Phone : 65-65412426
AFS : WSSSYNYX
Fax : 65-65431826
Email :
caas_singaporeais@caas.gov.sg
Website:
http://www.caas.gov.sg

REPUBLIC OF SINGAPORE AIP SUPPLEMENT
AERONAUTICAL INFORMATION SERVICE
CIVIL AVIATION AUTHORITY OF SINGAPORE
SINGAPORE CHANGI AIRPORT
P.O. BOX 1, SINGAPORE 918141

43/08
27TH MARCH

ADVANCED - SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM (A-SMGCS) - MULTILATERATION SYSTEM DEPLOYMENT AT SINGAPORE CHANGI AIRPORT

1 Introduction

1.1 The purpose of this AIP Supplement is to inform the aviation industry of the introduction of a Multilateration System at Singapore Changi Airport and the required changes to airlines' Mode S operating procedures at Singapore Changi Airport.

1.2 The Multilateration System is a new surveillance system which is able to detect and identify all Mode S equipped aircraft and vehicles moving on the airport surface even during bad weather conditions such as heavy rain. It will integrate with the current radar-based ground surveillance system as part of the Advanced - Surface Movement Guidance and Control System (A-SMGCS) at Singapore Changi Airport. This will enhance the efficiency and safety at the airport.

2 System Outline

2.1 The Multilateration System uses multiple receivers to pick up "squitters" transmitted by aircraft or vehicle Mode S transponders. It calculates the position of an aircraft or a vehicle by comparing the time its "squitter" arrives at each receiver.

2.2 The system will derive the identity of an aircraft by selectively interrogating its transponder to receive its assigned Mode A code or extracting its aircraft identification (that is, the ICAO callsign used in flight and inserted in the Flight Management System (FMS) or the Transponder Control Panel), if available, from its squitter. For transponder equipped vehicles, the system will derive their respective identities from the unique Mode S addresses contained in their squitters.

3 Aircraft Requirements

3.1 The Multilateration System is essentially passive. It relies on aircraft transponders squittering at all times when moving on the airfield. At present, some aircraft checklist procedures instruct pilots to turn off the transponder shortly after leaving the runway on arrival and, not to switch it on until reaching the runway holding point for departure. This is in line with the requirement that Mode A / C transponders should not transmit on the ground, which does not apply to Mode S transmissions.

3.2 For the Multilateration System to work effectively, all aircraft Mode S transponders need to transmit Mode S squitters at all times when moving on the airfield, starting immediately prior to pushback, and for arrival aircraft until they are stationary at the aircraft stands. The Mode S transponders should not respond to All-Call interrogations, but should respond to addressed interrogations.

4 Procedures / Actions Required By Pilots

4.1 The Multilateration System needs to receive squitters and to acquire the Mode A code of a Mode S equipped aircraft at all times when it is on the ground. This is to enable detection and identification of the aircraft (from its Mode A code or ICAO callsign) as soon as it pushes back. Hence, the following actions from pilots are required.

4.2 Pre-Pushback / taxi

a) Pilots will be required to enter an assigned Mode A code at start-up. This code will be either a discrete or non-discrete code (a conspicuity code, e.g. 1000).

b) Pilots shall ensure that the aircraft transponder is operating (that is, XPNDR or the equivalent according to specific installation, AUTO if available, not OFF or STBY) and the assigned Mode A code is selected prior to the request for pushback or taxi, whichever is earlier.

c) Whenever the aircraft is capable of reporting aircraft identification, the aircraft identification must also be entered prior to the request for pushback or taxi, whichever is earlier, through the FMS or the Transponder Control Panel. Flight crew must use the 3-letter ICAO designator of the operator, followed by flight identification number (for example, BAW123, SIA002).

4.3 After landing

a) Pilots shall ensure that the aircraft transponder is operating (that is, XPNDR or the equivalent according to specific installation, AUTO if available, not OFF or STBY) after landing, and continuously until the aircraft is stationary at the aircraft stand.

b) Pilots shall ensure that the assigned Mode A code is not changed until the aircraft is stationary at the aircraft stand. (The system requires it for identification of the aircraft).

5 Timeline

5.1 Airlines are required to adopt the changes in the Mode S operating procedures at Singapore Changi Airport by 1 July 2008.

5.2 This AIP Supplement cancels NOTAM A2659/B2660/C2748 dated 14/12/07.

NG MEI CHIN
for DIRECTOR-GENERAL & CHIEF EXECUTIVE OFFICER
CIVIL AVIATION AUTHORITY OF SINGAPORE