

SPACE OPERATIONS SYMPOSIUM (B6)
Flight Control Operations Virtual Forum (4)

Author: Ms. Sinje Steffen

Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany, sinje.steffen@dlr.de

Mr. Nikola Zekusic

Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany, nikola.zekusic@dlr.de

COLUMBUS MODULE INVOLVEMENT DURING LIMITED POWER SCENARIOS ON THE
INTERNATIONAL SPACE STATION

Abstract

Columbus is the European experiment module of the International Space Station (ISS). Columbus does not have its own power generation system and relies completely on the NASA power system (8 huge solar arrays) for its power supply. There are several occasions during which the solar array rotary joints have to be locked which leads to a reduction in the total power available and necessitates power downs all over the Station, for example: thrusters firing due to an altitude increase of the ISS, Extra Vehicular Activities (EVAs) or docking visiting vehicles. During these timeframes certain power limits are specified for the different sections of the ISS (USOS part). These limits are given to the Columbus Flight Control Team about a week before the actual event. At the Columbus Control Centre (Col-CC) the COL-SYSTEMS position is responsible for the power consumption and distribution for Columbus. COL-SYSTEMS provides all inputs to ensure a controlled course of events during the power down for all Columbus systems and payloads. This paper focuses on the power downs of the ISS from a Columbus point of view. It illustrates how the Columbus power consumption can be reduced with minimal impact to essential equipment or science. Furthermore lessons learned are identified; specifically with respect to the use of the shell heater during power downs.