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WORKING PAPER

FOURTEENTH AIR NAVIGATION CONFERENCE

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Agenda Item 3: Air navigation system performance improvement
3.1: Proposals to improve the efficiency of air navigation services contributing to LTAG

ADDRESSING THE NEED FOR SEPARATION MANAGEMENT AND CONTINGENCY PLANNING IN RELATION TO HIGHER AIRSPACE OPERATIONS

(Presented by the United States)

EXECUTIVE SUMMARY

There is an anticipated growth in higher airspace operations (HAO) due to technological and engineering advancements which will necessitate the development of globally applicable rules and guidance to support the safe, secure and sustainable development of civil aviation operations. This paper highlights the need to address the increasing activity in higher airspace, including aircraft that provide telecommunications, earth observation and transportation services. Further, this paper also suggests where ICAO, civil aviation authorities (CAA) and air navigation service providers (ANSPs) should focus their near-term efforts to support the evolution of the aviation system. Finally, it will highlight the long-term work needed that will align with ICAO's Strategic Objectives to optimize aviation system performance and its 2023-2025 Business Plan global priority on new entrants.

Action: The Conference is invited to agree to Recommendation 3.3/x – Prioritize development of separation management solutions and contingency planning strategies in relation to higher airspace operations.

1. INTRODUCTION

1.1 Technological advancements and engineering innovations have led to an increase in the types of aircraft that can operate in low atmospheric density airspace. High altitude long endurance aircraft, commonly known as HALE aircraft, unmanned free balloons, airships, and supersonic and hypersonic aircraft can efficiently and economically satisfy business and research objectives. Some of these aircraft have vastly different performance characteristics and manoeuvrability profiles that must operate safely without interfering with each other and other operations.

1.2 The anticipated growth in these operations necessitates the development of globally applicable rules and guidance to support the safe, secure, and sustainable development and management of civil aviation operations taking place in higher airspace, typically above the level of today's conventional aircraft operations.

1.3 At the 40th Session of the ICAO Assembly in 2019, Resolution A40-7 directed ICAO to "review Standards and Recommended Practices (SARPs) relating to, inter alia, the rules of the air, air traffic services, certification, licencing, liability and the environment, for amendment or expansion as necessary". At the 41st Session of the ICAO Assembly in 2022, Resolution A41-9 updated this resolution and directed ICAO to not only "facilitate the operation of new entrants within a global, harmonized framework" but also to "develop specific concepts and guidance."

1.4 In December 2023, the governments of Canada, the European Union and its member States, Japan, the United Kingdom and the United States released a joint statement on HAO. This statement called upon ICAO to "prioritize and expedite higher airspace operations in its work program and to accelerate the development and implementation of solutions for manned and unmanned aviation traffic in higher airspace".

1.5 The joint statement also reaffirmed that space launch and re-entry operations are not HAO because they simply transit through higher airspace. As space launch and re-entry operations are separate from HAO, processes and guidance developed for the integration of HAO should not be applied to space operations.[1]

2. DISCUSSION

2.1 Globally there is no uniform higher airspace classification, a common approach for air traffic management in higher airspace, nor uniform expectations for contingency procedures.

2.2 Safe and efficient operations are dependent upon access to accurate and timely information by the operator, CAA and ANSP. Current systems that provide information to stakeholders in lower altitudes are either limited in their support for HAO or are impractical in higher airspace, presenting growing risks as HAO increase in frequency. For this reason, a common approach to implementing an information-sharing capability between all stakeholders needs to be established.

2.3 This will require the development of regulatory frameworks, operating rules, and an information architecture for data exchange that supports shared situational awareness among stakeholders. Information exchange between CAAs, ANSPs and operators will ensure that responsible parties have access to necessary information to maintain safe operations, such as flight information including location and flight intent.

2.4 Regarding operating rules, there is an urgent need to determine novel methods of separation management and establish guidance for the separation for these aircraft as they transit traditional airspace and operate in higher airspace. In higher airspace, both air traffic control (ATC)-facilitated separation and cooperative separation potentially could be suitable in different circumstances. However, since it is not always feasible or practical for ANSPs to provide separation services in higher airspace, operating rules, roles, and responsibilities need to be developed to ensure the accountability and oversight of operators by the appropriate authorities. When transiting lower airspace, it is crucial that ATC-supported separation practices are seamlessly integrated and account for the vehicle's performance and manoeuvrability.

2.5 It is imperative that proactive strategies are developed to address situations impacting the flight or safe landing of aircraft operating in higher airspace. This includes identifying contingency indicators and preparing response protocols to be used when mitigating safety hazards by the operator and

[1] Space launches and re-entries refers to both orbital and sub-orbital operations.

ANSP. Access to accurate and timely information is crucial to ensure the safety of aircraft during urgent and emergency events.

3. CONCLUSION

3.1 These immediate priorities should be part of a holistic vision for higher airspace operations, which should include such topics as: harmonized rules for airworthiness, personnel licensing and training, identification, detection, communication, flight information sharing including location and flight intent, and traffic management/demand and capacity balancing.

3.2 Addressing these priorities as a matter of urgency will help ensure that aircraft operating in higher airspace support safety and security as we work towards ICAO's Strategic Objectives of enhancing safety, capacity, efficiency and environmental protection in the global civil aviation system and its 2023-2025 Business Plan global priority on new entrants.

3.3 The Conference is invited to agree on the following recommendation:

Recommendation 3.3/x – Prioritize development of separation management solutions and contingency planning strategies in relation to higher airspace operations

That ICAO:

a) prioritize the development and implementation of comprehensive solutions for the safe separation of aircraft as they ascend to, descend from, and operate within higher airspace, ensuring enhanced collaboration between operators, CAAs and ANSPs; and

b) accelerate discussions to harmonize airspace management techniques that aim to seamlessly integrate higher airspace operations into the existing airspace system, and to develop proactive strategies to address situations impacting the flight or safe landing of aircraft that operate in higher airspace.

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