

# Encoding TAFs

## Terminal Aerodrome Forecast (TAF)

Terminal forecasts for the world follow an internationally accepted format. The TAFs are issued four times daily for 24 hour periods beginning at 00Z, 06Z, 12Z, and 18Z. In the United States, TAFs are issued three times each day at roughly 08-10Z, 15-17Z and 22-00Z.

Each TAF is a series of time segment forecasts. The number of time segments varies from forecast to forecast, depending upon the expected weather conditions. A new time segment signifies a change in the weather conditions that is significant to aviation operations. These conditions are related to ceiling heights, visibilities, precipitation and other obstructions to visibility, and wind speed and direction.

### The generic format for a TAF is:

**TAF** CCCC YYGGggZ YYHHHH dddff(f)GffKT VVVVSM [ww NNNhhh] [Wshhh/dddffKT] [TTTTT xxxx] repeated as needed

**Where:** CCCC is the ICAO identifier

YYGGggZ is the issue time

YYHHHH is the start and end time of the forecast

dddff(f)GffKT is the wind direction and speed/gusts in knots

VVVVSM is the visibility in statute miles (or M for meters)

ww is significant weather [if present]

NNN is the cloud coverage [if present]

hhh is the cloud height [if present]

TTTTT is the indicator for a change in condition [if needed]

xxxx is the start and end time of the change in [if needed] conditions. This group is followed by the group in brackets giving the change in the wind, visibility, weather and cloud types.

The format for decoding TAFs is therefore as follows:

- A. Station identifier
- B. Issue time of forecast
- C. Valid time of forecast
- D. Wind direction and speed (knots)
- E. Visibility in statute miles
- F. Significant weather (from list below)
- G. Cloud coverage and height
- H. Non-convective low level wind shear
- I. Forecast Change Indicators
- J. Expected change in prevailing conditions

### **Expanding on these items:**

A. Station identifiers are all ICAO identifiers.

B. Issue time is a six-digit group ending with Z. The first two digits represent the date, while the last four numbers reflect the hour and minute, using a 24-hour clock. The time is in UTC.

C. Valid time is always a 24-hour period with the first two numbers the start time, and the second two numbers the ending time of the forecast. Thus, 1212 means a forecast valid from 12Z today to 12Z tomorrow.

D. Wind is a five (or six) digit group with the first three numbers the direction in degrees and the last two (three) numbers the speed in knots. When wind gusts are expected, the gusts are listed with a G after the average wind speed forecast. For example, 33020G35KT means wind direction from 330 degrees with an average speed of 20 kts and gusts to 35 kts.

E. Visibility is in statute miles. Any visibility more than 6 miles (10 km) is coded as P6SM. International TAF's will list the visibility in meters. An easy way to convert meters into miles is to divide by 1600, the result being in miles. For example, a visibility of 300 meters is 300/1600 or 3/16 of a mile. A visibility of 2600 meters is 2600/1600 miles which is 1 and 1000/1600 miles, or 1 5/8 miles.

F. Significant weather is taken from a listing of Qualifiers and Weather Phenomena. Combinations from this list are possible.

### **Qualifier for Intensity:**

- Light

Moderate (no sign)

+ heavy

VC In the vicinity (0SM to 10 SM for precipitation, and 5SM to 10 SM for non-precipitation)

### Descriptors:

MI	Shallow
PR	Partial
BC	Patches
DR	Low Drifting
BL	Blowing
SH	Shower(s)
TS	Thunderstorm
FZ	Freezing

### Precipitation:

DZ	Drizzle
RA	Rain
SN	Snow
SG	Snow Grains
IC	Ice Crystals
PE	Ice Pellets
GR	Hail
GS	Small hail/Snow pellets
UP	Unknown precipitation

### Obscuration:

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BR	Mist (visibility 5/8 statute miles or more)
FG	Fog (visibility 1/2 mile or less)
FU	Smoke
VA	Volcanic Ash
DU	Widespread Dust
SA	Sand
HZ	Haze
PY	Spray

### Other phenomena:

PO	Well developed Dust/Sand Whirls
SQ	Squalls
FC	Funnel Cloud, (+FC for Tornado, or Waterspout)
SS	Sandstorm
DS	Duststorm

G. Cloud coverage and height are listed if they are expected to occur during the forecast period. The first three characters relate to the amount of the sky that is covered by clouds. The following codes and coverage amounts, in eighths of the sky are the same as used in METAR reports.

SKC or CLR 0/8

FEW >0 - 2/8

SCT 3/8 - 4/8

BKN 5/8 - <8/8

OVC 8/8

VV (vertical vsby) 8/8

The height of the clouds, in hundreds of feet, immediately follows the code for cloud amount.

H. Non-convective low level wind shear will appear in the TAF when low level wind

shear (up to 2000 feet above the ground), is expected. In Canadian TAF's, this group will appear immediately after the wind, while it is not given for other international locations.

**The group is coded as follows:**

WShhh/dddffKT

where WS is the indicator for the LLWS group

hhh is the forecast height of the shear, in hundreds of feet AGL

ddd is the forecast wind direction above the shear

ff is the forecast wind speed in knots above the shear

KT is the units indicator for knots

**I. Forecast Change Indicators including:**

FMxxxx meaning FroM to indicate a significant change from prevailing conditions. First 2-digits are the beginning hour of the period and the last two are the minutes.

TEMPO meaning TEMPORary, with changes expected for <1 hour

xxxx and in total, < half of the 2-digit beginning and 2-digit ending period.

PROBpp meaning PROBability and 2-digit percent chance of occurrence during 2-digit hour beginning and 2-digit ending time period.

BECMG BECoMinG meaning a change expected during the 2 digit beginning and 2-digit ending time period.

J. After a forecast change indicator, there will be a listing of the weather elements that are expected to change during that period. Only the elements that are expected to change are listed, otherwise any remaining elements are expected to be the same as the previous listing.

**Other abbreviations used in some international TAFs**

WX NIL..the end of thunderstorms or freezing precipitation

CAVOK...no clouds under 5000 ft, no thunder, no precipitation and visibility 6 miles or greater

NOSIG...no elements are expected to change in such a way as to require a change to be indicated.

Example:

```
KSEA 121733Z 121818 16006KT P6SM SCT035 BKN045 OVC060  
TEMPO 1821 4SM -SHRA BR BKN030  
FM2100 20006KT P6SM -RA BKN035 OVC060  
TEMPO 2202 5SM RA BR BKN025  
FM0400 19006KT P6SM -SHRA BKN022 OVC045=
```

The above forecast for Seattle was issued on the 12th of the month at 1733Z. The valid period runs from 18Z on the 12th to 18Z on the 13th.

At 18Z, the wind is from 160 degrees at 6 knots, the visibility is greater than 6 statute miles, there is a scattered cloud layer at 3500 feet, a broken layer at 4500 feet and an overcast layer at 6000 feet.

Temporarily between 18Z and 21Z, the visibility will drop to 4 statute miles in light rain showers and mist with a broken cloud layer at 3000 feet. From 2100Z, the wind will be from 210 degrees at 6 knots, the visibility will be greater than 6 statute miles in light rain, with a broken cloud layer at 3500 feet and an overcast layer at 6000 feet.

Temporarily between 22Z and 02Z, the visibility will drop to 5 statute miles in moderate rain and mist with a broken layer at 2500 feet.

From 0400Z the wind will be from 190 degrees at 6 knots, the visibility will be greater than 6 statute miles, with light rain showers. There will be a broken layer at 2200 feet and an overcast layer at 4500 feet.