

How to read a METAR

A METAR will look something like this:

PHNY 202124Z AUTO 27009KT 1 1/4SM BR BKN016 BKN038 22/21 A3018 RMK AO2

Let's decipher what each bit of the METAR means.

PHNY

The first part of the METAR is the airport identifier for the facility which produced the METAR. In this case, this is Lanai Airport in Hawaii.

202124Z

Next comes the time and date of issue. The first two digits correspond to the date of the month, and the last 4 digits correspond to the time of issue (in Zulu time). In the example, the METAR was issued on the 20th of the month at 21:24 Zulu time.

AUTO

This part indicates that the METAR was generated automatically.

27009KT

Next comes the wind information. The first 3 digits represent the heading from which the wind is blowing, and the next digits indicate speed in knots. In this case, the wind is coming from a heading of 270 relative to magnetic north, and the speed is 9 knots. Some other wind-related notation you might see:

- 27009G15KT – the G indicates gusting. In this case, the wind comes from 270 at 9 knots, and gusts to 15 knots.
- VRB09KT – the VRB indicates the wind direction is variable; the wind speed is 9 knots.

1 1/4SM

This section of the METAR indicates visibility in statute miles. In this case, visibility is 1 ¼ statute miles. Note that the range is typically limited to 10 statute miles, so a report with 10 statute mile visibility could well indicate a situation with more than 10 statute miles of visibility. An M indicates that the visibility is less than the value shown.

BR

This section describes elements (i.e. precipitation, smoke, etc.) that exist at the report facility. In the example, mist exists in the vicinity. Here is a list of the possible elements that could be reported:

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|---------------------|----------------------|
| • FG – fog | • SN – snow |
| • BR – mist | • SG – snow grains |
| • FU – smoke | • GR – hail |
| • HZ – haze | • GS – small hail |
| • PY – spray | • PE – ice pellets |
| • SA – sand | • IC – ice crystals |
| • DU – dust | • BC – patches |
| • VA – volcanic ash | • FZ – freezing |
| • RA – rain | • SH – showers |
| • DZ – drizzle | • TS – thunderstorms |

BKN016 BKN038

This part of the METAR describes the sky condition. This amounts to an identification of the clouds that exist in the area and what altitude they are at. There will be a 3-letter cloud type identifier and the altitude of the base of these clouds in hundreds of feet above the field.

There are three cloud types that count as a ceiling:

- OVC – overcast clouds.
- BKN – broken clouds.
- VV – vertical visibility. This isn't a cloud type, but still counts as a ceiling.

Cloud types that do not count as a ceiling:

- SCT – scattered clouds.
- SKT – same as above.
- CLR – sky clear of clouds below the range of the sensor (typically 6000 feet above the field).
- SKC – same as above.
- FEW – few clouds.

So, in the example, broken clouds exist at 1600 feet and 3800 feet above the field.

22/21

This section indicates the temperature and dew point in degrees Celsius. The temperature is first, and dew point second. An M indicates a negative value. In the example, the temperature is 22 and the dewpoint is 21 degrees Celsius.

A3018

This describes the altimeter setting. It is used to calibrate altimeters on manned aircraft. This indicates what the atmospheric pressure, in inches of mercury, would be if the present atmospheric conditions existed at sea level. In the example, 30.18 in Hg would be the atmospheric pressure at sea level under the present atmospheric conditions.

RMK AO2

Finally come the remarks. In this case, AO2 describes the type of sensor that generated the data. In this case, the station has a precipitation discriminator.

Test yourself: in the METAR below, can you understand the reasoning that leads to the following information?

KLMO 131556Z AUTO 13007G15KT M1/4SM HZ VV009 10/M01 A2992 RMK AO2

Airport: Longmont Vance Brand Airport
Maximum wind speed: 15 knots
Elements: haze
Temperature: 10 degrees C

Time of issue: 15:56 Zulu
Visibility: less than ¼ statute mile
Ceiling: at 900 feet above the field
Dew point: -1 degree C

