Wednesday, April 27, 2016

How was the Apollo 13 Space Mission a tribute to American ingenuity? What happened?

On April 11, 1970 James A. Lovell, Fred W. Haise, and John L. Swigert-the crew of Apollo 13-were launched into space in the hopes of walking on the moon. One complication the crew was not expecting, however, was an explosion on board and temperatures below freezing. This initial explosion set off a series of events that put these men in great danger. Apollo 13 was one disaster in history that will never be forgotten. Not only did the spacecraft fail to land on the moon, but also the crew nearly failed to make it back to Earth. At first, NASA scientists didn't know how to respond to the problem, but with three lives at risk and less than two hours to spare, they were able to devise a solution to bring the astronauts home.

Apollo 13 had one mission, to land on the moon. It was to be the third manned lunar landing mission launched by NASA. The spacecraft was intended to land in the Fra Mauro region. Fra Mauro is a mountainous crater in the south western hemisphere of the moon. The crew was going to explore the different lunar formations. The objective was for Fred, John, and James to take samples of the rocks and perform tests on the chemicals found. By taking these tests and samples, NASA scientists would be able to further study the moon's environment and develop man's capability of surviving in such conditions. Unfortunately, Apollo 13 never landed in the Fra Mauro region or on the moon at all. The mission had been aborted fifty-six hours into the flight due to some unforeseen equipment breakdown on board.

Fifty-four hours after it was launched, the mission was compromised when the astronauts heard a loud bang and felt a minor vibration. Thirteen minutes later James A. Lovell-the flight

commander-saw a warning light flashing on the dashboard. He noticed a gas being emitted into space and instinctively notified NASA with what would soon become one of the greatest understatements of all time… "Houston, we have a problem." Oxygen tank No. 2 had exploded. The impact of the explosion had ruptured a whole in tank No. 1. Oxygen was needed to power the fuel cells and for the astronauts to breathe. Sooner or later, the fuel cells would shut down or the crew would run out of oxygen. With no oxygen left in tank No. 2 light and electricity were lost. The loss of electricity meant heat was no longer an option. The astronauts were soon surviving in temperatures below freezing. Eventually, they managed to stop the venting, but there was still barely enough oxygen for them to breathe for three hours.

After what seemed like an interminable amount of time, NASA was able to formulate a plan to get the crew back to Earth. One hour after the explosion, NASA instructed the astronauts to make their way to Aquarius (LM), the lunar landing module, with the intention that it would use the moon's gravity to 'slingshot' back to Earth. NASA didn't know if this strategy would work since it had never been tried before. There was a strong possibility of something malfunctioning. Debris from the explosion was still floating around in space, blocking the path the astronauts were going to take to get back to Earth. They were facing the risk of the LM crashing into the debris. Once on board Aquarius, it would take four days until the crew reentered Earth's atmosphere. On the journey back Odyssey (CM), the command module, was ejected and the crew was finally able to see the damage caused by the explosion. One side of the CM had been completely blown off. After it was ejected, there was nothing for the crew to do but wait.

On April 17, 1970 the crew of Apollo 13 splashed down safely into the Pacific ocean after days of disastrous events. Although the mission's goal wasn't reached, NASA was able to make changes to modern space travel to prevent another catastrophe like this from reoccurring. Scientists from NASA expected that if anything had gone wrong on Apollo 13, the effect would've been much greater. Fortunately, they were wrong. The Apollo 13 disaster shows how teamwork and quick-thinking can avoid the loss of life. Many are familiar with the quote "Houston, we have a problem", but not many ever stop to think about what the Apollo 13 crew actually experienced.

Sources

Dumoulin, Jim. NASA Apollo Mission Apollo-13. Friday, June 29, 2001. science.ksc.nasa.gov

Howell, Elizabeth. Apollo 13: Facts About NASA's Near-Disaster. August 23, 2012. www.space.com

National Air and Space Museum Apollo 13 (AS-508)|. airandspace.si.edu.

Dunbar, Brian. July 8, 2009. www.nasa.gov.

Vogt, Gregory. Apollo and the Moon Landing. Brookfield, Connecticut: The Millbrook Press, 1991.

Benoit, Peter. The Space Race. Danbury, Connecticut: Children's Press, 2012.

Holt Science & Technology Earth Science. Austin, Texas: Holt Reinhart and Winston, 2001. Print.