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NEOSSAT AND M3MSAT - TWO CANADIAN MICROSAT MISSIONS

Abstract

The Canadian Space Agency (CSA) launched the highly successful Microvariability and Oscillation of Stars (MOST) astronomy microsatellite spacecraft on June 30th, 2003 as its first micorsat which is still in operation after 7 years. Building upon the demonstrated effectiveness and success of MOST, Defence Research and Development Canada (DRDC) and the CSA are jointly funding two new micorsat missions, namely the Near-Earth Object Surveillance Satellite (NEOSSat) and the Maritime Monitoring and Messaging Micro-Satellite (M3MSat).

The NEOSSat microsat project is designed to satisfy three mission objectives: 1) discover and determine the orbits of Near-Earth Objects (NEO's) that cannot be efficiently detected from the ground, 2) demonstrate the ability of a microsatellite to produce useful metric (position/time) data on man-made, Earth-orbiting objects with altitudes between 15,000 and 40,000 km, and 3) carry out a flight demonstration of the CSA's first multi-mission microsatellite bus (MMMB). Starting in 2006, the NEOSSat project has passed through a competitive bidding process that resulted in the NEOSSat Phase B/C/D development contract award in July 2007 to an industrial team led by Dynacon. The project is presently in the development phase (Phase D) and spacecraft Test Readiness Review will be held in May 2011 with a target launch in Q3 2011 for at least a 1-year mission after commissioning and a goal of 2 years. The M3MSat microsat project is also designed to satisfy three mission objectives: 1) augment existing maritime surveillance capabilities through the monitoring of ship Automatic Identification System (AIS) signals from space with the AIS payload, 2) further develop Canadian capabilities by providing an opportunity for the Contractor to propose and demonstrate a new technology with the secondary payload, 3) provide a flight opportunity for Canadian industries to space qualify new technology and to establish flight heritage. Starting in 2007, the M3MSat project has passed through a competitive bidding process that resulted in the M3MSat Phase B/C/D development contract award in 2008 to an industrial team led by COMDEV. The project is presently in the detailed design phase (Phase C) and spacecraft Critical Design Review will be held in March 2011 with a target launch in Q2 2012 for at least a 1-year mission after commissioning and a goal of 2 years.

This paper describes the overall progress of the NEOSSat and M3Msat projects focusing primarily on the mission and the engineering development of the spacecraft.