

**INTERNATIONAL CIVIL AVIATION ORGANIZATION  
ASIA AND PACIFIC OFFICE**



**REPORT OF THE SIXTH MEETING OF THE FANS IMPLEMENTATION TEAM,  
SOUTH-EAST ASIA (FIT-SEA/6) AND THE FOURTEENTH MEETING OF  
THE SOUTH-EAST ASIA ATS COORDINATION GROUP (SEACG/14)**

Hanoi, Viet Nam

28 May to 1 June 2007

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

Approved by the Meetings  
And Published by the ICAO Asia and Pacific Office

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**REPORT OF THE FIT-SEA/6**

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## **PART I – HISTORY OF THE MEETING**

### **1. Introduction**

1.1 The Sixth Meeting of the FANS Implementation Team, South-East Asia (FIT-SEA/6) was held at the Grand Meeting Room, VATM Building, Hanoi, Viet Nam on 28 May 2007. Subsequently, the fourteenth meeting of the South-East Asia ATS Co-ordination Group (SEACG/14) was held at the same venue from 29 May to 1 June 2007. Both meetings were graciously hosted by the Civil Aviation Administration of Viet Nam (CAAV) and Viet Nam Air Traffic Management (VATM).

### **2. Attendance**

2.1 Fifty participants attended the meetings from Australia, Brunei Darussalam, Hong Kong China, Indonesia, Japan, Malaysia, Philippines, Singapore, Thailand, Viet Nam, IATA, ARINC, SITA and Boeing. A list of participants is at **Appendix A** to this Report.

### **3. Officers and Secretariat**

3.1 Mr. Tinnagorn Choowong, Air Traffic Control Manager, Aeronautical Radio of Thailand, Ltd. served as the Chairperson of the SEACG. Mr. Kyotaro Harano, Regional Officer ATM, ICAO Asia and Pacific Office acted as the Secretary for the FIT-SEA and the SEACG.

3.2 CAAV and VATM generously provided administrative support to the meetings.

### **4. Opening of the Meeting**

4.1 Mr. Kyotaro Harano, on behalf of Mr. Lalit B. Shah, Regional Director, ICAO Asia and Pacific Office extended welcome to the participants. He expressed appreciation to CAAV and VATM for hosting those significant meetings.

4.2 Mr. Harano highlighted that FIT-SEA/6 would review the Phase I operation and decide if the States can move on to the Phase II. The review would be based on the experience of the five participating airlines and the operational controllers, and the technical analysis of data by the Central Reporting Agency (CRA), Japan. In this regard, he thanked Japan for their generous offer to provide the CRA service free of charge for the South China Sea airspace.

4.3 Mr. Harano said that the SEACG/14, which would start immediately after the FIT-SEA/6, would discuss a wide range of matters of ATS. Although ATS providers spent the past few years in implementing many major airspace projects bringing substantial benefits to operators as well as to the environment, there was still a need for States to improve their ATS. He stressed that SEACG was the meeting for all the participants and hoped that the participants were actively involved in the discussion. He wished the meeting successful outcomes.

4.4 Mr. Tinnagorn Choowong extended the warmly welcome to all delegates attending the SEACG/14. On behalf of the participants, he expressed appreciation to CAAV and VATM in hosting the SEACG/14 at the VATM Headquarters in Hanoi.

4.5 On behalf of the CAAV, Dr. Dinh Xuan Huong, Deputy Director-General, CAAV, extended the warmly welcome to all delegates attending the FIT-SEA/6 and the SEACG/14. Dr. Huong said that Viet Nam had planned for the transition of the Phase I to the Phase II of the ADS/CPDLC operations to expand the services to FANS 1/A-equipped aircraft of all airlines. Viet Nam hoped that upon the deliberation of reports submitted by Singapore, Viet Nam and CRA Japan, the meeting would support the transition plan of Viet Nam.

4.6 Dr. Huong said that the SEACG/14 would review the results of the FIT-SEA/6 and other issues such as the new CNS/ATM system, ATS routes, contingency plans, coordination between military and civil aviation, and the regional coordination plan for the near future. On behalf of the Management Board of the CAAV and the Chairman of Steering Committee of CNS/ATM Programme of CAAV, he wished the meeting a great success. He thereby declared the opening of the FIT-SEA/6 and the SEAG/14.

## 5. Documentation and Working Language

5.1 The working language of the meeting and the language for all documentation was English. Ten (10) Working Papers and four (4) Information Papers were presented to the FIT-SEA/6, and eighteen (18) Working Papers and eight (8) Information Papers were presented to the SEACG/14. The list of papers is shown at **Appendix B** to this report.

## **REPORT OF THE FIT-SEA/6**

*The Report of the FIT-SEA/6 is recorded under the Agenda Item 4 of the Report of the SEACG/14.*

## **REPORT OF THE SEACG/14**

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

1.1 The objectives of SEACG were to discuss problems affecting the provision of ATS in the area and to develop a co-ordinated plan for implementation of actions agreed, including reviewing the implementation of the new ICAO CNS/ATM systems (paragraph 1.1.2 of the Report of SEACG/10). Further, the objective of SEACG was not for long-range planning but to identify and solve current problems or deficiencies in ATS by means of an action plan with time lines (paragraph 6.1.5 of the Report of SEACG/10).

1.2 The meeting adopted the following agenda as the Agenda for the meeting:

- Agenda Item 1: Adoption of Agenda
- Agenda Item 2: Review status of recommended actions as agreed at the SEACG/13 Meeting
- Agenda Item 3: Outcomes of APANPIRG/17
- Agenda Item 4: Review of FIT-SEA/6
- Agenda Item 5: Review current operations across South East Asia and identify problem areas
- Agenda Item 6: Implementation of the new CNS/ATM systems in the Region
- Agenda Item 7: ATS route development
- Agenda Item 8: Development of State Contingency Plans
- Agenda Item 9: Civil Military Coordination
- Agenda Item 10: Develop a coordinated plan for implementation of actions agreed by the meeting
- Agenda Item 11: Any other business
- Agenda Item 12: Date and venue for the SEACG/15 meeting

### **Agenda Item 2: Review Status of Recommended Actions as Agreed at the SEACG/13 Meeting**

2.1 The meeting reviewed the status of the recommended Action Plan as agreed at the SEACG/13. Further update by the meeting was discussed under the Agenda Item 10.

**Agenda Item 3: Outcomes of APANPIRG/17**Conclusions and Decisions of APANPIRG/17

3.1 The meeting noted that the seventeenth meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/17, August 2006) raised a total of 55 new Conclusions and Decisions for regional action. Items of relevance to ATM, AIS and SAR were reviewed by the meeting.

3.2 IATA expressed concerns particularly in regard to the Conclusion 17/18 – Additional Asia/Pacific Office ATM Resources dealing with the current staffing situation at ATM, ICAO Asia and Pacific Office. Referring to the sub-item b) of the Conclusion, IATA felt that States should be requested for the further assistance to the Regional Office, for example, by convening meetings on behalf of the Regional Office. Otherwise, ATM-related program for the region would not be achieved in a timely manner.

3.3 Japan supported the view expressed by IATA and expressed that more active participation by States would help the Regional Office. Japan took an example of this meeting, for which most of the working papers and information papers had been prepared and submitted by the Secretariat. States should have actively prepared working and information papers.

3.4 The Regional Office expressed appreciation to States and organization for sharing the concerns and for understanding the situation.

Annex 15 Provisions in Relation to AIRAC

3.5 The meeting noted that the APANPIRG/17 was informed of the continuing examples of implementations occurring without sufficient notice and not in alignment with the AIRAC cycles. APANPIRG/17 agreed that the Conclusion 14/9 continued to adequately describe the long-standing regional concerns in this respect and should be further promulgated.

3.6 The second meeting of the Aeronautical Information Services Implementation Task Force (AITF/2, February 2007) found that in many cases, matters were outside the control of AIS officials as the upstream parties in the planning process lacked knowledge of AIS matters. A State which is observed not to meet the AIRAC cycle frequently advised the AITF/2 that they would hold a seminar to disseminate the information to the staff concerned on the AIRAC cycles.

3.7 IATA agreed that this matter be brought to the direct attention of the Conference of the Director Generals of Civil Aviation as well as to the APANPIRG.

**Agenda Item 4: Review of FIT-SEA/6**

4.1 The meeting reviewed the Report of the FIT-SEA/6 presented by the Rapporteur of the FIT-SEA/6. FIT-SEA/5 (January 2007, Ho Chi Minh) decided that an interim report of the Phase 1 be made from Singapore, Viet Nam and FIT-SEA CRA for a period of 7 or 8 weeks, and agreed that it could be decided whether the Phase 1 be continued or the States could move on to the Phase 2, based on the interim report at the FIT-SEA/6.

4.2 FIT-SEA/6 noted that the results of the Phase 1 trial were satisfactory and concluded that the Phase 2 trial could be commenced on 2 August 2007. The full report of the FIT-SEA/6 is in **Appendix C** to this Report.

**Agenda Item 5: Review Current Operations across Southeast Asia and Identify Problem Areas**

Traffic Sample Data (TSD) State Letter

5.1 The meeting was informed that that the Regional Office issued the State Letter Ref: T3/10.0, T3/10.1.17 – AP105/06 (ATM) in November 2006 in regard to the continuous monitoring and regular assessment of target levels of safety in reduced separation applications, advising States of a standardized approach to the collection of vertical and horizontal traffic sample data (TSD), and emphasizing a number of relevant Conclusions adopted by APANPIRG/16 (August 2005, Bangkok).

Report of the Sixth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/6)

*Report of MAAR's RMA activities*

5.2 Monitoring Agency for the Asia Region (MAAR) provided a summary of airspace safety oversight for RVSM implementation Western Pacific/ South China Sea (WPAC/SCS) area. The RVSM safety oversight had been conducted based on a one-month TSD collected in December 2005 and the most recent rolling 12 months of Large Height Deviation (LHD) reports between January 2005 and September 2006 submitted by relevant States in the WPAC/SCS region.

5.3 The estimate of overall risk was  $11.3 \times 10^{-9}$ , significantly exceeding the agreed target level of safety (TLS) values of  $5.0 \times 10^{-9}$  fatal accidents per flight hour due to all causes. RASMAG/6 recognized the adverse trend that was evident in terms of the WPAC/SCS safety assessment.

*RVSM Scrutiny Group for WPAC/SCS*

5.4 APANPIRG/17 agreed that a dedicated working group that would specifically address matters relating to WPAC/SCS RVSM operations should urgently scrutinize the RVSM-related safety issues in the WPAC/SCS area. It was recognized that in order to identify specific issues and recommend associated remediation, the WPAC/SCS RVSM Scrutiny Group (WPAC/SCS RSG) would have to undertake very detailed analysis of specific situations. For example, a consistent theme in the analysis of LHD was that of difficulties in ATC-to-ATC coordination, which accounted for a large proportion of LHD. WPAC/SCS RSG would have to undertake a detailed investigation, to a depth at which the specific ACCs were identified, of each LHD with "ATC Unit to ATC Unit coordination" as a causal factor.

*Safety assessment for RNP10 Operations in the SCS area*

5.5 RASMAG/6 was informed that the APANPIRG/17 had recognized that the lack of current horizontal safety assessment for the SCS route structure should also be urgently addressed. Recognizing the urgency of the situation, Thailand reported that they had taken a decision to offer their full commitment in providing appropriate staffing and resources to MAAR in order to satisfy this additional task in accordance with the requirements of Conclusion 17/6.

*ICAO Safety Management Systems Training*

5.6 APANPIRG/16 had expressed concerns in relation to a number of matters relating to ATS safety management including the non-provision of safety-related data by some States, the lack of robust organisational and funding arrangements to establish regional safety monitoring agencies, TLS in enroute airspaces being exceeded, significant numbers of LHD being reported, horizontal plane

safety assessments for RNP 10 route structures not updated and difficulties being experienced at the interfaces between differing flight level orientation schemes (FLOS) in use regionally.

5.7 A requirement of the special implementation project (SIP) on ATS Safety Management System Training was that, in addition to the ICAO SIP official, a fully funded State ATS SMS expert would be made available to support the SIP. Unfortunately, a fully funded State official could not be made available to support the SIP and, as a consequence, the Regional Office was obliged to redirect the SIP. To enable the objectives of the SIP to be met a SIP official was engaged however, as the SIP would not be supported by a State expert, the budget would not permit conducting the workshop in three States as originally planned. A decision was therefore taken to hold a single full-week workshop at the Regional Office.

*Oakland 30 NM/30 NM Trial*

5.8 The FAA introduced 30 NM/30 NM on a trial basis in the Oceanic Control Sector 3 (OC3) of Oakland ARTCC, between pairs of aircraft with State Approval for Required Navigation Performance (RNP) 4 and appropriate data link operations.

Report of the Second Meeting of the AIS Implementation Task Force (AITF/2)

*Conduct of Comprehensive AIS Survey*

5.9 In accordance with APANPIRG Conclusion 17/16 – Conduct of Comprehensive AIS Survey, the Regional Office conducted a comprehensive survey of all Asia/Pacific States in relation to AIS matters, including details of status in relation to the automation of dynamic data, automation of static data and availability of electronic terrain and obstacle data.

*Review of Air Navigation Deficiencies in the AIS Field*

5.10 AITF/2 agreed that Australia should continue to lead the working group and that the recent AIS survey be utilised to maximum benefit in highlighting the areas in need of most urgent attention.

*Latest Developments in the AIS Fields*

5.11 Japan reported the detail of the new provisions relating to the electronic Terrain and Obstacle Data, which were included in the recent amendments to Annexes 4, 14 and 15.

*Review of Euro OPADD (Operating Procedures for AIS Dynamic Data) Edition 2.0 and Determination of Update Requirements for Asia/Pacific OPADD*

5.12 The difference between Euro OPADD and the current Asia/Pacific Region OPADD were tabled for consideration. AITF/2 was requested to review these differences.

5.13 AITF/2 agreed the recommendation made by Japan, and the draft for the amendment to Chapter 3 of the *Guidance Manual for Aeronautical Information Services (AIS) in the Asia/Pacific Region* would be proposed at the ATM/AIS/SAR/SG/17. Japan would forward the paper to the Secretariat.

*Status of the AICM/AIXM Implementation*

5.14 AITF/2 noted that the FAA's modernizations efforts, such as Next Generation Air Transportation System (NextGen) and System Wide Information Management (SWIM) provided the mandate and the genesis for achieving aeronautical information modernization. The modernization of current AIS into Aeronautical Information Management (AIM) was part of these efforts. FAA began by identifying the FAA AIM mission.

5.15 AITF/2 noted that the Aeronautical Information Exchange Model (AIXM) Version 5 was designed to meet expanded requirements for aeronautical information exchange. AIXM 5 aligned with ISO 19100 series standards for geospatial information and included the use of the Geography Mark-up Language (GML). It provides for a temporality model to deal with temporary information like the data contained in a Notice to Airmen (NOTAM). AIXM 5 supports the latest industry and ICAO requirements for aeronautical data, including obstacles, terminal procedures, and airport mapping databases. The new version of the model is modular and extensible to support current and future aeronautical information messaging requirements.

*Item B) of the NOTAM Format in Appendix 6 of Annex 15*

5.16 Japan informed the meeting that an amendment to Annex 15 with regard to Item B) of the NOTAM Format had been proposed.

*Development of the AITF Task List*

5.17 The Secretariat informed the AITF/2 that many ICAO meetings had developed the Task List and update it at each meeting. The Task List was to facilitate the works of the Task Force by indicating the timeframe, responsible parties and the current status of the task. AITF/2 agreed to develop and the Task List and formulated it.

First Meeting of the WPAC/SCS RVSM Scrutiny Working Group (WPAC/SCS RSG/1)

5.18 The meeting was updated of the summary outcome from the WPAC/SCS RSG/1 (January-February 2007, Singapore).

*APANPIRG/17 Convenes the WPAC/SCS RSG*

5.19 APANPIRG/17 was updated on regional RVSM activities, conducted a thorough review of the work of the RASMAG and recognized that there were three very significant safety matters outstanding in relation to WPAC/SCS operations that needed to be urgently addressed, as follows:

- a) TLS not being satisfied for WPAC/SCS operations;
- b) the use of the Modified Single Alternate FLOS; and
- c) no updated horizontal safety assessment undertaken in the SCS area.

*Safety Assessment WPAC/SCS Area*

5.20 As the responsible RMA, the MAAR provided the WPAC/SCS RSG/1 with a summary of airspace safety oversight for RVSM implementation in the WPAC/SCS area. MAAR had identified that the main cause contributable to this infringement is **the significant number of operational errors**, which are derived from the series of LHD occurrences.

*Analysis of LHD Reports*

5.21 MAAR provided limited details to the WPAC/SCS RSG/1 of each of the specific LHD occurrences reported by States over the period January 2005 to December 2006. WPAC/SCS RSG/1 conducted an extensive review of the summary LHD information provided by MAAR, supported by verbal feedback from State delegates.

*RVSM/TF/28 FLOS Review*

5.22 Scenario 2 was essentially the same as Scenario 1, but with minor changes on A1/P901. In order to eliminate existing transition issues while achieving acceptable capacity and risk level on A1/P901, a flight level allocation system (FLAS) was proposed by MAAR to address the issues associated with A1/P901.

*Develop Scenario 2 to Scenario 3*

5.23 WPAC/SCS RSC/1 noted the Philippines position that the current Scenario 2 FLAS proposal could not be implemented in the Manila FIR unless flight level transitions took place outside the Manila FIR. WPAC/SCS RSG/1 also noted Thailand's firm position in relation to no longer servicing unnecessary flight level transition areas.

5.24 After extensive discussion, it was agreed that efforts to fine tune the Scenario 2 FLAS proposal and incorporate the relevant components of the new Philippines proposal would provide the most productive way forward. Accordingly, States and international organizations agreed to fully examine the Scenario 2 FLAS proposal as the baseline, incorporate appropriate aspects of the new Philippines proposal, conduct State safety assessments for the respective FIRs, determine any changes required and identify all the concerns and actions necessary to implement an enhanced Scenario 2, to be known as the Scenario 3 FLOS/FLAS in the WPAC/SCS area as soon as possible. WPAC/SCS RSG/2 would complete the enabling activities referred to above in time for comprehensive review.

Radars Provision across Southeast Asia Region

5.25 Thailand proposed a harmonized programme to enhance traffic flow in the Southeast Asia region by providing radar handover across boundaries, and reported to the meeting that the existing radar facilities were now available along the various ATS routes and traffic flows within the region.

5.26 Thailand suggested to the meeting that the existing radar facilities and coverage could be used to allow for the radar spacing from the Bangkok FIR to the Taipei FIR through the Ho Chi Minh, Sanya, Hong Kong FIRs and vice versa along ATS routes A1/P901/M750/G581. This spacing had already occurred between some of the FIRs concerned but limitations were still seen due to non-uniformity between all FIRs. Thailand propose to all ANSPs involved to arrange an operational trial by using radar spacing along the ATS routes A1, P901, M750 and G581.

5.27 Further, Thailand requested the meeting to look into other areas where radar facilities and coverage were available, and radar spacing could also be applied, e.g. traffic flow from Bangkok through the Vientiane FIR to the Kunming FIRs via B346 and B218, and from Bangkok through the Vientiane and the Hanoi FIRs to the Guangzhou FIR via R474, etc. Radar Coverage Chart is attached as **Appendix D** to this Report.

5.28 The meeting noted the advantages of reducing the spacing on those routes and created a timeframe table for States involved for future coordination, references and reporting back to the SEACG/15 on the outcome. The timeframe table for the applying the radar spacing is as follows:

Operational Status of Radar Spacing Application						
ATS Route	FIR	Spacing Applied	Status	Responsible Party	Target Date	Remark
B346	Bangkok	40 NM	Proposed	Thailand	November 2007	Proposed
	Vientiane			Lao PDR		
B218	Vientiane	40 NM	Proposed	Lao PDR	November 2007	Proposed
	Kunming			China		
R474	Bangkok	40 NM	Proposed	Thailand	November 2007	Proposed
	Vientiane			Lao PDR		
	Vientiane	40 NM	Operational	Lao PDR	Implemented	
	Hanoi	40 NM	Operational	Viet Nam	Implemented	
	Hanoi			Viet Nam		
Guangzhou			China			
A1	Bangkok/ Vientiane	40 NM	Proposed	Thailand/ Lao PDR	November 2007	Currently 20 NM applied for the westbound only
	Ho Chi Minh			Viet Nam		
A1/P901	Ho Chi Minh	40 NM	Operational	Viet Nam	Implemented	
	Sanya			China		
	Sanya	40 NM	Operational	China	Implemented	
	Hong Kong			Hong Kong China		
A1 M750	Hong Kong	30 NM	Operational	Hong Kong China	Implemented	
	Taipei			Taipei ACC		
G581 G86	Hong Kong	30 NM	Operational	Hong Kong China	Implemented	
	Taipei			Taipei ACC		

5.29 IATA supported the proposal from Thailand as it would bring benefits to both ANSPs and airlines in terms of increasing airspace capacity. The Secretariat agreed to bring this matter to the attention of the ATM/AIS/SAR/SG in July 2007.

5.30 Viet Nam also supported the proposal, advised the meeting that radar spacing on ATS routes A1/P901, A202 and R474 was specified in the ATC LOAs currently applied to relevant ACCs, and emphasized that Viet Nam also had a plan to review the route structure relating to A1/P901 and to establish an ATS route between the Hanoi and the Guangzhou FIRs.

5.31 Hong Kong, China reminded the meeting of an application of radar spacing might cause a capacity issue in the downstream FIR, however they would evaluate the reliability of radar signal while the integration programme of radar signal with Sanya being considered would improve coverage and be more reliable over the boundary between the Hong Kong and the Sanya FIRs. Hong Kong, China also informed the meeting of application of radar spacing of 30 NM for flights transiting to the Taipei FIR and five minute spacing for flights that transit to the North Pacific.

5.32 The meeting reviewed the table of the Status of Application of Radar Handover in the Southeast Asia developed at the SEACG/13. States updated the table as in **Appendix E** to the Report. The meeting was of view that there was a feasibility to implement radar spacing along the proposed ATS routes, and encouraged the States involved to carry out the bilateral coordination to apply the radar spacing and report to the next meeting of the outcomes.

#### Update on ATS Activities in Viet Nam

5.33 Viet Nam reported that the main ATS activities had been as follows:

- Deploying the Chapter “Air Navigation” of the revised Law on Civil Aviation;
- Finalizing the Governmental Degree on air traffic operations management;
- Finalizing the Regulation on Rules of the Air and Air Traffic services;
- Completing the Flight Regulations;
- Amending the flight procedures with minima for take-off, approach and landing;
- Internal and international coordination on establishing ATS route;
- Re-sectorization of the Ho Chi Minh FIR;
- Participating in AFTM trial operations for the Westbound traffic;
- Taking a study on revising RVSM FLAS within Ha Noi FIR; and
- Reviewing the Recommended Actions as agreed at the SEACG/12, etc.

### **Agenda Item 6: Implementation of the new CNS/ATM systems in the Region**

#### Implementation of Performance Based Navigation (PBN)

6.1 The meeting was advised that ICAO, with the assistance of the RNP Special Operational Requirements Study Group (RNPSORSG), commenced work to ensure a common global understanding of RNP/RNAV, and the relationship between RNP and RNAV system functionality in order to address the lack of global harmonization resulting from the differing RNP and RNAV naming conventions and proliferation of navigation specifications. The meeting was informed that the RNPSORSG was reviewing RNP and RNAV to address current proliferation and to develop a basis for current and future requirements for performance based navigation (PBN).

6.2 Considering that the navigation containment is based on accuracy, functional integrity, continuity and systems availability, the RNPSORSG agreed on the need to specify future applications of performance based navigation **without** a requirement for on-board performance monitoring and alerting, **to be designated as RNAV**, and applications **with** a requirement for on-board performance monitoring and alerting, **to be designated as RNP**.

6.3 In addition to the harmonized navigation specifications, also some new navigation specifications were developed for terminal area and approach applications. Work is complete on navigation specifications for RNAV 10 (RNP 10), RNAV 5, RNAV 1 and 2, RNP 4, Basic-RNP 1, RNP Approach and RNP AR Approach. RNP 2 and Advanced RNP 1 will be addressed in a future revision to the *Performance Based Navigation Manual*. The meeting noted that new ICAO guidelines with amendments to Annexes 6 – *Aircraft Operations* and 11, a revised PBN Manual and other related provisions would soon be presented.

6.4 For the operation in oceanic and remote airspace, applicable navigation specifications RNP 10 and RNP 4 would be applicable and implemented by 2010 in 100 %.

6.5 The meeting note that the soft copy of the draft PBN Manual was available from the Secretariat, and that the workshops are tentatively planned for the Asia/Pacific region from 10-14 September 2007 at the Regional Office and 17-21 September 2007 in New Delhi, India, and States were encouraged to participate in the workshops.

### **Agenda Item 7: ATS route development**

#### Implementation of Conditional Routes (CDRs)

7.1 APANPIRG/17 recognized that the establishment of the CDRs not only enhanced ATS safety, reduced flight mileage and time, saved fuel and reduced CO<sub>2</sub> emission but also demonstrated effective civil-military coordination in accordance with APANPIRG Conclusion 16/17 in terms of the adoption of the equitable sharing of both convenience and inconvenience in the use of airspace and facilities by civil and military users.

7.2 APANPIRG/17 considered that the conditional route implementations provided valuable, practical every day experiences and examples of what was intended by the related APANPIRG Conclusions and GPI-1. The meeting was informed, however, that the APANPIRG/17 was not aware of any definition of an “ATS Conditional Route” in ICAO documentation. Additionally, ICAO identified no specific ATS route designator for use in naming conditional routes, so States had adopted a variety of different route names. In this regard, the Air Navigation Commission was of view that the guidance on the ATS route designation provided in Annex 11 could be valid for the CDRs and specific designators for CDRs would not be needed.

#### Review of the Asia and Pacific ATS Route Catalogue

7.3 The meeting was presented the *Asia and Pacific ATS Route Catalogue* Version 4 for reviewing and encouraging States to study for further action. The meeting was informed that the soft copy of Version 4 of the Catalogue was available from the Secretariat during the meeting as well as from the ICAO Asia/Pacific Regional Office website. The meeting updated the *Asia and Pacific ATS Route Catalogue* as the Version 5.

#### Establishment and Revision of ATS/RNAV Routes within the Hanoi and the Ho Chi Minh FIRs

7.4 Viet Nam had considered the realignment and renaming of domestic ATS routes such as W2, W7, W10, W11, W15 and W17 with reasons of changing route's tracks to DVOR, correcting coordinates, etc.

#### *Proposal for Further Coordination for Establishment, Revision of ATS Routes*

7.5 In order to meet traffic operation requirements, based on APANPIRG Conclusion 16/4 and the ATS Route Catalogue, CAAV wished to propose civil aviation authorities of States concerned to consider revising and implementing the following routes:

- Combined routes of A1 and P901 from VOR Da Nang (DAN) to IKELA;
- Route serving traffic between Ha Noi/Hai Phong and Macao/Hong Kong and beyond from VOR Cat Bi (CAB) to the point within the Guangzhou FIR to join ATS routes A202 and R200;

- Extended ATS route R588 serving traffic between Da Nang/Ho Chi Minh City/Phnom Penh/Phuket and Hong Kong and beyond from NDB Pkeiku (PK) to IKELA with the lower limit of FL 290;
- Route serving traffic between Ho Chi Minh City/Kuala Lumpur and Hong Kong and beyond from VOR Phucut (PCA) to IKELA with the lower limit of FL 290;
- Route serving traffic between Ha Noi and Siemriep/Phnom Penh from VOR Vinh (VIN) to VOR Pakse (PAK);
- Route serving traffic between Ho Chi Minh City and Vientiane as well as traffic between Ha Noi and Ho Chi Minh City in certain contingencies from VIBUN to a point near to POPET on ATS route R468 within the Phnom Penh FIR.

7.6 The meeting took note of the information presented by Viet Nam and appreciated the work that had been undertaken by Viet Nam and concluded that States involved should take consideration and coordinate bilaterally toward the implementation.

#### ATS Route Development in Thailand

##### *Establishment of RNAV M752 between RYN (Rayong) and ENREP*

7.7 Thailand clarified to the meeting that the establishment of RNAV route M752 was diverted from the original proposal as referred in the Route Catalogue, Version 3, page 64 due to military's requirement. However, the implementation would be considered after the coordination has been made among the States concerned.

##### *Extension of RNAV Route M770 from RAN (Ranong) to VKB (Kota Bharu)*

7.8 Thailand informed the meeting that during the ATFM/TF/9 and 10, there had been a requirement to establish ATS route connecting from VKB to RAN to support traffic flow during the peak period of Europe-bound flights, the conditional RNAV routes M770 would be established to accomplish the requirement. However, due to danger area activity, the RNAV route M770 would be available under certain conditions. The proposed RNAV routes M752 and M770 are depicted in **Appendix F** to the Report.

7.9 In response to the establishment of the RNAV route M752, Singapore and Viet Nam expressed concern that the close spacing with the adjacent RNAV routes M751 and N891 would cause capacity issue on the three routes as a flight operating on M752 would not be laterally separated from flights operating either M751 or N891.

7.10 Thailand advised that they had already taken into account those issues and ensured that the proper procedure would be applied to optimize the capacity among the mentioned adjacent ATS routes by utilizing the available radar coverage along the RNAV route M751 and M752, which would be available in a very near future and would discuss with Malaysia at the next ACC meeting.

7.11 Malaysia informed the meeting that the radar facility over the VKB would be soon available after the calibration which would be done in June 2007 and expected that the discussion with Thailand on radar handover procedure at the eastern side of the Kuala Lumpur and the Bangkok FIRs at a later date.

7.12 IATA expressed appreciation to Thailand in establishing the ATS/RNAV routes, and recommended that the extension of M752 from RONSO to U-Tapao (BUT) be considered for the future implementation and the expansion of operational time of M770 between VKB and RAN to 1500-2000 UTC daily would be more useful for traffic flow from Kuala Lumpur and Singapore FIRs.

#### **Agenda Item 8: Development of State Contingency Plans**

##### Finalization of the Contingency Plan for Indonesia

8.1 The meeting noted that the APANPIRG/17, in reviewing the draft Contingency Plan for the Jakarta FIR, recognized that the final version of the Plan would serve as a useful model for other States of the region in preparing contingency plans.

8.2 It was noted that the Parts I – Contingency plan for the Jakarta FIR and II – Contingency plan for the Ujung Pandang FIR were almost the same except for the contingency routes, which had been established for each FIR. A soft copy of the National Contingency Plan for the Jakarta FIR (Part I) was available from the Secretariat during the meeting. The Contingency Plan is also available from Directorate General of Civil Aviation Indonesia, PT (Persero) Angkasa Pura I (AP-I), AP-II, IATA Singapore and ICAO Asia and Pacific Office.

#### **Agenda Item 9: Civil Military Coordination**

9.1 There was no discussion under this Agenda Item. The meeting noted the conduct of the CMAC 07 Conference in Bangkok, Thailand during March 2007.

#### **Agenda Item 10: Develop a Coordinated Plan for Implementation of Actions Agreed by the Meeting**

10.1 In recognition of the introduction of ICAO Strategic Objectives and the Global Plan with associated Global Planning Initiatives (GPIs), the meeting re-aligned the Action Plan with specific Strategic Objectives and GPIs. The meeting developed an action plan for its future activities as shown in **Appendix G** to this Report.

#### **Agenda Item 11: Any Other Business**

##### State Focal Point for Safety Related Activities

11.1 Malaysia and Viet Nam updated contact information. The updated list of contact is in **Appendix H** to this Report.

11.2 Japan requested to IATA that the information contained in the list be shared among its member airlines so that the appropriate officers can be contacted.

Review of the 30<sup>th</sup> Meeting of the RVSM Implementation Task Force and the Special Co-ordination Meeting for the RVSM Implementation by China

*RVSM/TF/30*

11.3 The 30<sup>th</sup> meeting of the RVSM Implementation Task Force (RVSM/TF/30, March 2007) was informed that China had determined to continue applying metric system to level allocations when implementing RVSM, taking into account the current situation of China's legal environment and the metric system. To harmonize the level allocation as much as possible in case of using the metric system in level allocations in China while the neighboring States use feet system, and to reduce differences thereby, China would establish a 500 m vertical separation between the levels of 8 400 m and 8 900 m, and apply a 300 m vertical separation between other altitude levels at or below 12 500 m. The actual vertical separation between the aircraft is 1 000 feet when aircraft flies in accordance with the corresponding feet flight level in the RVSM airspace.

11.4 RVSM/TF/30 was informed that the mechanism to collect the required TSD was being developed, and expected to be completed by June 2007. In the previous RVSM implementation within the Asia and Pacific Region, it has generally been the case that one month of TSD has been used for the safety assessment. Finally, the RVSM/TF/30 agreed that the preliminary safety assessment should be conducted early before the Go/No-Go Meeting in September 2007 so that any safety-related problem could be identified and resolved at the early stage of the preparation for the RVSM implementation in China. It was confirmed that China was responsible for the safety assessment for RVSM implementation in the Chinese airspace.

*SCM/RVSM China*

11.5 The Special Coordination Meeting for the RVSM Implementation by China (SCM/RVSM China, May 2007) expressed concerns about the breakdown of vertical separation during the transition between China RVSM levels and ICAO RVSM flight levels, which could happen when, for example, a Chinese ACC assigns an eastbound aircraft 8 900 m, which corresponds to FL 291, and the westbound aircraft is operating at FL 300 from a neighboring FIR. The SCM was of view that the procedures should be established to mitigate the breakdown of separation.

11.6 China informed the SCM that China would identify the transition areas and study whether the areas are covered by radar. China noted the concerns on the breakdown of the separation and advised the SCM that they would hold bilateral meetings with the neighboring States to consider the amendment of the LOA and the transition issue would be addressed in the process.

11.7 China reported that regional ATMBs would complete the modification and improvement of civil and military ATC assurance agreement, and modification of ATC transfer of control agreement (LOAs) within the internal ATC units of civil aviation by the end of September 2007. In the meantime, the ATMB headquarters would organize regional ATMBs to complete the modification and signing of LOAs with relevant States (regions), especially the studies on level conversion with States such as Kazakhstan, Russia and Mongolia.

11.8 The Secretariat advised China that the ICAO headquarters was also studying the amendment proposal of Appendix 3 to Annex 2. The amendment proposal would be available in due course. China and Russian Federation requested the Regional Office to coordinate with the ICAO headquarters to expedite the amendment of the proposal.

*Review by the SEACG/14*

11.9 IATA reiterated concerns expressed at the SCM about the transitions between China metric RVSM and feet RVSM, and the China RVSM and CVSM.

11.10 Viet Nam advised that they planned to revise the flight level allocations in the Hanoi FIR in order to harmonize the RVSM implementation by China.

Tenth Meeting of the BBACG Air Traffic Flow Management Task Force (ATFM/TF)

*ATFM Implementation "Go" Decision*

11.11 ATFM/TF/10 (April-May, Bangkok) agreed that the ATFM procedures should advance from operational trial to full and permanent operational implementation. ATFM/TF/10 recognized that there were still many areas in which improvements were necessary and that long-term endeavors involving the continuation of the Task Force and establishment of a scrutiny group were essential. ATFM/TF/10 congratulated all parties involved with the work of the Task Force over the last two years, as the move to a permanent implementation was a very significant milestone for the region.

*Implementation Date*

11.12 ATFM/TF/10 noted that in pursuant to comprehensive reviews of the performance of the operational trial by the ATFM/TF, the Bay of Bengal ATFM system would be permanently implemented as of the 5 July 2007 AIRAC date.

ATS Interfacility Data Communication (AIDC)

11.13 The meeting noted that any feedback in relation to the draft ICD Version 3 document could be provided to the Regional Office prior to June 2007 to enable incorporation into the final Version 3 ICD.

First Meeting of the Regional Airspace Safety Monitoring Committees Task Force

11.14 Although the amount of funds required to support all of the required safety monitoring activities in Asia and Pacific was relatively modest, the Task Force for Establishment of Regional Airspace Safety Monitoring Committees (RASMC/TF, February 2007)) had been established to address a very important challenge – to ensure that safety is maintained in the provision of ATS within airspaces. The Secretariat of the Task Force drew particular attention to Amendment 43 to Annex 11 requiring that any significant safety-related change to the ATC system, including implementation of a reduced separation minimum or a new procedure, shall only be effected after a safety assessment has demonstrated that an acceptable level of safety will be met and users have been consulted.

11.15 RASMC/TF gave thorough consideration to the steps that would be required to designate CRA and safety monitoring agency (SMA) services as multinational facilities/services in accordance with the ICAO 'Step-by-Step' guidance, while at the same time the broader implications for the Asia and Pacific Region were assessed. It was readily apparent to the RASMC/TF that the complexities of Asia and Pacific in terms of the number of States involved, their varying circumstances, the size and characteristics of the airspaces involved, and the way in which safety monitoring requirements had evolved presented issues that would take time to resolve by expertise not available to the Task Force.

11.16 RASMC/TF requested that the FAA investigate whether it was possible for the FAA to act as the administrator on behalf of a large number of States in the CRA arrangements with Boeing. The intention was that the FAA, in an administrator role, would take responsibility for a number of multilateral and bilateral arrangements with States perhaps including, for example, India, Indonesia, Malaysia, Maldives, Myanmar, Papua New Guinea, Sri Lanka and Thailand as well as the States in the Pacific Area, and enter a limited number of agreements with Boeing for CRA services. As part of the administrator role, the FAA would receive payments from States and relay them to Boeing for the provision of CRA services.

Report of the First Meeting of Seamless Airspace Working Group

11.17 Thailand informed the meeting of summary highlights of the first meeting of Seamless Airspace Working Group (SAWG1, May 2007) and presented the activities carried out by this informal working group, which had been held at Aerothai Headquarter, Bangkok, Thailand.

*Background of the Seamless Airspace Working Group*

11.18 The meeting noted that Airservices Australia had undertaken an initiative as a result of decisions agreed to at the Global Director General of Civil Aviation Conference (March 2006, Montreal) and the fifth meeting of the All Planning and Implementation Regional Group (March 2006, Montreal), and hosted the inaugural Asia Pacific Regional ANSPs Conference (August 2006, Gold Coast) to follow up on the important issues raised at these Montreal meetings. During the ANSP Conference, agreement was reached to establish a “Seamless Airspace Working Group (SAWG)” to further the process of improved regional cooperation and coordination in CNS/ATM matters initiated by the Conference.

*NOTE: SAWG/1 recognized the amount of ICAO group activities already in place within the region and agreed that the work of SAWG should compliment the work of ICAO, IATA and other industry group.*

11.19 The meeting was informed that the SAWG/1 had agreed to develop a working paper for presentation to the next meeting of SEACG on a uniform application of radar spacing on ATS Route A1 into the Hong Kong FIR and additional routes concerned to the north of the Hong Kong FIR.

11.20 Thailand advised the meeting that SAWG the formed the view that in consideration of anticipated growth in traffic, there was a need to undertake studies and analysis for the planning and implementation of the flow management.

11.21 In response to this, Singapore and Malaysia informed the meeting that the traffic capacity in the SCS area was more than sufficient to meet the traffic demand. In addition, the meeting noted that the area was taking the initiative to enhance the airspace capacity through the implementation of reduced longitudinal separation based on RNP 10 and RNP 4 operations. Flow management could result in delays as well as increasing controllers’ and pilots’ workload. As such, there was no requirement to undertake study for the flow management in the SCS area.

11.22 IATA was of the view that SAWG would bring benefit to the region since it would allow ANSPs to work closely together and considered that ATFM at this stage is premature.

**Agenda Item 12: Date and Venue for the SEACG/15 Meeting**

12.1 IATA suggested that FIT-SEA and SEACG meetings be separated over a weekend to lighten the burden of the Secretariat to prepare a draft Report of the FIT-SEA meeting, and to avoid the confusion of the discussion by the participants. Japan considered that the arrangement to have a weekend between the FIT-SEA and the SEACG meetings may cause administrative difficulty to participating States. The meeting agreed that the current arrangement be maintained, however a half day break be put between the meetings.

12.2 The FIT-SEA/6 and the SEACG/14 agreed that the meeting schedules as follows:

- FIT-SEA/7 30 January-1 February 2008 Fukuoka, Japan
- FIT-SEA/8 & SEACG/15 May 2008 Bangkok, Thailand

**Closing of the meeting**

13.1 Mr. Harano, in closing the meeting, thanked the participants for their excellent cooperation. The meeting had made substantial progress on a number of important operational matters.

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**LIST OF PAPERS**

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**WORKING PAPERS**

<b>WP/No.</b>	<b>Agenda Item</b>	<b>Subject</b>	<b>Presented by</b>
WP/1	1	Provisional Agenda for FIT-SEA/6	Secretariat
WP/2	3	ADS/CPDLC Equipage and Participation Status in Operational Trials of ADS/CPDLC	Secretariat
WP/3	4	Report of FIT-SEA CRA	FIT-SEA CRA
WP/4	6	Update FIT-SEA Task List	Secretariat
WP/5	7	Data Link Implementation Table	Secretariat
WP/6	7	Summary Report of FIT-BOB/8	Secretariat
WP/7	2	Result of the ADS/CPDLC Operational Trial Phase 1 and the Proposed Implementing Plan for the Phase 2 in Ho Chi Minh FIR	Viet Nam
WP/8	4	Request for Change to the FANS Operations Manual (FOM) Submitted to the IPACG	Japan
WP/9	7	JCAB CRA Activities Presented to the IPACG ( <i>Presentation</i> )	FIT-SEA CRA
WP/10	2	ATS Dataink System Performance ( <i>Presentation</i> )	Singapore

**INFORMATION PAPERS**

<b>IP/No.</b>	<b>Agenda Item</b>	<b>Subject</b>	<b>Presented by</b>
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	-	Terms of Reference of FIT-SEA	Secretariat
IP/3	2	Implementation Plan of ADS/CPDLC by the Philippines	Philippines
IP/4	7	SITA Satellite AIRCOM Service Status ( <i>Presentation</i> )	SITA

**SEACG/14**

**WORKING PAPERS**

<b>WP/No.</b>	<b>Agenda Item</b>	<b>Subject</b>	<b>Presented by</b>
WP/1	1	Provisional Agenda – SEACG/14	Secretariat
WP/2	2, 10	Action Plan from the SEACG/13	Secretariat
WP/3	3	Annex 15 Provisions in Relation to AIRAC	Secretariat
WP/4	3	Conclusions and Decisions of APANPIRG/17	Secretariat
WP/5	5	Traffic Sample Data (TSD) State Letter	Secretariat
WP/6	5	Review of the Sixth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/6)	Secretariat
WP/7	5	Summary Report of the Second Meeting of the Aeronautical Information Services (AIS) Implementation Task Force (AITF/2)	Secretariat
WP/8	7	Implementation of Conditional Routes (CDRs)	Secretariat
WP/9	7	Review of the Asia and Pacific ATS Route Catalogue	Secretariat
WP/10	8	Finalization of Contingency Plan for Indonesia	Secretariat
WP/11	11	State Focal Point for Safety Related Activities	Secretariat
WP/12	11	Review of the 30 <sup>th</sup> Meeting of the RVSM Implementation Task Force and the Special Co-ordination Meeting for RVSM Implementation by China	
WP/13	5	Review of the WPAC/SCS RVSM Scrutiny Group	Secretariat
WP/14	7	Establishment and Revision of ATS/RNAV Routes within Ha Noi and Ho Chi Minh FIRs	Vietnam
WP/15	5	Radar Provision across South-East Asia Region	Thailand
WP/16	7	ATS Route Development in Thailand	Thailand
WP/17	11	Report of the First Meeting of Seamless Airspace Working Group	Thailand
WP/18	4	Review of the FIT-SEA/6	Rapporteur of the FIT-SEA/6

**INFORMATION PAPERS**

<b>IP/No.</b>	<b>Agenda Item</b>	<b>Subject</b>	<b>Presented by</b>
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	6	Implementation Of Performance Based Navigation (PBN)	Secretariat
IP/3	11	Report of Second Inter-Regional Coordination Meeting	Secretariat
IP/4	11	Summary of the 10 <sup>th</sup> Meeting of the BBACG Air Traffic Flow Management Task Force (ATFM/TF)	Secretariat
IP/5	11	The ATS Interfacility Data Communication Review Task Force Meeting (AIDC/TF)	Secretariat
IP/6	11	Report of the First Meeting of the Regional Airspace Safety Monitoring Committees Task Force	Secretariat
IP/7	5	Updates on ATS Activities in Viet Nam	Vietnam
IP/8	11	Safety Management System in the Philippines	Philippines

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## REPORT OF THE FIT-SEA/6 MEETING

### 1. INTRODUCTION

1.1 The Sixth Meeting of the FANS Implementation Team, South-East Asia (FIT-SEA/6) graciously hosted by the Civil Aviation Administration of Viet Nam (CAAV) and Viet Nam Air Traffic Management (VATM) was held at the Grand Meeting Room, VATM Building, Hanoi, Viet Nam on 28 May 2007.

### 2. REPORT ON AGENDA ITEMS

#### 2.1 Agenda Item 1: Provisional Agenda

2.1.1 The meeting requested Japan to provide a Rapporteur for the meeting. Mr. Hiroshi Inoguchi, Special Assistant to the Director, ATS Systems Planning Division, ATS Department, Japan Civil Aviation Bureau (JCAB) accepted the request to be the Rapporteur for the meeting.

2.1.2 The meeting reviewed the provisional agenda presented by the Secretariat. The Secretariat proposed to revise the proposed agenda to include a new **Agenda Item 3: Review of ADS/CPDLC Implementation** to cover the areas other than the operational trial in the South China Sea and renumber Agenda Items 3 through 7 accordingly. The meeting agreed and adopted the following agenda:

- Agenda Item 1: Adoption of Agenda
- Agenda Item 2: Review South China Sea ADS/CPDLC Operational Trial
- Agenda Item 3: Review ADS/CPDLC Implementation
- Agenda Item 4: Central Reporting Agency – South-East Asia
- Agenda Item 5: Data link Guidance Materials
- Agenda Item 6: Update Task Lists
- Agenda Item 7: Any other business
- Agenda Item 8: Date and Venue for the next meeting

2.1.3 The meeting noted that the Terms of Reference (TOR) for the FIT-SEA was as follows:

#### Composition of FANS Implementation Team (FIT)

*The FANS Implementation Team (FIT) will consist of representatives from aircraft and ancillary equipment manufacturers, airlines, data communication service providers (DSP), ATS providers, IATA, ICAO, IFALPA and IFATCA.*

#### FIT-SEA Terms of Reference (TOR)

*The FANS Implementation Team for the South East Asia region (FIT-SEA) shall be responsible for system configuration and oversee the end-to-end monitoring process to ensure the FANS I/A systems are implemented and continue to meet their performance, safety, and interoperability requirements.*

*FIT-SEA shall:*

- a) *Determine the common operational architecture to support CPDLC and ADS;*
- b) *Support the implementation and operational benefits of CPDLC and ADS;*
- c) *Authorize and coordinate system testing and operational trials;*
- d) *Develop interim operational procedures to mitigate the effects of problems until such time as they are resolved;*
- e) *Review de-identified problem reports and determine appropriate resolution;*
- f) *Monitor the progress of problem resolution; and*
- g) *Assess system performance based on information in Central Reporting Agency periodic reports.*

*Preparation of Reports*

*The Central Reporting Agency (CRA) will report, as required, to FIT-SEA. FIT-SEA will report to the South-East Asia ATS Coordination Group (SEACG). ICAO will submit reports to appropriate sub-groups of APANPIRG.*

*(Adopted by the 11<sup>th</sup> Meeting of the South-East Asia ATS Co-coordinating Group, 2003)*

2.1.4 In accordance with the TOR, the Rapporteur undertook to report the discussion at the FIT-SEA/6 to the SEACG/14.

**2.2 Agenda Item 2: Review South China Sea ADS/CPDLC Operational Trial**

Updates on ADS/CPDLC Operational Status by States

2.2.1 The meeting noted the operational status of ADS/CPDLC in the Philippines, Singapore and Viet Nam as follows:

*Philippines*

2.2.2 Philippines updated the meeting their progress in relation to installation of the standalone equipment and to determination of a specific target date when the Philippines could join the operational trial in the Manila FIR.

2.2.3 Philippines advised that they would join the trial by 2008 subject to the availability of integral equipment while a fully integrated ADS/CPDLC as envisioned in the CNS/ATM Plan will only be realized by 2011. Negotiations were currently ongoing with financial institutions for funding an integrated arrangement.

2.2.4 Philippine agreed that they would advise the next FIT-SEA meeting on the progress of their ADS/CPDLC operational participation.

*Singapore Data Analysis*

2.2.5 Singapore provided details of the system performance for the period of four months from January to April 2007, covering the Phase 1 trial in the Ho Chi Minh FIR. The uplink/downlink message delivery time, success rate, service availability met the criteria in the *FANS Operations Manual* (FOM).

2.2.6 It was noted that, in the early stage of the Phase I operational trial, there were several crew reports on problems in the transfer of data link connection, however the auto-transfer between the Ho Chi Minh and Singapore area control centers (ACCs) had improved. Singapore was requested to include data concerning auto-transfer success rate in the future report.

2.2.7 Singapore advised the meeting from their experiences that data link enhanced the safety and efficiency of ATC in the Singapore FIR; thus strongly encouraging airlines to logon to ADS/CPDLC when services are available. The application of data link would lead to the reduction of the longitudinal separation and the enhancement of the airspace capacity over the South China Sea area.

*Viet Nam*

2.2.8 Viet Nam provided updated information on the activities undertaken since the FIT-SEA/5 towards the Phase 1 trial as follows:

- a) The ADS/CPDLC Committee established within CAAV with participation of VATM experts, has continued to oversight the planning and coordination process relating to the trial;
- b) A Task Force was also established, including senior ATS persons and engineers, for carrying out the ADS/CPDLC operational trial and collecting data for periodic reports and problem reports (PR);
- c) All 84 air traffic controllers and technical staff of Ho Chi Minh ACC were trained and examined on the ADS/CPDLC Phase 1 operational procedure for the Ho Chi Minh FIR;
- d) Singapore and Viet Nam met in Hanoi on 5-7 March 2007 and finalized the Supplementary Letter of Agreement (SLOA) on the transfer of ADS/CPDLC between the Ho Chi Minh and Singapore ACCs, which became effective from 0001 UTC on 15 March 2007;
- e) Viet Nam issued AIC A03/7 on 1 February 2007 to inform the implementation of the ADS/CPDLC Phase 1 operational trial with the limited participation of five airlines, in accordance with the conclusion of the FIT-SEA/5. The official invitation letters attaching the operational procedure were sent to the five airlines, and these airlines confirmed their participation in the Phase 1 trial in the Ho Chi Minh FIR; and
- f) Agreements were reached with ARINC (the data link service provider for the Ho Chi Minh FIR) and Thales ATM (provider of automation system in Ho Chi Minh ACC) on providing assistance during the trial.

Interim Reports of the Phase 1 Trial

2.2.9 The meeting was reminded the meeting that the FIT-SEA/5 decided that an interim report of the Phase 1 be made from Singapore, Viet Nam and FIT-SEA CRA for a period of 7 or 8 weeks, and agreed that it could be decided whether the Phase 1 be continued or the States could move on to the Phase 2, based on the interim report at the FIT-SEA/6.

2.2.10 Viet Nam briefed the meeting on the results of the Phase 1 trial in the Ho Chi Minh FIR as follows:

- a) The trial started from 0001 UTC, 15 March 2007, on a 24 hour basis, applicable on the six oceanic RNAV routes of L625, L628, M765, M768, N500 and N892 in the Ho Chi Minh FIR to FANS-1/A equipped aircraft of All Nippon Airways, Vietnam Airlines, Singapore Airlines, Cathay Pacific Airways and Japan Airlines;
- b) The total number of flights that participated in the trial for a period of eight weeks (15 March - 8 May 2007) was 1,761, of which 1,557 flights had stable ADS/CPDLC connection, 51 had unstable ADS/CPDLC connection, 56 had unstable CPDLC connection, and 97 had unstable ADS connection;
- c) The numbers of flights of participating airlines were 170 by All Nippon Airways, 99 by Vietnam Airlines, 1,178 by Singapore Airlines, 65 by Cathay Pacific Airways and 109 by Japan Airlines. There were 16 non-participating airlines, such as China Airlines (25 flights), Malaysia Airlines (23 flights), North West Airlines (22 flights), which logged on in the Ho Chi Minh FIR, and the Ho Chi Minh ACC accepted the log-on on a voluntary basis because the number of non-participating airlines' log-on was manageable level for air traffic controllers;
- d) It was reported that some flights attempted to log-on though they did not insert data link related information in Items 10 and 18 of flight plans properly;
- e) The ATM automation system in Ho Chi Minh ACC has been stable during the trial. Some minor problems with message exchanges were observed at the early stage of the trial, and main causes of those problems were sun outage, the process of resetting up and adjusting the system database, function of air/ground data link processing. Actions were taken to resolve the system malfunctions, and these instabilities have been no longer observed;
- f) ARINC provides data link services which is considered, in general, stable. ARINC ensures their commitment to working closely with VATM to find out the root cause of any problem and to resolve it. ARINC also is committed to support VATM during the Phase 2 trial;
- g) Use of CPDLC was found convenient and smooth during the trial. The maximum number of exchanged messages per a day was 3,086 on 14 April 2007 and the minimum was 1,119 on 27 April 2007. The transmitting and receiving time met the operation requirements;

- h) Viet Nam (CAAV) has submitted to the CRA-Japan, system performance data on a weekly basis as well as PRs in accordance with the agreement between CAAV and CRA-Japan. These PRs did not include reports from airlines because the airlines reports were not submitted to CAAV as described in AIC A03/7. However, Singapore Airlines, one of the participating airlines, reported to the meeting that they had sent problem reports from their crew to VATM and to Mr. Hiroshi Inoguchi, Japan Civil Aviation Bureau (JCAB).

2.2.11 Singapore was of the view that the Phase 1 trial proved safe and efficient, and expressed their support to Viet Nam to commence the Phase 2 trial.

2.2.12 IATA mentioned that they had consulted with the five trial participating airlines and expressed their satisfaction with the successful results of the Phase 1. Thus, IATA concurred to move on to the Phase 2 as early as possible.

2.2.13 The meeting reviewed the reports from Singapore, Viet Nam and FIT-SEA CRA, and agreed that the results of the Phase 1 trial were satisfactory and the Phase 2 trial could be commenced in August 2007.

#### Arrangement for the Phase 2 Trial

##### *Starting Date*

2.2.14 The meeting recalled the conclusion at the FIT-SEA/5 that the Phase 2 could be started with the two AIRAC cycles after the publication of an AIP supplement. The probable date would be the August 2007 AIRAC date. To this end, Viet Nam proposed 0001 UTC on 2 August 2007 AIRAC date as the date to commence the Phase 2 trial in the Ho Chi Minh FIR. The meeting agreed on this proposed timing.

##### *Applicable ATS Routes*

2.2.15 It was concluded that the Phase 2 trial in the Ho Chi Minh FIR would be carried out for all FANS-1/A equipped aircraft on the six RNAV routes of L625, M768, N892, N500, L628 and M765 as was the case with the Phase 1.

##### *AIC and AIP Supplement*

2.2.16 Viet Nam presented a draft AIP Supplement on ADS/CPDLC Phase 2 trial in the Ho Chi Minh FIR, which would be published in June 2007. The meeting reviewed the draft AIP and considered the procedures contained in the draft document appropriate. Viet Nam will process the publication of AIP Supplement and ensure that the existing AIC A03/7 dated 1 February 2007 be cancelled on 2 August 2007. The draft AIP Supplement is attached at **Attachment 1** to the Report.

##### *LOA between Ho Chi Minh and Singapore ACCs*

2.2.17 It was confirmed that the existing SLOA on the transfer of ADS/CPDCL between the Ho Chi Minh and Singapore ACCs would continue effective for the Phase 2 trial.

##### *Timeframe of the Phase 2*

2.2.18 Viet Nam considered that six months was required to conduct the Phase 2 in order to ensure safe ATC operations using data link and stable performance of ATC systems, including data link services and network.

2.2.19 IATA requested to keep the duration of the Phase 2 trial as short as possible, preferably three months.

2.2.20 Japan advised that in the Pacific trial, States took a cautious approach and nearly nine years was spent before the full operations of ADS/CPDLC in 2006 in collecting data, analyzing operational and technical problems, and implementing remedial procedures in order to verify the safety and interoperability of data link systems and operations.

2.2.21 The meeting understood that earlier benefits could be gained if the duration of the Phase 2 is kept as short as three months, but felt that six months was more practicable and appropriate for the purpose of trial evaluation.

2.2.22 It was recalled that the next meeting (FIT-SEA/7) had been scheduled in January 2008. The meeting considered that if a six-month period is agreed upon, this meeting could be used as a “review” meeting to which an interim report of the Phase 2 should be made by Singapore, Viet Nam and FIT-SEA CRA. As a result, Singapore, Viet Nam, IATA and the CRA expressed their concurrence to the six-month period of the Phase 2 trial from 2 August 2007 to 14 February 2008 AIRAC date. If the interim report finds out the Phase 2 trial is not satisfactory, the Phase 2 should be continued until the time agreeable to all concerned parties.

#### *Problem Report Submission Procedures*

2.2.23 IATA reiterated their concern that the PR should be reported directly to the FIT-SEA CRA, and requested the meeting to consider in the future that the procedures be simplified to expedite the reporting process in the South China Sea area.

2.2.24 Japan noted the concern but reminded IATA that the same discussion had taken place at the FIT-SEA/4. It was reiterated that due to the institutional and funding arrangements by JCAB and the needs for VATM to carry out in-house scrutiny and to coordinate with ARINC. The meeting decided that the PR submission procedures be kept as agreed at the FIT-SEA/4 in order to advance the trials in the interim until the new arrangement is made. The meeting recognized that FIT-SEA had already addressed this issue.

### 2.3 **Agenda Item 3: Review ADS/CPDLC Implementation**

#### Tables of ADS/CPDLC Equipage and ATS Participation Status

2.3.1 The second meeting of the FANS Implementation Team, Bay of Bengal (FIT-BOB/2, September 2003) noted that it was necessary to determine the status of the ADS/CPDLC systems being operated by States or being brought into operational service in time to participate in the operation, based on the present and future functional capability of the ATM systems to operate ADS/CPDLC systems by ATC. The meeting recalled that the FIT-SEA/2 (April 2005) adopted the same approach with the FIT-BOB and developed the Table of ADS/CPDLC Equipage and ATS Status to facilitate the equipage of the ADS/CPDLC system.

2.3.2 The meeting recalled that the Combined FIT-BOB/7 & FIT-SEA/4 reviewed and updated the Tables of ADS/CPDLC Equipage and ATS Status for the Bay of Bengal/Arabian Sea/Indonesian FIRs and the South China Sea/Southeast Asia, respectively. FIT-SEA/4 identified additional officers as the primary State contact responsible both for coordination of ADS/CPDLC operational trials in the South China Sea area and for coordination with CRA-Japan. These contacts for operational trials are shown with **bold** letters in the Table of ADS/CPDLC Equipage and ATS Status.

2.3.3 FIT-SEA/5 (January 2007, Ho Chi Minh) considered current format appropriate for Southeast Asia region. IATA noted that IATA was included in the Table even though IATA is not a State supposed to provide the ADS/CPDLC services.

2.3.4 The Secretariat informed that the 15<sup>th</sup> meeting of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/15, August 2004) noted that planning and implementation of some elements of the *Asia/Pacific Regional Plan for the New CNS/ATM Systems* such as ADS-C, ATN, AIDC, automated AIS systems, GNSS and ADS-B were progressing slowly, and the Table included international organizations to facilitate progressing the implementation planning, in particular in the area of data link communications and ATM automated systems. IATA suggested that the “N/A” (not applicable) be inserted for the clarification in the Table, and the meeting accepted the suggestion. The reviewed Equipage and ATS Status Table is at **Attachment 2** to the Report.

#### 2.4 **Agenda Item 4: Central Reporting Agency – Southeast Asia**

2.4.1 CRA-Japan was designated as the FIT-SEA CRA by FIT-SEA, and had been operated by the Air Traffic Control Association Japan (ATCA-J). The FIT-SEA CRA had been providing the CRA activities according to the Terms of Reference (TOR) that was agreed upon by the FIT-SEA/3 (November 2005).

2.4.2 The meeting recalled that the FIT-SEA/5 agreed to the arrangement for the Phase 1 operational trial of data link in the Ho Chi Minh FIR, and the trial commenced at 0001 UTC on 15 March 2007. Since then, the FIT-SEA CRA had received data and information concerning system performance and PRs from the Civil Aviation Authority of Singapore (CAAS) and the Civil Aviation Administration of Viet Nam (CAAV).

2.4.3 The meeting was provided with a CRA interim report containing the detailed information concerning the status of ATS data link operational performance and the summary of PRs provided solely by CAAS and CAAV in accordance with the established procedures. A PowerPoint presentation material is attached at **Attachment 3** to the Report.

##### *System Performance*

2.4.4 Singapore had provided system performance data for the period of four months from January to April 2007 on a monthly basis. The FIT-SEA CRA used the format of data analysis as provided by Singapore, and presented the following analysis:

- CPDLC Down-link Performance;
- CPDLC Up-link Performance;
- Total Number of CPDLC Up-link messages; and
- CPDLC Up-link Message Success Rate.

2.4.5 Viet Nam had provided system performance data from 15 March up to 6 May 2007 on a weekly basis. The FIT-SEA CRA applied the regular format of data analysis, and presented the following analysis:

- CPDLC Down-link Performance;
- CPDLC Up-link Performance;
- Total Number of CPDLC Down-link messages;

- Total Number of CPDLC Up-link messages; and
- CPDLC Up-link Message Success Rate.

*Problem Reports*

2.4.6 Although PRs do not always cover all deficiencies experienced in the data link operations, the meeting noted that 17 PRs which had been received through Singapore and Viet Nam CAAs since 15 March 2007 were analyzed.

2.4.7 The 17 PRs were sorted into based on functions as follow:

- a) ADS-related PRs --- 10;
- b) CPDLC ---- 0;
- c) connection ---- 2; and
- d) data link failure --- 5

2.4.8 The CRA recognized that most of PRs in the Ho Chi Minh and Singapore FIRs were related to ADS while most of PRs in the Fukuoka FIR were related to CPDLC. The meeting was informed that there had been certain similarities in problems between the Ho Chi Minh and the Singapore FIRs, and the Fukuoka FIRs.

2.4.9 The FIT-SEA CRA concluded that the data link system performance of the Ho Chi Minh and Singapore ACCs met the FOM criteria, and there was no significant problem identified from PRs submitted from Singapore and Viet Nam.

2.4.10 The CRA-Japan as FIT-SEA CRA expressed appreciation to CAAS and CAAV for their cooperation and assistance in submitting data and information on a regular basis.

2.4.11 The meeting reviewed the information contained in this interim report and acknowledged, with the satisfaction, the work conducted by the CRA-Japan. The meeting thanked Japan for the voluntary provision of the CRA services and the professional conduct of the report production.

2.5 **Agenda Item 5: Data Link Guidance Materials**

Request for Change to the FOM

2.5.1 Japan informed that the Thirteenth Meeting of the FANS Interoperability Team (FIT/13) of the Informal Pacific Air Traffic Control Coordinating Group (IPACG) was held in Anchorage, Alaska, USA, from 14 to 15 May 2007 in conjunction with the Twenty-sixth Meeting of IPACG (IPACG/26), both hosted by the Federal Aviation Administration.

2.5.2 There were initially three Requests For Change (RFCs) presented to the IPACG FIT/13, namely RFCs 07-001, 002, and 003. After some discussions on RFC 07-003, a small group was formed to review and rewrote the RFC, and developed a revised RFC 003 and a new RFC 004. These four RFCs are accessible on the IPACG website at <http://www.faa.gov/ats/ato/ipacg.html>. Discussions at the IPACG FIT/13 is summarized below.

*RFC 07-001 Communication Service Provider Outage Notification*

2.5.3 The FAA presented the RFC 001, which was designed to emphasize the need for data link service providers (DSPs) to notify affected air traffic service units (ATSUs) and airline dispatches of network and satellite data service outages as rapidly as possible. During the FIT discussion, there

were no objections to the substance of the RFC, but it was pointed out that the RFC should specify to change the text of the first “sentence” instead of the first “paragraph” because there was no intent to eliminate the remaining material. With this revision the RFC was adopted.

*RFC 07-002 Proposed Additional Freetext Messages*

2.5.4 Boeing, as the FAA CRA, presented this RFC, which was designed to fill a void because implementation of ADS-B has required new voice phraseologies and there are no FANS ADS-B-related CPDLC messages that serve. Two new freetext messages were proposed. The RFC was adopted.

*RFC 07-003 Emergency Procedures*

2.5.5 Boeing presented this RFC to make it standard for ATSU's to follow up any CPDLC emergency declaration with voice contact to ensure the flight deck and ground personnel had a common understanding of the nature of the emergency. This would help in avoiding confusion and providing appropriate and timely assistance.

2.5.6 Some objections were raised on the basis that within the FAA there are policies and procedures already in existence which detail how to respond to emergencies. The discussion that followed concluded with a request for a FIT ad hoc sub-group to meet and rewrite RFC 07-003, and bring the revision back to the FIT the next day for consideration.

2.5.7 The sub-group produced a re-written RFC 07-003 and new RFCs 07-004 and 07-005 which emerged from discussions within the subgroup. These were presented to the FIT on the following day.

*RFC 07-003 Emergency Procedures (revised)*

2.5.8 This revised RFC emphasized the need for controllers to obtain emergency situation details by “the most efficient means available” rather than direct voice communication. It also added a sentence to this FOM Section to make the point that flight crews were likely to revert to voice in these situations. The RFC was adopted without comment.

*RFC 07-004 ADS Emergency Procedures*

2.5.9 Boeing presented this RFC which completely rewrote FOM Section 7.1.2, and modified Section 7.1.3 in line with RFC 07-003. Section 7.1.2 had specified a “secure” way to verify that an ADS emergency was in fact an emergency and not unauthorized flight deck intervention, but experience had shown that the procedure was seldom followed, and when followed led to confusion.

2.5.10 The procedural communication was deleted, and the section was simplified and aligned with the non-ADS emergency similarly to the RFC 07-003. The RFC was adopted without comment.

*Review by the FIT-SEA/6*

2.5.11 The meeting reviewed the contents of the four RFCs adopted by the IPACG FIT. Singapore commented on RFC 001 that they receive advance information as far as planned service outage is concerned. SITA confirmed that the company monitors continuously the message traffic and service status on a 24-hour basis, and provides information to their customers via most expeditious communication means. There were no comments on other RFCs.

2.5.12 The meeting requested Japan to inform Mr. Reed Sladen, the FOM editor, of the result of the FIT-SEA/6 review.

2.6 **Agenda Item 6: Update Task Lists**

2.6.1 The meeting reviewed the FIT-SEA Task List as updated during the FIT-SEA/5. The meeting updated the list as in **Attachment 4** to the Report.

2.7 **Agenda Item 7: Any other business**

Data Link Implementation Table

2.7.1 The meeting noted that the Combined FIT-BOB/7 & FIT-SEA/4 had recognized the importance of the global capacity planning by all stakeholders initiated by SITA and commenced preparation of a suitable table of ADS/CPDLC implementation planning for all FIT-BOB and FIT-SEA FIRs including estimated dates for implementation of CPDLC communications, ADS/CPDLC full implementation, 50 NM/50 NM reduced separation and 30 NM/30 NM reduced separation to provide basis for long term satellite traffic load estimates to assist data link service provider network planning.

2.7.2 SITA advised the FIT-SEA/5 that the Global Capacity Planning Team of the Informal South Pacific ATS Coordination Group (ISPACG) considered the capacity planning and developed the draft table of "Air Traffic Forecasting Form", which is updated twice a year with the past 12 months record and predicts the capacity for the 12 month period. The meeting recalled that the FIT-SEA/5 noted the information provided by SITA and was of view that the table developed by the ISPACG was more useful.

2.7.3 As the global satellite capacity/performance planning initiative was initiated by SITA and the new table contains highly technical matter, the FIT-SEA/5 requested SITA to present to the next meeting the table developed by the ISPACG to replace the current Data Link Implementation Table and continue presenting the new table to future meetings to be updated. Accordingly, FIT-SEA/5 decided NOT to update the table presented by the Secretariat.

2.7.4 In preparation for the meeting, the Secretariat invited SITA to present a working paper to provide the new table. SITA advised the Secretariat that the new table had not been finalized yet at the ISPACG and was of view that the previous table could be used for the time being.

2.7.5 The meeting noted the background and the objective of the table provided by the Secretariat, and agreed to continue to use the Table and updated it as in **Attachment 5** to the Report.

SITA Satellite AIRCOM Service Status

2.7.6 SITA made a presentation on the SITA Satellite AIRCOM Service Status. The FANS SATCOM Improvement Team was being formed and the Global Datalink Capacity Planning Group was ongoing. SITA is an active participant in both groups. The PowerPoint presentation made by SITA is at **Attachment 6** to the Report.

Summary Review of FIT-BOB/8

*Expanded Scope of the FIT-BOB*

2.7.7 The meeting was informed that the FIT-BOB/7 (July 2006, Bangkok) agreed that the FIT-BOB and the Bay of Bengal Central Reporting Agency (BOB-CRA) would provide services to

both the Jakarta FIR and Ujung Pandang FIRs. Indonesia had commenced a programme to establish a new ADS/CPDLC facility for enhanced services at the Indian Ocean Sector, which will replace the former facility. Advanced discussions were taking place with SITA as DSP and it was anticipated that operational trials of ADS/CPDLC would commence in late 2007.

2.7.8 Boeing offered assistance in utilizing its test bench to test all parameters of an air navigation service provider (ANSP) equipment installation, and create, for example, simulated deviations from track and flight level in order to test the track and level compliance detection and alarm systems in the ground installation to States in the FIT-BOB and also States involved in the South China Sea operational trials. States were encouraged to contact the BOB-CRA to commence coordination of testing using the Boeing test bench equipment.

#### *Review ADS/CPDLC Implementation*

2.7.9 FIT-BOB/8 (January 2007, Bangkok) noted that a similar approach had been adopted by FIT-SEA for the operational trial in the Ho Chi Minh FIR that would commence in March 2007 and that some preparatory work on a set of standardised procedures had been completed. FIT-BOB/8 agreed that using the Ho Chi Minh procedures as the basis for the Bay of Bengal/Arabian Sea procedures would assist regional standardisation. India agreed to work with IATA in drafting and promulgating a suitable set of standardised procedures.

2.7.10 Malaysia informed the FIT-BOB/8 that they were finalizing the tender documentation for the acquisition of new ADS/CPDLC equipment and tenders were expected to be opened during early February 2007. Malaysia anticipated reaching engineering readiness with the new ADS/CPDLC equipment in late 2007 with the intention of joining the Bay of Bengal operational ADS/CPDLC trials in the first quarter of 2008.

2.7.11 Singapore reaffirmed to the FIT-BOB/8 that their ADS/CPDLC equipment had been operational for some years. Planning was now in progress towards the implementation of RNP 10 based 50/50 NM separation using CPDLC during late 2007 and for RNP 4 based 30/30 NM separation in 2010.

2.7.12 Although the international airspace of Thailand was mostly covered by radar and VHF communication, Thailand had recognised a need for data link and had conducted some earlier trials with standalone equipment. The construction of the new Bangkok ACC, which was expected to commence operations in late 2008, had provided an opportunity to further study the matter and the outcomes of the present planning discussions were expected to be available in late 2007 or early 2008.

#### *Central Reporting Agency – Bay of Bengal*

2.7.13 Airport Authority of India (AAI) would shortly commence formal communications with IATA for the purposes of finalizing the agreement and other arrangements including AIP supplement, modalities for data collection and submission of PRs in respective systems at Chennai, Delhi, Kolkata and Mumbai as per the agreed TOR. Having BOB-CRA services available would enable suitable technical assessment to be made and would assist markedly in the full implementation of data link services.

#### *Funding of Safety Monitoring*

2.7.14 APANPIRG/17 had acknowledged the importance of safety monitoring and noted the concerns about the sustainability of the voluntary approaches that were in place regionally. Additionally, APANPIRG/17 recognized that in matters such as these, each State had individual responsibility and therefore APANPIRG was unable to act for all States regionally in this respect. In

order to allow States time to consult within their own administrations and consider the matter thoroughly, the APANPIRG/17 agreed to establish a task force to draft implementation proposals for regional airspace monitoring committees.

*Data Link Guidance Materials*

2.7.15 The RASMAG primary authors of the draft *Guidance Material – Data Link Procurement, Deployment and Implementation* from Japan and New Zealand considered that the material was now complete, but suggested to RASMAG/6 that it be circulated to the FIT-BOB and FIT-SEA, IPACG and ISPACG for comment. Final adjustments would be made to the draft during the next RASMAG meeting scheduled in June 2007, with a view to presenting the Guidance Material to APANPIRG/18 in September 2007 for adoption as regional guidance material.

2.7.16 APANPIRG/15 (August 2004, Bangkok) agreed under Conclusion 15/7 that the FOM provided the necessary procedures for ATS providers and should be used as a basis to operate ADS and CPDLC in the Asia and Pacific Region with aircraft equipped with the FANS-1/A systems. Version 4 of the FOM was published effective 28 September 2006.

2.7.17 FIT-BOB/8 recalled that under Conclusion 16/20, APANPIRG/16 had adopted the Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data Link Systems in the Asia/Pacific Region. Copies of the guidance material are available from the website of the ICAO Asia/Pacific Regional Office at <http://www.icao.int/apac/> under the “eDocuments” menu.

Report of CRA Japan for the North and Central Pacific Area

2.7.18 Japan provided the meeting with a summary report of CRA Japan activities in the Fukuoka FIR, which had been presented at the IPACG FIT/13. This report is available on the IPACG website at <http://www.faa.gov/ats/ato/ipacg/html>.

2.7.19 The meeting noted that there were two CRAs established under the IPACG arrangement; operated by JCAB for the Fukuoka FIR and by the FAA for the Anchorage Oceanic and the Oakland FIRs. CRA Japan processed reports originating in or relating to the Fukuoka FIR. Air Traffic Control Association Japan (ATCA-J) provides resources for the Supporting Agency of CRA Japan. For the Oakland and Anchorage Oceanic FIRs, the FAA CRA processes reports originating in or relating to these FIRs. Boeing Company provides resources for the FAA CRA. Activities of the FAA CRA cover the South Pacific and Bay of Bengal as well.

2.7.20 CRA Japan reported on 13 PRs, out of which 6 were classified as “Lessons Learned”, 4 as “Open”, 1 as “Waiting for information”, 1 as “Ready for FIT”, and 1 was proposed for closure. Among them, the following particular PRs were brought to the attention of FIT for discussions:

PRs 10413, 10420, 10423, 10425, 10427 and 10428 (Lesson Learned);  
PR 10426 (Open); and  
PR 10414 (proposed to be closed)

2.7.21 The meeting was informed that PR10413 was found relevant to the FAA CRA’s PR588 in that CC1 timer of Airbus may cause downlink of DRs to uplinked CRs from ATSU’s, mainly due to the limited timer value. FANS-A software has 2-minute CC1 timer value and FANS-A+ software has adjusted the value to 3 minutes and 30 seconds.

2.7.22 CRA Japan observed the repeated occurrences of similar events that had been frequently reported as PRs relating to pilots procedures, such as non-compliance of resequencing

procedures specified in the FOM and deviation without obtaining ATC approval. Operators were requested to note those PRs that may have significance to their operations.

2.7.23 PR 10414 concerning data link system network problems and subsequent handling by DSP was proposed for closure by the FIT. It was explained that the DSP had established message handling procedures following system recovery in order to prevent message delivery delay. This PR was closed.

2.7.24 CRA Japan also provided the Periodic Status Report, which indicated that the FOM performance criteria for CPDLC downlink and uplink was met. The success rate of automatic transfer of connections to the Fukuoka FIR from Oakland and Anchorage FIRs was improved steadily, and as of March 2007, the average success rates were 96% for the transfer from Oakland and 97% from Anchorage. The CPDLC uplink message success rate was slightly below 99%.

2.7.25 In addition, Japan advised that they had a plan to replace the current CPDLC waypoint reporting procedures with ADS waypoint/periodic reporting within Fukuoka FIR in early 2008, and a plan to implement seamless application of 50 NM longitudinal separation minimum between the Fukuoka and Oakland FIRs in a step-by-step approach after ensuring the distance measurement in both ACCs is consistent and meets safety requirement.

2.8 **Agenda Item 8: Date and venue for the next meeting**

2.8.1 Japan generously offered to host the FIT-SEA/7 from 30 January – 1 February 2008 in Fukuoka, Japan. The Secretariat appreciated Japan for the offer provided in addition to the provision of the CRA service for the Southeast Asia. The meeting agreed to the offer and thanked Japan for their continuous support.

2.9 **Closing of the meeting**

2.9.1 Mr. Inoguchi thanked all participants for their active involvement in the meeting. The meeting reviewed the interim reports on the Phase 1 operational trial submitted by Singapore, Viet Nam and FIT-SEA CRA, and good progress had been made towards the Phase 2 operational trial in the Ho Chi Minh and Singapore FIRs on 2 August 2007. He expressed appreciation to CAAV and VATM for hosting the meeting.

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and@caa.gov.vn

**CIVIL AVIATION ADMINISTRATION OF**  
**VIET NAM**  
**AIR NAVIGATION DEPARTMENT**  
119 NGUYEN SON  
LONG BIEN DISTRICT

**AIRAC**  
AIP Supplement  
01/07  
21 JUN 2007

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**Procedure for Operational trial  
for ADS/CPDLC in the Ho Chi Minh FIR**

**1. Introduction**

- 1.1 Vietnam has completed installation of an Advanced Automated Air Traffic Management System with integrated ADS/CPDLC capabilities in the Ho Chi Minh ACC. The required training for ATC personnel have been completed. Operational trials with aircraft have also been successfully conducted. Vietnam is now expanding the operational trials to all FANS-1/A equipped aircraft.
- 1.2 The purpose of the operational trials is to familiarize controllers with ADS/CPDLC applications on specific routes in the Ho Chi Minh FIR, and to resolve any problems arising, before full operations are implemented. ADS/CPDLC procedures will be based on the FANS Operations Manual (FOM) version 4.0 dated 28<sup>th</sup> September 2006. A copy of the FOM may be obtained from the FAA website address <http://www.faa.gov/ats/ato/ispacg.htm>
- 1.3 This AIP Supplement supersedes the AIC A03/7 dated 01st February 2007.

**2. Implementation of operational trials**

With effect from **0001UTC on 2 August 2007**, ADS/CPDLC services will be available on a 24 hour basis on ATS routes L625, L628, M765, M768, N500 and N892 to all FANS-1/A equipped aircraft.

**3. Data Link Airspace**

- 3.1 ADS/CPDLC services are available in the oceanic controlled airspace within Ho Chi Minh FIR, on ATS routes L625, L628, M765, M768, N500, and N892 to FANS-1/A equipped aircraft. As Singapore ACC is already and currently providing data link services within the Singapore FIR, close coordination between Ho Chi Minh and Singapore ACC for address forwarding function is necessary for a seamless ADS/CPDLC service within the two FIRs.

- 3.2 For aircraft having data link connection CPDLC is utilized as the primary means of communications and VHF/HF voice will be used as secondary communication means. Depending on traffic loadings, air traffic controllers may also use CPDLC within the range of VHF voice if the connection is still existed.
- 3.3 All FANS-I/A equipped aircraft, who have CPDLC connection, shall be informed of frequency to be monitored while provided with data link services. ADS/CPDLC connection will be established by either automatically or manually by ground system after logon procedure completed .
- 3.4 ADS will be utilized as surveillance outside of radar coverage but ADS application shall not alter the current position report procedures.
- 4. ADS/CPDLC LOGON Procedures**
- 4.1 The ATS Facility Notification (AFN) logon is prerequisite to any ADS or CPDLC connection.
- 4.2 To avoid automatic rejection of the logon, the flight identification number and aircraft registration contained in the logon shall be identical to the flight identification number and registration as filed in the ATS flight plan.
- 4.3 The AFN logon address for Ho Chi Minh FIR is "VVTS".
- 4.4 FANS-I/A equipped aircraft requesting data link services on entering from a non-data link FIRs or airspace being provided with radar services shall logon to VVTS between 15-45 minutes prior to entering the data link airspace and CPDLC/ADS-C connection will be either established automatically or manually by Ho Chi Minh ACC after logon completed. The pilot shall downlink a CPDLC position report at the first compulsory reporting point after CPDLC connection.
- 4.5 FANS-1/A equipped aircraft which are being provided with data link services on entering from Singapore FIR, shall be either transferred automatically by address forwarding process or instructed by Singapore ACC, to manually logon to VVTS at an appropriate time/distance prior to the FIR boundary. The pilot shall downlink a CPDLC position report at FIR boundary after CPDLC connection.
- 4.6 For aircraft traversing between Ho Chi Minh and Singapore FIRs, if address forwarding is not processed and the controlling FIR is not becoming the active centre, the pilot shall, within 3 minutes of crossing the common FIR boundary, terminate the existing data link connection and then initiate a new AFN logon to the current controlling FIR i.e. "VVTS" or "WSJC". A downlink report is required to enable the controlling FIR to ensure that it is CPDLC data authority for the aircraft.

## 5. ADS/CPDLC Procedures

- 5.1 When entering Ho Chi Minh FIR, all aircraft, which have ATC data link communications established, shall downlink position report by ADS and CPDLC at the FIR boundary. If a CPDLC position report has been sent per FOM procedures and uplinked response message received, the additional voice position reports are not required, unless requested by ATC.
- 5.2 To ensure the correct synchronization of message, the dialogue between air traffic controller and pilot initiated via voice shall be completed by voice and the dialogue opened by CPDLC shall be closed by CPDLC.
- 5.3 When ATC instruct pilots to MONITOR [unit name] [frequency] , CPDLC will remain the primary means of communication.
- 5.4 The downlink response "WILCO" indicates that the instruction is understood and will be complied with.
- 5.5 Pilot's read back for ATS clearance/instruction issued via CPDLC is not required.
- 5.6 The STAND BY message is used to indicate that the request is being assessed and a short term delay is expected.
- 5.7 The REQUEST DEFERRED message is used to indicate that the request is being assessed and a long term delay is expected.
- 5.8 To avoid possible ambiguity, a CPDLC downlink message should not contain more than one clearance request.
- 5.9 If multiple clearance requests are contained in a single downlink message and the controller can not comply with all requests, uplink message element **UNABLE** will be sent as a response to the entire message. A separate message containing a response to those requests that can be met will then be sent by the controller.
- 5.10 If any ambiguity exists as to the intent of a particular message, classification shall be made by voice.
- 5.11 Standard pre-formatted message elements shall be used whenever possible. Free text message elements shall be used only when an appropriate pre-formatted message element does not exist or to supplement to an existing pre-formatted message element. A down linked clearance request and an up linked clearance shall be performed by the use of pre-formatted message elements only.

- 5.12 When a free text message is required, standard ATC phraseology and format shall be used. Non-essential words and phrases should be avoided. Abbreviations should only be included in free text messages when they form part of standard ICAO phraseology, e.g. ETA.

## **6. Limitations to ADS/CPDLC Services**

- 6.1 Basing on the nature of the emergency condition experienced, the pilot shall notify ATC of the circumstances by the most efficient means available (voice or CPDLC).
- 6.2 If a CPDLC MAYDAY or PAN message is received by ground system, the air traffic controller will respond with the free text uplink message ROGER MAYDAY or PAN.
- 6.3 If the emergency situation no longer exists, the pilot should cancel the ADS emergency mode (if activated).
- 6.4 Special and other non-routine aircraft observations of moderate or severe turbulence, volcanic activity, etc should be reported by voice to ATS.

## **7. Termination of DATA LINK Service**

### **7.1 For outbound flights entering Singapore FIR**

For FANS-1/A equipped aircraft being provided with data link services, the "contact advisory message" (FN\_CAD) will be automatically up-linked to cause the aircraft's avionic to initiate logon to Singapore ATM system 15 minutes before crossing the FIR boundary. The "CONTACT or MONITOR [ATS unit name] --- [frequency]" message will be up-linked 5 minutes before crossing FIR boundary and "END SERVICE" message will be automatically up-linked at the boundary, when Singapore ACC accepts the flight. In the event of a failure of automatic function, an "END SERVICE" message will be manually up-linked not later than the time the flight is crossing the FIR boundary or as soon as practicable.

### **7.2 For outbound flights entering non data link FIRs**

- 7.2.1 For FANS-1/A equipped aircraft being provided with data link services, the CPDLC message of "CONTACT [ATS unit name][frequency]" shall be up-linked 5 minutes before crossing FIR boundary.
- 7.2.2 The pilot should acknowledge this message by sending "WILCO". When departing the data link airspace, an "END SERVICE" message will be uplinked to terminate the CPDLC connection with "VVTS"

## 8. Flight Plan Procedures

8.1 ATS systems use Item 10 (Equipment) of the standard ICAO flight plan to identify an aircraft's data link capabilities. The participating pilots or operator shall be responsible for inserting the following information in the ICAO flight plan:

- Item 10 - The letter "J" to indicate data link capability;
- Item 10 - The letter "D" in the Surveillance field to indicate ADS-C capability;
- Item 18 - The letters DAT/ followed by one or more letters as appropriate to indicate the type of data link equipment carried when "J" is entered in Item 10. (Refer ICAO PANS/ATM)

Example:

ICAO Item 10: .....J...../...D

ICAO Item 18: **REG/.....DAT/SV** (for a satellite and VHF data link equipped aircraft)

Letter following DAT/	Type of data link
S	Satellite data link
H	HF data link
V	VHF data link
M	SSR Mode S data link

## 9. Data Link Failure

9.1 When CPDLC connection cannot be established successfully, the pilot should select "ATC Com off" if possible and then initiate another AFN logon. If the pilots continue experiencing the inability to establish CPDLC connection, the pilot shall re-establish voice communication **on** appropriate frequency.

9.2 When the pilot recognizes a failure of the CPDLC connection, the pilot should inform ATC of the situation via appropriate voice frequency and terminate the CPDLC connection, if possible, by selecting "ATC Com Off".

## 10. Addressee for Problem Reports

10.1 Pilots or operators who have encountered problems with data link service shall report to the Air Navigation Department/ Civil Aviation Administration of Viet Nam, at the following address:

**Civil Aviation Administration of Viet Nam  
Air Navigation Department  
119 Nguyen Son Street, Long Bien District,  
Ha Noi, Viet Nam  
Tel: 84-4-8 274 191 or 8 723 600  
Fax: 84-4-8 274 194  
AFS: VVVVYAAN  
E-mail: [and@caa.gov.vn](mailto:and@caa.gov.vn)**

10.2 FANS 1/A Problem Report form is at Attachment 1

**Director General**  
Civil Aviation Administration of Viet Nam

<b>FANS 1A-PROBLEM REPORT</b>			<b>NUMBER</b>
<b>Date UTC</b>		<b>Time UTC</b>	
<b>Registration</b>		<b>Flight Number</b>	
<b>Sector</b>			
<b>Originator</b>		<b>Aircraft Type</b>	
<b>Organization</b>			
<b>Active Center</b>		<b>Next Center</b>	
<b>Position</b>			
<b>Description</b>			

**Southeast Asia - ADS/CPDLC Equipage and ATS Status**

*(last update January May 2007)*

STATE/ ORGANIZATION	FIR	LOGON CODE	Ground Station Manuf- acturer	DSP (e.g. SITA, ARINC)	ADS	CPDLC	AIDC	FDP	Test, Ops Trial or Operational	Procedures Published	ADS/CPDLC TRIAL	CONTACTS (ATM contact in <b>bold</b> )	REMARKS
<b>CHINA</b> CAAC - General Administration of Civil Aviation of China	Sanya FIR												
<b>HONG KONG, CHINA</b> CAD - Civil Aviation Department	Hong Kong FIR				YES (trial equipment)	YES (trial equipment)	YES (trial equipment)	YES	Stopped	NO	conducted from 1997 to 2002	Mr.W Y Leung Assistant Director-General of Civil Aviation (Engineering & Systems) Tel: (852) 2591 5000 Fax: (852) 2845 7160 email: wyleung@cad.gov.hk	
<b>JAPAN</b> JCAB - Civil Aviation Bureau of Japan	Fukuoka FIR	RJJJ		SITA	YES	YES	YES (with Oakland & Anchorage)	YES	Operational	PUBLISHED	completed in July 2006	<b>Mr. Hiroshi Inoguchi</b> Special Assistant to the Director, JCAB ATS Systems Planning Division, Tel: +81-3-5253- 8111 ext 51128 Fax: +81-3-5253-1663 E-mail: inoguchi- h2hh@mlit.go.jp	FUKUOKA FIR Oceanic participating in the IPACG FIT
<b>MALAYSIA</b> Department of Civil Aviation	Kuala Lumpur <u>FIR</u>	WMFC		ARINC			NO	YES	In early 2007 Malaysia will issue tender documentation for new installation.		No	<b>Mr.Harizan Mohammad Yatim</b> Director ATS Tel: 603-88714000 Fax: 603-88714290 E-mail: accwmfc@tm.net.my harizan@atsdca.gov.my <b>Mr Omran Zakarina</b> Deputy Director ATS Email:omran@dca.gov.my:	
	Kota Kinabalu FIR	WBFC		ARINC			NO	YES		No			

FIT-SEA/6 and SEACG/14  
Attachment 2 to Appendix C

STATE/ ORGANIZATION	FIR	LOGON CODE	Ground Station Manuf- acturer	DSP (e.g. SITA, ARINC)	ADS	CPDLC	AIDC	FDP	Test, Ops Trial or Operational	Procedures Published	ADS/CPDLC TRIAL	CONTACTS (ATM contact in <b>bold</b> )	REMARKS
<b>PHILIPPINES</b> Air Transportation Office	Manila FIR										No	<b>Mr. Salvador G. Rafael</b> Chief, ATC Division Tel: 632-8799160 Fax: 632-8799160 E-mail: raffy_thunder92@yahoo.com	State to provide information for FIT- SEA/4 7
<b>SINGAPORE</b> Civil Aviation Authority of Singapore	Singapore FIR	WSJC	Thales	SITA	YES	YES	NO	YES	Operational	YES	<del>conducted from 1997-</del> <u>Completed</u>	<b>Mr. Yeo Cheng Nam</b> Senior Engineer (Surveillance) yeo_cheng_nam@caas.gov.sg <b>Mr. Kwek Chin Lin</b> ATC Manager (Systems) kwek_chin_lin@caas.gov.sg Mr. Kwek Chin Lin ATC Manager (Systems) E-mail: kwek_chin_lin@caas.gov.sg	<del>Expects to joined Viet</del> Nam in operational trial commencing in 2007
<b>THAILAND</b> AEROTHAI	Bangkok FIR	VTBB	ARINC	ARINC	YES	YES	YES	YES	Ops Trial	NOTAM every three months	No	<b>Mr. Tinnagorn Choowong</b> Tel: 66-2-285 9975 Mobile: 66-09-816 6486 Fax: 66-2-285 9077 E-mail: tinnagorn.ch@aerothai.co.th	<u>Pending an operational trial in the Bay of Bengal after six months period and will study CPDLC application over the continental area base on ATN protocol.</u>
<b>VIETNAM</b> Civil Aviation Administraion of Viet Nam	Ho Chi Minh FIR	VVTS	Thales	ARINC	YES	YES			<del>system test- Ops trial will be in since March-</del> <del>2007</del>	PUBLISHED	Yes	<b>Mr. Nguyen Manh Quang</b> Deputy Director of ATS/AIS/MET/SAR Tel: (84-4) 8725272 Fax: (84-4) 8725281 e- mail: vatmats@n.vnn.vn	<del>to be ready for-</del> operational trial in 2007. <u>Phase 1 started in March 2007 and Phase 2 will start in August 2008.</u>
	Hanoi FIR										No		

FIT-SEA/6 and SEACG/14  
Attachment 2 to Appendix C

STATE/ ORGANIZATION	FIR	LOGON CODE	Ground Station Manuf- acturer	DSP (e.g. SITA, ARINC)	ADS	CPDLC	AIDC	FDP	Test, Ops Trial or Operational	Procedures Published	ADS/CPDLC TRIAL	CONTACTS (ATM contact in <b>bold</b> )	REMARKS
<b>CENTRAL REPORTING AGENCY (CRA)</b> CRA-Japan	Ho Chi Minh, Manila and Singapore FIRs						N/A					Mr. Yoshiro NAKATSUJI K-1 Building, 3rd floor 1-6-6, Haneda Airport. Ota-ku, Tokyo 144-0041, Japan Telephone: +81-3-3747-1231 Fax: + +81-3-3747-1231 E-mail: crasa@cra-japan.org naka@atcaj.or.jp	FIT-SEA CRA, operated by CRA Japan.
<b>IATA</b>							N/A					Soon Boon Hai Assistant Director Safety Operations & Infrastructure Tel: 65 62397267 Fax: 65 65366267 E-mail: soonbhd@iata.org	
<b>IFALPA</b>							N/A					Capt. Suresh Menon Regional Vice President ASIA/East Tel: 61 2 99487532 Fax:(65) 6584 8869 E-mail: menon@pacific.net.sg	
<b>ARINC</b>							N/A					Mr. Sarawut Assawachaichit Program Manager, Globalink Asia Tel: 66 2 2859435-6 Fax: 66 2 2859437 E-mail: sassawac@arinc.com	
<b>SITA</b>							N/A					Mr. David Fung SITA Regional Manager, Asia AIRCOM CNS Services Room 1201, 12/F Centre Point 181-185 Glovcester Road Wanchai Hong Kong, China Tel: 852 2122 7000	
<b>ICAO</b>							N/A					Mr. Kyotaro Harano Regional Officer ATM Tel: 66 2 5378189, ext. 159 Fax: 66 2 537 8199 E-mail: kharano@bangkok.icao.int icao_apac@bangkok.icao.int	

# ***FIT-SEA CRA Activity Since 15 March 2007***



FIT-SEA6  
Hanoi, Viet Nam  
28 May - 1 June, 2007

# FIT-SEA CRA Activity Since 15 March 2007

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This presentation contains;

## 1. **Statistic Analyses on System Performance**

System Performance Analysis Data

## 2. **Problem Reports**

Since 15 March 2007

Reports proposed to be closed at FIT-SEA/6

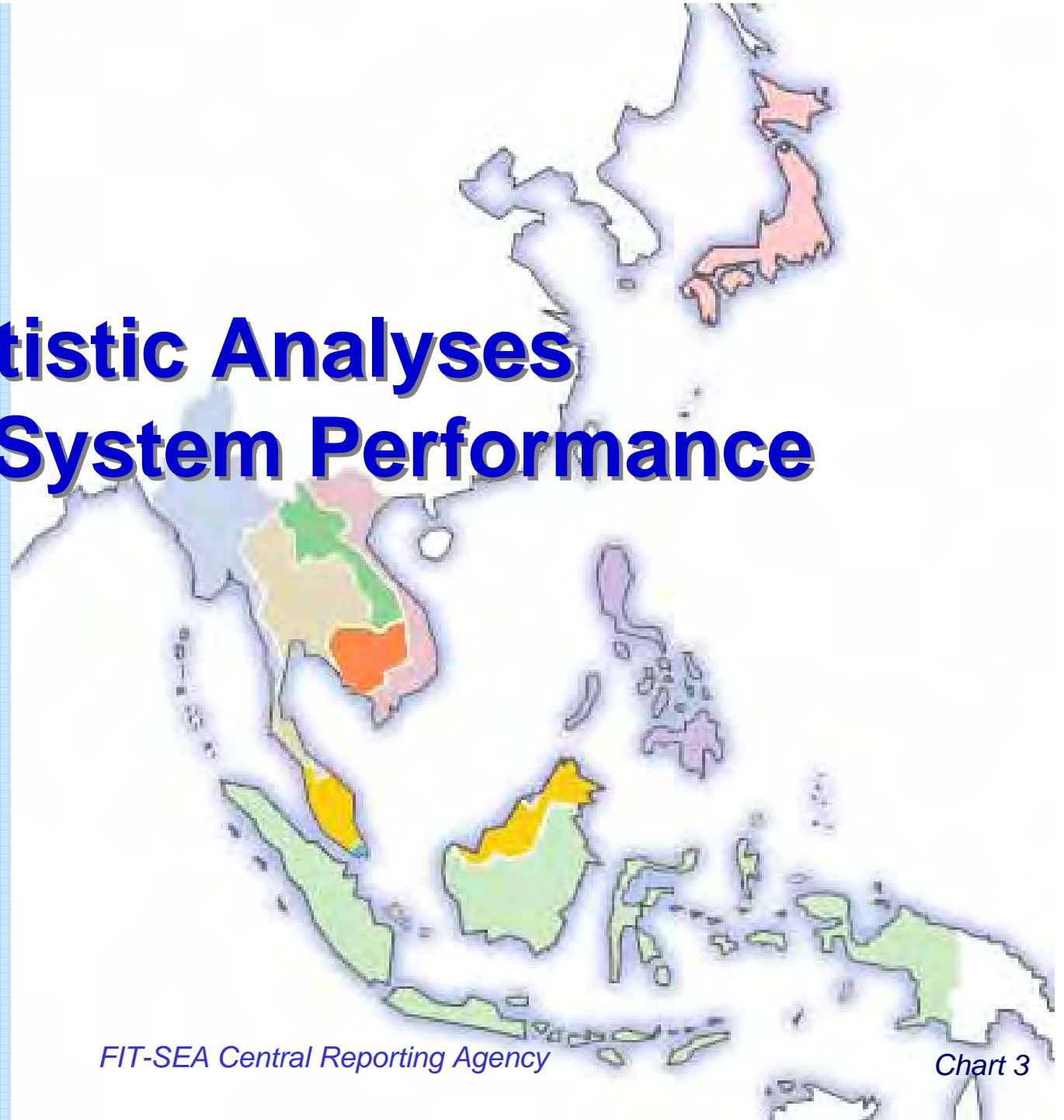
Reports remained as lesson learned

Specific reports

# 1. **Statistic Analyses on System Performance**

*FIT-SEA Central Reporting Agency*

*Chart 3*



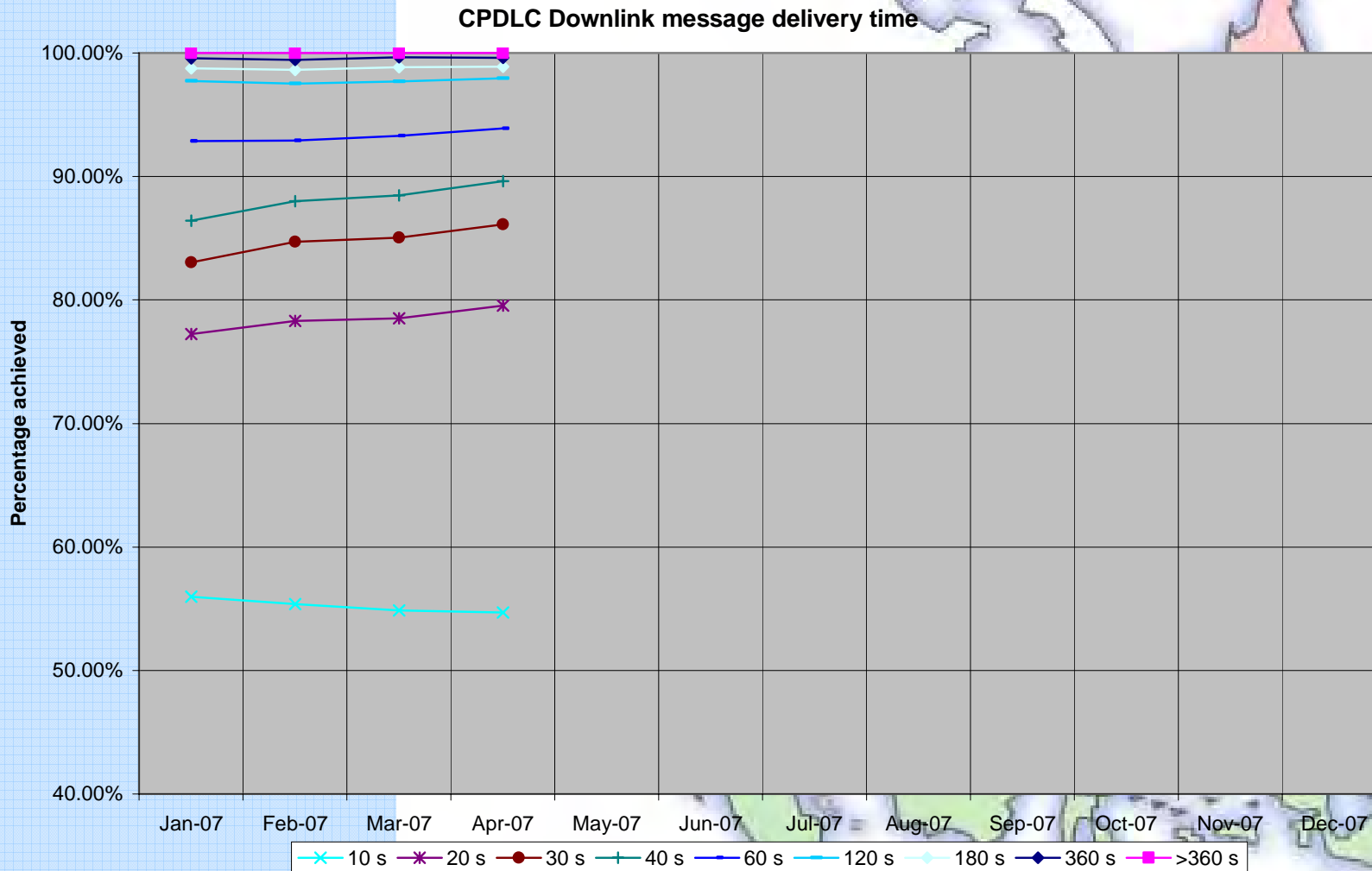
# CPDLC System Performance

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- In this section, we provide CPDLC system performance on:
  - + CPDLC Down-link Performance
  - + CPDLC Up-link Performance
  - + Total Number of CPDLC Down-link messages
  - + Total Number of CPDLC Up-link messages
  - + CPDLC Up-link Message Success Rate

# CPDLC Down-link Performance

<SINGAPORE>



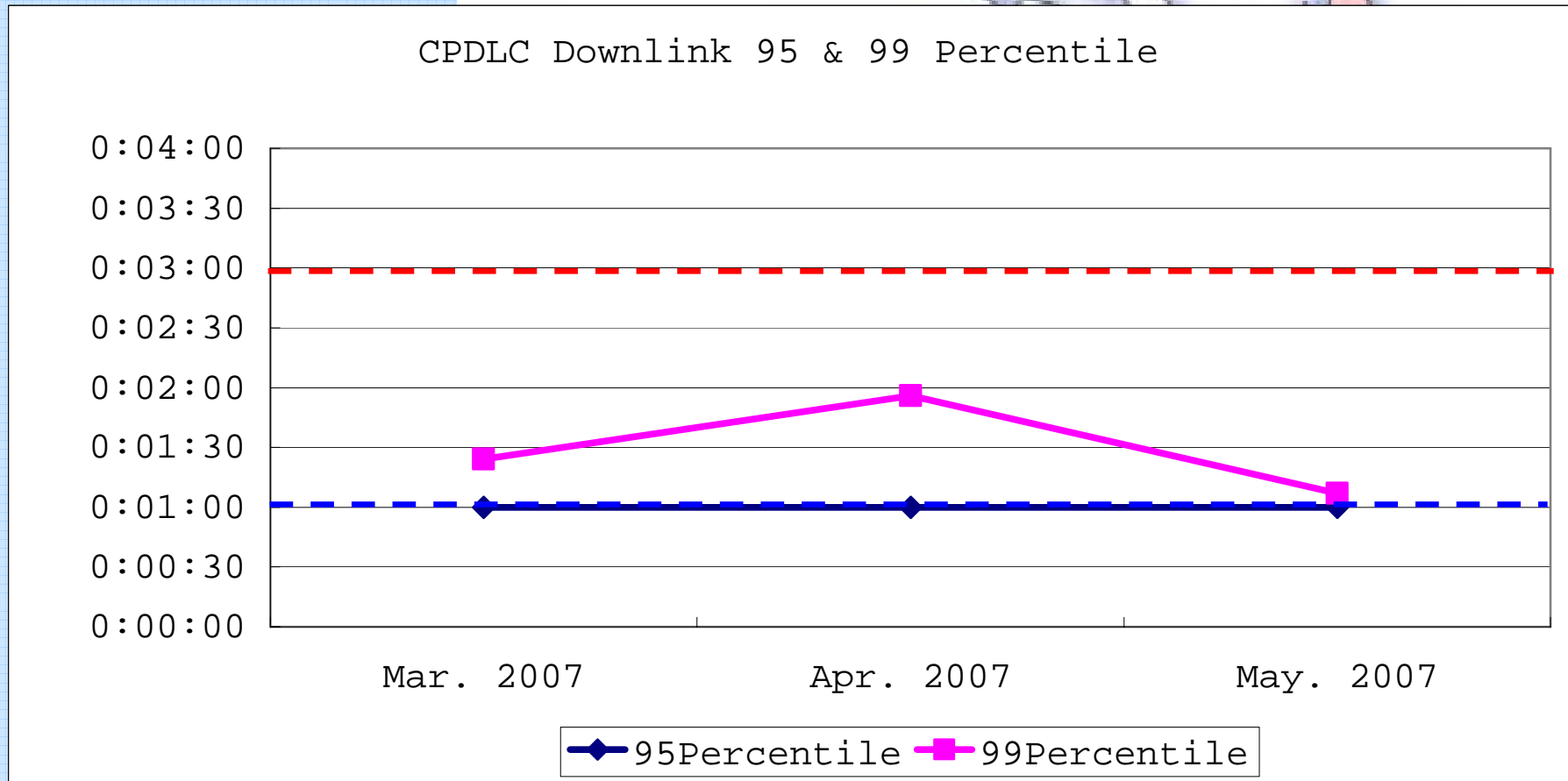
**One-way Trip Time: Difference of time-stamps between the avionics and ground systems**

FIT-SEA Central Reporting Agency

Chart 5

# CPDLC Down-link Performance

<VIET NAM>



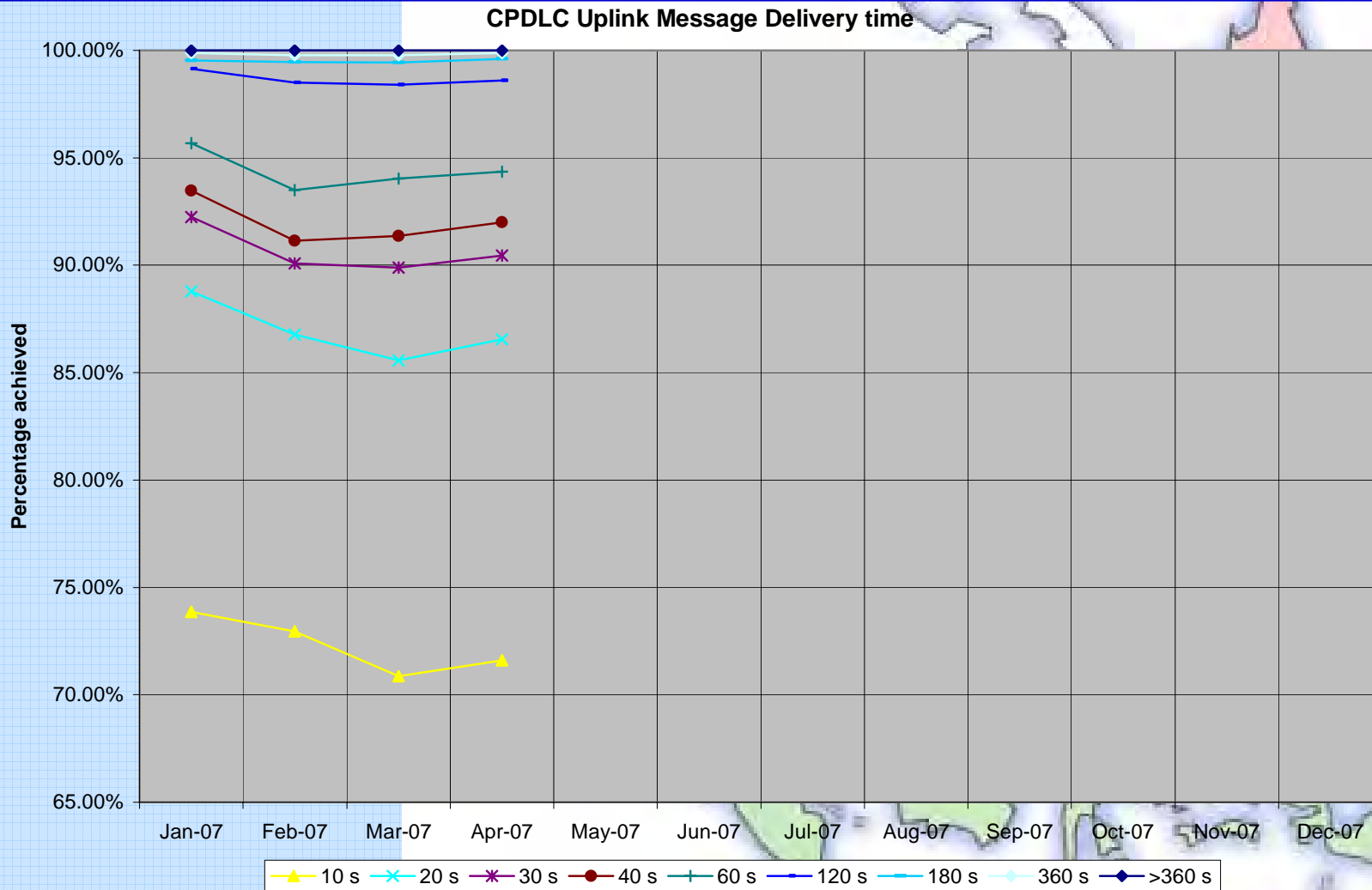
**One-way Trip Time: Difference of time-stamps between the avionics and ground systems**

FIT-SEA Central Reporting Agency

Chart 6

# CPDLC Up-link Performance

<SINGAPORE>



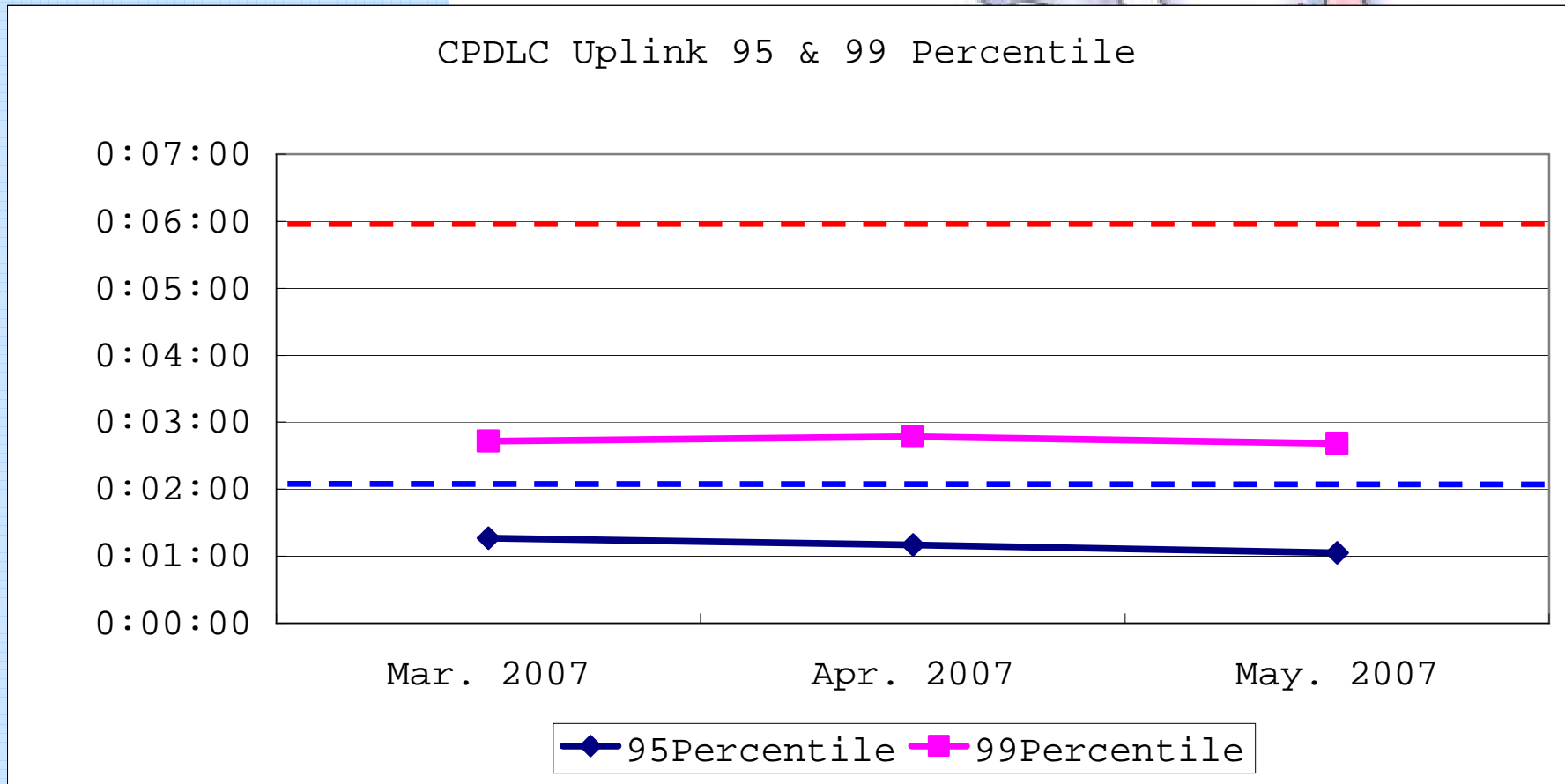
**Round Trip Time: Transit-delay-time from time-stamp of up-link to receipt time of MAS**

FIT-SEA Central Reporting Agency

Chart 7

# CPDLC Up-link Performance

<VIET NAM>



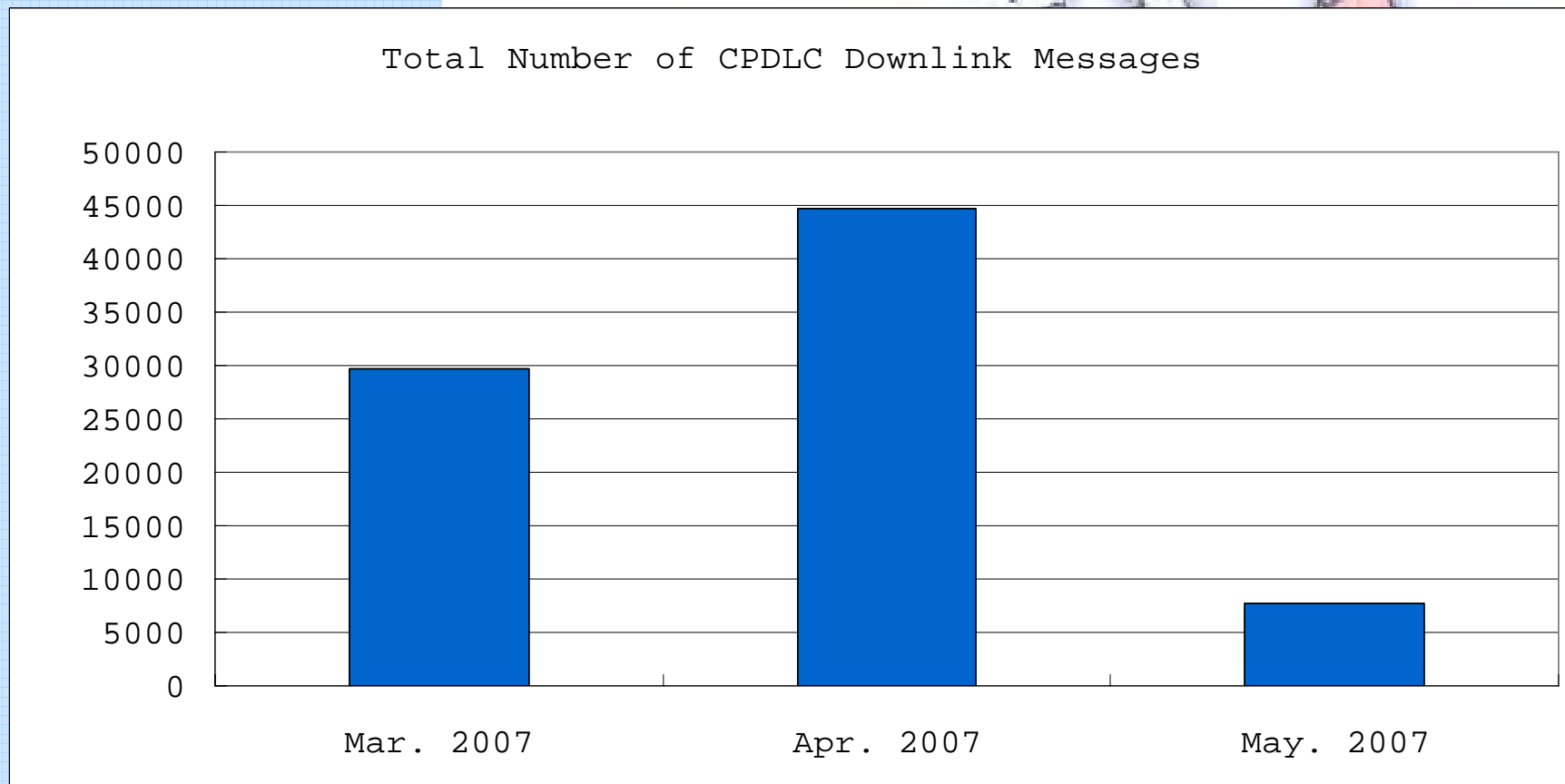
**Round Trip Time: Transit-delay-time from time-stamp of up-link to receipt time of MAS**

FIT-SEA Central Reporting Agency

Chart 8

# Total number of CPDLC Down-link Messages

<VIET NAM>



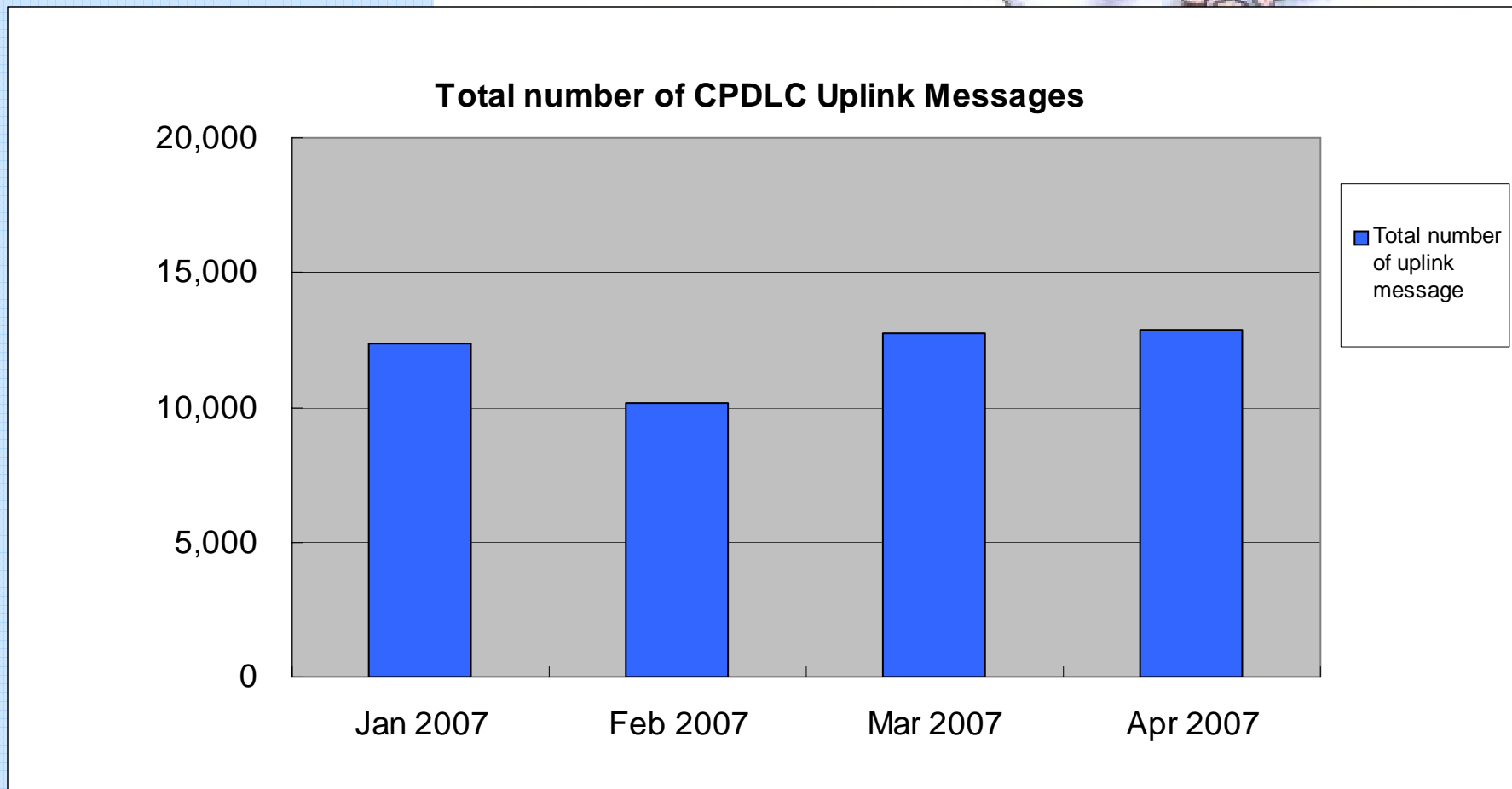
**Note:** *March: 15 - 31 March 2007*  
*April: 1 - 30 April 2007*  
*May: 1 - 6 May 2007*

FIT-SEA Central Reporting Agency

Chart 9

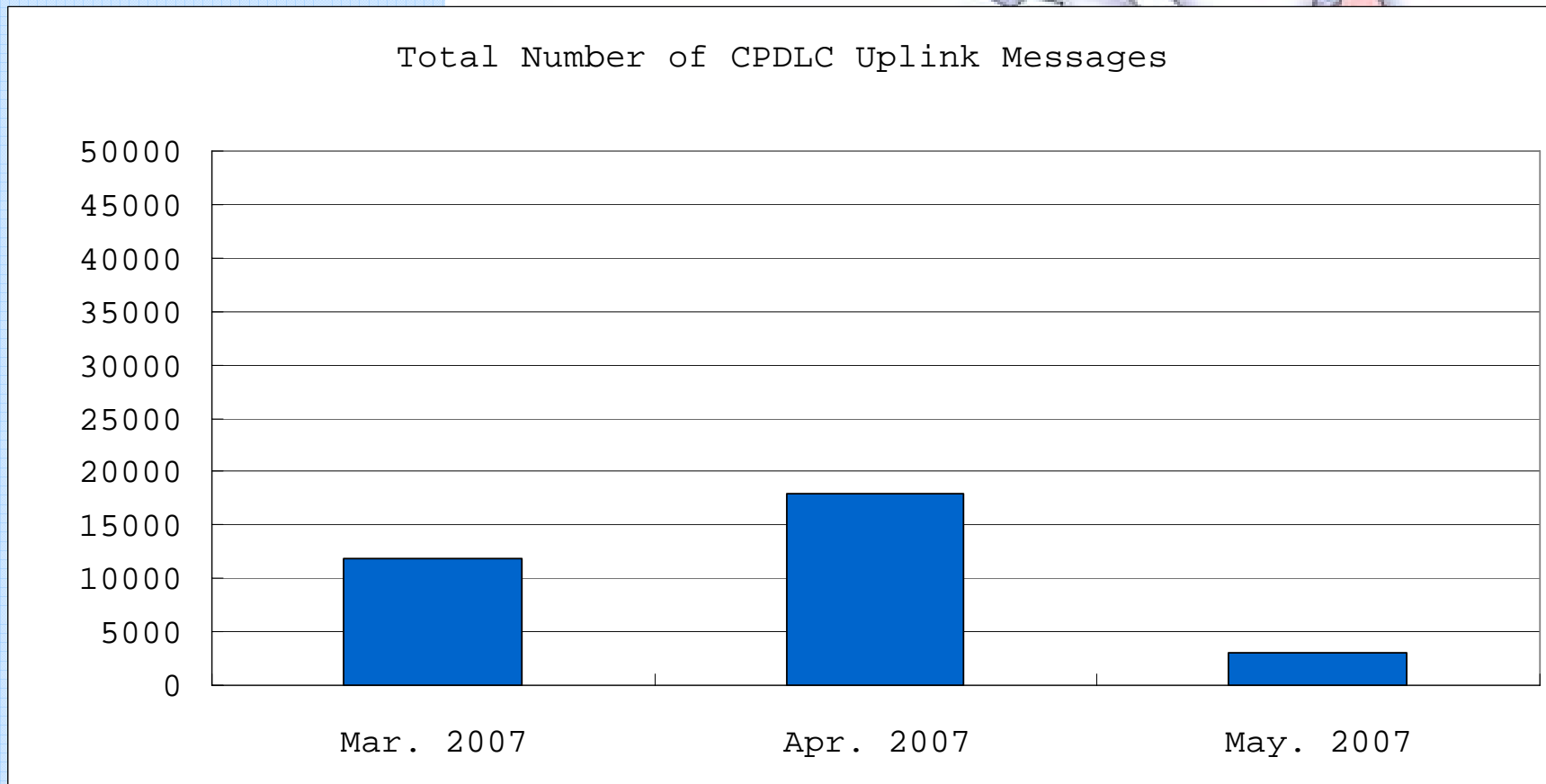
# Total number of CPDLC Up-link Messages

<SINGAPORE>



# Total number of CPDLC Up-link Messages

<VIET NAM>



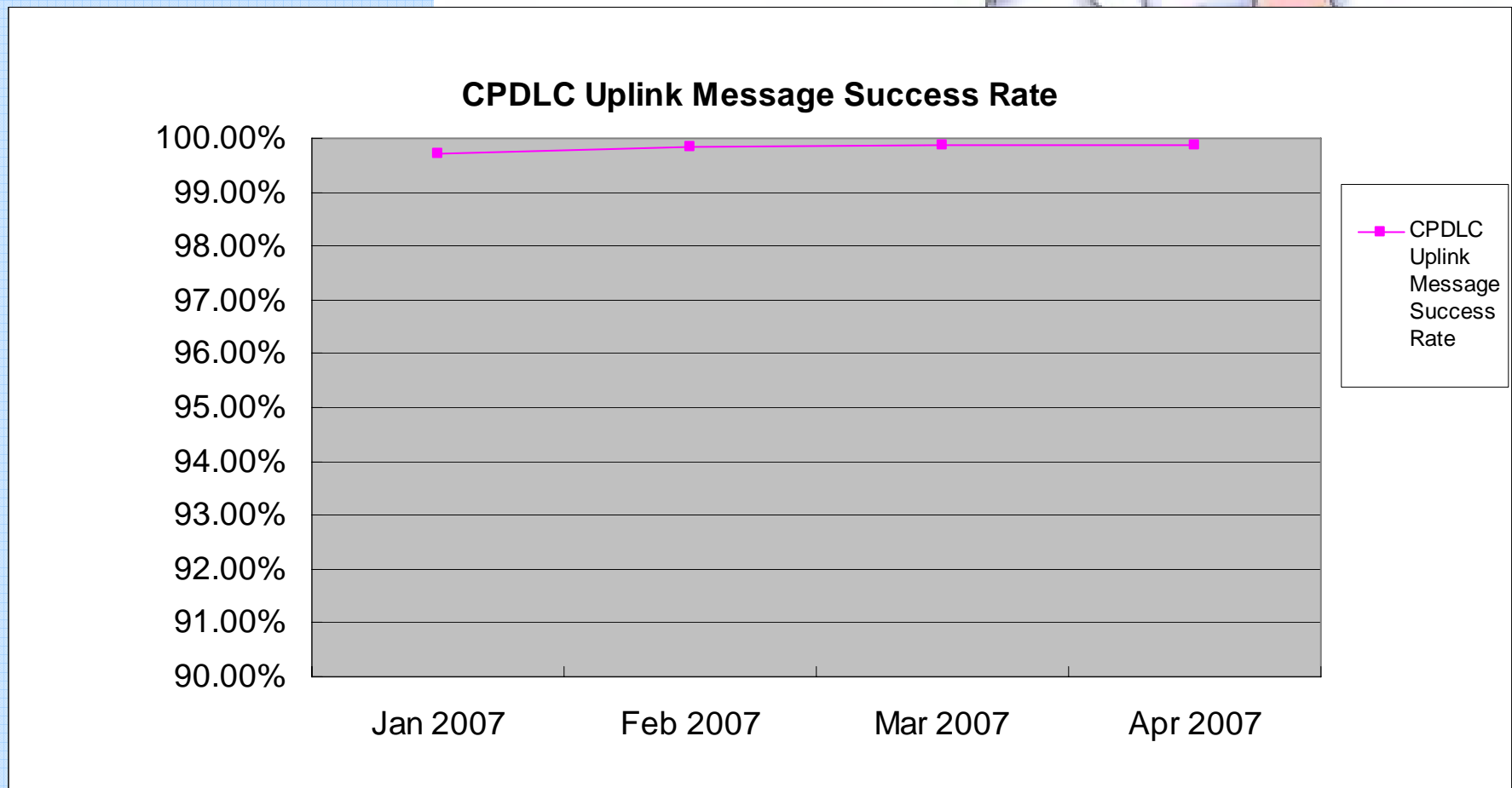
**Note:** *March: 15 - 31 March 2007*  
*April: 1 - 30 April 2007*  
*May: 1 - 6 May 2007*

FIT-SEA Central Reporting Agency

Chart 11

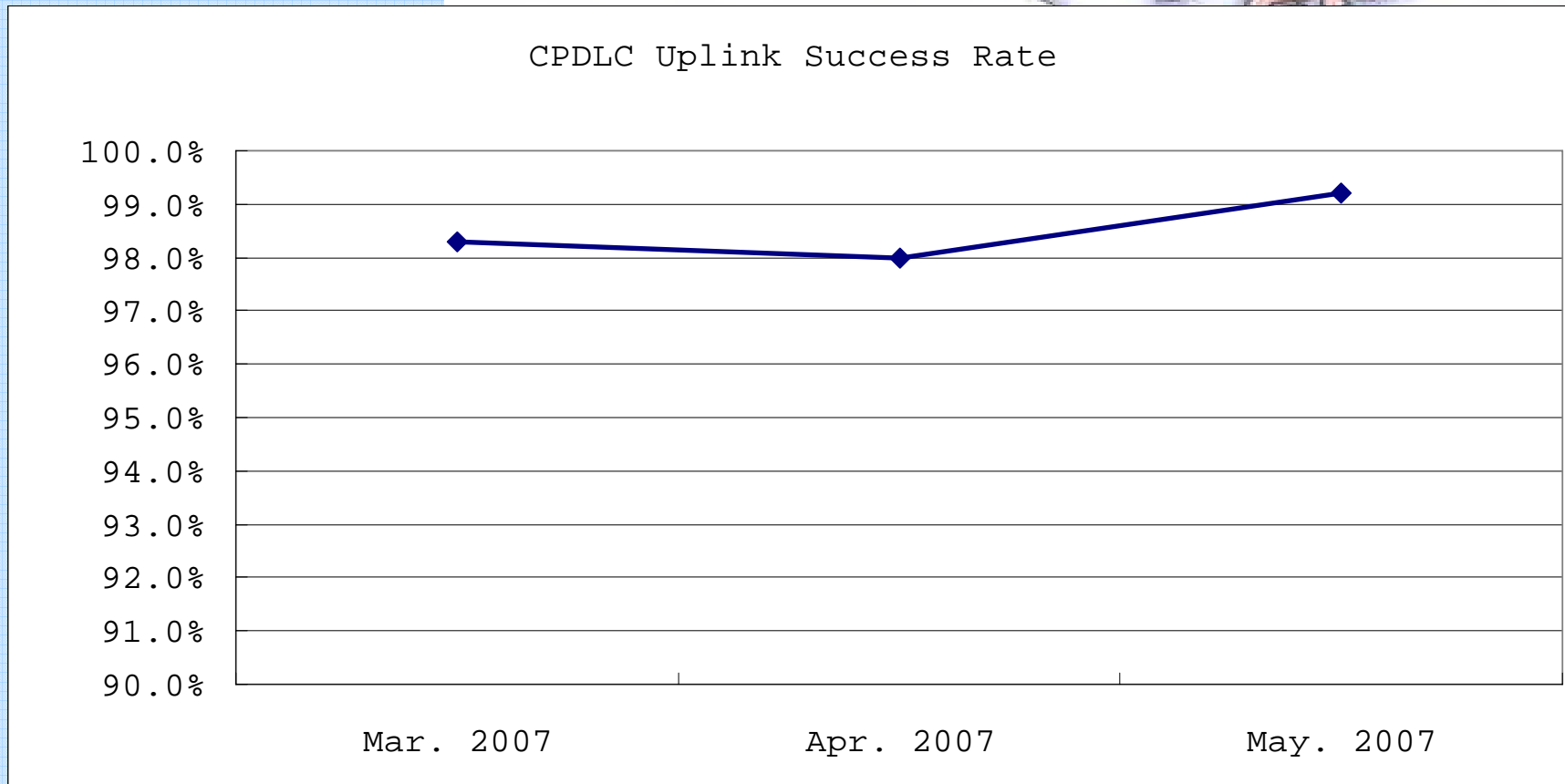
# CPDLC Up-link Message Success Rate

<SINGAPORE>



# CPDLC Up-link Message Success Rate

<VIET NAM>



## 2. Problem Reports



# ***Problem reports***

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- **What is PRs status?**
- **Categories of new reports**
- **New Problem Reports summary**
- **PRs to be closed at FIT-SEA6**
- **Specific reports for discussion**

# What is PR status?

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## Each PR Status means as follows:

### -In progress:

- *Under investigation.*

### -Open:

- *Action being taken after identifying the cause.*
- *In the process of confirmation if rectified or not.*

### -Closed:

- *Having closed the case.*

### -Waiting for info:

- *Just in the process of acquiring data.*
- *Inquiry being made to the concerned.*
- *Investigation in progress at the concerned.*

### -Ready for FIT-SEA:

- *Scheduled to close the case after discussion at FIT-SEA meeting.*

### -Lesson learned:

- *In the midst of circulating the cause and counter measures of the trouble.*

# Categories of Reports

---

- of the 17 Reports;

- **ADS** 10
- **CPDLC** 0
- **Connection** 2
- **Datalink failure** 5

# New Reports summary (1)

## (1) ADS problem

PR NO.	Problem Report Title	Comments/Notes/Description	Status	Discuss at FIT-SEA/6?
50001	Deviated from planned route. 3 minutes later, it was back to normal.	Incorrect ADS report received	Waiting	Y Chart25
50002	Deviated from planned route. With Demand Contract, it jumped back to normal route.	Incorrect ADS report received	Waiting	Y Chart25
50004	20-50 NM off-set. Later, it was back to normal. 999kts shown.	Incorrect ADS report received	Waiting	Y Chart25
50005	Observed with ground speed 995kts.	Incorrect ADS report received	Waiting	Y Chart25
50006	Label showing about 5NM east of track, but corrected by receiving a new ADS report.	Incorrect ADS report received	Waiting	Y Chart25

# New Reports summary (2)

## (1) ADS problem (cont'd)

PR NO.	Problem Report Title	Comments/Notes/Description	Status	Discuss at FIT-SEA/6?
50007	Label showing about 5NM west of track, but corrected by receiving a new ADS report.	Incorrect ADS report received	Waiting	Y Chart25
50011	999 kts, off-track displayed on ATC screen. Then, label disappeared for about 2 minutes.	Incorrect ADS report received	Waiting	Y Chart25
50012	999 kts, off-track displayed on ATC screen, but corrected by receiving a new ADS report.	Incorrect ADS report received	Waiting	Y Chart25
50013	999 kts, off-track displayed on ATC screen, but corrected by receiving a new ADS report.	Incorrect ADS report received	Waiting	Y Chart25
50014	999 kts, off-track displayed on ATC screen, but corrected by receiving a new ADS report.	Incorrect ADS report received	Waiting	Y Chart25

# New Reports summary (3)

## (2) Connection/Transfer Problem

<b>PR NO.</b>	<b>Problem Report Title</b>	<b>Comments/Notes/Description</b>	<b>Status</b>	<b>Discuss at FIT-SEA/6?</b>
50008	Not logoff to an ATSU	1.Message delay due to flying on the airspace where datalink tends to be unstable. 2.Message reference number error.	Open	Y Chart30
50010	Unable to auto-transfer (warning message received).	The aircraft downlinked FN_COMP with reason code = 4.	Open	Y Chart32

# New Reports summary (4)

## (3) Datalink, General Problem

PR NO.	Problem Report Title	Comments/Notes/Description	Status	Discuss at FIT-SEA/6?
50003	Disappearance of ADS tag	The aircraft downlinked ADS DIS in response to an ADS periodic contract request. About 13 minutes later, the aircraft downlinked ADS periodic report.	Waiting	Y Chart29
50009	No ADS reports downlinked.	The ATSU did not uplink ADS contract requests.	Open	Y Chart31
500015	Unable to use Datalink	Due to DSP'S outage.	Ready for FIT-SEA6	Y Chart23
500016	Unable to use Datalink	Due to DSP'S outage.	Ready for FIT-SEA6	Y Chart23
500017	Unable to use Datalink	Due to DSP'S outage.	Ready for FIT-SEA6	Y Chart23

# PRs to be closed at FIT-SEA6

---

- Unable to use Datalink(PR50015,50016,50017)



# Unable to use Datalink

PR Number: 50015,50016,50017

PR Status: Ready for FIT-SEA (Technical)

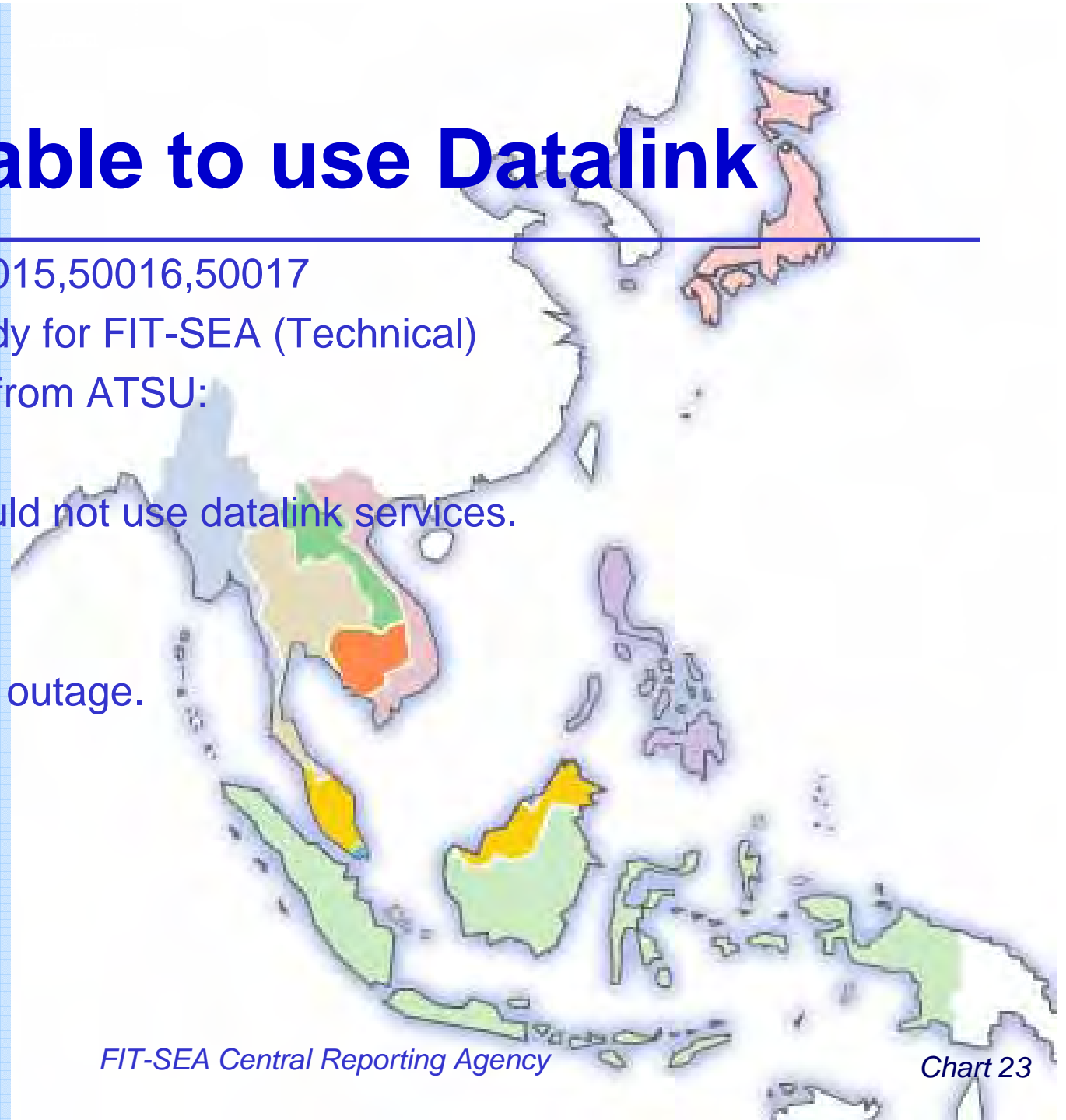
Problem Report from ATSU:

## <EVENTS>

- All aircraft could not use datalink services.

## <ANALYSIS>

- Due to DSP's outage.



# Specific PRs for discussion

---

- Incorrect ADS report received (PR50001,50002,50004-50007,50011-50014)
- Disappearance of ADS tag (PR50003)
- Not logoff to an ATSU (PR50008)
- No ADS reports downlinked (PR50009)
- Unable to auto-transfer (PR50010)

# Incorrect ADS report received(1)

A map of Southeast Asia is visible in the background of the slide. The map shows the outlines of the region, with various countries shaded in different colors: Thailand in light blue, Laos in light green, Cambodia in light orange, Vietnam in light purple, Malaysia in yellow, and Indonesia in light green. The Philippines is also partially visible in the east.

PR Number: PR50001,50002,50004-50006,50007,50011-50014

PR Status: Waiting for info (Technical)

Problem Report from ATSU:

<EVENTS>

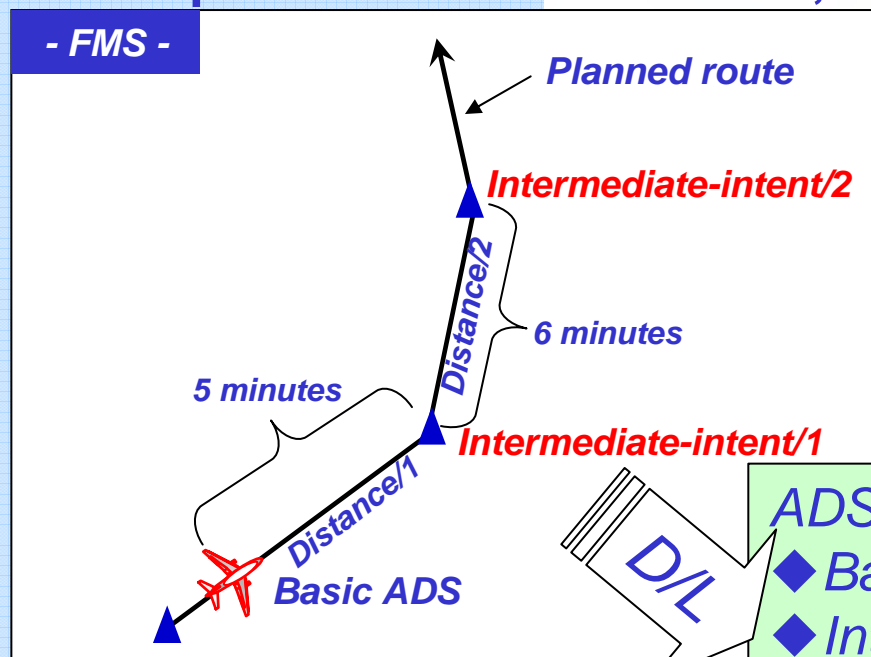
- Showing on the ATC screen as follows :
  - **“Deviated”** from it’s planned route,
  - Ground speed **“999 knots”**,
  - **“jump back”** to the planned route.
- Almost PRs were corrected by receiving **“a New ADS report”**.

<ANALYSIS>

- All problems were caused by receiving an **“Incorrect ADS reports”**.

# Incorrect ADS report received(2)

ADS report contains Basic ADS, and Intermediate Intent.



ADS report

◆ Basic ADS

◆ Intermediate Intent

· Intermediate/1

Distance/1, True Track/1, Projected time/1(5 min))

· Intermediate/2

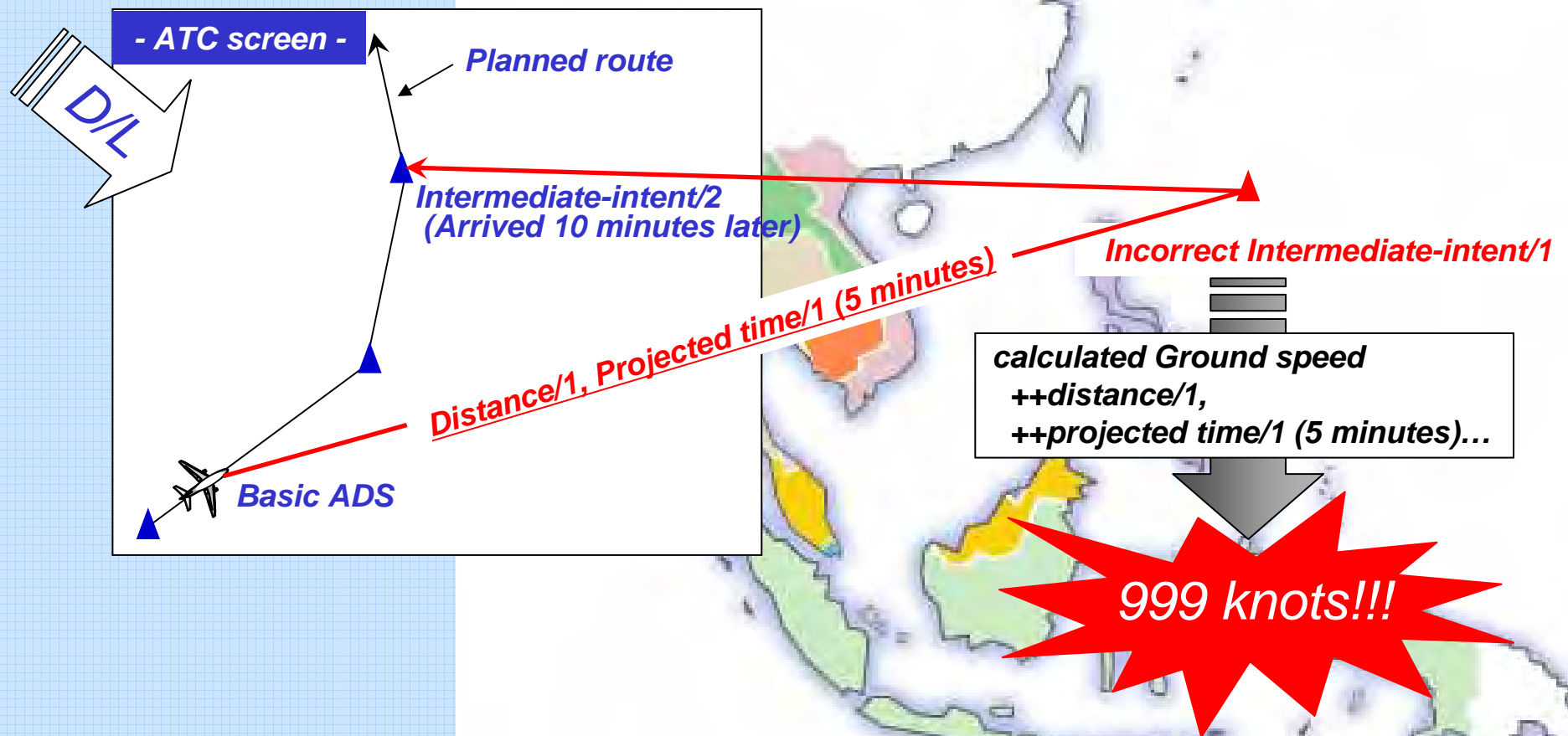
Distance/2, True Track/2, Projected time/2(6 min))

FIT-S

Chart 26

# Incorrect ADS report received(3)

If the Intermediate Intent is incorrect, the aircraft is displayed as,



# Incorrect ADS report received(4)

---

<Waiting for information>

- There is some possibilities that the avionics of the aircraft has problems, so CRA has inquired about the problems to the aircraft manufacturer.
- We understand that the ATSU end system is using “intermediate intent” to display aircraft position on the ATC screen.
- What other data are used to display aircraft in your system ?

# Disappearance of ADS tag



PR Number: PR50003

PR Status: Waiting for info (Technical)

Problem Report from ATSU:

## <EVENTS>

- Between LUSMO and AKMON, does not display any ADS tag.
- Checked with aircraft and confirmed that its “ADS is ON”.

## <ANALYSIS>

- According to the log, ATSU received ADS DIS in response to ADS periodic contract request.
- About 13 minutes later, the aircraft downlinked ADS periodic report.

## <Waiting for information>

- *What conditions are required to display ADS data tag on the ATC screen?*

# Not logoff to an ATSU

A map of Southeast Asia is visible in the background, showing countries like Thailand, Laos, Cambodia, Vietnam, Malaysia, and Indonesia. The map is partially obscured by the text and a blue grid background on the left.

PR Number: PR50008

PR Status: Open (Technical)

Problem Report from ATSU:

## <EVENTS>

- Aircraft did not logoff to an ATSU.
- Then the ATSU uplinked erroneous CPDLC message.

## <ANALYSIS>

- After analyzing the log data, it turned out that this event occurred when the aircraft was flying through the airspace where VHF communications were not stable to make.
- As the result, it is presumed that the DR (Disconnect Request) messages which were stagnated in the avionics were sent to the ATSU later.
- The reason why ATSU uplinked erroneous CPDLC messages to the aircraft is presumed that the ATSU received downlink messages (WILCO. 7 minutes delay) in reply to the uplink message (CONTACT + EOS) which was already erased by the ATSU.

# No ADS reports downlinked



PR Number: PR50009

PR Status: Open (Technical)

Problem Report from ATSU:

<EVENTS>

- No ADS reports downlinked.

<ANALYSIS>

- The aircraft downlinked ADS DIS in response to an ADS Periodic Contract Request.
- After that, the ATSU did not uplink ADS Periodic Contract Request.
- As a result, the aircraft did not downlink ADS periodic reports.

# Unable to auto-transfer



PR Number: PR50010

PR Status: Open (Technical)

Problem Report from ATSU:

## <EVENTS>

- An ATSU uplinked CPDLC NDA (Next Data Authority), but the aircraft responded to warning message.

## <ANALYSIS>

- According to the log, the aircraft downlinked AFN FN\_COMP with reason code = 4.
- Reason code “4” means,  
“Next ATSU could not match the Flight ID and position to a flight plan.”  
(ARINC622-2 3.5.8)
- It is thought that the ATSU end system is designed if it received FN\_COMP with reason code normal(0), it displays warning message.

# *The analysis of interim report*

## 1. System Performance Date Analysis

Performance of both FIR is well meets the FOM criteria.

## 2. Problem Report

Most of PRs in Singapore and Ho Chi Minh FIR were caused by ADS. But in case of Fukuoka FIR, most of PRs were caused by CPDLC in 2006 FY.

In general, some similarities were found between Fukuoka FIR and Ho Chi Minh as well as Singapore FIRs with regard to both ADS and CPDLC.

# Questions?

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*FIT-SEA Central Reporting Agency*

*Chart 34*

**FIT- SEA TASK LIST**

(Last updated *January-May 2007*)

	<b>ACTION ITEM</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>Status</b>	<b>REMARKS</b>
1.	ATS providers to use the <i>FANS Operations Manual (FOM)</i> and to review and update their ATS operating procedures to align with the FOM.	Ongoing activities as additional States join the operational trial.	All States	Ongoing	Important all ATSU adopt common operating procedures.  APANPIRG/15 (August 2004) agreed that the FOM be used as the basis for ADS and CPDLC operations in conjunction with Annex 10, PANS-ATM and regional guidance material.
2.	ATS providers to coordinate with adjacent ACCs to review and update letters of agreement for introduction of ADS/CPDLC services on a trial basis.	Ongoing activities as additional States join the operational trial.	Philippines, Singapore and Viet Nam	Ongoing	Ensure common ATC procedures applied.  Letter of agreement between Singapore and Viet Nam <del>to be</del> was finalised and signed in February 2007
3.	Issue AIC/AIP Supplement on the commencement of the operational trial.	AIC prior to the Phase 1 commencement and AIP Supplement prior to Phase 2 commencement	Philippines and Viet Nam	Ongoing	Singapore has already issued AIP on availability of ADS/CPDLC services in the Singapore FIR  AIC for Phase 1 was issued by Viet Nam in January 2007. <del>and</del> AIP Supplement <del>in due course</del> for Phase 2 is to be on published 21 June 2007.

FIT-SEA/6 and SEACG/14  
Attachment 4 to Appendix C

	<b>ACTION ITEM</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>Status</b>	<b>REMARKS</b>
					Publications of AIC and AIP Supplement by the Philippines are subject to the readiness in the Manila FIR.
4.	Coordinate with Southeast Asia States on implementation of the operational trial.	Ongoing activities as additional States join the operational trial.	ICAO, All States	Ongoing	Determine status on trial participation
5.	Collect ADS/CPDLC Problem Reports (PR) and submit to CRA through the State.	<del>Immediate</del> Ongoing	States, operators	Ongoing	To be submitted as soon as practicable to facilitate analysing the reports.  FIT-SEA CRA operated by CRA Japan to undertake CRA services from late 2005.  <del>Singapore to provide data to FIT-SEA CRA.</del>
6.	Provision of monthly monitoring ADS/CPDLC system performance data to be submitted to the CRA.	Monthly	States	Ongoing	Essential for evaluating overall system performance within the trial airspace.  FIT-SEA CRA operated by CRA Japan to undertake CRA services from late 2005.

FIT-SEA/6 and SEACG/14  
Attachment 4 to Appendix C

	<b>ACTION ITEM</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>Status</b>	<b>REMARKS</b>
7.	Compile data on aircraft ADS/CPDLC equipped in the trial airspace.	Biannually	States, IATA	Ongoing	To keep record of aircraft participating in the trial and determine overall benefits derived by population of aircraft operating in the trial airspace.
8.	Training of controllers and technical staff on ADS/CPDLC operational procedures based on the FOM.	Ongoing activities as additional States join the operational trial.	Philippines and Viet Nam	Ongoing	Eight five-day training courses for 60 air traffic controllers began in 15 January 2007 <u>to Viet Nam</u> and <del>would be completed</del> for all controllers by 10 March 2007.
9.	Nominate contact person (technical and ATS) and keep details updated.	Ongoing activities as additional States join the operational trail	States, operators	Ongoing	Important that CRA has contact with engineering and operational personnel to analyse problem reports and performance data.  Contact persons to be included in the Table of ADS/CPDLC Equipage and ATS Status retained by FIT-SEA  FIT-SEA CRA operated by CRA Japan to undertake CRA services from late 2005.

FIT-SEA/6 and SEACG/14  
Attachment 4 to Appendix C

	<b>ACTION ITEM</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>Status</b>	<b>REMARKS</b>
10.	Establish data confidentiality agreements between States and CRA, and States and operators participating in the trial airspace.	Immediate	CRA, Philippines, Singapore and Viet Nam, and operators	As required	To establish agreement with States, operators and data providers for release of data and to de-identify reports.  Viet Nam and Singapore have signed.
11.	Update ICAO Guidance Material on CNS/ATM Operations in APAC Region.	As soon as practicable	ICAO	Ongoing	Part III harmonized with FOM.  ICAO Headquarters continuing the review/harmonisation of Guidance Material.  International Data Link Manual (IDLM) in preparation under the auspices of ICAO EUR/NAT Office.
<del>12.</del>	<del>Coordinate with the FOM editorial group on Request for Change (RFC) to the FOM.</del>	<del>As required</del>	<del>CRA, SEA FOM editor</del>	<del>Completed</del>	<del>SEA FOM principle contact point to be nominated.  FOM includes Request for Change (RFC) processes.</del>
<del>13.</del>	<del>Provide details of processes necessary to set up and operate the FIT-SEA CRA</del>	<del>FIT-SEA/3</del>	<del>SEA States/ CRA Japan/ participating industry partners</del>	<del>Completed</del>	<del>CRA Japan to provide information at FIT-SEA/3  FIT-SEA/3 endorsed terms of reference, task list and problem reporting arrangements for FIT-SEA CRA operated by CRA Japan.</del>

FIT-SEA/6 and SEACG/14  
Attachment 4 to Appendix C

	<b>ACTION ITEM</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>Status</b>	<b>REMARKS</b>
14.	Prepare suitable table of ADS/CPDLC implementation planning for all FIT-SEA FIRs including estimated dates for implementation of CPDLC communications, ADS/CPDLC full implementation, 50/50 NM reduced separation and 30/30 NM reduced separation to provide basis for long term satellite traffic load estimates to assist DSP network planning.	As required	SITA, <u>ANSP</u>	Ongoing	SITA has launched global satellite capacity/performance planning initiative to collect data from ANSPs and users to ensure timely network enhancement to meet future network requirements  (Raised at FIT-SEA/4)
15.	<del>Standardize the reporting arrangement for Problem Reports.</del>	As soon as possible	<del>ICAO, CRA</del>	<u>Completed</u>	<del>The use of different procedures from those of FIT BOB was undesirable and agreed that the matter should be further studied, with a view to aligning the procedures if at all possible.</del>  (Raised at FIT-SEA/4)
16.	<del>Letter of Request to Participate in the Phase 1 Trial</del>	As soon as possible	<del>Viet Nam, IATA and participating airlines</del>	<u>Completed</u>	<del>The Phase 1 involves the limited participation of airlines and the letter of request will be sent from Viet Nam to the participating airlines with the operational procedures to be attached to the letter.</del>  (Raised at FIT-SEA/5)

FIT-SEA/6 and SEACG/14  
Attachment 4 to Appendix C

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	<b>ACTION ITEM</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>Status</b>	<b>REMARKS</b>
17.	<u>Submit the interim report of the Phase 2 by Singapore, Viet Nam and FIT-SEA CRA.</u>	<u>FIT-SEA/7</u>	<u>Singapore, Viet Nam and FIT-SEA CRA</u>		<u>FIT-SEA/7 will be a “Go/No-Go” decision making where an interim report of the Phase 2 should be made by Singapore, Viet Nam and FIT-SEA CRA</u>  (Raised at FIT-SEA/6)

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**SOUTHEAST ASIA DATA LINK IMPLEMENTATION**

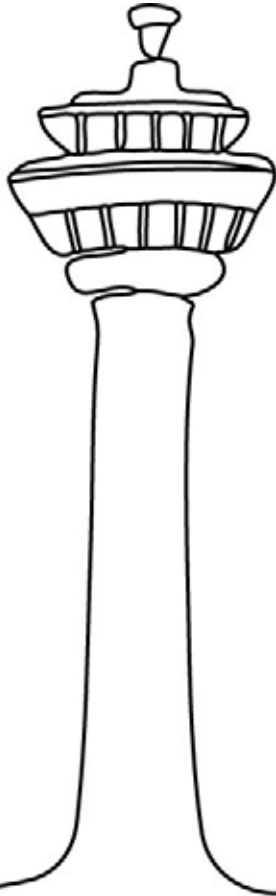
STATES	FIR	ESTIMATED/ STARTED DATE	DATE COMPLETED	NOTES
<b>Commence ADS/CPDLC Operational Trial</b>				
Malaysia	Kuala Lumpur	2007		<u>Will participate in BOB trials in the first quarter of 2008.</u>
Philippines	Manila	TBA		
Singapore	Singapore	<del>15 March 2007</del> <u>1997</u>	<u>1997</u>	
Thailand	Bangkok	<del>2007</del> <u>TBA</u>		Had previously participated in BOB trials, some equipment issues.
Viet Nam	Ho Chi Minh	15 March 2007		New ATS Centre Ho Chi Minh commissioned May 2006
<b>Implement CPDLC - Data Link Communications only</b>				
Malaysia	Kuala Lumpur			
Philippines	Manila	TBA		
Singapore	Singapore	<del>2008</del> <u>1997</u>		
Thailand	Bangkok	<u>TBA</u>		
Viet Nam	Ho Chi Minh	2008		
<b>Implement 50 NM/50 NM Based on RNP 10</b>				
Malaysia	Kuala Lumpur	TBA		
Philippines	Manila	TBA		
Singapore	Singapore	TBA		
Thailand	Bangkok	TBA		
Viet Nam	Ho Chi Minh	TBA		

FIT-SEA/6 and SEACG/14  
Attachment 5 to Appendix C

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STATES	FIR	ESTIMATED/ STARTED DATE	DATE COMPLETED	NOTES
<b>Implement 30 NM/30 NM Based on RNP 4</b>				
Malaysia	Kuala Lumpur	TBA		
Philippines	Manila	TBA		
Singapore	Singapore	TBA		
Thailand	Bangkok	TBA		
Viet Nam	Ho Chi Minh	TBA		

# FITSEA/6 and SEACG/14 Attachment 6 to Appendix C



SITA Satellite AIRCOM Service Status

Philip Koh  
AIRCOM CNS Manager  
South East Asia and Pacific

Straightforward aircraft operations

**SITA**

# Outline

- SITA Satellite AIRCOM Service
- GES Upgrade Status
- SITA Performance and Statistics
- SITA use of Japan Multi-function Transport Satellites (MTSAT) Satellites
- GES Backup Considerations
- FANS SATCOM Improvement Team
- Global Datalink Capacity Planning Group (GDCap)
- Summary



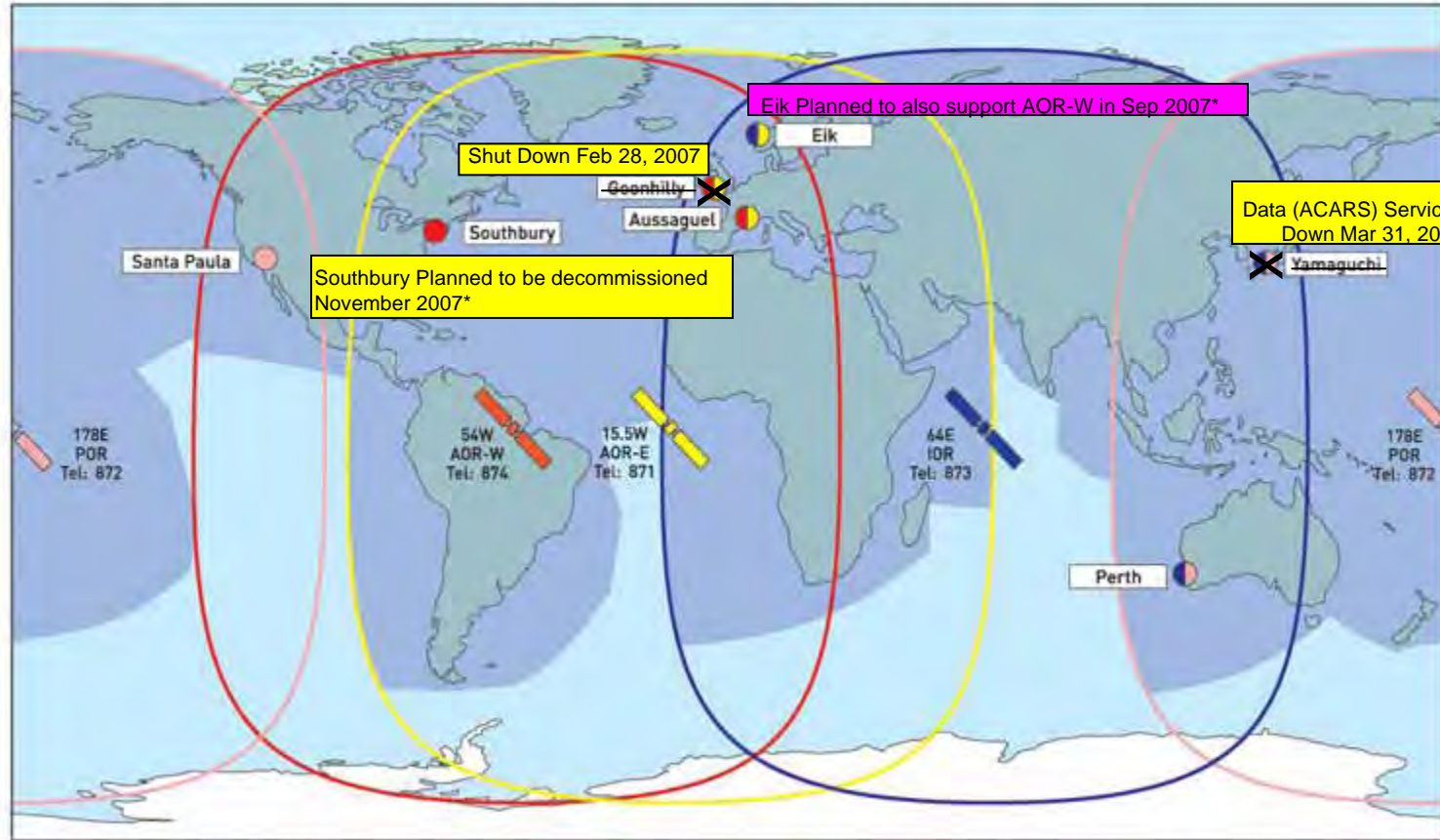
# SITA Satellite AIRCOM Service

- SITA Uses the following GESs:
  - Aussaguel-(Antennas link AOR-E and AOR-W)-Operated by Apax/FTMSC (France Telecom Mobile Satellite Communications)
  - Perth-(Antennas link IOR and POR)-Operated by Stratos
- Previous Backup GESs
  - Goonhilly-(Antennas link AOR-E and AOR-W)-Operated by Stratos  
NOTE: GES shutdown February 28, 2007.
  - Yamaguchi-(Antennas link IOR and POR)-Operated by KDDI, but,  
NOTE: Data (ACARS) service shut down March 31, 2006.
- GESs operated by Telenor that provide links via the Inmarsat Satellites but are not connected to SITA:
  - Eik-(Antennas link AOR-E and IOR)
  - Santa Paula-(Antenna link to POR)
  - Southbury-(Antenna link to AOR-W) (to be de-commission by Nov 07)
- ALL GESs were manufactured by NERA (recently acquired by Thrane & Thrane) with the exception of the Yamaguchi GES which was manufactured by Toshiba





# Inmarsat Aeronautical Global and Spot Beam Coverage



Limit of global beam coverage for Inmarsat Aeronautical Services

- Pacific Ocean Region
- Atlantic Ocean Region-West
- Atlantic Ocean Region-East
- Indian Ocean Region

Inmarsat Aeronautical Spot Beam coverage

No Spot Beam coverage

The map depicts Inmarsat's expectations of coverage but does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending upon a variety of conditions.

Inmarsat Customer Services & Operations  
Tel: +44 (0)20 7728 1777  
Fax: +44 (0)20 7728 1746  
E-Mail: customer\_care@inmarsat.com

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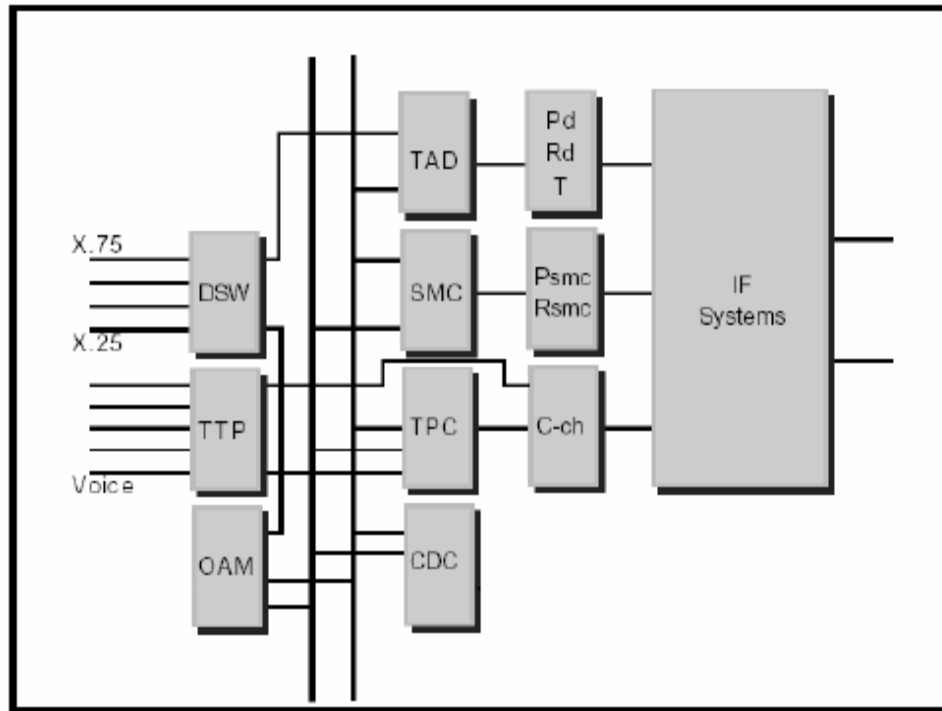
SITA Satellite AIRCOM Service uses the Aussaguel GES operated by Apax (whose France Telecom acquisition completed in Oct 2006) and the Perth GES operated by Stratos (who acquired Xantic in Feb 2006.)

The other GESs shown are not connected to SITA and are operated by Telenor. (In Oct 2006, Apax announced agreement with Telenor to buy Telenor SATCOM.)

\* Source: ARINC GLOBALink/Satellite Service Update Presentation to the February 7-8, 2007 Airlines Electronic Engineering Committee (AEEC) Data Link Users Forum



# Inmarsat classic aero ground station components



DSW: Data Switch (EBpack)  
TAD: Telex & Data Computer  
TTP: Terrestrial Telephony System (DCX)  
OAM: Operation and Maintenance  
Computer  
SMC: System Management Computer  
TPC: Telephony Channel Computer  
CDC: Call Data/Station Common Computer  
Pd, Rd, T Pd, Rd, and T channel units  
Psmc, Rsmc channel units  
C-Ch channel units  
IF Satcom frequency Systems.

- All the aeronautical stations use equipment from a specialized Inmarsat system provider previously called Nera based in Norway, which was recently sold to Thrane & Thrane of Denmark.

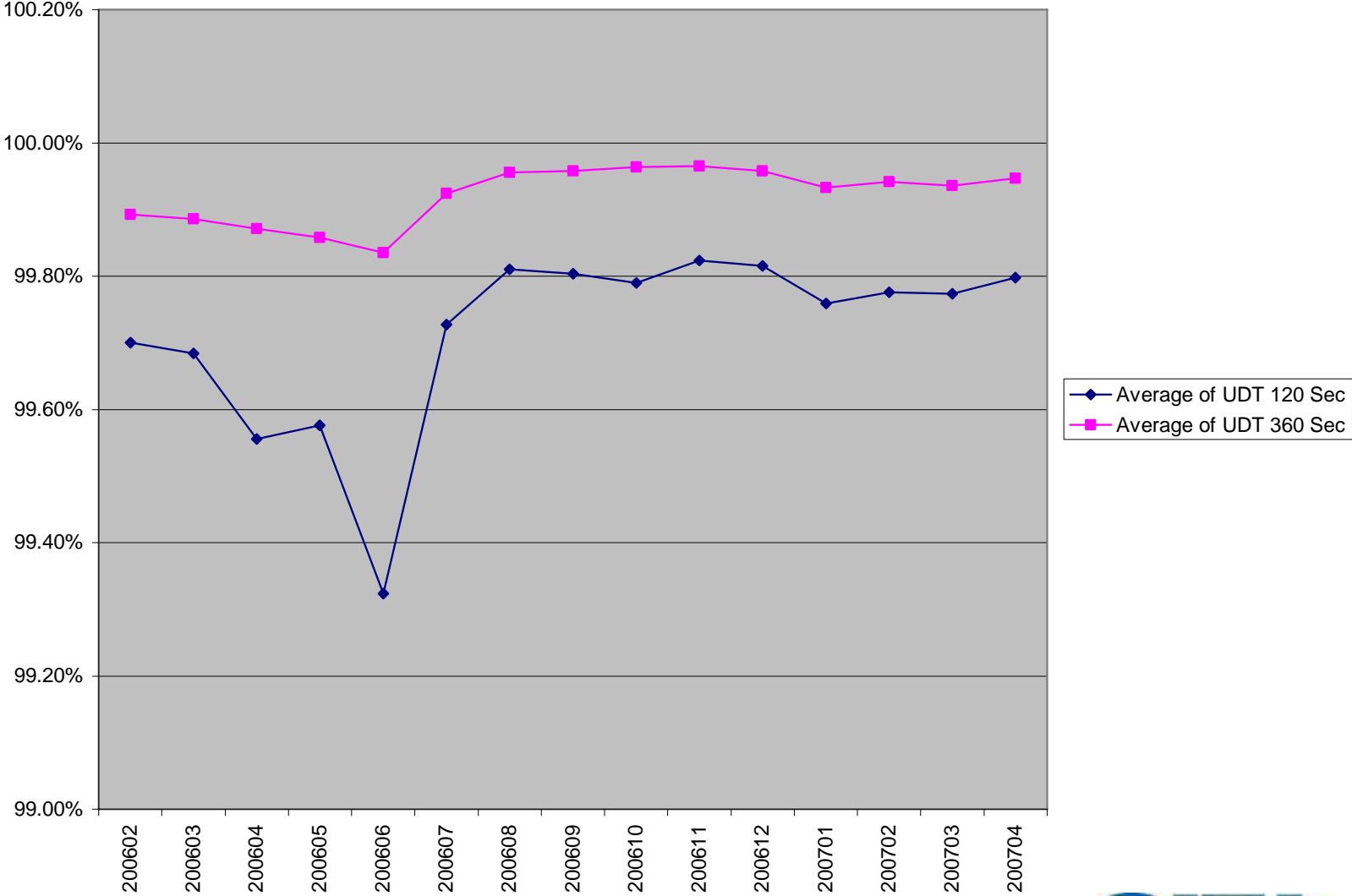


# SITA Satellite AIRCOM GES Upgrades- Timeline and Status

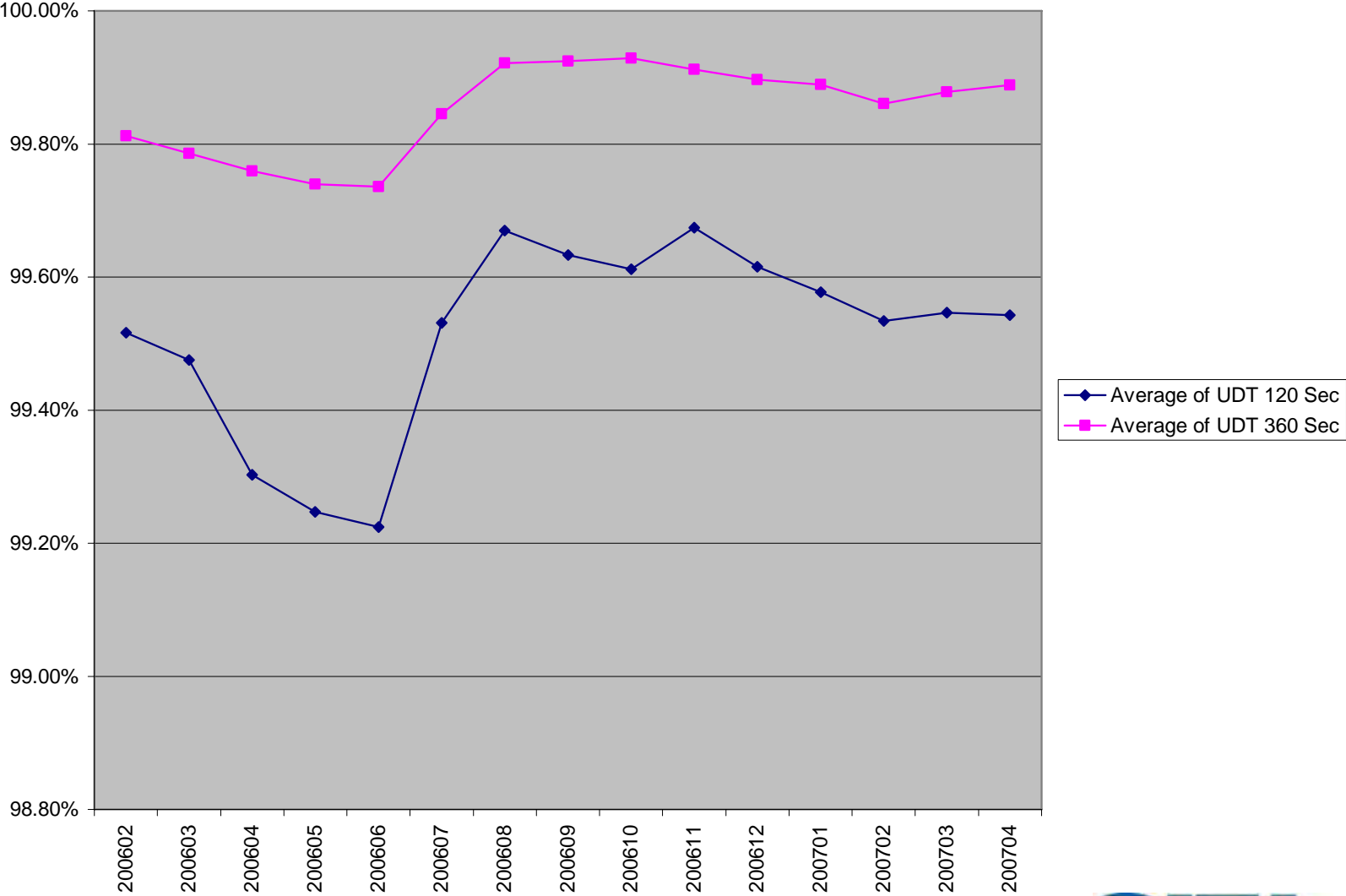
- 2004: SITA worked with the GES manufacturer Nera to define TAD Upgrade/EBPACK replacement.
- 2005 Feb: Inmarsat contracted with Nera to develop a new generation of channel units.
- 2005 Aug: France Telecom contracted with Nera for the channel units needed in Aussaguel.
- 2005 Oct: Aussaguel GES TAD Upgrade/EBPACK Replacement completed.
- 2005 Nov: Perth GES TAD Upgrade/EBPACK Replacement completed.
- 2006 Jun 29: Aussaguel GES Data Channel Unit Upgrade completed.
- 2006 Aug: Old channel units freed up as a result of the Aussaguel Upgrade installation at Perth completed. This results in increased capacity and provides additional spares until completion of Perth upgrade.
- 2006 Oct 5: Perth GES Data Channel Unit Upgrade completed.
- 2006 Dec 14: Perth GES TAD release to correct issues identified after data channel unit upgrade.
- 2007 Mar 28: Aussaguel Voice Channel Unit Upgrade completed.
- 2007 Apr 18: Perth Voice Channel Unit Upgrade completed.



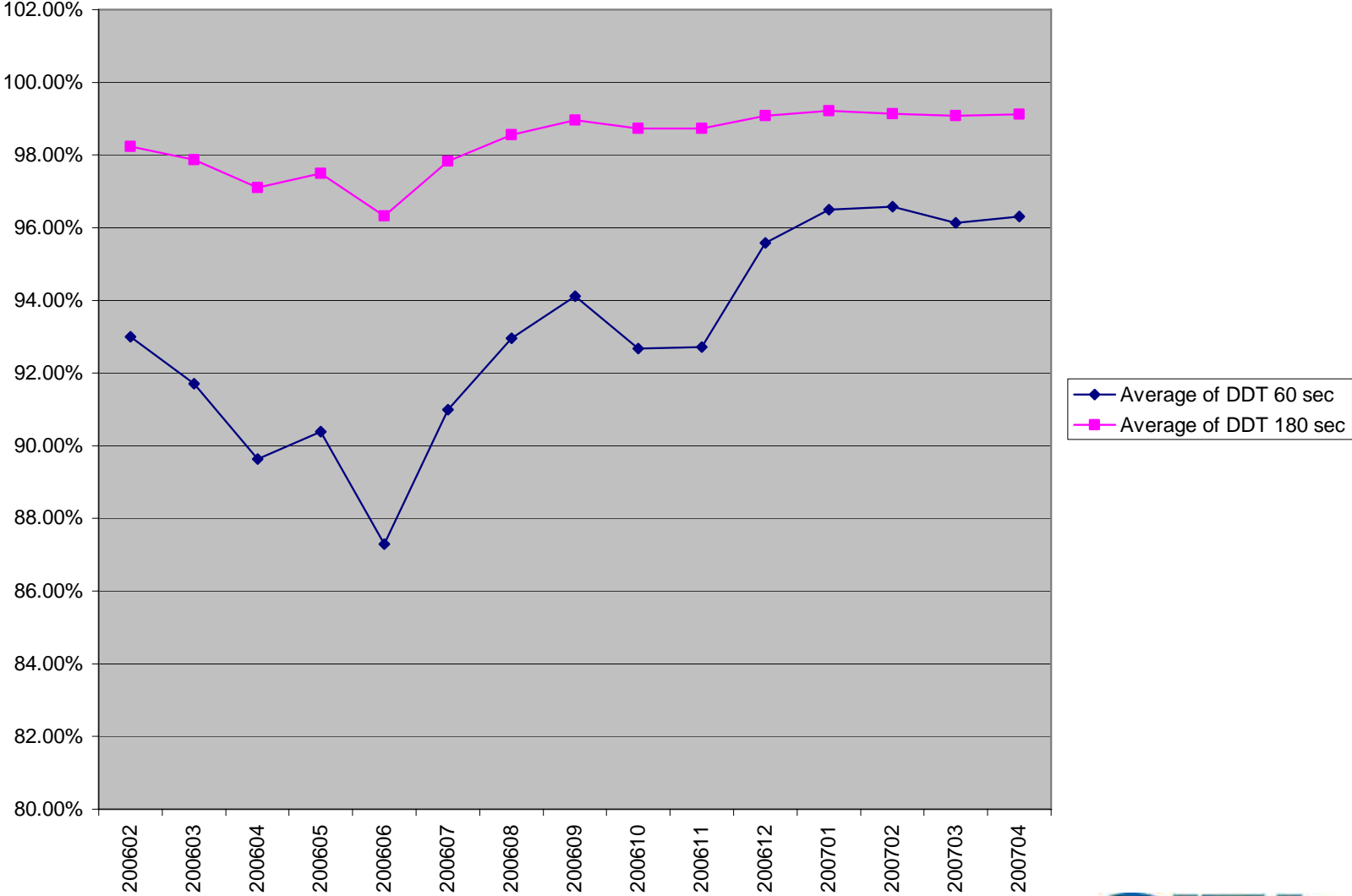
# Perth GES Performance – POR Uplink Delivery Time



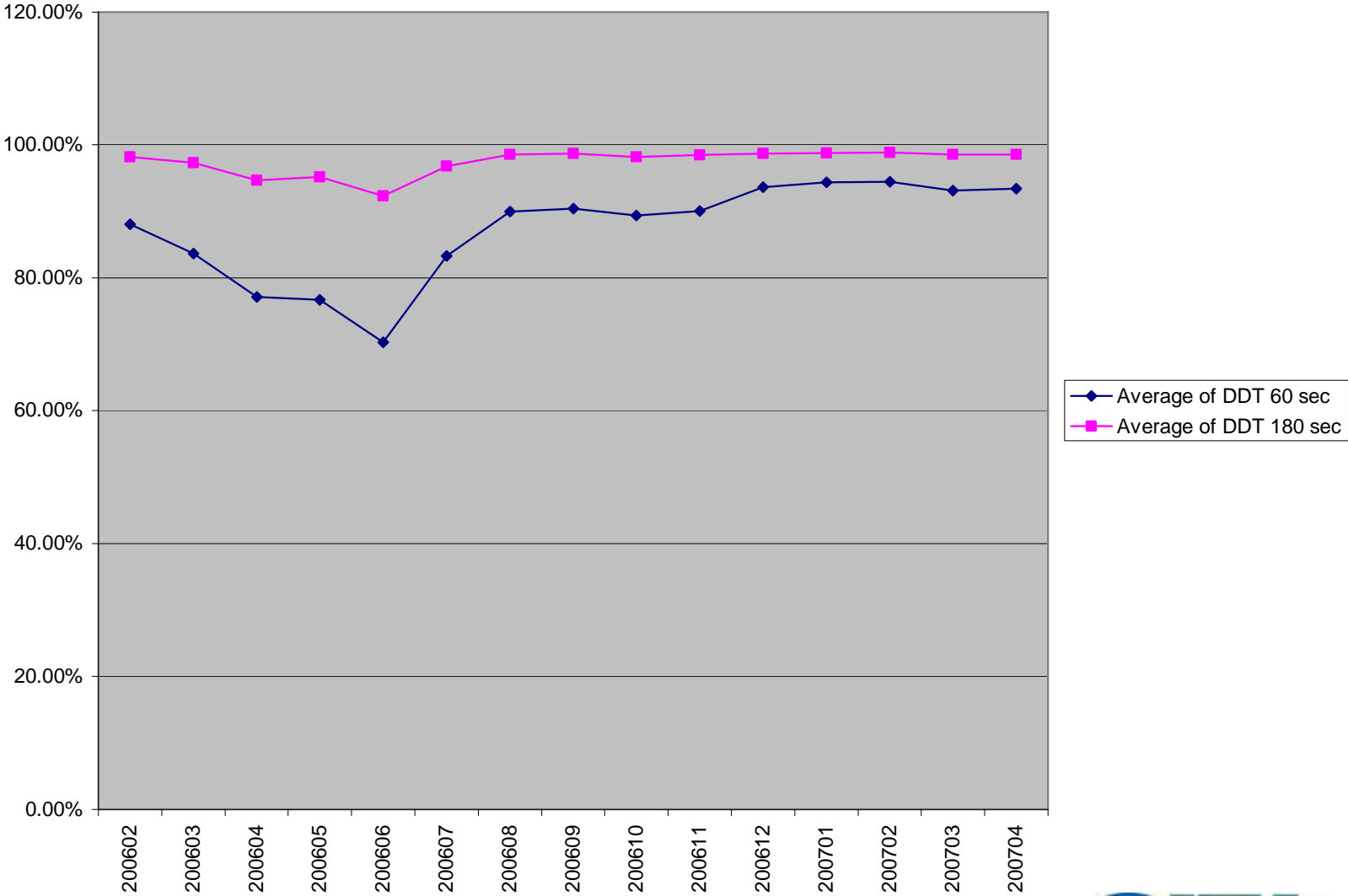
# Perth GES Performance – IOR Uplink Delivery Time



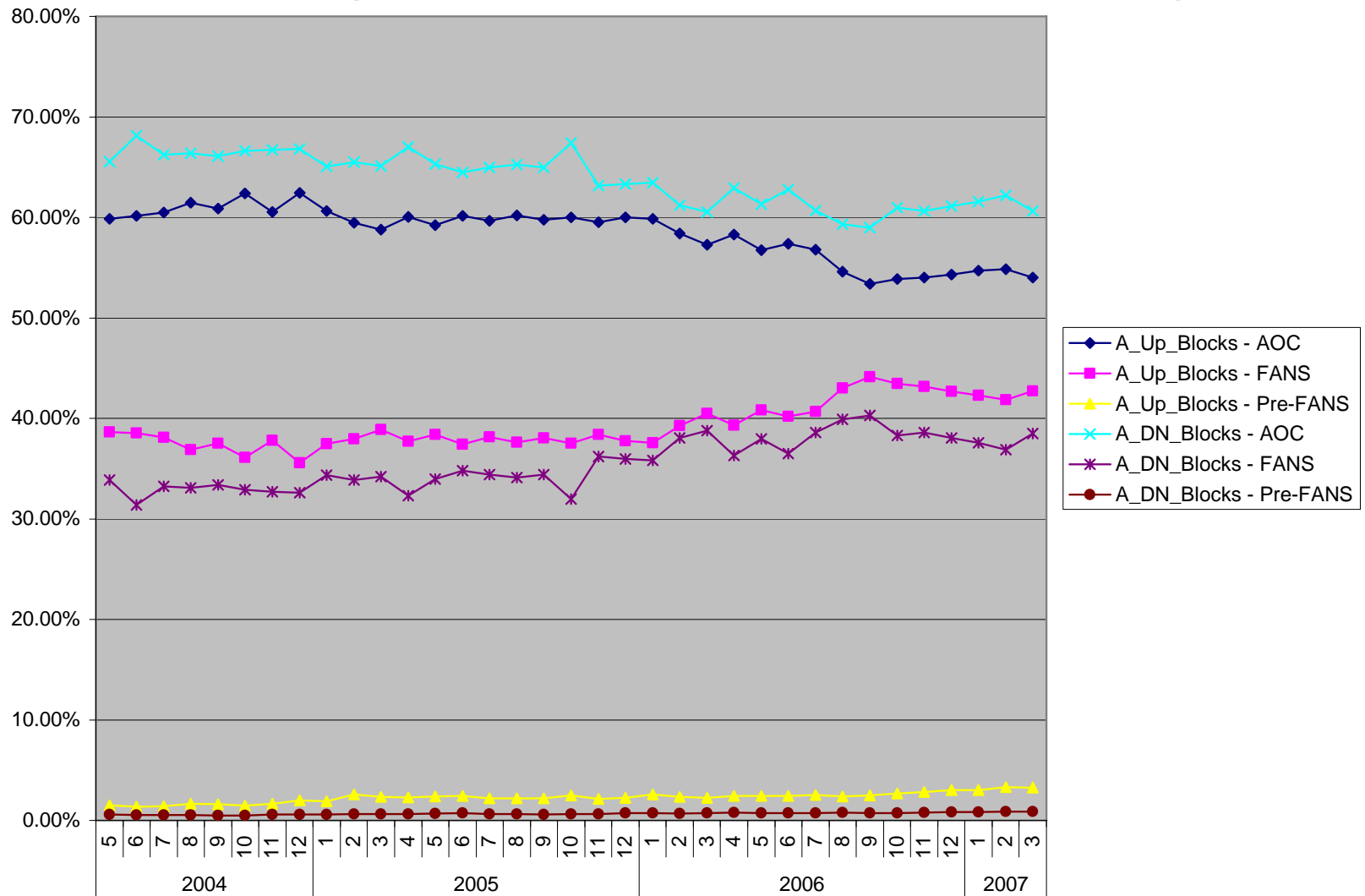
# Perth GES Performance – POR Downlink Delivery Time



# Perth GES Performance – IOR Downlink Delivery Time

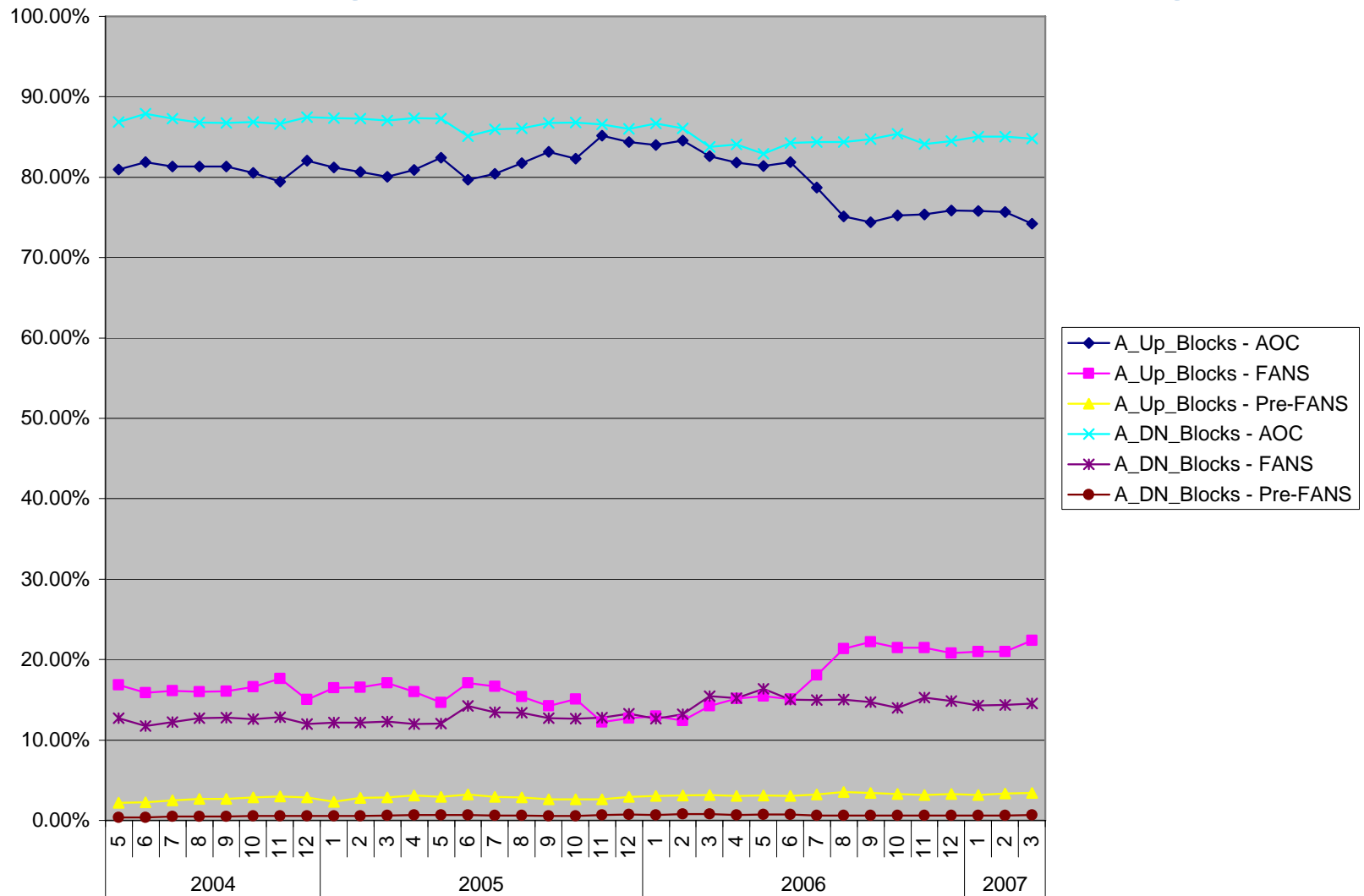


# Traffic Type Breakdowns via SITA POR1 Uplink Percentages and Downlink Percentages



# Traffic Type Breakdowns via SITA IOR2

## Uplink Percentages and Downlink Percentages

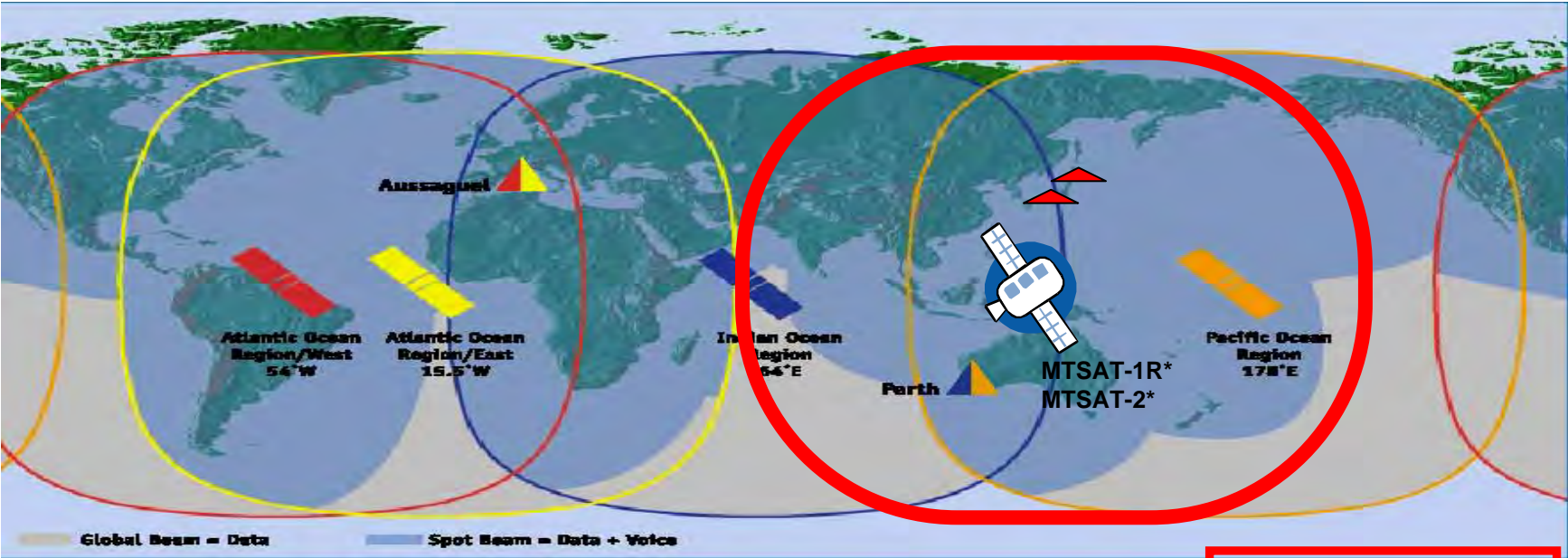


# SITA use of Japan Multi-function Transport Satellites (MTSAT) satellites

- Japan Civil Aviation Bureau (JCAB) launched satellites providing service compatible with Inmarsat
  - Multi-function Transport Satellites (MTSAT) are in orbit over Japan in between the Inmarsat Indian and Pacific Ocean satellites, meaning that it cannot replace either Inmarsat satellite.
  - MTSAT does not have same capacity as Inmarsat at this time because of its frequency allocation so it will not be able to take over the Inmarsat traffic during any outages.
  - JCAB has selected SITA to market MTSAT based service to airlines.
  - SITA continues to monitor MTSAT performance as more aircraft starting to use it to identify how many aircraft it can support at an acceptable level of performance.
  - JAL, ANA, NCA each have configured a few of their aircraft for operational use of the service. If there is still spare capacity after they expand their use, SITA will open up to other airlines to the limits of the spare capacity.
  - Aircraft that do not use MTSAT as primary should not configure MTSAT as backup because its full capacity is intended to be used up by its primary users.



# Inmarsat and JCAB MTSAT ground station operators providing aeronautical service

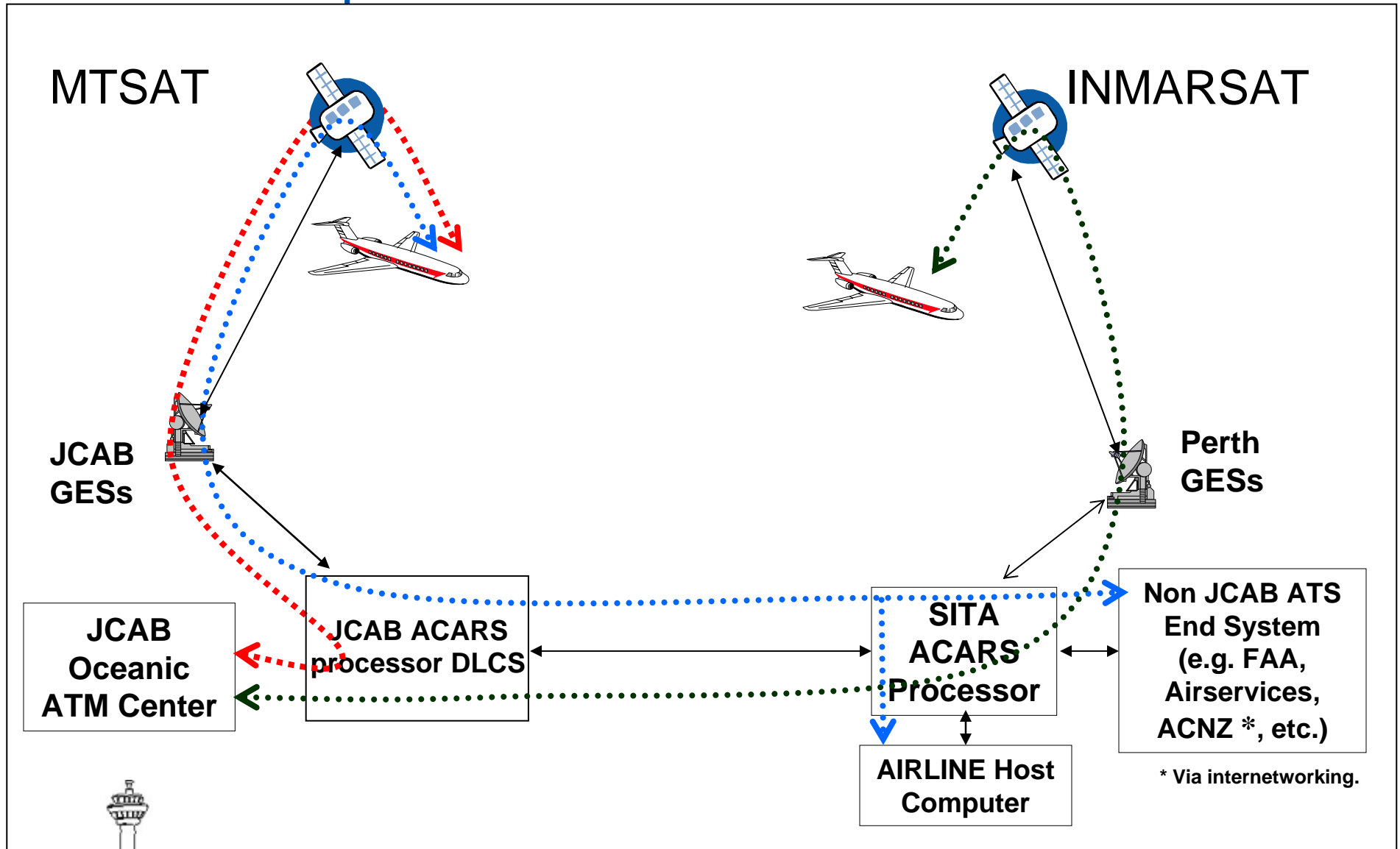


Atlantic West	Atlantic East	Indian Ocean	Pacific Ocean	JCAB MTSAT
Apax	Apax	Stratos Australia	Stratos Australia	JCAB GESs*
Telenor USA	Telenor Norway	Telenor Norway	Telenor USA	Approx. MTSAT footprint

\* Approximate MTSAT Coverage footprint. MTSAT-1R Launched Feb 26, 2005, MTSAT-2 launched Feb 18, 2006. JCAB responsible for MTSAT satellites and is associated GES operator. The MTSAT GESs are Kobe and Hitachi Ohta. To the aircraft AES, will appear to be a single virtual satellite and single virtual GES.



# Partnership Architecture



# GES obsolescence impact on backup

- SITA and ARINC have used “secondary” GESs to obtain backup access to the Inmarsat satellites but those stations did not get enough traffic to justify staying in operation and have all been shut down.
- Channel units have been upgraded in SITA’s two primary GES and will apparently be upgraded in two of the Telenor sites so these sites seem to be the only options for backup access the satellites.
  - SITA payment for channel units in Aussaguel/Perth only covers enough units to provide capacity needed by SITA customers
  - If ARINC customers use Aussaguel/Perth for backup today they will saturate the stations and make the service unusable for SITA customers.
  - ARINC/Telenor are likely to only equip their sites with enough units/capacity for ARINC customers so the same problem will apply in reverse.
- SITA or ARINC use of the other’s primary sites would require installation of more units costing up to \$1M per GES
  - If the primary GES are reliable these backup units will never be used so the investment is very hard to justify for SITA and probably also ARINC.
  - Aviation community needs to evaluate need for backup and identify ways to justify and fund the necessary investment.



# GES Backup considerations

- Increasing numbers of aircraft using decreasing numbers of GES means that if aircraft have to fall back it will cause a “log-jam”.
  - SITA uses the Perth GES to access the satellites over the Indian & Pacific Oceans so it generally has more aircraft simultaneously logged on than any other GES, averaging over 1000.
  - If during an outage of the Perth GES these 1000 aircraft had to fall back to another GES, even if it took 1 second/aircraft to log on it would take at least 16 minutes for the last one to be logged on, then at least another 16 minutes to switch back after the outage.
  - Aircraft switching to a backup GES during “short” outages caused by equipment failures may not be a worthwhile.



# Inmarsat FANS SATCOM Improvement Team

- Inmarsat forming to “identify, investigate, propose and implement solutions to solve” Inmarsat Classic aero system reliability and performance issues.
- Invitation for Participation Letter being sent out to Candidate Participants:
  - Boeing and Airbus
  - GES Operators
  - GES Manufacturer
  - SITA and ARINC
  - Airlines (Initially BA and CO (AEEC DLUF Co-chairs))
  - ANSPs (Initially one from Pacific, one from NAT)
  - Avionics Vendors
- First meeting scheduled for May 30-31, 2007



# Global Datalink Capacity Planning Group

- SATCOM Capacity is not infinite.
- Global Datalink Capacity Planning Group formation commenced around August 2006
  - Inmarsat, ARINC, SITA, Boeing, Airbus, and designated ANSPs
  - Monthly telecons since September 2006
  - Finalizing Terms of Reference
  - First face-to-face meeting April 20, 2007
- Accurate ATS traffic forecasts needed to have more accurate traffic forecasting to input into capacity plan models-work in process to determine best methodology for ATS traffic forecasting.



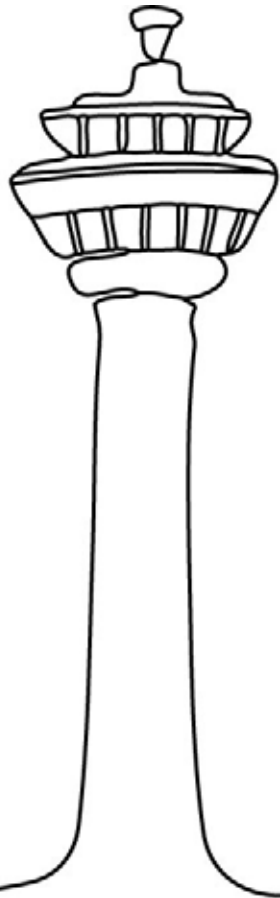
## Conclusion

- Aussaguel and Perth GES Upgrades completed.
- The FANS SATCOM Improvement Team is being formed.
- Global Datalink Capacity Planning Group is ongoing.
- SITA is an active participant in both groups.
- Propose FITSEA & FITBOB to continue to use the ICAO prepared Data Link Implementation table under FITSEA/6 WP/5 attachment until further notice.



Thank you

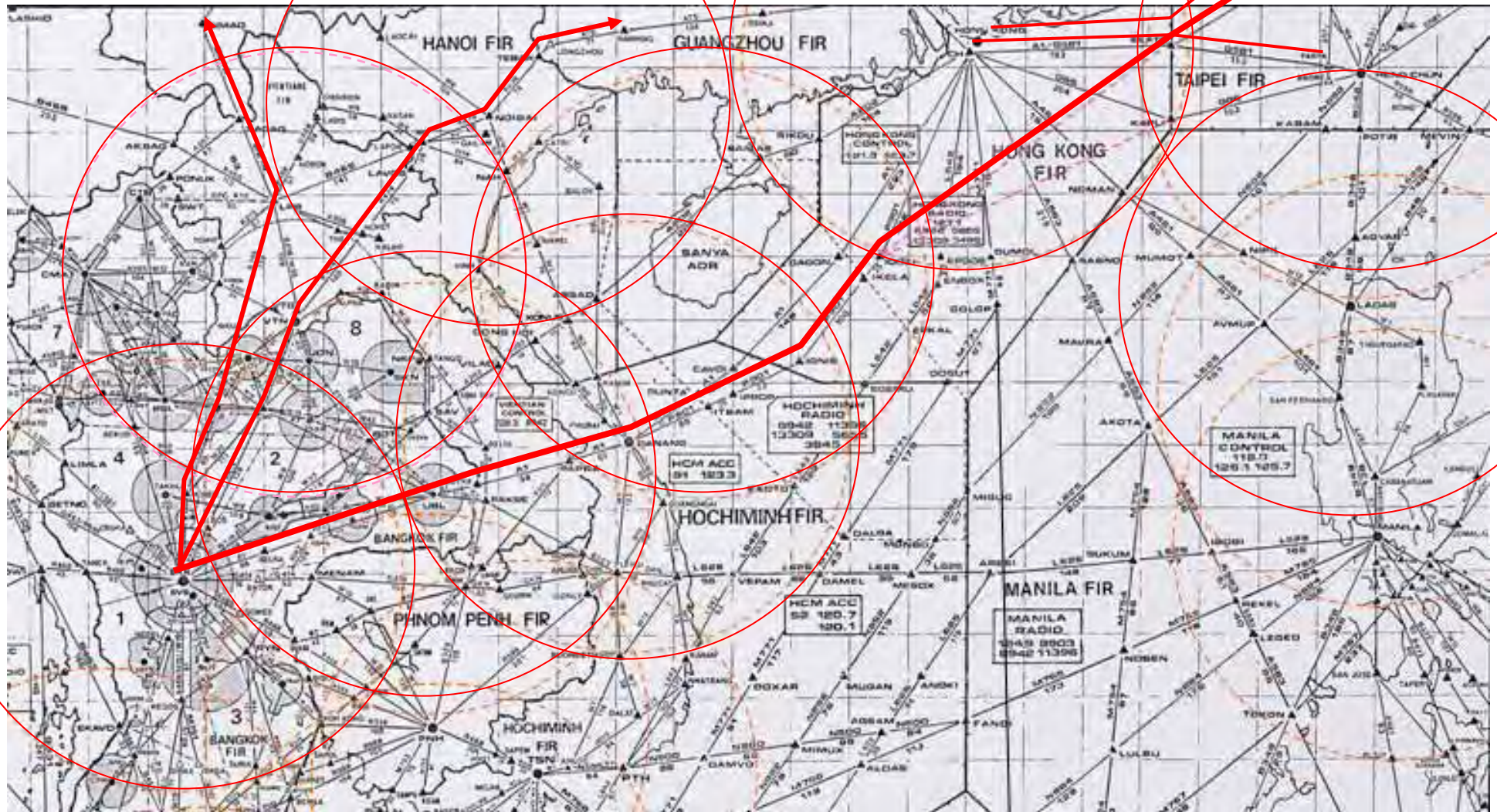
For further information, please contact:  
[philip.koh@sita.aero](mailto:philip.koh@sita.aero)



Straightforward aircraft operations

**SITA**

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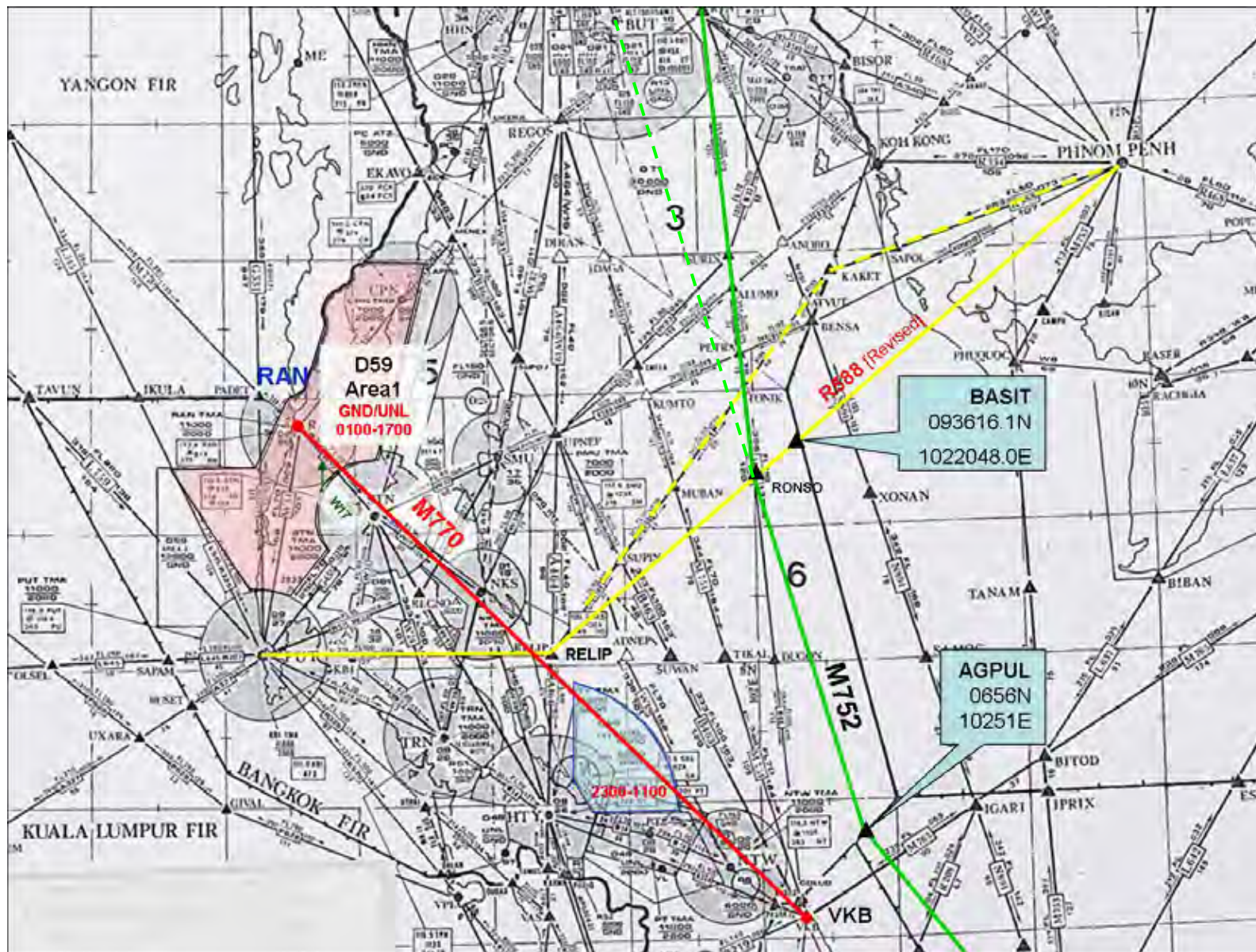


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**Status of Application of Radar Handover in South East Asia**

Yes: Implemented  
No: Not Implemented  
N/A: Not Applicable (radar coverages not overlap, thus impossible)

FIR/AOR	Bangkok	Guangzhou	Hanoi	Ho Chi Minh	Hong Kong	Jakarta	Kota Kinabalu	Kuala Lumpur	Manila	Fukuoka	Phnom Penh	Sanya	Singapore	Taipei	Ujung Pandang	Vientiane
Bangkok		N/A	N/A	YES	N/A	N/A	N/A	YES	N/A	N/A	YES	N/A	N/A	N/A	N/A	YES
Guangzhou	N/A		YES	N/A	NO	N/A	N/A	N/A	N/A	N/A	N/A	TBD	N/A	N/A	N/A	N/A
Hanoi	N/A	YES		YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	YES	N/A	N/A	N/A	YES
Ho Chi Minh	YES	N/A	YES		N/A	N/A	N/A	N/A	N/A	N/A	YES	YES	NO	N/A	N/A	NO
Hong Kong	N/A	NO	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	NO	N/A	YES	N/A	N/A
Jakarta	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	NO	N/A	N/A	N/A
Kota Kinabalu	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kuala Lumpur	YES	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	YES	N/A	N/A	N/A
Manila	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	NO	N/A	N/A
Fukuoka	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NO		N/A	N/A	N/A	YES	N/A
Phnom Penh	YES	N/A	N/A	YES	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	NO
Sanya	N/A	NO	YES	YES	NO	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A
Singapore	N/A	N/A	N/A	NO	N/A	N/A	NO	YES	N/A	N/A	N/A	N/A		N/A	N/A	N/A
Taipei	N/A	N/A	N/A	N/A	YES	N/A	N/A	N/A	YES	YES	N/A	N/A	N/A		N/A	N/A
Ujung Pandang	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A
Vientiane	YES	N/A	YES	NO	N/A	N/A	N/A	N/A	N/A	N/A	NO	N/A	N/A	N/A	N/A	



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**SEACG/14 — ACTION PLAN (Re-structured)**

IMMEDIATE: Action to be taken immediately after the conclusion of the meeting  
MID TERM: Action to be taken within six months  
LONG TERM: Action to be taken one year

	<b>ACTION ITEM</b>	<b>ICAO STRATEGIC OBJECTIVE</b>	<b>ASSOCIATED GPI</b>	<b>TASKS/STRATEGY</b>	<b>BENEFITS</b>	<b>DELIVERABLES</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>REMARKS</b>
1	Review No-PDC Procedure	D - Efficiency	GPI-7 Dynamic and flexible ATS route management	States to review the impact of the no-PDC procedures on the provision of more efficient flight levels, and report to SEACG 14 15	Utilization of available flight levels in a flexible and dynamic manner	Flexible flight level assignment	IMMEDIATE	All States	Raised at SEACG/12.
2	Proposal to establish additional ATS routes for Brunei Middle East/Europe Flights	D - Efficiency	GPI-8 Collaborative airspace design and development	Brunei Darussalam to discuss the suggested options for shorter routes with Royal Brunei Airlines and advise States, ICAO and IATA on the outcomes. IATA to work with these States to arrive at a viable solution.	Fuel saving, increased traffic flows	New route requirement	MID-TERM	Brunei Darussalam, Indonesia, Malaysia, Singapore, Thailand, Viet Nam and IATA	Raised at SEACG/10.  Based on the development of the ATS Route Catalogue updated at this meeting, States will coordinate with Royal Brunei Airlines with regard to their two route proposals tabled at this meeting.  Update provide by Brunei Darussalam at SEACG/12.  Brunei and IATA to include the proposals in Chapters 4 and 5, respectively, of the Route Catalogue.

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	ACTION ITEM	ICAO STRATEGIC OBJECTIVE	ASSOCIATED GPI	TASKS/STRATEGY	BENEFITS	DELIVERABLES	TIME FRAME	RESPONSIBLE PARTY	REMARKS
3	Deletion of Requirements for A205 and G580	D – Efficiency	GPI-8 Collaborative airspace design and development	Brunei Darussalam and Malaysia coordinate with ICAO for a necessary amendment to Asia/Pacific ANP in order to add the requirement for A205 and amend the requirement for G580 in the Asia/Pacific ANP.	Requirement consistent to the operational needs	Deletion of the requirements for A205 and G580 from the BANP.	MID-TERM	Brunei Darussalam, Malaysia, Regional Office	<p>Raised at SEACG/10.</p> <p>Brunei Darussalam was not represented at SEACG/12. Malaysia reported that they would prefer retain A205, and that the portion of G580 between BRU and VJN was replaced by B348. The Regional Office would coordinate with Brunei to progress this matter.</p> <p>An amendment to the ANP required. Brunei Darussalam will coordinate the raising of the ANP amendment.</p>
4	Realignment studies A1/P901	D - Efficiency C - Environmental Protection	GPI-8 Collaborative airspace design and development	Plan for and facilitate the integration of A1 and P901.	Enhancing fuel efficiency	Integration of A1 and P901	LONG TERM	Cambodia, China, Hong Kong China, Viet Nam and IATA	<p>Raised at SEACG/12. China updated progress.</p> <p>China submitted the proposal to ATM/AIS/SAR/SG/15. States and users to review and provide feedback.</p> <p>cf. Action Item 12</p>
5	Establishment of Safety Monitoring Agency (SMA) for Asia Region	A- Safety	GPI-5 Performance based navigation	MAAR's staff to be trained in all aspect of the establishment of SMA by the PARMO	Horizontal safety assessment for the reduced horizontal separations	Establishment of SMA	MID TERM	MAAR and Regional Office	<p>Raised at SEACG/11.</p> <p>MAAR provided details on planning to establish an SMA for the Southeast Asia area.</p> <p>MAAR to progress this matter and report progress to SEACG/44 15.</p>

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	ACTION ITEM	ICAO STRATEGIC OBJECTIVE	ASSOCIATED GPI	TASKS/STRATEGY	BENEFITS	DELIVERABLES	TIME FRAME	RESPONSIBLE PARTY	REMARKS
6	Update on ADS/CPDLC Implementation Planning	D-Efficiency	GPI-5 Performance based navigation  GPI-9 Situational awareness	FIT/SEA States to submit their ADS/CPDLC implementation plans with timelines to be updated at SEACG/14	Evaluate States' ability and readiness in providing ADS/CPDLC services which will serve as a foundation for the introduction of 50/50 and 30/30 NM separation	Update of ADS/CPDLC implementation plans with timelines by FIT/SEA States	MID TERM	FIT-SEA	Raised at SEACG/11.  States to update SEACG/44 <u>15</u> and/or FIT-SEA/4 <u>7</u> on their ADS/CPDLC implementation plan with timelines for implementation.
7	Implementation of Radar Handover Procedures	A-Safety D-Efficiency	GPI-9 Situational awareness	States to identify areas where radar handover procedures can be applied at common FIR boundary	Increased airspace capacity, reduced horizontal separation, fuel saving, enhanced controllers' situational awareness and safety	Radar handover procedure, revised LOA	LONG TERM	All SEA States	Raised at SEACG/10.  SEACG/11 was advised that many States had introduced radar handover procedures. Some States agreed to move towards radar handover procedures as soon as possible.  States updated the radar converge/services chart and the matrix presented at SEACG/10.  States to implement radar handover procedures, where possible. Report to SEACG/44 <u>15</u> .

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	<b>ACTION ITEM</b>	<b>ICAO STRATEGIC OBJECTIVE</b>	<b>ASSOCIATED GPI</b>	<b>TASKS/STRATEGY</b>	<b>BENEFITS</b>	<b>DELIVERABLES</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>REMARKS</b>
8	Implementation of RNP 10 and RNP 4 routes and reduced horizontal separation of 50 NM and 30 NM respectively	D-Efficiency	GPI-5 Performance based navigation	Ongoing implementation of RNP 10 routes as required and introduction of 50 NM separation.  Identify areas suitable for RNP 4 and reduction of en-route separation to 30 NM	Reduced longitudinal & lateral separation	Incorporation of advanced aircraft navigation capabilities into the air navigation system infrastructure	<del>LONG</del> <u>MEDIUM</u> TERM	RNP-SEA/TF	Raised at SEACG/11.  Ongoing Implementation of RNP 10 routes as required and introduction of 50 NM separation.  Identify areas suitable for RNP 4 and reduction of en-route separation to 30 NM.  RNP-SEA/TF to undertake study of implementation.
9	A202 metric cruising levels transition	D-Efficiency	GPI-2 Reduced vertical separation minima	Consideration should be given to an alternate arrangement to the metric cruising level system for operations on A202 to facilitate flights with ceiling limitations.			LONG TERM	China, Hong Kong China	Raised at SEACG/10.  China would consider this issue in its RVSM Implementation Plan.
<del>10</del>	<del>Implementation of ADS-B</del>	<del>A-Safety, D-Efficiency</del>	<del>GPI-9 Situational awareness</del>	<del>States to identify areas for ADS-B implementation and to notify users by AIC at earliest opportunity.</del>	<del>Provision of "radar like" surveillance to enhance situational awareness for both controllers and pilots</del>	<del>Feasibility study</del>	<del>LONG TERM</del>	<del>All States</del>	<del>Raised at SEACG/11.  States to identify areas for ADS-B implementation and to notify users by AIC at earliest opportunity, and report to SEACG/14 for further action.  Taken over by the ADS-B/TF.</del>

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	ACTION ITEM	ICAO STRATEGIC OBJECTIVE	ASSOCIATED GPI	TASKS/STRATEGY	BENEFITS	DELIVERABLES	TIME FRAME	RESPONSIBLE PARTY	REMARKS
11	Provision of Contact Person for Study of ATM Automation System Development	D- Efficiency	GPI-6 Air traffic flow management	States to review the outcome of the Action Item 11 prior to nomination	Reduced longitudinal & lateral separation	Incorporation of advanced aircraft navigation capabilities into the air navigation system infrastructure	LONG TERM	All States	Raised at SEACG/12. SEACG/12 agreed that the SEACG States should study the need for an ATFM system and consideration should be given to include requirements for ATFM in their ATM development plans.  <del>States to review the outcomes of the Action Item 21.</del>
12	<del>Study of the Parallel Unidirectional Routes between Bangkok and Hong Kong, China as a Replacement Restructuring of A1 and P901, Including the Establishment of Parallel Unidirectional Routes</del>	D- Efficiency C- Environmental Protection	GPI-1 Flexible use of airspace between civil and military, GPI-7 Dynamic and flexible ATS route management, GPI-8 Collaborative airspace design and management	<del>Study the realignment restructuring of A1 and P901 or and the establishment of the parallel unidirectional routes by all States concerned</del>	Increased airspace capacity, Fuel saving more aircraft at optimum level	Provision of the direct routes for the traffic flow between Bangkok and Hong Kong	LONG TERM	China, Hong Kong China, Viet Nam, Lao PDR and Thailand	Raised at SEACG/13.  IATA requested that the parallel unidirectional routes to <del>replace</del> <u>restructure</u> A1 and P901 be considered to increase capacity.  States to study the <del>realignment restructuring</del> <u>restructuring</u> of A1 and P901 <del>or</del> <u>and</u> the establishment of the parallel routes, and report to SEACG/44 <u>15</u> .  cf. Action Item 4.
13	<u>Compliance with the Annex 15 AIRAC Provisions</u>	A-Safety	<u>GPI-9 Situation awareness</u> <u>GPI-18 Aeronautical information</u>	<u>Bring to the attention of the DGCA the example of the non-compliance of AIRAC cycles</u>	<u>Accurate and timely publication of the information</u>	<u>Publication of the critical information on a AIRAC date at least 42 day before the implementation</u>	<u>MID TERM</u>	<u>IATA and the Regional Office</u>	Raised at SEACG/14.  <u>AITF/2 found in many cases, matters were outside the control of AIS officials as the upstream staff in the planning process has no knowledge about AIRAC cycles.</u>

## STATE ATS SAFETY CONTACT POINTS

APANPIRG Conclusion 16/62 required the nomination by States of a Contact Officer or position to act as the focal point for ATS safety-related activities and in particular for the submission and coordination of ATS incident reports. The ICAO Asia and Pacific Regional Office (Bangkok, Thailand) maintains the following list in this regard.

Attention is drawn to the provisions in the ICAO Air Traffic Services Planning Manual (Doc 9426), Part II, Section 1, Chapter 3 – *ATS Incident Reporting* in relation to the reporting and investigation of ATS incidents.

(Last Updated ~~23 April~~ 29 May 2007)

	Name	Title/Organization	TEL/FAX Number	E-mail
1.	<b>AUSTRALIA</b>			
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2.	<b>BANGLADESH</b>			
	Mr. Mohammad Kaiser Alam	Director (Flight Safety & Regulations) Civil Aviation Authority, Bangladesh FSR Division CAAB Headquarters, Kurmitola Dhaka – 1229 Bangladesh	Tel + 8802 891 1126 Fax + 8802 891 3322 + 8802 891 4709	dfsraab@accesstel.net
3.	<b>BHUTAN</b>			

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	Name	Title/Organization	TEL/FAX Number	E-mail
4.	<b>BRUNEI DARUSSALAM</b>			
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5.	<b>CAMBODIA</b>			
	Mr. Keo Sivorn	Director of Flight Operations and Air Safety, Directorate General of Civil Aviation State Secretariat of Civil Aviation No. 62, Preah Norodom Blvd, Phnom Penh Kingdom of Cambodia	Tel 855 12 810 330  Fax 855 23 725 938	k_sivorn@yahoo.com SITA: PNHCAAYA AFTN: VDPYAYC
6.	<b>CHINA</b>			
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7.	<b>COOK ISLANDS</b>			
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	Name	Title/Organization	TEL/FAX Number	E-mail
8.	<b>DPR KOREA</b>			
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9.	<b>FIJI</b>			
	Mr. Robert Y Fong	Controller Ground Safety Civil Aviation of the Fiji Islands Private Mail Bag NAP 0354 Nadi Airport, Nadi Fiji Islands	Tel 679-672-1555 EXT 3371  Fax 679-672-1500	cgs@caaf.org.fj
10.	<b>FRENCH POLYNESIA</b>			
	Mr. Reuter Numa  Tahiti Civil Aviation	Quality and Safety executive manager BP H1 98849 Nounea Cedex Direction des Affaires Strate'giques et Technique 50 rue Henry FARMAN 75720 PARIS cedex 15 France	Tel: 687 26 51 82 Fax: 687 26 52 06	numa.reuter@aviation-eivile.gour.fr  ueva.paquier@aviation.eivile.gour.fr
11.	<b>HONG KONG CHINA</b>			
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	Name	Title/Organization	TEL/FAX Number	E-mail
12.	<b>INDIA</b>			
	Mr. Manoj Bokade	Deputy Director of Operations Office of Director General of Civil Aviation, Ministry of Civil Aviation Government of India New Delhi 110003 India	Tel 91-11-24620273, 24610629,24622495 Ext. 428  Fax : 91-11-24633140	N/A
13.	<b>INDONESIA</b>			
	Mr. Ichwanul Idrus	Director of Flight Safety Directorate of Air Communication JL. MERDEKA BARAT No. 8 Jakarta 10110 Indonesia	Tel 62 21 350 5550, 62 21 350 5006 Fax 62 21 350 5135, 5139, 7144	N/A
14.	<b>JAPAN</b>			
	Near Collision Report by PIC	Safety and Security Inspector General Japan Civil Aviation Bureau 2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo, 100-8918 Japan	Tel +81-3-5253-8701 Fax +81-3-3580-5233	N/A
	Accident/Serious Report	Flight Standard Division Japan Civil Aviation Bureau 2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo, 100-8918 Japan	Tel +81-3-5253-8731 Fax +81-3-5253-1661	
	ACAS RA Report	Air Traffic Control Division Japan Civil Aviation Bureau 2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo, 100-8918 Japan	Tel +81-3-5253-8749 Fax +81-3-5253-1664	

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	Name	Title/Organization	TEL/FAX Number	E-mail
15.	<b>KIRIBATI</b>			
16.	<b>LAO PDR</b>			
17.	<b>MACAU, CHINA</b>			
18.	<b>MALAYSIA</b>			
	Accident/Incident Ahmad Nizar Zolfakar	Director ATS Inspectorate DCA Malaysia	Tel 603-8871-4000 Fax 603- <del>8871-4290</del> <u>8881-0530</u>	nizar@dca.gov.my
	Safety related Chew Lam Leong	Assistance Director, Safety Management Unit Air Traffic Services Division Department of Civil Aviation 4 <sup>th</sup> floor, podium block B Lot 4G4 Precint 4 Federal Government administrative Centre 62570 Putrajaya, Malaysia	Tel 603-8871-4210 Fax 603- <del>8871-4290</del> <u>8881-0530</u>	chew@atsdca.gov.my  chewll@dca.gov.my

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	Name	Title/Organization	TEL/FAX Number	E-mail
19.	<b>MALDIVES</b>			
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20.	<b>MARSHALL ISLANDS</b>			
	Mr. Stanley Myazoe	Director, Directorate of Civil Aviation P.O. Box 1114 Majuro, Marshall Islands MH 969690	Tel 011 (692) 625-6179, 455-3330 Fax 011 (692) 625-6170	rmidca@ntamar.net SMS-4553330@cell.ntamar.net
21.	<b>MICRONESIA</b>			
22.	<b>MONGOLIA</b>			
23.	<b>MYANMAR</b>			
	Mr. U YOA SHU	Deputy Director (Air Traffic Services) Department of Civil Aviation Yangon International Airport Airport Road, DCA Headquarter Building Yangon, Myanmar	Tel: 951 665838, 665144, 665637 Fax: 951 665124	dca.myanmar@mptmail.net.mm dca.myanmar@mptmail.net.mm(ATB)

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	Name	Title/Organization	TEL/FAX Number	E-mail
24.	<b>NAURU</b>			
25.	<b>NEPAL</b>			
		Director, ATS Department Civil Aviation Authority of Nepal Head Office, Katmandu Nepal	Tel: 977 1 426 2518  Fax: 977 1 426 2326	cnsatm@caanepal.org.np
26.	<b>NEW CALEDONIA</b>			
27.	<b>NEW ZEALAND</b>			
	Mr. Peter Davey	Manager, Policy and International Civil aviation Authority of New Zealand 10 Hutt Road Petone P. O. Box 31 441 Lower Hutt New Zealand	Tel: +64 4 560 9400  Fax: +64 4 569 2024	piru@caa.govt.nz
28.	<b>PAKISTAN</b>			
	Mr. Nusrat Ullah Khan	Director Operations Civil Aviation Authority - Pakistan, HQ Civil Aviation Authority, Terminal 1, Operations Directorate JIAP Karachi 75200, Pakistan	Tel: 92-21-9248745  Fax: 92-21-9248744	dops@caapakistan.com.pk

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	Name	Title/Organization	TEL/FAX Number	E-mail
29.	<b>PALAU</b>			
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30.	<b>PAPUA NEW GUINEA</b>			
	Mr. Gabriel Salayau	Assistant Manager ATS Operations (SS&F) Papua New Guinea Civil Aviation Authority P.O. Box 684 Boroko Port Moresby, N.C.D Papua New Guinea	Tel: (675) 324 4643  Fax: (675) 325 0749	gsalayau@caa.com.pg
31.	<b>PHILLIPPINES</b>			
	Capt. Jose R. Saplan	Check Pilot / Chairman, AAIB Air Transportation Office, Philippines Old MIA Road, Pasay City 1301, Philippines	Tel: (632) 8799 225 / 218 Fax: (632) 8799 218	saplan6864@yahoo.com
	Mr. Wilfredo S. Borja	Director, Air Traffic Service Air Transportation Office MIA Road, Pasay City 1300, Philippines	Tel: (632) 8799 161/259 Fax: (632) 8799 259	
32.	<b>REP. OF KOREA</b>			
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33.	<b>SAMOA</b>			
34.	<b>SOLOMON ISLANDS</b>			
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35.	<b>SINGAPORE</b>			
	Mr. Heng Cher Sian Edmund	Project Officer (Airspace) Civil Aviation Authority of Singapore P.O. Box 1 Singapore Changi Airport Singapore 918141	Tel: 65-6541-2457 Fax: 65-6545-6516	edmund.heng@caas.gov.sg
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36.	<b>SRI LANKA</b>			
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37.	<b>THAILAND</b>			
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38.	<b>TONGA</b>			
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39.	<b>UNITED STATES</b>			

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40.	<b>VANUATU</b>			
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41.	<b>VIET NAM</b>			
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