

[Nov 24, 2011] Thanksgiving Aboard the Space Station

Jim Oberg advises:

0. The last 24 hours of human spaceflight events are narrated starting at para 1. The particular challenges of this specific new crew are described at para 7. The imbalance in Russian to American crew is explained at para 11. And Thanksgiving Dinner in space is at para 17.

1. With the successful crew handover aboard the ISS, there is grounds for general rejoicing and giving thanks in the space agencies of the US, Russia, and their international partners.

2. The 'ticking clock' that began a countdown to possible end-of-manned-operations was the duration of the Soyuz TMA-2M s/c flight that landed last night -- and the countdown started last August with the crash of a robot Russian supply ship on a routine mission to the station.

3. Although the 'Soyuz' could have stayed in space another month before its 7-month hardware lifetime expired, its shifting orbit forced all subsequent landings into pre-dawn darkness.

4. This didn't used to be a problem for the USSR, which once deployed massive military forces from their garrisons in Kazakhstan to stand by whenever a cosmonaut landing was expected -- but that was then, and this is modern Russia with a cash-strapped military and an even more cash-strapped space program. 5. The prudence of limiting landings to daylight was underscored by the snowy weather at the landing site -- that would have been a problem if the ship had landed too far off course in the dark. But this time it landed right on the dime.

6. Now here is the main risk now facing the new crew. Because of the compressed schedule, they were forced to perform the fastest-ever on-the-fly crew handover in space station history, with the normal week-long familiarization and hands-on advice from the departing crew replaced by a few rushed days, if even that. Plus some radio calls from Earth, before launch.

7. The departing crew was preoccupied with preparing the station for autonomous flight in the event the new crew could not reach them in time. This is a long, complex process of reconfiguring power lines, comm channels, air flow valves, and other mechanical processes involved in shutting down machinery and electronics that would not be needed in case the station became empty. Special control hook-ups were set up to allow remote-control and automated processes for such critical functions as receiving fuel from robot tanker craft.

8. Most of this had to be done in advance because it took so long, there wasn't time to get it all done if they waited until the new crew failed to arrive -- and the old crew had to leave in a few days anyway because of the safe daytime landing requirement.

9. Now the new crew -- among the most inexperienced ever to be sent into orbit -- have to begin both their normal well-prepared duties as well as the complex, laborious process of 'backing out' of the evacuation configuration. And without an experienced crew looking over their shoulders, they have to do it without any irreversible errors. 10. I expect it will take a lot longer than anybody has expected, and I wouldn't be surprised if they wind up breaking at least a few items on the station, in the process. How much we're allowed to find out is a challenge for ME, and I'm already on the case.

11. And note as usual the pattern of flying alternate crews with one American per flight and then either two Russians, or a Russian and another 'international partner' [the next up is veteran Dutch astronaut Kuipers]. As a result, the six-person full crew [which will be achieved by a new Soyuz launch in a month] always has three Russians, two Americans, and one miscellaneous. Always. 12. This isn't a fluke, it's actually the deal that NASA agreed to several years ago. On a station funded >80% by the US, and about 10% by the Russians, the US gets 33% of the crew space, and the Russians get 50%.

13. Aside from nationalistic peevishness, it's not that bad, since by far the greatest portion of the scientific and engineering research on the station is by the US -- much more in keeping with the funding fraction. We're really getting what we paid for.

14. The difference is that most US research is done by remote control via the awesome but gets-no-respect 21st century comm links between the US lab and an army of scientists on the ground. 15. Round the clock, 24/7/365, on average 3 or 4 American scientists are "tele-

operating" their gear in the lab from their laptops, or initiating stand-alone computer controlled processes and observations. The 'science' that the astronauts usually have to do is mostly set up, tear down, and repair of the gear [and samples] that is primarily used by scientists back on Earth.

16. The true scientific contributions of the crew is in their observation skills and judgment in recognizing and following up on unexpected, non-programmed phenomena -- which happens often enough to make their on-the-scene presence worthwhile. But this is another story.

17. And since they are human, they also do human stuff. Here are two links about preparation for the Thanksgiving meal:

18. Astronaut, Food Scientist To Discuss Thanksgiving Menu In Space <http://www.iewy.com/36806-astronaut-food-scientist-to-discuss-thanksgiving-in-space.html>

[available for interviews Wednesday, 7 – 8:30 AM EST] 19. Future astronauts may enjoy Thanksgiving in space with fresh sweet potatoes <http://news.bioscholar.com/2011/11/future-astronauts-may-enjoy-thanksgiving-in-space-with-fresh-sweet-potatoes.html> and

<http://www.physorg.com/news/2011-11-thanksgiving-space-day-trimmings.html>

20. For their part, the Russians tend to wear their post-Communist new-found religious culture on their sleeves -- or around their necks [chains with gold crosses are common on cosmonauts]. 'Holy images' of Russian Orthodox icons are on the walls of the 'Russian segment' next to secular space saints such as Gagarin and Tsiolkovskiy.

21. One Russian cosmonaut returned last summer from orbit with a small Koran he brought into space on the request of an Iranian businessman who was also a spaceflight enthusiast, Cyrus Borzoo. Borzoo recently presented it to a museum in Teheran. If there are any Bibles still on board, they probably are in Russian. I dunno.

22. Spaceflight, and space culture, really is UNearthly. And endlessly fascinating.