



DEPARTMENT OF THE NAVY
COMMANDER
NAVAL METEOROLOGY AND OCEANOGRAPHY COMMAND
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STENNIS SPACE CENTER, MS 39529-5005

NAVMETOCOMINST 3143.1F
N3
28 MAY 1996

NAVMETOCOM INSTRUCTION 3143.1F

From: Commander, Naval Meteorology and Oceanography Command

Subj: AERODROME FORECAST (TAF) CODE

Ref: (a) WMO-No 306, FM51-X, 1995 edition

Encl: (1) Coding Instructions for Aerodrome Forecast (TAF)

1. Purpose. To promulgate the instructions for using the Aerodrome Forecast (TAF) Code. This instruction has been completely revised and should be reviewed in its entirety.

2. Cancellation. NAVOCEANCOMINST 3143.1E

3. Background. To standardize the aerodrome forecast with the World Meteorological Organization (WMO), the Naval Meteorology and Oceanography Command and the U.S. Marine Corps are adopting the TAF Code (FM51-X) as contained in reference (a), with minor exceptions.

4. Discussion

a. The TAF code was designed to accommodate requirements in direct support of aviation and for use by the forecaster. It provides information about the expected (projected) weather conditions that will occur at the airfield or station control zone as described in the base operation manual or the local forecaster's handbook.



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b. The TAF is disseminated locally and longline. Many users rely on this information for making significant judgments and decisions in support of aviation and base operations. It is essential that the information in the TAF is accurate, complete, and derived in all cases, through a thorough consideration of the variables that contribute to the forecast. Moreover, it is essential that the weather conditions are continuously monitored and amendments to the TAF issued when necessary.

5. Action. The Naval Meteorology and Oceanography Command and Marine Corps activities shall adopt the TAF Code as outlined in enclosure (1). This code has significant modifications in comparison to previous formats.

a. All TAF's filed at six-hour intervals at 0300, 0900, 1500, and 2100 UTC shall have a valid period of 24 hours.

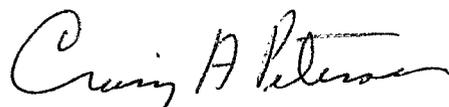
b. File time of all standard time TAF's will be on the hour of valid time. Amendments are the exception to this rule and are explained in enclosure (1). All activities will follow coding criterion and guidance contained in enclosure (1).

c. The requirements for local dissemination of the TAF will be established locally.

6. Effective Date. This instruction becomes effective 1 July 1996.

7. Concurrence. This instruction has the concurrence of the Commandant of the Marine Corps. Marine Corps Activities shall take those actions prescribed in this instruction which are not contradictory to specifically expressed policies of the Commandant of the Marine Corps.

Distribution:
See page 3


CRAIG A. PETERSON
Chief of Staff

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CODING INSTRUCTIONS FOR AERODROME FORECAST (TAF)

1. TAF Format

CCCC TAF (AMD or COR or RTD) Y₁Y₁G₁G₁G₂G₂ dddffG_{f_m}f_mKT VVVV w'w'
N_sN_sN_sh_sh_sh_s or SKC or VVh_sh_sh_s (WS_{h_{WS}}h_{WS}h_{WS}/dddffKT or WSCONDS)
(6I_ch_ih_ih_it_L) (5Bh_bh_bh_bt_L) QNHP_IP_IP_IP_IINS (Remarks) TTTTT
GGG_eG_e/TTGGGG (TTFTF/G_FG_FZ) (AMD or COR GGGG)

2. General

a. Forecast Area. The forecast elements in the main body of the forecast text (winds, visibility, present weather, sky cover layers, etc.) apply to the airfield control zone as delineated in the base operations manual or local forecaster's handbook.

b. TAF Formulation. When formulating a forecast, every effort shall be made to properly present a representative outlook of the forecast elements for the valid period. Whenever possible, avoid redundancy and ambiguity. When conditions warrant, the TAF will reflect the forecast conditions of nationally issued and locally prepared weather warnings and advisories.

c. Specification of symbolic letters.

(1) Message Heading. The message header shall begin with the four letter ICAO location identifier (CCCC), followed by "TAF"; the (AMD/COR/RTD) indicator, as applicable; and the valid forecast period, day and time, (Y₁Y₁G₁G₁G₂G₂). Amendments to the forecast will be issued for criteria outlined herein. The ending time will be the standard time of the forecast period designated by "G₂G₂"; e.g., if the 041515 TAF were amended at 041700, the Y₁Y₁G₁G₁G₂G₂ for the amendment would be encoded as 041715. The abbreviation "AMD" represents amended TAF, "RTD" for routine delay, and "COR" for a correction.

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(2) **dddffGf_mf_m**. Surface wind direction and speed including gusts, when applicable.

(a) **ddd**. Forecast the prevailing true wind direction (from which the wind is blowing) to the nearest 10 degrees. When the wind direction is expected to vary by 60 degrees or more, enter the prevailing wind direction as "ddd" and encode the limits of the variability in remarks (e.g., WND 270V350). The contraction "VRB" may be utilized only when the wind speed is 6 knots or less or, in the rare occasions, when it is impossible to forecast a single wind direction at wind speeds exceeding 6 knots; e.g., airmass thunderstorms where the exact location of formation and movement cannot be forecast.

(b) **ff**. Forecast the mean wind speed in whole knots. When the speed is forecast to be 100 knots or more, use three digits.

(c) **Calm Wind**. Encode calm wind for **dddff** as "00000KT".

(d) **Gf_mf_m**. Forecast the maximum wind gusts in whole knots. A gust will be forecast when the peak wind is expected to exceed the wind lull by 10 knots or more. When the wind gust is forecast to be 100 knots or more, use three digits.

(e) **KT**. Units of measure indicated in knots.

(3) **vvvv**. Forecast the prevailing visibility in meters, rounded down to the nearest reportable value. Utilize table 1-1 for reportable values. Include weather and/or obstructions to vision (w'w') whenever the prevailing visibility is forecast to be 9000 meters or less.

(4) **w'w'**. Forecast weather and obstructions to vision using table 1-2.

(a) Utilizing the standard abbreviations, choose the best combination to describe the forecast condition. The order of precedence for entry is tornadic activity (FC/+FC); thunderstorms (TS); precipitation type(s) with predominate first (intensity applies only to first, most predominant type of precipitation); and obstructions to vision.

(b) Shallow ground fog, MIFG, shall be encoded when the fog depth is less than 6 feet and not expected to obscure any part of the sky. Descriptors, PR and BC, can be used in METAR and TAF to describe fog "covering part of the aerodrome", PRFG, and "patches of fog", BCFG, even with prevailing visibility of 7 statute miles (9999 meters) or greater.

(c) When fog is forecast, use BR (mist) when the prevailing visibility is expected to be 5/8's of a statute mile (1000 meters) or more and FG (fog) when the prevailing visibility is expected to be less than 5/8's of a statute mile (1000 meters).

(d) Volcanic Ash. Volcanic ash, VA, shall always be forecasted regardless of restrictions to visibility.

(5) $N_s N_s N_s h_s h_s h_s$. Sky Cover group. This group will be reported as often as necessary to indicate all forecast sky cover layers to the first overcast 8/8 layer as described in subparagraphs (a), (b) and (c) below. Arrange the sky cover layers in ascending order of cloud bases (i.e., lowest layer first). Encode SKC, without an associated height, to forecast a clear sky. All clouds are considered to be opaque.

(a) $N_s N_s N_s$. The sky cover amount $N_s N_s N_s$ shall be given as sky clear, SKC, (no clouds); few, FEW, (1 to 2 oktas); scattered, SCT, (3 to 4 oktas); broken, BKN, (5 to 7 oktas); or overcast, OVC, (8 oktas) respectively, followed without a space by $h_s h_s h_s$. Height information is not included when encoding SKC. The summation principle applies. The summation principle shall be used when forecasting sky cover layers up to and including the first overcast layer.

(b) $h_s h_s h_s$. Encode the height of the base of each sky cover layer in hundreds of feet AGL. Express the height to the nearest 100 feet from the surface to 5,000 feet, to the nearest 500 feet from 5,000 feet to 10,000 feet; and to the nearest 1,000 feet above 10,000 feet. Sky cover from the surface to 50 feet are considered to be surface based and encoded as 000.

(c) Cloud Reporting. Types of clouds, other than cumulonimbus, shall not be encoded. Cumulonimbus clouds, when

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expected, shall always be indicated in a separate group, forecasted for independently if above the OVC layer, and designated by appending the letter abbreviation "CB" to the cloud group without a space (i.e., 6/8's of total clouds with 2/8's of imbedded cumulonimbus at 2,000 ft would be forecast as FEW020CB BKN020).

(d) Obscurations

Partial. Partial obscurations are no longer considered distinct meteorological phenomenon, but will be considered as the first layer in the sky cover group (i.e., fog forecast to cover 3/8 of an airfield would be encoded as SCT000). A forecast broken, BKN000, sky cover will place most airfields below minimums.

Total. $VVh_g h_g h_g$. When the sky is expected to be totally obscured, the group $VVh_g h_g h_g$ shall be encoded in lieu of $N_g N_g N_g h_g h_g h_g$. The indicator "VV" shall be entered followed by the vertical visibility in hundreds of feet AGL.

(e) If two or more significant sky conditions will alternate frequently from one to the other, describe the conditions in a TEMPO group; do not use variable sky condition remarks.

(6) $WS h_{ws} h_{ws} h_{ws} / dddffKT$ or **WSCONDS**. Non-Convective Low Level Wind Shear group. This group is used only to forecast wind shear not associated with convective activity from the surface to 2,000 ft AGL. Complete wind shear information should be included for near term forecasts (usually within six hours) whenever a vector sum difference from the surface to the wind shear height of ≥ 20 KTs is forecast (i.e., 12 KTs from 270 at the surface and 15 KTs from 090 at 1,600 ft would be forecast as WS016/09015). To indicate wind shear when complete information can not be reliably forecast with high confidence (usually beyond six hours), use **WSCONDS**. Omit this group when no low level wind shear is forecast.

(a) WS. Low Level Wind Shear indicator.

(b) $h_{ws} h_{ws} h_{ws}$. Forecast height of the wind shear in hundreds of feet AGL.

(c) ddd. Forecast wind direction, in tens of degrees true, at the indicated height.

(d) ff. Forecast wind speed, in whole knots, at the indicated height.

(e) KT. Units indicator, knots.

(f) WSCONDS. Optional, less specific, wind shear indicator group.

(7) (6I_ch₁h₁h₁t_L). Icing group. This group is used to forecast icing not associated with thunderstorms (thunderstorm forecasts imply moderate or greater icing). Repeat this group as often as necessary to indicate multiple icing layers. Omit when no icing is forecast, except when modifying forecast in a BECMG group.

(a) 6. Icing indicator.

(b) I_c. Type of icing from table 1-3. When more than one type is expected within the same stratum, encode the highest code figure.

(c) h₁h₁h₁. Height of the icing layer's base in hundreds of feet AGL from icing base layers forecasted below 100 ft shall be encoded as "000".

(d) t_L. Thickness of the icing layer in thousands of feet from table 1-4. When a layer is forecast to be thicker than 9,000 feet, repeat the icing group so that the base of the layer expressed by the second group coincides with the top of the layer given by the first. When multiple layers are forecast which are not related to each other, encode the layers in ascending order.

(8) 5Bh_bh_bh_bt_L. Turbulence group. This group is used only to forecast turbulence not associated with a thunderstorm (thunderstorms imply severe or extreme turbulence). Omit when no turbulence is forecast, except when modifying forecast in a BECMG group.

(a) 5. Turbulence indicator.

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(b) B. Turbulence type and intensity from table 1-5. As a matter of emphasis, extreme turbulence shall be encoded with an "X".

(c) $h_b h_b h_b$. Forecast the height of the turbulence layer's base in hundreds of feet AGL turbulence base layers below 100 ft as "000".

(d) t_L . Thickness of the turbulence layer in thousands of feet AGL from table 1-4. When a layer is forecast to be thicker than 9,000 feet, repeat the turbulence group so that the base of the layer expressed by the second group coincides with the top of the layer given by the first. When multiple layers are forecast which are not related to each other, encode the layers in ascending order.

(9) $QNHP_I P_I P_I P_I INS$. Lowest altimeter setting expected (in inches) during the initial forecast period and in each BECMG and FM group. Do not encode in the TEMPO group.

(a) QNH. Altimeter setting indicator.

(b) $P_I P_I P_I P_I$. Forecast the lowest altimeter setting in inches.

(c) INS. Units of measure, inches of mercury.

(10) Ceiling Identification. The lowest forecast broken or overcast layer, or total obscuration, is automatically considered the ceiling. No special indicator required.

(11) Remarks

(a) Contractions. For weather and obstructions to vision, utilize the alphabetic abbreviations contained in table 1-2. Utilize the FAA General Use Contractions for those not contained in the table.

(b) Relate operationally significant forecast elements to geographical features whenever possible; e.g., FG OVR RIVER E.

(c) Vicinity. The proximity qualifier "VC" may be used only for airmass weather when the weather is expected to

occur within the local forecast area; e.g., VCSHRA W translates to rainshowers vicinity west. If the airmass weather is expected to occur within a 5 mile radius of the runway complex, it is considered to be "at the station" and the proximity qualifier "VC" shall not be used.

(d) Last TAF. For stations that temporarily close for any duration of time, the last TAF will include the statement "LAST NO AMDS AFT YYGG NEXT YYGG" (where YY is the day of the month (UTC) and GG is the time to the nearest whole hour (UTC)).

(e) The remarks section is not intended as a "catch all" and shall not be used as a substitute for a change group.

(12) **TTTTT GGG_eG_e** or **TTG**. Change Groups. Change groups shall be used during the twenty-four hour forecast period when a change in some or all of the elements forecast is expected to occur at some intermediate time. Start a new line of text for each change group. Several change groups may be encoded to properly identify the forecast conditions.

(a) **FMGGGG**. The time indicator **TTGG** in the form of "FMGGGG" shall be used to indicate the beginning of a self-contained part of the forecast indicated by the four-digit time "GGGG". When the group **FMGGGG** is used, all forecast conditions preceding this group are superseded by the condition forecast in this group. This forecast line shall contain all elements of a predominate forecast line. For example, if the TAF period is 0909 and a change is forecast at 1420 UTC, the entry "FM1420" shall be encoded. The elements entered on this line are in effect from 1420 UTC to the end of the forecast period, 0900 UTC. While the use of a four-digit time in whole hours, e.g., 1600, remains acceptable, a forecast and amending events may require a higher time resolution. In this case, forecast minutes should be used. Four-digit resolution will only be used in this **FMGGGG** group.

(b) **BECMG**. The change group **BECMG GGG_eG_e** shall be used to indicate a change to forecast meteorological conditions expected to occur at either a regular or irregular rate at an unspecified time within the period identified in GG to G_eG_e. The duration of the change shall normally not exceed 4 hours.

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This change to the predominate conditions shall be followed by a description of all elements for which the change is forecast. An element omitted from this change group would indicate that the element from the previous predominate group remains valid. The forecast conditions encoded after the BECMG GGG_eG_e group are those elements expected to prevail from the ending time of this change group (G_eG_e) to the ending time of the forecast period (G₂G₂) as indicated by the valid time of the TAF. When using the BECMG group to forecast a change in one or more elements, the entire element(s) must be repeated. For example, if the BECMG group was utilized to forecast a decrease in the ceiling and all other forecast layers were expected to remain the same, the entire cloud code group must be repeated, not just the ceiling layer. Also, if turbulence/icing was forecast and expected to cease in the forecast period, indicate 50000/60000 in the BECMG group.

(c) TEMPO. The change group TEMPO GGG_eG_e group shall be used to indicate frequent or infrequent temporary fluctuations to the forecasted meteorological conditions which are expected to last less than one hour in each instance and, in the aggregate cover, less than half of the period indicated by the time GGG_eG_e. When the temporary conditions do not conform to the aforementioned criteria, the change group BECMG GGG_eG_e or FMGGGG shall be used to call for conditions different from those forecast prior to the time GGGG.

(d) To keep the forecast intent clear and unambiguous, the use of change groups should be done with care and kept to significant changes which are operationally significant to airfield operations. Overlapping of forecast periods should be avoided. Use caution when utilizing too many BECMG and TEMPO change groups between FMGG groups. In order to avoid confusion, keep the intent of the forecast simple.

(13) (TT_FT_F/G_FG_FZ). Temperature Group. This is an optional group; however, its usage is highly encouraged and should be included to meet the needs of the forecasting activity. Helicopter and VSTOL aircraft often require arrival density altitude. The forecasting activity is best suited to provide the maximum and minimum temperature and its time of occurrence. This will be the last information of a TAF unless the TAF is an AMD, COR or RTD.

(a) T. Temperature indicator.

(b) $T_F T_F$. Forecast maximum or minimum temperature, as applicable to the time of day. Encode a two digit forecast as applicable to the time of day. Encode a two digit forecast temperature in whole degrees Celsius, prefixing a minus temperature with an "M".

(c) $G_F G_F$. The time at which the maximum or minimum temperature is expected to occur (UTC) followed by "Z".

(14) Amendments/Corrections/Routine Delays. Append this group to the forecast text to identify an amended TAF (TAF AMD), corrected the TAF (TAF COR), or a routine delay TAF (TAF RTD).

(a) TAF AMD. When issuing an amendment to the TAF, the time of the forecast beginning will be the time of the hour at which the amendment is written. The ending time shall be the valid time of the standard TAF issuance identified by $G_2 G_2$. All weather elements shall be forecast for the remainder of the period covered by the amendment. TAF AMD COR shall be used when issuing a correction to the amended TAF.

(b) TAF COR. Issue a correction to the forecast whenever any element was incorrectly transmitted or when an error has been identified. Corrections to the TAF shall not be used as a replacement of a TAF AMD; e.g., if a forecast element(s) has unexpectedly changed within a short period of time after the transmission of the standard TAF, do not use the COR remark.

(c) TAF RTD. A routine delay shall be used when the transmission of the TAF did not meet the time designated by the AWN transmission schedule.

(d) Time of AMD, COR. The last line of the TAF shall have the time the amendment, correction or routine delay was completed for transmission. Encode this time without a "Z"; e.g., AMD or COR 1935.

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(15) Amendment Criteria

(a) The established amendment criteria are based on ceiling and visibility requirements outlined in NATOPS manual, and other safety of flight considerations.

(b) A TAF amendment will be issued anytime the forecaster considers it advisable in the interest of safety, efficiency of aircraft operations, flight planning, operational control, or inflight assistance to aircraft. In determining the need for an amendment, first consideration will be given to providing adequate advance warning of the development of conditions bearing on the safety of enroute aircraft and the adjustment of any forecast that is failing in such a way as to create a potential hazard. A more stringent criteria may be established locally based on flight control requirements and the airfield's operations manual.

(c) As a minimum, the following criteria shall be used when determining whether an amendment is needed. However, the responsibility and authority for issuing amendments shall always rest with the forecaster. Table 1-6 is included for reference.

Ceilings and Visibilities

Ceilings and/or visibilities are observed or are later forecast to increase to equal or exceed, or decrease to less than any of the following values:

<u>Ceiling</u>	<u>Visibility</u>
3,000 feet	4,800 meters (3 SM)
1,000 feet	1,600 meters (1 SM)
200 feet	800 meters (1/2 SM)

Ceiling and/or visibility are observed or are later forecast to increase to, equal or exceed, or decrease to less than those values designated as operationally significant for local operations.

Surface Winds

Wind speed change of ten knots or more.

Directional change of 30 degrees or more when the mean wind speed or gusts are expected to be in excess of 15 knots.

Wind speed or directional change which has resulted in a change of the active runway.

Thunderstorms or tornadic activity

A thunderstorm or tornadic activity was not forecasted to occur, but later occurs or is expected to occur.

A thunderstorm or tornadic activity was forecast, but later is not expected to occur.

Precipitation

Precipitation that will affect the safety of flight, including runway breaking action, is occurring or is forecast to occur, or--if forecast, is no longer expected to occur.

Non-Convective Low Level Wind Shear

Non-Convective Low Level Wind Shear is occurring or forecast to occur, or if forecast, is no longer expected to occur.

QNH (minimum altimeter)

Whenever the observed altimeter falls below or is expected to fall below the forecast minimum altimeter for the applicable forecast period.

3. TAF Example and Explanation.

KNGU TAF 210909 24010KT 4800 -SN BKN005 OVC012 620107 QNH3001INS
TEMPO 0915 0800 +SNRA -BLSN VV002
BECMG 1516 31012G20KT 9999 SCT012 BKN250 510008 QNH3008INS
FM1845 31014G28KT 9999 SKC WS010/26040KT 510008 520804 QNH3020INS
BECMG 0506 33010KT 510804 QNH3020INS T01/15Z

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Explanation:

- KNGU is the ICAO identifier for NAS Norfolk, VA; TAF is the forecast designator; 210909 is the valid beginning date and time of the forecast; 24010KT is the wind group; 4800 is the prevailing visibility in meters; -SN, present weather, is light snow; BKN005 OVC012 is the cloud code group; 620107 is the icing group identifying light icing in cloud, the base and top of the layer are 1,000 feet and 8,000 feet; QNH3001INS is the lowest altimeter forecast.

- TEMPO 0915 is a change group with temporary fluctuation occurring between 0900 UTC and 1500 UTC; 0800 is the prevailing visibility in meters; +SNRA is the precipitation group indicating heavy snow and rain. -BLSN is an obstruction to vision group indicating light blowing snow; and VV002 is a total obscuration with the vertical visibility of 200 feet.

- BECMG 1516 is a change group identifying those elements which will become a predominate change between 1500 UTC and 1600 UTC; 31012G20KT is the wind group; 9999 is unrestricted visibility or seven miles; SCT012 BKN250 is the cloud code group; 510008 is the turbulence group indicating light turbulence, the base and the top of the layer are surface to 8,000 feet; and QNH3008INS is the lowest forecast altimeter.

- FM1845 is a change group indicating a predominate change beginning at 1845 UTC, all elements are encoded; 31014G28KT is the wind group; 9999 is unrestricted visibility or seven miles; SKC is sky clear; the base of the low level wind shear is expected at 1,000 feet with winds from 260 degrees true at 40 knots; 510008 and 520804 are turbulence groups, the first indicates light turbulence from surface to 8,000 feet, and the second is occasional moderate turbulence between 8,000 feet to 12,000 feet; and QNH3020INS is the lowest forecast altimeter.

- BECMG 0506 is a change group identifying those elements which will become predominate between 0500 UTC and 0600 UTC; 33010KT is the wind group; and 510804 is a turbulence group which identifies light turbulence, the base and the top of the layer are 8,000 feet to 12,000 feet. QNH3020INS, the lowest forecast altimeter, is included in all FM and BECMG groups.

- T01/15 indicates the maximum temperature will be one degree Celsius and occur at 1500 UTC.

4. Miscellaneous Entries. The information provided in this paragraph is not authorized for use by NAVMETOCOM Activities. However, the entries and their respective definitions are provided to assist the forecaster in his interpretation of the encoded elements which may be included in forecasts provided by foreign countries and other U.S. agencies. One or more of the following may be encoded:

(a) CAVOK (KAV-OH-KAY). The WMO Manual states that the contraction CAVOK shall be included in place of the groups VVVV, w'w' and $N_s N_s N_s h_s h_s / VV h_s h_s$ when all of the below listed forecast conditions exist simultaneously:

Visibility: 9999 meters or 7 statute miles.

Clouds: No cloud layers below 5,000 feet or below the highest minimum sector altitude, whichever is greater, and no cumulonimbus.

Weather: No precipitation, thunderstorms, shallow ground fog, or drifting dust, sand, or snow.

(b) PROB $C_2 C_2$ GGG $_e G_e$.

PROB is the probability group indicator; $C_2 C_2$ is the forecast percentage expressed in values of 30%, 40%, or 45%; and GGG $_e G_e$ is the time period of the expected occurrence of the forecast elements.

The probability group PROB $C_2 C_2$ GGG $_e G_e$, shall be used only to forecast the probability of an occurrence of a thunderstorm or precipitation event, along with the associated weather elements whose occurrences are directly related to and contemporaneous with the thunderstorm or precipitation event. The PROB group should not be used as a modifier to the BECMG or FM groups. The PROB group shall be used to identify the range of coverage expressed in percent. The WMO regulations allow for the use of 30% and 40%; the NWS may utilize 45%. In any case, less than 30% does not justify the use of this group and 50% or more justifies the use of a BECMG, TEMPO, or FM group. The PROB group

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may be utilized to indicate a chance of the occurrence of thunderstorm or precipitation in a domestic forecast.

(c) Limited Duty Station (LDS). LDS's have less than 24 hour per day on site forecast support. In remarks of the forecast, these stations will identify when a limited weather watch support or no weather watch support is available. The remark "LIMITED MET WATCH (TIME PERIOD UTC)" will be the added remark.

(d) FNXXT/QCYY (USAF only). The final remark of any remotely issued TAF will ensure that this TAF is not included in the automated TAF verification statistics.

Visibility Conversion Table - Statute Miles to Meters
 Reportable Values

Table 1-1

STATUTE MILES	METERS
0	0000
1/16	0100
1/8	0200
3/16	0300
1/4	0400
5/16	0500
3/8	0600
1/2	0800
5/8	1000
3/4	1200
7/8	1400
1	1600
1-1/8	1800

STATUTE MILES	METERS
1-1/4	2000
1-3/8	2200
1-1/2	2400
1-5/8	2600
1-3/4	2800
1-7/8	3000
2	3200
2-1/4	3600
2-1/2	4000
3	4800
4	6000 (1)
5	8000
6	9000 (2)
7	9999

Notes:

- (1) Rounded down from 6400m
- (2) Rounded down from 9600m

w'w' - Significant Forecast Weather and Obstructions to Vision¹

QUALIFIER		WEATHER PHENOMENON				
INTENSITY OR PROXIMITY 1	DESCRIPTOR 2	PRECIPITATION 3	OBSCURATION 4	OTHER 5		
- Light	MI Shallow	DZ Drizzle	BR Mist	PO	Well-Developed Dust/Sand Whirls	
Moderate ²	PR Partial	RA Rain	FG Fog	SQ	Squalls	
+ Heavy	BC Patches	SN Snow	FU Smoke	VA	Volcanic Ash	
VC In the Vicinity	DR Low Drifting	SG Snow Grains	VA Volcanic Ash	FC	Funnel Cloud, Tornado, Waterspout	
	BL Blowing	IC Ice Crystals	DU Widespread Dust	SS	Sandstorm	
	SH Showers (s)	PE Ice Pellets	SA Sand	DS	Duststorm	
	TS Thunderstorm	GR Hail	HZ Haze			
	FZ Freezing	GS Small Hail and/or Snow Pellets	PY Spray			

1. The w'w' groups shall be constructed by considering columns 1 to 5 in the above table in sequence, i.e.: intensity, descriptor, then weather phenomenon.
 2. No symbol is required to denote moderate intensity.

Table 1-2

IC	Type of forecast ice accretion on the external parts of aircraft
Code Figure	
0	No Icing
1	Light Icing
2	Light Icing in Cloud
3	Light Icing in Precipitation
4	Moderate Icing
5	Moderate Icing in Cloud
6	Moderate Icing in Precipitation
7	Severe Icing
8	Severe Icing in Cloud
9	Severe Icing in Precipitation

Table 1-3 Icing Type (IC)

B	Turbulence
Code Figure	
0	None
1	Light Turbulence
2	Moderate Turbulence in clear air, occasional
3	Moderate Turbulence in clear air, frequent
4	Moderate Turbulence in cloud, occasional
5	Moderate Turbulence in cloud, frequent
6	Severe Turbulence in clear air, occasional
7	Severe Turbulence in clear air, frequent
8	Severe Turbulence in cloud, occasional
9	Severe Turbulence in cloud, frequent
X	Extreme Turbulence

Table 1-5, Turbulence Type and
Intensity (B)

Code Figure	Thickness
1	1000 feet
2	2000 feet
3	3000 feet
4	4000 feet
5	5000 feet
6	6000 feet
7	7000 feet
8	8000 feet
9	9000 feet

Table 1-4, Thickness of Turbulence and Icing Layers (t_L)

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Minimum Amendment Criteria									
Ceilings and Visibilities	<ul style="list-style-type: none"> Whenever ceilings and /or visibilities are observed or are later forecast to increase to, equal or exceed, or decrease to less than any of the following: <table style="margin-left: 40px; border: none;"> <thead> <tr> <th style="text-align: left;"><u>Ceiling*</u></th> <th style="text-align: left;"><u>Visibility*</u></th> </tr> </thead> <tbody> <tr> <td>3,000 ft</td> <td>4,800 meters</td> </tr> <tr> <td>1,000 ft</td> <td>1,600 meters</td> </tr> <tr> <td>200 ft</td> <td>800 meters</td> </tr> </tbody> </table> <p style="margin-left: 40px;">* Or any other values designated as operationally significant for local operations.</p> 	<u>Ceiling*</u>	<u>Visibility*</u>	3,000 ft	4,800 meters	1,000 ft	1,600 meters	200 ft	800 meters
<u>Ceiling*</u>	<u>Visibility*</u>								
3,000 ft	4,800 meters								
1,000 ft	1,600 meters								
200 ft	800 meters								
Surface Winds	<ul style="list-style-type: none"> Wind Speed change of 10 kts or more. Directional change of 30° or more when mean wind or gusts in excess of 15 kts. Wind speed or directional change resulting change of active runway. 								
Thunderstorm or Tornadic Activity	<ul style="list-style-type: none"> Thunderstorm or tornadic activity was not forecast to occur, but later occurs or is expected to occur. Thunderstorm or tornadic activity was forecast, but later is not expected. 								
Precipitation	<ul style="list-style-type: none"> Precipitation that will affect safety of flight, including runway braking action, is occurring or is forecast to occur, or if forecast, is no longer expected. 								
Non-Convective Low Level Wind Shear	<ul style="list-style-type: none"> Low Level Wind Shear is occurring or forecast to occur, or if forecast, is no longer expected. 								
QNH	<ul style="list-style-type: none"> Whenever the observed altimeter falls below, or is expected to fall below the original forecast. 								

Table 1-6, Minimum Amendment Criteria