



WORKING PAPER

THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE A

Agenda Item 5: Emerging issues

Agenda Item 5.5: Other emerging issues impacting the global air navigation system including unmanned aircraft systems (drones), and supersonic and commercial space operations

IMPACT OF COMMERCIAL SPACE OPERATIONS ON CIVIL AVIATION

(Presented by the International Air Transport Association (IATA), the International Federation of Air Line Pilots' Associations (IFALPA) and the International Federation of Air Traffic Controllers' Associations (IFATCA))

EXECUTIVE SUMMARY

This paper presents issues related to the impact on civil aviation created by the emergence of commercial space, and identifies the need for ICAO to begin developing guidance material related to the safe and orderly operation of spacecraft transiting civil airspace. The paper acknowledges that any changes to airspace designs should not alter the delegation of airspace given to a State, nor determine what level of services are provided.

Action: The Conference is invited to agree to the recommendation contained in paragraph 3.1.

1. INTRODUCTION

1.1 Developments in commercial space activities, and other new emergent activities have created a new category of aviation operator and have changed the perception of what traditional civil operations are. These operations have affected the conversations and interactions between commercial space and aviation operators. ICAO's role in discussions related to commercial space have generally focused on aspects related to those operations within civil airspace, and the impact they may have on operations between FL410 and FL600. However the emerging question that must be addressed is, the need for ICAO to discuss issues related to civil spacecraft launches, the applicable debris fields, and associated airspace regulations.

1.2 As conversations related to diverse user types in shared airspace and the need to safely accommodate them intensifies, a similar conversation regarding the transit of these spacecraft grows. The

¹ English, Arabic, Chinese, French, Russian and Spanish versions provided by IATA.

need to begin developing appropriate regulatory guidance material, Standards, and Recommended Practices related to the management of airspace where these activities occur, has only been highlighted. As the rate of commercial space operations increase, the aviation community can no longer wait to address these concerns.

2. DISCUSSION

2.1 The designation of airspace for which air traffic services are provided is distinct, and separated from the designation of sovereign airspace. Annex 11 — *Air Traffic Services*, Chapter 2 states: “*Contracting States shall determine, in accordance with the provisions of this Annex and for the territories over which they have jurisdiction, those portions of the airspace and those aerodromes where air traffic services will be provided.*” The Annex does not require a State to provide air traffic services within the volume of their sovereign airspace.

2.2 Annex 11, Chapter 2 also provides a list of elements to be considered in the determination of the needs for air traffic services, which includes types of aircraft and density. This allows States to determine when an increase in activities may create a need for additional services. States may also determine which airspace classes are appropriate for a given volume of airspace based on the type of operations, including the vertical boundaries. A common upper limit for controlled airspace is not required under the Annex.

2.3 The increased frequency of commercial space launches, the recovery of expended stages and reusable launch vehicles, and their associated debris fields have created the need for clearly defined safety standards. These activities and their associated restrictions, have placed an undue burden on international airspace. Launch providers and airspace managers, must control the unpredictability of flight efficiencies and the manner in which airspace restrictions are organized. These issues have created an imbalance with airspace being restricted in a manner that promotes one industry over another. Whether an industry is emerging, or well established, all should comply with the development of safety risk mitigations that would limit the impact to users. Freedom of navigation and equality of use, must be maintained.

2.4 Transit both over high seas, and to and from higher airspace, has implications for all airspace users. Therefore, the development of guidance, Standards and Recommended Practices for these operations, should engage the entire aviation community.

2.5 Current approaches toward commercial space launches have included the designation of restricted areas which encompass the launch area, debris field, and depending on the type of vehicle, possibly a re-entry area as well. These areas have predominantly been contained over high seas, with varying areas being protected. The size of the areas, the amount of time these areas are restricted, and the process used to notify civil operators is non-standard.

2.6 There are two main concerns with the current approach. The operations are conducted over international waters but are not based on international procedures, and the lack of harmonized procedures and standards do not ensure a safe and efficient operation.

2.7 As a possible means to initiate discussions regarding the establishment of a more robust and efficient process, existing provisions contained within regional air navigation agreements could be used as the vehicle to address both high altitude and commercial launch operations. In particular, existing airspace configurations and forecasted airspace requirements need to be considered. This will assist in

ensuring only those areas that require protection from potential hazards would be segregated from civil aviation operations.

3.1 As commercial space operations are expected to increase, ICAO will need to assist in ensuring this growth is accommodated in a safe and orderly manner. To accommodate these developments, the Conference is invited to agree to the following recommendation:

Recommendation 5.1/x —Regarding impact of emerging issues on civil aviation

That the Conference:

- a) invite States to note the development in commercial space activities and to recognize that this new entrant should be of interest to all airspace users.
- b) utilizing guidance material and best practices, request ICAO initiate the development of provisions for the integration of commercial space operations into controlled airspace, and development of a specific risk model including establishment of optimized protected debris field to address the unique risks caused by these new operations.

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