International Civil Aviation Organization

The Twentieth Meeting of the APANPIRG ATM/AIS/SAR Sub-Group (ATM/AIS/SAR/SG/20)

Singapore, 05 – 09 July 2010

Agenda Item 8: Review developments relating to CNS/ATM implementation

AIRSPACE DEFINITIONS IN ASIA PACIFIC

(Presented by IATA)

SUMMARY

This paper discusses the application of PBN navigation specifications based on airspace categorisation and proposes that the adoption of Continental type standards on routes/airspace that may otherwise be considered Oceanic can deliver particular benefits and is acceptable within the ICAO framework.

1. INTRODUCTION

1.1 The implementation of PBN in the en route phase is based on the application of navigation specifications dependent on the categorisation of the airspace, namely Oceanic, Remote Continental and Continental.

1.2 The term “Oceanic airspace” is considered to apply to airspace over the “high seas”, that is above the oceans of the world, beyond the territorial limits, where the responsibility for the provision of ATC services is delegated by ICAO.

1.3 However the implementation of newer technologies and procedures such as PBN and ADS-B presents new opportunities beyond the scope of the original definition, particularly within Asia Pacific.

2. DISCUSSION

2.1 The Basic Air Navigation Plan (Doc 9750) identifies 9 major traffic flows within Asia Pacific.

2.2 Of these 6 are designated as Oceanic with two, AR2 and AR9 designated as Oceanic High Density. This suggests that traffic densities in these two flows are at or near capacity at times. The application of enhancements associated with PBN specifications could enable increased capacity.

2.3 The Oceanic separation standards, 50/50 for RNP 10 and 30/30 for RNP 4 are based on datalink (ADS-C/ CPDLC) with the rationale of a limited navigation and ATC infrastructure being available.

2.4 While the definitions apply well within other areas, the archipelagic nature of many parts of South East Asia offers unique opportunities.

2.5 In some parts of Asia Pacific, while a majority of an air route may well be over the “high seas” and therefore is prescribed as an Oceanic route, it may also be within range of ATM capability such as direct surveillance and communication. Aircraft on these routes are also generally within range of ground facilities for large portions of their flight enabling regular navigation update capability.

2.6 Furthermore the advent of ADS-B in particular has improved the cost effectiveness of enhancing surveillance coverage. A number of Asia Pacific States are pursuing ADS-B programs.

2.7 These enhancements may offer the potential for “Continental” capability based on the direct surveillance/ communication capabilities which can offer significant advantages over the application of ”Oceanic” standards based on datalink application.

2.8 While the application of datalink does enable reduced Oceanic separations to be applied, it also introduces some complications related to aircraft capabilities.

2.9 On wide bodied aircraft, the capability of datalink is relatively high within this region due to the relatively young average fleet age. It is however more limited amongst narrow body aircraft. The cost of fitting datalink to an aircraft without the capability can be extremely costly.

2.10 While new technologies such as FANS over Iridium may offer a longer term option, it is still in development. Hence in the short/ medium term, many aircraft (particularly narrow bodies) operating within this region will not have datalink capability.

2.11 This means the application of RNP10/ RNP4 separations will invariably involve mixing separations standards simply because not all aircraft are capable.

2.12 The capability of Continental RNAV requirements however are not subject to the same specific requirements. In fact most commercial aircraft currently operating within this region will be capable of at least RNAV5 and probably RNAV2.

2.13 This would enable the application of consistent separation standards without the need for specific equipage requirements as an overwhelming majority of operators already have the capability (with the exception of ADS-B which is subject to mandate anyway where applicable).

2.14 Note this does not consider outstanding regulatory issues for the certification of navigation standards. As PBN becomes more prevalent within the region, these regulatory issues should slowly disappear.

2.15 An example of the benefits may be found with the 2 primary South China Sea routes between Singapore and Hong Kong, L642 and M771. These routes are designated RNP 10 with 50/50 separations applied and are experiencing growing movements. The State PBN plans already identify RNP4 as a future step.

2.16 Except for a relatively small portion of airspace between Vietnam and Singapore, the entire route is also covered by radar surveillance and VHF communications (Radar Coverage Chart WP/05 SEACG/17 attached) With the planned implementation of the ADS-B project involving Indonesia, Singapore and Vietnam, this gap in direct surveillance will be remedied and the entire route will be covered with direct surveillance and communication.

2.17 This capability enables consideration of what is considered to be a “Continental” type application, currently either RNAV5 or RNAV2 with the separation standard applied based on direct surveillance/ communications and associated traffic handling requirements (i.e. in trail spacings).

2.18 Other routes within the region may also benefit from similar considerations.

2.19 IATA has brought this issue to the attention of the South East Asian Route Review Task Force (SEA-RR TF) and the South East Asian ATS Coordination Group (SEACG). While the States present raised no objections, several voiced concerns as to whether this was within the existing ICAO guidelines, in particular the Regional PBN Plan.

2.20 IATA is not questioning the definitions themselves. We are however asking for clarification as to how we should apply these definitions, particularly with the application of the PBN plan.

2.21 IATA believes the application of navigation specifications and the associated separation standards applied should be based primarily on the existing CNS/ ATM capability and considering the traffic requirements.

2.22 Where traffic requirements support reduced separations and the CNS/ATM capability enable direct surveillance and VHF communication, then the airspace (route or portion there of) should be considered “Continental”.

2.23 Where the capability does not exist and the traffic requirements do not support, then the airspace (route or portion thereof) should be considered “Remote Continental or Oceanic”.

2.24 This would enable States to make better use of their ATM capabilities and can simplify the requirements for aircraft operating within the region.

2.25 IATA also recognises the application of these standards will take some planning and consideration of a number of issues. We simply ask for endorsement the principles of Continental airspace may be adopted within airspace/ routes that would otherwise be considered Oceanic where significant benefits may be realised.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Consider the unique nature of Asia Pacific

b) Recognise the relative advantages/ disadvantage associated between Oceanic and Continental type specifications

c) Endorse the concept that States may consider routes/ airspace to be “Continental” based on CNS/ATM capability where justified.

Attachment A
Radar Coverage Chart from WP/05 SEACG/17