



**THE FORTY-THIRD MEETING OF THE
INFORMAL PACIFIC ATC CO-ORDINATING GROUP
(IPACG/43)**

(Tokyo, Japan 27 – 28 September 2017)

Agenda Item 6: ATM Issues

Commercial Space

Presented by Federal Aviation Administration

SUMMARY

This paper provides a glance of the growing impact of Commercial Space operations within the Pacific Ocean Flight Information Region.

1. Introduction

1.1. Commercial Space operations are expanding within our FIR and becoming more frequent. The airspace requests for potential operations can negatively impact traffic depending on location, time of day and duration. The hazard areas often affect routine traffic flows creating reroutes which increase the workload for controllers and air crews.

1.2. It is Oakland ARTCC's duty to uphold and work under the ICAO rules set forth through the international community. With respect to Airspace restrictions and reservations, Section 3.3 of the ICAO Doc 9426 reads:

1.2.1. 3.3.1.1 Since the demands on the use of airspace are manifold, some of which are not compatible with civil aviation (e.g. rocket firing) and because there exist sensitive areas on the ground which need protection from possible disturbance by overflying aircraft, it is recognized that there will be a need for States to establish airspace restrictions of varying degrees of severity. In addition, there are aerial activities by specific users or user groups which may require the reservation of portions of the airspace for their exclusive use for determined periods of time.

1.2.2. 3.3.1.2 Whenever such restrictions and/or reservations have to be imposed, they invariably constitute a limitation to the free and unhampered use of that airspace with the associated restrictive effects on flight operations. It is therefore evident that the scope and duration of restrictions established should be subject to very stringent scrutiny in order to keep undesirable effects to the minimum consistent with reasons causing their creation. To achieve this, it will be essential to create appropriate methods or organizations, in which all users and providers are adequately represented, for screening requests for airspace restrictions or reservations.

1.3. In order to alleviate or reduce impacts to Air Traffic we are striving to work with the Air Traffic Command Center Space Operations Office and the FAA Office of Commercial Space on future agreements. The goal is to learn how to integrate these operations and mitigate negative impacts to air traffic with a focus on safety, which will minimize current reactive efforts when dealing with space operations.

2. Discussion

2.1. Currently within the Oakland Oceanic FIR the requests for airspace reservations for commercial airspace operations is growing. There are three companies conducting or planning commercial operations; Space-X, Ventions and Virgin Orbit. Space-X has been operational for over two years. They currently average about four to six operations per year, with an expected increase for the Iridium Satellite constellation.

2.1.1 Ventions and Virgin Orbit are in the negotiating and licensing stage of their operations. Virgin Orbit is working to have all formalities completed and plans to begin launching in February 2018 along the western coast of the Oakland Oceanic FIR that borders Los Angeles Center. The future launch projections for Virgin Orbit are expected to increase over the course of two years reaching 24 operations per year in 2020. Ventions also plans to complete their licensing and begin operations early next year. We do not have the number of projected operations, however Ventions will be using the Pacific Spaceport Complex in Kodiak, Alaska with launch trajectories into the Oakland Center FIR.

2.2. Integrating Commercial Space Operations into Oakland Oceanic FIR is not the only challenge we face. It is important to note that there are ongoing Military Space operations as well. There are large scale operations from various Department of Defense (DOD) branches that use ranges located within or surrounding our FIR (Reagan Test site, PMRF and Vandenberg). Normally, the launch trajectories impact various portions of Oakland Oceanic airspace. The number of events per year is significantly higher than commercial space projections. In 2017, there have been ten military launches completed and seven of those were large scale operations requiring FLOW NOTAMs and/or PASCOT track restrictions.

2.2.1 Military space operations have increased in recent years. We have learned a significant amount concerning these operations as well as how to manage the impacts of these events. Instead of reacting to projected hazard areas for these launches, we are able to evaluate them and relay our concerns about any impacts. We have established relationships with contacts from DOD agencies such as the MDA (Missile Defense Agency) in order to create a working environment where we can mitigate negative impacts to users. This approach has developed a constant flow of timely information so that we can discuss future missions well in advance of their occurrence, usually a year prior or more. The advanced information we receive is analyzed based on location, time of day and duration. Traffic impacts are recorded based on reroutes or track restrictions. The knowledge gathered during analysis in our reports is shared and used to discuss different options if needed to minimize negative impacts.

2.2.2 This process has proven to be very effective in mitigating impacts. We have successfully been able to modify specific elements of missions when there are no constrictions. The receipt of advanced information has allowed us to project and plan more effectively. Moving forward we would like to use this model to help integrate Commercial Space operations into the Oakland Oceanic FIR. The demand for airspace use continues to rise for various types of space launches. Integration being the goal, we believe our current process for military launch operations has taught us that open communication and advance information are the first steps towards reaching this goal.

3. Conclusion

- 3.1 The meeting is invited to note the information provided.