

(26.X.2011)

**JOINT MEETING:
CBS EXPERT TEAM ON AIRCRAFT BASED
OBSERVATIONS
(Third Session)
AND
AMDAR PANEL
(Fourteenth Session)**

ITEM: 4.1.1

Original: ENGLISH ONLY

(QUEBEC CITY, CANADA, 2-4 NOVEMBER 2011)

PROJECTS, PLANNING AND WORK PROGRAMME

WIGOS Pilot Project for AMDAR – Review and Planning Update

Update of BUFR Template

(Submitted by the Secretariat)

SUMMARY AND PURPOSE OF DOCUMENT

To provide a status report on the progress in developing and implementing the AMDAR BUFR Template.

ACTION PROPOSED

1. The Joint Meeting is invited to note the information contained in the document.
2. The Joint Meeting is invited to consider the recommendations made in the document.

BACKGROUND

1. The development of a new standardized BUFR template for AMDAR is one of the tasks associated with the WIGOS Pilot Project for AMDAR (WIGOS-PP-AMDAR).
2. The following outlines the history of the work progress made on the BUFR Template for AMDAR:
 - Feb 2009, WIGOS-PP-AMDAR Session 2, Feb 2009:
 - noted that proposed template 3 11 010, version 1 was capable of representing all elements of the current templates 3 11 002, 3 11 005, 3 11 008, 3 11 009 and 3 11 010, version 0 and could be used as the only template for AMDAR data;
 - agreed on a number of new elements and deleted 0 08 004 (Phase of flight) from Template 3 11 010 version 1; deleting of two other entries (0 01 023 and 0 33 025) was suggested to produce Version 2;
 - Version 2 was to be reviewed by AMDAR Community and NWP centers.
 - 2009: Version 2 was reviewed by AMDAR Community and NWP centers from which Version 3 was produced;
 - Sep 2009: Version 3 presented to Programme Expert Team on Data Representation and Codes (IPET-DRC) Session 1, resulting in the pre-operational approval of an updated Version 4;
 - Oct 2010, Joint Meeting AMDAR-XIII and ET-AIR-II, Geneva: changes to Version 4 were proposed;
 - Feb-Mar 2011, WIGOS-PP-AMDAR-5, De Bilt:
 - The changes to the template proposed by AMDAR Panel XIII were to be incorporated into the updated template and two steps taken to complete the approval process: 1) Preliminary check for content conducted by Dr Eva Červená, Inter-Programme, representative of the Expert Team on Data Representation and Codes (IPET-DRC); and 2) A formal validation process of the template to be carried out by two participating national data centres (E-AMDAR and USA AMDAR Programmes were proposed.)
 - Combined with the changes to the proposed changes at AMDAR Panel XIII, the list of changes to be implemented to attain Version 5 of the template were the following:
 - 0 07 004 Pressure descriptor to 0 07 010 Pressure Altitude (Flight Level);
 - increasing the resolution for mass mixing ratio to 10^{-4} g/kg;
 - The Joint Meeting agreed, based on advice from Eva Červená, that the AMDAR Template include:
 - the new Code Table, 0 02 170 "Aircraft Humidity Sensor";
 - the expanded Coded Table 0 33 026 "Moisture Quality".
 - Version 5 of the AMDAR BUFR Template was provided as an Appendix II to the WIGOS-PP-AMDAR-5 Final Report.
 - Mar 2011, E-AMDAR TAG meeting, Plitvice: the AMDAR BUFR Template, version 5 and the newly proposed descriptors were discussed.
 - 2011:
 - A BUFR message, containing this AMDAR Version 5 template and all new descriptors, was encoded and decoded in CHMI by two independently developed software modules.
 - Jul 2011 – Sep 2011:
 - UKMO and ECMWF offered their participation in validation of the template using data from actual AMDAR messages. Dr Enrico Fucile expressed the requirement of ECMWF for availability of relative humidity with higher precision in the AMDAR template.

- This requirement, supported by information from the WMO Secretariat, suggested that the precision for reporting of relative humidity via ARINC 620 might be increased to 0.01 % inline with the ARINC 620 specification for AMDAR, leading to Version 6 of the template.
 - Version 6 and a corresponding BUFR message were produced tested by two independent software modules in CHMI.
 - AMDAR experts were informed on availability of a more sophisticated operator 207YYY that might be used instead of operators 201YYY and 202YYY to change data width and scale of mixing ratio 0 13 002 and relative humidity 0 13 003.
 - Sep 2011:
 - Version 6 presented to IPET-DRC-III, Melbourne (see document INF.4.1.1(1)), and the descriptors and new entries were granted fast-track approval.
 - At the instigation of Dr Hoff, Version 7 was produced to reflect the increased precision and data width of the relative humidity for mixing ratio.
 - Oct 2011
 - AMDAR BUFR was further discussed at E-AMDAR TAG-18 and recommended to validate Version 7. UK Met Office and ECMWF were requested to start validation activities to be finished before the end of 2011. UK Met Office will take the lead and has to report back the results of the validation to the AMDAR Panel.
3. Version 7 of the AMDAR BUFR Template is provided as document INF.4.1.1(2).

FUTURE WORK

4. Dr Červená has advised the AMDAR Panel that, in order to progress the approval of the AMDAR BUFR Template, the following should be completed:
- 1) The Joint Meeting to determine whether version 6 or version 7 of the template should be progressed to the validation stage.
 - 2) The AMDAR Panel and ET-AIR should seek to ensure that the validation process is completed in time to submit the proposal for approval of the template through the procedure for the adoption of amendments between CBS sessions at the next IPET-DRC session which is likely to be held around December 2012.
5. **Recommendation 1:** The Joint Meeting agrees with the recommendation made by the E-AMDAR TAG that Version 7 of the template should be validated by the ECMWF and UK MetOffice.
6. **Recommendation 2:** The adopted version of the template is forwarded to ECMWF and UK MetOffice for validation.
7. **Recommendation 3:** The final report of the Joint Meeting expresses gratitude for the work and assistance of Dr Červená.
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