AERODROME METEOROLOGICAL OBSERVATION AND FORECAST STUDY GROUP (AMOFSG)

TENTH MEETING

Montréal, 17 to 19 June 2013

Agenda Item 6: Forecasting at the aerodrome and in the terminal area and ATIS requirements

REVIEW THE GUIDANCE IN DOC 8896: CONTINUOUS MONITORING OF TAF
AMOFSG AD HOC TEAM (WG/3)

(Presented by Colin Hord, Rapporteur)

SUMMARY
An ad hoc team was set up to review the guidance material that is provided in the Manual of Aeronautical Meteorological Practice (Doc 8896) detailing the continuous monitoring of TAF.

1. INTRODUCTION

1.1 Following the ninth meeting of the Aerodrome Meteorological Observation and Forecast Study Group (AMOFSG/9) held in Montréal on 26 to 30 September 2011, there was discussion related to the continuous review of aerodrome forecasts (in meteorological code form) (TAFS). It was agreed that an ad hoc team would be established to review the guidance material currently in the Manual of Aeronautical Meteorological Practice (Doc 8896). The following were members of the team of Bill, Colin (Rapporteur), Keith, Steve and the International Air Transport Association (IATA).

1.2 Each of the members agreed to supply their guidance material used for the continuous review of TAF. This was received from Canada, New Zealand, United Kingdom and United States. These are attached in Appendix A.

2. DISCUSSION

2.1 Following the sharing of guidance material a number of e-mail discussions took place which considered revised wording for the section in Doc 8896 relating to the continuous review of TAF;

(7 pages)
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however, there was no consensus for a revision to the wording. For this reason the group is not proposing any changes to the wording in Doc 8896 regarding the continuous review of TAF at this time.

3. **ACTION BY THE GROUP**

3.1 The group is invited to:

   a) note the contents of this paper; and

   b) consider follow-up action.
APPENDIX

NATIONAL PRACTICES FROM AD HOC TEAM 3 MEMBERS RELATING TO THE CONTINUOUS REVIEW OF TAF

CANADA

2.3 Observational Requirements
Aerodrome forecasts are issued for aerodromes for which regular hourly and special weather reports meeting standards for observations, as stated in MANOBS, are available. Aerodrome forecasts based on automated observations shall be issued only for acceptable AWOS sites. They are recognizable by the label “AUTO” in the corresponding METAR or SPECI report.

2.3.1 Parameters required to establish a TAF service
The meteorological parameters required to establish a TAF service are the following:

a. sky condition;
b. visibility;
c. present weather and obstructions to vision;
d. air temperature;
e. dew point temperature;
f. wind speed, direction and character; and
g. mean sea level (MSL) pressure.

Regular hourly and special weather observations are only one of the data sources available to forecasters. Therefore, when it comes to maintaining an already established aerodrome forecast, no single element is necessarily critical.

After analyzing available data from other sources (e.g. satellite imagery, radar pictures, profiler data), if, in the forecaster’s judgment, one missing observation or a missing element will have no impact on the quality of the aerodrome forecast, the forecast can be maintained.

2.4.1 (In part)
For those aerodromes which do not have a 24-h observing program, two (2) consecutive hourly observations immediately prior to the issue time of the forecast are required before issuing a forecast…

… If two consecutive hourly observations are not available immediately prior to the issue time of a TAF, a nil TAF shall be issued….

2.7 Aerodrome Advisories
Aerodrome advisories may be issued, in place of aerodrome forecasts, for the following reasons:
2.7.1 Offsite (OFFSITE)
To be used when the forecast is based on observations that are not always considered to be representative of weather conditions at the airport. In normal situations, an observation shall be considered representative of the weather conditions at the aerodrome if it is taken within 1.6 NM (3 km) of the geometric centre of the runway complex.
In cases where the 1.6 NM (3 km) criteria does not apply because of local characteristics, the representativeness of an observation shall be determined and approved by the Regional Director of MSC, for site controlled by EC or, by the Director of Meteorology and Oceanography, for sites controlled by DND.

The word ADVISORY shall appear after the period of coverage group. The word OFFSITE shall be added, followed by one space, after the word ADVISORY (e.g. TAF CCCC 151040Z 1511/1523 ADVISORY OFFSITE …). This is intended to indicate to the users that the observations do not necessarily reflect the actual conditions at the aerodrome.

2.7.2 Observation incomplete (OBS INCOMPLETE)
The term “OBS INCOMPLETE” is to be used when the forecast is based on observations with missing or incomplete data on a regular basis (e.g. MSL pressure not reported). The word ADVISORY shall appear after the period of coverage group. The words OBS INCOMPLETE shall be added immediately after the word ADVISORY (e.g. TAF CCCC 201640Z 2017/2105 ADVISORY OBS INCOMPLETE …).

2.7.3 No specials (NO SPECI)
The term “NO SPECI” is to be used when the forecast is based on observations from a station with a limited observing program that does not issue special weather observations. The word ADVISORY shall appear after the period of coverage group. The words NO SPECI shall be added immediately after the word ADVISORY (e.g. TAF CCCC 252240Z 2523/2612 ADVISORY NO SPECI …).

2.10.1 Cancellation for missing observations (in part)
In the event that scheduled hourly observations are not received, the forecaster shall determine the reason for the missing observations.
If the observations were not received because of a telecommunication problem, the forecaster shall make every reasonable effort to obtain them, whenever possible, by alternative means. If two consecutive hourly observations from an aerodrome cannot be obtained, the TAF for that aerodrome shall be canceled by sending an amended TAF.

2.10.2 Cancellation due to unreliable or missing AWOS observation element(s) (in part)
A forecaster may cancel a TAF for an aerodrome equipped with a stand-alone AWOS site when:
a. the observation of any critical element (e.g. ceiling) is missing or believed to be incorrect or affected by a mechanical malfunction for two hours; and
b. all attempts have failed to determine a reasonable inferred value(s) based on sound meteorological knowledge and techniques.

Additional Commentary:
It may also be worth noting that although we do not specify a requirement for reports of altimeter setting to be included for a TAF to be maintained that the absence of an altimeter setting report for more than 90 minutes at any aerodrome will nullify the associated instrument procedure (i.e. an altimeter setting is useable for a maximum of 90 minutes).

It should be noted that the excerpt above related to an ADVISORY rather than a TAF has the consequence of raising the alternate aerodrome minin for the associated aerodrome by 500 feet and
requires a visibility of 3 miles or greater. In other words, the limits will typically become VFR in order to maintain an equivalent level of safety with that of a TAF that has complete and timely observations.

That is, we view the METAR / SPECI to be essential for the production of a TAF. Brief and non-systemic interruptions in some or, in rare cases a single absence of an entire METAR, can be tolerated when other means of observations are sufficient to address the existing degree of uncertainty regarding current conditions. In our opinion, there is no replacement for a continuous METAR / SPECI weather watch to provide up to date information regarding boundary layer conditions in highly variable, low cloud and / or low visibility weather conditions. When there is any degree of doubt regarding the current conditions, our preference is that the TAF be cancelled. Even in areas that have several METAR / SPECI in close proximity there is no replacement for a site specific report to relay current visibility, cloud and precipitation conditions (i.e. fog and snow etc. are highly variable in time and space).

The absence of a METAR also speaks to the probably absence of SPECI. In our view the regularly scheduled TAF, by itself, is not sufficient to meet the requirements of an aerodrome forecast. The TAF must be accompanied by an amendment service which, in turn, requires the continuous weather watch to ensure that it is provided in a timely manner.

We agree that forecasters should consider all relevant sources of information when preparing a TAF. Clearly, the METAR / SPECI is an essential component of this. If the METAR / SPECI are missing then all other sources of weather information become necessary but not sufficient to maintain the TAF during any conditions of significant uncertainty.

To us, using a TAF that is continued over a prolonged period without METAR / SPECI would be like planning your weekend picnic by reading the forecasts that are available on Monday and then never looking for an update.

Finally, it is imperative that the priority given to surface weather observation not be diminished by any trend towards forecasts that are not based upon directly assessed, local and timely information intended for aviation use.

**NEW ZEALAND**

For International Air Navigation, the Meteorological Authority (which is the New Zealand Civil Aviation Authority) requires the approved service provider (MetService New Zealand Ltd.) to provide or arrange METAR/SPECI coverage 24/7 for designated Asia/Pacific RAN AOP aerodromes in New Zealand. MetService has arranged for the ATC tower controllers at the AOP aerodromes to provide augmented METAR/SPECI, ie, a combination of manual and automated elements. In the event that a controller is not able to provide a METAR/SPECI (possibly due to a higher than usual workload at certain times), a METAR AUTO must be provided and must include vis, present wx and cloud, as well as the other usual elements (wind, temp, etc.). In effect METAR AUTO are generated every 30 minutes anyway (24/7) and are automatically used to substitute for any missing controller METAR/SPECI, ie, a monitoring programme will distribute a METAR AUTO if a "Manual" version is not filed by a prescribed time. Under normal circumstances, tower controllers at the New Zealand AOP aerodromes are on duty 24/7.

In the case of the New Zealand regional airports (33) that are not designated under the RAN as AOP aerodromes, METAR AUTO (with vis, cloud and present wx) are provided every 30 mins, 24/7, so that
continuous review is possible even if the airport is not operational during the late night/early morning. In addition, an automated monitoring programme checks the AWS at all locations every minute and if significant changes to any element are recorded, the duty forecaster is alerted. The regional airports have tower controllers but they are not on duty 24/7. These controllers do not produce “manual” METAR/SPECI. However, they do provide landing and take-off reports on ATIS, and these can be accessed in the air or pre-flight. In the case of pre-flight, ATIS reports from all the regional aerodromes are available via the web. Additionally METAR AUTO provided at New Zealand regional airports, also include TS and VCTS through access to a nationwide New Zealand lightning detection network, which can determine whether the cloud to ground strikes are within 8 km of the aerodrome reference point, or between 8 and 16 km. We had extensive consultation with the aviation industry (domestic and international) before approving the implementation of METAR AUTO. As the industry players have access to radar and satellite imagery via the web (for mobile phones, tablets, etc.) this complements the METAR AUTO info they receive.

The New Zealand (regulatory) requirement for METAR AUTO is that these reports must include wind, vis, cloud height and amount, present wx, temp, dew point and QNH, and TS when detected. The industry has advised us that a TAF or TREND indicating CB or TCU is sufficient and that it is not necessary to include this in a METAR AUTO, given they have access to radar and satellite imagery, as well as ATIS (ATC landing and take-off reports) at all aerodromes where METAR AUTO is provided instead of a manual METAR/SPECI.

UNITED STATES

Per United States directives (NWSI 10-813) aviation meteorologists are to maintain a watch of weather conditions at all aerodromes with a TAF (both 24 and 30 hour), including aerodromes with scheduled part-time observations (i.e., METAR/SPECI), automated observations (e.g., the United States’ ASOS and AWOS) with or without augmentation from contract or ATC observers.

Although integral to the issuance of a TAF, a complete surface observation (i.e., all elements required for a METAR) is not required by United States NWS directives to keep a TAF valid and under continuous review. United States aviation meteorologists use the "total observation concept" to prepare and issue a TAFs, which allows the usage of nearby observations, radar, satellite, weather balloon (i.e., radiosonde), numerical weather prediction model data, ACARS, MDCRS, and other sources.

In the event that surface observation at a TAF aerodrome has incomplete, missing, or unreliable surface observation elements, the aviation meteorologist may append the remark “AMD NOT SKED” (amendment not scheduled) to the end of a TAF. The use of the remark AMD NOT SKED indicates the aviation meteorologist has enough data, using the total observation concept, to issue a TAF and keep it under review, but will not provide amendments. This allows airport operations to continue using a valid TAF.

For aerodromes with scheduled part-time observations, the TAF is kept valid to the end of the routine scheduled forecast period even when observations end prior to that time. The time observations are scheduled to end and/or resume will be indicated by the use of the remark AMD NOT SKED. For Example:

TAF AMD KRF 150202Z 1502/1600 {TAF text} AMD NOT SKED 1505/1518= Per U.S. directives, the use of NIL TAF is limited to rare situations where surface observations have been missing for extended periods of time (i.e., more than one TAF cycle of six hours), and the total observation concept cannot provide sufficient information to construct a TAF.

For domestic aerodromes with non-augmented automated observations, a NIL TAF may be issued when the aviation meteorologist is notified of, or strongly suspects, an outage or unrepresentative data, or when an element the aviation meteorologist judges to be critical is missing from the automated observation.
Per United States directives, for domestic aerodromes with automated observations and part-time augmentation (based on the type of automated observation system and level of manual backup) aviation meteorologists may use additional remarks for the times when the automated system is unattended. For example, “AMD LTD TO CLD VIS AND WIND (AFT YYHHmm, or TIL YYHHmm, or YYHH/YYhh)”, where YY is the date, HHmm is the time, in hours and minutes, of the last augmented observation and HHmm is the time, in hours and minutes, the second complete observation is expected to be received. This remark, which does not preclude amendments for other forecast elements, is appended to the last scheduled TAF issued prior to the last augmented observation. It will also be appended to all subsequent amendments until augmentation resumes. The AMD LTD TO (elements specified) remark is a flag for users and differs from the AMD NOT SKED AFT Z remark for part-time manual observation sites. AMD LTD TO (elements specified) means users should expect amendments only for those elements and the times specified.

Example:
TAF AMD KCOE 150202Z 1502/1600 text AMD LTD TO CLD VIS AND WIND 1505/1518=
The amended forecast indicates that amendments will only be issued for wind, visibility and clouds, between 0500Z and 1800Z.

UNITED KINGDOM

In the United Kingdom a METAR (or AUTO METAR is required) to be provided in order to maintain or issue a TAF. AUTO METARs that are issued during the operational hours must be able to provide all the METAR elements including CB, TCU and TS, this information is generated from remote sensing systems at the United Kingdom Met Office and appended to the METAR at the airport.

During non-operational hours of an aerodrome we currently do not require AUTO METARs to have CB, TCU or CB information to be added to the METAR since this information is available to the forecaster using remote sensing information (radar, satellite, etc.). We do require that all other elements are provided and have now stipulated that Present Weather elements must be able to be reported from a present weather sensor. For those aerodromes that do not have the facility to add CB, TCU or TS information a manual METAR must be issued a half hour before the aerodrome is operational to ensure the TAF service.

— END —