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Harmony in Space Amid the US-Russia Stand-Off over Ukraine

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Roscosmos, the Russian space agency, and NASA, the American space agency, announced on July 15, 2022, that they had reached a ride-share agreement for the exchange of seats on their spacecraft for astronauts. This would give Russian astronauts seats on SpaceX rockets in exchange for American astronauts getting rides to orbit on Russian Soyuz rockets.[1] So the next rocket to the International Space Station (ISS) launching from Russian soil could have an American astronaut on board and vice versa. The agreement was under deliberation for some time and was finalised despite the ongoing stand-off in Ukraine, a sign of continuing Russia-US cooperation in space.

This could easily go down as the greatest paradox in the history of international relations, when relations between the two countries are at their lowest point, with western sanctions affecting the Russian space and technology sectors.[2] The compulsion and necessity of keeping the ISS afloat have brought the two great space powers closer, at least in the space domain. Notwithstanding the competition in the military domain and historical rivalry, space agencies of the two nations – NASA and Roscosmos – were compelled to barter seat occupancy for the rides to the ISS.

The rocket seat share phenomenon is, however, not a recent measure. The two space agencies had previously shared crew occupancy on the American Space Shuttle and the Russian Soyuz spacecraft. After the shuttle was phased out in 2011, the US had no spacecraft capable of transporting astronauts to the ISS. They utilised Russia's Soyuz rocket for sending American astronauts to the space station until 2020, when the American company, SpaceX, operationalised the Crew Dragon capsule, which revived NASA's human spaceflight capability.[3]

The history of space diplomacy dates back to 1992, after the collapse of the Soviet Union, when the US entered into a series of agreements with Russia for expanding cooperation in outer space activities. For the US, space cooperation with Russia was driven by a number of considerations. The most prominent of these was the advantage to be gained from Russian space expertise and capabilities, which would augment the US space programme and help in reducing the cost of achieving US objectives in space, particularly with respect to the space station program. There was also a broader set of foreign policy, economic, political, and security factors supporting US initiatives, especially the invitation to join the International Space Station program.[4] In 1993, the United States and Russia reached a landmark deal to merge their separate space station modules into a single facility, calling it the International Space Station. An MoU was signed between the space agencies of the two countries on January 29, 1998. The first two modules, the Zarya Control Module (Russia) and Unity Connecting Node (USA), were docked together in 1998.

More modules were added in later years to form the ISS as it exists today. The ISS has been continuously occupied by Russian and American astronauts since then. They have routinely trained together, launched into space together, and returned to Earth together on the same spacecraft. The crew capacity of the ISS was increased to six astronauts in May 2009, when the ISS was declared fully operational. Partners from other countries were also included in the crew composition. The ISS is now at the far end of its service life and is likely to be abandoned in 2024 unless it gets approval for a life extension.[5] Reports indicate that the Russian space agency has already decided to exit the space station programme after 2024, while NASA intends to keep the ISS alive till the end of 2030.[6]

Joint space research onboard ISS is the purpose of the US and Russia's coming together in space, although ferry trips to and fro from the space station have always been a bottleneck owing to the limited carriage capacities, training complexities, language barrier, and cost factor. Crew rotation on the ISS is a critical activity for various reasons, like human factors, which cannot wait for a rocket and spacecraft to be available. Hence, the seat share agreement comes at a critical juncture where the war in Ukraine has restricted Russian space activity.[7]

Presently, an international collaboration of space agencies provides and operates the multiple components of the ISS. The partners in this collaborative effort are the space agencies of the United States, Russia, Japan, Canada and Europe. All of them have contributed to the hardware and modules which comprise the ISS.[8] The US and Russia have a major stake in the ownership of the ISS. While some modules have been launched into space and docked together in orbit, many other modules and equipment have been assembled in space. These modules are laboratories, living compartments, cargo capsules, power generation units, and control modules. Each partner has the primary responsibility to manage and run the module or hardware they provide. Having combined crews ensures there are appropriately trained crew members for each task on board the ISS for routine maintenance work, scientific experiments, essential tasks related to the station's position keeping and safety in orbit as well as spacewalks. Therefore, having at least one American and one Russian astronaut on board the ISS is crucial to keeping the space station operational.[9]

Space cooperation is seen as one of the last links between the US and Russia as tensions flare over Russia's military operations in Ukraine. The agreement is beneficial for both the US and Russia and will promote the development of space science and technology and space exploration within the framework of the ISS programme. The ISS has been the most politically complex space exploration programme ever undertaken. It has also emboldened the necessity of partnerships for

the survival of space programmes. One could only hope that such harmony would be seen in other areas as well and serve as a precedent for global peace and unity.

NOTES:

[1] "US, Russian astronauts will swap seats on rockets again", *Times of India*, July 15,2022, at http://timesofindia.indiatimes.com/articleshow/92906601.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst. Accessed on July 24, 2022.

[2] Jeremy Grunert, "Sanctions And Satellites: The Space Industry After The Russo-Ukrainian War", June 10, 2022, at https://warontherocks.com/2022/06/sanctions-and-satellites-the-space-industry-after-the-russo-ukrainian-war/. Accessed on July 25, 2022.

[3] Reuters, "NASA, Russian Space Agency Sign Deal to Share Space Station Flights – Roscosmos", at https://www.usnews.com/news/world/articles/2022-07-15/nasa-russian-space-agency-sign-deal-to-share-space-station-flights-roscosmos. Accessed on July 24, 2022.

[4] John Logsdon, James Millar , 'U.S. -Russian Cooperation in Human Space Flight Assessing the Impacts', a report by 'the *Space Policy Institute'*, February 2001, at https://www.nasa.gov/sites/default/files/atoms/files/partners_us_russian_cooperation_in_human_spaceflight.pdf. Accessed on July 24, 2022.

[5] Britannica, 'International Space Station', at https://www.britannica.com/topic/International-Space-Station. Accessed on July 24, 2022.

[6] Uliana Pavlova and Kristin Fisher "Russia says it will quit the International Space Station after 2024", CNN, July 27, 2022, at https://edition.cnn.com/2022/07/26/world/russia-quit-iss-scn/index.html. Accessed on July 27, 2022.

[7] Jeremy Grunert, n-2.

[8] NASA official website, 'International Space Station, at https://www.nasa.gov/mission_pages/station/cooperation/index.html. Accessed on July 24, 2022.

[9] Reuters, n-3.