

SPACE OPERATIONS SYMPOSIUM (B6)  
Training Relevant for Operations, including Human Spaceflight (3)

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COLUMBUS FLIGHT CONTROL TEAM: TRAINING AND OPERATIONAL EVOLUTION

**Abstract**

Three years ago the first biggest European contribution to the human space flight program, the space laboratory Columbus was docked to the International Space Station. Since then such space operations in Europe have tremendously expanded leading to the emergence of a new generation of the flight controllers. European human space flight program in terms of payload operations has almost 30 years of tradition. In the 70's Europe began to collaborate with the United States and the Soviet Union in human space research. It allowed creating small groups of European flight controllers to support from ground the onboard experiments in the framework of such research agreements. However, opportunities for European flight controllers to gain experience in supporting longer space missions arose only with the increase in European research experiments on the MIR station. Until the beginning of Columbus operations most of these teams were based in their national ground control centers. With the decision of having a laboratory in space, the European Space Agency concentrated its task in the organization and creation of a dedicated human space operation system similar to the Mission control center in Houston, USA. As a result, the Columbus Control Center (Col-CC) was established in 2004 at German Space Operations Center in Oberpfaffenhofen, Germany with the objective of combining the spacecraft and payload operations engineers and the entire technical infrastructure at one place. Presently, the flight control team based at Col-CC significantly supports the work of the astronauts on board the station, especially in the European module. Also, the concept of spacecraft and payload operations has since evolved into a 24/7 and 365 days a year operation for the Columbus Flight controllers supporting Columbus operations. This paper in a first section will provide the readers an overview of the development of manned space operations in Europe. A second section will give details on the certification process to become members of the ESA flight control team. We include a description of the FCT preparation tasks and necessary efforts in terms of operational readiness to support dedicated missions and ISS increments. Also mission execution and FCT daily activities, with emphasis on payload operations given by the Columbus Operations Coordinators will be presented. Last but not the least, post flight activities like "lessons learned", what and how to improve operations for the next missions are treated as well.