

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)

Flight & Ground Operations aspects of Human Spaceflight - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia (4-B6.4)

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DEVELOPING THE NEW ESA CONCEPT OF OPERATIONS FOR THE AXIOM-3 MISSION, THE
FIRST MISSION OF AN ESA ASTRONAUT ON A COMMERCIAL SPACEFLIGHT

Abstract

The Axiom-3 mission was a private spaceflight with a crew of 4 astronauts to the International Space Station, operated by Axiom Space. Following the Axiom-1 mission in 2022 and Axiom-2 mission in 2023, the Axiom-3 mission launched on January 18th 2024 on a SpaceX Falcon 9 rocket, and landed on February 9th 2024. It was the third mission of its kind, but it also represented the first time that an ESA astronaut was a crew member on a private spaceflight to the International Space Station. For ESA project astronaut Marcus Wandt, who was selected as a member of the ESA astronaut reserve in November 2022, it was the first space flight. This short timeframe between selection and mission execution shows that fast-track, short-duration missions can be a new way for space agencies of generating science, outreach and education. This new concept of mission, with agency astronauts taking part in private missions, introduces a new set of challenges for both the agencies and the commercial partners. This paper focuses on the operational concept that was developed on ESA side, by the ESA/DLR (European Space Agency/German Aerospace Center) integrated team, at the Columbus Control-Centre in Oberpfaffenhofen Germany, together with Axiom Space and NASA. Due to the long-term already established position of ESA as ISS International Partner, the operational concept between ESA and Axiom differ from the standard Axiom process with other private customers. The different aspects considered in paper include the overall sharing of responsibilities between the involved partners, establishment of new interfaces and development of new operational processes that had to be agreed on and set up, challenges encountered within this process and lessons learned and how they apply to future upcoming commercial missions with ESA astronauts.