



Met Office User Forum / 11

Thursday 23rd October 2014

Venue: CAA House, London

Agenda

Agenda Item 1: Welcome and Introductions

Agenda Item 2: Regulatory service provision

- a. Review of MOUF/10 actions
- b. Review of Met Costs
- c. Review of Met Service performance
- d. 2015-16 R&D outline proposals
- e. Volcanic Ash issues
- f. SESAR progress report
- g. Met Divisional Meeting
- h. Space weather programme

Agenda Item 3: National services

- a. Changes to UK regulated service provision
- b. Aerodrome weather warnings
- c. Services to GA

Agenda Item 4: Specific issues

- a. Low temperature forecasts
- b. Cold weather altimetry

Agenda Item 5: Any other business

Agenda Item 6: Date of next meeting

Attendees

Nigel Gait	Met Office	NG
Darren Hardy	Met Office	DH
Colin Hord	CAA	CH
David Gibbs	CAA	DG
James Carr	NATS	JC
Dan Lewis	NATS	DL
Jane Gothard	NATS	JG
John Hamshare	LHR Airports Ltd	JH
Steve White	Loganair	SW
Les Dunn	HIAL	LD
Steve Stebbings	BA (rep IATA)	SS
Dominic Haysom	Easyjet	DHa
Mike Thrower	BALPA	MT
Peter Cox	Hon Co of Air Pilots	PC
Dai Whittingham	UKFSC	DW
Dan Lewis	NATS	DL

Apologies



Ian Cameron	Met Office	IC
Andy Wells	CAA	AW
Stuart Dingle	NATS	SD
Andy Foyston	NATS	AF
Marie Pennington	Southampton Airport	MP
John MacCaskill	HIAL	JM
Tim Kinvig	Loganair	TK
Paul Clarke	Flybe	PCI
Steve Smith	Thomson Airways	SSm
John Hanlon	ELFAA	JHan
Steve Copeland	AOPA	SC
John Haney	AOA	JH
Gareth Nicholas	HIAL	GN

Summary of Outstanding Actions & New Actions

OUTSTANDING ACTIONS

None.

NEW ACTIONS

Reference:	MOUF/11/2013/01
Action:	TAF 36 month SQI: Provide a copy of the latest rolling 36 month UK TAF SQI scores.
Action on:	DH
Status:	OPEN

Reference:	MOUF/11/2013/02
Action:	PWS KPIs: Provide the latest PWS KPIs to the MOUF.
Action on:	DH
Status:	OPEN

Reference:	MOUF/11/2013/03
Action:	Aviation R&D benefits: Provide an Executive Summary on on how Aviation R&D has tangibly benefitted aviation.
Action on:	NG
Status:	OPEN

Reference:	MOUF/11/2013/04
Action:	Manchester airport anemometry: Review the current siting of the anemometry at Manchester airport.
Action on:	DH
Status:	OPEN

Reference:	MOUF/11/2013/05
Action:	Low temperature forecasts: Consider the provision of a 'cold weather correction information package' to support altimeter corrections for low temperatures.
Action on:	CH
Status:	OPEN

Reference:	MOUF/11/2013/06
Action:	High Ice Water Content Research: Met Office to ensure that HIAC research is given a high priority in research programmes given the current hazard to operations.
Action on:	NG
Status:	OPEN

Reference:	MOUF/11/2013/07
Action:	Gust front awareness documentation: DH and DW to work on potentially developing some guidance on gust fronts for the CAA.
Action on:	DW/DH
Status:	OPEN

Agenda Item 1: Welcome and Introductions

DH opened the meeting, and thanked everyone for attending. Introductions were made and the minutes of the previous meeting were confirmed as a true account. DH also expressed his thanks to the CAA for their kind invitation to host this meeting.

Agenda Item 2: Regulatory service provision

NG provided a presentation on regulatory service provision. A presentation relating to each item is available at **Annex A**.

a. Review of actions from previous meeting

Reference:	MOUF/10/2013/01
Action:	<p>MOUF ToRs and attendance:</p> <ul style="list-style-type: none"> -Review proposed MOUF ToRs -Ensure the correct delegates for each organization continue to be identified -Review currency of MOUF representatives and future meeting arrangements <p>Revised ToRs provided at Annex D.</p>
Action on:	DH
Status:	CLOSED

Reference:	MOUF/10/2013/02
Action:	<p>AIRMETS:</p> <p>In consideration of the comments expressed at MOUF/10, MOUF members are invited to review the continuation of current UK AIRMET provision. DH to correspond with users on this.</p> <p>DH thanked those responding to an informal survey and commented that following a subsequent workshop held by the Met Office a paper providing a number of options was provided to the CAA for consideration.</p> <p>The meeting discussed the product in detail and PC, SW and LD commented that little use was made of AIRMETS, though JC remarked that they were utilised by NATS. The meeting agreed that private pilots perhaps had the greatest use of this product.</p> <p>CH commented that the feedback received from the Met Office and the</p>

	MOUF would be considered at the next Quarterly Regulation Meeting held by the Met Office and CAA.
Action on:	DH
Status:	CLOSED

Reference:	MOUF/10/2013/03
Action:	Met Divisional Meeting: Provide a summary paper to the group ahead of the meeting describing the UKs input into the Met Divisional and invited any feedback from the group. Update provided, see para 2g.
Action on:	CH
Status:	CLOSED

Reference:	MOUF/10/2013/04
Action:	Non standard anemometer heights: <ul style="list-style-type: none"> • Review the anemometer siting at those airports that provide readings outside the 9-11 metres range required by ICAO, • Confirm that an adjustment provided as a result of anemometers at non standard heights is calculated at source thereby ensuring the results are reflected in both METARs and local reports. DH provided a Paper (see Annex E). PC commented on the anemometry at Manchester airport (see para 3a) and DH committed to review the siting of this.
Action on:	DH
Status:	CLOSED

Reference:	MOUF/10/2013/05
Action:	Aerodrome warnings: Provide the MOUF with a copy of the comment response document following the consultation feedback. DG described the recent consultation undertaken by the CAA, and noted that the results of this consultation were available from the CAA web site at: http://www.caa.co.uk/default.aspx?catid=1350&pagetype=90&pageid=15488 .
Action on:	AW
Status:	CLOSED

Reference:	MOUF/10/2013/06
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Action:	Met Office space weather programme: Provide the group with an update on the activities of the Met Office's space weather programme by March 2014. NG provided an update –see para 2h.
Action on:	AW
Status:	CLOSED

b. Review of Met Costs

NG presented a review of UK regulated aviation costs describing how these are comprised through to the end of the EU Reporting Period 2 in 2019. The meeting discussed cost recovery principles in detail. CH commented that the CAA continue to lobby intensely in Europe to ensure equitable cost recovery though no consensus was reached within Europe on the contents of a paper to the ICAO Met Divisional meeting in July, so the CAA will focus efforts on cost recovery principles of regional activities such as WAFC (World Area Forecast Centre) and VAAC (Volcanic Ash Advisory Centre). NG reported that the Met Office continued to review the efficiency of the WAFS (World Area Forecast System) and commented on options that the Met Office were considering, such as some automation of processes and to reduce from 2 to 1 the number of rosters.

c. Review of Met Service performance

NG then presented a summary of TAF and WAFC performance, including how TAF performance is measured, leading to the generation of TAF Service Quality Index (SQI) scores. The meeting discussed in detail the accuracy of TAFs over the UK, and also the current composite target. NG commented that certain airports provided particular challenges to meteorologists, for example Bristol airport typically has a lower TAF SQI score compared to Exeter airport. JC enquired whether TAF quality was impacted by the quality of METARs. NG commented that METARs were an important way of monitoring the currency of TAFs, which is why the Met Office provides detailed quality control of UK METARs on behalf of the CAA. DW asked whether centralisation of TAF production had led to a loss of local knowledge. DH reported that detailed information on each airport was readily available to the meteorologists to call upon.

CH commented that this target was actually more accurately defined as a Key Performance Indicator and is used to monitor the performance of the TAFs both collectively and individually. This KPI is subject to review by the CAA. CH also noted that recently, the CAA requested the Met Office to provide a rolling 36 month graphic – this serves to smooth the seasonal performance fluctuations, and DH committed to provide the latest 36month rolling mean graphic to the group.

Reference:	MOUF/11/2013/01
Action:	TAF 36 month SQI:

	Provide a copy of the latest rolling 36 month UK TAF SQI scores.
Action on:	DH
Status:	OPEN

NG commented that cloud and visibility were the meteorological parameters used to generate these scores. DW noted that there is both a safety and economic impact of accurate wind forecasts. CH commented that a number of aviation related performance measures had also been established by the Met Office Public Weather Service of which the CAA are members, including crosswind. DH committed to provide the latest PWS KPI figures to the MOUF.

Reference:	MOUF/11/2013/02
Action:	PWS KPIs: Provide the latest PWS KPIs to the MOUF.
Action on:	DH
Status:	OPEN

d. 2014-15 R&D outline proposals

NG provided a brief presentation on potential Met R&D proposals for 2015 and explained that the proposals for future R&D were based upon three themes:

Theme 1: Towards a better understanding of global en-route hazards

Theme 2: New observations and improved forecasting of winds and convection for UK services

Theme 3: Improved understanding of weather hazards and improved forecasting at UK airports

In each case, the proposals consider how best to benefit from development in our core capabilities, understanding customer impacts and needs, pull through to application and continuous assessment and verification of performance.

CH reported that members of the R&D Steering Group had met to discuss the merit of each proposal and a decision of which ones to take forward was expected by the end of November. SS and DHa asked whether the benefits of R&D pull through had been assessed. CH noted that benefits from R&D activities to improve the forecasting of low cloud and visibility were evident from the performance measures established by the CAA, such as TAF SQIs. DHa and SS suggested that an Executive Summary on how Aviation R&D has tangibly benefitted aviation would be useful. NG committed to look at providing such a paper for future MOUFs.

Reference:	MOUF/11/2013/03
Action:	Aviation R&D benefits:

	Provide an Executive Summary on on how Aviation R&D has tangibly benefitted aviation.
Action on:	NG
Status:	OPEN

PC suggested there would also be value in understanding how much money was available for Aviation R&D annually. NG commented that normally £150-180K of work was funded by the CAA per annum. CH reported that much of the R&D undertaken by the PWS also benefitted Aviation, and the attendance of the CAA at PWS meeting ensures that Aviation gets to benefit from these activities. CH welcomed the scrutiny of aviation experts at the Aviation R&D Steering Group and invited anyone wishing to be involved to contact the Met Office or CAA.

e. Volcanic Ash issues

NG provided an update to the group on volcanic ash activities, including the planned migration from ash concentrations to a total ash column based approach on the VA contamination charts. DHa asked whether this change would alter the look and feel of these concentration charts. NG commented that this change would not alter the actual charts, but noted that that the current provision of 3 charts (representing up to FL200, FL200-350 and above FL350) would change to a single chart with additional charts depicting the ash top and ash base. . DW appreciated the update and commented that UKFSC would be pleased to help publicise any changes. The meeting discussed VA visualization tools and SS and SW informed the meeting of their experiences with the visualization tools used by British Airways and Loganair.

f. SESAR progress report

NG provided a presentation of the recent progress of SESAR WP11.2. SESAR is the European air traffic control infrastructure modernisation programme. It aims to develop the next generation air traffic management system capable of ensuring the safety & fluidity of air transport worldwide over the next 30 years. Meteorology is fundamental to managing all phases of Air Traffic Management (ATM) operations. SESAR WP11.2 is split into two projects: 11.2.1 Requirements for MET information and 11.2.2 MET information system development, verification and validation. The Met Office plays a key role in both projects, with activities in the past year being more concerned with 11.2.2

DHa discussed the provision of high resolution products to support the TMA, such as WAFTAGE. CH noted the importance of having a 'single authoritative source' for meteorological data within Europe, to ensure that all users and aviation sectors are utilising similar and consistent data, and have full access to this data.

g. Met Divisional Meeting

CH provided the meeting with a copy of the Executive Summary following the ICAO Met

Divisional meeting, held in Montreal in July, and described the objectives and composition of the meeting. The main outcomes included:

- The Global Air Navigation Plan (GANP), broken into Aviation System Block Upgrades (ASBUs)
- Future requirements for forecasting SO².
- SIGMET deficiencies, leading to the establishment of regional hazard centres for parts of the world
- Governance and cost recovery issues
- Products for the terminal area
- Collaborative Decision Making approach
- Guidance on cost recovery, especially for the WAFS, and
- Establishment of a PANS-MET document

DL enquired about the mechanism to import the contents of the future PANS MET into EASA legislation. CH commented that a Task Force had been established to consider the best way of achieving this.

The meeting discussed the use of aviation data for non aviation purposes, with PC citing the use of METARs for climate data as an example. CH noted that the Met Divisional meeting was concerned about the use of aviation Met data for commercial purposes where there is no input into the cost recovery mechanism. For example whilst the CAA maintain overall control of the MOCCA (Met Office Civil Contingency Aircraft), any use of the aircraft to gather data for non aviation purposes would be funded by whoever is using the MOCCA.

h. Space weather programme

NG provided an update on recent activities, including the establishment of the Met Office Space Weather Operations Centre (MOSWOC). MOSWOC has been established to serve the interests of the UK as a whole, though the potential impact of space weather is known for aviation in terms of communications, high altitude radiation etc – as such the Met Office are sending daily warnings to NATS. Currently the Met Office are monitoring some intense sun spot activity.

CH is Chair of a Space Weather Working Group and noted that space weather is on the UK Government National Risk Register, ensuring that industries potentially affected by its impacts have mitigating activities established. For aviation such activities are to mitigate the risk of increased high level radiation, avionics failures, loss of HF Comms and satellite navigation. The CAA is now in a position to create guidance and education documentation to help the aviation industry to update their safety risk assessment programmes and SMS. The meeting considered that little warning of an event is possible, so much of the guidance will relate to post event activities. PC and SS agreed that education of such hazards is key to the aviation industry, to ensure the correct mitigating actions are established.

Agenda Item 3: National services

a. Changes to UK regulated service provision

DH provided a summary of the changes to national aviation services over the past year. This included:

- The availability of regulated aviation performance statistics on the Met Office web site (<http://www.metoffice.gov.uk/aviation/national-responsibilities/caa-verification>).
- Changes to TAF provision, i.e. for airports now requiring TAFs such as Oxford and airports closing such as Manston.
- The development of a competency assessment procedure for meteorologists
- Annual CAA auditing of elements of the Met Office regulated aviation service and infrastructure
- Involvement of the Met Office in a recent EASA audit of the CAA, and
- Development of products designed to serve offshore aviation in light of new CAA regulations (CAP 1145).

The meeting discussed TAF performance (summarised in para 2c). SW commented that Loganair encourage pilots to feedback on TAFs, and it was encouraging to hear that no negative feedback had been received over recent months. DW asked whether TAFs for Battersea Heliport may be provided in future. DH commented that the provision of TAFs was very much dependent upon the supply of compliant METARs utilizing appropriate instrumentation – the requirements are provided in CAP746. The Met Office would be pleased to provide TAFs on this basis and with the authority of the CAA.

With respect to MOUF/10/2013/04 PC commented on the anemometry at Manchester airport and DH committed to review the siting of this. DH commented that the EASA transposition of the existing ICAO Annex 3 regulations called for wind to be representative of 10 metres above ground level (both for local ATC reports and METARs). The siting of airport anemometry is audited annual by the Met Office on behalf of the CAA. At most airports, anemometry is sited very close to 10 metres, though at a small number they are sited at different height heights. In such cases, the airport uses an approved algorithm to reflect the wind speed for 10 metres. Where an airport does not site it's anemometry at 10 metres and fails to apply this algorithm, a finding will be raised and the CAA will require a corrective action plan to be generated by the airport to resolve this non-compliance.

Reference:	MOUF/11/2013/04
Action:	Manchester airport anemometry: Review the current siting of the anemometry at Manchester airport.
Action on:	DH
Status:	OPEN

b. Aerodrome weather warnings

DH then gave a presentation on future changes to the arrangements for aerodrome weather warnings. This included the rationale for the changes, and a summary of the features of the new service (i.e. the generation and promulgation of warnings). The new service will be hosted on a revised Met Office aviation web briefing service and also available via AFTN (through CACC).

c. Services to GA

DH described the work being undertaken in the Met Office to improve the provision of services to the aviation community through the provision of a new aviation briefing service. This new briefing service would make available regulated aviation products on all devices, including desktop, tablets and smart phones. The Met Office has been fully engaged with the CAA throughout the process and new briefing system is expected to become available around April 2015.

The meeting discussed arrangements for advertising this to the aviation community. DH commented that the Met Office would seek to utilise CAA processes such as AICs and/or Information Notes for this. DW commented that the CAA safety evenings run by GASCo could also be utilised, and that engagement with CAA Corporate Comms should also be considered. JC also reported that the Met Office could utilise the NATS emailshot list as well. These suggestions were appreciated and DH would work with the Met Office Communications team to ensure these changes were widely circulated.

Agenda Item 4: Specific issues

a. Low temperature forecasts

PC commented on recent events that had led to discussions on altimeter setting during low temperatures. A CAA Information Note (IN-2014/17) had been issued by the CAA noting that corrections for low temperatures are not applied in the UK and that any new requirement would need to be based on a pan-European approach to ensure consistency. Further, recent consultation had concluded a need for an education package and reaffirmed that any new requirements would require ATC units to provide it. PC enquired whether the Met Office could provide a product to support this.

CH noted that this was a complex issue requiring a European wide solution. Meetings had recently been held to discuss the requirements and the data the Met Office could provide in support.

MT commented on the provision of density altitude data in the METARs provided in the United States, and suggested that the use of the RMKS (remarks) section could be an option. CH noted that in the UK, the use of RMKS was not permitted since this was not ICAO compliant. Using RMKS extensively would also require significant end user software changes.

CH committed to look into the provision of a 'cold weather correction information package'.

Reference:	MOUF/11/2013/05
Action:	Low temperature forecasts: Consider the provision of a 'cold weather correction information package' to support altimeter corrections for low temperatures.
Action on:	CH
Status:	OPEN

b. High Ice Water Content Research

PC commented that the AF447 accident highlighted the fact that high altitude ice water was a significant hazard to aviation. NG commented that one of the proposals given at the recent Aviation R&D Steering Group included the validation of observed data against satellite imagery over the tropics and especially near the ITCZ, to identify events where the data suggest that encounters with High-IWC regions may have taken place.

SS commented that Boeing had also reviewed this hazard and considered how best to mitigate the risk (i.e. by filing flight plans around risk areas). As such this was a hazard that had gained significant exposure. PC commented that this highlights both a safety and commercial benefit to HIAC forecasting.

Reference:	MOUF/11/2013/06
Action:	High Ice Water Content Research: Met Office to ensure that HIAC research is given a high priority in research programmes given the current hazard to operations.
Action on:	NG
Status:	OPEN

Agenda Item 5: Any other business

- **Gust front awareness**

DW recounted the experiences of a recent Boeing 767 incident on approach to Buenos Aires airport. The crew had been fully briefed on wind shear potential, but on final approach rapidly developing convective weather had led to gusting and severe turbulence that the crew had not fully anticipated. As such DW asked whether some guidance documentation could be produced. MT confirmed that the orography on approach to Buenos Aires often resulted in challenging conditions. NG/DH committed liaison with DW and consider an appropriate article for use by the CAA.

Reference:	MOUF/11/2013/07
Action:	Gust front awareness documentation: DH and DW to work on potentially developing some guidance on gust fronts for the CAA.

Action on:	DW/DH
Status:	OPEN

- **Wind data provided by ATC**

DHa enquired about the averaged wind data provided by ATS on local reports and on ATIS broadcasts. CH confirmed that the 2 minute averaged wind should be provided, and JC confirmed that MATS carried this guidance. An instantaneous wind could be relayed by ATC via R/T on request, though such information would need to be clearly annotated as 'instant'. LD commented that the provision of instantaneous wind speed and direction offered little value to aviation, and that a 2 minute mean provides a much better representation of conditions expected on touchdown.

MT enquired as to the possibility of including the runway(s) in use at time of observation in METARs in order to provide greater situational awareness to pilots. SS also confirmed the potential value of this information to his Flight Crew Briefing department in their duties. It was noted that such information is available on other commercially available Apps. CH referred to current content of METARs defined by ICAO.

- **NATS AUTO METAR trial**

JG provided the meeting with an overview of an AUTO METAR trial commenced by NATS at Cardiff and Glasgow airports. The trial, spanning 6 months, is designed to consider the impacts of fully automated METARs on the airport weather provided by ATC and for forecasting. NATS will provide an in depth analysis following the trial.

Agenda Item 6: Date of next meeting

It was agreed that the date and location of MOUF/12 would be agreed by correspondence.

There being no other business, the meeting closed at 1530.