Fujairah Meteorological Office

METAR Tutorial

- METAR is the name of the code for an aviation routine weather report.
- A METAR is issued at hourly or half-hourly intervals.
- SPECI is the name of the code for an aviation special weather report.
- A SPECI can be issued at any time when certain criteria are met.
- Both METAR and SPECI have the same code form and both may have a TREND Forecast appended.
- TREND forecast is a forecast covering a period of 2hours from the time of observation.
- METAR or SPECI contains the following information in the order shown:

✓ IDENTIFICATION GROUPS
✓ SURFACE WIND
✓ PREVAILING VISIBILITY
✓ RUNWAY VISUAL RANGE (if available)
✓ PRESENT WEATHER
✓ CLOUD (or vertical visibility if appropriate)
✓ AIR AND DEWPOINT TEMPERATURE
✓ PRESSURE – QNH
✓ SUPPLEMENTARY INFORMATION

The following is an example of a METAR, a surface observation, from Fujairah International Airport.

TYPE	ID	TIME	WIND	VIS	WX	SKY	T/TD	ALT	REMARK
METAR	OMFJ	201600Z	02010G25KT	4000	-TSSHRA	FEW020CB BKN030	22/19	Q1019	RMK A3010

❖ **METAR** = Meteorological aviation routine weather report and the scheduled observation taken at the end of each hour.

❖ **OMFJ** = The ICAO location indicator of the reporting station.

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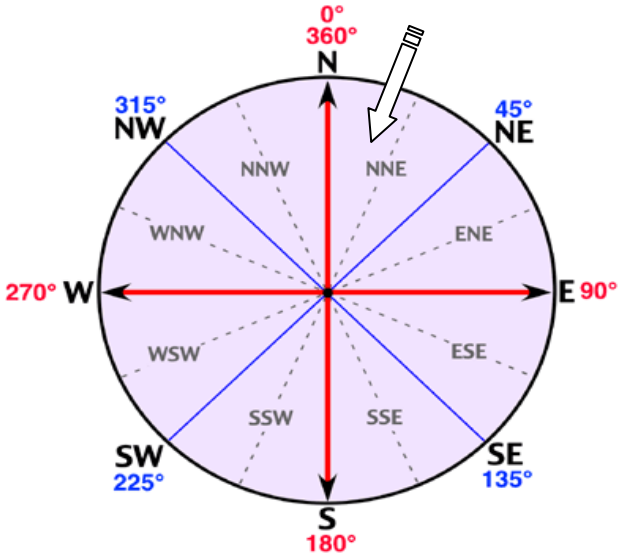
❖ **201600Z = Time and Date**

- The 20 represents the day of the month.
- The 1600 represents the time at which the observation went out.
- The Z represents that the time is in ZULU or UTC (Coordinated Universal Time).

❖ **02010G25KT = Surface Winds**

- The 020 (the first three numbers) is the direction of the winds in degrees from 0 to 360 degrees.



- The 10 (next two numbers) is the speed of the winds in knots.
- The G25 represents the wind gusts. In this case the gusts are 25 knots. Gust will not always be on here...there are criteria which must be met in order to have a gust. Simply, unless it's windy, you are not going to see gusts in the observation.
- The KT simply means knots. It will always be at the end. (1kt = 1.85 km/hour)
- For winds speeds below 3 knots, you might see VRB02KT or VRB03KT which means the wind direction is variable.
- In case of calm wind (wind speed is less than 1 KT); the group is encoded as 00000KT.
- The wind speed is higher and wind direction is varying by 180° or more and a single direction is impossible to determine, for example when a thunderstorm is over the aerodrome you might see VRB28KT.
- For winds greater than 3 knots you might see 18015KT 150V210. The winds are from 180 degrees at 15 knots, but the direction is actually variable between 150

degrees and 210 degrees. In order to be variable above 6 knots, the winds must have at least a 60 degree variation.

- **If wind Speeds is 100 KT ,** the speed shall be preceded by the letter indicator **P** and reported as P99 **KT ,** Example: **240P99KT**

❖ **4000 = prevailing horizontal Visibility in meters.**

- Prevailing visibility of 4 000 m is encoded as 4000.

- Prevailing visibility of 800 m is encoded as 0800.

❖ **(-TSSHRA) = Present Weather.**

- (-) is the designator for light. Precipitation will either be light (-), moderate ( ), or heavy (+) based on certain criteria that must be met. For more info on those criteria.
- TSSHRA: Thunderstorm associated with rain showers.
- If more than one weather phenomenon is observed, separate groups will be encoded.

QUALIFIER		WEATHER PHENOMENA		
INTENSITY OR PROXIMITY	DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER 5
- Light Moderate (see note 2) + Heavy VC In the Vicinity (see note 4)	MI Shallow PR Partial BC Patches DR Low Drifting BL Blowing SH Shower(s) TS Thunderstorm FZ Freezing	DZ Drizzle RA Rain SN Snow SG Snow Grains IC Ice Crystals PL Ice Pellets GR Hail GS Small Hail and/or Snow Pellets UP Unknown Precipitation	BR Mist FG Fog FU Smoke VA Volcanic Ash DU Widespread Dust SA Sand HZ Haze PY Spray	PO Well-Developed Dust/Sand Whirls SQ Squalls FC Funnel Cloud Tornado Waterspout (see note 3) SS Sandstorm SS Duststorm

1. **The weather groups shall be constructed by considering columns 1 to 5 in the table above in sequence, i.e. intensity, followed by description, followed by weather phenomena, e.g.**

heavy rain shower(s) is coded as +SHRA

2. **To denote moderate intensity no entry or symbol is used.**
3. **Tornados and waterspouts shall be coded as +FC.**
4. **VC denotes not at the aerodrome but not further away than 8 km from the aerodrome perimeter.**
5. **The qualifier TS shall be used whenever thunder is heard or lightning detected at the aerodrome within the 10-min period preceding the observation.**
6. **When visibility is 5 000 m or less, one of the phenomena IC, FU, HZ, DU, SA and BR is reported in the METAR/SPECI.**

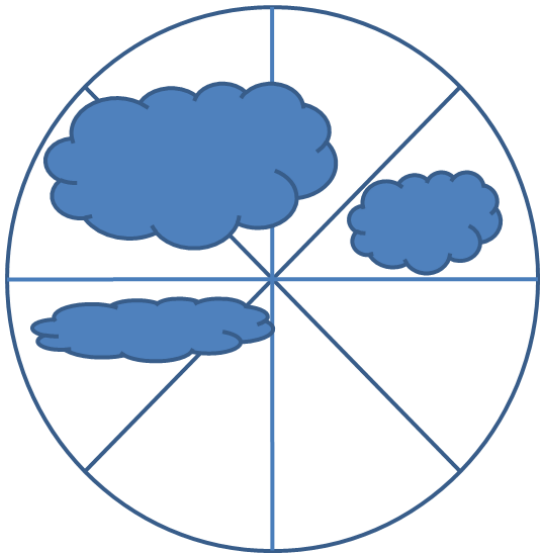
❖ Sky Condition

To record the amount of cloud in the sky when you take your weather readings you must do two things.

1- Imagine that the cloud has all been pushed together in the sky.

2- Think about how much of the sky would be covered by the total cloud.

Cloud amount is measured in eighths of the sky obscured by clouds. The largest number for cloud amount is 8, the smallest is 0. Obviously when half the sky is covered it would be recorded as a 4.



This example shows about 3 octas.

- The cloud cover will either be **FEW** (1/8 TO 2/8 cloud coverage), **SCT** (SCATTERED, 3/8 TO 4/8 cloud coverage, **BKN** (5/8-7/8 coverage), and **OVC** (OVERCAST, 8/8 Coverage).
- Few020cb represents a few of thundery clouds at 2000feet. (The clouds cover 1/8 to 2/8 of the sky)
- BKN030 represents a broken sky. (The clouds cover 5/8 to 7/8 of the sky)
- 030 represents the clouds are at 3,000 feet (simply add 2 zeroes to get the height)
- You will often have more than 1 group (i.e. FEW020TCU SCT035 BKN040)
- An indefinite ceiling caused by fog, rain, snow, etc., will require a designator as VV (Vertical Visibility). VV is the how high you can see vertically into the indefinite ceiling, Example: **VV003** (vertical visibility 300 ft).
- Significant Clouds such as TCU (Towering Cumulus), CB, (Cumulonimbus) will be found on the end of a category (i.e. SCT035TCU or FEW025CB).

- Use of **CAVOK**
  When the following conditions occur simultaneously at the time of observation:
  (a) Visibility, 10 km or more, and the lowest visibility is not reported;
  (b) No cloud of operational significance;
  (c) No weather of significance to aviation.

- If there are no clouds of operational significance and no restriction on vertical visibility and the abbreviation “CAVOK” is not appropriate, the abbreviation “NSC” should be used.

❖ **Temperature and Dew point 22/19**

- 22 represents the temperature in Celsius
- 19 represents the dew point in Celsius
- If the temperature or dew point falls below 0 there will be an "M" before it (i.e. 03/M02). "M" means minus.
- If T= 22 & D.P = 19 –> R.H = 83% , if T=22 & D.P =22 --> R.H = 100% ,

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❖ **Altimeter / Pressure Q1019**.

- A simply stands for Altimeter
- 1019 means 1019 hpa “hectopascals”

❖ **RMK A3010**

- RMK simply means REMARKS and marks the end of the standard Metar observation and the beginning of the remarks that are put in as necessary.
- A3010 means 30.10 inches of mercury (inHg) for the pressure.

EXAMPLE 2:

METAR for: OJAM (Amman Airport, JORDAN)
Text: **OJAM 272000Z 26030KT 5000 FZRA BKN020 BKN030 02/00 Q1012 NOSIG**
Temperature: 2.0°C .
Dewpoint: 0.0°C . [RH = 87%]
Pressure (altimeter): (1012.0 hpa)
Winds: from the W (260 degrees) 30 knots.
Visibility: (5 km)
Ceiling: 2000 feet AGL
Clouds: broken clouds at 2000 feet AGL, broken clouds at 3000 feet AGL
Weather: FZRA (freezing rain)