CPL Theory
Meteorology (CMET)

CAE Oxford
Aviation Academy

CMET 8 – Weather Services, Reports & Forecasts

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2. Related Documents

Related Documents	Document Identification

CMET 8 – Weather Services, Reports & Forecasts

Amendments made to this document since the previous version are listed below. All amendments to this document have been made in accordance with CAE OAAM's document management procedure.

Slide	Changes

METEOROLOGICAL SERVICES

Meteorological Services

- What is the most important aspect of understanding weather?
- For pilots, it is:

  - What weather should we expect?

  - How will that weather affect us?

  - What are we going to do about it?

- To help answer these questions, various meteorological services are provided
- Details of these services can be located in:

AIP GEN 3.5 OR VFRG page 2.34-2.62

Meteorological Services

- In general, the meteorological services provided are:

1. Reports

A statement of actual weather conditions observed at a certain location at a certain time

2. Advices

Statements of the condition believed to exist in a specified area but not actually observed by the reporting station. (Usually based on en-route pilot reports)

3. Forecasts

Conditions that have not yet occurred but are expected to occur at a certain location at a certain time

REPORTS

Aerodrome Weather Reports

Refer AIP GEN 3.5-8 para. 4.1
JEPPS: Met AU31

- Are observations of meteorological conditions at aerodromes. The reports are made by approved observers, or through electronic recording devices called Automatic Weather Stations (AWS).

Routine Reports – METAR

Refer AIP GEN 3.5-9 para. 4.2
JEPPS Meteorology AU31

- A Meteorological Aerodrome Report (METAR) is a routine report made by an approved observer at fixed times at a particular aerodrome.
- It is available on request to aircraft in flight.
- Because the METAR is a routine report, it comes out at the appointed time (on the hour or half hour), even if it has nothing special to tell us.

```
METAR YMMB 270000Z AUTO 35018KT 9999NDV // BKN046 13/07 Q1011
RMK RF00.0/000.0
```

Special Reports (SPECI)

Refer AIP GEN 3.5-9 para. 4.3
JEPPS Met AU31

- When the conditions at an aerodrome fluctuate about or are certain specified criteria, the aerodrome report has its name changed from METAR to SPECI.
- As far as the pilot is concerned, nothing but the name has changed. It is true to say that when the report is prefixed SPECI, it is likely to contain information of greater operational significance.
- SPECI reports are issued whenever there is more than 4/8ths cloud (ie, BKN or OVC) at or below the alternate minimum visibility. Additional SPECI may be issued when weather conditions deteriorate further.

```
SPECI YMTG 160200Z AUTO 27016KT 8000 MODERATE RAIN BKN008 OVC012
11/09 Q1001
RMK RF00.4/002.6
```

Special Reports (SPECI)

SPECI will also be issued under the following conditions:

Wind

- When mean direction changes by 30° or more, the mean speed before or after the change being 20KT or more; or
- When the mean speed changes by 10KT or more, the mean speed before or after the change being 30KT or more; or
- When the variation from the mean speed gusts has increased by 10KT or more, the speed before or after the change being 15KT or more

Other Conditions

- When any of the following begins, ends or changes in intensity, thunderstorms, hailstorm, mixed snow and rain, freezing precipitation, drifting snow, dust storms, sandstorm, squall, fog;
- When severe turbulence, severe icing or wind shear is reported by pilot to have begun or ended;
- At the passage of a front
- At the incidence of any other phenomena likely to be significant to the operation of an aircraft;
- When the QNH altimeter setting changes by 2 HPA or more;
- When the temperature changes by 5° C or more.

Special Reports (SPECI) – Runway Visual Range

AIP GEN 3.5 – 29 para. 12.8

- Runway visual range or RVR, is sometime reported in a SPECI at aerodromes which are suitably equip to measure it

- RVR is a measurement of the **maximum** visibility in the direction of Takeoff or landing at the **average eye level of a pilot** at the **touchdown point**

Takeoff and Landing Reports

Refer AIP GEN 3.5-10 para. 4.4
JEPPS Met AU 31

- Are provided at aerodromes where a control tower is established. This service may also be provided by a CA/GRS or UNICOM, details of which can be obtained in ERSA

- Take-off and landing reports are included on ATIS, where available, or passed to aircraft reporting taxiing or inbound.

```
ATIS YMML X   270013
  RWY: 34
  OPR INFO: RWY 27 NOT AVAILABLE
+ WND: 310/15-30.MAX XW 15 KTS
  VIS: GREATER THAN 10 KM
  CLD: SCT030
+ TMP: 14
+ QNH: 1011
  SIGWX: MELBOURNE SIGMET 1 CURRENT
```

Takeoff and Landing Reports

Take-off and landing reports contain, as available, the following:

- Wind velocity, with direction in degrees **magnetic**;
- Altimeter setting;
- Air temperature (if appropriate to the type of aircraft)
- Low cloud, if significant;
- Visibility, if significant, in metres up to and including 5,000M, above this value in KM. A visibility greater than 10KM is given as “VISIBILITY GREATER THAN 10 KM”;
- Additional items, ie, extend of cloud below the main ceiling, disposition and intensity of rain, reported turbulence area, etc;

Takeoff and Landing Reports - CAVOK

CAVOK is used when the following conditions are observed to occur simultaneously:

- Visibility of 10KM or more;
- No cloud below 5,000FT or below the highest minimum sector altitude, whichever is the greater, and no cumulonimbus;
- No precipitation, thunderstorms, shallow fog, low drifting snow or dust devils.
- When the term CAVOK is used, the elements above will not be advised.

Takeoff and Landing Reports - Observations

- The meteorological information provided by Air Traffic Controllers may be obtained by observation of the whole horizon or only the area that will contain the probable flight path of an aircraft.

- Reports based on AWS data will be limited to wind direction and velocity, QNH and temperature, except when a qualified observer at the aerodrome provides visually observed information.

Approved Observer (AIP GEN 3.5 – 10/11 para. 4.5)

- "Approved Observers" are officers of the **BoM, Air Traffic Controllers**, and other persons on the ground approved for the purpose by the BoM and/or CASA.
- For the purpose of observing visibility for take-off and landing at an aerodrome, the **pilot in command shall be deemed an approved observer** for that flight.

Aircraft Weather Reports

Refer to AIP GEN 3.5-11 4.7
JEPPS Met AU 32

- The pilot in command of an aircraft is required to observe and report en route meteorological condition. For this purpose, he/she is deemed an approved observer.
- There are requirements for special AIREP reports concerning MET conditions likely to affect the safety of other aircraft.
- Pilots are encouraged to report observations of MET conditions which they consider will assist in the provision of meteorological services.

Aircraft Weather Reports – Short AIREP

Refer AIP GEN 3.5-26 11.2.1

- Sometimes not all meteorological information goes from the ground to the pilot in flight.
- Various times it is the pilot who tell the 'met man' what's going on.
- General aviation pilots may give short AIREP reports to pass on information that may be valuable to meteorological stations or to other pilots.

Aircraft Weather Reports – Short AIREP

Short AIREP should be provided by other pilots when requested.

ATS should be advised when a pilot encounters:

- Cloud: Unexpected significant variations to amount, base or tops (by reference to QNH);
- Visibility: Reduced due fog, mist, hail, rain, snow or dust, or improvement observed;
- Wind: Significant variation to forecast;
- Other Phenomena: Incidence of severe or moderate turbulence, thunderstorms, moderate or severe icing, hail, line squalls, standing waves or winds of 40KT or more within 2,000FT of ground level.

The report comprises:

- Call sign of the ground station
- Call sign of the aircraft
- Short AIREP
- Position and time; or
- EN ROUTE (departure point) TO (destination)
- Weather report

AERODROME FORECASTS

Terminal Aerodrome Forecast

Refer to AIP GEN 3.5 –4 para. 3.4
JEPPS Met: AU19

- An aerodrome forecast (TAF) is a statement of meteorological conditions expected for a specified period in the airspace within a radius of **5 nautical miles** from **AD reference point**.

- All of the aerodromes in Australia have been organised into categories according to how busy they are.

```
MOORABBIN (YMMB)
    TAF AMD YMMB 152320Z 1600/1612
    34018G30KT CAVOK
    FM160400 29016G28KT 9999 LIGHT RAIN SCT040 BKN070
    FM160900 26014KT 9999 LIGHT RAIN SCT020 BKN040
    INTER 1606/1609 5000 MODERATE RAIN BKN025
    TEMPO 1609/1612 4000 MODERATE RAIN BKN020
    RMK FM160000 MOD TURB BLW 5000FT TILL161000
    T 20 22 16 13 Q 1000 998 1000 1003

    METAR YMMB 160200Z AUTO 34016KT 9999 // NCD 22/10 Q1000
    RMK RF00.0/000.0
```

Terminal Aerodrome Forecast

Refer to AIP GEN 3.5- 4 **AIP GEN 3.5 – 39 para. 16 contains a list of aerodromes with TAF's and their categories**

Category	Aerodrome Type	TAF Service
A	**International**	Issued 6 hourly, valid for 24 or 30 hours. Commencement times 00, 06, 12, 18 UTC
B	**Large** Pax > 150,000 or Movements > 75,000	Issued 6 hourly, valid for 12 or 18 hours. Commencement times 00, 06, 12, 18 UTC
C	**Medium** Pax > 50,000 or Movements > 10,000	Issued 6 hourly, typically valid for 12 hours. Commencement times 02, 08, 14 and or 20 UTC, except in WA (where its 2 hours later)
D	**Small** AD's meeting pax and movement thresholds or other operational criteria	Issued 6 or 12 hourly, typically valid for up to 12 hours. Commencement times typically 20 and/or, 02 UTC, except in WA (where its 2 hours later)

Terminal Aerodrome Forecast – Validity

- A pilot in command must ensure that the forecast over the period of the flight and that the aerodrome forecasts for the destination and alternate aerodromes, to be nominated on the flight plan, are valid for a period of **not less than 30 minutes before and 60 minutes after the planned ETA**.

```
MANGALORE (YMNG)
    TAF AMD YMNG 261813Z 2618/2708
    36008KT 9999 FEW010 BKN025
    FM270000 33014KT 9999 SCT035
    RMK
    T 04 07 11 14 Q 1014 1014 1014 1012

    METAR YMNG 270000Z AUTO 04014KT 9999NDV // NCD 10/06 Q1015
    RMK RF00.0/000.0
```

Trend Type Forecast (TTF)

Refer to AIP GEN 3.5-5 para. 3.6
JEPPS Met: AU 21

- At some category one aerodromes, the TAF service is supplemented by the issue of short term forecasts, with a **validity of only 3 hours**, attached to the end of the routine METARs or SPECIs. These messages are prefixed "TTF/METAR or TTF/SPECI.

```
TTF SPECI YMML 270004Z 33016G28KT 9999 SCT030 13/04 Q1011
RMK RF00.0/000.0 HZ
FM0004 MOD TURB BLW 5000FT
```

Trend Type Forecast (TTF)

- The TTF **supersedes the TAF** for its validity period of **3 hours** commencing at the time of the observation and is the current forecast for pilots of aircraft whose arrival time falls within the three hour period.

- For aerodromes where the TTF service is not a 24 hour service, or the meteorological watch ceases, the **TAF will supersede the remaining portion of the TTF validity for which a meteorological watch is not available**.

- The time at which the TAF supersedes the TTF will be included in the remarks section of the TTF.

- **NO 30 min buffer either side of bad weather in a TTF (AIP ENR 1.1 – 88 59.2.10)**

- NOTE: For pilots whose arrival time falls **outside the three-hour period**, the **TAF** is the current forecast.

- Where applicable, TTF replaces a TAF and present weather in Volmet broadcast.

Provisional Forecast (PROV)

- Forecasts may be prefixed PROV (to denote provisional) when considered likely to be deficient in accuracy because origination was by a forecasting office issuing information for a location or area not under its authority.
- *Note: The Director of Meteorology may, however, authorise the issue of provisional TAF in additional circumstances.*
- Provisional aerodrome forecasts will be confirmed or amended as soon as possible.
- MUST have an alternate

Aerodrome Forecast

Cloud Height Datum

GEN 3.5 – 31 para. 12.12
JEPPS Met: AU 22

- In aerodrome and trend forecasts, cloud heights are given above aerodrome elevations.

- In other forecasts, heights are expressed:
  - As a flight level; or
  - With reference to mean sea level

Forecast Amendments

- Amendments to forecasts are issued as necessary when changes are expected during the period of validity of a given forecast.

Aerodrome Forecast - Variations

INTER / TEMPO Periods, FM & BCMG

AIP GEN 3.5-7 para 3.7.5 and
ENR 1.1 –87, para 59.2
JEPPS Met: AU 22

- INTER and TEMPO are used to indicate significant variation of a **Intermittent** or **Temporary** nature in aerodrome and landing forecasts:

- **INTER:** is used to indicate changes expected to occur frequently for periods of less than 30 minutes duration, the conditions fluctuating almost constantly, between the times specified in the forecast.

- **TEMPO:** is used to indicated the change in prevailing conditions expected to last for a period of less than 60 minutes in each instance.

Aerodrome Forecast - Variations

- A change is different to a variation in that is indicates that the weather conditions described after the change will REPLACE those conditions described before the change.

Refer to AIP GEN 3.5-7 para. 3.7.6

From Periods (FM)

- **FM** is used in forecasts to indicate **rapid changes** which are significantly different to preceding information in one or more of the elements:
  - *Wind direction and/or speed*
  - *Visibility*
  - *Weather*
  - *Cloud*.

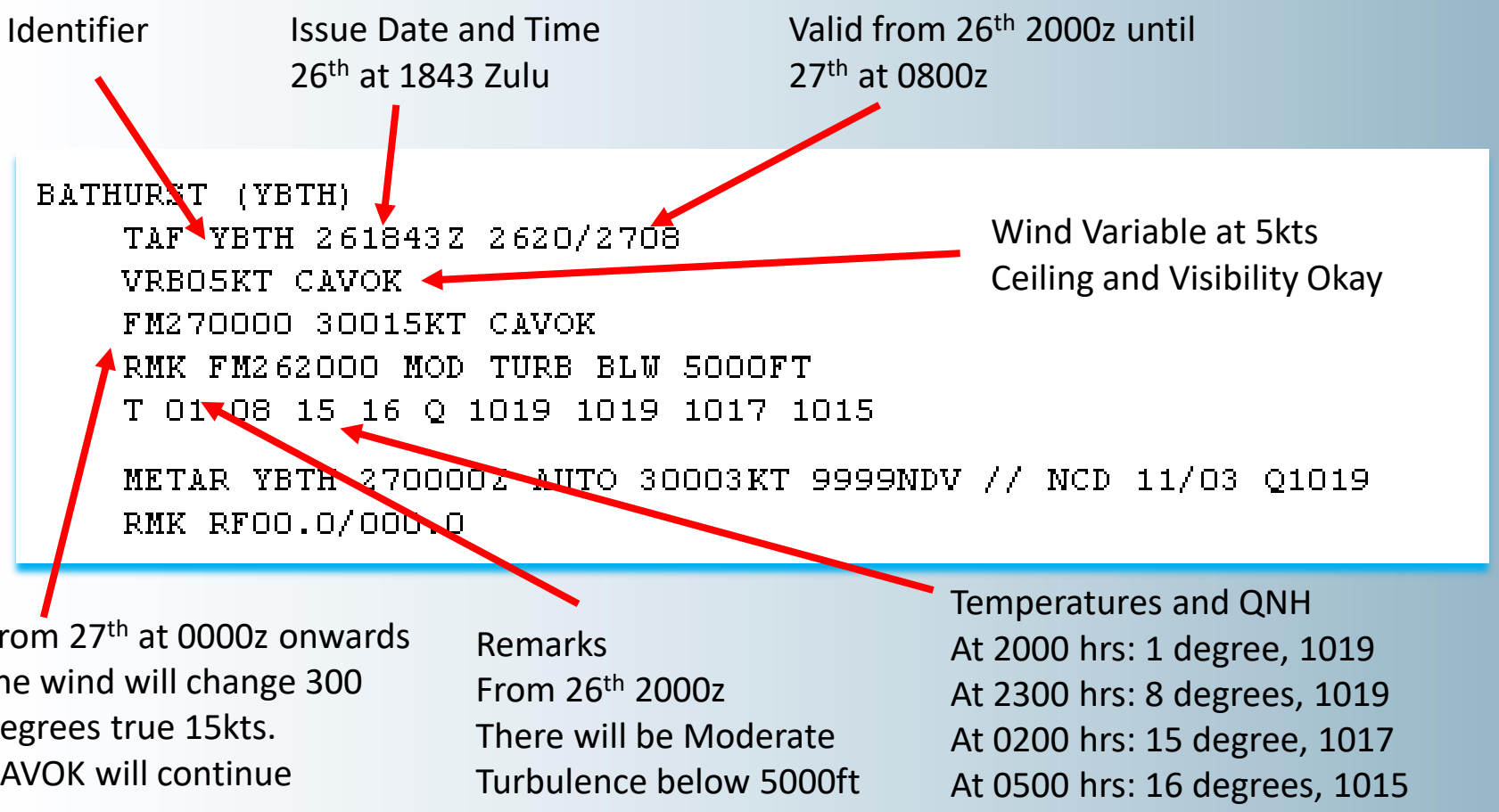
Time format is FM dd/hh/mm

Becoming (BECMG)

- BECMG is used when the changes are expected to develop at **a regular or irregular rate during the specified time period** and is given in the format BECMG ddhh/ddhh

DECODING TAF's

Decoding TAF's



Decoding TAF's

Identifier
YFLI

Issue Date and Time
26th at 1842 Zulu

Valid from 26th 1900z until
27th at 0800z

```
FLINDERS ISLAND (YFLI)
    TAF AMD YFLI 261842Z 2619/2708
    29030G40KT 7000 LIGHT RAIN SCT010 BKN020
    TEMPO 2619/2702 4000 RAIN BKN010
    INTER 2702/2708 4000 SHOWERS OF RAIN BKN015
    RMK FM261900 MOD TURB BLW 5000FT
    T 12 13 14 14 Q 1003 1003 1004 1003

    SPECI YFLI 270001Z AUTO 30025G36KT 8000NDV // SCT027 OVC037 13/09
    Q1004
    RMK RF00.0/000.0
```

Wind 290/30kt gusting 40kt
7km Visibility in Light Rain
Cloud Scattered 1000ft AGL
Broken Cloud 2000ft AGL

Temperatures and QNH
At 1900 hrs: 12 degrees, 1003Hpa
At 2200 hrs: 13 degrees, 1003Hpa
At 0100 hrs: 14 degrees, 1004Hpa
At 0400 hrs: 14 degrees, 1003Hpa

TEMPO Period (30 - 60 mins)
Between 26th 1900z and 27th 0200z
Visibility 4km in Rain
Broken Cloud 1000ft AGL

INTER Period (up to 30min)
Between 27th at 0200z and 27th at 0800z
Visibility 4km in Showers of Rain
Broken Cloud 1500ft AGL

Remarks: From 26th 1900z Moderate Turbulence below 5000ft

Decoding TAF's - SPECI

Identifier
YWLP

Issue Date and Time
27th at 0000 Zulu

Automatic Weather Information
(It came from a machine)

```
WILSONS PROMONTORY (YWLP)
    SPECI YWLP 270000Z AUTO 28027G46KT //// // ////// 12/06 Q1004
    RMK RF00.0/000.0
```

Wind observed 280degrees 27kts gusting to 46kts

Temperature 12 degrees

Dew Point Temperature 6 degrees

No Visibility Information available from this source

No weather information available form this source

No Cloud information available form this source

QNH 1004

Remarks: Rainfall last 10 minutes nil;
Rainfall since 9am local nil

ALTERNATE REQUIREMENTS

Alternate Requirements

- VFR Aircraft operating **beyond 50 NM from the departure** point by day, and **all aircraft operating at night**, are required to carry sufficient fuel to allow for the possibility of arriving in the vicinity of the destination aerodrome and then finding it impossible to land due to weather.

- Sufficient fuel must be carried to proceed to a suitable alternate aerodrome, with all normal reserves, or in some cases to hold for a specified period of time, depending on the conditions described in the aerodrome forecast.

- 30 min buffers must be applied to either side of poor weather which requires alternate or holding

The conditions under which this is necessary are outlined in
AIP ENR 1.1-86 59.1 – 59.4

Alternate Requirements - Cloud

- **More than half the sky** covered in cloud **below 1500ft** above the aerodrome elevation
- For any one cloud layer more than half is indicated by **BKN or OVC**.
- However, if two or more layers exists below 1500 feet AGL, the following formula applies.

  FEW plus SCT = More than half the sky
  SCT plus SCT = More than half the sky
  FEW plus FEW is considered less than half the sky

Alternate Requirements – Visibility

- Less than 8km (or forecast probability of less than 8 km)

Alternate Requirements – Probability

Forecast is endorsed with a "Percentage Probability":

- If the forecast is endorsed with a percentage of probability of fog, mist, dust or any other phenomenon restricting visibility below the alternate minimum, an **Alternate is required.**

```
GRAFTON (YGFN)
    TAF YGFN 261740Z 2620/2708
    VRB03KT 9999 HAZE SCT002
    FM262200 VRB03KT CAVOK
    FM270300 03010KT CAVOK
    PROB30 2620/2622 0100 FOG
    RMK
    T 04 14 22 25 Q 1019 1020 1018 1015

    METAR YGFN 270000Z AUTO 24002KT 9999NDV // NCD 18/04 Q1020
    RMK RF00.0/000.0
```

Alternate Requirements – Wind

- **Cross Wind and Downwind Component:**

- Above maximum **crosswind and downwind (tailwind)** component approved for the aircraft type or pilot capability.

- Wind gusts must be considered.

- Note:
  C172S limitations:
  - Max demonstrated X-wind = 15kts
  - Max tailwind = 10kts

Alternate Requirements – Thunderstorms

- If thunderstorms, (TS) are forecast, an alternate or appropriate holding is required no matter what the height or amount of the associated cloud base may be.
- Note that thunderstorms are a **weather phenomenon**, not clouds.
- The associated cloud is Cumulonimbus (CB). However the **presence of CB alone does not indicate Thunderstorms**, these are **indicated by the use of TS** under weather.

Alternate Requirements – Provisional

Provisional Forecast

- When an aerodrome forecast is “provisional’, the pilot in command must make provision for a suitable alternate that has a firm forecast.

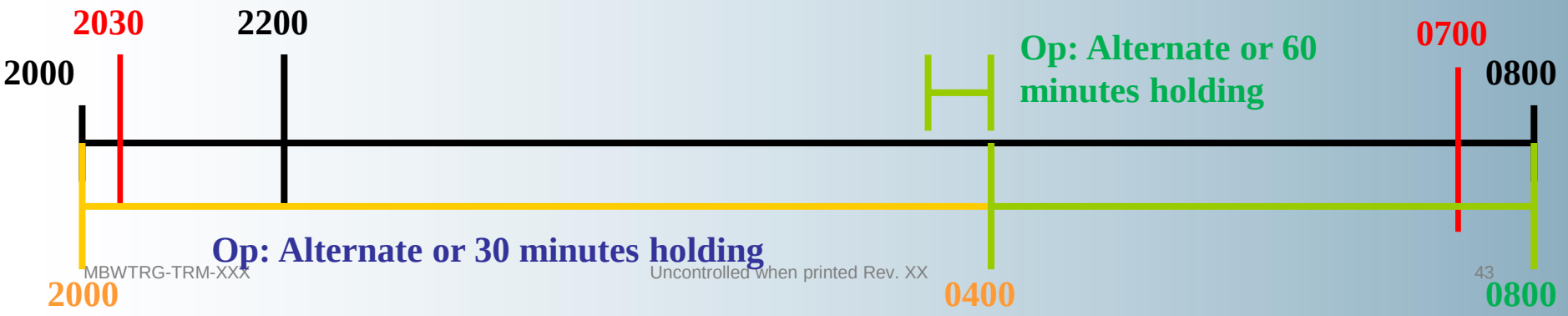
OPERATIONAL EXAMPLES

Operational examples

ETA 27 0600

```
PORTLAND (YPOD)
    TAF YPOD 261824Z 2620/2708
    29019G29KT 9999 LIGHT SHOWERS OF RAIN SCT025 BKN040
    FM262200 29025G38KT 9999 LIGHT SHOWERS OF RAIN SCT025 BKN040
    INTER 2620/2704 4000 SHOWERS OF RAIN BKN012
    TEMPO 2704/2708 4000 SHOWERS OF RAIN BKN012
    RMK FM262000 MOD/SEV TURB BLW 5000FT
    T 11 12 14 14 Q 1007 1006 1006 1005

    SPECI YPOD 270019Z AUTO 31016G26KT 9999NDV // SCT018 SCT041 BKN047
    13/10 Q1007
    RMK RF00.0/000.0
```

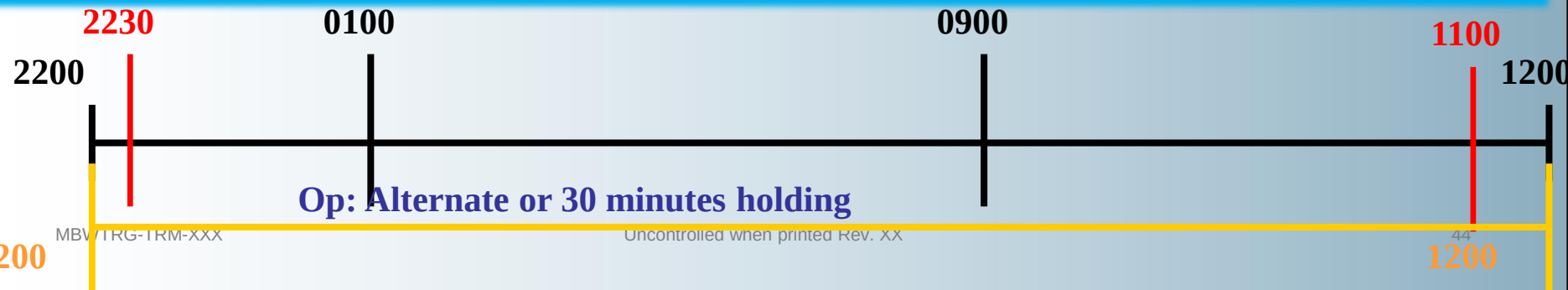


Operational examples

ETA 270200

```
MOUNT GAMBIER (YMTG)
     TAF AMD YMTG 262301Z 2622/2712
     32015KT 9999 LIGHT SHOWERS OF RAIN SCT030 BKN045
     FM270100 31020G33KT 9999 LIGHT SHOWERS OF RAIN SCT030 BKN045
     FM270900 30012KT 9999 LIGHT SHOWERS OF RAIN SCT025 BKN040
     INTER 2622/2712 5000 SHOWERS OF RAIN SCT015 BKN025
     RMK FM262200 MOD TURB BLW 5000FT TILL271100
     T 11 13 15 13 Q 1009 1009 1008 1008

     SPECI YMTG 2700000Z 35009KT 5000 LIGHT SHOWERS OF RAIN AND DRIZZLE
     FEW006 SCT012 BKN020 10/10
     Q1009
     RMK RF00.0/000.4
```

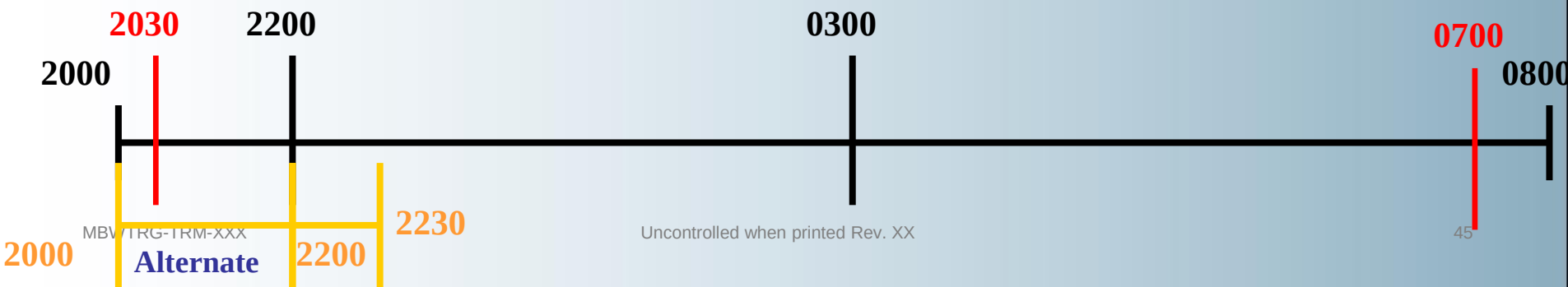


Operational examples

ETA 262215 **ETA 262245**

```
KEMPSEY (YKMP)
    TAF YKMP 261736Z 2620/2708
    VRB03KT 9999 HAZE FEW001
    FM262200 VRB03KT CAVOK
    FM270300 03010KT CAVOK
    PROB30 2620/2622 4000 MIST
    RMK
    T 04 14 22 23 Q 1018 1019 1017 1014

    METAR YKMP 270000Z AUTO 33004KT //// // ////// 20/05 Q1019
    RMK RF00.0/000.0
```



GAF / GPWT

Operations below FL100

6 hour forecast period per GAF

All cloud, wind and freezing level heights (except METAR) are at AMSL

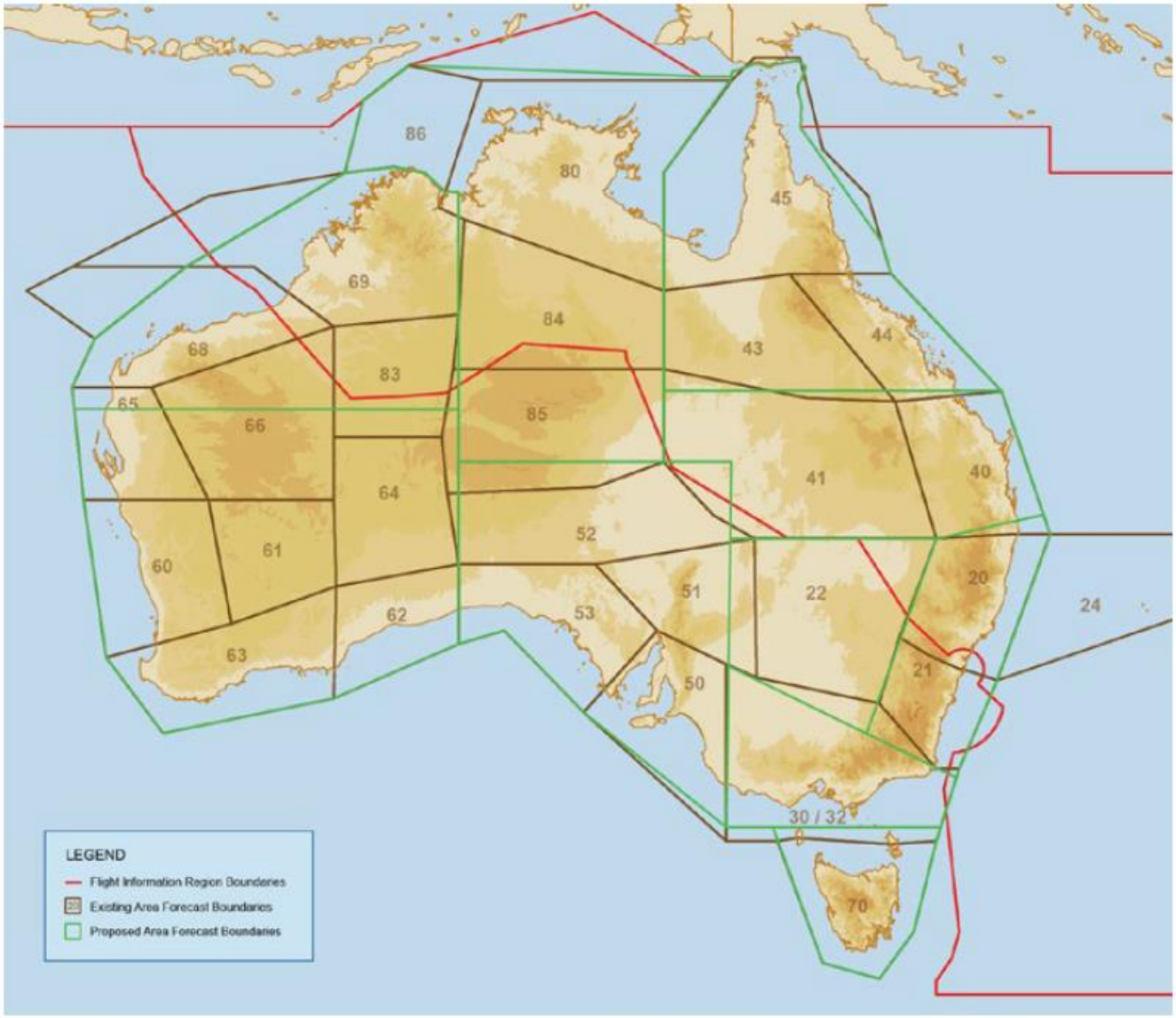
CMET 8 – Weather Services, Reports & Forecasts

Graphical Area Forecasts (GAFs)

- The Bureau of Meteorology will be changed the format of Area Forecasts (ARFORs) from text based to graphical on **9 November 2017**.
- The new format is known as a Graphical Area Forecast (GAF).
- The GAF will be a combination of graphical and textual information. The graphic will be divided into areas that share common weather characteristics which are detailed in an associated table.
- There are significant changes noticeable to users of ARFORs. These include changes to:
    - The number of forecast areas (10 GAFs in total for Australia, compared to 28 ARFORs) and therefore boundaries of each area;
    - validity periods;
    - the method of advising significant weather deterioration;
    - wind and temperature information, which will be presented in a separate Grid Point Wind and Temperature (GPWT)

CMET 8 – Weather Services, Reports & Forecasts

NSW-E, NSW-W, NT, QLD-N, QLD-S, SA, TAS, VIC, WA-S, WA-N,



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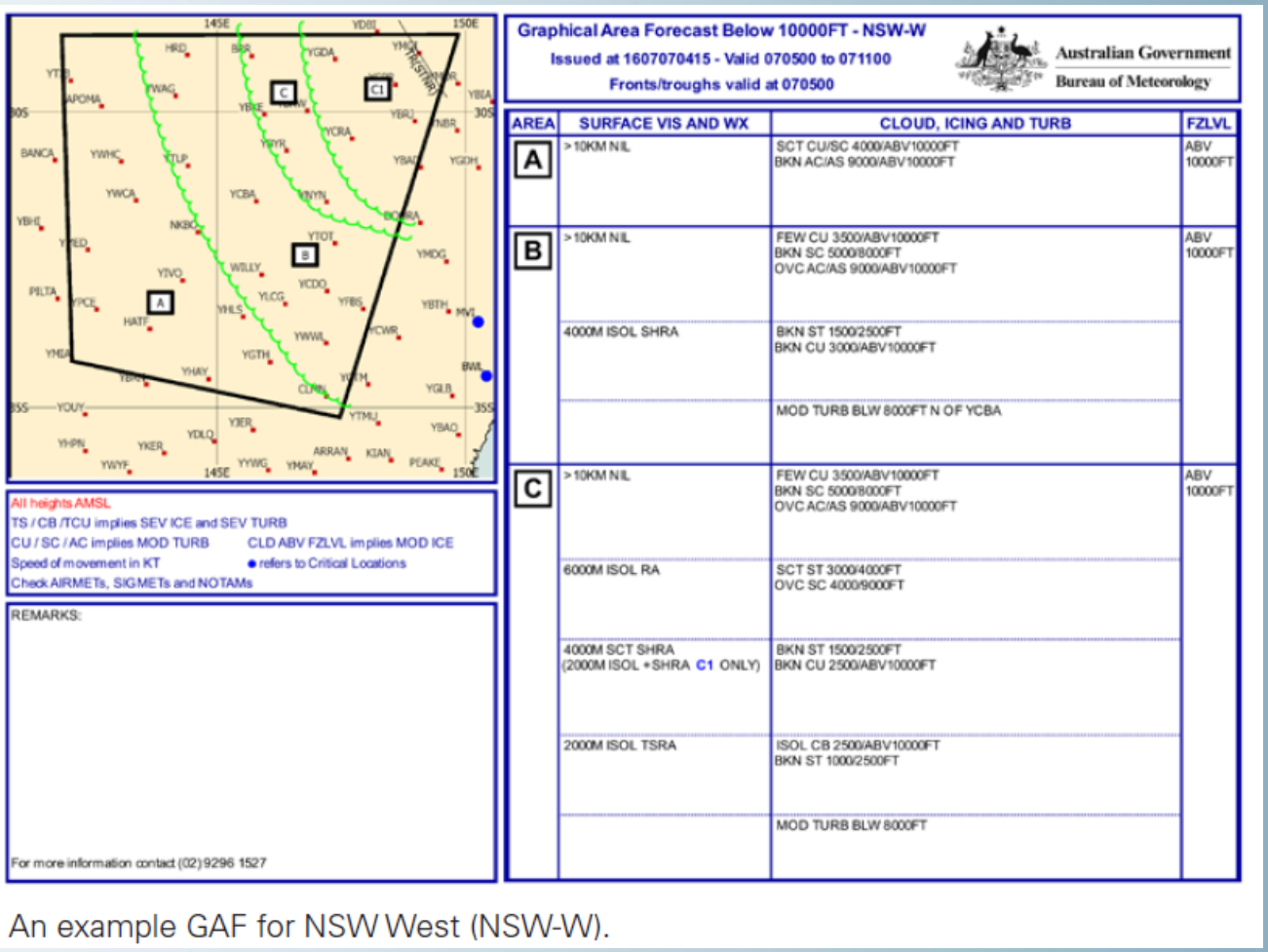
Graphical Area Forecast

Graphical Area Forecasts are a combination of graphical and text information. The GAF is broken up into different sub-areas that share common characteristics of weather, visibility or cloud that change in a similar fashion during the period of the forecast. GAF is divided into separate sections to provide information on weather and visibility, cloud and freezing level for different sub-areas within a GAF during the period of the forecast.



AREA	SURFACE VIS AND WX	CLOUD, ICING AND TURB	FZLVL
A	>10KM NIL	SCT CU/SC 4000/ABV10000FT BKN AC/AS 9000/ABV10000FT	ABV 10000FT
B	>10KM NIL	FEW CU 3500/ABV10000FT BKN SC 5000/8000FT OVC AC/AS 9000/ABV10000FT	ABV 10000FT
	4000M ISOL SHRA	BKN ST 1500/2500FT BKN CU 3000/ABV10000FT	
		MOD TURB BLW 8000FT N OF YCBA	
C	>10KM NIL	FEW CU 3500/ABV10000FT BKN SC 5000/8000FT OVC AC/AS 9000/ABV10000FT	ABV 10000FT
	6000M ISOL RA	SCT ST 3000/4000FT OVC SC 4000/9000FT	
	4000M SCT SHRA (2000M ISOL +SHRA C1 ONLY)	BKN ST 1500/2500FT BKN CU 2500/ABV10000FT	
	2000M ISOL TSRA	ISOL CB 2500/ABV10000FT BKN ST 1000/2500FT	
		MOD TURB BLW 8000FT	

An example GAF for NSW West (NSW-W).

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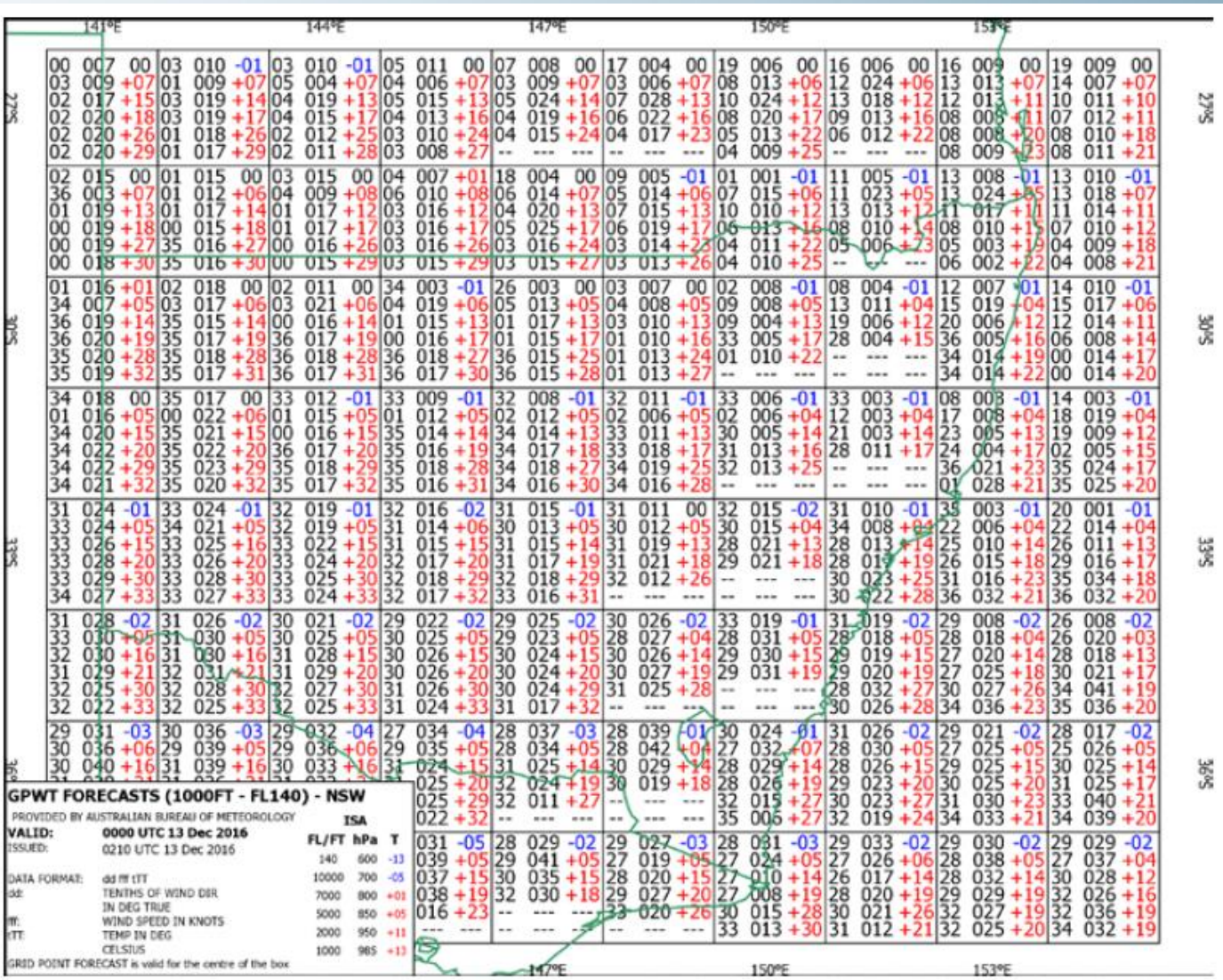
Grid Point Wind and Temperature chart

Graphical Area Forecasts are not proposed to include low-level winds. Low-level winds and temperatures will be provided in a Grid Point Wind and Temperature (GPWT) format as produced for mid and high-level flights. The low-level GPWT chart will provide wind and temperature information for vertical levels of 1000FT, 2000FT, 5000FT, 7000FT, 10,000FT and 14,000FT.



An example of GPWT chart for NSW.

ADVICES

Advices

- Sometimes it becomes obvious that conditions being encountered by pilots en-route are significantly different form those that are forecast.
- When operationally significant information which is not in the current forecast needs to be passed to pilots en-route, or in the process of flight planning, a meteorological *advice* is issued.
- These advices are often the result of pilots en-route transmitting an AIREP.
- Depending on the severity of the phenomena being described, the advice will be called a SIGMET transmitted to pilots in flight as required, or are made available along with the forecast in the pre-flight briefing.

Advices - SIGMET

AIP GEN 3.5-11 para. 5.1
JEPPS Met AU 32

SIGMET information concerns the occurrence or expected occurrence, in an area over which area meteorological watch is being maintained, of one or more of the following:

➢ Below FL450:

- Active thunderstorm area;
- Tropical revolving storm;
- Severe line squall;
- Heavy hail;
- Severe turbulence;
- Severe icing;
- Marked mountain waves;
- Widespread sandstorms or dust storms;
- Volcanic ash cloud;

➢ Above FL450

- Moderate or severe turbulence
- Cumulonimbus clouds;
- Hail.

When the conditions described are severe and/or widespread a SIGMET is issued.

Advices - AIRMET

AIP GEN 3.5-18 para. 5.3
JEPPS Met AU 36

- When the conditions described are operationally significant, but **moderate** and AIRMET is issued.

- AIRMET advices are limited to phenomena occurring below FL200.

- Hail;
- Moderate icing;
- Moderate turbulence, when this is expected to occur in an area, or at a time, where or when it is not a normal seasonal feature;
- The initial onset of phenomena producing extensive areas of visibility of less than 8km, or of cloud coverage of more than 4/8ths below 1,500ft above ground level;
- Winds of 40kt or more within 2,000ft above ground level;

- When SIGMET phenomena only are concerned, a separate AIRMET advice is not issued.

BROADCASTS

Broadcasts - ATIS

AIP GEN 3.3 - 5 para 2.7

Moorabbin ATIS 120.9
Take-off and Landing Reports are provided at aerodromes where a control tower is established.

Take-off and landing reports contain, as available, the following:

- wind velocity, with direction in degrees magnetic;
- altimeter setting;
- air temperature (if appropriate to the type of aircraft);
- low cloud, if significant;
- visibility, if significant – in metres up to and including 5,000M, above this value in KM. A visibility greater than 10KM is given “VISIBILITY GREATER THAN 10KM”;
- additional items, ie, extent of cloud below the main ceiling, disposition and intensity of rain, reported turbulence area, etc;
- CAVOK
- no cumulonimbus;
- no precipitation, thunderstorm, shallow fog, low drifting snow or dust devils. When the term CAVOK is used, the elements d., e. and f. will not be advised.

Broadcasts - VOLMET

AIP GEN 3.5-22 para. 7.3
JEPPS Met: AU 38

- Broadcast on HF frequencies on the hour and half hour at most international airports.

- HF is a long range frequency and it allows aircraft that are beyond the range of VHF to have access to aerodrome meteorological information.

- VOLMET broadcasts are prefixed by the designator 'VOLMET' and may contain:
  - trend-type forecasts,
  - aerodrome forecasts, and
  - advice regarding the availability of SIGMET.
  - Individual VOLMET broadcasts will not exceed five (5) minutes duration. Cloud types, cumulonimbus, will not be included in VOLMET broadcasts, and temperature and QNH information will not be included in aerodrome forecasts.

Broadcasts – AERIS (Automatic En-Route Information Service)

AIP GEN 3.5 – 22 para. 7.2

- Continuous METAR broadcasts on a network of VHF transmitters around Australia
- Details are provided in the ERSA GEN