



*International Civil Aviation Organization*

ICAO

**Tenth Meeting of the Air Traffic Management Sub-Group  
(ATM/SG/10) of APANPIRG**

Video Teleconference, 17 – 21 October 2022

---

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

**NEED FOR PROPER GUIDANCE TO ESTABLISH AND UPGRADE THE ATS  
AIRSPACE CLASSES**

(Presented by Civil Aviation Authority of Nepal)

**SUMMARY**

This paper presents the need for necessary updates in the ICAO Annex 11 and/or other relevant ICAO documents so as to provide the States the appropriate provisions or guidance to establish or upgrade their ATS airspace classes, and seeks ICAO's necessary initiatives in this regard. Lack of such provisions or guidance is driving the States in a state of dilemma or subjectivity, leading to the lack of harmonization in the process of airspace class establishment and up-gradation which may further lead to the airspace over- or under-classified.

**1. INTRODUCTION**

1.1 Annex 11- Air Traffic Services was adopted by the ICAO Council in 1950 which pertains to the establishment of airspace, units, and services necessary to promote a safe, orderly and expeditious flow of air traffic, including the classification of airspace, and the provision of classification of airspace has been adopted in the annex since 1999. The last version of the annex has been appeared as 15th Ed. in 2018 with 52nd AMDT in 2021.

1.2 Similarly, ATS Planning Manual, Doc 9426 was developed by the Secretariat in 1984 which was aimed at providing guidance for the planning and implementation of the ATS System, including that for airspace organization. The last version of the manual appeared as 1st Ed., 5th AMDT almost 30 years back in December 1992.

1.3 However, clear-cut provisions and/or guidance for the progressive development of ATS airspace classes is missing in both the documents, especially with regard to the considerations for technological advancement in navigation and surveillance systems.

**2. DISCUSSION**

Need for Proper Guidance to Establish and Upgrade the ATS Airspace Classes

2.1 Annex 11 and Doc 9426 provide some useful information and guidelines about the airspace class and airspace organization, but they do not present concise and easy-to-implement provisions and/or guidance for the establishment and up-gradation of ATS airspace class based on the all-necessary CNS infrastructures.

2.2 Appendix 4 to the Annex 11 only considers ‘Type of flight’, ‘Separation provided’, ‘Service provided’, ‘Speed limitation’, ‘Radio communication requirement’, and ‘ATC clearance’ as the factors for establishing or identifying ATS airspace class from Class G to Class A.

2.3 Other factors such as navigation and surveillance infrastructures that could contribute to the effective operation of airspace seemed missing.

2.4 Navigation and surveillance systems play significant roles in the safety and efficiency of airspace operations, and they are the enablers of the airspace concept too. Such systems are the main supports for ATCOs to ensure that the required separation in airspace classes as mentioned in the Annex are effectively implemented. As such, the requirements for navigation and surveillance should also be taken into consideration while establishing or upgrading the airspace classes. However, this aspect is lacking in the Annex.

2.5 Lack of clear-cut guidance is leading the States like Nepal in a state of confusion or dilemma to establish and upgrade their ATS airspace classes using their subjective judgment. So, there is a lack of harmonization in the process of airspace classification which may lead to over- or under-classification of the airspace.

2.6 As such, despite what it is mentioned in the Annex 11, it is better if there could be some additional provisions for the States to enhance and harmonize the process of progressive development of their airspace classes. Such additional provisions may contain, including the others, the following aspects:

a) Navigation and surveillance requirements for airspace classification. The last two columns with gray shading as suggested below seems logical if they are incorporated in the table of Appendix 4 to the Annex 11.

**Appendix 4 to the Annex 11**

<b>Class</b>	<b>Type of flight</b>	<b>Separation provided</b>	<b>Service provided</b>	<b>Speed limitation</b>	<b>RAD COM requirement</b>	<b>ATC CLR</b>	<b>NAV requirement</b>	<b>SUR requirement</b>

b) Details of minimum NAV and SUR requirements are given below with the necessary justification.

Class	Navigation Requirement	Surveillance Requirement	Justification
A	Yes	Yes	Being the most restrictive airspace class, it is logical to facilitate the airspace by NAV and SUR systems so as to ensure the safe operation of only IFR flights within the airspace concerned.
B	Yes	Yes	As both IFR and VFR traffics are allowed and separation is required between all traffic, it is logical to have NAV and SUR systems within the airspace concerned.
C	Yes	Yes	As IFR flight is to be separated from other IFR and VFR traffic, and VFR/VFR traffic avoidance advice, it is logical to facilitate the airspace by NAV and SUR systems.
D	Yes	Yes, if practicable	As separation is required between IFR/IFR only and traffic avoidance advice for IFR/VFR, VFR/VFR on request, it is logical to facilitate the airspace by NAV system, and SUR systems, if practicable.
E	Yes, if practicable	No	As separation is required between IFR/IFR only and other restrictions are very limited, it is logical to facilitate the airspace by NAV if practicable, SUR not mandated.
F	No	No	As having less restrictions in the airspace class and separation is not mandatory even for IFR/IFR traffic, NAV and SUR are not proposed mandatory in the airspace.
G	No	No	As being least restrictive airspace class, and IFR and VFR traffic provided with just FIS, NAV and SUR are not proposed mandatory in the airspace.

*Note:*

1. *Airspace with GNSS signal coverage is considered as facilitated by navigation infrastructure.*
2. *Aircraft with certified and functional GNSS receiver is considered as meeting the qualification for the airspace where GNSS is mandatory.*

c) Other aspects that could be relevant in the determination of ATS airspace classes are:

- Volumes and types of operating traffic - real or projected in the particular airspace class.
- Necessary aircraft equipage such as for GNSS, ADS-B, TCAS, Transponder, etc.
- ATS Surveillance Safety Nets.
- Requirements for necessary vertical dimensions of the airspace, as appropriate.
- RPAS and other general aviation activities like paragliding, hang-gliding, ultra-lights, hot air balloon, etc.
- Meteorological and environmental issues.

- Other factors as appropriate.

### 3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- Note the information contained in this paper;
- Request ICAO to review the proposals mentioned in this paper and take necessary initiatives to update the Annex 11 and/or Doc 9426 to address the issues about airspace matter as raised in this paper; and
- Discuss any other relevant matter as appropriate.

.....

<b>Draft Conclusion/Decision ATM/SG/10-X:NEED FOR PROPER GUIDANCE TO ESTABLISH AND UPGRADE THE ATS AIRSPACE CLASSES</b>	
<b>What:</b> That, the review and update of the relevant provisions of Annex 11 and/or Doc 9426 with regard to ATS airspace classification so as to provide the States the appropriate provision and/or guidance to establish and upgrade their ATS airspace classes.	<b>Expected impact:</b> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<b>Why:</b> To: a) relieve the States from the state of dilemma or subjectivity during the activities concerning establishment and up-gradation of their ATS airspace classes, and b) help the States in harmonizing the process of performing such activities.	<b>Follow-up:</b> <input checked="" type="checkbox"/> Required from States
<b>When:</b> dd-mm-yy	<b>Status:</b> Draft to be adopted by Subgroup
<b>Who:</b> <input type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input checked="" type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	