NASA AEROSPACE SAFETY ADVISORY PANEL
National Aeronautics and Space Administration
Washington, DC 20546
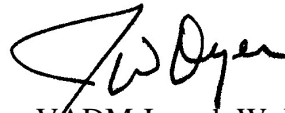**VADM Joseph W. Dyer USN, (Ret.), Chair**

July 29, 2014

Mr. Charles F. Bolden, Jr.
Administrator
National Aeronautics and Space Administration
Washington, DC 20546

Dear Mr. Bolden:

The Aerospace Safety Advisory Panel (ASAP) has reviewed the fifteen open NASA responses to their recommendations. Of these fifteen recommendations, the ASAP has determined that five recommendations can be closed. The enclosures provide rationale for closure of the five recommendations and a summary of the ten remaining open recommendations. On recommendation 2012-03-01, Software Assurance and Capability Maturity Model Integration Requirements, the ASAP changed the status from green to yellow due to persistent schedule slips.

Sincerely,

VADM Joseph W. Dyer, USN (Ret.)
Chair

Enclosures
ASAP Closed Recommendations
ASAP Open Recommendations

The ASAP has closed the following recommendations:

2013-03-02   Firm Loss of Crew (LOC) Number for the Exploration System Development (ESD) Program: Establish a firm, Agency-level safety threshold and goal for LOC for ESD's first crewed mission as soon as possible.

Rationale: NASA provided a copy of the signed decision memorandum that documents the Administrator's approval on Agency-level safety thresholds for crew for human cis-lunar missions to ASAP.

2014-AR-01   Definition of Missions, Objectives, and Requirements for Performance and Certification: NASA should clearly define missions, objectives, and requirements – for both performance and certification – in a timely manner. Once they are defined, NASA should resist continually changing these elements because of the deleterious impact on cost, schedule, performance, and safety.

Rationale: NASA response dated 7/22/2014. Current capabilities approach and budget realities do not currently support a definitive requirement statement. ASAP shall continue to monitor.

2014-AR-04   Realism in Cost and Schedule: NASA should strive for realism in cost and schedule.

Rationale: NASA response dated 7/22/2014. Current capabilities approach and budget realities do not currently support developmental, development or life cycle cost estimation. ASAP shall continue to monitor.

2014-AR-06   Commercial Cargo Risk Policy: NASA should revisit its Agency-level commercial cargo risk policy.

Rationale: NASA response dated 7/22/2014.

2014-AR-07   Robust Safety Culture: NASA should continue to foster a robust safety culture.

Rationale: NASA response dated 7/22/2014. ASAP believes that safety culture is important and the Agency should continue to keep this a priority. ASAP will continue to monitor this topic.

ASAP OPEN RECOMMENDATIONS

Rec. No.	Title	ASAP POC	ASAP Status	ASAP Evaluation of To-Date Responses
2012-01-02	**International Space Station (ISS) Deorbit Capability:** (1) To assess the urgency of this issue, NASA should develop an estimate of the risk to ground personnel in the event of uncontrolled ISS reentry. (2) NASA should then develop a timeline for development of a controlled reentry capability that can safely deorbit the ISS in the event of foreseeable anomalies.	Bagian	Open waiting implementation timeline and the final plan. Provide a timeline for when the detailed planning AND software for controlled ISS deorbit, in both the planned and unplanned conditions, will be finalized and in place. NASA should have a detailed schedule after a Technical Interface Meeting in September of this year. The ASAP looks forward to the seeing this product.	*(green)*
2012-03-01	**Software Assurance and Capability Maturity Model Integration (CMMI) Requirements:** All NASA internal safety-critical software development groups should achieve CMMI Level 3 (or an equivalent as established by external validation agent) by the end of FY 14.	Sanders	Open. Pending completion of CCMI Maturity Level 3 at KSC expected in Spring 2015. ASAP changed status to yellow due to persistent schedule slips.	*(yellow)*
2012-03-05	**Five Year Roadmap for Continuous Improvement of the Agency's Mishap Investigation Process:** NASA should continue to report to the ASAP on the training of the Mishap Investigation Team (MIT) and the investigation Board Chairs in greater detail to include the method, consistency, and quality of training for MIT members and Board Chairs.	Conway	Open. Awaiting development and implementation of safety investigation training program. ASAP updated the wording of this recommendation in May 2014.	*(green)*
2013-01-01	**Philosophy on the Certification Process:** NASA should develop a philosophical approach to the certification process; specifically, when NASA certification is required and when it is not.	Frost	Open. Action assigned (7/12/13): come back in 6 months on what constitutes "NASA personnel." NASA anticipates being able to provide these responses to ASAP by the end of July 2014.	*(yellow)*

Enclosure 2

Rec. No.	Title	ASAP POC	ASAP Status	ASAP Evaluation of To-Date Responses
2013-03-01	**Technical Authority and Role of Center Director** (a): Revise NPD 1000.0A, NASA Governance and Strategic Management Handbook, to reflect the Administrator's current governance model and specifically address the question about how non-concurrences are handled. (b): Make a clear distinction in the Technical Authority (TA) policy between the formal appeal process related to Technical Authority decisions and the dissent process related to non-authoritative differences of opinion on matters outside the TA's authority.	McErlean	Open. Pending release of NPD 1000.0. The ASAP is happy with the process and progress to date and like the direction. It remains open until final review and sign off.	
2014-01-01	**Radiation Risk Decision on Deep Space Mission:** The ASAP recommends that (1) NASA continue to seek mitigations for the radiation risk and (2) establish an appropriate decision milestone point by which to determine acceptability for this risk to inform the decision about a deep space mission. This risk choice should be made before NASA decides to go forward with the investment in a future long-term mission.	Frost	Open. The Institute of Medicine of the National Academy of Sciences released a study called "Health Standards for Long Duration and Exploration Spaceflight: Ethics Principles, Responsibilities, and Decision Framework." The ASAP would like a brief on the results of the study and NASA's path forward to implement the recommendations in the report at the next quarterly meeting.	
2014-01-02	**Knowledge Capture and Lessons Learned:** The ASAP strongly recommends a continuous and formal effort in knowledge capture and lessons learned that will make them highly visible and easily accessible. Modern tools exist to facilitate this and NASA should avail itself of them. NASA's Knowledge Management system should include risk-informed prioritization of lessons and a process to determine which lessons have generic (vs. local or project unique) potential. Further, it should be supplemented by formal incorporation into appropriate policies and technical standards of those lessons that are most important to safety and mission success. Rigor in this area is particularly critical as the experience in specific skills dissipates over time and as engineering talent is stretched across programs.	Sanders	Open. ASAP updated the wording of this recommendation in May 2014. Open pending NASA implementing a policy that formally incorporating appropriate policies and technical standards of those lessons that are most important to safety and mission success.	

ASAP OPEN RECOMMENDATIONS

Rec. No.	Title	ASAP POC	ASAP Status	ASAP Evaluation of To-Date Responses
2014-AR-02	**Identification and Communication of Safety Risk:** NASA should rigorously identify the risks that it is accepting and the rationale for accepting them – i.e., the value expected that justifies accepting a safety risk – and transparently communicate this information to NASA's stakeholders and the public.	Frost	Open. ASAP requests a briefing at the next quarterly meeting on design LOC/LOM requirements, goals, and thresholds including approval authorities and associated risk levels for SLS and Orion.	■ (yellow/orange)
2014-AR-03	**Competition in the Commercial Crew Program:** In a fixed-price environment, NASA should maintain competition in the Commercial Crew Program until there is confidence that the acceptable level of safety will be achieved.	Nield	Open. The ASAP looks forward to seeing how NASA will maintain competition with the limitations they have.	■ (green)
2014-AR-05	**Processes for Managing Risk with Clear Accountability:** NASA should consistently provide formal versus ad hoc processes for managing risk with clear accountability.	Sanders	Open. There remains a reluctance and/or a delay in implementation of a single signature risk acceptance process during development. Currently, risk is often accepted collectively by committees and panels and documented in their minutes without assigning specific leadership accountability.	■ (red)