INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF THE FOURTH MEETING OF THE SOUTHEAST ASIA ROUTE REVIEW TASK FORCE (SEA-RR/TF/4)

BANGKOK, THAILAND, 22 – 26 NOVEMBER 2010

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

Approved by the Meeting
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1.1 Introduction

1.1.1 The Fourth Meeting of the Southeast Asia Route Review Task Force (SEA-RR/TF/4) was held at the ICAO Asia and Pacific Regional Office, Bangkok, Thailand from 22 to 26 November 2010.

1.2 Officers, Secretariat and Participants

1.2.1 The meeting was chaired by Mr. Peter Rabôt, Head, Air Navigation Services Safety Office, Civil Aviation Authority of Singapore (CAAS). Mr. John E. Richardson, ATM Expert, ICAO Asia and Pacific Office, acted as Secretary to the Meeting, assisted by Mr. Syed Y. Abbas, ATM Officer, ICAO Asia and Pacific Office.

1.2.2 Forty-nine (49) participants from Cambodia, China, Hong Kong China, Indonesia, Lao PDR, Malaysia, Nepal, Philippines, Singapore, Thailand, Viet Nam, IATA and IFATCA attended the meeting. A list of participants is in **Appendix A.**

1.3 Opening of the Meeting

1.3.1 The Chairman, Mr. Peter Rabôt, welcomed all participants to the fourth meeting of the Southeast Asia Route Review Task Force.

1.3.2 On behalf of Mr. Mokhtar A. Awan, Regional Director, ICAO Asia and Pacific Regional Office, Mr. John Richardson, ATM Expert and Secretary for the meeting, welcomed all participants from States and International Organizations.

1.3.3 Mr. Richardson introduced Mr. Syed Abbas, mentioning that this was the first meeting he had attended in this part of the region's activities; however, his overall experience in CNS/ATM activities would be of value to the meetings activities.

1.3.4 Mr. Richardson urged the meeting that, during the forthcoming discussions, items presented should be looked at in a cooperative manner across FIR boundaries. This would allow collaborative decisions to be made for the benefit of all concerned. It was further mentioned that aviation is a dynamic industry and the meeting should be prepared to adjust to change in a reasonable timeframe.

1.4 Documentation and Working Language

1.4.1 The meeting was conducted in English. All meeting documentation was in English.

1.4.2 Eleven (11) working papers and three (3) information papers were presented to the meeting. A list of the papers is at **Appendix B**.

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Agenda Item 1: Adoption of Agenda

1.1 The meeting adopted the following agenda:

Agenda Item 1:	Adoption of Provisional Agenda
Agenda item 2:	Review Outcomes of Related Meetings
Agenda item 3:	Review of ADS/CPDLC Implementation
Agenda item 4:	Review Current Operations across South-East Asia and Identify Problem Areas
Agenda item 5:	Implementation of the New CNS/ATM Systems in the Region
Agenda Item 6:	ATS Route Development
Agenda Item 7:	Develop a Coordinated Plan for Implementation of Actions Agreed by the Meeting
Agenda Item 8:	Any other business
Agenda Item 9:	Date and Venue for the Next Meeting

Agenda Item 2: Review Outcomes of Related Meetings

Unidirectional Crossing Routes in the South China Sea

2.1 The use of unidirectional routing in the South East Asia (SCS) was extensively discussed during previous SEA-RR/TF meetings; however, agreement to introduce this concept had not eventuated despite the agreement that the concept of unidirectional routes had unanimous support.

2.2 The significant benefits were once again highlighted such as safety considerations, more efficient use of flight levels, controller workload and advantages to airlines to optimize the use of flight levels.

2.3 At previous task force meetings, substantial discussion had taken place on proposals to establish pairs of unidirectional crossing routes to replace each of the present single bidirectional routes. Each pair of routes would diverge within surveillance coverage to a lateral spacing of 50 - 60NM prior to crossing the primary traffic flow. Then once separated from the primary flow and also under surveillance coverage, converge back to a single route at a point to be defined. These four crossing routes are:

a)	M768	Brunei to TSN
b)	L628	Manila to PCA
c)	A461	Manila to Hong Kong
d)	B462/B348	Manila to Taipei

2.4 At a previous task force meeting, the Philippines had advised that they supported the concept of a unidirectional crossing routes structure, which would allow airspace users more access to optimum flight levels and in turn, provide ATC more flexibility in the selection of flight levels. From an environmental perspective, this would also result in reduced carbon emissions.

2.5 It was also noted that Malaysia supported the concept of the unidirectional crossing route structure; however, in regard to M768 from Brunei to TSN in Viet Nam, Malaysia considered that the additional unidirectional route be implemented Northeast of the present M768 due to several conflictions with other routes in the area to the Southwest.

2.6 Two common principles were agreed to. In order that aircraft are not required to change flight levels as they approach each pair of crossing routes, flight level allocation on either the primary routes or the crossing routes should be harmonious across the whole route structure in the area under consideration. In addition, pairs of crossing routes should remain laterally separated prior to and until clear of all primary routes.

2.7 It was noted that statistics indicated that the Asia/Pacific Regional Traffic Flow continues to grow, especially in regard to the AR 9 traffic flow which included the area under consideration of the task force. It was also mentioned that, with this growth, it was expected that Beijing will be the busiest airport in the world by the year 2015. This would have a major impact to the area being discussed, as many of these aircraft to/from Beijing would transit through this area.

2.8 The meeting was advised that, with more routes being proposed, this could have an impact on operational issues during the typhoon season when Large Scale Weather Deviations (LSWDs) often take place. This matter could possibly be an issue and would need to be taken into consideration when planning and developing these unidirectional routes. Nevertheless, careful management as these situations arise, should overcome any perceived obstacles.

2.9 It was further mentioned that statistical data, which was currently being collected from all States on a monthly basis, would play an important role in assisting the meeting to obtain real time information on aircraft movements in the area. The data collection and analysis Small Working Group (SWG/1), which had been formed at a previous meeting, were tasked to consider these issues and report back to the plenary meeting with their findings. Their report is mentioned in other sections of the report.

2.10 With regard to the four proposed unidirectional crossing routes mentioned in paragraph 2.3, the following coordination has taken place between States concerned and in some cases with IATA assistance:

a) regarding A461 (Manila to Hong Kong), preliminary discussions have been established between Hong Kong China and Manila with further work required;

b) regarding M768 (Brunei to TSN), IATA would discuss with Malaysia, the proposal of a new unidirectional route northeast of the present M768. Future discussions will be required with Viet Nam;

c) regarding B462/B348 (Manila to Taipei), arrangements will be required between Manila and Taipei; and

d) regarding L628 (Manila to PCA), Discussion are required between Philippines and Viet Nam. These have not as yet commenced due to some operational issues within Viet Nam airspace.

2.11 The meeting was asked that the work programme in achieving a satisfactory result on this project, should also include the following:

a) introduction of RNP10 horizontal separation where applicable;

b) unidirectional RNAV routes on the described crossing tracks;

c) data collection and analysis on most project items to ensure that qualified data indicates a reason to proceed;

d) necessary safety related issues which are required to be addressed before implementation; and

e) realistic target dates to complete all projects within the overall framework of the SEA-RR/TF.

Agenda Item 3: Review of ADS/CPDLC Implementation

3.1 Items under this agenda are incorporated where necessary within other areas of this report.

Agenda Item 4: Review Current Operations across South-East Asia and Identify Problem Areas

Further Reduction of Minimum Longitudinal Spacing A1/P901

4.1 China and Hong Kong China presented a joint working paper on this subject. It was recalled that one of the objectives of a route restructure was to increase the overall capacity of the present system. This could be achieved by establishment of unidirectional routes and/or the reduction of longitudinal spacing requirement on the current routes.

4.2 The meeting was advised that the proposal from China and Hong Kong, China was a reduction of longitudinal spacing from 40 NM to 30NM on A1/P901 to take advantage of the communication and surveillance capabilities of the ANSPs along these routes to increase capacity. Further, it was noted that these two routes had now been multi-layered with A1, a conventional ATS route up to FL280 and RNAV route P901 above FL280 in the Sanya and Hong Kong FIRs.

4.3 In providing a history of these two routes, it was noted that the minimum longitudinal spacing on A1/P901 was 10 minutes when the Revised South China Sea ATS Route Network was implemented in November 2001.

4.4 In recognition of increasing traffic on the routes, China and Hong Kong China coordinated to implement 40NM longitudinal spacing on A1/P901 and A202 in Sanya and Hong Kong FIRs on 15 April 2004. Despite such initiatives, due to further increases of traffic on A1/P901, led China and Hong Kong China to agree to reduce the longitudinal spacing to 30NM as a first step in the overall reduction of longitudinal spacing in this high profile area.

4.5 It was recalled that A1/P901 are mainly used by flights between Southeast Asia and North Asia (Taipei FIR, Fukuoka FIR and Incheon FIR). The application of 30NM longitudinal spacing on A1/P901 over the South China Sea would harmonise with spacing already used in the in the Taipei and Fukuoka FIRs. Hence a reduction to 30NM longitudinal spacing on A1/P901 in Hong Kong, Sanya, Ho Chi Minh, Vientiane and Bangkok FIRs would achieve harmonization of minimum longitudinal spacing for flights between South East Asia along A1/P901 to Japan.

4.6 Advice was given that Taipei ACC had already indicated their readiness to implement 30NM longitudinal spacing for flights operating between Southeast Asia via A1/P901 and Taipei.

4.7 The meeting thanked both China and Hong Kong China for their initiative to reduce the longitudinal spacing to 30 NM in their airspace, which would enhance the route efficiency within this sub region, extending from the Bangkok FIR to Japan.

4.8 Hong Kong China also advised that they were in discussion with Taipei ACC and Japan in designating the portion of A1 between CH DVOR and reporting point ELATO to the east of Hong Kong FIR as an RNAV5 route.

4.9 Thailand supported the China/Hong Kong China proposal to introduce 30NM longitudinal on A1/P901. It was also suggested that a SWG be developed involving States concerned to harmonize implementation procedures along this route south of Sanya FIR.

Traffic Data Analysis by the Data Collection and Analysis Small Working Group 1 (SWG/1)

4.10 The meeting was presented with the traffic analysis based on the one week traffic data supplied by the States each month from January to September 2010, with particular consideration to the AR9 flow of traffic.

4.11 SWG/1 reviewed the template provided to States of the one-week-per-month Traffic Sample Data (TSD).. In addition, the Group discussed potential use of the combined TSD to assist States in airspace planning as well as enhancements of traffic flows in the sub-region.

4.12 The combined TSD was processed to show average or peak hourly traffic movements throughout a typical day of traffic sample data collected. The data also allowed an analysis of city pairs or key FIR pairs contributing traffic to these routes. This processed data could then be used to compare traffic on crossing points between a given route and other routes concerned.

4.13 Examples of such a study were L628 (crossing route) and A1/P901, a key bi-directional ATS Route with the second highest traffic in the region.

4.14 In the case of L628, a diagram showing peak traffic in each hour of the day when compared to other routes, namely L642, M771, N892 and L625 is described in **Figure 1** with an approximate map of the region in **Figure 2**.

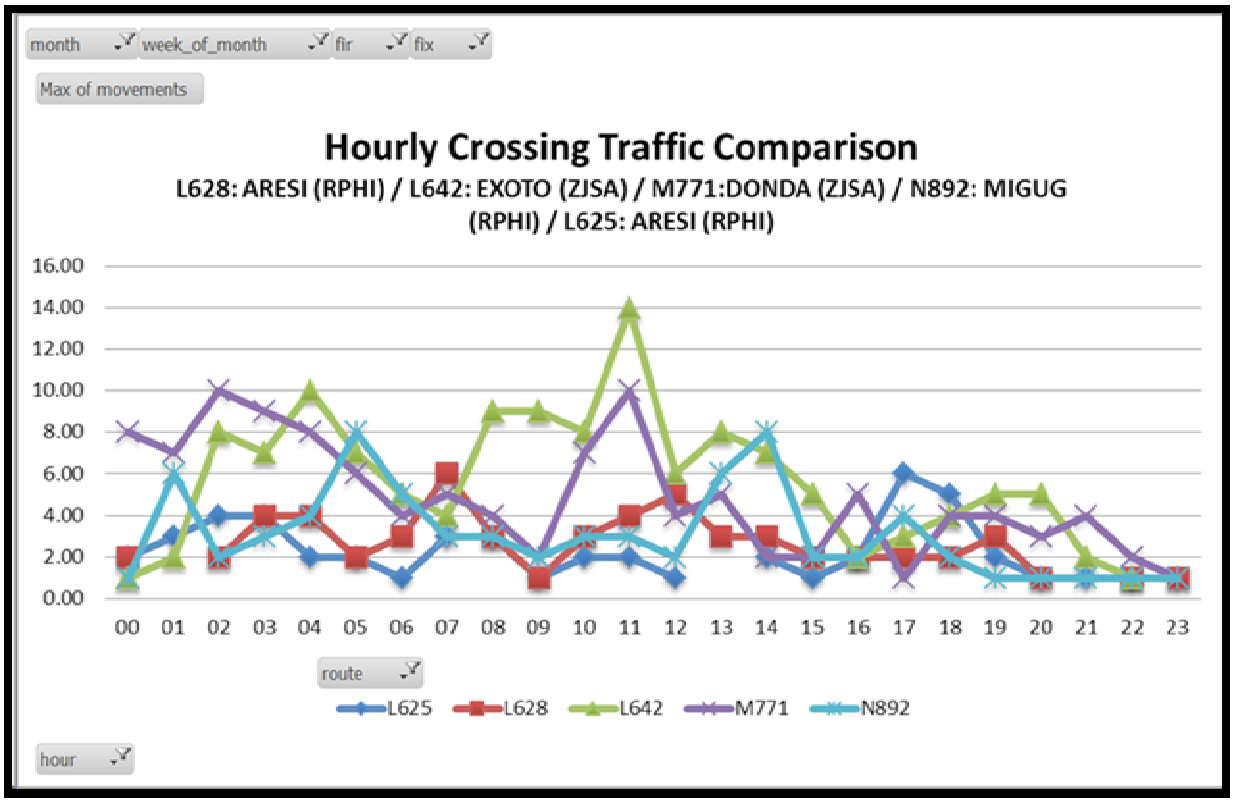

Figure 1: Peak hourly crossing traffic comparison between L628 (ARESI at Manila FIR boundary) with L642 (EXOTO at Sanya FIR boundary), M771 (DONDA at Sanya FIR boundary), N892 (MIGUG at Manila FIR boundary) and L625 (ARESI at Manila FIR boundary) based on August 2010 Combined TSD

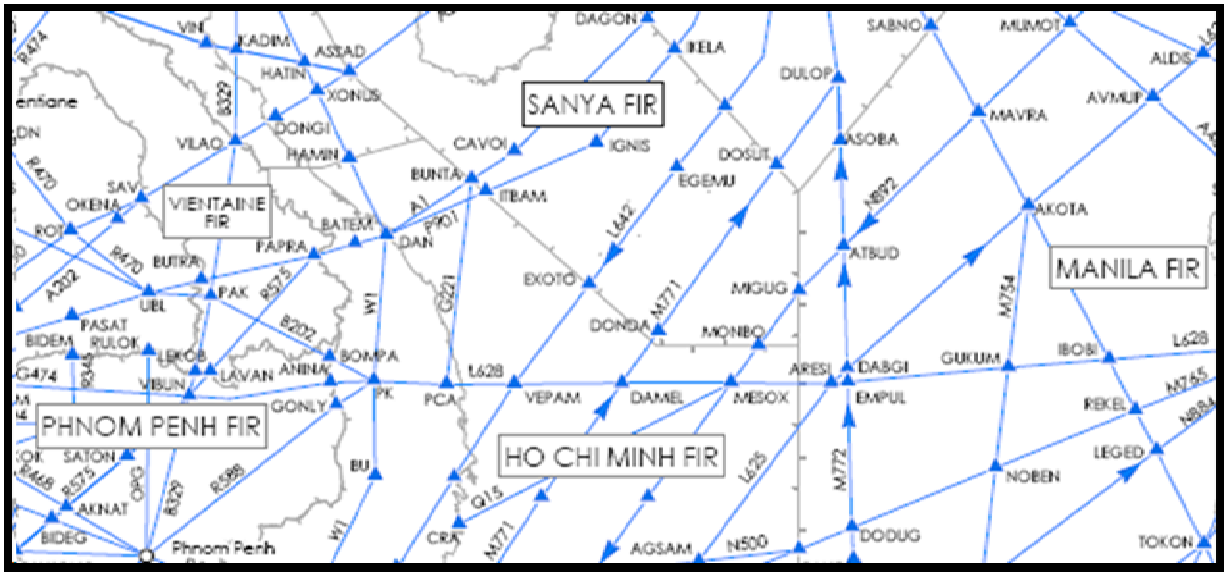

Figure 2: Regional Map showing L628

4.15 Top city pairs and FIR pairs contributing traffic on the routes are shown in **Figure 3** and **Figure 4.**

City Pair	Percent
RPLL-VTBS	**36.51%**
OTBD-RPLL	**12.93%**
OMDB-RPLL	**9.73%**
OBBI-RPLL	**8.58%**
OMAA-RPLL	**8.48%**
OERK-RPLL	**6.09%**
Others	**17.68%**

Figure 3: Top City Pairs contributing traffic on L628

FIR Pair	Percent
RP-VT	**39.99%**
OM-RP	**18.21%**
OT-RP	**15.69%**
OE-RP	**9.38%**
OB-RP	**2.77%**
Others	**8.14%**

Figure 4: Top FIR Pairs contributing traffic on L628

4.16 It was noted that while approximately 40 percent of the traffic on L628 were serving connections between the Bangkok FIR and the Manila FIR, the route L628 also services traffic from Manila to various destinations in the Middle East.

4.17 Due to the traffic on A1 being the second highest in the region covered by the combined TSD among bi-directional routes, a study of A1 crossing with W1 in the Ha Noi and Ho Chi Minh FIRs was undertaken, with a diagram showing peak traffic on each hour of the day shown in Figure 5 were presented along with approximate map of the region in Figure 6.

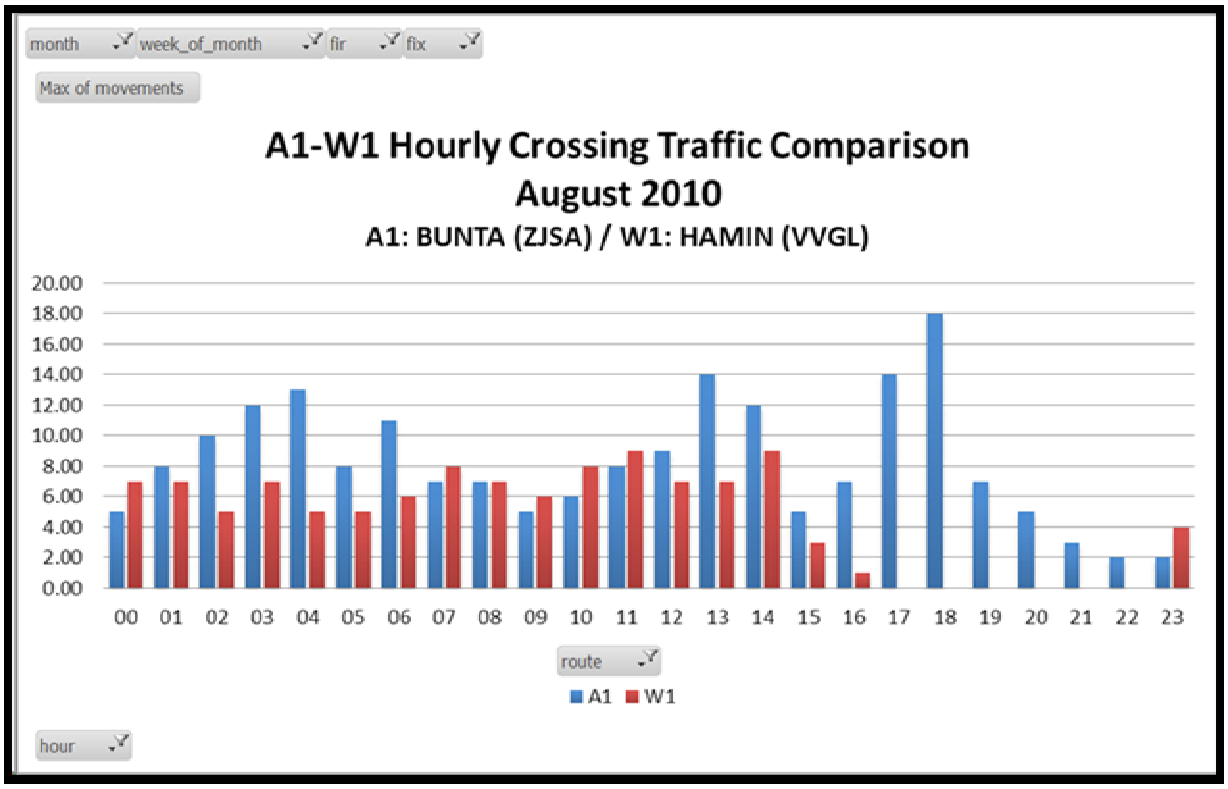

Figure 5: Peak hourly crossing traffic comparison between A1 (BUNTA at Sanya FIR boundary) with W1 (HAMIN at Ha Noi FIR boundary) based on August 2010 Combined TSD

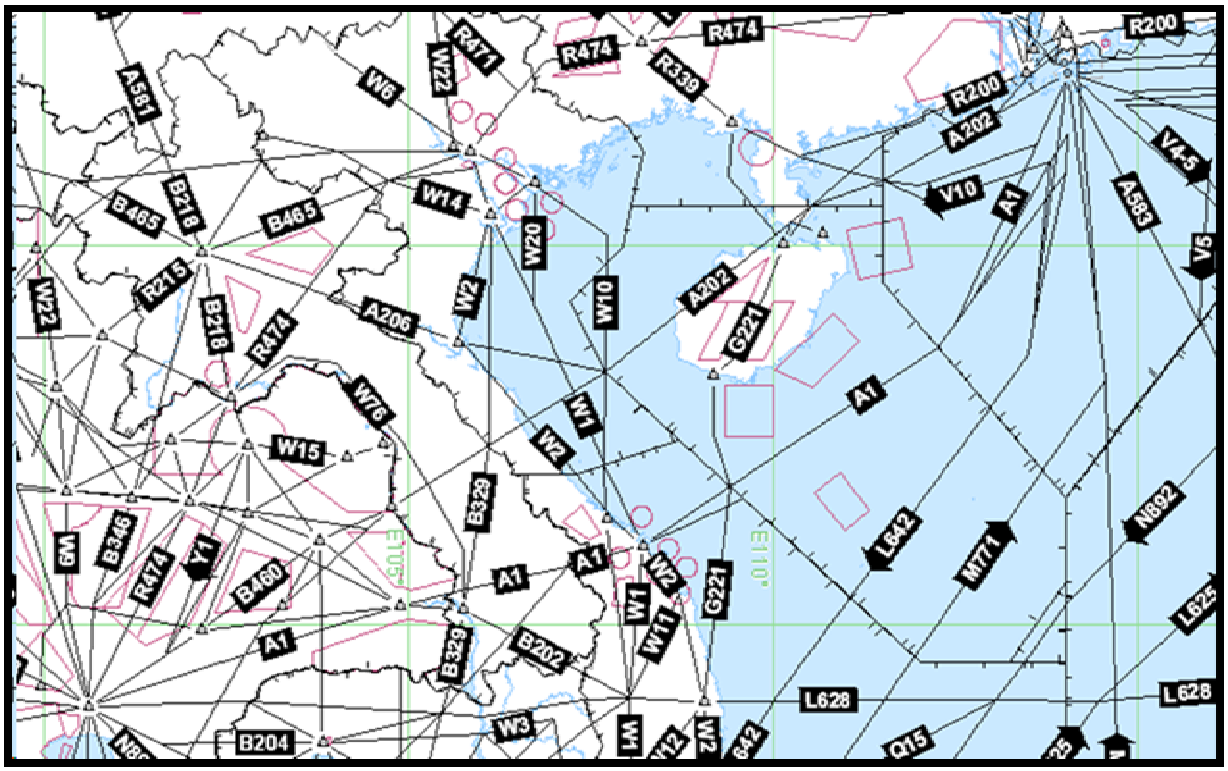

Figure 6: Regional Map showing A1

4.18 In addition, the top city pairs and FIR pairs contributing to traffic on A1, are shown in **Figure 7** and **Figure 8**.

City Pair	Percent
RCTP-VTBS	**11.86%**
RJAA-VTBS	**11.44%**
RKSI-VTBS	**11.03%**
RCTP-VVTS	**5.57%**
RJBB-VTBS	**4.12%**
RCTP-WMKK	**3.30%**
RKSI-VTSP	**2.99%**
RJGG-VTBS	**2.89%**
Others	**46.80%**

Figure 7: Top City Pairs contributing traffic on A1

FIR Pair	Percent
RJ-VT	**19.79%**
RC-VT	**16.60%**
RK-VT	**13.20%**
RC-VV	**7.42%**
RK-VD	**5.36%**
RC-WM	**3.92%**
RK-VV	**3.40%**
RJ-VV	**2.99%**
Others	**27.32%**

Figure 8: Top FIR Pairs contributing traffic on A1

4.19 It was noted that A1 was used mostly for traffic between Thailand and East Asia destinations in Japan, Korea and Taiwan.

Top Bi-Directional Routes

4.20 The SWG discussed the further use of combined traffic sample data in analyzing traffic on top bi-directional routes in the region, with average daily traffic from August 2010 combined TSD shown in **Figure 9**.

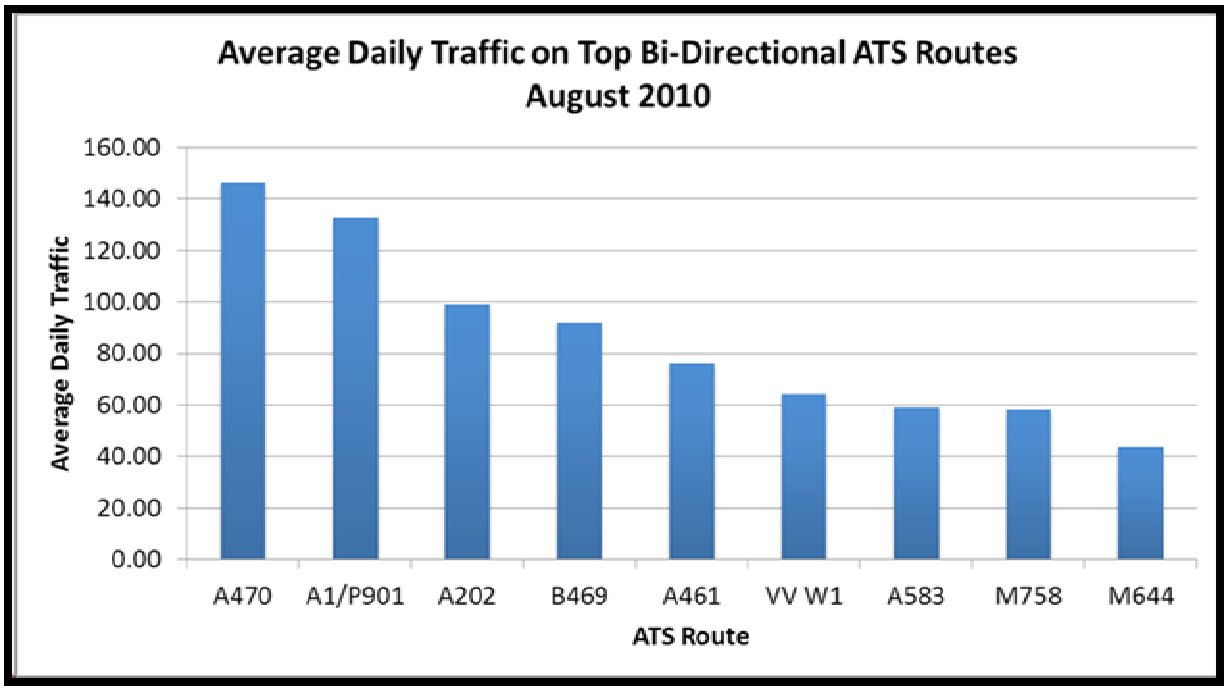

Figure 9: Top Bi-Directional Routes in the Region based on August 2010 Combined TSD

Analysis on loading of current allocated flight levels and current spacing used on these routes could be useful in progressing a route review in this region. A survey of key FIR pairs contributing traffic to the routes as well as spacing/separation standard used was shown in Figure 10.

Route	Key FIR Pairs	Separation / Spacing
A470	**VH/VM – ZS**	**40 NM radar spacing**
A1/P901	**VT/VD/VV – RC/RJ/RK**	**40 NM radar spacing (10 minutes MNT)**
A202	**VH/ZG/VM – VT/OM/VI**	**40 NM radar spacing (10 minutes MNT)**
B469	**VT – WS/WI/WA**	**10 minutes**
A461	**RP – VH/ZG/ZS**	**10 minutes MNT / 15 minutes**
VV W1	**VV-VV**	**Normally 20 NM radar spacing (to be confirmed)**
A583	**VH – YS/YM/WA/WB**	**10 minutes MNT / 15 minutes**
M758	**WB/WM**	**10 minutes**
M644	**VT – WS/VT/VI**	**10 minutes**

Figure 10: Survey of Key FIR Pairs and Spacing/Separation Standard Used for Top Bi-Directional Routes in the Region

Comparison of Requested FL and Actual FL using Flight Plan Data

4.21 The SWG also discussed potential comparison of requested flight level to actual flown flight levels for aircraft as well as potential delay analysis. It was pointed out that information from the current flight plan could be analyzed into FIR boundary crossing information similar to those collected in combined TSD.

4.22 As the process of collecting TSD may be time-consuming for some States without the aid of automation, it was agreed that monthly TSD collection would continue until December 2010 in order to obtain a complete monthly traffic data for the year 2010. Afterwards, frequency of TSD collection would be reduced to a quarterly collection along with forwarding of flight plans to MAAR (using the Bangkok ATFMU AFTN Address: VTBBZDZX) or SEASMA for analysis. It was therefore decided to reduce the data collection to once every three months, commencing on February 2011.

Forward-looking Data

4.23 The SWG discussed the potential use of city pair growth rate, available from schedule databases such as Official Airline Guide (OAG) and IATA Airport Intelligence Services (AirportIS) to project traffic on current ATS route structure into the future.

4.24 The SWG also discussed the potential provision of combined TSD in some form by States to increase the efficiency of airspace planning. More details need to be put forward on this subject to gain maximum benefits in the planning process. It was also suggested that a training session could be held during future task force meeting to enable the use of combined TSD for airspace planning purposes.

Data Analysis Collection

4.25 Comment was made regarding a request from the ICAO forecasting group for a traffic sample data (TSD) collection from States for the month of July. It was stated that many States in the region already provided a TSD for safety assessment purposes in December each year as well as the requested data for traffic analysis required for the SEA-RR/TF.

4.26 ICAO was requested to ask the Traffic Forecasting Group if data already collected last December or data from SEA-RR/TF could be utilized.

Report on Small Working Group 2 (SWG/2)

Introduction

4.27 All the States and international organisations attending the Task Force 4 meeting were present in the Small Working Group 2 (SWG/2).

4.28 SWG/2 was tasked with the following items:

a) review Working Paper 4, ‘Changing ATS Routes to RNAV Route Designators’;

b) review use of Domestic Route Designators; and

c) review Working Paper 3, 'Unidirectional Crossing Routes in the South China Sea' and associated matters in Working Paper 6, 'Unidirectional Crossing Routes' and Working Paper 9, 'ATS Route Implementation and Proposals for New and Revised Routes'.

4.29 It was suggested that States devise an implementation plan for the change of ATS route designator to RNAV routes, noting that a change of designator could not be considered individually by a State. Any implementation plan should include coordination with those States concerned to unify the RNAV designator whenever practicable. The plan should also cater for notification to operators, training for controllers and adequate promulgation of the details.

Clarification Of RNAV and RNP categories within PBN procedures

4.30 To clarify the various RNAV and RNP categories within the PBN procedures, IATA gave a brief explanation of the ATS surveillance and communication requirements for each category.

4.31 Several States raised the issue of the timescale for a change of designator with regard to the ICAO Regional PBN Plan and the benefits for the ANSPs and operators of any change at this stage. It was emphasised that the Regional PBN Plan includes requirements for en-route RNAV capabilities by aircraft and the implementation of appropriate procedures by ANSPs in the short, medium and long term. A unidirectional route structure to maximise the efficient use of airspace using most efficient lateral spacing should be based on the PBN concept. Therefore States should be actively considering their options for implementing RNAV routes as part of their overall preparation for handling increasing traffic in the future and the further demands from operators for a more efficient and environmentally effective service.

Changing ATS Routes to RNAV Route Designators

4.32 All States were invited to give details of planned or proposed changes. These changes are listed in **Appendix C** to this Report.

Use of Domestic Route Designators

4.33 It was noted that many States have a number of domestic routes with the ICAO Internal Route Designator 'W'. However several adjacent States have allocated same names to domestic routes, e.g. ATS Routes W6 and W15 are both used by Cambodia, Thailand and Vietnam. As most modern aircraft have Flight management Systems (FMS) as their primary navigation system, the provision of accurate and unambiguous data is essential. The multiple use of the same ATS Route name could lead to errors or misunderstanding when inputting data into the FMS. States were recommended to review Annex 11 in regard to the use of ATS route designator, especially within their own domestic airspace.

Unidirectional Crossing Routes in the South China Sea

4.34 Of the four proposals for pairs of unidirectional routes in the South China Sea, L628 (Manila-Bangkok) had been extensively discussed in Working Papers presented to the Plenary meeting; A461 (Manila-Hong Kong) was covered in paragraph 2 above; and B348 (Manila-Taipei) will be discussed with Taiwan at a special meeting next week. Taking these factors into consideration, the SWG/2 only reviewed the route M768 (Brunei-Bangkok).

4.35 It was noted that there were approximately 140 flights per week on this route which included overflights between Bangkok-Australia. At SEA-RR/TF/3, IATA had proposed a parallel unidirectional route 60 NM south of M768, however Malaysia had raised concerns about crossing

M758 (Kota Kinabalu-Kuala Lumpur) which has approximately four times the traffic count of M768. At this meeting IATA proposed a pair of parallel routes 30NM either side the current M768. However Malaysia again commented on the potential conflicts of the southern parallel route with traffic on M758. It was agreed that with the current surveillance and communication procedures in the area it would be difficult to implement a parallel route structure for M768. The proposal is expected to be revisited when the surveillance and communication facilities in the area are upgraded.

New and Revised Routes

4.36 Vietnam's proposals for new and revised routes had been briefly discussed under Working Paper 9 by the plenary meeting; however, further consideration was given by the SWG/2 to three routes: Ha Noi - Yangon; Ha Noi - Siem Reap and Ho Chi Minh - Siem Reap.

4.37 It was noted that the two options for a revised Hanoi-Yangon route require coordination with Laos and Thailand. Laos advised that the military authorities had no objection to the revised routes within the Vientiane FIR. Thailand stated that due to military airspace restrictions west of Chiang Mai, the northerly option was not practical at this time, however the southern option will be reviewed and discussed at a civil/military planning meeting early in the new year.

4.38 The Ha Noi – Siem Reap and Ho Chi Minh – Siem Reap routes require coordination with Cambodia, Laos and Thailand. Cambodia agreed to Viet Nam's proposal. For the route Ho Chi Minh – Siem Reap, The meeting noted that Cambodia and Viet Nam would be having a coordination meeting in December to discuss this proposal. Laos advised that their military authorities had no objection to the proposed Ha Noi - Siem Reap route. However, a safety assessment needs to be carried out in cooperation with concerned States. Thailand reiterated that the two Hanoi routes to Siem Reap and Yangon would be subject to negotiations and approval from the military authorities.

Note: *In regards to discussions above, after SEA-RR/TF 03, CAAV sent an official letters to the Civil Aviation Authority of Myanmar on 05 July 2010; and to the Civil Aviation Authority of Thailand and Lao PDR on 27 September 2010, requesting detailed discussion on these proposals.*

4.39 Viet Nam also supplied the meeting with two other route proposals. They were:

a) ATS route Cat Bi – NANKANG serving traffic between Ha Noi/Haiphong and Hong Kong/Northeast Asia; and

b) Route Phu Cat - LENKO (or joining other suitable point on Route A1 to the North of LENKO) serving traffic between Ha Noi/Haiphong and Hong Kong/Northeast Asia

4.40 Viet Nam also advised that, in regard to items a) and b) above, they would be prepared to be flexible in the route alignment and offered some alternative suggestions for discussion with the FIRs concerned.

Note: *Route Phu Cat - LENKO (or another suitable point on Route A1 to the North of LENKO) serving traffic between Ha Noi/Haiphong and Hong Kong/Northeast Asia*

Result of the Discussion between Singapore and Thailand on M752

4.41 The meeting was informed on the outcomes of a side meeting between Singapore and Thailand to further progress the development of RNAV Route M752 (SVB – UTAPAO – ENREP), which was presented to the SEA-RR/TF/3 meeting held in August 2010. Both Singapore and

Thailand agreed to establish the RNAV Route M752. Meanwhile Thailand would coordinate with ICAO to seek the renaming of the new route M752 to M904 as well as other arrangements related to five-letter name code of new relevant waypoints.

4.42 Prior to the side meeting, Malaysia and Thailand had also agreed to establish other new routes which had been discussed at another coordination meeting. It was finally decided that Malaysia, Singapore and Thailand would continue further coordination to finalize the operational letter of agreement on all of these matters, with a targeted implementation date of AIRAC date 7 April 2011.

4.43 Thailand and Singapore also agreed on further collaboration to enhance surveillance for aviation in this region commencing with discussions of ADS-B data sharing and VHF radio communications at future ADS-B Task Force meetings as well as other future collaborations.

Agenda Item 5: Implementation of the New CNS/ATM Systems in the Region

5.1 *There was no discussion under this agenda item.*

Agenda Item 6: ATS Route Development

ATS route initiatives by Viet Nam

6.1 It was observed by the meeting that, since 2009, the Civil Aviation Administration of Vietnam (CAAV) had put together a comprehensive plan for the establishment and revision of ATS routes within the Hanoi and Ho Chi Minh FIRs. The current process was summarized as follows:

a) two new domestic ATS routes (W17, W22) and two extended ATS routes (W10, W12) effective July 2009;

b) new ATS route B214 NASAN – LADON – AKSAG and extension of ATS route B329 from PAKSE to VILAO – NAMHA effective January 2010;

c) new RNAV route Q15 Cam Ranh – MESOX and extension of ATS route G221 from BUNTA to Phu Cat effective March 2010;

d) two new ATS route R213 Can Tho – VOR/DME Phnom Penh and extension of ATS route R334 from Shihanoukville to Phu Quoc effective September 2010; and,

e) a Unidirectional RNAV route M756 ENREP - Tan Son Nhat, serving traffic between Singapore and Ho Chi Minh City as well as future traffic to Can Tho City, is under assessment.

Traffic analysis in Hanoi and Ho Chi Minh FIRs

6.2 Viet Nam advised the meeting that in October 2010, the average daily traffic volume reached a peak of 1011 flights per day covering both Viet Nam FIRs This figure represented 455 operating between Ha Noi and Ho Chi Minh FIRs and 556 international flights overflying either the Hanoi or Ho Chi Minh FIRs from/to adjacent States.

6.3 The daily average traffic figure of 803 flights on main ATS routes, either within or crossing Viet Nam airspace was as follows:

Route/No. of flights	Route/No. of flights
Route W1: 147 flts	**Route L642: 95 flts**
Route W2: 16 flts	**Route M771: 63 flts**
Route R474: 84 flt	**Route L625: 22 flts**
Route A1: 115 flts	**Route N892: 40 flts**
Route A202: 97 flts	**Route G474-L628: 26 flts**
Route A206: 20 flts	**Route M768-R468: 15 flts**
Route G221: 16 flts	**Route M765: 47 flts**

Proposed changes to present ATS routes

6.4 It was also observed that Viet Nam are in the process of studying changes to some major sub-regional ATS/RNAV routes which have been discussed at this and previous meetings of the task force. These included A1/P901, A202, L642, M771 and R474.

6.5 Thailand, Lao PDR and Cambodia advised that they had received the respective letters on Viet Nam's proposals and are studying these proposals in coordination with their military authorities.

6.6 China advised that Cat Bi – Nankang and Phu Cat – LENKO proposals may not be attainable in the short term. Nevertheless, China would be willing to coordinate with Viet Nam in other meetings or by other means to optimize routings in the future.

Route Proposals submitted by IATA

6.7 The meeting was reminded that the SEA-RR Task Force was established by the ATM/AIS/SAR Sub-Group in order to provide route enhancements supporting the ICAO AR-9 traffic flow. The first meeting of this TF was held in December 2009.

6.8 A number of regional proposals had been presented that could provide increased efficiencies for operations. It was observed that, while the task force itself was still relatively new, having met only three times to date, no formal agreements or conclusions have been made as a result of these proposals to date.

6.9 It was therefore considered appropriate to summarise the proposals at TF/4 with the idea of establishing some priorities for the task force as well as a proposed implementation plan.

6.10 At the SEA-RR/Task Force/1 meeting, some broad principles were established and agreed to. These were:

a) the use of uni-directional routes to aid capacity where appropriate;

b) the establishment of PBN type routes (considering the regional PBN plan);

c) separation standards and procedures should be based on CNS/ATM capability; and

d) overflights should not be restricted by Terminal Procedures.

6.11 A number of specific route and other enhancements had been proposed. These included:

a) realignment of L642/ M771 (between Sanya and HKG FIR);

b) establish Uni-directional flow/realignment A1;

c) establish Uni-directional flow/ realignment A202;

d) uni-directional crossing routes (to increase primary traffic flow capacity)
- MNL – TPE
- MNL – HKG
- MNL – BKK
- BSW – BKK;

e) uni-directional routes
- BKK – BJS
- BKK – SHA;

f) availability of 30/30 NM separations where appropriate;

g) RNAV 5 on L642/ M771 when full surveillance/ VHF permits;

h) RNAV 5 corridor SIN – JKT – BLI – SIN;

i) upgrading non RNAV to RNAV routes;

j) new Route M752;

k) new Segments serving (proposed by VNM)
- HAN – REP
- HCM – REP
- HAN – RGN .

6.12 The meeting was advised that, while these proposals have all been subject to discussion, the Task Force is yet to agree on the implementation of most regional route proposals. It was however recognised that some of these proposals will take considerable effort and some may take time to facilitate further courses of action by the concerned parties.

6.13 To achieve some progress, it was proposed that the proposals are progressed through the appropriate SWG, and assigned a tentative timeline for each project, based on the potential benefits and the perceived ease of implementation.

6.14 To begin this process the meeting was requested that the following items be considered high priority from the user perspective.

a) establish Un-directional flow/realignment A1;

b) establish Unidirectional crossing route MNL – BKK;

c) availability of 30/30 NM separations where appropriate;

d) upgrading of non RNAV to RNAV routes;

e) HAN – RGN, HCM – REP, HAN – REP;

f) realignment of L642/ M771 between Sanya and HKG FIR (with the long term vision to make use of RNAV 5 Capability).

6.15 It was considered important that timelines were established for each of these high priority proposals. If any proposal was considered long term, then it should be entered into the ICAO route catalogue to ensure that it is not overlooked in the future.

6.16 The meeting noted the content of the paper. There was no further feedback to previous comments from States on these proposals.

Reduced Horizontal Separation on RNAV Routes between Indonesia and Singapore

6.17 The meeting was provided with an update on the progress of collaboration to implement reduced horizontal separation based on PBN specifications on two ATS routes between Indonesia and Singapore, that serves air traffic between South-East Asia and Australasia, with the aim of bringing about an improvement in safety, airspace capacity, flight efficiency and environmental benefits.

6.18 It was observed that this item was raised at the Second Meeting of the Southeast Asia Route Review Task Force held in Bangkok, Thailand on 22 – 26 March 2010.

6.19 The current minimum longitudinal separation on M774 and A576 is 10 minutes based on the Mach number technique. Based on the feedback gathered from operators, the majority of the flights flying on these routes already have RNAV10 capabilities.

6.20 Taking advantage of the availability of Direct Controller – Pilot Communication (DCPC) facilities throughout these two routes, Indonesia and Singapore focussed on a series of proposed changes to the route structure of M774 and A576. The first step to be considered was to redesignate ATS route A576 as an RNAV10 route M635. This route would be implemented with allowance for sufficient lateral spacing with the adjacent routes. Similarly, RNAV10 route M774 would be realigned accordingly to achieve a lateral route spacing of 60NM. The proposed route spacing of 60NM between M635 and M774 would allow flexibility for future increase of capacity utilizing higher PBN specifications such as RNP4.

6.21 While the implementation of M635 and realignment M774 would increase the flight distance by 3 NM and 8 NM respectively, the benefit would far outweigh this increase with better flight level allocation on both routes. The chart in **Appendix D** shows a diagram of these proposed changes.

6.22 The timeline mentioned below includes changes to the ATM systems, conduct of safety assessment by the South East Asia Safety Monitoring Agency (SEASMA) and also the training of the controllers.

2nd Quarter 2011

- Implementation of RNAV10 route M635 and realignment of RNAV10 route M774 in Jakarta and Singapore FIR
- Implementation of 50NM lateral separation between M635 and M774.

3rd Quarter 2011

- Implementation of 50NM longitudinal separation on both M635 and M774.

Agenda Item 7: Develop a Coordinated Plan for Implementation of Actions Agreed by the Meeting

7.1 The meeting updated the Task List which is at **Appendix E** to this Report.

Agenda Item 8: Any Other Business

Implementation of Himalaya-2 Route

8.1 Nepal presented a paper on a proposal to implement the Himalaya – 2 route between Kathmandu in Nepal and Kunming in China. This route was proposed during the introduction of the EMARSSH structure project in 2001. Unfortunately, this proposal was not able to gain approval at that time from China. The route is presently documented in the Asia/Pacific Region ATS Route Catalogue as a future requirement.

8.2 The meeting was advised that the proposed Himalaya 2 Route had been further augmented in the context of fulfilling ICAO's strategic objectives on environmental protections and enhancing the efficiency of aviation operations by developing, coordinating and implementing air navigation plans that reduce operational unit cost and facilitate increased traffic. The expected benefit from the proposed Himalaya-2 Route was presented in the tables below.

Himalaya-2 Route details and the expected benefit in Aviation

Routing	Existing Route	Proposed Route	Distance saved	Reduced Emission, CO_2 (per flight)	Total Reduced Emission, CO_2/Year	Fuel Saving (per flight)	Total Fuel Saving/year (Average)	Remarks
Kathmandu to Kunming, Hong Kong, Guangzhou	Kathmandu-R344-BRT-KH-RAJ-A201-LSO-A599-Kunming (1085NM)	1.Kathmandu-G348-BBD-W45-GGT-W53-KKU-W55-IIM-DCT-Kunming (971NM)	114NM	5700kg	5200 ton	1824kg	1660 ton	Average 2.5 flt/day from Kathmandu to Hong Kong, Kunming, Guangzhou

8.3 The proposed route not only reduces the emission by shortening the distance because of the direct routing, when connected to L626 (already established route from Kathmandu to Delhi), will significantly increases ATC efficiency by shifting the air traffic congestion from existing airspace. This route also helps to reduce flying time of flights from Hong Kong to Delhi, Middle East and Europe.

Routing	Existing Route	Proposed Route	Distance saved	Reduced Emission, CO_2 (per flight)	Total Reduced Emission, CO_2/Year	Fuel Saving (per flight)	Total Fuel Saving/year (Average)	Remarks
Delhi to Kunming, Hong Kong, Guangzhou	Delhi-R460E-LLK-A201-SALOR-RAJ-LSO-A599-Kunming (1488NM)	1.Delhi-L626-Kathmandu-G348-BBD-W45-GGT-W53-KKU-W55-IIM-DCT-Kunming (1431NM)	57NM	2850kg	15600 ton	912kg	4990 ton	Average 15 flt/day from Hong Kong, Kunming, Guangzhou to Delhi & beyond

Beneficiary airlines of the proposed Himalaya-2 Routes

Flights to/from Kathmandu

i.	Nepal Airlines	-	Kathmandu-Hong Kong-Kathmandu	-	3 flights a week
ii.	Dragon Air	-	Hong Kong-Kathmandu-Hong Kong	-	6 flights a week
iii.	China Southern	-	Guangzhou-Kathmandu-Guangzhou	-	4 flights a week
iv.	China Eastern	-	Kunming-Kathmandu-Kunming	-	3 flights a week

Flights to/from Hong Kong to Delhi & west

i.	Air India	-	Delhi-Hong Kong-Delhi
ii.	Cathay Pacific	-	Hong Kong-Delhi-Hong Kong
iii.	Qatar Airways	-	Doha-Hong Kong-Doha
iv.	Saudi Arabian Airlines	-	Riyadh-Hong Kong-Riyadh
v.	KingFisher Air	-	Delhi-Hong Kong-Delhi

vi. Jet Airways - Delhi-Hong Kong-Delhi
vii. Japan Airlines (JAL) - Delhi-Hong Kong-Delhi
viii. Singapore Airlines - Delhi-Hong Kong-Delhi

8.4 Nepal requested the co-operation from all stakeholders especially from China for the implementation of the proposed route which will be of great benefit to civil aviation and airline industry of the region. China thanked Nepal for their informative paper on the Himalaya-2 proposal. China further advised that they would look seriously at the proposal and provide feedback to Nepal.

8.5 Nepal presented the meeting with a PowerPoint presentation on their proposal which is at **Appendix F** to this Report.

Impact of the Mount Merapi Eruption to Civil Aviation

8.6 In 26th of October 2010, the Mount Merapi volcano erupted, throwing volcanic ash in vast quantities into the air. The aviation code Red was declared by Indonesian authorities.

8.7 The Indonesian ATS Contingency Plan pertaining to volcanic impact on aviation was activated to ensure that coordination with other authorities including commenced in accordance with the plan. Authorities such as DGCA, Indonesian ANSPs, the Met Office and the Military collaborated to ensure the safety of aircraft likely to be affected by the eruption.

8.8 The Darwin Volcanic Ash Advisory Centre coordinated information on the height and direction of the ash cloud This information was disseminated and distributed by Indonesia as ASHTAMS to all AIS Offices which were responsible to aircraft likely to fly near the affected area. Two groups of contingency routes were devised for different wind directions and published by NOTAM. It was also noted that more than 400 flights were cancelled due to the closure of Jogjakarta Airport from 7 – 20 Nov 2010

Agenda Item 9: Date and Venue for the Next Meeting

9.1 The meeting was advised that there had been relatively small progress in respect to the Terms of Reference of the Task Force. It was considered that further analysis would be required in relation to the work and timelines of this task force and as such, the date and venue of the next meeting would need further consideration.

Closing of the Meeting

9.2 In closing the meeting, the Chairman, Mr. Peter Rabôt thanked all participants for their participation at the Task Force. Despite the strong representation by States and international organizations, it was somewhat disappointing that only minimal progress could not be made at this time.

9.3 The Chairman re-emphasised that further discussions on this important route review of the Southeast Asia area requires a harmonious and cooperative approach by all concerned. Aviation traffic continues to grow and effective planning to cope with this growth needs to be achieved in a timely manner. It was the Chairman's view that this could only be fulfilled by working together and compromising where necessary to do so to provide benefit to users and providers of the air traffic service within the area under consideration.

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LIST OF WORKING PAPERS (WPs) AND INFORMATION PAPERS (IPs)

WORKING PAPERS

NUMBER	AGENDA	WORKING PAPERS	PRESENTED BY
WP/1	1	Provisional Agenda	Secretariat
WP/2	7	Update SEA-RR/TF Task List	Secretariat
WP/3	2	Unidirectional Crossing Routes in the South China Sea	Secretariat
WP/4	6	Changing ATS Routes to RNAV Route Designators	Secretariat
WP/5	4	Further Reduction of Minimum Longitudinal Spacing A1 and P901	China Hong Kong, China
WP/6	6	Uni-directional Crossing Routes	IATA
WP/7	6	Proposed Realignment of Current Routes L642, M771 and A1	Secretariat
WP/8	6	Route Proposals	IATA
WP/9	6	ATS Route Implementation and Proposals for New and Revised Routes	Viet Nam
WP/10	4	Traffic Data Analysis by the Data Collection and Analysis Small Working Group (SWG/1)	Singapore Thailand
WP/11	6	Reduced Horizontal Separation on RNAV Routes between Indonesia and Singapore	Indonesia Singapore

INFORMATION PAPERS

NUMBER	AGENDA	INFORMATION PAPERS	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	6	Implementation of Himalaya-2 Route	Nepal
IP/3	8	Impact of the Mount Merapi Eruption to the Civil Aviation	Indonesia

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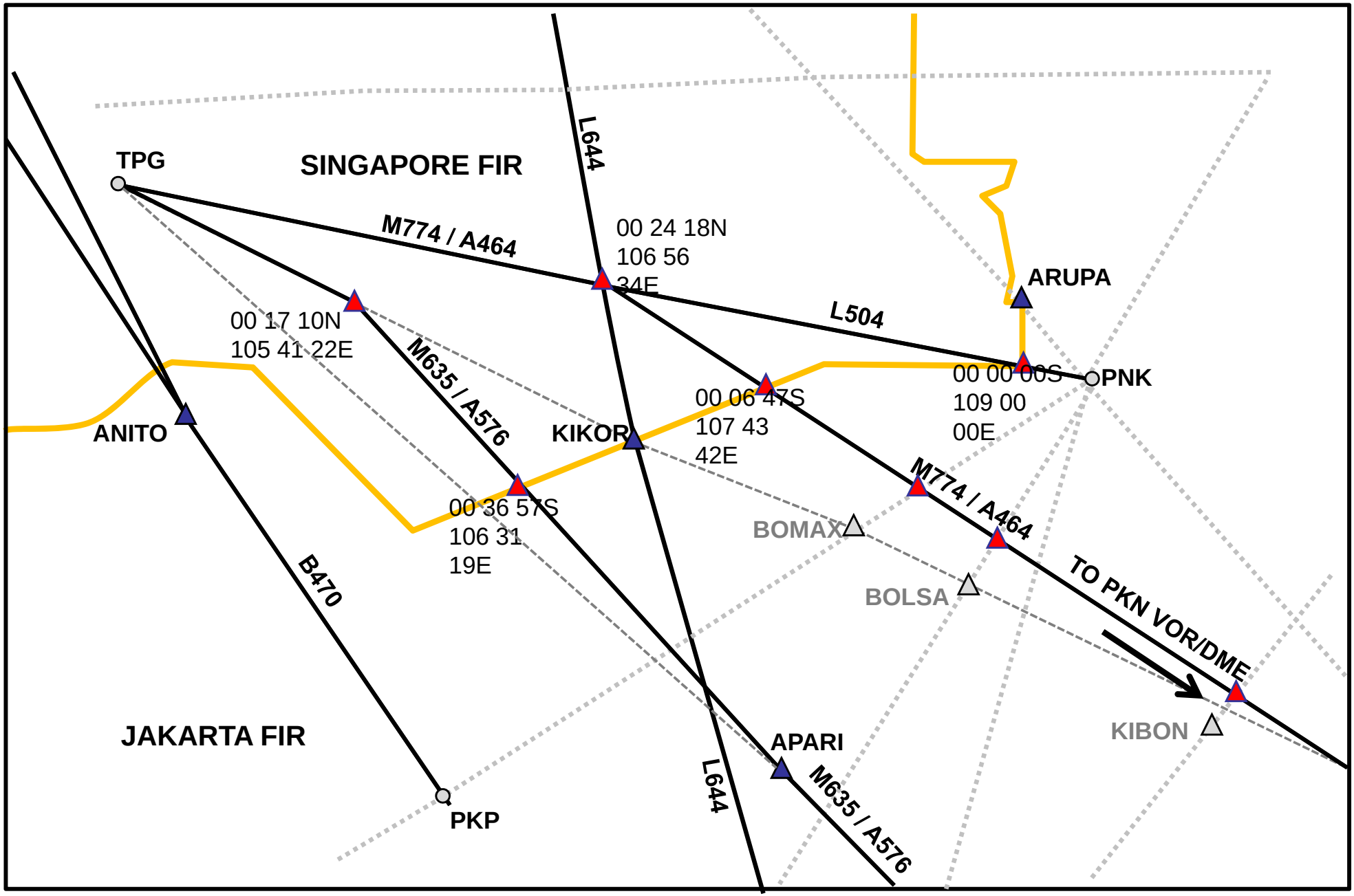
Update on progress by States in changing ATS Routes to RNAV Routes

State	ATS Routes	Status of Proposal	Coordination
Cambodia	G474[0] (L628) R468 (M768) B329 [1] (W76) R575, R588	Plans for RNAV classification	Laos, Vietnam
China	A1, A202 [2]	Radar surveillance 30 NM spacing planned	Hong Kong
Hong Kong, China	A461, A583 [3] A1, A202 [2]	Unidirectional routes being coordinated with Philippines Radar surveillance 30NM spacing planned	Philippines China (Sanya FIR)
Indonesia	A461, B472, B473, R340,	Plans for RNAV classification. Coordinating action with Philippines and Australia.	Australia, Philippines
Laos	B218 (R470) R474, B329 [1]	No objection to implementation. Will coordinate with the adjacent FIRs	Cambodia, Thailand, Vietnam

Update on progress by States in changing ATS Routes to RNAV Routes

Malaysia	B348 [4]	Meetings for RNAV designation of B348 concluded. Final coordination with Singapore and Philippines on implementation to be conducted soon. accordingly.	Philippines, Singapore
Philippines	A461, A583 [3] B348 [4] A590	Discussions with Hong Kong Coordination with Malaysia to be completed soon. Matter to be discussed with Taiwan next week. Coordination with Japan (already RNAV procedures in Japan)	Hong Kong Malaysia Japan (Fukuoka)
Singapore	B348 [4]	Coordination with Malaysia	Malaysia
Thailand	A464, G458 (W31)	Agree to RNAV designation. Meeting in new year to coordinate actions	
Vietnam	G474[0]	Any action to be coordinated with implementation of RNP4 procedures on L628.	Philippines

IMPLEMENTATION OF M635 AND REALIGNMENT OF M774



TASK LIST

SN	Activity	Start	Completed	Present Status	Group Responsible
	Identify Operational Need				
	Agree on operational needs for a route review in South China Sea area	Dec. 09		ongoing	States
	Safety Assessment				
	Review available summary data (non-compliant aircraft, aberrant aircraft etc)	Dec. 09		ongoing	SEASMA
	Examine history of navigational errors and assess possible impact on safety				
	Confirm collision risk model assumptions/parameters are consistent with airspace where the routes are being reviewed	Dec. 09		ongoing	SEA-RR/TF
	Collect weather and turbulence data for analysis	TBD		ongoing	States
	Report monthly navigational errors (including operational errors) to Enroute Monitoring Agency	Dec. 09		ongoing	States
	Collect traffic sample data for safety assessment for the routes under review.	Aug. 10		ongoing	SEA-RR/TF
	Conduct a Safety Assessment	TBD		TBD	SEASMA
	Feasibility Analysis				
	Examine the operational factors and workload associated with the routes under review.	Dec. 09		ongoing	SEA-RR/TF
	Determination of Requirements (airborne & ground systems)	Dec. 09		ongoing	SEA-RR/TF
	States assess the impact of the routes to be implemented on controller automation systems and plan for upgrades/modifications	Dec. 09		ongoing	SEA-RR/TF
	Aircraft & Operator Approval Requirements				
	Promulgate the operational approval process of PBN requirements	TBD		ongoing	SEA-RR/TF
	Notify States when significant changes occur to the documentation	TBD		ongoing	SEA-RR/TF
	Perform Rulemaking (if required)				
	Recommend State airspace regulatory documentation	TBD		TBD	States
	Perform Necessary Industry & International Co-ordination				
	Establish target implementation date	TBD		TBD	SEA-RR/TF
	Report to ATM/AIS/SAR/SG	Apr. 11		ongoing	SEA-RR/TF
	Process Doc 7030 amendment	TBD		ongoing	SEA-RR/TF
	Publish advance AIC	TBD		ongoing	States

TASK LIST

SN	Activity	Start	Completed	Present Status	Group Responsible
	Publish AIP Amendment on separation/policy procedures	TBD		TBD	SEA-RR/TF
	Review inter-facility coordination procedures	TBD		TBD	SEA-RR/TF
	Finalize changes to Letters of Agreement	TBD		TBD	States
	Approval of Aircraft & Operators				
	Establish approved operations readiness targets	Jun. 11		TBD	SEA-RR/TF
	Assess operator readiness	Jun. 11		TBD	SEA-RR/TF
	Develop Pilot & ATC Procedures				
	Review weather and contingency procedures.			ongoing	SEA-RR/TF
	Conduct simulation modelling to assess impact	Jun. 11		ongoing	SEA-RR/TF
	Report on simulation activity	Jun. 11		ongoing	SEA-RR/TF
	Develop procedures for handling non-compliant aircraft in ATS documentation	Mar. 11		ongoing	SEA-RR/TF
	Develop mutually acceptable ATC procedures for non-approved State acft to transit the reviewed routes	Mar. 11		ongoing	SEA-RR/TF
	Implement procedures for suspension of the reviewed routes.	Mar. 11		ongoing	SEA-RR/TF
	Liaise with State defense authorities regarding military operations	Mar. 11		ongoing	States
	Pilot & ATC Training				
	Provide Pilot/ATC training documentation based on past experience	Mar. 11		TBD	SEA-RR/TF
	Conduct local training for air traffic controllers	Mar. 11		TBD	States
	Perform System Verificiation				
	Navigational performance monitoring needed to undertake initial safety analysis	Jun. 11		ongoing	SEASMA
	Provide representative traffic movement data to Safety Monitoring Agency	Aug. 10		ongoing	SEA-RR/TF
	Undertake initial safety analysis	Mar. 11		ongoing	SEASMA
	Prepare/maintain regional status report detailing the routes	Mar. 11		ongoing	SEA-RR/TF
	Final Implementation Decision				
	Review aircraft navigational performance and operational errors	TBD			SEA-RR/TF
	Complete ATS State documentation	TBD			States
	Publish Trigger NOTAM	TBD			SEA-RR/TF and States

TASK LIST

SN	Activity	Start	Completed	Present Status	Group Responsible
	Complete readiness assessment	TBD			SEA-RR/TF and States
	Complete safety analysis	TBD			SEASMA
	Declare Initial Operational Capability				
	Monitor System Performance				
	Perform Follow-On Monitoring				SEA-RR/TF
	Adopt New route and associated separation				SEA-RR/TF and States
	Declare Full Operational Capability	TBD			SEA-RR/TF and States
	Meetings				
	SEA-RR/Task Force/1/2/3/4 (Bangkok)	Dec. 09		ongoing	

IMPLEMENTATION OF HIMALAYA 2 ROUTE

Where is Nepal ?

Area almost: 57000 square mile
Population: almost 30 million

Where is Nepal ?

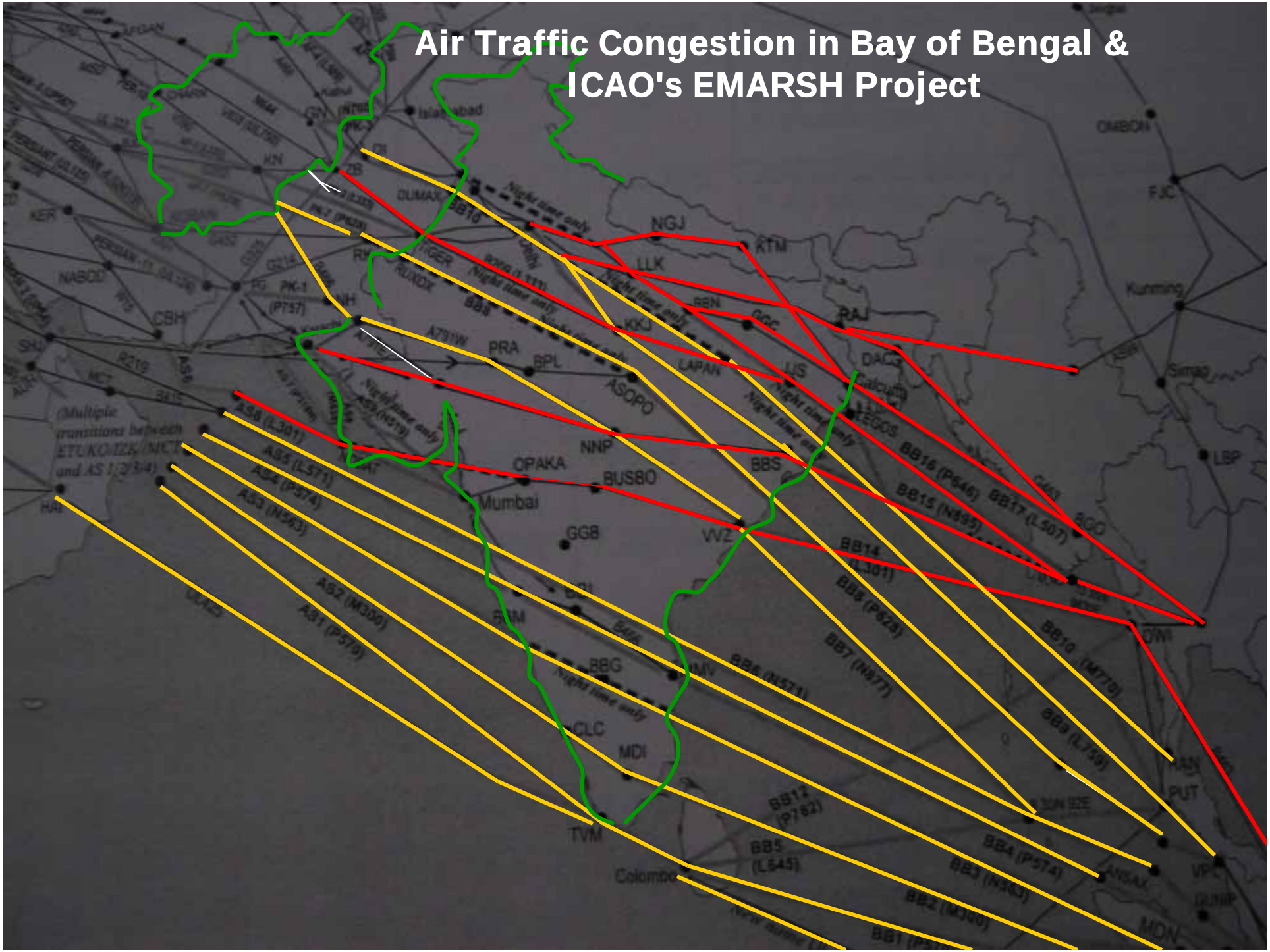
ONE International Airport

51 Domestic Airports

Second International Airport in process

What is Himalaya Route

Air Traffic Congestion in Bay of Bengal & ICAO's EMARSH Project



ICAO's initiation to ease congestion:

- EMARSH (Europe Middle East/Asia Air Route South of Himalaya - Direct, short and efficient Route.
- Nepal had proposed 3 Routes during EMARSH Project: Himalaya 1,
  Himalaya 2 and
  Himalaya 3

Himalaya 1
Bangkok-Kolkota-Nepalganj-Indek/Ishlamabad

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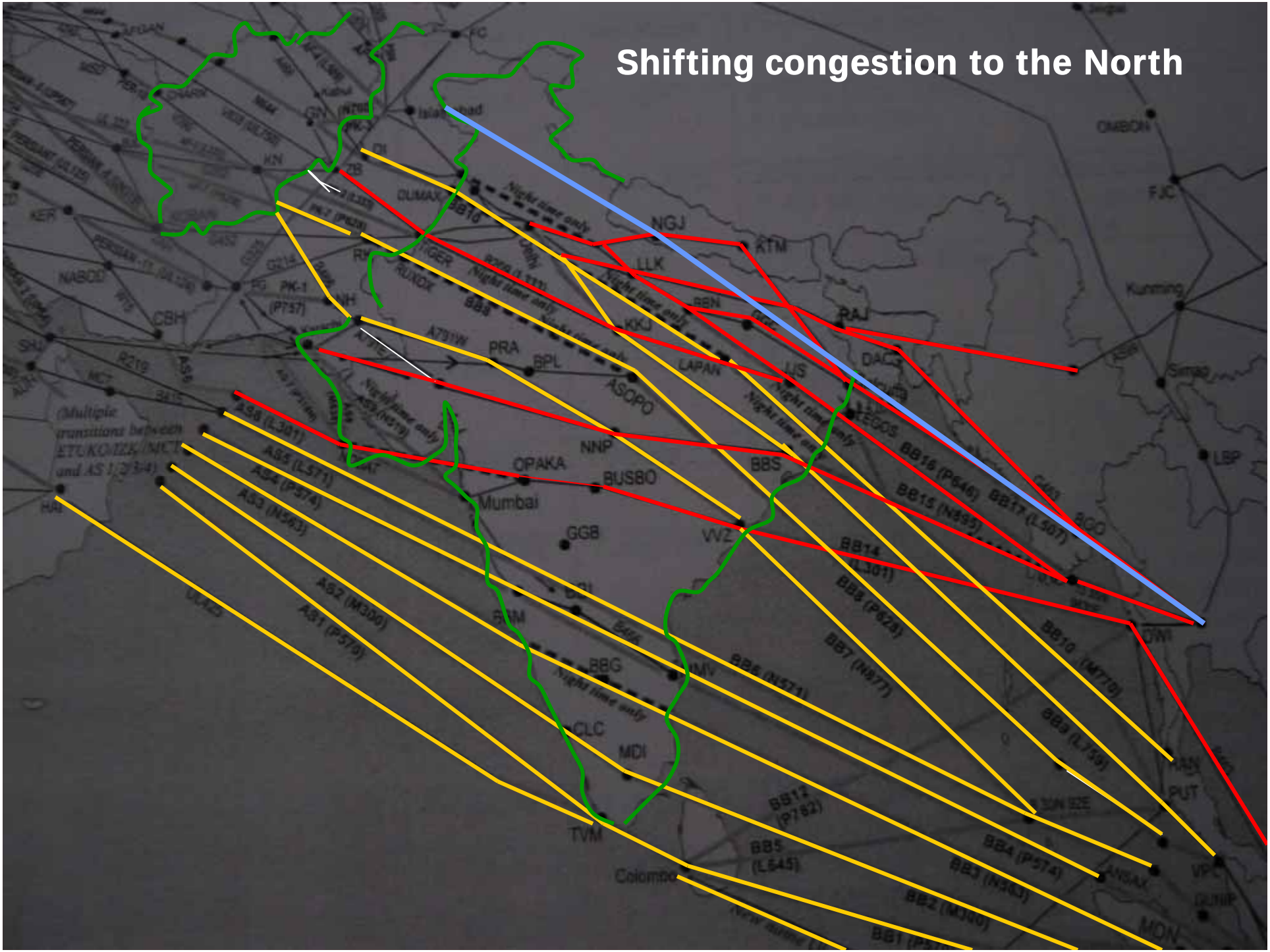
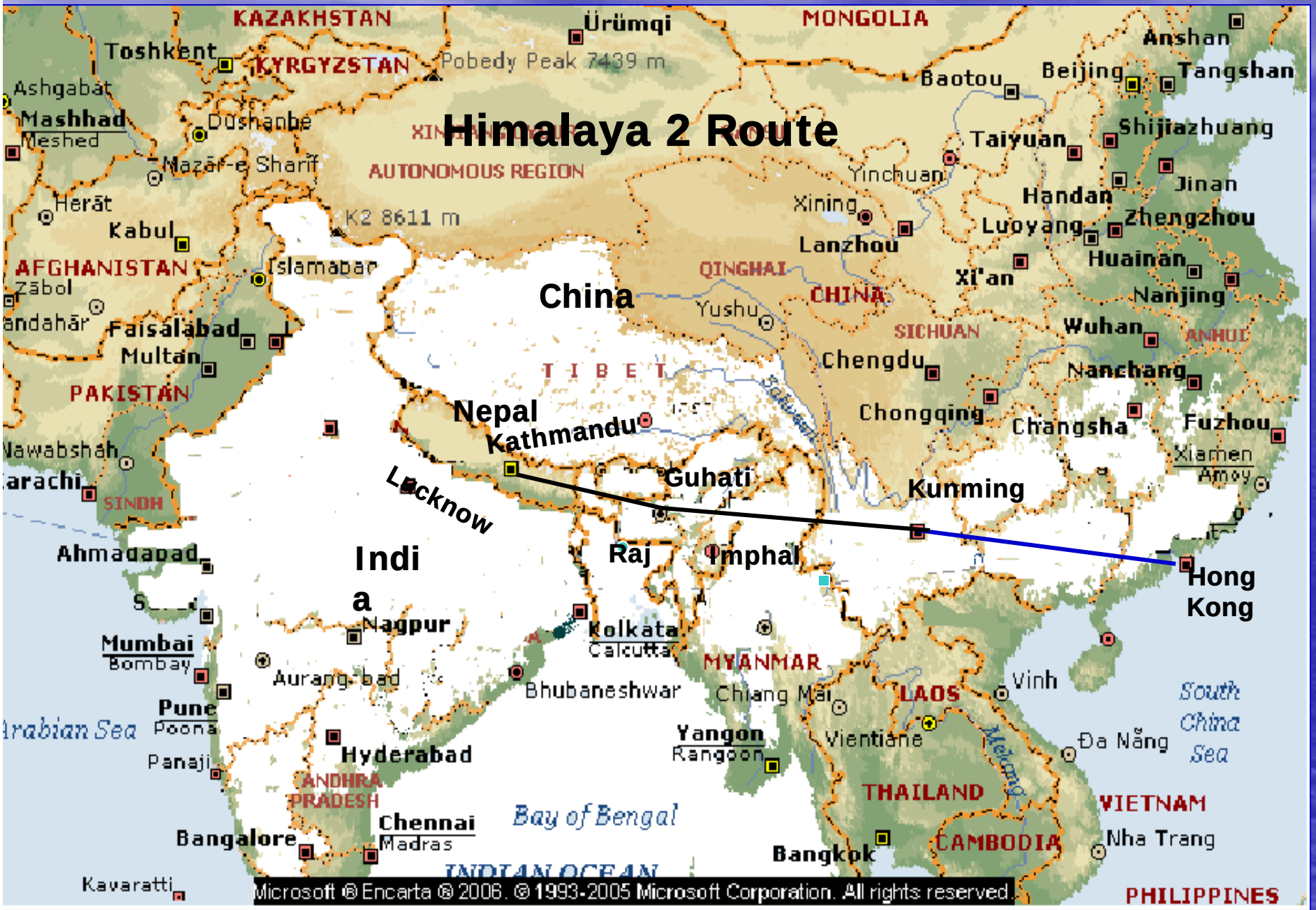

Shifting congestion to the North
NGJ
KTM
LLK
KKJ
PRA
BPL
ASOPO
NNP
OPAKA
BUSBO
Mumbai
GGB
BBG
CLC
MDI
TVM
Colombo
PAJ
DACCA
BBS
WZ
MV
BB16 (P646)
BB17 (L507)
BB15 (N553)
BB14 (L301)
BB8 (P628)
BB7 (N577)
BB6 (N571)
BB5 (L545)
BB4 (P574)
BB3 (N563)
BB2 (M306)
BB1 (P575)
AS8 (L301)
AS5 (L571)
AS4 (P574)
AS3 (N563)
AS2 (M306)
AS1 (P575)
BB10 (M778)
BB9 (L735)
BB17 (P752)
PUT
VPC
MDN


Himalaya 2 Route
China
Nepal
Kathmandu
Lucknow
Guhati
Kunming
Hong Kong
India
Raj
Imphal
KAZAKHSTAN
KYRGYZSTAN
MONGOLIA
Ürümqi
Toshkent
Pobedy Peak 7439 m
Ashgabat
Mashhad
Meshed
Dūshanbe
Mazār-e Sharīf
AUTONOMOUS REGION
Herāt
K2 8611 m
Kabul
AFGHANISTAN
Islamabad
Zābol
Qandahār
Faisalabad
Multan
PAKISTAN
QINGHAI
CHINA
Yushu
Xining
Lanzhou
Yinchuan
Baotou
Beijing
Anshan
Tangshan
Taiyuan
Shijiazhuang
Handan
Jinan
Luoyang
Zhengzhou
Huainan
Xi'an
Nanjing
SICHUAN
Wuhan
ANHUI
Chengdu
Nanchang
TIBET
Chongqing
Changsha
Fuzhou
Xiamen
Amoy
Nawabshah
Karachi
SINDH
Ahmadabad
Nagpur
Kolkata
Calcutta
MYANMAR
Mumbai
Bombay
Aurang-bad
Bhubaneshwar
Chiang Mai
LAOS
Vinh
Pune
Poona
Arabian Sea
Yangon
Rangoon
Vientiane
Đa Nẵng
South China Sea
Hyderabad
Panaji
ANDHRA PRADESH
THAILAND
VIETNAM
Mekong
Chennai
Madras
Bay of Bengal
Bangalore
Bangkok
CAMBODIA
Nha Trang
INDIAN OCEAN
Kavaratti
PHILIPPINES
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Benefit of Himalaya 2 Route

Delhi
Nepal
Kathmandu
Lucknow
Guhati
Kunming
Raj
Imphal
Hong Kong
China
India
KAZAKHSTAN
KYRGYZSTAN
MONGOLIA
Ürümqi
Toshkent
Pobedy Peak 7439 m
Baotou
Beijing
Anshan
Tangshan
Ashgabat
Mashhad
Meshed
Dushanbe
XINJIANG UYGUR
AUTONOMOUS REGION
GANSU
Taiyuan
Shijiazhuang
Mazār-e Sharīf
Yinchuan
Jinan
Herāt
K2 8611 m
Xining
Handan
Zhengzhou
Kabul
Luoyang
Lanzhou
Huainan
AFGHANISTAN
Islamabar
QINGHAI
Xi'an
Nanjing
Zābol
CHINA
Yushu
Faisalabad
SICHUAN
Wuhan
ANHUI
Multan
Chengdu
Nanchang
PAKISTAN
TIBET
Chongqing
Changsha
Fuzhou
Nawabshah
Xiamen
Amoy
Karachi
SINDH
Ahmadabad
Nagpur
Kolkata
Calcutta
Mumbai
Bombay
MYANMAR
Aurang-bad
Bhubaneshwar
Chiang Mai
LAOS
Vinh
South China Sea
Arabian Sea
Pune
Poona
Yangon
Rangoon
Vientiane
Đa Nẵng
Hyderabad
Panaji
ANDHRA PRADESH
THAILAND
VIETNAM
Mekong
Chennai
Madras
Bay of Bengal
Bangalore
Bangkok
CAMBODIA
Nha Trang
INDIAN OCEAN
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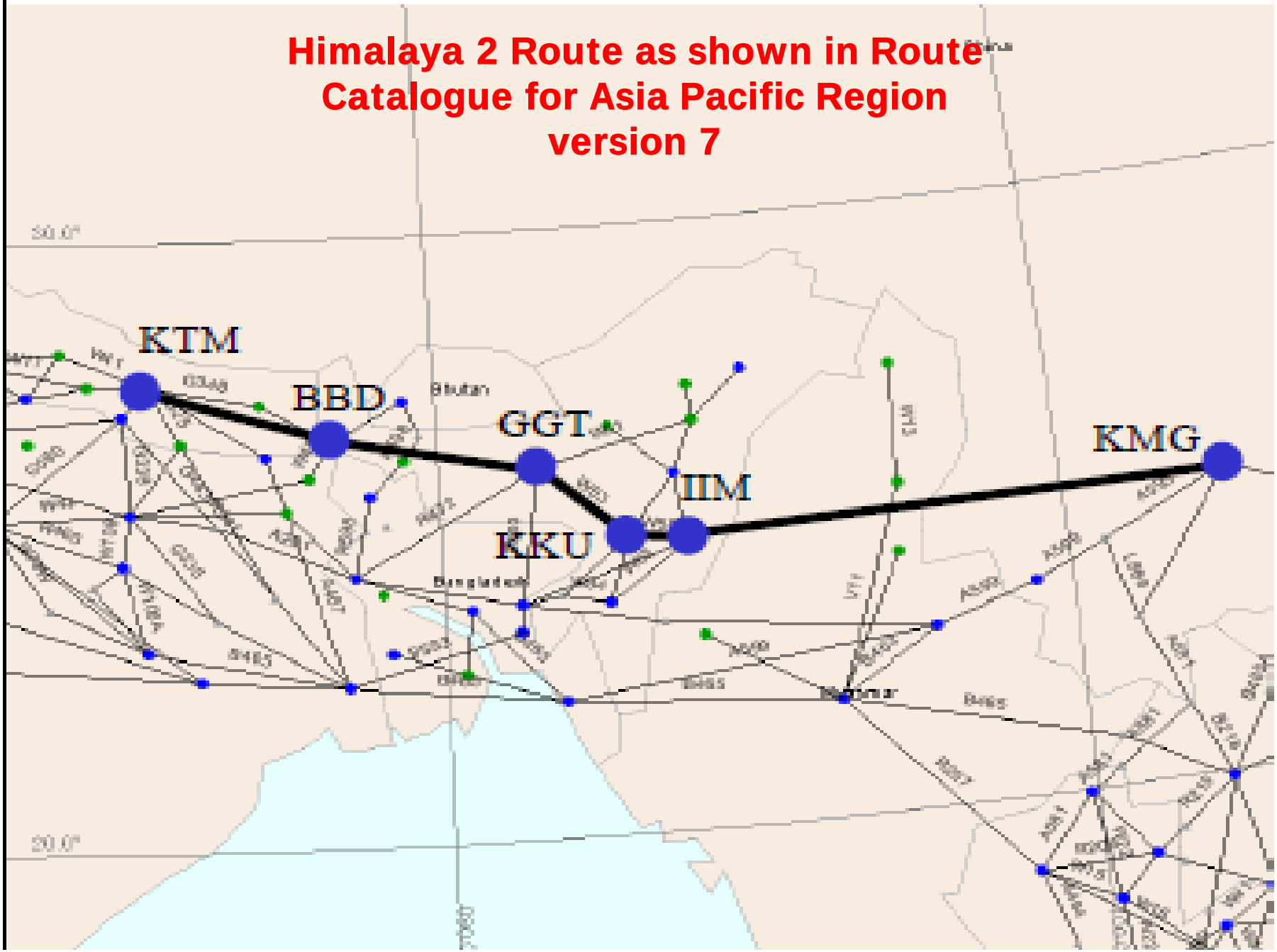
Chapter 4: Part B: Future Route Requirements – States

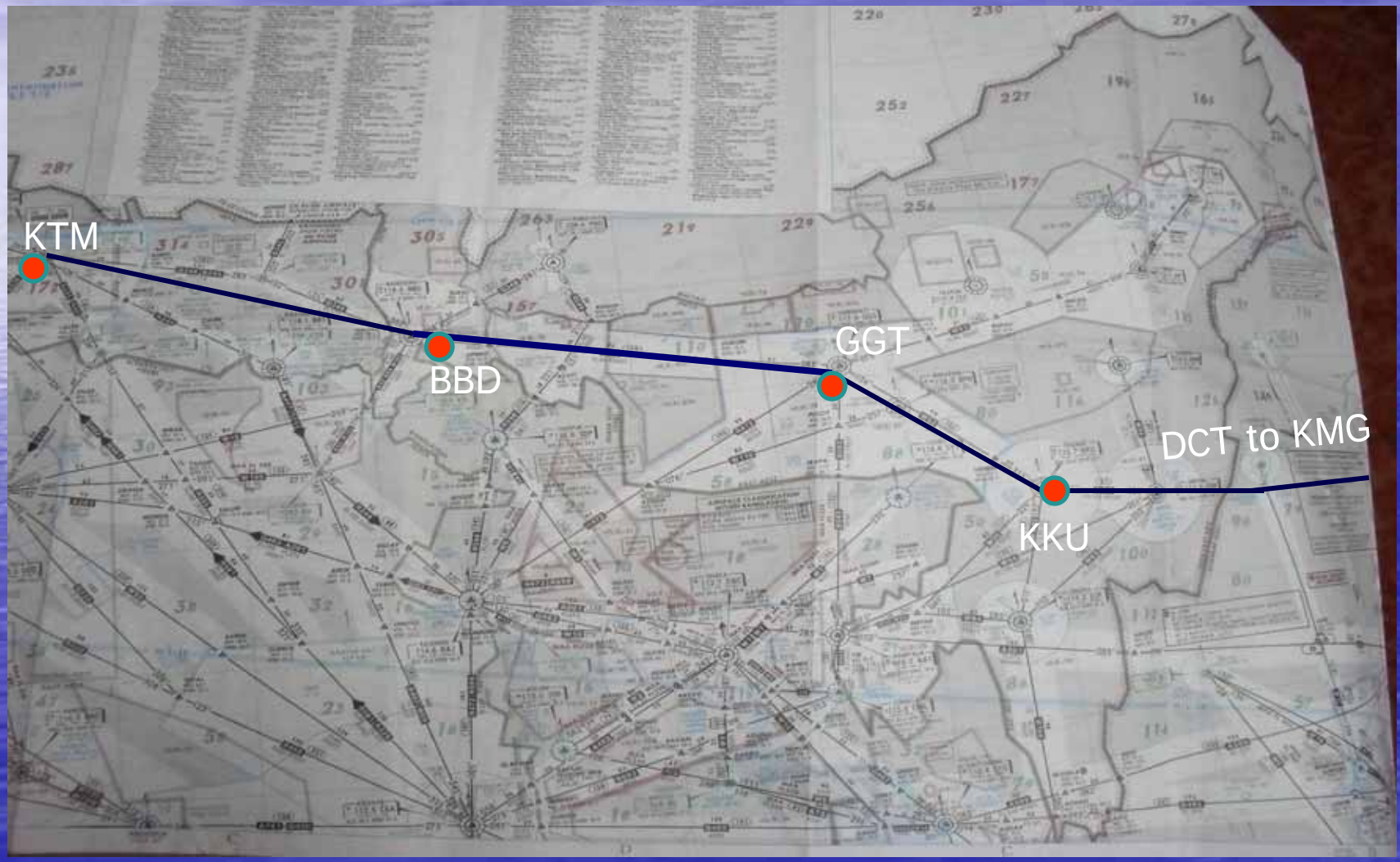
(The routes in this section are intended to be used as a basis for developing BANP amendment proposals, and to provide information on route planning developments which would form the basis for future proposals.These routes are subject to coordination and agreement.)

PROPOSER	ATS ROUTE	SIGNIFICANT POINTS	COORDINATES	FIR	REMARKS
Nepal	Himalaya 1	Kolkata Nepalgunj INDEK	2238.7N 08827.2E 2806.1N 08139.1E 3246N 7316E	Kolkata Kathmandu Lahore	
	Himalaya 2	Kathmandu Baghdogra Guwahati Silchar Imphal Kunming	2740.5N 08521.0E 2641.3N 08819.8E 2606.1N 09135.3E 2454.8N 09258.9E 2446.0N 09354.5E 2501N 10244E	Kathmandu Kolkata Kolkata Kolkata Kolkata Kunming	

CHART

Himalaya 2 Route as shown in Route Catalogue for Asia Pacific Region version 7




KTM
BBD
GGT
KKU
DCT to KMG

Delhi
L626
Kathmandu

Benefits of Himalaya 2

Kathmandu- Kunming

Present Route
Distance
1085 NM

Himalaya 2
Distance
971 NM

Savings
114 NM
15 minutes flying

Benefits of Himalaya 2 Route

Fuel Saving

1824 kg
per flight
16 flights a week

Total Fuel Saving
Per year
1660 ton

Benefits of Himalaya 2 Route

Environmental Benefit

Carbon Emission → **Reduced** → **5700 kg Per flight**

5200 ton Per year

Benefits of Himalaya 2

Kunming – Delhi via Himalaya 2

Present Distance 1488 NM

Proposed Route Distance 1431 NM

Savings 57 NM 7 minutes flying time

Benefits of Himalaya 2 Route (Kunming-Delhi)

Fuel Saving

912 kg per flight

15 flights a day

Total Fuel Saving Per year 4990 ton

Benefits of Himalaya 2 Route (Kunming – Delhi)

Environmental Benefit

Carbon Emission → **Reduced** → **2850 kg Per flight**

15600 ton Per year

Benefits of Himalaya 2

- Total Savings in a year:

  Fuel: 6650 ton

- Reduction in carbon emission 20800 ton.

  Huge achievement

Note: Above information and calculation is based on :

Kathmandu to/from Hongkong, Kunming and Gunagzhou - actual one.

Hongkong to Delhi and beyond (Europe/Middle east via Delhi) is taken from internet sources. So latest information may differ.

China Civil Aviation Report
民 航 报 导
Sunday, November 21, 2010
Volume 12 , Issue 4 July 2010

China Civil Aviation : Leaves No Stones Unturned in Reducing Carbon Emission

Early last year, CAAC issued ten policies in a bid to cope with the international financial crisis and spur the stable and rapid development of civil aviation. Among them, one of the important policy is to save energy and reduce carbon emission.

CAAC launched 35 interim direct flights last year. Air Traffic Management Bureau of CAAC, revealed that through optimizing the flight routes continuously, such as direct flights to reduce the flying distance, was one major step for cutting carbon emission

China Civil Aviation Report
民 航 报 导
Sunday, November 21, 2010

Statistics showed the prior air routes distance total was shortened by 16 thousand kms. Thanks to this measure, 88 thousand tons of fuel worthed 440 million Yuan was saved with 275 thousand tons of carbon dioxide being reduced

During the spring festival travel season, Air Traffic Management Bureau of CAAC launched 16 interim flights and spared 2,400 tons of fuel that cutted down 7,600 tons of carbon dioxide emission. There were 77 such interim flights last year totaling 26,700 km flight distance, which took up 16.6% of China's total flight distance. In all, domestic flights saved 8.6 million km flight distance and 48 thousand tons of fuel with a 150 thousand tons of carbon dioxide reduced

- Aviation community is to be encouraged and learn from the Chinese effort in reducing emission.

- Nepal is of the view that the proposed Himalaya 2 route will be an addition to the Chinese effort in saving cost and protecting environment.

IATA's initiations

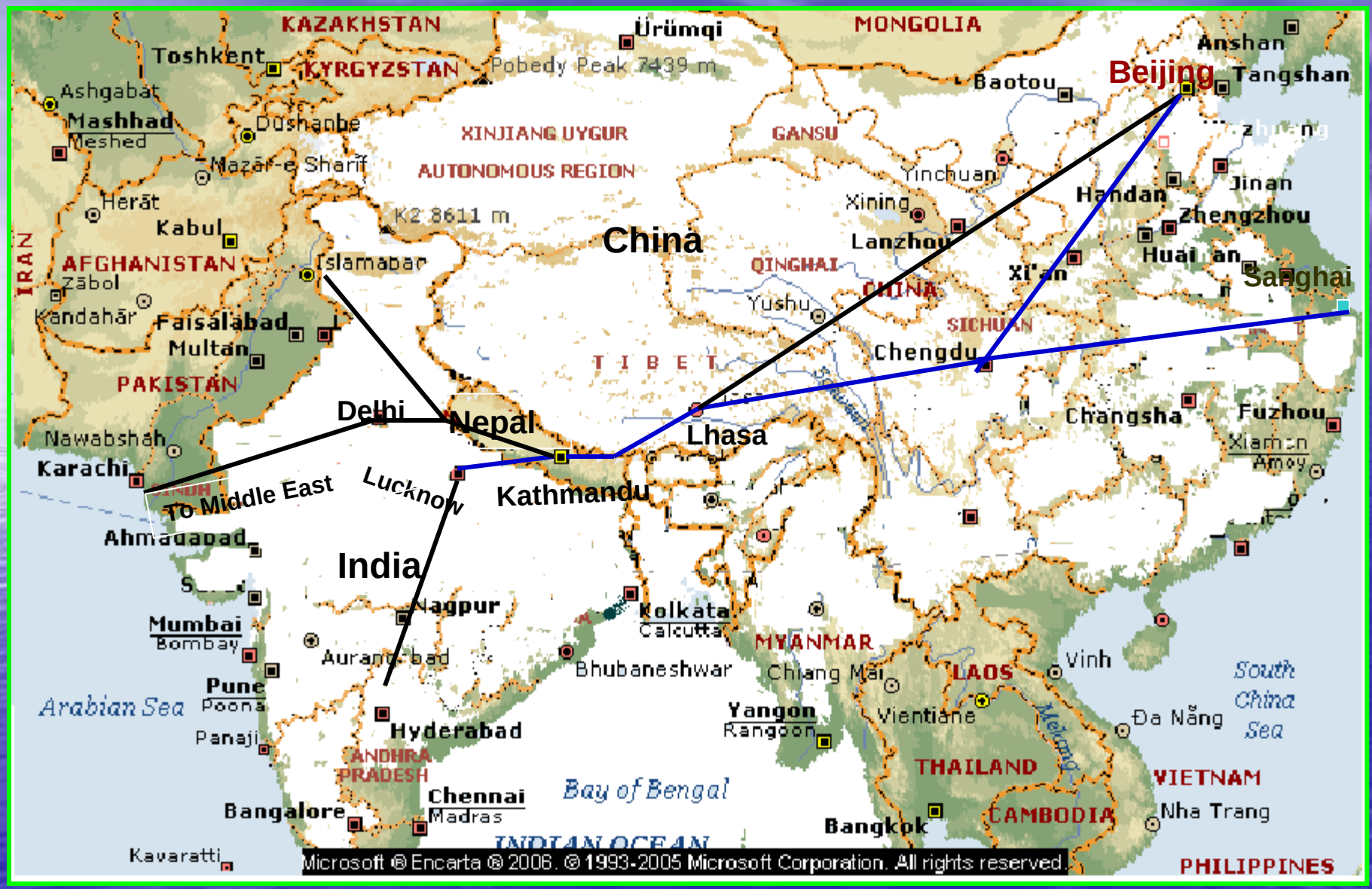
Among other things

- Save a minute per flight Campaign
- Opening of new short and direct routes (Opening of 390 new routes in 2007 alone)
- 50% less emissions by 2050.

Nepal's request

- In view of the above facts, Nepal believe that Himalaya 2 Route will not only benefit Nepal but the region as a whole.
- Nepal request the comments and suggestions and also appeal for the cooperation of all concerned agencies for its implementation.

Thank you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MONGOLIA
Toshkent
KYRGYZSTAN
Pobedy Peak 7439 m
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Beijing
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Baotou
Ashgabat
Mashhad
Meshed
Dushanbe
XINJIANG UYGUR
AUTONOMOUS REGION
GANSU
Mazār-e Sharīf
Yinchuan
Jinan
Herāt
K2 8611 m
Handan
Zhengzhou
Xining
Kabul
China
Lanzhou
Huai an
IRAN
AFGHANISTAN
Islamabad
QINGHAI
Xi'an
Sanghai
Zābol
CHINA
Yushu
Kandahār
Faisalabad
SICHUAN
Multan
Chengdu
T I B E T
PAKISTAN
Delhi
Nepal
Changsha
Fuzhou
Lhasa
Nawabshah
Xiamen
Amoy
Karachi
To Middle East
Lucknow
Kathmandu
Ahmadabad
India
Nagpur
Kolkata
Calcutta
Mumbai
Bombay
MYANMAR
Aurangabad
Bhubaneshwar
Chiang Mai
LAOS
Vinh
South
China
Sea
Arabian Sea
Pune
Poona
Yangon
Rangoon
Vientiane
Đa Nẵng
Hyderabad
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