



International Civil Aviation Organization
The Third Meeting of South China Sea Major Traffic Flow Review Group
(SCS-MTFRG/3)

Bangkok, Thailand, 25-27 February 2016

Agenda Item 4 : Discussion on PBN Route Development and FLAS/FLOS Optimisation

APAC ROUTE CATALOGUE

(Presented by IATA)

SUMMARY

This paper is in response to **TASK LIST SCS-MTFRG/2: Task 5**

1. INTRODUCTION

- 1.1 The current edition (v14 - Sept 2015) of the APAC route catalogue contains a number of routes requested by Users and some from States.
- 1.2 For the purposes of the MTFRG it is assumed the focus is on Chapter 2 “South East Asia” and a sub set of these routes that pertain to the South China Sea area

2. DISCUSSION

Review

- 2.1 IATA has presented the MTFRG with a proposal for enhancement utilizing improved ATM capability enabled by new system implementation by states managing SCS airspace together with PBN implementation.
- 2.2 The current User requests in the route catalogue remain relevant, were reviewed in March 2015 and presented to SEACG 22.
- 2.3 It is intended to further review the Catalogue later in 2016. Attached is the SEACG 22 paper referred to above

3. ACTION BY THE MEETING

The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss IATA’s proposal for improvements



International Civil Aviation Organization

The Twenty-Second Meeting of the Southeast Asia ATM Coordination Group (SEACG/22)

Bangkok, Thailand, 09-12 March 2015

CHOOSE FROM THE FOLLOWING AGENDA ITEMS

Agenda Item 5: ATS Route Development

Agenda Item 6: Development of State Contingency Plans

Agenda Item 8: Review of SEACG Task List

**User Review of Asia Pacific Region ATS Route Catalogue :
Chapter 2 ‘South East Asia’**

(Presented by IATA)

SUMMARY

This paper presents a review of Chapter Two of the Asia Pacific Region ATS Route Catalogue.

4. INTRODUCTION

4.1 The attached appendix is a review of Chapter Two of the Asia Pacific ATS route catalogue for consideration by SEACG/22

2 DISCUSSION

2.1 The changes (red font) are summarized below:

ATS ROUTES	SIGNIFICANT PTS	COORDINATES	FIR	REMARKS
SEA-2	DANANG SYX	N1603.2 E10811.9 N1818.4 E10910.4	HOCHIMINH SANYA	Recommend removal
SEA-5	STUNG TRENG DANANG	N1331.5 E10600.9 N1603.2 E10811.9	PNOMPENH HOCHIMINH	Moved from Chapter 5 part A – recommend remove
SEA-6	PAKSE ASSAD	N1511.8 E10544.5 N1820.5 E10740.9	VIENTIANE ASSAD	Recommend removal
SEA 10	QUNGI - LENKO	N1713.5 E11000.0 N1721.0 E11109.0 N1507.0 E10848.0 N0932.8 E10003.7	SANYA SANYA HOCHIMINH BANGKOK	
SEA 12	ROT HUGUANG	N1607.0 E10346.7 N2107.9 E11020.2	HOCHIMINH GUANGZHOU	

SEA 13	ASSAD-SYX- EPKAL- MAVRA-SAN		YANGON, VIENTIANE, HANOI, MANILA	New Request
SCS1	DAMEL CH	N1358.7 E11136.4 N2213.2 E11401.8	HOCHIMINH HONGKONG	
SCS 2	VEPAM CH	N1358.0 E11000.0 N2213.2 E11401.8	HOCHIMINH HONGKONG	
SCS 4	VKL CONSON	N0243.5 E10144.3 N0843.8 E10637.9	LUMPUR HOCHIMINH	Recommend Removal (replace with SCS11)
SCS 5	EXOTO DAMVO MELAS LUSMO	N1521.5 E11103.0 N1106.5 E10932.7 N0705.3 E10809.2 N0333.7 E10655.6	HOCHIMINH HOCHIMINH HOCHIMINH SINGAPORE	Recommend removal
SCS 7	BRUNEI LAXOR DULOP	N04 52.5E11453.1 N0949.6 E11448.5 N1814.2E11432.6	KINABALU SINGAPORE HONGKONG	TO JOIN M772 AT LAXOR
SCS8	DULOP ELATO ENVAR DULOP KAPLI	N1814.2E11432.6 N2220.0 E11730.0 N2159.5 E11730.0 N1814.2E11432.6 N2110.0 E11730.0	HONGKONG HONGKONG HONGKONG HONGKONG HONGKONG	EITHER DULOP/ KAPLI G86, OR DULOP/ ELATO& ENVAR
Unnamed Request Review (see remarks in route chart appendix 1)	NOIBAI KUNMING	2112.8N 10550.1E 2501.0N 10244.0E	HANOI KUNMING	Moved from Chapter 4. Route Requested by Vietnam
Unnamed Request Review (see remarks in route chart appendix 1)	NOIBAI CATBI SAMAS OR HUGUANG	2112.8N 10550.1E 2049.1N 10642.5E 2030.3N 11029.7E 2107.9N 11020.2	HANOI HANOI GUANGZHOU/ SANYA GUANGZHOU	Moved from Chapter 4. Route Requested by Vietnam
SCS10	PHUCAT ASISU		HO CHI MINH SINGAPORE KOTA KINABALU	
SCS11	R208 – VKT - BITOD	N05° 21.1', E103° 04.6' -> N07° 15.9', E104° 07.3'	KALA LUMPUR HO CHI MINH	New request (replacing SCS4)
PHI 5	ENDAX VJN		MANILA	
SCS9	TOKON DILIS TOKON ENDAX	N1142.0 E11940.5 N1431.1 E12600.1 N1142.0 E11940.5 N1415.0 E13000.0	MANILA MANILA MANILA MANILA	Moved from Chapter 5 part A

5. ACTION BY THE MEETING

- c) The meeting is invited to: note the information contained in this paper; and
- d) discuss any relevant matters as appropriate.

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Chapter 2: Southeast Asia
(referred to: SEACG for review)

ATS ROUTES	SIGNIFICANT PTS	COORDINATES	FIR	REMARKS
SEA 2	DANANG SYX	N1603.2 E10811.9 N1818.4 E10910.4	HOCHIMINH SANYA	Recommend removal
SEA 5	STUNG TRENG – DANANG	N1331.5E 10600.9 N1603.2 E10811.9	PNOM PENH HO CHI MINH	Recommend removal
SEA 6	PAKSE ASSAD	N1511.8 E10544.5 N1820.5 E10740.9	VIENTIANE ASSAD	Recommend removal
SEA 10	QUNGI - LENKO	N1713.5 E11000.0 N1721.0 E11109.0 N1507.0 E10848.0 N0932.8 E10003.7	SANYA SANYA HOCHIMINH BANGKOK	
SEA 12	ROT HUGUANG	N1607.0 E10346.7 N2107.9 E11020.2	HOCHIMINH GUANGZHOU	
SEA 13	ASSAD-SYX- EPKAL- MAVRA-SAN		YANGON, VIENTIANE, HANOI, MANILA	New Request
SCS1	DAMEL CH	N1358.7 E11136.4 N2213.2 E11401.8	HOCHIMINH HONGKONG	
SCS 2	VEPAM CH	N1358.0 E11000.0 N2213.2 E11401.8	HOCHIMINH HONGKONG	
SCS 4	VKL CONSON	N0243.5 E10144.3 N0843.8 E10637.9	LUMPUR HOCHIMINH	Recommend Removal (replace with SCS11)
SCS 5	EXOTO DAMVO MELAS LUSMO	N1521.5 E11103.0 N1106.5 E10932.7 N0705.3 E10809.2 N0333.7 E10655.6	HOCHIMINH HOCHIMINH HOCHIMINH SINGAPORE	Recommend removal
SCS 7	BRUNEI LAXOR DULOP	N04 52.5E11453.1 N0949.6 E11448.5 N1814.2E11432.6	KINABALU SINGAPORE HONGKONG	TO JOIN M772 AT LAXOR

SCS8	DULOP ELATO ENVAR DULOP KAPLI	N1814.2E11432.6 N2220.0 E11730.0 N2159.5 E11730.0 N1814.2E11432.6 N2110.0 E11730.0	HONGKONG HONGKONG HONGKONG HONGKONG HONGKONG	EITHER DULOP/ KAPLI G86, OR DULOP/ ELATO& ENVAR
Unnamed	NOIBAI KUNMING	2112.8N 10550.1E 2501.0N 10244.0E	HANOI KUNMING	Moved from Chapter 4. Route Requested by Vietnam Request Review
Unnamed	NOIBAI CATBI SAMAS OR HUGUANG	2112.8N 10550.1E 2049.1N 10642.5E 2030.3N 11029.7E 2107.9N 11020.2	HANOI HANOI GUANGZHOU/ SANYA GUANGZHOU	Moved from Chapter 4. Route Requested by Vietnam; Request Review
SCS10	PHUCAT ASISU		HO CHI MINH SINGAPORE KOTA KINABALU	
SCS11	R208 – VKT - BITOD	N05° 21.1', E103° 04.6' -> N07° 15.9', E104° 07.3'	KALA LUMPUR HO CHI MINH	New request (replacing SCS4)
PHI 5	ENDAX VJN		MANILA	
SCS9	TOKON DILIS TOKON ENDAX	N1142.0 E11940.5 N1431.1 E12600.1 N1142.0 E11940.5 N1415.0 E13000.0	MANILA MANILA MANILA MANILA	Moved from Chapter 5 part A

ATS ROUTE NAME: SEA2

REQUESTED BY: IATA

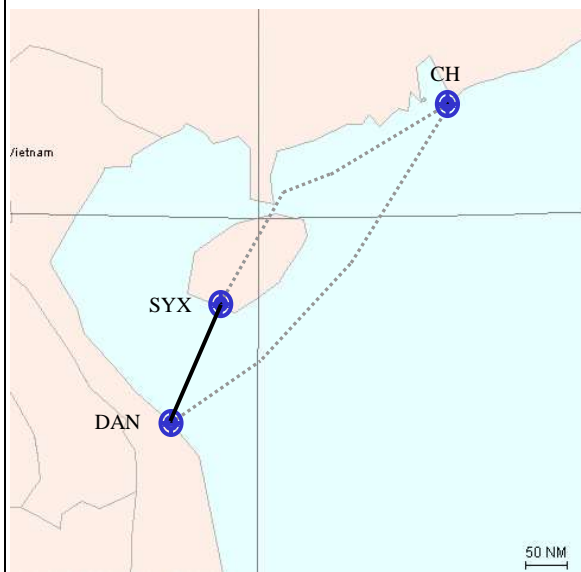
ENTRY/EXIT POINT
DAN / XXXXX / SYX

ROUTE DESCRIPTION
DAN .. SYX

FLIGHT LEVEL BAND
29000 – 46000 feet

PRIORITY: HIGH/MED/LOW

CHART



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	739nm/93 mins	
Fuel	12090 kg	4,412 tonnes
CO ₂	37200kg	13,578 tonnes
No _x		

Remarks: Supports traffic Southeast Asia – Haiian Island and possible alternative routing for the Perl River Delta area. **Recommend remove**

Potential City Pairs: South East Asia – Hainan

ATS ROUTE NAME: SEA5

REQUESTED BY: IATA

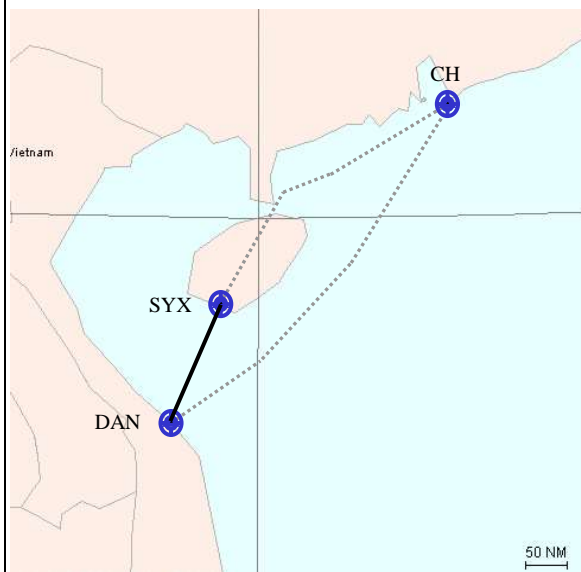
ENTRY/EXIT POINT
STUNG TRENG - DANANG

ROUTE DESCRIPTION
Direct STUNG TRENG (ST) to
DANANG (DAN)

FLIGHT LEVEL BAND
29000 – 46000 feet

PRIORITY: MED

CHART



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	64NM/8 mins	
Fuel	1040 kg	379,600kgs
CO ₂	3200kg	1168 tonnes
No _x		

Remarks: Supports traffic Southeast Asia – Hainan Island. Link with SEA2.
Recommend remove

Potential City Pairs: South East Asia - Hainan

ATS ROUTE NAME: SEA-6

REQUESTED BY: IATA

**ENTRY/EXIT POINT
PAKSE - ASSAD**

ROUTE DESCRIPTION

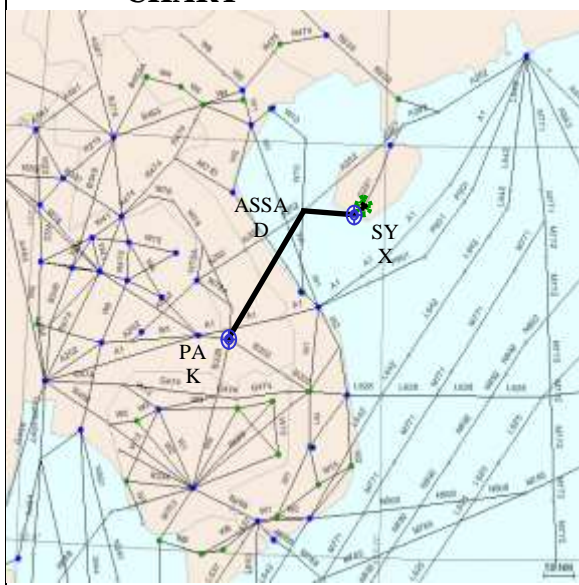
**Direct PAKSE to ASSAD
FLIGHT LEVEL BAND**

29000 – 46000 feet

PRIORITY: HIGH/MED/LOW

MED

CHART



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	126 nm / 16 min	
Fuel	2047 kg	747.338 kg
CO ₂	6300 kg	2299,500 kg
No _x		

Remarks: Supports traffic Southeast Asia – the Perl River Delta area/South China.
Recommend Remove

Potential City Pairs: KUL/SIN/Phnom Penh/JKT – Hainan/ Hong Kong

ATS ROUTE NAME: SEA 10

REQUESTED BY: IATA

ENTRY/EXIT POINT
XXXXX

ROUTE DESCRIPTION
Quangnai/QUNGI .. SAMUI (SMU)

FLIGHT LEVEL BAND
28000 – 46000 feet

PRIORITY: HIGH/MED/LOW

CHART



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time		
Fuel		
CO ₂		
No _x		

Remarks: Supports traffic from Northeast Asia to Phuket and beyond. .Propose new “Chart” Qungi - Lenko

Potential City Pairs: Colombo/ Phuket - Pearl River Delta

ATS ROUTE NAME: SEA 12

REQUESTED BY: IATA

ENTRY/EXIT POINT
ROT - HUGUANG

ROUTE DESCRIPTION

Direct ROT - HUGUANG

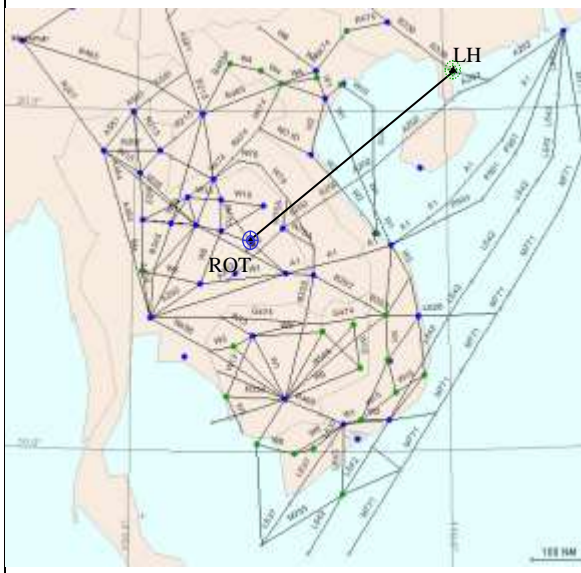
FLIGHT LEVEL BAND

29000 - 46000

PRIORITY: HIGH/MED/LOW

HIGH

CHART



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time		
Fuel		
CO ₂		
No _x		

Remarks: Provide parallel to the A202 route similar to proposal for uni-directional routes proposed through Southeast Asia Route Review Task Force.

Potential City Pairs: KUL/SIN/Phnom Penh/JKT – SANYA/HKG

ATS ROUTE NAME: SEA13

REQUESTED BY: IATA

DATE: March 2015

(SEACG/22)

ENTRY/EXIT POINT

ASSAD-SYX-EPKAL-MAVRA-SAN

PRIORITY: MED

CHART



Action Required	States
	ICAO

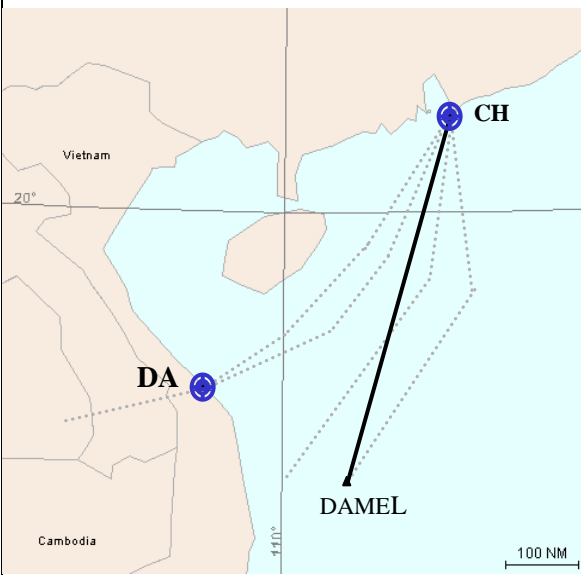
Saving	Per flight	Annual
Mileage / Time	10mins	
Fuel	835kgs	608 Tonnes
CO ₂	2630kgs	1900T
No _x		

Remarks: Route utilized in Summer months - Qatar Airways alone will have 14 flights per week that would utilize the requested route

Potential City Pairs: Middle East – Clark

ATS ROUTE NAME: SCS1

REQUESTED BY: IATA

<p>ENTRY/EXIT POINT DAMEL / CH</p> <p>ROUTE DESCRIPTION DAMEL .. CH</p> <p>FLIGHT LEVEL BAND 28000 – 46000 feet</p> <p>PRIORITY: HIGH/MED/LOW</p>	<p style="text-align: center;">CHART</p> 
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Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	35nm / 4mins	
Fuel	568kg	207594kg
CO ₂	1750kg	638,750kg
No _x		

Remarks: Proposed route shortening for M770 into the Pearl River Delta area. Similar proposals have been made through Southeast Asia Route Review Task Force. 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.

Potential City Pairs: Singapore-Pearl River Delta Airports

ATS ROUTE NAME: SCS2

REQUESTED BY: IATA

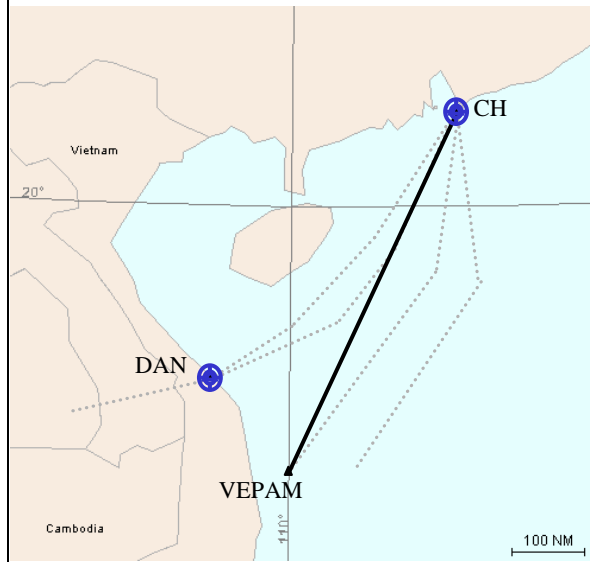
ENTRY/EXIT POINT
CH / VEPAM

ROUTE DESCRIPTION
CH .. VEPAM

FLIGHT LEVEL BAND
28000 – 46000 feet

PRIORITY: HIGH/MED/LOW

CHART



Action Required	States
	ICAO


Saving	Per flight	Annual
Mileage / Time	17nm/ 2 mins	
Fuel	276kg	100,831kg
CO ₂	850kg	310,250kg
No _x		

Remarks: Proposed route shortening for L642 out of the Pearl River Delta area. Similar proposals have been made through Southeast Asia Route Review Task Force. 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.

Potential City Pairs: Singapore-Pearl River Delta Airports

ATS ROUTE NAME: SCS4 – recommend remove (replace with SCS 11)

REQUESTED BY: IATA

<p>ENTRY/EXIT POINT CS / VKL</p> <p>ROUTE DESCRIPTION CS .. VKL</p> <p>FLIGHT LEVEL BAND 28000 – 46000 feet</p> <p>PRIORITY: HIGH/MED/LOW</p>	<p style="text-align: center;">CHART</p> 
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Action Required	IATA
	ICAO

Saving	Per flight	Annual
Mileage / Time	18nm / 2.25 mins	
Fuel	292kg	106,763kg
CO ₂	900kg	328,500kg
No _x		

Remarks: Supports traffic to and from Kuala Lumpur from and to the northeast.

Potential City Pairs: Kuala Lumpur-Pearl River Delta Airports

ATS ROUTE NAME: ~~SCS5~~— recommend remove

REQUESTED BY: IATA

<p>ENTRY/EXIT POINT EXOTO / MELAS / LUSMO</p> <p>ROUTE DESCRIPTION EXOTO .. DAMVO .. MELAS .. LUSMO</p> <p>FLIGHT LEVEL BAND 28000 – 46000 feet</p> <p>PRIORITY: HIGH/MED/LOW</p>	<p style="text-align: center;">CHART</p>
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Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	76nm/ 9.5 mins	
Fuel	1235kg	450,775kg
CO ₂	3800kg	1,387 tonnes
No _x		

Remarks: Need to be considered in conjunction with developments with L642/M771 and possibly South China Sea ADS-B project.

Potential City Pairs: Jakarta- Pearl River Delta Airports

ATS ROUTE NAME: SCS7

REQUESTED BY: IATA

**ENTRY/EXIT POINT
DULOP/ M772 / LAXOR / XXXXX /
BRU**

**ROUTE DESCRIPTION
DULOP M772 LAXOR .. XXXXX ..
BRU**

**FLIGHT LEVEL BAND
28000 – 46000 feet**

PRIORITY: HIGH/MED/LOW



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	60nm/ 7.5mins	
Fuel	975kg	355,875kg
CO ₂	3000kg	1,095 tonnes
No _x		

Remarks: Supports traffic from Perth, eastern Malaysia and eastern Indonesia to the Perl River Delta area, China. Segment DULOP and LAXOR exists as M772.

Potential City Pairs: Pearl River Delta Airports-Bali/ Surabaya/ Perth

ATS ROUTE NAME: SCS 8

REQUESTED BY: IATA

ENTRY/EXIT POINT

1. DULOP / ELATO(ENVAR)

2. DULOP / KAPLI

ROUTE DESCRIPTION

DULOP .. ELATO (A1)/ENVAR (M750)

or

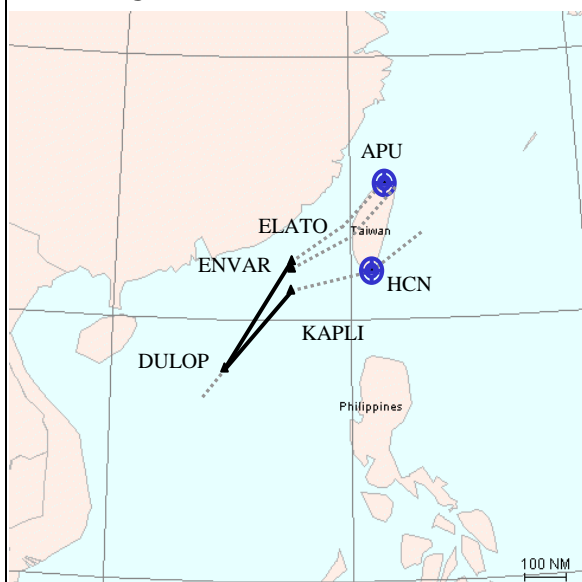
DULOP .. KAPLI (G86)

FLIGHT LEVEL BAND

28000 – 46000 feet

PRIORITY: HIGH/MED/LOW

CHART



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	a.DULOP/ENVAR 140nm/17.5min b.DULOP/KAPLI 238nm/ 30min	
Fuel	a.2275kg b.3867kg	a.830,000kg b.1,411 tonnes
CO ₂	a. 7000kg b.11,900kg	a.2,555tonnes b.4,343 tonnes
No _x		

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.

Potential City Pairs: SEAsia-North Asia Airports

ATS ROUTE NAME:

Requested by : Vietnam

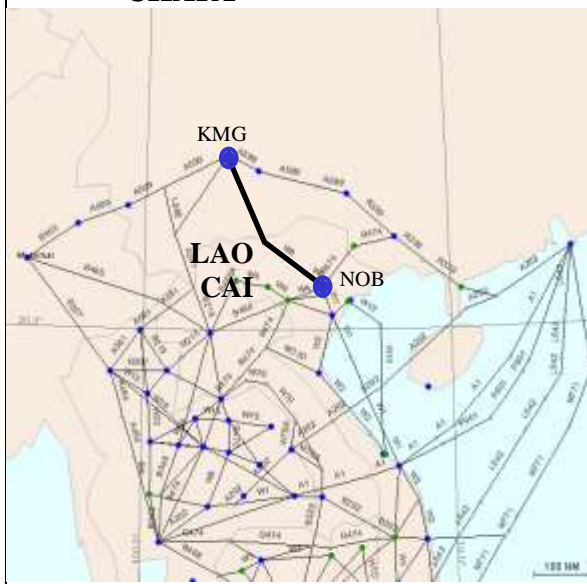
ENTRY/EXIT POINT
XXXXX

ROUTE DESCRIPTION
Noibai (NOB) .. LAOCAI .. Kunming (KMG)

FLIGHT LEVEL BAND
28000 – 46000 feet

PRIORITY: HIGH/MED/LOW

CHART



Action Required	States to coordinate implementation.
	ICAO to circulate proposal for deletion from BANP.

Benefit		
Cost		
Fuel Saving		
Emission	CO ₂	
	NO _x	

Remarks: Because of small traffic demand and cost/benefit considerations, this route is impossible and cannot be implemented at present. **Given comment “impossible” should this be removed? (Vietnam)**

ATS ROUTE NAME:

Requested by : Vietnam

ENTRY/EXIT POINT
XXXXX

ROUTE DESCRIPTION

Three Options:

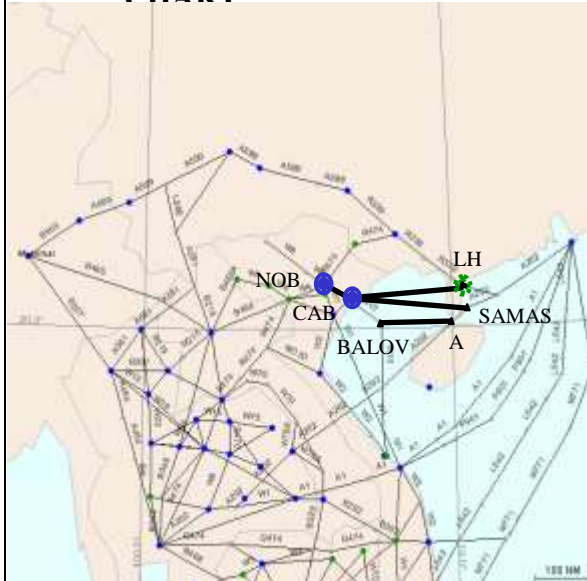
- A) Noibai (NOB) .. Catbi (CAB) .. SAMAS
- B) Noibai (NOB) .. Catbi (CAB) .. BALOV .. A .. SAMAS
- C) Noibai (NOB) .. Catbi (CAB) .. Huguang (LH)

FLIGHT LEVEL BAND

28000 – 46000 feet

PRIORITY: HIGH/MED/LOW

CHART



Action Required	States to coordinate to submit proposal for deletion of the requirement.
	ICAO to circulate proposal for deletion from BANP.

Benefit		
Cost		
Fuel Saving		
Emission	CO ₂	
	NO _x	

Remarks: Because of small traffic demand and cost/benefit considerations, this route is impossible and cannot be implemented at present. **Given comment “impossible” should this be removed? (Vietnam)**

Appendix 2

ATS ROUTE NAME: PHI 05 (Propose Route ENDAX-VJN)

REQUESTED BY: IATA
(ATM/AIS/SAR/SG-22)

Date: 25 June 2012

ENTRY/EXIT POINT
ENDAX-VJN

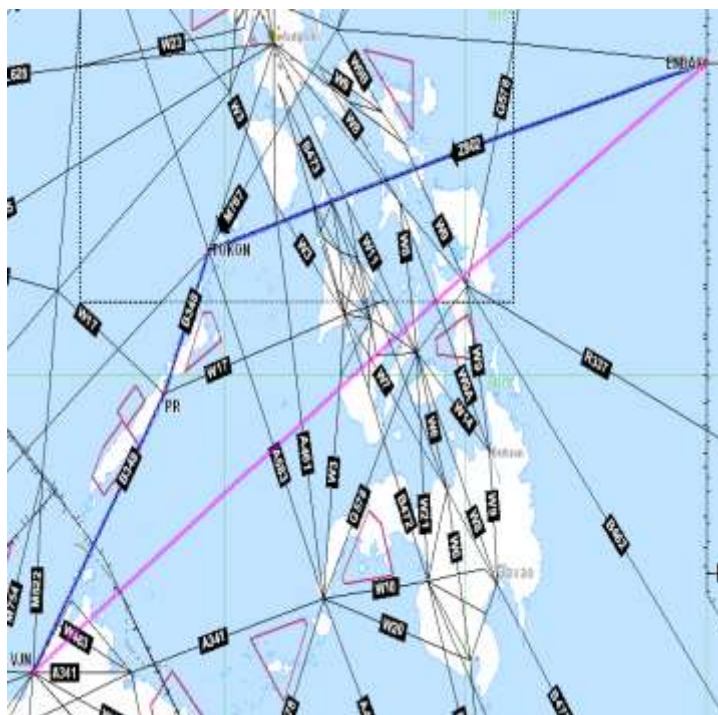
ROUTE DESCRIPTION

FLIGHT LEVEL BAND

PRIORITY:
High/Medium/Low

ENDAX-VJN 964.5NM
ENDAX-TOKON-PR-VNJ
1033.7NM

CHART



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	69.2nm / 8.65 mins	
Fuel	836kg	kg
CO ₂	2592kg	kg
No _x		

Remarks

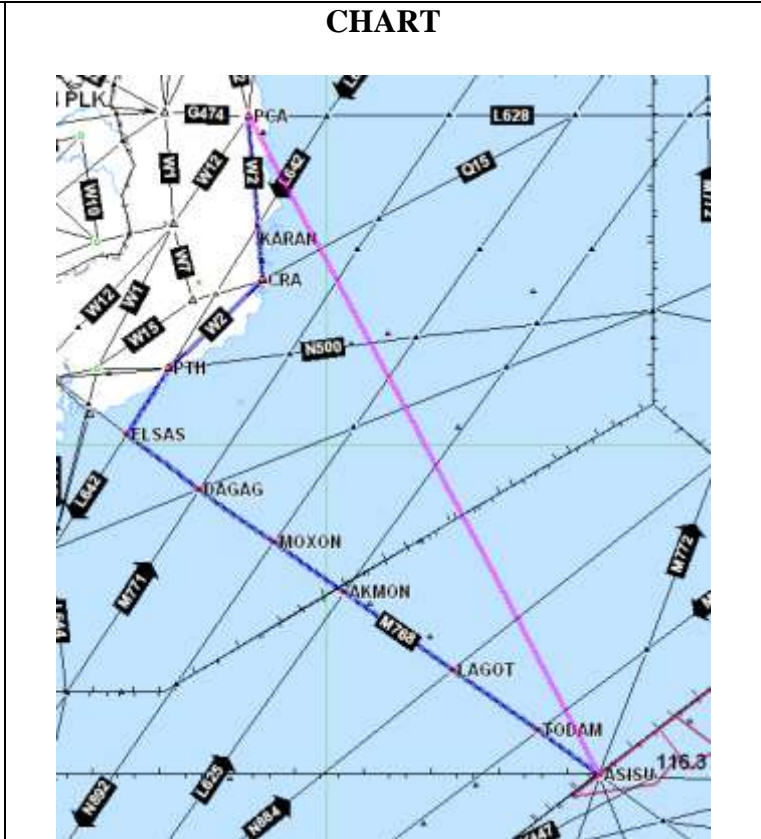
ATS ROUTE NAME: SCS 10 (Propose Route designator R321)
REQUESTED BY: IATA **Date:** 25 June 2012 (ATM/AIS/SAR/SG-22)

ENTRY/EXIT POINT
Phu CAT (PCA) - ASISU

ROUTE DESCRIPTION
PCA to ASISU

FLIGHT LEVEL BAND

PRIORITY:
HIGH
(VN commencing SGN-SYD service in October 2012)
Plan for 3 flights per week....
Potential for other airlines to use?



Action Required	States
	ICAO

Existing 692.9
New PCA-ASISU = 541.6

Saving	Per flight	Annual
Mileage / Time	151nm / 22 mins	
Fuel	1827kg	kg
CO ₂	5664kg	kg
No _x		

Remarks

Potential City Pairs: SGN-SYD, any others

ATS ROUTE NAME: SCS 9 **request update from ICAO/Philippines**

REQUESTED BY: IATA

ENTRY/EXIT POINT

1. ENDAX (FIR Boundary between Oakland and Manila FIRs) or DILIS on G467
2. TOKON on M767 (Manila FIR)

ROUTE DESCRIPTION

ENDAX .. TOKON or
DILIS .. TOKON

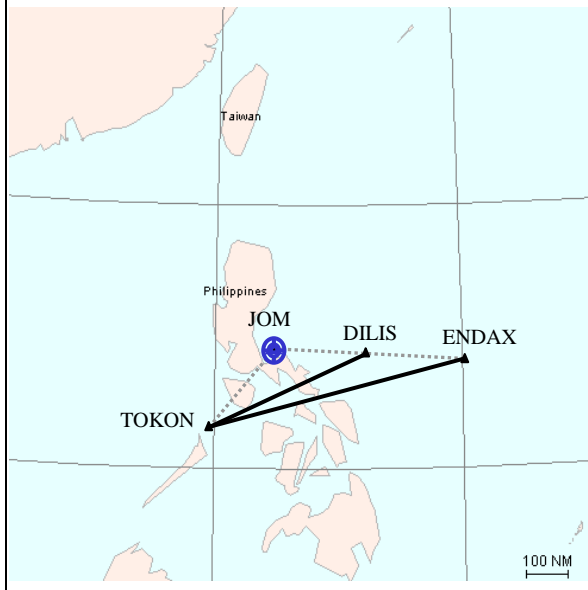
FLIGHT LEVEL BAND

28000 – 46000 feet

PRIORITY: HIGH/MED/LOW

(Immediate request with DILIS – TOKON)

CHART



Action Required	States
	ICAO

Saving	Per flight	Annual
Mileage / Time	a.TOKON-DILIS 45nm/ 5.5in b.TOKON-ENDAX 110nm/14min	
Fuel	a.731kg b. 1788kg	a.266,906kg b.652,440kg
CO ₂	a.2250kg b.5,500kg	a.821,250kg b.2,007 tonnes
No _x		

Remarks this route has already been implemented as domestic route Z902, except that it is not a domestic route. It should be a regional route but has not been entered into the BANP and consultation with Oakland is unclear.

Potential City Pairs: SEA –San Francisco/Los Angeles

ATS ROUTE NAME: SCS 11

REQUESTED BY: IATA

DATE: March 2015

(SEACG22)

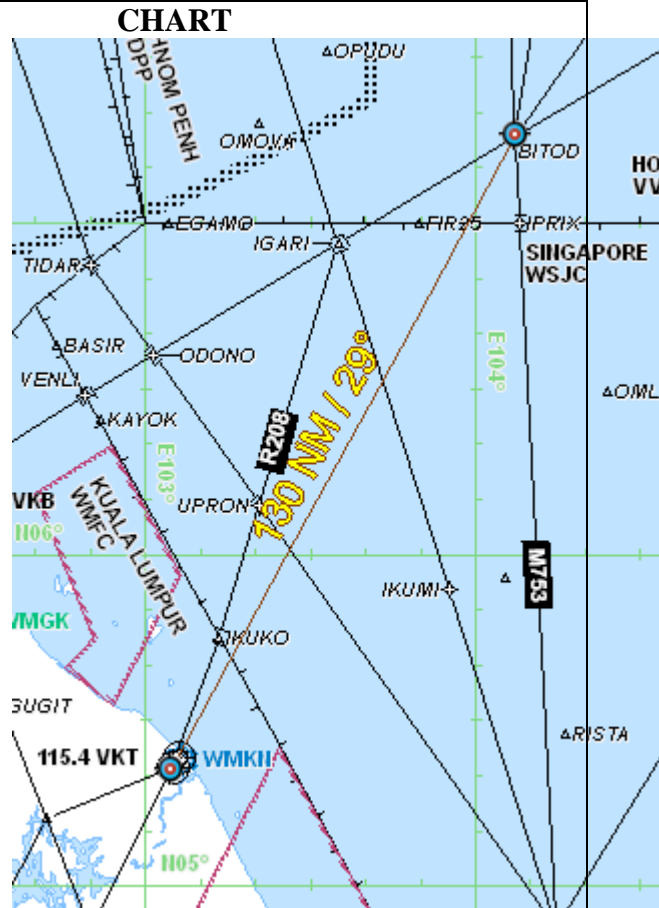
ENTRY/EXIT POINT
Kuala Lumpur – BITODR

ROUTE DESCRIPTION

R208 – VKT - BITOD

FLIGHT LEVEL BAND
28000 – 46000 feet

PRIORITY: MED



Action Required	IATA
	ICAO

Saving	Per flight	Annual
Mileage / Time	9nm track shortening	
Fuel		
CO ₂		

Remarks