Handout behorende bij de KNMI luchtvaart thema avond van 22 januari 2025.

Wees er van bewust dat dingen niet altijd hetzelfde blijven en soms veranderen.

Rini Hoevenaren   01-2025 De Bilt

Drukverdeling

Hoge en lagedrukgebied met bijbehorende stroming.

Bij een hogedrukgebied waait de wind met de wijzers van de klok mee, bij een lagedrukgebied waait de wind tegen de wijzers van de klok in. Hoe dichter de isobaren bij elkaar liggen, hoe harder het waait.

Forecast Valid: Fri 14 Jun 2024 12 UTC
Issued at 13-06 / 18:45 UTC   @ copyright KNMI
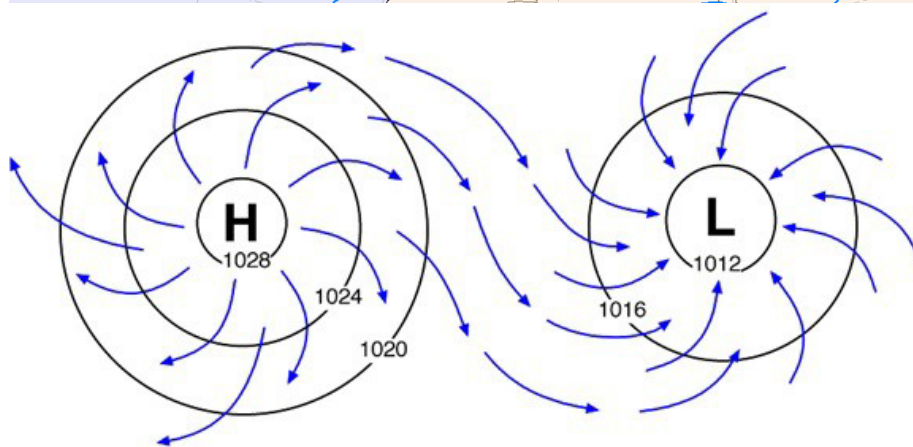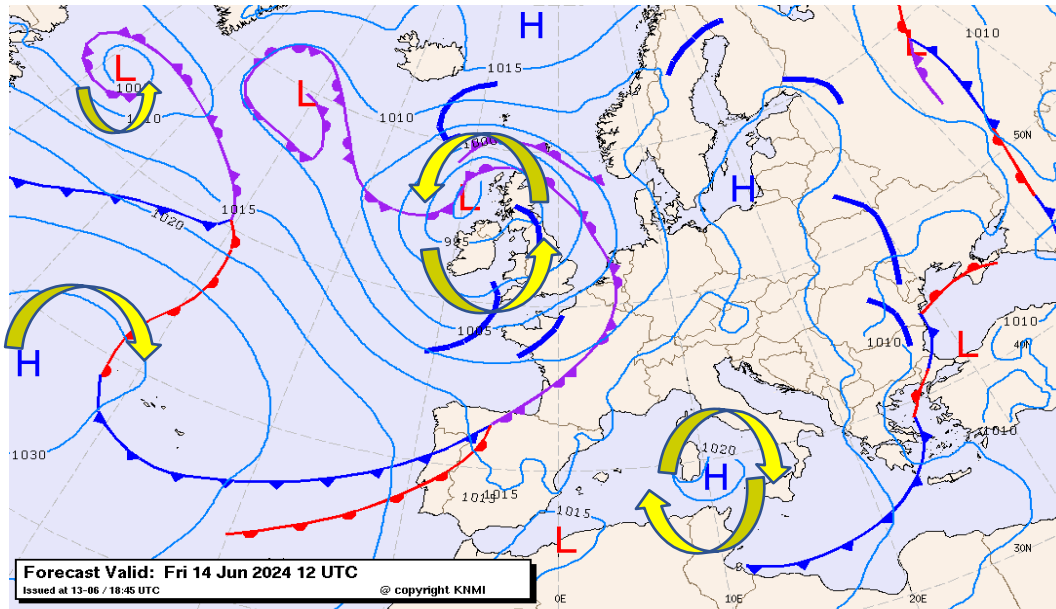
Uitleg weerkaart

 koufront

 warmtefront

 occlusie

 trog

METAR / TAF

TAF grenzen:

Zicht: 150 m, 350 m, 600 m, 800 m, 1500 m, 5000 m, 8000 m.

Bewolking: 100 vt, 200 vt, 300 vt, 500 vt, 1000 vt, 1500 vt.

Bron: https://www.aemet.es/documentos/en/conocermas/aeronautica/AU-GUI-0102_en.pdf

AERODROME OBSERVATION (METAR)

METAR: Aerodrome routine meteorological report. It is issued in intervals of either 30 minutes or one hour.

METAR CCCC YYGGgg**Z** **AUTO** dddff**G**$f_m f_m$**KT** $d_n d_n d_n$**V**$d_x d_x d_x$ or $N_S N_S N_S h_S h_S h_S$[cc]

CAVOK   **VV**$h_S h_S h_S$
or
NSC

$T'T'/T'_d T'_d$ **Q**$P_H P_H P_H P_H$ **RE**w'w'   **WS R**$D_R D_R$
or
WS ALL RWY   **TREND** (see forecast)   **(RMK...)**

NOTE 1: METAR

NOTE 2: The groups enclosed in brackets are used in accordance with regional or national decisions.

SPECIFICATIONS OF SYMBOLIC LETTERS

CCCC	**ICAO location indicator of the aerodrome.**
YYGGgg**Z**	**The day of the month and the time of observation in hours and minutes UTC.**
YY	Day of the month.
GGgg**Z**	Time of observation in hours and minutes followed by the letter Z (UTC).
AUTO	**The optional code word AUTO shall be inserted before the wind group when a report contains fully automated observations without human intervention (see METAR AUTO)**
dddff**G**$f_m f_m$**KT**	**Surface wind**
ddd	Mean true direction in degrees rounded off to the nearest 10 degrees from which the wind is blowing. VRB (Variable): - ff < 3 kt and variation in ddd ≥ 60º or - ff ≥ 3 kt and variation in ddd ≥ 180º or undetermined wind direction
ff	Mean speed of the wind over the 10-minute period immediately preceding the observation (knot is the reporting unit in Spain).
G	Gust indicator
$f_m f_m$**KT**	Maximum wind velocity in KT over the 10-minute period immediately preceding the observation. It must obey : $f_m f_m$ ≥ ff + 10 KT.
$d_n d_n d_n$**V**$d_x d_x d_x$	**Total variation in wind direction**
	If, during the 10-minute period preceding the observation, the total variation in wind direction is 60°≤ variation ddd < 180° and the mean wind speed is ≥ 3 KT. V is the group separator.
VVVV	**Prevailing visibility or minimum visibility**
	Prevailing visibility, or minimum visibility when the visibility is fluctuating rapidly and the prevailing visibility cannot be determined. Visibility shall be reported as 9999 indicating 10 km or above.

CAVOK	**Code word CAVOK**
	The code word CAVOK shall be included in place of the groups of visibility, RVR, significant weather and cloud amount or vertical visibility when the following conditions occur simultaneously at the time of observation:
	a) Visibility reported in the group VVVV is 10 km or more and criteria for inclusion of the group $V_NV_NV_NV_ND_v$ are not met.
	b) No cloud below 1500 metres (5000 ft) or below the highest minimum sector altitude, whichever is greater, and no cumulonimbus and no towering cumulus.
	c) No significant weather phenomena.

SPECIFICATIONS OF SYMBOLIC LETTERS

$V_NV_NV_NV_ND_v$ $V_NV_NV_NV_N$ D_v	**Minimum visibility** When the horizontal visibility is not the same in different directions and when the minimum visibility is different from the prevailing visibility, and less than 1500 m or less than 50% of the prevailing visibility, and less than 5000 m. Direction of minimum visibility with respect to one of the eight directions of the compass (if known)
$RD_RD_R/V_RV_RV_RV_Ri$ R D_RD_R $V_RV_RV_RV_R$ i	**Runway Visual Range (RVR)** Group indicator. Runway designator (parallel runways should be distinguished by appending L = Left, C = Centre or R = Right). Mean value of RVR over the 10-minute period immediately preceding the observation (in meters). Tendency of RVR over the 10-minute period immediately preceding the observation. If the runway visual range values during the 10-minute period preceding the observation show a distinct upward or downward tendency such that the mean during the first five minutes varies by 100 metres or more from the mean during the second five minutes of the period, this shall be indicated by i = U for upward and i = D for downward tendency of runway visual range values. When no distinct change in runway visual range is observed, i = N shall be used. Extreme values of runway visual range When actual RVR values are outside the measuring range of the observing system in use, the following procedure shall apply: a) When the RVR is greater than the maximum value which can be assessed with the system in use, the group $V_RV_RV_RV_R$ shall be preceded by the letter indicator P ($PV_RV_RV_RV_R$) in which $V_RV_RV_RV_R$ is the highest value which can be assessed. When the RVR is assessed to be more than 2000 m, it shall be reported as P2000. b) When the RVR is below the minimum value which can be assessed with the system in use, the group $V_RV_RV_RV_R$ shall be preceded by the letter indicator M ($MV_RV_RV_RV_R$) in which $V_RV_RV_RV_R$ is the lowest value which can be assessed. When the RVR is assessed to be less than 50 m, it shall be reported as M0050.
w'w'	**Present weather phenomena observed at or near the aerodrome** (See table 1) The w'w' group is formed by: intensity or proximity + descriptor + weather phenomenon. Up to three different groups can be included.
$N_sN_sN_sh_sh_sh_s[cc]$ $N_sN_sN_s$ $h_sh_sh_s$ cc	**Cloud amount and cloud height (up to 4 groups)** Cloud amount: FEW (few) = 1 to 2 oktas, SCT (scattered) = 3 to 4 oktas, BKN (broken) = 5 to 7 oktas, OVC (overcast) = 8 oktas. Height of cloud base in steps of 100 ft. Cloud type. Significant convective clouds CB (cumulonimbus) or TCU (cumulus congestus of great vertical extent).
$VVh_sh_sh_s$ VV $h_sh_sh_s$	**Vertical visibility** It replaces the cloud amount group when the sky is obscured and information on vertical visibility is available. Group indicator. Vertical visibility in units of hundreds of feet. When the sky is obscured and information on vertical visibility is not available the group shall read ///.
NSC	If there are no clouds below CAVOK reference height, no CB and no TCU, and no restriction on vertical visibility, and the abbreviation CAVOK is not appropriate, then the abbreviation NSC shall be used.

SPECIFICATIONS OF SYMBOLIC LETTERS

T'T'/T'$_d$T'$_d$ T'T' T'$_d$T'$_d$	**Temperature and dew-point temperature** Observed air temperature rounded to the nearest whole degree Celsius Observed dew-point temperature rounded to the nearest whole degree Celsius. Temperatures below 0°C shall be immediately preceded by M.
QP$_H$P$_H$P$_H$P$_H$ **Q** P$_H$P$_H$P$_H$P$_H$	**QNH** Group indicator. QNH value rounded down to the nearest whole hectopascal.
REw'w' **RE** w'w'	Recent weather phenomena of operational significance. (up to 3 groups) Group indicator. Weather phenomena observed during the period since the last routine report, or last hour, whichever is shorter, but not at the time of observation. No intensity of the recent weather phenomena shall be indicated. Abbreviations from Table 1 shall be used for the following phenomena: - Freezing precipitation: REFZDZ, REFZRA - Moderate or heavy precipitation (including showers): REDZ, RESG, RERA, RESN, RESHRA, RESHSN, RERASN, RESHGR, RESHGS, REPL - Blowing snow: REBLSN - Sandstorm or duststorm: REDS, RESS - Thunderstorm: RETS, RETSRA, RETSSN, RETSGR, RETSGS - Funnel cloud(s) (tornado or waterspout): REFC - Volcanic ash: REVA When an automatic observing system is used and when the type of the precipitation cannot be identified by this system, the abbreviation REUP shall be used for recent precipitation.
WS RD$_R$D$_R$ o **WS ALL RWY** **WS** RD$_R$D$_R$ **ALL RWY**	**Wind shear in the layer below 500 meters** Group indicator. Runway indicator and runway designator (L= Left, C= Center, R= Right). If the wind shear along the take-off path or approach path is affecting all runways in the airport.
TREND	See TREND code.
RMK…	Denotes the beginning of a section containing information included by national decision which shall not be disseminated internationally.

AERODROME OBSERVATION (METAR)

TABLE 1   w'w': PRESENT AND FORECAST SIGNIFICANT WEATHER

| QUALIFIER | | WEATHER PHENOMENA | | |
INTENSITY OR PROXIMITY 1	DESCRIPTOR 2	PRECIPITATION 3	OBSCURATION 4	OTHER 5
- Light Moderate (no qualifier) + Heavy (well developed in the case of dust/sand) and funnel clouds) **VC** In the vicinity	**MI** Shallow **BC** Patches **PR** Partial (covering part of the aerodrome) **DR** Low drifting (height < 2 m) **BL** Blowing (height > 2 m) **SH** Shower(s) **TS** Thunderstorm **FZ** Freezing (supercooled)	**DZ** Drizzle **RA** Rain **SN** Snow **SG** Snow grains **PL** Ice pellets **GR** Hail **GS** Small hail and/or snow pellets	**BR** Mist **FG** Fog **FU** Smoke **VA** Volcanic ash **DU** Widespread dust **SA** Sand **HZ** Haze	**PO** Dust/sand whirls (dust devils) **SQ** Squalls **FC** Funnel cloud(s) (tornado or waterspout) **SS** Sandstorm **DS** Duststorm

The w'w' groups shall be constructed by considering columns 1 to 5 in the table above in sequence, that is, intensity, followed by description, followed by weather phenomena. Example: +SHRA (heavy shower(s) of rain).
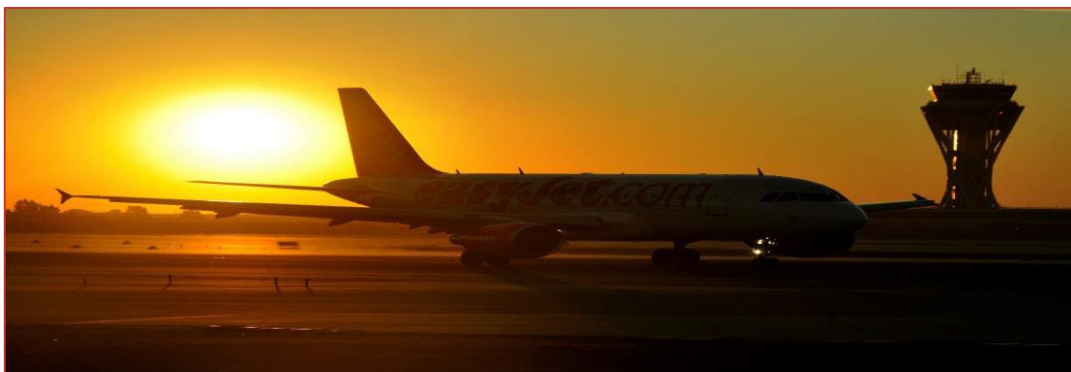
Aerodrome observation AUTOMETAR

METAR: : Aerodrome routine meteorological report with fully automated observations. It is issued every half hour.

METAR or SPECI	CCCC YYGGggZ **AUTO** dddff**G**$f_m f_m$ **KT** $d_n d_n d_n$ **V**$d_x d_x d_x$ or	VVVV $V_N V_N V_N V_N D_V$ **R**$D_R D_R / V_R V_R V_R V_R i$ w'w' CAVOK	$N_S N_S N_S h_S h_S h_S$ or $N_S N_S N_S h_S h_S h_S ///$ and/ **VV**$h_S h_S h_S$ or **VV**/// or **NSC** or **NCD**	///**TCU** or ///**CB**
	T'T'/T'$_d$T'$_d$ **Q**$P_H P_H P_H P_H$ **RE**w'w' **(RMK...)**			

SPECIFICATIONS OF SYMBOLIC LETTERS
(METAR AUTO symbols that are identical to those of METAR have the same meaning)

AUTO	**Meteorological report with fully automated observations**
w'w'	**Present weather phenomena observed at or near the aerodrome** (see Table 2). The w'w' group is formed by: intensity or proximity + descriptor + weather phenomenon. Up to three different groups can be included.
$N_S N_S N_S h_S h_S h_S$ $N_S N_S N_S$ $h_S h_S h_S$	**Cloud amount and cloud height** Cloud amount: FEW (few) = 1 to 2 oktas, SCT (scattered) = 3 to 4 oktas, BKN (broken) = 5 to 7 oktas, OVC (overcast) = 8 oktas. Height of cloud base in steps of 100 ft.
$N_S N_S N_S h_S h_S h_S ///$	Symbols /// mean that there are convective clouds (TCU or CB) but it cannot be determined if they are linked to this layer.
///TCU	There are cumulus congestus of great vertical extent (TCU) but their amount and height cannot be determined
///CB	There are cumulonimbus clouds (CB) but their amount and height cannot be determined
$VVh_S h_S h_S$ **VV** $h_S h_S h_S$	**Vertical visibility** It replaces the cloud group when the sky is obscured and information on vertical visibility is available. Group indicator. Vertical visibility in hundreds of feet.
VV///	Vertical visibility whose height cannot be determined.
NSC	If there are no clouds below CAVOK reference height, no CB, no TCU and no restriction on vertical visibility, and the abbreviations CAVOK is not appropriate
NCD	No clouds are detected.

TABLE 2 w'w': PRESENT SIGNIFICANT WEATHER FOR METAR AUTO			
QUALIFIER		WEATHER PHENOMENA	
INTENSITY OR PROXIMITY 1	DESCRIPTOR 2	PRECIPITATION 3	OBSCURATION 4
- Light Moderate (no qualifier) + Heavy VC In the vicinity	BC Patches SH Shower(s) TS Thunderstorm FZ Freezing (supercoooled)	DZ Drizzle RA Rain SN Snow GR Hail GS Small hail and/or snow pellets UP Unknown precipitation	BR Mist FG Fog FU Smoke DU Widespread dust HZ Haze

The w´w´ groups shall be constructed by considering columns 1 to 4 in the table above in sequence, that is, intensity, followed by description, followed by weather phenomena. Example: +SHRA (heavy shower(s) of rain).

Comments on METAR AUTO

• The optional code word AUTO is inserted before the wind group when a report contains fully automated observations without human intervention.

• ICAO requirement is that all of the specified elements shall be reported. However, if any element cannot be observed, the group in which it would have been encoded shall be replaced by the appropriate number of solidi. The number of solidi depends on the number of symbolic letters for the specific group which is not able to be reported.

The coding of the groups is the same as in the non-automatic METAR. The abbreviations that are specific to the automatic METAR are the following:

▪ **UP:** When an automatic observing system is used and when the type of the precipitation cannot be identified by this system, the abbreviation UP is used for precipitation. The abbreviation UP may be combined, as necessary, with the following present weather: FZ (freezing) and TS (thunderstorm).

▪ **NCD:** When an automatic observing system is used and no clouds are detected by that system.

▪ **REUP, REFZUP, RETSUP:** For recent precipitation when an automatic observing system is used and when the type of the precipitation cannot be identified by this system.

▪ When cumulonimbus clouds or towering cumulus clouds are detected by the automatic observing system and the cloud amount and/or the height of cloud base cannot be observed, the cloud amount and/or the height of cloud base are replaced by /// (e.g.: ///CB, ///TCU).

▪ When the automatic observing system cannot assign the type of convective cloud detected to a specific layer of clouds, the cloud type is replaced by /// (e.g.: SCT020/// BKN025/// ///CB).

▪ When information on vertical visibility is not available the group shall read VV///.

▪ //////: When the cloud sensor is out of order.

METAR CCCC YYGGggZ NIL=

• The code **NIL** is placed right after the day/hour group in case of missing report.

TREND: It is a forecast for the next two hours from the time of the METAR or SPECI report. It contains concise information related to expected changes in weather conditions. This information is appended at the end of either a METAR or SPECI bulletin. The TREND informs about important changes in one or more of the following variables: Surface wind velocity, visibility, weather conditions and cloud amount or vertical visibility. If no change is expected the code word "NOSIG" is used.

$TTTTT$ or **NOSIG**	$TTGGgg$	$dddff$**G**f_mf_m**KT**	$VVVV$ or **CAVOK**	$w'w'$ o **NSW**	$N_sN_sN_sh_sh_sh_s(cc)$ or **VV**$h_sh_sh_s$ or **NSC**

NOTE 1: Only the groups of expected significant changes are included. However, in the case of significant changes of the clouds, all cloud groups, including any significant layer(s) or masses not expected to change, shall be given.

NOTE 2: The specific value of any of the elements and the time given in the forecast shall be understood by the recipient to be the most probable value which the element is likely to assume during the period of the forecast and the most probable time of occurrence.

SPECIFICATIONS OF SYMBOLIC LETTERS

$TTTTT$	**Change indicator (BECMG or TEMPO) for one or several of the observed elements** BECMG: It is used to describe expected changes to meteorological conditions which reach or pass specified threshold criteria at either a regular or irregular rate. TEMPO: It is used to describe expected temporary fluctuations to meteorological conditions which reach or pass specified threshold criteria and last for a period of less than one hour in each instance and in the aggregate cover less than half of the forecast period during which the fluctuations are expected to occur.
$TTGGgg$	**Indicator (TT) and time group (GGgg). Optional field.** **TT**: FM (from), TL (until) or AT (at). **GGgg**: Time group (hours and minutes UTC).
$dddff$**G**f_mf_m**KT**	**Surface wind** It indicates changes in observed wind direction and/or mean speed, according to some specified thresholds, as well as those values that are relevant in the operational task.
$VVVV$	**Prevailing forecast visibility** It indicates important changes in prevailing visibility considering some specified thresholds. It is specified in meters. The value 9999 indicates 10 km or above.
$w'w'$	**Present weather phenomena** It indicates the onset, cessation or change in intensity of the weather phenomena shown in Table 1 (present and forecast significant weather for METAR or SPECI).
$N_sN_sN_sh_sh_sh_s(cc)$ o **VV**$h_sh_sh_s$	**Cloud amount or vertical visibility** It indicates changes, according to some specific thresholds, in the height of the layer of clouds and/or the amount of clouds, or the vertical visibility.
CAVOK	**Code word CAVOK** It applies when: a) Visibility reported in the group VVVV is 10 km or more. b) No cloud below 1500 metres (5000 ft) and no CB and no TCU are present. c) No significant weather phenomena.
NSW	End of significant weather phenomena w'w'.
NSC	If there are no clouds below CAVOK reference height, no CB, no TCU and no restriction on vertical visibility, and the abbreviations CAVOK is not appropriate.
NOSIG	None of the significant forecast weather is expected to change during the forecast time

EXAMPLES OF METAR, AUTOMETAR AND TREND

EXAMPLE 1:   METAR without TREND

METAR COR	EHAM	141200Z	21009KT	6000	NSC	24/10	Q1008=
a	b	c	d	e	f	g	h

a: Type of message: corrected METAR.

b: ICAO location indicator: EHAM, Schiphol Amsterdam.

c: Day and hour of observation 141200Z: 14th of the current month at 1200 UTC.

d: Mean true direction and mean wind speed in 10 minutes: 210º and 9 kt.

e: Prevailing visibility: 6000 m.

f: Cloud height above 1500 m (5000 feet) or above CAVOK's reference height of the aerodrome, and no CB or TCU are present.

g: Temperature and dew-point temperature 24/10: temperature +24ºC, dew-point temperature +10ºC.

h: Mean sea-level pressure, in accordance with the International Standard Atmosphere (or QNH), 1008 hPa.

EXAMPLE 2:   METAR with TREND = NOSIG

METAR	LEZL	150800Z	06003KT 350V100	6000	2000E	R27/0900U	PRFG	OVC009	13/13	Q1022	NOSIG=
	a	b	c	d	e	f	g	h	I	j	k

a: ICAO location indicator: LEZL, Sevilla-San Pablo.

b: Day and hour of observation 150800Z: 15th of the current month at 0800 UTC.

c: Mean true direction and mean wind speed in 10 minutes: 60º variable between 350º y 100º; mean wind speed: 3 kt.

d: Prevailing visibility: 6000 m.

e: Minimum visibility: 2000 m to the East.

f: Runway visual range R27/0900U: 900 m at runway 27 and increasing.

g: Present significant weather PRFG: fog covering part of the aerodrome (Table 1).

h: Cloud amount and cloud height OVC009: overcast sky (8 oktas) with the cloud base at 900 feet.

i: Temperature and dew-point temperature 13/13: temperature +13ºC, dew-point temperature +13ºC.

j: QNH, Q1022: 1022 hPa.

k: Trend forecast NOSIG: no forecast significant change for the next 2 hours following the observation time (until 1000 UTC).

AERODROME FORECAST (TAF)

TAF Concise statement of the expected meteorological conditions at an aerodrome for a specified period, including changes significant for the aircraft operations. The validity period of a routine TAF is 24 or 30 hours. For a modified TAF (AMD), the validity period is reduced according to the time of issue of the modified TAF.

TAF CCCC YYGGgg**Z** $Y_1Y_1G_1G_1/Y_2Y_2G_2G_2$ ddff**G**f_mf_m**KT** $\begin{array}{c}\text{VVVV}\\ \text{or}\\ \textbf{CAVOK}\end{array}$ w'w' $\begin{array}{c}N_sN_sN_sh_sh_sh_s\text{(cc)}\\ \text{or}\\ \textbf{VV}h_sh_sh_s\\ \text{or}\\ \textbf{NSC}\end{array}$ **TX**T_FT_F/Y_FY_FGG**Z**   **TN**T_FT_F/Y_FY_FGG**Z**

$\begin{array}{c}\textbf{PROB}C_2C_2\ o\\ \textbf{PROB}C_2C_2\ \text{TTTTT}\\ \text{or TTTTT}\\ \text{or}\\ \text{TTYYGGgg}\end{array}$ YYGG/YYG_eG_e ddff**G**f_mf_m**KT** $\begin{array}{c}\text{VVVV}\\ \text{or}\\ \textbf{CAVOK}\end{array}$ $\begin{array}{c}\text{w'w'}\\ \text{or}\\ \textbf{NSW}\end{array}$ $\begin{array}{c}N_sN_sN_sh_sh_sh_s\text{(cc)}\\ \text{or}\\ \textbf{VV}h_sh_sh_s\\ \text{or}\\ \textbf{NSC}\end{array}$

NOTE 1: TAF COR is used for a corrected TAF and TAF AMD for an amended TAF.

SPECIFICATIONS OF SYMBOLIC LETTERS

CCCC	**ICAO location indicator of the aerodrome**
YYGGgg**Z**	**The day of the month and the time of forecast**
$Y_1Y_1G_1G_1/Y_2Y_2G_2G_2$ $Y_1Y_1G_1G_1$ $Y_2Y_2G_2G_2$	**Validity period of forecast** Day and hour UTC of origin of forecast. Day and hour UTC of end of forecast.
ddff**G**f_mf_m	**Forecast wind on surface** Information on forecast wind has the same format as in the METAR/SPECI code.
VVVV	**Forecast prevailing visibility in meters** It is given in meters, excepting 9999, which indicates a visibility of 10 km or more.
CAVOK	**Code word CAVOK** The code word CAVOK shall be included in place of the groups of visibility, significant weather and cloud amount or vertical visibility when certain conditions are forecast (see METAR code)
w'w'	**Forecast significant weather** It indicates forecast significant meteorological phenomena according to the abbreviations shown in table 1 of METAR/SPECI code.
NSW	End of significant weather phenomena w'w'.
$N_sN_sN_sh_sh_sh_s$(cc) **VV**$h_sh_sh_s$	**Forecast cloud amount and cloud height** **Forecast vertical visibility** Information on forecast cloud amount, cloud height and visibility has the same format as in the METAR/SPECI code
NSC	If there are no forecast clouds below CAVOK reference height, no forecast CB, no forecast TCU, and the abbreviations CAVOK is not appropriate
TX$T_FT_F/Y_FY_FG_FG_F$**Z** **TN**$T_FT_F/Y_FY_FG_FG_F$**Z** TX (TN) T_FT_F $Y_FY_FG_FG_F$**Z**	**Forecast maximum (minimum) temperature.** Letter indicator of maximum (minimum) temperature. Forecast maximum and minimum temperatures (in integer Celsius degrees) expected to occur during the period G_1G_1 to G_2G_2. Temperatures below 0°C shall be preceded by the letter M, that is, minus. Day and hour UTC of forecast maximum and minimum temperatures expected to occur

SPECIFICATIONS OF SYMBOLIC LETTERS	
PROBC_2C_2 $YYGG/Y_eY_eG_eG_e$ PROBC_2C_2	**Significant changes in some or all the elements forecast** Probability of occurrence in % (C_2C_2 = 30 or 40) of a forecast element significant to the aircraft operations. The group PROB shall be always followed by the time group $YYGG/Y_eY_eG_eG_e$ or by the group TEMPO $YYGG/Y_eY_eG_eG_e$.
YYGG	Day and hour UTC of the origin of the period of the expected changes.
$Y_eY_eG_eG_e$	Day and hour UTC of the end of the period of the expected changes.
TTTTT $YYGG/Y_eY_eG_eG_e$ or TTYYGGgg	The change group TTTTT is used in the form of **BECMG** or **TEMPO**. **The change indicator BECMG $YYGG/Y_eY_eG_eG_e$** should be used to describe changes in the meteorological conditions at an unspecified time during the time period GG to G_eG_e. The time period should normally not exceed 2 hours but in any case should not exceed 4 hours. **The change indicator TEMPO $YYGG/Y_eY_eG_eG_e$** should be used to describe expected temporary fluctuations in the meteorological conditions at an unspecified time during the time period GG to G_eG_e. Following the change groups only elements that are expected to change significantly will be included.
TTYYGGgg	**The time indicator group FMYYGGgg** shall be used to indicate the beginning of a self-contained part of the forecast indicated by YYGGgg. When the group FMYYGGgg is used, all forecast conditions given before the group FMYYGGgg are superseded by the conditions indicated after the group.

EXAMPLES OF TAF

EXAMPLE 1:   TAF OF 30 HOURS LONG

```
TAF   EHWO   101100Z   1012/1118   30010KT   7000   SHRA   FEW008   SCT015TCU   BKN025   TEMPO
      a        b          c           d        e      f       g          h          i        j
1015/1017   3000   +SHRA   PROB30 TEMPO 1017/1019 TSRA FEW008 BKN012CB BKN025=
                      k
```

a: ICAO location indicator: EHWO, Woensdrecht Airbase
b: Day and time of the forecast 101100Z : Day 10th of the month at 1100 UTC.
c: Period covered by the forecast 1012/1118 : from 1200 UTC 10th to 1800 UTC of 11th.
d: Wind on surface: 300°, 10 kt.
e: Forecasted prevailing visibility: 7000 m (7 km).
f: Forecast significant weather SHRA: Moderate showers of rain.
g: Cloud amount and cloud height (1st layer): 1 to 2 oktas and cloud base at 800 feet.
h: Cloud amount and cloud height (2nd layer): 3 to 4 oktas of TCU with the cloud base at 1500 feet.
i: Cloud amount and cloud height (3rd layer): 5 to 7 oktas and the cloud base at 2500 feet.
j: Temporary fluctuations in forecast meteorological conditions TEMPO 1015/1017 3000 +SHRA: temporary, from 1500 UTC to 1700 UTC, reduced visibility 3000m (3 km) due to heavy showers of rain.
k: Temporary fluctuations in forecast meteorological conditions PROB30 TEMPO 1017/1019 TSRA FEW008 BKN012CB BKN025: Moderate probability (30%), temporary, from 1700 UTC to 1900 UTC, moderate thunderstorm of rain, 1 to 2 oktas and cloud base at 800 feet, 5 to 7 oktas of CB at 1200 feet and 5 to 7 oktas, with the cloud base at 2500 feet.

EXAMPLE 2:   TAF OF 24 HOURS LONG

```
TAF   LEST   191720Z   1918/2018   VRB02KT   6000   SCT050   TX18/2013Z TN10/2004Z
      a        b          c           d        e      f         g
BECMG 2003/2005 0900 FG BKN003 OVC008 TEMPO 2006/2009 0500 FG VV001 BECMG 2009/2011 04010KT 8000 NSW=
h                                       i                              j
```

a: ICAO location indicator: LEST, Santiago.
b: Day and time of the forecast 191720Z: Day 19th of the month at 1720 UTC.
c: Period covered by the forecast 1918/2018: from 1800 UTC of 19th to 1800 UTC of 20th.
d: Wind on surface: variable, 2 kt..
e: Forecasted prevailing visibility: 6000 m (6 km).
f: Cloud type and height of the clouds: 3 a 4 oktas and cloud base at 5000 feet.
g: Forecasted maximum and minimum temperature TX18/2013Z TN10/2004Z: max temperature 18°C at 13Z and min temperature 10°C at 04Z of 20th.
h: Change in forecast meteorological conditions BECMG 2003/2005 0900 FG BKN003 OVC040: changes from 0300 UTC and 0500 UTC: visibility 900 m due to presence of fog, very cloudy sky (5 to 7 oktas) with cloud base at 300 feet, covered sky (8 oktas) with cloud base at 800 feet.
i: Temporary fluctuations in forecast meteorological conditions TEMPO 2006/2009 0500 FG VV001: temporary, from 0600 UTC to 0900 UTC, reduced visibility 500 m due to the presence of fog, and vertical visibility of 100 feet.
j: Change in forecast meteorological conditions BECMG 2009/2011 04010KT 8000 NSW: changes from 0900 UTC to 1100 UTC, wind direction 40° and wind speed 10 kt, visibility 8000 m (8 km), and no significant weather.