

**RTCA Special Committee 186**

**Working Group 3**

**ADS-B 1090ES MOPS Corrigenda**

**Clarification to Receiver NIC Reporting in DO-260B/ED-102A**

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**Summary**

This working paper addresses a response to problems that have been reported with the implementation of Version 2 receiver/decoders.

## 1.0 Introduction

Based on reported problems from the implementations of Version 2 receiver/decoders, we wanted to propose a clarification of the reporting of NIC in the receiver section of DO-260B/ED-102A. We propose the clarifications below.

## 2.0 Proposed Clarification

### 2.2.8.1.16 Navigation Integrity Category (NIC)

The ADS-B Report Assembly Function **shall** provide Navigation Integrity Category (NIC) information in the State Vector Report. The NIC is derived from the “TYPE” Code data (§2.2.3.2.3.1) and the NIC Supplement-B value (§2.2.3.2.3.3) from the ADS-B Airborne Position Message, and the NIC Supplement-A value (§2.2.3.2.7.2.6) from the ADS-B Aircraft Operational Status Message, OR the “TYPE” Code data (§2.2.3.2.4.1) from the ADS-B Surface Position Message, and the NIC Supplement-A value (§2.2.3.2.7.2.6) and the NIC Supplement-C value (§2.2.3.2.7.2.3.10) from the ADS-B Aircraft Operational Status Message. The NIC values are encoded according to the NIC values given in Table 2-69, except for  $R_c < 0.3$  NM which is encoded in the State Vector Report with a value of 6 in bits 0 – 3 in byte 35, with bit 4 in byte 35 set to ONE (1) (i.e., xxx10110). The NIC parameter is provided to the user application in the State Vector Report as specified in Table 2-83.

#### **Notes:**

1. For backward compatibility, applications designed to interface to the State Vector Report structure of RTCA DO-260A will decode  $R_c < 0.3$  NM as  $NIC=6$  and interpret it as  $R_c < 0.6$  NM. Applications designed to comply with these MOPS will properly decode the NIC as  $R_c < 0.3$  NM.
2. Since NIC is defined by the combination of Type Code in Airborne Position Messages and Surface Position Messages and NIC Supplement bits in the Operational Status Message (except NIC Supplement-B is contained in the Airborne Position Message), upon a NIC change, the combination of Type Code and NIC Supplement bits currently received by the ADS-B Message Processor may yield a NIC value not specified in Table 2-69. To prevent reporting of NIC 0 ( $R_c$  unknown) to ADS-B applications during these NIC transitions, the reporting of NIC needs to consider these cases. For reporting of NIC from Airborne Position Type Codes, NIC Supplement-A is not used for NIC determination unless Type Code = 13 and NIC Supplement-B is ZERO to distinguish  $R_c < 0.3$  and  $R_c < 0.5$  (NIC Supplement-A primarily serves for backward compatibility for pre-Version 2 receivers and solely used in Version 2 to distinguish  $R_c < 0.3$  and  $R_c < 0.5$ ). For reporting of NIC from Surface Position Type Codes, if the combination of NIC Supplement bits and Type Codes is not defined by Table 2-69, report the NIC corresponding to the largest  $R_c$  for that Type Code.