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SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Verification and In-Flight Experimentation (6)

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ROLE OF ADVANCED TELEMETRY IN SPACE TRANSPORTATION SYSTEM AND IN-FLIGHT EXPERIMENT DEVELOPMENT AND QUALIFICATION

Abstract

VEGA Maiden flight was the demonstration of a new development system structure, led directly by ESA, through its Integrated Project Team. The flight was conceived as a single PL mission but the opportunity of hosting educational satellites went in the direction of opening doors to the academic research world. In this frame Almasat and seven Cubesats were embarked and entitled as secondary PLs. Supporting PL systems have then faced to different needs coming also from LV side: as a consequence, the whole system complexity increased. This was, hence, an excellent opportunity for introducing on board innovations for the first time with the LARES complementary TLM given by ASI in support to the VEGA qualification. Thus, a very important role was given to such low cost TLM, which is a Formula 1 flown high quality data and video system; this allowed the acquisition of a large number of information on LV separations. Video images are currently the most valuable and impressive information of the dynamic of the separated stages, on which after separation no active elements was monitoring the events. In addition, acquisition of separation shock of the Fairing and of 3rd stage separation, at frequencies of some tens of Khz, is not reaching the maximum capacity of the Fast Acquisition Unit system, which is of the order of Mhz, offering additional margins of improvement for the quality of available flight data with respect to state of art. Those are the main of the innovation introduced for the first time with the LARES complementary TLM given by ASI in support to the VEGA qualification. Thanks to the very quick post-processing process built and to the quality of the results, it is intention of the project to implement such system as a real time images provider in order to ease those monitoring processes that take place during the launch.