

NASA grounds space shuttle fleet after near-disaster in Discovery launch

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In a devastating blow to the US space program, NASA ordered the suspension of all future space shuttle flights Wednesday, pending an investigation into the loss of a large piece of foam insulation during the successful launch of Discovery the previous day. The space agency began an intensive review of the launch, examining photos taken by hundreds of cameras, as well as inspecting the spacecraft's skin, looking for possible damage.

The debris fell from Discovery's external fuel tank about two minutes into the shuttle flight. The incident was very similar to that suffered by the shuttle Columbia in January 2003, when a large chunk of foam broke loose from the fuel tank 82 seconds into the flight, hitting the Columbia's wing and inflicting damage that ultimately proved fatal during the shuttle's reentry to the atmosphere.

The one saving difference this time is that the foam insulation did not hit Discovery, but fell away without making contact. Otherwise, the incident is eerily similar: the piece of foam from Discovery was about 33 inches long and 8 inches wide, comparable to the piece 27 inches long and 18 inches wide, about the size of a briefcase, that struck Columbia.

The piece of foam that struck the left wing of Columbia during liftoff is believed to have weighed 1.67 pounds. NASA has not yet released an estimate of the weight of the foam piece that nearly hit Discovery, but it is clearly much larger than the tolerance set by NASA engineers.

After tests showed that a fragment as small as 0.023 pounds could cause catastrophic damage at the high velocity of the shuttle, NASA set a goal of insuring that no fragment larger than 0.01 pounds, about one sixth of an ounce, would strike the spacecraft's skin. Much of the nearly \$1.4 billion expended on shuttle repairs and

upgrades during the past two and a half years was to eliminate as much as possible the problems with the insulation. It is clear that these efforts failed.

NASA officials were visibly shaken when they announced the grounding of the other two shuttles, Atlantis and Endeavor. "Until we fix this, we're not ready to fly again," space shuttle program manager Bill Parsons told a news conference at Johnson Space Center in Houston. "I don't know if it's a month; I don't know if it's three months. We have a lot of work to do, and we'll do it."

The area on the fuel tank where the piece of foam came off was identified as a problem, but NASA put off redesigning it because of time pressures and the abbreviated lifespan of the shuttle program, which is to be phased out by 2009. "We decided it was safe to fly as is," Parsons said. "Obviously, we were wrong."

In an interview Wednesday night on ABC's "NightLine" program, Parsons said, "I just have to say we missed something. And we were very lucky that it didn't impact the orbiter." Asked if the problem could have led to a Columbia-style accident, Parsons said: "I can't say it couldn't. This was a big piece of foam."

Deputy shuttle program manager Wayne Hale said that if the piece of insulation had fallen off earlier in the liftoff and struck the orbiter, "we think this would have been really bad."

In addition to the big piece, several smaller fragments of foam were ripped off by the force of the launch, each of them large enough to have done some damage. There were also two chips in the ceramic heat-protection tile, one of them near the landing-gear door on the orbiter's underbelly. Hale said that these did not appear to represent serious damage, and that Discovery should be able to undergo the stresses of reentry when it returns to the Earth's atmosphere on August 7.

According to press reports, there was considerable dissent within the space engineering community about whether the safety improvements since the Columbia disaster were sufficient, but NASA officials decided to proceed to launch anyway. A NASA task force charged with monitoring compliance with recommendations of the commission that investigated the loss of Columbia reported a month ago that the agency “did not meet” requirements to “eliminate all ... debris shedding.” It specifically noted that the external fuel tank “still sheds debris that could potentially cripple an orbiter.”

A NASA engineer who spoke anonymously to the *New York Times* was more pointed: “It’s an ugly story, it’s a mess,” he said. “Everyone’s really, really disappointed. It is what it is. Physics doesn’t lie.”

Perhaps the most revealing event in the run-up to the launch was how the space agency handled an intermittent problem with fuel tank sensors that forced it to postpone the launch from its initial date of July 13 to July 27. After engineers replaced various electrical components and could neither reproduce nor fix the problem, NASA officials announced that in the event the problem recurred they would simply waive the safety requirement that all four sensors operate properly, and proceed to launch with only three.

While the sensor decision demonstrates a seemingly cavalier attitude on the part of the NASA leadership, the problem is more fundamental than the absence of a “culture of safety,” as the Columbia disaster commission put it.

NASA is capable of technological marvels, as in the Deep Impact probe which deliberately struck the comet Tempel 1 on July 4, a feat that has been compared to hitting a bullet with another bullet (although actually much more difficult than that). But the space shuttle program is a technological nightmare, with electronics and engineering that were cutting-edge in the 1970s now preserved in an almost fossilized form in 2005.

While the US military employs the most modern technologies for the deeply reactionary purposes of American imperialism—destroying human lives and the infrastructure of civilization—the resources devoted to manned space exploration are pathetically inadequate.

There are 2.5 million parts in the shuttle, most of them based on specifications of 30 years ago, when the space shuttles were built. (Discovery is a relative youngster at 21 years old). Until the Columbia disaster,

NASA still had some computers running with Intel 8086 microprocessors, the first ever used in PCs, which run about 300 times slower than today’s best computer chips. Wiring, bolts and other metal parts are replaced as they wear out, but some date back to the original construction.

According to one press account, some electronic components contain transistors hand-soldered into circuit boards, a method of assembly that would be laughed out of any modern factory. According to another, NASA engineers “are sometimes reduced to hunting for obsolete hardware and electronics on eBay.”

The new NASA administrator, Michael Griffin, made a revealing comparison, likening the space shuttle to a clipper ship—i.e., a once brilliant but now completely outmoded technology. This did not stop President Bush, in his invincible ignorance, from describing the launch of Discovery as “an essential step toward our goal of continuing to lead the world in space science, human spaceflight and space exploration.”

The successful landing of the first man on the moon in 1969 was a scientific and technical achievement that epitomized the predominant position that the United States then enjoyed in the world. The demise of the space shuttle program—for that is what has really happened, even if Discovery, as one fervently hopes, makes a successful return to Earth—symbolizes the decrepit and backward state of American capitalism.

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