METEOROLOGICAL AIRPORT REPORT

1. Introduction

1.1.METAR

A METAR (Meteorological Airport Report) is a meteorological observation report (not a prediction) dedicated to the aviation.

This international code was developed by the ICAO and approved by the World Meteorological Organization. Baseline data are common to all countries, but some sections of the code are subject to local variations.

This kind of message is elaborated each hour (or less, depending of the airfield). Normally, the METAR is valid for one hour or until a new report is issued.

It allows knowing the meteorological conditions on an airfield at a given timeframe. Its elements are determinants in order to choose the landing/departing direction for example.

1.2.SPECI

A SPECI is identical to a METAR with the difference that it is not created regularly but from time to time. It's a special observation message showing a punctual meteorological event that occurred since the last METAR or SPECI published.

1.3.Syntax and Structure

The METARs have a syntax that may appear a bit complex. The terms used in this code are abbreviations that come from different languages.

Example of a METAR:
LFPO 041300Z 36020KT 320V040 1200 R26/0400 +RASH BKN040TCU 17/15 Q1015 RETS 26791299

1.4.Unities

The unities are also variables and have been settled from the history development of the aviation and the influence USA and British pioneers in aerospace.

We use:

- The **feet (ft)** for the clouds height above ground
- The **knot (kt)** for the wind speed (kt=nautical mile per hour)
- The **meter (m)** for the horizontal visibility
- The **hectopascal (hPa)** for the atmospheric pressure (QNH QFE)
- The **degree Celsius (°C)** for the temperature measurement

Some unities can change depending of the countries.
For example, we use:

- The **meter per second 'mps' (m/s)** in Russia for the wind speed
- The **kilometer per hour 'km' (km/h)** in Russia for the indicated airspeed
- The **American land mile 'SM'** for the visibility in North America
- The **inch of mercury (inHg)** for the atmospheric pressure in America (1013hpa=2992 inHg)

2. Decoding the METAR

Now, we will start decoding the following METAR:

LFPO 041300Z 36020KT 320V040 1200 R26/0400 +RASH BKN040TCU 17/15 Q1015 RETS 26791299

2.1.Airfield ICAO code

LFPO *041300Z 36020KT 320V040 1200 R26/0400 +RASH BKN040TCU 17/15 Q1015 RETS 26791299*

This ICAO code is **Paris-Orly airport / LFPO**.

Near all airports in the world have a unique ICAO code, which is a location indicator **with 4 letters**.

- 1st letter determines an area in the world (France is in the **L** area)
- 2nd letter determines a country in the world area (**F** for France)
- 3rd and 4th letters determine an airfield

Just after the airfield OACI code, you can find:

- **AUTO** indicates a fully automated report with no human intervention. It is removed when an observer logs on to the system.
- **NIL** is inserted if the **observation message is missing**. It's at the end of message.

2.2.Date and time of the observation

LFPO ***041300Z*** *36020KT 320V040 1200 R26/0400 +RASH BKN040TCU 17/15 Q1015 RETS 2679199*

This group means that the date and time of weather observation is number **04** of the current month, at **13:00** hours UTC (Z or GMT)

This group is constructed with:

- Two digit which represent the day of weather observation
- Four digit time followed with letter **Z** which represent the hours and minutes

> Times are always in UTC using a 24-hour clock.

2.3.Surface wind and wind orientation

*LFPO 041300Z **36020KT** 320V040 1200 R26/0400 +RASH BKN040TCU 17/15 Q1015 RETS 26791299*

This group means that the wind comes from **360**° blowing at **20** knots (kt).

It's a **five numbers group** which shows the **average wind on 10 minutes** following (without any space) by an abbreviation of the wind speed unity (KT, MPS…).

- The first three numbers indicate the **wind direction** in degrees.
- The last two, **the wind speed** juxtaposed with the speed unit.

The wind direction indicates that the wind comes in front of the aircraft when its heading equals the wind direction.

The wind direction is indicated in multiples of 10° true rounded to the multiple or at the nearest number.

The wind direction values below 100° are always preceded by a **0**.

A wind blowing from the true north is indicated by **360°** (and not 000°).

When during the last 10 minutes preceding the observation, if the maximum wind speed into the gusts (average on 3 seconds) **exceeds at the least of 10 knots or more** of the average wind speed**, this maximal speed is indicated directly after the average speed** using **G** between the two values.

The wind direction is written **VRB (variable winds)** instead of the average direction when:

- The wind speed is below 3 knots (6 km/h) and the total variation, on 10 minutes of the wind direction is above or equals to 60°.
- The wind speed is above or equals to 3 knots (6 km/h) and the total variation, on 10 minutes of the wind direction is above or equals to 180°.

Examples:
***00000KT** = Wind calm when the average speed is below 1 knot*
***27010G25KT** = wind 270° 10kt with gusts at 25kt (**G**=gust)*
***VRB03KT** = wind from variable direction blowing at 3kt*

2.4.Wind direction variation

*LFPO 041300Z 36020KT **320V040** 1200 R26/0400 +RASH BKN040TCU 17/15 Q1015 RETS 26791299*

This group means that the wind direction is variable around 360° BETWEEN **320**° and **040**°.

> Note that it's an optional group; it is present only to indicate a variable wind.

When the 10 minutes period preceding the observation, the wind direction variability is between 60° included and 180° excluded and the average speed is above or equals to 3 knots (6 km/h), the both extreme directions observed are indicated in the direction of clockwise, the '**V**' letter is inserted between the two values.

2.5.Visibility

*LFPO 041300Z 36020KT **1200** R26/0400 +RASH BKN040TCU 17/15 Q1015 RETS 26791299*

This group means that minimal horizontal visibility is **1200 meters over the whole horizon**

The **visibility** is measure of the opacity of the atmosphere. An automated, instrumentally derived visibility value is a sensor value converted to an appropriate visibility value using standard algorithms and is considered to be representative of the visibility in the vicinity of the airport runway complex. A manually derived visibility value is obtained using the "prevailing visibility" concept. In this section, the term "prevailing visibility" shall refer to both manual and instrument derived values.

The **4 numbers are indicating the visibility in meters**. One or two letters can be added to define a particular visibility in a sector.
Note: In special cases, if local conditions vary greatly then two groups may be displayed showing the visibility variation in different sectors.

At automated stations, when visibility sensor can't deliver any direction, the value of visibility is followed by **NDV**.
Automated stations shall use an **M** to indicate "less than" when reporting visibility. (Example: **M1SM**)

Examples:
***0000** = visibility is below 50 m*
***9999** = visibility is greater than 10 km (or equal)*
***4000NE** = visibility is 4000 m at north-east (mean visibility = 1.5x4000 = 6000 M)*
***1400S 4000N** = visibility is 1400 m at south but 4000 m at north*
***10SM** = visibility of 10 statute miles or American land mile (=1.625km)*
***1/4SM** = visibility of 0.25 statute miles (one quarter)*
***1 1/2SM =** visibility of 1 SM + ½ SM = 1.5 statute miles*
CAVOK** = **C**louds **A**nd **V**isibility **OK
***NSC** = **N**o **S**ignificant **C**louds (no clouds below 5000 feet, no cumulonimbus (CB) or towering cumulus(TCU))*
***SKC** = **SK**y **C**lear – no clouds*

Three conditions in order to have a CAVOK:

1. No clouds exist below 5000 feet or below the highest minimum sector altitude, whichever is greater, and no cumulonimbus or tower cumulus are present.

2. Visibility is 10 kilometres or greater

3. No precipitation, thunderstorms, sandstorm, dust storm, shallow fog, or low drifting dust, sand or snow is occurring (no significant weather).

Note that the term **CAVOK** is not used in the United States

2.6.Runway visual range

*LFPO 041300Z 36020KT 320V040 1200 **R26/0400** +RASH BKN040TCU 17/15 Q1015 RETS 26791299*

This group means that RVR or runway visibility range is **400** meters on runway **26**

Note that it's an optional group; it is present only to indicated runway visual range when visibility is below 1500m.

Runway Visual Range is an indication of the real visibility as measured down the runway either electronically or manually. RVR will always be prefixed by the letter R followed by the runway for which the value has been taken

Some letters **M**, **P**, **D**, **U**, **B** and **V** can be added to the RVR to specify the evolution of visibility.

Examples:
***R25/M0075** = RVR runway 25 is below than 75 meters (M=Minus)*
***R33L/P1500** = RVR runway 33 LEFT is greater than 1500 meters (P=Plus)*
***R16R/1000D** = RVR runway 16 RIGHT is 1000 meters with aggravation (D=Down)*
***R16R/1000U** = RVR runway 16 RIGHT is 1000 meters with improvement (U=UP)*
***R33C/0900N** = RVR runway 33 CENTRE is 900 meters with no change (N=No change)*
***R27/0150V0300U** = RVR runway 27 variable (V) from 150 to 300 meters with improvement (U= Up)*

2.7.Weather phenomena

*LFPO 041300Z 36020KT 320V040 1200 R26/0400 **+RASH** BKN040TCU 17/15 Q1015 RETS 26791299*

This group is the present weather phenomena and means in the airfield, we have heavy (**+**) Shower (**SH**) Rain (**RA**)

> Note that it's an optional group; it is present only to indicate when precipitation and weather and obscuration phenomena are present.

A present weather phenomenon includes precipitations, obscurations and other weather phenomena. The present weather may be evaluated instrumentally, manually, or through a combination of instrumental and manual methods.

Weather phenomena: VC = in **Vi**C**i**nity MI = Shallow PR = **Pa**R**t**ial DR = low **DR**ifting BL = **BL**owing FZ = **F**ree**Z**ing RE = **RE**cent BC = Patches SH = **SH**ower TS = **T**hunder**S**torm XX = Violent	Precipitation: RA = **RA**in SN = **SN**ow GR = Hail DZ = **D**ri**Z**zle PL = ice **P**e**L**lets GS = **G**re**S**il SG = **S**now **G**rains IC = **I**ce **C**rystals UP = **U**nknown **P**recipitation
Obscuration: BR = Mist FG = **F**o**G** HZ = **H**a**Z**e FU = Smoke SA = **SA**nd DU = **DU**st VA = **V**olcanic **A**sh	Others : PO = Well developed dust / sand whirls SS = **S**and**S**torm DS = **D**ust**S**torm SQ = **SQ**ualls FC = **F**unnel **C**loud +FC = e.g. tornado
Intensity qualifier: **sign "-"** = Light **No sign** = Moderate **sign "+"** = Heavy	

2.7.1. Precipitation definition

Precipitation is any of the forms of water particles, whether liquid or solid, that falls from the atmosphere and reaches the ground. The types of precipitation are:

- **Drizzle**: Fairly uniform precipitation composed exclusively of fine drops with diameters of less than 0.02 inch (0.5 mm) very close together. Drizzle appears to float while following air currents, although unlike fog droplets, it falls to the ground.
- **Rain**: Precipitation, either in the form of drops larger than 0.02 inch (0.5 mm), or smaller drops which, in contrast to drizzle, are widely separated.
- **Snow**: Precipitation of snow crystals mostly branched in the form of six-pointed stars.
- **Snow Grains**: Precipitation of very small, white, and opaque grains of ice.
- **Ice Crystals** (Diamond Dust): A fall of unbranched (snow crystals are branched) ice crystals in the form of needles, columns, or plates.
- **Ice Pellets**: Precipitation of transparent or translucent pellets of ice, which are round or irregular, rarely conical, and which have a diameter of 0.2 inch (5 mm), or less. There are two main types: Hard grains of ice consisting of frozen raindrops, or largely melted and refrozen snowflakes. Pellets of snow encased in a thin layer of ice which have formed from the freezing, either of droplets intercepted by the pellets, or of water resulting from the partial melting of the pellets.
- **Hail**: Precipitation in the form of small balls or other pieces of ice falling separately or frozen together in irregular lumps.
- **Small Hail and/or Snow Pellets**: Precipitation of white, opaque grains of ice. The grains are round or sometimes conical. Diameters range from about 0.08 to 0.2 inch (2 to 5 mm).

2.7.2. Obscuration definition

An obscuration is any phenomenon in the atmosphere, other than precipitation, that reduces the horizontal visibility. These include:

- **Mist**: A visible aggregate of minute water particles suspended in the atmosphere that reduces visibility to less than 7 statute miles but greater than or equal to 5/8 statute miles.
- **Fog**: A visible aggregate of minute water particles (droplets) that is based at the earth's surface and reduces horizontal visibility to less than 5/8 statute miles and, unlike drizzle, it does not fall to the ground.
- **Smoke**: A suspension in the air of small particles produced by combustion. A transition to haze may occur when smoke particles have travelled great distances (25 to 100 miles or more) and when the larger particles have settled out and the remaining particles have become widely scattered through the atmosphere.
- **Volcanic Ash**: Fine particles of rock powder that originate from a volcano and that may remain suspended in the atmosphere for long periods.
- **Widespread Dust**: Fine particles of earth or other matter raised or suspended in the air by the wind that may have occurred at or far away from the station that may restrict horizontal visibility.
- **Sand**: Sand particles raised by the wind to a height sufficient to reduce visibility.
- **Haze**: A suspension in the air of extremely small, dry particles invisible to the naked eye and sufficiently numerous to give the air an opalescent appearance.
- **Spray**: An ensemble of water droplets torn by the wind from the surface of an extensive body of water, generally from the crests of waves, and carried up a short distance into the air.

2.7.3. Other weather phenomena

These other phenomena include:

- **Well-developed Dust/Sand Whirl**: An ensemble of particles of dust or sand, sometimes accompanied by small litter, rose from the ground in the form of a whirling column of varying height with a small diameter and an approximately vertical axis.
- **Squall**: A strong wind characterized by a sudden onset in which the wind speed increases at least 16 knots and is sustained at 22 knots or more for at least one minute.
    - **Funnel Cloud (Tornado Activity)**: These include:
    - **Tornado** = A violent, rotating column of air touching the ground.
    - **Funnel Cloud** = A violent, rotating column of air which does not touch the surface.
- **Waterspout** = A violent, rotating column of air that forms over a body of water, and touches the water surface.
- **Sandstorm**: Particles of sand carried aloft by a strong wind. The sand particles are mostly confined to the lowest ten feet, and rarely rise more than fifty feet above the ground.
- **Dust storm**: A severe weather condition characterized by strong winds and dust-filled air over an extensive area.

2.8.Cloud layers

*LFPO 041300Z 36020KT 320V040 1200 R26/0400 +RASH **BKN040TCU** 17/15 Q1015 RETS 26791299*

This group is the cloud layer group. The example means that we have broken (**BKN**) clouds layer at 4000ft (**040**) with presence of tower cumulus (**TCU**)

2.8.1. Sky coverage

The sky coverage shall be coded for each layer reported by using the appropriate reportable contraction:

- **FEW** = *Few* = 1/8th to 2/8th of sky coverage
- **SCT** = *Scattered* = 3/8th to 4/8th of sky coverage
- **BKN** = *Broken* = 5/8th to 7/8th of sky coverage
- **OVC** = *Overcast* = 8/8th of sky coverage

Sky condition shall be coded in the format **XXXYYY** where **XXX** is the **cover code** (e.g. FEW or BKN) and **YYY** its **height above surface**:

- There shall be no space between the summation layer amount of sky cover and the height of the layer.
- Heights of sky cover shall be evaluated in feet above the surface.
- Heights of layers shall be reported in hundreds of feet, rounded to the nearest reportable increment.
- When a cloud layer is 50 feet or less above the surface, the height shall be reported as 000.
- Each layer shall be separated from other layers by a space.

If there is no significant layer, METAR can use this term:

- **NSC** = **N**o **S**ignificant **C**louds
- **NCD** = **N**o **C**loud **D**etected
- **SKC** = **S**ky **C**lear

Clear skies shall be coded in the format, **SKC** or **CLR**, where SKC is the abbreviation used by manual stations to indicate no layers are present and CLR is the abbreviation used by automated stations to indicate no layers are detected **at or below 12,000 feet**.

A METAR can include no, one or more than one layer.

Example:
FEW015 SCT023 BKN041 *describes 3 layers in the following order: FEW clouds layer at 1500ft AGL, SCT clouds layer at 2300ft AGL and BKN clouds layer at 4100ft AGL.*

At manual stations, cumulonimbus (**CB**) or towering cumulus (**TCU**) shall be appended to the associated layer.

Examples:
BKN025TCU *= BROKEN cloud layer at 2500ft with* ***towering cumulus***
SCT020CB *= SCATTERED cloud layer at 2000ft with* ***cumulonimbus***

The ceiling (coverage > 50% or 4/8th) is the height above the earth's surface of the lowest layer that is reported as broken (BKN) or overcast (OVC); or if the sky is totally obscured, the vertical visibility shall be the ceiling.

Sky condition shall be coded in an ascending order up to the first overcast layer. At mountain stations, if the layer is below station level, the height of the layer shall be coded as ***///***.

2.8.2. Vertical visibility

Vertical visibility shall be coded in the format **VVxxx** where:

- **VV** is the abbreviation for **V**ertical **V**isibility
- **xxx** the visibility's value in hundreds of feet.

If there is no information available the report shall contain **VV*///***. There shall be no space between the **VV** identifier and the value.

Example:
VV010 *reports a vertical visibility of 1000ft.*

2.9.Air temperature and dew point

*LFPO 041300Z 36020KT 1200 R26/0400 +RASH BKN040TCU **17/15** Q1015 RETS 26791299*

This group is the air temperature and dew point group. The example means the air ***temperature*** is **17 degrees Celsius** and its ***dew point*** at **15 degrees Celsius**.

This group gives temperature value followed with dew point temperature. They are in degrees Celsius. **The temperature shall be separated from the dew point** with a solidus "**/**".

The temperature and dew point shall be coded as two digits rounded to the nearest whole degree Celsius. Sub-zero temperatures and dew points shall be prefixed with an **M**.

Examples:
***00/M00** = Air temperature is +0°C, dew point temperature is -0°C*
(Example if air temperature is +0.3°C and dew POINT is -0.2°C)
***M03/M05** = Air temperature is -3°C, dew point temperature is -5°C*

If the temperature is not available, the entire temperature/dew point group shall not be coded. If the dew point is not available, the temperature shall be coded followed by a solidus "**/**" and no entry made for dew point.

2.9.1. Temperature

The temperature is the **degree of hotness or coldness of the ambient air** as indicated as measured by any suitable instrument.

2.9.2. Dew point

The dew point is the **temperature where the water vapor in a volume of humid air at a constant barometric pressure will condense into liquid wate**r. The dew point is a water-to-air saturation temperature.

The **dew point is associated with relative humidity**. A high relative humidity indicates that the dew point is closer to the current air temperature. Relative humidity of 100% indicates the dew point is equal to the current temperature and that the air is maximally saturated with water. When the dew point remains constant and temperature increases, relative humidity decreases

2.10. Pressure at mean sea level

*LFPO 041300Z 36020KT 320V040 1200 R26/0400 +RASH BKN040TCU 17/15 **Q1015** RETS 26791299*

This group is pressure at mean sea level group. The example means the sea level pressure OR QNH at aerodrome is **1015** hectopascal.

2.10.1. Mean sea level pressure (QNH):

The mean sea level pressure or QNH is a pressure value obtained by the theoretical reduction of barometric pressure to sea level.

Where the earth's surface is above sea level, it is assumed that the atmosphere extends to sea level below the station and that the properties of that hypothetical atmosphere are related to conditions observed at the station.

The group starts with a Q letter followed by its 4 digit value given in hector Pascal.
The decimal values are not given.

In some countries (North American), the mean sea level pressure is not given in hector Pascal but in inches of mercury (inHg).

In this case, the altimeter group always starts with an A letter (the international indicator for altimeter in inches of mercury).

The altimeter shall be coded as a four digit group immediately following the A using the tens, units, tenths, and hundredths of inches of mercury. The decimal point is not coded.

2.10.2. Station Pressure: (QFE)

The station pressure or QFR is the atmospheric pressure at the designated station elevation.

Examples:
***QFE 987** = pressure at surface or QFE is 987 hecto pascal*

Coding the sea-level pressure group:
The sea-level pressure group is included in the remarks section of the message. It starts with 'SLP' and is followed by 3 digits (units, tenths and hundreds).
A sea-level pressure of 1002.5 hecto pascal is **SLP025**.

2.11. Recent weather

*LFPO 041300Z 36020KT 320V040 1200 R26/0400 +RASH BKN040TCU 17/15 Q1015 **RETS** 26791299*

This group is the recent weather group. The example means Recent (**RE**) Thunderstorm (**TS**)

> Note that it's an optional group; it is present only to indicate when recent weather phenomena are present.

The recent weather takes some of the codes presented in previous weather phenomena chapter. This group gives some important recent information that's not included in METAR.

Examples:
***RERA** = **RE**cent **RA**in*
***WS TKOF RWY 26** = **W**ind**S**hear during take-off on runway 26 reported*
***WS LDG RWY28L** = **W**ind**S**hear during LANDING on runway 28 LEFT reported*
***SNOCLO** = Airfield close due to snow*

2.12. Runway status

*LFPO 041300Z 36020KT 1200 R26/0400 +RASH BKN040TCU 17/15 Q1015 RETS **26791299***

Runway **26**: ice (**7**) covering more than 51% of the runway (**9**), coverage height of 12 millimeters (**12**), braking coefficient incapable of measurement or not reliable (**99**)

> Note: It's an optional group. This group is present only to indicate special runway conditions. The evaluation of the group above is done with the following table.

This table includes the optional data of a runway condition indication in a METAR and declares how its syntax works:

Runway designator	Type of coverage	Dimension of coverage	Height of coverage	Friction coefficient and braking action
15: RWY15 or 15L **65:** 15R (15+50) **88 :** ALL RWYs	**0:** dry and clear **1:** humid **2:** wet or puddles **3:** collar **4:** dry snow **5:** wet snow **6:** snow slush **7:** ice **8:** compressed snow **9:** frozen wheel tracks **/:** type not specified or unavailable	**1:** up to 10% **2:** 11 - 25% **5:** 26 - 50% **9:** 51 - 100% **/:** not specified	**00:** < 1 mm **01:** 1 mm **02:** 2 mm **03:** 3 mm ... **10:** 1 cm (10 mm) ... **50:** 5 cm **90:** 9 cm **92:** 10 cm **93:** 15 cm **94:** 20 cm ... **97:** 35 cm **98:** >= 40 cm **99:** RWY not useable **//:** Height incapable of measurement	Frictional coefficient **R** and braking action **B**: **R** < 26 - **B** bad **R** 26-29 - **B** bad/moderate **R** 30-35 - **B** moderate **R** 36-39 - **B** moderate/good **R** > 39 - **B** good **91: B** bad **92: B** bad/moderate **93: B** moderate **94: B** moderate/good **95: B** good **99: B** and **R** not specified or not reliable **//:** RWY not in use

2.13. Prevision

Prevision group can be found on METAR.
Hereunder you will find some definition and examples.

Examples:
***NOSIG** = **NO SIG**nificant changes coming within the next two hours according to the hour of*
***BECMG** = weather development (**BEC**o**M**in**G**)*
***TEMPO** = **TEMPO**rary existing weather phenomena (changes to the main report)*
***FM** = **F**ro**M** (time)*
***AT** = time*
***TL** = un**TiL** (time)*

2.13.1. Becoming group

BECMG is the indicator of regular or irregular evolution of weather conditions. It is only used when the evolution begins and ends at the hours of the beginning and the end of the tendency or occurs at the uncertain one o'clock during the validity of the tendency.

***BECMG AT1200 33010KT** = wind becomes 330° at 10 knots at 12h00 UTC*
***BECMG FM1130 TL1230 0350** = visibility will be 350m from 11h30 until 12h30 UTC*

2.13.2. Temporary group

TEMPO is the indicator of temporary weather fluctuations on one or several parameters for less than one hour and covering less half of the period. It is only used when the beginning and the end of the period of temporary fluctuations correspond at the beginning and at the end of validity of the tendency.

***TEMPO FM1130 TL1230 OVC006** = temporary fluctuation between 11h30 and 12h30 UTC, with overcast cloud layer at 600ft*
***TEMPO 3000 SHRA** = temporary visibility 3000m with rain showers*

3. AIRMETs

Hazardous weather advisories of **moderate** intensity will be issued as AIRMETs. AIRMETs are issued when the following conditions are expected to cover an area of at least 3000 square miles:

- Moderate icing.
- Moderate turbulence.
- Sustained surface winds of 30 knots or more.
- Ceilings less than 1,000 ft. and/or visibility less than 3 miles affecting 50% of an area at one time.
- Extensive mountain obscuration.

4. SIGMETs

Hazardous weather advisories of severe intensity will be issued as SIGMETs. SIGMETs are reported as convective or no convective:

- Convective SIGMETs report only thunderstorms and related phenomena (tornadoes, heavy precipitation, hail and high surface winds.
- No convective SIGMETs are issued when the following conditions occur or are expected to cover an area of at least 3,000 square miles:
    - Severe or extreme turbulence or clear air turbulence (CAT) not associated with thunderstorms.
    - Severe icing not associated with thunderstorms.
    - Widespread dust storms, sandstorms, or volcanic ash lowering surface or in-flight visibilities to below three miles.

4.1.Volcanic eruption

Volcanic eruption SIGMET's are identified by an alphanumeric designator which consists of an alphabetic identifier and issuance number.
The first time an advisory is issued for a phenomenon associated with a particular weather system, it will be given the next alphabetic designator in the series and will be numbered as the first for that designator. Subsequent advisories will retain the same alphabetic designator until the phenomenon ends.

In the conterminous U.S., this means that a phenomenon that is assigned an alphabetic designator in one area will retain that designator as it moves within the area or into one or more other areas. Issuance's for the same phenomenon will be sequentially numbered, using the same alphabetic designator until the phenomenon no longer exists. Alphabetic designators NOVEMBER through YANKEE, except SIERRA and TANGO are only used for SIGMET's, while designators SIERRA, TANGO and ZULU are used for AIRMET's

4.2.Pilot weather report

Pilots will report any significant weather or flight condition to you as ATC as soon as possible. Additionally, you can expect that all significant weather or flight conditions that clearly differ from the forecast will be reported by the pilot. There is no specific format for this type of report.

Remember: If there is any wind shear during departure or approach the pilot will inform the tower controller.