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

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THE ATV PROGRAMME - A SUCCESSFUL STORY

Abstract

On next summer the 5th and last ATV George Lemaître will start its journey to the International Space Station (ISS), for its nearly 6-month logistics resupply mission.

The Automated Transfer Vehicle (ATV) is a European logistics vehicle designed to support the International Space Station (ISS) by providing cargo upload, propulsive support and trash removal. The first ATV, Jules Verne, was launched in March 2008, followed by ATV2, Johannes Kepler in February 2011, ATV3, Edoardo Amaldi in March 2012 and ATV4, Albert Einstein in June 2013. Each of these four ATV missions did fulfil its mission objectives successfully. Although the missions are supposed to be recurrent, each of them had its own story and provided opportunities to learn more about ATV's amazing capabilities.

The ATV Programme has been a big success for ESA European industry in terms of technical achievements, but in addition it has been an extraordinary example of international cooperation between the European, Russian and American partners of the ISS. This is due to the tremendous spirit of teamwork on all sides and great respect for each other's knowledge and experience. It took time to build up the ATV team spirit and this can be seen in the way mission preparation and operations have evolved from one mission to the next. Along the way, the teams had to ensure the fulfilment of mission specific objectives while respecting strict ISS safety requirements and dealing with the inevitable off-nominal situations that arise in real life.

In particular the final ATV mission incorporates two major novelties, each of them involving learning potential:

1) The Laser Infra-Red Imaging Sensors (LIRIS) for demonstration of new rendezvous technology with non-cooperative targets. 2) The shallow re-entry demonstration planned at the end of the mission, which will allow the ISS Community to gather unique experimental data for the validation of the analytical models to be used for predicting the future ISS re-entry behaviour.

This paper will summarize the history of the four ATV missions completed so far and provide the latest status of the current ATV5 operations. It will provide examples of how the lessons learned from the European cooperation with the ISS partners will be beneficial for future space programs.