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CIVIL MILITARY COOPERATION AND FLEXIBLE USE OF AIRSPACE IN INDIA

(Presented by India)

SUMMARY

This paper provides information about the progress made by India in implementing the Flexible Use of Airspace (FUA) concept. It highlights the improvements in mutual trust, understanding and cooperation between the military and civil aviation agencies achieved through better coordination at strategic Airspace Management (ASM) levels and through effective communication and training. The paper also discusses the plans for establishment of Airspace Management Cells (AMC) in a phased manner, sharing of surveillance data between military and civil Air Traffic Services (ATS) units to improve tactical airspace management and the benefits accrued through civil military cooperation.

CIVIL MILITARY COOPERATION AND FLEXIBLE USE OF AIRSPACE IN INDIA

1. INTRODUCTION

1.1 The proposal for implementation of Flexible Use of Airspace (FUA) in India was formally approved by the Government of India in March 2013. Subsequently, National High Level Airspace Policy Body (NHLAPB), with the primary responsibility of implementing FUA in India, came into existence on 24 October 2013. The National Airspace Management Advisory Committee (NAMAC) was also established to assist NHLAPB in realizing its objectives.

1.2 NHLAPB authorised an adhoc subcommittee, comprising of members from civil as well as military, to prepare a Manual on Flexible Use of Airspace. The first version of the Manual on FUA was released on 28August 2014 which was later validated through a live exercise in the presence of stakeholders. The Manual on FUA version 1.0 thus became the guidance material and reference document for the implementation of FUA in India.

1.3 The purpose of this paper is to inform the member States about India's progress in civil military cooperation, particularly in the area of airspace management, through effective application of the principles of flexible use of airspace.

2. DISCUSSION

2.1 Progress in Strategic Airspace Management

2.1.1 Five NHLAPB meetings have been conducted since 2013 to take important high-level decisions pertaining to flexible use of airspace. Eleven NAMAC meetings have been conducted so far for realizing the objectives of NHLAPB and find early solutions to airspace-related issues between military and civil units. Participation of the regulator (DGCA) in the NHLAPB and NAMAC meetings has resulted in faster decision-making.

2.1.2 28 Temporary Segregated Areas (TSA) / Temporary Reserved Areas (TRA) have been established for use by the military. 13 Conditional Routes (CDR) have also been established for use by airlines. Proposals for creation of more TRA/TSA/CDR are being processed by Airports Authority of India (AAI), the civil Air Navigation Service Provider (ANSP).

2.1.3 The process of reviewing existing Danger (D) and Restricted (R) Areas under the military is underway. AAI is negotiating with defence authorities for denotification of unused D/R areas and for converting D/R areas into either TRA/TSA or AMC-manageable D/R areas. It has been generally agreed that no more rigid airspace structures will be established unless particularly important for national security. Denotification or realignment of under-utilized Danger and Restricted Areas under military is also being carried out.

2.1.4 Joint airspace review and design workshops are being conducted at regular intervals which help in bridging gaps in understanding leading to confidence building and early resolution of differences. AAI has conducted many such meetings with Indian Air Force (IAF), Indian Navy (IN) and other agencies such as Indian Space Research Organization (ISRO) and Defence Research and Development Organization (DRDO) to resolve airspace related issues.

2.2 Improvements in Civil-Military Cooperation

2.2.1 ICAO Circular 330 stresses on the importance of good civil/military communication and collaboration which are key elements for efficient Air Traffic Management (ATM) around the world. Good communication and mutual understanding enable building collaboration upon a solid foundation.

2.2.2 India has identified that mutual trust and cooperation between civil and military agencies can be significantly improved through interactions and training, with the intent of bringing about a cultural change on both sides. This will lead to better acceptance of each other's needs and create awareness about the immense potential of FUA in realising benefits such as fuel saving and reduced carbon emissions.

2.2.3 AAI has conducted many training programmes for military and civil ATS personnel and other airspace users since 2013. Beginning with a 3 day workshop in Delhi in June 2015, AAI has organized many training programmes for military and civil personnel and the process is still continuing. More than 300 senior military personnel and 400 senior civil ATS personnel have been trained on FUA as on date.

2.2.4 An important aspect of civil military cooperation is the familiarization of civil and military ATS personnel with each other's working environment, procedures and the systems they use for discharging their responsibilities and their requirements and limitations. Based on the NAMAC decision to organize such familiarizations visits, AAI has effected necessary coordination for scheduling the visits of civil controllers to IAF / Indian Navy and Hindustan Aeronautics Limited (HAL) ATC units and vice-versa. Two phases of such visits have been completed as on date, in which 400 civil/military controllers have completed the familiarization programme. The third phase of familiarization is expected to commence in August 2017.

2.2.5 Formal channels of communication between adjacent civil and military ATC units are being made more effective through LOAs and SOPs. Existing Letters of Agreement (LoA) and Standard Operating Procedures (SOP) between civil and military ATC units are being reviewed incorporating principles of FUA. LoA/SoP are being established between civil and military units which do not have any formal agreements existing. This includes LOA for making use of military airspace when not being used by military units.

2.3 Establishment of Airspace Management Cells (AMC)

2.3.1 Airspace Management Cells (AMC) are joint civil/military ASM focal-points which have the authority to conduct pre-tactical and tactical ASM within the framework of the State's airspace structures, priority rules and negotiation procedures as laid down by the NHLAPB. India will establish four Regional AMCs (R-AMC) and 1 National AMC (N-AMC) to manage pre-tactical and tactical ASM.

2.3.2 R-AMC will be established at the four major ATS centres at Chennai, Delhi, Kolkata and Mumbai. The RAMCs will work under the supervision of the N-AMC to be located at Delhi, which will be collocated with the Central Command Centre (CCC) of the Air Traffic Flow Management (ATFM) System. RAMCs will work in tandem with Flow Management Position (FMP) of ATFM established at the four ATS Centres.

2.3.3 AMCs will be vested with the responsibility of pre-tactical allocation of temporary airspaces (TRA, TSA etc.) and Conditional Routes (CDR). Each R-AMC will be responsible for allocation of the FUA structures within the corresponding FIR. AMC will, in near term, also handle tactical allocation of adhoc airspaces through Dynamic Airspace Management (DAM).

2.3.4 India has planned establishment of RAMCs in a phased manner. Owing to the limited number of FUA structures established so far (28 TSA/TRA and 13 CDR), R-AMC will be established only at Delhi initially, which will also act as the N-AMC. The R-AMC/N-AMC at Delhi will be collocated with the ATFM Central Command Centre (CCC) near IGI Airport in Delhi. More RAMCs will be established in a time bound manner based on the requirement.

2.3.5 Trial operation of Delhi AMC was conducted from 27 February to 10 March 2017 in collaboration with the representatives from IAF, Indian Navy, Airline Operators and Airport Operators. The live trials highlighted some important issues which need to be addressed before AMCs can be established on permanent basis. The pre-requisites include:

- Reliable and fast communication facilities between the Military Units and AMCs
- Adequate number of qualified and trained military & civil manpower to man the AMCs
- Faster mechanism for dissemination of Airspace Use Plans (AUP) and Updated Airspace Use Plans (AUP).
- Letters of Agreement (LoA) between military and civil authorities on pre-tactical and tactical airspace management by AMCs

2.3.6 Preparations are underway to establish at least one R-AMC along with the N-AMC on permanent basis before 31 December 2017.

2.4 Sharing of Resources between Civil and Military Agencies

2.4.1 Indian civil and military agencies have been sharing their resources for a long time. Navigation Aids such as NDB, VOR, DME and ILS at most of the joint user airports were installed and are being maintained by AAI. Further, at joint user airports, Air Traffic Service (ATS) is being provided by military whereas services such as Apron Management Service of civil apron(s) and Terminal Management are being looked after by AAI.

2.4.2 Search and Rescue is another area where civil military cooperation exists. Indian Air Force, Indian Navy and Indian Coast Guard are actively involved in search and rescue operations involving aircraft in distress.

2.4.3 During the flooding of Chennai city in 2015, which resulted in shutting down of Chennai International Airport, Tambaram airbase of IAF and Arakonam airbase of Indian Navy were used for continued access to the city for providing humanitarian assistance and for conducting search and rescue operations.

2.4.4 AAI has shared surveillance data from many of its radars with IAF ATC and Air Defence units for improved situational awareness of military controllers. IAF and Indian Navy have agreed in principle to share the data from their ATC radars with civil ATC centres of AAI. AAI and the military have identified four military radar stations as pilot projects for surveillance data sharing, which is expected to be implemented before 31 March 2018.

2.5 Coordination for Airspace Closures

2.5.1 Large volumes of airspace get closed during launch of rockets and test firing of missiles. Even though the actual duration of the launch may be between 30 to 60 minutes, airspaces get blocked for up to 4 hours daily for many days. Even after the launch is over and the airspace released by the airspace user, timely cancellation of the airspace closure NOTAMs may not happen due to delay in receipt of the information by the concerned States / ANSPs and / or due to the delay in the Aeronautical Information Service (AIS) process.

2.5.2 In order to reduce delayed cancellation of such NOTAM, India took early steps to address the issue of improper management of airspace closures. Since 2015, AAI had series of meetings and interactions with Indian Space Research Organization (ISRO) and Defence Research and Development Organization (DRDO) to streamline the process of airspace closures during their activities. This resulted in bringing down the airspace closure windows substantially and also improve advance notification period to ensure adherence with Annex 15 Standards and Recommended Practices.

2.6 Benefits of Flexible Use of Airspace

2.6.1 Airline operators save significant amount of fuel through shorter routing options on Conditional Routes (CDR) passing through military airspace. Use of CDR1 and CDR2 routes will result in additional advantage of flight planning which saves the "cost to carry fuel". India has published 2 CDR1, 8 CDR2 and 3 CDR3 routes, which has resulted in reduction of 625 NM of routes between the concerned airports.

2.6.2 Rough estimates show that even a humble reduction of 625 NM of distance due to creation of CDRs, *a majority of which are available only on Sundays or on tactical basis*, has resulted in an average saving of 115 tonnes of fuel per month. This has resulted in decreased carbon emission of 355 tonnes per month.

2.6.3 A direct benefit of shorter routing of aircraft on CDRs is better Air Traffic Management by ATS units. Airspace capacity increases due to faster disposal of traffic along shorter routes. It will also enable more efficient performance of ATFM system, as multiple routing options will be available for better management of air delay. Shorter routing options, especially which provide flight planning advantage, also improve operational efficiency of airline operators by better fleet utilization and improved On Time Performance (OTP).

2.6.4 Creation of flexible airspace structures such as TSA and TRA and allocating the TSA/TRA pre-tactically through AMC will result in reduced occupation of airspace by military. Rigid airspace structures such as Danger Areas and Restricted Areas are inaccessible to non-military aircraft either on permanent basis or as when activated through NOTAM. In both these cases, actual use of Danger Areas and Restricted Areas by military may be significantly less than the published information, as the decisions to activate the airspaces are taken much before the actual day of operation and hence the projected requirement may be significantly greater than the actual requirement. In the trial operation of Delhi AMC, which was conducted in the months of February / March 2017, use of pre-tactically allocated TSA/TRA by military was approximately 40% less than the typical strategic allocation through NOTAM.

2.6.5 Cost effectiveness of FUA may not always be tangible. Besides the obvious benefit of saving fuel by aircraft operators, there are other long-term benefits such as reduction in carbon footprint and reduction in cost of flying when airline operators accrue significant savings due to shorter routing options. For the military, availability of adhoc local flying areas nearer to the air bases, which hitherto would not have been possible due to presence of ATS routes, will reduce the cost of operations. Dynamic management of airspace under FUA will ensure availability of airspace for military flying at short notice, resulting in reduced planning and preparatory expenditure including burning of fuel on ground due ATS coordination delays.

2.7 India's Contribution to Promulgate the Concept of FUA

2.7.1 Working Papers / Information Papers on FUA were presented by India in SAIOCG/4, SAIOCG/5, BOBASIO/3, BOBASIO/4, BOBASIO/6, ATFM/SG/3 and ATM/SG/5 meetings.

2.7.2 India was invited to the IATA-ICAO Cross Border ATFM workshops held at Jakarta and Bangkok for delivering lectures on FUA. India also actively participated in the APAC Civil Military Cooperation Seminar held in Beijing in November 2014.

2.7.3 India hosted the ICAO APAC Civil Military Cooperation Conference at New Delhi in May 2016, which was attended by representatives from ICAO APAC States, and Uganda.

2.7.4 Recognizing the efforts of India in improving civil military cooperation, ICAO APAC has identified India as a Champion State for FUA in the region. A template of FUA Manual prepared by India has been uploaded in ICAO APAC site and is available for download at https://www.icao.int/APAC/Pages/edocs.aspx .

2.8 Tasks and the Challenges Ahead

2.8.1 Whilst India has made significant progress in the area of civil military cooperation, complete realization of the benefits requires more concerted efforts. India has identified the following key thrust areas and is working towards achieving them in near term:

- Establishing simplified air defence procedures for scheduled airline operators such as flexible use of domestic route segments by international scheduled operators, simplified procedures for obtaining air defence clearances especially for enabling use of tactical flexible routes such as CDR3 routes and improved procedures for gaining access to restricted airspaces during military exercises and airspace restrictions.
- Publication of essential aeronautical information of joint user airports in public domain for use by civil aircraft operators, following ICAO aeronautical data quality and publication requirements as per Annex 15.
- Establishing civil Surface Movement Control Units at certain busy joint user defence aerodromes for the control of aircraft on the civil manoeuvring area with the objective of enhancing the safety and provision of better services to aircraft operators.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

a) note the information contained in this paper regarding India's efforts to encourage civil-military cooperation and to proliferate the concept of Flexible Use of Airspace; and

b) discuss any matters, as appropriate.

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