RTCA Special Committee 186, Working Group 3
EUROCAE WG-51, SG-1

ADS-B 1090ES MOPS Maintenance

WG-3 Meeting #26
SG-1 Meeting #3
Joint Session

RTCA Headquarters, Washington DC
31 March – 3 April 2009

Proposed Change to the CDTI Capability

Tom Pagano
FAA ATO-P, FAA Technical Center

Summary
This Working Paper addresses a proposed change to the CDTI Capability Bit, and a proposed new bit definition for one of the reserved Capability Class Code bits.

There has been discussion at previous meetings concerning the “CDTI Traffic Display Capability“ bit of the Capability Class Code contained in the Operational Status Message.

The bit, as originally defined, is an indication whether a cockpit display of traffic information (CDTI) is installed and operable. The current requirement in DO-260A Change 2 is contained in §2.2.3.2.7.2.3.3 entitled “CDTI Traffic Display Capability”. Don Walker had presented 1090-WP24-06R1 that initiated discussion on the utility of this field. Working Paper 1090-WP24-06R1 questioned the operational use of this field as it is defined. The WP pointed out that having an operational CDTI is not sufficient to communicate capability to perform an application, which is really the operational goal trying to be achieved. Although the WP recommended designating this field “reserved” in this revision of the MOPS, it was further discussed at the last WG-3 meeting in Brussels that this bit may be redefined to provide a different meaning that could provide operational benefit.

The FAA ADS-B Ground architecture will be providing TIS-B and ADS-R Services and in order to conserve RF spectrum, it is an advantage to be able to identify aircraft that have an ADS-B receiver. The redefinition of the CDTI Traffic Display Capability field to indicate ADS-B IN capability for this purpose was captured in the proposed change matrix (Change 13). The FAA Ground system uses a client oriented strategy to determine which aircraft needs to receive TIS-B and ADS-R services. With the proposed modification to indicate that the aircraft is equipped with an ADS-B receiver, the Ground system would not consider aircraft without a receiver as a client.

To further enhance the ADS-B Ground system’s ability to provide service efficiently to ADS-B equipped aircraft, an additional field is required to handle a non-typical aircraft installation. Since the US airspace is supporting two data links, 1090ES and UAT, there may be cases where an aircraft has installed an ADS-B transmitter on one data link and a receiver on the other data link. In the case of an aircraft transmitting on 1090ES and receiving on UAT, the Ground system would be incorrectly transmitting TIS-B and ADS-R on 1090ES if the proposed ADS-B Receive Capability indicates reception capability or nothing at all if the proposed ADS-B Receive Capability indicates no reception capability. To overcome this, it would be beneficial to provide an additional bit in the Capability Class Code to indicate if an aircraft has reception capability on UAT. This will allow the ADS-B Ground system to provide the ADS-B Services on the proper link.

In summary, this proposed change would require the following:

1) Redefinition of the CDTI Traffic Display Capability field to indicate ADS-B IN capable
2) Taking a reserved bit of the Capability Class Code and defining a new field to indicate ADS-B IN capability on UAT.