



International Civil Aviation Organization

**THE FOURTH MEETING OF ADS-B STUDY AND
IMPLEMENTATION TASK FORCE (ADS-B SITF/4)**

Nadi, Fiji, 26-28 October 2005.

**Agenda Item 2: Review of outcomes of APANPIRG/16 and Sub-groups on ADS-B,
particularly deliveries on:**

- a) ADS-B Implementation and operational Guidance Document (AIGD);
- b) Amendment to Regional Plan for new CNS/ATM system;
- c) FASID update; and
- d) Amendment to the BORPC for regional air navigation planning.

**OUTCOME OF APANPIRG/16 AND SUB-GROUPS ON ADS-B
AND WORKS ACCOMPLISHED BY ADS-B STUDY AND
IMPLEMENTATION TASK FORCE**

(Presented by the Secretariat)

SUMMARY

This paper reviews the outcome of APANPIRG/16 on ADS-B and works accomplished by the Third Meeting of ADS-B Study and Implementation Task Force (ADS-B SITF/3). The paper also reviews actions taken by the Ninth Meeting of CNS/MET Sub-group and Fifteenth Meeting of ATM/AIS/SAR Sub-group of APANPIRG on the draft Decisions and Conclusions developed by the ADS-B SITF/3.

1. INTRODUCTION

1.1 The APANPIRG/16 held on 22-26 August 2005 in Bangkok reviewed the work accomplished by the Third Meeting of the ADS-B Study and Implementation Task Force held in Bangkok from 23 to 25 March 2005. The outcome of APANPIRG/16 on matters relating to ADS-B is provided at Attachment 1 to this paper for review by this meeting.

1.2 The report of the Third Meeting of ADS-B Task Force was also reviewed by CNS/MET SG/9 held in Bangkok from 11 to 15 July 2005 and ATM/AIS/SAR SG/15 from 25 to 29 July 2005.

1.3 A subject/tasks list of the ADS-B Study and Implementation Task Force was approved by the APANPIRG/16 (Decision 16/38).

2. DISCUSSION

ACTION TAKEN BY APANIRG/16

2.1 The APANPIRG/16 adopted all four draft Conclusions and two draft Decisions formulated by the Third Meeting of the Task Force and recommended by the CNS/MET SG/9 and ATM/AIS/SAR/SG/15.

2.1.1 The adopted ADS-B Implementation and operational Guidance Document (AIGD) and the updated Regional Plan for the CNS/ATM System to include ADS-B have been posted on the ICAO APAC website: <http://www.icao.int/apac/edocs/index.html>

2.1.2 The amendment to the FASID Table CNS 4 - Surveillance Systems will be initiated by ICAO regional office in accordance with the established procedure.

2.1.3 ICAO will seek agreement from Eurocontrol to use the Eurocontrol Asterix Cat 21 document in the Asia/Pacific Region.

2.1.4 Recognizing the revised BORPC was approved the Air Navigation Commission, on 22 February 2005 for use by all ICAO Region, APANPIRG/16 recommended that the paragraph 7.2 of the revised BORPC be amended in the next cycle of update.

ACTION TAKEN BY CNS/MET SG/9

2.2 The Ninth Meeting of CNS/MET Sub-group of APANPIRG held in Bangkok from 11 to 15 July 2005 reviewed the report of Third Meeting of the ADS-B SITF and endorsed the draft Conclusions and draft Decisions formulated by the Task Force. The relevant discussions are as follows:

ADS-B Implementation and operational Guidance Document (AIGD)

2.2.1 The CNS/MET SG/9 reviewed the updated draft ADS-B Implementation and operational Guidance Document - AIGD and made some editorial changes. The meeting noted that the AIGD would be a living document and it should keep consistency with PANS-ATM as indicated by the Task Force. Accordingly, the meeting endorsed the draft Conclusion formulated by the ADS-B SITF.

Amendment to Regional Plan for the CNS/ATM System to include ADS-B

2.2.2 The CNS/MET SG/9 reviewed and endorsed the draft amendment proposal developed by the ADS-B SITF to the ASIA/PAC Regional Plan for CNS/ATM System to include ADS-B. The plan needs revision to include ADS-B related planning and description materials. The proposed changes are contained in the Chapter 3, 5, 6 and Chapter 9. The meeting also updated time lines of national trials and implementation activities of surveillance systems in the Table 9-1 of the Plan. The meeting agreed to replace the term of “ADS” used in the document with “ADS-C” especially in the two chapters and in the bar chart time lines. The meeting endorsed the draft Decision developed by the ADS-B SITF.

Review of the revised BORPC for regional air navigation planning

2.2.3 The CNS/MET SG/9 also reviewed the comments made by the ADS-B SITF regarding the Surveillance part contained in the revised BORPC approved by Air Navigation Commission on 22 February 2005. The meeting noted the role played by ADS-B for surveillance function. ADS-B based air-ground surveillance has been identified by APANPIRG as one cost effective alternative to the radar system in remote continental airspace and for backup or redundant surveillance system. ADS-B has also been identified as an enabler for the new ATM concept. Therefore, the meeting agreed the proposal for removal of the last two sentences in the paragraph 7.2. Accordingly, the meeting endorsed the draft Conclusion formulated by the ADS-B SITF.

FASID Table CNS 4 –Surveillance Systems

2.2.4 The CNS/MET SG/9 also reviewed and updated the information contained in the Table CNS 4 - Surveillance System of the ASIA/PAC Air Navigation Plan FASID which will be amended in accordance with the established procedure.

ACTION TAKEN BY ATM/AIS/SAR/SG/15

2.3 ATM/AIS/SAR/SG/15 was updated in respect to the work of the Third meeting of Automatic Dependent Surveillance-Broadcast (ADS-B) Study and Implementation Task Force (ADS-B/TF/3, March 2005).

2.3.1 Subsequent to a review of the ADS-B Implementation guidance Document (AIGD) drafted by ADS-B/TF, ATM/AIS/SAR/SG/15 supported the work of ADS-B/TF/3 and CNS/MET SG/9, endorsing the position that the AIGD, as amended by CNS/MET SG/9 and contained in Appendix A to the ATM/AIS/SAR/SG/15 Report on Agenda Item 7, be recommended to APANPIRG for adoption and circulation to States in the Asia/Pacific Region and International Organizations. Rather than raise a separate draft Conclusion in this respect, ATM/AIS/SAR/SG/15 agreed to join the CNS/MET/SG as co-sponsor.

3. ACTION BY THE MEETING

3.1 The meeting is invited to review the outcome of the APANPIRG/15 and comments made by the Sub-groups of APANPIRG and take necessary follow up actions.

(Abstract from report of APANPIRG/15 relating to ADS-B)

ADS-B study and Implementation Task Force

2.2.73 The meeting reviewed the work carried out by the Third Meeting of ADS-B Study and Implementation Task Force which was held from 23 to 25 March 2005 in Bangkok. An ADS-B Seminar was also held from 21-22 March 2005 in conjunction with the Task Force. The meeting also reviewed the result of the ADS-B working group meeting held in Singapore from 13 to 15 October 2004.

States' activities on trials and implementation of ADS-B

2.2.74 Airservices Australia has committed to deploying a network of ADS-B ground stations across Australia during 2005 under the UAP. This project is expected to provide near-nationwide coverage above FL300, with significant coverage at lower levels through 28 ground Stations. Integration of the high performance GPS engine in the ground station has been completed. The installation at remote sites will be progressively completed through the second half of 2005. Commissioning of the UAP network is expected to take place by the end of 2005.

2.2.75 A RAIM prediction system as a modification to the existing system has been purchased to provide predictions of when aircraft can be expected to report integrity values corresponding to HPL<0.5NM. Formal testing of the Eurocat enhancements has commenced. An ADS-B bypass system had been developed which takes ADS-B data from the ADS-B ground stations and presents it to the controller workstation directly without centralised processing. ATC procedure development had commenced. Design safety case for the UAP had been completed.

ADS-B Trial and Implementation Regulatory Aspect

2.2.76 It was noted that for the Burnett Basin Operational Trial, the Civil Aviation Safety Authority (CASA) approved the use of a 5 NM minimum horizontal separation distance between trial aircraft on 5 December 2004. A copy of the instrument authorizing ADS-B separation in the trial is available at <http://www.casa.gov.au/rules/miscinst/2004/CASA559.pdf>

2.2.77 It was noted that recently CASA has issued two Australian Technical Standard Orders (ATSOs) for the certification of ADS-B avionics. ATSO-C1004 is a standard for Mode A/C transponders capable of transmitting ADS-B 1090ES messages, while ATSO-C1005 is a standard for the certification of a stand-alone (non-transponder) ADS-B 1090ES transmitter. The two ATSOs are available at: <http://www.casa.gov.au/avreg/aircraft/ATSO.htm>.

ADS-B Validation Trials

2.2.78 ADS-B validation trials were performed based on an 1090 MHz ES Ground station installed in Toulouse Airport within EUROCONTROL ADS-B validation activities called CRISTAL. CRISTAL Toulouse has started with the participation of consortium made of French DSNA, Airbus, Thales ATM and Alticode. It includes the installation of an ADS-B ground station with good coverage of the airport and of the surrounding airspace and validation activities through data collection and analysis. Equipped aircraft are detected with a very good detection quality at 200 NM at high altitude and sometimes up to 250 NM. For French DSNA, the study will also prepare the operational implementation of ADS-B especially in La Réunion Island by gaining confidence in ADS-B data and identifying potential issues. A final public report will be delivered to Eurocontrol at the end of 2005. It was noted that the French DSNA is also involved with EUROCONTROL, ENAV (Italy), AENA (Spain) and HCAA (Greece) in the CRISTAL MED project that will deploy an ADS-B 1090 MHz ES infrastructure for the Mediterranean airspace. ADS-B will be used to allow radar-like procedures with goal to provide radar like separation even in areas without radar coverage and currently under procedural control. It is also envisaged to use ADS-B ground stations for airport

surface surveillance on some major airports close to the Mediterranean area where ADS-B data could support aircraft identification and vehicle tracking for A-SMGCS.

ADS-B Project study and Implementation Plan in Fiji

2.2.79 The meeting noted the progress of ADS-B study and tentative plans for implementation of ADS-B in Fiji. The ADS-B core Project team was liaising with some of the Stakeholders to complete and Cost Benefit Analysis (CBA) study. The following tentative project plan had been developed to be provided with Cost Benefit Analysis report for approval by the State which leads to implementation of ADS-B in Fiji. The tender and contract was estimated to be done by 31 October 2005 and commissioning of ADS-B Service in Fiji is by 30 April 2006. Four VHF sites are being considered for initial location of the ADS-B Ground Stations including two remote sites at Delaikoro and Koro-o and two local sites at Nadi and Nausori Airports. The ADS-B solution for surveillance capability in Fiji is a typical example for where no radar surveillance service is provided.

ADS-B plan in Indonesia

2.2.80 It was noted that in order to extend the surveillance coverage within Indonesian airspace, in the Near-Term the DGAC, Indonesia is considering installation of ADS-B ground station for use as complementary surveillance tool. In the Long-Term will consider SSR replacement program and to explore other applications. In the near term, 20 ground stations (11 for stage 1 and 9 for stage 2) would be installed to extend radar-like coverage and replace the unserviceable radar.

ADS-B Evaluation tests in Japan

2.2.81 The evaluation tests of ADS-B and multilateration on surface and terminal areas have been conducted by the Electronic Navigation Research Institute (ENRI). The evaluation tests of multilateration on surface area conducted used the experimental vehicle. The test results were generally satisfactory in comparison with EUROCAE MOPS. The target losses observed in front of the terminal building and large errors observed at the left and right corners were caused by shielding and reflection from buildings or parking aircraft. To resolve these problems, height of an antenna was extended and a remote unit was added near the terminal building area. The tests with these improvements were conducted on September 2004. The comparison of tracking outputs near the terminal building was analyzed.

ADS-B Implementation Plan in the Republic of Korea

2.2.82 In the 2nd phase construction of Incheon International Airport, ADS-B system has been considered to enhance surveillance capability for approaching aircraft to the airport and moving vehicles on the ground by providing efficient RIMCAS (Runway Incursion Monitoring and Conflict Alert System) function and fostering smooth air traffic flow. Incheon International Airport, which is currently operating Ku-band ASDE (Airport Surface Detection Equipment) with a MRI (Multi Radar Tracking) function, will be improved by adding X-band ASDE to ensure CAT-IIIb operation. ADS-B system will be used to supplement the detection function of the ASDE which is easily influenced by blind area or by more than a 16 mm/h rainfall. The ADS-B is also considered to be integrated with ARTS (Automated Radar Terminal System) to enhance precision approach monitoring for simultaneous parallel arrivals and departures. Four sets of ground ADS-B receivers are to be established at appropriate positions in the airport to secure sufficient visual range for detecting approaching and moving aircrafts and vehicles. The ADS-B system plan will be determined after review of expert committee with consideration of international standards and then the final decision will be made in the consultation with concerned authority and organizations. The SSR Mode S 1090 MHz ES will be used and the project is anticipated to be completed by 2008.

ADS-B trial and Plan in Singapore

2.2.83 In early October 2004, Singapore took the opportunity of flight inspection to long range radar to conduct an ADS-B trial to assess performance of ADS-B. Singapore plans to implement ADS-B in 3 phases as follows:

- Phase 1 (2006/7) involves the tracking of ground movement of vehicles with ADS-B transponders and ADS-B equipped aircraft using sensors installed at Changi Airport. The ADS-B tracking will be displayed at the Advanced Surface Movement Guidance and Control System (A-SMGCS) at Tower.
- Phase 2 (2007/8), the ADS-B coverage will be extended up to 250 NM by installing a high-gain antenna in the airport vicinity, if required.
- Phase 3 (2009/10) we will integrate ADS-B data into the new ATC system for ATC operations.

ADS-B Operational Trail in Thailand

2.2.84 In December 2004, AEROTHAI approved the budget to conduct the ADS-B operational trial. The ADS-B operational trial in Thailand will mainly focus on assessing the system's performance in the local environment utilizing targets of opportunity in Bangkok Flight Information Region and the possibility to improve the Secondary Surveillance Radar (SSR) coverage using ADS-B as an additional source. A single, non-redundant, ADS-B ground station will be installed either in Bangkok or Phuket where an existing communication link and other necessary infrastructure are available. A cost estimate for provision of a 9600 bps communication link between ADS-B site and the air traffic control centre in Thailand is about US\$ 4,800 including additional hardware for supporting ADS-B traffic. The cost estimate was based on the assumption that the ADS-B system would be installed at a location, which already has a communication infrastructure (VSAT network). AEROTHAI is currently in the procurement process and expects the installation of the equipment to be completed by the third quarter of 2005. It was further noted that Thailand intends to initiate an operational trial of ADS-B for ATC surveillance from 2005 with the target time frame 2010 for full operation, operating in parallel with the existing Secondary Surveillance Radar (SSR). ADS-B is expected to provide improved radar like coverage for Bangkok FIR, as well as backup, or replace existing radar systems in Thailand.

Potential Area for using ADS-B

2.2.85 It was noted that a requirement for using ADS-B can be identified in area between D.P.R. Korea and Russian Far East including Northern part of Japan which would be potential area to use ADS-B technology serving those flights between Republic of Korea and Russia and beyond via DPR. Korea. There is minimal procedure airspace in DPR Korea and large part of military airspace in Northwest of Japan. IATA was requested to provide details information at next Task Force meeting listing advantage and benefits by extension of surveillance coverage with the use of ADS-B ground station.

ADS-B Radar – Like Service with a Regional ADS-B Provider

2.2.86 It was informed that SITA and Airservices Australia had become partner in providing ADS-B radar like service. To minimize capital investment by ANSPs and technical/commercial ANSP risk, the ADS-B air-ground surveillance service can be provided jointly with ANSPs. For example SITA will buy, install and maintain ADS-B ground stations and operate on existing SITA RGS sites or on ANSP sites. Example of ADS-B data sharing implementation sites could be at Norfolk Island and Christmas Island of Australia and Port Blair of India.

Problem Report System

2.2.87 It was informed that an interim ADS-B problem and issue reporting database has been developed by Australia based on the proposal agreed by the Task Force. ADS-B related problems and issues may be submitted online using a data entry form on the Airservices Australia website at www.airservicesaustralia.com/adsb/issues with following user name and password. Members of the ADS-B Task Force were invited to provide any comments regarding the web page and the database.

User name: icao
Password: abit2004
Domain: leave this field blank

Transponder Status

2.2.88 It was informed that Airbus certified in 2003 three new Mode S transponders, capable of ELS (Elementary Surveillance), EHS (Enhanced surveillance) and 1090ES (Extended Squitter, first implementation of ADS-B out). These three Mode S transponders ELS/EHS/ES capable are:

- ACSS XS-950, P/N 7517800-10005
- Honeywell TRA-67A, P/N 066-01127-1402
- Collins TPR-901, P/N 822-1338-021

2.2.89 Basically, Airbus aircraft are equipped with Honeywell transponder P/N: 066-01127-1101, which is not ELS-EHS capable. However, through the RFC process, new Airbus customers have the possibility of install on their aircraft an ELS-EHS capable transponder from the list above. This RFC is free of charge for customers, and the installation of a new transponder capable of extended squitter does not imply add costs to customers.

Development of Technical Standard

2.2.90 It was noted that the United States Technical Standard Order (TSO)-C166 for Extended Squitter ADS-B and TIS-B Equipment Operating on 1090 MHz became effective on 20 September 2004, which can be electronically downloaded at:
[http://www.airweb.faa.gov/Regulatory and Guidance Library/rgTSO.nsf/MainFrame?OpenFrameSet](http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgTSO.nsf/MainFrame?OpenFrameSet)

Comparison of ADS-B vs. radar

2.2.91 The meeting noted the U.S. activities concerning comparison of ADS-B vs. radar data and plan for a national 3 NM terminal ADS-B separation standard. These activities are documented in the Plan to Obtain Approval for Automatic Dependent Surveillance - Broadcast (ADS-B) Terminal Area Separation Standards (TermSepStdPlan). (FAA, Final Coordination v1.0, 31 August 2004). Analyses were performed on the horizontal position accuracy of ADS-B and radar targets reported to the ATC automation system. Comparing ADS-B accuracy to terminal SSR cross track accuracy at 40 NM from the radar, the data indicates that ADS-B is from 18 to 60 times more accurate. Comparing ADS-B accuracy to enroute SSR cross track accuracy at 200 NM, the data indicates that ADS-B is from 90 to almost 300 times more accurate.

ADS-B Data Sharing Policies

2.2.92 The meeting noted the following two levels of service could be adopted for sharing ADS-B data.

- LEVEL 1: Use of the ADS-B data for radar like separation standards (eg. 5 NM). This requires availability, reliability, accuracy and integrity equivalent to that offered by radar.
- LEVEL 2: Use of ADS-B data for situational awareness and perhaps some automated safety alerting features such as Cleared level adherence monitoring. For this service, integrity and accuracy are most important whilst lower standards could be tolerated for availability and reliability. Accuracy and integrity are determined in most part by the system design and by the avionics. Maintenance support is not as critical for this level of service.

ASTERIX Format for sharing ADS-B data

2.2.93 It was noted that EUROCONTROL maintains ASTERIX data format standards for data sharing between Air Traffic Control automation systems. The format which has worldwide acceptance by the ATM system manufacturing industry is called ASTERIX Cat 21 for ADS-B. The meeting recognized that the ASTERIX 21 format will evolve, and should consider the potential for future upgrades in their system designs. It was informed that the version number of ASTERIX21 data format are changed every three months. It was confirmed that version 0.23 was issued in November 2004. It was further informed that the versions are now backward compatible. EUROCONTROL exercises configuration control of the standard and version 0.23 is considered the current baseline for deployment of ADS-B systems. Accordingly the meeting adopted the following conclusion:

Conclusion 16/35 - ADS-B Data Exchange format

That,

- 1) the Eurocontrol Cat 21 version 0.23 or later message format be adopted for ADS-B data exchange in the Asia/Pacific Region.
- 2) ICAO be requested to seek agreement from Eurocontrol to use the Eurocontrol Asterix Cat 21 document in the Asia/Pacific Region as was done for radar data exchange in the region.

ADS-B Implementation and operational Guidance Document (AIGD)

2.2.94 The meeting reviewed the updated draft ADS-B Implementation and operational Guidance Document –AIGD with few editorial changes. The meeting noted that the AIGD would be a living document and it should keep consistency with PANS-ATM as indicated by the Task Force. The document was fully supported by the ATM/ASI/SAR SG/15. Accordingly, the meeting adopted the following conclusion:

Conclusion 16/36 - ADS-B Implementation and Operational Guidance Document (AIGD)

That, the ADS-B Implementation and Operational Guidance Document as provided in **Appendix G** to the Report on Agenda Item 2.2 be adopted and circulated to States in the Asia/Pacific Region and International Organizations.

2.2.95 The meeting appreciated efforts made by the ADS-B Task Force in completing the AIGD.

FASID Table CNS 4 –Surveillance Systems

2.2.96 The meeting reviewed and updated the information contained in the Table CNS 4 of the ASIA/PAC Air Navigation Plan FASID. It was noted that ADS-B was marked as emerging technology and listed as one system in the table. The meeting suggested that such remark should be removed as ADS-B has been identified by APANPIRG as one enabler for new ATM concept and system. It was also proposed to add a new column called A-SMGCS to reflect the current requirement.

2.2.97 Considering that States were encouraged by APANPIRG to implement ADS-B at sub-regional bases with target date commencing from 2006 and information contained in the Regional Plan for the CNS/ATM System needs to be gradually transferred into the tables of FASID. The meeting endorsed the following Conclusion formulated by the ADS-B SITF.

Conclusion 16/37 –Amendment to Table CNS-4–Surveillance System

That, the existing Table CNS-4 – Surveillance System provided in ASIA/PAC FASID, Part IV CNS be replaced with an updated Table in accordance with established procedure.

Subject/Tasks list of the ADS-B Study and Implementation Task Force

2.2.98 The meeting reviewed the Subject/Tasks list of the ADS-B SITF. The meeting considered the need to continue its efforts in cost benefit study. The sub-regional based ADS-B implementation plan and project should be developed and issues emerged during the trial and implementation stages should be appropriately addressed in a harmonized manner. The exchanging information and experiences gained during the trial and implementation of ADS-B should be further encouraged. Accordingly, the meeting reached the decision as follows:

**Decision 16/38 - ADS-B Study and Implementation Task Force
Subject/Tasks List**

That, the updated subject/Tasks list for ADS-B Task Force as provided in **Appendix H** to the Report on Agenda Item 2.2 be adopted.

2.2.99 It was noted that in order to attract more participants from the Industry from other region, ADS-B air-to-air surveillance service should also be addressed by the Task Force.

2.2.100 It was informed that the next meeting of ADS-B SITF will be held in Nadi Fiji from 24-28 October 2005 hosted by Airports Fiji limited.

Designated Contact Persons for ADS-B

2.2.101 The meeting noted the an action item agreed by 41st DGCA Conference on ADS-B and updated the list of Designated Contact Persons Responsible for ADS-B Study and Implementation in the Asia/Pacific Region which is at the Appendix M to this report.

Advanced Technologies and Oceanic Procedures (ATOP) IOC

2.2.102 The United States informed the meeting that on June 30, 2004, Initial Operating Capability (IOC) of the Advanced Technologies and Oceanic Procedures (ATOP) system was declared at the Oakland Air Route Traffic Control Center (ARTCC). The ATOP system provides a new automation platform for the provision of air traffic control (ATC) services in the Oakland oceanic flight information region (FIR). It is planned to transition to full twenty four hours a day, seven days a week use in the entire Oakland FIR by October 2005. The ATOP system is also installed at the New

York ARTCC and was declared operational on March 31, 2005. Finally, the ATOP system is planned to go operational in the Anchorage ARTCC in March, 2006. It was informed that aircraft tracked in the ATOP system is by means of a cleared four dimensional (4-D) profile. An automated conflict probe ensures that all 4-D profiles being maintained by the system are separated from each other, both in space and time. The ADS-C application is used in the ATOP system as the primary surveillance means. The meeting recognized that the implementation of a satellite-based surveillance system using ADS-C in the oceanic area can not be substituted by ADS-B.

Safe Flight 21 (SF-21) Programme

2.2.103 The US updated the information on the progress of Safe Flight 21 (SF-21) program. As a result of SF-21 demonstration activities in Alaska, along the East Coast and in the Ohio River Valley, progress has been made toward implementing operational enhancements and applications related to the use of GPS, ADS-B, TIS-B, FIS-B, and the multi-functional display in the cockpit. The Airport Map Database (AMDB) will supply current digital airport maps to cockpit avionics and airport vehicle displays to enhance airport surface situational awareness and improve runway safety. In April, the FAA published a Notice to Airmen (NOTAM) to announce initial ADS-B availability along the East Coast, and in locations in the upper Midwest and in Arizona. In 2005 MOPS compliant GBTs were installed in the Bethel area and aircraft avionics were changed out to be compatible with the GBTs. The FAA ADS-B link decision will recognize a national deployment of 900 ADS-B ground based transceivers by 2012. Further detailed information about the Safe Flight 21 program and Capstone program is provided at the following FAA websites:

<http://www.faa.gov/safeflight21> and

<http://www.alaska.faa.gov/capstone>

Revised Statement of BORPC

2.4.1 Taking into account the changes proposed by States, the meeting noted that the Air Navigation Commission, on 22 February 2005, approved the revised Statement of BORPC for use by all ICAO Regions. Consequently, the meeting agreed to incorporate the revised Statement of BORPC, through the following decision, into the Asia/Pacific Basic air navigation plan (ANP).

Decision 16/55 – Revised Statement of BORPC for regional air navigation planning and implementation

That, the revised Statement of BORPC for the regional air navigation planning and implementation be incorporated into the Asia/Pacific Basic ANP (Doc 9673).

Furthermore, the meeting while reviewing the revised Statement of BORPC proposed modification to para 7.2 and reflected in the following Conclusion. The meeting requested ICAO to take into account the amendment during its next cycle of BORPC update.

Conclusion 16/56- Amendment to Surveillance Part of revised BORPC

That, the paragraph 7.2 of the revised BORPC be amended in the next cycle of update as follows:

7.2 Surveillance should be provided as an integral part of air traffic control where practicable and desirable or necessary in the interest of safety, efficiency and economy of operations, in particular for those areas where traffic density and/or the multiplicity or complexity of ATS routes creates constraints. ~~Primary and/or secondary surveillance radar systems may be used to fulfill this requirement. Subject to availability and cost effectiveness and provided that the required level of safety is~~

~~maintained, ADS and ADS-B may be used in airspace where surveillance by radar is impracticable or cannot be justified.~~

Amendment to Regional Plan for the New CNS/ATM System to include ADS-B

3.8 The meeting adopted an amendment proposal proposed by the ADS-B Study and Implementation Task Force to the ASIA/PAC Regional Plan for New CNS/ATM System to include ADS-B. It was recognized that the plan needs revision to include ADS-B related planning and description. The proposed changes are contained in the Chapter 3, 5, 6 and Chapter 9. The bar chart timelines information of national trials and implementation of surveillance systems in the table 9-1 of the Plan was also updated. The meeting agreed to replace the term of ADS used in the document with ADS-C especially in the two chapters and in the bar chart timelines table. Accordingly the meeting formulated the following Decision:

Decision 16/58 - Amendment to the Regional Plan for the CNS/ATM System to include ADS-B

That the ASIA/PAC Regional Plan for the New CNS/ATM System be amended to include ADS-B element for the surveillance systems as indicated in the **Appendix C** to the Report on Agenda Item 3.
