

## HUMAN SPACE ENDEAVOURS SYMPOSIUM (B3)

Sustainable Operations of the ISS - Joint Session of the Human Space Endeavours and Space Operations  
Symposia (4.-B6.6)

Author: Dr. Dieter Sabath

Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

Mr. Alexander Nitsch

Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany

Mr. Dirk Schulze-Varnholt

Airbus DS GmbH, Germany

## CHANGES IN COLUMBUS OPERATIONS AND OUTLOOK TO LONG-TERM OPERATION PHASE

**Abstract**

Since the activation of Columbus on 12 February 2008 three years of busy and partly challenging operation have been performed by the Columbus FCT. The last year was mainly driven by the ground segment schedule to update the control rooms and servers to adapt the ground systems with software and hardware development. Starting with the control room K3 new workstations, new monitoring and command software as well as a new Voice Communication System (VoCS) have been installed, tested and brought into operations. Meanwhile also K4, the main control room at Col-CC, is completely renewed and used for operations. The last step to follow is the update of the backup control room K11 which is planned for March/April 2011.

Besides the scheduling of the ground events around the most important activities on board, the proficiency training of the FCT was a major challenge of the Columbus flight control team. For the first time the flight controllers have to be trained on a completely new system, i.e. the VoCS, during ongoing operations with all constraints due to shift plan and operation preparation work. This experience will be used for the training for future add-ons, changes and upgrades as well as for the setup of continuous proficiency training for upcoming years.

Despite the quite low attrition rate in the Flight Control Team at Col-CC a continuous replacement of flight controllers takes place. The training for the new flight controller is well established and continuously adapted to the current needs. Nevertheless the knowledge of the long-term flight controllers has to be kept on the current level of experience and the way how operation is done. Hence a knowledge database has to be set up for use by the flight controllers and as a basis for the establishment and extension of the proficiency training of the FCT.

During the ULF5 (STS-133) flight in February 2011 the WOOV8 valve of the Columbus Thermal Control System is the next major challenge of the Col-FCT, because this the first major on-orbit maintenance of the Columbus TCU including a necessary rack tilting

The paper will give an overview of the achievements and highlights of the last year and concentrate further on the operational goals and constraints of the next years as well as the first preparations on the planned ISS operations until 2020.