**ADS-B IMPLEMENTATION STATUS IN THE APAC REGION**

| **State/ Administration** | **ADS-B Ground Infrastructure and ATC System readiness or Implementation plan** | **Date of issue/effectiveness date of equipage mandate** | **Mandated Airspace and/or ATS-routes** | **Intended separation criteria to be applied** | **Remarks** |
| --- | --- | --- | --- | --- | --- |
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| **AFGHANISTAN** | ADS-B & Multi Lateration system installed. |  |  |  | subject to safety assessment |
| **AUSTRALIA** | A total of 33 ADS-B stations and 28 WAM stations are currently used.  ATC system readiness since 2004.  ADS-B data sharing with Indonesia operational since 2/2011.  ASMGCS using multilateration is operational in Brisbane, Sydney & Melbourne. It is being installed in Perth.  Additional 13 ADS-B stations from 2014-2016.  OneSKY replacing current ATM system is estimated for full operational around 2020. | 2009/effective date of mandating in UAP 12/12/2013.  A forward fit ADS-B mandate also applies from 2/2014 for all IFR aircraft at all flight levels.  An ADS-B for all IFR aircraft applies from 2/2017. | at/above FL290 UAP from 12/2013 for domestic & foreign aircraft.  Mandates for additional flight level are considered for 2015 & 2017.  WAM is operating in Tasmania since 2010 delivery 5 Nm separation service.  WAM is also operating in Sydney for 3 Nm separation service in TMA and for precision runway monitoring function. | 5 NM  3 NM SYDWAN |  |
| **BANGLADESH** | Bangladesh has a plan to commission four ADS-B ground stations to be installed at Dhaka, Cox’s Bazar, Saidpur and Barisal Airports by 2016.  ADS-B data will be integrated with new ATS system at Dhaka. |  |  |  |  |
| **CAMBODIA** | 3 ADS-B ground stations have been installed in Cambodia since 2011 and able to provide full surveillance coverage for Phnom Penh FIR. |  |  |  |  |
| **CHINA** | 5 UAT ADS-B sites are used for flight training of CAFUC.  8 ADS-B stations installed by end of 2012. 200 ADS-B stations nationwide will deployed as 1st phase.  1 ADS-B station operational in Sanya FIR since 2008.  Sanya ATC system ready since July 2009 to support L642 nd M771.  Chengdu-Jiuzhai project finished in 2008 with 2 ADS-B stations and additional site is planned to enhance the surveillance coverage.  Chengdu - Lhasa route surveillance project completed with 5 ADS-B stations using 1090ES since 2010. Trials planned from May 2011.  1 ADS-B site installed in Sanya FIR since 2008. 3 additional ground stations planned, Trial planned for Jun, 2011. | NOTAM issued on ADS-B trial operation |  |  | ADS-B signal alone won’t be used for ATC separation |
| **HONG KONG CHINA** | A larger-scale  A-SMGCS  covering the  whole Hong  Kong International  Airport put into  operational use  in April 2009.  Data collection/  analysis on aircraft ADS-B equipage in  Hong Kong airspace conducted on quarterly basis since 2004.  ADS-B trial using a dedicated  ADS-B system completed in 2007.  ADS-B out operations over PBN routes L642 and M771 at or above FL 290 within HK FIR was effective in December 2013 and within HK FIR at or above FL 290 is planned for December 2016.  ADS-B ground station infrastructure completed in 2013.  ADS-B trial using ADS-B signal provided by Mainland China to cover southern part of Hong Kong FIR commenced in 2010. | AIP supplement issued on 29 Oct.2013/12 Dec. 2013 as effective date. | L642/M771  ATS routes. | To be determined. | ADS-B signals being fed to ATC controllers under an operational trial programme.  ADS-B operation in Hong Kong FIR re-scheduled for Dec. 2016. An AIP Supplement was issued on 29 Aug. 2014. |
| **MACAO, CHINA** | Mode S MSSR coverage available for monitoring purposes. |  |  |  |  |
| **DEMOCRATIC PEOPLE’S REPUBLIC OF KOREA** | ADS-B has been used as back-up surveillance of SSR since 2008. |  |  |  |  |
| **FIJI ISLANDS** | ADS- B /multilateration ground stations installed. Situations awareness service will be provided in 2013. |  |  |  |  |
| **FRANCE**  ***(French Polynesia)*** | Project launched to install 9  ADS-B stations. 2 stations to be installed in 2014; 3 in 2015 and 4 will be installed in 2016. |  |  | 5 NM for airspace under coverage. |  |
| **INDIA** | ASMGCS (SMR + Multilat) is operational at Delhi, Mumbai, Chennai, Kolkata, Bangalore and Hyderabad Airports.  ASMGCS is also being installed at 05 more international airports.  ADS-B Ground Stations installed at 14 locations in phase one across continental and Oceanic airspace at Port Blair.  07 more ADS-B Ground stations in phase two in 2014.  ATS systems at 12 ACCs are capable of processing ADS-B data and provide the information on Display.  Wide area Multilateration pilot project is being planned in Kolkata TMA to augment the surveillance coverage. | AIP supplement issued on 17th April 2014 with effective date of implementation from 29th May 2014. |  |  | ADS-B in India to provide redundancy for radar and filling the surveillance gaps.  Currently study the integrity of ADS-B data and evaluating in both Non-radar and radar  environment for ATC purposes. |
| **INDONESIA** | 30 Ground Station successfully installed.  Since 2009, ATC Automation in MATSC has capabilities to support ADS-B application.  ADS-B Task Force team established to develop planning and action concerning ADS-B Implementation within Indonesia FIR  ADS-B data sharing with Australia and Singapore. |  |  |  | ADS-B Task Force Team is considering a mandate in 2016.  Mandate for 3 ATS routes: B472, M768, R592 from 25 June 2015 subject to safety assessment process. |
| **JAPAN** | Multilateration Systems for surface monitoring have been implemented at seven airports and are being implemented at another one airport.  PRM (WAM) is planned to be implemented at Narita Airport. (Operation will start in 2014).  Basic design of en-route WAM system completed in FY2013. Plans to start manufacture in FY2014 and estimated operational in FY2018.  Plan to evaluate accuracy of ADS-B information and has intension to introduce  ADS-B to the oceanic direction. |  |  |  |  |
| **MALAYSIA** | Malaysia planned to start mandate  ADS-B requirement in KL FIR in 2018 and full implementation of ADS-B service at specific routes/exclusive airspace by end of 2020.  Plan to install two ADS-B stations at Pulau Langkawi and Genting Highland by 2016. Data sharing with neighbouring by mid. 2017. | Plan to issue mandate with target effective date end of 2018. |  |  |  |
| **MALDIVES** | 4 ADS-B stations installed in Nov. 2012 (2 at Male’ Ibrahim Nasir Intl Airport, 1 at Kulhudhuffushi Island in the North and 1 at Fuah Mulah Island in the South to cover 95% of the FIR at/above FL290. Maldives’ ADS-B is integrated with the ATM system (in November 2013), and under observation prior to commencing trials.  Maldives has plan to share ADS-B data with its adjacent FIRs. |  |  |  | Seaplane in Maldives equipped with ADS-B for AOC purpose.  These seaplanes have ADS-B IN functions as well. |
| **MONGOLIA** | Five ADS-B ground stations for combination with SSR will be implemented first quarter of 2013.  Full coverage for surveillance gaps will be implemented by 2015-2016. |  |  |  |  |
| **MYANMAR** | ADS-B ground stations to be installed at  Sittwe, Co Co Island by end of 2014 as 1st phase Yango , Lashio and Myeik -2015 as 2nd phase;  Kengteng, Myitkyina in 2016.  Completion of integration to Euro Cat. C. in 2014.  Agreed to share ADS-B data with India, agreement on sharing being negotiated. |  |  |  | Supplement radar and fill the gaps to improve safety and efficiency.  ADS-C/CPDLC integrated in Yangon ACC since 2010. |
| **NEPAL** | ADS-B feasibility study conducted in 2007. |  |  |  |  |
| **NEW CALEDONIA** | Three ADS-B ground stations commissioned in 2010 to cover international traffic at La tontouta airport serving Tontouta ACC & APP. It is used for Situation awareness and SAR. |  |  |  |  |
| **NEW ZEALAND** | MLAT and ADS-B data is being used from the WAM system centered in the Queenstown area to provide surveillance coverage and surveillance separation (5 nm) over the southern half of the South Island of  New Zealand.   Additionally MLAT data from the Auckland MLAT system is used to provide airport surface movements at NZAA.  The New Zealand Navigation and Airspace and Air Navigation Plan “New Southern SKY” issued May 2014 |  |  | 5 NM Surveillance Separation |  |
| **PAKISTAN** | Feasibility study for using ADS-B is in hand. One station was installed at ACC Karachi and evaluation is in progress. |  |  |  |  |
| **PAPUA NEW GUINEA** | Legislation mandating ADS-B and guidelines for aircraft equipage and operational approval to be issued by 31/12/2011 with target mandatory date by mid-2015 and plans to provide  ADS-B service above FL245 within Port Moresby FIR and also in specific higher traffic areas domestically. |  |  |  |  |
| **PHILIPPINES** | One (1) ADS-B ground station in Manila ATM Center will be available in 2016. |  |  |  |  |
| **REPUBLIC OF KOREA** | ADS-B implemented 2008 for SMC in Incheon International Airport.  ROK is developing ADS-B system since 2010 through R&D group. The testbed at Gimpor Airport supporting both 1090ES and UAT, undergoing operational testing (2013-16). At Incheon Intl Airport, promotion of surface surveillance (2014-17) In 2nd phase from 2015 to 2016, ADS-B ground stations will supplement to the radar in the terminal area and fill up the gap between radar coverage. The last phase from 2017 to 2020, ADS-B will be deployed for entire Incheon FIR. |  |  |  |  |
| **SINGAPORE** | The airport MLAT system was installed in 2007 and “far-range” ADS-B sensor was installed in 2009.  ATC system has been processing ADS-B data since 2013. | AIC was issued on 28 December 2010/effective from 12 December 2013.    AIP supplement published in Nov 2013 to remind operators of ADS-B exclusive airspace implementation.  AIP updated in Jan 2015 to remove the need for ops approval and to include the FAA standard as an additional accepted means to meet the equipage requirements. | L642 and M771.  At and above FL290. Also affect the following ATS routes  N891, M753, L644 & N892 | 40nm on ATS routes L642, L644, M753, M771, N891 and N892    30nm planned for 26th June 2014 on ATS routes L642, M753, M771 and N892;    20nm panned for end 2015 | Safety case was completed end of November. 2013. |
| **SRI LANKA** | ADS-B Trials planned for 2012 and implementation in 2013. 5 ADS-B ground station was planned and willing to share ADS-B data with neighbouring States through a cenral processor which is ready for trial in 4th Quarter 2014. |  |  |  | An AIC on ADS-B services with TMA of Colombo FIR issued on 10 Nov. 2014 (A02/14) with effective 1 Sep. 2015. |
| **THAILAND** | Multilateration implemented in 2006 at Suvarnbhumi Int’l. Airport.  ADS-B Ground Stations have been installed in Thailand for internal research and development project. ADS-B is planned to be part of future surveillance infrastructure. New ATM System to be in operational in 2017 will be capable of processing  ADS-B data. |  |  |  |  |
| **TONGA** | Trial planned for 2017 |  |  |  |  |
| **UNITED STATES** | As of 1 April 2015, the “baseline” set of Service Volumes planned by the FAA in 2007 are operational, using data from 634 radio sites installed by Exelis. Since 2007, FAA has planned and funded activities to activate additional Service Volumes that Exelis will service using and additional 29 radio sites; 9 of these radio sites have been installed by Exelis as of 1 April 2015.  As of 1 April 2015, 123 of the 231 U.S. air traffic control facilities are using ADS-B for ATC separation; all facilities are planned to be using ADS-B by 2019. | The U.S. ADS-B Out rule (14 CFR 91.225 and 14 CFR 91.227) was issued in May 2010 and specifies that the ADS-B Out mandate is effective on  1 January 2020. | Class A, B, and C airspace, plus Class E airspace above 10,000 ft MSL. See 14 CFR 91.225 for details. | The U.S. is using both terminal and en route (5nm) separation criteria, depending on the specific airspace and available surveillance information. Terminal separation includes the following separation criteria:  - 3nm  - 2.5nm  - indepen-dent parallel approach operations down to 4300 ft centreline separation  - dependent parallel approach operations down to 2500 ft centreline separation (currently 1.5 nm diagonal distance). |  |
| **VIET NAM** | Two phases ADS-B implementation plan adopted. Phase 1 implemented in March 2013. Phase 2 for whole lower and upper airspace of Ha Noi and Ho Chi Minh FIR to be completed by 2016. | AIC issued on 20 June 2013/ADS-B mandating effective from 12 December 2013 in Ho Chi Minh FIR. | M771, L642, L625, N892, M765, M768, N500 and L628  At/above FL290. |  | Operators required to have operational approval from State of aircraft registry. |

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