

SPACE OPERATIONS SYMPOSIUM (B6)
Human Spaceflight Operations (1)

Author: Ms. Paola Parodi
Thales Alenia Space Espana, Italy, Paola.Parodi@thalesalieniaspace.com

INPUTS TO AN AMMONIA MODERATE LEAKAGE DETECTION AND REACTION IN
COLUMBUS**Abstract**

This paper describes the analysis prepared to define a timely detection and response to an ammonia moderate leakage from ISS Thermal Control System (TCS) into the Columbus TCS water loop, and how the inputs have been reflected in dedicated Flight Rules. Ammonia leakage is currently classified into three levels, with two extremes: the micro-leak, detectable generally via sample/strip analysis methods; the rupture, with a visible (FDIR reaction) flow of ammonia into the Columbus TCS and the intermediate moderate leakage, visible via telemetry. At the time being, no moderate leak Flight Rule (FR) is available on the Columbus' books and therefore no guidance to the flight team is provided if that size leak develops. The advantage of implementing moderate leakage response is that it covers the 'gray zone' between micro-leak and rupture, thus reducing the risk of over-reaction and stop of the activities inside the lab for a leak greater than the micro-leak, that would be treated as a rupture.