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Applicability of the Latency Sections of DO-260A

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Summary
This Working Paper addresses the applicability of the Latency Sections of DO-260A Section 2.2.5.2.1 and subsequent in relation to 1090-WP25-11R1.

Discussion of DO-260 §2.2.5.2.1 Latency Sections

ACSS recommends that this section be updated to incorporate the latency specifications per 1090-WP25-11R1-Total+Uncomp_Latency.pdf.

Section should indicate that the message as a group be transmitted with consistent data and meet the new proposed latency requirements.

2.2.5.2.1 Airborne Position Message Latency

The ADS-B Transmission Device Message Processor function **shall** update the Airborne Position Message data fields specified in §2.2.3.2.3 as follows:

a. Type information may change due to changes in the precision, quality, or integrity of received navigation information. As such, any change in the TYPE information identified in §2.2.3.2.3.1 **shall** be reflected in the Type subfield of the next scheduled Airborne Position Message transmission provided that the change occurs and is detected at least 100 milliseconds prior to the next scheduled Airborne Position Message transmission.

b. Any change in the Surveillance Status …
c. Any change in the Altitude …
d. CPR Format … (NOTE: This one doesn't make sense.)

e. Encoded Latitude (specified in §2.2.3.2.3.7) must be extrapolated in accordance with §2.2.3.2.3.7.2 for precision systems. Likewise, Encoded Latitude must be updated in accordance with §2.2.3.2.3.7.3 for non-precision systems. Any change in the Encoded Latitude **shall** be reflected in the Encoded Latitude subfield of the next scheduled Airborne Position Message transmission provided that the change occurs at least ***"X"*** milliseconds prior to the next scheduled Airborne Position Message transmission. The time ***"X,"*** **shall** be dependent upon the NAC_P (see Table 2-71, §2.2.3.2.7.2.7 and §2.2.8.2.12) provided to the transmission device as follows:

(1). ***"X"*** is equal to 200 milliseconds if $NAC_P < 8$

(2). ***"X"*** is equal to 50 milliseconds if $NAC_P > 8$

Note: *All efforts must be made to allocate the time necessary to update the actual transmission buffer within the 200 millisecond time frame allocated updating the Encoded Latitude. That is, that no additional time can be added to the 200 milliseconds already allocated*

f. Encoded Longitude...

2.2.3.2.3.7 "Encoded Latitude" Subfield in ADS-B Airborne Position Messages
The "Encoded Latitude" subfield is a 17-bit ("ME" bit 23 through 39, Message bit 55 through 71) field containing the encoded latitude of the airborne position…

2.4.5.2.1 Verification of Airborne Position Message Latency (§2.2.5.2.1)

Purpose/Introduction:

This test verifies the latency of the Airborne Position Message.

Step 1: Airborne Position Message - "TYPE" Subfield …

Change input to the ADS-B System so as to affect the TYPE subfield value so that the change occurs and is detected at least 100 milliseconds prior to the next scheduled Airborne Position Message transmission. Verify that the TYPE subfield value has changed in the next transmitted Airborne Position Message and that it is the correct value.

Step 2: Airborne Position Message – "Surveillance Status" Subfield …
Step 3: Airborne Position Message – "Altitude" Subfield …
Step 4: Airborne Position Message – "CPR Format" Subfield …
Step 5: Airborne Position Message – "Encoded Latitude" Subfield (§2.2.3.2.3.7 and §2.2.5.2.1.e)
Appropriate test procedures to verify §2.2.5.2.1.e are provided in §2.4.3.2.3.7.2 and §2.4.3.2.3.8.2.
Step 6: Airborne Position Message – "Encoded Longitude" Subfield …

2.4.3.2.3.7.2 Verification of Airborne Latitude Position Extrapolation/Estimation (Precision Case, TYPE Codes 9, 10, 20 and 21) (§2.2.3.2.3.7.2)

2.4.3.2.3.8.2 Airborne Longitude Position Extrapolation/Estimation (Precision Case, TYPE Codes 9, 10, 20 and 21)