International Civil Aviation Organization

Thirteenth Meeting of the Air Traffic Management Sub-Group (ATM/SG/13) of APANPIRG

Singapore, 25 – 29 August 2025

Agenda Item 5: ATM Systems (Modernization, Seamless ATM, CNS, ATFM)

HIGHER AIRSPACE OPERATIONS

(Presented by India)

SUMMARY

This information paper presents the increasing development of Higher Airspace Operations (HAO) across the globe. Much of the progress in civil HAO are happening in Europe and United States APAC region is yet to establish corresponding framework and concept for HAO operations.

1. INTRODUCTION

1.1. The volume of airspace above altitudes where the majority of air traffic services are provided today (i.e. above FL550 or 17 km altitude), is commonly referred as higher airspace. Higher Airspace Operations (HAO) are activities carried out at such altitudes.

1.2. HAO have recently increasing attention in civil aviation due to technological advancements necessitating new global standards and regulations to ensure safety and efficiency.

2. DISCUSSION

2.1. HAO includes activities such as space launches, suborbital flights, high-altitude platform systems (HAPS), and integration of unmanned aircraft at higher airspace altitudes. Recent developments in suborbital and hypersonic flight, and unmanned aircraft systems are driving the need for HAO regulations. Higher airspace operations have progressed over the past few years and the trend is expected to continue in coming years.

2.2. . The lower and upper limits of the higher airspace are not clearly delineated. The lower limits depend on the classification of airspace and services provided today in Member States and vary between FL460 and FL660. The upper limit of airspace is linked to the issue of the delineation between airspace and space is not commonly agreed upon at international level and is speculated to be in the range between 80 and 120 km altitude.

2.3. There is a steep increase in number of vehicles using higher airspace to deliver a range of commercial services including surveillance, broadband connectivity, supersonic and hypersonic travel, trans-atmospheric and suborbital vehicles apart from military users. The mix of un-crewed, piloted, fast, and slow-movers requires a new operational framework and Air Navigation Services, to ensure safe operations.

2.4. The reliance on space-technology for daily functioning on weather services and navigation

is ever increasing. Satellite technology supports a wide variety of industries including aviation, defense, maritime, agriculture, science, etc. The advantages of satellite technology within the aviation industry are significant, however another consideration becoming more prevalent for aviation is the potential risks associated with the re-entry of space objects associated with satellite technology.

2.5. The United States document on Upper Class E Traffic Management (ETM) Concept Operations, and the European Concept of Higher Airspace Operations (ECHO) are the two major steps towards higher airspace civil aircraft operations. The ECHO provides the foundation for the development of a higher airspace regulatory framework by European Union Aviation Safety Agency (EASA). ECHO project also paves the way for the economic development of innovative and commercial concepts using the higher airspace environment including system-wide information management and trajectory-based operations.

2.6. Provisioning of Air Traffic Services (ATS) at higher airspace poses a significant challenge which required to be thought about. The Communications, Navigations and Surveillance (CNS) and Weather services for effective provisioning of ATS are under development. Efforts are undertaken for integration of Air Traffic Management and Space Traffic Management at some countries. Enough thought should also be given to scarce resources such as frequencies, transponder codes etc., in a cooperative manner, as well as elements that are necessary for safety reasons.

2.7. The primary goals of HAO regulations are to ensure the safe and efficient integration of these new operations with existing air traffic, minimizing disruptions and potential risks. ICAO guidance will be needed for regulators on how to accommodate new aircraft within existing global Standards and policies.

2.8. A collaborative effort at APAC region can help to evolve necessary standards and guidance material on complex HAO operations in the coming years.

3. ACTION BY THE MEETING

3.1. The meeting is invited to note the information contained in this paper.

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