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COMMITTEE ON
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SUBCOMMITTEE ON SPACE AND AERONAUTICS,
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COMMITTEE ON HOMELAND SECURITY
COMMITTEE ON TRANSPORTATION
AND INFRASTRUCTURE

Safety Paramount in Ongoing Space Debate

Dear Colleague,

Recently, I received a letter from aerospace executive Roger Tetrault. Mr. Tetrault was a member of the Columbia Accident Investigation Board (CAIB.) I feel that his perspective as it pertains to the future of America's human space flight program is worth sharing.

There are many facets to the debate on the future of human space flight, but paramount among them is safety. The lessons of CAIB have been too often forgotten in this debate. Their recommendations were born out of tragedy and we would be unwise to neglect them going forward.

Please find his letter below.

Very respectfully,


Pete Olson

Dear Representative Olson:

May 27, 2010

As a member of the Columbia Accident Investigation Board (CAIB), I am watching the uncertainty of America's space program with great fear. In these moments of indecision, we must not forget the lessons that we learned from the past, and in particular, those learned from the Columbia accident.

Following the aftermath of the Columbia accident on February 1, 2003, America had a decision to make. Do we continue our space program, and if we do, how do we ensure that everything has been done to prevent another accident with resulting loss of life. As an investigation board this meant not only determining the root technical cause of the accident, but expanding the scope to discover the overarching answer to why shuttle accidents have happened.

In the course of our investigation into the Columbia space shuttle disaster, the Accident Board came to feel deeply—indeed passionately—that the causes of the accident went well beyond manufacturing and technical flaws. There were also organizational causes that were deeply rooted in a lack of national leadership (from both successive Administrations and Congresses) that had habitually withheld a clear mission and the required resources from NASA since the waning days of the Apollo moon landings. In fact, the CAIB final report clearly states that “history” was in fact a cause of the Columbia and Challenger accidents, just as much as the foam separation or the faulty o-ring. The “history” we referred to was comprised of the political and management forces that were set in motion in the late 60s and early 70s when the space shuttle was conceived.

The Accident Board came to feel these organizational causes combined with the shuttle's technical complexity pushed generations of space program managers into unwittingly accepting the approximately 1-in-60 demonstrated probability of each flight ending in disaster (two flights lost in 113).

We indirectly recommended that the space shuttle should be retired in the near future, as merely fixing the shuttle would not provide NASA and America with a long term solution to becoming a perennial space faring nation. As a result, additional recommendations we made were not specific to shuttle; rather, these recommendations were aimed at those who would be in a position to create “history” for the next generation of America's space faring vehicles. Our recommendations were made to those who would be

setting policy in the future. These recommendations are outlined in Chapter 9.3 of the "Columbia Accident Investigation Board Report" entitled "*Long Term: Future Directions for the U.S. in Space.*" These recommendations follow common sense, yet require discipline and dedication to execute.

We called for national leadership to learn from and heed the mistakes of previous generations. When shuttle was conceived, NASA was forced to promise undeliverable capabilities at unachievable low costs in order to gain the necessary political support for funding. As we have learned through two fatal accidents, the resulting system was exceedingly complex and difficult to manage, and it failed to produce the promised panacea.

CAIB recommended that a clear human space flight mission be defined by the administration and Congress and that it be adequately funded. In future vehicles designed to transport crew to and from low Earth orbit or into the outer reaches of space, *safety* must be the primary consideration above all other design parameters – including performance, cost, reusability and advance space operations. If you don't achieve the former, the latter won't matter. How much did the Challenger and Columbia accidents really cost? To answer that question, one needs to not only think in terms of the lives lost, but also in the treasure lost. The two shuttle accidents totally shut down all shuttle launches for four plus years, and the shuttle program was costing, and continued to cost approximately \$4 Billion a year during those lost years. What could that lost \$16 billion plus dollars have achieved in terms of new and safer technologies?

The Accident Board became impressed with just how difficult it is to achieve safe and reliable human space flight. Because the margins are so thin, the environment so unforgiving, and our space flight experience still so embryonic compared to commercial aviation, every human space flight must be treated like a test flight. There is no such thing as routine and operational human space flight, and we found no evidence that such a leap could be made in the near future. As we said:

"Building and launching rockets is still a very dangerous business, and will continue to be so for the foreseeable future while we gain experience at it. It is unlikely that launching a space vehicle will ever be as routine an undertaking as commercial air travel – certainly not in the lifetime of anybody who reads this."

In addition, CAIB suggested that NASA needed to build a robust, optimized-for-safety transportation system for the crew, while building a separate, less costly system for moving cargo to and from low Earth orbit.

These recommendations served as the genesis for the exploration mission and architecture adopted in 2004. Safety was the number one factor in vehicle design, crew was separated from cargo, and the technology was based on proven human rated systems. Although encouraging in its inception, we once again saw history repeating itself; the program did not received adequate funding while the schedule pressures began to mount.

America's path in space is now threatened by the decisions being proposed in the NASA budget. We are cancelling a program built around the findings and lessons learned from Columbia. There is no clear mission or direction given to NASA, and the use of proven-technologies is being shunned. Further, the choice to commercialize our launch capability provides insufficient safety for the brave men and women that will be asked to ride these rockets. Surely, they deserve the best that we can provide.

To me, the appropriate fix is not throwing away the significant dollars that have already been invested to develop the new valuable architecture, but rather enforcing the management and programmatic changes that are necessary to get the program back on track. Meanwhile, the new entrepreneurial space transportation companies can continue to develop their vehicles and prove their cargo capabilities. Only after they have proven that they are mature and safe enough, should they be allowed to step up to the much harder task of carrying humans.

Otherwise America is on the spiraling path of just repeating the mistakes of the past, and we are setting the stage for another major space-related tragedy. We are abandoning every lesson that we are supposed to have learned from history.

Sincerely,

Roger E Tetrault