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FROM ATV JULES VERNE TO ALBERT EINSTEIN – EUROPEANS MASTERING OF SPACE
RENDEZVOUS OPERATIONS

Abstract

During 2013 ESA's Automated Transfer Vehicle will perform its 4th mission to the International Space Station. The actual foreseen duration of the mission is 4 to 6 months. With the success of the previous ATV missions – Jules Verne (2008), Johannes Kepler (2011) and Edoardo Amaldi (2012) ESA has confirmed its capability to successfully operate complex spacecrafts and perform rendezvous operations, with about 1 year interval. Yet every mission is a challenge on its own, due to various factors :

- New ISS traffic scenarios, with the introduction of commercial servicing spacecrafts and the shuttle retirement
- Different ISS logistic requirements, power constraints, flying attitudes, reboost and altitudes strategy
- Evolutions and improvements of the ATV system itself, both on the vehicle and its ground segment

This paper describes the ATV Albert Einstein mission, in all its aspects, and compares with its predecessors, with particular emphasis on:

- Description of the mission objectives, and a status of the achievements
- The improvements of the ATV vehicle
- The improvements of the ground processing
- The changes and evolutions of the mission operations functions
- The process for inclusion of the lessons learned for each mission