

**RTCA Special Committee 186, Working Group 3**

**ADS-B 1090 MOPS, Revision A**

**Meeting #16**

**Proposed Appendix Q for future  
Runway Threshold Speed On-Condition Message**

**Presented by Rocky Stone**

**SUMMARY**

This Working Paper is a proposed new Appendix [Q] for DO-260A for the final approach speed message. This is an important placeholder until we get final approach speed into either the ASA MASPS or ADS-B MASPS.

### Runway Threshold Speed On-Condition Message

Applications are under development that rely on knowledge of aircraft planned final approach speed. The requirements for these applications will be included in future RTCA documents. Until this work is concluded, this appendix suggests a coding scheme for those desiring early implementation of this capability.

#### Justification

There are at least two applications under development that are expected to use planned runway threshold information to enhance airport capacity. The best documented is one that uses planned aircraft approach speeds for enhancing the capacity of converging runway configurations for airports such as Chicago's O'Hare. Potential capacity gains of 10- 20 arrivals per hour in IMC for such airports have been estimated. (See Mundra and Smith, 2001). Another possibility is approach spacing. This analysis is currently underway, and may yield capacity benefits of the order of 3 to 4 arrivals per hour for any single runway operation under certain wind conditions.

To enable these procedures, the expected or planned speed of the aircraft across the threshold (i.e., the landing speed) must be known at least 10 to 15 minutes prior to touch-down. In practice, a logical time for computing and down-linking this speed is probably at top of descent. If transmitted more than 20 minutes before touch down, provision should also be made for at least one revised estimate.

This information would be input directly into terminal automation for aircraft spacing. This would thus be safety critical information and adequate reliability must be ensured, whether through redundancies or multiple transmissions.

#### Information content

Information should be in the following format:

Coding (binary) (7 bits)	Coding (decimal)	Meaning (Runway threshold speed in knots in 1 knot increments)
000 0000	0	No runway threshold speed available
000 0001	1	Runway threshold speed <70 knots
000 0010	2	Runway threshold speed = 70 knots
000 0011	3	Runway threshold speed =71 knots
000 0100	4	Runway threshold speed = 72 knots
...		...
111 1110	126	Runway threshold speed = 194
111 1111	127	Runway threshold speed > 194

The encoding represents positive magnitude data only.  
Values of approach speed are assumed to be rounded to the nearest knot.

#### Reference:

Anand D. Mundra and Arthur P. Smith (2001), *Capacity Enhancements in IMC for Converging Configurations with down-link of aircraft expected final approach speeds*, 20<sup>th</sup> Digital Avionics Systems Conference, Dayton Beach, Florida, October 2001