SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
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VEGA REAL-TIME GLOBAL TELEMETRY STREAMING VIA THE TDRS SPACE NETWORK

Abstract

Presently the Vega Telemetry system uses a standard network of telemetry ground fixed and in some cases more costly mobile stations to guarantee the visibility of the main events of the launch and to download the mission telemetry streaming. However in specific cases the ground stations are not sufficient to cover all space to ground visibility needs and the problem is then solved by means of the on-board telemetry internal memory mechanism or by optimizing the mission trajectory, which has a non-negligible impact on the mission performances. Even with these solutions, there are long coasting phases where the telemetry coverage is not possible and thus the relevant data is definitely lost, which jeopardize the possibility to perform post-processing of the data in the event of an anomaly. The TDRS Network System will provide a valid alternative in terms of mission visibility and flexibility definition. In fact the use of TDRSS will provide VEGA launcher with the capability to download the telemetry streaming in real time in indirect way and then sending it to the Guyana Space Centre for Immediate Visual Control. The Vega selected service is the return service, by means of which the telemetry originated at the VEGA platform will be routed through the TDRS to White Sands Center or Guam Remote Ground Terminal back to the Guyane control center. The Vega on-board TDRSS platform will consist of of one 40W S-Band Telemetry Transmitter having the capability to transmit the CCSDS Telemetry frame coming from the Vega Telemetry unit to the TDRS Space Network. The Vega TDRS S-Band telemetry transmitter will distribute the 40W power to four S-Band antennas located around the skirt structure of the VEGA launcher. Only one of the four Transmitter RF outputs will be active at every instant. The selection of the Telemetry transmitter output port will be performed by the Flight Program Software, on the basis of the Launcher Roll attitude and the reference TDRS satellite constellation in visibility.