

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Astronaut Training, Accommodation, and Operations in Space (5)

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ASTRONAUT ON-BOARD TRAINING (OBT)
CHALLENGES, ADVANTAGES AND PERSPECTIVES FOR FUTURE HUMAN MISSIONS

Abstract

Imagine the year 2025, astronauts on the lunar gateway, or imagine in a more distant future astronauts in their spacecraft on the way to Mars... They are going through some specifically designed training material, learning how to perform scientific experiments, technology demonstrations or maintenance activities once arrived at their final destination. In view of future Human Exploration Missions to the Moon and Mars, the concept of astronaut On-Board Training (OBT) is gaining more and more relevance.

The current traditional approach for astronaut training for the standard 6-months International Space Station (ISS) missions is almost entirely built around ground-based training. During the 18 months period prior to their assigned mission astronauts travel around the world to receive training from each International Partner on their specific Space Station Systems and Experiments. Although face-to-face and hands-on training is still considered the holy grail for ISS operations, certain circumstances like mission extensions, last minute crew replacements, or unexpected on-board failures requiring a quick solution, call for a different type of training in the form of On-Board Training.

Keeping in mind 10 more years of ISS operations, with a foreseen increased crew size of up to 10 persons, and a multiplication of scientific experiments to be performed, astronaut On-Board Training will also become more and more important for the ISS in the coming years.

Based on the experience with some OBTs for European Space Agency (ESA) activities on the ISS, this paper discusses the challenges, advantages and disadvantages for developing and performing OBTs for and with ISS astronauts. A perspective is given on the use of OBTs as an essential part of astronaut training for future Human Exploration Missions.