

44th SYMPOSIUM ON SAFETY AND QUALITY IN SPACE ACTIVITIES (D5)
A Big Challenge : Safety in Aerospace Missions (1)

Author: Mr. Andrea Guidi
HE Space, Germany, heso.guidi@airbus.com

Mr. Simon Challis
Airbus Defence and Space Ltd, Germany, Simon.Challis@airbus.com

Mrs. Piera Mannini
Italy, piera.mannini@external.thalesalieniaspace.com

Mr. Alexander Nitsch
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany, Alexander.Nitsch@dlr.de

“THE HUMAN FACTOR” IN TEAM INTERACTION, INFORMATION FLOW AND DECISION
MAKING WITHIN ISS OPERATIONS

Abstract

ISS operations are more dynamic and flexible in comparison to nominal satellite operations. Having a Human in the loop means that not only can operations be more complex (ie the ability to remove and replace failed equipment) but also that operations are faced with additional constraints (both technical and programmatic) to maintain the safety of the crew member in the case of both nominal and off-nominal situation.

ISS Operations are also based on specified Crew and Ground Procedures, however, they require a wider real time expertise and decision making capability on-console even during nominal operations.

This greater need of technical expertise and decision making capability is implemented accordingly by the diversified real time Team available to support directly and indirectly the ISS operations. This team includes not only Flight Controllers, Engineers and Safety Support, but also planners, medical experts and management. During critical operational phases (e.g. repair or maintenance operations) the real time team on console is strengthened by dedicated subsystem experts. During nominal operations the flight control team can resort to “off-line” experts who can provide additional engineering expertise on short notice in case of incidents and anomalies.

The interaction of these various teams, needed to support the growth in complexity and flexibility given by the presence of the crew, means in consequence an additional level of complexity to the operations through the need to interface among expert having different cultural backgrounds and work approach. This translates into a significant dependency of ISS Operations from a variety of Human Factors. The management of the complex preparatory activities for on-orbit operations has to cope among other with human dependability regarding the process flow of information and the appropriate consideration of the various contributions from the different, worldwide spread teams in the decision process.

The objective of this paper will be to address various topics related to these highly dynamic space operations. Real time cases of interaction between Col FCT, Engineering and Safety, addressing how this was in line with the previously described process and how the various team perceived the events. An objective of this part would certainly be to identify room for improvement but especially to find way of increasing empathy among the various participating teams, through the understanding of the needs of each participant. Often processes are perceived as not efficient from one player, because they have to accommodate the need of another player.