AMDAR Panel Preparatory Meeting, De Bilt, 21 to 22 July

Attendees

Frank Grooters, AMDAR Panel Chairman, Netherlands
Stewart Taylor, E-AMDAR Technical Coordinator, UK
Stig Carlberg, E-AMDAR Program Manager, Sweden
Dean Lockett, Scientific Officer, Aircraft & Remotely Sensed Observations
Frank Tamis, AirDatec, Netherlands (partial attendance)

Minutes

1. ARINC620 Update to Version 5

The Planning Meeting (PM) discussed the requirements and issues associated with the current draft of the ARINC620 version 4 specification for AMDAR specification update to version 5.

1.1. Issues with current draft version.

The following issues were highlighted:

1) Following feedback from Fernand Karcher from the IAGOS project, there was still no clear requirement evident for the inclusion of IAGOS parameters within the AMDAR specification and considerable doubt regarding the specification ever being utilized for real time transmission of IAGOS data directly from an AMDAR/ACARS system. To include the parameters, the AMDAR Panel would have to have much more certainty regarding the requirements for the composition of the data, both in terms of the parameters observed, and the vertical sampling system. There also was currently a lack of information available to adequately describe the IAGOS parameters within the specification. Another issue raised was that the combination of the IAGOS and AMDAR parameters into a single specification creates a significant complication in terms of being able to determine the costs associated with data communications and specification maintenance and attribute them to each programme.

It was decided that the complications created by the addition of this set of parameters, combined with the increase in the message data volumes poses a significant risk to the successful update of the AMDAR specification within the document and that it should be removed.

Whilst the AMDAR Panel is willing to assist the IAGOS community in implementing a specification within the ARINC620 document, it is considered that the IAGOS requirements should first be specified in more detail by the IAGOS project and the cooperation should focus on assisting IAGOS to implement a separate specification within the document.

2) The issue of the inclusion of the volcanic ash parameters within the AMDAR specification was discussed and rejected for the same reasons as for the IAGOS parameters.

Once again, the Panel would be willing to assist the relevant international meteorological and aviation bodies in developing a separate specification for volcanic ash reporting within the ARINC specifications.

3) Clarification was sought from Axel Hoff regarding the reporting of new parameters: True Air Speed, True Heading, De-icing and Aircraft Configuration and the specification of these parameters as optional (through uplink configuration) within the message output. It was confirmed that these parameters are sought to be included so as to determine their correlation with data

quality. It was questioned as to whether the introduction of an optional component of each report within the message would create a significant and costly overhead for message decoders due to exception handling. It was also questioned whether it was appropriate to include the specification of non-operational parameters for research within the operational specification.

It was decided that these parameters should remain within the specification but the Panel should seek advice from AEEC and data processing experts as to whether there might be a better way to handle this data.

4) As with chapter 5 which specifies the downlink component, chapter 4 needs to be restructured so as to provide a version history for the uplink component.

5) Several other smaller issues were raised with the current draft including update of the version parameter to version 05, revision of appendices G and H and inclusion of changes made to the explanation of the calculation of pressure altitude.

1.2.Requirements for the current update.

It was decided that the critical requirements for the current update of the ARINC specification to version 5 are the following items:

1) The improvement to the resolution of the water vapour sensor downlink parameter;
2) The improvement to the resolution of the latitude and longitude downlink parameters;
3) Updates and improvements to the description of the calculation of the pressure altitude parameter and extension of the related tables;
4) Including of Turbulence (EDR and conventional turbulence parameters) with sufficient (TBD) resolution.

1.3.Completion of the update process.

ACTION

The PM agreed that the following steps should be taken to complete the update process:

1) Stewart Taylor to modify the specification in accordance with the resolution of the above identified issues by early next week (week commencing July 25);
2) Stewart Taylor to circulate the updated draft to the PM and Axel Hoff for review;
3) Stewart Taylor to update and produce the final draft and provided to AEEC DLK SC, preferably by July 29.
4) Dean Lockett to contact the IAGOS project (Karcher and LeMaitre) and inform them of the Panel's decisions regarding the exclusion of the IAGOS parameter from the ARINC620 version 5 AMDAR specification.
5) Dean Lockett to contact the Volcanic Ash Group and inform them on the Panel's decision regarding the exclusion of the ASH parameter from the ARINC620 version 5 AMDAR specification.
6) Dean Lockett to seek advice from AEEC and data processing expert(s) as to the appropriateness of and the processing overheads associated with, the inclusion of optional components within the downlink specification.
7) Request David Helms to provide more and detailed information on EDR (algorithm and software) of the currently in the USA being implemented version.

2.Membership/Representation to Aviation Forums

The PM discussed the representation of the Panel to the various aviation forums that are known to the Panel.

2.1.Future membership/representation of AEEC DLK SC.

It was decided that the PM should request of WMO that SO-ARSO should represent the Panel at the AEEC Data Link Sub Committee meetings.

2.2.Meeting in Brussels: Data Link Users Forum September 7-8, 2011

The PM will request that Dean Lockett (SO-ARSO) and Stig Carlberg represent the Panel at the Data Link Users Forum.

2.3.Data Link (DLK) Systems Subcommittee meeting, week of October 24th, 2011

The PM will request that Dean Lockett (SO-ARSO) represent the Panel at the AEEC DLK SC meeting in New Jersey.

2.4.NextGen

The PM will request that David Helms is formally requested to represent the Panel at NextGen meetings in the USA as appropriate and as resources allow and provide reports on matters of relevance to the Panel.

2.5.RTCA - http://www.rtca.org/

The origins and purposes of this organization were unclear to the PM. It was pointed out that Andrew Mirza represents the UK MetOffice to the RTCA Sub-committee on met applications and should be contacted to seek advice on whether the Panel should be represented to the RTCA.

ACTION: Dean Lockett to contact Andrew Mirza by email and report to the Panel.

2.6.Airbus

The meeting discussed the progress that had been made in recent years in developing a strategy and a proposal for the integration of AMDAR specifications and software into the engineering and factory implementation processes of Airbus so as to enable the optional inclusion of both AMDAR software and WVSS sensor in any Airbus factory delivery to prospective Airlines. This development culminated in Airbus providing a quotation to the Panel for such a development to proceed and lead to the Panel, through WMO, contacting Panel Members to ascertain the level of support to meet the costs and Airbus contacting Airlines to ascertain their level of interest in these options (early 2007).

The results of this were that the Panel was unable to raise the necessary capital to meet the costs of one or both of the software and WVSS integration options within Airbus.

Since 2007, the project continued to progress through E-AMDAR, EUMETNET via involvement in the European Union COMET project.

This COMET project resulted in a positive position regarding the relevance of implementing AMDAR and WVSS in Airbus aircraft. The follow-up of this project has however made limited progress since June 2010. The meeting discussed future strategy for reinvigorating this project and suggested that it may be appropriate to develop a business case document that can be presented to NMHSs and possibly airlines to engage their interest in financial support for the integration proposal and costing developed with Airbus. This would also necessitate an approach to Airbus to refresh and update their proposal and quotation.

As the E-AMDAR Programme has an instruction to co-operate with Airbus Stig Carlberg was asked to report back to the Panel any relevant news about Airbus.

ACTION:

1) This issue is to be raised at AMDAR-14 and approval of the Panel Members sought regarding the development of a BC for NMHSs and renewal of the quotation by Airbus.
2) Stig Carlberg to the AMDAR Panel any relevant news and information regarding Airbus

2.7.Boeing

Since Michael Berechree's initial attendance at a meeting with Boeing in early 2010, the Panel has been represented to Boeing by the USA through Carl Weiss and David Helms. The meeting decided that this arrangement should continue and that the USA should be requested to report on Boeing in relation to matters that may affect the AMDAR Programme.

Also discussed was the recent suggestion that Boeing was in the process of developing a strategy for the retention and use of meteorological data as a corporate commercial strategy, which is of great concern to the AMDAR community, although it was recognized that it also does have the potential to be beneficial if the meteorological community works with Boeing.

ACTION

1) Dean Lockett to ensure that the AMDAR Panel Meeting 14 is updated on the status of matters relating to Boeing and AMDAR.

2.8.ICAO

ICAO had in the past been represented to the Panel by Mr Olli Turpeinen who has recently retired.

The meeting confirmed that the Panel should seek to revive the previous strong relationship with ICAO that has waned somewhat since the cessation of the MetLink Study Group. The Panel should work with Herbert Puempel to find a way to renew the interest of ICAO in Panel activities and investigate a means for having AMDAR Panel representation in ICAO activities.

ACTION

1) Frank Grooters to provide Dean Lockett with the contact details of the new ICAO representative [Mr Greg Brock]

2) Dean Lockett to discuss with Herbert Puempel options for AMDAR Panel representation to ICAO activities.

2.9.Others?

- IATA: Hans-Rudi represents IATA to the Panel as an Observer (soon to be Associate Member).
- EuroControl: Frank Grooters informed the meeting that Dennis Hart has represented EuroControl to the Panel. The meeting suggested that EuroControl should be invited to attend Panel Meetings as an Observer or Associated Member.
- SESAR (Single European Sky ATM Research): The Meeting discussed the Panel's representation to SESAR activities and it was decided that Stig Carlberg should be formally requested to attend SESAR meetings as appropriate and report to Panel.

ACTION

1) Dean Lockett to ensure that EuroControl receives and invitation to the AMDAR Panel Meeting 14.
2) The AMDAR Panel (Frank Grooters) to formally request that Stig Carlberg represent the Panel at SESAR meetings and report to the Panel.

3.AAA Inclusion of additional parameters.

The meeting discussed with Frank Tamis (AirDatec) the process for the incorporation of new parameters derived from additional sensors such as the WVSS-II and possible future volcanic ash sensors. Frank Tamis explained that the process of updating the AAA software for incorporation of additional sensors is straightforward, as long as the data is available to the ACMS and that the interface is provided in the ARINC429 specification.

4.Generic Software Specification

The meeting discussed the AMDAR Panel task relating to the development of a Generic Software Specification. Frank Grooters explained that this task had been prioritorised as a longer term task given that a higher priority was to complete the upgrade of the ARINC 620 specification to version 5. The urgency of this task has been raised recently with the requirement for the Australian Bureau to provide a specification for the development of AMDAR software for Honeywell avionics for the Embraer E-jet 190 system and would also be of benefit for the desired development of software for B777 (Honeywell) and CRJ (Rockwell Collins) fleets.

The meeting was informed that Dean Lockett had approached Mr Murray Joss (Aviation Data Systems, Melbourne) regarding the possibility of taking on this work under contract with the Panel and had expressed an interest but not yet provided confirmation. The meeting discussed with Frank Tamis the possibility of this work being contracted to AirDatec and Frank confirmed that he would be interested and could provide a quotation if provided with a Statement of Work.

ACTION

1) Dean Lockett to draft a Statement of Work for the development of a Generic AMDAR Software Specification in time for AirDatec to provide a quotation or estimate of cost for decision at the next AMDAR Panel Meeting.

5.AAA Software specifications for Honeywell avionics:

5.1.For Embraer E-Jet 190.

Dean Lockett informed the meeting of the discussions that had taken place between the Bureau, Virgin Blue Airways (VBA), Embraer and Honeywell regarding the potential development of software for the VBA Embraer E-jet190 fleet. In recent months these discussions had progressed to the point where a proposal from VBA for the software development by Embraer was expected to be received by the Bureau soon. It was noted that this task depended upon a specification of requirements (SoR) for the software and that the Australian Member would require Panel assistance in its compilation. It was suggested that this specification could also be used as input into the Panel task of compiling the Generic Software Specification. It was pointed out that, during discussions VBA had indicated that it was unlikely that uplink functionality would be possible for the current configuration of E-jet avionics.

ACTION

1) The Australian Panel Member to report to the Panel on progress and the Panel to assist the Bureau in the development of the SoR as requested.

5.2.For B777

Air France/KLM have expressed interest to develop AMDAR software for the Air France B777 (Honeywell) fleet. The software package is to be developed by KLM on specifications based on AAAv3.
The subject was discussed in the E-AMDAR/Air France-KLM bilateral meetings and with support of the E-AMDAR TAG the B777 AMDAR specification was finalized.

Because of the Global AMDAR interest for B777 AMDAR software a price quotation for the development of the software was requested (July 2011) on behalf of the AMDAR Panel from Air France as the Project Leader.
If the quotation is received in time, this proposal will be presented to the Panel members for final decision.

E-190 jets also carry Honeywell avionics for which this type of software was thought to be applicable as well. It turned out however, that E-190s have an older version Honeywell equipment for which the intended B777 software cannot be used.

5.3.For CRJ fleets with SAS/Rockwell Collins (RC)

The E-AMDAR Programme has discussed with SAS the possible development of AMDAR capability based on ARINC 620 for the SAS CRJ900 fleet (12 aircraft). SAS has explained that the development could be made for a wider application. As a result E-AMDAR has requested Rockwell Collins, through SAS, to provide a commercial offer based on three options:
a) software development for the SAS CRJ900 fleet only
b) software development for CRJs using the same avionics platform and in service at other airlines
c) software development to include other aircraft (e.g. Airbus) using the same avionics platform and in service at other airlines
In the case of b) and c) the development would be of interest also for the Panel and co-financing between the Panel and E-AMDAR could be negotiated. A commercial offer is expected after the summer and a meeting between all parties concerned could be arranged.

6.SAA AMDAR Data Problem

6.1.Progress report from Dean

The meeting was informed that the issue relating to the AAA software bug associated with the Base40 encoding algorithm that causes large latitudinal and longitudinal “jumps” was still a problem for the South African AMDAR Programme, as reported by Brad Ballish from NOAA. Dean Lockett explained that recent enquiries by email had determined that, whilst part of the South African Airways (SAA) fleet (11 aircraft) had been upgraded to AAA version 3, the airline was still waiting for confirmation from SAWS that the upgrade had resolved the problem as was the case with the Australian Qantas B738 update, which occurred in 2009. Currently, SAWS has not been successful in updating their decoding and re-encoding software, which means that the data from the AAAv3 aircraft (AMDAR3 data) is not being switched onto the GTS. Thus only the errant data from the remainder of the fleet that has not been upgraded (still operating the AAAv2 software) is being transmitted on the GTS, giving the impression that no progress has been made. As a stopgap, SAA have switched the AMDAR3 to the Australian Bureau, where it was recently confirmed that the software upgrade had resolved the issue for the 11 updated aircraft. The next steps in this process are:

- the Bureau to put the AMDAR3 data on the GTS so that NOAA can confirm the fault resolution;
- SAWS to complete the upgrade to their data processing software;
- NOAA (Brad Ballish) to confirm that the upgrade has resolved the issue;
- SAA to complete the roll out of AAAv3 to the remainder of the fleet.

ACTION

1) Dean Lockett to continue to monitor and facilitate progress and to ensure that an update on progress is provide to AMDAR-14.

7.AMDAR Benefits/Business Case Document for Aviation.

Frank Grooters informed the Meeting that, due to ill health, Jim Giraytys has been unable to complete the work associated with the development of an “AMDAR Benefits to Aviation” document under the Special Service Agreement (SSA) and the terms established with the AMDAR Panel and WMO. With the amicable agreement of both parties, the contract was recently terminated.

The meeting discussed the possibilities for continuation and progression of this task in the future.

Dean Lockett informed the Meeting that he had recently contacted Murray Joss (Aviation Data Systems, Melbourne) regarding the possibility of taking on this work, however, Murray was unable to commit to undertaking the work until early 2012 given the scope of the task and his level of commitment to other priorities of ADS. However, he may be interested in the work given a renewed approach in 2012 if it is still available.

Stewart Taylor suggested that another possible and very good candidate to be approached to undertake the work would be Randy Baker from UPS, who, given his connection with the USA MDCRS and WVSS-II programmes, would be ideally suited.

ACTION:

1) Frank Grooters to write to USA Panel Member, Carl Weiss to seek advice and request that Carl, if appropriate, approach Randy with an informal proposal to consider undertaking the task.

8.Mexico Workshop Agenda.

The meeting discussed in detail the agenda for the upcoming Mexico AMDAR Workshop to take place in Mexico City in November. The agenda was revised and a new draft compiled.

ACTION:

1) Frank Grooters to circulate the updated draft agenda to the appropriate Workshop Members for review.

9.Funding arrangements for AeroMexico and Air Alaskan Airlines startup projects.

Dean Lockett provided a summary of the requirements and discussions that have taken place with Carl Weiss and Caroline Corvington in relation proposed strategy for funding of both the AeroMexico and Alaskan Airlines startup programs.

It has been recommended by the USA that the following strategy is adopted:

Air Alaskan Airlines:

- USA and WMO to meet costs of US$51.5K for software and avionics configuration and 2 years of communications costs via USA VCP funding to AMDAR Panel TF (total VCP funds are US$65K).
- US$30K of additional funding provided by NWS to support funding.
- Contract will either be NWS direct with ARINC or WMO contract with ARINC.

AeroMexico:

- USA and WMO to meet estimated startup costs of US$34K including software and avionics configuration and 1 year of communications costs via USA VCP funding to AMDAR Panel TF.
- Contract will either be NWS direct with ARINC or WMO contract with ARINC.

- It is expected that Mexico SMN will take over the funding requirements for the Mexican Programme after 2 years.

Total costs for both programmes: $85.5K

Of the $65K of VCP funds in the TF, an estimated $27K will be used to support travel associated with the Mexico AMDAR Workshop, leaving $38K in the TF. A further $47K is required to sponsor these programmes, which are expected to be funded through NWS support.

10.AMDAR Panel 14 Meeting Agenda.

The meeting discussed the draft agenda for the joint AMDAR Panel and ET-AIR meeting to take place in Canada in November 2011. In relation to the agenda it was agreed that:

- the change to the format of the agenda proposed by Dean Lockett should be adopted;
- the associated recommendation for the development and ongoing maintenance of short, medium and long term plans and strategies should be submitted to the Panel Members for approval;
- the Chairman should address an agenda item that informs Panel Members about the new status of the AMDAR Panel Technical Coordinator and the resource situation, both in relation to the reduced capacity of the TC (50%) and the additional funding available as a result of the TC to be funded by WMO following WMO Congress;
- Dean Lockett to follow up with sub-group Conveners on the way that the sub-group meetings should be structured for the Panel meeting.

ACTION:

1) Dean Lockett to make the agreed changes to the proposed Agenda and circulate to the Meeting for review;
2) Dean Lockett to prepare a document for the AMDAR Panel Meeting recommending and describing the new approach to the planning process;
3) Frank Grooters to address the resource issue at the AMDAR Panel Meeting 14;
4) Dean Lockett to contact sub-group conveners regarding sub-group meetings.

10.1.Update to AMDAR Panel ToR

The meeting reviewed and discussed the proposed changes to the AMDAR Panel ToR to incorporate a new category of Associate membership. It was agreed that these changes, along with those reviewed at the Management Group Meeting, De Bilt, February 2011 should be submitted to the Panel Membership for review and approval at the AMDAR Panel Meeting in November 2011.

ACTION:

1) Dean Lockett to prepare a mark-up version of the new ToR for review by the AMDAR Panel Meeting 14.

11.Water Vapor (WVSS) International Program Development

The meeting discussed the current status of the WVSS-II development and implementation process being monitored and assisted by the AMDAR Panel in cooperation with the USA, E-AMDAR and other research and development partners. Stig Carlberg provided a status update on the comparison flights being conducted on the Facility for Airborne Atmospheric Measurements (FAAM) research aircraft, in which 2 WVSS-II sensors with different air-inlet configurations are being compared with the standard research grade water vapor sensors during research flights. A draft report has recently been submitted to E-AMDAR and the final report should be available in November 2011.

It was determined that the following are the next steps to be taken in order for the WVSS-II to gain final WMO approval as meeting prescribed requirements for upper air water vapor measurement:

1. E-AMDAR (Stig Carlberg) to receive the final report from the FAAM WVSS-II comparison tests and submit to the AMDAR Panel Science and Technical Sub-group for review;
2. If results from the trial are favorable and the sensor meets prescribed CIMO requirements, the Convener of the STSG to oversee the development of a submission to the CIMO President, seeking the official endorsement of the WVSS-II sensor and the appropriate integration of the relevant documentation into CIMO regulatory material.

The Meeting also discussed the strategy for further international implementation of the water vapor measurement programme and it was agreed that a coordinated international approach was desirable to enable the possibility of international collaboration in relation to issues such as certification, reduction in sensor costs through bulk purchases and the strengthening of a business case to airlines through such an international and WMO sponsored approach.

ACTION

1) Stig Carlberg to contact FAAM to request for report to be made available in time for AMDAR-14.

11.1.Airline business case:

The Meeting discussed the possible compilation of a business case that might be developed to underpin the international strategy for the implementation of the AWVM Programme, including the incorporation of the following aspects:

11.1.1. Research on Icing Potential and Icing Warning

It was discussed and proposed that the AMDAR Panel might encourage research into the possible use of AMDAR water vapor data as an input to the compilation of parameters or indexes that might be utilized as an indicator and warning for aircraft icing potential.

11.1.2. Offset to weather services charges by NMHSs for receipt of AMDAR and WV data.

It was discussed that a significant and often-raised issue for airlines participating in the AMDAR Programme and the future AMDAR Water Vapor Measurement (AWVM) Programme is that, in participating, whilst they acknowledge the benefit gained by the airline, the same benefit is also derived by any non-participating airline. It is possible that, to counter this issue, NMHSs could be encouraged to explore the possibilities for seeking an arrangement with their services divisions and the relevant air services agencies to allow the costing of weather services to aviation to be structured so as to provide a direct cost advantage to those airlines and aircraft submitting AMDAR data. For example, if weather services are charged on a per landing or takeoff basis, this cost could be reduced if the landing or take-off provided an AMDAR data profile.

The Meeting also discussed that any AMDAR business case to the Airlines and the aviation industry in general would be greatly strengthened by a case and set of arguments and principles that is sanctioned and has approval from within the aviation community. It was suggested that one way to attempt to obtain such sanctioning would be for the AMDAR Panel to hold a workshop or conference of the relevant aviation representatives that appreciate or can be presented with the benefits of AMDAR data to the industry with the aim of producing a statement of benefit as an outcome.

ACTION

1) Stig Carlberg and Stewart Taylor to oversee the finalisation of the FAAM WVSS-II comparison tests and provide the final report to the AMDAR Panel;

2) Convener STSG to oversee the preparation of a submission to CIMO based on the results of all testing of the WVSS-II carried out on the recent sensor version (3);
3) Dean Lockett to recommend to the AMDAR Panel Meeting the adoption of a coordinated international approach to the implementation strategy for the AMDAR Water Vapor Measurement programme.
4) Dean Lockett and Frank Grooters to ensure that the concept of an aviation conference or workshop, possibly to be held in 2012, is put to the AMDAR Panel Members at AMDAR-14.

12.Turbulence and EDR

The Meeting discussed the current status and future strategy of the development and use of the Eddy Dissipation Rate (EDR) parameter, its implementation and use in the USA and the next stage of international and global implementation.

Prior to the meeting, a report was requested of David Helms on the current status of EDR within the USA (see also item 1).

12.1.Report from David Helms

A report from David Helms on the current status of implementation in the USA and the EDR software version and the detailed algorithm description was not received in time for the meeting.

12.2.International implementation

Frank Grooters reported that in previous discussions by email with David Helms, it had been suggested that a possible first step in the international implementation of EDR would be for a trial of EDR to be conducted outside the USA, most likely within Europe under the E-AMDAR Programme.

In order for this to occur the following would be necessary:

1. The US FAA to agree to provide the required standardized EDR algorithms to the AMDAR Panel;
2. The AMDAR Panel to coordinate and oversee the implementation of a trial of the EDR within a participating airline.

Additional steps in parallel would likely be:

3. NWP experts should be consulted regarding how the EDR data can be utilized by the numerical models;
4. Quality evaluation of EDR data compared to NWP output;
5. Aviation services should be consulted regarding how they might best make use of both the EDR data and any resulting NWP output to provide

12.3.Inclusion for AMDAR-14

It was decided that David Helms would be requested to kindly present a paper to the AMDAR Panel Meeting on the current status of EDR implementation and use in the USA.

ACTION

1) Dean Lockett to ensure that an agenda item related to turbulence and EDR implementation is included in the agenda and that David Helms is requested to submit a paper on the current status of EDR implementation and use in the USA.

13.Requirement for study on Global AMDAR Program future development:

13.1.Where are the gaps
13.2.Which NMHSs and Airlines should be targeted to fill the gaps.

The Meeting discussed the need to develop a renewed strategy for the future development of the Global AMDAR Programme and the work of the Panel, possibly based on the results of a specific study into the gaps in the current coverage and those airlines that have the necessary expertise, the aircraft and the avionics systems to fill these gaps. Such a study and resulting strategy would have the potential to ensure that AMDAR Panel resources are most efficiently and optimally utilized specifically to improve the coverage of the GAP. It was decided that a Statement of Work for such a study should be drafted in order to put to AMDAR Panel Members as potential work item to be funded through the AMDAR Panel TF.

It was suggested that such a task should be included as a component of the medium-term planning strategy for the Panel.

ACTION

1) Dean Lockett to draft a SoW to be put to the Panel Membership as a potential work item to be adopted in the AMDAR Panel medium-term work program.

14.Requirement for study on AMDAR future technological developments and risks to the program.

The meeting discussed another issue in relation to the longer-term planning, strategy and aims for the AMDAR Panel, namely those current and future technological developments within avionics and communications systems that might have an impact or put at risk the AMDAR Programme. An example of such a technology is that associated with the development of satellite and IP communications that may allow cheaper and more efficient AMDAR communication solutions.

Whilst many of these developments are well known to the Panel, such as ADS-C, Mode S ADS-B, TAMDAR, etc, it is considered important that the Panel has a strategy and a process for continually keeping up to date with technological developments that may impact upon the program.

It was decided that this was another potential AMDAR Panel-sponsored work item for which a SoW should be drafted and documented within the medium to long-term planning strategies of the AMDAR Panel.

ACTION

1) Dean Lockett to incorporate the concept of the study and a draft SoW within the planning and strategy agenda item for AMDAR Panel 14.

15.Global AMDAR Programme Data Management and Data Monitoring

15.1.Establishment of a DM Framework
15.2.Archival of Data
15.3.A (global) model for data QC
15.4.Pre-AMDAR-14 Meeting
15.5.How to handle this issue at the AMDAR-14 Meeting

It was acknowledged that the first 3 items are above are associated with the development and refinement of a Data Management Framework (DMF) for AMDAR, which is currently a key task under the WIGOS Pilot Project and assigned to Jitze van der Meulen, who is also a Theme Leader on Aircraft Measurements under the CIMO OPAG for Standardization and Intercomparisons. It was also acknowledged that this is a very large and complex task that will require the input of many AMDAR and AMDAR data processing experts so as to develop a complete data and quality

management framework. Clearly this task is also strongly tied to the integration of AMDAR into WIGOS through the WIGOS Pilot Project.

Prior to this Preparatory Meeting, the AMDAR Management Group had discussed the possibility of conducting a meeting of experts to discuss, in particular, the Global Data Management Framework for AMDAR including aspects such as global data monitoring, quality control and archival and global metadata management. It was also acknowledged that such action needs to be consistent and possibly integrated into existing WMO Information System (WIS) standards and, therefore, any such meeting should have WIS representation and input.

It was decided that, due to the current absence of Jitze van der Meulen and the scope of the upcoming work program and calendar up to November, it would not be practical or possible to hold a meeting of experts on this matter prior to AMDAR-14 and that this activity should be discussed at the AMDAR Panel meeting and delayed until early 2012.

ACTION

1) Dean Lockett to contact Brad Ballish and inform him of the Meeting's decision on the proposed meeting of experts;
2) Jitze van der Meulen to report to the Panel Meeting on the status of the strategy for the QMF.

16.Resourcing for AMDAR Panel projects and tasks

This item was discussed in the context of previous agenda items and the related action is under item 10.

17.WIGOS PP

17.1.BUFR Template

The Meeting discussed the current status of the WIGOS PP task to update the AMDAR BUFR Template. The following summarizes the action that has been taken to date (provided by Miroslav Ondras, email 9 April 2011):

1. Over the previous 2 years the AMDAR Template has been reviewed and updated by various stakeholders in the AMDAR and data users communities;
2. The Template version 5 was reviewed (and adapted) by IPET-DRC for consistency with the BUFR regulations and now has to be validated before it can be submitted for the final approval by CBS Commission in autumn 2012;
3. The AMDAR MG (De Bilt, February 2011) proposed that E-AMDAR (Stuart Taylor), US-AMDAR (David Helms) and European Quality Evaluation Centre (Jitze van der Meulen) together with IPET-DRC (Eva Cervena) and ECMWF (Milan Dragosavac) should, as a minimum, take part in the validation process.

In his email, Miroslav Ondras suggested that the validation process needed to have AMDAR data sets to encode and decode and that a data set had been developed by Eva Cernova that could serve as a preliminary test set. However it was also suggested that it would be necessary to develop additional data sets to ensure that all facets of the new template are included and tested.

There has been no further action on this issue and the validation process has not commenced.

The meeting determined that there are 3 key pieces of work that require expert technical implementation:

1. Development of the test dataset;
2. Development of the BUFR encoding software;
3. Development of the BUFR decoding software;

It was decided that, as a matter of urgency, given the timeframe, the ECMWF Head of Assimilation, Lars Isaksen and the Meteorological Database Manager, Richard Weedon from the MetOffice should be contacted to ask for assistance in the validation process.

ACTION

1) Dean Lockett to contact Lars Isaksen and Richard Weedon to seek their assistance in the validation process.