

SPACE OPERATIONS SYMPOSIUM (B6)
Training Relevant for Operations (3)

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CREW EMERGENCY TRAINING FOR THE COLUMBUS MODULE

Abstract

Emergency training for ISS crew members is implemented to ensure the crew handles potentially life threatening situations in a structured, agreed way. Past events have shown that there is a potential for fires, depressurisation, and atmosphere contamination.

NASA as the ISS Integrator has the ultimate responsibility for overall ISS safety. However, since all partners contribute with certain elements, it has been decided that element-level emergency training for the crew shall be performed by the partners in preparation of integrated emergency training. ESA is implementing a dedicated training for Emergency Response in the Columbus module at the European Astronaut Centre (EAC) in Cologne. The ESA Emergency training was developed by the Columbus Instructor Team. The content and conduct of this training are presented in this paper.

The Columbus Emergency Training largely focuses on the fire case and is harmonised with the NASA emergency training. Differences between NASA and ESA hardware and software are emphasised. The Emergency Training occurs early in the Columbus training flow, and it relies on the basic knowledge of the Columbus module and its subsystems. A basic system knowledge is necessary to ensure situational awareness throughout the emergency, and may also allow for an early detection of a contingency situation. Maintaining safety also requires validated procedures, to be followed precisely and in close coordination with the Flight Control Teams on ground. Communication, both written and oral, should be “explicit, clear and concise”.

During Columbus Emergency training, all this is practised in conditions as realistic as possible. Key tasks and safety-relevant information are stressed and repeated throughout the entire Columbus training from the first lesson up to on-board drills. Repetition of theory and practise, along with memorizing response actions and facts, has the goal of building “automatic” reactions, which is crucial for crew to act decisively under stress. Crew feedback was essential in the early training implementation to improve lessons, training material, and most important the Columbus Emergency procedures.

The paper will present a summary of EAC Columbus Emergency Training development, key crew tasks, lesson flow, interface with the NASA training counterpart, and facilities used, along with possible future developments.