

HUMAN SPACE ENDEAVOURS SYMPOSIUM (B3)
New Technologies, Processes and Operating Modes Enabling Future Human Missions (7)

Author: Mr. Hiroshi Ueno
JAXA, Japan, ueno.hiroshi@jaxa.jp

Mr. Naoki Satoh
Japan Aerospace Exploration Agency (JAXA), Japan, naoki.satoh1@jaxa.jp

HUMAN SPACESHIP CONTROL BY CREW INTERVENTION AND ITS DYNAMICS COCKPIT
SIMULATOR

Abstract

This paper describes research activities on human spaceship control by crew intervention. The human spaceship needs to be capable of providing human intervention at multiple level so that human can perform their abilities when required. The control structure for such system and the interaction between automation and operation are needed to investigate. JAXA has recently started research activities regarding to the topics described above. The human space ship mission scenario and the dynamics simulators along with its scenario have been developed in addition to the specific element technologies. The dynamics crew cockpit simulator for rendezvous docking and re-entry has the capability of manual control by crew with hand controller in addition to automatic control, and is able to simulate human spaceship control by crew intervention. The maneuverability test relevant to crew intervention control has been performed by several astronauts. The next-generation technologies on the rendezvous docking crew-auto shared operation include the predictive display, and collision avoidance and advanced fault detection and isolation, exhibiting promising results.