



*International Civil Aviation Organization*

**THE THIRD MEETING OF PERFORMANCE BASED NAVIGATION  
IMPLEMENTATION COORDINATION GROUP (PBNICG/3)**

Bangkok, Thailand, 08 – 10 March 2016

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**Agenda Item 9: Regional and Sub-regional Implementations of PBN in En-route Airspace**

**PBN HIGHWAYS**

(Presented by the Secretariat)

**SUMMARY**

This paper presents information on planning for inter-regional advanced Air Traffic Services (ATS) route development projects, designed to use the most efficient Performance-based Navigation (PBN) specifications, a degree of prioritisation, and end-to-end planning.

**1. INTRODUCTION**

1.1 The Fourth Inter-Regional Co-ordination Meeting (IRCM/4) on Interface Issues between the Asia/Pacific (APAC), European and North Atlantic (EUR/NAT) and Middle East (MID) Regional Offices of ICAO was held at Bangkok from 14 to 16 September 2015.

1.2 The Sixth Meeting of the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/6) and the Twenty-Third South East Asia ATM Coordination Group (SEACG/23) was held at Bangkok, Thailand, Thailand, from 29 February to 03 March 2016.

**2. DISCUSSION**

PBN Highways

2.1 The IRCM/4 discussed a paper detailing proposals from the Fourth Meeting of the Trans-Regional Airspace and Supporting ATM Systems Steering Group (TRASAS/4, Bangkok, Thailand, 29 to 31 October 2014) for Advanced Inter-Regional ATS Route Development Task Forces (AIRARD/TF).

2.2 In its Summary of Discussion, the IRCM/4 agreed to the formation of AIRARD/TF.

2.3 An information paper was provided on the AIRARD/TF to the European route development group RDGE. An information paper (**Attachment A**) on PBN Highways was also reviewed by the combined SAIOACG/6 and SEACG/23 meetings, which supported the concept.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to note the information contained in this paper.



*International Civil Aviation Organization*

**Sixth Meeting of the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/6) and the Twenty-Third South East Asia ATM Coordination Group (SEACG/23)**

Bangkok, Thailand, Thailand, 29 February – 04 March 2016

**Agenda Item 5: ATS Route Development**

**PBN HIGHWAYS**

(Presented by the Secretariat)

**SUMMARY**

This paper presents information on planning for inter-regional advanced Air Traffic Services (ATS) route development projects, designed to use the most efficient Performance-based Navigation (PBN) specifications, a degree of prioritisation, and end-to-end planning.

**1. INTRODUCTION**

1.1 The Fourth Inter-Regional Co-ordination Meeting (IRCM/4) on Interface Issues between the Asia/Pacific (APAC), European and North Atlantic (EUR/NAT) and Middle East (MID) Regional Offices of ICAO was held at Bangkok from 14 to 16 September 2015.

**2. DISCUSSION**

PBN Highways

2.1 The IRCM/4 discussed a paper detailing proposals from the Fourth Meeting of the Trans-Regional Airspace and Supporting ATM Systems Steering Group (TRASAS/4, Bangkok, Thailand, 29 to 31 October 2014) for Advanced Inter-Regional ATS Route Development Task Forces (AIRARD/TF). The paper is appended at **Attachment A**.

2.2 In its Summary of Discussion, the IRCM/4 agreed to the formation of AIRARD/TF (Excerpt, **Attachment B**).

2.3 An information paper was provided on the AIRARD/TF to the European route development group RDGE (**Attachment C**).

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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*INTERNATIONAL CIVIL AVIATION ORGANIZATION*

**FOURTH INTER-REGIONAL COORDINATION MEETING  
BETWEEN APAC, EUR/NAT AND MID (IRCM/4)**

*Bangkok, Thailand, 14 to 16 September 2015*

**Agenda Item 5: Specific Air Navigation issues necessitating Inter-Regional Coordination**

**ADVANCED INTER-REGIONAL ATS ROUTE DEVELOPMENT TASK FORCES**

(Presented by the APAC Office)

**SUMMARY**

This paper presents a proposal for inter-regional advanced Air Traffic Services (ATS) route development projects, designed to use the most efficient Performance-based Navigation (PBN) specifications, a degree of prioritisation, and end-to-end planning.

The IRCM is invited to consider the planning of Advanced Inter-Regional ATS Route Development Task Forces as agreed by the Fourth Meeting of the Trans-Regional Airspace and Supporting ATM Systems Steering Group (TRASAS/4).

**Strategic Objectives:**

- A: **Safety** – Enhance global civil aviation safety*
- B: **Air Navigation Capacity and Efficiency**—Increase the capacity and improve the efficiency of the global aviation system*
- E: **Environmental Protection** — minimize the adverse environment effects of civil aviation activities.*

**1. INTRODUCTION**

1.1 The Fourth Meeting of the Trans-Regional Airspace and Supporting ATM Systems Steering Group (TRASAS/4) was held in the ICAO Asia and Pacific (APAC) Office, Bangkok, Thailand, from 29 to 31 October 2014.

1.2 Under Agenda Item 3 (Integration and Harmonization of NextGen, SESAR, and other regional and national modernization plans, including interface issues and the relationship with the new GANP and ASBU), TRASAS/4 discussed the need for advanced inter-regional (end-to-end) Air Traffic Services (ATS) route development projects, to take into account the enhanced capabilities of airborne systems and new Performance-Based Navigation (PBN) specifications.

1.3 Increasingly, traffic flowing along Major Traffic Flows (MTF) was being constrained by congestion, civil/military issues and other difficulties that mean a large number of aircraft are flying inefficiently between major city pairs. This was recognised more than a decade ago when the Europe Middle East-Asia Route South of Himalaya (EMARSSH) group created a ground-breaking outcome by developing end to end routes linking Europe and Asia with the best available Area Navigation (RNAV) navigation specifications at the time (RNAV10).

1.4 Current ATS route development efforts have been characterised by bilateral efforts between nations to ‘fix’ bottlenecks and conflict problems, sometimes by dualisation of routes. The difficulty in getting approval for changes even on a bilateral basis is often due to the military in many States being in a position where they administer or can veto airspace changes, but do not necessarily realise the importance of individual amendment proposals for safety or efficiency.

1.5 In this regard, EMARSSH was revolutionary. It brought together expertise from a large number of States on MTFs and created momentum that demonstrated the value of change across the entire route, thus impressing upon individual administrations and their military the critical need to support what was being proposed by many stakeholders.

1.6 Though they were a great step forward, the EMARSSH routes have not proven to be as successful as hoped in driving efficiency because States have applied various restrictions on them such as:

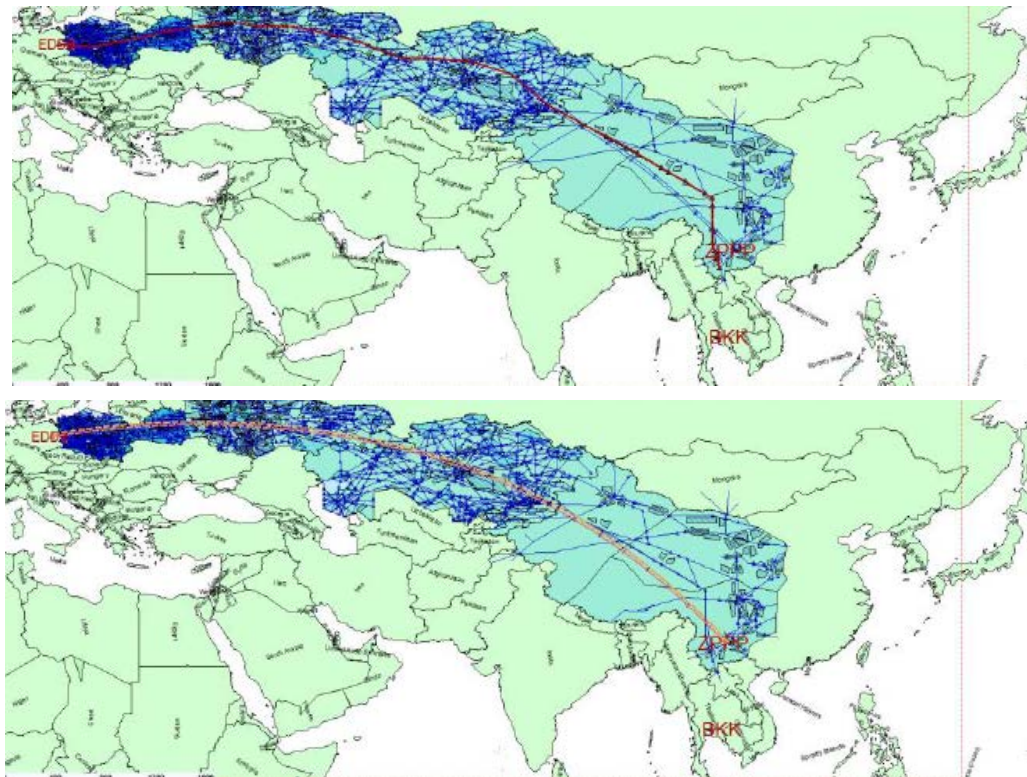
- specific hours of operation and Special Use Airspace (SUA) requirements that restricted the availability of routes;
- Flight Level Allocation Schemes (FLAS) that restrict the available flight levels;
- RNAV 10 has a large area semi-width (protected airspace), necessitating ATS routes being at least 50NM apart; and
- procedural longitudinal separations and other restrictive practices at transfer of control points that were passed on from upstream Air Navigation Service Providers (ANSPs) via ATS Letters of Agreement (LOA) that limited capacity.

1.7 There had been considerable advances in aircraft performance and in ground-based support such as the capability of Automatic Dependent Surveillance-Broadcast (ADS-B) systems to provide Air Traffic Services (ATS) surveillance where this was not previously possible. As long ago as 1997 the Australian airline QANTAS commissioned a study that routing options that crossed part of the Tibetan plateau for their B747-400 aircraft would provide benefits, and that suitable depressurization escape routes were able to be determined.

1.8 The RNP 2 and RNAV 2 navigation specifications have become available in the PBN Manual (Doc 9613), providing the possibility of more accurate navigation than the RNP 4 specification that the QANTAS study was based on. A key advance in the last decade has been the advent of sophisticated Geographical Information System (GIS) supporting the design of sophisticated end-to-end PBN route planning.

1.9 The ‘Silk Road’ initiative was a proof-of-concept ATS route study. The ‘Silk Road’ concept is a pair of ATS routes utilising RNP 2 or RNAV 2 PBN navigation specifications. The initiative was first presented to the Regional ATM Contingency Plan Task Force (RACP/TF) as a possible future contingency system north of the Himalayas for traffic operating on the MTF via South Asian airspace between Europe and Southeast Asia, in case of airspace unavailability in South Asian FIRs. It was also presented to the APANPIRG ATM Sub-Group (ATM /SG/1, Bangkok, Thailand, 20 – 24 May 2013), as an example of a fuel efficient routing scheme.

1.10 An analysis of a flight from Kunming to Frankfurt using advanced GIS systems yielded a potential reduction of 245NM from ATS route L888 when using the theoretical Silk Road (**Figure 1**), and even a flight from Bangkok to Frankfurt had a potential reduction of 139NM using the Silk Road compared to a normal route south of the Himalayan Mountains. The ICAO Fuel Savings Estimation Tool (IFSET) tool indicated a potential saving of approximately 1,682kg per aircraft between Frankfurt and Kunming (approximately 5,315kg CO<sub>2</sub> if a multiplier of 3.16 was used), but this was a theoretical exercise to show the potential savings solely based on reduced route length.



**Figure 1:** Comparison of ATS route L888 (above) and conceptual Silk Road (below)

1.11 After more than a decade of phenomenal growth in the Asia/Pacific and Middle East Regions, it was necessary to follow up the success of EMARSSH, and to take advantage of the new PBN navigation specifications in line with the Asia/Pacific Seamless ATM Plan. However, if a new routing scheme was to be more successful, a holistic approach was necessary to complement the aircraft capability with the highest possible levels of ANSP service based on the available Communications, Navigation and Surveillance (CNS) capability in the future.

1.12 During the first Bangladesh, India, Malaysia, Thailand Coordination meeting (BIMT/1, Bangkok, Thailand, 18-19 August 2014), it was proposed that the Bay of Bengal routes mainly developed by EMARSSH had capacity problems and that it was necessary to establish parallel routes to augment the current structure. India noted that they would prefer a complete end-to-end review of the route structures and the implementation of more efficient horizontal separation minima than the proposal to simply add more short distance supplementary routes to the existing structure, which made the Bay of Bengal more complex.

1.13 The general concept of a high density Organised Track System (OTS) is in place in many parts of the world, but these are generally in oceanic airspace with fewer military and State constraints. However, what was envisaged now was the application of ENMARSSH cooperative end-to-end thinking to implement OTS as PBN ‘Highways’, so the route system was augmented with a level of priority to assure its effectiveness. This means that once aircraft entered the ‘PBN Highway’ there was minimal Air Traffic Control (ATC) intervention and SUA/military restrictions, so aircraft were mainly monitored as they progressed – mirroring what happens on the ground for vehicular traffic on terrestrial highways.

1.14 In order to progress work, the TRASAS discussed the possibility of establishing trans-regional groups to study ‘advanced’ ATS OTS, so as to provide the most efficient and environmentally friendly outcomes possible in the medium to long term timeframe.

1.15 The TRASAS agreed it was necessary to plan advanced routing systems well in advance of scheduled implementation to provide long lead times for aircraft equipage, ANS improvements needed to support the operation, and the necessary training and approvals. Therefore, and in accordance with the Aviation System Block Upgrades (ASBU) Block 1 capability availability, the TRASAS agreed that work should commence as soon as possible within several trans-regional ‘advanced’ ATS route working bodies. These bodies would be tasked with identifying and agreeing on future advanced end-to-end routing systems providing for a maximum benefit from the infrastructure improvements brought by ASBU. The ‘PBN Highway’ concept was endorsed by TRASAS/4 with the following Conclusion:

**TRASAS Conclusion 4/4 – Advanced Inter-Regional ATS Route Development Task Forces**

That the TRASAS:

- a) endorse the concept of advanced PBN Highways utilising the most efficient PBN standards, prioritisation for efficient flight levels and the least restrictive civil/military practices to link major population centres; and
- b) Support the set-up of Advanced Inter-Regional ATS route Development Task Forces (AIRARD/TF), with a proposed route implementation date in the 2018 -2020 timeframe.

*Note: Suggested AIRARD/TFs may include: Europe – East/Southeast Asia; East Asia – North America; North America – Europe. The concerned PIRGs to agree on the ToRs and Working Programme*

## 2. DISCUSSION

### Asia/Pacific Seamless ATM Plan

2.1 The Asia/Pacific Seamless ATM Plan establishes the following expectations for airspace and ANSPs by 08 November 2018 (Phase 2):

- a) regional ATS routes based on a Required Navigation Performance (RNP) 2 navigation specification within exclusive PBN airspace with mandatory carriage of Global Navigation Satellite System (GNSS) capability (paragraph 7.22);
- b) ATC units using the horizontal separation minima stated in ICAO Doc 4444 (PANS ATM), or as close to the separation minima as practicable (paragraph 7.30);
- c) ATM systems with ATS Inter-facility Data link Communications (AIDC, version 3 or later) between ATC units where transfers of control are conducted unless alternate means of automated communication of ATM system track and flight plan data are employed (paragraph 7.35 and 7.49);
- d) Priority for FLAS level allocations for higher density ATS routes over lower density ATS routes (FLAS other than OTS should only be utilised for safety and efficiency reasons in certain specified situations, paragraph 7.36);
- e) ATC communication and ATS surveillance systems supporting the capabilities of RNP 2, and the ATC separation standards applicable (paragraph 7.37);
- f) aircraft not meeting specified equipage requirements receiving a lower priority (paragraph 7.40); and
- g) adjacent ATC Centres using ATS surveillance capability with automated hand-off procedures that allow the transfer of aircraft without the necessity for voice communications, unless an aircraft requires special handling (paragraph 7.46).

2.2 The net result of these infrastructure upgrades should result in a high degree of automated and efficient ANSP capability, matching the navigation capability of the aircraft. However, without the necessary medium to long term route inter-regional planning necessary to take advantage of these upgrades, the lowest common denominator (in terms of lowest performing ANSP on the route) would prevail and significant penalties would result in a lack of return on investment, and no lessening of the problems that exist today.

2.3 Using the RNP 2 navigation specification, two near-parallel ATS routes would require approximately 40NM of protected space, compared to 50NM for a single RNAV 10 route (25NM area semi-width), reducing potential civil/military conflicts. PANS ATM, paragraph 5.4.1.2.1.6 prescribes a minimum of 15NM between parallel or non-intersecting tracks or ATS routes using RNP 2 or Global Navigation Satellite Systems (GNSS) and Very High Frequency (VHF) communications. Thus, 'PBN Highways' based on RNP 2 would have a theoretical capacity increase by a factor of four over single RNAV 10 routes, provide contingency options, and improving safety with less complexity and greater predictability over current route systems.

2.4 It is possible that in the future, the use of space-based ADS-B and SATVOICE augmenting efficient RNP 2 PBN Highways could be developed across even remote airspace linking major population centres. The difficulty – and core development work for the AIRARD/TFs – would be to ensure a common planning regime inter-regionally along the proposed 'PBN Highway' MTFs.

#### Task Forces

2.5 Like ENMARSSH, but with the benefit of modern GIS that allow end-to-end planning, the IRCM may consider the following proposal for a step-by-step approach to the AIRARD/TF tasks:

- a) using the optimum great circle pathway (a strip of airspace not less than 40NM wide for two routes, or not less than 60NM for three routes) between the main population centres, determine the most appropriate terminal or congested airspace entry/exit points to connect the PBN Highway to current ATS route networks near the main population centres;
- b) determine if weather patterns provide substantially different pathways than the great circle, to provide optimal benefits to airlines (more than one pathway may be determined, dependent on seasonal variations);
- c) determine the obstacles and limitations to the most direct pathway – SUA, mountainous regions, congested terminal airspace, areas of conflict (although these should not be considered as insurmountable as the PBN Highways were not expected to be implemented for about five years in the 2020 timeframe), etc.;
- d) amend the optimum great circle pathway as appropriate, based on b) and c);
- e) determine the ATS communication and surveillance gaps along the [amended] proposed pathway (noting that VHF was required for communication, and radar, ADS-B or multilateration (MLAT) were required for ATS surveillance, plus ATS Inter-facility Data Link Communications - AIDC);
- f) determine the ATS communication and surveillance upgrades that were necessary, new FIR entry/exit points, conflict with established OTS and FLAS; and
- g) provide the general proposed scheme to affected States to discuss with military authorities and other appropriate agencies to determine if what other amendments may be required.



2.6 It was necessary to plan advanced routing systems many years ahead of scheduled implementation because of long lead times for aircraft equipage, ANS improvements that were needed to support the operation, and the necessary training and approvals. The AIRARD/TFs would need to identify and agree on future advanced end-to-end routing systems that provided maximum benefit for the infrastructure improvements brought by ASBU Block 1 capability availability. Therefore, a general target of 2020 is proposed for initial PBN Highway implementation, for consideration by the IRCM.

2.7 As TRASAS agreed that work should commence soon within several trans-regional advanced AIRARD/TFs in order to maximize the benefit to airlines, the following Task Forces are proposed for consideration by the IRCM meeting (the States involved may vary, dependent on the exact proposed pathway):

- **Europe-Northeast Asia AIRARD/TF (Figure 2)** involving the following States: Germany, Denmark, Sweden, Finland, Russia, Mongolia, China (and indirectly involving the United Kingdom, Netherlands, Belgium, Republic of Korea, Japan);



**Figure 2:** Great Circle between Europe and Northeast Asian Major Populations Centres

- **Europe-East Asia AIRARD/TF (Figure 3)** involving the following States: Germany, Poland, Lithuania, Latvia, Russia, Kazakhstan, China (and indirectly involving the United Kingdom, Netherlands, Belgium, Denmark, Hong Kong, China and the Taibei FIR);



**Figure 3:** Great Circle between Europe and East Asian Major Populations Centres

- **Europe-Southeast Asia AIRARD/TF (Figure 4)**, involving the following States: Germany, Poland, Belarus, Ukraine, Russia, Kazakhstan, Uzbekistan, Tajikistan, Afghanistan, Pakistan, India, Myanmar, Thailand, Malaysia (and indirectly involving the United Kingdom, Netherlands, Belgium, Denmark, Singapore and Indonesia);



**Figure 4:** Great Circle\* between Europe and Southeast Asian Major Populations Centres

\*Note: the great circle is subject to a present-day conflict zone



2.8 Other potential PBN Highways (subject to present day conflict zones) may be as follows:

- **Europe-South Asia (Figure 5);**



**Figure 5:** Great Circle between Europe and South Asian Major Populations Centres

- **Europe-Gulf States (Figure 6);**



**Figure 6:** Great Circle between Europe and Gulf States

- **Northeast Asia-North America** (e.g.: Beijing, Shanghai, Seoul, Tokyo) to North America – replacing the current PACOTS system; and
- **North America-Europe** – replacing the current highly constrained North Atlantic Organized Track System (NAT OTS) which uses 4-7 tracks per day, each separated by approximately 50-55NM.

2.9 As the task forces need to be endorsed by the relevant PIRG (and report to at least one such PIRG such as APANPIRG), the recommendations from the IRCM on setting up specific task forces may take as long as a year to be formally endorsed. Given the need for data, inter-regional planning and a certain degree of urgency, it may be appropriate to consider holding an informal preparatory meeting with International Organizations such as CANSO, IATA, IFATCA, IFALPA, EUROCONTROL and IBAC, plus key States such as China, Russia and the United States to discuss the Task Forces during the first six months of 2016. Then the AIRARD/TFs may meet in the second half of 2016 with a greater level of preparation and data that can assist the technical discussions.

2.10 Based on the recent experiences in the interface area between Turkey and Iran/Iraq/Syria it has become quite difficult to address some issues when several ICAO ROs are involved. Even if all Regional Offices are trying to achieve an optimal result, it had been clear that some of the important information does not reach the right operational people/decision makers. The recent example of a new ATS route proposal from Iran and the creation of a new waypoint on the FIR border between Tehran and Ankara FIR that has not been followed up is an example.

2.11 The importance of this coordination at the interface areas between the regions is paramount and therefore the new Task Forces should also have in their ToRs the task to facilitate this exchange of information (as well as to ensure the attendance of ICAO Regional Offices at regular meetings in adjacent Regions) between the States in the different Regions.

**3. ACTION BY THE MEETING**

3.1 The Meeting is invited to:

- a) note the TRASAS Conclusion 4/4 – *Advanced Inter-Regional ATS Route Development Task Forces*;
- b) discuss the proposed step-by-step approach to the AIRARD/TF tasks;
- c) discuss the general target of 2020 for initial PBN Highway implementation;
- d) discuss the proposed AIRARD/TFs and develop ToRs;
- e) discuss the proposal for an informal preparatory meeting; and
- f) discuss any other relevant matters.

—END—



*International Civil Aviation Organization*

**FOURTH INTER-REGIONAL COORDINATION MEETING BETWEEN APAC, EUR/NAT AND MID REGIONAL OFFICES (IRCM/4)**

***Bangkok, 14 - 16 September 2015***

**SUMMARY OF DISCUSSION**

**2.4.2 Advanced Inter-Regional ATS Route Development Task Forces (WP APAC/7)**

2.4.2.1 The APAC Office presented a proposal for inter-regional advanced Air Traffic Services (ATS) route development projects, designed to use the most efficient Performance-Based Navigation (PBN) specifications, a degree of prioritisation, and end-to-end planning. The meeting discussed the need to update the EMARSSH (Europe Middle East-Asia Route South of Himalaya) routes network implemented several years ago and accordingly, agreed that the three Regional Offices of APAC, EUR/NAT and MID should work together to establish an EMARRSH-2 Routes Network within the three Regions.

2.4.2.3 The IRCM/4 meeting agreed to the necessary steps to support the formation of the Advanced Inter-Regional ATS Route Development Task Forces (AIRAD/TF(s)), which were expected to be jointly established by the EANPG and APANPIRG in 2016.

<b>Action Item IRCM/4/09 – Advanced Inter-Regional ATS Route Development Task Force(s)</b>	
<p>That, to support the concept of an advanced Inter-Regional ATS Route Development Task Force(s) to facilitate the establishment/enhancement of PBN ATS routes among the regions as highlighted in WP APAC/10 and the IRCM also supports the concept of PBN Highways as described in IRCM/4 WP APAC/7:</p> <p>a) APAC RO will present IRCM/4 WP APAC/7 to the RGDE meeting in Sochi, Russia (October 2015);</p> <p>b) the step-by-step approach and 2020 timeline for implementation outlined in IRCM/4 WP APAC/7 is supported in principle;</p> <p>c) APAC RO, in coordination with EUR/NAT RO, will conduct a preparatory meeting of 1-2 days in association with the RGDE meeting in March 2016 which will include International Organizations such as CANSO, IATA, IFATCA, IFALPA, EUROCONTROL and IBAC, plus key States such as China, Russia and the United States to discuss the Task Forces; and</p> <p>d) APAC and EUR/NAT Offices will coordinate as necessary to support the conduct of Advanced Inter-Regional ATS Route Development Task Force(s) commencing in the Second half of 2016 (MID Office will be coordinated with as required).</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Economic</p> <p><input checked="" type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Ops/Technical</p>
Why:	To support the implementation of Block 1 and advanced PBN specifications and aircraft capabilities with end-to-end planning for reduced fuel and emissions, and better utilisation of aircraft due to reduced sector times.
When:	31-Dec-16
Status:	Adopted by IRCM
Who:	<input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO APAC RO <input checked="" type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: International Organizations, ICAO EUR/NAT RO

**2.4.3 Afghanistan ATM Contingency Update (WP APAC/8)**

2.4.3.1 The APAC Office presented an update regarding the outcomes from the Second and Third Meetings of the Ad Hoc Afghanistan Contingency Group (AHACG) and noted on-going actions related to Afghanistan contingency planning. The IRCM/4 noted the following recent developments:

- May 2015: the Very Small Aperture Terminal (VSAT) service supporting air/ground Very High Frequency (VHF) communication covering the Kabul Flight Information Region (FIR) and ground/ground communication had been successfully transitioned to a new contractor;
- 30 June 2015: the UAE had agreed to proceed with reinstating the CADAS (Comsoft Aeronautical Data Access System) flight plan and message exchange system in Kabul;
- 18 August 2015: a civil/military arrangement between the Combined Force Air Component Commander (CFACC) and the ACAA detailing procedures to integrate Afghanistan, United States and NATO air operations within the Kabul FIR was agreed;

- 16 September 2015: the ANS contract would be transitioned to the new civil provider;
- 29 September 2015: the implementation of capacity building measures (50NM separation) would be implemented between Pakistan and India, and the last routes in Afghanistan, to support Iran daily operations and the Inter-regional Afghanistan ATM Contingency Arrangement
- In November 2015 the Kabul FIR Multilateration (MLAT) ATS surveillance system was expected to be operational after Germany had committed to completion of the safety case.

– **END** –



## ROUTE DEVELOPMENT GROUP - EASTERN PART OF THE ICAO EUR REGION TWENTY-THIRD MEETING

(Sochi, Russian Federation, 19 to 23 October 2015)

### Agenda Item 1b: Report on activities since RDGE/22 and follow-up actions

#### PBN HIGHWAYS

(Presented by ICAO EUR/NAT Office on behalf of ICAO APAC Office)

This paper presents information on a proposal for inter-regional advanced Air Traffic Services (ATS) route development projects which have been agreed internally between the ICAO EUR/NAT, Middle East (MID) and Asia/Pacific (APAC) Regional Offices. The projects are designed to make use of the most efficient Performance-based Navigation (PBN) specifications, prioritization of design regarding Special Use Airspace (SUA) and for flights, and end-to-end planning to link highly populated areas between regions.

### 1. Introduction

1.1 The Fourth Inter-Regional Coordination Meeting between APAC, EUR/NAT AND MID (IRCM/4) took place in Bangkok, Thailand, 14 to 16 September 2015.

1.2 The following excerpt is from the IRCM/4 Summary of Discussions:

2.4.2.1 *The APAC Office presented a proposal for inter-regional advanced Air Traffic Services (ATS) route development projects, designed to use the most efficient Performance-Based Navigation (PBN) specifications, a degree of prioritisation, and end-to-end planning. The meeting discussed the need to update the EMARSSH (Europe Middle East-Asia Route South of Himalaya) routes network implemented several years ago and accordingly, agreed that the three Regional Offices of APAC, EUR/NAT and MID should work together to establish an EMARRSH-2 Routes Network within the three Regions.*

2.4.2.3 *The IRCM/4 meeting agreed to the necessary steps to support the formation of the Advanced Inter-Regional ATS Route Development Task Forces (AIRAD/TF(s)), which were expected to be jointly established by the EANPG and APANPIRG in 2016.*



<b>Action Item IRCM/4/09 – Advanced Inter-Regional ATS Route Development Task Force(s)</b>	
<p><i>That, to support the concept of an advanced Inter-Regional ATS Route Development Task Force(s) to facilitate the establishment/enhancement of PBN ATS routes among the regions as highlighted in WP APAC/10 and the IRCM also supports the concept of PBN Highways as described in IRCM/4 WP APAC/7:</i></p> <p><i>a) APAC RO will present IRCM/4 WP APAC/7 to the RGDE meeting in Sochi, Russia (October 2015);</i></p> <p><i>b) the step-by-step approach and 2020 timeline for implementation outlined in IRCM/4 WP APAC/7 is supported in principle;</i></p> <p><i>c) APAC RO, in coordination with EUR/NAT RO, will conduct a preparatory meeting of 1-2 days in association with the RGDE meeting in March 2016 which will include International Organizations such as CANSO, IATA, IFATCA, IFALPA, EUROCONTROL and IBAC, plus key States such as China, Russia and the United States to discuss the Task Forces; and</i></p> <p><i>d) APAC and EUR/NAT Offices will coordinate as necessary to support the conduct of Advanced Inter-Regional ATS Route Development Task Force(s) commencing in the Second half of 2016 (MID Office will be coordinated with as required).</i></p>	<p><i>Expected impact:</i></p> <p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Economic</p> <p><input checked="" type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Ops/Technical</p>
<p><i>Why: To support the implementation of Block 1 and advanced PBN specifications and aircraft capabilities with end-to-end planning for reduced fuel and emissions, and better utilisation of aircraft due to reduced sector times.</i></p>	
<p><i>When: 31-Dec-16</i></p>	<p><i>Status: Adopted by IRCM</i></p>
<p><i>Who: <input checked="" type="checkbox"/>States <input checked="" type="checkbox"/>ICAO APAC RO <input checked="" type="checkbox"/>ICAO HQ <input checked="" type="checkbox"/>Other: International Organizations, ICAO EUR/NAT RO</i></p>	

**2. Discussion**

**2.1 Planning Effect on RDGE States**

2.2.1. RDGE States should study the material contained in the attached IRCM paper (**Attachment A**), to gain an early insight into the potential work required to manage the inevitable civil-military issues, Air Traffic Management (ATM) challenges and the possible Communications, Navigation and Surveillance (CNS) upgrades that may be required to support the concept. However, the actual airspace path involved will not become clear until the first Advanced Inter-Regional ATS Route Development Task Force (AIRARD/TF) is held so a general understanding is all that is required at this early stage.

**2.2 Next Steps**

2.2.2. As can be noted from the IRCM Action Item above, the intention is to present a working paper at the next RDGE meeting with more details to key States such as Russia and China, as well as key stakeholders such as IATA and EUROCONTROL. After approval by the EANPG and APANPIRG, a joint AIRARD/TF may be convened to begin detailed analysis of data that allows conceptual agreement on the disposition of future PBN Highways.

**3. Conclusion**

3.1 The RDGE/23 is invited to:

- Note the information contained in **Attachment A**; and
- Brief relevant stakeholders regarding the PBN Highways Projects.

- END -