METAR HELP

The following is an example of a METAR, a surface observation, from O' Hare Airport. Just click on any of the cells to go to the help dealing with that particular section

TYPE	ID	TIME	WIND	VIS	WX	SKY	T/TD	ALT	REMARK
METAR	KORD	041656Z	19020G26KT	6SM	-SHRA	BKN070	12/08	A3016	RMK AO2

METAR-TYPE

METAR is the scheduled observation taken at the end of each hour. SPECI is an observation taken at an unscheduled time due to certain criteria that is met such as low visibility, low clouds, frozen precipitation, or thunderstorms.

KORD-Station ID

In this example, **K** refers to a North American Station and **ORD** is the three letter id for O' Hare (from Old Orchard, it's original name). Other examples are KRFD (Rockford Il), KAMA (Amarillo, TX) and KDEN (Denver, Co).

041656Z-Time and Date

- The **04** represents the day of the month
- The **1656** represents the time at which the observation went out
- The **Z** represents that the time is in ZULU or UTC (Coordinated Universal Time).

19020G26KT-Winds

- The **190 (the first three numbers)** is the direction of the winds in degrees from 0 to 360 degrees (although you will never see 360 because after 350, it goes back to 0).
- The **20 (next two numbers)** is the speed of the winds in knots.
- The **G26** represents the wind gusts. In this case the gusts are 26 knots. Gust will not always be on here...there is 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 obsevation.
- the **KT** simply means knots. It will always be at the end.
- For winds speeds below 7 knots, you might see VRB005KT which means the wind direction is variable. This is the idea of "light and variable" that you might see in a forecast.
- For winds greater than 6 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.

6SM-Visibility

- The **6SM** simply means 6 Statute Miles. Occasionally you might see visibility up to 20 or 30 SM but for the most part it will go from < 1/4 (vis below 1/4 SM) up to 10 SM.

(-SHRA)-Present Weather and Obscurations

- **(-)** 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 that criteria, please see the FMH-1 link at the bottom of this page. For now, just understand that it is simply the intensity of the snow, rain, hail, sleet, or freezing rain.
- **SH** means showers and **RA** means rain. So the present weather is a light rain shower.
- The following is from the FMH-1 HANDBOOK. The entire handbook is linked at the bottom of this page.

QUALIFIER		WEATHER PHENOMENA		
INTENSITY OR PROXIMITY 1	DESCRIPTOR 2	PRECIPITATION 3	OBSCURATION 4	OTHER 5
- Light Moderate (see note 2) + Heavy VC In the Vicinity (see note 3)	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.				

BKN070-Sky Condition

- **BKN** represents a broken sky. (The clouds cover 5/8 to 7/8 of the sky)
- **070** represents the clouds are at 7,000 feet (simply add 2 zeroes to get the height)
- 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).
- You will often have more than 1 designator (i.e. SCT035 BKN090 OVC140)
- 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 indefinate ceiling.
- Significant Clouds such as TCU (Towering Cumulus), CB, (Cumulonimbus, or a shower/thunderstorm), or ACC (Altocumulus Castellanus) will be found on the en of a category (i.e. SCT035TCU)

12/08-Temperature and Dewpoint

- **12**represents the temperature in Celsius
- **08**represents the dewpoint in Celsius
- If the temperature or dewpoint falls below 0 there will be an "M" before it (i.e. 03/M02). "M" means minus.

30.16-Altimeter/Pressure

- **A** simply stands for Altimeter
- **3016** means 30.16 inches of mercury for the pressure.

RMK AO2-REMARKS

- **RMK** simply means REMARKS and marks the end of the standard metar observation and the beginning of the remarks that are put in as necessay.
- **A02** means that the site is automated and HAS a precipitation sensor. If it were AO1, there would be no precip sensor. This does not mean the site is un-manned. If there is an AUTO after the ID in the metar ob, then there is no observer.
- There are many remarks, and the FMH-1 (Federal Meteorological Handbook-1) at the bottom will give you a full listing of them. Here are only a few of the important and common remarks:

Volcanic Eruptions are in plain english
TORNADO, FUNNEL CLOUD, or WATERSPOUT
Peak Wind (PK_WND)
Wind Shift (WSHFT_time)
BINOVC (Breaks in Overcast)
    BINOVC denotes a few, small clear patches in the overcast sky
Tower or Surface Visibility (TWR_VIS SFC_VIS)
CIG (Ceiling=Lowest BKN/OVC layer or height of VV)
    V (Variable)
i.e. BKN V SCT, VIS 2V3 [2 variable 3 miles], CIG 025V030 [2500 ft-3000ft])
Lightning (Frequency_LTG-type)
    CG: Cloud to ground
    IC: Intracloud
    CC: Cloud to Cloud
    CA: Cloud to Air
    OCNL: Occasional
    FRQ: Frequent
    CONS: Continuous
Beginning/Ending of Thunderstorms/Rain/Snow (TSB, SNE, RAB, etc)
Thunderstorm Location (TS_LOC_(MOV_DIR)
    LOC=Location (N, NE, S, VC, OHD [Overhead], ALQDS [All Quadrants])
    DIR=Direction (N, NE, S, etc)
Hailstone Size (GR_[size])
Virga (VIRGA_[DIR])
Cumulonimbus or Cumulonimbus Mammatus (CB or CBMAM_LOC_(MOV_DIR).
Towering cumulus (TCU_[DIR])
Altocumulus castellanus (ACC_[DIR])
Standing lenticular or Rotor clouds (CLD_[DIR])
Pressure Rising or Falling Rapidly (PRESRR/PRESFR)
Sea-Level Pressure (SLP###)
Aircraft Mishap (ACFT_MSHP)
Snow Increasing Rapidly (SNINCR_amount this hour/total)
Precipitation amounts (in hundredths of inches)
    Hourly Precipitation Amount (P####)
    3- and 6-Hour Precipitation Amount (6####)
    24-Hour Precipitation Amount (7####)
Snow Depth on Ground (4/###) (Whole inches)
Water Equivalent of Snow on Ground (9####)
Hourly Temperature and Dewpoint (Tsn###sn###)
    T=Temp
    sn=Type (0=above zero celsius, 1=below zero celsius)
    ###=celsius temperature to nearest tenth of a degree
6-Hourly Maximum Temperature (1sn###)
6-Hourly Minimum Temperature (2sn###)
24-Hour Maximum and Minimum Temperature (4sn######)
    First three numbers=maximum temp to nearest tenth of a degree celsius
    Last three numbers=mimimum temp to nearest tenth of a degree celsius
-Hourly Pressure Tendency (5a###)--see table 12-7 at the bottom for a (type)
RVR (Runway Visual Range, Rrrr/####ft)--will eventually be in the body!
    R=RVR
    r=runway, i.e. 31C, 21L, etc.
    ####ft=Distance of visual range (i.e. 6000ft, P6000ft [plus], m600ft [minus])

Table 12-7. Characteristics of Barometer Tendency
Taken from the FMH, linked at the bottom

Primary Requirement	Description	Code Figure
Atmospheric pressure now higher than 3 hours ago.	Increasing, then decreasing.	0
	Increasing, then steady, or increasing then increasing more slowly.	1
	Increasing steadily or unsteadily.	2
	Decreasing or steady, then increasing; or increasing then increasing more rapidly.	3
Atmospheric pressure now same as 3 hours ago.	Increasing, then decreasing.	0
	Steady	4
	Decreasing then increasing.	5
Atmospheric pressure now lower than 3 hours ago.	Decreasing, then increasing.	5
	Decreasing, then steady, or decreasing then decreasing more slowly.	6
	Decreasing steadily or unsteadily.	7
	Steady or increasing, then decreasing; or decreasing then decreasing more rapidly.	8

For the ultimate guide to METAR and observations, please see the
FAA Order 7900.5D - Surface Weather Observing