International Civil Aviation Organization

The Ninth Meeting of the APANPIRG ATM Sub-Group (ATM/SG/9)

Video Teleconference, 01 – 05 November 2021

Agenda Item 6: ATM Coordination (Meetings, Route Development, Contingency Planning)

ATS ROUTE CATALOGUE

(Presented by the Secretariat)

SUMMARY

This paper presents *Asia/Pacific Region ATS Route Catalogue* for review and update. This paper also provides the information about the Airspace Concept Validation Webinar planned in January 2022.

1. INTRODUCTION

1.1 The *Asia/Pacific Region ATS Route Catalogue* records the status of route proposals, which may not have reached the stage of the formal proposal stage through the Regional Air Navigation Plan Proposal for Amendment (PfA) process.

1.2 The ICAO APAC Regional Sub-Office has updated the *Asia/Pacific Region ATS Route Catalogue* based on the information provided by States and airspace users through email correspondences and meetings. The most recent Version 20 of the Catalogue is available at the ICAO Asia/Pacific website (https://www.icao.int/APAC/Pages/default.aspx) under the menu 'APAC eDocuments'.

1.3 The APAC Regional Sub-Office has conducted an Airspace Concept Validation Methods survey, which States/Administrations were requested to complete and respond by 30 September 2021.

2. DISCUSSION

Route Catalogue

2.1 The ICAO APAC Regional Sub-Office sent out emails to all concerned States/Administrations requesting for status updates on relevant route proposals.

2.2 Feedback received from States/Administrations and IATA that were provided at the Combined Tenth Meeting of the South Asia/Indian Ocean ATM Coordination Group and the Twenty-Seventh Meeting of the South-East Asia ATS Coordination Group (SAIOACG/10 and SEACG/27, Video Teleconference, 29 March – 02 April 2021) and through email correspondence prior to ATM/SG/9, have been incorporated into the Draft Version 21 of the *Asia/Pacific Region ATS Route Catalogue*.

2.3 The Draft Version 21 of the *Asia/Pacific Region ATS Route Catalogue* is appended at **Attachment A** for review by States and IATA.

Airspace Concept Validation Webinar

2.4 Several cross-border airspace improvement projects are being discussed at APAC meetings, and APAC States/Administrations are actively reviewing their airspace structure to accommodate the traffic growth in the region. However, some projects were delayed, which may be due to a lack of validation tools to support the decision-making process.

2.5 The APAC Regional Sub-Office has developed a survey to identify the validation methods and tools commonly used in the APAC region, and to obtain feedback whether there is a need for a webinar regarding the use of validation tools in the process of validating airspace concepts. A copy of the survey is provided in **Attachment B**.

2.6 Based on the survey feedback, it has been concluded that the APAC Regional Sub-Office should provide a platform, via webinar, for States/Administrations to share their knowledge and experiences and the benefits gained using validation tools to support decision-making process by their Administrations.

2.7 The Airspace Concept Validation Webinar is tentatively planned in January 2022. A State Letter concerning this webinar will be distributed and posted on the ICAO APAC Webinars web-page (https://www.icao.int/APAC/Meetings/Pages/Webinars-.aspx) in due time.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) provide feedback on the status of the route proposals to ICAO;

c) note the information and consider participation in the Airspace Concept Validation Webinar; and

d) discuss any relevant matters as appropriate.

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ASIA/PACIFIC REGION ATS ROUTE CATALOGUE

INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA/PACIFIC REGIONAL OFFICE

VERSION 21

November 2021

Table of Contents

Foreword

1.1 The *Air Navigation Plan – Asia and Pacific Regions* (Doc 9673) has been superceded, in electronic form by the electronic Air Navigation Plan (eANP), which contains a table of regional ATS routes in Volume II (*Table ATM II- APAC- 1 – Asia and Pacific Regions ATS Routes*).

1.2 The Fourteenth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/14, August 2004) under Conclusion 14/5 established the ATS Route Network Review Task Force (ARNR/TF) to review the Asia and Pacific ATS route network to determine present and future route requirements. To facilitate the amendment process and keep track of route implementation and future requirements, and with the objective of providing more up to date information on route developments, ARNR/TF prepared the draft Asia/Pacific Region ATS Route Catalogue.

1.3 APANPIRG/16 (August 2005, Bangkok), recognizing the value of a consolidated reference document for the regional ATS routes and future route requirements of States and airspace users, accepted the Asia/Pacific Region ATS Route Catalogue under Decision 16/9. The ATS Route Catalogue is intended to be a living document, supplementing the eANP and maintained by the ICAO Asia and Pacific (APAC) Regional Sub-Office on behalf of the ICAO Asia and Pacific Office. Communication related to the ATS Route Catalogue should be made via email to apac-rso@icao.int.

1.4 A Contracting State or qualifying International Organization identifying a need for a new route requirement to be included in the eANP or to change an existing route contained in the eANP, may submit an amendment proposal to the ICAO APAC Regional Office in accordance with established procedures summarized below and the template provided on the ICAO APAC website.

1.5 Appropriately presented and documented proposals to amend the eANP are submitted to the ICAO Secretary General through the Regional Office and circulated to States and International Organizations for comment. If, in reply to the ICAO Regional Office's inquiry, no objection is raised to the proposal by a specified date, it will be deemed that a regional agreement (involving the relevant PIRG) on the subject has been reached. The Regional Office will inform States and International Organizations concerned of the approval and the eANP will be amended accordingly.

1.6 If, in reply to the ICAO Regional Office's inquiry, any objection is raised, and if objection remains after further consultation, the matter will be documented for discussion by APANPIRG and, ultimately for formal consideration by the Air Navigation Commission, if it remains unresolved. If the Commission concludes that the amendment is acceptable in its original or other form, it will present appropriate recommendations to the Council.

1.7 The APAC Regional Sub-Office, which is responsible for maintaining the ATS Route Catalogue, will update the ATS Route Catalogue from time to time as amendment proposals are presented, progressed and agreed or not agreed. The revision number and date shown on the cover page of the Catalogue. The Asia/Pacific Region ATS Route Catalogue is posted on the ICAO APAC website at (https://www.icao.int/APAC/Pages/default.aspx).

1.8 The Asia/Pacific Region ATS Route Catalogue is now as follows: Chapter 1: South Asia; Chapter 2: Southeast Asia; Chapter 3: East Asia; Chapter 4: Trans-Regional (South Asia); Chapter 5: Trans-Regional (East Asia); and Chapter 6: Pacific.

1.9 Regional ATS route proposals affecting Asia/Pacific airspace should be presented as part of a paper to ATM coordination groups or other suitable bodies, and then may be entered into the Asia/Pacific Region ATS Route Catalogue by the Regional Office. The APAC Regional Office or

Regional Sub-Office will periodically present to appropriate ATM coordination groups or other suitable bodies the proposals within their geographical area of interest for review.

1.10 The Asia/Pacific Region ATS Route Catalogue contained proposals for route changes that had not yet been agreed and implemented.

1.11 States in APAC were required to reclassify the routes as:

- Priority A – Short Term i.e. it could be implemented within 12 months;
- Priority B – Medium Term i.e. it could be implemented within 13 to 36 months;
- Priority C – Long term i.e. more than 36 months; and
- Priority D – Cannot be implemented (reasons to be provided).

As some States were not represented, these routes were classified as Priority C and will be updated when more information becomes available.

1.12 IATA has also prioritised the routes in terms of efficiency and environmental benefits as:

- HIGH – one of top priorities for airlines; or
- MEDIUM – has significant benefits but can wait until high priority proposals are implemented; or
- LOW – the route proposal may be deleted if the State cannot implement within 36 months.

1.13 After review, the Asia/Pacific Region ATS Route Catalogue may be updated by:

- deletion of the proposal when the proposal has been agreed and entered into the eANP; or
- deletion of the proposal when it has been decided that there is no possibility of implementation in the foreseeable future [~~(~~i.e.: the proposal has had no progress in the past five years, or it is a Priority C or D (more than 36 months) by States and is assigned a LOW priority by IATA~~)~~]; or
- amendment with the addition of supplementary information; or
- addition of a new ATS route proposal.

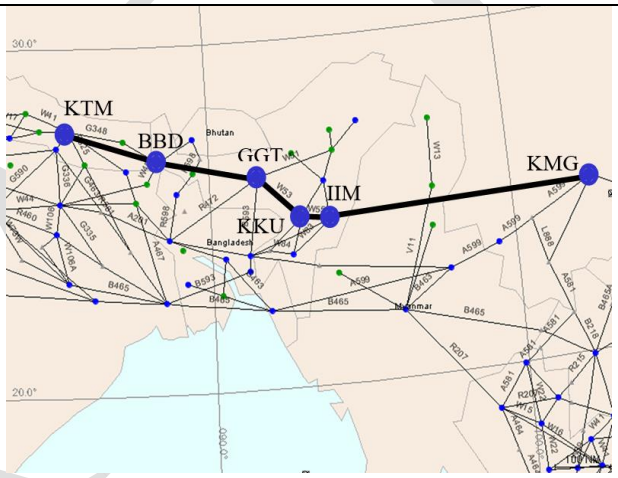
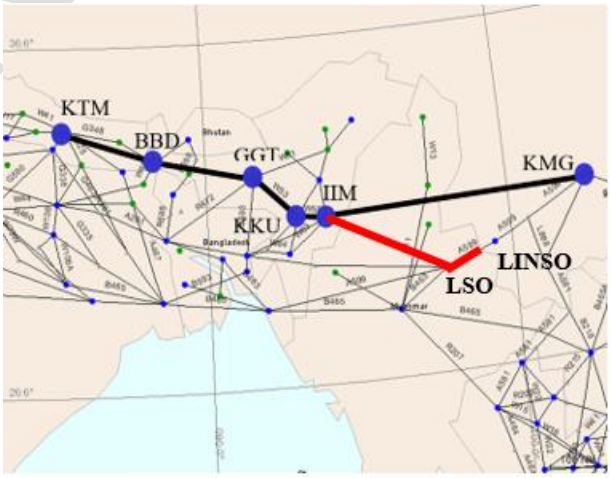
Amendment Record

Version	Date	Amended by	Comments
0.1	14 February 2005	-	ARNR/TF/2 developed draft version.
0.2	5 May 2005	ARNR/TF/3	Finalized format following contribution from members.
0.3	29 July 2005	ATM/AIS/SAR/SG/15	Sub-Group concluded the Catalogue be adopted (Draft Conclusion 15/3).
1	26 August 2005	APANPIRG/16	APANPIRG/16 decided that the Catalogue be accepted (Decision 16/9).
2	24 January 2006	BBACG/17	Reviewed and updated the Catalogue.
3	19 May 2006	SEACG/13	Reviewed and updated the Catalogue.
4	26 January 2007	BBACG/18	Reviewed and updated the Catalogue.
5	23 May 2008	SEACG/15	Reviewed and updated the Catalogue.
6	15 May 2009	SEACG/16	Reviewed and updated the Catalogue.
7	27 May 2010	SEACG/17	Reviewed and updated the Catalogue.
8	10 March 2011	BBACG/21	Reviewed and updated the Catalogue.
9	6 May 2011	SEACG/18	Reviewed and updated the Catalogue.
10	22 September 2011	SAIOACG/1	Reviewed and updated the Catalogue.
11	22 June 2012	ATM/AIS/SAR/SG/22 APANPIRG/23	Reviewed, reformatted, and updated the Catalogue, approved by APANPIRG/23.
12	26 June 2013	SAIOACG/SEACG, ATM/SG	Reviewed, reformatted, and updated the Catalogue, approved by APANPIRG/24.
13	11 September 2014	SAIOACG/SEACG, ATM/SG APANPIRG/25	Reviewed subsequent to Easter Island being transferred out of the Region; added trans-regional proposals
14	September 2015	SAIOACG/SEACG, ATM/SG APANPIRG/26	Removal of Chapter A (BANP routes).
15	September 2016	SAIOACG/SEACG, ATM/SG APANPIRG/27	Reviewed and updated the Catalogue.
16	August 2017	SAIOACG/SEACG, ATM/SG	Reviewed and updated the Catalogue.
17	September 2018	SAIOACG/SEACG, ATM/SG	Reviewed and updated the Catalogue, incorporated IATA inputs, added State and IATA priority label.
18	April 2019	SAIOACG/9, SEACG/26	Reviewed and updated the Catalogue.
19	September 2019	ATMSG/7, AIRARD TF/4	Reviewed and updated the Catalogue.

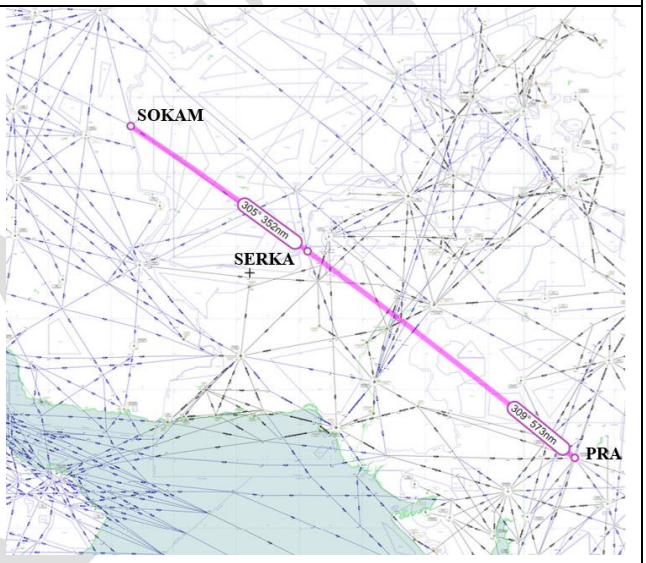
20	December 2020	ATMSG/8	Reviewed and updated the Catalogue.
21	November 2021	SAIOACG/10, SEACG/27, ATM/SG/9	Reviewed and updated the Catalogue.

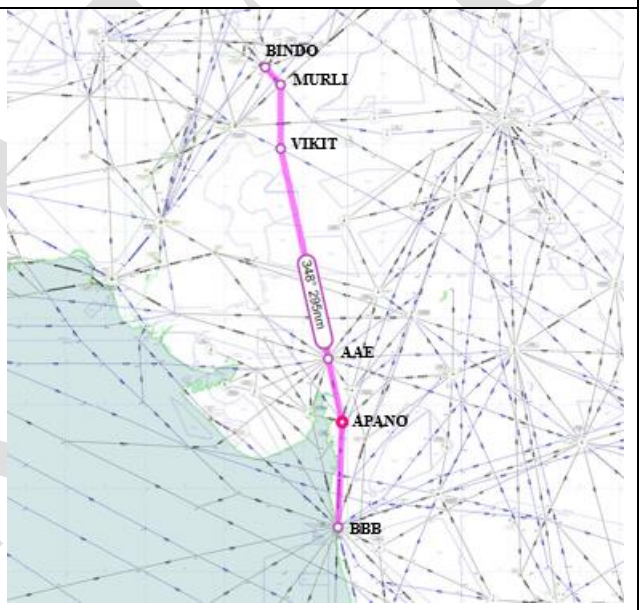
Chapter 1: South Asia

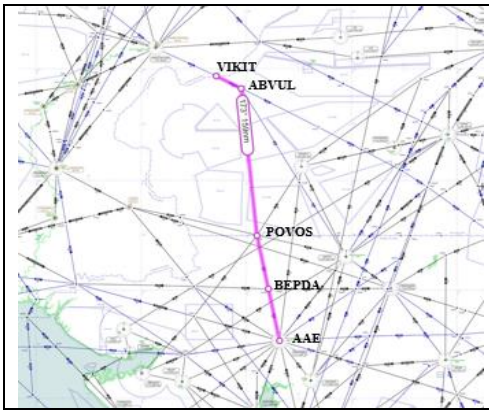
(referred to: SAIOACG, BOBASIO, ASIOACG as appropriate for review)

ATS Route Name	**HIMALAYA 02**
State Priority	**D**
IATA Priority	**LOW**
Requested by (when)	Nepal (01/09/2018)
States/Administrations Involved	Nepal, India, Myanmar, China (Kathmandu, Kolkata, Yangon, Kunming FIRs)
Route Description	Kathmandu (KTM) 2740.5N 08521.0E – Baghdogra (BBD) 2641.3N 08819.8E – Guwahati (GGT) 2606.1N 09135.3E – Silchar (KKU) 2454.8N 09258.9E – Imphal (IIM) 2446.0N 09354.5E – Kunming (KMG) 2501N 10244E
Flight Level Band	
Benefit (fuel, environmental)	110 NM / 15 minutes, 520 kg fuel, 1640 kg CO_2 per flight
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: <u>The route has been implemented except for Imphal to Kunming which China had undertaken to review (as per current remarks)</u>. IATA North Asia Office approached China who have indicated this route will be considered as part of the overall China route review – no timeline was given. China advised that they would seriously look at the proposal and would coordinate with Nepal (ref. para 8.4 of the SEA-RR/TF/4 report). At SAIOACG/9: with the improvement of surveillance capability, Myanmar would review this proposal. At ATMSG/7: Under consideration by China; and Myanmar commented this route proposal would be dependent on the enhancement of surveillance and communication coverage in the area. 26/09/2020: Nepal updated this route proposal was under discussion with Myanmar, and they were optimistic that communication and surveillance capabilities would be available in Yangon FIR in the near future to support the implementation of this route. 20/11/2020: China commented that it was not possible to establish a new entry/exit point, and counter-proposed to re-align IIM – LSO – LINSO (existing entry/exit point between Yangon and Kunming FIRs). At ATM/SG/8: In response to China's counter-proposal, Myanmar provided	  Counter-proposal by China

their disagreement; and India commented the existing established routes in Kolkata FIR (i.e. W137, W53 and W55) was for domestic operations only, and India would need to review the possibility of opening these routes for international operations. India also suggested that in light of this, and the delay of more than nine years and the positions of Myanmar and China, Nepal may wish to consider a new proposal.	

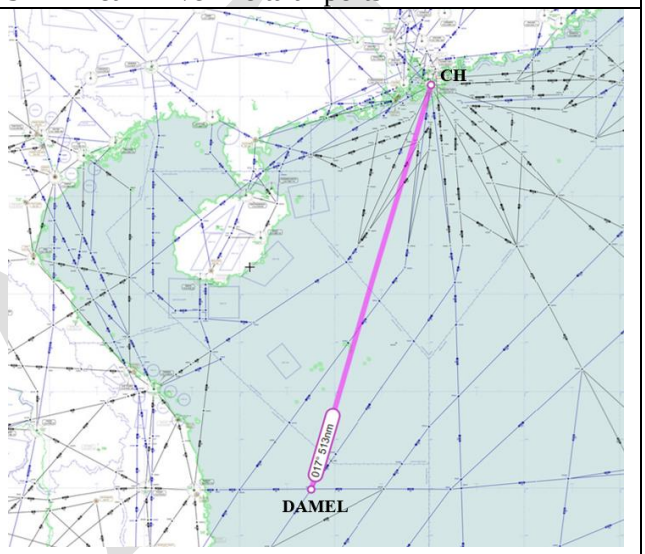
ATS Route Name	**IND 07 (N877 Extension)**
State Priority	**D**
IATA Priority	**MEDIUM**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	India, Pakistan, Afghanistan (Mumbai, Delhi, Karachi, Kabul FIRs)
Route Description	Pratagarh (PRA) 2401.8N 07445.0E – SERKA 2951.0N 06615.0E – SOKAM 3313.3N 06037.9E
Flight Level Band	28,000 - 46,000 ft
Benefit (fuel, environmental)	51 NM / 7 minutes, 835 kg fuel, 2,630 kg CO_2 per flight, 3,387 tonnes fuel, 10,668 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	LH, KL KUL/SIN – Middle East – East/Europe
Remarks: This proposal predates the extension of UL333 through Kabul FIR and has been under consideration for a number of years. The extension of UL333 is under utilised against other Kabul routes largely due the 45 NM 'penalty' in track mileage the current route structure requires. The routes primary benefit at this stage will be westbound and during BOBCAT traffic flow. Extension completed SERKA to SOKAM. Update 08/02/13: PRA – SERKA has been approved by India after lengthy consultation with the military, complementary action from Pakistan awaited. At SAIOACG/9: Pakistan commented this route proposal was very unlikely to be implemented. Future of this route would be decided at SAIOACG/10 in 2020. Update from India on 02/08/2019: Since the proposal is pending concurrence of Pakistan for a long time, India need to renegotiate the proposal with military after comments from Pakistan. 17/08/2020: The designated established military areas in Karachi FIR and route structure (crosser routes near the boundary with Delhi and Kabul FIRs) does not allow the establishment of this route. Pakistan proposed for deletion. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue.	

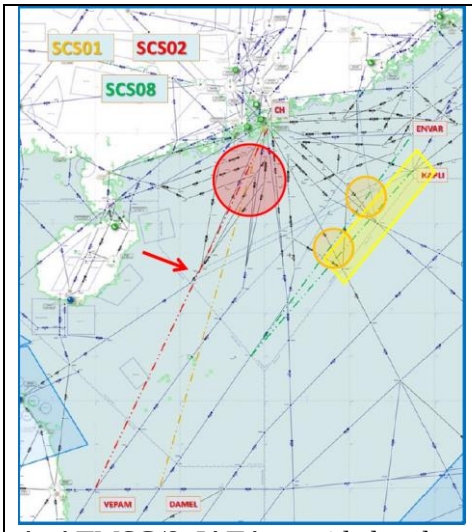
ATS Route Name	**IND 08 (a)**
State Priority	C
IATA Priority	**MEDIUM**
Requested by (when)	IATA, (25/06/2012: ATM/AIS/SAR/SG-22)
States/Administrations Involved	Pakistan, India (Mumbai, Karachi FIRs)
Route Description	Mumbai (BBB) 1905.2N 07252.5E – APANO 2135.0N 07259.0E – W13N – Ahmedabad (AAE) 2304.1N 07237.7E – New Waypoint 1 (FIR BDRY between Mumbai and Delhi) – VIKIT 2752.2N 07125.5E – MURLI 2917.7N 07125.4E – BINDO 2940.8N 07101.9E
Flight Level Band	
Benefit (fuel, environmental)	67 NM / 10 minutes, 700 kg fuel, 2,205 kg CO_2 per flight, 72,800 kg fuel, 229,330 kg CO_2 annually Note: Savings based on HEL – GOI city pair.
Operational Information (potential airlines, flight frequency, potential city pairs)	Mumbai – North America
Remarks: Initial request time specific (1600 – 2359) to support late night operations to North America. Segment VIKIT – MURLI – BINDO is within Karachi FIR. MURLI and BINDO is now connected via L750. IND 08 (a) preferred over IND 08 (b). At SAIOACG/9: as this route would traverse military SUAs, India required more time to coordinate with its military authority; and Pakistan counter-proposed for VIKIT P628 RK G202 (using existing route) as this route would also lead to ZB L750 in Karachi FIR. Update from India on 02/08/2019: Proposal for route between Ahmedabad (AAE) to VIKIT is under negotiation with military authority. 30/10/2020: India commented the proposal was still under negotiation with military. At SAIOACG/10 and SEACG/27: India commented the proposal was still under negotiation with military authority. 22/09/2021: India commented ATS Route Z8 (conditional route) had been implemented, effective 12 August 2021.	

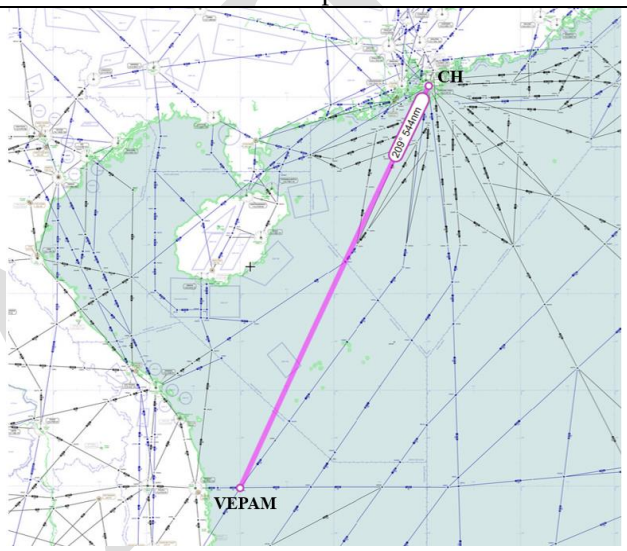
	

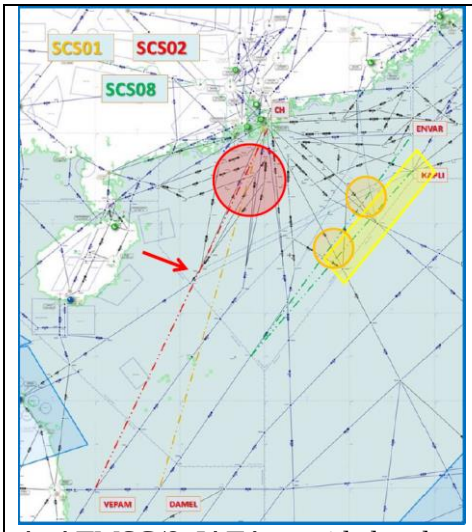
Chapter 2: Southeast Asia

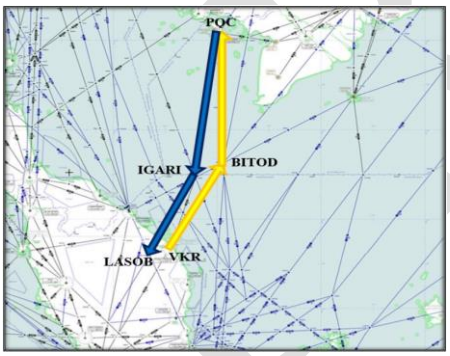
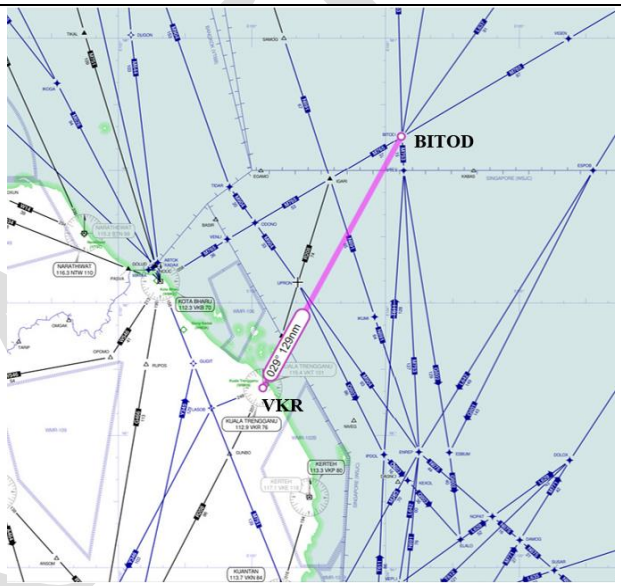
(referred to SEACG for review)

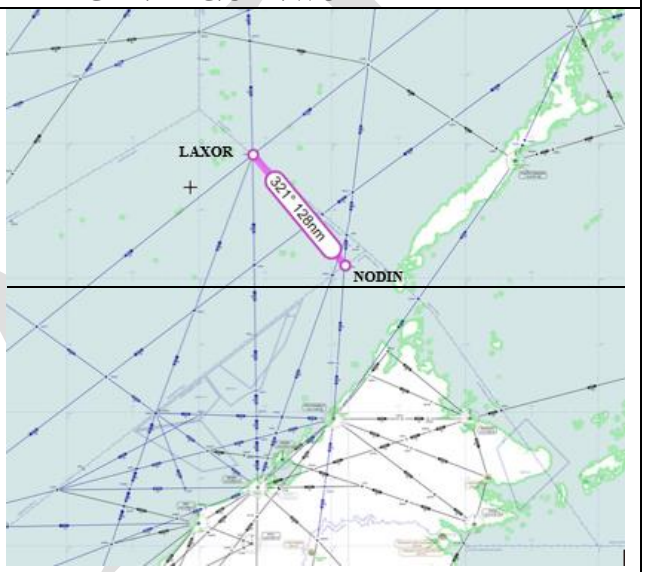
ATS Route Name	**SCS 01**
State Priority	~~C~~ **D**
IATA Priority	**HIGH**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	Viet Nam, China, Hong Kong China (Ho Chi Minh, Sanya, Hong Kong FIRs)
Route Description	DAMEL 1358.7N 11130.6E – Cheung Chau (CH) 2213.2N 11401.8E
Flight Level Band	28,000 – 46,000 ft
Benefit (fuel, environmental)	23 NM / 4 minutes, 300 kg fuel per flight, 1,560 tonnes fuel, 4,914 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	CX, KA, MH, SQ At least 100 flights per week SIN – Pearl River Delta airports
Remarks: Proposed route shortening for M771 into the Pearl River Delta area. During SEACG/19 in WP09 Hong Kong China advised they had studied the proposal for track shortening and advised the proposed change would reduce capacity of A1/P901. It would also require an extensive change in the flight route system and ATC sectors in Hong Kong FIR. However, Hong Kong China would continue to study this proposal for the implementation of RNP4/2. At SEACG/26: Hong Kong China commented they would need to review the integration of this route proposal with its planned airspace enhancement projects. Update from Viet Nam on 22/07/2019: Viet Nam has no objection, subject to agreement from China and Hong Kong China. 23/10/2020: China commented the proposal was under consideration. <u>30/10/2020: Hong Kong China commented SCS 01 and SCS 02 were conflicting with each other (see the red circle in the figure below). The two routes would create additional confliction points in the most congested ATC sector and ATS route segment in the Hong Kong FIR (see the red circle and arrow in the figure below). Therefore, these two routes were not recommended.</u>	

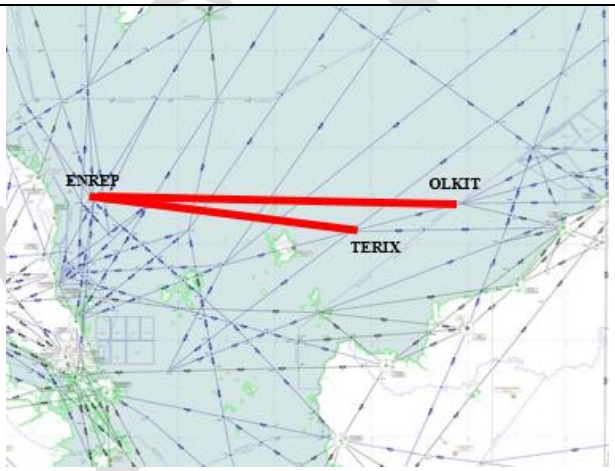
 At ATMSG/8: IATA provided updates on IATA priority; implementation benefits; and operational information. 29/09/2021: China commented SCS 01 would create conflict with existing ATS routes A1, L642 and M771, and therefore not recommended for implementation.	

ATS Route Name	**SCS 02**
State Priority	~~C~~ **D**
IATA Priority	**HIGH**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	Viet Nam, China, Hong Kong China (Ho Chi Minh, Sanya, Hong Kong FIRs)
Route Description	VEPAM 1358.0N 11000.0E – Cheung Chau (CH) 2213.2N 11401.8E
Flight Level Band	28,000 – 46,000 ft
Benefit (Environmental)	12 NM / 1 minutes, 200 kg fuel per flight, 2,080 tonnes fuel, 8,580 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	CX, KA, MH, SQ At least 200 flights per week SIN – Pearl River Delta airports.
Remarks: Proposed route shortening for L642 out of the Pearl River Delta area. During SEACG/19 in WP09 Hong Kong China advised they had studied the proposal for track shortening and advised the proposed change would reduce capacity of A1/P901. It would also require an extensive change in the flight route system and ATC sectors in Hong Kong FIR. However Hong Kong, China would continue to study this proposal for the implementation of RNP4/2. At SEACG/26: Hong Kong China commented they would need to review the integration of this route proposal with its planned airspace enhancement projects. Update from Viet Nam on 22/07/2019: Viet Nam has no objection, subject to agreement from China and Hong Kong China. 23/10/2020: China commented the proposal was under consideration. <u>30/10/2020: Hong Kong China commented SCS 01 and SCS 02 were conflicting with each other (see the red circle in the figure below). The two routes would create additional confliction points in the most congested ATC sector and ATS route segment in the Hong Kong FIR (see the red circle and arrow in the figure below). Therefore, these two routes were not recommended.</u>	

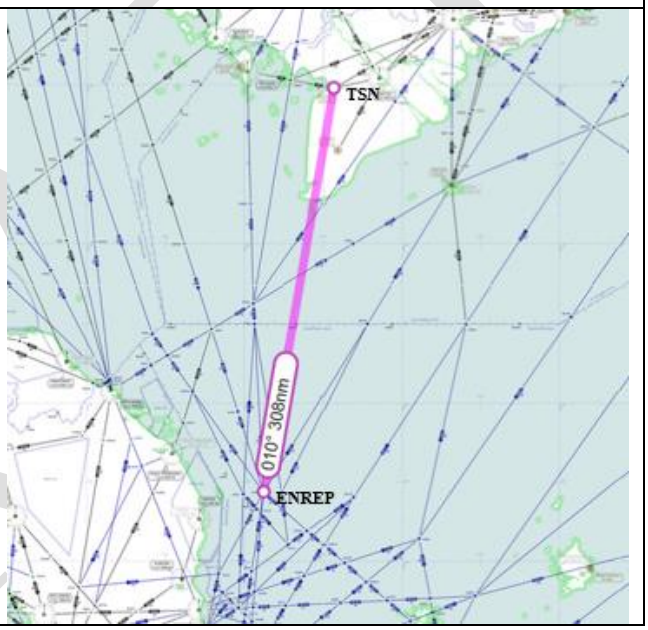
 At ATMSG/8: IATA provided updates on implementation benefits; and operational information. 29/09/2021: China commented SCS 02 would create conflict with existing ATS routes A1, L642 and M771, and therefore not recommended for implementation.	

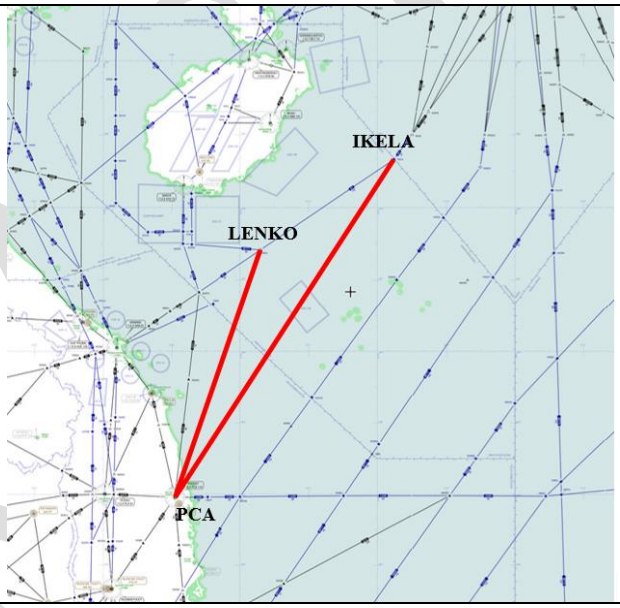
ATS Route Name	**SCS 11**
State Priority	**B**
IATA Priority	**LOW**
Requested by (when)	IATA (10/03/2015: SEACG/22)
States/Administrations Involved	Viet Nam, Singapore, Malaysia (Ho Chi Minh, Singapore, Kuala Lumpur FIRs)
Route Description	Kuala Terengganu (VKR) 0521.6N 10304.9E – BITOD 0715.4N 10407.1E
Flight Level Band	
Benefit (fuel, environmental)	6 NM / 0 minutes, 23 kg fuel per flight, 167 tonnes fuel, 527 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	MH, VN At least 20 flights per week KUL – HAN/PNH/SGN
Remarks: At SEACG/26: Malaysia, Singapore and Viet Nam had agreed in principle the feasibility of the route proposal. The States concerned would meet to further discuss the proposal in due time, and Malaysia agreed to become the lead coordinator. Update from Viet Nam on 22/07/2019: Viet Nam proposed the following route proposals for consideration by Malaysia and Singapore: Uni-directional eastbound route VKR – BITOD – PQC; and uni-directional westbound route PQC – IGARI – LASOB.  At ATMSG/7: Malaysia would lead the tripartite meeting, expected during the SCSTFRG/8 in September 2019. At ATMSG/8: This route proposal was under consideration by Viet Nam; and IATA provided updates on IATA priority, implementation benefits and operational information. 08/10/2021: Malaysia commented they would host the meeting between Malaysia, Singapore and Viet Nam in Q4 2021 or Q1 2022.	

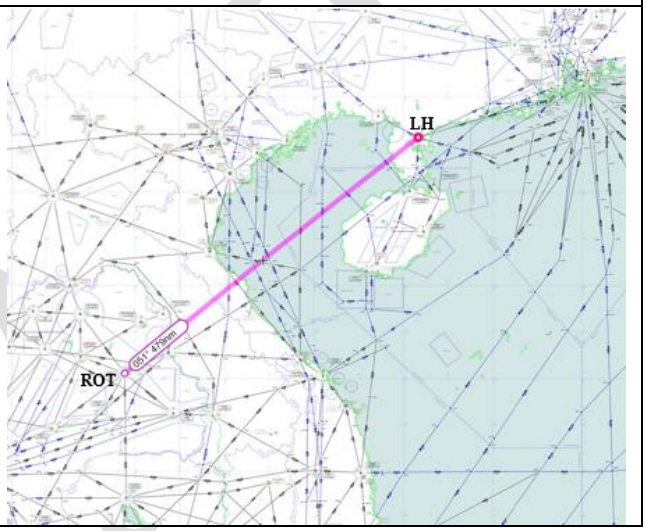
ATS Route Name	**SCS 13**
State Priority	**D**
IATA Priority	**LOW**
Requested by (when)	Malaysia (26/03/2018: SAIOACG/8 & SEACG/25)
States/Administrations Involved	Malaysia, Singapore, Philippines (Kota Kinabalu, Singapore, Manila FIRs)
Route Description	NODIN 081059.88N 1161142.00E – LAXOR 094936.84N 1144829.16E
Flight Level Band	30,000 and 38,000 ft (FLAS for M772)
Benefit (fuel, environmental)	39 NM / 8 minutes, 236 kg fuel, 746 kg CO_2 per flight, 1,550 tonnes fuel, 4,900 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	9C, AK, CZ 63 flights per week BKI – CAN/HKG/SZX/WUH
Remarks: At SEACG/26: IATA would assign its priority after a comprehensive review of the Catalogue by its focus group. 15/05/2020: this route proposal was discussed at the bi-lateral meeting between Philippines and Singapore in August 2019. Both States agreed that it was not feasible to be implemented, as there were existing two routes converging at waypoint LAXOR, with only two FLAS level allocated (FL300 and FL380) and 10 minutes longitudinal separation. At ATMSG/8: IATA assigned "**LOW**" priority and recommended for deletion. At SAIOACG/10 and SEACG/27: Malaysia agreed for deletion.	

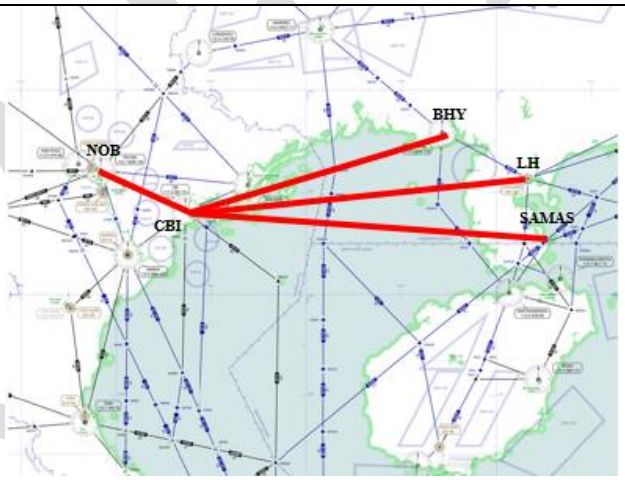
ATS Route Name	**SCS 14**
State Priority	**B**
IATA Priority	**LOW**
Requested by (when)	Malaysia (26/03/2018: SAIOACG/8 & SEACG/25)
States/Administrations Involved	Malaysia, Singapore (Kota Kinabalu, Singapore FIRs)
Route Description	ENREP 045223.88N 1041442.00E – OLKIT 045012.12N 1115118.00E or ENREP 045223.88N 1041442.00E – TERIX 041520.88N 1093455.92E
Flight Level Band	At or below 29,000 ft
Benefit (fuel, environmental)	107 NM / 12 minutes, 365 kg fuel, 1,153 kg CO_2 per flight, 266,450 kg fuel, 841,982 kg CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	BKI – KBR
Remarks: Purpose is to circumnavigate major confluence of air traffic at VPK thus providing better efficiency for flight operating from/to KBR. Operation at 29,000 ft and below to avoid crossing traffic within the South China Sea airspace. At SEACG/26: Singapore commented implementation of this route would be possible with the implementation of space-based ADS-B in Singapore FIR, planned by end of 2019; and IATA would assign its priority after a comprehensive review of the Catalogue by its focus group. 15/05/2020: discussion on this route proposal would be conducted when the COVID-19 situation improved, and a face-to-face meeting could be conducted between Malaysia and Singapore. At ATMSG/8: Indonesia commented future discussion on this route proposal would require their involvements; and IATA assigned "**LOW**" priority and recommended for deletion. 16/09/2021: Singapore commented that, as the COVID-19 situation had not improved, the face-to-face meeting between the States involved had yet to materialise.	

ATS Route Name	**SCS 15**
State Priority	**B**
IATA Priority	**LOW**
Requested by (when)	Malaysia (26/03/2018: SAIOACG/8 & SEACG/25)
States/Administrations Involved	Malaysia, Singapore (Kota Kinabalu, Singapore FIRs)
Route Description	ENREP 045223.88N 1041442.00E – KAMIN 023441.88N 1085536.12E
Flight Level Band	At or below 29,000 ft
Benefit (fuel, environmental)	107 NM / 12 minutes, 365 kg fuel, 1,153 kg CO_2 per flight, 266,450 kg fuel, 841,982 kg CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	KCH – KBR
Remarks: Purpose is to circumnavigate major confluence of air traffic at VPK thus providing better efficiency for flight operating from/to KBR. Operation at 29,000 ft and below to avoid crossing traffic within the South China Sea airspace. At SEACG/26: Singapore commented implementation of this route would be possible with the implementation of space-based ADS-B in Singapore FIR, planned by end of 2019; and IATA would assign its priority after a comprehensive review of the Catalogue by its focus group. 15/05/2020: discussion on this route proposal would be conducted when the COVID-19 situation improved, and a face-to-face meeting could be conducted between Malaysia and Singapore. At ATMSG/8: Indonesia commented future discussion on this route proposal would require their involvements; and IATA assigned "**LOW**" priority and recommended for deletion. 16/09/2021: Singapore commented that, as the COVID-19 situation had not improved, the face-to-face meeting between the States involved had yet to materialise.	

ATS Route Name	**SCS 16**
State Priority	**C**
IATA Priority	**MEDIUM**
Requested by (when)	Viet Nam, (01/04/2019: SEACG/26)
States/Administrations Involved	Singapore, Viet Nam (Singapore, Ho Chi Minh FIRs)
Route Description	Implementation of new uni-directional northbound ATS route: ENREP 045223.88N 1041442.00E – New Waypoint (FIR BDRY between Singapore and Ho Chi Minh) – Tan Son Nhat (TSN) 104859.20N 1063844.10E
Flight Level Band	
Benefit (fuel, environmental)	48 NM / 6 minutes, 252 kg fuel, 794 kg CO_2 per flight, 576,576 kg fuel, 1,816 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	SIN – SGN
Remarks: Update from Viet Nam on 22/07/2019: Due to crossing routes, this route proposal would be possible subject to the enhancement of surveillance and ATFM capabilities in the concerned area. At ATMSG/8: Viet Nam commented this route proposal was under consideration; and IATA assigned "**MEDIUM**" priority.	

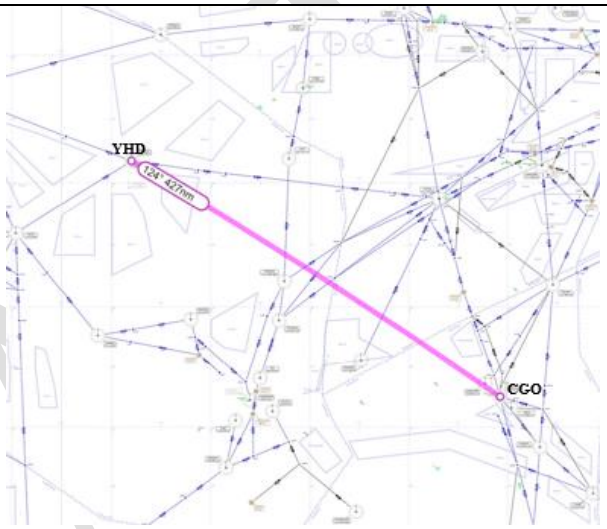
ATS Route Name	**SCS 18**
State Priority	**C**
IATA Priority	**LOW**
Requested by (when)	Viet Nam (01/04/2019: SEACG/26)
States/Administrations Involved	Viet Nam, China, Hong Kong China (Ho Chi Minh, Sanya, Hong Kong FIRs)
Route Description	Phu Cat (PCA) 135726.00N 1090233.60E – IKELA 183942.00N 1121442.00E or Phu Cat (PCA) 135726.00N 1090233.60E – LENKO 172456.88N 1101800.00E
Flight Level Band	
Benefit (fuel, environmental)	52 NM / 5 minutes, 220 kg fuel per flight, 435 tonnes fuel, 1,370 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	KA, MH At least 30 flights per week KUL – SGN – East Asia
Remarks: At ATMSG/7: China proposed to concentrate on the implementation of parallel route to A1 (SCSTFRG Priority Area 1). This route proposal may not be needed, if the parallel route to A1 is implemented. 23/10/2020: No update (SCSTFRG/9 postponed to 2021). At ATMSG/8: IATA provided updates on IATA priority; implementation benefits; and operational information.	

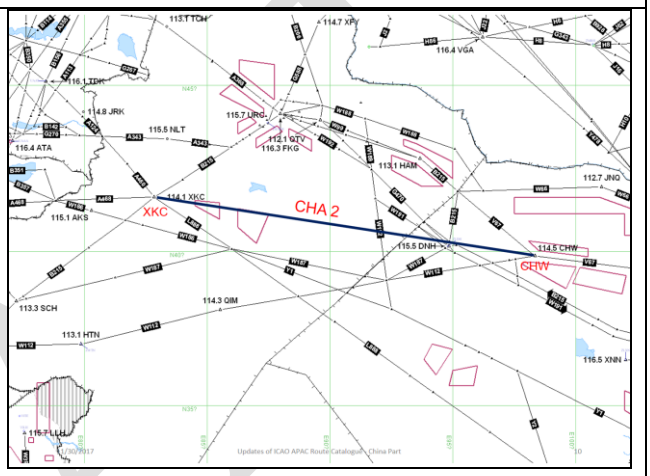
ATS Route Name	**SEA 12**
State Priority	**C**
IATA Priority	**HIGH**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	Thailand, Lao PDR, Viet Nam, China (Bangkok, Vientiane, Hanoi, Sanya, Guangzhou FIRs)
Route Description	Roiet (ROT) 1607.0N 10346.7E – Huguang (LH) 2107.9N 11020.2E
Flight Level Band	29,000 – 46,000 ft
Benefit (fuel, environmental)	14 NM / 2 minutes, 208 kg fuel, 655 kg CO_2 per flight, 1,731 tonnes fuel, 5,451 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	CX 160 flights per week JKT/KUL/PNH/SIN – HKG/SYX
Remarks: Provide parallel to the A202 route. At SEACG/26: Viet Nam proposed to concentrate on SCSTFRG Priority Area 1: parallel route to A1 proposal. This route proposal to be reviewed at a later stage. 23/10/2020: No update (SCSTFRG/9 postponed to 2021).	

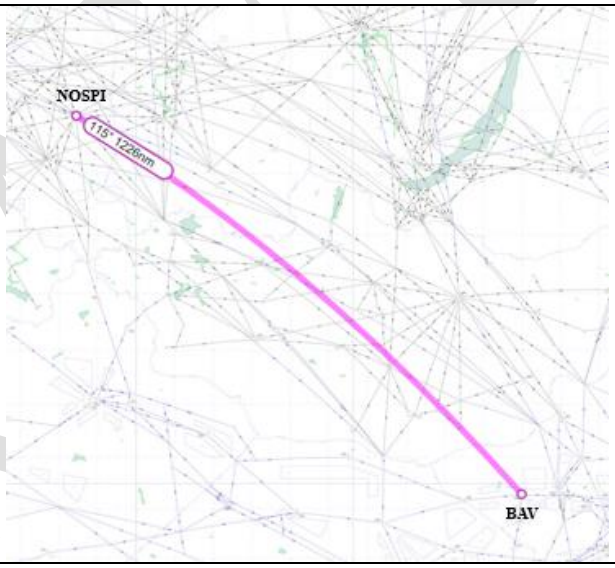
ATS Route Name	**VIET NAM 02**
State Priority	**D**
IATA Priority	**HIGH**
Requested by (when)	Viet Nam (01/09/2018)
States/Administrations Involved	Viet Nam, China (Hanoi, Sanya, Guangzhou FIRs)
Route Description	Noi Bai (NOB) 2112.8N 10550.1E – Cat Bi (CBI) 2049.1N 10642.5E – SAMAS 2030.3N 11029.7E or Noi Bai (NOB) 2112.8N 10550.1E – Cat Bi (CBI) 2049.1N 10642.5E – Huguang (LH) 2107.9N 11020.2E or Noi Bai (NOB) 2112.8N 10550.1E – Cat Bi (CBI) 2049.1N 10642.5E – Nankang (BHY) 2135.2N 10925.9E
Flight Level Band	28,000 – 46,000 ft
Benefit (fuel, environmental)	48 NM / 6 minutes, 252 kg fuel, 794 kg CO_2 per flight, 576,576 kg fuel, 1,816 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	CX 44 flights per week
Remarks: Because of small traffic demand and cost/benefit considerations, this route is impossible and cannot be implemented at present. Retain proposal for long-term planing (Viet Nam). Retention discussed at SEACG/22. At SEACG/26: China commented that this route proposal was very unlikely to be implemented, and recommended for this route proposal to be deleted from the Catalogue; and Viet Nam proposed alternate option: Noi Bai (NOB) 2112.8N 10550.1E – Cat Bi (CBI) 2049.1N 10642.5E – Nankang (BHY) 2135.2N 10925.9E to serve traffic between Ha Noi/Cat Bi/Van Don (new international airport in Viet Nam) and destinations in China and beyond. 23/10/2020: China commented the proposal was under consideration. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue. 29/09/2021: China commented the proposal was still under consideration.	

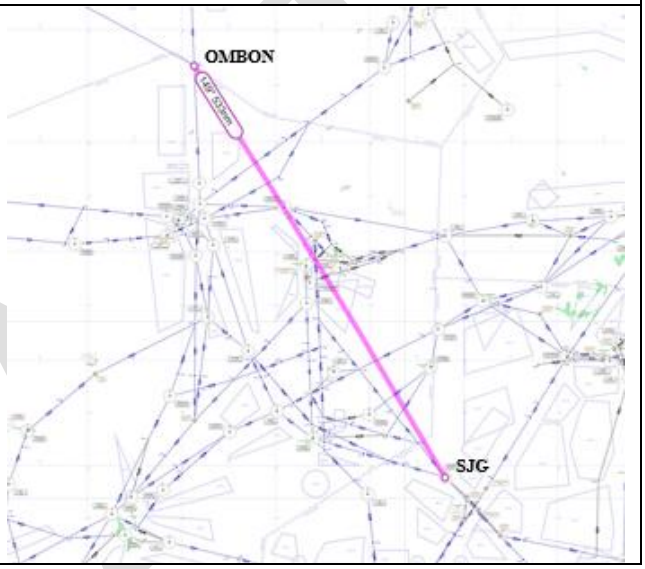
Chapter 3: East Asia

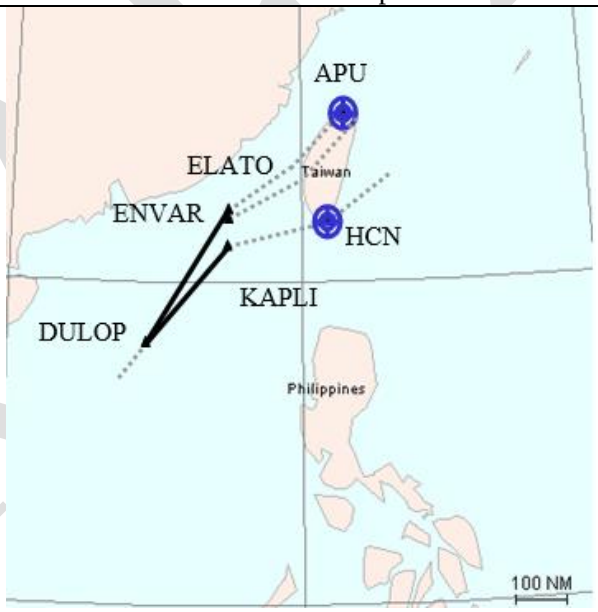
(referred to: States or EATMCG as appropriate for review)

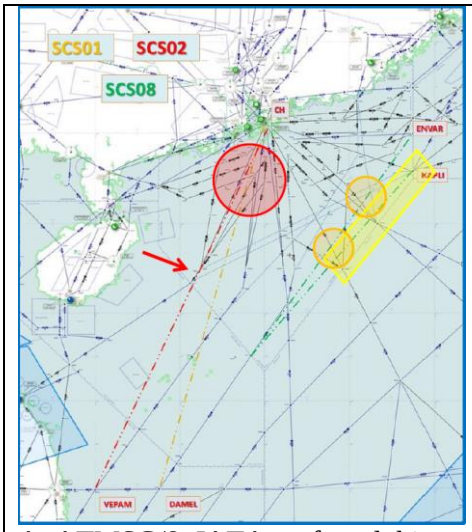
ATS Route Name	**CHA 01**
State Priority	**D**
IATA Priority	**HIGH**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	China (Lanzhou, Beijing, Wuhan FIRs)
Route Description	Yinchuan (YHD) 3820.8N 10624.6E – Zhengzhou (CGO) N3431.1 E11350.6
Flight Level Band	8,400 – 15,000 meters
Benefit (fuel, environmental)	73 NM / 9 minutes, 26,645 kg fuel, 825,995 kg CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	Europe – Shanghai
Remarks: Original proposal: YHD – YAV – CGO – ZHO – SB/HFE. The route segment between CGO – ZHO – HFE has been implemented as part of ATS route B208 since 2008. Therefore, the route description was amended as YHD – CGO accordingly. At ATMSG/7: China commented the proposed route would create numerous conflicts, and was not consistent with its planned route network. 23/10/2020: China commented there was no progress on this proposal. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue, and proposed the route segment between CGO – ZHO – HFE to be made available for eastbound too. In response to IATA's proposal, China commented the following uni-directional routing systems had been implemented for flight planning: (a) eastbound: HFE – FYG – ZHOU – CGO. (b) westbound: CGO – W129/KAMDA – W128/FYG. At SAIOACG/10 and SEACG/27: China proposed for deletion.	

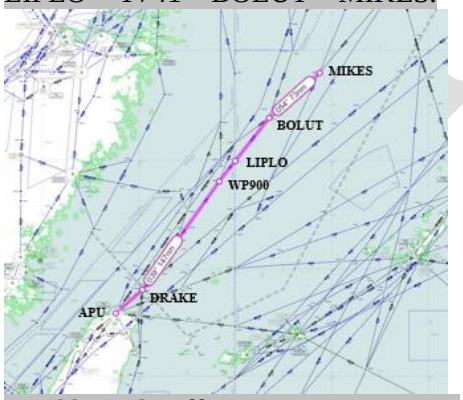
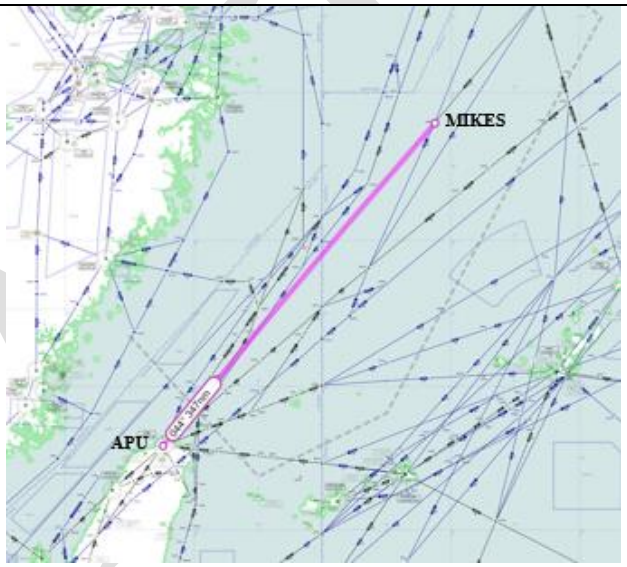
ATS Route Name	**CHA 02**
State Priority	**D**
IATA Priority	**HIGH**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	China (Urumqi, Lanzhou FIRs)
Route Description	Qiuci (XKC) 4140.6N 08250.6E – Jiayuguan (CHW) 3951.3N 09821.0E
Flight Level Band	8,400 – 15,000 meters
Benefit (fuel, environmental)	93 NM / 12 minutes, 4,426 tonnes fuel, 1,372,202 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	63 flights per week Middle East/Pakistan – China/Japan/Korea
Remarks: China comment: there are existing routes between XKC and CHW. At ATMSG/7: China commented the proposed route was not possible for implementation, and proposed for deletion; and IATA would provide feedback after a comprehensive review of the Catalogue by its focus group, expected in March 2020. 23/10/2020: China proposed for deletion. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue.	

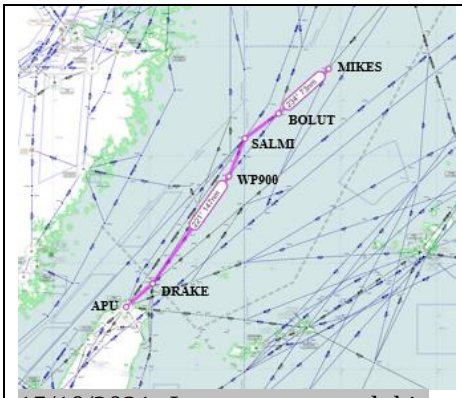
ATS Route Name	**CHA 12**
State Priority	**D**
IATA Priority	**HIGH**
Requested by (when)	IATA (29/08/2018)
States/Administrations Involved	Russia, Mongolia, China (Novosibirsk, Krasnoyarsk, Ulaanbatar, Beijing FIRs)
Route Description	NOSPI 534912.00N 0865248.00E – New Waypoint (FIR BDRY between Novosibirsk and Krasnoyarsk) – New Waypoint (FIR BDRY between Krasnoyarsk and Ulaanbatar) – New Waypoint (Entry/Exit Point: FIR BDRY between Ulaanbatar and Beijing) – Baotou (BAV)
Flight Level Band	28,000 – 46,000 ft
Benefit (fuel, environmental)	5 minutes, 6,090 tonnes fuel, 19,185 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	85 flights per week
Remarks: New route proposal replacing the previous from Weixian to Novokuznetsk. At ATMSG/7: China and Mongolia commented the proposed route was not possible for implemention; and IATA would provide feedback after a comprehensive review of the Catalogue by its focus group, expected in March 2020. 23/10/2020: China proposed for deletion. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue.	

ATS Route Name	**IATA 02**
State Priority	**D**
IATA Priority	**HIGH**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	China (Kunming, Guangzhou FIRs)
Route Description	OMBON 3321.4N 10416.3E – Sanjiang (SJG) 2546.6N 10936.6E
Flight Level Band	8,400 – 15,000 meters
Benefit (fuel, environmental)	14 minutes, 6,657 tones fuel, 20,636 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	56 flights per week Europe – Pearl River Delta airports
Remarks: China comments: There are existing routes between OMBON and RO. Direct route is impossible at present. 23/10/2020: China proposed for deletion. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue.	

ATS Route Name	**SCS 08**
State Priority	~~C~~ **D**
IATA Priority	**HIGH**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	Hong Kong China, Taibei ACC (Hong Kong, Taibei FIRs)
Route Description	DULOP 1814.2N 11432.6E – ELATO 2220.0N 11730.0E – A1 or DULOP 1814.2N 11432.6E – ENVAR 2159.5N 11730.0E – M750 or DULOP 1814.2N 11432.6E – KAPLI 2110.0N 11730.0E – G86
Flight Level Band	28,000 – 46,000 ft
Benefit (fuel, environmental)	6 minutes, 850 kg fuel, 2,687 kg CO_2 per flight, 1,863 tonnes fuel, 5,868 tonnes CO_2 annually Note: Savings based on DULOP – ENVAR.
Operational Information (potential airlines, flight frequency, potential city pairs)	BR, CI At least 42 flights per week Southeast Asia – North Asia airports
Remarks: Supports traffic Northeast Asia – Southeast Asia. Potentially problematic as will impact South China Sea's traffic arrangements (IATA to review). During SEACG/19 in WP09, Hong Kong China advised they had studied the proposal for track shortening and advised that allowing flights to proceed from M771 DUMOL to ELATO/ENVAR/KAPLI will likely create a bottle neck at these points and result in flights not getting optimum levels or increase ground delay to departures from Hong Kong and Macao to East Asia. However, Hong Kong China would continue to study this proposal. Most preferred: DULOP – ENVAR. <u>30/10/2020: Hong Kong China commented these two routes are too close to the Hong Kong and Manila FIR boundary (see the yellow shaded areas in the figure below). New confliction points would be created and the distance/time available for traffic resolution is not sufficient. There are safety concerns and these proposed routes were not recommended. Therefore, the two routes are not recommended.</u>	

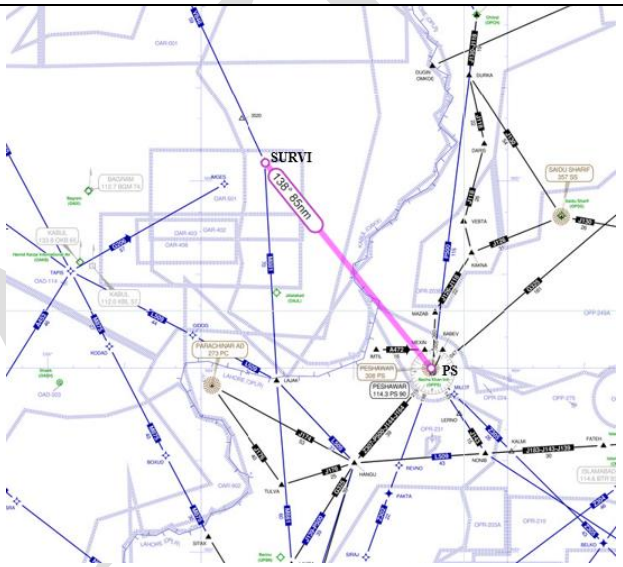
 At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue.	

ATS Route Name	**TPE 01**
State Priority	**C**
IATA Priority	**HIGH**
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	Taibei ACC, Japan (Taibei, Fukuoka FIRs)
Route Description	Anbu (APU) 2510.6N 12131.3E – New Waypoint (FIR BDRY beween Taibei and Fukuoka) – MIKES 2935.2N 12544.9E
Flight Level Band	28,000 – 46,000 ft
Benefit (fuel, environmental)	16 NM / 2 minutes, 107 kg fuel, 337 kg CO_2 per flight, 1,168 tonnes fuel, 3,680 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	BR, CI 210 flights per week Southeast Asia/HKG/TPE – Fukuoka
Remarks: Supports traffic between APU and Japan. Update from Japan on 29/06/2019: Under consideration. 23/10/2020: Japan commented this proposal was under consideration. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue. 16/09/2021: Based on information provided by the IFATCA, the proposed route TPE 01 partially overlaps ATS route Q11 and several other ATS routes that already existed in the area, and therefore it was not possible to implement a new route in Taibei FIR. Counter-proposal: Northbound traffic: APU – A1 – DRAKE – Q11 – WP900 – L4 – LIPLO – Y741 – BOLUT – MIKES.  Southbound traffic: MIKES – BOLUT – B576 – SALMI – Q11 – DRAKE – APU.	

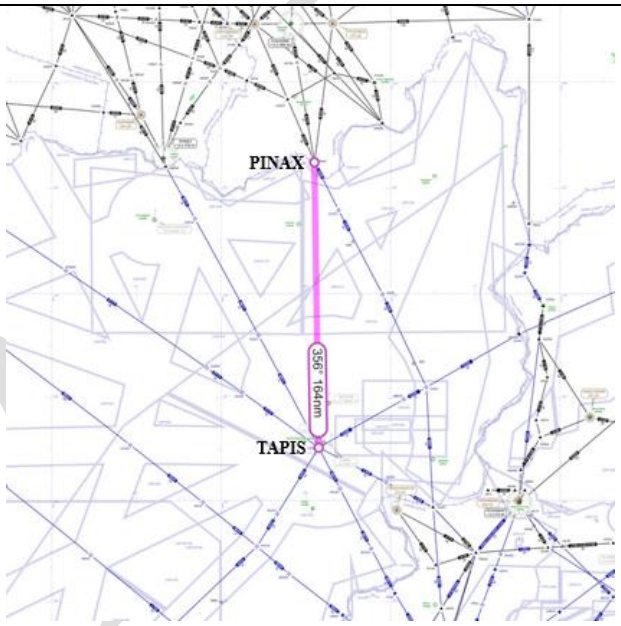
 15/10/2021: Japan commented this proposal was still under consideration.	

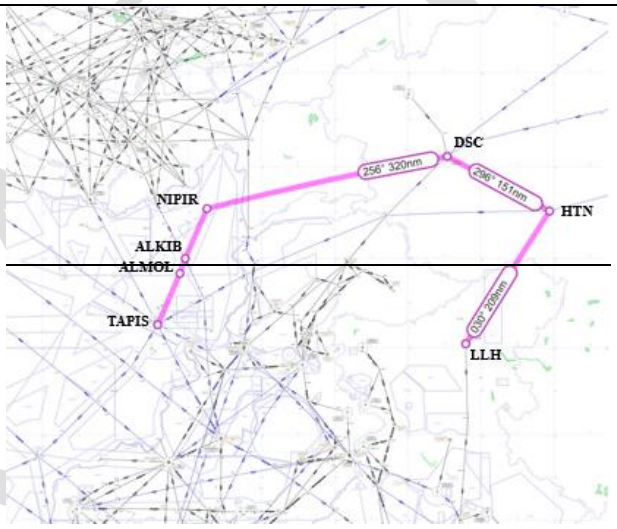
Chapter 4: Trans-Regional (South Asia)

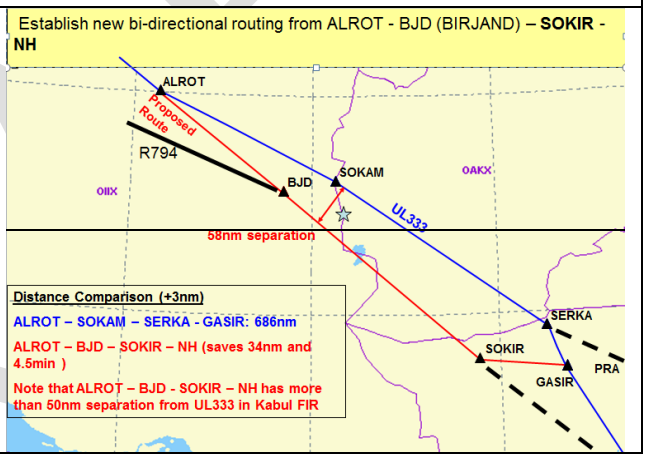
(referred to: States or AIRARD TF as appropriate for review)

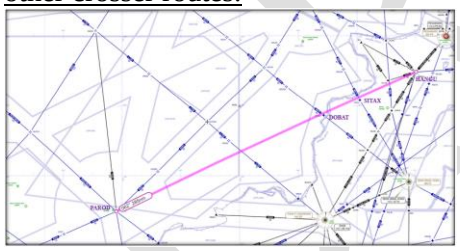
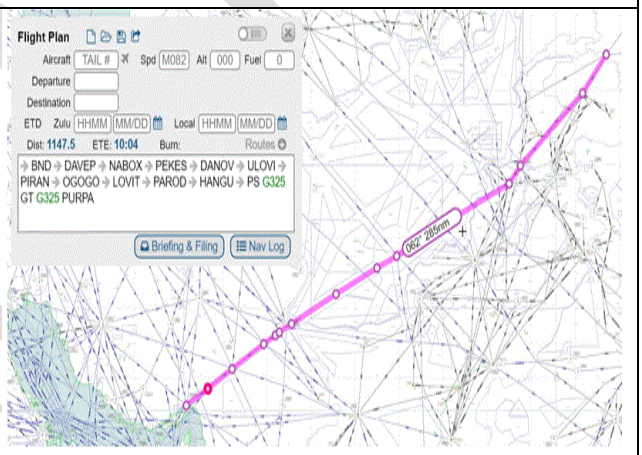
ATS Route Name	**AFG 01**
State Priority	**B**
IATA Priority	**MEDIUM**
Requested by (when)	Afghanistan (03/08/2019: AIRARD TF/4)
States/Administrations Involved	Pakistan, Afghanistan (Lahore, Kabul FIRs)
Route Description	Peshawar (PS) 335841.50N 0713100.90E – SURVI 350606.12N 0702512E
Flight Level Band	
Benefit (fuel, environmental)	32 NM / 4 minutes, 400 kg fuel per flight, 957 tonnes fuel, 3,014 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	AI, AY, TG About 46 flights per week (some operating during winter season only) HEL – BKK/SIN
Remarks: This is an alternative proposal to INDEK-BABEV-SURVI, which will shorten the flight distance. Original proposal: IMTIL – SURVI. At ATMSG/7: Pakistan counter-proposed for this route via SURVI – Peshawar (PS). Pakistan informed the meeting the proposed route between SURVI and PS had been submitted to the relevant authorities of Pakistan for approval. 17/08/2020: Pakistan informed this route proposal was still under consideration by the relevant authorities. At ATMSG/8: IATA assigned "**MEDIUM**" priority; implementation benefits; and operational information. IATA also proposed to review the time restrictions LAJAK-SULOM (1500-2359Z) to make proposal beneficial to more traffic. At SAIOACG/10 and SEACG/27: Pakistan informed this route proposal was still under consideration by the military authority. 15/09/2021: Pakistan informed that the military authorities of Pakistan had approved the following ATS route proposal (bi-directional), on the request of Tajikistan and Uzbekistan: SULOM – Lahore (LA) – INDEK – Islamabad (BTR) – NONIB – Peshawar (PS) – 343433N 0710533E (new TOC points between Afghanistan and Pakistan). The above route proposal was under approval process of Pakistan Federal Government and coordination process with Afghanistan and Tajikistan regarding further route connectivity in	

Afghanistan airspace and beyond from the new TOC points was ongoing.  	

ATS Route Name	**AFG 02**
State Priority	**C**
IATA Priority	**LOW**
Requested by (when)	Tajikistan (03/08/2019: AIRARD TF/4)
States/Administrations Involved	Afghanistan, Tajikistan (Kabul, Dushanbe FIRs)
Route Description	TAPIS 343100.12N 0690900E – PINAX 371500N 0690600E
Flight Level Band	
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Afghanistan commented that waypoint TAPIS is a converging point for two congested routes, and would review this proposal. At ATMSG/8: IATA assigned "**LOW**" priority and recommended for deletion. *Note: continuation of this proposal is 29.007 "TAPIS-PINAX-SORAM-TENRO" in RDGE Middle Asia ATS Route Catalogue.*	

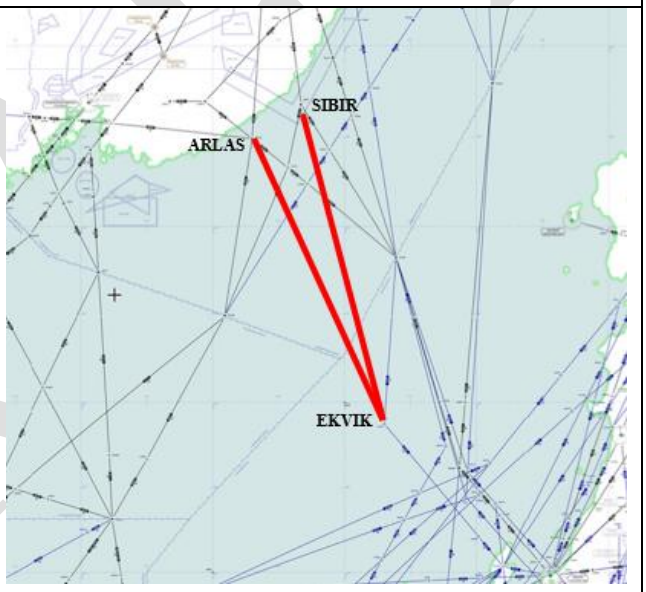
ATS Route Name	**AFG 03**
State Priority	**D**
IATA Priority	**LOW**
Requested by (when)	Afghanistan (03/08/2019: AIRARD/TF/4)
States/Administrations Involved	India, China, Tajikistan, Afghanistan (Delhi, Urumqi, Dushanbe, Kabul FIRs)
Route Description	Leh (LLH) 340504N 0773438E – Hotan (HTN) 370212N 0795206E – Yarkant (DSC) 381318N 0770418E – NIPIR 370530.12N 0703000E – ALKIB 355939.84N 0695415.84E – ALMOL 353947.16N 0694529.88E – TAPIS 343100.12N 0690900E
Flight Level Band	
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Bypass route for Afghanistan – India carriers bypassing Pakistan airspace (if required). Tajikistan would coordinate with China for opening new exit/entry point at the FIR boundary. At ATMSG/7: China commented this route proposal would not be viable at the time being, however, China would provide its assistance and support for any contingency route when necessary, in the event of abrupt closure of Pakistan airspace. At ATMSG/8: IATA assigned "**LOW**" priority and recommended for deletion.	

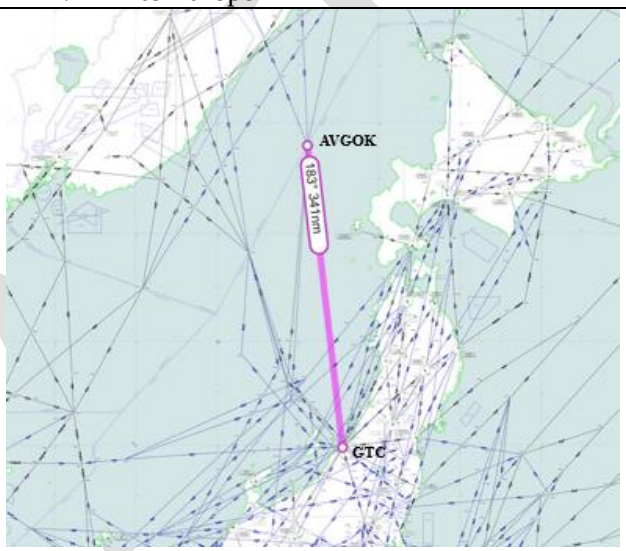
ATS Route Name	**IRAN 01**
State Priority	**D**
IATA Priority	**LOW**
Requested by (when)	Iran (01/09/2018)
States/Administrations Involved	Iran, Afghanistan, Pakistan (Tehran, Kabul, Karachi FIRs)
Route Description	a. ALROT 3511.3N 05541.6E – Birjand (BJD) 3258.3N 05912.0E – SOKIR 2908.0N 06425.0E – Nawabshah (NH) 2613.1N 06823.1E b. ALROT 3511.3N 05541.6E – Birjand (BJD) 3258.3N 05912.0E – SOKIR 2908.0N 06425.0E – GASIR c. ALROT 3511.3N 05541.6E – Birjand (BJD) 3258.3N 05912.0E – SOKIR 2908.0N 06425.0E – SHANG or BIMLA
Flight Level Band	
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Requested by IRAN and amended by IATA at SAIOACG/3 meeting. IATA suggest amendment to BJD – KAMAR – DAVER – NH. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue. *Note: Waypoint GASIR and SHANG need to be verified.*	

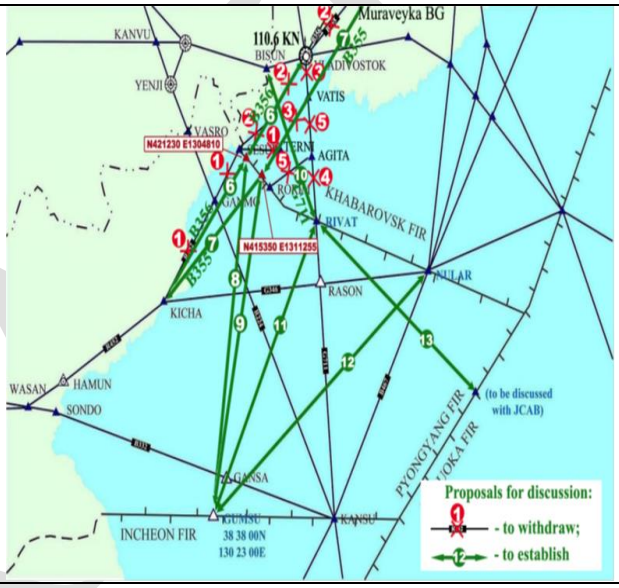
ATS Route Name	**MID 02 (a)**
State Priority	**B**
IATA Priority	**HIGH**
Requested by (when)	AIRARD TF/2 (04/05/2018)
States/Administrations Involved	Iran, Pakistan, Afghanistan (Tehran, Karachi, Kabul, Lahore FIRs)
Route Description	Bandar Abbas (BND) 2711.8N 05622.0E – DAVEP 2742.4N 05720.1E – NABOX 2816.5N 05826.0E – PEKES 2859.5N 05952.3E – DANOV 2914.7N 06023.9E – ULOVI 2919.8N 06034.5E – PIRAN 2934.1N 06108.1E – OGOGO 3024.9N 06309.1E – LOVIT 3109.1N 06500.4E – PAROD 3129.0N 06554.0E – A453 – HANGU 3329.1N 07100.3E – Penshawar (PS) 3358.7N 07131.0E – G325 – Gilgit (GT) 3555.2N 07420.1E – G325 – PURPA 3656.5N 07524.4E
Flight Level Band	
Benefit (fuel, environmental)	40 NM / 3 minutes, 600 kg fuel per flight, 1,342 tonnes fuel, 4,262 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	EK, EY, QR About 43 flights per week
Remarks: High Priority MID 02 (a) preferred over MID 02 (b) if only one route is chosen. 17/08/2020: The proposed entry into Pakistan airspace allows very minimal response time (less than two minutes) for traffic de-confliction at DOBAT and SITAX and other crosser routes.  Pakistan proposed for deletion. At ATMSG/8: IATA assigned "**HIGH**" priority; implementation benefits; and operational information. IATA preferred this route to be retained in the Catalogue and commented this route could be used for contingency and for aircraft with limited oxygen requirements.	

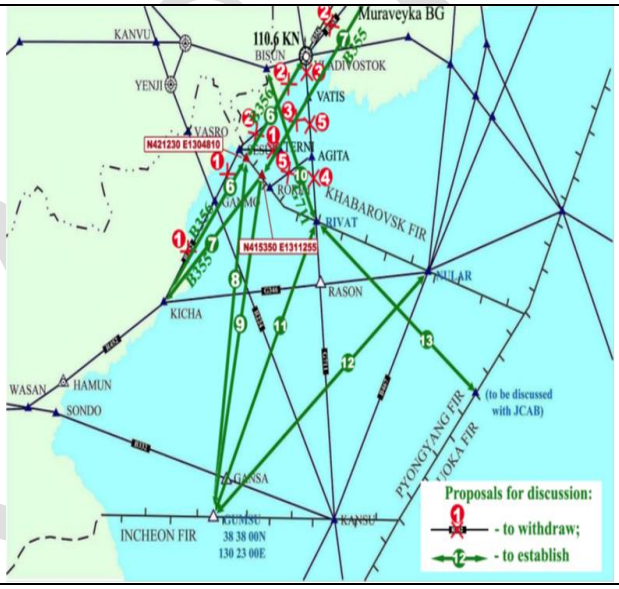
Chapter 5: Trans-Regional (East Asia)

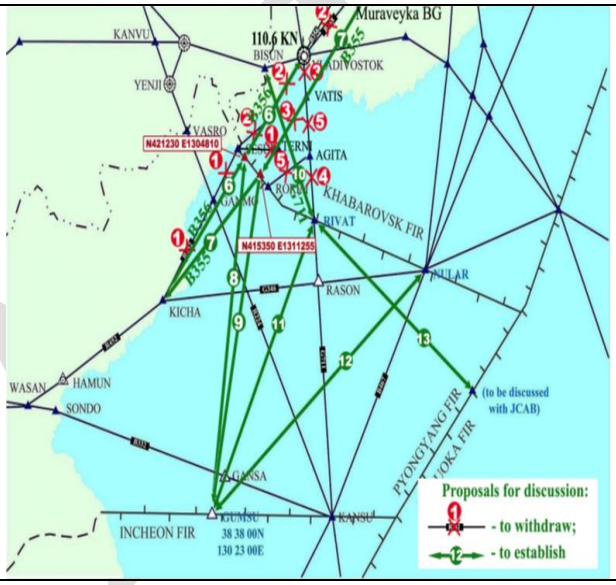
(referred to: AIRARD/TF, RDGE or EATMCG as appropriate for review)

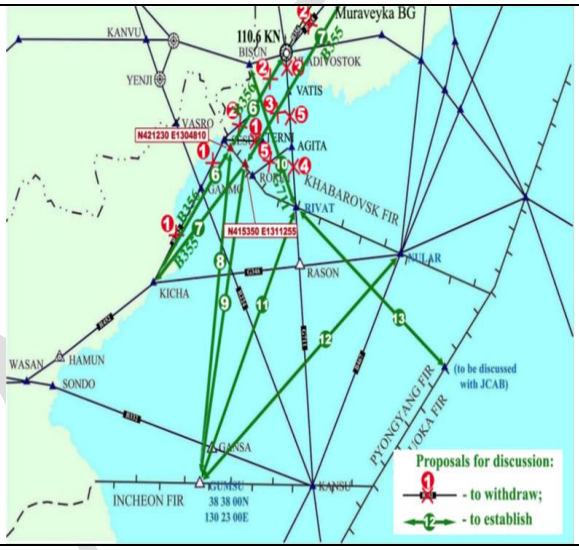
ATS Route Name	**FE0008 / RDGE 15.003 / APAC RUS 5**
State Priority	**C**
IATA Priority	**MEDIUM**
Requested by (when)	Russia, IATA (01/09/2018)
States/Administrations Involved	Russia, Japan (Khabarovsk, Fukuoka FIRs)
Route Description	Implementation of two new bi-directional ATS routes: a. SIBIR 432154.00N 1352024.00E – New Waypoint (FIR BDRY between Khabarovsk and Fukuoka) – New EKVIK Waypoint b. ARLAS 425906.00N 1343553.88E– New Waypoint (FIR BDRY between Khabarovsk and Fukuoka) – New EKVIK Waypoint
Flight Level Band	
Benefit (fuel, environmental)	No fuel gain but could help to reduce ground delays for HND/KIXNRT operations to Europe.
Operational Information (potential airlines, flight frequency, potential city pairs)	AF, BA, KL, LH
Remarks: To improve north-south traffic flows between Khabarovsk FIR and Fukuoka FIR, Original SIBIR – LURED – EKVIK proposal will be changed due to new position of EKVIK further east as a result of the planned airspace structure change in Japan, when both new ATS routes will be implemented, the existing B451 ARLAS – LAKTA – LURED – IGROD will be withdrawn. Based on the results from the coordination meeting between the Russian Federation and Japan in February 2017, the implementation could not be progressed as Japan indicated that no further airspace changes for the Fukuoka FIR are acceptable before the 2020 timeframe (RDGE/27). Russian Federation: New waypoint needed 404751N 1361021E (FIR Boundary), coordination with Japan (Fukuoka FIR) required. Alternative bi-directional route to EN15. 23/10/2020: Japan commented no update. At ATMSG/8: IATA assigned "**MEDIUM**" priority and recommended for this route to be retained in the Catalogue. 15/10/2021: Japan commented no update.	

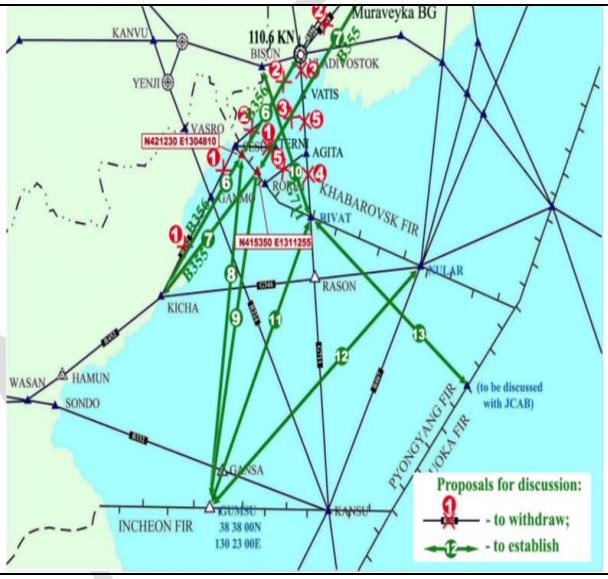
ATS Route Name	**FE0021 / RDGE 13.028 / APAC RUS 4**
State Priority	**C**
IATA Priority	**HIGH**
Requested by (when)	Russia, IATA (01/09/2018)
States/Administrations Involved	Russia, Japan (Khabarovsk, Fukuoka FIRs)
Route Description	Implementation of new bi-directional ATS route: AVGOK – Niigata (GTC) 375729.90N 1390653.60E
Flight Level Band	
Benefit (fuel, environmental)	20 NM / 4 minutes, 440 kg fuel per flight, 2,400 tonnes fuel, 7,550 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pair)	AF, AY, JL, KL, NH About 105 flights per week HND/NRT to Europe
Remarks: During a bi-lateral meeting between the State ATM Corporation and the JCAB Japan (in Tokyo, November 2012), a difference in coordinates of the AVGOK waypoint was identified in the aeronautical information publications of Russia and Japan. The incorrect coordinates were confirmed by Japan and a decision was made to report this issue to the appropriate Regional ICAO Offices. The Russian Federation proposes the following coordinates (4336N and 13815E) for the AVGOK waypoint. Based on the results from the coordination meeting between the Russian Federation and Japan in February 2017, the implementation of the bi-directional ATS Route AVGOK – GTC requires further studies due to the involved military area. RDGE/27 meeting in 2017: could become a conditional route. Further discussion with Japan required through the ICAO APAC Office. To reduce route distance of 13NM as compared to current routing AVGOK – KADBO – GTC. 23/10/2020: Japan commented no update. At ATMSG/8: IATA assigned "**HIGH**" priority and recommended for this route to be retained in the Catalogue. 15/10/2021: Japan commented no update.	

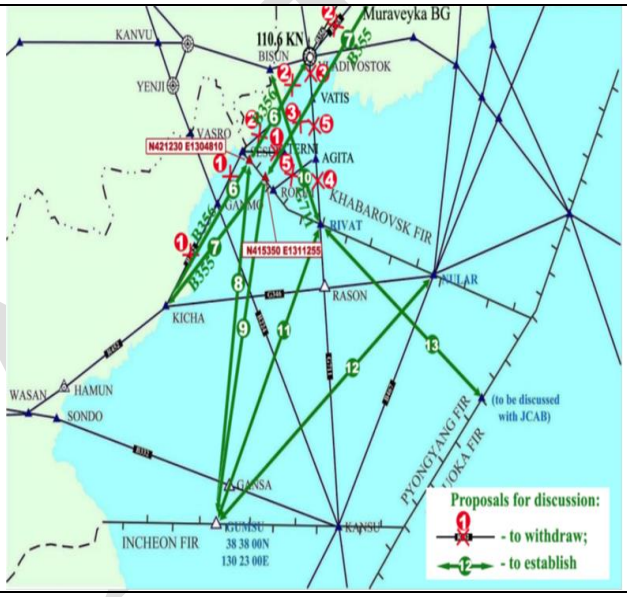
ATS Route Name	**FE0049 / RDGE 20.010**
State Priority	C
IATA Priority	
Requested by (when)	DPRK, Russia (01/09/2018)
States/Administrations Involved	Russia, DPRK (Khabarovsk, Pyongyang FIRs)
Route Description	Implementation of new uni-directional eastbound ATS route: KICHA 404103N 1291140E – ADNUR 421230N 1304810E – Vladivostok (KN) 432303N 1320708E
Flight Level Band	17,000 – 53,000 ft
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Planned implementation date as part of project in 2015. Khabarovsk/Vladivostok airspace re-organisation project, (in map No. 6)	

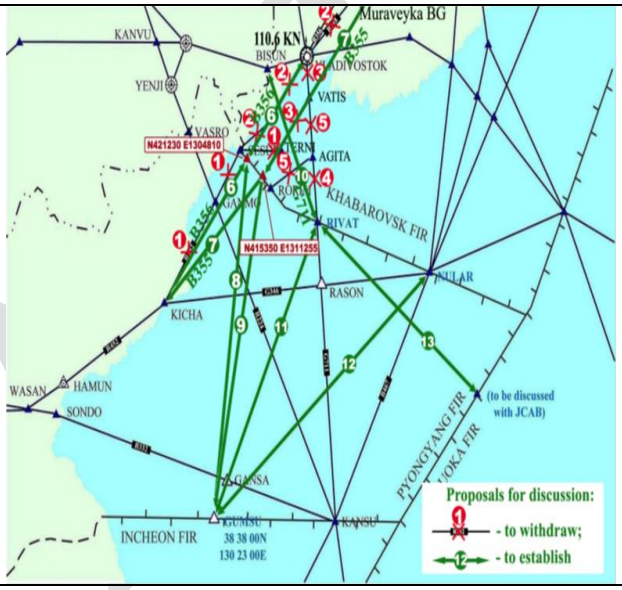
ATS Route Name	**FE0050 / RDGE 20.011**
State Priority	C
IATA Priority	
Requested by (when)	DPRK, Russia (01/09/2018)
States/Administrations Involved	Russia, DPRK (Khabarovsk, Pyongyang FIRs)
Route Description	Implementation of new uni-directional westbound ATS route for B355: Muraveyka (BG) 435303N 1331511E – VATIS 425143N 1320851E – TERNI 422213N 1314003E – BUMEP 415350N 1311255E – KICHA 404106N 1291140E
Flight Level Band	18,000 – 51,000 ft
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Planned implementation date as part of project in 2015. Khabarovsk/Vladivostok airspace re-organisation project, (in map No. 7).	

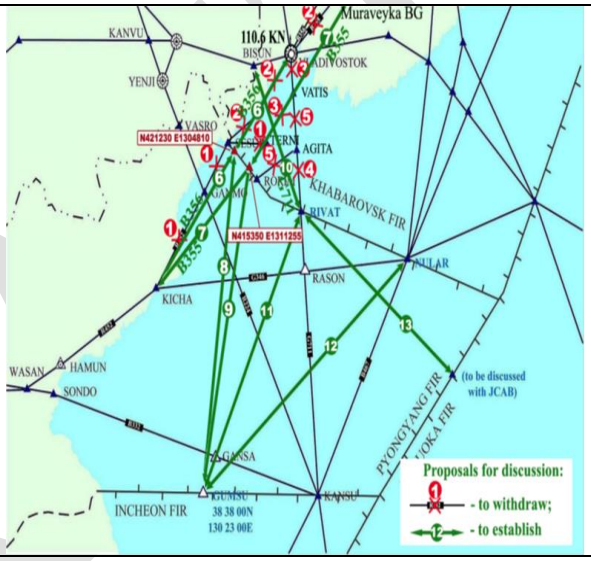
ATS Route Name	**FE0051 / RDGE 20.012**
State Priority	C
IATA Priority	
Requested by (when)	DPRK, Russia (01/09/2018)
States/Administrations Involved	Russia, DPRK (Khabarovsk, Pyongyang FIRs)
Route Description	Implementation of new uni-directional eastbound ATS route segment: MESOV 383800N 1302300E – ADNUR 421230N 1304810E
Flight Level Band	29,000 – 53,000 ft
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Planned implementation date as part of project in 2015. Khabarovsk/Vladivostok airspace re-organisation project, (in map No. 8). Implementation has not progressed as the connection/ continuation of this ATS route (implemented ATS routes end at FIR border over High Seas) into Incheon FIR still missing. No information was received from DPRK and South Korea (ROK) via the ICAO APAC Office. Implementation could not be progressed as no information from DPRK at RDGE/28.	

ATS Route Name	**FE0052 / RDGE 20.013**
State Priority	C
IATA Priority	
Requested by (when)	DPRK, Russia (01/09/2018)
States/Administrations Involved	Russia, DPRK (Khabarovsk, Pyongyang FIRs)
Route Description	BUMEP 415350N 1311255E – MESOV 383800N 1302300E
Flight Level Band	28,000 – 51,000 ft
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Khabarovsk/Vladivostok airspace re-organisation project, (in map No. 9). Implementation has not progressed as the connection/ continuation of this ATS route (implemented ATS routes end at FIR border over High Seas) into Incheon FIR still missing. No information was received from South Korea (ROK) via the ICAO APAC Office. Implementation could not be progressed as no information from DPRK at RDGE/28.	

ATS Route Name	**FE0053 / RDGE 20.014**
State Priority	C
IATA Priority	
Requested by (when)	DPRK, Russia (01/09/2018)
States/Administrations Involved	Russia, DPRK (Khabarovsk, Pyongyang FIRs)
Route Description	New G711 BISUN 431400N 1311148E – TERNI 422213N 1314003E – RIVAT 412900N 1321600E
Flight Level Band	21,000 – 53,000 ft
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Khabarovsk/Vladivostok airspace re-organisation project, (in map No. 10). *Note: to verify has this route been implemented as G705?*	

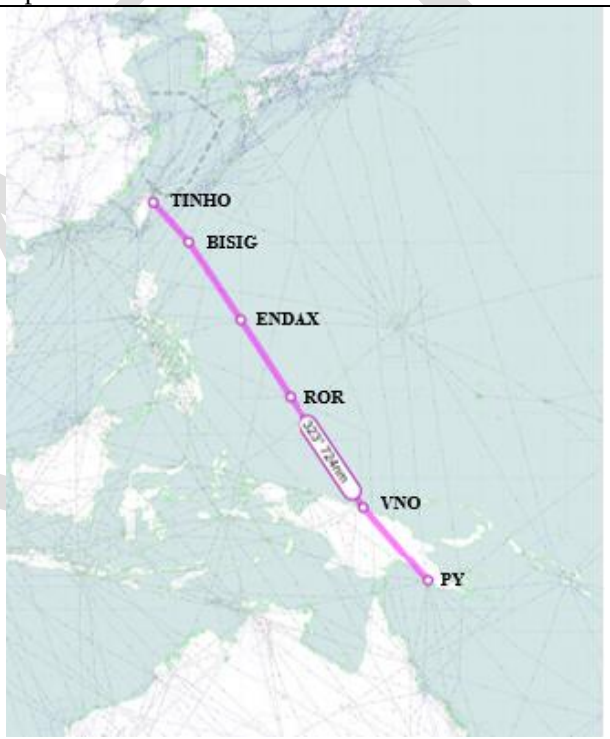
ATS Route Name	**FE0054 / RDGE 20.015**
State Priority	C
IATA Priority	
Requested by (when)	DPRK, Russia (01/09/2018)
States/Administrations Involved	Russia, DPRK (Khabarovsk, Pyongyang FIRs)
Route Description	Implementation of new bi-directional ATS route: RIVAT 412900N 1321600E – MESOV 383800N 1302300E
Flight Level Band	21,000 – 53,000 ft
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Khabarovsk/Vladivostok airspace re-organisation project, (in map No. 11). Planned implementation date 11 December 2014. *Note: to verify has this route been implemented as N513?*	

ATS Route Name	**FE0055 / RDGE 20.016**
State Priority	C
IATA Priority	
Requested by (when)	DPRK, Russia (01/09/2018)
States/Administrations Involved	Russia, DPRK (Khabarovsk, Pyongyang FIRs)
Route Description	Implementation of new bi-directional ATS route: NULAR 405912N 1341100E – MESOV 383800N 1302300E
Flight Level Band	28,000 – 53,000 ft
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Khabarovsk/Vladivostok airspace re-organisation project, (in map No. 12). Planned implementation date 11 December 2014. *Note: to verify has this route been implemented as L771?*	

ATS Route Name	**FE0056 / RDGE 20.017**
State Priority	C
IATA Priority	
Requested by (when)	DPRK, Russia (01/09/2018)
States/Administrations Involved	Russia, DPRK, Japan (Khabarovsk, Pyongyang, Fukuoka FIRs)
Route Description	Implementation of new bi-directional ATS route segment: RIVAT 412900N 1321600E – New Waypoint (FIR BDRY between Pyongyang and Fukuoka)
Flight Level Band	
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: Khabarovsk/Vladivostok airspace re-organisation project, (in map No. 13), for further discussion with JCAB, Japan. Planned implementation date as part of project in 2015. Implementation could not be progressed as no information from China at RDGE/28.	

Chapter 6: Pacific

(referred to: IPACG, ISPACG as appropriate for review)

ATS Route Name	**WPC 01**
State Priority	~~C~~ D
IATA Priority	HIGH
Requested by (when)	IATA (30/07/2018)
States/Administrations Involved	Papua New Guinea, Indonesia, USA, Philippines, Japan, Taibei ACC (Port Moresby, Ujung Pandang, Oakland Oceanic, Manila, Fukuoka, Taibei FIR)
Route Description	Port Moresby (PY) 0927.2S 14712.9E – Vanimo (VNO) 0240.7S 14118.2E – Koror (ROR) 0722.1N 13433.0E – ENDAX 1415.0N 13000.0E – BISIG 2027.0N 12500.0E – TINHO 2421.2N 12201.7E
Flight Level Band	FL250 – FL430
Benefit (fuel, environmental)	163 NM / 15 minutes, 1,604 kg fuel, 5,053 kg CO_2, 5,000 tonnes fuel, 15,700 tonnes CO_2 annually
Operational Information (potential airlines, flight frequency, potential city pairs)	60 flights per week Taipei and beyond – Australia, New Zealand, and Papua New Guinea
Remarks: BISIG replaces the waypoint that was published in the ICAO route catalogue as that waypoint no longer exists. May also be useable as an offload route for flights between Manila and Australasia. At ATM/SG/6: PNG positive, Indonesia positive, Japan was reviewing, Philippines and Taipei yet to be discussed. At ATMSG/7: Under consideration by Philippines. 17/01/2020: Philippines supported the implementation of this route. 23/10/2020: Japan commented this route proposal was under consideration. 16/09/2021: Based on information provided by the IFATCA, implementation of this proposed route in Taibei FIR was not possible because it would cross ATS routes G581 and Q13, and traverse restricted area RCR 17. Proposed for deletion. 15/10/2021: Japan commented this route proposal was still under consideration.	

International Civil Aviation Organization | Organisation de l'aviation civile internationale | Organización de Aviación Civil Internacional | Международная организация гражданской авиации | منظمة الطيران المدني الدولي | 国际民用航空组织

Ref. RSO – AP154/21 (RSO) 19 August 2021

Subject: Airspace Concept Validation Methods Survey

Actions required: To complete the survey and reply no later than **30 September 2021**

Sir/Madam,

I wish to draw your attention to the airspace concept validation methods conducted in your State.

Several cross-border airspace enhancement projects are currently being discussed at ICAO meetings and Asia/Pacific States are actively reviewing their airspace structure to accommodate the growth of traffic in the region. However, some of the projects are delayed, which could be due to the lack of validation tools to support the decision-making process.

The ICAO Asia/Pacific Regional Sub-Office has developed a survey to identify the validation methods and tools commonly used in the region, and to seek feedback whether there is a need for a webinar focusing on the benefits and sharing of experience from the States in this region on the use of validation tools in airspace concept validation process.

Guidance material to assist States in the interpretation of the survey is provided in **Attachment A**. Accordingly, States are urged to complete the Airspace Concept Validation Methods Survey (**Attachment B**) no later than **30 September 2021**, and submit the survey to the following email address APAC-RSO@icao.int, with a copy to msallehhuddin@icao.int.

Please accept, Sir/Madam, the assurances of my highest consideration.

Yours sincerely,

Manjit Singh
Acting Regional Director

Enclosures:
Attachment A - Guidance Material
Attachment B - Airspace Concept Validation Methods Survey

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ATTACHMENT A

GUIDANCE MATERIAL

Background

An airspace concept provides the outline and intended framework of operations within an airspace. Airspace concepts are developed to satisfy explicit strategic objectives such as improved safety, increased air traffic capacity and mitigation of environmental impact, etc. Airspace concepts can include details of the practical organization of the airspace and its users based on particular CNS/ATM assumptions, e.g. ATS route structure, separation minima, route spacing and obstacle clearance.

As described in Doc 9992 – *Manual on the use of Performance-based Navigation (PBN) in Airspace Design*, the main objectives of airspace concept validation are to:

a) assess whether the project objectives can be achieved by implementation of the airspace design and the airspace concept in general and that there is a positive business case;

b) prove the air traffic management (ATM) validity of the airspace design;

c) identify potential weak points in the concept and develop mitigation measures; and

d) provide evidence that the design is safe, i.e. to support the safety assessment.

There are several ways to undertake airspace concept validations, e.g. airspace modelling, fast time simulation, real time simulation and live trials. Each method differs in terms of cost, realism, complexity, time and the number of traffic samples and test cases used.

Why is this survey necessary?

Below are examples of advantages of using validation tools to support decision-making process by States:

a) graphically modify airspace design and enable the visualisation in three dimension, the placement and profile of routes, airspace structures and sectorisation;

b) analyse conflicts and identify hotspots so that solutions may be proposed;

c) quantify the benefits of operational improvements;

d) assess the impact of changes in controller workload due to traffic growth, new airspace designs and procedures; and

e) enable easy analysis and comparison and export of data for report preparation, so decision makers can determine the best solution.

This survey is to identify the validation methods and tools commonly used in the region, and to seek feedback whether there is a need for a webinar focusing on the benefits and sharing of experience from the States in this region on the use of validation tools in airspace concept validation process.

Who should respond to the survey?

All Asia/Pacific States.

What needs to be done?

State/Administration to complete and submit this survey form to the following email address APAC-RSO@icao.int with a copy to msallehhuddin@icao.int no later than **30 September 2021**.

ATTACHMENT B

AIRSPACE CONCEPT VALIDATION METHODS SURVEY

Q1: In the past, did you conduct validation process before implementation of airspace change and/or new ATS routes?

A. Yes

B. No

C. Depending on the complexity of the airspace concept (e.g. safety and operational impact)

Q2: If validation process was conducted, please indicate the validation method(s) used by your State.
(Note 1: for validation methods, may please refer Doc 9992, Chapter 2, Section 2.4)
(Note 2: you can choose more than one answer)

A. Expert judgement (qualitative assessment)

B. Airspace modelling

C. Fast time simulation / Real time simulation

D. Other (please specify): _____

Q3: Could you please specify the validation tools being used in your State?

_____

_____

Q4: In your opinion, do the validation results reflect the actual operation when implemented?

A. Yes

B. Neutral

C. No

D. Additional comment (if any): _____

Q5: In your opinion, do you find airspace modelling and/or simulation tools useful to support the decision-making process in your State?

A. Very useful

B. Useful

C. Neutral

D. Not Useful

E. Additional comment (if any): _____

Q6: If you find airspace modelling and/or simulation tools useful to support the decision-making process in your State, please provide any example of the project conducted in your State.
(Example: implementation of ATS route [route designator] or airspace restructuring project, using [validation tool being used])

_____

_____

Q7: Would your State be willing to provide assistance in airspace concept validation for States who does not have validation tools?

A. Yes

B. Not

C. Additional comment (if any): _____

Q8: In your opinion, do you think that ICAO Regional Office should conduct a webinar focusing on the benefits and sharing of experience from States regarding the usage of validation tools to support decision-making process?

A. Yes

B. No

C. Additional comment (if any): _____

Q9: If your answer to Q8 is 'Yes', would you like to present your experience regarding the usage of validation tools to support decision-making process, in the webinar?

A. Yes

B. No