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CHALLENGES OF INTEGRATING COMMERCIAL SPACEFLIGHT OPERATIONS INTO THE NATIONAL AIRSPACE SYSTEM

Abstract

This research paper has been written to address an emerging issue for the aerospace industry. Over recent years, regulatory changes and technological advancements have driven the entrepreneurial spirit and imagination of hundreds of individuals to set their eyes on the exploration of outer space. The potential benefits derived from being able to go beyond Earth's atmosphere have been sufficient to catch the interest of the private sector, and during the last decade, an exponential increase in private space vehicle operations has begun to take place. In consequence, the methodology utilized during the first part of the Space Age to manage such operations may not be the most efficient to cope with an increasing volume of air traffic within the boundaries of the United States National Airspace System. Adverse effects ranging from economic loss to flight safety decay will occur if the government and aerospace stakeholders fail to act proactively on this subject. This research paper will first explore the effects of the increasing volume and cadence of space vehicle operations in the NAS, the current approach of Air Traffic Management to handle space related activities, the potential hazards of such operations and the regulatory gap that exists to foster cooperation between interested entities. Then, innovative concepts to deal with the previously mentioned policy and technical issues will be introduced . Finally, a general concept of how future space operations might interact with air traffic will be described and the general requirements for a successful integration of Commercial Space Transportation operations into the National Airspace System will be summarized.