. Despite the continued operational excellence of the ISS team, the Panel emphasized that the Station has now entered the riskiest period of its existence. Spaceflight remains inherently challenging, and the growing complexity and aging of the ISS are compounding those risks.

Key concerns include ongoing cracking and leaking in the Russian segment's PRK module, where the root cause remains unclear. Mitigation efforts involve patching existing cracks and reducing pressurization cycles, with close collaboration between U.S. and Russian partners continuing, including upcoming technical meetings. Another critical risk area is the safe deorbit of the ISS. The U.S. Deorbit Vehicle (USDV), necessary to meet public safety standards during ISS reentry, is not scheduled for delivery until 2028 and launch in 2029. A premature deorbit before USDV availability would significantly increase public risk.

Additional challenges include critical life support system sparing, instability in flight schedules, delays affecting resupply vehicles like Northrop Grumman's NG-22, and broader consumables resupply concerns. These risks are exacerbated by an overarching ISS program budget shortfall, which threatens both the day-to-day safety of ISS operations and the broader LEO transition strategy critical to NASA's M2M exploration goals.

ASAP reiterated that continued access to LEO is essential for the human research needed to enable long-duration spaceflight and safe future missions to the Moon and Mars. It is vital that the ISS be fully resourced and maintained until controlled reentry is achieved, safeguarding both crew safety and public safety requirements. The Panel strongly emphasized that declining resources or assumptions of reduced need during the Station's final phase would greatly increase risk.

Dr. Williams expressed deep admiration for the ISS team's professionalism and capabilities, particularly under Ms. Dana Weigel's leadership, but urged that funding and support remain robust to safely complete the ISS mission and avoid cascading risks to broader exploration efforts.

LTG Helms concluded the session by recognizing the critical contributions of NASA's independent technical authorities, particularly regarding their role in the Starliner mission. She emphasized that the Columbia Accident Investigation Board's recommendations highlighted the need for independent technical voices, free from programmatic pressures, to ensure robust technical oversight. The Panel observed firsthand the value of these independent perspectives

during Starliner readiness reviews and fact-finding activities. LTG Helms noted that the technical authorities' input has been invaluable in helping ASAP assess NASA's organizational health, culture, and management of dissenting opinions. The Panel expressed appreciation for their continued contributions, along with broader gratitude to the NASA teams for their ongoing efforts and excellence.

Ms. Hamilton opened the meeting for public comment. No comments were received.

LTG Helms adjourned the ASAP Second Quarterly meeting of 2025 at 3:57 p.m. CST.

Appendix A
Teleconference Attendees¹

Adie Lewis	<i>Government Accountability</i>	Tim Bowers	<i>NASA</i>
Ander McIntyre	<i>Aero Space</i>	Tracy Dillinger	<i>NASA</i>
Anna Morgan	<i>SpaceX</i>	Veronika Fuhrmann	<i>European Space Agency</i>
Aubrey Stewart	<i>Boeing</i>	Will Bryan	<i>NASA SLS</i>
Beverly Perry	<i>NASA</i>	Will Robinson-Smith	<i>Safe Flight Now</i>
Bill Beckman	<i>Boeing</i>		
Christopher Lam	<i>SpaceX</i>		
Crystal Jones	<i>NASA</i>		
David West	<i>Certified Safety Professionals</i>		
Diana O’Glesby	<i>NASA</i>		
Dillon Lavaeau	<i>SpaceX</i>		
Donald Wood	<i>NASA</i>		
Irma	<i>NASA</i>		
Isidro Reyna	<i>SpaceX</i>		
Jamie Krauk	<i>NASA</i>		
Jeff Foust	<i>Space News</i>		
Jessica London	<i>NASA</i>		
Jim Wilson	<i>NASA</i>		
Kathryn Hambleton	<i>NASA</i>		
Kennedy	<i>GAL</i>		
Laura Kiker	<i>NASA</i>		
Laura Pope	<i>NASA Contractor</i>		
Madhurita Sengupta	<i>NASA</i>		
Marcia Dunn	<i>AP</i>		
Marcia Smith	<i>Spacepolicyonline.com</i>		
Mark Carroeau	<i>Aviation Week & Space Tech</i>		
Michelle Green	<i>NASA</i>		
Mildred Rogers	<i>Nodlis</i>		
Miles Doran	<i>CBS News</i>		
Nicholas Bell	<i>Aerospace Corporation</i>		
Ramona Gallardo	<i>NASA ISS</i>		
Robyn Gatens	<i>NASA</i>		
Roman Medley			
Rosa Canuelos	<i>Boeing</i>		
Steven Clark	<i>ARS Technical</i>		
Sylvie Espinasse	<i>European Space Agency</i>		
Tam	<i>House Science</i>		
Thomas Andrews	<i>Independent Consultant</i>		

¹ The names and affiliations are as given by the attendees, and/or as recorded by the teleconference operator.