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Cooperative Integration of Commercial Space Operations into the National Airspace

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Cooperative Integration of Commercial Space Operations into the National Airspace

Abstract

The Federal Aviation Administration (FAA) mission is to provide a safe and efficient National Airspace System (NAS) for users. The capacity of the NAS is increasing with the number of operations thus safety and efficiency must continue to update within the NAS. Currently, the NAS is being used in a segregated approach for integration of operations between NAS users. This segregated integration method is limiting the overall efficiency of the NAS of all users, including aviation and commercial space operations. Using cooperative integration, the FAA Air Traffic Organization (ATO) and Commercial Space Transportation (AST) must collaborate on an agreement to prevent disruption of other NAS operations. The current standards being used include the use of hazard areas, however, the current use is siding with extra caution of safety by using too large of an area, which causes disruption. Developing a compromised hazard area standard that maintains the safety of civil aviation operations while also allowing for these operations to be done efficiently without affecting other NAS stakeholders.

Introduction

With an increase in site operator licenses for commercial spaceports along with proposals for airport/spaceport hybrids, the commercial space industry era is blooming. Therefore, an increase in commercial space traffic in the National Airspace System (NAS) is expected. The NAS includes the airspace, facilities, associated personnel, equipment and airports in the United States. Although NAS includes airports, it is not only limited to aviation operations. With the expected increase in space traffic in the NAS the FAA must continue to maintain safe and efficient airspace for all NAS users, including commercial space operations.

Under current integration methods, NAS stakeholders are greatly affected due to the inefficient use of airspace. Currently, hazards areas are assigned during launch and re-entry operations causing temporary airspace closures, thus, resulting in airport delays and additional usage of fuel due to reroutes. This method of integration could be considered segregated for the safety of airspace, however, it is not efficient for air or space traffic management. All NAS users must be able to use the shared classes of airspace without causing disruption to other users. This operability throughout the NAS would increase the efficiency as well as the profit for NAS stakeholders.

Methodology

Currently, there is a lack of efficiency due to the current use of hazard areas, however, assigning these hazard areas does ensure that the airspace is used safely. This current method causes a disruption to civil aviation users thus affects the FAA ATO. To improve efficiency, the FAA ATO and AST must develop an integration method that involves the cooperation of all authoritative parties involved. Cooperative integration meaning all NAS user authorities must work together on improvement in regulations, policies and standards.

The current use of hazard areas could be deemed as inefficient due to effects made on civil aviation users such as: reroutes causing addition fuel burn and delays at airports. Hazard areas currently are made with an extra caution of safety for air traffic in the NAS and people/property on the ground. Revision to the current hazard area equation should be considered along with timing considerations for restrictions. Using hazard analysis, a smaller hazard area should be defined while still maintaining safety of other NAS users if a catastrophic failure occurs within launch or reentry operations.

Results

Currently, there are projects in the works by the FAA to improve integration methods for commercial space operations into the NAS.

Conclusion

With the innovation of technology, operations will continue to flourish and expand the NAS capacity. Integration of civil aviation and space traffic is merely just the beginning. Using cooperative integration, the FAA AST and ATO must come to an agreement on hazard area standards and how they can be used more efficiently and expand the NAS capacity. Using this method between FAA agencies, all stakeholders will have the same mission and fulfilling that mission successful using the open line of communication.

References

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