Australian Government
Civil Aviation Safety Authority

SUMMARY OF PROPOSED CHANGE

Amended TAF rules - Ceasing TTF product from BoM

Amendment to Aeronautical Information Publication (AIP) Book Australia

Date	February 2020
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Introduction

The Bureau of Meteorology (BoM) is proposing to cease issuing the Trend Forecast (TTF) as a meteorological forecast product for aviation users on 13 August 2020.

The TTF is an aerodrome weather report plus a forecast of meteorological conditions expected to affect the aerodrome for the validity period of the TTF, which is normally 3 hours following the time of the report. The forecast covers the elements of wind, visibility, low-level turbulence, weather and cloud. TTFs are provided for Cairns, Brisbane, Sydney, Canberra, Melbourne, Adelaide, Perth and Darwin and several Defence aerodromes.

At the request of the aviation industry, the BoM undertook a review of TTF services. The review was conducted between 2012-14 with a final report issued in October, 2016. Recommendation 2 states:

> "..subject to appropriate risk mitigation, that the TTF service be ceased, and that, where appropriate, the {Aerodrome Forecast} TAF be issued routinely every 3 hours instead of every 6 hours. In addition, the TAF should be amended to provide similar responsiveness, accuracy and operational meteorological information as the current TTF".

The new product would be known in publications as the TAF3 and would be provided for the aerodromes specified above and include Hobart and the Gold Coast.

CASA's proposal is to amend the relevant rules to accommodate the BoM proposal. CASA is seeking feedback from stakeholders on the proposed changes to the rules. Industry advice on the likelihood of the impacts of ceasing the TTF being addressed by the proposed TAF rules amendments as well as advice on other potential operational impacts as a result of the proposed changes are also welcomed as part of this consultation.

CASA will take into consideration the advice we receive to determine if the proposal is adequate.

Background

ICAO standards

ICAO publishes relevant standards and recommended practices for meteorological services in Annex 3 of the *International Convention on Civil Aviation – Meteorological Service for International Air Navigation*. Forecasts are prescribed in Chapter 6 – Forecasts. Section 6.2 refers to aerodrome forecasts and section 6.3 refers to landing forecasts. Landing forecasts are required to be prepared in the form of a trend forecast.

Annex 3 also describes details on matters such as criteria required for issuing reports, content, coding and accuracy.

The current product – TTF

The TTF is a tactical short-duration, high repetition forecast with high accuracy standards that has been in use in Australia for more than 30 years. It was introduced as an adaption to the ICAO landing forecast.

The BoM has adopted many of ICAO Annex 3 accuracy standards for trend forecasts as the accuracy standard for TTFs. The Annex 3 amendment criteria are also applied although with

some variations. Australian TTF accuracy standards and amendment criteria are specified in the BoM Aeronautical Services Handbook (ASH).

TTFs, including the current weather report and trend forecast, are routinely issued every 30 minutes with a normal validity period of 3 hours, commencing from the time of observation. When highly changeable weather is present, the TTF is issued more frequently.

BoM's TTF service is provided 24 hours a day, 7 days a week at Cairns, Brisbane, Sydney, Melbourne, Adelaide, and Perth aerodromes. The service is also provided at Canberra and Darwin during a range of operating hours (e.g. Darwin is provided with a TTF service from 5.30am until 9.59 pm). The service is also provided at eight Australian Defence Force (ADF) and joint-user aerodromes.

The current product – TAF

The Terminal Area Forecast (TAF) is a strategic long-duration, lower repetition forecast with lower operationally desirable accuracy standards. The accuracy standards of the TAF are contained in the ASH.

The TAF service is typically provided in accordance with the aerodrome's TAF category where the category is determined by factors such as passenger or aircraft movement volume and whether the aerodrome is an international aerodrome.

TAFs are issued at routine intervals, usually 6-hourly, and are valid for at least 12 hours[1] They can be amended during the period of validity if specified amendment criteria are met in the same manner as a TTF. The Annex 3 amendment criteria standards are also applied to the TAF.

Key points of current products

The key operational points to note based on the currently provided forecast products are:

- aerodromes that are provided a TTF service also receive a TAF service
- a TTF supersedes a TAF for its period of validity
- although a TTF supersedes a TAF, the TAF can also be used as a valid forecast within the TTF validity period
- TTFs are issued with time accuracy to the minute
- TAFs are issued with time accuracy to the hour
- probability groups (lower probability weather events) are not contained in TTFs – e.g. PROB30 TS.

Proposed Product – TAF3

The BoM Trend Review recommended the following:

- cease issuing the TTF
- replace the TTF with a new product described as an increased frequency TAF (identified as TAF3)
- extend the coverage of the service by providing the TAF3 at current TTF aerodromes plus Gold Coast and Hobart aerodromes.

[1] Category A TAFs at international aerodromes are valid for 24 or 30 hours.

The main reasons for the change cited in the Trend Review are:

- The TAF3 would provide a single, definitive weather forecast for the aerodrome; whereas the current TTF and TAF can contain different information and there is potential for user confusion.
- The TAF3 is ICAO compliant meaning that all aviation users, including international operators, will have access to the same weather information which is current and of the highest quality.
- Meteorological forecasting has significantly improved since the TTF was introduced and it is now possible to provide a TAF3 with equal accuracy to the TTF (over the same time period).

Further information produced by the BoM on the proposed TAF3 can be found at Appendix A.

Regulatory changes

The requirements for the regulatory change

CASA has analysed the proposed ceasing of the BoM's TTF forecasting product and has identified that the current rules in the Aeronautical Information Publication Book Australia (AIP) would result in a similar safety outcome for the aviation industry overall.

However, in analysing the change, CASA has identified an economic impact of maintaining the existing TAF rules within the AIP on the aviation industry where weather forecasting periods are updated less frequently. Without a change to the TAF rules, alleviations offered by the TTF product would not be available and in some circumstances additional fuel would need to be carried.

The proposed regulatory changes

Section 98(5A) (a) of the *Civil Aviation Act 1988* (the Act) empowers CASA to issue instruments in relation to the safe navigation and operation of aircraft. It is applied by CASA to issue instructions under Regulation 240 of *Civil Aviation Regulations 1988 (CAR)*. Standards are then published in the AIP.

CASA is proposing to address the impact of the cessation of the TTF by amending the rules within the AIP to include TAF3 provisions to ensure:

- a similar safety outcome as the current combination of TAF and TTF products
- the proposed combination of TAF3 and TAF products retains the economic alleviations offered by the current combination as far as practicable.

The amended TAF rules would include TAF3 provisions that would apply the current TTF rules, as far as practicable, to the TAF3 at prescribed aerodromes. Specifically, the proposed amendments would change the TAF rules so that in the first 3 hours of a TAF3, operators may be exempt from applying:

- 30-minute buffers for change groups
- probability groups (PROB30 and PROB40) for TS or low visibility.

Draft versions of the proposed rule amendments can be found at Appendix B.

The final rules would be contained in Part 91 of the *Civil Aviation Safety Regulations 1998 (*CASR*)* and its associated Manual of Standards (MOS). The most recently consulted draft version of the Part 91 MOS can be found at Appendix C. The MOS has not been finalised and will contain amendments arising from earlier consultation.

Operational implications of utilising the TAF3

The TAF3 would be issued routinely every 3 hours, rather than the routine 6-hourly issue cycle of the existing TAF, but not as frequently as the 30 minutes for the TTF. The TAF3 would also be reviewed at least once per hour and amended where conditions are expected to differ from the forecast. During times of marginal, deteriorating or fluctuating weather, the TAF3 would be amended more frequently than every 3 hours.

The proposed TAF3 would convey the same information as a regular TAF, noting that 'FROM' elements would be specified in minutes, while the validity and change group times would be conveyed in the existing hour-level interval format.

The CASA proposal is to amend the TAF rules to ensure, as far as practicable, continued application of the TTF rules to the TAF3 at prescribed aerodromes. Specifically, the proposed amendments would change the TAF rules so that in the first 3 hours of a TAF3, operators may be exempt from applying:

- 30-minute buffers for change groups
- Probability groups (PROB30 and PROB40) for TS or low visibility.

The proposed amendments to the TAF rules described above would replicate, as far as practicable, the operational effect observed under the existing TAF and TTF system.

However, it should be noted for the proposed amended rules, during the first 3 hours of the TAF3, the forecast would not provide a ‘rolling’ period like the TTF. As such, some flights may require planning that complies with probability groups and/or buffer requirements if weather conditions are present in the longer-range TAF.

To reduce the impact of these circumstances, the BoM would review the TAF3 at least once every hour with a TAF3 amendment issued if required and that the validity time would be updated if the TAF3 is amended. Additionally, the BoM has ensured that the TAF3 is issued as early as possible in the hour prior to commencement validity for the next routine issue, thereby improving the capability for planning and dispatch to be conducted as efficiently as possible under the new rules.

The delivery mechanisms used to disseminate the TTF to aircraft in flight have been assessed by BoM to ensure there is the ability to support the delivery of TAF3 information. Airservices Australia and the BoM have advised that VOLMET and AERIS will include those elements of TAF3 that are effective in the first 3-hour period commencing with the VOLMET issue time.[2]

Examples of proposed ERSA entries for aerodromes with a TAF3 can be found at Appendix D.

[2] For more information see http://www.bom.gov.au/aviation/trend-review/TAF3-FAQ.pdf

Scope of the consultation

CASA welcomes responses and suggestions from operators who may be impacted by the proposed BoM changes to forecasting and the proposed CASA amendments to the AIP in response.

Specifically, CASA invites comments on the following:

- Whether a similar safety outcome as the current combination of TAF and TTF products is likely to be achieved by the new TAF3 product.
- Whether, and to what extent, the proposed TAF3 product and proposed regulatory changes are likely to retain the economic alleviations offered by the current combination.
- Whether any other aspects of aviation operations will be impacted as a result of either the proposed changes to the forecasting products from BoM, or the AIP amendments by CASA and the nature of that impact. For example, flight planning systems and business continuity.

While all replies will be considered, CASA is unable to respond to each individually. We will publish a summary of consultation of the received feedback.

Closing date for comment

CASA will consider all comments received as part of this consultation process and incorporate changes as appropriate. Comments should be submitted through the online response form by close of business 31 March 2020.

Appendix A

Proposed BoM TAF3

AVIATION WEATHER PRODUCTS

Three-hourly Aerodrome Forecast (TAF3)

Bureau of Meteorology › Aviation Meteorological Services

TAF3 is issued routinely every three hours, pro-actively reviewed every hour and amended when conditions are expected to be different to forecast.

TAF3

The TAF3 is formatted the same as a traditional aerodrome forecast (TAF) and is issued routinely every three hours. It is pro-actively reviewed every hour by the responsible aviation meteorologist and amended when conditions are expected to be different to forecast.

TAF3 is provided 24 hours a day 7 days a week at Sydney, Melbourne, Brisbane, Perth, Adelaide, Gold Coast, Canberra, Darwin, Cairns and Hobart airports. The service is also provided at Defence aerodromes as per the En Route Supplement Australia (ERSA). Any deviations from ERSA published TAF3 service hours will be notified by NOTAM.

The TAF3 is issued from the aviation forecast office 30–60 minutes before the forecast validity period, with a target issue time of 45 minutes.

TAF3 Characteristics and Benefits

- Issued routinely every 3 hours;
- Reviewed every hour by the responsible aviation meteorologist focusing on the next 5-hours of the:
  - validity and timings of probabilities (PROBs) (updated if necessary); and
  - validity and timings of TEMPO/INTERs (updated if necessary).
- Amended on review and alerts;
- Issued with minute granularity for FROM (FM) element;
- Provides a 24–30 hour forecast and updated validity every 6 hours;
- Available at Gold Coast and Hobart airports – upgrading current aviation meteorological service;
- Available 24/7 at Darwin airport – upgrading current aviation meteorological service; and
- Identical code format as the standard TAF.

To limit prolonged PROB periods affecting aviation operations, forecasters will use FM groups in the first three hours of the TAF3 wherever possible to indicate the onset and cessation of meteorological phenomena.

DRAFT

FURTHER INFORMATION

Refer to the TAF (Aerodrome Forecast) brochure to access TAF format and de-coding information and examples:
http://www.bom.gov.au/aviation/data/education/taf.pdf

Refer to the TAF3 Frequently Asked Questions document available at:
http://www.bom.gov.au/aviation/trend-review/TAF3-FAQ.pdf

Australian Government
Bureau of Meteorology

Airservices Australia is the official distributor of aviation forecasts, warnings and observations issued by the Bureau of Meteorology. Airservices' flight briefing services are available at www.airservicesaustralia.com. Telephone contact details for elaborative briefings are contained in Airservices' Aeronautical Information Publication Australia (AIP), which is available online through their website.

Other brochures produced by the Bureau of Meteorology's aviation meteorological services program can be found at www.bom.gov.au/aviation/knowledge-centre.

A vertical line in the margin indicates a text amendment since last update.

Appendix B

Consultation Draft – AIP General and EnRoute

The following section contains the significant amendments to AIP General and Enroute that the proposed TAF3 product and TAF rule amendment would generate. This is not a complete revision of the AIP sections that contain TTF and TAF as the minor editorial changes, such as basic transposition of TTF to TAF3 in tables of contents, are not provided.

GEN 3.5 – 5

3.4 Aerodrome Forecasts

3.4.3 Category description and routine TAF service are as follows:

Category	Aerodrome Type	Routine TAF Service
A	**International.**	Issued 6 hourly, valid for 24 or 30 hours. Commencement times 00, 06, 12 and 18 UTC.
B	**Large:** Passengers > 150 000 or Movements > 75,000	Issued 6 hourly, valid for 12 or 18 hours. Commencement times 00, 06, 12 and 18 UTC.
C	**Medium:** Passengers > 50,000 or Movements > 10,000	Issued 6 hourly, typically valid for 12 hours. Commencement times are 02, 08, 14 and/or 20 UTC, except in Western Australia where commencement times are 04, 10, 16 and/or 22 UTC.
D	**Small:** Aerodromes meeting passenger and movement thresholds, or other operational criteria.	Issued 6 or 12 hourly, valid for up to 12 hours. Commencement times are typically 20 and/or 02 UTC, except in Western Australia where commencement times are typically 22 and/or 04 UTC.
TAF3	**As Specified:** Aerodromes identified in ERSA at which TAF3 is provided.	Issued 3 hourly, valid for 12, 18, 24 or 30 hours as determined by the aerodromes basic TAF category. Commencement times are typically in accordance with the basic TAF category and 3-hourly interval. Aerodrome ERSA entries detail variances.

Note 1: Commencement times for C and D TAFs will be one hour earlier in states using Daylight Saving.

Note 2: TAF will be provided upon request for other locations in support of SAR and emergency flights.

Note 3: The content of TAF, and locations for which TAF are issued and their categories, are given in section 15 and 16.

Note 4: TAF3 Aerodromes that do not have H24 TAF3 service are annotated in ERSA. MO hours for TAF3 watch and routine TAF3 issue and validity periods are annotated in ERSA. Deviations from ERSA published times will be notified by NOTAM.

ENR 1.1 – 94

11.7.2 **Weather Conditions**

11.7.2.9 Due to the accuracy standards applied to the Three-hourly Aerodrome Forecast (TAF3) (see section GEN 3.5, 3.6 – Three-hourly Aerodrome Forecast), at aerodromes provided with a TAF3 during the period of TAF3 service specified in ERSA, the 30-minute buffers required by paras 11.7.2.7 and 11.7.2.8 do not apply during the first 3 hours of TAF3 validity while the TAF3 service is provided. Additionally, for the first 3 hours of a TAF3 validity while TAF3 service is provided, the alternate or holding fuel required by para 11.7.2.1 (c) for reduction in visibility, or by para 11.7.2.5 for any PROB30 or PROB40 for TS or associated severe turbulence, do not apply.

Appendix C

Part 91 Manual of Standards (MOS) amendments

A copy of the last publicly consulted version of the Part 91 Manual of Standards (MOS) can be found on the CASA Consultation Hub.

Please note, the linked version is not yet in operation and is subject to change following more recent consultation and future consultations on the MOS.

The relevant part (8.07) has been provided below.

Chapter 8 Flight preparation — flight planning (alternate aerodromes)

8.07 Trend type forecasts (TTF)

(1) When there is a TTF for the destination aerodrome:

(a) the 30-minute buffer periods mentioned in subsections 8.06 (3) and (4) do not apply; and

(b) a flight to be completed within the time of validity of the TTF of the destination aerodrome may be planned wholly by reference to that TTF.

(2) The TTF for a destination aerodrome may have either 1 visibility or 2 visibilities included in the report. Operational requirements to carry holding fuel or plan for an alternate apply to the PIC if:

(a) the 1 visibility is less than the alternate minimum; or

(b) the higher of 2 visibilities is less than the alternate minimum.

(3) When a flight cannot use a TTF, the PIC may plan a flight on the current aerodrome forecast until such time as the destination ETA falls within the validity period of a TTF.

Section 8.07 above would be replaced by the following amended section 8.07.

8.07 Three-hourly Aerodrome Forecast (TAF3)

(1) When there is a three-hourly Aerodrome Forecast (TAF3) for the destination aerodrome:

(a) for the first three hours of TAF3 validity, and

(b) whilst the TAF3 service is provided by the meteorological office for the aerodrome;

(i) the 30-minute buffer periods mentioned in subsections 8.06 (3) and (4) do not apply; and

(ii) the probabilities of thunderstorm or the associated severe turbulence, or probabilities of fog, mist, dust or any other phenomenon restricting visibility below the alternate minimum mentioned in subsections 8.03 (1)(b)(ii), do not apply.

NOTE: When a flight has an ETA at an aerodrome with a TAF3 that is outside of the first three hours of the validity of the forecast, the alleviations in subsection 8.07 (1)(b) do not apply.

Appendix D

ERSA Entry Examples

The following examples compare potential sample ERSA entries that have TAF3 with a sample current entry that includes TTF. The examples are selected to illustrate the method for conveying the basic TAF category, the TAF3, and whether H24 or non-H24 the default or expected TAF3 and MO hours.

Note: The times are indicative examples and may not be the final TAF3 times for the locations selected.

MELBOURNE **ELEV 434**
AVFAX CODE 3001
VIC UTC +10 YMML
S 37 40.4 E 144 50.6 VAR 11 DEG E CERT

METEOROLOGICAL INFORMATION PROVIDED

1. TAF CAT A, METAR/SPECI, TTF, AD WRNG, WS WRNG.

Would replace TTF with TAF3 as follows:

METEOROLOGICAL INFORMATION PROVIDED

1. TAF CAT A, METAR/SPECI, TAF3 H24, AD WRNG, WS WRNG.

DARWIN **ELEV 103**
AVFAX CODE 8001
NT UTC +9:30 YPDN
S 12 24.9 E 130 52.6 VAR 3 DEG E JOINT

METEOROLOGICAL INFORMATION PROVIDED

1. TAF CAT A, METAR/SPECI, TTF AVBL 20Z - 12Z, AD WRNG, WS WRNG.

Would replace TTF with TAF3 as follows:

METEOROLOGICAL INFORMATION PROVIDED

1. TAF CAT A, METAR/SPECI, TAF3 H24, AD WRNG, WS WRNG.

TOWNSVILLE/Townsville INTL **ELEV 18**
AVFAX CODE 4402
QLD UTC +10 YBTL
S 19 15.2 E 146 45.9 VAR 7 DEG E JOINT

METEOROLOGICAL INFORMATION PROVIDED

1. TAF CAT A, METAR/SPECI, TTF AVBL during MO HRS, AD WRNG, WS WRNG.

Would replace TTF with TAF3 as follows:

METEOROLOGICAL INFORMATION PROVIDED

1. TAF CAT A, METAR/SPECI, TAF3 AVBL during MO HRS (2200-0300 MON-FRI, OT by NOTAM), AD WRNG, WS WRNG.

PEARCE			**ELEV 150**
AVFAX CODE 6006			
WA		UTC +8	YPEA
S 31 40.1	E 116 00.9	VAR 1 DEG W	MIL

METEOROLOGICAL INFORMATION PROVIDED

1. TAF CAT B, METAR/SPECI, TTF AVBL during MO HRS, AD WRNG.

Would replace TTF with TAF3 as follows:

METEOROLOGICAL INFORMATION PROVIDED

1. TAF CAT B, METAR/SPECI, TAF3 AVBL during MO HRS (0000-1600 MON-THU; 0000-0700 FRI, EXC PH, OT by NOTAM), AD WRNG.