SSUNS Position Paper

Committee: Apollo 13

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Our first priority as NASA has always been the safety of our astronauts. In this committee, we need to address the current situation at hand, and come up with several solutions for all the possible problems that could occur. Unlike most situations, we as a committee don't have direct access to Apollo 13, so diagnosing specific problems is near impossible. Instead, we need to come up with several possible plans of action for different scenarios, and stay on our feet. Let's discuss some possible plans of action.

Currently, the situation is just oxygen tank 2's measurements are showing zero. Since we don't know if this is an instrumentation error, or an actual leakage or lack of oxygen, we should look to procedurally solve this problem: first, analyzing instrumentation, and if that isn't the problem, then correcting course so there's enough oxygen for the crews' trip. The initial check we should make is to ensure that the air isn't stratified, which is a common cause of measurement error[i]. Spinning the cyro fans should initially let us know if the oxygen is just stratified. If it is not an instrumentation error, then the problem is more severe. Considering the lack of oxygen is a direct danger to the lives of the astronauts, ensuring that they have enough oxygen for their entire spaceflight is essential. Unfortunately, without oxygen tank 2, the service module alone will not have enough oxygen for the 10-day mission. However, cutting the mission short by not completing the lunar mission will have two benefits: shortening the time of the mission, so that less oxygen is needed to support the crew, and allowing the use of the lunar module's resources such as the oxygen on board[ii], which can make up for the lack of oxygen tank 2. In addition, the lunar module can be jettisoned, which can use less fuel, and possibly shorten the return trip. This plan requires NASA to assist the astronauts in a few ways: help the astronauts figure out how to use the resources from the lunar module in the service and command modules, plan a new flight trajectory for the different spacecraft, and help the astronauts repair any damage on the craft. Nevertheless, it seems like our best option to get Apollo 13 back to Earth, unless any major damage is done to the service/command modules. If that's the case, we might have to move the astronauts into the lunar module, as it also has life-support resources[iii], and attempt to repair any damage done on the spacecraft. In this worst-case scenario, astronauts would have to conserve fuel and oxygen as they attempt to change the trajectory to go back to Earth. This would require an immense amount of cooperation between NASA on the ground and Apollo 13, but I have confidence that it is possible.

Through strong cooperation and planning, NASA can help out our astronauts in space get back home safely, whether if it's a simple instrumentation error, or a long chain of disastrous events. Throughout this crisis committee, we need to act quickly, but carefully, to ensure the safety of our astronauts. There's very little space for error.

[i] "Apollo 13 Accident", NASA.gov, Accessed November 6th, http://nssdc.gsfc.nasa.gov/planetary/lunar/ap13acc.html

[ii] "Apollo 13 Mission", Lunar and Planetary Institute, Accessed November 6th, http://www.lpi.usra.edu/lunar/missions/apollo/apollo_13/overview/

[iii] ibid