*International Civil Aviation Organization*

**MIDANPIRG Air Traffic Management Sub-Group**

**Third Meeting (ATM SG/3)**
*(Cairo, Egypt, 22 – 25 May 2017)*

**Agenda Item 4:** **MID Region ATS Route Network**

OUTCOME OF THE AIRARD TF/1

*(Presented by* AIRARD TF Chairman*)*

| SUMMARY |
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| This paper presents the outcome of the AIRARD TF/1 for the meeting appropriate action. |
| Action by the meeting is at paragraph 3. |
| **REFERENCES** |
| - AIRARD TF/1 Report |

1. **INTRODUCTION**

1.1 The First meeting of the Advanced Inter-regional Air Traffic Services Route Development Task Force (AIRARD/TF/1) was kindly hosted by the Georgian Civil Aviation Authority in Tbilisi, on 21 October 2016. The meeting was held back-to-back with the Twenty Fifth Meeting of the Route Development Group – Eastern Part of the ICAO EUR Region (RDGE/25).

1.2 The meeting was attended by thirty three (33) participants from fourteen (14) States and three (3) International Organizations, including Armenia, Bulgaria, China, Estonia, Finland, Georgia, Islamic Republic of Iran (I. R. Iran), Iraq, Kazakhstan, Kyrgyzstan, Romania, Sweden, Tajikistan, Turkey, EUROCONTROL IATA and ICAO.

2. **DISCUSSIONS**

2.1 The AIRARD/TF, as a new body, discussed the working structure, and decided to appoint two co-chairs, one from a State and one from the aviation industry due to the complex tasks involved in inter-regional coordination. The meeting agreed to the draft terms of reference of the Task Force.

2.2 Due to the inter-regional nature, the meeting agreed to a multiple reporting arrangement to all three concerned ICAO Regions (to the ATM Sub-Group in the APAC and MID Regions, and the RDGE and EUROCONTROL RNDSG in the EUR/NAT Region).

2.3 The meeting addressed in general the ATM issues at the interfaces between the three ICAO Regions such as, ATS routes, contingency planning, 5LNCs duplicates, longitudinal separation, etc.

2.4        The meeting also reviewed the proposals related to the PBN highways between ASIA and EUR, and agreed to differ the discussions to the second meeting.

2.5        The AIRARD TF/2 meeting is planned to be held concurrently with the RDGE/27 meeting (Kazakhstan, 23-27 October 2017).

2.6        The final report of the AIRARD TF/1 meeting is at **Appendix A**.

**3.        ACTION BY THE MEETING**

3.1        The meeting is invited to:

a)  urge States and Organizations to support the work of the AIRARD TF;

b)  encourage concerned States to attend the AIRARD TF/2 meeting; and

c)  review and recommend amendments to the terms of reference of the AIRARD TF.


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**INTERNATIONAL CIVIL AVIATION ORGANIZATION**



**REPORT OF THE FIRST MEETING OF THE**
**ADVANCED INTER-REGIONAL ATS ROUTE DEVELOPMENT TASK FORCE**
**(AIRARD/TF/1)**

TBILISI, GEORGIA, 21 OCTOBER 2016

The views expressed in this Report should be taken as those of the
Meeting and not the Organization

Approved by the Meeting and published by the
ICAO Asia and Pacific Office, Bangkok,
ICAO Middle East Office, Cairo and the
ICAO European and North Atlantic Office, Paris

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**APPENDIXES TO THE REPORT**

**INTRODUCTION**

**Meeting**

1.1         The First Meeting of the Advanced Inter-regional Air Traffic Services Route Development Task Force (AIRARD/TF/1) was kindly hosted by the Georgian Civil Aviation Authority at the Tbilisi Marriot Hotel, Tbilisi, on 21 October 2016.

**Attendance**

2.1         The meeting was attended by 33 participants from fourteen States and three International Organizations, including Armenia, Bulgaria, China, Estonia, Finland, Georgia, Islamic Republic of Iran (I. R. Iran), Iraq, Kazakhstan, Kyrgyzstan, Romania, Sweden, Tajikistan, Turkey, EUROCONTROL IATA and ICAO.  A list of participants is provided at **Appendix A** to this Report.

**Officers and Secretariat**

3.1         Mr. Len Wicks, Regional Officer Air Traffic Management (ATM), ICAO Asia and Pacific (APAC) Office, Mr. Elie El Khoury, Regional Officer ATM, ICAO Middle East (MID) Office and Mr. Sven Halle, Regional Officer ATM, ICAO European and North Atlantic (EUR/NAT) Office provided Secretariat support to the meeting.  They were supported by Ms. Patricia Cuff, Technical Assistant, ICAO EUR/NAT Office.

**Language and Documentation**

4.1         The working language of the meeting was English for all documentation and this Report.  Translation into English was provided by meeting participants when the meeting was addressed in the Russian and Chinese languages by delegates.

4.2         A total of four working papers (WP) and three information papers (IP) were considered by the meeting.  The list of working and information papers is attached at **Appendix B** to this report (IP01).

**Opening of the Meeting**

Meeting Modalities

5.1         Mr. Len Wicks welcomed participants to the meeting, and outlined the general objectives of the AIRARD/TF.  As a new body, the meeting discussed the working structure, and decided to appoint two co-chairs, one from a State and one from the aviation industry due to the complex tasks involved in inter-regional coordination.

5.2         Mr. Ahmad Kavehfirouz Deputy Director of Tehran ACC, I. R. Iran was nominated by Turkey and seconded by Armenia for the role of Co-Chair of the AIRARD/TF.  As no other nominations were received, Mr. Ahmad Kavehfirouz was duly elected as AIRARD/TF Co-Chair for a minimum of three cycles.

5.3         IATA nominated Mr. L. Grant Wilson, Head – Global ATC Charges, Safety & Flight Operations, IATA Montreal Headquarters as a temporary point of contact until the IATA nomination for industry Co-Chair was submitted within one month of the AIRARD/TF/1 meeting.

5.4     In addition, due to the inter-regional nature the meeting agreed to a multiple reporting arrangement to all three concerned regions (to the ATM Subgroup in the APAC and MID Regions, and the RDGE and EUROCONTROL RNDSG in the EUR/NAT Region).

**REPORT ON AGENDA ITEMS**

**Agenda Item 1: Adoption of Provisional Agenda**

1.1　　　　The provisional agenda (WP01) was adopted by the meeting, noting IP01 (Tentative List of Working and Information Papers).

**Agenda Item 2: Background, Concept and Drivers**

Development of the PBN Highways Concept (IP02)

2.1　　　　ICAO presented information on the development of the Performance-based Navigation (PBN) Highways concept, which is designed to use efficient PBN specifications, a degree of prioritisation, and end-to-end planning for advanced inter-regional ATS route development projects.

2.2　　　　IP02 noted that traffic flowing along Major Traffic Flows (MTF) had been 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 used end-to-end planning for routes linking Europe and Asia with the best available Area Navigation (RNAV) navigation specifications at the time (RNAV10). EMARSSH created momentum by impressing upon individual administrations and their military the critical need to support what was being proposed by many stakeholders. Though they were a great step forward, the EMARSSH routes have not proven to be as successful as hoped because some States had individually applied restrictions that reduced efficiency.

2.3　　　　The AIRARD/TF noted that advances such as the RNP 2 navigation specification (which provided highly accurate track-keeping suitable for dense Organised Track Systems (OTS)) and the advent of sophisticated Geographical Information System (GIS) supported a new effort in end-to-end route planning like EMARSSH.

2.4　　　　While recognising that optimal routes were unlikely to mirror great circle tracks, the meeting observed that an analysis of a flight from Kunming to Frankfurt using advanced GIS systems yielded a potential reduction of 245NM compared to ATS route L888. 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 $CO_2$ if a multiplier of 3.16 was used).

2.5　　　　The phenomenal growth in the APAC and MID Regions meant it was necessary to utilise RNP 2 to provide close spacing for high density, in line with the Asia/Pacific Seamless ATM Plan. The meeting noted that safety assessments in the Asia/Pacific had demonstrated RNAV 2/RNP 2 high density routes could be safely spaced by 8NM within surveillance airspace. A holistic approach was necessary to complement the aircraft capability with the highest possible levels of Air Navigation Service Provider (ANSP) service based on the available Communications, Navigation and Surveillance (CNS) capability – in other words, a practical application of 'best equipped, best served'.

2.6　　　　In the discussions, it was pointed out that States in the EUR Region have to deal with different navigation specification requirements. The current developments indicate RNAV 5 navigation specifications for en-route airspace and RNP 1 navigation specifications for Terminal Airspace (in several high density TMAs such as Amsterdam or Paris RNP 1 is already an access requirement today), which will also be part of an EASA Implementing Rule that will make these navigation specifications mandatory from December 2018 onwards.

2.7 The Fourth Meeting of the Trans-Regional Airspace and Supporting ATM Systems Steering Group (TRASAS/4, Bangkok, Thailand, 29 to 31 October 2014) had agreed to establish trans-regional groups to study 'advanced' ATS OTS.

2.8 The 'PBN Highway' concept was endorsed by TRASAS/4:

*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*

2.9 The Fourth Inter-Regional Co-ordination Meeting (IRCM/4) on Interface Issues between the APAC, EUR/NAT and MID Regional Offices of ICAO was held at Bangkok from 14 to 16 September 2015. The IRCM/4 discussed and endorsed the AIRARD/TF Conclusion with the following Action Item:

| **Action Item IRCM/4/09 – Advanced Inter-Regional ATS Route Development Task Force(s)** | |
|---|---|
| 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: <br><br> a) APAC RO will present IRCM/4 WP APAC/7 to the RGDE meeting in Sochi, Russia (October 2015); <br><br> b) the step-by-step approach and 2020 timeline for implementation outlined in IRCM/4 WP APAC/7 is supported in principle; <br><br> 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 <br><br> 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). | Expected impact: <br><br> ☐ Political / Global <br><br> ☒ Economic <br><br> ☒ Environmental <br><br> ☒ Ops/Technical |
| 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: ☒States ☒ICAO APAC RO ☒ICAO HQ ☒Other: International Organizations, ICAO EUR/NAT RO | |

**Agenda Item 3: Performance Frameworks and Metrics**

<u>Applying Seamless ATM Principles (WP02)</u>

3.1        AIRARD/TF/1 observed that it was imperative that all ANSPs aligned their services to ensure there was no 'lowest common denominator' along the PBN Highway; otherwise that often becomes the default in some parts of the world, particularly with regard to ATC separation standards.

3.2        The Asia/Pacific Seamless ATM Plan established the following expectations for airspace and ANSPs by 07 November 2019, which were intended to match the performance of modern aircraft and provide consistently advanced service levels:

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;

b)    ATC units using the horizontal separation minima stated in ICAO Doc 4444 (PANS ATM), or as close to the separation minima as practicable;

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;

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;

e)    ATC communication and ATS surveillance systems supporting the capabilities of RNP 2, and the ATC separation standards applicable;

f)    aircraft not meeting specified equipage requirements receiving a lower priority; 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.

3.3        The RNP 2 navigation specification was discussed by the meeting (three near-parallel ATS routes would require approximately 60NM of protected space, compared to 50NM for a single RNAV 10 route).  The PBN Highways concept was proposed as having either two or three near parallel routes, imbedded within the PBN Highway airspace.  PBN Highways based on RNP 2 would have a theoretical capacity increase by a factor of four over single RNAV 10 routes even with only two embedded routes, provide contingency options, and improve safety with less complexity and greater predictability over current route systems.  However, States would need to consider how they manage crossing or merging traffic to ensure the PBN Highway traffic was not greatly affected by this traffic; thus PBN Highway aircraft would be accorded priority. EUROCONTROL explained that with the implementation of the Free Route Airspace (FRA) concept in Europe, the Route Availability Document (which describes all European traffic flow restrictions and traffic orientation schemes) must be considered in the development process in order to maintain the required airspace capacity especially for the peak hour flows.

3.4        Regarding the use of RNP 2, the meeting noted that this specification was chosen because (unlike RNAV 5) with on-board monitoring, waypoint sequencing, GNSS required and an approved database, it supported high density, operations with track-keeping assurance that should require the minimum of intervention by Air Traffic Control (ATC).  Moreover, the meeting was informed that the geometry of available ground-based navigation aids in Asia were unlikely to support RNAV 5 over long distance routes.

3.5        IATA stated that not many aircraft were currently approved for RNP 2.  The meeting noted that the 2022 to 2025 timeline expected for commencement of PBN Highways should allow a large number of aircraft to be approved for RNP 2. It was also noted that as a result of the EASA Implementing Rule, aircraft operating to/from Europe might already be RNP 1 equipped from 2024 onwards.

> *Note: the Asia/Pacific had endorsed a temporary equivalence by accepting aircraft having the following three capabilities: RNAV (Air Navigation) 2, RNP 1 and GNSS RNP 2 as being equivalent to RNP 2.  While there are some technical differences with RNP 2, for the purposes of ATM these differences have not been deemed to be significant.*

3.6        Several airspace users however underlined the need to focus on the existing problem areas, such as areas in the interface where the route network did not satisfy airspace user needs, or stalled implementation aspects where proposals had not been implemented, or interoperability aspects where required airspace access and capacity were not available, before the TF planned the seamless operation of the PBN highways concept from 2025 onwards. The IATA Flight Operations Committee had identified 15 major global traffic flows and the current challenge was the integration of flows in multiple Regions while maintaining the highest level of route options/flexibility to the airspace users.

**Agenda Item 4: ANS and Aircraft Performance Expectations**

PBN Highway Trials Proposal (WP03)

4.1        British Airways, Lufthansa, KLM, Cathay Pacific and Singapore Airlines kindly provided basic flight planning data in order to make some early analysis of potential pathways containing near-optimal routes under the PBN Highways concept (**Attachment C**).

4.2        The airline data was 'averaged' to find the approximate best fit for potential PBN Highway pathways.  Each PBN Highway (a strip of airspace approximately 60NM wide for three near parallel routes routes) in high density Organised Track System (OTS) configuration.  Eight potential pathways were drafted to link Europe with Asia (Japan, China/East Asia, and Southeast Asia).

4.3        As the PBN Highways concept is synonymous with the Silk Road Economic Belt (丝绸之路经济带) being constructed by China on land and at sea, it was appropriate that three of the four identified priority pathways connected China with Europe.  Therefore these PBN Highways would form an aviation equivalent of the rail and shipping networks of the Silk Road Economic Belt.

4.4        IATA emphasised that connectivity to any high density OTS to and from airports en-route was necessary, as was the need to address the flexibility of airlines to choose optimal tracks. The meeting noted that terminal airspace varied considerably in size and complexity, and the effect on Extended-range Twin-engine Operational Performance Standards (ETOPS) should be considered.

4.5        The meeting addressed the necessity to investigate how proposed bi-directional PBN Highways could be integrated into the current uni-directional traffic flow as well as arrival and departure systems through transition gates (approximately 60NM wide for three embedded routes).

4.6        IATA advised the meeting that they would study the PBN Highway concept and provide data and analysis to the AIRATD/TF/2. The meeting noted that a future task would be to determine which PBN Highways would be accorded a priority, based on traffic requirements and less complexity.

4.7      Sweden stated that enhancement could come just from the greater harmonisation of ATS and aircraft systems required by PBN Highways.

4.8      Turkey supported the concept but noted that current-day issues with neighbouring airspace would mean some difficulties in implementation.

4.9      The Chinese delegation supported the PBN Highways concept, as did Armenia.

**Agenda Item 5: Identification of Key Stakeholders and Actions**

Next Steps (WP04)

5.1      The meeting was informed that ICAO emphasised the use of project management techniques, which may suit the implementation of priority PBN Highways.  The following basic steps were noted as a starting point:

1.  Assignment of a project manager for each PBN Highway and identification of concerned project members;

2.  using the optimum pathway and advanced GIS, determine the most appropriate terminal or congested airspace entry/exit gates;

3.  draft the amended PBN Highway if necessary to avoid obstacles or reduce Air Traffic Management (ATM) complexity;

4.  concerned States and airlines should then determine the ATM system deficiencies compared to the agreed specification (for example, communication and surveillance gaps along the proposed PBN Highway);

5.  reporting of each PBN Highway project to the AIRARD/TF;

6.  training and implementation of systems to support PBN Highways; and

7.  provision of information to stakeholders on the planning and implementation of PBN Highways, with particular emphasis on adherence to Annex 15 promulgation requirements and ICAO Doc 7030 *Regional Supplementary Procedures* amendments if this is deemed necessary for such matters as airspace mandates.

*Note 1: the presence of present-day conflict zones, difficulties with civil/military issues, etc. should not require the optimal PBN Highway to be amended automatically; rather, consideration should be made of the possibility of such obstacles not being an issue to facilitation by the 2022-2025 timeframe. Equally, new conflicts or civil/military issues might affect airspace currently available for civil air navigation so the emphasis must be on flexibility with a vision for the future.*

*Note 2: the use of GIS may require the funding of specific GIS tools; such funding sources should be considered by the AIRARD. The GIS would be important to identify places where the optimal pathway needs to be 'bent' to avoid Special Use Airspace (SUA) that cannot be amended itself.  However, the principles of PBN Highways demand that SUA be designed around the highways, not the other way around if at all possible.*

*Note 3: the avoidance of dense terminal airspace en-route such as Delhi and Moscow may not be necessary if it is considered that the PBN Highways traffic would normally operate in the RVSM stratum, well above terminal operations.  However, safe and efficient procedures for integration of arriving and departing traffic with the PBN Highway traffic.*

Progress on Airspace Optimization Projects in China (IP03)

5.1       China provided information on the progress and effects of the traffic flow optimization between China and Korea, and work on more flexible use of entry/exit points in China.  The meeting expressed its appreciation for China's efforts in this regard.

**Agenda Item 6: Improvements in the interface area between the EUR and MID Regions**

Due to time constraints, this item was not discussed.

**Agenda Item 7: Improvements in the interface area between the EUR and APAC Regions**

7.1       Due to time constraints, this item was not discussed..

**Agenda Item 8: Free Route Airspace Concept implementations within the EUR Region**

8.1       Due to time constraints, this item was not discussed..

**Agenda Item 9: Duplicated 5LNCs and the related safety issues**

9.1       Due to time constraints, this item was not discussed..

**Agenda Item 10: Any other business**

Task List

10.1       A draft task list was developed for consideration by AIRARD/TF/2, as appended in **Attachment D**.

Terms of Reference

10.2       An AIRARD/TF Term of Reference (TOR) was drafted but not discussed at the meeting. The draft would be circulated among the Secretariat and the Co-Chairs, then presented to the ATM Groups in the EUR/NAT, MID and APAC Regions for consideration.  The Second Meeting of the AIRARD/TF would then review and discuss the TOR.

**Agenda Item 11: Date and venue for the next meeting**

11.1        The next AIRARD/TF was tentatively planned for October 2017, in conjunction with the RDGE/27 meeting in Kazakhstan.

**Closing**

11.2        The State Co-Chair thanked participants for their contributions and closed the meeting.

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## LIST OF PAPERS

*Working Papers*

| No. | Agenda Item | Subject | Presented by |
|-----|-------------|---------|--------------|
| 01 | 1 | Provisional Agenda | Secretariat |
| 02 | 3 | Applying Seamless ATM Principles | Secretariat |
| 03 | 4 | PBN Highway Trials Proposal | Secretariat |
| 04 | 5 | Next Steps | Secretariat |

*Information Papers*

| No. | Agenda Item | Subject | Presented by |
|-----|-------------|---------|--------------|
| 01 | – | Tentative List of Working and Information Papers | Secretariat |
| 02 | 2 | Development of the PBN Highways Concept | Secretariat |

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The following pages contain the following:

(1) An approximation of optimal routes (not necessarily based on current route structures) that join major population centres, with both winter (blue) and summer (red) tracks shown. The information was sourced from British Airways, Lufthansa, Singapore Airlines and Cathay Pacific Airlines.

(2) The overlay of an optimized 'pathway', approximately 60-75NM wide (sufficient to contain three RNP 2 near parallel PBN Highway routes), and gates from which aircraft may enter or leave the PBN Highways to enter terminal airspace.

(3) The approximate PBN Highway pathways, in draft for consideration by the AIRARD/TF, prioritized for possible testing (based on no convergence with other PBN Highways and for the higher density routes).

Optimal routes between major population centres
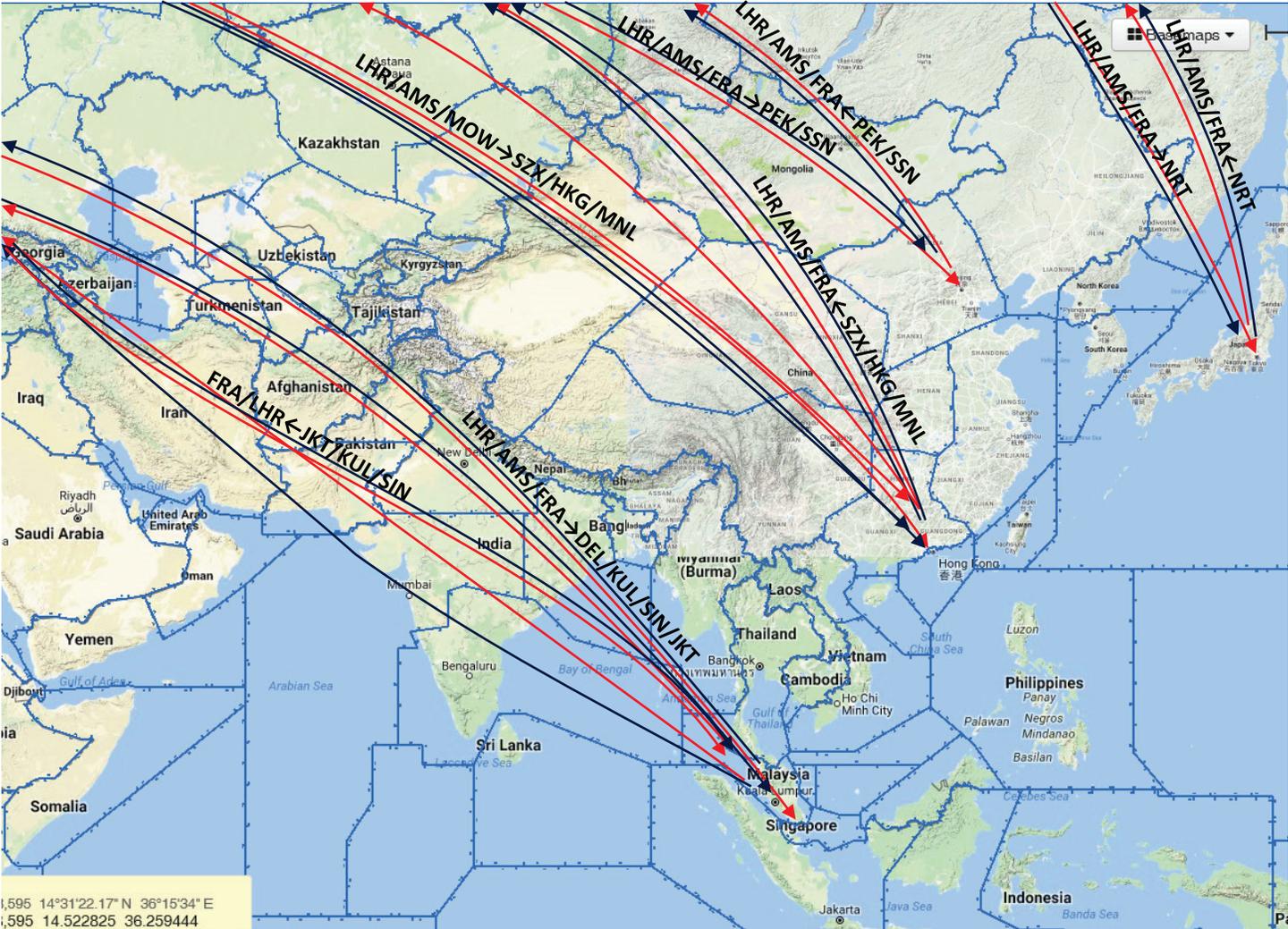
Pathways encompassing optimal routes, with entry/exit gates

Gate

Optimal Pathway

FRA/LHR/JKT/KUL/SIN
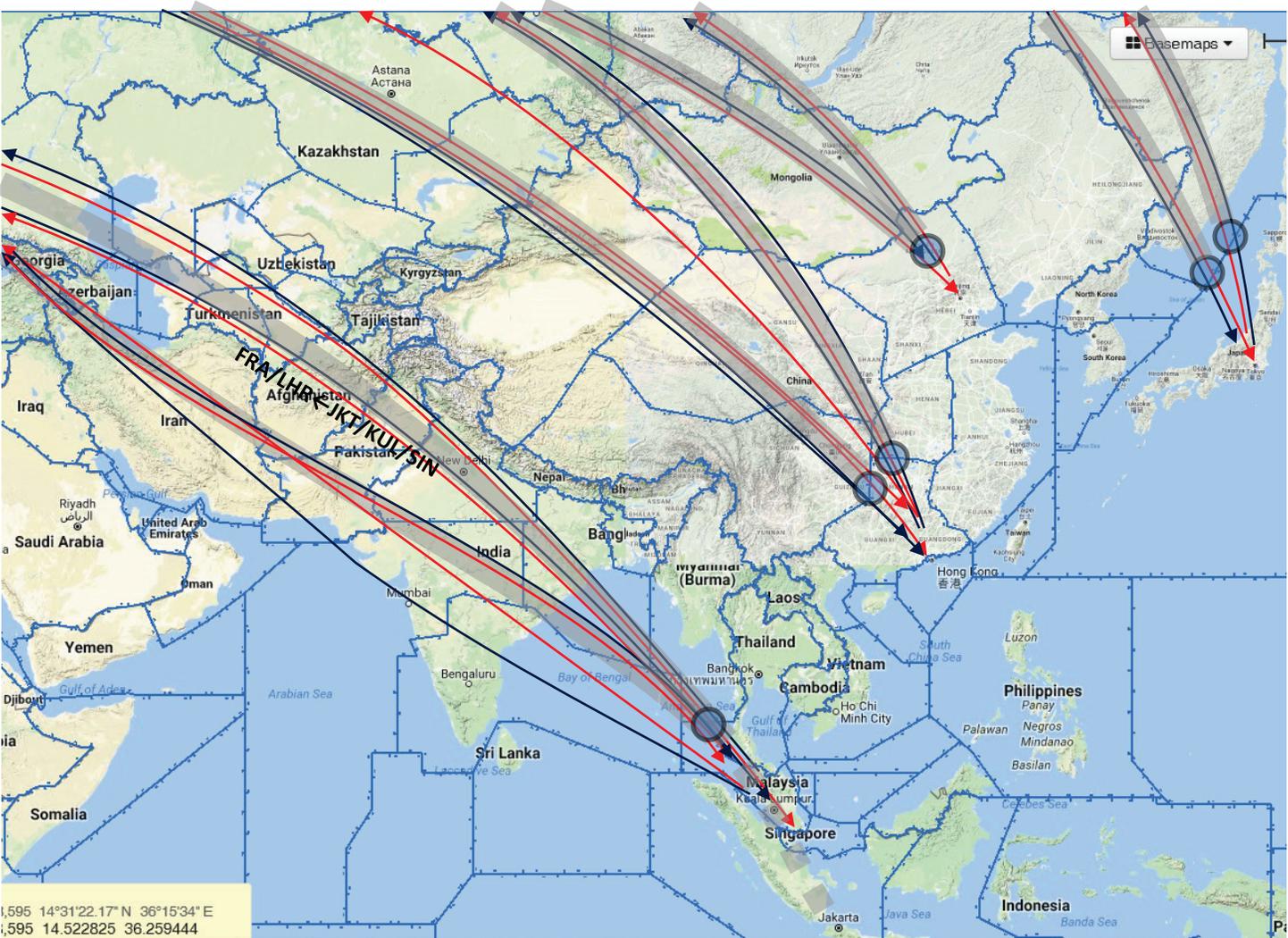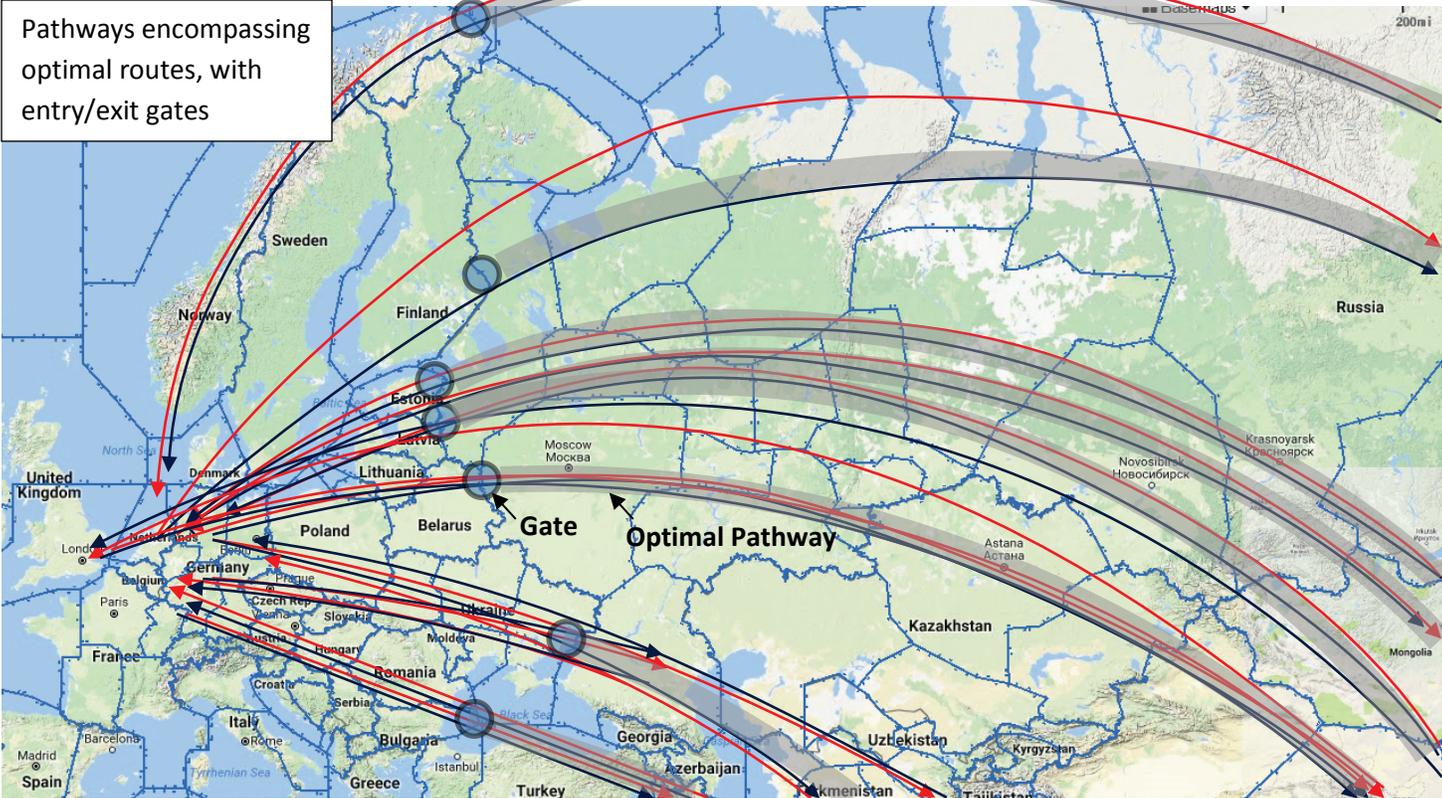
PBN Highway Concept
(red means candidate
for a priority test)
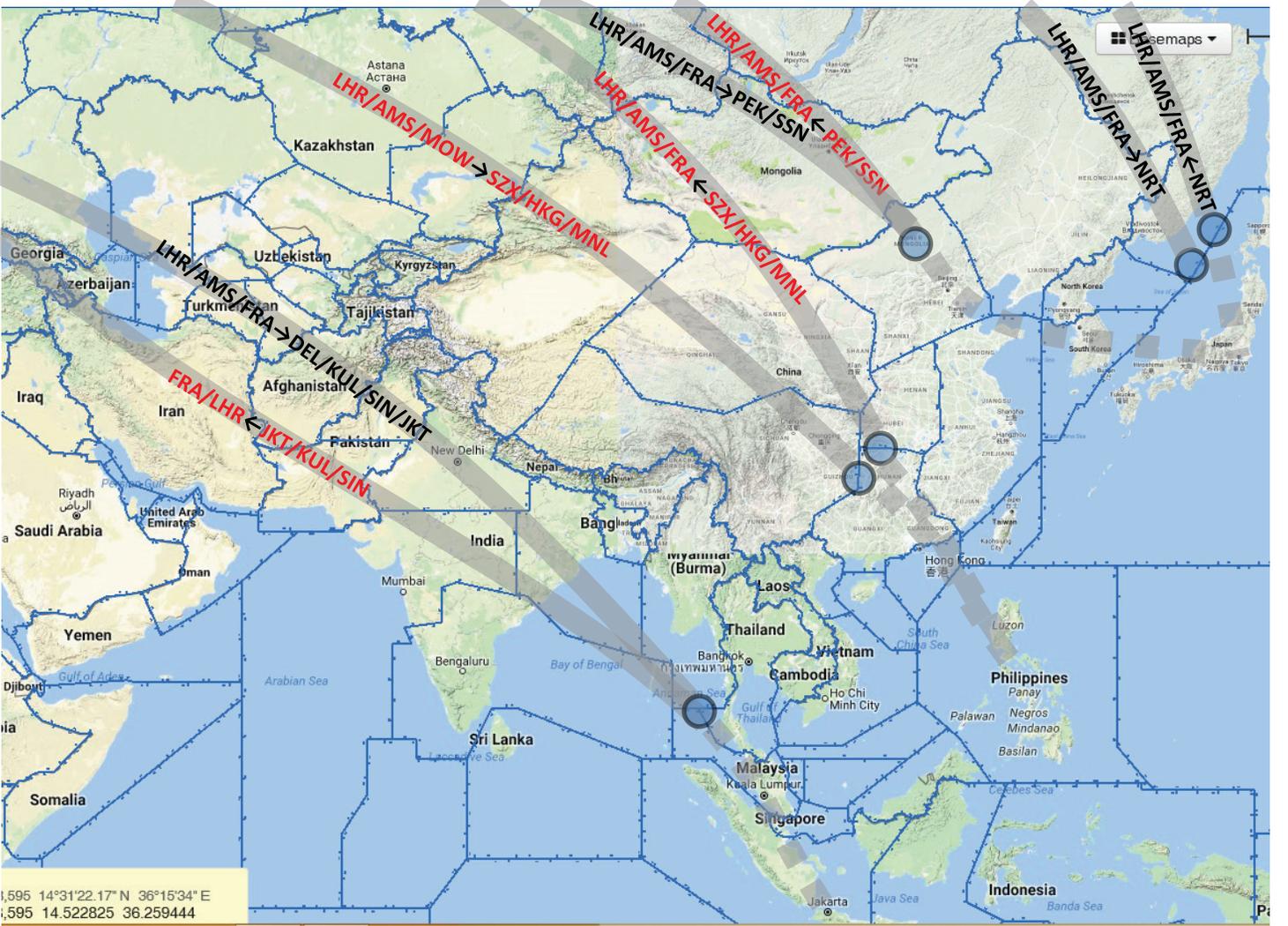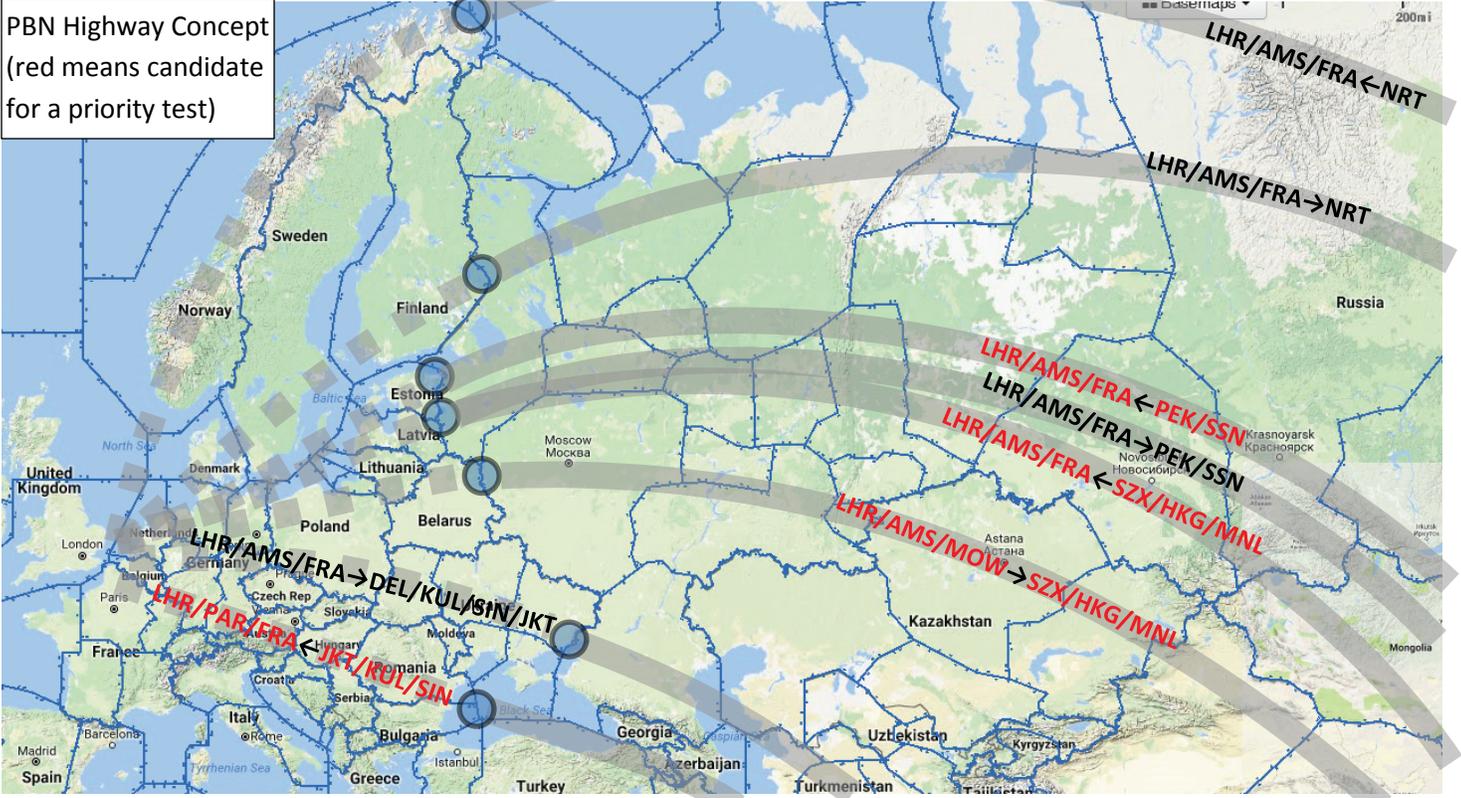
## ATM Sub Group of APANPIRG ─ TASK LIST

*(**Last update 24 October 2016, amendments are shown in highlight**)*

| ACTION ITEM | DESCRIPTION | TARGET DATE | RESPONSIBLE PARTY | STATUS | REMARKS |
|---|---|---|---|---|---|
| **1/1** | IATA nomination for industry Co-Chair to be submitted within one month of the AIRARD/TF/1 | 21 NOV 16 | IATA | OPEN | |
| **1/2** | IATA advised the meeting that they would study the PBN Highway concept and provide data and analysis to the AIRATD/TF/2 | AIRARD/ TF/2 | IATA | OPEN | |
| **1/3** | The draft TOR would be circulated among the Secretariat and the Co-Chairs, then presented to the ATM Groups in the EUR/NAT, MID and APAC Regions for consideration | AIRARD/ TF/2 | ICAO, Co-Chairs, ATM Groups | OPEN | |
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**TERMS OF REFERENCE (TOR) OF**
**Advanced Inter-Regional ATS Route Development Task Force (AIRARD/TF)**

**1.   TERMS OF REFERENCE**

**1.1          The terms of reference of the AIRARD Task Force are to:**

a) identify requirements and improvements for achieving and maintaining an efficient route network across the  ICAO APAC, EUR/NAT and MID Regions based on the airspace user needs and in coordination with stakeholders (States, International Organizations, user representative organizations and other ICAO Regions);

b) ensure harmonized planning and implementation of ATS routes and airspace improvement projects at the interfaces between the three ICAO Regions;

c) monitor the status of implementation of the agreed ATS routes and airspace improvement projects;

d) in case of implementation problems, identify the associated difficulties and propose/agree to solutions to further progress with the implementation;

e) review and amend the components of the ATS route structure and airspace description in order to ensure their compliance with ICAO provisions (e.g. five-letter name-code (5LNC) uniqueness, ATS route designators, WGS-84 coordinates, flexible use of airspace (FUA) implementation);

f) discuss and support the implementation of new concepts, such as the PBN Highway concept;

g) determine the CNS requirements, interoperable entry/exit points or areas, connections into the TMAs, weather related issues, terrain aspects, airspace organisation which would be needed in order to support the implementation of the new concepts;

h) achieve common understanding and support from all stakeholders involved in or affected by the ATM developments/activities in the three ICAO Regions; and

i) use the AIRARD/TF meetings as a forum for bilateral and multilateral discussions (such as review of ANS  Letters of Agreements.

**1.2          In order to meet the Terms of Reference, the AIRARD Task Force  shall**:

a) Discuss and review the ATS route network and airspace improvement projects which involve States (including the Military) and all aviation stakeholders (airspace users, international organisations and Computer Flight Plan Software/Service Providers (CFSPs)) across the three Regions;

b) propose a strategy and prioritized plan for development of improvements to the route network and/or airspace structure, highlighting:

- areas that require immediate attention (solution of safety, capacity or complexity constraints);
- interface issues with adjacent ICAO Regions;

c) monitor and report on the implementation status of the prioritized plan;

d) develop a roadmap for the implementation of new concepts such as the PBN highways;

e) develop a working depository for route proposals that will be used as a dynamic reference document for ongoing discussions on routes under development/ modification. In this respect, the Task Force should explore the utility that can be realized from the route catalogue concept/ATS routes database; and

f) address CNS and ATM interface issues with other regions and make specific recommendations to achieve a harmonized and interoperable environment in the interface areas between the regions.

**2. In order to effectively perform its tasks and responsibilities:**

a) The AIRARD TF shall elect Co-Chairpersons (one from a State and one from the airspace users) for a cycle of three meetings, unless otherwise re-elected.

b) The TF shall meet at least once a year and/or when deemed necessary.

c) The TF meetings should be hosted by its members on rotation basis.

d) The TF shall report to the relevant ATM Groups in the APAC and MID Regions under the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG), the European Air Navigation Planning Group (EANPG), North Atlantic Systems Planning Group (NAT SPG) and the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG).

**3. COMPOSITION**

The AIRARD Task Force is composed of:

a) States from APAC, EUR/NAT and MID Regions, or States providing services in the APAC, EUR/NAT and MID Regions;

b) concerned International and Regional Organizations; and

c) other representatives from provider States and Industry may be invited on ad hoc basis, as observers, when required.

**-** END **-**