Multiple causes downed the challenger

Business, Industries

The United States has always been proud of its space exploration endeavors. NASA's programs have always led the world intechnologyand performance. In 1970, NASA began its Shuttle program which was meant to create reusable space shuttles rather than one-use shuttles. They were successful in producing four models: Columbia, Challenger, Discovery and Atlantis. All was going well for NASA and its space shuttle program until January of 1986 when the Challenger exploded 73 seconds into the flight, killing all the crew.

Since then, the shuttle program has been besieged by controversy, much of it stemming over the causes of the Challenger explosion. Basically, reports and research now indicates that the explosion was caused by a deadly combination of mechanicalfailureand human miscalculation and poor decision-making.

The Challenger liftoff was plagued with foreboding problems long before it actually was launched. Initially, liftoff was scheduled for 3: 43 pm on January 22, 1986. However, delays in both scheduling and weather forecasts forced it back nearly a week. During the last day of delays, a small closing fixture was malfunction, so it was replaced. Additionally, a module which detects fire was found to be malfunctioning; the crew fixed it as well before the shuttle finally lifted off into space, and then exploded (Green 2007).

Officially, the investigative report pointed to a faulty " O-ring" seal in the solid-fuel rocket. This faulty seal combined with the very cold weather to allow hot gas to leak into the hole. Rocket flames were then able to penetrate the fuel tank and catch fire causing the booster rocket to break off

of the shuttle and pierce the fuel tank. The liquid hydrogen and oxygen then ignited, causing the Challenger to explode (Green 2007). A nation stood in horror as media broadcasts replayed the chilling scene over and over again.

However, this mechanical failure did not receive the weight of the blame. As the Reagan-ordered investigation continued, several human factors were uncovered in this tragedy. For years, NASA’s programs had, like many other agencies, been forced to cut manpower andmoneyfrom its programs. One researcher, James Sigler of the U. S. Naval Institute, noted that at the height of the shuttles missions, “ NASA's leaders were emphasizing the importance of safety, while their personnel cutbacks sent other signals” and cites NASA’s motto - faster, better, cheaper – as meaning that " cost efficiencygoals[became] elevated to the level of… safety goals” (Sigler, 2007).

Fewer men and less money meant more work for those that did remain with fewer resources. In fact, “ the accident investigations in the wake of the Challenger disaster decried the paucity of resources allocated to support NASA's objectives” (Sigler, 2007). Clearly, there was too much work and not enough manpower, resources, parts, or money to meet all of the objectives.

Yet, despite these conditions, some engineers did warn NASA officials about the fateful launch. Many engineers voiced concerns about the extremely cold temperatures and the possibility that the equipment could fail. Apparently, two NASA officials were told of these concerns well before the flight:

Joseph Kilminster had overruled five of his own engineers when they argued on a telephone conference call the night before the launch that the conditions were unsafe. The subfreezing temperatures at Cape Canaveral, the engineers told Kilminster, could cause a failure in the O-rings that protect the joints of Thiokol's solid rocket motors, which could lead to an explosion. The concerns were also rejected by NASA manager Lawrence Mulloy, who was in charge of the solid rocket boosters and was listening in on the debate (Vartabedian, 2003).

Sadly, this is exactly what happened. Both officials are now retired from NASA.

Of course, this sad occurrence goes beyond the doubtful opinions of two men. It seemed that the entire attitude of NASA had suffered a bit of egoism.

According to investigators, NASA, at that time, seemed to be “ blinded by its 'Can-Do' attitude, a cultural artifact... that was inappropriate in a ... program so strapped by schedule pressures and shortages that spare parts had to be cannibalized from one vehicle to launch another” (Sigler, 2003). James Oberg, a former NASA engineer, agrees: “ NASA managers made a bad call for the launch decision, and engineers who had qualms about the O-rings were bullied or bamboozled into acquiescence” (2006). The men who knew the truth were asked to remain silent to preserve NASA’s reputation.

It is rare that one cause can be attributed to a disaster as horrible as the Challenger explosion. Here, investigators did find a mechanical failure, but

soon learned that this failure had been detected. Instead, the decision-makers chose to ignore the advice of engineers in an effort to preserve the already late launch date. As a result, the explosion set up a new level of safety for NASA.

“ The entire space shuttle program was grounded during the Space Shuttle Challenger Commission's investigation and did not resume flying until shuttle designers made several technical modifications and NASA management implemented stricter regulations regarding quality control and safety” (Green, 2007). On September 28, 1988, the shuttle missions started again with the flight of the shuttle Discovery. Sadly, the entire tragedy had to be revisited with the 2003 explosion of the shuttle Columbia. Hopefully, the lessons learned can be applied to future decisions in the NASA shuttle program.

REFERENCES

Greene, N. (2007). Challenger Disaster - A NASA Tragedy. About. com. Retrieved 12

December 2007 from http://space. about. com/cs/challenger/a/challenger. htm

Oberg, J. (2006). 7 Myths about the Challenger shuttle disaster. MSNBC. January 27.

Retrieved 11 December 2007 from http://www. msnbc. msn. com/id/11031097/

Sigler, J. (2007). Repeating NASA’s Deadly Mistakes. U. S. Naval Institute Proceedings 133. 9:

48-52

Vartabedian, R. (2003). The Nation; Forgotten Lessons of Challenger Seen as Haunting NASA;

Retired space officials say today's managers must, as a first step, take blame for

Columbia loss. Los Angeles Times. Jul 28, 2003: A. 1