

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001



January 14, 2003

Reply to Attn of: Q-1

MEMORANDUM FOR THE RECORD

Pursuant to the provisions of the Federal Advisory Committee Act (Public Law 92-463, October 6, 1972) and the NASA Policy Directive 1150.21, entitled "Establishment, Operation and Duration of NASA Advisory Committees," the enclosed minutes of the Aerospace Safety Advisory Panel's Plenary Meeting (conducted on November 7, 2002 in Houston, Texas) are submitted for the record.

A handwritten signature in cursive script, reading "Leonard B. Sirota".

Leonard B. Sirota
Executive Director, Aerospace
Safety Advisory Panel

A handwritten signature in cursive script, reading "Shirley C. McCarty".

Shirley C. McCarty
Chair, Aerospace
Safety Advisory Panel

Enclosure:

Meeting Minutes

**Aerospace Safety Advisory Panel Open Deliberation Meeting In Houston, Texas –
November 7, 2002**

Members and Panel Consultants in Attendance:

Dr. Wanda Austin
Mr. Richard Bruckman
Adm. Walter Cantrell
The Hon. Robert Francis
Mr. Otto Goetz
Dr. Ulf Goranson
Mr. Sydney Gutierrez
Dr. Bernard Harris
Gen. Forrest McCartney, Vice Chair
Ms. Shirley McCarty, Chair
Mr. Roger Schaufele
Mr. Robert Sieck
Mr. Leonard Sirota, Acting Executive Director
Mr. Arthur Zygielbaum

Members of the public in Attendance:

Bryan Burdick, Electric Boat Corp.
George Chervenik, NAVSEA
Gregory J. Cordeiro, NAVSEA/SUBMEPP
Frank Culbertson, NASA/SAIC
Michael P. Desjardins, NAVSEA
Garvin T. Evatt, SAIC
A.H. Ford, Jr., NAVSEA
Loretta Garza, NASA
Charlette Y. Hudson, NAVSEA
Jeannie Kranz, United Space Alliance
Gary Kitmacher, NASA
James M. Lawrence, NAVSEA
Jim Noonan, Electric Boat Corp.
Mike Shaw, Boeing

Space Shuttle Operations

The meeting opened with Mr. Sirota, welcoming the Panel members and the public with a description of the process to be followed that day. Ms. Shirley McCarty, the Panel Chairperson, then gave a brief history of the Panel, walked through the agenda and began the discussions with the Shuttle program.

Mr. Goetz: Thus far, in 2002 there had been five successful Shuttle missions, including the first complete set of block 2 Shuttle main engines which were flown on STS-110. The new turbo pumps increased the factor of safety on the Shuttles.

The people and process used to identify the problem and fix the cracks in the suction liner of STS-112, which was successfully flown after the repairs, were commended for a job well done. He noted that JSC was now looking at what else should be inspected given unexpected cracks that were found. He also mentioned the start of a fleet leader effort for critical Orbiter components. Ms. McCarty noted that finding the cracks had been serendipitous and questioned if the right processes were in place. Dr. Goranson stated that as aircraft age the inspection and maintenance processes must change. Bad news should be expected and planned for. Management needs to plan for these eventualities with adequate funding to maintain the fleet through its now longer life. There is a need to better manage the process for what happens when. Mr. Francis stated that new methods of inspection should be considered for such items as wiring. Mr. Bruckman discussed the change in OMM process to now do the work in little periods and observed that there was a need to guard against items falling between the cracks. The Shuttle program had agreed to look at the issue of changing inspection requirements due to an aging fleet.

Mr. Zygielbaum and Mr. Goetz raised the issue of unincorporated Engineering Orders (EO's). They want to see the screening criteria. They distinguished between high traffic items and critical systems. They wanted critical drawings to be identified and always kept up to date. The program should be ranking all systems and focusing on the most critical items, not only reducing the overall backlog. They noted that some drawings have over 100 unincorporated changes and that the current trend, appeared to be toward increasing the overall backlog. Adm. Cantrell stated that the Navy Benchmarking will put another measure in front of the Agency. Additional fact-finding is needed to better understand the status and direction of this area. Mr. Zygielbaum will take the lead on the EO issue with the assistance of Adm. Cantrell.

Mr. Goetz discussed the Integrated logistics Panel (ILP) at Thiokol which looked at the requirements to fly the Shuttle until 2020 and found work that needed to be done such as evaluating sub-tier supplier supportability, where companies may be going out of business (e.g. solid rocket motor asbestos lining supplier) or may not be motivated to support a small buyer like NASA. All projects need to look at components which will run out of life before the overall vehicle. One issue is the tradeoff between the costs of recertifying and requalifying versus stockpiling now, for which we may not presently have adequate funds.

There was also a need identified for evaluating the impact on the workforce of competitive sourcing, as discussed in the Executive Summary of the Rand report on the same topic. The Panel felt that they needed to see the entire report to get a better understanding of the issue. Mr. Goetz expressed a safety concern about continuing operations with the potential for contracts running out. The contractors need to be

looking forward to a known future. A strategy for safety should go hand in hand with the new contracting strategy.

Gen. McCartney: NASA had not been looking at the long-range supportability requirements until now. The current steps are in the right direction to go out to approximately 2020. He noted that in the Competitive Sourcing NASA should be looking at the total system including management, contract structure, contract durations and safety improvements.

Mr. Gutierrez: Noted that the Panel should not cast the year 2020 in stone but should establish a time based on how long the Shuttle can fly and when a replacement will be available, partly based on an SLI study.

Adm. Cantrell: Stated that the loss of a competitive base drives one to seek best solutions to preserve the needed contractors.

Mr. Gutierrez: Stated that contractors need to look beyond the next two years if they are going to catch aging problems and focus on safety.

Ground Processing – Root Cause

Gen. McCartney: Discussing the FRR process, he stated that the new structure with Codes M & Q sharing the head of the table was a great improvement. There was good discipline in the reviews. He also noted that the teams were improving on their process for getting to the root causes of problems. Ms. McCarty stated that Mr. O'Connor, Associate Administrator for Safety and Mission Assurance, was serving as an effective advocate for root cause analysis.

Gen. McCartney thought the transition of functions, including Orbiter Major Modifications, and personnel from California to JSC had been successful and that NASA had benefited from the Enron problems with a larger pool of skilled workers to hire from. He noted that the formation of a Space Shuttle and International Space Station (ISS) Level I at HQ was starting to have an impact on the Center roles. Gen. Howell had said that even though the transition was expected, it was causing the Centers to re-evaluate their roles, missions and accountability. There was some potential for impact to safety and the Panel will continue to watch the transition. In addition, the changes in accounting practices, moving to Full Cost Accounting (FCA), add to the complexity of the transitions. He observed that there have been many changes incorporated safely and with high quality, despite all of the transitions.

On the subject of infrastructure, Gen. McCartney stated that it was good to see attention being paid by the programs and the Center management. This needs to be carefully watched for safety concerns, especially with the changing in program versus Center funding sources and ownership. Additional fact-finding should be scheduled. Mr. Zygielbaum also expressed concern about the long-term maintenance of the Agency

infrastructure. Dr. Goranson and the Hon. Robert Francis also stated that NASA would need to add supplemental inspections and use new inspection techniques as the ground and flight hardware ages.

International Space Station

Admiral Cantrell believed that the most critical issues for operations were receiving appropriate attention by the Program. The International Partnership review and approval process for payload items needs continuing focus since it currently leads to uncomfortable results some times such as the case with the Lithium Thionyl Chloride payload batteries recently flown. In this case the established processes at ESA were bypassed, NASA refused to sign the document accepting the risks, and Russia accepted responsibility and flew the hardware. Messrs. Bruckman and Schaufele reiterated their concerns for the process and it was agreed by the Panel that the problem was restricted to the payloads and did not extend to the Element reviews. The payload review process requires more fact-finding and Adm. Cantrell will take the lead.

Adm. Cantrell also expressed concern for crew safety with the high noise level on the ISS. It can preclude crewmembers from hearing the caution and warning signals.

Crew Return

Mr. Schaufele considered the current Crew Return capability planning to be a notable issue. The interim arrangement to use the Soyuz restricts the ISS to a three-person crew. Also, the arrangement with Russia will run out before NASA can provide a replacement. The X-38, which had been the planned NASA CRV has been terminated with no visible alternative. Mr. Gutierrez mentioned that the CRV was never in the ISS budget and with the inability of NASA to contract with Russia for additional Soyuz vehicles due to the Iranian Non-proliferation Act, the condition is further complicated. The Panel expressed further concern for the lack of research capability without a larger than three person crew. Ms. McCarty noted that there was a study under way to determine what size crew is needed and to evaluate the transportation options.

Mr. Schaufele referred to an earlier White Paper looking at the Safe Haven concept versus the CRV. It concluded that the Safe Haven had limited applicability and a lifeboat was still needed. Mr. Gutierrez stated that there really was not a Safe Haven on the ISS currently and that adding one would be very expensive.

Aviation Safety

Mr. Gutierrez discussed the continuing Panel concern about who the Center Aviation Safety Officers report to. The ASAP has consistently taken the position that the ASO should report directly to the Center Directors. NASA does not have a consistent

organization across all Centers and does not believe this structure is necessary to have a safe operation. It was agreed that the issue would be closed in the Annual Report with an agreement to disagree.

Mr. Gutierrez also mentioned the SATS program and the no-fly zone concerns as possible issues which would be addressed in the visit to LaRC the following week.

Mr. Goetz noted that Orbital Debris was still an open issue that needed to be addressed. Ms. McCarty wanted the funding status of the JSC capability to be included in the next JSC briefing. Messrs. Goranson and Gutierrez desire more fact-finding about on-orbit vehicle repair techniques and characteristics for extended on-orbit durations.

Mr. Schaufele discussed the common issues of Second Generation launch vehicles, SLI, CRV, CTV and upgrades. The requirements have not been adequately defined, have not considered full lifecycle costs, have not been focused on a long-range NASA vision and have not had adequate focus on safety. The inter-relationship between SLI and CRV/CTV need to be considered as well as the compatibility of the CRV/CTV with EELV's. It was noted that the Integrated Space Transportation Plan, currently under NASA review, would address the requirements of these programs.

EVA

Mr. Gutierrez commended the EVA program for their excellent training and the process improvements for maintenance. They no longer tear down the EMU after each flight which induces additional wear, unless something is broken. At this time, the cost savings from the new approach are being used to fund EMU improvements. There is no R&D funding for a future generation suit. It was recommended and agreed that last year's action to review the EMU should be closed.

Computer Hardware and Software

Mr. Zygielbaum stated that he had been impressed with the process for the CAU improvement and with the level of astronaut involvement. He acknowledged the improvement with the solid state memory replacing the disk memory. There was some concern about the Russian computer failures and more fact-finding needs to be conducted. The cancellation of the CLCS at KSC places an additional burden on the LPS for life extension planning and safety. The Panel expressed a desire to review the LPS plans when they are available.

Mr. Zygielbaum discussed his concern for the risks of payload commands inadvertently affecting operations computers. He has requested additional information from the Shuttle Program to better understand the separation of the domestic as well as International Partner systems.

The current status of the White Papers was discussed by Ms. McCarty. These included:

- ISS Reorganization
- Safety Leading Indicators
- Crew Escape
- Shuttle Competitive Sourcing (Rand study)
- OMM (this will be closed out with concerns for EO incorporation noted)
- Shuttle Life Extension
- ISS Flight Rate/Logistics
- Benchmarking with the Navy to include a review of submarine crew rescue versus safe haven operations concepts

A White Paper addressing the ongoing Panel concern about critical skills within the NASA workforce was discussed. The Panel has begun reviewing the potential impact of the proposed Human Capital Management Legislation on the workforce. Preliminarily, they believe that these initiatives can help the Agency fill existing gaps and help assure a pipeline of skilled personnel.

Another White Paper is in work concerning aviation safety and security initiatives. This will include Air Traffic Control Management at ARC and Aircraft Avionics Techniques at LaRC.

After full deliberation on the preceding topics it was decided that members of the Panel will draft sections for the Annual Report reflecting the Panel's conclusions.

Drafting Assignments:

Space Shuttle Program – Mr. Sieck

ISS, Crew Escape – Adm. Cantrell, Mr. Schaufele, Mr. Gutierrez

2nd Gen RLV - Mr. Schaufele

Aviation Safety - Mr. Gutierrez

Computer Hardware and Software – Mr. Zygielbaum

EVA - Mr. Gutierrez

Crew and Occupational Health – Dr. Harris

The Editorial Board will have a Non-FACA teleconference December 11 and 12 to work on the Annual Report.