



International Civil Aviation Organization

**The First Meeting of the APANPIRG ATM Sub-Group
(ATM /SG/1)**

Bangkok, Thailand, 20 – 24 May 2013

Agenda Item 4: ATM Systems (Modernisation, Seamless ATM, CNS, ATFM)

APPLICATION OF SURVEILLANCE-BASED SEPARATIONS

(Presented by IATA)

SUMMARY

This paper requests that states review with some urgency information presented at SAIOACG20/SEACG3 which gave an overview of the application of separations applied at FIR transfer of control points and asks states evaluate whether more appropriate separations can be applied.

1. INTRODUCTION

1.1 At the recent SAIOACG20/ SEACG 3 meetings the Surveillance Small Working Group (SUR) compiled a comprehensive regional overview of the application of separations applied at FIR transfer of control points.

1.2 The information identified areas between states where overlapping surveillance and communication coverage existed but the procedural separation of 10mins or 80nm continued to be used.

1.3 This separation is the most conservative procedural standard available, and was designed many years ago for remote areas where no surveillance or communication was available.

1.4 Over recent decades regional infrastructure has improved significantly and with the majority of the region now being within surveillance & communication coverage, it is past time to review situations where this procedural separation remains applicable.

1.5 Even for those areas that remain outside coverage other modern separation options are now available.

1.6 The SAIOACG20/SEACG3 meeting report refers –

3.6 In summary, recommendations identified by the SAIOACG and SEACG SUR SWGs were as follows.

1) States with overlapping surveillance coverage should implement direct speech circuit to allow tactical coordination between surveillance controllers, in addition to AIDC, instead of relaying the information.

2) States with overlapping surveillance coverage should consider introducing surveillance handoff procedures. This could be done on a phase-by-phase basis, starting with a comfortable longitudinal distance for a period of time before reducing the longitudinal distance further. This will be subject to the safety assessment of each individual State. The SWG discussed the issue of agreed longitudinal spacing between aircraft at the transfer of control point between two FIRs and was of the view that there was no need to link it to the applicable separation minima in the concerned FIR.

*3) A reduction in spacing at the transfer of control point could be reviewed on a step by step basis, starting with a comfortable agreed spacing for a period of time before reducing the spacing further. This should be subject to the safety assessment of each individual State, which should consider radar handoff requirements. **Several States agreed to examine the current spacing requirements at the transfer of control points.***

2. DISCUSSION

2.1 IATA requests that states review the information with some urgency and evaluate whether more appropriate separations can be applied at transfer of control points.

3.0 ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) agree to a review of any application of 80NM/10 minutes separation minimums at transfer of control points, where overlapping surveillance and communication coverage exists

APPENDIX 1: South Asia

WP03 Appendix 2 (g)

State	FIR	Terminal Surveillance Separation	En-Route Surveillance Separation	Communications	Surveillance	Future Enhancements to Surveillance (eg. ADS-B, separation reduction)	Expected Date of Implementation	Any Other Information
AFGHANISTAN	Kabul			VHF				
BANGLADESH	Dhaka	5NM	NIL	VHF	Whole FIR covered by radar			Overlapping radar coverage with India. Upper airspace ATC provided by India.
INDIA	Chennai	5NM	10NM	VHF and CPDLC	ADS-C, Radar	ADS-B	Dec-12	
	Delhi	3NM	10NM	VHF and CPDLC	ADS-C, Radar	ADS-B	TBN	
	Kolkata	5NM	10NM	VHF and CPDLC	ADS-C, Radar	ADS-B and MLAT implementation. However the northeast portion will not be covered	Dec-12	
	Mumbai	5NM	10NM	VHF and CPDLC	Radar	ADS-B and whole FIR will be covered by Surveillance	TBN	
INDONESIA	Jakarta	5NM	10NM	VHF and ADS/C - CPDLC	Whole FIR covered by radar and ADS-B			
IRAN	Tehran							
MALAYSIA	Kuala Lumpur	3 NM	5 NM	VHF, HF and ADS-C / CPDLC	Whole FIR except Western End of Oceanic Airspace not covered by radar	Expect to implement radar separation with Bangkok and Jakarta at common FIR boundary.	Mid 2013	Working towards radar data sharing between K.Lumpur and Bangkok in near term.
MALDIVES	Male	5NM	10NM	VHF, Extended VHF, ADS/CPDLC	Cover by Radar but some portions in the southeast and western are not covered	ADS-B and MLAT implementation which will cover almost the whole FIR except the southern portion	End of 2012	Once ADS-B implemented, will have overlapping surveillance coverage with India Sri Lanka
MYANMAR	Yangon							
OMAN	Muscat	5NM	5NM	VHF	Whole FIR covered by radar			
PAKISTAN	Karachi			VHF	Whole FIR covered by radar and ADS-B			
	Lahore			VHF	Whole FIR covered by radar and ADS-B			
SRI LANKA	Colombo	5NM	10NM / 15NM	VHF, CPDLC	ADS-C, Covered by Radar but northeast not covered			Overlapping radar coverage with India
THAILAND	Bangkok	3NM in Bangkok TMA 5-10NM otherwise	5NM	VHF	Whole FIR covered by radar			

Airspace / ATS Routes	FIRs Involved	Separation	Overlapping Surveillance Coverage	Radar Handover Procedures	Any Other Information
L509	Kolkata, Delhi, Lahore, Kabul	Kabul: 50/50NM (2000-2359UTC), 80NM otherwise 50/50 NM between Kolkata, Delhi and Lahore FIRs	Between Delhi and Varanasi ACCs		Reference Kabul ACC NOTAM A1448/12
L510 / P828 B579 / R325	Kuala Lumpur, Chennai, Kolkata, Mumbai, Karachi, Kabul, Tehran	50/50NM and 10 minute longitudinal between Chennai & Kuala Lumpur for non-CPDLC equipped aircraft, 50/50NM and 80NM between Bangkok & Yangon for non-CPDLC equipped aircraft	Bangkok, Kuala Lumpur	Bangkok-Kuala Lumpur Pointout Radar Handover (20NM)	
L750 / L759	Kuala Lumpur, Bangkok, Yangon, Chennai, Kolkata, Mumbai, Delhi, Lahore, Kabul	50/50NM and 80NM between Bangkok & Yangon for non-CPDLC equipped aircraft Kabul ACC: 80NM	Between Kuala Lumpur and Bangkok	30 NM between Kuala Lumpur and Bangkok	Greater separation required for long haul applies between Kuala Lumpur and Bangkok
N563	Jakarta, Chennai, Muscat				
N571, N877 / N571	Kuala Lumpur, Chennai, Kolkata, Mumbai	50/50NM and 10 minutes between Chennai & Kuala Lumpur for non-CPDLC equipped aircraft	NIL		
L301 / P762	Bangkok, Yangon, Kolkata, Mumbai, Muscat	50/50NM and 80NM between Bangkok & Yangon for non-CPDLC equipped aircraft	Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Yangon ACC being discussed
L507	Bangkok, Yangon, Dhaka, Kolkata	50/50NM and 80NM between Bangkok & Yangon for non-CPDLC equipped aircraft	Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Yangon ACC being discussed
M300	Jakarta, Colombo, Chennai, Mumbai, Muscat	80NM between Jakarta & Colombo & Chennai			
L515_M770 / M875 L515_M770 / N844	Kuala Lumpur, Bangkok, Yangon, Kolkata, Delhi, Lahore, Kabul	50/50NM and 80NM between Bangkok & Yangon for non-CPDLC equipped aircraft Kabul ACC: 80NM between 0000-1959UTC on M875 and 80NM on N844	Between Kuala Lumpur and Bangkok	30 NM between Kuala Lumpur and Bangkok	Greater separation required for long haul applies between Kuala Lumpur and Bangkok. Surveillance data exchange between Bangkok ACC - Yangon ACC and Bangkok ACC - Kuala Lumpur ACC being discussed; Reference Kabul ACC NOTAM A1448/12
N636	Karachi, Kabul	50/50NM in Kabul			Reference Kabul ACC NOTAM A1448/12
N895	Yangon, Kolkata, Mumbai,	50/50NM			
P570	Jakarta, Colombo, Chennai, Mumbai, Muscat	80NM between Jakarta & Colombo & Chennai			
P574	Kuala Lumpur, Jakarta, Chennai, Muscat	50/50 NM & 80NM between Jakarta & Chennai for non CPDLC equipped.	Only between Jakarta and Kuala Lumpur	To be implemented between Kuala Lumpur and Jakarta FIR mid 2013	Expect further development on radar separation upcoming bilateral meeting.
P646	Bangkok, Yangon, Kolkata, Delhi	50/50NM and 80NM between Bangkok & Yangon for non-CPDLC equipped aircraft	Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Yangon ACC being discussed
UL333	Karachi, Kabul, Tehran	50/50NM			Reference Kabul ACC NOTAM A1448/12

M502	Bangkok, Yangon	50/50NM and 80NM between Bangkok & Yangon for non-CPDLC equipped aircraft	Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Yangon ACC being discussed; connects to L301 with similar spacing
M626	Kuala Lumpur, Bangkok, Yangon	Bangkok-Yangon: 50/50NM and 80NM for non-CPDLC equipped aircraft Kuala Lumpur-Bangkok: 80 NM or 10 minutes MNT	Kuala Lumpur, Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Kuala Lumpur ACC being discussed
L645 / R203	Kuala Lumpur, Bangkok	80 NM or 10 minutes MNT			Surveillance data exchange between Bangkok ACC - Kuala Lumpur ACC being discussed
P627	Kuala Lumpur, Bangkok	80 NM or 10 minutes MNT			Surveillance data exchange between Bangkok ACC - Kuala Lumpur ACC being discussed
G331	Kuala Lumpur, Bangkok	80 NM or 10 minutes MNT	Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Yangon ACC being discussed
G473	Bangkok, Yangon	80 NM or 10 minutes MNT	Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Yangon ACC being discussed
R207	Bangkok, Yangon	80 NM or 10 minutes	Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Yangon ACC being discussed
A581	Bangkok, Yangon	80 NM or 10 minutes	Bangkok, Yangon		Surveillance data exchange between Bangkok ACC - Yangon ACC being discussed

SOUTH EAST ASIA:

WP03 Appendix 1 (g)

State	FIR	Terminal Surveillance Separation	En-Route Surveillance Separation	Communications	Surveillance	Future Enhancements to Surveillance (eg. ADS-B, separation reduction)	Expected Date of Implementation	Any Other Information
CAMBODIA	Phnom Penh	5NM	10NM	VHF	Whole FIR covered by radar	5NM for en-route separation		
CHINA	Sanya	6KM / 3NM	10KM / 5NM	VHF	Whole FIR covered by radar. Share radar info with HK and Guangzhou			
HONG KONG, CHINA	Hong Kong	5NM	10NM	VHF	Whole FIR covered by radar	ADS-B to be installed initially as back-up to PSR then will replace long range PSR	TBN	
INDONESIA	Jakarta	5NM	10NM	VHF and ADS/C - CPDLC	Western portion of oceanic airspace under procedural control (Indian ocean). RNAV10 on M635 and M774	ADS-B in Matak and Natuna and with Australia to the south.	Matak and Natuna - 2012	
	Ujung Pandang	5NM	10NM	VHF and ADS/C - CPDLC				
LAOS	Vientiane	5NM	10NM	VHF	Whole FIR covered by radar with exception of only able to cover FL200 and above for A1	Install new radar to cover A1 below FL200	2014	
MALAYSIA	Kuala Lumpur	3NM	5NM	VHF / ADS-C - CPDLC and HF	Whole FIR except Western End of Oceanic Airspace not covered by radar	ADS-B over Indian Ocean	2015	15NM / 20NM longitudinal spacing for aircraft with no closing speed with Singapore ACC
	Kota Kinabalu	5NM	5NM	VHF	Whole FIR covered by radar			AIDC to be implemented by early January 2013 with Ujung Pandang ACC. Thereafter reduced separation will be applied
PHILIPPINES	Manila	5NM	10NM - Lateral Climb/Descend - 10NM	VHF and HF	Western portion with HCM FIR is procedural using 10 minutes MNT. Same with Singapore FIR for N884 and M767. 40-45% of FIR is procedural airspace	ADS-B from Manila & Puerto Princesa Additional Enroute Radar from Quezon Palawan, Zamboanha, Pasuquin and Aparri	2016	
SINGAPORE	Singapore	3NM	5NM	VHF, ADS/C - CPDLC and HF	Certain portion covered by radar and ADS-B. The rest are ADS-C for suitably equipped aircraft	40nm with Indonesia	ADS-B and CPDLC by end 2012	15NM / 20NM longitudinal spacing for aircraft with no closing speed with Kuala Lumpur ACC
THAILAND	Bangkok	3NM in Bangkok TMA 5-10NM otherwise	5NM	VHF	Whole FIR covered by radar			
VIET NAM	Hanoi	5NM	10NM	VHF	Whole FIR covered by radar			
	Ho Chi Minh	5NM	10NM	VHF	Eastern most portion of airspace (N892 & L625) not covered)	ADS-B in CONSON	End 2012	

ATS Routes	FIRs Involved	Separation	Overlapping Surveillance Coverage	Radar Handover Procedures	Any Other Information
A1 / P901	Bangkok, Vientiane, Ho Chi Minh, Sanya, Hong Kong	30NM radar spacing between Bangkok and Vientiane, Hong Kong and Sanya	Bangkok, Vientiane Hong Kong, Sanya	Bangkok-Vientiane Pointout Radar Handover	Hong Kong-Sanya using AIDC
A202	Bangkok, Vientiane, Hanoi, Sanya, Hong Kong	30NM radar spacing between Bangkok and Vientiane, Hong Kong and Sanya	Bangkok, Vientiane Hong Kong, Sanya	Bangkok-Vientiane Pointout Radar Handover	Hong Kong-Sanya using AIDC
A340	Bangkok, Phnom Penh	80NM or 10 mins MNT	Bangkok, Phnom Penh	Bangkok-Phnom Penh Pointout Radar Handover (20NM)	
A457	Bangkok, Kuala Lumpur	80NM or 10 mins MNT	Bangkok, Kuala Lumpur	Bangkok-Kuala Lumpur Pointout Radar Handover	Surveillance data exchange between Bangkok ACC - Kuala Lumpur ACC being discussed
A464	Bangkok, Kuala Lumpur	80NM or 10 mins MNT	Bangkok, Kuala Lumpur	Bangkok-Kuala Lumpur Pointout Radar Handover (20NM)	Surveillance data exchange between Bangkok ACC - Kuala Lumpur ACC being discussed
A581	Bangkok, Vientiane, Kunming	40NM Radar Spacing	Bangkok, Vientiane	Bangkok-Vientiane Pointout Radar Handover	
A583 / A461	Hong Kong, Manila, Ujung Pandang	80NM or 10 mins MNT			
B202	Bangkok, Vientiane, Phnom Penh, Ho Chi Minh	80NM or 10 mins	Bangkok, Vientiane	Bangkok-Vientiane Pointout Radar Handover	
B218/R470	Bangkok, Vientiane	40NM Radar Spacing	Bangkok, Vientiane	Bangkok-Vientiane Pointout Radar Handover	
B346	Bangkok, Vientiane	40NM Radar Spacing	Bangkok, Vientiane	Bangkok-Vientiane Pointout Radar Handover	
G474 / L628	Bangkok, Phnom Penh, Ho Chi Minh, Manila	80NM or 10 mins MNT	Bangkok, Phnom Penh	Bangkok-Phnom Penh Pointout Radar Handover	
G578 / R590 / B472 / B473 / B462	Manila, Ujung Pandang	80NM or 10 mins MNT			
L625	Singapore, Ho Chi Minh, Manila, FuKuoka	80NM or 10 mins MNT			
L642	Hong Kong, Sanya, Ho Chi Minh, Singapore	50NM between Hong Kong, Sanya, Ho Chi Minh, Singapore	Between Hong Kong, Sanya, Ho Chi Minh.		
L644	Ho Chi Minh, Singapore, Jakarta	80NM or 10 mins MNT			
M644	Bangkok, Kuala Lumpur	80NM or 10 mins MNT	Bangkok, Kuala Lumpur		Surveillance data exchange between Bangkok ACC - Kuala Lumpur ACC being discussed
M646	Manila, Taipei	80NM or 10 mins MNT (procedural); 40NM (longitudinal/radar)	Between Manila and Taipei	Yes - between Manila and Taipei	
M646/M754	Manila, Kota Kinabalu	80NM or 10 mins MNT			Manila will have overlapping radar coverage by 2016
M751	Bangkok, Kuala Lumpur	80NM or 10 mins MNT	Bangkok, Kuala Lumpur	Bangkok-Kuala Lumpur Pointout Radar Handover (20NM)	Surveillance data exchange between Bangkok ACC - Kuala Lumpur ACC being discussed
M765	Kuala Lumpur, Ho Chi Minh, Manila	80NM or 10 mins MNT	Between Kuala Lumpur, Ho Chi Minh		Surveillance based reduced separation has been planned between Kuala Lumpur and Ho Chi Minh

M767	Singapore, Manila	80NM or 10 mins MNT			Planning for 50NM longitudinal based on RNAV10 ops
M768	Bangkok, Phnom Penh, Ho Chi Minh, Singapore, Kota Kinabalu, Ujung Pandang	80NM or 10 mins MNT	Between Bangkok, Phnom Penh, Ho Chi Minh. Between Kota Kinabalu, Ujung Pandang	Bangkok-Phnom Penh Pointout Radar Handover	Currently 10 mins MNT applied. Surveillance based reduced separation has been planned between Kota Kinabalu and Ujung Pandang in mid 2013
M771	Hong Kong, Sanya, Ho Chi Minh, Singapore	50NM between Hong Kong, Sanya, Ho Chi Minh, Singapore	Between Hong Kong, Sanya, Ho Chi Minh.		
M772	Jakarta, Kota Kinabalu, Singapore, Manila, Hong Kong	80NM or 10 mins MNT	Between Jakarta, Kota Kinabalu		
M904	Bangkok, Kuala Lumpur (delegated), Singapore	80NM or 10 mins MNT	Bangkok, Kuala Lumpur (delegated)		Surveillance data exchange between Singapore and Thailand being discussed
N884	Singapore, Manila	80NM or 10 mins MNT			Planning for 50NM longitudinal based on RNAV10 ops
N892	Singapore, Ho Chi Minh, Manila, Taipei	80NM or 10 mins MNT			
N891	Bangkok, Phnom Penh, Ho Chi Minh, Kuala Lumpur (delegated), Singapore	80NM or 10 mins MNT	Bangkok, Phnom Penh	Bangkok-Phnom Penh Pointout Radar Handover	
R207	Bangkok, Vientiane	80NM or 10 mins MNT	Bangkok, Vientiane	Bangkok-Vientiane Pointout Radar Handover	
R215	Bangkok, Vientiane	40NM Radar Spacing	Bangkok, Vientiane	Bangkok-Vientiane Pointout Radar Handover	
R474	Bangkok, Vientiane, Ha Noi, Guangzhou	30NM Radar Spacing	Bangkok, Vientiane	Bangkok-Vientiane Pointout Radar Handover	