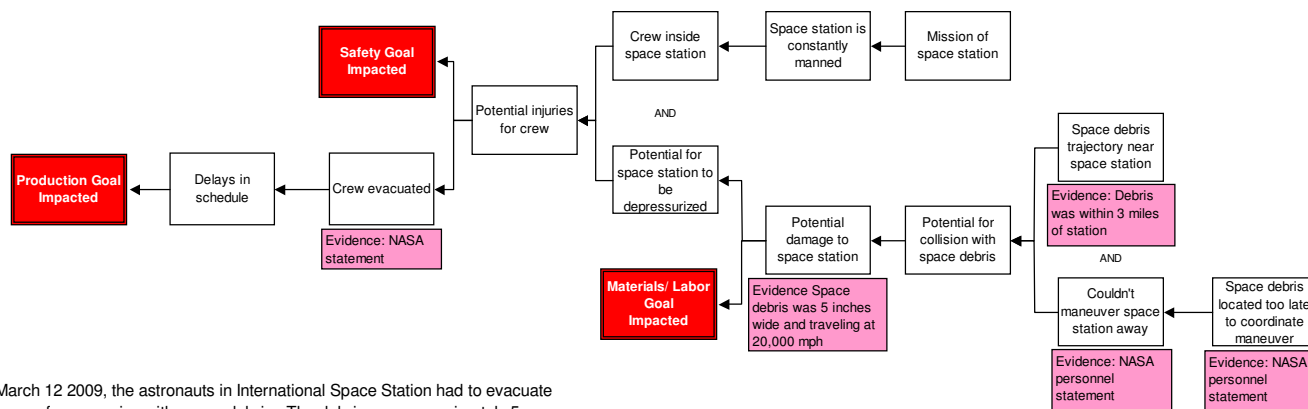


Space Station Near Miss

March 12, 2009

A thorough root cause analysis built as a Cause Map can capture all of the causes in a simple, intuitive format that fits on one page.



On Thursday, March 12 2009, the astronauts in International Space Station had to evacuate the station because of a near miss with space debris. The debris was approximately 5 inches across and traveling at nearly 20,000 miles per hours so a collision could have resulted in significant damage.

For safety reasons, the astronauts entered the Soyuz, a Russian space craft kept at the space station, for ten minutes. The hatches between the station and the Soyuz were soft latched so that they could be closed quickly if needed and the crew could depart the station if it was damaged.

A root cause analysis of the incident shows that there are number of causes that contributed to the event.

One of the causes was late identification of the possibility of a near miss. Typically, the station is maneuvered out of danger if the trajectory of space debris is predicted to be close to the station. This has been done eight times in the eight years that the station has been occupied. In this case, the debris wasn't spotted early enough to coordinate the maneuver so the crew had to be evacuated. The press reports didn't give specifics on why the debris was identified late, but the size, speed and volume of typical space debris creates a tough challenge in tracking possible near misses.

A second cause is that it is difficult to maneuver the space station. It is not a vehicle with an easily changed orbit so each move takes time to calculate and coordinate.

The international space community keeps a space craft at the station at all times for use as a life boat by the crew if necessary to prevent injury from debris strikes. Hopefully, the crew will never have to test it out first hand.

Even more detail can be added to this Cause Map as the analysis continues. As with any investigation the level of detail in the analysis is based on the impact of the incident on the organization's overall goals.

Cause Map Detail Level



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