

**RTCA Special Committee 209**

**ATCRBS / Mode S Transponder MOPS Maintenance**

**Meeting #11**

**In Joint Session with EUROCAE WG-49  
RTCA Headquarters, Washington, DC  
8 – 10 September 2010**

**Corrections Needed to  
ARINC 718A-3  
And  
ICAO Doc. 9871**

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This Working Paper is provided in response to **Action Item 10-01 and 10-03**.

The Working Paper submits an Errata form for ARINC 718A-3 for updates to Flight Identification implementation (AI 10-03) and the addition of Label “165” to Attachment 3A in order to provide for GPS data input for Register 60<sub>16</sub>.

The changes proposed for the addition of Label “165” are equally applicable to Table C-1-1 of ICAO Document 9871, Edition 1 and Table D-1-1 of Doc 9871, Edition 2.

## **Introduction / Discussion:**

This document has been prepared to address Action Items 10-01 and 10-03.

Included in this document is a completed Standard Errata form for ARINC 718A-3 to recommend the following changes:

- a. Implementation of Flight Identification and/or Aircraft Registrations data in Registers 08<sub>16</sub> and 20<sub>16</sub> is clarified in section 4.a of the Errata form
- b. Label “165” is added to ARINC 718A-3 Attachment 3A in order to provide for GPS sourcing of Vertical Velocity data to be used in the Inertial Vertical Velocity subfield of Register 60<sub>16</sub>.

The Standard Errata form will be submitted to ARINC after being reviewed and agreed by SC-209 and WG-49.

The information provided for item “b”, above, is then expected to be used to update Table D-1-1 of ICAO Document 9871, Edition 2.

No errata are expected to be issued by ICAO for Doc 9871, Edition 1.

# ARINC Standard – Errata Report

## 1. Document Title

*(Insert the number, supplement level, date of publication, and title of the document with the error)*

ARINC 718A-3, Published\_June 30, 2010,

“Mark 4 Air Traffic Control Transponder (ATCRBS/MODE S)

## 2. Reference

Page Number: Section Number: Date of Submission:

### a. First Errata Item:

Page 201, Attachment 3A-1, Note 13.c. July 26, 2010

### b. Second Errata Item:

Page 191, Attachment 3A, Register 60<sub>HEX</sub> July 26, 2010

## 3. Error

*(Reproduce the material in error, as it appears in the standard.)*

### a. First Errata Item

13. Flight Identification or Aircraft Registration data usage should adhere to the following guidelines:

- c. If flight identification data has been entered into registers 08<sub>HEX</sub> and 20<sub>HEX</sub> and then becomes not available, then the character subfields of the registers should all be set to “0”.

Note that Aircraft Registration data must not be used to fill the character subfields of the registers once flight identification data has been used during the transponder power-on cycle.

### b. Second Errata Item

Attachment 3A, for Register 60<sub>HEX</sub>, currently has an entry for Inertial Vertical Velocity, and indicates Label “365”, Inertial Vertical Velocity, as the appropriate data source. Label “165”, Vertical Velocity, needs to be added as an appropriate source since GPS data may be used as the data source.

## 4. Recommended Correction

*(Reproduce the correction as it would appear in the corrected version of the material.)*

### a. First Errata Item

13. Flight Identification or Aircraft Registration data usage should adhere to the following guidelines:

- c. If Extended Squitter is not implemented, then if flight identification data has been entered into registers 08<sub>HEX</sub> and 20<sub>HEX</sub> and then becomes not available, then the character subfields of the registers should all be set to “0”.

If Extended Squitter is implemented, then if flight identification data has been entered into register 20<sub>HEX</sub> and then becomes not available, then the character subfields of the register should all be set to “0”.

If Extended Squitter is implemented, then Register 08<sub>HEX</sub> **is not** cleared or ZEROed once either Flight Identification or Aircraft Registration data has been loaded into the register during the current power-on cycle. Register 08<sub>HEX</sub> **is not** cleared since it provides information that is fundamental to track file management in the ADS-B environment.

More specifically, Extended Squitter implementation of Register 08<sub>HEX</sub> should also consider the following:

- If valid Flight Identification data is available, then the data **should** be used to populate the character subfields in Register 08<sub>HEX</sub>
- After using Flight Identification data to populate the character subfields in Register 08<sub>HEX</sub> in a given power-on cycle, if Flight Identification data becomes invalid or not available, then the last known valid Flight Identification data **should** be retained and used to continue population of the character subfields in Register 08<sub>HEX</sub> for the duration of the power-on cycle
- If valid Flight Identification data is not available, but valid Aircraft Registration data is available in a given power-on cycle, then the valid Aircraft Registration data **should** be used to populate the character subfields in Register 08<sub>HEX</sub> for the duration of the power-on cycle
- If Register 08<sub>HEX</sub> has been populated using Aircraft Registration data in a given power-on cycle, and valid Flight Identification data becomes available, then the Flight Identification data **should** be used to populate the character subfields in Register 08<sub>HEX</sub> for the remainder of the power-on cycle
- Once valid Flight Identification data has been used to populate Register 08<sub>HEX</sub> in a given power-on cycle, Aircraft Registration data **should not** be used to populate the character subfields of Register 08<sub>HEX</sub>, even if Flight Identification data becomes invalid or not available during the power-on cycle

**b. Second Errata Item**

Update Attachment 3A, entry for Register 60<sub>HEX</sub> as indicated in the following figure. Note that Label “165” has been added to the Inertial Vertical Velocity entry as indicated in “red” font. Also note:

- a. In the Third Column, the “Inertial Vertical Velocity” cell has been merged to cover both the “365” line and the newly added “165” line.
- b. In the Second Column, the “Heading and Speed Report” cell has been merged to cover down through and including the “165” line.
- c. In the First Column, the “60” cell has been merged to cover down through and including the “165” line.

MODE-S GICB REGISTER DATA REQUIREMENTS AND INPUT AVAILABILITY (continued)																							
DATA REQUIREMENTS												INPUT DATA SOURCE AVAILABILITY (See Note 1)											
Register Number (HEX)	Assignment	Register Field	ARINC 429 Word (Octal)	Parameter Description	Signal Format	Units	+ Sense	Range	Sig. Bits/ Dig.	Resolution	MAX TX INTVL	GPS	FMC/ GNSS	IRS/ FMS	FMC GEN	ADS	Cont. Panel	FCC/ MCP	DFS/ VHF	WX	Maint Comp	Notes	
60	Heading and Speed Report	Barometric Altitude Rate	212	Altitude Rate, Barometric	BNR	Ft./min.	+	32,768	11	16	62.5			2		1							
			232	Altitude Rate	BNR	Ft./min.	UP	+/- 20,000	4	10.0	62.5			2		1							
		Inertial Vertical Velocity Status	Inertial Vertical Velocity Status is established via the data received for Inertial Vertical Velocity data in the following rows.											N/A									
		Inertial Vertical Velocity Sign	Inertial Vertical Velocity Sign is established via the data received for Inertial Vertical Velocity data in the following row.											N/A									
		Inertial Vertical Velocity	365	Inertial Vertical Velocity	BNR	Ft./min.	+	32,768	15	1.0	40			1	3	2							
165	Vertical Velocity		BNR	Ft./min.	+	+/- 32,768	15	1.0	1200	1		2	3										

**5. Reason for Correction (Optional)**

*(State why the correction is necessary.)*

**a. First Errata Item**

RTCA DO-181D and EUROCAE ED-73C are currently being updated to incorporate the latest changes that are necessary to be compatible with the latest changes made during the development of RTCA DO-260B and EUROCAE ED-102A for ADS-B functions. As such, the latest desired operations have been updated (e.g., clarified) for Register 20<sub>HEX</sub> and 08<sub>HEX</sub> and require that Attachment 3A-1, Note 13.c be updated as provided in section 4.a above.

**b. Second Errata Item**

Label “165”, Vertical Velocity, needs to be added to Attachment 3A since GPS data may be used to provide data for the Inertial Vertical Velocity parameter in Register 60<sub>HEX</sub>.

**6. Submitter (Optional)**

*(Name, organization, contact information, e.g., phone, email address.)*

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Note: Items 2-5 may be repeated for additional errata. All recommendations will be evaluated by the staff. Any substantive changes will require submission to the relevant subcommittee for incorporation into a subsequent Supplement.

<b>[To be completed by IA Staff]</b>	
<b>Errata Report Identifier:</b> _____	<b>Engineer Assigned:</b> _____
<b>Review Status:</b> _____	

ARINC Errata Form  
11/24/2004