WORLD METEOROLOGICAL ORGANIZATION

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

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PROJECTS, PLANNING AND WORK PROGRAMME

AMDAR Software Development

Australian AAA v3 Software Development

(Submitted by Douglas Body)

Summary and purpose of document

To present a brief outline of work ongoing and proposed work on AAA v3, including a draft specification for discussion.

ACTION PROPOSED

1. The Panel is invited to note the information contained in the document.

References:

1. AAA AMDAR Software Developments – Technical Specification. Doc Ref: E-AMDAR/TSC/003 Version 3, Bruce Truscott, 1st August 2000
2. AMDAR3 User Manual, 31-0027-05, Frank Tamis, 25th May 2011.

Qantas

1. Qantas operate a fleet of 44 B737-800s and through its subsidiary, JetConnect, a further five B737-800 running AAAv3 software. This version allows uplinking to control the turning on and off of reporting. This combined with the transmission of OOOI messages to the Bureau allows the number of profiles taken in any given hour at an airport to be controlled.

2. For example, between 1st-14th October 2011, 777 AMDAR profiles were available from arriving and departing flights. Of these, 247 (~32%) were taken, leading to considerable saving in redundant data costs. Using a strict definition that a profile will be considered redundant if it occurs in the same "clock hour" as another (that is, a profile at 2:01pm and 2:59pm have the same "clock hour" (ie. 2pm), profiles at 2:59pm and 3:01pm don't), shows approximately 17% profiles taken are redundant. Analysis of the data shows that flight delays and aircraft not responding to uplink commands (in time) are the main causes of redundant profiles. Flight delays cause redundancy as the decision as to which flight is reporting is based on the average flight time for a particular route, starting from the time the aircraft leaves the gate (ie. Receipt of OUT message). This decision is not revisited once assigned.

3. The installed software also allows parameters such as the bounding box and reporting status at particular airports to be set via uplinked commands.

4. Qantas also operates nineteen 747s and seven 767s which have been running AAAv1 software. These are in the process of being upgraded to AAAv3 which will give increased efficiency of AMDAR data collection in the Australian region.

Jetstar

5. Jetstar Asia have a fleet of fourteen A320-200s, based in Singapore, with flights to destinations in 14 countries throughout Asia.

6. Jetstar Asia have been running AAAv3 software on two of their A320s since April 2011, but without uplinking capability. This has allowed a thorough testing of the software via observations emailed to the Bureau. In principle agreement has been reached on a Data Transfer Agreement with Jetstar Asia, and the formal agreement should be signed shortly. Rollout of the software has been delayed several times but is expected late 2011.

7. Jetstar Airways (Australia) have a fleet of 44 A320-200s (along with A321a and A330s). Company structure means that the testing of the software on the Jetstar Asia A320s was conducted in conjunction with Jetstar Airways, hence no trailing will be required on Jetstar Airways aircraft, but a separate Data Transfer Agreement is required. This is currently under discussion, but rollout to these aircraft is also expected in late 2011.

Air Vanuatu

8. Air Vanuatu have a B737-800 which is used for regional/International flights, mostly to Auckland and Brisbane/Sydney/Melbourne. Maintenance is primarily done by Qantas and uplinking is possible to this aircraft via Qantas servers. The aircraft has been providing ~275 observations per day since September 2011.

Virgin Australia

9. Talks are continuing to get AMDAR onto Virgin Australia's (formerly Virgin Blue) fleet of Embraer E190 aircraft. While Virgin also fly A330-200 and B737 aircraft, the focus has been on the E190s as they primarily used for regional flights and would yield data at airports not already covered by Qantas aircraft.

10. The ASDAR specification has been provided and it is understood that Virgin are continuing to discuss possibilities with Honeywell, who manufacture the avionics for the Virgin E190s. Current indications are that the CPU in the CMC on the aircraft is not up to additional reporting requirements would need to be upgraded to allow AMDAR.

AAA v3 Specification

11. Attached is a draft for the AAAv3 specification for discussion. It is adapted from the AAAv3 specification for Qantas ACMS (B737-800), the AAAv2 specification produced by Bruce Truscott [1] and the associated User Manual [2].