



International Civil Aviation Organization

The Eleventh Meeting of the FANS Implementation Team for South-East Asia (FIT-SEA/11) and the Eighteenth Meeting of the South-East Asia ATM Coordination Group (SEACG/18)

Bangkok, Thailand, 3 – 6 May 2011

Agenda Item 4: Review of FIT-SEA/11

REVIEW OF FIT-SEA/11

(Presented by the Rapporteur of FIT-SEA/11)

SUMMARY

This paper presents the draft report of FIT-SEA/11.

1. INTRODUCTION

1.1 The 11th Meeting of the FANS Implementation Team for the South East Asia (FIT-SEA/11) was held on 3 May 2011 at ICAO Asia and Pacific Office, Bangkok.

2. DISCUSSION

Agenda Item 1: Adoption of Agenda

1.1 The meeting unanimously elected Mr. Kwek Chin Lin, Senior Air Traffic Control Manager (Systems) from the Civil Aviation Authority of Singapore (CAAS) as the Rapporteur of FIT-SEA/11. In his opening remarks, the Rapporteur welcomed the delegates to FIT-SEA and encouraged active participation from members.

1.2 The meeting noted the Terms of Reference (TOR) for FIT-SEA 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 SEACG/11, 2003)

Agenda Item 2: Review of ADS/CPDLC Implementation

Outcomes of APANPIRG on FIT-SEA Activities

2.1 The meeting reviewed the outcome of the 21st Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/21, September 2010) with regard to data link operation matter.

Global Operational Data Link Document

2.2 APANPIRG/21 recalled that the *Global Operational Data Link Document* (GOLD) had replaced the *Guidance Material for ATS Data Link Services in North Atlantic Airspace* and the *FANS-1/A Operations Manual* (FOM) for Asia/Pacific, South American and African/Indian Ocean Regions. The First Edition of GOLD is available for download on the websites of the United States Federal Aviation Administration (FAA), Airways New Zealand and ICAO Asia and Pacific Office.

ATS Coordination Group Activities

2.3 APANPIRG/21 was updated on the activities of the 17th Meeting of South-East Asia ATS Coordination Group (SEACG/17, May 2010) and FIT-SEA/10. FIT-SEA/10 (May 2010, Singapore) recognized the need to establish a formal FIT-SEA Central Reporting Agency (CRA) as soon as possible but not later than March 2011 by Philippines, Singapore and Viet Nam.

Review by ATM/AIS/SAR/SG/20

2.4 In view of the urgent need for the continuation of the CRA functions, Singapore, Philippines and Viet Nam had a side meeting during the 20th Meeting of the ATM/AIS/SAR Sub-

Group (ATM/AIS/SAR/SG/20, July 2010). Philippines and Vietnam requested Singapore to assume the role of the CRA after March 2011. Singapore informed ATM/AIS/SAR/SG/20 that it would seek management approval. It was assured that CRA Japan would assist Singapore in establishing the formal FIT-SEA CRA as required during the transition period until 31 March 2011.

Outcomes of RASMAG/13 and 14

2.5 The meeting reviewed the outcome of the 13th and the 14th meetings of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/13 and 14, August 2010 and February 2011, respectively).

RASMAG/14

Airspace Safety Monitoring Documentation and Regional Guidance Material

2.6 New Zealand had proposed amendments to the *Guidance Material for End-To-End Safety and Performance Monitoring of Air Traffic Service (ATS) Datalink Systems in the Asia/Pacific Region* which was prepared by RASMAG and adopted by APANPIRG/16 (August 2005, Bangkok).

Data Link Performance Monitoring Results

2.7 New Zealand stated that they had reworked some of the data to reflect performance trends rather than monthly performance. The GOLD requires an availability of 99.9% for safety, but adds the more stringent availability of 99.99% for traffic efficiency for air navigation service providers (ANSPs) operating reduced separations in areas of high traffic density. In terms of outages, the safety target was a maximum of 520 min total outage in a 12 month period, and the efficiency target was a maximum of 52 min total outage with no more than four outages of greater than 10 min in a 12 month period.

2.8 RASMAG/14 discussed whether States understood that this type of performance monitoring was an on-going post-implementation requirement. The United States indicated that Appendix D of the GOLD was based on post-implementation monitoring and corrective action. They noted that the FAA was doing some work to automate the charting of GOLD formatted data and would share that with States on request. Further discussion indicated that there was a need to take some action to encourage ANSPs to provide data link performance data to the CRAs. The Secretary advised that he had personally discussed such issues with those States that had not been providing data, in an attempt to educate them to the requirements. New Zealand suggested that possibly the FITs should be asked to undertake such an education program. RASMAG/14 agreed to this suggestion and indicated that this might also occur at the SEACG meetings. The Secretary was tasked with conveying RASMAG's concern to relevant coordination groups and FITs.

ADS-C/CPDLC Data Link Performance Monitoring

2.9 RASMAG/14 discussed the information presented and recommended appropriate action to encourage ANSPs to provide data link performance data to the CRAs. Accordingly, RASMAG/14 proposed a recommendation as follows:

Recommendation RASMAG 14

Noting the pre- and post-implementation system performance monitoring required by Annex 11 – Air Traffic Service (Para 2.26.5), the Global Operational Data Link Document (GOLD) and the Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service Data Link Systems in the Asia/Pacific Region, States are invited to ensure that the appropriate data link performance

monitoring is undertaken and reported to CRAs/FITs, as required, in a timely manner.

Outcomes of the FIT-BOB/13

2.10 The meeting reviewed the outcome of the 13th meeting of FIT-Bay of Bengal (FIT-BOB/13, February 2011).

Review Bay of Bengal ADS/CPDLC Operations

ADS/CPDLC Progress and Commencement of 24-hour Operational Trial within Kuala Lumpur FIR

2.11 The meeting was informed that FIT-BOB/13 noted several problem reports (PRs) but there had been no analysis of these issues available from CRA at the time presented. In terms of the system performance analysis, the Secretariat noted that Malaysia made reference to the FOM whereas APANPIRG/20 formally adopted the GOLD to replace the FOM. The assessment performed by Malaysia indicated that the system stability was not sufficient to allow use for operational provision of reduced separation at this time, but this was being worked on.

2.12 IATA noted that in more mature systems, ADS-C reports were utilised for position reports in lieu of CPDLC reports. India commented that in case there is no ADS-C connection and only CPDLC connection, only CPDLC could be used for position verification. IATA stated that they would prefer the minimum of delay to implement reduced horizontal separation standards, and preferred the earliest possible implementation.

Progress Report of ADS-C/CPDLC Operation within the Ujung Pandang FIR

2.13 FIT-BOB/13 noted that there had been a lack of PRs, reporting of which should be encouraged as they are a vital part of the safety oversight of data link operations. FIT-BOB discussed whether Ujung Pandang FIR should be within FIT-SEA instead of FIT-BOB. There was general discussion about the different traffic flows that each FIR supported, and the possibility of FIT-BOB and FIT-SEA being merged. For the time being, the Ujung Pandang FIR should have more association with FIT-SEA while the Jakarta FIR could remain with FIT-BOB.

ADS/CPDLC Operation within the Ujung Pandang FIR and the Proposal for the Ujung Pandang FIR to Join FIT-SEA

2.14 Indonesia reported that data link services began with the trial operation of ADS-C/CPDLC on 3 July 2008 on ATS routes A461, B462, B472, B473, B583, B584 and R340/R590, and international flights operating on those routes now shall use CPDLC as the primary means of communication. Ujung Pandang ACC started the ADS/CPDLC regular operations within the Ujung Pandang FIR after the publication of AIP Supplement No. 10/10 concerning the ADS-C/CPDLC Procedure within Ujung Pandang FIR dated 29 July 2010.

ADS-C/CPDLC Operation Monitoring

2.15 The meeting noted the system performance data for the Ujung Pandang FIR as shown in **Appendix XX** to this report.

Traffic Flows

2.16 The traffic flows in the Ujung Pandang FIR are different from the traffic flows in the Jakarta FIR. The traffic flows within the Ujung Pandang FIR are mostly serving the traffic from East

Asia to Australia and vice versa while traffic flows within the Jakarta FIR are from East Asia to the Middle East and vice versa. There are five major ATS routes serving the traffic flows, namely A461, B472, B473, R340 and G578, in connection with the Manila FIR and two major ATS routes in connection with the Kota Kinabalu, namely B583 and B584. It was also noted in the report of FIT-BOB/13 that the traffic flows in the Ujung Pandang FIR had closer relation with the FIT-SEA activities rather than those of FIT-BOB.

Discussion

2.17 IATA agreed that the traffic flow in the Ujung Pandang FIR was predominantly north-south while the traffic flow in the Jakarta FIR was east-west. Even though the two contiguous FIRs belong to a State with another FIR in between, there should not be a problem for those FIRs to belong to different FITs from the view point of the traffic flow, thus agreeing with Indonesia. Singapore supported Indonesia's request for Ujung Padang FIR to be member of FIT-SEA.

2.18 The Secretariat advised the meeting that in order for the Ujung Pandang FIR to be a member of FIT-SEA, there was no need to amend the TOR of FIT-SEA as it does not specifically list the member FIRs. The Rapporteur drew to the attention of the meeting that the TOR of the FIT-SEA CRA agreed at FIT-SEA/3 (November 2005, Bangkok) would need to be amended as it defined the area of services for CRA services for airspace outside radar and VHF coverage within the Ho Chi Minh, Manila and Singapore FIRs. The area of service of FIT-SEA CRA would be amended to add the Ujung Pandang FIR.

Agenda Item 3: Central Reporting Agency – South-East Asia

Report of FIT-SEA CRA

3.1 Japan informed the meeting that FIT-SEA CRA (CRA Japan) had been providing the CRA services according to the TOR that was agreed upon by FIT-SEA/3 (November 2005, Bangkok). FIT-SEA/7 (January-February 2008, Fukuoka) agreed that the Phase 2 operational trial of data link in the Ho Chi Minh FIR could be migrated to the full ADS/CPDLC operations. The ADS/CPDLC regular operations were commenced on the eight oceanic RNAV routes of L625, L628, L642, M765, M768, M771, N500 and N892 in Ho Chi Minh FIR from 10 April. FIT-SEA CRA has been receiving data and information concerning ADS/CPDLC system performance and PRs from the Civil Aviation Authority of Singapore (CAAS) and the Civil Aviation Administration of Viet Nam (CAAV).

System Performance

CPDLC Performance for Singapore

3.2 CRA Japan informed the meeting that from April 2010 to February 2011, 94.51% of downlinked messages were delivered within 1 min, and 99.14 % were within 3 min. The CPDLC downlink performance for 1 minute criteria was marginally short (0.49%) of the FOM standards. As far as the uplinked messages are concerned, the actual numbers derived from the Civil Aviation Authority of Singapore showed that both 95 and 99 percentile figures conforms to the FOM standards. Average uplink success rate in this year was 99.98%.

3.3 In regard to the auto transfer success rate, there is no prescribed standard in the FOM. Average auto transfer success rate in this year was 95.5%.

CPDLC Performance for Ho Chi Minh

3.4 95% for downlink messages took an average of 56 sec, and 99% of downlink messages took an average of 1 min 43 sec. The actual numbers derived from the Civil Aviation

Administration of Viet Nam showed that both 95 and 99 percentile figures for the uplink messages conform to the FOM standards.

3.5 Average uplink success rate in this year was 98.74%. It was marginally less than the success rate specified in the FOM. Average auto transfer success rate in this year was 92.6%.

Problem Reports

3.6 Since FIT-SEA/10, the CRA-Japan has received a total of eight PRs from Singapore. All of the eight events were classified as “In progress”.

3.7 The PowerPoint charts contained in **Appendix XX** to this report shows each item and data link system performance analyses to be covered.

Discussion

3.8 The Rapporteur noted that the PRs were from a single source and encouraged members to submit PRs. Airline operators were also encouraged to submit PR to CRA. To facilitate more timely submission, the Rapporteur suggested reviewing the PR submission mechanism to allow for earlier receipt by CRA. This will ensure that data that needs to be retrieved from the data link service providers (DSP) are still available as he noted that the PR analysis by Japan required additional information in order to complete the investigations.

3.9 IATA thanked Japan for the continuous support for the CRA service. In regard to the reporting mechanism, IATA informed the meeting that in the South Pacific, direct reporting can be filed through the use of data link, and was of view that FIT-SEA may wish to consider this in the future plan.

Review of ADS/CPDLC Operations in Singapore FIR

3.10 Singapore presented the ATS data link System Performance/Operator review of ADS/CPDLC Operations in the Singapore FIR for the period May 2010 to Mar 2011.

Performance

3.11 Monthly Periodic Status Reports were prepared and submitted regularly to CRA-Japan. A summary of the year’s performance is in **Appendix XX** to this report.

3.12 The reports indicated that the ATS data link system performance was within the FOM criteria except for downlink message delivery in the earlier part of the review period. It was noted that the downlink message delivery performance for the 1 min criteria for Feb 2011 onwards has improved and has since being maintained at a performance level that met the FOM criteria.

3.13 The mean CPDLC uplink delivery time was 98% and 99.9% for the 120 seconds and 360 seconds criteria. The mean CPDLC downlink delivery time was 99.15% and 94.57% for the 180 seconds and 60 seconds criteria. The total reject rate remained low with an average of 0.02%. The data link service availability remained high and the NDA success rate was 95.32%.

3.14 As previously noted at FIT-SEA/9 and FIT-SEA/10, there were performance issues for downlinks in both Singapore and Ho Chi Minh FIR. This was a known performance issue that was attributed to the B777 type, which formed a majority amongst the aircraft types operating FANS in Singapore FIR.

3.15 During this period Boeing provided a fix to the operators. All 26 of SIA's AIMS-2 equipped B777 has completed this upgrade, with 10 out of the remaining 51 AIMS-1 equipped B777 are still in progress. Although it is expected it would take time for all the aircraft to be updated, these upgrades has resulted in improved downlink performance from Feb 2011 onwards.

Data Link Usage

3.16 The average logon rate is 165 logons per day over the South China Sea in the Singapore FIR, with B777 aircraft type contributing with 55% of the logons, the Airbus family of aircraft with 35% and the B747-400 with 13% of the logons.

3.17 The average CPDLC messages were 30575 per month or 1019 CPDLC messages per day.

ADS/CPDLC Implementation in Ho Chi Minh FIR

3.18 Viet Nam reported that they had officially started providing data link services on eight RNAV routes L625, L628, L642, M765, M768, M771, N500 and N892 in the oceanic area of Ho Chi Minh FIR since April 2008.

Operational Status

The status of ADS/CPDLC operations:

- Based on the daily records, there were more than 300 aircraft flying on the above ATS routes, only half of which have been equipped with both ADS and CPDLC.
- There are about 100 aircraft having ADS/CPDLC connection with Ho Chi Minh system. The remaining aircraft used voice communication (VHF) in the radar environment.

Technical status:

- Ground system: There was no modification to ground system, and the system was working satisfactorily.
- ACARs link: With dual link provided by ARINC, there was no unplanned interruption, and the connection between our system and service provider's server was stable.
- Data link transfers between Ho Chi Minh and Singapore ACCs had been taking place smoothly.

CPDLC Uplink/Downlink messages:

- CPDLC Up link Performance is met the FOM criteria.
- Downlink messages: 95 percentile had the duration of 01: 00 minute and 99 percentile was 01: 43 minutes.
- Uplink messages: 95 percentile had the duration of 01: 00 minute and 99 percentile was 02: 20 minutes.
- Success rate: 99 percent.

Periodic Status Reports: The reports had been made monthly and sent to CRA-Japan for analysis up to February 2011. There was no recommendation for any correction received from CRA.

PRs: There was no problem report being made and forwarded to CRA.

Further Improvement

Future actions of improvement would be required as follows:

- Maintenance of stable operation of data link.
- Improvement of quality of data link.
- Reduction of Uplink time and Downlink time in order to allow the improvement on ADS/CPDLC separation application.
- Continued CRA service provision in the area to support ADS/CPDLC operations.
- Expansion of ADS/CPDLC operation into other FIRs in our area.

Progress of ADS/CPDLC Trial Operations in Manila FIR

3.19 Philippines reported that the Phase 1A of the trial operations was conducted from 8 November 2010 to 11 February 2011. The trial period was from 0300 UTC to 0900 UTC. Four airlines participated in the data link trial.

3.20 From 14 February 2011 up to the present, the Phase 1B operational trial is ongoing. The trial period is from 0100 UTC to 1300 UTC. Seven airlines are taking part in the trial.

Outcome of the Phase1A Operational Trial

System Performance

3.21 Data on the System Performance during the Phase 1A, i.e. for the period 8 November 2010 to 11 February 2011, of the data link trial operations were provided by the service provider which is SITA. Subsequently, these data were sent to CRA. Based on the data collected, Manila attained encouraging figures for the success rate of uplink and downlink messages delivery per month. The figures met the minimum values of the system performance criteria defined in the *FANS I/A Operations Manual* (FOM). (**Appendix XX** to this report).

Problem Reports

3.22 Majority of the problems encountered during the Phase 1A were problems with connection or log on to RPHI.

Status of the Phase1B Operational Trial

3.23 Starting from 14 February 2011, Manila progressed to the Phase 1B of the trial operations wherein seven airlines are participating. Problem Reports and system performance reports for the trial period are regularly submitted to CRA-Japan.

Preparations for the Next Phase

3.24 Phase 2 of the trial operations will be divided into two sub-phases, i.e. Phase 2A and Phase 2B. (**Appendix XX** to this report)

Supplementary LOA

3.25 Draft Supplementary LOA has already been prepared. It will be finalized as soon as discussions with adjacent ACCs are done. (**Appendix XX** to this report)

AIC Supplement

3.26 As a requirement for the trial involving the participation of all FANS 1/A equipped aircraft, Manila drafted an AIC Supplement. (**Appendix XX** to this report).

3.27 IATA queried about the timeline for the Phase 2A trial. After discussions between the Philippines and the Secretariat, there were two actions for the Philippines to complete before moving to Phase 2 trail. One was for the LOA with the neighboring FIRs and amend the operational letters of agreement and the second is the AIP supplement would should be published two AIRAC cycles before the commencement of the start of the Phase 2 trail. The Philippines was invited to inform ATM/AIS/SAR/SG/21 and APANPIRG for the estimated time schedule in an Information Paper.

3.28 The Rappateour congratulated the Philippines on the progress made in data link trials and noted that CRA-Japan provided CRA services to the Philippines on a bilateral arrangement. The meeting agreed that this arrangement for Phase 1 (limited to 7 airlines) will continue so as not affect the on-going trails and Phase 2 trials would need to be authorized and coordinated under the auspices of FIT-SEA.

Setting Up of CRA-Singapore

3.29 Singapore recalled that at FIT-SEA/10, Japan indicated that she is unable to continue so due to financial resources and other considerations. With the Philippines planning to introduce data link operations soon, it was important that an alternative CRA arrangement be set-up quickly in order to continue data link operations in South China Sea region and not to affect the data link implementation in the Philippines.

3.30 Singapore had offered to set up and fund an alternative CRA arrangement for the South China Sea region. This arrangement will be for a period of at least three years to facilitate the expansion data link operations in the South East Asia region, after which a review will be done.

Terms of Reference of FIT-SEA CRA

3.31 Whilst it was originally envisaged that there will not be any change to TOR, a change to the area of FIT-SEA services would be necessary to accomodate the participation of Ujung Pandang FIR in FIT-SEA. In order for CRA-Singapore to act as FIT-SEA CRA under the authorization of FIT-SEA, a data confidentiality agreement shall be signed between CRA-Singapore and the States that provide data link services or will implement data link trials (namely Singapore, Vietnam, Indonesia and the Philippines). Besides establishing a data confidentiality agreement with their DSP, States shall also establish this arrangement with Boeing who will be supporting CRA-Singapore in providing technical expertise for CRA activities.

3.32 CRA-Singapore as the FIT-SEA CRA will analyses PRs, disseminate de-identified information on PRA and preparation of periodic reports in accordance with the TORs agreed by FIT-SEA. It is envisaged that PRs may be submitted directly by ATS providers, airlines and DSPs directly to Boeing, who will provide a copy to CRA-Singapore, in accordance with the data confidentiality arrangements.

3.33 In response to query from the Secretariat, Singapore clarified that CRA-Singapore had already been able to accept PR since April 2011, subject to signing of data confidentiality agreement.

3.34 The meeting noted and discussed the information, the changes to the CRA arrangement, in particular PR submission procedures, and was invited to establish a data confidentiality arrangement with CRA-Singapore, DSP and Boeing. Upon the establishment of the data confidentiality arrangement, the CRA service will be provided officially to the ANSPs.

3.35 The Secretariat appreciated that Singapore took over the role of the CRA for the South East Asia region. It was noted that the Philippines was currently providing PR to CRA-Japan on a bilateral cooperation basis. The Philippines was invited to conclude the data confidentiality agreement with CRA-Singapore as soon as possible. Japan agreed that the current bilateral assistance would be continued until the official service provision starts by signing the confidentiality agreement and/or the Phase 2A starts.

3.36 Viet Nam requested the new point of contact (POC) of CRA-Singapore. Singapore responded that the POC is Mr. Kwek Chin Lin, Senior Air Traffic Control Manager (Systems), Civil Aviation Authority of Singapore, whose email address is kwek_chin_lin@caas.gov.sg.

Tables of ADS/CPDLC Equipage and ATS Participation Status

3.37 The table of Southeast Asia ADS/CPDLC Equipage and ATS Participation Status was updated as in **Appendix B** to this report.

Agenda Item 4: Data Link Guidance Materials

There was no discussion under this agenda item.

Agenda Item 5: Update Task Lists

5.1 The meeting reviewed and updated the list as in **Appendix XX** to this report.

Agenda Item 6: Any Other Business

There was no discussion under this agenda item.

Agenda Item 7: Date and Venue for the Next Meeting

7.1 The meeting agreed that FIT-SEA/12 will be held three months before the commencement of Phase 1B of the Philippines operational trial [place to be determined]. If due to any unforeseen circumstance that the operational trial unable to commence as planned, the next meeting will be held in May 2012 at the Regional Office in conjunction with SEACG.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:-

- a) review the draft; and
- b) note the outcome of FIT-SEA/11.

.....