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SMALL SATELLITE APPROACH FOR A LARGE MISSION RESEARCH RETURN:FASTSAT

Abstract

Late in the fall of 2008, the DoD Space Test Program (STP) and the NASA's Marshall Space Flight Center (MSFC) rapidly formed a partnership to take advantage of a time-critical opportunity where the technical, schedule and budgetary aspects were higher risk by traditional standards, but the payoff for both the NASA and DoD research space communities would be enormous if successful. When the STP received notification of withdrawal of a previously manifested payload on a Minotaur mission only 14 months before launch, the DoD program faced launching a mission with more than a 25% payload mass shortfall. The STP with NASA immediately began to identify probable substitutes and the risks associated with each. The short timeline imposed limitations which only mature options could normally satisfy, and yet the STP and NASA teams insisted on looking "outside the box" for solutions to increase sustainable access to space for small secondary missions. In fact, NASA's Fast Affordable Science and Technology Satellite-Huntsville (FASTSAT-HSV) spacecraft, mission approach and the innovative multi-organizational partnership arrangements at the MSFC afforded a highly synergistic solution which satisfied the STP mission experiments and spacecraft launch schedule requirements. The FASTSAT-HSV01 approach, directly supports some of the future technology maturation and scientific research needs of NASA's Exploration Systems Mission Directorate, Office of the Chief Technologist, and Science Mission Directorate mission agendas, by providing a new microsatellite platform and a mission approach where both low and mid level complexity science and technology research payloads(components, subsystems, instruments, operational processes) can be flown responsively and affordably for the Agency. The FASTSAT-HSV01 mission approach enables both NASA and DoD missions that are of a tactical research nature and are intended to conduct innovative research and technology demonstration missions that gain unique scientific insights or mature the readiness of new technology components, subsystems or systems by increasing the Technology Readiness Level (TRL) for future missions. The FASTSAT-HSV01 offered the space research community a pathfinder for low-cost space access using the DoD-funded EELV Secondary Payload Adapter (ESPA) Standard Services. In fact, the Secretary of the Air Force issued a policy in 2008 to establish ESPA Standard Service missions on Air Force EELVs annually beginning in 2012 which offers a wide variety of launch vehicle increased opportunities. Future FASTSAT-HSV01 type missions will ensure a capability exists to support ST payloads allowing them to take advantage of these DoD opportunities and potential future opportunities on NASA missions.