भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

AIRSPACE MANAGEMENT MANUAL

Air Navigation Services

Directorate of Airspace Management

Airports Authority of India
Corporate Headquarters
Safdarjung Airport
New Delhi -110003.

15TH JANUARY 2025

Edition: 1.0

ASM/ASM/2025/V1.00-MASM-ASAR

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Document Approving Authority

Executive Director (ASM)
Airports Authority of India Corporate Headquarters
Safdarjung Airport
New Delhi -110003

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PREFACE

Airspace management stands as a fundamental pillar of modern aviation, facilitating the safe, efficient, and expeditious movement of aircraft within increasingly crowded skies. With global air traffic continuing to expand—driven by economic growth, technological advancements, and the rising prominence of unmanned aircraft systems (UAS)—the need for effective airspace management has become more pressing than ever. This manual is designed to serve as a practical guide, offering a comprehensive understanding of the principles, practices, and emerging trends in airspace management, bridging the gap between foundational knowledge and advanced applications.

The scope of airspace management is broad, encompassing diverse disciplines such as air traffic control (ATC), regulatory frameworks, and systems integration. Success in this field relies on the collaboration of governments, aviation authorities, airlines, and technology providers to maintain a safe, navigable, and adaptable airspace for both manned and unmanned operations.

This manual address key topics, including the establishment/realignment of Flight Information Regions (FIR)s, Control Zones, Aerodrome Traffic Zones, Control Areas and Air Traffic Services (ATS) Routes. It also explores the flexible use of airspace between civil and military by establishment/realignment of Temporary Reserved Areas (TRA)s & Temporary Segregated Areas (TSA)s, Conditional ATS Routes (CDR)s as well as Temporary airspace reservations. This manual also addresses operational aspect of unmanned aircraft system (UAS).

Emerging surveillance technologies, such as space-based ADS-B, artificial intelligence, and data-driven decision-making, are transforming how airspace is monitored and utilized. At the same time, challenges like GNSS spoofing, cybersecurity threats, environmental sustainability, and regulatory harmonization are reshaping priorities in the field. This manual is designed to provide professionals, policymakers, and airspace users with the knowledge and insights needed to tackle these complexities and play a vital role in shaping the future of airspace management.

This edition (*Version 1.0)* is a New Document. Subsequent amendments and corrigenda shall appear in the Amendment and Corrigenda Record Table.

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Foreword

The safe and efficient management of airspace is one of the most critical responsibilities in aviation. As Member (Air Navigation Services), it takes immense pride to present the **Airspace Management Manual**, a vital resource designed to enhance our capabilities in this ever-evolving domain. This manual reflects our commitment to fostering innovation, collaboration, and operational excellence in managing increasingly dynamic airspace environments.

In recent years, the aviation industry has undergone significant transformation, driven by the rapid growth of global air traffic, the adoption of emerging technologies, and increasing demand for sustainable practices. These shifts highlight the critical need for a comprehensive airspace management framework that prioritizes safety, operational efficiency, and environmental responsibility. One of the key initiatives is to reduce the carbon footprint by optimizing ATS routes to ensure shorter, fuel-efficient flight paths at optimal altitudes. This approach not only benefits the environment by lowering the carbon emissions but also enhances airline efficiency and cost-effectiveness.

This manual serves as a comprehensive resource for air navigation professionals, providing practical solutions and strategic approaches to address the complexities of modern airspace management. It highlights the use of advanced technologies, such as satellite-based surveillance (Space-Based ADS-B) and GNSS-enabled ATS routes, to reduce separation standards and enhance airspace capacity, meeting the growing demands of the aviation industry. Additionally, it emphasizes the future use of real-time data analytics to optimize airspace utilization and support informed decision-making. The manual also underscores the importance of fostering collaboration among stakeholders to ensure that the diverse requirements of all airspace users are accommodated without compromising safety or operational efficiency.

I would like to express my deepest appreciation to the entire team of officers at ASM Section who have dedicated their hard work, knowledge and expertise to the preparation of this manual. Their contributions reflect a shared vision of advancing airspace management practices and ensuring that our skies remain safe, efficient, and sustainable for all users.

(M. Suresh)
Member (ANS), AAI

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Document Approval

Sr. No.	Role	Name & Designation	Signature
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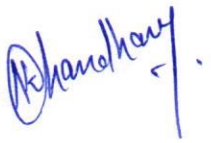
3	Recommended by	Naresh Kumar Chaudhary GM (ATM-ASM)	
4	Approved by	Moosa T F ED (ATM-ASM)	

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RECORD OF AMENDMENTS AND CORRIGENDA

No.	DATE APPLICABLE	DATE ENTERED	ENTERED BY	APPROVED BY

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ABBREVIATIONS

5LNC	- Five Letter Naming Code
AAI	- Airports Authority of India
AD	- Aerodrome
AIM	- Aeronautical Information Management
AIP	- Aeronautical Information Publication
AIRAC	- Aeronautical Information Regulation and Control
AMC	- Airspace Management Cell
ARINC	- Aeronautical Radio Incorporated
ATM	- Air Traffic Management
ATR	- Action Taken Report
ATS	- Air Traffic Service
ATZ	– Aerodrome Traffic Zone
CAD	- Computer Aided Design
CDR	- Conditional Route
CTA	- Control Area
CTR	- Control Zone
DRDO	-Defense Research & Development Organization
DQR	- Data Quality Requirements
DTM	- Digital Terrain Model
eTOD	- Electronic Terrain and Obstacle Data
FPD	- Flight Procedure Design

FPOAM	- Flight Procedure Design and Airspace Management
FUA	- Flexible Use of Airspace
GCS	- General Commission of Survey
GNSS	- Global Navigation Satellite System
lAP	- Instrument Approach Procedure
ICAO	- International Civil Aviation Organization
ICARD	- International Codes and Routes Designator
IFP	- Instrument Flight Procedure
IFPDS	- Instrument Flight Procedure Design Section
IFR	- Instrument Flight Rules
ILS	- Instrument Landing System
LNAV	- Lateral Navigation
MEA	-Minimum Enroute Altitude
MEA	-Ministry of External Affairs
MOCA	- Minimum Obstacle Clearance Altitude
MoCA	- Ministry of Civil Aviation
MoD	- Ministry of Defence
MoM	- Minutes of Meeting
MSD	- Minimum Stabilization Distance
NAMC	- National Airspace Management Cell
NDB	- Non Directional Beacon
NOTAM	- Notice to Airmen

OLS	- Obstacle Limitation Survey
PANS-OPS	- Procedures for Air Navigation-Operations
PBCS	- Performance Based Communication and Surveillance
PBN	- Performance Based Navigation
PDR	- Pre-Determined Routing
QMS	- Quality Management System
RAMC	- Regional Airspace Management Cell
RCP	- Required Communication Performance
RNAV	- Area Navigation
RNP	- Required Navigation Performance
RPAS	- Remotely Piloted Aircraft System
RSP	- Required Surveillance Performance
SID	- Standard Instrument Departure
SQ&E	- Standards, Quality and Environment
SRTM	- Shuttle Radar Topography Mission
STAR	- Standard Terminal Arrival Routes
SUA	- Special Use Airspace
TMA	- Terminal Area
VOL	- Volume
VOR	- Very High Frequency Omni-Directional Range
WGS-84	- World Geodetic System-1984

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Chapter 1

DOCUMENT CONTROL AND MANAGEMENT

1.1 Title of The Document

1.1.1 This document is identified as "Airspace Management Manual" (ASM Manual).

1.2 Purpose of This Chapter

1.2.1 This chapter details the procedures for writing, approving, controlling and amending the documentation in ASM Manual.

1.3 Responsibility for Documentation and Publication

1.3.1 This "Airspace Management Manual" has been prepared by a team of officers of ASM Directorate under Executive Director (Airspace Management), endorsed by Executive Director (ATM-ASM) and finally approved by the Member (ANS). The ED (ATM-ASM), under whose jurisdiction the responsibility of Airspace Management lies, is responsible to publish and maintain this manual on behalf of the Member(ANS).

1.3.2 The Executive Directors (ATM-ASM) will ensure that the procedures and guidelines as detailed in this manual are in conformance with the regulatory provisions contained in the Annexes to the Convention on International Civil Aviation and various ICAO Documents relevant to the airspace management and also to the national regulations as applicable in India.

1.4 Authority/ Responsibility for Changes

1.4.1 The ED (ATM-ASM), under whose jurisdiction the responsibility of 'Airspace Management' lies, is responsible for incorporating amendments to the ASM Manual.

1.4.2 Holders of hard-copies of ASM Manual are responsible for ensuring that the manual is kept up to date. This includes inserting new chapters or chapter amendments in a timely manner and complying with any instructions on amendment advice.

1.4.3 The user of ASM Manual will be responsible for verifying the currency of documentation in the manual.

1.5 Effective Date

1.5.1 Effective date of is indicated at the footer of the page.

1.5.2 New version will be indicated by date at the footer of the page.

1.6 Change History

1.6.1 This is first edition of ASM Manual. Subsequent changes will be indicated on 'Record of Amendments and Corrigenda' page.

1.7 Format

1.7.1 Amendment-documentation being inserted in the manual must contain headers and footers that are consistent with those residing in this document.

1.8 Controlling the Manual

1.8.1 Directorate of Airspace Management will control this manual electronically through AAI web site *www.aai.aero.*

1.9 Distribution of The Manual

1.9.1 Directorate of Airspace Management will not provide hard copies of the manual. All ATS-

In-Charge and other stake holders may print and distribute hard copies of the manual, as deemed appropriate.

1.10 Master Copy

1.10.1 An electronic and a paper format master copy of the manual will be held and maintained by the Directorate of Airspace Management at CHQ.

1.11 Checking Currency of the Manual

1.11.1 A current copy of the manual will be published on AAI web site *www.aai.aero*.

1.12 Enquiries

1.12.1 Enquiries/clarifications/suggestions, if any, should be addressed to:

The Executive Director (ATM-ASM),
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1.13 Review

1.13.1 The General Manager (ATM-Airspace Management) will conduct a review of this manual once in three years or in case of changes in ICAO Documents, relevant DGCA CARs, Rules/Procedures etc. to ensure accuracy and updating of all its contents and reference data. The results of such audit and action taken thereupon will be documented and presented to concerned ED (ATM) for approval.

1.13.2 Incorporating changes: The GM (ATM-ASM) on behalf of the Executive Directors (ATM-ASM) will ensure that;

a) changes being incorporated are duly approved by competent authority;
b) relevant pages in the manual are revised as amendments/corrigenda; or
c) in case of adoption of new ICAO amendments/ exhaustive changes across ASM Manual, a new version will be published;
d) amendments/ revised ASM Manual are posted on AAI web site;
e) Master copy of the manual is updated.

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Chapter 2

DEFINATIONS

2.1 Definitions

Airspace Management (ASM): Process whereby airspace options are selected and applied in order to meet the airspace users' needs**.**

Advisory airspace: An airspace of defined dimensions, or designated route, within which air traffic advisory service is available.

Advisory route: A designated route along which air traffic advisory service is available.

Aerodrome: A defined area on land or water (including any buildings, installations, and equipment) intended to be used either wholly or in part for the arrival, departure, and surface movement of aircraft.

Aerodrome traffic zone (ATZ): An airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic.

Aeronautical Information Publication (AIP): A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

Airborne collision avoidance system (ACAS): An aircraft system based on secondary surveillance radar (SSR) transponder signals that operates independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft equipped with SSR transponders.

Aircraft: Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Air-ground control radio station: An aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area.

Air traffic: All aircraft in flight or operating on the maneuvering area of an aerodrome.

Air traffic advisory service: A service provided within advisory airspace to ensure separation, as far as practical, between aircraft operating on IFR flight plans.

Air Traffic Flow Management (ATFM): A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that ATC capacity is utilized to the maximum extent possible, and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.

Air traffic service (ATS): A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service, or aerodrome control service).

Air Traffic Services airspaces: Airspaces of defined dimensions, alphabetically designated, within which specific types of flights may operate and for which air traffic services and rules of operation are specified. *Note.— ATS airspaces are classified as Class A to G.*

Air traffic services unit: A generic term meaning variously, air traffic control unit, flight information Centre, or air traffic services reporting office.

Airway: A control area or portion thereof established in the form of a corridor.

Alerting service: A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and assist such organizations as required.

Appropriate ATS authority: The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.

Appropriate authority: a) Regarding flight over the high seas: The relevant authority of the State of Registry. b) Regarding flight other than over the high seas: The relevant authority of the State having sovereignty over the territory being overflown.

Area navigation (RNAV): A method of navigation that permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

ATS route: A specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services.

Note 1.— The term "ATS route" is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure route, etc.

Note 2.— An ATS route is defined by route specifications which include an ATS route designator, the track to or from significant points (waypoints), distance between significant points, reporting requirements and, as determined by the appropriate ATS authority, the lowest safe altitude.

Automatic dependent surveillance — broadcast (ADS-B): A means by which aircraft, aerodrome vehicles, and other objects can automatically transmit and/or receive data, such as identification, position, and additional data, as appropriate, in a broadcast mode via a data link.

Automatic dependent surveillance — contract (ADS-C): A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

Note.— The abbreviated term "ADS contract" is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract, or an emergency mode.

Conditional Route (CDR): A non-permanent ATS route or part of it that can be planned and used under special conditions.

Control area (CTA): A controlled airspace extending upwards from a specified limit above the earth.

Controlled aerodrome: An aerodrome at which air traffic control service is provided to aerodrome traffic.

Note. — The term "controlled aerodrome" indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists.

Controlled airspace: An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification.

Note. — Controlled airspace is a generic term that covers ATS airspace Classes A, B, C, D, and E as described in Annex 11, 2.6.

Controlled flight: Any flight which is subject to an air traffic control clearance.

Controller-pilot data link communications (CPDLC): A means of communication between controller and pilot, using data link for ATC communications.

Control sector: A subdivision of a designated control area within which responsibility is assigned to one controller or to a small group of controllers.

Control zone (CTR): A controlled airspace extending upwards from the surface of the earth to a specified upper limit.

Declared capacity: A measure of the ability of the ATC system or any of its subsystems or operating positions to provide service to aircraft during normal activities. It is expressed as the number of aircraft entering a specified portion of airspace in a given period of time, taking due

account of weather, ATC unit configuration, staff and equipment available, and any other factors that may affect the workload of the controller responsible for the airspace

Flexible Use of Airspace (FUA): Concept of airspace management based on the principle that air- space should not be designated as exclusively military or civilian, but as a continuous space that meets the requirements of all users to the extent possible.
Note: *However, given the prevailing security situation in Indian subcontinent, national security imperatives and consequently, military requirements would also be taken into consideration**]***

Flow control: Measures designed to adjust the flow of traffic into a given airspace, along a given route, or bound for a given aerodrome, so as to ensure the most effective utilization of the airspace

Flow Management Position (FMP): A working position established in appropriate air traffic control units to ensure the necessary interface between local ATFM partners (i.e. ATCs, AOs and Airports) and a central command center on matters concerning the provision of the air traffic flow and capacity management service.

Instrument approach procedure: A series of predetermined maneuvers by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply.

Instrument approach procedures are classified as follows:

- **Non-precision approach (NPA) procedure**: An instrument approach procedure that utilizes lateral guidance but does not utilize vertical guidance.
- **Approach procedure with vertical guidance (APV)**: An instrument approach procedure that utilizes lateral and vertical guidance but does not meet the requirements established for precision approach and landing operations.

Minimum En-route Altitude (MEA): The altitude for an en-route segment that provides adequate reception of relevant navigation facilities and ATS communications, complies with the airspace structure and provides the required obstacle clearance.

Minimum Obstacle Clearance Altitude (MOCA): The minimum altitude for a defined segment of flight that provides the required obstacle clearance.

Performance-Based Navigation (PBN): Performance-based area navigation requirements applicable to aircraft operating along an ATS route, on an instrument approach procedure, or in a designated airspace.

Procedures for Air Navigation Services (PANS): Procedures adopted by the Council, including general operational procedures that are not considered mature enough to be adopted as international standards and recommended practices, or more permanent texts that are inappropriate or too detailed to be included in an Annex.

Remotely Piloted Aircraft: Aircraft whose pilot is not on board

Required communication performance (RCP) specifications: A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.

Required navigation performance (RNP): A statement of the navigation performance necessary for operation within a defined airspace.

Note: *Navigation performance and requirements are defined for a particular RNP type and/or application.*

Required surveillance performance (RSP) specification: A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.

Remotely Piloted Aircraft System: Means a remotely piloted aircraft, its associated remote pilot stations, the required command and control links and any other components as specified in the type design;

Segregated Airspace: Airspace of specific dimensions allocated for the exclusive use of a user or users.

SUA (Special Use Airspace):

(1) Danger area: An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

(2) Prohibited area: An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

(3) Restricted area: An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

Temporary Reserved Area (TRA): Airspace temporarily reserved and allocated for the specific use of a particular user during a determined period of time, through which other flights may pass with permission from Air Traffic Control (ATC).

Temporary Segregated Area (TSA): Airspace temporarily reserved and allocated for the exclusive use of a specific user during a determined period of time, through which no other flights may pass.

Unmanned Aircraft System (UAS): Aircraft and its associated elements operated without a pilot on board.

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Chapter 3

INTRODUCTION

3.1 Introduction

Air Traffic Management (ATM) is the dynamic, integrated management of Air Traffic and Airspace including Air Traffic Services (ATS), Airspace Management (ASM) and Air Traffic Flow Management (ATFM), safely, economically and efficiently, through the provision of facilities and seamless services in collaboration with all stake holders and involving airborne and ground based functions.

Air Traffic Services (ATS) is a generic term meaning variously Flight information services Alerting Service, Air traffic advisory service, Air Traffic Control (ATC) service (Area Control Service, Approach Control Service, Aerodrome Control Service), with the objectives to:

1. Prevent collisions between aircraft;
2. Prevent collisions between aircraft on the manoeuvring area and obstructions on that area;
3. Expedite and maintain an orderly flow of air traffic;
4. Provide advice and information useful for the safe and efficient conduct of flights;
5. Notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organisations as required. Control Service, Aerodrome Control Service), with the objectives.

Airspace Management (ASM*)* is the process of organizing and controlling the use of airspace to ensure the safe, efficient, and orderly flow of air traffic. It involves the allocation, regulation, and supervision of different areas of airspace for various types of aircraft, including commercial aircraft, military aircraft, General aviation aircraft and drones. Effective airspace management

balances competing needs, such as maintaining safety, minimizing delays, optimizing routes and consideration for need of all Airspace users.

Air Traffic Flow Management (ATFM) is a key process in air traffic management (ATM) aimed at ensuring a safe, efficient, and balanced flow of air traffic across controlled airspace. It focuses on managing the volume of air traffic so that it stays within the capacity limits of airports and air traffic control sectors, preventing congestion, delays, and safety risks while optimizing the use of available resources.

The major elements of Strategic Airspace Management include:

- Airspace Infrastructure Planning
- Airspace Organization
- Airspace Planning Methodology
- ATM Requirements for Communications, Navigation and Surveillance

The major elements of Tactical Airspace Management include:

- Flexible Use of Airspace
- Civil/Military Coordination

The guiding principles of Airspace Management are:

- All airspace will be the concern of ASM and will be a usable resource;
- Airspace management will be dynamic and flexible;
- Any restriction on the use of any particular volume of airspace will be considered transitory; and
- All airspace will be managed flexibly. Airspace boundaries will be adjusted to particular traffic flows and should not be constrained by national or facility boundaries.

3.2 Objective

The objective of an Airspace Management (ASM) Manual is to provide standardized guidelines, procedures, and regulations for the efficient and safe use of airspace. It serves as a comprehensive reference for air traffic controllers, airspace designers, Policy makers and other stakeholders involved in airspace management. The ASM Manual aims to optimize the utilization of airspace by balancing the diverse needs of civil, military, research, Commercial and General Aviation operations while ensuring the safety of aircraft and minimizing delays.

3.3 Scope

The procedures and guidelines contained in this ASM Manual of Airports Authority of India is applicable to air traffic controllers, airspace designers and Personnel of ASM Dte and ATS In-Charges of field stations.

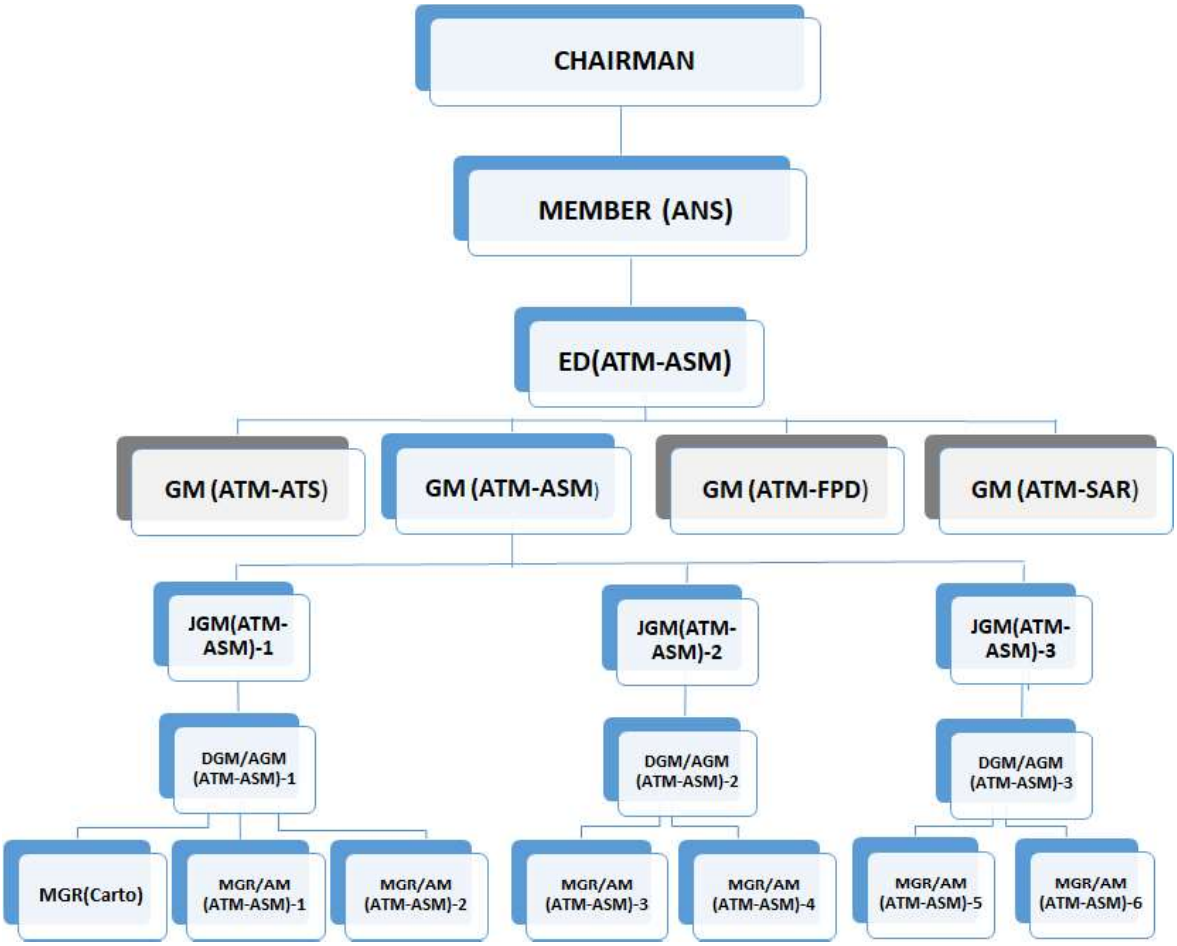
This manual shall be read in conjunction with ICAO Annex 2, Annex 11, PANS ATM Doc 4444, PBN Manual Doc 9613, PANS-OPS Doc 8168, Vol-II, PBCS Manual Doc 9869, e-AIP, India, Manual of ATS-AAI (MATS Part-1) and Relevant DGCA CARs and Air Traffic Management Circulars (ATMC) issues by AAI.

3.4 Amendment

Amendment, revision, distribution & control of ASM manual: On behalf of ASM Dte., the General Manager (ATM-Airspace Management) will ensure that this manual will be reviewed once in three years to meet the applicable requirements. The amendments will be presented to ED (ASM) for approval. Directorate of Air Space Management will control this manual.

Availability of ASM manual: The Airspace Management Manual and its revisions is available online on AAI website. A Master copy of the Airspace Management Manual will be maintained by the Head of the ASM Section.

3.5 Hierarchy Chart of Directorate of Airspace Management



The ASM Directorate consists of four sections, viz- ATS, ASM, FPD and SAR headed by respective General Managers. ED(ATM-ASM) is overall In-Charge of the four sections. This Manual deals with the Management of Airspace and ATS Routes. Although the instrument Flight Procedures are complementary to the procedures of ASM, they are governed by the FPD Manual managed by FPD Section.

3.6 Duties & Responsibilities of GM (ATM-ASM)

GM(ATM-ASM) shall be responsible for the followings:

1. Design, modification and restructuring of domestic and international RNAV

(conventional and PBN) routes & non-RNAV routes including Conditional ATS Routes (CDR).

2. Design, modification and restructuring of Controlled Airspaces (CTR, CTA and ATZ).
3. Design, modification and restructuring of Danger/Prohibited/Restricted Areas / TSA / TRA.
4. Design, modification and restructuring of PBN airspaces, including classification of airspaces.
5. Approval of Upper Airspace Harmonization.
6. Approval of Revision of eAIP-India sections pertaining to ASM Section.
7. Approval of Clearances Coordination for Airspace Reservations and Airspace Clearances.
8. Coordination with ICAO, DGCA, Defence Authorities and other internal & external stakeholders.
9. Flexible use of Airspace and Civil Military Coordination for Airspace related matters.
10. Determination and implementation of vertical and horizontal separation minima pertaining to ATS routes and airspaces.
11. Updating of ATM Contingency Plans for Airspace Management.
12. Coordination with Defence Authorities regarding Field Firing Range Activation, operation of UAVs etc.
13. Coordination and clearances related to launch of Satellites, rockets, missiles and defence related exercises.
14. Coordination and clearances related to aero-sport activities like ballooning and parasailing.
15. Safety assessment of Airspace Management for projects undertaken, including the necessary coordination with all stakeholders including DGCA, if required.
16. Coordination related to closure of airspace on account of Republic Day, Independence Day, Air Force Day etc.
17. Creation and review of LOA/SOP for providing Air Traffic Services (ATS) between various ATC units in India, with adjacent countries and also between AAI and other stakeholders like IAF/Indian Navy/DRDO etc.
18. Follow up on outcomes of ICAO meetings.
19. DGCA Regulation compliance.
20. Processing of proposals in respect of Airspace Management for New Airports.
21. Organize NAMAC/NHLAPB Meetings
22. Coordination for Airspace Mapping in Digital Sky Platform.
23. Preparation of RTI, Appeal replies & quarterly reports of RTI applications, associated with ATM-HRD section. CPIO for RTI related matters.

3.7 Duties & Responsibilities of Jt.GM 1 (ATM-ASM)

Joint General Manager-1 is responsible for the followings:

1. ATS Route — Design & Establishment of New ATS Route
2. ATS Route — Realignment of ATS Route
3. International ATS Route — Design/coordination with ICAO/States
4. Implementing PBN/PBCS in Enroute Airspace
5. Airspace — Establishment of New/ Realignment/Review of CTA/CTR/ATZ including Military
6. Review and implementation of Separation Standards
7. Letter of Agreement (LOA) between ATS Units International
8. Letter of Agreement (LOA) between ATS Units — With Military units
9. Transition Altitude (TA) - New & Review
10. Impact Analysis — Nav-aid changes or obstacles
11. Stakeholder consultation — Equipage/design/changes
12. Stakeholder negotiation with other organizations
13. Gap Analysis — CNS/ATM infrastructure
14. Follow up on outcomes of ICAO meetings
15. DGCA Regulation compliance
16. Airspace analysis of New Airports when assigned.
17. Tasks related to RCS project as assigned.
18. Coordination with MoCA for various ASM related matters when assigned.
19. Coordination with field stations for various ASM projects
20. Coordination with Military Units for Civil-Military cooperation
21. Coordination with Carto for revised ATS Route Chart of India

3.8 Duties & Responsibilities of Jt.GM 2 (ATM-ASM)

1. Process Temporary Airspace Reservation for Republic Day.
2. Process Temporary Airspace Reservation for Independence Day.
3. Process Temporary Airspace Reservation for ISRO.
4. Process Temporary Airspace Reservation for DRDO.
5. Process Temporary Airspace Reservation for air exercises by Indian Airforce/Navy.
6. Process Temporary Airspace Reservation for Field Firing Ranges for Indian Army, Indian Navy and Indian Coast Guards.
7. Process approval for tethered balloon, free balloon, microlite aircraft, para motoring, para gliding, hang glider or powered hang gliders activity etc.
8. Coordination with Military units for airspace closure.

9. Coordination with neighbouring countries for rocket/missile launch.
10. Coordination with AIS for promulgation of NOTAMs regarding Temporary Airspace Reservation.
11. Coordination with Carto for plotting of requested Temporary Airspace Reservation.
12. Coordination with filed stations in respect of exercises requiring Temporary Airspace Reservation.
13. Coordination with MoCA for closure of airports due Temporary Airspace Reservation.
14. Provide alternate routing due Temporary Airspace Reservation
15. Prepare and maintain internal database of airspace allocation requests.
16. Review of ATMCs on Temporary Airspace Reservation

3.9 Duties & Responsibilities of JGM-3 (FUA)

1. Responsible for Establishment of Airspace Management Cell (AMC)
2. Coordination with all agencies regarding FUA
3. Organize NAMAC/NHLAPB Meetings
4. Organize Joint civil-military airspace review meetings
5. Organize Technical Sub-committee on System Inter-operability meetings
6. Approval of Unmanned Aircraft Systems
7. Coordination for Airspace Mapping in Digital Sky Platform
8. Revalidation of Temporary Segregated Area and Temporary Reserved Area
9. Promulgation of MCTR
10. Promulgation of conditional routes (CDR)
11. Review of Danger, Restricted and Prohibited Area
12. Develop and update SOP and LOA regarding FUA structures
13. Update weekly ANB report and provide data on ANB
14. Provide Guidance in formulation of Drone Rules
15. Organize Technical Sub-committee to review FUA Manual
16. Update SOP of AMC
17. Provide Guidance in development of Digital Sky platform
18. Analysis of use of FUA structures.

3.10 Responsibilities of Other Officers in ASM Section

Other Officers in ASM Section in the lower rungs of hierarchy shall be responsible for the work assigned to them by their superior officers. When warranted they may be assigned work from within the responsibilities of any of the Joint GMs or directly by GM(ATM-ASM) or ED(ATM-ASM).

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Chapter 4

LEGISLATIVE AND REGULATORY ASPECTS

4.1 Introduction

This chapter identifies the legislative and regulatory aspects mandated by National Law and international Standards & Recommended Practices (SARPS) pertaining to airspace management. The chapter also examines the legal obligation of India as a signatory to the Chicago Convention and also the various provisions pertaining to airspace management stipulated by the national law.

4.2 Bharatiya Vayuyan Adhiniyam, 2024

The **Bharatiya Vayuyan Adhiniyam, 2024** marks a significant shift in India's aviation regulatory landscape. Among its many provisions, it introduces progressive changes to **Airspace Management (ASM)**, the regulation of **Unmanned Aircraft Systems (UAS)**, and **Air Traffic Management (ATM)**, aligning with global standards while addressing the emerging needs of the aviation industry.

4.2.1 Airspace Management (ASM)

The **Bharatiya Vayuyan Adhiniyam, 2024** emphasizes the need for **efficient and flexible airspace management** to optimize the use of India's airspace for both civil and military aviation. Key features include:

- **Flexible Use of Airspace (FUA):** The Act promotes flexible airspace structures, allowing civil and military aviation to share airspace efficiently, while minimizing conflicts.
- **Real-Time Coordination:** Enhanced coordination between various stakeholders such as the Ministry of Civil Aviation (MoCA), Defense Authorities, and other aviation bodies ensures effective airspace allocation, particularly for temporary reservations during events, exercises, or other national requirements.

4.3 Aircraft Rules 1937

The following Rules are pertinent to ASM Section:

- Rule 12 - Prohibited Areas
- Rule 16 - Rules of Air
- Rule 20 - Certain rules not applicable to Gliders, Kites and Remotely Piloted Aircraft System
- Rule 29(C) - Adoption of the Convention and Annexes
- Rule 29(D) - Safety management system

4.4 Airports Authority of India Act 1994

- Section 12 (2): Duty of the Authority (AAI) to provide air traffic service and air transport service at any airport and civil enclaves.
- Section 12 (3) c: AAI may provide air safety services and search and rescue, facilities in co-ordination with other agencies.
- Section 12 (3) p: AAI may perform any other function considered necessary or desirable by the Central Government for ensuring the safe and efficient operation of aircraft to, from and across the airspace of India.

4.5 Unmanned Aircraft System

- Drone Rules, 2021
- National UTM (Unmanned aircraft system Traffic Management) Policy Framework 2021

4.6 Civil Aviation Requirements

- SECTION 8 - AIRCRAFT OPERATIONS SERIES S, PART II ISSUE I, *Requirements for Implementation of Reduced Vertical Separation Minimum (RVSM).*
- SECTION 8 - AIRCRAFT OPERATIONS SERIES S PART IV ISSUE I, *Performance Based Navigation (PBN)*
- SECTION 9 - AIRSPACE AND AIR TRAFFIC MANAGEMENT SERIES E PART I ISSUE III , *Air Traffic Services*
- SECTION 9 - AIRSPACE AND AIR TRAFFIC MANAGEMENT SERIES E PART I ISSUE II , *Establishment of Minimum Flight Altitudes*

4.7 Other DGCA Documents

- ANSS Advisory Circular 01 of 2023 GNSS Interference in Airspace.
- ANSS Advisory Circular 4 of 2017-ATM dated 17 October 2017 *Guidelines for Air Navigation Service Provider for determining the capacity of the ATS system including airport acceptance rate, number of staffs required*
- ANSS Advisory Circular 1 of 2018 dated 31 August 2018 *Dissemination of Safety Critical Information*
- OC No 01 of 2018 dated 23 March 2018 *Performance Based Communication and Surveillance (PBCS)*
- OC No 6 of 2014 dated 4 September 2014 *Aircraft and Operators Approval for RNAV 10 (RNP10) Operations*
- OC No 7 of 2014 dated 4 September 2014 *Aircraft and Operators Approval for RNAV 5 Operations*
- OC No 8 of 2014 dated 4 September 2014 *Aircraft and Operators Approval for RNAV 1 and RNAV 2 Operations*
- OC No 10 of 2014 dated 4 September 2014 *Aircraft and Operators Approval for RNP 4 Operations*

- OC No 14 of 2014 dated 4 September 2014 *Aircraft and Operators Approval for RNP 2 Operations*

4.8 Annex 2 (Rules of the Air)

- Territorial application of the rules of the air.

4.9 Annex 4 (Aeronautical Charts)

- ASM Section is required to publish Enroute Charts and Area Charts in accordance with the provisions contained in Chapter 7 of Annex 4.

4.10 Annex 11 (Air Traffic Services)

- Annex 11 contains provisions for establishment of ATS airspaces, ATS routes and Special Use Airspaces (SUA).
- ASM Section shall be responsible for:
  - Designation of airspace as Controlled and Uncontrolled Airspace (Ch.2, Sec.- 2.5)
  - Establishment of Flight Information Regions (FIR), Control Zones (CTR), Control Areas (CTA) and Aerodrome Traffic Zones (ATZ) (Ch.2, Sec.- 2.5 & 2.11)
  - Classification of airspaces as Class A, B, C, D, E, F or G airspace (Ch.2, Sec.- 2.6)
  - Prescribing PBN navigation specifications for designated tracks, areas or ATS routes (Ch.2, Sec.- 2.7)
  - Establishment of ATS Routes (including identification of route designators and establishment of Significant Points-NAVAIDS/Waypoints) (Ch.2, Sec.- 2.13)
  - Civil Military ATM Coordination and Flexible Use of Airspace (Ch.2, Sec.- 2.18)
  - Coordination of activities potentially hazardous to civil aircraft (Ch.2, Sec.- 2.19)
  - Determination and promulgation of Aeronautical Data pertaining to airspace structures (Ch.2, Sec.- 2.20)

- Determination and promulgation of Minimum flight altitudes for each ATS route and Control Area over Indian territory (Ch.2, Sec.- 2.23)
- Safety assessment of any significant safety-related change to airspace structures or procedures (airspace reorganisation) before its implementation (Ch.2, Sec.- 2.29)
- Development and promulgation of contingency plans for implementation in the event of disruption, or potential disruption, of air traffic services and related supporting services in the airspace for which India is responsible for the provision of such services (Ch.2, Sec.- 2.32)
- Identification and delineation of Prohibited, Restricted and Danger Areas (and flexible airspace structures such as Temporary Segregated Areas (TSA) and Temporary Reserved Areas (TRA)) (Ch.2, Sec.- 2.33)
- Applicability of appropriate separation minima within a given portion of airspace (Ch.3, Sec.- 3.4)
- Determination of Transition altitude.
- Process of approval for Temporary Airspace Reservation.
- Process of approval for UAS Operation.
- Process of obtaining 5 LNC from ICAO.

4.11 Doc 4444 (PANS-ATM)

- Procedures contained in Doc 4444 (PANS-ATM) are complementary to the SARPs in Annex 2 and Annex 11 and are supplemented when necessary by regional procedures contained in the Regional Supplementary Procedures (Doc 7030).
- The focus of Doc 4444 (PANS-ATM) is on the actual procedures to be applied by air traffic services units in providing the various air traffic services to air traffic. However, it contains detailed procedures related to Airspace Management as well.
- ASM Section shall be responsible for:

- Conduct of safety assessments in respect of the planned implementation of airspace reorganizations (Ch.2, Sec.2.3c and 2.6)
- Conduct of safety reviews in respect of ATS route structure, separation minima used, traffic volume etc. (Ch.2, Sec.- 2.5)
- Supporting ATS Section and ATFM Directorate in airspace capacity assessment, reviewing airspace capacity periodically.
- Take appropriate steps for Flexible Use of Airspace to enhance airspace capacity (Ch.3, Sec.- 3.1)
- Establishment of Transition Altitude including common Transition Altitude, where required (Ch.4, Sec.- 4.10.2.2) *PANS-AIM (Doc 10066)*
- Determination and promulgation of minimum cruising level for IFR flights (MEA) for the whole or parts of control area (Ch.4, Sec.- 4.10.3)
- Determination of separation minima applicable within a given portion of airspace (Ch.5, Sec.- 5.2) except those applicable in the vicinity of aerodromes
- Establishing Letters of Agreement (LoA) between adjoining ATS Units (including military ATS units and Controlling Authorities of SUAs) (Ch.10, Sec.- 10.1.1.2 and 10.1.1.3)
- Coordination and promulgation for temporary airspace reservation for the use of large formation flights or other military air exercises, Space vehicle launch and re-entry, Military weapon testing, DRDO requirements etc. (Ch.16, Sec.- 16.1)
- Coordination and promulgation for intended flight of medium or heavy unmanned free balloon (Ch.16, Sec.- 16.2)
- Promulgation of Strategic Lateral Offset Procedures (SLOP) in enroute airspace (Ch.16, Sec.- 16.5)

4.12 Doc 8168 (PANS-Aircraft Operations) Volume 2

- Doc 8168 (PANS-Aircraft Operations) Volume 2 deals with Construction of Visual and Instrument Flight Procedures which are more or less confined to the terminal

airspace and hence under the purview of Flight Procedures Design (FPD) Section. However, certain provisions of Doc 8168 are applicable/adopted for design of enroute airspace structures.

- The following section would be applicable to ASM Section for design of conventional and PBN airspace structures:
  - Application of magnetic variation (Part 1 Section 2 Chapter 1, Sec.- 1.11.1.1)
  - VOR and NDB routes (Part II Section 3 Enroute Criteria Chapter 1)
  - GNSS RNAV (Part IV Section 1 Chapter 2)
  - DME/DME RNAV (Part IV Section 1 Chapter 3)
  - VOR/DME RNAV (Part IV Section 1 Chapter 4)

4.13 Doc 10066 (PANS-AIM)

- Aeronautical information management
- Quality management
- Aeronautical data requirements

4.14 PBCS Manual Doc 9869

Performance-Based Communication and Surveillance (PBCS) concept: The PBCS concept is aligned with that of performance-based navigation (PBN). While the PBN concept applies to required navigation performance (RNP) and area navigation (RNAV) specifications to the navigation element, the PBCS concept applies to required communication performance (RCP) and required surveillance performance (RSP) specifications to communication and surveillance elements, respectively. Each RCP/RSP specification includes allocated criteria among the components of the communication and surveillance systems involved.

4.15 Air Traffic Services Planning Manual (Doc 9426)

Guidance material relating to the establishment of ATS routes is contained in the Air Traffic Services PlanningManual

4.16 PANS-AIM (Doc 10066)

Specifications concerning the accuracy and integrity classification of air traffic services-related aeronautical data.

4.17 Doc 9674 World Geodetic System — 1984 (WGS-84)

The accuracy level of data relating to different needs are as per the WGS-84 requirements.

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Chapter 5

AIRSPACE CLASSIFICATION

5.1 Airspace Classification

ATS airspaces shall be classified and designated in accordance with the following:

5.1.1 Class A.

IFR flights only are permitted, all flights are provided with air traffic control service and are separated from each other.

5.1.2 Class B.

IFR and VFR flights are permitted, all flights are provided with air traffic control service and are separated from each other.

5.1.3 Class C.

IFR and VFR flights are permitted, all flights are provided with air traffic control service and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights.

5.1.4 Class D.

IFR and VFR flights are permitted and all flights are provided with air traffic control service, IFR flights are separated from other IFR flights and receive traffic information in respect of VFR flights, VFR flights receive traffic information in respect of all other flights.

5.1.5 Class E.

IFR and VFR flights are permitted, IFR flights are provided with air traffic control service and are separated from other IFR flights. All flights receive traffic information as far as is practical. Class E shall not be used for control zones.

5.1.6 Class F.

IFR and VFR flights are permitted, all participating IFR flights receive an air traffic advisory service and all flights receive flight information service if requested.

Note. — Where air traffic advisory service is implemented, this is considered normally as a temporary measure only until such time as it can be replaced by air traffic control. (See also the PANS-ATM (Doc 4444), Chapter 9.)

5.1.7 Class G.

a) IFR and VFR flights are permitted and receive flight information service if requested.

5.2 Flight information regions

Flight information regions shall be delineated to cover the whole of the air route structure to be served by such regions. A flight information region shall include all airspace within its lateral limits, except as limited by an upper flight information region.

Where a flight information region is limited by an upper flight information region, the lower limit specified for the upper flight information region shall constitute the upper vertical limit of the flight information region and shall coincide with a VFR cruising level of the tables in Appendix-3 to Annex2.

Note — In cases where an upper flight information region is established the procedures applicable therein need not be identical with those applicable in the underlying flight information region.

5.3 Control areas

Control areas including, inter alia, airways and terminal control areas shall be delineated so as to encompass sufficient airspace to contain the flight paths of those IFR flights or portions thereof to which it is desired to provide the applicable parts of the air traffic control service, taking into account the capabilities of the navigation aids normally used in that area.

Note — In a control area other than one formed by a system of airways, a system of routes may be established to facilitate the provision of air traffic control.

A lower limit of a control area shall be established at a height above the ground or water of not less than 200 m (**700 ft).** *(Source Annex11)*

5.4 Control zones:

The lateral limits of control zones shall encompass at least those portions of the airspace, which are not within control areas, containing the paths of IFR flights arriving at and departing from aerodromes to be used under instrument meteorological conditions. The lateral limits of a control zone shall extend to at least 9.3 km (**5 NM**) from the centre of the aerodrome or aerodromes concerned in the directions from which approaches may be made. *(Source Annex11)***.**

Classification of airspace in India: The Following is given on the classification of airspace in India as extracted from ENR 1.4 of e-AIP India:

Sl	Classification of airspace	Remarks
1	**Class C:** IFR and VFR flights are permitted, all flights are provided with air traffic control service and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights	Designated airspace within controlled airspace is classified as Class C. Class C airspaces are defined in e-AIP, India, ENR 2.1
2	**Class D:** IFR and VFR flights are permitted and all flights are provided with air traffic control service, IFR flights are separated from other IFR flights and receive traffic information in respect of VFR flights, VFR flights receive traffic information in respect of all other flights.	Airspace within all CTRs is classified as Class D.
3	**Class E:** IFR and VFR flights are permitted, IFR flights are provided with air traffic control service and are separated from other IFR flights.	Airspace within ATS Route segment outside controlled airspace is classified as Class E.

	All flights receive traffic information as far as is practical. Class E shall not be used for control zones.	
4	**Class F:** IFR and VFR flights are permitted, all participating IFR flights receive an air traffic advisory service and all flights receive flight information service if requested	Designated Airspace within ATS Route segment outside controlled airspace is classified as Class F.
5	**Class G:** IFR and VFR flights are permitted and receive flight information service if requested.	Airspace outside ATS route segment and outside controlled airspace is classified as Class G.

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Chapter 6

AIRSPACE DESIGN PROCESS

6.1 Design Process

The development and implementation of an airspace concept can be broken down into five main phases: Plan, Design, Approval, Validation and Safety assessment and Implement.

Airspace redesign is usually initiated by an event which triggers an operational requirement. Such events are often categorized by one or more strategic objectives such as safety, capacity, flight efficiency, environmental. Airspace development is not a linear process — it can only result in a sound product through stakeholder participation, series of reviews, validations and subsequent refinements.

Airspace plan should consider interdependence of the airspace concept with the following: fleet capability, traffic density and pattern, ATM infrastructure viz communications (COM), surveillance (SUR) and Air traffic management (ATM) tools, constraints, stakeholders' concerns and arrangements (LoA) between adjacent ATS units.

The airspace changes proposals by the Civil ANSP (AAI) are of two kinds:

a) with no airspace consideration from the military airspace user/service provider(s), clear of their SUAs by more than 5 NM.

b) with airspace consideration(s) from the military airspace service provider/ user including proximity (within 5 NM) to a special use airspace under the control of military authorities.

In the case of (i) AAI shall continue to design and implement the change, after completing the mandatory safety case analyses as prescribed from time to time and with wider stakeholder consultations. Appropriate military representation in the stakeholder consultations may be considered.

In case of (ii) above AAI shall develop the concept and design in coordination with military.

6.2 PBN Routes

Performance based Navigation is the primary enabler for airspace capacity building. ASM shall endeavour to promulgate RNP Routes wherever possible. The ultimate aim is to establish a complete PBN airspace having RNP2 or RNP4 routes. The spacing between RNP routes shall be governed by that prescribed in Doc 4444 and/or PBN Manual. The spacing between the routes shall also be governed by the availability of continuous surveillance and communication coverage. In oceanic airspace the separations shall be governed additionally by PBCS requirements.

6.3 Standards and processes for Enroute Airspace

The standards and process adopted for determining changes to airspace and their publication for

a) Process for Establishment/Realignment of FIR.
b) Control Zone, Control Area, Aerodrome Traffic Zone
c) Process of establishment/Realignment of ATS Routes.
d) Process for Obtaining 5LNC (Way point)/Route Designator from ICAO.
e) Process for Letter of Agreement (LoA) Between ATS Units.
f) Process for Determining the Transitional Altitude of an Airport.
g) Process for Establishment of New/Additional Sector.
h) Process for determining Minimum Flight Altitude (MFA)/ Minimum Obstacle Clearance Altitude (MOCA) of Routes.
i) Process for determination of Navigation Specification.
j) Process for determination of Vertical Limit.
k) Process for Route Identifier allocation.
l) Process for Data Accuracy

   ARP, VOR, NDB, CTR/CTA (All references shall be to coordinates only and no reference to ARP/VOR/NDB) & Way Points.

6.4 Process for Establishment/Realignment of FIR.

6.4.1 Those portions of the airspace where it is determined that flight information service and alerting service will be provided shall be designated as flight information regions. Where designated within a flight information region, control areas and control zones shall form part of that flight information region.

6.4.2 Flight information regions shall be delineated to cover the whole of the air route structure to be served by such regions.

6.4.3 A flight information region shall include all airspace within its lateral limits, except as limited by an upper flight information region.

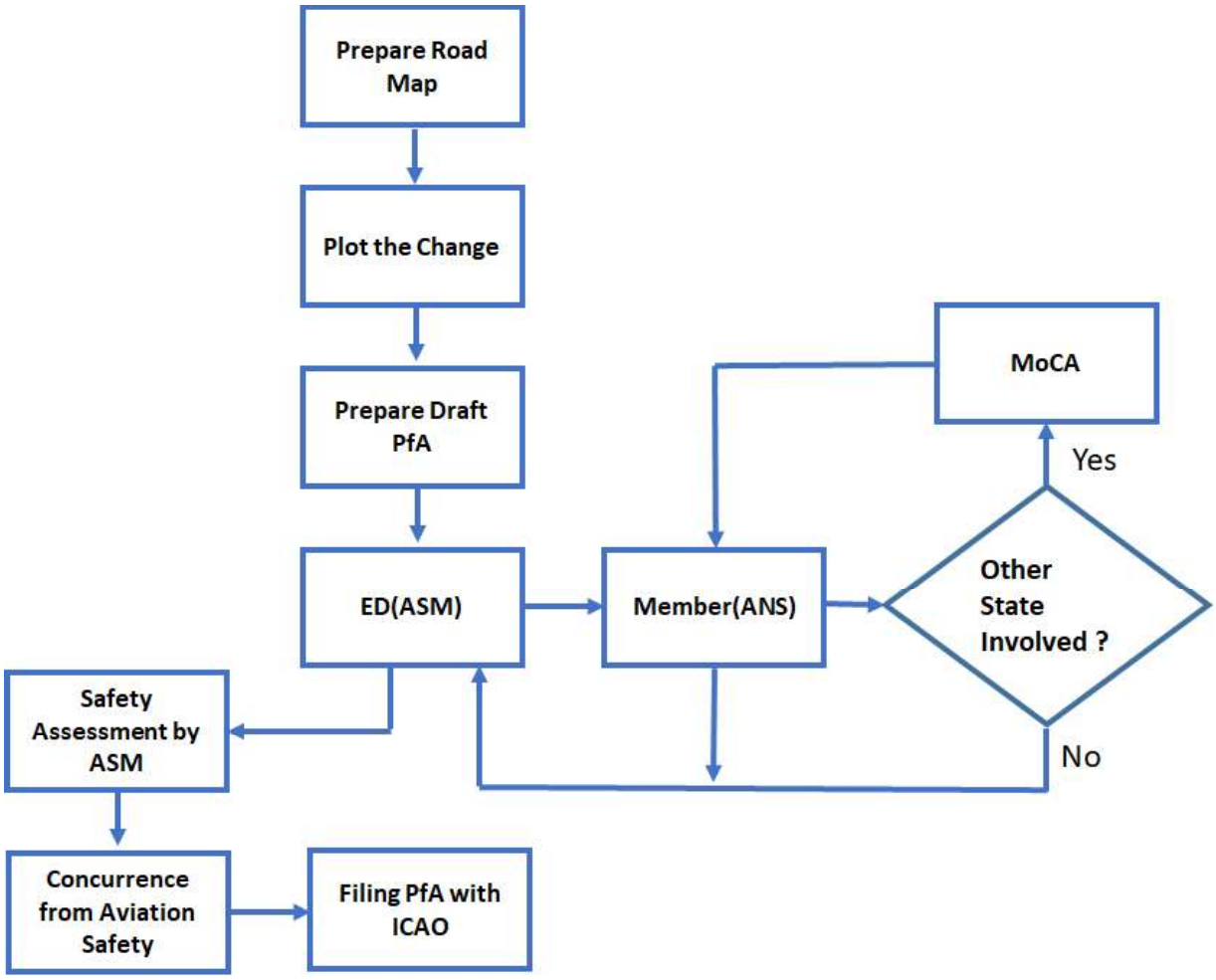
6.4.4 Where a flight information region is limited by an upper flight information region, the lower limit specified for the upper flight information region shall constitute the upper vertical limit of the flight information region and shall coincide with a VFR cruising level.

6.4.5 Where it is desirable to limit the number of flight information regions or control areas through which high flying aircraft would otherwise have to operate, a flight information region or control area, as appropriate, should be delineated to include the upper airspace within the lateral limits of a number of lower flight information regions or control areas.

When it is determined that there is a need for realignment of an FIR the following process shall be followed.

a) A team of officers from ASM Dte. shall prepare a road map for realignment of FIR.
b) The ASM Carto shall plot the realignment of FIR.
c) A draft PfA shall be prepared by the ASM.
d) The proposal and the draft PfA shall be sent to ED(ATM-ASM) for vetting.
e) ED(ATM-ASM) shall recommend and send it to Member(ANS) for approval.
f) After the approval of Member(ANS), the PfA may be discussed with DGCA/Ministry if any other State is affected.
g) A safety assessment shall be carried out by ASM Dte.
h) The PfA shall be filed with ICAO for change in FIR.

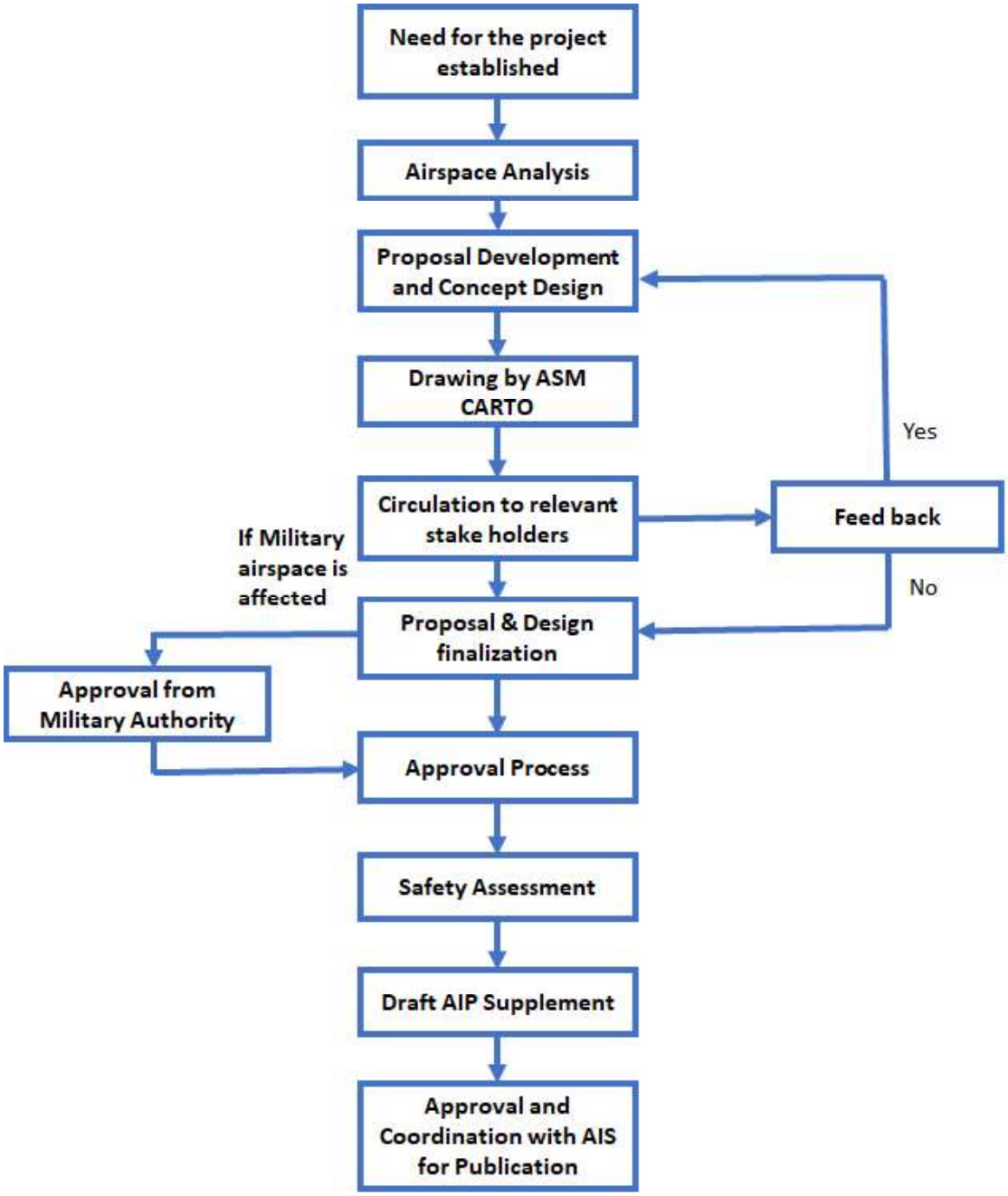
i) ICAO shall follow its due process to approve or discard the PfA.



[Flow Diagram of Process 6.4]

6.5 Process for Establishment/ Realignment Control Zone, Control Area, Aerodrome Traffic Zone & ATS Routes.

Upon determination of need for establishing a Control Zone (CTR), Control Area (CTA), Aerodrome Traffic Zone (ATZ), or ATS route, the process shall be followed.



[Flow Diagram of Process 6.5]

6.5.1 Airspace Analysis:

The ARP coordinates, runway orientation and preferably the 30NM Chart of the proposed airport shall be made available to ASM by AIS Section of AAI. The airspace analysis shall consider inter-alia the available airspace, proximity of special use areas, nearby airfields, current route structure near the proposed location & complexity of operation.

6.5.2 Proposal Development & Concept Design:

Prepare a detailed proposal addressing the demand. The proposal should align with ICAO guidelines, considering operational requirements, airspace structure, and safety considerations. Accordingly, a concept design will be decided. ASM Carto section shall plot the concept design on route Chart with demarcation of coordinates, waypoints (for ATS routes), Altitudes etc.

6.5.3 Circulation to relevant stake holders:

Circulate the draft proposal to Within ASM Dte as well as affected stake holders for feedback and comments.

6.5.4 Proposal & Design finalization:

Incorporate changes suggested by the team to refine the proposal.

6.5.5 Approval Process:

If the proposal affects military airspace, ASM Dte shall coordinate with Air HQ/Naval HQ/Army HQ for the concurrence of the Military units.

Submit the proposal for approval by the Executive Director of Air Space Management (ED ASM).

6.5.6 Safety Assessment:

Conduct a safety assessment as per Safety Manual to evaluate and mitigate any potential risks associated with the proposed changes in the airspace or ATS route.

6.5.7 Draft AIP Supplement Preparation:

Prepare the draft Aeronautical Information Publication (AIP) Supplement for publication in AIP.

6.5.7.1 Approval and Coordination with AIS for Publication:

Submit the draft AIP Supplement to ED(ATM-ASM) through proper channel for approval and onward transmission to the Aeronautical Information Services (AIS) for publication, ensuring adherence to the AIRAC cycle timelines when required.

6.6 Identification and delineation of prohibited, restricted and danger areas

Some agencies require certain airspace for special purpose activities such as fighter flying, weapon testing, Space Launch activities etc. The airspace required for these activities may be accomplished by reserving the airspace temporarily through issuance of NOTAM. However, if these activities are repetitive in nature, it is easier to manage the airspace by notifying the areas as special use areas i.e TRA, TSA, Danger Area, Restricted Area or Prohibited Area in AIP India and activating them through NOTAM whenever required by the controlling authorities. The TRA/TSA are activated through AUP/UUP under flexible use of airspace concept.

As per Annex 11:

Each prohibited area, restricted area, or danger area established by a State shall, upon initial establishment, be given an identification and full details shall be promulgated.

Note — See PANS-AIM (Doc 10066), Appendix 2, ENR 5.1.

The identification so assigned shall be used to identify the area in all subsequent notifications pertaining to that area.

The identification shall be composed of a group of letters and figures as follows:

a) nationality letters for location indicators assigned to the State or territory which has established the airspace;

b) a letter P for prohibited area, R for restricted area and D for danger area as appropriate; and

c) a number, unduplicated within the State or territory concerned.

Note — Nationality letters are those contained in Location Indicators *(Doc 7910).*

To avoid confusion, identification numbers shall not be reused for a period of at least one year after cancellation of the area to which they refer.

Recommendation — *When a prohibited, restricted or danger area is established, the area should be as small as practicable and be contained within simple geometrical limits, so as to permit ease of reference by all concerned.*

6.7 Process for Establishment of TRA/TSA/Danger Area or Restricted Area

To establish TRA/TSA/Danger Area/Restricted Area the following process shall be followed.

The final authority of approval to establish any special use area is the MoCA.

6.7.1 Receipt of Proposal

The agency concerned shall send its proposal for establishment of any of the above areas to ASM Directorate denoting the geographical coordinates in WGS 84 and the delineation of the area clearly mentioning the height in AMSL.

6.7.2 Plotting by ASM Carto

ASM Carto shall plot the area on the ATS Route Chart with clear mention of coordinates, Altitude, distance from nearby ATS Routes and Airports that might be affected.

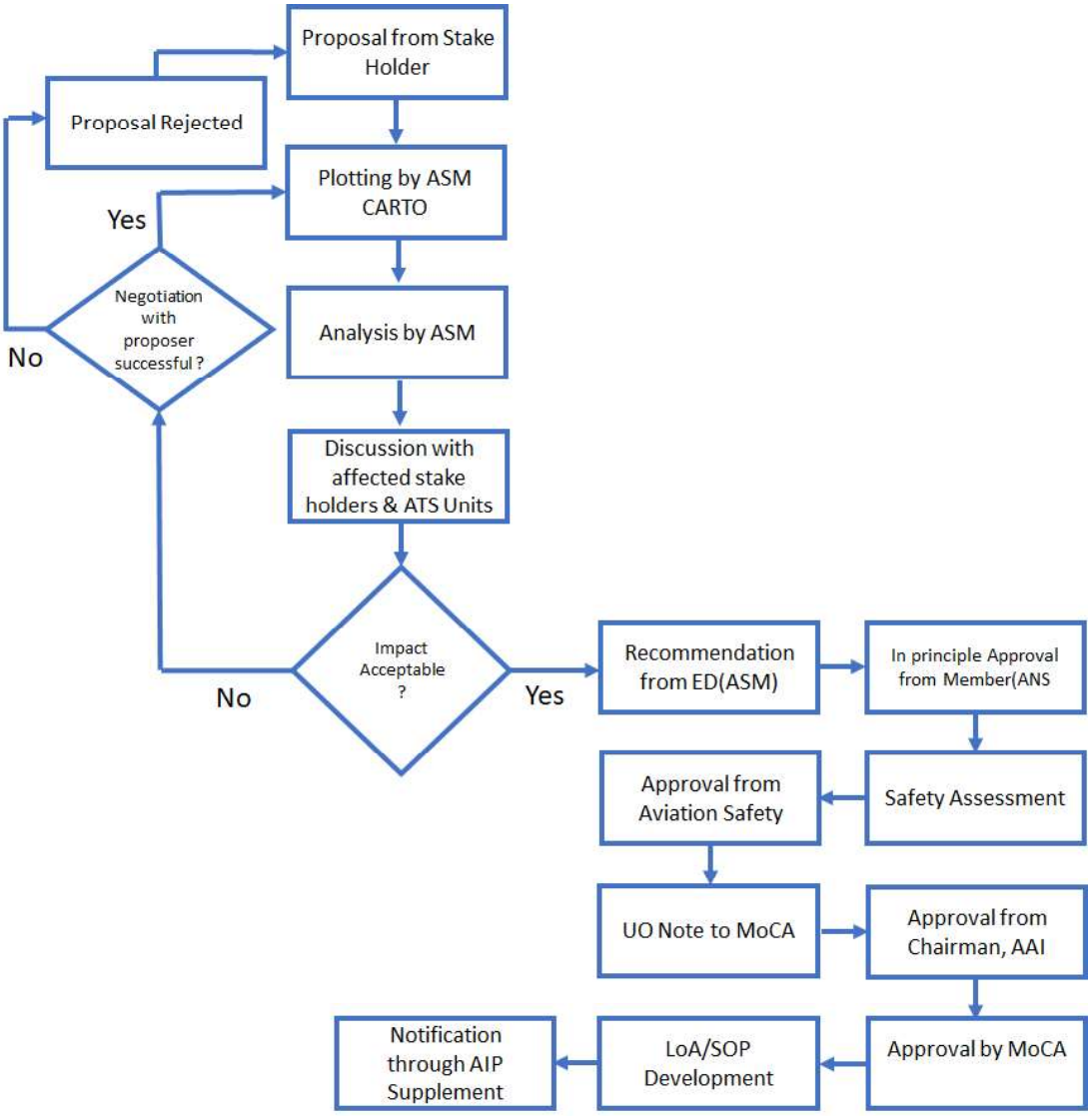
6.7.3 Analysis by ASM Dte.

The proposed area will be analysed by ASM Dte officers in terms of its impact on civil aviation and air safety. ASM shall consult with all the affected stake holders and ATS Units. If it is found acceptable then in principle approval from Member (ANS) shall be taken on file.

6.7.4 Negotiation with the Proposer Agency

If the proposal in its original form cannot be accepted but a modified form can be, then it will be negotiated with the proposer to modify the proposal. If negotiation is successful, it will be processed as per para 6.7 above.

If the negotiation fails, the proposal shall be rejected and the proposer agency informed.



[Flow Diagram of Process 6.7]

6.7.5 Safety Assessment

After obtaining the in principle approval from Member(ANS), ASM will conduct a safety assessment and send the safety risk assessment documents to Aviation Safety Dte, for concurrence. When approval from Aviation Safety is obtained, further processing shall be done by ASM Dte.

6.7.6 UO Note to MoCA

A draft UO Note shall be prepared by ASM Dte for the establishment of any Special Use Area mentioned above indicating clearly any condition to be imposed on the controlling authority or the area itself.

The draft UO Note shall be sent on file **to Chairman, AAI for approval** through proper channel.

After approval of Chairman, AAI, the UO Note shall be sent to MoCA for approval. MoCA may send any queries which needs to be answered by ASM Dte.

6.7.7 LoA/SOP with nearby ATS Units

After obtaining the approval from MoCA, the controlling authority shall be advised to develop any LoA/SOP with nearby Air Traffic Control Units.

6.7.8 Notification

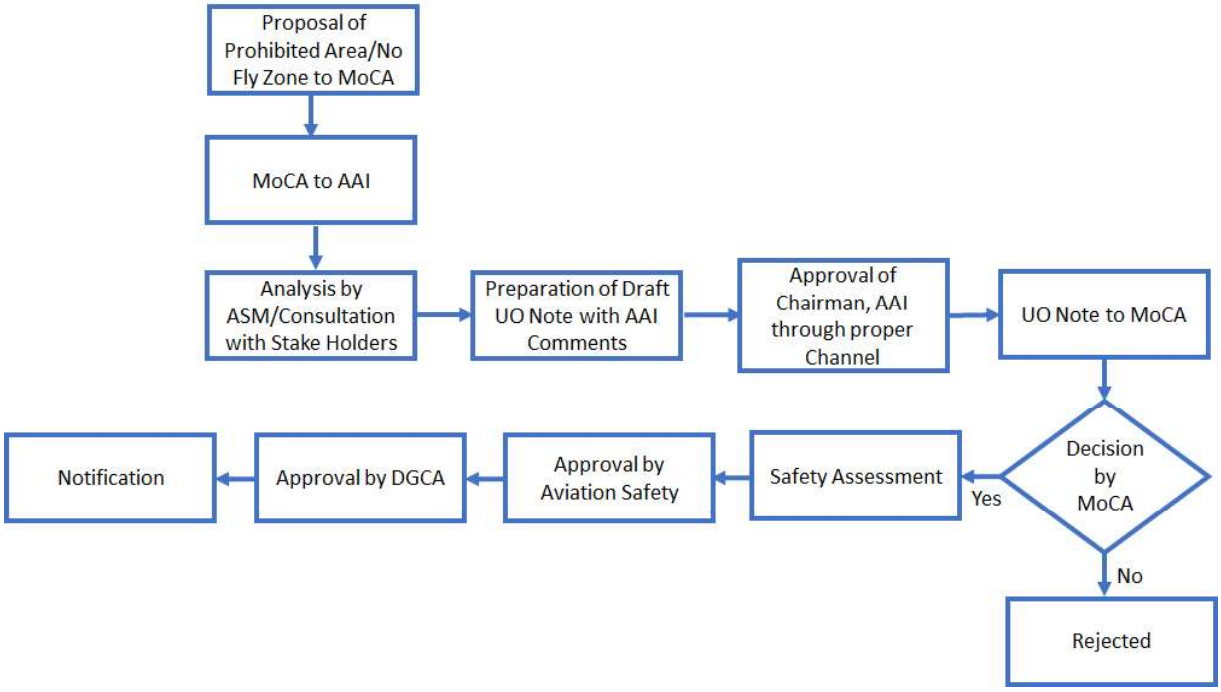
When the LoA/SOPs are finalised and signed, the establishment of the concerned area shall be notified through the AIP supplement after due process.

6.8 Establishment of Prohibited Areas/Permanent No Fly Zone

An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited is designated as a Prohibited Area. While Prohibited Areas puts a lot of constraints to air transport activities especially in view of growth in civil aviation, such areas may be necessary for national interest and/or safety & security reasons.

[*Note: There have been proposals for No Flying Zones from multitudes of agencies. However, MoCA in their letter dated 16/01/2003 has clearly mentioned that 'No Fly Zones' have to be kept at a minimum in order that safety and efficiency of civil fight operations are not hampered. It is also mentioned that no airspace over any pilgrim places such as Tirupati Temple, Ayodhya Temple, will be declared as 'No Fly Zone'.*]

In case of establishment of Prohibited Airspace, the following process shall be followed.



[Flow Diagram of Process 6.8]

6.8.1 Consideration of Proposal

6.8.1.1 No proposal sent directly to AAI shall be entertained by any Directorate of AAI.

6.8.1.2 The proposal for a permanent Prohibited Area/ No Fly Zone must be routed through the MoCA to AAI.

6.8.1.3 ASM Directorate may receive the proposal through Chairman, AAI

6.8.1.4 The proposal shall be thoroughly analysed by ASM Directorate in terms of its impact on present and future ATM and the guiding principle of the ICAO and the Ministry. ASM may consult all the stake holders on the matter.

6.8.1.5 ASM Dte. will prepare a draft UO Note conveying the comments of AAI on the proposal of Prohibited Area and inform Chairman, AAI through proper channel.

6.8.1.6 If approved by Chairman, AAI, the UO Note shall be sent to MoCA for their decision to approve the proposal or reject it.

If the Proposal is approved by MoCA, the following process shall be followed**.**

6.8.2 The Proposed Area shall be plotted on ATS Route Chart by ASM Carto Setion. The draft AIP Supplement and the map and SCARS form of safety assessment shall be sent to all stake holders including the DGCA.

6.8.2.1 A safety Assessment shall be conducted by ASM Dte.

6.8.2.2 The SRA documents shall be sent to Aviation Safety for approval. It shall be submitted to DGCA as well requesting for approval.

6.8.2.3 A prohibited Area may not require any LoA/SOP as the area is prohibited for any flying.

6.8.2.4 After obtaining approval from DGCA, the Area will be notified through AIP Supplement following the due process.

6.9 Establishment/ Realignment of International ATS Routes:

The following procedures shall be followed for establishment of International ATS Routes.

6.9.1 Initial Analysis

Upon agreement of establishment of a new international ATS routes in ICAO forums the proposal will be analysed by ASM Dte in terms of complexity of airspace, availability of ATM/CNS infrastructure, benefits to airlines and safety concerns.

6.9.2 Draft conceptual design

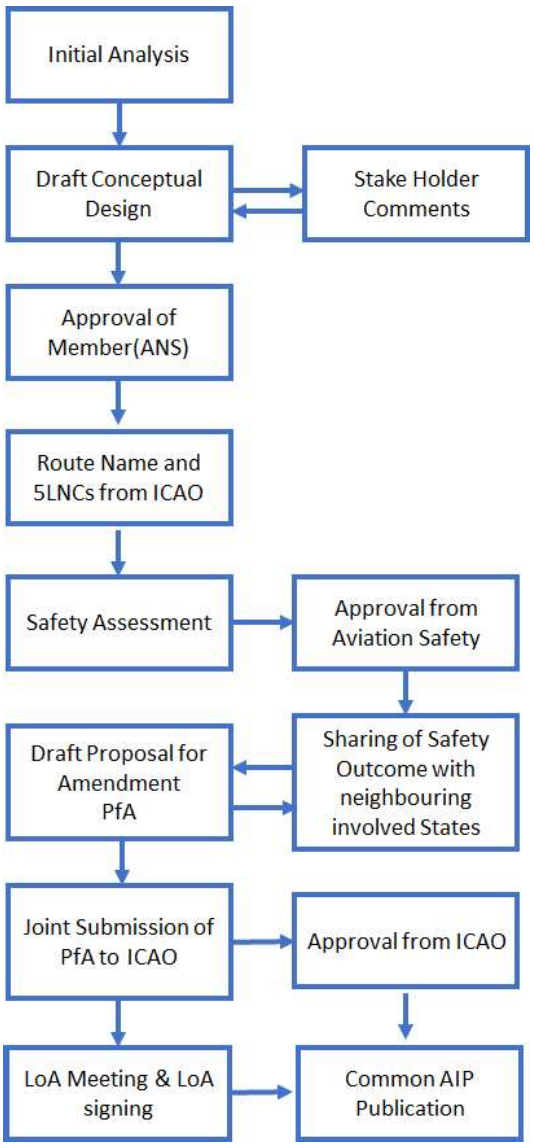
Accordingly, a draft proposal of the conceptual design of the route will be prepared depicting way points, navigational specification shall be prepared and forwarded to Member (ANS) for approval.

6.9.3 Approval from Member (ANS)

After obtaining approval from Member (ANS) the draft proposal will be sent to the countries affected by the route for their comments.

6.9.4 Stakeholder's Comments

After obtaining the comments of the concerned states, the final design of the route shall be prepared.



[Flow Diagram of Process 6.9]

6.9.5 5 LNC Waypoint

The Route Name and 5LNC for way points shall be obtained from ICAO as per the established procedure.

6.9.6 Safety Assessment

A concept and design level safety assessment will be carried out by ASM Dte. This safety assessment may be within the state or involve other concerned states also.

6.9.7 Safety Outcome

The SCARS form and the safety outcome will be shared with concerned states.

6.9.8 Draft proposal for amendment (PfA)

A draft proposal for amendment (PfA) in the appropriate ICAO form shall be prepared and shared with other states for consideration of a joint PfA.

6.9.9 PfA Submission to ICAO for Approval

A joint PfA (or PfA for own part) shall be submitted to ICAO for approval.

6.9.10 Coordination meeting for LoA

A coordination meeting for LoA on ATS Coordination on the proposed route shall be arranged and LoA shall be finalized and signed.

6.9.11 Implementation and Execution

Once PfA approval is received an execution and commission level safety assessment shall be undertaken and route will be published in AIP of concerned States from a common AIRAC date.

6.10 Process for Obtaining 5LNC from ICAO:

The following process shall be followed for obtaining required waypoint "5LNC":

6.10.1 Determine Requirement for 5 LNC way points: The requirement for 5 LNC (Latitudinal and Longitudinal Coordinates) is determined for ATS route or Airspace design point of view. Plot on Airspace Chart by ASM CARTO

6.10.2 ASM CARTO shall plot the required design on the Airspace Chart and determine the exact coordinates of the proposed waypoints in Arc GIS

6.10.3 Obtain Coordinates: Extract the specific geographic coordinates (latitude and longitude) for the 5 LNC points based on the plotted locations shall be obtained from ASM CARTO.

6.10.4 Request 5 LNC through ICAO Website: Visit the ICAO website (https://data.icao.int). Select the name of the way point relevant to the 5 LNC request (Precaution to be taken of not selecting similar sounding name of way point). Submit the request for the 5 LNC with coordinates and other necessary details.

6.10.5 Approval from ICAO: Wait for approval from ICAO after submitting the request. ICAO will review and process the request.

6.10.6 Use 5LNC as envisaged: Once approval is received from ICAO, update the draft Aeronautical Information Publication (AIP) Supplement or relevant NOTAM with the newly approved 5 LNC as required.

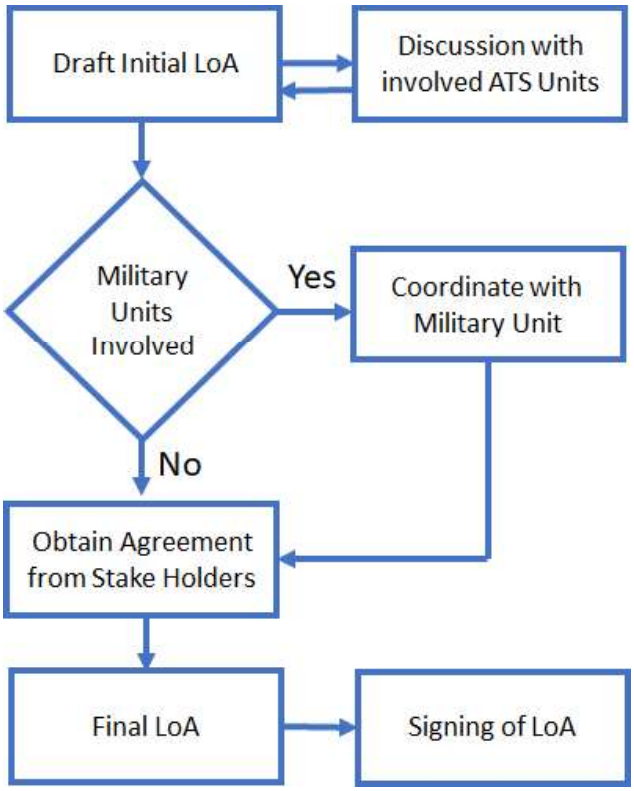
6.10.7 Approval and Coordination with AIS for Publication: Submit the draft AIP Supplement/ NOTAM to ED(ATM-ASM) through proper channel for approval and onward transmission to the Aeronautical Information Services (AIS) for publication, ensuring adherence to the AIRAC cycle timelines when required.

[Flow Diagram of Process 6.10]

6.11 Process for Letter of Agreement (LoA) on ATS Coordination Procedures

6.11.1 Draft the Initial LoA:

Prepare a Draft Letter of Agreement (LoA) incorporating all agreed general conditions and specific coordination procedures. Ensure the draft aligns with applicable regulations, operational requirements. The draft may be prepared by ASM or outsourced to a concerned field station.



[Flow Diagram of Process 6.11]

6.11.2 Discuss with Involved ATS Units

Share the draft LoA with all involved ATS units. Discusses the draft LoA in detail negotiate, and finalize the terms of the agreement.

6.11.3 Obtain Agreement from Stakeholders

Ensure that all stakeholders, including the participating ATS units, review and agree to the conditions specified in LoA. Address any concerns or suggestions to achieve consensus.

6.11.4 Coordinate with Defence Authorities (if applicable)

If the LoA involves Defence authorities, involve them in discussions and ensure their agreement. ASM Dte will coordinate with AHQ for the same. Incorporate any necessary adjustments and obtain signatures from Defence stakeholders.

6.11.5 Signing of the LoA by All ATS Stakeholders

Once agreed upon, circulate the final LoA for signature by all stakeholders or their representatives of all involved ATS units. The signature on the LoA may be obtained physically or through scanned document to save time and resource.

6.11.6 Finalize and Distribute the LoA

After obtaining all necessary approvals and signatures, finalize the LoA. Distribute the signed copy of the LoA to all concerned parties for implementation and reference.

6.12 LoA on AIDC:

The LoA or SOP on AIDC between two ATS Units shall be incorporated in a common LoA or made separately. The LoA should contain the following;

- AIDC Messages to be exchanged between two ATS Centres
- AIDC Coordination Points (COPS)
- AIDC Parameters agreed between two units
- Procedures for AIDC message exchanges
- procedure for AIDC failure

6.13 International LoA on ATS Coordination:

For International LoA between two ANSP/State on ATS Coordination, the following process shall be followed. This may involve multiple ATS Centres of both States. The Authorised Signatory of AAI for International LoA shall be the Executive Director (ASM).

6.13.1 Preparation of Draft LoA:

A draft LoA shall be prepared by one of the parties. When multiple centres are involved, separate LoAs may be prepared for concerned ATS Centres. If the LoA involves AIDC, the LoA for AIDC may also be incorporated in the same LoA or prepared separately. The

term LoA will refer to either or both the documents.

6.13.2 Sharing of Draft LoA

The Draft LoA shall be shared with the other parties through e-mail.

6.13.3 Coordination Meeting:

A coordination meeting shall be arranged between two parties either in face-to face manner at either locations (preferred) or through virtual mode when time and resource do not permit physical meeting.

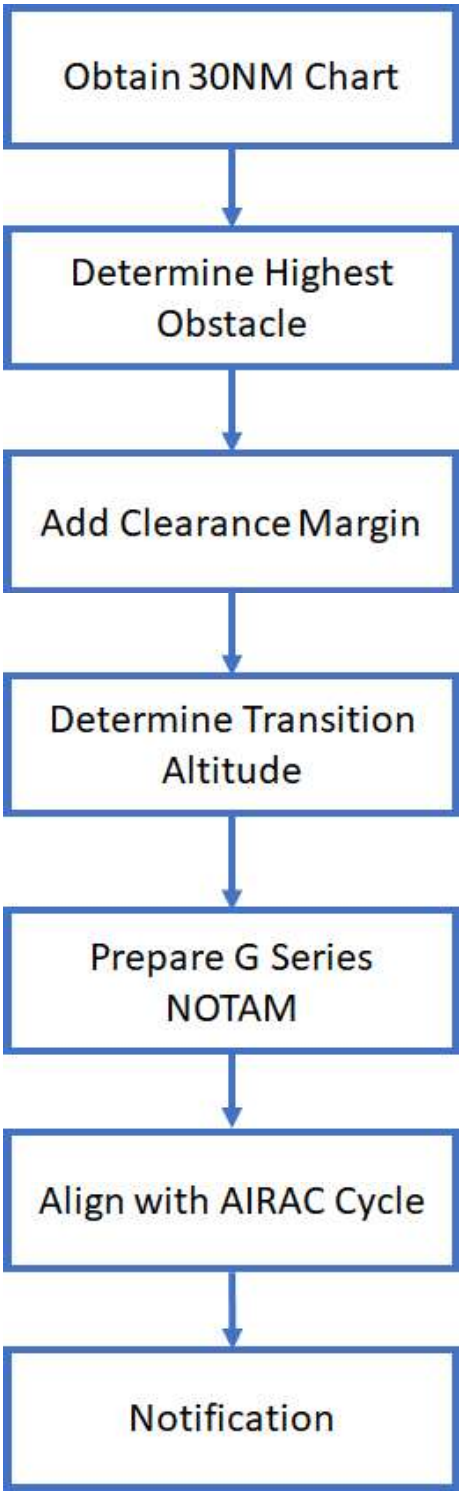
6.13.4 Finalization of LoA:

After the coordination meeting, the LoA shall be finalized. In case of a physical meeting authorised signatories of both parties shall sign the LoA and signed copy of the LoA shall be distributed to both/all parties. In case of virtual meeting, one party shall send a scanned copy of signed LoA to the other for signature and distribution of the copy of the document signed by both parties.

[Flow Diagram of Process 6.13]

6.14 Process for Determining the Transitional Altitude of an Airport:

This process ensures a systematic determination of the transitional altitude (TA) in compliance with operational and regulatory requirements.



6.14.1 Obtain the 30 NM Chart from AAI Survey Dte

Request the AAI Survey section for the 30 NM radius chart of the concerned airport.

Verify that the chart includes detailed obstacle information within the 30 NM radius of ARP of the airport.

6.14.2 Identify the Highest Obstacle

Examine the 30 NM chart to locate the highest obstacle within the radius.

Note the elevation of the highest obstacle in feet above mean sea level (AMSL).

6.14.3 Add Clearance Margin

Add a vertical clearance of 1000 feet (2,000 feet Where high terrain/hills are located around the Airport) to the elevation of the highest obstacle. For example: If the highest obstacle is 3,450 feet, adding 2,000 feet equals 5,450 feet.

Round off the resultant altitude to the nearest hundred feet. Example: 5,450 feet is rounded to 5,500 feet. [Flow Diagram of Process 6.14]

6.14.4 Determine the Transitional Altitude

a) The rounded-off value becomes the **transitional altitude** (TA) for the airport.

b) The transition altitude shall not be less than 4000 feet AMSL.

c) When operational requirement demands transition altitude may be fixed at a higher altitude than that determined by above process.

6.14.5 Prepare a G-Series NOTAM

Draft a G-Series NOTAM detailing the determined transitional altitude.

Ensure that the NOTAM clearly specifies:

a) The new TA value.

b) The effective date of implementation.

c) Section of e-AIP to be amended.

6.14.6 Align with the AIRAC Cycle

Schedule the publication and implementation of the transitional altitude change in alignment with the AIRAC cycle.

This ensures compliance with international standards for aeronautical information dissemination.

6.14.7 Notification:

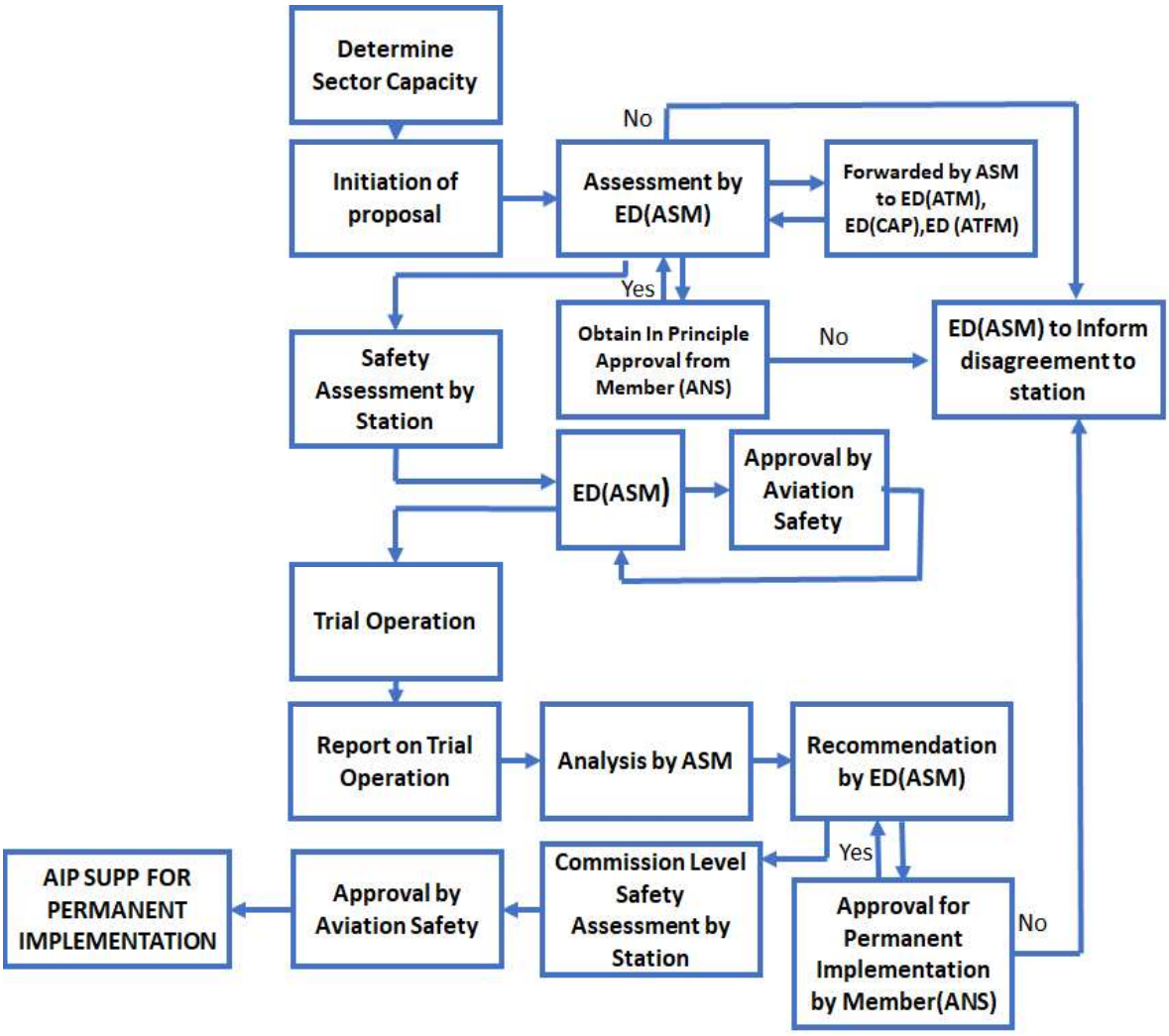
Inform all Concerns through G Series NOTAM:

6.15 Process for Establishment of New/Additional Sector

6.15.1 Sectorization of Area Control Centers (ACC) may be done when the sector capacity of the existing sector(s) exceeds the declared sector capacity as calculated as per the ATMC 02 of 2018

6.15.2 Initiation of the proposal

Station will initiate a proposal for establishment of new sector or restructuring of existing sectors by providing a comprehensive document containing the following.



[Flow Diagram of Process 6.15]

a) a brief on area sectors

A brief on area sectors including traffic density, peak traffic and general weather patterns in terms of deviations.

b) Brief on establishment of additional and/ or dynamic ATS Sectors

Station will assess the need of additional and/ or dynamic ATS Sectors including reason for such sectors clearly specifying the requirements thereof (manpower, automation related, space etc.)

6.15.3 Determining Sector Capacity

Station will specify the formula used for determining sector capacity. Currently sector capacity is defined using the below formula as per ATMC 02/ 2018. Tracking any changes to this formula or ATMC is responsibility of SQMS In-charge for respective station.

a. Sector Capacity is determined using the average sector flight time in the minutes during a week over a period of 24 hours, for any 15-minute time period

b. The formula used to determine the sector capacity is:

$$\frac{\text{(Average sector flight time in minutes) x (60 seconds)}}{\text{36 Seconds}} = \text{Sector Capacity}^{\text{Optimal}}$$

c. Calculated ACC/ OCC Sector Capacity as per ATMC 02/ 2018 or any revision thereof:

[Station will list out Present Sector Capacity, optimum sector capacity and adjusted (final) sector capacity for all available sectors in below mentioned format]

S.no.	Station Name	Sector Capacity				Remarks
		Sector Name	Present capacity	Optimum capacity	Adjusted (final) Sector Capacity	
1	VXXX	XX	XX	XX	XX	--
2	VXXX	XX	XX	XX	XX	--

6.15.4 Obtaining In-principle approval

The need for more sectors may arise from various reasons. Station will justify the need of additional sectors and the same should be sent to ED (ASM) for in-principle approval.

a) ED(ATM-ASM) shall assess the need and justification of the sectorization request. If required, an on-site visit by ASM Officers may be initiated by ED(ATM-ASM).

b) ED(ATM-ASM) shall obtain comments from ED(ATM), ED(CAP) & ED(ATFM) on man power requirement, training and rating issues, CNS infrastructure issues etc.

c) Based on the assessment and comments from different directorates, ED(ATM-ASM) may recommend the sectorisation and send the file to Member(ANS) for In-Principle Approval.

d) On obtaining In-Principle Approval from Member(ANS), ED(ATM-ASM) shall direct the concerned ATS-In-Charge of the station to prepare SOP, LoA etc. and conduct a concept, design and execution level safety assessment to start trial operation.

6.15.5 Safety Assessment

a) Accountable safety manager shall be responsible for initiating the process for conduct concept, design and execution level safety assessment as per policies laid out in current SMS manual.

b) The Safety Assess Document shall be forwarded to ED(ATM-ASM) who in turn shall forward Dte. for approval after checking it.

6.15.6 Approval for Trial Operations

After the Aviation Safety Dte. approves the process, ED(ATM-ASM) shall approve the trial operation.

6.15.7 Trial Operation

a) The ATS In-Charge shall ensure that the Automation System adaptation data base has been updated for airspace, safety nets, sectorisation and any other related matter. He/She shall ensure that the SOPs, LoAs and Internal Circulars are in place. The training/Sensitization of Controllers has been completed.

b) Once Trial operations starts at the concerned station, the station shall periodically review the results and look for any additional hazards identified during trial operation and find the mitigation measures.

6.15.8 Report of Trial Operation

a) The Station shall Prepare reports of Trial operations periodically and send it to ED(ATM-ASM).

b) Any new hazard that is identified during the trial operation and their mitigation measures shall also be forwarded.

6.15.9 Recommendation by ED(ATM-ASM) for Approval of permanent implementation.

ED(ATM-ASM) shall recommend the proposal considering all safety aspects send the proposal to M(ANS) for approval.

6.15.10 Approval for Permanent Implementation

a) After obtaining approval of Member(ANS) for permanent implementation, ED (ASM) shall instruct the ATS-In-Charge of the concerned station to conduct a commission level safety assessment for permanent implementation and also share the draft AIP Supplement with ASM Dte..

b) The station will conduct the commission level safety assessment and send the documents to ED(ATM-ASM) who in turn will send it to ED (Aviation Safety) for approval.

c) After obtaining the approval from Aviation Safety, ASM Dte. shall take action to publish the sectorisation as an AIP Supplement concerned from the next available AIRAC date and inform the concerned station.

6.16 Use of airspace design and charting tools:

Airspace Planning & Design requires complex activities which would be better realised with the help of software tools. Use of approved tools by properly trained and qualified designers would ensure quality output. This section lists out the various software tools and packages-whether off-the-shelf or custom-made standalone or networked, online or offline- which can be of help to en-route airspace designers.

ASM Section of AAI use many software tools and web-portals to achieve the various objectives effectively and in a timely manner. Most of these tools can be self-taught; however, some tools require intensive and supervised training. Table-1 below lists the tools used in ASM Section:

Sl	NAME	TYPE	PURPOSE	TRAINING REQUIREMENT
1	FPDAM (IDS)	Airspace Design Tool	Design of Airspace Structures	Intensive, Classroom, Hands-on
2	Google Earth Pro	3D Earth Map Tool	Airspace Planning	Self-training; supported by expert
3	Skyvector	Aeronautical Charts Portal	Airspace Planning	Self-training; supported by expert
4	AUTOCAD	CAD Tool	Mapping & Charting	Intensive, Classroom, Hands-on
5	ArcGIS	GIS Mapping Tool	Mapping & Charting	Intensive, Classroom, Hands-on
6	ICARD	ICAO Route and Waypoint Designator Platform	Allocation of 5LNC and Route Designators	Self-training; supported by expert
7	IFSET	ICAO Fuel Saving Estimate Tool	Estimating Fuel Savings from Operational Changes	Self-training; supported by expert

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Chapter 7

STRATEGIC TEMPORARY AIRSPACE RESERVATION

7.1 Introduction

a) This chapter provides guidance on strategic temporary airspace management and contains the procedures for the allocation of such airspace for different users.

b) Indian administered airspace comprises airspace within the territorial limits of the country and airspace over international waters delegated to India by International Civil Aviation Organization (ICAO) for providing Air Traffic Services (ATS).

c) While ASM responsibilities in the pre-tactical and tactical stages are discharged by concerned Airspace Management Cells (AMC) constituted under the Flexible Use of Airspace (FUA) concept and ATS units, strategic ASM activities are almost entirely managed by ASM Directorate at AAI-CHQ in coordination with MoCA, DGCA, MHA, MoD (Defence Authorities IAF, Indian Navy, Indian Army, Coast Guard), Regional and local AAI Offices.

d) Airspace is a finite asset shared by many airspace users such as aircraft operators, defence agencies, aerospace agencies, educational institutions, research organizations, adventure sport enthusiasts and hobbyists.

e) Approvals granted by AAI are from Air Traffic Management point of view and for air space controlled by AAI only. Request for activities falling in established Restricted, Danger, TRA or TSA must be routed through or made to the controlling authority of such areas.

f) Operators requesting airspace reservation are required to obtain approvals from all concerned government agencies and local bodies as appropriate, in accordance with the regulations

7.2 Procedures for Strategic Temporary Airspace Reservation

7.2.1 Requests for temporary air space reservation for the following activities shall be processed and approved by ASM Directorate at CHQ:

a) Rocket or Missile launches by other States affecting Indian territorial or administered airspace;

b) Space activities viz. Rocket launches by government and non-government entities.

c) Launch of Experimental Flight Vehicles by DRDO.

d) Airspace reservation in connection with Republic Day and Independence Day Celebrations at Delhi;

e) Any large-scale airspace closure required for Defence Exercises, missile firing by IAF/Army/Navy and/or Coast Guard;

f) Any airspace activity leading to closure of civil airport during ATC Watch hours:

- During Outside watch hours, an airport shall be considered as already closed.
- Minimum 30-minute buffer should be maintained before and after ATC watch hour while considering air space activity at or around an airport outside watch hours)
- approval from Ministry of Civil Aviation is required for closure of civil Airport.

g) Any airspace activity leading to closure of International ATS route(s) (except closing of one or two usable flight levels of International ATS route(s)

h) Similarly, for closure of airspace for security reasons on occasions like VIP visits, Kumbh etc. The applicants should route their requests through Ministry of Home Affairs.

7.2.2 The responsibility for approving airspace reservation requests for all activities other than those mentioned under paragraph 7.2.1 above shall be vested with the General Manager (ATM) of the four metro stations concerned viz. Chennai, Delhi, Kolkata & Mumbai. Such activities will include, but not limited to the following:

a) Activation of danger area already published in AIP (India);

b) Flights of tethered balloons, operation of kites, gyroplanes, use of laser beams, pyro-techniques, flower/petal or pamphlet dropping and such other activities subject to clearance from DGCA, MHA, defence authorities, local authorities as applicable;

c) Aero sport activities like glider, hang glider or powered hang glider, Para motoring activities having minimum impact on air traffic; Parasailing, Para jumping, aerobatic flights; these activities shall be conducted in accordance with National Air Sports policy.

d) Unmanned Aircraft (Remotely Piloted Aircraft System) flights conducted as per the provisions contained in Drone Rules 2021 or and other circulars issued on time to time or granted exemption by MoCA/DGCA but outside the purview of Digital Sky Platform; *(Refer Chapter 13 UNMANNED AIRCRAFT SYSTEMS)*

e) Combat Free Fall activity within CTR (Control Zone). NOTAM may be issued for activity outside ATC watch hours.

f) Closing one or two usable flight levels of International ATS route(s).

g) Minor changes in date & time or altitude which does not change the impact on air traffic, may be accommodated at station level under intimation to ASM-CHQ;

h) Any other activity which has no or very little impact on aircraft operations;

7.2.3 No airspace reservation is required for survey flights, calibration flights, cloud seeding flights and flights of any type of Manned or unmanned balloons. Such flights should be accommodated as per traffic density and with least possible delay to civil scheduled air traffic. NOTAM, as appropriate, may be initiated by ATS-In-Charge for such activities.

7.2.4 Search & Rescue flights and QRA (quick reaction alert) flights required at short notice by Government agencies should be treated as air traffic only and sufficient separation from other air traffic is to be provided as per procedure. No specific air space approval is required for such flights. Such flights should be treated as priority flights.

7.3 Submission of Application

a) Airspace Users requiring approval for temporary airspace reservation mentioned under paragraph 7.2.1 shall apply sufficiently in advance to Executive Director (ASM) at AAI-CHQ along with all relevant information about the activity and approval from DGCA/MHA/Defence authorities/local administration as applicable.

b) Airspace Users requiring approval for temporary airspace reservation mentioned under paragraph 7.2.2 shall apply sufficiently in advance to General Manager (ATM) of Chennai, Delhi, Kolkata, Mumbai airport, as applicable, with a copy to Executive Director (ASM), AAI-CHQ along with all relevant information about the activity and approval from DGCA/MHA/Defence authorities/local administration as applicable.

c) The airspace users are also required to telephonically confirm receipt of their requests by the intended addressees unless their requests have been acknowledged by the primary addressee. (Refer Appendix 7-1 for the contact details of AAI offices).

d) Those areas which are already published in CARs for specific activities, may be used by airspace user with prior approval from local authorities and with proper flight planning and in coordination with nearest ATC.

e) Airspace Users while submitting proposals for approval of temporary airspace activities should ensure sufficient advance notification for meeting the ICAO PANS AIM DOC 10066 and Annex 15 requirements. As a general guideline, AAI offices may insist on the advance notification time from airspace users as given in Table 1 to ensure notification as per international norms.

f) Any activity which may affect domestic or international air traffic should be notified at least 7 days in advance. In addition, AAI will require adequate processing and coordination time which will depend on the complexity of the proposed activity.

g) When multiple operator is operating aero sport activities in same area, it shall be the responsibility of each operator to coordinate between themselves and maintain separation between their activities.

7.4 Processing by Receiving Office

The office responsible for processing airspace activity request (as detailed in 7.2.1 and 7.2.2) will carry out the following tasks in the order of priority:

a) Acknowledge receipt of the activity request telephonically or through email;
b) Prepare the airspace chart of the proposed activity using tools such as ArcGIS or TARGETS, CAD, Google Maps or basic drawing tools;
c) Send the airspace chart along with request to the affected station(s) and obtain their comments;
d) Conduct a preliminary impact assessment of the activity on air traffic. The assessor should consider the feasibility of approving the activity as far as possible without closure of airspace;
e) If the proposed activity is affecting an already approved activity, the applicant should be informed so and should be asked to submit a revised proposal;
f) Coordinate with the applicant if there is any difficulty in approving the activity and seek alternate proposal. The alternate proposal should be sent to concerned stations and fresh comments should be obtained;
g) Prepare the approval letter based on the comments sent by the concerned stations and send the approval letter to the applicant with copies to affected stakeholders like DGCA/MHA/Defence authorities/local administration;
h) It should be explicitly mentioned that the approval is only from ATM operational perspective and necessary permissions from other agencies DGCA/MHA/MoD/local administration, as applicable based on the nature of the activity planned, shall be obtained by the applicant prior to commencement of the activity and AAI shall not be responsible for loss of any life, property due to such activity;

i) If the proposed activity is affecting FIRs other than Indian FIRs or is planned near FIR boundary with a neighboring State, concurrent NOTAM action by all affected States (FIRs) shall be ensured. If the proposed activity is affecting any international ATS route(s), the alternate routing should be published in coordination with the affected neighbouring FIR;

7.5 General Guidelines

a) Where ever controlled airspace is affected, the NOTAM should be published at least 7 days prior to the commencement of the activity.

b) The NOTAM should also contain, to the extent possible, alternate routes for the affected ATS route segments, especially for international ATS routes.

c) Applications that require publication of NOTAM but submitted late by the operator / stakeholder should be summarily declined.

d) NOTAM shall be initiated for all temporarily danger areas created outside the controlled airspace.

e) For activities which are repetitive in nature or of long duration an SOP should be developed for notification, activation, deactivation and suspension of activities. Details of the Controlling Authority (Organisation, designation and contact details) should be included in the SOP.

f) Flight plan shall be filed & ADC number shall be obtained for all those activities as specified in CARs, and as per ATC requirement;

g) Once the activity is approved, the General Manager (ATM) concerned shall be responsible for initiation and cancellation of the NOTAM, if required, and also for dissemination of NOTAM to all concerned FIR and ATC Centres

h) Copies of NOTAMs published by all FIRs including affected FIRs of other States should be compiled and a copy to be sent to affected stations and ASM-CHQ. Minor changes in date & time or altitude which does not change the impact on air traffic, may

be accommodated at station level under intimation to ASM-CHQ.

i) Activation of TSA/TRA shall be done as per the Procedure published in FUA Manual by Concerned NAMC or RAMC.

7.5.1 Advance Notification Time

ACTIVITY	RECEIPT OF PROPOSAL BY AAI	REMARKS
Rocket Launch by ISRO	45 days before start of launch window	NOTAM required
EFV Launch by DRDO	21 days before start of launch window	NOTAM required
Large-scale defence exercises like LFE	30 days before commencement of exercise	NOTAM required
Airspace Closures involving non-Indian FIR	30 days before commencement of activity	NOTAM required
Activation of published Danger Area and Restricted Areas	15 days before commencement of activity	NOTAM required
Airspace activities involving closure of airports	30 days before commencement of activity	NOTAM required
Fly-past, aerobatic activity	30 days before commencement of flight	NOTAM required
Parasailing, Para jumping and Para motoring activities	15 days before commencement of activity	NOTAM may be required
Glider, hang glider or powered hang glider activities	15 days before commencement of activity	NOTAM required

Flights of free or tethered balloons of small, medium or heavy category	15 days before commencement of activity	NOTAM required
Operation of kites, gyroplanes, ground-to-air fire cracker activity, Temporary use of laser beams and pyro-techniques	15 days before commencement of flight	NOTAM required

7.5.2 Contact Details

The Contact Details of AAI Officials are provided in **Appendix-7-1**

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Chapter 8

COORDINATION

8.1 Introduction

Coordination may be defined as the synchronization and integration of activities, responsibilities, and command and control structures to ensure that the resources of an organization are used most efficiently in pursuit of the specified objectives. Another definition of Coordination is the unification, integration, synchronization of the efforts of group members to provide unity of action in the pursuit of common goals. Whether it is the coordination within a section or with other sections or directorates of the same organisation or with external agencies, coordination with stakeholders is an important management function of any organisation, especially in a service-oriented organisation like AAI.

Airspace Management sets the stage for provision of Air Traffic Services by designing and developing airspace structures, determine airspace classification, the separation standards, establish Letters of Agreement between the ATS units involved etc. Thus, coordination with internal and external stakeholders is an important aspect in the day-to-day functioning of the ASM Section.

This chapter deals with coordination between ASM Section and various internal & external stakeholders.

8.2 Internal Stakeholders

8.2.1 Flight Procedure Design (FPD) Section-CHQ:

FPD section is responsible for the design of Instrument Flight Procedures, both arrival and departure, which include conventional & PBN procedures and SIDS and STARS. Activities of FPD section are essentially confined to the terminal airspace, which is 30 NM

(56 km) from the aerodrome the procedures are intended to serve. However, SIDS and STARS may extend well beyond the terminal airspaces.

ASM Section would be required to coordinate with the FPD section on a routine basis to ensure the seamless and hassle-free flow of traffic from terminal to enroute phases of flight and vice-versa. Therefore, coordination on the following between the two sections would be required:

a) For design of new airspace structures including ATS routes, Controlled Airspaces and Special Use Airspace or any change in any element of existing airspace structures. The proposed changes shall be coordinated with the FPD Section at the design stage itself.

b) For any change in Transition Altitude of airports.

c) For any change demanded by a change of location of NAVAIDS (including changes brought about by survey).

d) For design of new Instrument Flight procedures or for change in any existing procedures, which may have an impact on any existing airspace structure. The proposed changes shall be coordinated with the ASM Section at the design stage itself.

e) When there is a need for publication of changes in AIP concurrently. The date of publication and the effective date shall be coordinated between the two sections well in advance.

8.2.2 Air Traffic Services (ATS) Section-CHQ:

ATS Section is responsible for ensuring provisions of Air Traffic Services through various ATS Units established across the country. ASM Section, being the office responsible for setting the stage for provision of ATS, needs to coordinate with ATS Section on a routine basis. Proper coordination shall be ensured between ASM Section and ATS Sections, as given below:

a) Any conceptual changes related to airspace management shall be coordinated with the ATS Section. e.g. implementation of the new concept of Flexible Use of Airspace or introduction of Class B airspace.

b) Design of new airspace structures including ATS routes, Controlled Airspaces and Special Use Airspace or any change in any element of existing airspace structures shall be coordinated with the ATS Section at the design stage itself. This coordination may be primarily with Stations concerned under intimation to ATS-CHQ.

c) Activities such as preparation of Letters of Agreement between ATS Units and preparation of ATS Contingency Plans shall be undertaken by ASM Section in close coordination with ATS Section.

d) Reply to DGCA Surveillance audit findings related to ASM shall be provided by ASM to ATS section.

e) Any concept level safety assessment conducted by ASM Section should include ATS Section as a stakeholder.

f) Changes in operational status of ATS units at existing or new airports and capacity enhancement measures or agreements affecting airspace should be coordinated with ASM Section.

g) Airspace allocated to FTO and NOC issued by ATS for FTOs/other air activity shall be coordinated by ATS with ASM.

8.2.3 Aeronautical Information Service (AIS) Section-CHQ:

AIS Section, being the Data Manager of AAI, is responsible for supplying aeronautical data conforming to the data quality requirements to ASM Section.

AIS Section is also responsible for the promulgation of data on airspace related changes by ASM Section as per the provisions contained in ICAO SARPs and National Regulations. All changes to AIP India made through AIP Amendment, AIP Supplement or NOTAM are submitted to AIS after due validation and approval.

Note: Refer Chapter 9 for detailed procedures involving AIS Section.

8.2.4 ATFM (Air Traffic Flow Management)

Role of Air Traffic Flow Management (ATFM) is managing air traffic flow in a safe, efficient, and in timely manner. It involves coordinating and regulating the flow of aircraft within controlled airspace, ensuring that minimizing delays, and optimizing the use of available airspace. Airspace Management (ASM) deals with the allocation, use, and regulation of airspace to support safe and efficient operations for both civilian and military air traffic.

8.2.5 Airports (ATS-in-Charges):

a) Matters related to design of new airspace structures, review and amendment of existing structures, new LoAs or review of old LoAs etc. are coordinated directly with airports. This will include vetting of draft designs, publication of the changes in AIP and conduct of training for airspace changes. Preparation of LoAs are sometimes outsourced to the airport concerned.

b) The validity of a Letter of Agreement (LoA) will continue till such time a change in airspace, ATS routes, Procedures occurs. In case of such changes an addendum will be signed till a revised LoA is signed by all parties.

c) In cases where only contact details are changed, signatures from all stakeholders are not required. The party whose contact details has changed, shall intimate all the parties through e-mail and all the holders of LoA shall effect the changes in their respective LoA copies.

d) Airports may also be required to conduct safety assessment of operational changes and also to conduct trial operations wherever required.

e) Any changes related to airspace required to be published in AIP as AIP amendment, AIP Supplement or NOTAM (of any series) should be initiated by CHQ or initiated by airport concerned when specifically approved by ED (ATM-ASM).

8.2.6 Communication, Navigation & Surveillance (CNS) Directorate

CNS-Planning (CNSP-1 & CNSP-2) CHQ deals with the Planning & procurement of new CNS equipment and CNS-OM takes care of operation and maintenance of such facilities at all the Airport.

Coordination for maintenance and enhancement of CNS infrastructure should happen between ASM Section and CNS-OM sections. This will include:

a) CNS-OM coordinating with ASM Section (and other sections concerned) for new installation of navigational aid shifting or trans-installation of obsolete navigation aids;

   i. In such cases the ATS routes need to be realigned with the new location of the navigational aid if the coordinates are shifted as a result of trans location or shifting.

   ii. CNS shall provide the V&V coordinates of the nav aid to ASM.

   iii. The location will be noted by ASM and the route realignment shall be processed in ASM file as appropriate.

   iv. The file will be sent to FPD who may realign or review the IAL procedures w.r.t the new location of the navigational aid.

   v. The commissioning of the new navigational aid, route realignment and promulgation/withdrawal of IAL procedures shall be from a common AIRAC date which shall be coordinated amongst the departments concerned.

b) ASM Section requesting CNS-Planning (CNSP-1 & CNSP-2) CHQ for installation of new navigation aids to support existing or changed airspace concept.

c) CNS conducts Simulation study for coverage of radio navigational aids, surveillance aids and impact study of structures on such coverage. The comment from ASM is normally sought by CNS in such cases. In such cases

   i. ED(ATM-ASM) shall forward the file to ATS In-Charge/GM(ATM) of the

concerned station for comments as the station has knowledge of day-to-day operation and can best assess the impact.

ii. After receiving comments from concerned station ED(ATM-ASM) shall seek comments from ASM and FPD before providing the final comments to CNS.

8.2.7 Standards, Quality Management & Safety (SQMS) Section

Root cause analyses of safety incidents would, in many cases, reveal airspace-related factors. SQMS Section may involve ASM Section in safety investigations and safety studies for enhancing the safety of ATM operations.

SQMS section may also coordinate with ASM for publication of ATMC or amendments to MATS-I on airspace related matters.

8.2.8 Operations (OPS) Directorate

ASM Section shall coordinate with OPS Directorate for approval of temporary airspace reservations leading to closure of AAI airports.

8.2.9 CAP Directorate:

a) CAP Dte. is responsible for coordinating training needs for ATCOs at new airports. CAP Dte shall seek airspace structure, ATS routes for the new airports from ASM.

b) ASM shall provide the draft (or Final) Airspace & ATS route structure to CAP to be used for ATCO training.

c) ASM shall coordinate any licence related matter with CAP which may be affected by new procedures or airspace related changes.

8.2.10 Planning Directorate:

Planning Directorate is responsible for feasibility study of proposed new airports. Planning Dte shall coordinate with ASM as follows.

a) Planning Dte. shall provide the ARP coordinate and RWY details to ASM for airspace analysis.

b) ASM shall carry out the desktop airspace analysis (Simulation study is not in purview of ASM) in terms of its proximity to special use area, proximity and interdependency with nearby airports, availability of airspace, ATS route complexity, Coordination required with Military or any other authority for airspace and ATS routes.

c) ASM shall intimate its findings to Planning Dte and FPD for further necessary action at their respective ends.

8.3 External Stakeholders

8.3.1 International Civil Aviation Organization (ICAO)

a) Any coordination with ICAO on policy matters shall be made through the office of Member (ANS) and DGCA only.

b) Coordination for routine activities related to ASM Section shall be made through the office of ED (ASM) only except for ICARD-related activities where the authorised ICARD Manager may interact with the concerned personnel at ICAO RHQ.

c) ASM Section may coordinate with ICAO (HQ/RO/RSO) for the following activities:

i. Obtaining 5LNC through ICARD;

ii. Obtaining route designators for regional ATS routes;

iii. Submitting Proposal for Amendment (PfA) for changes to be made in international airspace structures contained in ANP;

iv. Preparation and acceptance of international ATS Contingency Plans;

v. Coordination during special situations during conflict situations and calamities;

vi. Submission of Working Papers and Information Papers and participation details for ICAO Conferences and Meetings;

vii. Reply to PfA filed by other states or ICAO matter related to airspace structure shall be prepared by ASM which would be sent to DGCA after obtaining

approval of Member (ANS) for onward transmission to ICAO.

viii. Any other relevant matters.

8.3.2 Military Authorities:

Coordination with military authorities is a regular and continuous process.

a) Any change in airspace structure or procedures when such changes affect any military airspaces shall be coordinated with the military authority concerned well in advance.

b) Any change in airspace structure when such changes do not affect any military airspaces or procedures may be informed to ATS Section of Indian Air Force (IAF) in advance. IAF (ATS) should also be invited to attend any external stakeholder meeting organised in this regard including safety assessment meetings.

c) Any request for creation/amendment of TSA and TRA or amendment of any R/D/P areas shall be coordinated with ASM Section by the military authority concerned well in advance. ASM Section shall process such requests after ascertaining the feasibility.

d) Any request for military exercises to be conducted in civil airspace / civil airports shall be communicated to the ASM Section well in advance by the military authority concerned. The same shall be coordinated by ASM Section with all concerned internal sections of AAI including concerned airports, ATS-CHQ, OPS-AAI and also with MoCA, if required, before approval. Refer Chapter 6 for guidance on strategic temporary airspace management.

e) Coordination with military authorities for the management of flexible airspace structures under FUA Concept is handled by Airspace Management Cells. Refer Manual on FUA Ver 1.0 and Chapter 12 of this document for details.

f) ASM Section shall be nodal office for establishing LOA with military authorities including LOA between civil & military ATS units and LoA/SoP for activation, use and deactivation of SUAs.

8.3.3 Airport Operators (Non-AAI)

Operators of Civil Enclave (Military controlled), private airport and state-owned airports may propose for change in airspace according to their requirements, to ASM Directorate. ASM Dte shall evaluate such requests for changes and take action as deemed fit.

8.3.4 Airline/Aircraft Operators

Airline and other Aircraft Operators are one of the primary stakeholders in the activities of ASM Section. Acceptability of the airspace designs is one of the key parameters to assess the performance of ASM Section.

a) Any major conceptual changes related to airspace management shall be informed to Airline/Aircraft Operators for comments.

b) Design of new airspace structures including ATS routes, Controlled Airspaces and Special Use Airspace or any change in any element of existing airspace structures may be informed to Airline/Aircraft Operators for comments.

c) Airline/Aircraft Operators should be invited to participate in concept/design/implementation level safety assessments of airspace projects conducted by ASM Section or at the airport level.

d) Airline/Aircraft Operators may submit their proposals for airspace changes during the airspace review conducted by ASM Section or in any other platform or directly.

8.3.5 Other Airspace Users

a) Different airspace users operate in coordination with ASM. Drone (RPAS) operation, Balloon, Paragliding and survey flights are some of the activities which require prior coordination and/or approval from ASM Directorate.

b) ISRO, DRDO and other such organisations coordinate with ASM Section for approval of their airspace activities.

c) Ministry of Home Affairs (MHA) coordinates with ASM Directorate for many activities including airspace closure/ reservation for various activities such as Republic Day, Independence Day and other events of national importance.

d) ASM Section processes all such requests on case to case basis after due consultation with stakeholders. The requests will be analysed to minimise impact on air traffic. Approvals are issued from an ATM point of view. Timely NOTAM action for dissemination of information to all concerned, where required, will be ensured by ASM Section.

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Chapter 9

QUALITY ASSURANCE

9.1 Introduction

Quality Assurance may be defined as the maintenance of a desired level of quality in a service or product, especially by means of attention to every stage of the process of delivery or production.

This chapter describes the steps undertaken by the ASM Section to ensure quality assurance at various levels of its activities including competence of airspace designers, handling of aeronautical data and design of airspace structures.

9.1.1 Airspace Designer

9.1.1.1 Qualification

- The Airspace Designer shall be an officer from ATM & must have completed Aerodrome Control, Approach Control and Area Control Course.
- He/She must have rating of Area Control.
- He/She must have any Surveillance rating with minimum One year of experience.
- Training in basic IAP and PBN Procedure design, PBN Enroute Criteria and FPDAM(IDS) are desirable.

9.1.2 Aeronautical Data

9.1.2.1 Definitions

- ***Data Quality:*** A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.
- ***Data Accuracy:*** A degree of conformance between the estimated or measured value and the true value.
- ***Data Resolution*****:** A number of units or digits to which a measured or calculated value is expressed and used.

- ***Data Integrity:*** A degree of assurance that an aeronautical data and its value has not been lost or altered since the origination or authorized amendment.
- ***Data traceability:*** The degree that a system or a data product can provide a record of the changes made to that product and thereby enable an audit trail to be followed from the end-user to the originator.
- ***Data timeliness:*** The degree of confidence that the data is applicable to the period of its intended use.

9.1.3 Data Inputs Required for Airspace Design

- Aerodrome Data
- Terrain and Obstacle Data
- Data pertaining to CNS facilities: VOR, NDB, DME, VHF, HF, Radar and ADS-B
- Jurisdictional Data such as FIR, Country Boundary, State & District Boundaries and Airspace Sectors
- Data pertaining to existing airspace structures such as CTA, CTR, ATZ, SUA and ATS Routes
- Data pertaining to Waypoints

9.1.4 Responsibility of ASM Section

ASM Section shall be responsible to ensure that:

- Data used for design of airspace structures are generated or derived and Provide by the ASM Section and
- Any data generated or derived by ASM Section (e.g. Waypoints) shall be verified by the ASM Section.

9.1.5 Design of Airspace Structures

The guiding principles to ensure quality of airspace structures are given below:

- **Design:** Airspace structures shall be designed by qualified and competent airspace designers in conformance with international SARPs and national regulations, as

applicable, using approved airspace design tools, where required.

- **Documentation:** At every stage from concept to design to publication to maintenance, design of airspace structures shall be documented, which will help in traceability and review.
- **Peer Review:** There should be at least one complete peer review of all designs; i.e. airspace structures designed by an airspace planner should be reviewed by another airspace planner.
- **Stakeholder Consultation:** Airspace design process should go through internal (within AAI) and external stakeholder consultations. Safety assessment of the new designs shall also be carried out.
- **Desktop Validation:** All designs should be validated through desktop tools (e.g. flyability checks using TARGETS)
- **Publication:** Airspace structure shall be promulgated as per the required AIS provisions.

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Chapter 10

SAFETY MANAGEMENT PROCESSES

10.1 Introduction

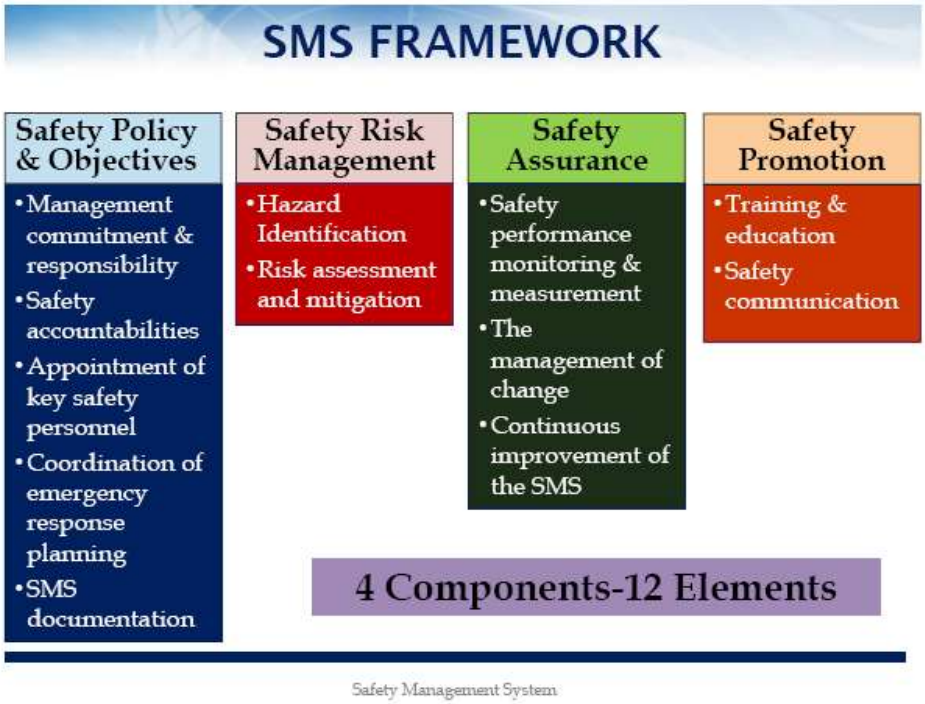
Civil Aviation Requirements (CAR) Section 1 General Series C Part I Issue III dated 24th March 2022 provides the Regulation for Establishment of a Safety Management System (SMS) for Aviation Organisations in India. The CAR stipulates that aviation organisations including manufacturers and service providers, shall develop, establish, maintain and adhere to a safety management system. The guiding principles are in synchronisation with ICAO Annex 19 and DOC 9859.

This chapter describes the specific procedures to be followed by personnel in ASM Section under ED (ATM-ASM) to conform with the regulatory (DGCA), corporate (AAI) and international (ICAO) standards and recommended practices.

10.2 SMS Framework

Directorate of Aviation Safety, AAI is responsible to lay out the detailed SMS framework for AAI based on the provisions contained in the DGCA CAR. Accordingly, the Directorate has published AAI Corporate SMS Manual to be followed by all operational sections and personnel of AAI.

As a group which performs safety-critical tasks, ASM Section is bound to consistently follow as aspects contained in the SMS framework described in the CAR / AAI CSMS Manual. However, for the sake of emphasising the importance, procedures to be followed by the Section for Hazard Identification, Risk Management and the Management of Change are explained in the paragraphs below.



10.3 Hazard Identification and Risk Management

10.3.1 HIRM Concepts

A hazard is defined as a condition or an object with the potential to cause injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function.

Safety risk is the projected likelihood and severity of ***the most credible*** consequence or outcome from an existing hazard.

Safety risk management encompasses the assessment and mitigation of safety risks. The objective of safety risk management is to assess the risks associated with identified hazards and develop and implement effective and appropriate mitigations.

Hazard Identification is a continuous, ongoing and daily activity. The hazard can be reported from any source. The need for hazard identification is essential in the following conditions:

- Unexplained increase in safety-related incidents
- During major operational changes
- Significant organizational changes

Hazard identification shall be based on a combination of reactive, pro-active and predictive method of safety data collection. All identified hazards should be assigned a hazard number and recorded in a hazard log along with its consequences.

Hazards may be identified through various data sources, which can be either internal or external.

- Some examples of internal hazard identification data sources include voluntary and mandatory reporting system, safety survey, safety auditing and follow-up reports on accidents/incidents.
- Some examples of external hazard identification data sources include State voluntary and mandatory reporting systems, State oversight audit and safety information-sharing system.

10.3.2 HIRM in ASM

a) ASM Section should conduct HIRM exercise for all major airspace-related operational changes, organisational changes in ASM Section and also when an unexplained increase in safety-related incidents point to an airspace angle.

b) HIRM exercise should be conducted as per the guidance contained in the CSMS Manual.

c) Internal and external stakeholders should be encouraged to report hazards to ASM Section on a routine basis. Internal meetings and meeting with external stakeholders may be seen as opportunities to identify hazards present in the system.

d) ASM Section, CHQ should maintain a master database of hazards identified along with the risk management history.

e) ASM, CHQ may coordinate with ATS-in-Charges of airports and Directorate of Aviation Safety for sharing of safety information on airspace-related hazards.

10.3.3 The Management of Change

10.3.3.1 Provisions Contained in CSMS Manual

All changes to ATS, CNS or Airport operations concerning service levels, procedures, equipment, or organizational structures, which will affect the performance, functional or technical specification of a system or service or facility, and organizational changes affecting safety accountabilities MUST be assessed to determine the safety magnitude of the change with the help of SCARS form (AAI-SAF-103).

Where a proposed change will not result in any change to the items mentioned above, or the change is of a routine maintenance or administrative nature, the normal routine change process may be used instead of the SCARS methodology.

The outcome of the safety assessment must be reported as follows:

- Where the SCARS form indicates a Minor change, a Safety Statement must be recorded in the SCARS form.
- Where the SCARS form indicates a Moderate change, a Safety Statement must be recorded in the SCARS form and a HAZLOG Register must be developed.
- Where the SCARS form indicates a Major change, a Safety Plan and a Safety Case must be prepared and a HAZLOG Register for this change must be developed.

The following shall be carried out as part of the Safety Assessment process:

- All safety assessment activities must be recorded.
- All potential hazards and their consequences must be identified, assessed in terms of probability and severity to determine risk and all risks must be treated.
- All residual risks must be accepted or rejected by the appropriate authority.

CSMS Manual mentions four distinct phases in any project; viz. Concept, Design, Implementation and Operation phases. The manual stipulates that safety assessments should be conducted for each phase of the project lifecycle. DGCA Circular AD AC 1 of 2012 specifies that normally any change in infrastructure shall be in three stages – i.e. Stage-I as Design + Concept phases combined, Stage-II as Execution and Stage-III as Commissioning phase. "Implementation Phase" as defined in CSMS Manual includes both "Execution" and "Commissioning" phases as prescribed in DGCA circular. "Operation phase" is the additional phase defined in C-SMS Manual, which concerns the post-implementation stage.

10.3.4 Change Management in ASM Section

1. Change Management dealt with by Airspace Management could be due to the following:
   a. Change in Classification of Airspace;
   b. Establishment of new airspace structures such as Control Zone (CTR), Aerodrome Traffic Zone (ATZ), Control Area (CTA) or changes to existing structures including Flight Information Region (FIR);
   c. Establishment of Special Use Airspaces (SUA) such as Restricted, Prohibited and Danger Area, Temporary Segregated Area (TSA) and Temporary Reserved Area (TRA) or changes to existing SUAs;
   d. Establishment of international and domestic ATS Routes or changes to existing ATS routes;
   e. Change in CNS infrastructure;
   f. Changes in applicable aircraft separation minima; and
   g. Any other airspace-related changes.

2. All major airspace management projects shall be safety assessed at the Concept & Design stage and Implementation phases. Thus at least two safety risk assessment workshops should be conducted for every major project.

3. It is desirable to conduct Concept & Design phase safety assessment at CHQ level or in the presence of representatives from ASM-CHQ. Implementation phase safety assessment should be conducted at the airport concerned with or without the presence of CHQ representatives.

4. Participation of external and internal stakeholders including military (especially IAF), airline operators, DGCA, CNS, Electrical Engineering, ATS should be ensured in all safety assessment workshops.

5. Safety assessment workshops may be organised in physical mode or online mode through video conference.

10.3.5 Safety Training

All personnel of the ASM Section engaged in airspace design should have undergone basic/advanced SMS course and should possess adequate knowledge and experience in Safety Risk Management.

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Chapter 11

AERONAUTICAL INFORMATION SERVICE

11.1 Introduction

The DGCA has delegated the provision of Aeronautical Information Services (AIS) to the AIS Section of AAI. This includes the publication of Integrated Aeronautical Information, wherein the Aeronautical Information Publication (AIP), AIP Supplements, AIP Amendments, and NOTAMs are published by AAI, while Aeronautical Information Circulars (AICs) are issued by the DGCA.

The Aeronautical Information Service (AIS) Section of the Airports Authority of India receives, collates, formats, edits, and publishes aeronautical information related to permanent changes or temporary changes of longer duration for all field stations under the control of the AAI, other airport operators, and the territory/airspace delegated to the State by ICAO, in accordance with the prescribed rules, regulations, procedures, and guidelines.

AIS section receives aeronautical information mainly but limited to the following sources:

- Aerodromes
- Airport Operators
- Airspace Designers
- Communication Service Providers
- Defence Services Providers
- Director General of Civil Aviation (DGCA)
- Flight Procedures Designers
- Meteorological Service Providers
- Search and Rescue (SAR) Service Providers
- Survey and Cartography Section

11.2 Provision of Aeronautical Information Service

In order to publish changes in airspace or new or amended aeronautical information, the ASM Section must establish and maintain direct liaison with the relevant services.

- military services within the State, as necessary, to receive and distribute information concerning aviation warnings (military exercises, etc.) or any special military procedure affecting civil airspace;
- air traffic services within the State, to ensure immediate transmission of all required information affection airspace which in turn may affect air traffic or in-flight information purposes;

Aeronautical information/data is distributed in standard formats for the operational requirements of:

- those involved in flight operations, including flight crews, flight planning and flight simulators; and
- the air traffic services unit responsible for flight information service and the services responsible for pre-flight information.

Before introducing airspace and Navigation related changes, due account shall be taken by the ASM Section. Such changes of the time needed by the Aeronautical Information Service for the preparation, production and issuance of relevant material for promulgation. To ensure timely provision of the information to the aeronautical information service, close coordination between ASM and with AIS section is therefore required.

Aeronautical information is provided in a standardized presentation that includes the Aeronautical Information Publication (AIP), AIP Amendments, AIP Supplements, AIC, NOTAM and aeronautical charts. ICAO standard format is used for the information published in AIP, amendment service. AIP Supplement and NOTAM.

11.3 Aeronautical Information Publication (AIP)

- The AIP India is issued in electronic form only as eAIP India.

11.3.1 AIP Supplement

- Temporary changes of long duration (3 months or longer) and information of short duration which contains extensive text and/or graphics is published as AIP Supplement.
- AIP Supplements issued as AIRAC are indicated as 'AIRAC AIP Supplements' and those not issued as AIRAC are indicated as 'AIP Supplements'.

11.3.2 NOTAM

- Temporary changes anticipated to last less than three months are considered to be information of short duration, or when operationally significant permanent changes or temporary changes of long duration are made at short notice, except for extensive text and/or graphics, is distributed by NOTAM.
- At least seven days' advance notice shall be given of the activation of established danger, restricted or prohibited areas and of activities requiring temporary airspace restrictions other than for emergency operations.
- When a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM shall be indicated. The series, location indicator and subject of both NOTAM shall be the same. Only one NOTAM shall be cancelled or replaced by a NOTAM.
- One of the following message identifiers is to be inserted as appropriate:
    - NOTAMN if it concerns a NOTAM containing a new information.
    - NOTAMR if it concerns a NOTAM replacing a previous NOTAM followed by the series and number/year of the NOTAM replaced. i.e. A0125/18 NOTAMR A0123/18.

- NOTAMC if it concerns a NOTAM cancelling a previous NOTAM, followed by the series and number/year of the cancelled NOTAM, e.g. A0460/18 NOTAMC A0456/18.

11.3.3 Aeronautical Information Circulars

- In India the responsibility to issue and disseminate Aeronautical Information Circulars (AICs) has been entrusted to Director General of Civil Aviation (DGCA) under Rule 133A of the Aircraft Rules, 1937.

11.3.4 AIRAC Methodology for Publishing Aeronautical Information

Aeronautical information that affect aeronautical charts which qualify to be notified by the Aeronautical Information Regulation and Control (AIRAC) system needs to publish as predetermined, internationally agreed AIRAC effective dates.

(Refer schedule of AIRAC issued by AIS Section, published in AIM-india Website in document section.)

11.3.5 Processing cycle for airborne navigation databases

Annex 15 (ICAO) stipulates that information (pertaining to ASM) concerning the following circumstances shall be distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days~~,~~

1. Limits (horizontal and vertical), regulations and procedures applicable to:
   a. flight information regions
   b. control areas
   c. control zones
   d. advisory areas
   e. ATS routes
   f. permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ

g. permanent areas or routes or portions thereof where the possibility of interception exists

2. Transition levels, transition altitudes.

Refer Appendix 9-1 for schedule of AIRAC effective dates from 2025.

11.4 Guidelines for Publication of Information Pertaining to Airspace Structures

1. All new airspace structures shall be published as AIP Amendments or AIRAC AIP Supplements as per AIRAC Cycle.
2. Permanent or temporary changes to existing airspace structures, amending data elements which are operationally significant, shall be published as AIP Amendments, AIRAC AIP Supplements or G-Series NOTAM.
3. Permanent or temporary information which are not of significant operational importance may be published as AIP Supplements or NOTAM.
   a. Physical or electronic file of the proposal, duly approved by ED (ATM-ASM);
   b. Draft AIP Amendment, AIP Supplement or NOTAM in duplicate, both signed by a Concerned ASM official;
   c. Safety Assessment Report, where required; and
   d. Softcopy of the AIP Amendment, AIP Supplement or NOTAM, as applicable, to be mailed or attached in e-office file to AIS Section
4. On receipt of information from AIS Section regarding publishing of the intended information, ASM official concerned shall verify the applicable AIP Amendment, AIP Supplement or NOTAM for any inadvertent errors. Any observed anomaly should be brought to the notice of AIS Section for corrective action.

5. ASM Section should, to the extent possible, inform internal and external stakeholders regarding the published information through email.

11.5 Publication of Enroute Aeronautical Charts

ASM Section is required to prepare and publish Enroute Chart and Area/TMA Chart. In addition, ATS Route Chart should be prepared for official uses.

The responsibility of preparing charts lies with Cartography officials posted to ASM Section.

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Chapter 12

CIVIL MILITARY COORDINATION AND FLEXIBLE USE OF AIRSPACE

12.1 Introduction

Flexible Use of Airspace (FUA) is a concept aimed at optimizing airspace utilization by dynamically managing and sharing airspace between civil and military users. It emphasizes the efficient allocation of airspace as a shared resource rather than segregating it permanently for exclusive use.

12.1.1 Temporary Reserved Airspace (TRA) is a defined block of airspace temporarily reserved for specific activities, such as military exercises. It is activated based on the needs of the user, typically through prior coordination. Civil aircraft can operate through TRAs when inactive, ensuring no loss of airspace efficiency.

12.1.2 Temporary Segregated Airspace (TSA) is a section of airspace segregated temporarily for exclusive use, typically by the military. Unlike TRA, civil aircraft are not allowed to transit through TSAs during activation. TSA ensures complete isolation for high-risk or sensitive operations, such as live ammunition exercises, launching of Rocket or Missile.

12.1.3 CDR-1 Routes: CDR1 routes are published in the Aeronautical Information Publication (AIP) and are permanently available for flight planning during specified periods. Typically, these are unaffected by TRA or TSA activation, ensuring high reliability for route planning.

12.1.4 CDR-2 Routes: CDR2 routes are available for use but are subject to activation based on daily airspace management plans published in AUP/UUP. Pilots and dispatchers must check their availability during pre-flight planning.

12.1.4.1 CDR-3 Routes: CDR3 routes are the most flexible and are activated tactically, often on a short-notice basis. These routes are not plannable during pre-flight stages but may be

offered by air traffic control during flight, depending on real-time airspace status.

12.2 Developments in FUA

12.2.1 India has implemented Flexible Use of Airspace (FUA) after the Government of India approved the concept in 2013. As a prerequisite to successful implementation, India has established the National High-Level Airspace Policy Body (NHLAPB) to spearhead the implementation process and the National Airspace Management Advisory Committee (NAMAC) to assist NHLAPB in achieving its objectives. The *Manual on Flexible Use of Airspace Version 1.0,* which was approved by NHLAPB and published in 2014, is the master document describing the policies and procedures for implementation of FUA.

12.2.2 The plan was to establish a National AMC (NAMC) in CATFM Centre at New Delhi and four Regional AMCs (RAMC) at Chennai, Delhi, Kolkata and Mumbai airports. The establishment of RAMCs would be in a phased manner depending on the requirement.

12.2.3 Accordingly, on 30 July 2020, India established its first AMC in Delhi, the National Airspace Management Cell (NAMC) at the CATFM Central Command Centre Facility (CATFM-CCC) at Vasant Kunj. This unit functioned as a combination of all four RAMCs and the NAMC, thereby discharging the responsibilities of all five units with pan India jurisdiction.

12.2.4 The next step in FUA was the establishment of Regional Airspace Management Cells (R-AMC) at metro ATC Centres across the country. India has established Two R-AMC at Delhi (for Delhi & Mumbai FIR) & at Chennai for (Chennai & Kolkata FIR) which are tasked with the responsibility of day to day allocation and management of temporary airspace structures such as Temporary Reserved Areas (TRA), Temporary Segregated Areas (TSA), AMC Manageable Restricted / Danger Areas and Conditional Routes (CDR).

12.2.5 The FUA Secretariat, comprising officers from Airspace Management (ASM) Directorate of Airports Authority of India (AAI) has imparted basic FUA training to more than 700

military officers belonging to IAF, Indian Navy & Indian Coastguard and 1000 civil ATC officers from AAI and HAL.

12.3 Airspace Management Cell

12.3.1 India has established one National AMC at Delhi and two Regional AMC at Delhi and Chennai. These AMCs are responsible for strategic management of 115 (93 TRA+22 TSA) and 132 CDRs as on date.

12.3.2 Establishment of two more R-AMCs at Mumbai and Kolkata is in the planning process. These will ensure optimum use of resources, including manpower requirement, for manning the AMCs.

12.4 Constitution of NAMC

1. Two Officers from Air force
2. One officer from Navy
3. 4 supporting staff from Air Force
4. CIVIL
   a) NAMC In-charge
   b) NAMC Supervisor
   c) 4 officers in two shifts

12.5 Constitution of RAMC

12.5.1 Each AMC will have a minimum representation per shift from stakeholders as follows:

- AAI : One AAI ASM officer
- IAF : One IAF ATS officer
- Indian Navy : One Navy ATS Officer
- DGCA : One Representative (not mandatory)

- Airline Operator : One representative of airline community (not mandatory)
- Airport Operator : One representative of airport operators (not mandatory)

12.6 Roles and Responsibilities of NAMC

a) Overall supervision of RAMC

b) Resolve any differences between RAMCs

c) Deal with Concurrent Routes i.e. passing through one or more RAMCs

d) Maintain close coordination with ATFM-CCC to react tactically to any capacity shortfall at airports and airspace which may require renegotiation with AA and ACCs.

e) Check whether the draft AUPs sent by the RAMCs is conceptually correct and approve them for publication.

f) Publish AUPs in the AIM Portal and CATFM Web Portal.

g) Obtain PDF version of UUPs (if published) with NOTAM No from RAMCs

h) Communicate the UUP(s) to CATFM-CCC to publish UUP(s) in ATFM Web Portal

i) Publish UUPs in the AIM Portal

j) To send the copy of latest AUP/UUP issued by RAMC to all stakeholders including Approved Agencies (AA), Airline Operators (AO) and ACC/FMP by email using a standard distribution list.

k) Check whether the latest AUP/UUP for the next day has been published in the ATFM Portal and AIM Portal.

l) Conduct weekly/monthly review of the AMC operation and mail report to FUA Secretariat (applicable only on the last working day of the week/month

12.7 Roles and Responsibilities of Delhi & Chennai RAMC

12.7.1 Approved Agencies designated by IAF, Indian Navy and if required, by other airspace users, are required to submit requests (for the next day) for allocation of TSA and TRA under their jurisdiction, to Delhi & Chennai R-AMC in the prescribed format given in Appendix 1. Such requests should reach Delhi AMC through a mutually agreed mode of communication.

12.7.2 After de-conflicting airspace and CDR2 Allocation requests, Delhi & Chennai R-AMC should prepare an Airspace Use Plan (AUP). Airspace Use Plan (AUP) is an ASM message of NOTAM status notifying the daily decision of an Airspace Management Cell on the temporary allocation of the airspace within its jurisdiction.

12.7.3 Delhi & Chennai R-AMC, on receipt of the request for allocation of TSA, TRA and CDR2, should evaluate the request and identify conflicts. Conflicts can arise due to airspace allocation request for TRA/TSA/CDR in the same general area with an already published NOTAM for temporary adhoc airspace allocation for large-scale military exercises, rocket launches or missile testing. Conflicts could also happen between an allocation request for a TRA/TSA and the request for allocation of a CDR2 established through the TRA/TSA.

12.7.4 The members of Delhi & Chennai R-AMC should engage in Collaborative Decision Making (CDM) to find optimum solution to airspace allocation conflicts.

12.7.5 If Necessary changes to Pre-tactical airspace are affected by AMCs through the publication of an updated Airspace Use plan (UUP). Thus, Plan notify the changes to airspace allocation. The AUP & UUP will be published in prescribed format.

12.8 Responsibilities of Approved Agencies

12.8.1 Approved agencies are required to:

12.8.1.1 Plan submission of airspace use activities in advance so as to be able to notify their needs

for airspace to Delhi AMC on the day before the activity.

12.8.1.2 Submit requests for airspace allocation to Delhi ACM, on the day before the proposed activity (D-1).

12.8.1.3 Inform Delhi & Chennai R-AMC of any change in the proposed activity, including cancellations, for the promulgation of UUP.

12.8.1.4 Submit a new request for airspace allocation to the Delhi & Chennai R-AMC for the promulgation of UUP; and

12.8.1.5 Ensure, on the day of the activity, that the airspace usage is in conformance with AUP / UUP.

12.9 Responsibilities of Aircraft Operators

12.9.1 AOs are required to file or refile their file plans using shorter routing options offered by CDR2 routes published through AUP / UUPs

12.9.2 AOs should also ensure that the revised flight plans are distributed to all operational units, especially the flight crew.

12.10 Sequence of Activities by the Delhi & Chennai R-AMC

12.10.1 Delhi AMC shall function from 0800 to 1900 IST (0230 to 1330 UTC) from Monday to Friday except on gazetted holidays. Morning Shift will work from 0730 to 1330 IST and afternoon shift from 1300 to 1930 IST.

12.10.2 A typical sequence of activities to be carried out collectively by the Delhi & Chennai R-AMC members is given in the table below:

SEQ No.	TIME (IST)	Activities by Delhi AMC
1	0730 to 0800	1. Familiarize with latest AUP/UUP and ATFM Daily Plan (ADP) applicable for the day
		2. Familiarize with NOTAMs for any airspace reservation applicable for the day
		3. Check the serviceability of COM channels to be used.
2	0800 onwards	4. Ensure that all COM channels are manned / monitored on real-time basis
		5. Respond to any tactical reallocation request by AA/ACC in respect of TSA/TRA/CDR already allocated through AUP/UUP issued the previous day. If required, a fresh UUP for the remaining portion of the day may be issued.
		6. Maintain close coordination with ATFM-CCC officers to react tactically to any capacity shortfall at airports and airspace which may require renegotiation with AA and ACCs
3	1100 to 1130	7. Ensure that an airspace allocation request or "not required for the day" information is received from AA/ACC in respect of all TRA/TSA & CDR2 (Note that the requests will be for allocation for the next day)
4	1130 to 1330	8. Analyse the TSA/TRA/CDR allocation requests and identify conflicts
		9. De-conflict the requests following the guidelines in paragraphs.
5	1330 to 1430	10. Prepare the AUP applicable for the next day
6	1430 to 1500	11. Publish the AUP applicable for the next day through AFTN as A-Series NOTAM
		12. Disseminate the AUP through FAX / email to AA, ACC and AO.

7	1600 to 1630	13. Analyse and de-conflict request for changes in the previous allocation and also requests for fresh allocation received upto 1600 IST
8	1700	14. If required, publish the first UUP applicable for the next day through AFTN as A-Series NOTAM
		15. If published, disseminate UUP1 through FAX / email to AA, ACC and AO
9	1730 to 1800	16. Analyse and de-conflict request for changes in the previous allocation and also requests for fresh allocation received between 1600 and 1730 IST
10	1800	17. If required, publish the first UUP applicable for the next day through AFTN as A-Series NOTAM
		18. If published, disseminate UUP2 through FAX / email to AA, ACC and AO
11	1800 to 1900	19. Prepare AUPs for SAT/SUN/Gazetted holidays based on the allocation requests received till 1730 IST (applicable only if next day(s) happen to be SAT/SUN/ Gazetted Holiday)
		20. Publish AUP(s) applicable for SAT/SUN/Gazetted Holidays through AFTN as A-Series NOTAM
		21. Disseminate the AUP(s) through FAX / email to AA, ACC and AO
12	1900 to 1930	22. Check whether the latest AUP/UUP for the next day(s) has been published in the ATFM Portal
		23. Conduct weekly/monthly review of the AMC operation and mail the report to FUA Secretariat (applicable only on the last working day of the week/month)

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Chapter 13

UNMANNED AIRCRAFT SYSTEMS

13.1 Introduction

Unmanned Aircraft System Traffic Management (UTM) is a specialized air traffic management (ATM) system designed to facilitate the safe and efficient operation of unmanned aircraft systems (UASs), commonly referred to as drones. UTM ensures that UASs can coexist safely with manned aircraft and other airspace users in controlled and uncontrolled airspace.

With the increasing popularity of drones for commercial, recreational, and industrial applications, UTM has become a critical component of modern airspace management systems. ASM Section is the nodal office in AAI to coordinate with various internal and external stakeholders in matters pertaining to operation of UAS and other related issues such as UAS Traffic Management (UTM). This chapter deals with the roles and responsibilities of ASM Section in matters pertaining to UAS.

13.2 Brief history of developments

Summary of historical developments in the field of Unmanned Aircraft Systems (UAS).

- DGCA issued Civil Aviation Requirements (CAR) Section 3 Air Transport Series X Part 1 on Operation of Civil Remotely Piloted Aircraft Systems (RPAS), which became effective from 1st December 2018.
- This was replaced in March 2021 by the UAS Rules 2021.
- To ensure the safe and regulated use of UAS, the Indian government replaced the UAS Rules in 2021 itself by a comprehensive regulatory framework, the Drone Rules, 2021.
- Subsequent policies such as the National Unmanned Aircraft System Traffic Management (UTM) Policy Framework, 2021 serve as the foundation for managing UAS operations.

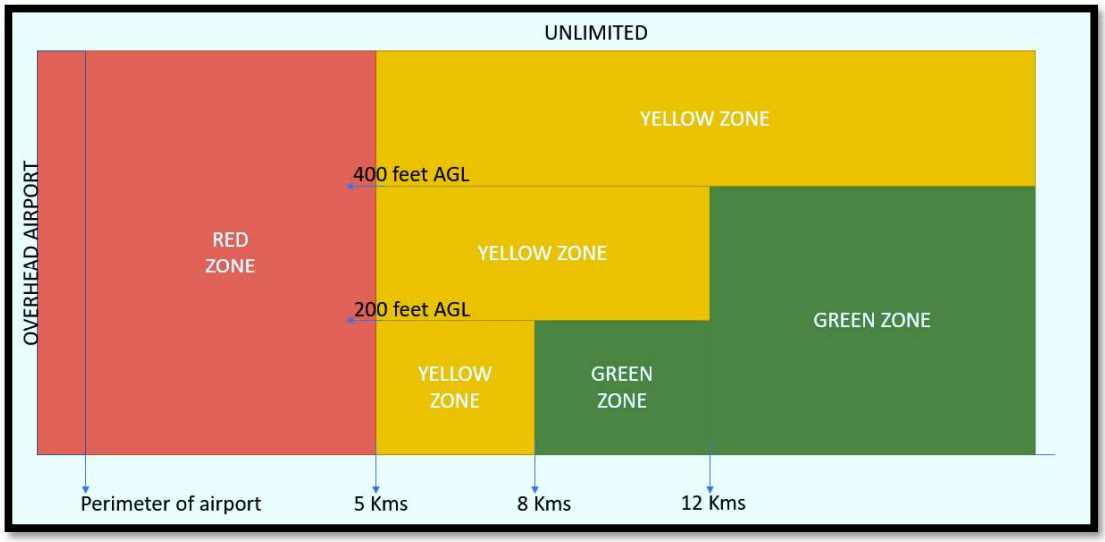
- This National UTM Policy Framework 2021 was introduced to establish a structured and efficient framework for integrating unmanned aircraft systems (UAS) into Indian airspace. The policy aims to address the growing demand for drone operations while ensuring safety, security, and the efficient use of airspace.
- An online platform called Digital Sky is being developed in phases to digitally enforce compliance to the Rules and Regulations pertaining to Unmanned Aircraft System (UAS) operations in India.

13.3 Nodal agency.

ASM Directorate of CHQ, AAI is working as a nodal agency for the following:

- Issuing guidelines for drone operations.
- Management of airspace, particularly near airports, into red, yellow, and green zones for clear demarcation of drone operation areas.
- Development of UTM systems for the safe and efficient management of drone operations in these zones.
- Integration of UTM with Air Traffic Management (ATM) systems to enable seamless coordination.

13.4 Airspace Management as per Drone Rules 2021



The Very Low Level (VLL) airspace of India (from ground to 400 feet or 120 meters above ground level) is divided into Green, Yellow, and Red zones. This is depicted in the diagram above. Implementing this zoning system requires collaboration between the DGCA, Air Traffic Control (ATC) and security agencies to manage no-fly zones and restricted areas, such as near airports and military installations.

- "**Green zone**" means the airspace of defined dimensions above the land areas or territorial waters of India, upto a vertical distance of 400 feet or 120 metre that has not been designated as a red zone or yellow zone in the airspace map for unmanned aircraft system operations and the airspace upto a vertical distance of 200 feet or 60 metre above the area located between a lateral distance of 8 kilometre and 12 kilometre from the perimeter of an operational airport:
- "**Yellow zone**" means the airspace of defined dimensions above the land areas or territorial waters of India within which unmanned aircraft system operations are restricted and shall require permission from the concerned air traffic control authority. The airspace above 400 feet or 120 meter in the designated green zone and the airspace above 200 feet or 60 meter in the area located between the lateral distance of 8 kilometers and 12 kilometers from the perimeter of an operational airport, shall be designated as yellow zone;
- **"Red zone"** means the airspace of defined dimensions, above the land areas or territorial waters of India, or any installation or notified port limits specified by the Central Government beyond the territorial waters of India, within which unmanned aircraft system operations shall be permitted only by the Central Government. (Source Drone Rules 2021)

13.5 National UTM Policy Framework, 2021

To manage low-altitude airspace effectively, the **National Unmanned Traffic Management (UTM) Policy Framework** was introduced. It focuses on:

- Real-time tracking and identification of drones.
- Collaboration with UTM Service Providers for airspace management.
- Ensuring data privacy and cybersecurity.

13.6 Digital Infrastructure

13.6.1 DigitalSky: The Platform for Drone Operations in India

The DigitalSky Platform is a pivotal component in implementing drone regulations to facilitate and regulate safe drone operations in India. It streamlines processes such as registration, licensing and flight approvals. Operators are required to upload drone details, apply for operational zones, and secure real-time permissions through this platform.

Since the beginning of 2024, regulatory aspects such as registration and licensing are being ported out of DigitalSky and operational aspects such as dynamic as well as interactive Airspace maps (red, green and yellow zones) and Flight Planning have been retained. These ensure sufficient data is available with Airspace Management agencies to make decision regarding granting or not real-time permissions.

13.7 Implementation of UAS Rules & Regulations

Drone operations are managed by ASM Directorate of CHQ using the following procedure:

- Requests for drone operations and RPTO establishment are evaluated from the ATC perspective by verifying the area/route of operation with respect to the airport red or yellow zones.
- However, clearance (NOC) from DGCA, MoCA, MHA etc. is to be obtained by drone operator as applicable.
- Drone operations in Airport red zones need mandatorily to obtain permission from MoCA as well as the concerned ATC.

- Drone operations in Airport yellow zone need to obtain permission from just the concerned ATC.
- The operator is advised to formulate an SOP in coordination with the concerned ATC whenever ATC permission is required. Such an SOP would include details such as contact details, timings, commencement and completion intimation etc.
- No approval/guideline is required for drone operations in green zone.
- The Drone Rules, 2021 are not applicable to an unmanned aircraft system belonging to, or used by, the naval, military or air forces of the Union of India. Such drone operations requests are advised to coordinate with concerned ATC if proposed area of drone operations falls in either Airport Red or Yellow Zone.
- For BVLOS drone operations, a specific permission from MoCA/DGCA is mandatory other than that of concerned ATC/concerned agency.

13.8 Submission of Application:

- Operators requiring approval for drone operations shall apply sufficiently in advance to ASM Dte, CHQ on email ID: drone.asmchq@AAI.AERO along with all relevant information about the operations and approval from MoCA/DGCA/MHA etc. as applicable.
- For drone operations in Green Zone, operators need not send request to ASM Dte, CHQ.

13.9 Processing by Receiving Office

ASM Dte, CHQ carries out tasks in the following order of priority to process drone operations requests:

- Prepare the airspace chart of the proposed activity using tools such as ArcGIS or TARGETS, CAD, Google Maps or basic drawing tools;

- Prepare the reply as per map and share the reply/guidelines to MoCA, DGCA, concerned ATC etc. along with the operator.
- If proposed area falls in close proximity to a busy airport, send the airspace chart along with request to the affected station(s) and obtain their comments;
- As per the comments of affected station, send the reply/guidelines to drone operator and share the reply to MoCA, DGCA, ATC etc along with operator.

13.10 Future Goals:

- Establish dedicated drone corridors for cargo deliveries.
- Integrate with international UTM systems to support cross-border drone operations.
- Expand functionalities to include automated compliance audits and data-sharing frameworks with other government agencies.

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Chapter 14

DOCUMENT & FILE MANAGEMENT IN ASM SECTION

The chapter identifies the document control and file management in ASM section which include the documents to/from internal and external agencies, document numbering and document control and file management.

14.1 Internal and External Documents

i. Internal and External document received from different departments within the organization or from other agencies have been received at o/o of Executive Director (ATM-ASM) and Head of Department of ASM Section, which are further marked to respective individuals as per duties and responsibilities for either to put-up on respective files or if no action is required then file the document as per the subject for information or future references.

ii. Internal and external documents which have been generated from ASM section for other departments within the organization or for other agencies and organization outside AAI have been initiated by individuals from the respective files and the documents are forwarded through proper channel (via GM(ASM) or ED (ATM-ASM)).

iii. Other office orders which are received in the section for information only are filed in the miscellaneous file.

14.2 Document Numbering and Document Control

Documents are numbered according to the files in which they have been initiated/originated so that the document may be controlled and easily traceable.

14.3 File Management: Numbering, Physical Files and Electronic Files

i. File numbering: the basic structure for file numbering is as follows;
AAI/ATM/ASM/XX-XX/XXXX

Explanation for the numbering is given in the table as below;

AAI	ATM	ASM	XX (head)	XX (sub-head)	XXXX
Organization Name	Directorate	Section	**01** – For ED (ATM-ASM) Files **02** – Based on the specific topic **03** – Project based files **04**- for temporary Airspace reservation files **05**- for Station Related matter	Followed by head based on the specific topic or Station name in the head.	Year for starting of file

Example for danger/restricted/prohibited/TSA/TRA file for year 2020 is numbered in 02 head and 11 sub-head so the number will be AAI/ATM/ASM/02-11/2020.

ii. **Physical files:** the files are numbered based on the scheme described in Para 1.19. i. the generation of a new file is done either at the start of new calendar year or as an when an new project has come for which a fie is need to be created separately. Sometimes part files or also generated for the same number if the main file becomes bulky or too many new projects have come under the same sub-head.

iii. **Electronic file:** the electronic file will be generated in the e-office software of AAI. The numbering and other features of the file will be same as for physical file. However, the electronic file will not require any almirahs or space to store the files and are easily traceable.

14.4 Document and File Retention

As per the AAI guideline the files and documents are kept secure for a period of 10 years after which they may be disposed of. However, some of the files and documents in ASM section are of most important and secretive in nature. Those file and documents are being kept in the safe custody of General Manager (ASM)/ Executive Director (ASM).

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Chapter 15

APPENDICIES

15.1 APPENDIX 7-1

CONTACT DETAILS OF AAI OFFICES

OFFICE	POSTAL ADDRESS	TELEPHONE / FAX	EMAIL
Corporate Headquarters	Executive Director (ASM), Airports Authority of India, Rajiv Gandhi Bhawan, Safdarjung, New Delhi-110003	011-24610528 (TELEFAX) 011-24629012 (TELEFAX)	edasm@aai.aero gmasm@aai.aero
Chennai	General Manager (ATM), Airports Authority of India, ATS Complex, Chennai Airport, Chennai – 600027	044-22561740 (TELEFAX)	vomm.gmatm@aai.aero vomm.ais@aai.aero
Delhi	General Manager (ATM), Airports Authority of India, ATS Complex, IGI Airport, New Delhi – 110037	01125654367 (TELEFAX)	gmatmpalam@aai.aero aisigiadelhi@aai.aero
Kolkata	General Manager (ATM), Airports Authority of India, ATS Complex, NSCBI Airport, Kolkata – 700052	033-25119966 (TELEFAX)	gmatmkol@aai.aero vecc.ais@aai.aero
Mumbai	General Manager (ATM), Airports Authority of India, ATS Complex, Near Sahar Cargo, Sutar Pakadi Road, Andheri East, Mumbai - 400099	022-26819444 022-26828010 (TELEFAX)	gmatmmum@aai.aero ais_mumbai@aai.aero

15.2 APPENDIX 9-1

List of Major Changes

a) new aerodromes for international instrument flight rules (IFR) operations;

b) new runways for IFR operations at international aerodromes;

c) design and structure of the ATS route network;

d) design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change);

e) circumstances listed in 9.2.1 if the entire State or any significant portion thereof is affected or if cross-border coordination is required.

List of Normal Changes

a) limits (horizontal and vertical), regulations and procedures applicable to:

1) flight information regions;

2) control areas;

3) control zones;

4) advisory areas;

5) air traffic services (ATS) routes;

6) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and air defence identification zones (ADIZ);

7) permanent areas or routes or portions thereof where the possibility of interception exists;

b) positions, frequencies, call signs, identifiers, known irregularities and maintenance periods of radio navigation aids, and communication and surveillance facilities;

c) holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures;

d) transition levels, transition altitudes and minimum sector altitudes;

e) meteorological facilities (including broadcasts) and procedures;

f) runways and stopways;

g) taxiways and aprons;

h) aerodrome ground operating procedures (including low visibility procedures);

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