International Civil Aviation Organization

The Second Meeting of the APANPIRG ATM Sub-Group (ATM /SG/2)

Hong Kong, China, 4-8 August 2014

Agenda Item 4: ATM Systems (Modernisation, Seamless ATM, CNS, ATFM)

CNS/ATM DEVELOPMENTS WITHIN THE SINGAPORE FIR

(Presented by Singapore)

SUMMARY
This paper presents an update on the CNS/ATM developments in Singapore FIR.
The initiatives aim at enhancing safety and efficiency through a measured increase in capacity to meet the future growth of air traffic in this region.

1. INTRODUCTION

1.1   Air traffic movement in this region has grown at a steady rate for the past decade. It is estimated that air traffic in the Asia Pacific region will continue to grow by more than 6% a year, for the next 20 years. To prepare the region for the future growth of air traffic, Singapore supported the call by ICAO to establish a seamless environment for air traffic to operate in.

1.2   With the collaboration of the neighbouring States/ANSPs in the Region, Singapore has implemented a few CNS/ATM initiatives to meet the growing demands and complexity of increased air traffic. These include sharing of ADS-B data and communication facilities to provide ADS-B services to suitably equipped aircraft, AIDC arrangements with Vietnam and the review and publication of PBN procedures to benefit from the improved capability of airline operators.

2. DISCUSSION

Surveillance - ADS-B implementation

2.1   Singapore published an AIC 14/10 on 28 December 2010 to inform airspace users on Singapore's plan to implement the use of ADS-B Out on December 2013 within parts of the Singapore FIR, specifically, on ATS routes L642, L644, M753, M771, N891 and N892 at FL290 and above, to support future increase in airspace capacity and allow better accessibility to these routes. This early notification not only allows airspace users to plan ahead their forward purchasing, retrofitting and scheduling to meet the requirements for ADS-B equipage, but also forms part of the overall strategy and effort to progress with the ICAO Asia Pacific Seamless ATM Plan.

2.2   Singapore has collaborated with Indonesia and Vietnam to share ADS-B data and VHF communication facilities for a portion of the South China Sea area to provide ADS-B services to suitably equipped airspace users. Con Son Island in Vietnam has been providing the ADS-B data to Singapore since August 2013 and the VHF facility on the islands has been operational since November 2013. Matak and Natuna islands from Indonesia have been providing the ADS-B data to Singapore since August 2013 and the VHF facility will be operational by 4Q of 2014.

2.3 Singapore and the Philippines have agreed in-principle on ADS-B collaboration as well to provide ADS-B coverage for a portion in the South China Sea area.

2.4 ADS-B has brought about immense safety and efficiency benefits to airspace users. These benefits have come about with the establishment of ADS-B exclusive airspace over certain parts of Singapore FIR. This ensures that safety is not compromised by avoiding mixed environment for aircraft on-board. With the continued progress to implement ADS-B exclusive airspace, the Regional Supplementary Procedures MID/ASIA (ICAO Doc 7030) should be amended in accordance to APANPIRG Conclusion 22/36 - Amendment to Regional Supplementary Procedures on ADS-B.

2.5 Similar to RVSM and RNP10 requirements stipulated in DOC 7030 MID/ASIA, the amendments to include requirements for ADS-B would benefit the whole civil aviation community in the Asia Pacific Region.

Communications - AIDC implementation

2.6 ATS Inter-facility Data Communication (AIDC) provides the means to automate routine coordination between ATS units. It provides a reliable and timely means for conducting coordination, with the potential to prevent the occurrence of errors that occasionally occur when voice coordination is in use. Due to the increased traffic movements between Singapore and neighbouring States, AIDC will provide a more efficient way to carry out coordination between parties.

2.7 Since March 2014, Vietnam and Singapore has conducted AIDC trials as a pre-cursor to implementation in July 2014. The AIDC plan between Vietnam and Singapore is divided into 2 phases. This is to allow both sides to become familiar with AIDC behaviour before introducing more messages to be exchanged between the 2 ACCs. During the trials, various technical issues were observed and resolved and it also serves as a useful guide in formulating bilateral agreements towards the implementation of AIDC between the parties. The implementation of AIDC has brought about a few benefits:

a) Reduced controller workload with automated coordination via AIDC,
b) Reduction of human errors during voice coordination,
c) Increased efficiency and capacity in handling high volume of traffic coordination.

2.8 The next step is to collaborate with neighbouring States to test and implement AIDC to allow more efficient management of air traffic coordination. Singapore has outlined a proposed roadmap and tasks for AIDC implementation with a view to push forward with Seamless ATM in the region. The proposed roadmap is attached (ANNEX A) for reference.

Navigation – Performance Based Navigation (RNAV[GNSS])

2.9 In line with the region's performance framework to progress with PBN implementation, Singapore have implanted RNAV(GNSS) with APV (Baro-VNAV) for instrument approaches into Singapore Changi Airport (WSSS). This brings Singapore to the 2014 target of achieving 50% or more for the implementation of PBN instrument runway. Singapore will be working to implement PBN instrument approach for Seletar Airport (WSSL) in the coming years.

3.   ACTION BY THE MEETING

3.1   The meeting is invited to:

    a)   note the implementation of ADS-B in Singapore FIR;

    b)   note the close collaboration between Indonesia, Singapore and Viet Nam to enhance ATM in this region through ADS-B data sharing;

    c)   encourage States to collaborate on ADS-B data sharing to enhance safety, capacity, and efficiency, and to achieve seamless ATM within Asia Pacific Region;

    d)   note the implementation of AIDC with Vietnam;

    e)   note the benefits of AIDC implementation;

    f)   develop the proposed amendments to ICAO Doc 7030 to reflect requirement for ADS-B in the Asia Pacific Region; and

    g)   encourage States to collaborate and implement AIDC in this Region.

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Roadmap and Tasks for AIDC Implementation

Item	Description	Target Period	Status
A – Viet Nam	Initiate technical testing with Vietnam - Ho Chi Minh ACC	1Q 2014	completed
	Phase 1Operational trials with Vietnam - Ho Chi Minh ACC	2Q 2014	completed
	Phase 1Implementation with Vietnam - Ho Chi Minh ACC	3Q 2014	completed
	Phase 2 Operational trials with Vietnam - Ho Chi Minh ACC	4Q 2014	
	Phase 2Implementation with Vietnam - Ho Chi Minh ACC	4Q 2014	
B – Malaysia	Initiate technical testing with Malaysia - Kota Kinabalu ACC - Kuala Lumpur ACC	4Q2014	
	Operational trials with Malaysia - Kota Kinabalu ACC - Kuala Lumpur ACC	TBC	
	Implementation with Malaysia - Kota Kinabalu ACC - Kuala Lumpur ACC	TBC	
C – Indonesia	Initiate technical testing with Indonesia - Jakarta ACC	4Q 2015	
	Operational trials with Indonesia - Jakarta ACC	TBC	
	Implementation with Indonesia - Jakarta ACC	TBC	
D – Philippines	Initiate technical testing with Philippines - Manila ACC	4Q 2016	
	Operational trials with Philippines - Manila ACC	TBC	
	Implementation with Philippines - Manila ACC	TBC	