



## **Soyuz: The Final Flight**

By Harry A. Milman

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In this fictional, but technically realistic book about dystopic events on the International Space Station (ISS), the author Harry A. Milman picks up a question of operational concern: what to do with the body if somebody dies on the ISS?

Having been involved for more than 20 years in crewed spaceflight activities – this is a scenario I fortunately never ran across. However, with planned long duration flights to outer space, space Agencies must be prepared to deal with such unfortunate events, and this book gives some interesting hints.

“When a disgruntled astronaut decides to get revenge, all hell breaks loose! By the time the (fictitious) final flight of the Russian space capsule, Soyuz, docks at the ISS, Derek Johnson - the oldest astronaut to fly in space - is sick with a severe case of food poisoning that does not respond to antibiotics, and he soon dies. Recruited to assist NASA’s medical team, Dr. Bob Kramer, a forensic toxicologist and expert witness, concludes that the cause of Johnson’s death is a mutated form of bacteria that is not normally found in nature” [2].

Even though there is no official protocol, astronauts do some practice for such a worst-case scenario.

In his book "An Astronaut's Guide to Life on Earth" astronaut Chris Hadfield explains a chilling training exercise called a "death sim". It's designed to help prepare astronauts for what they should do in the event of the death of one of their colleagues [1].

Death sims usually operate as a roundtable discussion in which one astronaut is announced as having died and whoever is leading the exercise will throw curveballs into the hypothetical scenario that plays out. In his book, Hadfield explains what it was like listening to his own death sim played out:

"We've just received word from the Station: Chris is dead. Immediately, people start working the problem. Okay, what are we going to do with his corpse? There are no body bags on Station, so should we shove it in a spacesuit and stick it in a locker? But what about the smell? Should we send it back to Earth on a resupply ship and let it burn up with the rest of the garbage on re-entry? Jettison it during a spacewalk and let it float away into space?"

The death sims force the astronauts to really think through how they should respond, Hadfield writes:

“Who should tell my parents their son is dead? By phone or in person? Where will they even be — at the farm or at the cottage? Do we need two plans, then, depending on where my mom and dad are?”

From an operational view the following points described in the book by author Harry A. Milman are well taken: an internationally composed ISS crew, the workings of the medical safety board and the decision to bring back the astronaut to Earth although it terminates the current mission-increment and requires a lot of re-planning, logistics and addition funding in the seven-digit range.

Due to rigorous training-, medical- and safety procedures loss of life on the ISS could be prohibited so

far, however such a scenario may become true for long duration flights like to Mars and to outer space or if space-tourism picks up.

The author should be lauded for drawing public attention to unpleasant situations of crewed spaceflight which might become real in the future. NASA and other space faring Agencies should be prepared to come up with meaningful solutions for this kind of scenarios of hidden dangers to avoid the public opinion turning against crewed space exploration altogether after catastrophic events and loss of life.

As mentioned above, the “who-done-it” story involves some particularities of the ISS by taking place in a (hermetically) closed environment. For me, it was the reading of my first “reality oriented” fictitious crime story taking place on the space station. I enjoyed the technical-realistic background and the clever, surprising ending!

Harry A. Milman is a PhD toxicologist and expert witness and president of ToxNetwork.com. His wildly successful political thriller, "A Death at Camp David," was enthusiastically praised by nonscientists and scientists alike for incorporating forensic toxicology into a captivating and suspenseful plot with a big surprise ending. As an expert witness, Dr. Milman assisted in over 250 civil, criminal, and high-profile cases involving drug overdoses, pharmacy errors, toxic chemicals, carcinogens, and assaults. [2]

#### References

[1] 10 April 2015 <https://www.businessinsider.com/what-if-someone-dies-in-space-2015-4?IR=T>

[2] About the author: <https://www.amazon.com/Soyuz-Final-Flight-Harry-Milman-ebook/dp/B07949PHF8>