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The Fifth Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/5)

Bangkok, Thailand, 30 March – 3 April 2015

Agenda Item 6: Any Other Business

MANUAL ON FLEXIBLE USE OF AIRSPACE – INDIA, VERSION 1.0

(Presented by AIRPORTS AUTHORITY OF INDIA)

SUMMARY

This paper presents the successful adoption of the Manual on Flexible Use of Airspace, India, Version 1.0 by the National High Level Airspace Policy Body, India. The preparation and the adoption of the Manual is a milestone event and provides the evidence to India's commitment to the implementation of FUA and the significant strides made in Civil Military Cooperation in India.

1. INTRODUCTION

1.1 India has led by example in the field of Civil Military Cooperation in seven long decades. India has several joint user aerodromes, where at Airports Authority of India has established civil enclaves to facilitate air travelers. The Indian Military, especially the Indian Air force and the Indian Navy also provide Air Traffic Services in some notified enroute and terminal airspace(s). Even prior to the collation and documentation on the concept of Flexible Use of Airspace and Civil Military Cooperation (ICAO Cir 330) and terms thereof, particularly, CDRs or Conditional Routes, India has a robust ATS Route Structure that transits through the Military Local Flying Areas or Restricted Areas, subject to conditions. However, in order to bench mark Global Best Practices and conform to the structured implementation of FUA, India established its National High Level Airspace Policy Body (NHLAPB) in August 2013. The Secretary CA, Government of India is the Chairperson of NHLAPB and the Member (ANS) is the Convener, with representation from the highest level from the Ministry of Defence, Indian Space Research Organization, Indian Air Force, Indian Navy and the Directorate General of Civil Aviation.

1.2 A National Airspace Management Advisory Committee (NAMAC) was constituted in January, 2014 and a subcommittee was constituted under NAMAC and tasked with the preparation of the FUA Manual. The FUA Secretariat constituted by the convener NHLAPB under the ASM Directorate was tasked with the overall management of the project. The NAMAC is suitably represented by senior level Officers from the Indian Regulator, Indian Military, ISRO, Airlines and the ANSP.

2. DISCUSSION

2.1 The FUA Manual Subcommittee comprised of representatives from the ANSP's ASM Directorate, The Indian Air Force – Air Traffic Services and Air Defence, The Indian Navy and the Indian Regulatory body, the DGCA.

2.2 A Draft Manual on FUA in India, was prepared by the FUA Secretariat, taking into considerations the body of knowledge contained in various ICAO Documents and Manuals, especially ICAO Cir 330, CAR SAM Guidance Material, Euro Control Documents and FAA Documents. The main challenges were to ensure that the document should neither be too narrow nor too broad, aligned with processes and procedures internationally accepted, whilst providing a perfect fit into the Indian Context and within the Indian Safety and Security paradigm. The Manual was drafted to contain a historical perspective, which builds trust, a current perspective so that there may be a pragmatic management of Basic FUA and a futuristic perspective to address the evolution of the system, accounting for Civil Military System Interoperability.

2.3 It was recognized that establishment and optimal use of CDRs and the information management to facilitate the use of CDRs is a key result area in FUA implementation. The other Key thrust area identified were the procedures to follow in all three levels of Air Space Management. The Manual was drafted to adequately contain these areas.

2.4 The Draft Manual was circulated among all stakeholders, including the regulator, the Indian military and national airlines and their participation was amazing and encouraging on the one hand, however, threw up several questions to be answered, contents to be realigned to suit national requirements while striking a good balance between Civil and Military requirements as well provide impetus to both National Economy and National Security.

2.5 After several deliberations in the FUA Manual Subcommittee and the FUA Secretariat the revised Draft Manual was referred to the National Airspace Management Advisory Committee. The FUA Secretariat compiled a "Comment(s) Matrix" which contained the suggested changes from various agencies which contained contrary view points which required academic discussions so that the contents of the Manual could be realigned subject to a mutual and Collaborative agreement. The NAMAC met over two days and addressed more than fifty comments for inclusion or exclusion, and at the end of elaborate discussions, the NAMAC was able to provide solutions to all but two issues, which the committee deemed was fit to be decided by the apex body, viz., the NHLAPB.

2.6 On the 20th of August, 2014 the NHLAPB convened its fourth meeting, in which the two issues were resolved and the Manual on FUA version 1.0 was adopted.

2.7 The completion of this activity marks a milestone in the implementation of FUA in India and the path treaded and processes followed epitomize the Civil Military Cooperation in India. Reinforcement of "Mutual Trust" between Civil and Military Authorities was abundantly visible at all levels, top-down. The activity was enabled largely due to cross functional teams at apex and grass root levels and the synergy that was infused into the process.

2.8 The Manual on FUA, India is attached with this working paper (**Attachment A**) for the perusal of all participants. The Manual is also available on:
www.aai.aero/public_notices/FUA_Manual_V1_230315.pdf and www.aaians.org.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the significant strides made by India in the direction of implementation of FUA which is a Global Plan Initiative (GPI – 1) in the ICAO GANP.
- b) Discuss about the process flow and lessons learnt in the preparation of the Manual.
- c) Discuss any other matter relevant to the Manual on FUA or the Implementation of FUA in India.

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MANUAL ON FLEXIBLE USE OF AIRSPACE INDIA





FOREWORD

Airspace is a finite sovereign resource which needs to be optimally used to serve the best interest of all Airspace Users. This can be effectively achieved through Flexible Use of Airspace (FUA) which is an Airspace Management concept based on the principle that Airspace should be treated as a continuum in which all user requirements are accommodated to the greatest possible extent.

2. Implementation of FUA will result in dynamic flight planning, reduced fuel consumption and operating cost, along with consequent reduction in carbon footprint. Considering the benefits of implementation of FUA, Government of India set up an apex body called National High Level Airspace Policy Body for Airspace use (NHLAPB) for identifying the requirements of various users and ensuring that the airspace is shared among all the Airspace users in a manner that brings in operational efficiency while serving public interest.

3. As envisaged by NHLAPB, preparation of FUA Manual is a vital and an important step in ensuring timely and smooth implementation of FUA, considering the magnitude of the task and the number of stakeholders involved in the process. This FUA Manual for India has been developed for use in the Indian Flight Information Regions (FIRs) taking into account the operational improvements and airspace optimization initiatives in the short and medium term and in accordance with Air Traffic Services (ATS) route network optimization in the region. The Manual takes into consideration the national context of Civil Military cooperation, security requirements, global best practices on FUA and the principles of FUA enshrined in various ICAO Documents.

4. The FUA Manual will uniformly apply to all Civil and Military use of Flexible Airspace structures and conditional route networks. It is expected that this comprehensive FUA Manual, through a systematic guidance for all stakeholders, will go a long way in ensuring timely implementation of FUA in India and guiding all stakeholders in realizing the intended benefits. It is a living document that could be modified as we learn from our experience.

5. I would like to acknowledge the dedication and diligence of all those who developed the Manual, and the spirit of cooperation and understanding exhibited by all concerned in its preparation which has resulted in this path breaking success.

Ashok Lavasa
Secretary, Government of India
Ministry of Civil Aviation and
Chairman, NHLAPB

28th August, 2014

PREFACE

The Flexible Use of Airspace (FUA) Manual has been prepared by the FUA Manual sub-committee (Appendix C) constituted by the National High Level Airspace Policy Body (NHLAPB). (Appendix A) The FUA Manual has been reviewed by the National Airspace Management Advisory Committee (NAMAC) (Appendix B) before adoption by the NHLAPB. It considers the different aspects that should be taken into account for the coordination and cooperation between civil and military air traffic, recognizing that the Indian airspace is a common resource of civil and military aviation that allows to achieve safety, consistency and efficiency of civil aviation and to meet military air traffic requirements through the implementation of dynamic airspace.

The FUA Secretariat shall publish revised versions of the FUA Manual, under the guidance of NAMAC in order to keep a duly updated document.

You can request copies of the FUA Manual at:

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E-mail	:	fuasect@aai.aero
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This edition (*Version 1.0*) is a new document, approved by NHLAPB. Subsequent amendments and corrigenda shall appear in the Amendment and Corrigenda Record Table.

INTRODUCTION

I Preamble

a) Objective

- i) The Flexible Use of Airspace (FUA) Manual for India has been prepared by a duly constituted sub-committee with participation from the ANSP, IAF, Indian Navy and DGCA. It is aimed at providing comprehensive guidelines for matters pertaining to implementation of FUA in India in harmonic fashion.
- ii) The FUA Manual has taken into consideration the recommendations of the International Civil Aviation Organization in this regard, ICAO Cir 330, the Global Air Navigation Plan (Doc 9750, especially GPI – 1 which promotes the optimal, balanced and equitable use of airspace by civil and military users. FUA shall be facilitated through both strategic coordination and dynamic interaction, thus allowing the implementation of optimal flight paths, reducing operating costs of airspace users while protecting the environment, whilst paying due heed to security considerations and providing for military operational requirements.

b) Scope

- i) The FUA Manual – India, has been developed to be used in the Indian FIRs, taking into account the operational improvements and airspace optimization initiatives in the short and medium term, and particularly in accordance with ATS route network optimization in the region. This Manual will apply to all civil and military use of flexible airspace structures and Conditional route networks.

II Global background

- a) Annex 2 - Rules of the Air, contains rules concerning flight and aircraft manoeuvring within the scope of Article 12 of the Convention, and provisions for coordination with military authorities for reasons of integrity and territorial sovereignty of a State, whereas Annex 11 - Air Traffic Services, contains provisions concerning the need to coordinate with military authorities or units, mainly to the extent that State aircraft activities may affect civilian operations and vice versa.
- b) In addition, the Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM, Doc. 4444) contain procedures applicable to other in-flight contingencies, such as lost or unidentified aircraft, that require coordination with military authorities, and describe procedures for the implementation of special military operations. ICAO CIR-330 states that “each Contracting State shall require Air Traffic Service Providers operating in that State to establish and implement appropriate security provisions to meet the requirement of the national security requirements. A review of ICAO definitions in the PANS-ATM (Doc-4444) and a review of expectations for security in the ATM Operational

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Concept provide the foundation for understanding the meaning of ATM security”.

- c) Information on coordination requirements between military units and air traffic services can also be found in the Manual concerning safety measures relating to military activities potentially hazardous to civil aircraft operations (Doc 9554) and in the Air traffic services planning manual (Doc 9426). Safety of Civil Aviation is a national responsibility. Arrangements shall be made to permit information relevant to the safe and expeditious conduct of flights of civil aircraft to be promptly exchanged between air traffic service units and appropriate military units. In order to eliminate or reduce the need for interceptions, air traffic services authorities shall designate any areas or routes where the requirements of Annex 2 concerning flight plans, two-way communications and position reporting apply to all flights to ensure that all pertinent data is available in appropriate air traffic services units specifically for the purpose of facilitating identification of civil aircraft. This is in accordance with ICAO Doc 9554 (Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations).
- d) Likewise, the Global Air Navigation Plan (Doc 9750) proposes 23 initiatives (GPI) oriented to the implementation of the ATM operational concept. GPI 1 refers precisely to the “Flexible use of airspace”.
- e) In the new Aviation System Block Upgrade (ASBU) methodology fostered by ICAO, the Global Air Navigation Plan has been updated and the current global plan initiatives (GPI) have been inserted in the different modules of each block proposed in this methodology. In the 2013-2028 GANP FUA has been included under Performance Improvement Area 3: *Optimum Capacity and Flexible Flights*, Block Zero (B0) and thread *FRT0 Improved Operations through Enhanced En-route Trajectories* which aims at the use of airspace which would otherwise be segregated (i.e. Special Use Airspace) along with flexible routing adjusted for specific traffic patterns. This will allow greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight lengths and fuel burn.
- f) The ICAO Global Air Traffic Management Operational Concept (Doc 9854) describes the services required to operate the global air traffic system in the near future and beyond, and lists the requirements to provide more flexibility for users, maximize efficiency, and increase system capacity, while improving safety. Integral parts of these elements are interoperability and military system operations.
- g) Appendix O of Assembly Resolution A 37-15: lists the consolidated statement of continuing ICAO policies and associated practices related specifically to air navigation. The resolution states, among other things, that the joint use of airspace and some facilities by civil and military aviation will be provided in such a way so as to attain safety, regularity and efficiency of civil aviation and to meet the requirements of military air traffic, and promotes the dissemination of best practices and the adoption of follow-up action building upon the success of the Global air traffic management forum on civil-military cooperation (2009) with the support of the civil and military stakeholders.
- h) Upon summarizing the results of the Forum, the following was stated:
 - i) Peace and stability are essential conditions for social and economic development;
 - ii) Trust and mutual understanding are key requirements for collaboration between civil and

- military authorities;
- iii) The safety, security and efficiency are common civil and military values;
 - iv) For civil aviation, efficiency means greater capacity, less delays, and a reduction in costs, fuel consumption and emissions;
 - v) For military aviation, efficiency means mission efficacy (in times of peace and crisis) and realistic training, together with greater capacity, less delays and a reduction in costs, fuel consumption and emissions;
 - vi) Cooperation and coordination require communication;
 - vii) Civil-military cooperation is essential at national level;
 - viii) Airspace is a continuum and a limited common resource for all civil and military users;
 - ix) Better knowledge and application of flexible use of airspace principles are a good basis for civil-military coordination of ATM;
 - xi) Civil-military interaction is essential to optimize the safe and efficient use of airspace for all users.
 - xii) The integration of UAS is a challenge as well as an opportunity for the growth of the aviation system;
 - xiii) Civil-military cooperation and coordination are essential, both in times of peace and crisis;
 - xiv) A global civil-military approach to security and incident management is needed, especially airspace violations such as AD violations by civil flights and uncoordinated civil airspace infringement by military flights operating in SUAs, taking into account positive experiences that can help improve the system;
 - xv) Greater efforts are needed, not only within the context of flexible use of airspace, but also in terms of standards and compatible procedures and global interoperability of ATM systems; and
 - xvi) Good collaboration requires communication, education, good relationships and trust.
- i) Finally, in response to the agreements reached at the 2009 Global air traffic management forum on civil-military cooperation, ICAO and civil and military experts developed Circular 330-AN/189, which contains examples of good practices in civil-military cooperation and recognizes that growing civil air traffic and military air missions would benefit significantly from a more flexible use of airspace, and recommends and provides guidance on best practices in civil-military cooperation that could be adopted by States.

III National background

- i) In India, Military Aviation lays a lot of emphasis on a secure national airspace. The Civil Military Cooperation is based on effective real time communication.
- ii) One of the gaps identified in the current system is a lack of a policy and procedures for the

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flexible use of airspace, which hampers airspace design and management by not allowing the application of an optimal airspace structure and the use of optimum flight paths. The limitations that have been identified include the existence of permanently reserved airspace, primarily for military purposes, which although justified from a national security point of view, poses constraints in airspace planning, which prevents direct flights between airports of origin - destination and/or city pairs. The endeavour, made under FUA implementation, would be to permit civil flights through such areas, when not being utilized by the military.

- iii) The Ajay Prasad Committee report states “The airspace of a nation is a finite asset, which is used for the civil and military flights together or individually. Today the national economy demands flexibility in the airspace utilization for the operation of the civil flights depending on their requirement, which is ever increasing with the growth registered in the civil aviation sector. At the same time there is also need to fulfill the demand of national security, where the use of airspace by the military needs to be fulfilled in the fast changing environment of air warfare. Therefore, sharing of airspace on a need basis, by civil and military users is an urgent national requirement”. The Ajay Prasad Committee as part of its recommendation has stated that “the restricted airspace would continue with the Defence. However, the flexible use of airspace concept would imply that the size of airspace would vary on as required basis” and “Standard Operating Procedures (SOPs) for managing these changes would be worked out jointly”.
- iv) Civil-military cooperation and coordination in India has traditionally been based on a dialogue between civilian and military authorities with the view to making better use of airspace for both and improving cooperation for the exchange of flight plan and Surveillance data, of their respective air traffic control facilities, especially at the level of Metro ATCCs with the respective Flight Information Regions under their control and jurisdiction.
- v) ATM planning has been based on seven global aspects, for which the respective performance framework forms (PFF) have been developed. One of these aspects is the Flexible Use of Airspace. This activity identified the following benefits for the ATM community, which should be attained through operational and technical activities aligned with this performance objective:
 - a) Improved civil/military coordination and cooperation strengthens airspace safety;
 - b) It allows for a more efficient ATS route structure, reducing miles flown and fuel consumption and, consequently, CO₂ emissions into the atmosphere;
 - c) It increases airspace capacity; and
 - d) Increased availability of reserved airspace at times when there is no activity by the users of such airspace.
- vi) Availability of additional airspaces for military usage, on a day to day basis, where the requirements cannot be met in the existing reserved airspaces should also be considered.
- vii) The civil military cooperation activities are already near mature, and there are several FUA activities which have been undertaken by the ANSP in close coordination with the Indian Military authorities, however, it is highly desirable to organize the activities in a structured manner under the guidelines contained in this manual.

IV Rationale

- i) As world economies grow, demand for air travel multiplies; thus, airspace and airport capacity must increase to meet this demand. Traditional methods of increasing capacity have reached the end of their possibilities, so new, improved methods and concepts will be needed to maximize existing capacity and increase it where possible. At the same time military needs are also growing and cannot be effectively met through the existing small pockets of reserved airspaces. Therefore, apart from existing reserved airspaces additional airspaces would be provided as TSAs for military users for practicing Large Force Engagement Tactics/Exercises (e.g. weapon firing) and these areas would be published accordingly in the relevant section of AIP of India for ease of activation. While it is unambiguously accepted that national security will take precedence whenever it is incontestably required in the use of Indian airspace, it is imperative to understand the critically important role of the airlines and civil aviation users in the economy of India, and be genuinely cognizant of their need to use this common national resource whenever not required for national security purposes. Therefore every effort should be made to be flexible and pro-active in sharing Indian airspace.
- ii) In the context of the ATM Operational Concept, airspace management (ASM) is the process whereby options for the use of airspace are selected and applied to meet user needs. The objective of ASM is to achieve a more efficient use of airspace, taking into account actual needs of all users and avoid permanent segregation of airspace.
- iii) There are several and sometimes conflicting interests regarding the use of airspace, so ASM is a complex exercise. Additionally, there are also activities that require the reservation of a certain volume of airspace for its exclusive or special use (SUA) for defined periods of time due to the characteristics of its flight profile, the importance of its operations or the risks involved by the operations to be performed in said space and the need to separate them effectively and safely from other types of aeronautical activities.
- iv) Airspace management should be based on the following principles and strategies:
 - a) all available airspace should be managed in a flexible manner, whenever feasible;
 - b) airspace management processes should incorporate dynamic flight paths and provide optimal operational solutions;
 - c) when conditions require segregation, based on different types of operations and/or aircraft, the size, shape and time zones of said airspace should be determined to minimize impact on operations, with due consideration to security and operational implication.
 - d) the use of airspace should be coordinated and monitored, by respective agencies, to meet the different requirements of all users and minimize operational limitations;
 - e) Airspace reservation should be planned in advance, to the extent possible, making dynamic changes where possible. The system must also be able to meet unexpected last minute requirements; and
 - f) The complexity of operations, and the non-availability of appropriate CNS equipment, may limit the degree of flexibility.

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- g) The optimal, balanced, and equitable use of airspace by civil and military users shall be facilitated through both strategic coordination and dynamic interaction, allowing for the establishment of optimal flight paths while reducing operating costs for airspace users.
- h) The flexible use of airspace must also include airspace over high seas within the jurisdiction of the FIR, considered without detriment to the rights and obligations of Member States under the Convention on International Civil Aviation (Chicago Convention) of 7 December 1944 and its Annexes.

V Basic guiding principles of civil-military coordination and cooperation

The concept of flexible use of space should basically consider the following guiding principles:

- a) coordination and cooperation between civil and military authorities shall be organized at strategic, pre-tactical and tactical management level by establishing letters of operational agreement and/or special procedures for a given activity, aimed at increasing airspace safety and capacity and improving the efficiency and flexibility of air operations;
- b) consistency among airspace management, air traffic management, air traffic flow and management, and air traffic service functions must be established and maintained to ensure efficient planning, distribution and use by all users at the three airspace management levels (strategic, tactical and pre-tactical);
- c) airspace reservation for exclusive or specific use of certain user categories shall be temporarily applied only during limited periods of time depending on actual use and it shall be disregarded as the activity that motivated it ceases to be, and it shall follow the procedures set forth in ICAO documents and Annexes as well as those prescribed in the Letters of Operational Agreement and/or special procedures. Provision for activation of such areas at short notice, may be included in respective LoAs and SOPs.
- d) airspace reservation for exclusive military use, should be considered under permanent restricted area category, if deemed fit by the NHLAPB.
- e) air traffic service units and users will make the best possible use of available airspace,
- f) coordination and collaborative decision-making by ATS, ATFM units, and effective application of the flexible use of airspace concept must be consistent and permanent during the strategic, pre-tactical and tactical phases of airspace management;
- g) Adequate resources should be allocated for an effective implementation of the flexible use of airspace concept, taking into account both civil and military needs; and
- h) Security of national airspace shall be paramount and will not be compromised at any stage.

VI FUA Manual India – Structure and Content

- a) The FUA Manual – India takes into consideration the National security situation in the Indian sub-continent, the National background on Civil Military Cooperation and the current and future requirements as well as the Global benchmarks and best practices and the principles of FUA enshrined in various ICAO Annexes and Documents.

b The Manual is organized as follows:

- Chapter - 1** contains definitions
- Chapter – 2** contains details of implementation of FUA in India and the ASM Level 1 bodies such as the NHLAPB, the NAMAC, and their sub-committees, the three levels of Airspace Management (ASM Level 1, 2 & 3, Conditional Routes (CDRs), Temporary Allocation of Airspace (TAA) Restricted and Reserved Airspace, PCA/RCA Airspace(s), Particular application of FUA concept, Priority Rules, Transition to FUA Concept.
- Chapter - 3** contains procedures for Airspace Change Proposals, Joint Design of Airspace at ASM Level 1, Allocation of airspace at ASM Level 1, ATS-ASM-CATFM relationship
- Chapter - 4** contains procedures pertaining to ASM level 2 day-to-day allocation of airspace, details of National and Regional Airspace Management Cells (AMCs), Allocation and Notification process, based on Airspace requests, CDR requests
- Chapter - 5** contains procedures involved in publication, promulgation and dissemination of ASM information including AIP, AUP, UUP, eAMI, FUA Temporary Instruction (FTI).
- Chapter - 6** contains details of Air Defence Requirements, Cooperation between Civil and Military ATS Units in case of AD violations, interception of civil aircraft etc.,
- Chapter - 7** contains processes and procedures at ASM Level 3 (Tactical Management),.
- Chapter - 8** contains details of Civil Military Cooperation and Interoperability of their systems, Dynamic Airspace Management, Delineation of airspace structures under DAM, and Information process under DAM.

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Chapter - 1

DEFINITIONS

DEFINITIONS

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

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 AT capacity is utilised to the maximum extent possible, and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.

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

Air Traffic Service Unit. A generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office.

Air Traffic Management (ATM). The dynamic, integrated management of air traffic and airspace (including air traffic services, airspace management and air traffic flow management) under safe, cost effective, and efficient conditions by providing facilities and seamless services in collaboration with all stakeholders and incorporating ground and on-board features.

Airspace Data Repository. It provides an unified source of updated information about the past, present and future status of airspace, routes, sector capacities, airport capacities, runways in use, pre-determined ATFM scenarios and their modus operandi to resolve problematic traffic areas, etc. for which a recognized authority has taken a decision in terms of implementation, allocation, activation, etc.

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

ATM security. Contribution of the ATM system to the protection of Civil Aviation, Safety, and National Defence, Law Enforcement and Protection of the ATM system against security threats and vulnerabilities.

Collaborative Decision-Making (CDM). A process whereby all ATM decisions, except for ATC tactical decisions that are based on the exchange of all relevant information for transit operations between civilian and military parties.

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

Cross Border Area (CBA). Reserved or segregated airspace established for specific operational requirements on international borders.

Definitions

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

Flight Information Region (FIR). An airspace of defined dimensions within which flight information service and alerting service are provided.

Flexible Use of Airspace (FUA). Concept of airspace management based on the principle that airspace 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]

FUA Temporary Instruction (FTI). FTI is a temporary instruction published by the CCC and agreed/applied by appropriate AMCs and the CCC/CADF for all or for a part, of the FUA area.

Flow Management Position (FMP). FMP is a working position established within an ACC to ensure the necessary interface with the Central Command Centre (CCC) on matters concerning the provision of the ATFM Service and the interface with national AMCs on matters concerning the ASM Service.

Global Navigation Satellite System (GNSS). A worldwide position and time determination system that includes one or more satellite constellations, aircraft receivers and system integrity monitoring, augmented as necessary to support the required navigation performance for the intended operation.

Global Plan Initiatives (GPI). They are designed to support the planning and implementation of performance objectives in ICAO Regions.

General Air Traffic (GAT). GAT encompasses all flights conducted in accordance with the rules and procedures of ICAO and/or the national civil aviation regulations and legislation.

[Note: GAT can include military flights for which ICAO rules and procedures satisfy entirely their operational requirements.]

Operational Air Traffic (OAT). OAT encompasses all flights which do not comply with the provisions stated for GAT and for which rules and procedures have been specified by appropriate national authorities. OAT can include civil flights such as test-flights, which require some deviation from ICAO rules to satisfy their operational requirements.

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.

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.

Regional Supplementary Procedures (SUPPS). Operational procedures that supplement the Annexes and PANS developed largely through ICAO's regional air navigation meetings to meet the needs of a specific ICAO region. It addresses issues related to safety and consistency of international air navigation. They are published in a single document for all regions. ICAO's Regional Supplementary Procedures (SUPPS) are part of the air navigation plan prepared by the Regional Air Navigation Conferences (ANC) to meet those needs in certain areas not covered by global provisions.

They complement the requirement exhibition for facilities and services contained in the air navigation plan publications.

Remotely Piloted Aircraft. Aircraft whose pilot is not on board

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.

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

Standards and Recommended Practices (SARPS). The Council adopts standards and recommended practices pursuant to Articles 54, 37 and 90 of the Convention on International Civil Aviation and are defined as follows:

Standard. A standard is a specification of physical characteristics, configuration, material, performance, personnel or procedure, whose uniform application is recognized as necessary for the safety or regularity of international air navigation which contracting States shall comply pursuant to the Convention; in case compliance is not possible, notification to the Council is mandatory, as set forth in Article 38 of the Convention.

Recommended practice. A recommended practice is a specification of physical characteristics, configuration, material, performance, personnel or procedure, whose uniform application is deemed convenient for safety, regularity or efficiency of international air navigation which contracting States shall comply pursuant to the Convention.

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.

Chapter - 2

GENERAL

2.1. Implementation of FUA in India

- 2.1.1 In the report of court of inquiry on collision between Saudi Arabian B747 and Kazakhstan IL 76 on 12th November, 1996 near Delhi – India, Justice R.C. Lahoti, Hon’ble Judge High Court Delhi has emphasized the importance of civil military coordination. Hon’ble Justice Lahoti has recommended an integrated approach and better cooperation between civil and military authorities in utilizing a national resource viz., air space.
- 2.1.2 The Ajay Prasad Committee, constituted to formulate next generation futuristic Air Navigation Services Master Plan, in its report on “Flexible Use of Airspace” notes that “the airspace of a nation is a finite asset, which is used for the civil and military flights together or individually. Today the national economy demands flexibility in the air-space utilization for the operation of the civil flights depending on their requirement, which is ever increasing with the growth registered in the civil aviation sector. At the same time there is also need to fulfill the demand of national security, where the use of airspace by the military needs to be fulfilled in the fast changing environment.
- 2.1.3 In order to study the global best practices on the Flexible Use of Airspace through efficient Civil- Military cooperation, Government of India tasked a high level delegation, comprising Officers from the Ministry of Defence, Ministry of Civil Aviation, Indian Air force, Directorate General of Civil Aviation and Airports Authority of India to study and report its observations on the International best practices of FUA and provide recommendations. The Government of India delegation visited the United States of America, the United Kingdom and Belgium (Euro control) to study the global best practices of FUA implementation.
- 2.1.4 The Government of India delegation visited the United States of America, the United Kingdom and Belgium and submitted a report with suggestions and recommendations. The committee recommended setting up of a High Level Airspace Policy Body (HLAPB) a three tier Air Space Management Model. The delegation has also mentioned that the HLAPB should decide on the harmonization and standardization of civil & military ATC Systems, sharing of data and provision of common inputs as well as standardized CNS/ATM infrastructure at Airports.
- 2.1.5 In the meeting of the Committee of Secretaries held on 12th October, 2012, the adoption of the FUA concept by India and the establishment of a High Level Airspace Policy Body were proposed. The Cabinet Committee on security approved the proposal on the 08th March 2013.

2.2 The NHLAPB, Establishment, Constitution and TORs

- 2.2.1 The Government of India vide order No AV.19032/7/2003-AAI dated the 24th October, 2013 established the National High Level Airspace Policy Body. The Composition of the NHLAPB is as follows:

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S. No.	Designation/Organization	Status In NHLAPB
1	Secretary, Civil Aviation	Chairman
2	Joint Secretary (G/Air), Ministry of Defence	Member
3	Director General Air (Operations), IAF	Member
4	Assistant Chief Naval Staff (Air), Indian Navy	Member
5	Programme Director, SATNAV Programme, ISRO	Member
6	Member (Air Navigation Services), AAI	Member/ Convener
7	Joint Director General (In charge of Air Space), DGCA	Member

2.2.2 **Major functions and responsibilities of NHLAPB**

2.2.2.1 The NHLAPB is vested with the responsibility of implementation of Flexible Use of Airspace (FUA) in India.

2.2.2.2 The NHLAPB is responsible for the formulation of **National Airspace Use Policy** and carries out necessary strategic planning work, taking into account national and international airspace requirement.

2.2.2.3 The body also shall develop policy guidelines and procedures for airspace allocation for ASM1, ASM2, ASM 3 levels and to implement Conditional Routes (CDRs) as per the three categories.

2.2.3 **The TORs of the NHLAPB are:**

- i) continuous assessment/re-assessment of National airspace usage requirements of various stake holders and Route structures
- ii) establishment of Flexible Airspace Use (FUA) structures and the introduction of procedures for the allocation of these airspace structures.
- iii) to improve safe and effective regulation and Management of airspace and its supporting infrastructure.
- iv) to classify the airspace allocation in two categories, namely Permanently Restricted Areas and Temporary Segregated Areas (TSAs) or Temporary Reserved Areas (TRAs).
- v) to improve coordination for implementation and harmonization of Civil and Military ATC Systems with common features and applications.
- vi) standardize CNS/ATM infrastructure at airports.
- vii) to setup appropriate committees/sub-committees/advisory bodies at appropriate levels for implementation or taking suitable decisions for implementation of FUA in India.
- viii) any other issue vital to Flexible Use of Airspace in India

2.3 **The NAMAC, Establishment and TORs**

2.3.1 The National Airspace Management Advisory Committee (NAMAC) is a national airspace management body that is constituted to provide assistance and advice to the NHLAPB in formulating the national ASM policy and carry out the necessary strate-

gic planning work, taking into account national and international airspace users, both civil and military, as well as the ATS providers' requirements.

2.3.2 The NAMAC has nominated members from the IAF (AVM/Air Cmde), Indian Navy (Captain), two senior Commanders from the Airline Industry, DGCA (Director – ANS), ISRO (Senior Scientist) and the ANSP (ED – ASM)

2.3.3 The NAMAC shall be permanent in nature, however, the nominations of the non-ex-officio members may be reviewed by the Chairman/Convener NHLAPB, periodically.

2.3.4 The NAMAC shall be convened by the Executive Director (ASM), AAI.

2.3.5 The NAMAC may conduct periodical meetings, preferably once every quarter, or when deemed necessary..

2.3.6 **The Terms of Reference (TOR) for NAMAC:**

- i. to assist the NHLAPB in maintaining and actively seeking to improve the safe and effective management of the airspace and its supporting infrastructure;
- ii. to assist the NHLAPB in exercising fair and effective regulation of the airspace organization and management;
- iii. to build confidence and respect between airspace regulators and all other stakeholders through consultation and co-operation;
- iv. to assist the NHLAPB in accommodating shared use of national airspace by all user groups;
- v. to review the airspace and consider change requests initiated by either the Civil or Military Airspace Air Navigation Service provider and subsequently forward its observations and recommendations on the Airspace change proposal(s) to the NHLAPB.
- vi. to assist NHLAPB in harmonizing airspace management procedures with neighboring States;
- vii. to monitor the functioning of the sub—committee(s) and Airspace Management Cells (AMCs) and assigning tasks to the sub-committee(s) and Airspace Management Cells (AMCs) from time to time to realize the objectives of the Flexible Use of Airspace (FUA).
- viii. Prepare and submit a detailed Airspace Review, to the NHLAPB, based on the Annual Report with information compiled and collated from sources including airspace users, prepared by its subcommittee(s).
- ix. to constitute sub-committees, as appropriate, for specific tasks, for efficient discharge of its duties and responsibilities arising out of other TOR .
- x. Anything incidental to the functions of the NHLAPB.

2.4 The three ASM levels

2.4.1 The FUA Concept is based on three Levels of ASM which have been identified as:

- a) Strategic ASM - ASM Level 1,
- b) Pre-Tactical ASM - ASM Level 2, and
- c) Tactical ASM - ASM Level 3.

2.4.2 The three ASM Levels correspond with civil/military ATM coordination tasks. Each

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Level is related directly to, and impacts on, the others. The following paragraphs describe the FUA concept of operation at the three ASM Levels.

2.4.3 ASM Level 1 - National and International Airspace Policy

2.4.3.1 Strategic ASM at ASM Level 1 consists of a joint civil and military process within a national HLAPB, which formulates the national ASM policy and carries out the necessary strategic planning work, taking into account national and international airspace users' requirements, within the framework of national security requirements.

2.4.3.2 In order to maintain a flexible airspace organisation, there ought to be a continual assessment of the Indian national airspace and route structures. At ASM Level 1, the working structures for ASM Levels 2 and 3, should be determined and authority required to carry out their tasks, should be given to them. The procedures to be followed at these tactical and pre-tactical levels and the priority rules and negotiation procedures for airspace allocation at ASM Levels 2 and 3 should be determined by the NHLAPB.

2.4.4 ASM Level 2 - Day-to-Day Allocation of Airspace

2.4.4.1 Pre-Tactical - ASM Level 2 consists of the day-to-day management and temporary allocation of airspace through national or Regional AMCs and in coordination with the CATFM CCC.

2.4.4.2 AMCs are joint civil/military ASM focal-points which have the authority to conduct ASM within the framework of the States airspace structures, priority rules and negotiation procedures as laid down by the national HLAPB. AMCs collect and analyze all airspace requests. After coordination AMCs promulgate the airspace allocation as an Airspace Use Plan (AUP) and changes thereto in Updated Airspace Use Plan (UUP).

2.4.4.3 Consolidated AUP/UUP are daily published on the ANSP's dedicated portal and used via B2B service to provide information to Aircraft Operators (AOs) for flight planning purposes.

2.4.4.4 ASM Level 3 - Real Time Use of Airspace

2.4.4.4.1 Tactical - ASM Level 3 consists of the real time activation, deactivation or real time reallocation of the airspace allocated at ASM Level 2 and the resolution of specific airspace problems and/or traffic situations between civil and military ATS units and/or controlling military units and/or controllers, as appropriate.

2.4.4.4.2 Real time access to all necessary flight data, including controllers' intentions, with or without system support, permits the optimized use of airspace and reduces the need to segregate airspace.

2.4.4.4.3 General Air Traffic (GAT) and Operational Air Traffic (OAT) have different demands for the use of airspace (e.g. separation criteria etc.). The rules governing the management of airspace utilization are different for GAT and OAT. In general the GAT is subject to Air Traffic Flow Management (ATFM), whereas the airspace movements of OAT (Military traffic) are not subject to any ATFM measures. (ICAO Circular 330).

2.4.5 **Flexible airspace structures and procedures**

2.4.5.1 The FUA concept uses airspace structures and procedures that are particularly suited for temporary allocation and/or utilization, such as Conditional Routes (CDRs), Temporary Reserved Areas (TRAs), Temporary Segregated areas (TSAs), Reduced Coordination Airspace (RCA) and Prior Coordination Airspace (PCA). The use of these airspace structures is enabled through specific processes and procedures described hereafter.

2.4.5.2 Conditional Routes

2.4.5.2.1 A **Conditional Route (CDR)** is an ATS route or a portion thereof which can be planned and/or used under certain specified conditions only. CDRs permit the definition of more direct and alternative routes by complementing and linking to the existing ATS route network.

***Note:** An established CDR may be closed due to national security reasons or matters involving military contingency. The closure may be temporary or permanent and will be periodically reviewed by the appropriate organisation of ASM Level-1, such as NAMAC/NHLAPB*

2.4.5.2.2 CDRs can be established at ASM Level 1: through areas of potential temporary reservations (e.g. TRA or TSA), with opening/closure conditions resulting from associated military activities; and/or to address specific ATC conditions (e.g. traffic restrictions or ATC sectorisation compatibility) with opening/closure conditions resulting from purely civil needs.

2.4.5.2.3 The properties of CDRs, including their categories, alignment and route designator, are published in national Aeronautical Information Publications (AIPs).

2.4.5.2.4 CDRs are divided into different categories according to their estimated availability and flight planning possibilities. A CDR can be established at ASM Level 1 in one or more of the three following categories:

2.4.5.2.5 CATEGORY ONE (CDR1) - Permanently Plannable CDR

- CDRs1 are available for flight planning during times published in the relevant national AIP.
- When a CDR is expected to be available for most of the time, it should be declared as permanently plannable for stated time periods and published as a CDR1 in AIPs.
- CDRs1 can either be established on an H 24 basis or for fixed time periods or at fixed flight level bands.
- The closure of a CDR1, which requires re-filing of the affected flight plans, has to be published with appropriate advance notification. Any exceptional specific closure of CDR1 which does not require flight planning action by Airline Operators can be treated tactically when appropriate.

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2.4.5.2.6 CATEGORY TWO (CDR2) - Non-Permanently Plannable CDR

- CDRs2 may be available for flight planning. Flights may only be planned on a CDR2 in accordance with conditions published daily in the AUP/UUP.
- CDRs2 form part of predefined routing scenarios depending on the allocation of associated AMC-Manageable Areas or for addressing specific ATC conditions.
- CDRs2 availability can be requested to adjust traffic flow, when a capacity shortfall has been identified and after consideration of relevant ATC factors by the Flow Management Positions (FMPs)/ACCs concerned.
- CDR2 when not available according to AUP/UUP publication may also be managed tactically, whenever conditions allow short-notice usage, subject to preventive coordination between responsible ATS and/or controlling military units.

2.4.5.2.7 CATEGORY THREE (CDR3) - Not Plannable CDR

- CDRs3 are not available for flight planning. Flights must not be planned on these routes but ATC units may issue tactical clearances on such route segments, when made available.
- CDRs3 are those CDRs that are expected to be available at short notice when the pre-notified activity in the associated AMC-Manageable Areas has ceased, or for addressing specific ATC conditions.
- After coordination with the ATS or controlling military unit(s) in charge of the associated AMC-Manageable Area(s), the responsible controller may offer an aircraft a short-notice routing through the area using a predefined CDR3.
- CDRs3 are published in AIPs as CDRs usable on ATC instructions only and are not subject to allocation the day before by AMCs.

2.4.5.3 Temporary Airspace Restriction and Reservation

2.4.5.3.1 The Temporary Airspace Allocation (TAA) process consists in the allocation process of airspace of defined dimensions assigned for the temporary reservation/segregation (TRA/TSA) or restriction (D/R) and identified more generally as an “AMC-manageable” area).

2.4.5.3.2 Two different types of airspace reservation can be established taking into consideration the activity that would take place associated with the transit possibility:

- **Temporary Reserved Area (TRA);**
- **Temporary Segregated Area (TSA).**

Note: In the context of the FUA Concept, all TRAs and TSAs are airspace reservations subject to management and allocation at ASM Level 2.

2.4.5.3.3 The TAA Process gives States considerable flexibility in the use of airspace. TRAs/TSAs are established at ASM Level 1, allocated (by AMCs) at ASM Level 2 in re-

response to daily requests for specific periods, and activated at ASM Level 3 for periods corresponding as closely as possible to the real time civil or military airspace users' requirement. In order to conduct several activities in the area, the TRA and TSA may be subdivided at ASM Level 1 and published as such in the AIP. The activation/de-activation process of the subdivided areas allows for the accommodation of daily changes in traffic situations and airspace users' requirements.

2.4.5.3.4 TRAs/TSAs are established in response to the need for civil, military, R&D, training, testflights or activities of a temporary nature. TRAs/TSAs are established in accordance with national policy and allocated by AMCs for specific activities. If, due to the nature of these activities, segregation is needed to protect participating and non-participating traffic, only TSA applies. In these cases, any tactical crossing of the areas when activated should not be allowed.

2.4.5.3.5 Whenever an area is planned to be used for activities not always requiring a segregation to protect not-participating aircraft, it should be designated as TRA. In this way it would be possible to improve the flexibility in the usage, allowing tactical crossing when the activity inside doesn't require a protection of not-participating traffic.

2.4.5.3.6 In addition, TRAs/TSAs, as AMC-manageable parts of the airspace structures, supplement, replace or modify, where possible, existing airspace structures such as Danger (D) or Restricted (R) areas. However, in some situations, for example in airspace over the high seas, or because of difficulty in the notification of airspace status to airspace users in some ATS classes of airspace, or because of national legal requirements, States may have a continuing requirement to retain D and R areas.

2.4.5.4 Prior/Reduced Coordination Airspace Procedures

2.4.5.4.1 A **Prior Coordination Airspace (PCA)** is a portion of airspace of defined dimensions within which individual GAT is permitted to fly "off-route" only after prior co-ordination initiated by GAT controllers with OAT controllers.

2.4.5.4.2 The PCA procedure, as another way of booking airspace, involves a given block of controlled airspace within which military activities can take place on an ad hoc basis with individual GAT transit allowed under rules specified in Letters of Agreement (LoAs) between the units concerned.

2.4.5.4.3 A **Reduced Coordination Airspace (RCA)** is a portion of airspace of defined dimensions within which GAT is permitted to fly "off-route" without requiring coordination between controllers.

2.4.5.4.4 When OAT traffic is of low intensity, the need for civil/military coordination of off-route GAT unnecessarily increases controller workload. The RCA procedure is usually applied for a very large area such as the entire FIR, but also for critical ACC sectors which have different capacity figures according to the existence of military activity or not.

2.4.5.4.5 Before GAT is permitted "off-route", the OAT controller responsible for the separation between OAT and GAT, must have ready access to all necessary flight and radar data,

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including controller's intentions, on all relevant GAT within his area of responsibility. Effort may be undertaken to provide specific interoperable ATM infrastructure to achieve this objective.

2.4.6 Particular application of the FUA concept**2.4.6.1 ATS Routes**

2.4.6.1.1 Under ICAO provisions, an ATS route is a specified route designated for the routing of GAT and for the provision of air traffic services. The term "ATS route" is used to mean variously: Lower ATS Route, Upper ATS Route, PBN (RNP/RNAV) Routes, Standard Instrument Departure or Standard Instrument Arrival Route or Conditional Route.

2.4.6.1.2 The term "Permanent ATS Route" is used to designate all ATS routes other than Conditional Routes (CDRs). A Permanent ATS Route is therefore a permanently designated route which is not subject to daily management at ASM Level 2 by AMCs. Nevertheless, a Permanent ATS Route can be closed, but only under specific conditions specified at ASM Level 1 and published by NOTAM, e.g. for large scale military exercises.

Note: ASM Level-1 in this context refers to AAI CHQ (ATS/ASM), which is the organisation vested with the responsibility of evaluating such requests and approving the same and consequently promulgating the information through NOTAM(s)

2.4.6.2 Airspace Restrictions - R, D, P Areas

2.4.6.2.1 Some aerial activities which pose a potential risk to other users may not be possible to plan the day before operation. In these circumstances, India may retain or establish R, D or Prohibited (P) areas for safety and notification reasons.

2.4.6.2.2 When an airspace restriction is manageable at ASM Level 2, the FUA concept recommends that, where possible, R and D areas are replaced or modified by TRAs or TSAs. However, if there is a continuing requirement to retain R and D areas, and if they are AMC Manageable, these areas should provide the START and STOP times of their activities to the AMC. The AIP identifies as "AMC-Manageable Areas" those R and D areas managed and allocated at ASM Level 2.

2.4.6.2.3 Any remaining R, D (and P) areas that are not suitable for ASM Level 2 management remain unaltered from traditional utilization and are identified as such in the AIP.

2.4.6.3 Controlled Airspace

2.4.6.3.1 In controlled airspace CDRs, TRAs/TSAs and/or AMC-manageable R or D areas are designated at ASM Level 1 as "pre-determined" airspace structures to be allocated or deactivated at ASM Level 2 by AMCs on a day-to-day basis and used

at ASM Level 3 under conditions known and agreed by both civil and military airspace users and control units involved.

2.4.6.4 Uncontrolled Airspace

2.4.6.4.1 Uncontrolled airspace is by definition ICAO airspace classes F and G.

2.4.6.4.2 It is recognized that a major difference between upper and lower airspace, and therefore a potential difficulty, is that the lower airspace introduces the element of uncontrolled airspace and therefore an unknown traffic environment. This is particularly the case where a portion of controlled airspace (ICAO classification A to E inclusive), borders a portion of uncontrolled airspace (classification F or G). The main difficulty related to the application of FUA is the way of informing in real time the users and/or the ATS Providers about the current airspace structure and associated status. In order to guarantee the safety and the access to the airspace information to the wider audience, the implementation of FUA in uncontrolled airspace is not recommended. Therefore, only airspace structures compulsorily published in the AIP with predefined activation/deactivation time are applicable.

2.4.6.4.3 Under the ICAO system of airspace classes, classification A excludes VFR; in classes B, C and D airspace VFR traffic are required to obtain an ATC clearance to operate; therefore, airspace with those classifications can be considered as a known traffic environment. In class E airspace, although under the heading of controlled airspace, VFR traffic are not required to obtain an ATC clearance or carry a radio and, therefore, this airspace has to be considered as an unknown traffic environment.

2.4.6.4.4 Implementation of FUA in the lower airspace therefore requires a distinction to be made between the FUA in a known traffic environment including the Terminal Areas (CTA, CTR, and ATZ) and the FUA in an unknown traffic environment.

2.4.6.4.5 As with the upper airspace, the application of FUA in the lower controlled airspace, is centred upon flexible airspace structures being made available to the various users according to the usual FUA procedures. Therefore a need is identified to provide for the establishment of temporary segregated airspace which classification may not change but where the requirements for ATC services are temporarily suspended. Aircraft other than the temporarily accommodated aircraft will not be cleared into that volume of airspace whilst it is segregated.

2.4.6.4.6 The procedures for activation, deactivation and operating within the segregated volume of airspace should be contained in a written agreement agreed between the appropriate ATS authority and the responsible aircraft operating entity.

2.5 Priority Rules

2.5.1 In order to avoid lengthy negotiation for any of civil/military and military/military requests it is highly appropriate to establish priority rules, with an aim to promote predictability and stability in airspace planning and allocation.

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- 2.5.2 Activities planned well in advance with prior coordination should normally have priority over short term requests. However, the criticality of short term request(s) shall be factored in the decision process for according priority.
- 2.5.3 Operational or weather conditions shall be factored in while according priority in airspace allocation. When airspace demand exceeds capacity, and requires quick dispersal to enhance safety, flights impacted by such conditions and operating in such sectors shall be accorded priority. When traffic demand far exceeds the capacity in a given airspace, then such traffic may be permitted to use TRA/TSA airspace after the respective AMCs effect coordination with appropriate military authorities and obtain their clearance.
- 2.5.4 Priority rules shall be laid down in SOPs, LOAs governing TSA/TRA allocation and as a general principle, the allocation of TSA/TRA to the agency which is intended to use that airspace shall be given a higher priority.
- 2.5.5 The following general rules, as detailed below, shall apply in determining the order of priority for aircraft operations:
- (a) An aircraft which is known or believed to be in emergency compelling it to land without delay e.g. aircraft experiencing engine failure, acute shortage of fuel or total communication failure.
 - (b) Military fighter flights invariably experience shortage of fuel if not allowed to proceed as per the planned operations. Any alteration to their optimum flight profile (flight path/level) should be avoided/ minimized in general The ground time limitations of military fighters aircraft entail that the departures are accommodated from intended Civil/Military aerodromes without any delay.
 - (c) An aircraft engaged in a live scramble.
 - (d) An Aircraft carrying sick or injured persons, requiring urgent medical attention or carrying out approved medical evacuation (Medical Flights).
 - (e) An Aircraft carrying VVIP's as laid down in procedures for their handling
 - (f) An Aircraft proceeding on Search and Rescue missions.
 - (g) Military flight carrying out large integrated formations in military exercises.
 - (h) Aircraft/RPA in approved urgent operational military commitment which have been coordinated with appropriate ATCCs.
 - (i) Aircraft on large scale weather deviations.
 - (j) Aircraft landing at alternate aerodromes after diversion due adverse operational or weather conditions at their intended destination.

2.6 Transition to the FUA concept

- 2.6.1 A State adopting the FUA concept is committed to reassess current national airspace and route structures with the aim of implementing a flexible airspace organisation.
- 2.6.2 The resulting transition from its current airspace situation into the flexible airspace organisation under the FUA concept can be summarised as follows (Figure 2):

WITHOUT FUA		WITH FUA
Basic ATS routes	➔	“Permanent” ATS routes
Temporary routes, Week -end routes, Complementary routes, Selected tracks, Link routes, Off-load routes etc...	➔	CDR1, CDR2 and/or CDR3
TRAs, MTAs	➔	TRAs or TSAs and, where applicable, CBAs (TRA or TSA by its nature)
R (TRA) or D (TRA) D or R to be manageable at ASM Level 2	➔	TRAs or TSAs or, if not possible, AMC-Manageable Areas
D or R not manageable at ASM Level 2	➔	D or R with possibility of reduced use known by the AMCs the day before operations
Different blanket approval and/or prior coordination procedures for off-route GAT	➔	PCA/RCA procedures

Chapter – 3
ASM LEVEL 1

3.1. Airspace Change process

- 3.1.1 An airspace change, principally, will be proposed by one of the following:
- a. The Civil Air Navigation Service Provider (ANSP); or
 - b. A Military Air Traffic Service Provider (ATSP)
- 3.1.2 The airspace change proposals by the Civil ANSP may include, inter alia,
- a. Changes to the International Civil Aviation Organization (ICAO) airspace classification either through the creation of a higher classification than currently exists, or through the removal of controlled airspace of Classes A, B, C, D or E;
 - b. Changes to the lateral or vertical dimensions of existing Controlled Airspace (CAS);
 - c. The introduction of, or changes to, Standard Instrument Departure routes (SIDs), Standard Arrival Routes (STARs) or Noise Preferential Routes (NPRs) within controlled airspace.
 - d. Changes to existing published terminal patterns and procedures where the net effect results in changes to the lateral dispersion or lowering in altitude of traffic within controlled airspace; and
 - e. Introduction of, or significant changes to, existing Holding Patterns;
 - f. Changes to Area Control Centre (ACC) arrangements resulting in modifications to the existing published ATS route structure.
 - h. Significant changes to the hours of operation of existing airspace structures.
- 3.1.3 The airspace change proposals by the Civil ANSP (AAI) are of two kinds:
- i) with no airspace consideration from the military airspace user/service provider(s), clear of their SUAs by more than 5 NM.
 - ii) 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
- 3.1.4 In the case of the former the Civil ANSP 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 shall be ensured. This will ensure that the Air Defence (AD) personnel are duly informed of the impending changes in the airspace and ATS Route structure

and their inputs taken into consideration.

- 3.1.5 In the case of the latter, the Civil ANSP shall prepare a detailed proposal for the airspace change proposal, e.g. introduction of a conditional route (CDR) and present it to the military authority (AHQ or Indian Navy) for concurrence of the proposal. The military authority may agree to the entire proposal or parts of the proposal. If the agreement is not total, the concurrence shall contain clear and unambiguous references to every difference, which requires a revision in the proposal. The proposal shall be presented to the military authorities sufficiently in advance through MoCA/ MoD
- 3.1.6 The airspace change proposal from the military ATSP may contain requests for
- i) the creation of a TSA/TRA
 - ii) the creation of a controlled airspace within the airspace under their control and jurisdiction.
 - iii) changes to the lateral or vertical dimensions of Danger Areas, Restricted or Prohibited Airspace, Temporary Reserved Areas or significant changes in their operational use, owing to change in their prowess, or de-notification owing to their disuse.
- 3.1.7 The Airspace Change Proposals from the military ATSPs shall normally be routed through the Ministry of Defence and Ministry of Civil Aviation. The Civil ANSP shall prepare an acceptable change proposal after scrutiny and obtain the concurrence of the Ministry of Civil Aviation before promulgation of the information under intimation to the Military ATSP which has initiated the change proposal.
- 3.1.8 The airspace change proposals, after giving due regard to national security, shall be analyzed from the point of view of efficiency, capacity enhancement, optimal air space utilization, safety, environmental benefits the change is deemed to bring and the national security. It is vital to minimize the restrictions and permit the Flexible Use of Airspace. It should be noted that by definition the restriction is subject to certain specified conditions and not absolute in nature. Similarly Danger Areas by definition 'may exist at specified times'. It is important that whenever such rigid airspace structures are not limited to special use, it should be reverted for civil aviation use.
- 3.1.9 In case of a major airspace change, or in case of a dispute in appropriation of airspace using the processes detailed above, the change proposal shall be placed before the NAMAC. Implication on national security' must be given due regard during the airspace review process by NAMAC. The NAMAC after due deliberations, shall prepare a final proposal, including acceptance & dissents from any of its Members, and place it at the subsequent NHLAPB meeting.
- 3.1.10 The NAMAC shall provide the following details in their final proposal:
- i. Airspace Description;
 - ii. Justification for the Change and Analysis of Change Options;

- iii. Description of Airspace Change;
- iv. Supporting Infrastructure/Resources;
- v. Security Impact;
- vi. Operational Impact;
- vii. Economic Impact;
- viii. Safety Management;
- ix. Airspace and Infrastructure Requirements; and
- x. Supporting Maps, Charts and Diagrams.
- xi. Traffic Forecasts;
- xii. An assessment of the effects on noise;
- xiii. An assessment of the change in fuel burn/CO₂;
- xiv. An economic valuation of environmental impact.
- xv. The period of airspace reservations and airspace restrictions
- xvi. The period after which the review should be carried out by the controlling authority, so as to determine whether they are still required or whether modification may be necessary in the light of changed requirements.

3.1.11 The NHLAPB after due deliberations on the Airspace Change Proposal, arrive at a final decision, and direct its implementation. The implementation of the airspace change proposal as decided by the NHLAPB shall then be implemented by the ANSPs/ATSPs, as appropriate.

3.2. Joint Design of Airspace

- 3.2.1 With the advancement in avionics and increase in the fleet capable of Performance Based Navigation, the requirement to design ATS Routes with RNAV/RNP specifications has become absolutely essential.
- 3.2.2 The typical cycle of activities can be mainly classified under 4 heads viz., Planning, Design, Validation and Implementation. The Global best practices include joint design of airspace which may minimize the delays in the long process of Airspace Change proposals being presented to the Military Headquarters and subsequently evaluated at various levels of the Command Headquarters and Field ATS Units.
- 3.2.3 On completion of the planning stage of an Airspace Change Proposal, it may augur well to include a joint evaluation of the Airspace Design by airspace experts from the ANSP Headquarters, ATC Centers, and Military airspace experts from their Headquarters, Command Headquarters and affected Field ATS Units.
- 3.2.4 A joint design effort will minimize the delays in validation and implementation, since the considerations of both civil and military stakeholders has been obtained and recorded and the design suitably reiterated.
- 3.2.5 In case the proposal prepared during the joint design requires any referral to the NAMAC at any stage, it shall be placed before the subsequent meeting of NAMAC and all procedures detailed in the previous section, including the NAMAC referring it, if required so to do, to the NHLAPB, shall be followed before validation and implementation.

3.3. Allocation of airspace in ASM Level 1

- 3.3.1 Major events planned well in advance, such as large scale military exercises, rocket launches etc., which require additional segregated airspace are subject to ASM Level 1 coordination. Subsequently, these activities will be notified by AIS publication. Such allocation shall also be notified to the National and Regional AMCs.
- 3.3.2 The Indian Military authorities, ISRO, DRDO, NTRO, HAL and other agencies which are involved in such well-planned Special Use of Airspace shall place their requirements before the Civil ANSP in adherence to prescribed lead times, as per norms laid down from time to time by the Civil ANSP and mutually agreed by all stakeholders.
- 3.3.3 LFEs of approximate dimensions of 600 Km x 400 Km may be provided as per the requirements of military users. These LFEs are not subject to the provisions of ASM Level 2 allocation.. However, the military users should provide sufficient advance notification for activation of these areas so as to cause least disruption to civil aviation activities.

3.4. ATS/ASM/ATFM Relationship

3.4.1 General

- 3.4.1.1 As an integral part of ATM, ASM should work in close cooperation with both ATS and ATFM.
- 3.4.1.2 An airspace structure reorganised to increase the accessibility of more airspace is accepted as essential to increasing the capacity of the ATS system and reducing GAT delays. Therefore, Area Control Centre (ACC) sector capacity figures will improve in response to the different route and airspace organisation resulting from the daily AMC allocation.
- 3.4.1.3 In order to achieve an improvement in airspace use, the link between ASM and ATFM is harmonised at all the three Levels including compatibility between ATS, ASM and ATFM procedures and timetables. During an initial phase, all related pre-tactical ASM Level 2 and ATFM activities, will take place within a common agreed timetable

3.4.2 ASM/ATFM Relationship at Strategic Level - ASM Level 1

- 3.4.2.1 Both ASM and ATFM have a Strategic Planning Phase. In ASM Level 1, this consists of a periodical review of the use made of the airspace using traffic statistics and forecasts.
- 3.4.2.2 ATFM Level 1 identifies choke points, sector capacity and demand imbalances which should be examined in parallel with the ASM Level 1 review. This national periodical review process involving both airspace & route planners, ACCs/FMPs and AMC, should keep pace with the development of improved navigation capabilities, advanced ATC techniques and changes in user requirements.
- 3.4.2.3 The planning and establishment of permanent ATS routes and CDRs is conducted nationally and at Regional level.
- 3.4.2.4 The national airspace review including that of CDRs assists the annual airspace

planning, to establish solutions to identified bottlenecks for the next year.

- 3.4.2.5 The Civil ANSP may consider the preparation and publication of a Route Availability Document (RAD) which enables ATC to maximise capacity by defining route restrictions that provide an organised system of major traffic flows while allowing aircraft operators flight planning flexibility. The RAD is therefore based primarily on permanent ATS routes and CDRs¹ and includes route restrictions as published in the national AIPs, LoAs, NOTAMs and AIP Supplements. The RAD includes a number of permanent Routing suggestions to assist AOs in the preparation of their flight plans; these suggestions are advisory and not mandatory.

3.4.3 **ASM/ATFM Relationship at Pre-Tactical Level - ASM Level 2**

- 3.4.3.1 In the pre-tactical ATFM phase, the CATFM CCC highlights areas of insufficient ATC capacity. Routing scenarios following the RAD or using predefined scenarios for critical ACC sectors have then to be considered to solve capacity shortfalls in coordination with AMCs/ACCs/FMPs concerned.
- 3.4.3.2 User requirements necessitating segregated airspace form the basis for requests and allocation of TRAs and TSAs.

3.4.4 **ATC/ASM/ATFM Relationship at Tactical Level - ASM Level 3**

- 3.4.4.1 If a reduction in the activation time of a TRA or TSA is agreed between units, the subsequent release of airspace enables civil ACCs to open certain CDRs and re-route traffic flows at short notice. Similarly, ATS units responsible for OAT and/or controlling military units are able to use TRAs or TSAs at short notice taking into account the general ATFM plan. To enlarge or combine TRAs or TSAs civil ACCs may be able to allocate, at short notice, some flight levels of an ATS route segment for temporary OAT use.
- 3.4.4.2 The use of the RCA procedure, by direct agreement between the control units (ATS units and/or controlling military units) involved, reduces the GAT controller's workload by suppressing the need for individual coordination of any off-route GAT under PCA procedure and allows more direct routings and permits radar vectoring around major high density crossing-points.
- 3.4.4.3 For example, the identification by the ACC of a TRA or TSA deactivated early and available for use as a CDR is an ASM Level 3 task. The identification of particular CDRs required to resolve an ACC/sector or another ACCs capacity problem is more a Pre-Tactical ATFM task. The consequent re-routing of the GAT flow at short notice is a tactical ATFM task. Finally, the control of the GAT on the newly re-opened CDR is an ATC task of the ACC. The control, coordination, safe and expeditious conduct of air traffic, including the resolution of GAT and OAT conflicts, remains within the ATS ambit.

Chapter – 4
ASM LEVEL 2

4.1. ASM Level 2 – (day-to-day allocation of airspace)

- 4.1.1 Pre-Tactical ASM at ASM Level 2 consists of the day-to-day management and temporary allocation of airspace through national or Regional AMCs.
- 4.1.2 A National Airspace Management Cell (AMC) and Regional AMCs in four Upper Area Control Centers at Chennai, Delhi, Kolkata and Mumbai, established with adequate representation from civil and military ANSP/ATSP/DGCA and airlines shall act as the ASM Level 2 focal-points.
- 4.1.3 The Regional AMCs shall have the authority to conduct the ASM function within the framework of India's airspace structures, priority rules and negotiation procedures as laid down in the FUA Manual approved by the NHLAPB.
- 4.1.4 The National AMC shall oversee the functions of the regional AMCs and act as the facilitator of any negotiation required between the Regional AMCs and the ANSP Headquarters as well as the Military Headquarters. The National AMC shall also be collocated with the CATFM, when operational from the Central Command Center and perform CADF functions.
- 4.1.5 The AMCs shall have adequate authority to enable them to efficiently resolve conflicting airspace request and minimize the necessity for referral to higher authority.
- 4.1.6 The AMCs shall strictly adhere to the policies formulated by the NHLAPB, and engage in Collaborative Decision Making (CDM), within the framework of FUA and within the powers vested in it, by the guidelines provided by the NAMAC and approved by the NHLAPB.

4.2. Organizational structure of the National AMC

- 4.2.1 The National AMC shall comprise of a civil ANSP nominee, representatives from the IAF and Indian Navy, representatives of the airport operators, airline operators and a representative from the regulatory body.
- 4.2.2 In order improve the efficiency of the national AMC, there is a need to establish the Centralized Airspace Data Function (CADF) within the Central Air Traffic Flow Management Unit (CATFM) at New Delhi.

4.3. Organizational structure of the Regional AMCs

- 4.3.1 The Regional AMCs shall comprise of the civil ANSP nominee, representatives from the IAF and Indian Navy at the Regional level, representatives of the airport operators, airline operators and a representative from the regulatory body.
- 4.3.2 The Regional AMC functions and the FMP functions shall be integrated after the establishment of TMUs under the CATFM implementation.

4.4. Allocation & Notification process – General provisions

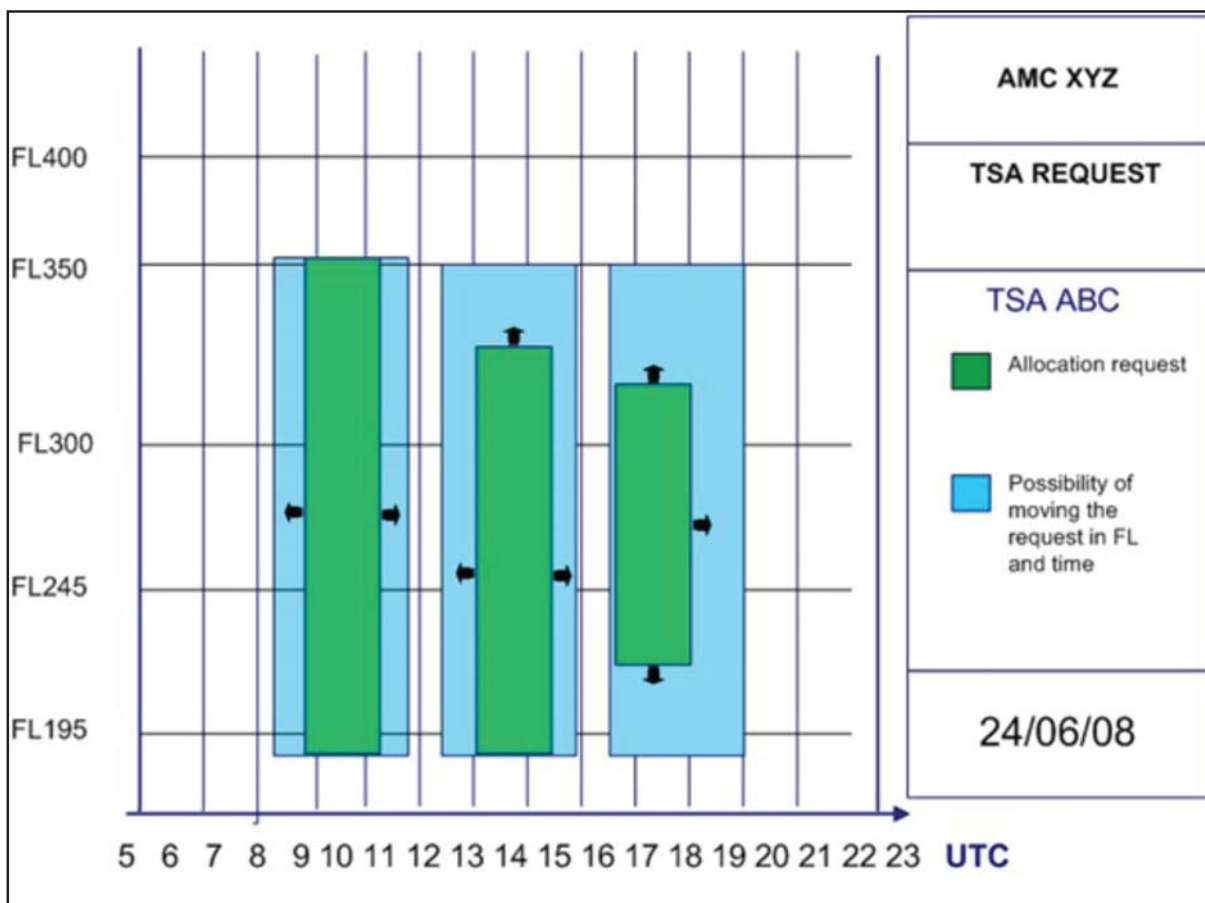
- 4.4.1 Agencies responsible for airspace activities should submit their requests for the allocation of airspace or routes - Temporary Segregated Areas (TSAs) or Conditional Routes (CDRs) - to the appropriate Regional Airspace Management Cell (AMC), in adherence to the agreed conditions laid down in the SOP/LoA for the TSA/TRA activation and deactivation.
- 4.4.2 After the Regional AMC has received, evaluated and de-conflicted the airspace requests, it will convey the allocation plan through a notification of the airspace allocation is published in a daily Airspace Use Plan (AUP), in advance. The Airspace Use Plans (AUPs) activate Conditional Routes (CDRs) and allocate Temporary Segregated Areas (TSAs) for specific periods of time.
- 4.4.3 The AUPs published by the AMCs are collected by the National AMC. The National AMC shall be vested with the responsibility of the compilation of daily conditional route availability message CRAMs /CADF and consolidates the same on available conditional routes, which indicates the availability of CDRs for flight planning in the Indian FIRs. . The CRAM is transmitted in advance to all airspace users and ATS providers concerned, according to guidelines laid down in the chapter on Information dissemination.
- 4.4.4 Once CATFM is established, the National AMC co-located, the CADF located in the Central Command Center of the CATFM, shall compile the daily conditional route availability message. Appropriate communication facility should be available for distribution of CRAM to concerned ATS Units
- 4.4.5 If necessary, changes to pre-tactical airspace allocation is effected by AMCs through the publication of an Updated Airspace Use Plan (UUP). This Plan notifies the changes to the airspace allocation on the actual day of operations. The Airspace Use Plan (AUP) and the Updated Airspace Use Plan (UUP) will be published in a prescribed format.

4.5. Airspace Requests

- 4.5.1 Units that represent airspace user entities (e.g. squadrons), which wish to utilize TRAs/TSAs, or R and D areas that are suitable for management/allocation by the AMC, are identified as Approved Agencies (AAs) and are authorized by the IAF, Indian Navy, Indian Army, NTRO, HAL, ISRO respectively. AAs are permitted to negotiate for airspace to be allocated by the AMC. When AAs are submitting airspace requests to the AMC, the safety should be paramount. The AAs for which the TSA or TRA has been created are considered as a priority user for that airspace once allotted. The priority rules for allocation may be established. In general, the requirement of highest importance to the State will be considered in case of any conflicting demands The priority rules in 2.5 may be referred to for guidance.
- 4.5.2 AAs are required to:
- a) plan submission of airspace use activities in advance so as to be able to notify their needs for airspace to the AMCs on the day before the activity;

- b) submit to the AMC, on the day before the proposed activity (D -1), requests for airspace utilization and allocation;
- c) ensure, on the day of the activity, that the airspace usage is in accordance with the AMC's airspace allocation;
- d) cancel any airspace allocation which is no longer required. Information is forwarded to the AMC for the promulgation of an UUP, and to the relevant ACC in accordance with national procedures;
- e) change previously promulgated airspace allocation by coordinating with AMC the promulgation of an UUP;
- f) submit a new request for airspace allocation to the AMC for the promulgation of an UUP.

4.5.3 The requests for airspace use could be presented as a block of airspace required during a specified period of time with the possibility of moving the request in terms of time and flight levels.



Example of TRA/TSA Request

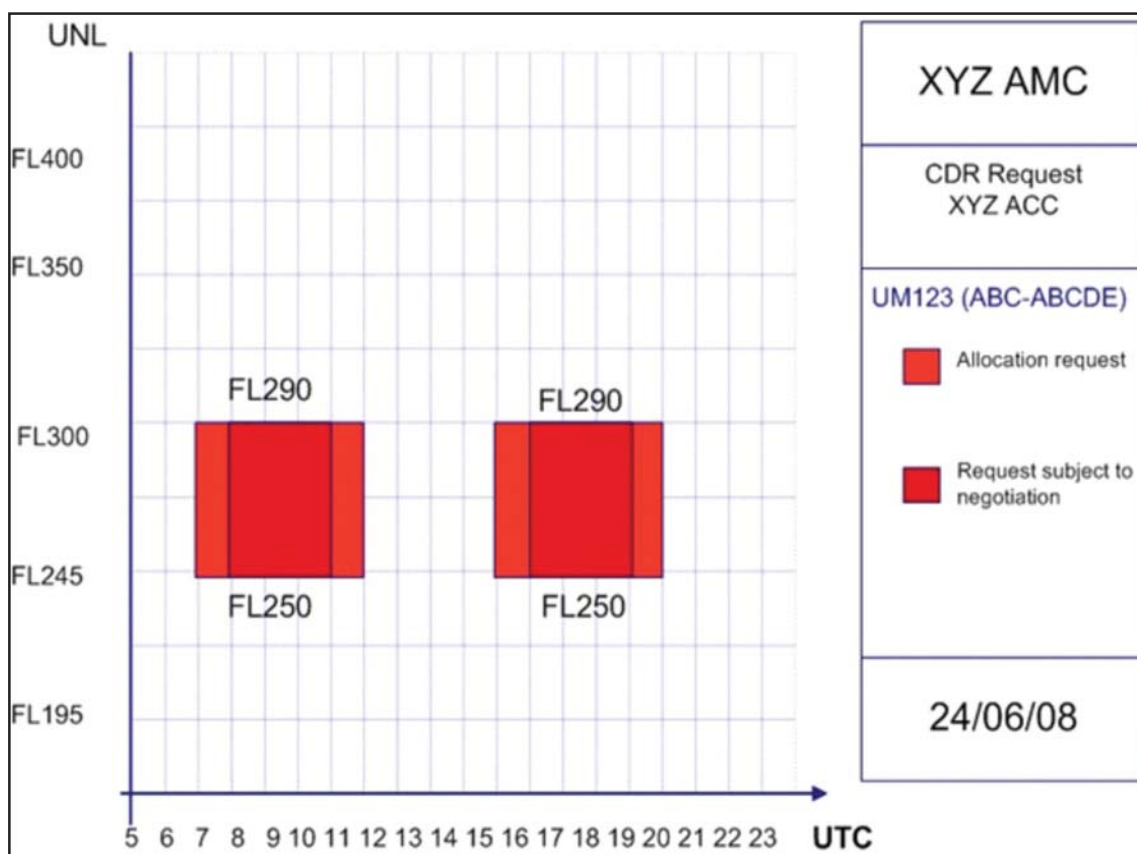
Note: the requests should cover a 24H period of time.

4.6. CDR requests – AMCs (UACCs/FMPs)

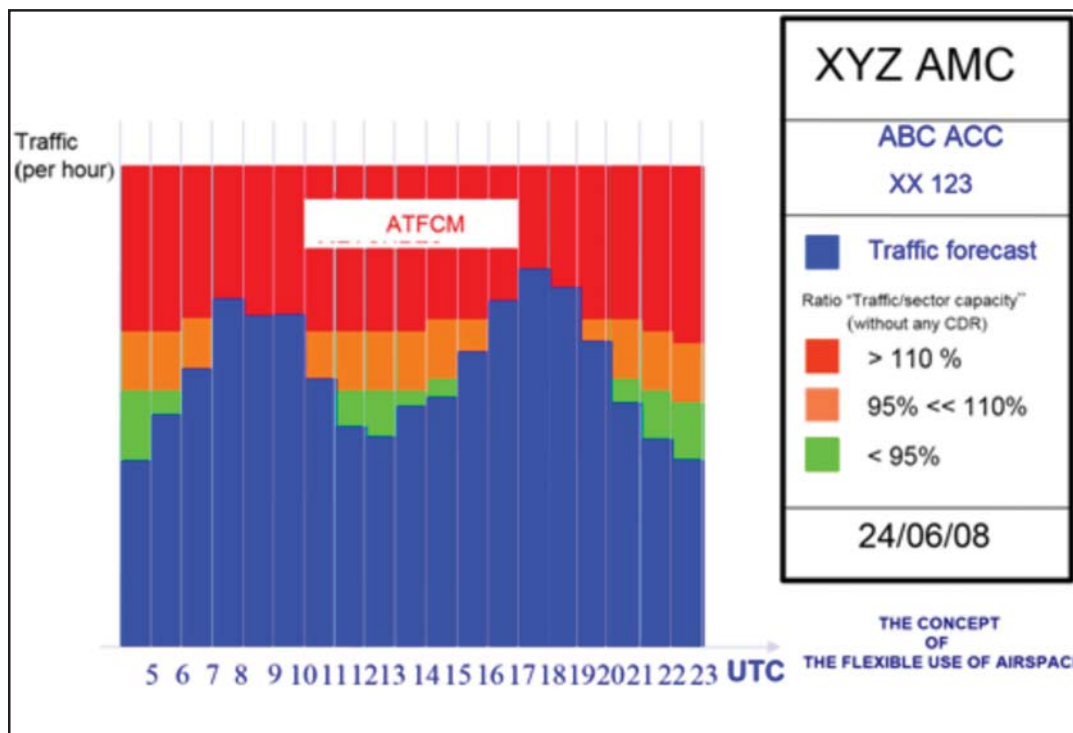
4.6.1 Requests for CDRs are normally based on capacity needs identified by the AMCs (FMPs/UACCs) and in coordination with National AMC/CCC in the pre-tactical ATFM phase.

- 4.6.2 The AMCs concerned should in coordination with the CCC:
- a) assess the traffic forecast for the day of operations;
 - b) identify areas of insufficient ATC capacity;
 - c) agree on the requests for CDR2, released by military authorities;
 - d) agree on the most appropriate sector configuration;
 - e) agree on the need for ATFM measures.

4.6.3 As a result of the pre-tactical ATFM coordination process and the consideration of all relevant ATC factors such as sector capacity, equipment status, operational constraints and staff availability, the AMCs (FMPs) submit a request for the activation of CDRs2 to the AMCs concerned, sufficiently in advance. CDR2 requests are presented together with traffic forecasts showing the expected capacity shortfall. Examples of such CDR requests and traffic forecasts are presented below.



Example of CDR Request



Example of GAT Traffic Forecast

- 4.6.4 If the traffic demand does not require the activation of CDR2, FMPs/ACCs should cancel the CDR2 request and advise the regional AMC, which in turn shall inform the National AMC.

4. 7. Restricted/Danger Areas - Notification of Reduced Activity

- 4.7.1 The designated controlling authority of AMC manageable R and D areas should notify to the relevant AMC, on their probable START and STOP time of activities for the following day.
- 4.7.2 This notification permits the AMC, as a focal point, to be aware of all airspace utilization and permits the publication by the AMC of any reduced period of R and D area activity in the AUP/UUP of Reduced Airspace Restrictions (R or D). The designated controlling authority of AMC manageable R and D areas should notify to the relevant AMC on their period of activity along with details of airspace volume planned for use for the following day.

4. 8. Airspace Management Cells - Airspace Allocation – specific provisions

- 4.8.1 The general priority rules for allocation of airspace such as TRAs and TSAs should be established in each Letter of Agreement or SOP and the AMC shall normally

ASM Level 2

follow the stated priority. In general, the military authorities for which TSAs/TRAs have been created should be considered as priority users consequent to receipt of their request.

- 4.8.2 The requests for Airspace may also contain the priority of a mission critical exercise from the military authorities and the AMCs shall handle such request by assigning them a suitable high level of priority owing to national security.
- 4.8.3 The AMCs shall also collect and analyze all Airspace Requests which may require temporary airspace segregation, including airspace allocation decisions taken at ASM Level 1 in respect of major military exercises, air shows etc.
- 4.8.4 The AMCs shall also analyze the CDR availability requests together with the traffic demand, anticipated ATC capacity problems and expected delay information received from the FMP.
- 4.8.5 The AMCs shall resolve conflicting requests for TSA/TRA and CDRs utilizing all relevant information, and in general according priority to State requirements.
- 4.8.6 The AMCs shall respond to any additional request for assistance by the CCC for Flow Management, the ACC/FMPs and other Approved Agencies or matters arising from major ATS routes inconsistencies or unexpected events
- 4.8.7 The AMCs are suitably represented by the Military airspace users and the decisions made are collective and collaborative.
- 4.8.8 National or Regional AMCs act as ASM Level 2 national and international ASM focal points, improve civil-military and international coordination and manage the airspace to ensure its flexible use.
- 4.8.9 AMCs conduct Pre-Tactical ASM Level 2 airspace allocation and management operations in a decisive, timely and efficient manner and resolve conflicting airspace requests and ASM Level 2 problems
- 4.8.10 After the AMC has completed the allocation process through the promulgation of the AUP, modification of the airspace allocation might be necessary. Modifications of the airspace allocation are effected by the AMC through an Updated AUP (UUP) and consist of any cancellations, changes or new requests.
- 4.8.11 AMCs may continue to address Basic FUA issues and when the CATFM is implemented adequate system support for ATFM FMP which will be integrated with the AMCs for functional requirements, should enable AMCs to perform the assessment of airspace allocation requests received in order to facilitate their decisions on final airspace allocation.
- 4.8.12 The AMCs should be provided with communications equipment required to facilitate communication/coordination with all appropriate partners (AAs, FMPs, CCC

and other AMCs). This is possible through the colocation of the AMCs in the Metro ATC Centers, which are already equipped with a communication network. The communication network shall be on mutually agreed terms.

- 4.8.13 AMCs should have a written agreement or arrangement with the CCC of the CAT-FM, after its establishment in adherence to a standard LoA template, to be used for this purpose, provided in Annex-11. The proposed LoA should provide a description of the specific procedures for the publishing of UUPs and it shall also contain a description of contingency procedures to be applied between CCC and each AMC in order to ensure the publication of all AUPs, if possible through electronic means.

4.9. Aircraft Operator's (AO's) FUA Responsibilities

- 4.9.1 In order to take advantage of available CDRs, AOs are required to submit their flight plans taking into account the latest available information. Flight plans should include route changes and the use of CDRs pertaining to a particular flight.

- 4.9.2 The AOs shall have suitable and adequate means of internal distribution, especially the revised plan shall be made available to the pilot-in-command.

4.9.3 CDRs1

- 4.9.3.1 CDRs1 are plannable as permanent ATS routes during the times published in AIPs. In the event of a short notice unavailability of a CDR1, flights are instructed by ATC to use alternative routes. Operators should consider the implications of the possible use of the alternate ATS routes published for each CDR1 in the AIP.

- 4.9.3.2 Any CDR1 closure which requires a re-filing of the flight plan is published with appropriate advance notice (e.g. through NOTAM) and, for safety reasons, publish in AUP/UUP and notified again to the operators by EAUP/EUUP. In such case any flight plan which uses the CDR1 portion during the affected period is to be cancelled or changed in accordance with the procedures laid down in the AOs operations manual.

- 4.9.3.3 In case when a CDR1 closure is cancelled, a new NOTAM is required to cancel/replace the existing one. The most appropriate UUP should be used to publish the cancellation of the CDR1 closure .

4.9.4 CDRs2

- 4.9.4.1 Flights on CDRs2 can only be planned when the CDRs are made available through AUP/UUP. In this respect, the UUP could also notify the closure of CDR2 declared available in AUP and/or previous UUPs.

- 4.9.4.2 The closure is notified deleting the (available) CDR2 from the previous AUP/UUP and notified to the AOs by AUP/UUP. AOs should also refer to national AIPs and to ATFM Notification Messages (ANMs) for additional information regarding the specific utilization of available CDRs2.

- 4.9.4.3 Whenever an operator wishes to take advantage of particular available CDRs2 or is

ASM Level 2

required by the Civil ATS to use particular CDRs2, an individual flight plan should be submitted. It should contain in Item 15 the available CDRs2 to be followed. Under these circumstances, any associated RPL shall be cancelled or changed in accordance with the procedures laid down in the AO's Operations Manual.

4.9.4.4 Post CATFM implementation, and the use of electronic means of notifying AOs, the flight planning systems of aircraft operators or flight planning agencies should be able to process the electronic ASM Instructions in AIXM format so as to automatically process the CDRs availability information (B2B service).

4.9.4.5 In case of an ATFM slot that prevents the CDR2 usage, the flight plan is to be changed to use an available ATS route. The revised FPL may result in a revised ATFM slot.

4.9.5 **CDRs3**

4.9.5.1 CDRs3 are published in AIPs as CDRs that are usable on ATC instructions only. Therefore, flights cannot be planned in advance on CDRs3.

4.10. Weekend Routes

4.10.1 The establishment of weekend routes, as CDR 2/ CDR 3, whenever feasible, should be taken up by joint consultation between civil and military ANSP/ATSP. An automated coordination infrastructure for activating week end routes, as mutually agreed, may be provided, since these routes may have to be closed at very short notice due to contingent military requirements.

4.10.2 In order to take advantage of extra availability of Weekend Routes AOs should refer to the ENR part of national AIPs and AIP Supplements, and to the EAUP for details.

4. 10.3 Weekend routes when established as CDR 2, and released by the appropriate military authority, are flight plannable. In the exceptional event of a cancellation of the availability of a weekend route, AOs are notified by NOTAM/UUP.

Chapter – 5

FUA
INFORMATION MANAGEMENT

5.1. Publication of ASM information

5.1.1 AIP/NOTAM for ASM level 1 decision

5.1.1.1 An important national task at ASM Level 1 is to publish in national AIPs the status of airspace structures and ATS routes under its jurisdiction.

5.1.1.2 Another task consists of the coordination of major events planned well in advance, such as large scale military exercises or air shows, which may require additional segregated airspace.

Note: However, the dates for military exercises should be notified through NOTAM only and information shall not be provided for in AIP of India for security reasons.

5.1.1.3 These particular activities need to be published by AIS publication such as NOTAM.

5.1.2 Publication of ATS/RNAV/CDR routes, their availability and conditions

5.1.2.1 ICAO in Annex 15 states that a detailed description of an ATS route shall be published, and that this shall include the publication of the upper and lower limits.

5.1.2.2 ICAO in Annex 15 does not define the format for published times of availability and other conditions in the AIP for ATS routes. It only states that such information should be inserted as remarks to the detailed description, complemented by the AIS Manual Doc 8126 description of ATS route tables for the AIP ENR chapter, illustrating the Remarks column using free, non standardized text.

5.1.2.3 In order to harmonize AIP publication describing times and conditions, as to when a CDR is available for flight planning the following procedure is being followed in AIP India.

5.1.2.4 In case of timely repetition during the equal periods, information in the remarks column of the AIP ENR 3 SHOULD clearly describe the following situations for the route:

- i) If the CDR is available for a H24 period, column 6 of the description of ATS routes contains an insertion: CDR1 H24;
- ii) If CDR1 conditions applies for a certain period of time, column 6 contains an insertion to that effect e.g. CDR1 23.00h -05.00h, together with what happens outside this time period, i.e. not available and/or all other possible combinations.
- iii) If weekly periods applies then column 6 contains an insertion e.g. CDR1 MON-FRI 23.00h-05.00h and/or FRI 14.00h – MON 06.00h; CDR2 rest of the week and/or all other possible combinations.
- iv) In case where only a portion of a route is published as being a CDR, and being a permanent route outside a time period, flight level or geographical boundaries, AIP publication should cover:
 - a) The applicable CDR time period - apply above procedures;

- b) Different category (e.g. CDR 1 FL280 - FL460 MON - FRI 08.00h - 10.00h, applicability of permanent use outside this period and FLs and/or all other possible combinations).

5.2. Specific ASM messages for ASM Level 2 Decisions

5.2.1 Airspace Use Plan (AUP)

- 5.2.1.1 The effective application of the FUA Concept requires that ASM Level 2 airspace allocation decisions are promulgated daily in an efficient, timely and accurate manner by each AMC by means of a national Airspace Use Plan message (AUP).
- 5.2.1.2 The AUP shall be transmitted in a common harmonized format to the National AMC/CATFM's dedicated interface for ASM and shall be published as soon as possible and not later than by or 15.00 UTC to cover the 24 hours' time period between 0600 UTC the next day to 0600 UTC the day after. Several AUPs can be sent in one sequence on the last day before the closure of the AMC to cover each day of a week-end or "Holidays" period, but with a maximum of seven consecutive days. The AUP shall be transmitted to AAs, ACCs/FMPs and to the CADF. AUP in ready format should be made available automatically to the other AMCs.
- 5.2.1.3 Post CATFM implementation, in order to automate the AUP process within AMCs and AAs, to allow the automatic storage and display of AUPs in AMCs (FMPs)/ACCs, AUPs should be prepared and distributed to the CADF by means of a common software set up in CATFM CCC terminals. The infrastructure/procedures for dissemination of AUP to the military units should be provided on mutually agreed terms.

5.2.2 Updated Airspace Use Plan (UUP)

- 5.2.2.1 After the AMC has completed the allocation process, modification of the airspace allocation might be necessary in order to take advantage of the cancellation of any previously reserved airspace structure. This may also have to be resorted to in case of sudden unexpected requirements of military to close certain routes/portions of routes, additional activation of TRAs/TSAs and/or increased timings for already activated TRAs/TSAs is to be effected. Changes to the airspace allocation will be effected by the AMC through UUPs.
- 5.2.2.2 UUPs will replace the current AUP and previous UUPs according to the validity time described in the procedure. It reflects the new plan with the aim of improving ATC capacity and reducing GAT delays through the more efficient use of airspace and also for accommodating tactical military requirements.
- 5.2.2.3 The UUPs information will be used by CATFM CCC/CADF to produce electronic Airspace Management Instructions. According to the CDRs change status, Re-Routing Proposals (RRPs) messages will be provided to interested users.
- 5.2.2.4 The UUP is published in the same common format as the AUP or previous UUP. The UUPs will be published according to the procedures described in succeeding

paragraphs.

5.2.2.5 The UUP is transmitted to the relevant AAs, AMCs (FMPs)/ACCs, and the CATFM CCC/CADF. However, UUPs is not published when there are no alterations to the current AUP.

5.2.2.6 Post CATFM implementation, in order to automate the UUP process within AMCs and AAs should allow for the automatic storage and display of UUPs, UUPs should be prepared by means of the common software set up in CATFM CCC terminals.

5.2.3 **Electronic Airspace Management Information (eAMI)**

5.2.3.1 eAMI or electronic Airspace Management Information is an electronic message containing all airspace allocations (ASM Level 1 and ASM Level 2) and the derived opening of CDRs2 and the confirmation of closure of CDRs1 and ATS routes.

5.2.3.2 Through eAMI, authorized users can query and compare CDR/Route Availability and Airspace Allocations. This should be normally available via CATFM CCC web services in accordance with a service agreement signed between user and CATFM CCC.

5.2.3.3 Through consolidated and validated electronic eAMI messages users can therefore make full use of the benefits offered by automated data processing.

5.2.4 **ASM Level 2 Timetable**

5.2.4.1 The application of the procedures described below will continue to allow the tactical management of CDRs and TRAs/TsAs according to the current modus operandi.

5.2.4.2 Outside the AUP/UUP process the changes will continue to be treated at a tactical level and will be processed at the ATC level, informing the users tactically. Notification to pertinent ATC units and CCC will be provided tactically (e.g. by phone, fax or UUP-like message). The detailed procedure is described in succeeding paragraphs.

5.2.4.3 Up To 48 Hours In Advance

5.2.4.3.1 Up to 48 hours in advance the AMCs (FMPs)/ACCs, in coordination with the CATFM CCC, should assess the expected traffic forecast for the particular day, identify and highlight capacity shortfalls, and agree on the traffic flow adjustment requirements that will be requested on the particular day of operations.

5.2.4.4 The Day before Operations (D-1)

5.2.4.4.1 Before 11.00 UTC on the Day before Operations:

- a) the FMP, with its related ACC, should compare the CATFM CCC operational requirements for traffic flow adjustment with relevant ACC factors such as sector handling capability, equipment constraints, staff availability and operational factors, and determine the corresponding CDRs2 and/or

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for specific airspace configuration requirements;

- b) the ACC/FMP should send the CDRs2 availability and/or for specific airspace configuration requests to the AMC, with details of traffic forecasts, capacity shortfalls and delay predictions;
- c) the national AAs should collect all airspace user requirements for CDRs, TRAs/TSAs, AMC-manageable R and D Areas, for the 24-hour period of the next day of operations, and submit them as the civil/military Airspace Requests to the AMC;
- d) the managers of designated R and D areas should advise the AMC of the details of any reduced utilization of these areas.

5.2.4.4.2 Before 1500 UTC on the Day before Operations:

- a) the AMC should collect, collate and analyze all airspace requests, resolve conflicts through negotiation and coordination, respond to any additional requests to resolve route inconsistencies, and decide on allocation of CDRs and TRAs/TSAs in accordance with priority rules established at ASM Level 1;
- b) the AMC should obtain details of, or in case of CDRs1 managed at ASM Level 2, decide on, the periods of temporary closure of CDRs1, and should obtain details of the periods of use of RCAs;
- c) the AMC should compose a Draft AUP after conducting, if required, coordination with other AMCs. The AMC should forward it to CCC/National AMC (CADF) by 13.00 UTC at the latest; between 13.00 and 14.00 UTC, the National AMC/CCC should evaluate the impact on the network of the “draft” airspace allocation in close coordination with FMPs and AMCs concerned, identify optimal scenarios and forward proposals to relevant AMCs and FMPs. A scenario may contain recommendations on change in CDRs/TRA/TSAs availability details (e.g. flight level band, availability time), sector reconfiguration, etc.
- d) between 14.00 and 15.00 UTC the AMC should consider the advice/alternatives proposed by CATFM CCC and coordinate proposed changes with the Airspace Users that requested airspace reservations, if required; The final airspace allocation decision remains the responsibility of the AMC.
- e) by 15.00 UTC the AMC should promulgate the AUP for the 24-hour period from 06.00 UTC on the day of operations to 06.00 UTC the next day (0600 UTC D to 0600 UTC D +1);
- f) The AMC may send the AUP to AAs, FMPs, ACCs and to adjacent AMCs via other means of notification (e.g. AFTN).

5.2.4.4.3 Before 16.00 UTC on the Day Before Operations:

- 5.2.4.4.3.1 The National AMC should consolidate the AUP information and ensure that it is appropriately promulgated through AIS/AIM. Post CATFM implementation,
- a) the National AMC/CADF consolidates the AUPs information that is published/promulgated and posts it on eAMI server. Dissemination of information via eAMI should allow stakeholders using B2B service to upload AUP information in their systems.
 - b) the CADF should ensure that information on CDR availability is made known to the CATFM CCC Operational Units;
 - c) the FMPs/ACCs should notify CATFM- CCC of any resulting capacity changes that could affect ATFM measures.

5.2.4.4.4 After 16.00 UTC on the Day Before Operations:

- 5.2.4.4.4.1 AOs file or re-file their FPLs according to the airspace and ATFM situation.

5.2.5 **Alteration of AUP via UUP publication**

- 5.2.5.1 The following procedures will be applied to provide information to the users about changes of the airspace plan in relation of release of areas previously planned as well as new availability of CDRs.

5.2.5.2 Alteration of AUP via UUP publication on D-1

- 5.2.5.2.1 The ability to generate UUPs demonstrates the maturity of the system's ability to coordinate dynamically.

- 5.2.5.2.2 The Airspace Users that have requested airspace allocations should advise the AMC about any change in their planning. This will enable the associated CDR to be available for additional period(s) than that planned in the earlier AUP. If required, the AMC should inform the FMP and CATFM CCC about the new airspace opportunities using a UUP,

- a) as from the AUP publication (16.00 UTC), the Airspace Users that requested airspace allocations should advise the AA/AMC about changes in their planning for the next day, if any (e.g. activity completed earlier than planned, cancelled or reduced in time or volume, etc.);
- b) upon reception of a such information, the AA/AMC should check if the airspace is needed by another user;
- c) when required, and if there is no requirement for use of that volume of airspace from other users, AMCs should inform national FMPs and CATFM CCC regarding the intention to lift/decrease airspace segregations (in time and/or space) via the promulgation of the first convenient UUP from 17.00 UTC every hour up to 20.00 UTC, inform of the opportunity of additional

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CDR availability.

- d) The UUPs provide information on the changes starting from 0600 UTC D to 0600 UTC D+1. Any UUP promulgated by AMC contains full information on airspace allocation.

5.2.5.3 Draft UUP

- 5.2.5.3.1 In some cases the re-routing of traffic on new available CDRs could produce downstream effects. This could be particularly relevant in case the availability of CDRs is associated to the application of Route availability restrictions. Experience of actors involved (AMCs, FMPs and CATFM CCC) and/or strategic analysis will identify such situations that require the usage of draft UUP.
- 5.2.5.3.2 Because lead time for the new availability of CDRs is not required, in case of draft UUP AMC should consider the time required for the coordination and identify which UUP is most suitable.
- 5.2.5.3.3 On the basis of Draft UUP received from AMC(s), FMPs, if not advised before, and CATFM CCC should identify the flights impacted and assess the additional CDR opening opportunities from the Local/Network perspective, and communicate them (if any) to AMCs for their consideration.
- 5.2.5.3.4 Such advice may contain recommendations on change in CDRs/TSAs availability details (e.g. flight level band, availability time), sector re-configuration, etc.
- 5.2.5.3.5 AMCs should receive the scenario proposed by CATFM CCC and FMPs and take into consideration their proposals.
- 5.2.5.3.6 AMCs should take the final airspace allocation decision, and, if required, promulgate the information using the most suitable UUP.
- 5.2.5.3.7 Post CATFM implementation, the new CDRs availability information should be disseminated by CATFM CCC through:
- A dedicated portal; and
 - eAMI
- 5.2.5.3.8 It may be appropriate, for dissemination of CDR availability, to use the portal http://www.aai.aero/public_notices/aaisite_test/AeronoticalInfo.jsp until a dedicated portal is established.
- 5.2.5.3.9 Dissemination of information via eAMI should be achieved through the posting CDRs availability updates onto FTP server in the same way as it is being done by CATFM CCC for e-RAD promulgation. Such a process would allow AO stakeholders using B2B service to upload the updates into their systems.
- 5.2.5.3.10 If FPLs are available, Re-routing proposal messages should be submitted by CATFM CCC (to potentially interested AOs, concentrating on the most profitable CDRs).

5.2.5.3.11 Interested AOs should re-file FPLs accordingly

5.2.5.4 The Day of Operations

5.2.5.4.1 On the day of operations the following actions are applicable:.

- a) Airspace users should utilize the TRAs/TSAs, CBAs and other AMC-manageable R and D areas in accordance with the AUP and UUPs allocation as promulgated the D-1 or anytime thereafter, in exceptional circumstances.
- b) ACCs should utilize the CDRs 1 and 2 in accordance with the AUP and UUPs activation as promulgate the D-1 as well as with tactical modus operandi
- c) AOs should flight plan the CDRs 1 and 2 in accordance with AIPs publications and AUP and UUPs activations as promulgate the D-1.

5.2.5.4.2 As Required on the Day Of Operations:

On the Day of Operation (**D**), the Airspace Users that requested airspace advise the AA/AMC about any change in their planning (e.g. activity completed earlier than planned, cancelled or reduced in time or volume, etc.) or any additional airspace requirements in terms of time/space, in exceptional circumstances detailed in the SOPs of the TSAs/TRAs. This will enable/disable the associated CDR to be available/unavailable for additional period(s) than that planned in the AUP.

- a) Upon reception of such information the AA/AMC should check if airspace is needed by another user(s).
- b) The AMC will inform FMP and CATFM CCC about the new airspace opportunities using the first convenient (no lead time is required) UUP from 07.00 UTC every hour up to 20.00 UTC. Each UUP promulgated by AMC supersedes the previous one(s).

5.2.5.4.3 In those situations where Network and Local Network Assessment is deemed necessary, AMC should inform national FMPs and CATFM CCC regarding the intention to lift/decrease airspace segregations (in time and/or space) and the opportunity of additional CDRs availability via usage of Draft UUP.

5.2.5.4.4 In case of draft UUP, AMC should consider the time required for coordination and identify which UUP will be suitable to eventually publish the information.

- a) the CATFM CCC and the FMPs should identify possible benefits from the opportunity (e.g. offloading sector, sector reconfiguration, etc). On the basis of the Draft UUP received from AMC(s), CATFM CCC should identify the flights impacted and assess the additional CDR opening opportunities from the network perspective and provide advice (if any) to AMCs for their consideration;

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- b) such advice may contain recommendations on change in CDR/TRA/TSA's availability details (e.g. flight level band, availability time), sector re-configuration, etc. Where relevant, it should also contain information for all FIRs concerned with the scenario, with an indication of changes that should be agreed by all FIRs to make the scenario work.
- 5.2.5.4.5 AMCs should receive the scenario proposed by CATFM CCC and FMPs and take into consideration their proposals.
- 5.2.5.4.6 AMCs should take their final airspace allocation decision, and, if required, promulgate the information using the most suitable UUP. Lead time for the validity of the change(s) is not required.
- 5.2.5.4.7 The new CDRs availability information is disseminated by CATFM CCC through:
- a dedicated portal, when established; and
 - eAMI
- 5.2.5.4.8 Dissemination of information via eAMI should be achieved through the posting of CDRs availability updates onto FTP server. Such a process would allow AO stakeholders using B2B service to upload the updates.
- 5.2.5.4.9 If FPLs are available, re-routing proposal messages should be submitted by CATFM CCC to potentially interested AOs.
- Should the flight be in the Planning Phase, interested AOs should re-file FPLs accordingly.
 - Should the flight be in the Execution Phase, it may continue as planned. The re-routing option will be provided by ATC to the pilot

Note 1: Flight in the planning phase means a flight in any stage of preparation 2 hour or more before EOBT.

Note 2: Flight in execution phase means a flight from 2 hour before EOBT onwards (including the airborne stage).

5.2.5.5 Restricted Airspaces Management in AUP/UUP

- 5.2.5.5.1 Restricted Airspaces represent a part of the Airspace where General Air Traffic (GAT) can be restricted. In practice, it corresponds in most cases with airspace where military operations or other operations that require segregations.
- 5.2.5.5.2 Each Restricted Airspace is managed by one and only one AMC (Airspace Management Cell) - in case of an SUA located across the FIR boundaries, then it should be delegated to one of the AMCs or it should be managed by the National AMC - which is responsible for the coordination and final publication of the restrictions of the Airspace.

5.2.5.6 Activation

- 5.2.5.6.1 The Restricted Airspace Activation includes a FL band (Lower/Upper FL), a start date and time, and the end date and time.
- 5.2.5.6.2 Restricted Airspace allocations from Released AUPs/UUPs are automatically propagated to the corresponding RSA Activation tables.

5.2.5.7 AMC Related Tasks for activation of Danger Areas over High Seas

- 5.2.5.7.1 AMCs must be informed of any activation of D areas over the high seas. If this activation has been announced by a NOTAM, the AMC reproduces the NOTAM reference in the Additional Remarks field of the AUP/UUPs. This adds to the completeness of the AUP/UUPs for the whole of the FIR. AUP/UUPs publication of D area activation does not replace the need for a NOTAM in accordance with ICAO Annex 15. In this context, AMCs may be assigned the responsibility to publish the NOTAM.
- 5.2.5.7.2 CDRs2 over the high seas are activated by the responsible AMCs and the information is included in the daily AUP/UUPs. AMCs must take into account the fact that there are no national sovereign rights in airspace over the high seas. This therefore may preclude the application of national allocation rules for those CDRs.
- 5.2.5.7.3 When AMCs have notification of activities potentially hazardous to civil aircraft operations in airspace over the high seas which conflict with CDRs1, they can publish the corresponding closure of those CDRs1 by using the appropriate part of the AUP.

5.2.6 Unplanned activation of TSAs/TRAs

5.2.6.1 As Required on the Day Before Operations:

- 5.2.6.1.1 The Airspace Users that need additional airspace reservations should advise the AMC on the unplanned activation of airspace required (in addition to those published by AUP earlier). For this purpose, as from AUP publication up to 17.00 UTC Airspace Users should send to the AMC their request on additional airspace activation needs which were not envisaged by and published in the relevant AUP.
- 5.2.6.1.2 If required, the AMC may carry out coordination with neighbouring AMCs and identify potential available areas in order to find other solutions instead of closing a CDR that was previously available.
- 5.2.6.1.3 AMC should inform FMPs concerned and National AMC/CATFM CCC regarding intentions to implement new or increase already published airspace reservations (in time and/or space) via promulgation of Draft UUP at 17.00 UTC. Relevant AAs, TSA/TRA users, FMPs concerned and adjacent AMC where required, should acknowledge receipt of Draft UUP.
- 5.2.6.1.4 National AMC/CATFM CCC, FMPs concerned and the AMC should assess the

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impact of the request at local and network level (e.g. on-loading sector, sector re-configuration, etc.). During this step, CATFM CCC should identify the flights and/or ATS sectors that would be impacted by the route closure, and consider these elements in the assessment, look for opportunities (reducing the network impact) and coordinate with the AMC and FMPs concerned for optimization of airspace allocation (e.g. changing the activation time, flight level band, CDRs closure details, etc.).

5.2.6.1.5 The result of this analysis and potential alternative scenarios (if any) should be sent by CATFM CCC to the AMCs and to the FMPs concerned for their consideration

5.2.6.1.6 AMCs should receive the Scenario proposed by CATFM CCC and conduct final coordination with Airspace Users, if required.

5.2.6.1.7 AMCs should take the final airspace allocation decision, and, if required, compose UUP by 17.45 UTC and release the resulting UUP information by 18.00 UTC at the latest. Relevant AAs, TSA/TRA users, FMPs concerned and adjacent AMCs where required, should acknowledge receipt of the UUP.

5.2.6.1.8 The new CDR closure information should be disseminated by National AMC/CATFM CCC through:

- The dedicated portal or www.aai.aero
- eAMI

5.2.6.1.9 Dissemination of information via eAMI is being done through the posting of CDR availability updates onto FTP server in the same way as is being done by CATFM CCC for e-RAD promulgation. Such a process will allow AO stakeholders using B2B service to upload the updates. The new CDRs closure information should also be promulgated with appropriate advance AIS notice (e.g. NOTAM).

5.2.6.2 **As Required on the Day of Operations**

5.2.6.2.1 As from previous UUP publication and up to 08.00 UTC, the Airspace Users that need additional airspace reservations should advise the AMC on the unplanned activation of airspace required (in addition to those published by AUP earlier) for the day of operation (D).

5.2.6.2.2 AMC should inform FMPs concerned and National AMC/CATFM CCC regarding the intention to activate new or increase already published airspace reservations (in time and/or space) via promulgation of Draft UUP at 08.00 UTC Relevant AAs, TSA/TRA users, FMPs concerned and adjacent AMCs where required, should acknowledge receipt of Draft UUP.

5.2.6.2.3 Between 08.00 – 09.00 UTC CATFM CCC, FMPs concerned and the AMC should assess the impact of the request at local and network level (e.g. on-loading sector, sector re-configuration, etc.).

5.2.6.2.4 During this step, National AMC/CATFM CCC in coordination with FMPs concerned should identify the flights (also those in the “execution phase”, i.e. after 1

Hour prior EOBT) and sectors that would be impacted by the route closure, and look for opportunities reducing the network impact.

- 5.2.6.2.5 Especially, as a part of the local and network assessment on the day of operation:
- concerned FMPs in coordination with the National AMC/CATFM CCC should identify the flights that will be in the execution phase by the time of CDRs closure/renewed CDR unavailability if the area to be activated as requested and their number;
 - FMPs/ATCs concerned should assess their ability to manage tactically the flights to be in the execution phase if any and in coordination with AMC and CATFM CCC look for optimization of airspace allocation (e.g. changing the activation time, flight level band, CDR closure details, etc.) in such way to ensure the number of flight in execution phase to be handled tactically (number of flights to be in the execution phase) is kept at acceptable level for ATCO(s) concerned;
 - if, in spite of the of the airspace allocation optimization, or due to inability to optimize the airspace allocation, number of the flights to be in the execution phase (and/or added complexity) remains unacceptable for ATCO(s), FMPs concerned in coordination with CATFM CCC should develop and introduce ATFM measures ensuring ATCO(s) workload allows for those flights tactical management;
 - in case if, in spite all efforts, no possibility to put in place either effective ATFM measures or optimize airspace allocation or both, are identified allowing that tactical management of the flights to be in execution phase can be provided by ATCO, such airspace request may be delayed in coordination with the TSA user
- 5.2.6.2.6 The result of the network analysis and potential alternative scenarios (if any) should be made available by the National AMC/CATFM CCC for the regional AMCs and to the FMPs concerned i.e. of upstream and downstream ATS units to be involved in the potential rerouting as a result of unplanned area activation for their considerations.
- 5.2.6.2.7 Regional AMCs should receive the Scenario proposed by National AMC/CATFM CCC and FMPs concerned and conduct final coordination with Airspace Users, if required.
- 5.2.6.2.8 AMCs with agreement of FMPs concerned should take its final airspace allocation decision, and, if required, compose UUP2 by 09.00 UTC.
- 5.2.6.2.9 AMCs should release the resulting UUP2 information by 09.15 UTC at the latest.
- 5.2.6.2.10 Involvement of FMPs concerned and ATC in collaborative decision making process regarding ad hoc airspace allocation on the day of operation is crucial to ensure safety.
- 5.2.6.2.11 The CDRs ad hoc closures caused by new unexpected airspace area activations should be disseminated by CATFM CCC through:

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- a dedicated portal or www.aai.aero or www.aaians.org
- eAMI

5.2.6.2.12 Dissemination of information via eAMI should be done through the posting of CDR availability updates onto FTP server in the same way as is being done by CATFM CCC for e-RAD promulgation. Such a process would allow AO stakeholders using B2B service to upload the updates.

5.2.6.2.13 The new CDRs closure information should also be promulgated with appropriate advance AIS notice (e.g. NOTAM)

5.2.7 Application

5.2.7.1 On the day of operation, FMPs/ACCs concerned when assessing their ability to manage tactically the flights to be in execution phase if the area to be activated as requested should take into account:

- availability of appropriate ATCO Tools and HMI that detect FPL inconsistencies and produces a timely warning to the ATCO;
- the re-clearance via new route points might result in additional radio communication and might distract the ATCO and increase ATCO workload;
- availability of direct communication between ATC and the TSA/TRA users in order to ensure safety in case of communication failure and in other situations when an infringement is imminent,
- the planned activation of a level band within a TSA/TRA is not hampering possible vertical profiles of traffic that is transiting still open CDR above or below the activated level.

5.2.7.2 ATCO should be aware that he would be responsible to give an alternative clearance in accordance with the necessary re-route. This might be a re-route which is actually not in the concerned ATCO's Area of Responsibility. In this case LoAs should be signed with adjacent ACC concerned in order to define appropriate co-ordination procedures to apply for the rerouting of the traffic involved.

5.2.7.3 Involvement of concerned FMPs/ATCs in ad hoc airspace activations collaborative decision making process on the day of operation should be ensured in order to satisfy the procedure safety requirements and ensure the safety.

5.2.7.4 ASM Level 1 should make regular review of the procedure application, analyze its application results, where the procedure is applied especially often - look for improvement of ASM/ATFM pre-tactical phase aiming at improving of the D-1 airspace use planning process accuracy.

5.2.8 Use of Tactical Management

5.2.8.1 ACCs should utilise the CDRs in accordance with the AUP/UUP as well as with tactical modus operandi.

5.2.8.2 When associated TRA/TSA activity has ceased or has been cancelled, ACCs/FMPs

should utilise CDRs on a tactical basis and may offer an aircraft a routing through the inactive area on short-notice.

- 5.2.8.3 The AMC should decide in accordance with criteria established at ASM Level 1 on the provisional closure of CDRs1 to be handled in real time at ASM Level 3.

5.3. Temporary and Contingency Procedures

5.3.1 FUA Temporary Instruction (FTI)

5.3.1.1 The “basic” procedures described above are permanent, common to and binding to all AMCs and the National AMC/CATFM CADF. However, operational instances may arise which, for the benefit of the users, require the National AMC/CATFM CADF and AMCs to:

- a) temporarily deviate from the “basic“ procedures; or
- b) apply a new procedure which has been considered beneficial by the experts of AMCs and of the CATFM CCC/CADF prior to being endorsed as a new “basic” procedure; or
- c) apply a new procedure which could be of temporary validity and/or of such operational impact which would not justify its transformation into a permanent procedure.

5.3.1.2 Procedures of the above nature are named FUA Temporary Instructions (FTI). FTIs shall be agreed/applied by the appropriate AMCs and the CATFM CCC/CADF for all or part of the FUA area.

5.3.1.3 A FTI will be published in the format presented below.

FUA OPERATIONS Issued by:	FUA TEMPORARY INSTRUCTION <i>Title</i> <i>Area concerned:</i>	Number: FTI 02/... <hr style="width: 80%; margin: 5px auto;"/> Validity from: to:
EXAMPLE FORMAT <i>(Insert text as appropriate)</i>		
Page 1	Date	CADF. FMD Supervisors. AMCs. IFPU Supervisors, VAU, MTZ, DEL, Original : BLZ

5.3.1.4 Implementation Procedure

5.3.1.4.1 The National AMC/CATFM CCC, as the unit responsible for the daily operations of the CADF, shall, with sufficient advance notice, coordinate and agree on the implementation of an FTI with the AMCs concerned and, when required, with the FMPs concerned and, if necessary, with the AOs.

5.3.1.4.2 When a decision has been taken among those concerned, the instruction shall be

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published by the CATFM CCC as a FTI. The drafting of the instruction is the responsibility of the National AMC/CATFM CCC. The purpose, scope and parties affected by the instruction shall be clearly stated.

5.3.1.4.3 The National AMC/CATFM CCC should notify the Airspace Management Directorate of the ANSP of the circumstances which require the implementation of a FTI. In any case, FTIs will be sent to all affected AMCs, FMPs and AOs, for application.

5.3.1.4.4 The National AMC/CCC may issue FTIs/AIMs in the domains, inter alia,

- a) CATFM CCC/CADF -AMC working procedures;
- b) FUA/ENV matters (e. g. modification of data);
- c) use of the CATFM CCC tools
- d) CATFM CCC/CADF -AOs relationship

Chapter – 6

AIR DEFENCE REQUIREMENTS

6.1 Air Defense Identification Zones (A.D.I.Z)

6.1.1 Air Defense Identification Zones (A.D.I.Z) as indicated here under have been established for air defense clearance

6.1.2 A.D.I.Z North:

The entire airspace over the area bounded by coordinates 311959.3N 0785954.3E, 283000.3N 0785954.5E, 273000.5N 0765955.5E, 273000.4N 0725957.6E, 280300.2N 0715458.1E (Over the International Border) then along the International Border / Line Of Control with Pakistan and Line of Actual Control with China till 311959.3N 0785954.3E.

6.1.3 A.D.I.Z. West :

The entire airspace over the area bounded by coordinates 280300.2N 0715458.1E, 273000.4N 0725957.6E, 273000.5N 0755956.0E, 150004.4N 0755956.4E, 150004.4N 0715957.3E, 211502.5N 0680700.0E, 233601.7N 0680700.0E then along the International Border with Pakistan up to 280300.2N 0715458.1E.

6.1.4 A.D.I.Z Central:

The entire airspace over the area bounded by coordinates 311959.3N 0785954.3E, 283000.3N 0785954.5E, 273000.5N 0765955.5E, 273000.5N 0755956.0E, 192003.1N 0755956.3E, 192003.4N 0845952.1E, 240002.0N 0845951.9E, 240002.1N 0855951.4E, 264001.2N 0855951.2E (A point over the International border with Nepal) and then line along the Indo-Nepal boundary and Line of Actual Control with China up to 311959.3N 0785954.3E.

6.1.5 A.D.I.Z East :

The entire airspace over the area East of line joining the coordinates 264001.2N 0855951.2E, 240002.1N 0855951.4E, 240002.0N 0845951.9E, 192003.4N 0845952.1E, 192003.5N 0855951.7E, 204003.3N 0891450.1E, 214003.0N 0890950.1E and along the borders of India in the East excluding the airspace covered by territories of Bangladesh, Bhutan and part of Nepal up to 264001.2N 0855951.2E.

6.1.6 A.D.I.Z South:

The entire airspace over the area bounded by coordinates 192003.1N 0755956.3E, 150004.4N 0755956.4E, 150004.4N 0715958.2E, 074006.5N 0762456.3E, 073506.5N 0784455.3E, 100005.9N 0795454.7E, 192003.5N 0855951.7E, 192003.1N 0755956.3E. A.D.I.Z South also includes airspace over and upto the territorial waters of Lakshadweep Islands.

6.1.7 Sub ADIZ South-East:

The entire airspace over the area bounded by coordinates 060007.1N 0915949.6E, 060007.1N 0942448.6E, 133005.4N 0942448.3E, 140005.2N 0915949.3E, 060007.1N 0915949.6E. It would be sub-ordinate organisation under ADIZ South.

6.2. Requirement for Air Defense Clearance (ADC)

6.2.1 ADC signifies authorisation of a proposed flight by the ADIA originating from and/or penetrating into an Indian ADIZ during peace and war. No flight of aircraft civil/military, Indian or foreign originating within the ADIZ defined above and those penetrating into these ADIZ are permitted without Air Defense Clearance.

Air Defence Requirements

- 6.2.1.1. Requirement and Purpose of ADC. No flight (including aircraft, heptrs, UAVs, microlight, power gliders and air balloons) by civil or military, Indian or foreign operator, originating within an ADIZ and those penetrating into ADIZs is permitted without an Air Defence Clearance. The purposes of issuing ADC are as follows: -
- (a) To provide ADIA with advance flight plan data for prompt identification of friendly movements by correlation
 - (b) To avoid wasteful flying effort involved in physical recognition of friendly aircraft.
 - (c) To ensure prompt and appropriate tactical action to investigate unknown flights
 - (d) To effectively deal with unauthorised and objectionable intrusion by foreign aircraft
- 6.2.2 Aircraft flying without an Air Defense Clearance (ADC) or failing to comply with any restriction or deviating from flight plan will be liable to identification and interception procedures as detailed in eAIP India ENR 1.12. ADC number for departing aircraft as well as aircraft entering Indian airspace shall be strictly enforced by ATC officers and no flight would be cleared without a valid ADC number in accordance with AAI/ATM/OPS/30-21/2012 Dated 06 Jun 2012. (Refer Appedix D)

6.3. Procedures for the issue of Air Defense Clearance (ADC)

- 6.3.1 Except the local flights conducted within airspace of 5NM radius centered at ARP and vertical limits of 1000ft.AGL of an aerodrome; aircraft when operating to, through or within the ADIZ shall obtain Air Defense Clearance before takeoff, through the ATC concerned.
- 6.3.2 ADC shall be valid for the entire route, irrespective of intermediate halts for flight originating in one ADIZ/FIR and transiting through other ADIZ/FIR.
- 6.3.3 All flights shall obtain Air Defense Clearance before entering ADIZ from respective FIC ten minutes prior to entering Indian Airspace.
- 6.3.4 Air Defence Clearance will be valid up to one hour after the ETD, for Indian fighter class of aircraft and 15 minutes before ETD to 45 minutes after ETD for all other class of aircraft, unless otherwise stated.
- 6.3.5 Flying club aircraft intending to operate beyond immediate vicinity of an aerodrome where no ATC is functioning may obtain ADC from the nearest IAF ATC Unit. The IAF ATC Unit will advise the FIC concerned regarding the movement of the Flying club aircraft.
- 6.3.6 Scheduled aircraft or flying club aircraft returning to the Aerodrome of departure on the same day may be issued with Air Defense Clearance for return flight also, if so desired, provided that a fresh ADC will have to be obtained in the event of the delay for more than thirty minutes in excess of the estimated departure time for the return flight.
- 6.3.7 Incidents of lapses/ violations will be jointly investigated by concerned AAI ATC units and IAF MLUs in accordance with procedure laid down in letter No. AAI/ATM/OPS/30-21/2014 dated 22 January 2014. (Refer Appendix E)
- 6.3.8 During celebrations connected with Republic Day and Independence Day functions certain flying restrictions/airspace closure would be in effect in accordance with standing instructions of Ministry of Home on the subject vide No. VI 23014/302/2013 (i)-VS dated 08 January 2014. (Refer Appendix F) This needs to be included as a section.

Chapter – 7
ASM LEVEL 3

TACTICAL MANAGEMENT FUNCTIONS (ASM LEVEL 3)

7.1. General

- 7.1.1 Tactical ASM Level 3 consists of the real-time activation, deactivation or real time reallocation of the airspace allocated at ASM Level 2 and the resolution of specific airspace problems and/or traffic situations between civil and military ATS units, controllers and/or controlling military units as appropriate.
- 7.1.2 The real time access to all necessary flight data, including controller's intentions, *with or without system support*, permits the optimized use of airspace and reduces the need to segregate airspace.
- 7.1.3 Adequate real time coordination facilities and procedures are required to fully exploit the FUA Concept at ASM Levels 1 and 2. Flexibility in the use of airspace is enhanced by realtime civil/military coordination capability. This flexibility depends on the potential offered by the joint use of airspace by civil and military traffic

7.2. Modes of Real-Time Civil/Military Co-ordination

- 7.2.1 Direct communication between civil and military air traffic service units/military controlling units is essential to facilitate the safety resolution of specific traffic situations. It should be addressed in detail in written agreements.
- 7.2.2 Associated coordination actions, which include the prompt exchange of information relevant to the safe and expeditious conduct of both civil and military flights, can take place either in an active or a passive mode with or without action by the controller.
- 7.2.3 The "Active mode" of civil/military coordination is the communication in real time between civil and military units which results from a controller(s) action. This active mode includes both "Verbal" coordination, by speech only, and "Silent" coordination, the communication process by manual input only.
- 7.2.4 The "Passive mode" of coordination is the communication of information in real time without any action by the controller. This is usually in the form of previously agreed automatic exchange of flight data between controllers to facilitate OAT/GAT separation without the need for an extra coordination.
- 7.2.5 The "Active mode" of coordination relates to the coordination of traffic situations whereas the Passive Mode of coordination relates mainly to the transmission of data and should be used to establish a course of action only where permitted by agreed procedures.
- 7.2.6 Silent coordination will mainly be used for crossing of airspace and/or route structures when prior coordination is required. The use of silent coordination may reduce the controller workload particularly in areas of very high density traffic.
- 7.2.7 Verbal coordination will be required to resolve certain coordination problems besides being available as the fall-back facility. In particular, the verbal coordination functions will be used whenever the silent system-supported dialogue cannot be

positively and quickly concluded without a direct verbal dialogue.

7.3. Coordination Procedures for ATS Routes and Airspace Crossing

7.3.1 Coordination Procedures for Controlled Airspace or ATS Route Crossings by OAT

7.3.1.1 In order to permit OAT/GAT separation during the crossing by OAT of an ATS route or controlled airspace, different procedures can be used according to the amount and accuracy of the flight data available.

7.3.1.2 Access, via electronic display, to the flight data of the overall OAT and GAT traffic situation involved, allows the controller responsible for OAT and/or GAT separation to determine a plan for either the application of ICAO horizontal or vertical separation minima or the necessity for an active mode of coordination (verbal coordination or system-supported silent coordination).

7.3.2 General procedures - Sufficient flight data allowing ICAO standard separations without additional coordination

7.3.2.1 The display of all relevant OAT and GAT flight data, including controller's intentions required in national LoAs, allows the responsible controller to fulfil his/her responsibility for OAT/GAT separation during a route crossing without the need for additional coordination.

7.3.2.2 Controller's intentions are updated through the exchange of flight data, as laid down in LoAs, either simultaneously with or before, the corresponding ATC clearance is issued.

7.3.3 OAT Crossing of Controlled Airspace - Display of Information

7.3.3.1 When bilaterally agreed, the controller responsible for GAT should be provided with the plan of action of the controller responsible for OAT intending to cross a specific portion of controlled airspace under his/her responsibility. Accordingly, a notification of intention is sent by controller responsible for OAT to the controller responsible for GAT.

7.3.3.2 The display to the GAT controller of all relevant OAT flight data allows the controller to be aware of the foreseen crossing conditions and to initiate coordination, if required. Division of the responsibility or the provision of separation between OAT and GAT is subject to detailed description in relevant LoAs.

7.3.4 Silent Co-ordination for Crossing

7.3.4.1 When the crossing requires prior coordination, the OAT controller sends, by means of a silent coordination message, a request for the crossing of controlled airspace (ATS route, CDR, and CTA). This request is responded to by the GAT controller by means of a silent coordination message.

7.3.4.2 The answer contains either an acceptance of crossing parameters or, if not acceptable, an alternative proposal, including revised crossing data (heading, FL, etc.). Verbal coordination is used if the alternative proposal is not acceptable.

7.3.4.3 When this coordination procedure is applied it binds each controller to an agreement and requires the controllers to conform to the agreed actions throughout the

crossing. Division of the responsibility for separation under the circumstances of such an agreement is subject to national regulations and respective LoA.

7.3.5 **Use of Pre-notified Crossing Corridors by OAT**

7.3.5.1 In some specific cases determined in LoAs, it is better to pre-plan specific corridors for OAT when military traffic demand requires a block of flight levels. The use of these pre-planned crossing corridors is agreed/notified to the responsible controller by means of a procedure similar to one of those described above.

7.3.5.2 Application of the pre-planned crossing corridors procedure binds each controller to the corresponding LoA and requires the controllers to conform to the agreed actions throughout the crossing. Division of the responsibility for separation under the circumstances of such an agreement is subject to national regulations and respective LoA.

7.3.6 **Transfer of Control Responsibility**

7.3.6.1 In case that the above procedures cannot be applied, a responsibility for transfer of control should be described in detail in respective LoA.

7.4 **Coordination Procedures for Airspace Crossings or Off-Route Flying by GAT**

7.4.1 **Crossing Clearance through an Active TRA**

7.4.1.1 When an off route/direct route for GAT is requested through an active TRA temporarily reserved for military activities, prior coordination is required. The request/answer procedure described in previous paragraphs can be used to automate this coordination process.

7.4.1.2 This coordination procedure binds each controller to an agreement and requires the responsible controllers to conform to the agreed actions throughout the crossing. Division of the responsibility for separation under the circumstances of such an agreement is subject to national regulations and respective LoA.

7.4.2 **Prior/Reduced Coordination Airspace (PCA/RCA) Procedures**

7.4.2.1 Under the “Prior Coordination Airspace” (PCA) procedure, individual GAT is permitted to fly “off-route” within a predefined portion of airspace only after prior coordination has been accomplished between responsible controllers.

7.4.2.2 Under the “Reduced Coordination Airspace” (RCA) procedure, GAT is permitted to fly “off route” within a predefined portion of airspace without prior coordination required. However, coordination by the responsible controller is required when OAT is to cross RCA.

7.4.2.3 The display of all relevant GAT flight data, including controller’s intentions, allows the OAT controller to be aware of the GAT crossing conditions of the RCA and to initiate co-ordination, if required.

7.4.2.4 Division of the responsibility for separation under the circumstances of such an agreement is subject to national regulations and respective LoA.

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7.4.3 **Transfer of Control Responsibility**

7.4.3.1 In case that the above procedures cannot be applied, a transfer of control responsibility should be described in detail in respective LoA.

7.5 System Support Functions

7.5.1 **General**

7.5.5.1 At the tactical level the main requirement is to provide system support to create a traffic environment in which the FUA Concept can be applied efficiently, i.e. an environment in which the need to segregate traffic is reduced to a strict minimum. This can be achieved by:

- the provision of airspace use data;
- the exchange of flight data, as appropriate, between civil and military units;
- the provision of system support for airspace crossing.

7.5.2 **Airspace Use Data Function**

7.5.2.1 The Airspace Use Data Information Function should provide, in real time, all the parties concerned with up-to-date information on the current use of airspace, in addition to AUP/UUPs information on allocated and scheduled use of airspace, so as to make efficient use of all available airspace.

7.5.2.2 The supporting systems should assure common, secure and consolidated information exchange of the current airspace status.

7.5.2.3 At ASM level 3 airspace management, information should be available to Controllers on activation, deactivation, short-term cancellation or amendments to reservations and reallocation of the airspace structures.

7.5.2.4 The supporting systems should provide the real time airspace status on an airspace status display and should be capable of interfacing with the ATC systems.

7.5.2.5 Initially, real time information on the current use of airspace should be provided manually in each ATS unit on their own and for their individual system. However, the implementation of CATFM and the introduction of TMUs/FMPs will enhance the availability of information at the working position level.

7.5.3 **Basic Flight Plan Information - Identification Function**

7.5.3.1 The Basic Flight Plan Data Information Function concerns the automatic exchange between civil and military control units (e.g. MLU) of all necessary flight plan data.

7.5.3.2 This function will permit the creation of associated tracks/labels in both civil and military units for the display and identification of the overall OAT and GAT traffic situation involved in a civil/military coordination process.

7.5.3.3 As a minimum, to permit the correlation of radar data with flight plan data, the aircraft identification/call sign, the SSR Mode and Code for each flight concerned

in the coordination process shall be passed from civil to military units, and when required from military to civil units.

7.5.4 **Current Flight Plan Information Function - Separation Function**

7.5.4.1 The current Flight Plan Data Information Function allows the automatic and dynamic update of the flight plan brought about by any subsequent ATC clearances.

7.5.4.2 The exchanged data may include data such as assigned heading, direct clearance, rate of climb/descent, assigned speed, controller/sector identification and any other executive data, including controller's intentions, as specified in a bilateral agreement between the units involved.

7.5.4.3 Updated flight data shall be exchanged, as laid down in LoAs, either before or simultaneously with the corresponding ATC clearance is issued.

7.5.5 **Silent Co-ordination Functionality - Airspace Crossing Function**

7.5.5.1 The Silent Coordination Functions, based on a system-supported dialogue, allow controllers to exchange coordination messages using electronic displays. These functions will speed-up and facilitate coordination procedures and methods, which at present are conducted mainly by speech. The main applications of this system-supported dialogue concern:

- crossing of ATS permanent/CDRs routes by OAT;
- crossing of controlled airspace by OAT;
- crossing of airspace reservation by GAT;
- use of additional CDRs/ direct routing/off-route by GAT.

7.5.5.2 The system-supported dialogues required above for airspace and route crossings can be divided into the Airspace Crossing Intention Notification Functionality and the Airspace Crossing Dialogue Function.

7.5.6 **Airspace Crossing Intention Notification Functionality**

7.5.6.1 The "Airspace Crossing Intention Notification Function" should be used to advise a civil ATS unit of the plan of action of a military controller intending to cross a specific portion of controlled airspace with (a) military flight(s) or vice versa.

7.5.6.2 This notification of intention should not be seen as a request for crossing clearance or a cleared flight path; only the plan of action is forwarded, if required by bilateral agreement, for the information of the civil controller, the military controller or Air Defence (AD) unit.

7.5.7 **Airspace Crossing Dialogue Function**

7.5.7.1 The "Airspace Crossing Dialogue Function" is a further development of the Airspace Crossing Intention Notification Function. It should be used when, by bilateral agreement, a prior OAT/GAT coordination is required for airspace or route crossing.

7.5.7.2 The Airspace Crossing Request Message (XRQ)/ Airspace Crossing Acceptance Message (ACP) - Airspace Crossing Counter-Proposal Message (XAP)-Airspace

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Crossing Reject Message (RJC) messages have been developed to permit the harmonized system supported distribution of Airspace Crossing information.

7.6. Common or Shared Use of Airspace**7.6.1 Common Use of Airspace**

7.6.1.1 An AMC can decide at ASM Level 2, in accordance with criteria defined at ASM Level 1, not to allocate specifically airspace as either CDR or TRA/TSA, or AMC-Manageable D and R areas. In such a case, the safe use of airspace in real time is subject to ASM Level 3 negotiation between the responsible ATS units and/or controlling military units concerned.

7.6.1.2 The corresponding ASM Level 3 negotiation rules agreed at ASM Level 1 should be reflected in LoAs established between the responsible ATS units and/or controlling military units concerned. These rules clearly define under which circumstances (nature of activity, civil/military coordination capability) airspace can be jointly used.

7.6.1.3 When the RCA procedure is in force, the LoAs should define the criteria required for the application of the PCA procedure with specific notice periods.

7.6.2 Shared Use of Airspace

7.6.2.1 It is possible to grant access to airspace, under suitable arrangements, between specific users and the ATS provider managing that airspace. In this scenario a specific airspace user may be given access to a specific volume of airspace under specific conditions where, under normal circumstances, this may not have been possible.

7.6.2.2 With the PCA procedure, it is possible to temporarily book airspace, for the use of specific users, which is located outside the major GAT traffic flows. A PCA is a given block of controlled airspace within which military or other specific activities can take place on an ad hoc basis with individual GAT transit allowed under rules specified in LoAs between units concerned.

7.6.2.3 A PCA will mainly be used to temporarily separate GAT operating in controlled airspace in a known traffic environment from high-speed military operations such as air combat training and formation flying. When military activities within a PCA cease or decrease, the RCA procedure will be initiated.

7.6.2.4 Another possibility consists in the temporary allocation of a published area (including Terminal Area) or a subdivision of it (e.g. a TMA Sector) usually under the responsibility of a defined ATS provider (e.g. civil ATS provider) to another ATS provider (e.g. military ATS provider). This area can be used autonomously to allow the conduct of a specific activity or can be merged with an active area in order to increase the volume of traffic controlled by the ATS provider concerned.

7.6.2.5 These arrangements shall be described in a LoA between the concerned parties.

7.7. Additional ASM Procedures for real time use of airspace by other than GAT/OAT

7.7.1 The procedures described above are commonly used within the upper and lower controlled Airspace.

7.7.2 However, due to somewhat different composition and nature of the lower airspace and the associated flying activities generated by General Aviation (e.g. recreation-

al flying, air sports, etc.) and by the aerial work (e.g. environmental surveillance, firefighting, aerial photography, etc.), additional ASM procedures should be implemented in order to meet the needs of all airspace users and to ensure that unnecessary restrictions are not imposed.

- 7.7.3 Benchmarking successful FUA models and adoption of Global Best Practices should be undertaken from time to time.
- 7.7.4 The main difficulty related to the application of FUA outside of controlled airspace is the way of informing in real time the users and/or the ATS providers about the current airspace structure and associated status.
- 7.7.5 With the progressive implementation of FUA, In order to ensure the maximum availability of airspace for all users, outside the notified hours of operation of a specific airspace (e.g. CTR, TMA, etc.) the airspace classification of that volume of airspace may be considered to be suitably changed to the classification of the surrounding airspace outside the hours of operation of the controlled airspace in order to make that airspace available to other users.
- 7.7.6 Whilst the emphasis on this flexible use of airspace has traditionally focused on the civil/military use of the airspace, there is also a need to address the civil/civil use of the airspace in order to maximise its availability to all users.
- 7.7.7 The hours of operation of such airspace may be notified for predetermined dates/times in the national AIP; for other less determinate applications, by NOTAM.
- 7.7.8 Notifications of these applications and deactivation will generally be broadcast on the appropriate frequency, and/or announced by the flight information service (FIS).
- 7.7.9 The general methods of promulgation and notification remain as for the Concept. Consideration is required as to the possibility of widening the circulation of the AUP and the list of AAs, in order that the information reaches the required wider audience.
- 7.7.10 The AIP should contain sufficient information to assist the pilot in making the appropriate arrangements for flight safety. The items shall include:
- the volume name/code identifier;
 - WGS coordinates;
 - dimensions (lateral and vertical);
 - times/days of operation;
 - contact details [telephone number /RT frequency (RTF)].
- 7.7.11 Different categories of airspace users may require differing notification processes and promulgation requirements, according to the classification/type of the subject airspace. All entities involved in the management and use of this airspace shall be included in the distribution lists of AUPs or a similar method (e.g. NOTAM) sufficient to achieve the required promulgation.

Chapter – 8

CIVIL MILITARY COOPERATION AND INTEROPERABILITY OF THEIR SYSTEMS

8.1. Civil Military Cooperation and Interoperability of their systems

8.1.1 Global Plans and Guidance Material

8.1.1.1 The Global Air Navigation Plan (Doc 9750) has as a final goal the achievement of an integrated, harmonized and globally interoperable ATM system. A global system can be described as a worldwide system that, on a global basis, achieves interoperability and seamlessness across regions for all users during all phases of flight. The Global Plan includes technical, operational, economic, environmental, financial, legal and institutional elements and also offers States practical guidance on implementation and funding strategies. In accordance with the Plan, States and regions will choose objectives and draft their guidance in support of the particular needs of a homogenous ATM system.

8.1.1.2 Doc 9750 aims to provide initial guidance on, and facilitate implementation of, the civil/military coordination measures and cooperation concepts embedded in the Global Air Traffic Management Operational Concept (Doc 9854). Achievements in the integration of the specified Global Plan initiatives (GPI) require the implementation of collaborative airspace design and management, performance-based navigation (PBN), the integration of ground and airborne systems or data link or communications. It is significant to note that the first of the twenty-three detailed GPIs of the Global Air Navigation Plan is GPI-1, “Flexible Use of Airspace”.

8.1.1.3 Doc 9854 is a relatively new document that describes the services that will be required to operate the global air traffic system in the near future and beyond. The Operational Concept highlights the elements needed to increase user flexibility, maximize efficiencies and increase system capacity while at the same time improving safety. Consideration of the interoperability and operations of military systems is an integral part of these elements.

8.1.2 Interoperability road map and migration

8.1.2.1 This possible situation entails the urgent need to identify valid solutions for interoperability between civil and military CNS/ATM systems at an early stage in their development and to define a migration path towards long-term avionics convergence and integration. India as a signatory to the Chicago Convention of ICAO and its Annexes, should establish a formal process of consultation with military users at an early stage of future avionics development with the aim of achieving maximum system interoperability between civil systems and military units. The ATM Operational Concept presents a vision of an integrated, harmonized and globally interoperable ATM system — a system that meets agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements for all users during all phases of flight. The vision does not discriminate or make any exceptions about the type of traffic it is designed to serve.

8.1.2.2 Communications, navigation and surveillance (CNS) systems, and advanced information management technology are to be used to functionally combine the ground-based and airborne system elements into a fully integrated, interoperable ATM system open to all users.

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- 8.1.2.3 *Interoperability can be considered as the ability of “systems” (not exclusively technical systems) to provide information and services to, and accept information and services from, other systems and to use the information and services so exchanged.* Interoperability constitutes the driver of standardization, integration and cooperation.
- 8.1.2.4 Global standards, uniform principles and agreements are needed to ensure the technical and operational interoperability of the ATM system. *However, ATM system interoperability needs to be considered in the broader context of governance, not just technology and procedures, while bearing in mind the requirements users place on the system.* After all, ATM aims to enable all airspace users, including the military, to operate their preferred flight/mission profiles, cost-efficiently and effectively, without compromising flight safety or national security.
- 8.1.2.5 Interoperability specifics, however, are not always well-defined when considered in relation to the CNS/ATM field. They are often situation-dependent, come in various forms and degrees and can occur at various levels, i.e. strategic, operational and technical.
- 8.1.2.6 From the aforementioned, it can be concluded that civil/military coordination and interoperability are very similar. Interoperability can be identified as strategic/political or operational/technical. The implementation of FUA in India is envisaged within the State and not across neighboring States and therefore the strategic/political interoperability is a non-issue at this stage.
- 8.1.3 **Strategic, Political and Technical Interoperability**
- 8.1.3.1 Interoperability at the operational level occurs when strategic, political and technical interoperability come together, not only to help all aviation partners to shape the environment and manage crisis, but also to support any anticipated aviation growth and its associated impact on aviation safety, environment, efficiency and capacity.
- 8.1.4 **Operational & Technical Interoperability and SWIM**
- 8.1.4.1 The benefits of interoperability at the operational and technical level generally derive from the inter- changeability of system elements or operational procedures. An example is the system-wide information management (SWIM) concept.
- 8.1.4.2 This concept enable users to randomly use that portion of information viable for their respective operation and can be achieved only through the interoperable technical feeders of the network. For this reason States and military organizations should endeavour to define mutually interoperable systems early in their design phase.
- 8.1.4.3 Another benefit of interoperability is modularity, which allows for the possibility of collecting only those technical facilitators that are necessary to conduct one’s operation. An example of this is the all-purpose structured Eurocontrol surveillance information, known as the ASTERIX protocol, used for radar data exchange.
- 8.1.4.4 This exchange protocol, in combination with a multi-radar tracker, can enable a civil

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air navigation service provider (ANSP) to use externally provided radar data, without necessarily procuring its own radar system, by using radar data provided by military sensors. States and military organizations should ensure a level of modularity in their respective systems to allow those systems access to a free exchange of information as required. Utilization of military radars for civil needs should be in exceptional circumstances. Additionally, exchange of data between military and civil will be based on type of data required by civil as the military radar data has classified information tagged to it.

8.1.5 Data sharing in Indian Context

- 8.1.5.1 AAI is in the process of sharing the surveillance radar data of civil radars with IAF. The seamless integration of the civil radar data with IAF, as envisaged in the Group of Ministers report, will be a reality, post integration of AAI radars. This would facilitate the Indian Air Force to have an enhanced Situational Awareness of civil flights.
- 8.1.5.2 The Indian Air Force has established Military Liaison Units (MLU) at all major Air Traffic Control Centers, including the Metro ATCCs. The Flight Data Processing Systems (FDPS) data from the ATS Automation systems is provided to the MLU for the purpose of identification of all traffic that is transiting within/through the four Flight Information regions viz., Mumbai, Delhi, Kolkata and Chennai. The information presented at the workstations of the MLUs is used to identify and assign a discrete Air Defence Clearance Number (ADC) which is a permit to operate in the Air Defence Identification Zone(s) of the Indian Airspace. The ATCCs thus, facilitate the information exchange on the Air Defence approval between the Indian Air force and the airline operators.
- 8.1.5.3 At the Delhi ATCC , a Joint Control and Analysis Centre has been established with the objective of providing security over the airspace over Rashtrapathi Bhawan (VIP 89)and owing to the proximity of the Delhi airport to the sensitive area north east of the AAI has provided the JCAC with information from both Surveillance Data Processing System and Flight Data Processing System from the Delhi ATS Automation system enabling JCAC to monitor all flights operating in Delhi FIR, especially in the vicinity of the airport to observe and act on any errant manoeuver by any flight.

8.1.6 Interoperability of CNS elements, the costs involved and the benefits

- 8.1.6.1 Costs associated with interoperability at the operational and tactical level very often derive from inefficiencies caused by a number of factors outside the direct control of the involved parties, such as strategic objectives, system impossibilities and institutional or governmental changes. States and military organizations should consider interoperability.
- 8.1.6.2 Civil/military interoperability in the area of communications, navigation and surveillance (CNS) infrastructure will enable the future capacity gains and safety improvements necessary to cater to the forecast increase in civil air traffic.
- 8.1.6.3 Ultimately, when the foreseen operational improvements to the air traffic management (ATM) system are in place, operations will be conducted in a highly automated

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environment dictated by increased traffic levels and the need for advanced tools and real-time information exchanges. These stringent conditions can be met only if both civil and military authorities cooperate fully.

- 8.1.6.4 However, there are some well-known deficiencies in the harmonization and interoperability of civil and military CNS systems used to support ATM operations.
- 8.1.6.5 Historically, military CNS systems have been procured with the primary objective of satisfying very demanding military operational requirements which often take precedence over the common ATM requirements. At the same time, on the civil side, in some cases there are visible difficulties in accommodating relevant military requirements, and a stable vision of future ATM developments is not always available to guide military planners.
- 8.1.6.6 Such lack of civil/military interoperability is sometimes the consequence of one or more of the following reasons:
- a) longer military procurement cycles and public budget constraints;
 - b) lack of space in the cockpit for extra avionics;
 - c) difficulty monitoring civil CNS/ATM developments;
 - d) absence of supporting military requirements;
 - e) lack of recognized certification processes; and
 - f) security and institutional aspects.

8.1.7 Mandatory carriage of equipment & exemptions

- 8.1.7.1 The end result is that, in some cases, military airspace users have to perform operations within the general air traffic (GAT) environment, carrying additional aircraft equipment that is not essential to military tasks; this entails the application of exemption policies. Not only must the ATM network satisfy the national security and defence requirements but it must also cope with the increasing pressure for higher air traffic capacity while maintaining the required level of safety.
- 8.1.7.2 This can be achieved in the future only through further improvements in civil/military coordination to raise the level of civil/military interoperability.

8.1.8 Civil Military Systems Interoperability Roadmap

- 8.1.8.1 The Technical subcommittee under the NAMAC may develop a Civil/Military CNS/ATM Interoperability Roadmap in close cooperation with national military authorities and other stakeholders.
- 8.1.8.2 The Roadmap shall describe a common framework for the evolution of Indian civil and military CNS/ATM systems through to 2020 and beyond. The plan will identify, in the short-term, a minimum set of interoperability requirements and the progressive convergence of related CNS technologies leading to the future integration of systems supporting ATM.
- 8.1.8.3 The Interoperability Roadmap, which is expected to be an important source of guidance for civil and military ATM planners, was developed taking as the basis the current Indian CNS/ATM strategies and a set of known military requirements.

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- 8.1.8.4 The Roadmap should provide a great level of detail in the domains of communications, navigation and surveillance. It shall identify a number of recommended actions considered as fundamental to achieving the proposed levels of interoperability and long-term integration of civil and military CNS enablers.
- 8.1.8.5 The Civil/Military CNS/ATM Interoperability Roadmap should assess the current Indian CNS strategies and the existing military systems, used within the ATM context, to derive an appropriate migration path towards required interoperability levels or integration.
- 8.1.8.6 The endeavour of the State would be to converge technologically with Civil Systems in a phased manner in the future. However, there would be limitations towards achieving this aspect, which is also recognized by ICAO. As per ICAO CIR-330 constraints on Defence budget spending create financial challenge of fitting state aircraft with new equipment to satisfy global developments in new ATM programmes.
- 8.1.8.7 Common technologies should lead to the development and application of common rules and required performances (airworthiness) for both civil and military flight operations within jointly used airspace. However, exemptions for military aircraft would still have to be granted wherever required.

8.1.9 Communications

- 8.1.9.1 The communications systems that supports air traffic control (ATC) functions still rely on aging techniques, but the situation is likely to evolve in the future to the use of state-of-the-art communications technologies in aviation.
- 8.1.9.2 Nevertheless, the level of interoperability between civil and military communications systems remains insufficient not only for fixed ground-ground communications but also for military avionics used in the air-ground segment.
- 8.1.9.3 Military communications and information systems (CIS) are mainly focused on military-driven command and control functions and thus rely on technologies mainly driven by military operational requirements and security aspects (e.g. information security). Hence, there is a need to ensure that required interoperability is achieved by making necessary adjustments in civil systems without insisting on modification of military systems.

8.1.10 Navigation

- 8.1.10.1 The need for seamless interoperability between civil and military navigation systems is of utmost importance when flights are conducted in controlled airspace.
- 8.1.10.2 In the future the continuing increase in system integration and the overall airborne/ATM architecture may influence civil/military interoperability and systems convergence in this domain.
- 8.1.10.3 Although military operational requirements with regard to positioning, navigation and timing are met in specific national and international documents, the increasing influ-

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ence of civil navigation requirements needs to be taken into account when military aircraft are flying as GAT.

8.1.11 Surveillance

8.1.11.1 Surveillance systems are an essential element of integrated ATM operations serving both civil and military users.

8.1.11.2 Interoperability in this area requires not only the continued provision of primary surveillance radar (PSR) and secondary surveillance radar (SSR) but also the proper consideration of future surveillance tools such as Multilateration and automatic dependent surveillance (ADS).

8.1.11.3 Ability of State aircraft to coexist with GAT traffic within Mode S airspace would remain a challenge for civil/military interoperability in surveillance domain. There may be certain military aircraft in which modifications cannot be done to install such equipment and hence will have to be exempted from such requirements.

8.1.11.4 The 21 ADS-B ground receivers have added to the surveillance coverage over Indian continental airspace as well as the Oceanic airspace of Bay of Bengal and the Indian Navy is considering the procurement of ADS-B receivers to be placed on board naval vessels. An integration of the ADS-B network thus formed may provide a huge benefit both to the Indian Navy and the Indian ANSP and Airline Operators.

8.1.11.5 Future flight management systems (FMS) are recognized as an outstanding evolution that can also influence the proposed objectives of civil/military CNS/ATM system interoperability. These areas are also identified in the Roadmap.

8.2. Dynamic Airspace Management

8.2.1 General

8.2.1.1 The intent of Dynamic Airspace Management (DAM) is to establish processes exploiting the airspace in a dynamic manner as close as practical to the time of operations to better accommodate users' requirements in accordance with ever evolving network operations. As such, the DAM process should complement ASM activities usually conducted at ASM Level 2, but restricted to a limited timeframe (i.e. the day before operations).

8.2.1.2 The DAM process refers to the use of additional procedures for the delineation and allocation of airspace, and the associated dissemination of information with the aim of enhancing the current FUA process to respond to specific airspace requirements and/or route optimization.

8.2.1.3 DAM addresses the planning, allocation and use of dynamic airspace structures to exploit optimum airspace capacity as a part of defining airspace configurations. This may be achieved through either existing airspace structures or those delineated ad hoc.

8.2.1.4 The elements of the dynamic airspace structure planning are:

- greater choice of routes by including route options supplemented by suit-

Civil Military Cooperation and Interoperability of their systems

able alternatives as a function of modularity of airspace reservation or restriction;

- greater flexibility to respond to short notice military operational requirements for existing or additional portion of airspace;
- provision of proactive route activation/airspace reservation or restriction allocation through a collaborative decision making process to accommodate short-term changes in routings and civil traffic demand in coordination with airspace reservation or restriction requests, adjusted to match the military training and operational profile.

8.2.1.5 Once an adequate information awareness system is in place, ‘ad hoc structures’, whether routes or areas, would be established on an ad hoc basis to meet operational needs at shorter notice than the usual ASM Level 1 process. The establishment of such ad hoc structures at ASM Level 2 or ASM Level 3 should follow the general design and safety management criteria.

8.2.1.6 Prior to implementing any DAM process at the three ASM levels, the following topics must be addressed and referred to in order to enhance the Basic FUA concept:

- **Delineation of Airspace Structures:** ASM Level 1 establishes airspace structures and defines their conditions of use through a series of options based on sub-division of temporary airspace reservations or restrictions and an increased number of related CDR routes. ASM Level 1 also defines and establishes processes and procedures allowing for the delineation of additional ad hoc airspace structures at ASM Levels 2 and 3 as appropriate.
- **Allocation of Airspace Structures:** At ASM Level 2, the airspace planning and allocation process enables the allocation of specific airspace configurations, based on a predefined and/or an ad hoc airspace structure, in response to specific airspace requirements and/or route optimisation. At ASM Level 3, a decision-making process needs to be implemented, allowing all partners involved to discuss, modify and agree at short notice (i.e. as near real time as possible) on the allocation / reallocation of airspace on the day of operations.
- **Dissemination of Information on Airspace Structures:** ASM system supported tools are used at ASM Levels 2 and 3 in order to inform all airspace users and providers affected by any airspace changes resulting from the DAM process, and to increase common situational awareness.

8.2.2 **DAM process and benefits**

8.2.2.1 Within these dynamic airspace structures planning, allocation and using processes, permanent ATS routes and available CDRs should be plannable, while predefined or ad hoc temporary airspace reservations or restrictions would remain inactive until formally allocated.

8.2.2.2 The DAM process enables all airspace users to follow preferred and flexible flight profiles and provides for two major benefits:

- equitable treatment in allocation of airspace and trajectories required at short notice;
- aircraft operators to increase their awareness of possible Routing options.

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ASM		ASM Level 1	ASM Level 2	ASM Level3
Airspace Delineation	Basic FUA	<ul style="list-style-type: none"> - Airspace Design Process - Establishment of airspace structures (with a limited number of scenarios) 		
	Dynamic Airspace Management	<ul style="list-style-type: none"> - Establishment of airspace structures offering greater choice of route options and flexibility to extend/ sub-divide military training areas - Ad hoc Airspace Delineation Process 	Ad hoc structure	Ad hoc structure
Airspace Allocation	Basic FUA	Priority Rules and Negotiation Process	Current AMC Process	Limited to real time activation / deactivation
	Dynamic Airspace Management	'Modus Operandi' of pre-defined scenarios	Enhanced AMC Process moved closer to time of operation	Collaborative Decision-making Process at very short notice
Information, Collection and Dissemination	Basic FUA	AIP NOTAM	AUP / UUP	Tel / Fax / Radio / NOTAM / Data Processing
	Dynamic Airspace Management	Airspace Data Repository	Airspace Data Repository	Airspace Data Repository Tel / Radio / Data Link

Enhanced Basic FUA Process with Dynamic Airspace Management

8.2.3 **Delineation of dynamic airspace structures at ASM Level 1**

8.2.3.1 **ASM Level 1 Process for design of dynamic airspace structures enabling activation of predefined airspace configurations**

8.2.3.1.1 The design of an ATS route structure, including CDRs and OAT routes and of temporary airspace reservations or restrictions (TRA/TSA/CBA) at national ASM Level 1 and the traffic distribution at Strategic ATFM Level are developed in a coordinated and cooperative process at national and regional level:

- the route architecture should be planned to include adjustable elements in order to accommodate variations in expected traffic demand, while
- the traffic distribution conforms with the set of predefined airspace co

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- figurations in order to derive the best possible capacity.
- 8.2.3.2 ASM Level 1 Process allowing the delineation of ad hoc structures at ASM Levels 2 & 3
- 8.2.3.2.1 With reference to the definition of DAM, the daily delineation of ad hoc structures at ASM Levels 2 and 3 should be based on clear criteria established at ASM Level 1.
- 8.2.3.2.2 Ensuing from the national collaborative and integrated airspace planning, the process aims at:
- a. defining clearly the assumptions to be taken into consideration when delineating the airspace;
 - b. guaranteeing that these assumptions will be published in the appropriate LoAs in order to maintain a reference for subsequent future reviews of the airspace structure;
 - c. making a clear distinction between the strategic delineation of the airspace and the operational use of it at tactical level.
- 8.2.3.2.3 NHLAPB/NAMAC should establish the defined criteria, taking into account all airspace users and ANS providers, as well as the various issues regarding the impact of the potential ad hoc structure on the current airspace structures, procedures and ATFM measures in force:
- a. the location of the ad hoc structure (within a State's borders, adjacent to the border);
 - b. the classification of the airspace within which the ad hoc structure will be implemented;
 - c. the airspace status (reserved, segregated);
 - d. the associated altitude and / or flight level blocks;
 - e. the impact of the ad hoc structure on the current airspace structure;
 - f. the impact of the ad hoc structure on the capacity of the ATC sector(s);
 - g. the separation criteria between traffic inside the ad hoc structure and transiting and / or circumnavigating traffic;
 - h. the airspace users allowed to request and use the ad hoc structure;
 - i. the ANS providers and Air Defence (AD) units allowed to delineate and to control, if required, the ad hoc structure;
 - j. the mandatory ATS to be provided;
 - k. the mandatory coordination means;
 - l. the required airspace design tool allowing the display of the ad hoc structure on the Controller Working Positions (CWP) concerned.
- 8.2.3.2.4 In busy and congested airspace, a significant number of flights operate on published ATS routes. In less constrained airspace there might be more freedom to manoeuvre and optimize the flight trajectory. Both cases however, offer a possibility of ad hoc routings at ASM Levels 2 and 3, subject to sector workload, e.g. in case of early closure of an AMC Manageable Area. The flight trajectory should be continuously optimized to meet the best balance between the users' needs, the prevailing flight circumstances, the requirement to ensure safety, and overall ATM efficiency. It should

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take into account actual weather conditions, airspace availability and capacity/load relationships in the en-route or terminal airspace, or at airports. The ad hoc routing could be defined based on:

- specific tracks based on headings;
- random coordination transfer points.

8.2.3.2.5 Similarly, and in order to better match the airspace users' requirements, ASM Levels 2 and 3 should be able to delineate ad hoc areas according to short notice and/or real time demands.

8.2.3.2.6 These areas may encompass all current FUA structures (TRA/TSA, CBA, AMC manageable D or R areas, etc) associated with the appropriate required separation and/or spacing means, as well as additional areas acting as holding areas or extended TMA airspace, created in order to guarantee flight safety in case of any ATFM constraints (e.g. circumnavigation of adverse weather, technical limitations of ATS ground equipment, etc.).

8.2.3.2.7 Different methods could be adopted when delineating ad hoc areas:

- a) location in latitude/longitude of the dedicated points, associated with the level block;
- b) the radius of the area centered on a point (defined by coordinates), associated with the level block;
- c) a specific volume around a flight (e.g., 5 NM from a flight);
- d) specific tracks flown between published reporting points or based on a drawing on a chart (e.g. air to air refueling or civil photo missions);
- e) in relation to a navigational aid.

8.2.4 **Situational Awareness**

8.2.4.1 The use of a common airspace design tool allowing the representation of the area and its display on the current traffic situation picture may be required.

8.2.4.2 It would ease the collaborative decision-making process between the partners concerned in presenting an ad hoc area (impact assessment) and to avoid any misunderstanding in the definition of its volume and its location.

8.2.5 **Coordination procedures and LoAs**

8.2.5.1 The NHLAPB/NAMAC should establish an efficient coordination process between all airspace users and ANS providers, allowing the delineation of ad hoc structures at ASM Levels 2 and 3.

8.2.5.2 During the process development, care should be taken that operations on short notice will not be hindered by other activities already allocated; furthermore, the NHLAPB/NAMAC should be informed of any discrepancies in order to review the process, ensuring that it serves efficiently the purposes for which it was designed initially.

8.2.5.3 The ASM Level 2 & 3 negotiation rules should be published in the LoAs established at ASM Level 1.

8.2.5.4 These rules should clearly define the civil/military coordination process, the circumstances (nature of activity, civil/military coordination capability, etc.) and the condi-

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tions (ad hoc airspace classification, coordination procedures, etc.) under which the ad hoc structures could be delineated. Coordination between all parties involved (civil and military airspace users, ANS providers, CATFM - CCC, adjacent AMCs), should be conducted in order to maintain consistency with the current airspace structures, while ensuring that operational and safety requirements are met and that ad hoc structures do not impact on ATFM measures in force. ATFM measures will be affected by military requirements such as ORP scrambles, fighter aircraft low on fuel etc. operating from joint user airfields and alternatively by civil air ambulance's emergency requirements, such as, in case of immediate organ transplant etc. Therefore, ATFM must be flexible enough to incorporate such contingencies or requirements as and when they occur.

8.2.6 Delineation of ad hoc structures at ASM Level 2

8.2.6.1 According to the criteria and processes established at ASM Level 1, the AMCs should be able to perform ad hoc structure delineation at short notice in order to respond quickly and effectively to airspace users' requirements.

8.2.6.2 The AMCs should apply standard procedures, including the collection, analysis and conflict resolution of the airspace requests and the airspace allocation. However, due to the inherent short time span, these basic procedures should be conducted simultaneously with a close coordination process involving all airspace users, ANS providers, adjacent AMCs concerned and the CATFM-CCC.

8.2.6.3 The methods used to delineate ad hoc Routing and areas should comply with the guidelines established at ASM Level 1.

8.2.6.4 The use of a common airspace design tool may ease the coordination process in guaranteeing the exchange of harmonized airspace data information and in ensuring that short-notice operations and associated ad hoc airspace delineation will not be hindered by other activities that have already been allocated at ASM Level 2 but are not yet occurring.

8.2.7 Delineation of ad hoc structures at ASM Level 3

8.2.7.1 According to ASM Level 1 criteria and processes, ASM Level 3 should be able to perform real time delineation of ad hoc airspace structures in order to better match the airspace users' needs and to accommodate the traffic flow requirements in optimizing the flights' trajectories.

8.2.7.2 Adequate real time coordination facilities (airspace design tool, direct controller-controller communication means, etc.) should be required and accurate procedures should be published in relevant LoAs.

8.2.7.3 The methods used to delineate ad hoc routings and areas should comply with the guidelines established at ASM Level 1.

8.2.7.4 The use of a common airspace design tool may ease the coordination process in guaranteeing the exchange of harmonized airspace data information and in allowing all parties concerned to assess in real time the impact of the ad hoc structure on the current air traffic picture. It also permits the automatic and simultaneous display of the new airspace structure on all CWP's concerned.

8.2.8 Airspace Allocation Process at ASM Level 2 & 3**8.2.8.1 Dynamic Airspace Allocation Process at ASM Level 2**

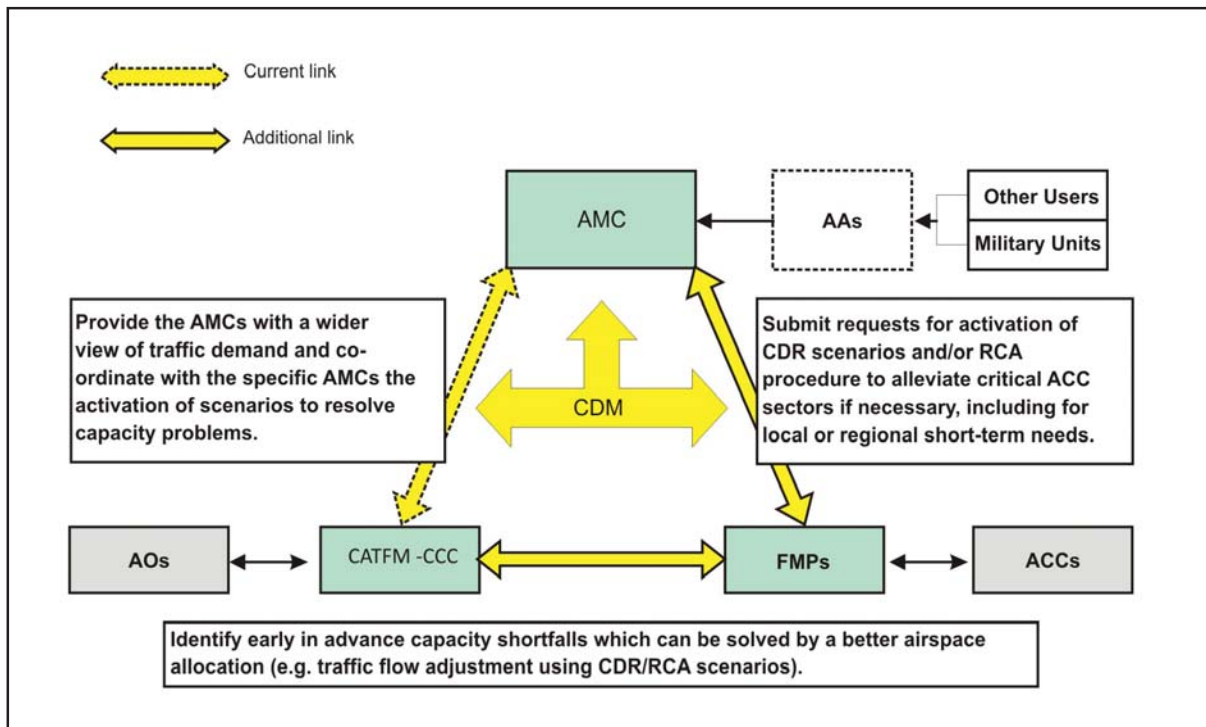
8.2.8.1.1 Pre-tactical ATFM activities for an optimized capacity management allow the CATFM - CCC together with ACCs/FMPs concerned to identify capacity shortfalls which

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can be solved by a better airspace allocation early in advance. Then, at pre-tactical ASM Level 2, the activation of airspace configurations to resolve a substantial capacity issue or military operational requirement is coordinated directly between the CATFM- CCC and designated AMCs (in addition to standard coordination with ACCs/FMPs) providing them with wider information on overall traffic demand.

8.2.8.1.2 Equally, the use of a more dynamic route activation/airspace allocation to accommodate local and regional short-term needs entails closer coordination between AMCs, ACCs/FMPs and CATFM- CCC in order to assess the impact of local AMC decisions on the overall traffic situation.

8.2.8.1.3 This coordination is supported by various systems allowing for the required exchange of information between them as illustrated below.



8.2.8.1.4 The airspace allocation process at ASM Level 2 should also respond to specific short notice airspace requirements and/or route optimization. It should ensure that within such a reduced time window (e.g. up to a few hours before operations), the AMC can still collect, coordinate and assess the airspace request with all parties concerned as illustrated above, before determining airspace and routing allocations, with priority for indispensable military operations.

8.2.8.2 Dynamic Airspace Allocation Process at ASM Level 3

8.2.8.2.1 The ASM Level 3 airspace allocation, is commonly an activation / deactivation process of airspace structures in accordance with ASM Level 2 allocation decisions published in the AUP/UUPs. However, there is a need for the dynamic allocation process that could be conducted both at pre-tactical and tactical level.

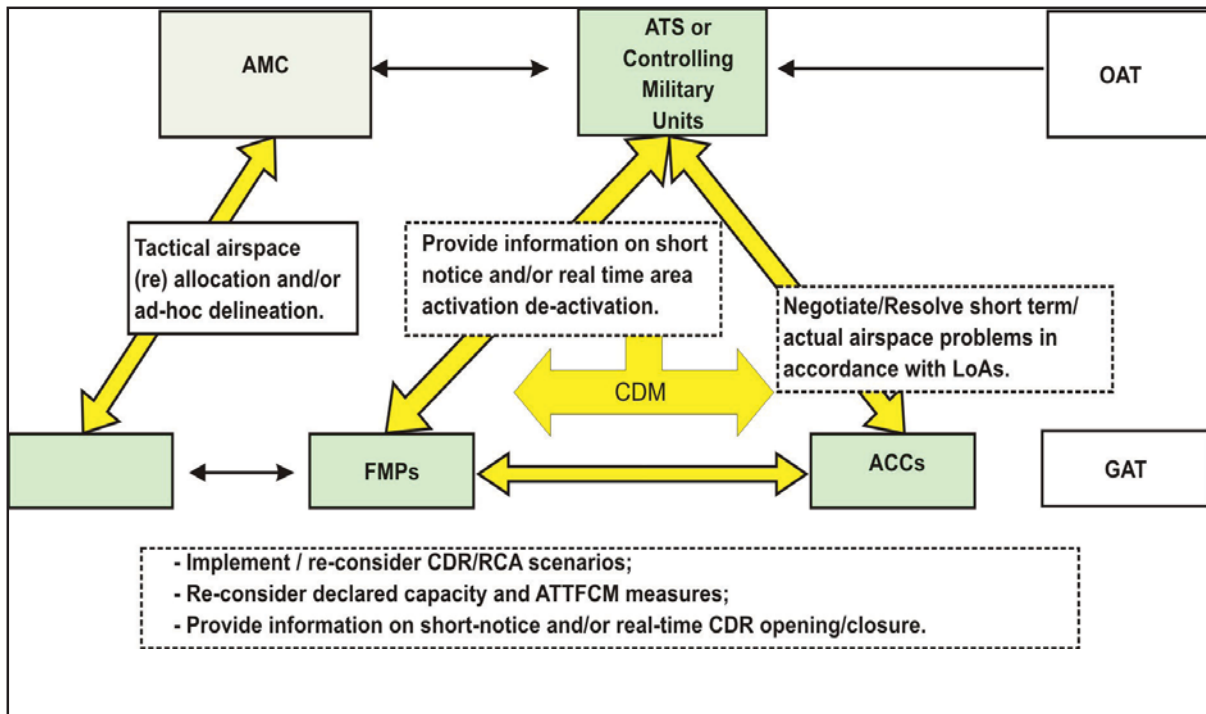
8.2.8.2.2 At ASM Level 3, airspace could be requested and delineated within a very short period of time, i.e. as close to real time as possible. The airspace allocation at tactical level could be done directly between civil and military units concerned based on explicit rules and procedures laid down in their LoA.

8.2.8.2.3 The dynamic allocation process at ASM Level 3 requires the establishment of an efficient Collaborative Decision Making (CDM) process, based on active coordination between the actors involved.

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8.2.8.2.4 The narrowing of the AMC time window and the shift towards ASM Level 3 allocation does not imply a degradation of the responsibility levels, but only refers to a change in:

- actors involved in the negotiation process;
- the time available; and
- the required advance notice of the decision taken, including notification to airborne traffic.



8.2.8.2.5 The goal of the ASM Level 3 airspace allocation decision-making process illustrated below is to enable the actors to improve mutual knowledge of the forecast/current situations and of each others' constraints, preferences and capabilities. It consists of proactive negotiation and resolution of potential short-term/actual airspace problems. It requires the development of new system-supported tools and/or the enhancement of the present technical facilities or an extension of those identified for ASM Level 2.

Establishment of a CDM process for dynamic airspace allocation at ASM Level 3

8.2.9 Dissemination of Information on Short-notice Changes to Airspace Status

8.2.9.1 AUP/UUP Process

8.2.9.1.1 In the AUP/UUP process described in Chapter 4, the dissemination of dynamic airspace allocation decisions is based on broadcasting information via a dedicated portal and eAMI messages for B2B service.

8.2.9.1.2 Such AMC decisions on dynamic airspace allocation are also notified directly to AOs based on the personalized addressing of those potentially interested through CATFM - CCC, by e.g. Re-routing Proposal (RRP) messages.

Civil Military Cooperation and Interoperability of their systems**8.2.10 Airspace Data Repository**

- 8.2.10.1 In order to get full benefits from dynamic airspace allocation and to overcome the limitations of the current mechanisms for the dissemination of information, a common airspace data pooling system is to be set-up as the '*Airspace Data Repository*'.
- 8.2.10.2 The ADR should be based on a link between the AIS Database, the CATFM - CCC database and should be able to provide a collaborative distributed environment for the storage, exchange and dissemination of up-to-date and accurate airspace data between airspace users and ATM providers.
- 8.2.10.3 In order to enhance processes at strategic, pre-tactical and tactical level, a rapid access to accurate information (e.g. portal web access) requires a new approach to avoid data inconsistency and to overcome the limitations of dissemination of updated information through messages.
- 8.2.10.4 These objectives are met through a common pool for the exchange and dissemination of up to-date and accurate data between airspace users and ATM providers. Depending on the need, data can be retrieved on request or delivered automatically to stakeholders.
- 8.2.10.5 By having access to common airspace and flight plan data pooling systems, all users involved in ATM benefit from a standard source of consolidated, consistent and up-to-date information and have the possibility to process automatically consistent digital information.
- 8.2.10.6 Such an airspace data pooling system is the Airspace Data Repository (ADR) (see Figure 16). Any query to the common airspace data repository defines the time parameter of its scope allowing any user to retrieve information related to a present, past or future status.
- 8.2.10.7 All interested parties have regulated access to stored airspace data granted up to specified levels of information. Such collaborative distributed environment and security mechanisms ensure that sensitive information can be stored, but with a restricted access managed by the information owner.

8.2.11 ASM Support Tools in DAM

- 8.2.11.1 The entire process is assuming that capability through system support exists in order to ensure an automatic management of the data flow among users.
- 8.2.11.2 Supporting tools will ease the transfer of data, assist planning, automate the booking of airspace and make possible the assessment of the likely impact of decisions. Adequate system support will ensure the accuracy of the data that are used by the partners in ASM. Data consistency will guarantee that all ATM users are using the same information.
- 8.2.11.3 ASM supporting tools will support the activation, deactivation, short-term cancellation or amendments to reservations and reallocation of the airspace structures.
- 8.2.11.4 The ASM supporting tools will provide the real time airspace status on an airspace status display. They may be capable of interfacing with the ATC systems providing them with real time airspace status data.

8.2.12 ATM Units Communication

- 8.2.12.1 There is a need to ensure, in particular, the real time notification to all ATM parties concerned, including the CATFM-CCC, if required, with up-to-date information on the short-term allocation and/or current use of airspace.

8.2.13 Controller - Pilot Communication

- 8.2.13.1 Bringing the pre-tactical and tactical timeframes closer together also implies that short notice or real time changes to airspace status stemming from the dynamic airspace allocation process could effectively affect airborne traffic.
- 8.2.13.2 There is therefore a need to establish a process to inform users in-flight. There are different possibilities to inform pilots on these airspace changes, i.e. through AO on a dedicated frequency, ATC and data link.

Civil Military Cooperation and Interoperability of their systems8.2.14 **Flight Plan Updates**

- 8.2.14.1 More generally, so as to ascertain the necessary update of flight plans affected by short notice or real time changes to airspace status, current flight plan processing and distribution processes should be enhanced in order to provide FPL changes up to and including the airport of destination, through the use of standard criteria for FPL processing so as to cover the following issues:
- a clear definition of the responsibility of the AOs' integrated flight planning systems (IFPS), as regards FPL amendments close to the EOBT (i.e. until an agreed time before EOBT);
 - similarly, the definition of responsibility of the ATSU concerned in FPL amendments (from an agreed time before EOBT);
 - when the flight is airborne, the establishment of a process permitting the IFPS to consider the change to the initial FPL, allowing all ATSUs concerned (including the airport ATSU) to assess and validate this change and ensuring the distribution of this change to the appropriate addressees.
- 8.2.14.2 Based on the AUP/UUP process, AOs should update their flight plan according to the changes proposed until an agreed time, e.g. 1 hour, before EOBT. Any change that has occurred based on the AUP/UUP process after the agreed time before EOBT may still be processed through re-filing of the flight plan pending assessment and validation of the ATSU(s) concerned.
- 8.2.14.3 Real time changes to airspace status are tactically processed through ATSUs following a standard current flight plan change process.



ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

AA	Approved Agencies
AAI	Airports Authority of India
ACC	Area Control Centre
AD	Aerodrome
ADC	Air Defence Clearance
ADIA	Air Defence Identification Area
ADIZ	Air Defence Identification Zone
ADR	Airspace Data Repository
ADS-B	Automatic Dependent Surveillance Broadcast
AFMLU	Air Force Military Liaison Unit
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
AMC	Airspace Management Cell (AMC)
ANM	ATFM Notification Message(s)
ANSP	Air Navigation Service Provider
AO	Aircraft Operator/Airline Operating Agencies
ASM	Airspace Management
ASTERIX	All-purpose Structured Eurocontrol Surveillance Information
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATS	Air Traffic Services
ATSP	Air Traffic Services
ATZ	Aerodrome Traffic Zone
AUP	Airspace Utilization Plan
B2B	Business to Business
CADF	Centralised Airspace Data Function
CAS	Controlled Airspace
CATFM	Central Air Traffic Flow Management
CBA	Cross Border Area
CCC	Central Command Centre
CDM	Collaborative Decision Making
CDR	Conditional Route
CIS	Communication Information Systems
CNS/ATM	Communication, Navigation and Surveillance/Air Traffic Management
CRAM	Conditional Route Availability Message
CTA	Control Area
CTR	Control Zone
CWP	Controller Work Position
DAM	Dynamic Airspace Management
DGCA	Director General of Civil Aviation
Doc	Document
e-AIP	electronic AIP
ENR	En route
ENV	Environment
EOBT	Estimated Off Block Time
ETD	Estimated Time of Departure
FAUP	Forecast Airspace Utilization Plan
FDPS	Flight Data Processing System

FIC	Flight Information Centre
FIR	Flight Information Region
FMU/FMP	Flow Management Unit/Flow Management Position
FPL	Flight Plan
FTP	File Transfer Protocol
FUA	Flexible Use of Airspace
FUUP	Forecast Update of the Utilization Plan
FTI	FUA Temporary Instruction
GAT	General Air Traffic
GNSS	Global Navigation Satellite System
GPI	Global Plan Initiatives
HMI	Human Machine Interface
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
LACC	Lower Area Control Centre
LFE	Large Flight Engagement
LoA	Letter of Agreement
MLU	Military Liaison Unit
MTA	Military Training Area
MOU	Memorandum of Agreement
NAMAC	National Airspace Management Advisory Committee
NHLAPB	National High Level Airspace Policy Body
NOTAM	Notice to Airmen
OAT	Operational Air Traffic
OPS	Operations
ORP	Operational Readiness Platform
PANS	Procedures for Air Navigation Services
PBN	Performance-Based Navigation
PCA	Prior Coordination Area
PSR	Primary Surveillance Radar
RAD	Route Availability Document
RCA	Reduced Coordination Area
RPA	Remotely Piloted Aircraft
RRP	Re Routing Proposals
RTF	Radio Telephony Frequency
SAR	Search and Rescue
SARPS	Standards and Recommended Practices
SIDS	Standard Instrument Departures
SMS	Safety Management Systems
SOP	Standard Operating Procedures
SSR	Secondary Surveillance Radar
STARS	Standard Arrival Routes
SUA	Special Use Airspace
SUPPS	Regional Supplementary Procedures
TMA	Terminal Control Area
TMU	Traffic Management Unit
TRA	Temporary Reserved Areas
TSA	Temporary Segregated Areas
UACC	Upper Area Control Centres
UAS	Unmanned Aircraft System
UUP	Updated Airspace Use Plan
VFR	Visual Flight Rules
WGS	World Geodetic System

APPENDIX

APPENDIX - A

NATIONAL HIGH LEVEL AIRSPACE POLICY BODY

1. Shri Ashok Lavasa , Secretary, Ministry of Civil Aviation (Chairman)
2. Shri Vikram Dev Dutt, Joint Secretary (G/Air), Ministry of Defence
3. Air Marshal S.B. Deo , Director General Air (Ops), Iaf
4. Rear Admiral D.M. Sudan , Asstt. Chief Naval Staff (Air), Indian Navy
5. Shri. A.S. Ganeshan , Program Director , Satellite Navigation Program, ISRO
6. Shri V. Somasundaram, Member, Air Navigation Services,
Airports Authority of India (Convenor)
7. Shri A.S. Sharan , Joint Director General , DGCA

APPENDIX - B

NATIONAL AIRSPACE MANAGEMENT ADVISORY COMMITTEE

1. AVM R.D. Mathur , ACAS OPS (Space), IAF AHQ
2. Shri Satender Singh, Former DGCA, Consultant FUA
3. Air Cmde M.S.G. Menon, PD OPS (ATS) , IAF
4. Captain D.Bhattacharya ,Director , Naval Air Staff, MOD (Navy)
5. Shri P.K. Mishra, ED (ATM-ASM) , AAI (Convenor)
6. Shri V. Seshagiri Rao, General Manager (MARS), Deputy Director, SDSC
7. Shri A.K. Bhardwaj, Director of Operations (ANS), DGCA
8. Shri Saleem Zaheer, Vice President – Special Projects , Indigo Airlines
9. Shri Sarvesh Gupta, Senior Commander, Jet Airways

APPENDIX – C

FUA MANUAL SUB COMMITTEE

1. Shri S.Swaminathan, Officiating General Manager(ATM-ASM)
2. Group Captain R.S. Saharan, JD OPS (ATS) , IAF AHQ
3. Cdr. E. Ramakrishna, JD. NAS ATM-OPS, Indian Navy
4. Wg. Cdr. Adarash Siddarth, IAF (AD) AHQ
5. Shri Atul Maindola, Asst. Director OPS (ANS), DGCA

APPENDIX – D



भारतीय विमानपतन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

F. No. AAI/ATM/OPS/30-21/2012

Dated, 6th Jun, 2012

Ministry of Defence through MoCA has brought to the notice of CHQ, AAI, about various instances of ADC violations by aircraft operators, where in aircraft have taken off from the airports or entered Indian airspace without obtaining the ADC from IAF agencies.

In this regard it is intimated that Secretary, MoCA vide D.O. letter No. AV2415/6/2008 AAI dt. 17th Dec, 2008 had assured Cabinet Secretary that directives issued by DGCA for ensuring AEC number for departing aircraft as well as aircraft entering Indian airspace shall be strictly enforced by ATC officers and no flight would be cleared without a valid ADC number.

It is therefore reiterated that necessary instructions may be issued to all the ATC units under your control for strict compliance of above directives and for maintaining effective co-ordination with IAF MLU on above matter.

Yours faithfully

Sd/-

General Manager (ATM)

For Executive Director (ATM)

APPENDIX – E



भारतीय विमानपतन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

F. No. AAI/ATM/OPS/30-21/2014

Dated, 22nd Jan, 2014

Sub.: Investigation of lapses/violation of ADIZ Procedures.

In spite of Instructions having been issued from time to time for ensuring adherence to ADIZ procedures by all aircraft, including military aircraft, it is observed that lapses and violation of ADIZ procedures by pilots/aircraft operators have been occurring in respect of departing aircrafts as well as aircraft entering India for Landing/ overflying Keeping in view the existing security scenario and to avoid any breach of security and laid down procedures, such incidents need to be curbed with due vigil and alertness by all concerned.

The exchange of flight plan and aircraft movement data of departing/ arriving / overflying aircraft must be done expeditiously to ensure that timely information reaches AFMLUs from the concerned FICs/AROs/ATC Units for the issuance of ADC number In case of incoming flights, it should be ensured that AFMLU is informed of all the details of flights as early as possible to establish identity of these flights well in time. Due care shall be taken at all the controlled aerodromes to ensure that aircraft are not given take-off clearance until they obtain/revise their ADC number from AFMLU.

It has been decided that the lapses/violation of such incidents will be investigated and remedial measures taken to avoid recurrence of such incidents Therefore, in continuation of this office letter of even no dated 10 Jan, 2014 regarding non-adherence to ADIZ procedures, the following procedure shall be followed by AAI ATC Units and IAF MLUs for the reporting and investigation of ADC lapses/violations.

1. AFMLU shall submit the initial report to the ATC Incharge /Watch Supervisory Officer (WSO) of the concerned aerodrome within 24 hours of the incidents for enabling AAI to initiate the investigation of the lapses / violation of ADC.
2. On receipt of above information, the ATC Incharge/WSO shall ensure that it is brought to the notice of ED (ATM) & ED (ASM), CHQ immediately through fax or email.

3. The ATC Incharge/WSO shall ensure that all the relevant details of aircraft like flight plan, aircraft estimate / change messages (in respect of incoming aircraft) audio / video recordings, co-ordination procedure followed with AFMLU for submission of details of aircraft etc. are preserved for investigation.
4. The ATC Incharge or his designated representative along with a designated officer of AFMLU shall investigate the reasons leading to the lapse or violation of ADC procedures
5. The investigation/analysis report shall be signed by the ATC Incharge and the designated AFMLU Officer (if participated in the investigation) and it shall be submitted to AAI Hqrs within 7 days of receiving the initial report from AFMLU. A copy of this report shall be sent to AFMLU also which had reported the violation
6. A copy of investigation/analysis report shall also be submitted to the GM (ATM) of the region concerned in case the violation had taken place from other than Delhi/ Mumbai / Kolkata / Chennai airports.
7. A monthly report of ADIZ lapses /violations which took place in the preceding month shall be submitted by the 7th of each month by the respective GM (ATM) of the Delhi / Mumbai / Kolkata / Chennai airport and the GM (ATM) of all the regions in respect of their region.
8. AAI Hqrs shall examine the above reports for taking necessary remedial measures / actions and inform MoCA / DGCA and AHQ accordingly.

Sd/-
Executive Director (ATM)

APPENDIX – F

**No. VI 23014/302/2013 (i) VS
GOVERNMENT OF INDIA/BHARAT SARKAR
MINISTRY OF HOME AFFAIRS/GRIH MANTRALAYA**

OFFICE MEMORANDUM

Subject : Standing Instructions for imposing restrictions on flying activities during Republic Day and Independence Day Celebrations.

The undersigned is directed to refer to this Ministry's O.M No. V1.23014/116/2012 (i)- VS dated 20th July, 2012 regarding restrictions imposed on flying activities during the celebrations connected with the Republic Day and Independence Day functions, on security considerations.

2. These standing instructions are hereby reiterated. The number of days and the duration for such restrictions imposed and other instructions are as under:
 - (i) Flying restrictions in connection with the Republic Day and Independence Day Celebrations may be enforced:
 - (a) Between 1400 to 1830 Hrs. on January 23 ('at Home' for Diplomats).
 - (b) Between 0700 Hrs. to 1230 Hrs and between 1400 to 1830 hrs on January 26, (Republic Day Function and 'At Home' President's House).
 - (c) Between 1400 to 1900 Hrs on January 29, (Beating Retreat Function).
 - (d) Between 0600 to 1000 Hrs and 1600 Hrs to 1900 Hrs. on 15th August (Independence Day).
 - (ii) Air Space closure may be effected in radius of 300 kms around Delhi. However, the restrictions will not apply to State owned aircrafts/ helicopters flying the Chief Minister or Governor of a State within the State and subject to necessary clearance from the DGCA.

3. In the light of the above, except for the scheduled flights by the scheduled flight operators taking off/landing at Indira Gandhi International (IGIA) and subsidiary airports in 300 kms Zone of Delhi and IAF, BSF and ARC flights and the State- owned aircraft/ helicopter flying the Governor or Chief minister within the State, no other flights may please be permitted on the above mentioned dates and timings. In case of IAF, BSF and ARC flights and State owned aircrafts/ elicopters, crew members should be security vetted.
4. In order to prevent any threat from light/ micro-light aircraft, UAVs and similar long-range aerial vehicles, their flights from flying clubs and other airports may be specifically prohibited in the above mentioned zone around Delhi from 0600 hrs. to 2100 hrs. on the dates mentioned in para 2 above.
5. Operations of hang-gliders, Para-gliders, Para-Motors, aero-models and Similar Short-range aerial vehicles should be prohibited within 100 kms around Delhi from 0600 hrs to 2100 hrs on the dates mentioned in para 2 above.
6. Delhi Police and IAF should activate the SoPs prepared by them to deal with threat from para-gliders/ para-motors/micro-light aircraft/ aero-models. etc as done during CWG-2010.
7. It is also requested that Safdarjung Airport should be closed on the dates and times mentioned in para 2 above except for the IAF helicopters which may be deployed on emergency duty or VVIP duty.
8. The above period of limited airspace closure may be modified in case there is any major change in the actual timings of the functions. Such changes, when required, will be communicated by the MHA.
9. It is requested the necessary instructions may be issued to all concerned accordingly

Sd/-
Director (VS)

