



**European Aviation Safety Agency
Rulemaking Directorate**

EXPLANATORY NOTE

AMC-20 Amendment 3

Executive Director Decision 2008/004/R amends Executive Director Decision No. 2003/12/RM of 05 November 2003 on general acceptable means of compliance for airworthiness of products, parts and appliances (« AMC-20 »).

This Amendment 3 of AMC-20 incorporates the output from the following EASA rulemaking task:

Rulemaking Task No.	TITLE	NPA No.
20.006	Miscellaneous improvements to AMC-20 (Part 1: ADS-B-NRA)	2007-05

This NPA has been subject to consultation in accordance with Article 52 of the Basic Regulation¹ and Article 5(3) and 6 of the rulemaking procedure established by the Management Board². The Agency has addressed and responded to the comments received on the NPA. The responses are contained in a comment-response document (CRD) which has been produced for the NPA and which is available on the Agency's website.

Detailed changes incorporated in the NPA are summarised in the following pages for ease of reference.

¹ Regulation (EC) No 216/2008 of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L79, of 19.3.2008, p.1.)

² Management Board Decision concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications and guidance material ("Rulemaking Procedure"), EASA MB/08/07, 13.6.2007.



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EXPLANATORY NOTE

TITLE: AMC-20 Amendment 3

Rulemaking Task No.:

20.006

Title:

Miscellaneous improvements to AMC-20 (Part
1: ADS-B-NRA)

NPA No.:

NPA 2007-05

CRD No.:

CRD 2007-05

LIST OF PARAGRAPHS AFFECTED

- Cover + Contents
- New AMC 20-24 added

In response to CRD 2007-05, the Agency received several reactions, which are reproduced below together with the Agency's responses:

Commentor / Reference	Reaction	EASA Response
<i>IFATCA</i> §4.5 CRD comment 40	IFATCA would like to add reference to ICAO Circular 311 "Assessment of ADS-B to Support Air Traffic Services and Guidelines for Implementation	Not Accepted As stated in the EASA response to comment 40, the reference to ICAO circular 311 is not added since it is a circular which is subject to change based on ED-126.
<i>IFATCA</i> §5.1.2	IFATCA considers that DO-260 is acceptable for ATC services in low and medium density areas provided HPL is used to generate NUC. This requirement should be clearly stated in paragraph 5.1.2. Justification IFATCA considers that DO-260 is acceptable for radar-like services in low and medium density areas provided that HPL is used to generate NUC. This is consistent with DO260 Change 1. This requirement should be clearly stated in paragraph 5.1.2. Allowing NUC to be based on HFOM if HPL is not available is not appropriate as using HFOM for NUC does not protect from satellite ranging errors	Noted The NUC must indeed be based on HPL by design (and that's also the AMC20-24 requirement). The rare situation of HFOM based HPL encoding can be mitigated on the ground by several means. It is at the discretion of the implementing ATSP to apply such mitigation(s), subject to the Local Safety Case.
<i>IFATCA</i> Chapter 8	All ground based ADS-B implementations must be in full compliance with DO260A. As a temporary solution, it can be acceptable in non-radar low density airspace to handle non compliant aircraft, provided that proper mitigation is in place. Radar can only be replaced by ADS-B, provided that the ADS-B implementation is in full compliance with DO260A.	Noted DO260 and DO260A are transponder standards. Ground stations are capable of receiving all signals. The statement that radar can be only replaced only if DO260A is used, is not supported by the detailed ADS-B-NRA safety (and surveillance risk) assessment. It should also be noted that the scope of AMC 20-24 is for ADS-B Surveillance application in Non-Radar Areas only. Separate rulemaking is anticipated for ADS-B-RAD in the future.
<i>IFATCA</i> §10.2.3	This paragraph requires expansion and rewording. "If flight crew receive equipment indications showing that the position-related data being broadcast by the ADS system is in error they should inform the ATSP.	Noted It is at the discretion of the implementing ATSP to implement additional ADS-B data integrity checking (i.e. beyond the required on-board function), subject

	<p>If the ATSP becomes aware that the position-related data being transmitted by the aircraft's ADS system is in error then the ATSP should inform the flight crew. Published procedures should be established for ATSPs and flight crews that prevent the use of ADS-B position-related data known by flight crew or ATSP as being erroneous."</p> <p>Justification</p> <p>This paragraph requires expansion and rewording. The transmission of erroneous data has consequences both for the ATSP and all other uses of ADS-B data. The requirement to notify the ATSP should be compulsory when ADS-B is being used for ATC services (not generically stated "as appropriate"). The best means of notifying needs further discussion. One option that should be considered is for the flight crew to be able to override the data quality/integrity values to force a situation where the positional data cannot be used by ATC (or any other receiver of the ADS-B information) for applications that require precise position information. In addition, the ATSP systems should have verification procedures that before the use of dependant surveillance data for separation purposes that some form of verification of the information is done (possibly automatically). This means that the ATSP may be aware of erroneous data transmissions before the flight crew.</p>	<p>to the Local Safety Case. This is considered outside of the scope of AMC 20-24.</p>
<p><i>Boeing</i> Appendix 3: Summary of ADS-B-NRA Airborne Safety and Performance Requirements CRD comment 49</p>	<p>Boeing (Commercial Airplanes) is very concerned that EASA has accepted this comment and will make the change in text. This "new" requirement cannot be met using current equipage without a deviation. This could also impact future requirements by increasing the NIC and NAC requirements.</p>	<p>Noted Acceptance of comment 49 has not introduced a new requirement. The requirements as reflected in the table in Appendix 3 remain consistent with ED 126.</p>

<p><i>IFTCA</i> Appendix 4.2</p>	<p>There seems to be an inconsistency of the proposal to on-going international work on position accuracy and integrity values seem to be incorrect. The document is proposing the following values for application of 5NM separation: NACp=5, NUC=4, NIC=4, SIL=3 For example the ICAO SASP came to the conclusion that the following values were required for the application of 5NM separation: NACp=7, NUC=5, NIC=5, SIL=2 (The SASP is considering changing those numbers to NACp=6, NUC=4, NIC=4, SIL=2 following results from calculations done by the Mitre corporation for the FAA but those numbers still don't add up to the numbers proposed in the EASA NPA document). Justification NPA needs to meet the international discussions ongoing. Both ICAO SASP and the FAA are having different numbers.</p>	<p>Noted Both RFG and ICAO surveillance risk modeling is based on the same approach (Mitre "CAP"). The detailed (and more recent) RFG work on the matter led to the values published in ED126/DO303 (representing broad international stakeholder consensus). Alignment at ICAO/SASP level is expected through the on-going RFG and ICAO/SASP coordination. In any case, the decision to use an ADS-B signal of a given quality is made on the ground and can be easily adapted to the latest findings and experience.</p>
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