



STUDY NOTE

**MEETING OF THE METEOROLOGY PANEL (METP)
WORKING GROUP MOG**

THIRD MEETING

Gatwick, London, United Kingdom, 13 to 16 June 2016

Agenda Item 6.4: AOB relating to WAFS

**PARTICIPATION WITH WMO EXPERT TEAM ON AIRCRAFT-BASED OBSERVING
SYSTEMS (ET-ABO)**

(Presented by the SADIS Provider State)

SUMMARY

This paper apprises the meeting in relation to the participation by the WAFCs with the WMO Expert Team on Aircraft-Based Observing Systems.

Action by the METP-WG/MOG is in paragraph 4.

1. INTRODUCTION

1.1 The meeting will recall that the WAFCs were invited to participate with the World Meteorological Organization Expert Team on Aircraft-Based Observing Systems (WMO ET-ABO).

1.2 As such, Matt Strahan (WAFAC Washington) and Chris Tyson (WAFAC London) became Associated Members of the ET-ABO.

2. DISCUSSION

2.1 Initial invitations to participate were received by the WAFCs in October 2014. Matt Strahan and Chris Tyson participated in several virtual meetings, and were invited to the WMO/ICAO Workshop on Future Requirements for Meteorological Aircraft Observations, held at the WMO Headquarters in Geneva, Switzerland, 28-29 October 2015.

2.2 Topics under discussion at the Workshop covered:

- Future requirements for upper air data.
- Status & future of the AMDAR Program.
- Status & future of ICAO aircraft observations.
- Aircraft tracking systems.
- WMO Member access to ICAO aircraft observations.
- Policy, ownership and liability issues.
- Requirements for data management and quality control.
- Cost/benefit and resourcing.

2.3 A summary of some of the topics of particular relevance is given below:

2.3.1 The AMDAR programme continues to grow, but growth in recent years was predominantly in areas where coverage was already good, though some previously data sparse areas were now being served.

2.3.2 There is a small volume of Automatic Dependent Surveillance – Contract (ADS-C) data on the WMO Global Telecommunications System (GTS), but this was not well controlled in terms of process and quality.

2.3.3 Automatic Dependent Surveillance – Broadcast (ADS-B) cannot be considered as a potential source of ABO data because of the limited (and fixed) size of the data block within the ADS-B message.

2.3.4 While WMO ABO are defined under WMO Resolution 40 as Basic Data for distribution on the GTS, it is clear and there is confusion among WMO Members and experts in relation the extent to which ICAO Aircraft Observations can and should be distributed under this resolution and also meet with requirements for compliance with ICAO regulations.

2.3.5 Unavailability of a unique aircraft identifier for AIREPs and ADS-C data

2.3.6 Inconsistency within some WMO manuals and guides on the definition of “Aircraft Identification” and on the process for putting data on the ICAO AFS and/or WMO GTS.

2.4 The meeting benefited greatly from the participation of ICAO, represented by Mr Neil Halsey. He was able to provide some clarification with regard to ICAO regulations and provisions.

2.4.1 ICAO aviation data that can be considered as contributing to meeting the provisions for ICAO Aircraft Observations are AIREPs, ADS-C and Mode-S data.

2.4.2 Provisions for Aircraft Observations as defined in Annex 3, are based on the requirements for such data by ICAO WAFCs for the support of forecasts and other services to aviation.

2.4.3 ICAO Members should exchange messages only in the format in which they are received (ICAO, Annex3, App 4,3.4).

2.4.4 These data are produced for the use of ICAO Members for ICAO purposes but should be made available to WMO Members and placed on the GTS under the arrangements set out in ICAO doc. 8896, 7.7.1 and 7.7.3, which stipulates that Air-reports exchanged beyond WAFCs are considered as basic meteorological data and therefore their further dissemination is subject to WMO provisions.

2.4.5 Pilot Reports (PIREPs) are not defined or regulated by ICAO and are not considered ICAO Aircraft Observations since they are a national product provided primarily by the United States.

2.4.6 While data derived from ICAO Aircraft Observations can be utilised by WMO Members under the regulations within Annex 3, the extent to which these arrangements are valid are limited to the requirements for Aircraft Observations as specified in ICAO Annex 3. Above and beyond these requirements, arrangements for the reception or utilisation of additional data from these ICAO data sources would be a matter for member states and their respective national organizations. In this regard, access by NMHS to high resolution Mode-S data from SSR would be subject to this understanding.

2.4.7 AMDAR data is considered by ICAO to be an arrangement either between WMO Member NMHS and airlines directly or, in some cases WMO Member NMHS and national civil aviation authorities. These have the same status with ICAO as do other Basic Data and would be subject to the same cost-sharing arrangements as established under the ICAO as described in the ICAO Manual on Air Navigation Services Economics (Doc 9161).

2.4.8 Mr Halsey suggested that the issues of data policy, data ownership and intellectual property rights in relation to aviation and meteorological data was a growing concern for ICAO and WMO Members and that there was a need to carefully consider these aspects of the organization's respective operations, particularly in light of the movement towards greater and wider exchange of data globally in support of future ATI management systems being envisaged by entities such as SESAR and NextGen.

2.5 With regard to the WAFCs, Mr Strahan and Mr Tyson contributed:

2.5.1 Several authors had commenced collaboration on a paper on, The Role of Aircraft Based Observations (ABOs) in Modern Weather Forecasting which might form a basis for describing the benefits and defining the requirements for ABO to support aeronautical meteorology forecast applications.

2.5.2 There was an ICAO Recommendation within the Aviation System Block Upgrades (ABSU) to support the delivery of high resolution icing and turbulence products by the WAFCs. Such forecasts would benefit from high resolution observing and reporting of icing, humidity and turbulence data. Such data would also provide information that could be used to verify the forecasts and to establish climatologies of these parameters. Whilst greatest benefit might be obtained through receipt of such observational data in real or near-real time, it was noted that for verification and climatological purposes data could be utilised for such purposes days or even weeks after the event. It was suggested that WMO might be able to assist in the development of requirements for the provision of non-real-time data sets of these parameters from aircraft platforms, if such an initiative could be supported by AMDAR partner airlines and perhaps IATA.

2.5.3 Mr Strahan and Mr Tyson offered to contribute to review the needs of WAFCs for Aircraft Observations, in consultation with WAFC colleagues and report back to WMO ET-ABO accordingly.

3. **CONCLUSION**

3.1 It is considered that the WAFC's participation with the WMO ET-ABO is a valuable relationship and provides an opportunity to share and learn from each other. The topics discussed at the Workshop (27-29 Oct 2015) and referenced above demonstrate an ongoing benefit to all parties.

4. **ACTION BY THE METP-WG/MOG**

4.1 The METP-WG/MOG is invited to note the information contained in this paper and raise points for discussion as necessary.

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