

7 FORECAST TEXT PRODUCTS

7.1 Area Forecasts (FA)

The NWS issues Area Forecasts (FA) to provide an overview of regional weather conditions that could impact aviation operations in the U.S. and adjacent coastal waters. Area forecasts are issued by the following offices for the following areas:

- The Aviation Weather Center (AWC)
 - Conterminous U.S. and adjacent coastal waters (CONUS)
 - Gulf of Mexico
 - Caribbean Sea and north Atlantic Ocean
- The Alaskan Aviation Weather Unit (AAWU)
 - Alaska and adjacent coastal waters
- WFO Honolulu, Hawaii
 - Hawaii and adjacent coastal waters

They are all available on the Aviation Weather Center (AWC) web site at:
<http://aviationweather.gov/products/fa/>.

7.1.1 CONUS (FAUS) and Hawaii (FAHW) Area Forecasts

A CONUS and Hawaii Area Forecast (FA) describe, in abbreviated language, specified en route weather phenomena below FL450. To understand the complete weather picture, the FA **must** be used in conjunction with the [AIRMETs](#) (Section 6.2) and [SIGMETs](#) (Section 6.1). Together, they are used to determine forecast en route weather and to [interpolate](#) conditions at airports for which no Terminal Aerodrome Forecasts (TAFs) are issued.

The CONUS and Hawaii FAs are available on the Aviation Weather Center (AWC) web site at:
<http://aviationweather.gov/products/fa/>.

The Hawaii Area Forecast can also be found on the NWS WFO Honolulu web site at:
<http://www.prh.noaa.gov/hnl/pages/aviation.php>.

The FA contains forecast information for VFR/MVFR clouds and weather for a 12-hour period with a 12- to 18-hour categorical outlook forecast for IFR, MVFR, and/or VFR. The following weather elements are included in the 12-hour forecast:

- Thunderstorms and precipitation;
- Sky condition (cloud height, amount, and tops) if bases are at or below (AOB) FL180 MSL. (Tops will only be forecast for broken (BKN) or overcast (OVC) clouds);
- Obstructions to visibility (fog, [mist](#), [haze](#), blowing dust, etc.) if surface visibilities are three (3) to six (6) miles; and
- Sustained surface wind speed of 20 [knots](#) or greater.

Hazardous weather (e.g., IFR, icing, turbulence, etc.) meeting [AIRMET](#) or [SIGMET](#) criteria is not forecast in the CONUS or Hawaii FA. Valid [AIRMETs](#) and [SIGMETs](#) must be used in conjunction with the FA to determine hazardous weather information for the flight.

The Aviation Weather Center (AWC) issues the following CONUS FAs for six (6) geographical areas (Figure 7-1). The Weather Forecast Office (WFO) Honolulu issues FAs for the main Hawaiian Islands and coastal waters extending out to 40 NM of the coastlines (Figure 7-2).

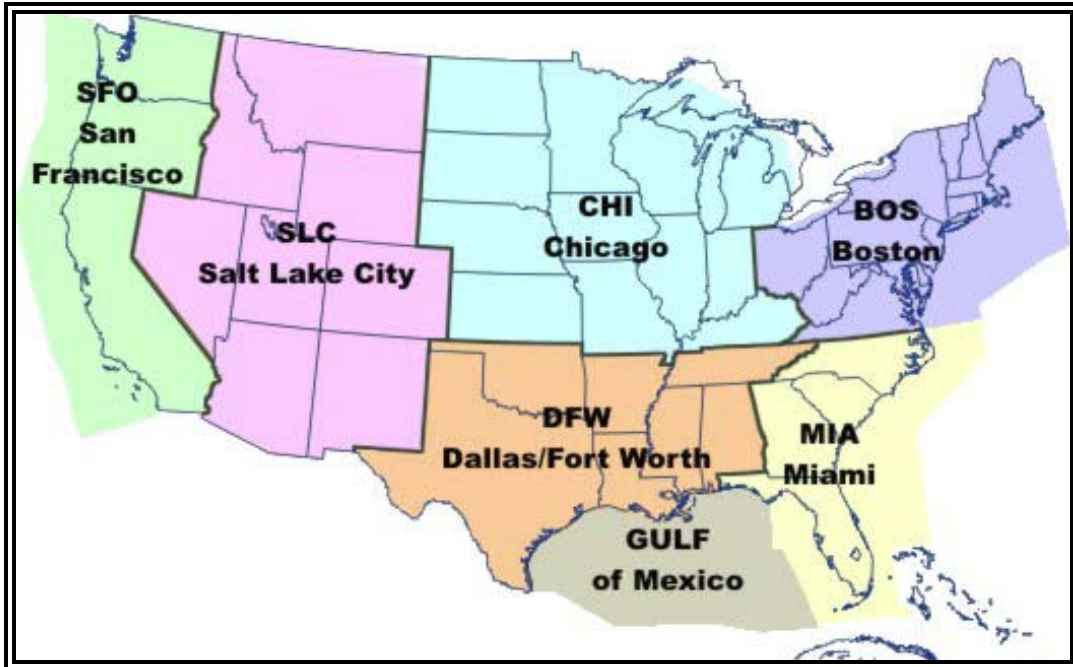


Figure 7-1. AWC Area Forecast Regions- Contiguous U.S.

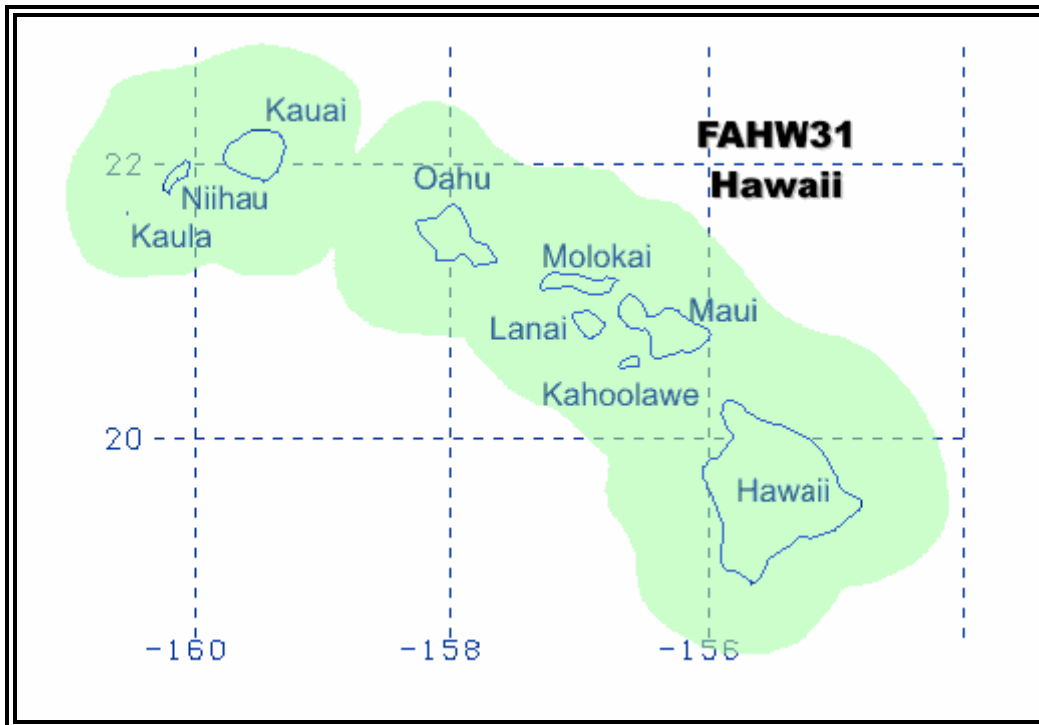


Figure 7-2. WFO Honolulu Area Forecast Region and WMO header - Hawaii

An Area Forecast (FA) provides an overview of regional weather conditions that could impact aviation operations in the U.S. and adjacent coastal waters. The Area Forecast **does not** include forecast for IFR conditions so the Area Forecast **must** be used in conjunction with SIGMETs and [AIRMETs](#). Each FA contains a precautionary statement, prior to the synopsis, saying **SEE [AIRMET SIERRA](#)** followed by a reminder of what thunderstorm activity implies and a reference to how heights not reported in MSL are denoted. This is not a reference to a specific [AIRMET](#) but a reminder the FA does not include forecasted IFR conditions.

7.1.1.1 Standardization

The CONUS FA follows these standards:

- All referenced heights or altitudes are referenced above mean sea level (AMSL), unless otherwise noted, and annotated using the height in hundreds of feet, consisting of three (3) digits (e.g., 040). For heights at or above 18,000 feet, the level will be preceded by FL (e.g., FL180).
- Messages are prepared in abbreviated plain language using contractions from the Federal Aviation Administration (FAA) Order 7340.1Y for domestic products and International Civil Aviation Organization (ICAO) document 8400 for international products issued for Oceanic FIRs. A limited number of non-abbreviated words, geographic names and numerical values of a self-explanatory nature may also be used.
- Weather and obstructions to visibility are described using the weather and abbreviations for surface airways observations (METAR or SPECI).

7.1.1.1.1 Height Reference

All heights are referenced to Mean Sea Level (MSL) except when prefaced by [AGL](#), [CIG](#) or [CEILING](#). Tops are always referenced to MSL.

Examples:

SCT030 BKN100

Scattered at 3,000 feet MSL, broken at 10,000 feet MSL

AGL SCT030 CIG BKN050

Scattered at 3,000 feet [AGL](#), broken at 5,000 feet [AGL](#)

AGL SCT-BKN015-025. TOPS 070-090

Scattered to broken at 1,500 to 2,500 feet [AGL](#). Tops 7,000 to 9,000 feet MSL.

7.1.1.2 CONUS and Hawaii Area Forecast Format

The FA is an 18 hour forecast composed of the following 4 sections: communication and product header, precautionary statements, synopsis and visual flight rules (VFR) clouds and weather forecast.

7.1.1.2.1 Communication and Product header

The Communication and Product header section (Figure 7-3) contains descriptive information about the product.

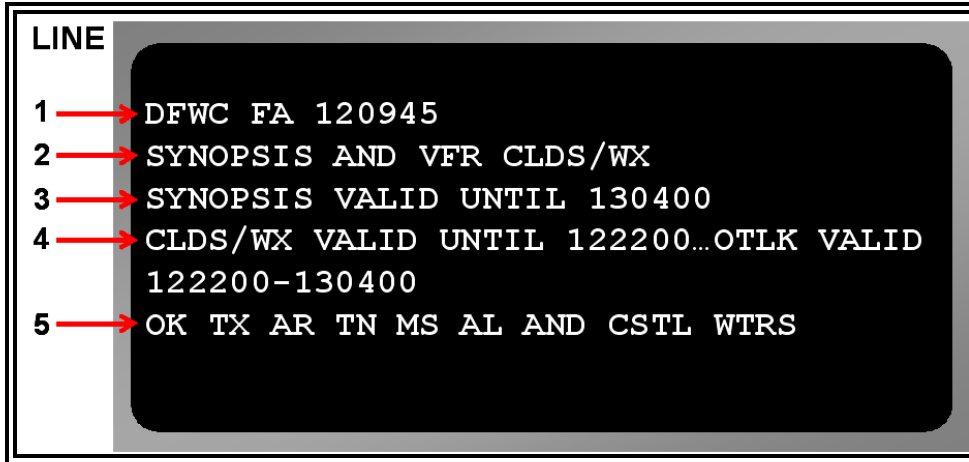


Figure 7-3. Area Forecast - Communication and Product Header Example

Table 7-1. Decoding the Communications and Product Header

Line	Content	Description
1	DFW C FA 120945	Area Forecast region identifier Indicates VFR clouds and weather forecast Product type Issuance and beginning of valid date/time (UTC)
2	SYNOPSIS AND VFR CLDS/WX	Statement of weather information contained in this forecast message
3	SYNOPSIS VALID UNTIL 130400	Synopsis valid date and time
4	CLDS/WX VALID UNTIL 122200...OTLK VALID 122200- 130400	The main forecast for VFR clouds and weather valid time. The valid date and time of the outlook.
5	OK TX AR TN MS AL AND CSTL WTRS	Description of the area for which the FA is valid.

7.1.1.2.2 Precautionary Statements

The Precautionary Statements section (Figure 7-4) consists of three lines.

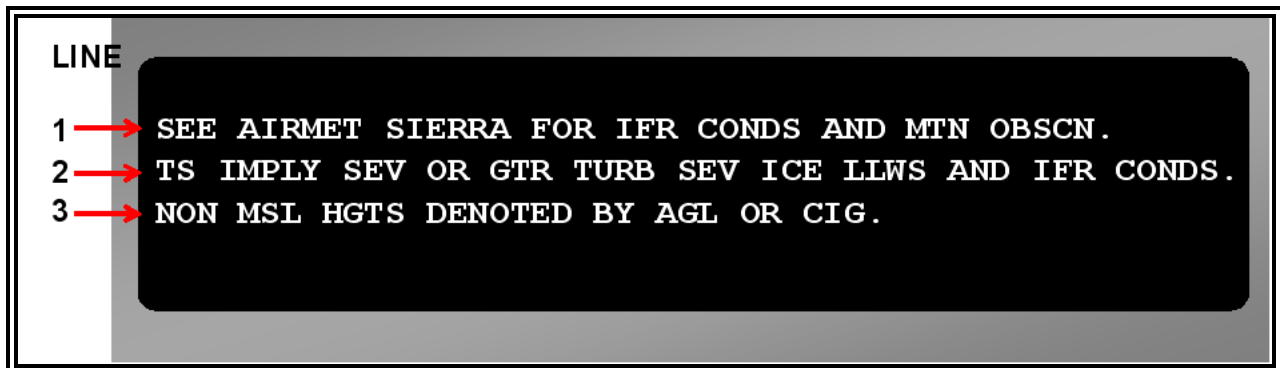


Figure 7-4. Area Forecast- Precautionary Statements Example

Line 1 is included to alert users that IFR conditions and/or mountain [obscurations](#) may be occurring or are forecast to occur and are not included in the product.

Line 2 is included as a reminder of all hazards associated with thunderstorms. These hazards are not spelled out in the body of the FA.

Line 3 indicates height references are Mean Sea Level (MSL) unless they are preceded by [AGL](#) or **CIG**.

7.1.1.2.3 Synopsis

The Synopsis section (Figure 7-5) contains a brief summary of the location and movement of fronts, pressure systems, and other circulation features for the entire 18 hour (FA) valid period.

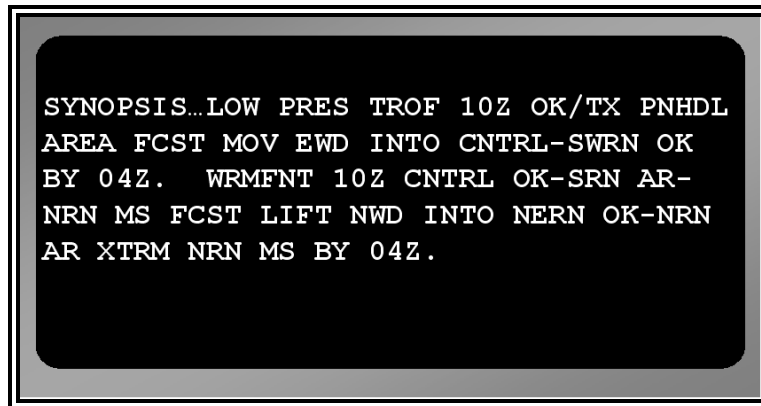


Figure 7-5. Area Forecast - Synopsis Example

The Synopsis is decoded as follows:

Synopsis...low pressure trough at 1000 UTC over the Oklahoma and Texas Panhandle area forecast to move eastward into central/southwestern Oklahoma by 0400 UTC. A warm front at 1000 UTC from central Oklahoma to southern Arkansas to northern Mississippi is forecast to lift northward into northeastern Oklahoma to northern Arkansas to extreme northern Mississippi by 0400 UTC.

7.1.1.2.4 VFR clouds and Weather (CLDS/WX)

The VFR CLDS/WX section (Figure 7-6) describes conditions consisting of MVFR cloud [ceilings](#) (1,000 to 3,000 feet [AGL](#)), MVFR obstructions to visibility (3-5 statute miles), and any other significant VFR clouds (bases at or below FL180) or VFR precipitation. The CLDS/WX section also includes widespread sustained surface winds of 20 [knots](#) or greater. Occasionally, IFR conditions may be forecast in the Hawaii FA as IFR conditions may not reach [AIRMET](#) geographical coverage criteria.

This section contains a 12-hour forecast, followed by a 6-hour categorical outlook of IFR, MVFR and/or VFR, giving a total forecast period of 18 hours. In the CONUS, the CLDS/WX section is divided into regions with generally uniform weather conditions. These divisions may be by geographical regions (e.g., LM – Lake Michigan) or states using their 2-letter designators (e.g. ND – North Dakota). See Appendix H for geographical regions.

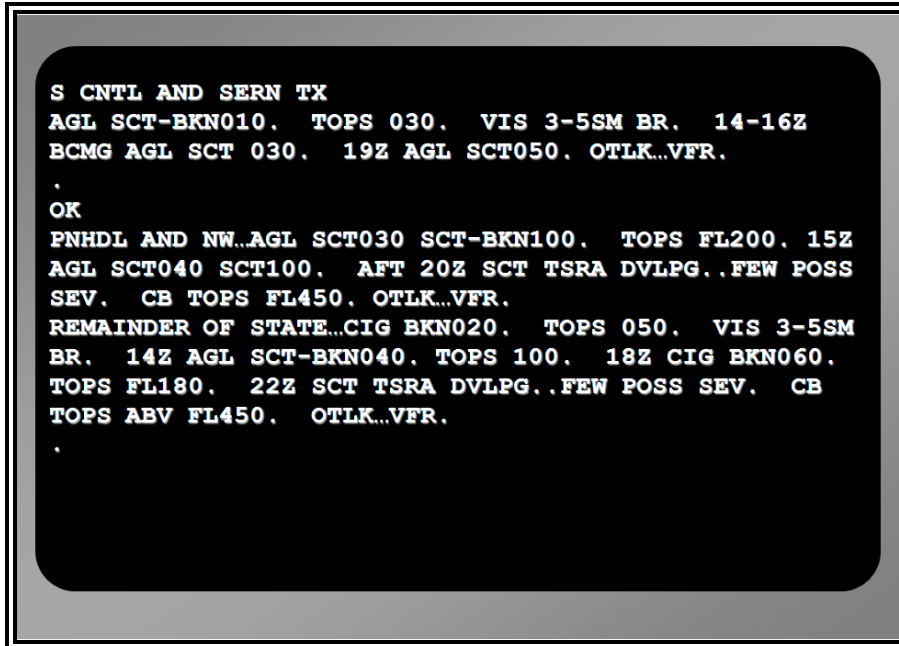


Figure 7-6. Area Forecast - VFR Clouds and Weather Example

The VFR CLDS/WX section is decoded as follows:

South central and southeast Texas.

Scattered to broken at 1,000 feet above ground level (AGL). Tops at 3,000 feet above mean sea level (MSL). Visibility 3 to 5 statute miles in mist. Between 1400 and 1600 UTC...clouds becoming scattered at 3,000 feet AGL. 1900 UTC...scattered at 5,000 feet AGL. Outlook...VFR.

Oklahoma

Panhandle and northwest...scattered at 3,000 feet AGL, scattered to broken at 10,000 feet AGL. Tops at flight level 20,000 feet MSL. 1500 UTC...scattered at 4,000 feet AGL, scattered at 10,000 feet AGL. After 2000 UTC...scattered thunderstorms with rain showers developing..a few possible severe. Cumulonimbus tops to flight level 45,000 feet MSL. Outlook...VFR.
Remainder of the state...Ceilings broken at 2,000 feet AGL. Tops at 5,000 feet MSL. Visibilities 3 to 5 statute miles in mist. 1400 UTC...scattered to broken at 4,000 feet AGL. Tops at 10,000 feet MSL. 1800 UTC...ceilings broken 6,000 feet AGL. Tops to flight level 18,000 feet MSL. 2200 UTC...scattered thunderstorm with rain showers developing...a few possibly severe. Cumulonimbus tops above flight level 45,000 feet MSL. Outlook...VFR.

7.1.1.3 CONUS and Hawaii Area Forecast Issuance

The CONUS FAUSs are issued three times daily for each of six areas (see following table).

Table 7-2. Area Forecast (FAUS) Issuance Schedule - CONUS

Area Forecast (FAUS)	Boston and Miami (UTC)	Chicago and Fort Worth (UTC)	San Francisco and Salt Lake City (UTC)
1st Issuance	0845 DT 0945 ST	0945 DT 1045 ST	1045 DT 1145 ST
2nd Issuance	1745 DT 1845 ST	1845 DT 1945 ST	1945 DT 2045 ST
3rd Issuance	0045 DT 0145 ST	0145 DT 0245 ST	0245 DT 0345 ST

The Hawaii Area Forecast is issued four times daily at 0340, 0940, 1540, and 2140 UTC.

7.1.1.3.1 FA Amendments

An amended FA may be issued to notify pilots and briefers that a weather phenomena and/or condition that was not forecast is now expected or a forecast phenomena or condition has improved or did not develop as expected. The new condition is expected to exceed half of the time of a regular issuance and is expected to no longer affect low-level flights. An amended FA is denoted by an **AMD** after the date/time group on the FAA product line (line 1 in Table 7-1) and will contain an **UPDT** contraction following the affected geographical area in the CLDS/WX section.

Example

```
CHIC FA 231345 AMD
SYNOPSIS AND VFR CLDS/WX
SYNOPSIS VALID UNTIL 240400
CLDS/WX VALID UNTIL 232200...OTLK VALID 232200-240400
ND SD NE KS MN IA MO WI LM LS MI LH IL IN KY
.
SD...UPDT
EXTRM SWRN/EXTRM S CNTRL...CIG BKN-OVC010 TOP 120. 18Z AGL SCT015
SCT-BKN035. OTLK...VFR.
RMNDR WRN/CNTRL...SCT CI. OTLK...VFR TSRA.
ERN...AGL SCT-BKN035 TOP 120. OTLK...VFR.
```

7.1.1.3.2 FA Corrections

FAs containing errors are corrected. This is identified by **COR** after the date/time group on the FAA product line. The first time indicated is the issuance time with the ending valid time unchanged. A corrected FA contains **UPDT** following the affected geographical area in the CLDS/WX section.

Example:

```
CHIC FA 231015 COR
SYNOPSIS AND VFR CLDS/WX
SYNOPSIS VALID UNTIL 240400
CLDS/WX VALID UNTIL 232200...OTLK VALID 232200-240400
ND SD NE KS MN IA MO WI LM LS MI LH IL IN KY
.
```

SD...UPDT

EXTRM SWRN/EXTRM S CNTRL...CIG BKN-OVC010 TOP 120. 18Z AGL SCT015
 SCT-BKN035. OTLK...VFR.
 RMNDR WRN/CNTRL...SCT CI. OTLK...VFR TSRA.
 ERN...AGL SCT-BKN035 TOP 120. OTLK...VFR.

7.1.1.4 Example of a CONUS Area Forecast

FAUS5 KDFW 030953 (ICAO Communication Header)

FA4W

DFWC FA 030945 (AMD or COR if needed)

SYNOPSIS AND VFR CLDS/WX

SYNOPSIS VALID UNTIL 040400

CLDS/WX VALID UNTIL 032200...OTLK VALID 032200-040400

OK TX AR TN LA MS AL

.

SEE AIRMET SIERRA FOR IFR COND AND MT OBSCN.
 TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
 NON MSL HGT DENOTED BY AGL OR CIG.

.

SYNOPSIS...HURCN LILI MOVG ONSHORE OVER CENTRAL LA COASTLINE. SEE
 LATEST ADVISORY FM NHC. QUASI-STNR FRONTAL SYSTEM EXTENDS FM N OH
 AND CENTRAL IN ACROSS S IL..SW MO..SW OK INTO SE CORNER OF NM. BY
 04Z...COLD FRONT WILL EXTEND FM A LOW OVER SERN NE ACROSS CENTRAL KS
 AND W OK INTO BIG BEND AREA OF SW TX.

.

OK

PANHANDLE/W OK...CIG OVC010. CLDS LYR TO FL240.

VIS 3-5SM BR. BECMG 1618 CIG OVC015-025. WIDELY SCT -SHRA/ISOL EMBD
 -TSRA. CB TOP FL350. OTLK...MVFR CIG TSRA BR.

ERN OK...AGL SCT-BKN015-025. TOPS 030-050. VIS 3-5SM BR. BECMG
 1417 AGL SCT030-050. OTLK...VFR.

.

NW TX

CIG010. CLDS LYR TO FL240. VIS 3-5SM BR. BECMG 1618 CIG OVC015-025.
 WIDELY SCT -SHRA/ISOL EMBD -TSRA. CB TOP FL350. OTLK...MVFR CIG TSRA
 BR.

.

SW TX

AGL SCT040-060. OTLK...VFR.

.

CENTRAL TX

CIG BKN015-025. TOP 030-050. VIS 3-5SM BR. BECMG 1417 AGL SCT030-050.
 OTLK...VFR.

.

E TX

SKC. BECMG 1316 AGL SCT030-050. OTLK...VFR.

.

AR

AGL SCT030-050. SCT-BKN100. TOP FL200. BKN CI. OTLK...MVFR CIG TSRA
 BR.

.

LA

N LA...AGL SCT-BKN030-050. BKN100. TOPS FL240. ISOL -SHRA. BECMG 1618
CIG BKN030-050. WIDELY SCT TSRA/SHRA DEVELOPING. CB TOP FL400.

OTLK...MVFR CIG TSRA WIND.

S LA...CIG OVC010-020. CLDS LYR TO FL280. OCNL RA/+RA...SCT
+TSRA...POSS SEV. CB TOPS FL450. SFC WND 14030G50KT. E SECTIONS...WND
30025G40KT. WND DIMINISHING TO 20G30KT 19-22Z.

OTLK...MVFR CIG SHRA WND.

.

TN

BKN CI. OCNL VIS 3-5SM BR TIL 14Z. OTLK...VFR.

.

MS AL

N AND CENTRAL MS-AL/SE AL..SCT-BKN100. BKN150. TOPS FL280. BECMG 1618
AGL SCT-BKN050 BKN100 OVC150. OTLK...MVFR CIG TSRA.

S MS/SW AL...AGL SCT-BKN050 BKN100 OVC150. TOPS FL280. BECMG 1316 CIG
OVC015-025. OCNL RA/SCT EMBD TSRA. CB TOP FL410. OTLK...MVFR CIG TSRA.

7.1.1.5 Example of a Hawaii Area Forecast

FAHW31 PHFO 080940

FAOHI

HNLIC FA 080940 (*AMD or COR, if necessary*)

SYNOPSIS AND VFR CLDS/WX

SYNOPSIS VALID UNTIL 090400

CLDS/WX VALID UNTIL 082200...OTLK VALID 082200-090400

HI

.

SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.

TS IMPLY SEV OR GRTR TURB SEV ICE LLWS AND IFR CONDS.

NON MSL HGT DENOTED BY AGL OR CIG.

.

SYNOPSIS...SFC HIGH FAR N PHNL NEARLY STNR.

.

BIG ISLAND ABV 060.

SKC. 20Z SCT090. OTLK...VFR.

.

BIG ISLAND LOWER SLOPES...CSTL AND ADJ WTRS FROM UPOLU POINT TO
CAPE KUMUKAHI TO APUA POINT.

SCT030 BKN050 TOPS 080 ISOL BKN030 VIS 3-5SM -SHRA BR TIL 20Z ISOL
BKN010 VIS BELOW 3SM SHRA BR. 21Z SCT030 SCT-BKN050 TOPS 080 ISOL
BKN030 5SM -SHRA. OTLK...VFR.

.

BIG ISLAND LOWER SLOPES FROM APUA POINT TO SOUTH CAPE TO UPOLU POINT.

SKC. 21Z SCT-BKN060 TOPS 080. 23Z SCT030 SCT-BKN060 TOPS 080 ISOL
BKN030 -SHRA. OTLK...VFR.

.

BIG ISLAND CSTL AND ADJ WTRS FROM SOUTH CAPE TO PHKO TO UPOLU
POINT.

SCT050 ISOL BKN050 TOPS 080. 18Z FEW050. 23Z SCT-BKN050 TOPS080.
OTLK...VFR.

.

N AND E FACING SLOPES...CSTL AND ADJ WTRS OF THE REMAINING ISLANDS.

SCT020 BKN045 TOPS070 TEMPO BKN020 VIS 3-5SM -SHRA...FM OAHU EASTWARD ISOL CIG BLW 010 AND VIS BELOW 3SM SHRA BR WITH TOPS 120. 22Z SCT025 SCTBKN050 TOPS 070 ISOL BKN025 3-5SM -SHRA. OTLK...VFR.

REST OF AREA.

SCT035 SCT-BKN050 TOPS 070 ISOL BKN030 -SHRA. 20Z SCT050 ISOL SCT030 BKN045 TOPS 070 -SHRA. OTLK...VFR.

7.1.2 Gulf of Mexico Area Forecast (FAGX)

The Gulf of Mexico FA is an overview of weather conditions that could impact aviation operations over the northern Gulf of Mexico (Figure 7-7). It serves as a flight-planning and weather briefing aid and describes weather of significance to general aviation (GA), military and helicopter operations. The FAGX is a 24 hour forecast product with the synopsis valid the entire 24 hour period, the forecast section valid the first 12 hours, and the outlook section is valid the last 12 hours.

Each FA contains a statement before the synopsis indicating heights not reported in MSL are denoted and a reminder of what thunderstorm activity implies.

The Aviation Weather Center (AWC) produces this forecast and it can be found at: <http://www.aviationweather.gov/products/fa/?area=gulf>

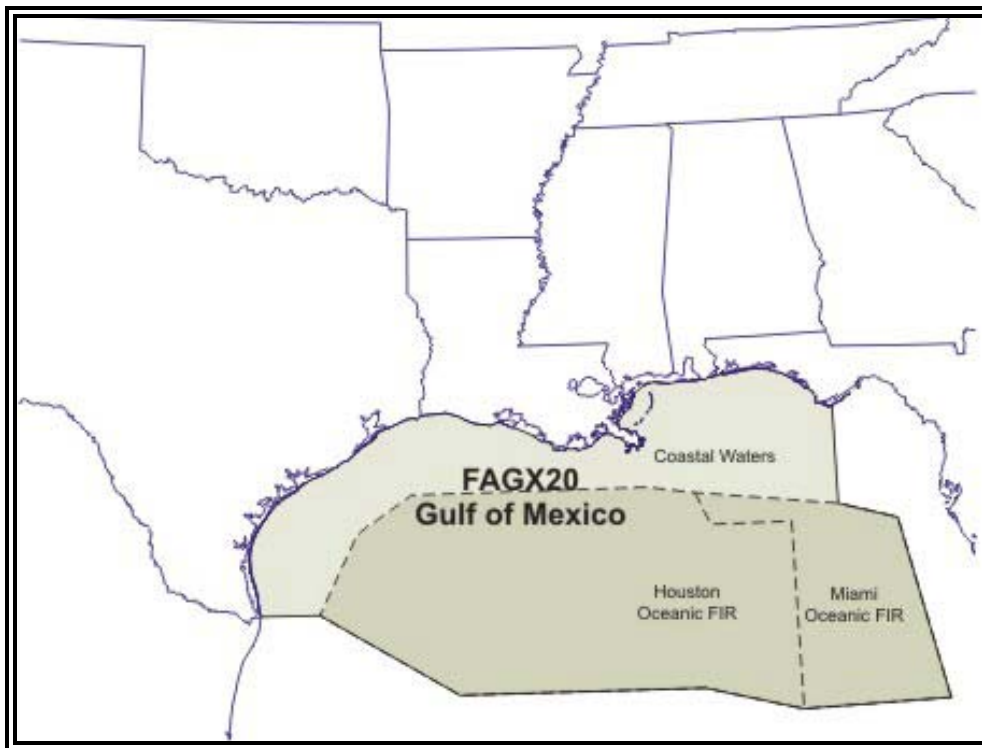


Figure 7-7. AWC Area Forecast Region and WMO Header - Gulf of Mexico

7.1.2.1 Standardization

All forecasts follow these standards:

- All referenced heights or altitudes consist of three (3) digits depicting height in hundreds of feet Mean Sea Level (MSL).
- Messages are prepared using approved ICAO contractions, abbreviations and numerical values of self-explanatory nature.
- Weather and obstructions to visibility are the same as weather abbreviations used for surface airways observations (METAR or SPECI) (Section 2).

7.1.2.1.1 Height Reference

All heights are referenced to Mean Sea Level (MSL) except when prefaced by [AGL](#) or CIG. Tops are always referenced to MSL.

Examples:

SCT030 BKN100

Scattered at 3,000 feet MSL, broken at 10,000 feet MSL

AGL SCT030 BKN100

Scattered at 3,000 feet [AGL](#), broken at 10,000 feet MSL

CIG BKN006 BKN070. TOP 100.

Broken at 600 feet [AGL](#), broken at 7,000 feet MSL. Top 10,000 feet MSL.

7.1.2.2 Gulf of Mexico Area Forecast Content

The Gulf of Mexico FA (FAGX) is a single product combining information contained in FAs prepared for the conterminous U.S. and the in-flight advisories -- [AIRMET](#)/SIGMET. Each section describes the phenomena impacting the respective areas and will always have an entry even if it is negative.

The FAGX contains a synopsis and a weather forecast section. The weather section includes:

- Flight precautions at or below 12,000 feet MSL for thunderstorms which are at least scattered or meet Convective SIGMET criteria;
- Moderate or greater [turbulence](#); moderate or greater icing;
- Wind speeds greater than or equal to 25 [knots](#) below 1,000 feet;
- [Ceilings](#) and/or visibilities less than 1,000 feet and/or three (3) miles;
- Significant Clouds and Weather;
- Icing and [freezing level](#);
- and [turbulence](#).

Table 7-3. Area Forecast Sections – Gulf of Mexico

SECTION	DESCRIPTION
SYNOPSIS...	A brief description of the location and movement of fronts, pressures systems, and other circulations as well as the weather associated with them.
FLIGHT PRECAUTIONS...	Flight precautions (at or below 12,000 feet MSL) include adverse weather. Examples may include thunderstorms, IFR, turbulence, strong winds, icing, etc...
SIGNIFICANT CLD/WX...	A 12-hour forecast of clouds and weather at or below 12,000 feet MSL. This forecast can include IFR conditions. It also includes a 12-hour categorical outlook (IFR/MVFR/VFR/WND) and the clouds or weather causing the categorical forecast.
ICE AND FZ LVL BLW 120	The location and altitudes of moderate or greater icing and the associated freezing levels at or below 12,000 feet MSL.

7.1.2.3 Example of a Gulf of Mexico Area Forecast

The following is an example of a Gulf of Mexico Area Forecast.

FAGX20 KKCI 091812

OFAGX

SYNOPSIS VALID TIL 101900Z

FCST...091900Z-100700Z

OTLK...100700Z-101900Z

- INTERNATIONAL OPERATIONS BRANCH
AVIATION WEATHER CENTER KANSAS CITY MISSOURI

- CSTL WATERS FROM COASTLINE OUT TO HOUSTON OCEANIC FIR AND GLFMEX MIAMI OCEANIC FIR AND W OF 85W. HOUSTON OCEANIC FIR AND GLFMEX MIAMI OCEANIC FIR.

- TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS. HGTS MSL.

- 01 SYNOPSIS...HIGH PRES OVR NRN GLFMEX.

- 02 SIGNIFICANT CLD/WX...

- CSTL WATERS...
SCT020. OTLK...VFR.

- HOUSTON OCEANIC FIR...SCT020. OTLK...VFR.

- GLFMEX MIAMI OCEANIC FIR... SCT020. OTLK...VFR.

- 03 ICE AND FRZLVL...
CSTL WATERS...SEE AIRMETS ZULU WAUS44 KKCI AND WAUS42 KKCI.
HOUSTON OCEANIC FIR... NO SGFNT ICE EXP OUTSIDE CNVTV ACT.

GLFMEX MIAMI OCEANIC FIR...NO SGFNT ICE EXP OUTSIDE CNVTV ACT.
FRZLVL...140 THRUT.

•
04 TURB... CSTL WATERS...SEE AIRMETS TANGO WAUS44 KKCI AND WAUS42
KKCI.

HOUSTON OCEANIC FIR... NO SGFNT TURB EXP OUTSIDE CNVTV ACT.
GLFMEX MIAMI OCEANIC FIR...NO SGFNT TURB EXP OUTSIDE CNVTV ACT.

7.1.2.4 Gulf of Mexico Area Forecast Issuance

The FAGX, valid for 12 hours with a 12-hour extended outlook, is issued twice daily at 1030 and 1830 UTC.

7.1.2.4.1 Gulf of Mexico FA Amendments

Gulf of Mexico FAs are amended at the forecaster's discretion.

If any phenomena or conditions depicted in FA improve and are no longer expected to affect low-level flights (including VFR) and the new conditions will exceed half the period between regular issuances, a FA **AMD** message is sent indicating which section has been amended by adding **AMD**. The first time indicated is the issuance time with the ending valid time unchanged.

The product will not be amended between 0200 and 1100 UTC.

7.1.2.4.2 FA Corrections

FAs containing errors are corrected. A FA correction is sent indicating which section has changed by adding **COR**. The first time indicated is the issuance time with the ending valid time unchanged.

7.1.3 Caribbean Area Forecast (FACA)

The Caribbean FA is an overview of weather conditions that could impact aviation operations over the Caribbean Sea and adjacent landmasses and islands and the southwestern portions of the New York Oceanic FIR (Figure 7-8). Specifically, it covers the Atlantic south of 32N and W of 57W, the Caribbean from surface to FL240 (approximately 400 [millibars](#)).

The synopsis and forecast sections are valid for 12 hours each, with the outlook valid for 12 hours beyond the synopsis and forecast section valid period. In this form, it serves as a flight planning and weather briefing aid for general aviation pilots, and civil and military aviation operations.

The clouds/weather forecast section includes the following areas:

- Atlantic (Southwestern NY and MIA Oceanic FIRs)
- Caribbean Sea (San Juan FIR; Western Piarco FIR; Santo Domingo, Port au Prince and Habana FIRs; Northern Maiquetia, Curacao, and Northern Barranquilla FIRs; Kingston and Northern Central America FIRs; Northern Merida FIR; and Eastern Monterrey FIR)

The Caribbean Area Forecast is issued by the AWC and can be found at:

<http://www.aviationweather.gov/products/fa/?area=carib>

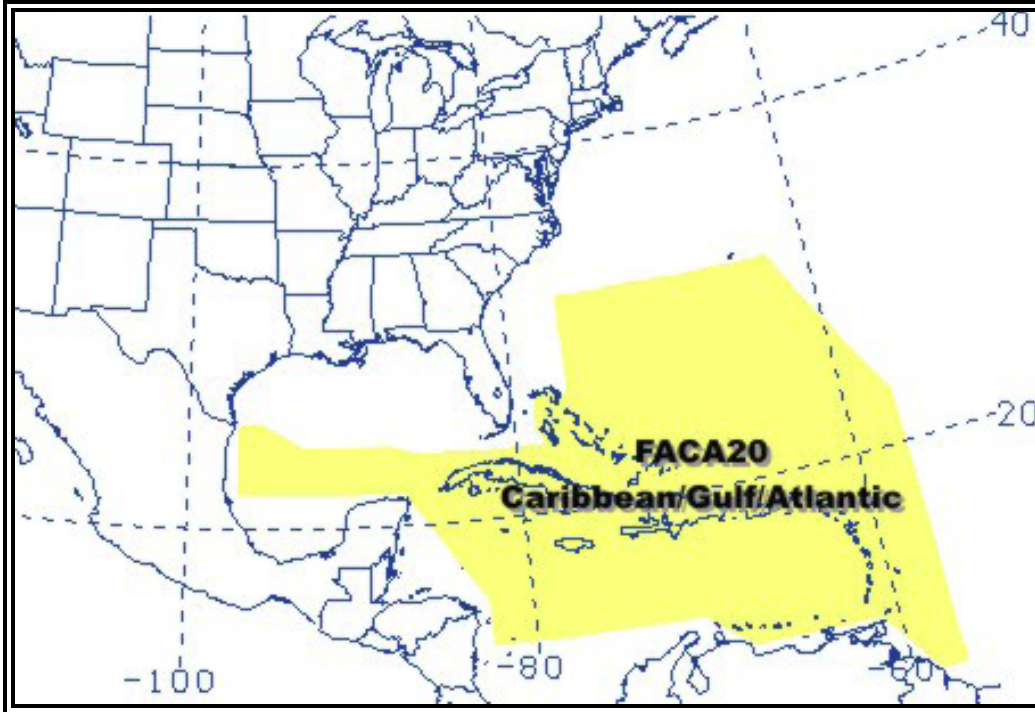


Figure 7-8. AWC Area Forecast Region and WMO Header - Caribbean

7.1.3.1 Standardization

All forecasts follow these standards:

- All Mean Sea Level (MSL) referenced heights or altitudes are annotated as FL for heights at or above 18,000 and consist of three (3) digits depicting height in hundreds of feet.
- Messages are prepared using approved ICAO contractions, abbreviations and numerical values of self-explanatory nature.
- Weather and obstructions to visibility are the same as weather abbreviations used for surface airways observations (METAR or SPECI) (Section 2).

7.1.3.1.1 Height Reference

All heights are referenced to Mean Sea Level (MSL) except when prefaced by [AGL](#) or CIG. Tops are always referenced to MSL.

Examples:

SCT030 BKN100

Scattered at 3,000 feet MSL, broken at 10,000 feet MSL

AGL SCT030 BKN100

Scattered at 3,000 feet [AGL](#), broken at 10,000 feet MSL

CIG BKN006 BKN070. TOP 100.

Broken at 600 feet [AGL](#), broken at 7,000 feet MSL. Top 10,000 feet MSL.

7.1.3.2 Caribbean Area Forecast Content

Table 7-4. Area Forecast Sections - Caribbean

Section	Description
SYNOPSIS...	A brief description of the location and movement of fronts, pressure systems, and other circulations, as well as the weather associated with them.
SIGNIFICANT CLD/WX...	A 12-hour forecast of clouds and weather (including IFR conditions) plus a 12-hour categorical outlook (IFR/MVFR/VFR/WND). The cause of IFR/MVFR conditions is specified. Wind is 25 knots or greater.
ICE AND FZ LVL...	The location and altitudes of moderate or greater icing and the associated freezing levels.
TURB...	The location and altitudes of moderate or greater turbulence.

7.1.3.3 Example of a Caribbean Area Forecast

FACA20 KKCI 121530
 OFAMKC
 INTERNATIONAL OPERATIONS BRANCH
 AVIATION WEATHER CENTER KANSAS CITY MISSOURI
 VALID 121600-130400
 OUTLOOK...130400-131600

.
 ATLANTIC S OF 32N W OF 57W...CARIBBEAN...GULF OF MEXICO BTN 22N AND 24N.

.
 TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS. SFC TO 400 MB.

.
 SYNOPSIS...WK CDFNT EXTDS FM NR 28N60W TO 23N63W TO THE MONA PASSAGE.
 CDFNT WL MOV EWD AND WKN TODAY. EXP NARROW BAND OF CLDS WITH ISOL
 SHRA INVOF CDFNT.

.
 SIGNIFICANT CLD/WX...
 ERN MONTERREY FIR...NRN MERIDA FIR
 SCT025 SCT060. OTLK...VFR.

.
 ATLC SWRN NEW YORK FIR...SAN JUAN FIR
 NW OF CDFNT...SCT025 SCT060. LYR OCNL BKN. TOP 120. ISOL SHRA.
 OTLK...VFR.
 VCNTY CDFNT...SCT025 BKN060. OCNL BKN025. TOP 120. WDLY SCT SHRA. ISOL TSRA
 TIL 20Z. OTLK...VFR SHRA.
 SE OF CDFNT...SCT025 SCT060. ISOL SHRA. OTLK...VFR.

.
 ATLC MIAMI FIR
 SCT025 SCT060. LYR OCNL BKN. TOP 120. ISOL SHRA. OTLK...VFR.

.
 WRN PIARCO FIR...NRN MAIQUETIA FIR...CURACAO FIR
 BTN 61W-63W...SCT025 BKN060. OCNL BKN025. TOP 120. WDLY SCT SHRA. OTLK...VFR
 SHRA.
 RMNDR...SCT025 SCT060. ISOL SHRA. OTLK...VFR.

.
SANTO DOMINGO FIR...PORT-AU-PRINCE FIR
SCT025 SCT060. LYR OCNL BKN. TOP 120. ISOL SHRA. OTLK...VFR.

.
NRN BARRANQUILLA FIR...NRN PANAMA FIR
SCT025 SCT060. ISOL SHRA. SFC WND NE 20-25KT. OTLK...VFR.

.
KINGSTON FIR...NERN CNTRL AMERICAN FIR...HABANA FIR
SCT025 SCT060. ISOL SHRA. OTLK...VFR.

.
ICE AND FRZLVL...
NO SGFNT ICE EXP OUTSIDE CNVTV ACT.
FRZLVL... 145-170.

.
TURB...
NO SGFNT TURB EXP OUTSIDE CNVTV ACT.

7.1.3.4 Caribbean Area Forecast Issuance

The FACA is issued four times daily at 0330, 0930, 1530, and 2130 UTC.

7.1.3.4.1 FA Amendments

If any phenomena or condition included in the FA is no longer expected to affect flight operations (including VFR), and the new condition is expected to exceed half the period between regular issuances, a FA **AMD** message is sent indicating which section has been amended by adding **AMD**. The first time indicated is the issuance time with the ending valid time unchanged.

7.1.3.4.2 FA Corrections

FAs containing errors are corrected. A FA correction is sent indicating which section has changed by adding **COR**. The first time indicated is the issuance time with the ending valid time unchanged.

7.1.3.4.3 Routine Delayed (RTD) FAs

For FAs delayed in transmission, **RTD** is added after the date/time group on the FAA product line (section 7.1.3.3 line1). The first time indicated is the issuance time with the ending valid time unchanged.

7.1.4 Alaska Area Forecast

The Alaskan FAs contain an overview of weather conditions that could impact aviation operations over Alaska and its coastlines. The Alaskan FAs contain a short synopsis for the entire area and a forecast for each of a specified number of aviation zones (Figure 7-9). The valid period of the synopsis and flight precautions section is 12 hours. The outlook section is for eighteen (18) hours beyond the forecast valid period.

Each FA contains [AIRMETs](#) and references to SIGMETs. In addition, a statement about conditions implied by a forecast of thunderstorms and a reference to how heights not reported in MSL are denoted is included.

The Alaska Area Forecast is issued by the Alaska Aviation Weather Unit (AAWU) and can be found at:

<http://aawu.arh.noaa.gov/areaforecasts.php> and on the Aviation Weather Center (AWC) web site at <http://aviationweather.gov/products/fa/?area=alaska>

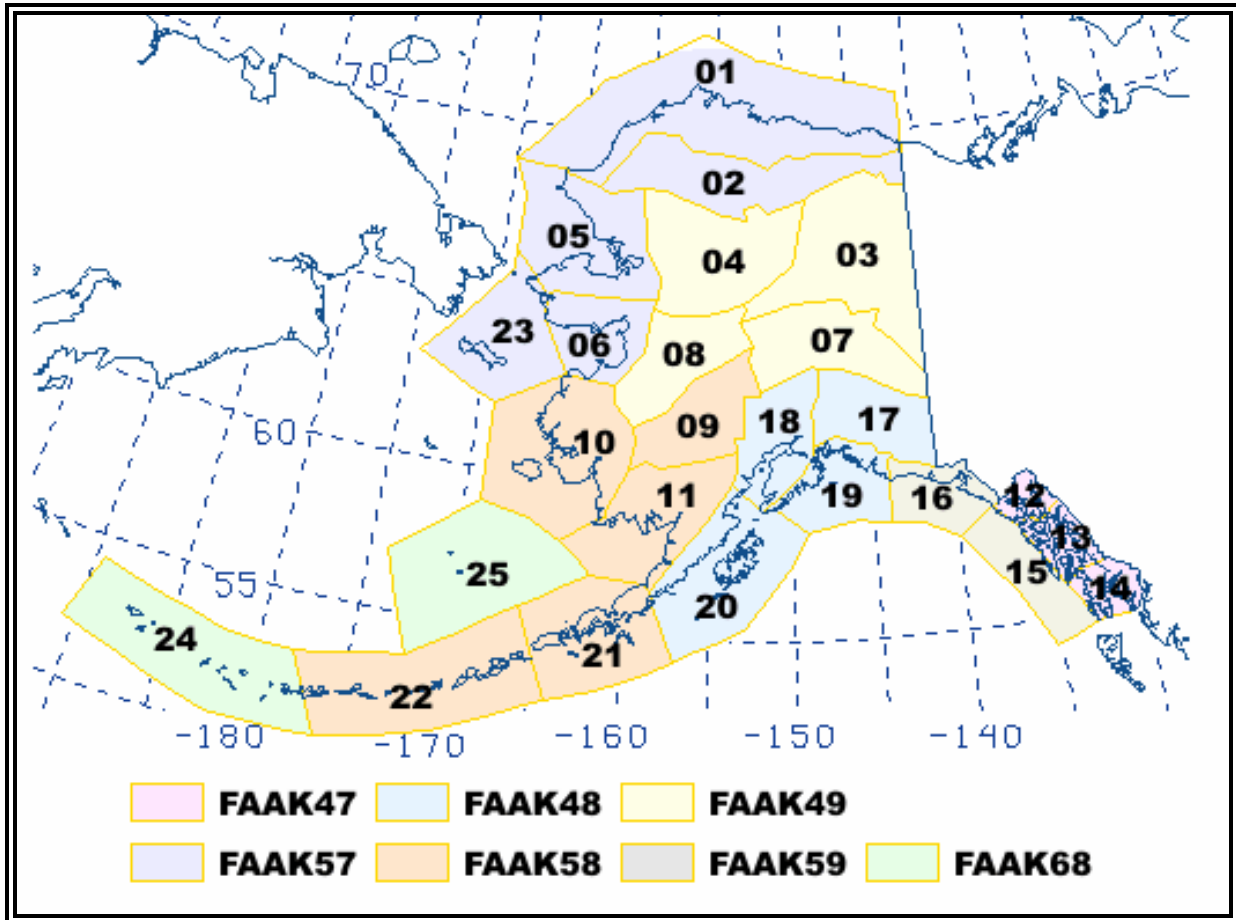


Figure 7-9. AAWU Flight Advisory and Area Forecast Zones - Alaska

Table 7-5. AAWU Flight Advisory and Area Forecast Zones – Alaska

1	Arctic Coast Coastal	14	Southern Southeast Alaska
2	North Slopes of the Brooks Range	15	Coastal Southeast Alaska
3	Upper Yukon Valley	16	Eastern Gulf Coast
4	Koyukuk and Upper Kobuk Valley	17	Copper River Basin
5	Northern Seward Peninsula-Lower Kobuk Valley	18	Cook Inlet-Susitna Valley
6	Southern Seward Peninsula-Eastern Norton Sound	19	Central Gulf Coast
7	Tanana Valley	20	Kodiak Island
8	Lower Yukon Valley	21	Alaska Peninsula-Port Heiden to Unimak Pass
9	Kuskowim Valley	22	Unimak Pass to Adak
10	Yukon-Kuskowim Delta	23	St. Lawrence Island-Bering Sea Coast
11	Bristol Bay	24	Adak to Attu
12	Lynn Canal and Glacier Bay	25	Pribilof Islands and Southeast Bering Sea
13	Central Southeast Alaska		

7.1.4.1 Standardization

All forecasts follow these standards:

- All referenced heights or altitudes are annotated as FL for heights at or above 18,000 and consist of three (3) digits depicting height in hundreds of feet Mean Sea Level (MSL).
- Messages are prepared using approved ICAO contractions, abbreviations and numerical values of self-explanatory nature.
- Weather and obstructions to visibility are the same as weather abbreviations used for surface airways observations (METAR or SPECI) (Section 2).

7.1.4.1.1 Height Reference

All heights are referenced to Mean Sea Level (MSL) except when prefaced by [AGL](#) or CIG. Tops are always referenced to MSL.

Examples:

SCT030 BKN100

Scattered at 3,000 feet MSL, broken at 10,000 feet MSL

AGL SCT030 BKN100

Scattered at 3,000 feet [AGL](#), broken at 10,000 feet [AGL](#)

AGL SCT-BKN015-025. TOPS 030-050.

Scattered to broken at 1,500 to 2,500 feet [AGL](#). Tops 3,000 to 5,000 feet MSL.

7.1.4.2 Alaska Area Forecast Content

The Alaskan Area Forecast zones contain sections on Clouds and Weather, [Turbulence](#), and Icing and [Freezing Levels](#).

The Clouds and Weather section includes:

- SIGMETs for Thunderstorms and Volcanic Ash;
- [AIRMET](#)s for IFR [ceiling](#) and visibility, mountain [obscuration](#), and strong surface winds;
- Bases and tops of significant [cloud layers](#);
- Visibilities of six (6) miles or less and restricting phenomena;
- Precipitation and thunderstorms;
- Surface winds of 20 KTS or greater;
- Outlook using categorical terms (i.e., VFR CIG, MVFR BR, IFR SN WND); and
- Mountain-pass conditions using categorical terms (for selected zones only).

The [Turbulence](#) section includes:

- SIGMETs for [Turbulence](#);
- [AIRMET](#)s for [Turbulence](#) and/or Low Level Wind Shear (LLWS);
- Forecast of significant [turbulence](#) not meeting SIGMET or [AIRMET](#) criteria or that is forecast for the period 6 to 12 hours after issuance; and
- If no significant [turbulence](#) is forecast, NIL SIG will be entered.

Icing section includes:

- SIGMETs for Icing;
- [AIRMET](#)s for Icing and freezing precipitation;

- Forecast of significant icing not meeting SIGMET or [AIRMET](#) criteria or which is forecast for the period 6 to 12 hours after issuance;
- [Freezing Level](#); and
- If no significant icing is forecast, NIL SIG will be entered followed by the [freezing level](#).

7.1.4.3 Example of an Alaska Area Forecast

FAAK01 PANC 251345 (AMD, COR, RTD if necessary)

FA8H

ANCH FA 251345

AK SRN HLF EXC SE AK...

.
AIRMETS VALID UNTIL 252000

TS IMPLY POSSIBLE SEV OR GREATER TURB SEV ICE LLWS AND IFR CONDS.
NON MSL HEIGHTS NOTED BY AGL OR CIG.

.
SYNOPSIS VALID UNTIL 260800

972 MB BRISTOL BAY LOW WL MOV N TO 50 S PAOM AT 987 MB BY END OF PD.
ASSOCIATED OCCLUDED FRONT FM PALJ..KENNEDY ENTRANCE..SE WL MOV NE
TO PAMH..PACV..SE
BY 08Z.

.
COOK INLET AND SUSITNA VALLEY AB...VALID UNTIL 260200

...CLOUDS/WX...

AIRMET IFR/MT OBSCAK RANGE/W SIDE COOK INLET..OCNL CIGS BLW 10
VIS BLW 3SM -RA BR. NC...

OTHERWISE..AK RANGE/W SIDE INLET..SCT005 OVC020 VIS 3-5SM -RA BR.
ELSEWHERE..SCT025 BKN045 OVC080 LYR ABV TO FL250. OCNL BKN025 OVC045
-RA.

COOK INLET..SFC WND NE 20G30 KTS. THRU TERRAIN GAPS..ERN MTS/AK
RANGE..SFC WND E 30G60 KTS.

OTLK VALID 260200-262000...MVFR CIG RA WND.

PASSES...LAKE CLARK..MERRILL..RAINY..IFR CIG RA WND. WINDY..MVFR CIG
RA.

PORTAGE..IFR CIG RA WND.

...TURB...

SIGMETKILO 1 VALID 251607/252000 PANC-

OCNL SEV TURB FCST BLW 080 WI AN AREA FM TKA-JOH-MDO-AKN-SQA-TKA.
THIS IS THE AREA S OF A PAHZ-PATK LN.

AIRMET TURB/LLWSOCNL MOD TURB BLW 120. LLWS. NC...

...ICE AND FZLVL...

AIRMET ICEOCNL MOD RIME/MX ICEIC 050-160. FZLVL 050. NC...

.
COPPER RIVER BASIN AC...VALID UNTIL 260200

...CLOUDS/WX...

FEW045 SCT090 BKN-OVC180 TOP FL250.

SFC WND SE G 25 KTS.

WRN MTS..ISOL BKN025 OVC045 4SM -SHRA.

OTLK VALID 260200-262000...VFR.

PASS...TAHNETA..MVFR CIG.

...TURB...

NIL SIG.

...ICE AND FZLVL...
 NIL SIG. FZLVL 050.

.

CNTRL GLF CST AD...VALID UNTIL 260200
 ...CLOUDS/WX...
 AIRMET MT OBSCMTS OBSCD IN CLDS/PRECIPITATION. NC...
 SCT020 OVC040 LYRD ABV TO FL250 -RA.
 OCNL SCT005 OVC020 VIS 3-5SM -RA BR.
 SFC WND E 20G35 KTS. THRU TRRN GAPS WND E-NE 25G50 KTS.
 ALONG KENAI PENINSULA..ISOL CIGS BLW 10 VIS BLW 3SM RA BR.
 OTLK VALID 260200-260200..MVFR CIG RA WND.
 ...TURB...
 SIGMETKILO 1 VALID 251607/252000 PANC-
 OCNL SEV TURB FCST BLW 080 WI AN AREA FM TKA-JOH-MDO-AKN-SQA-TKA.
 THIS IS THE AREA E OF A JOH-PAMD LN.
 AIRMET TURB/LLWSOCNL MOD TURB BLW 120. LLWS NR TRRN. NC...
 ...ICE AND FZLVL...
 AIRMET ICEOCNL MOD RIME ICEIC 050-160. FZLVL 050. NC...

.

KODIAK ISLAND AE...VALID UNTIL 260200
 ...CLOUDS/WX...
 AIRMET MT OBSCMTS OBSCD IN CLDS/PRECIPITATION. NC...
 SCT020 OVC040 LYRD ABV TO FL250 -RA.
 OCNL SCT005 OVC020 VIS 3-5SM -RA BR.
 E SIDE..ISOL CIGS BLW 10 VIS BLW 3SM RA BR.
 SFC WND SE G 25 KT.
 OTLK VALID 260200-262000...MVFR CIG SHRA WND. AFT 06Z..VFR.
 ...TURB...
 NIL SIG.
 ...ICE AND FZ LVL...
 ISOL MOD RIME ICEIC 030-120. FZLVL 030.

7.1.4.4 Alaska FA Issuance

The Alaskan FAs are produced four (4) times daily

Table 7-6. Area Forecast Issuance Schedule - Alaska

Alaska Area Forecast	Standard Time (UTC)	Daylight Time (UTC)
1 st Issuance	0245	0145
2 nd Issuance	0845	0745
3 rd Issuance	1445	1345
4 th Issuance	2045	1945

7.1.4.4.1 FA Amendments

FAs are under continuous review and amended at the discretion of the forecaster. An amended FA contains **AAA** after the date/time group on the WMO heading line for the first amendment, **AAB** for the second, and continuing for all subsequent amendments. **AMD** is also included after the date/time group on the FAA product line (section 7.1.4.3 line 1).

7.1.4.4.2 FA Corrections

FAs containing errors are corrected. This is identified by **COR** after the date/time group on the FAA product line (section 7.1.4.3 line 1). The first time indicated is the issuance time, with the ending valid time unchanged.

7.1.4.4.3 Routine Delayed (RTD) FAs

For FAs delayed in transmission, **RTD** is added after the date/time group on the FAA product line (section 7.1.4.3 line 1). The first time indicated is the issuance time, with the ending valid time unchanged.

7.2 Terminal Aerodrome Forecast (TAF)

A [Terminal Aerodrome Forecast \(TAF\)](#) is a concise statement of the expected meteorological conditions significant to aviation for a specified time period within five statute miles (SM) of the center of the airport's runway complex (terminal). The TAFs use the same weather codes found in METAR weather reports (Section 2) and can be viewed on the National Weather Service (NWS) Aviation Digital Data Service (ADDS) web site at: <http://adds.aviationweather.noaa.gov/tafs/>.

7.2.1 Responsibility

TAFs are issued by NWS Weather Forecast Offices (WFOs). A map of U.S. TAF locations is located on Figures 7-10, 7-11, and 7-12.

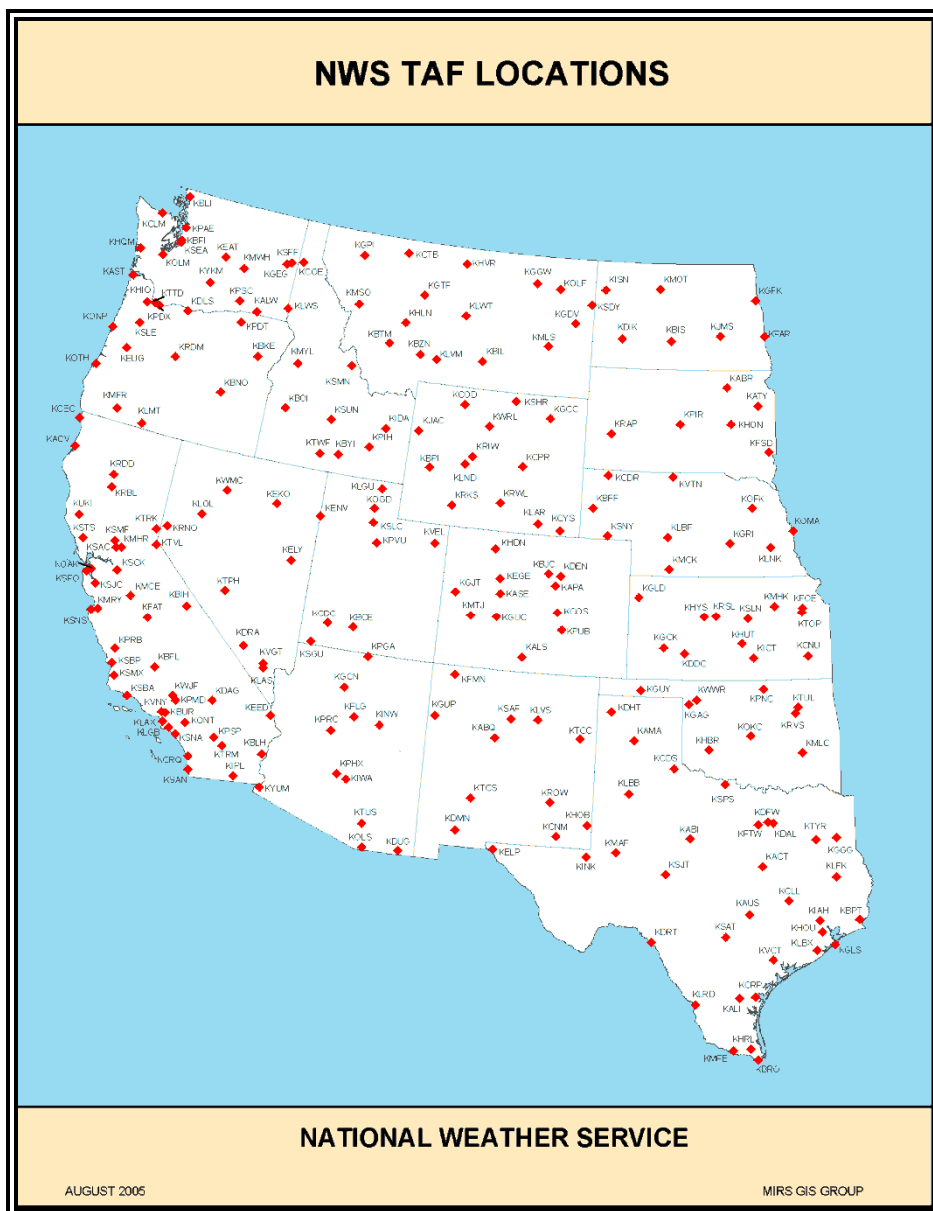


Figure 7-10. TAF Locations – Western Contiguous United States



Figure 7-11. TAF Locations – Eastern Contiguous U.S., Puerto Rico and Virgin Islands

7.2.2 Generic Format of the Forecast Text of a NWS-Prepared TAF

TAF or TAF AMD			
Type of report			
CCCC	YYGGggZ	YIY1G1G1G2G2	DddffGfmfmKT
Location identifier	Date/time of forecast origin group	Valid period	Wind group
VVVV	w'w' or NSW	NsNsNshshshs or VVhshshs or SKC	WShwshwshws/dddftKT
Visibility group	Significant weather group	Cloud and vertical obscuration groups	Non-convective low-level wind shear (LLWS) group
TTGGgg			
Forecast change indicator groups			
FMGG GGGeGe	TEMPO GGGeGe	PROB40GGGeGe	
"From" group	"Temporary" group	Probability Forecast	

7.2.2.1 Type of Report (TAF or TAF AMD)

The report-type header always appears as the first element in the TAF and is produced in two forms: a routine forecast, **TAF**, and an amended forecast, **TAF AMD**.

TAFs are amended whenever they become, in the forecaster's judgment, unrepresentative of existing or expected conditions, particularly regarding those elements and events significant to aircraft and airports. An amended forecast is identified by **TAF AMD** (in place of **TAF**) on the first line of the forecast text.

7.2.2.2 Location Identifier (CCCC)

After the line containing either **TAF** or **TAF AMD**, each TAF begins with its four-letter International Civil Aviation Organization (ICAO) location identifier. Figures 7-11, 7-12 and 7-13 contains the locations of NWS issued TAFs.

Examples:

KDFW – Dallas-Fort Worth

PANC – Anchorage, Alaska

PHNL – Honolulu, Hawaii

7.2.2.3 Date/Time of Forecast Origin Group (YYGGggZ)

The date/time of forecast origin group (**YYGGggZ**) follows the terminal's location identifier. It contains the day of the month in two (2) digits (**YY**) and time in four (4) digits (**GGgg** in hours

and minutes) the forecast is completed and ready for transmission, with a **Z** appended to denote UTC. This time is entered by the forecaster.

Examples

061737Z

The TAF was issued on the 6th day of the month at 1737 UTC.

121123Z

The TAF was issued on the 12th day of the month at 1123 UTC.

7.2.2.4 Valid Period (Y1Y1G1G1G2G2)

The TAF valid period (**Y1Y1G1G1G2G2**) is the next group. Scheduled 24-hour TAFs are issued four (4) times per day, at 0000, 0600, 1200, and 1800Z. The first two digits (**Y1Y1**) are the day of the month for the start of the TAF. The next two digits (**G1G1**) are the starting hour, and the last two digits (**G2G2**) are the ending hour of the valid period. A forecast period beginning at midnight UTC is annotated as **00**. If the end time of a valid period is at midnight UTC, it is annotated as **24**. For example, a 00Z TAF issued on the 9th of the month would have a valid period of **090024**.

Examples:

151212

The TAF is valid from 1200 UTC on the 15th of the month until 1200 UTC on the 16th.

230606

The TAF is valid from 0600 UTC on the 23rd of the month until 0600 UTC on the 24th of the month.

011818

The TAF is valid from 1800 UTC on the 1st of the month until 1800 UTC on the 2nd of the month.

060024

The TAF is valid from 0000 UTC on the 6th of the month until 0000 UTC on the 7th of the month.

7.2.2.5 Valid Period of Amended TAFs

An amended TAF (**TAF AMD**) covers all of the remaining valid period of the original scheduled forecast. Expired portions of the amended forecast or references to weather occurring before the issuance time are omitted from the amendment.

In an amended forecast, the date and time of the forecast origin group (**YYGGggZ**) reflects the time the amended forecast was prepared. In the forecast valid period group (**Y1Y1G1G1G2G2**), the first four digits (**Y1Y1G1G1**) reflect the UTC date and time of the beginning of the valid period of the amended TAF.

With an issuance time (**YYGGggZ**) in the first half hour of any given hour (:00 to :29), the current hour (based on UTC) is used to denote the beginning valid time. For example, an amended TAF issued at 1416Z would be valid from 1400 UTC until the standard ending time of the TAF. For the second half of any given hour (:30 to :59), the next hour (based on UTC) is used for the beginning valid time. For example, an amended TAF issued at 1639Z would be valid from 1700 UTC until the standard ending time of the TAF.

Example:

Original

TAF

PAEN 030540Z 030606...

Amended

TAF AMD

PAEN 031012Z 031006...

The scheduled forecast was sent, and 4 ½ hours later, the forecaster prepared an amendment to the forecast, at 1012Z on the 3rd day of the month.

7.2.2.6 Wind Group (dddffGfmfmKT)

The initial time period and any subsequent **FM** groups (Section 7.2.2.12.1) begin with a mean surface wind forecast (**dddffGfmfmKT**) for the period. Wind forecasts are expressed as the mean three-digit direction (**ddd** - relative to true north) rounded to the nearest ten degrees and the mean wind speed in [knots](#) (**ff**) for the time period. If wind gusts are forecast (gusts are defined as rapid fluctuations in wind speeds with a variation of 10 [knots](#) or more between peaks and lulls), they are indicated immediately after the mean wind speed by the letter **G**, followed by the peak gust speed expected. **KT** is appended to the end of the wind forecast group. Any wind speed of 100 [knots](#) or more will be encoded in three digits. Calm winds are encoded as **00000KT**.

The prevailing wind direction is forecast for any speed greater than or equal to seven (7) [knots](#). When the prevailing surface wind direction is variable (variations in wind direction of 30 degrees or more), the forecast wind direction is encoded as **VRBffKT**. Two conditions where this can occur are very light winds and convective activity. Variable wind direction for very light winds must have a wind speed of one (1) through six (6) [knots](#) inclusive. For convective activity, the wind group may be encoded as **VRBffGfmfmKT**, where **Gfmfm** is the maximum expected wind gusts. **VRB** is not used in the non-convective LLWS group.

Squalls are forecast in the wind group as gusts (**G**), but must be identified in the significant weather group (Section 7.2.2.8) with the code **SQ**.

Examples:

23010KT

Wind from 230 degrees "true" (southwest) at 10 [knots](#).

28020G35KT

Wind from 280 degrees "true" (west) at 20 [knots](#) gusting to 35 [knots](#).

VRB05KT

Wind variable at 5 [knots](#). This example depicts a forecast for light winds that are expected to variable in direction.

VRB15G30KT

Wind variable at 15 [knots](#) gusting to 30 [knots](#). This example depicts winds that are forecast to be variable with convective activity.

00000KT

Wind calm

090105KT

Wind from 90 degrees at 105 [knots](#)

7.2.2.7 Visibility Group (VVVV)

The initial time period and any subsequent FM groups (Section 7.2.2.12.1) include a visibility forecast (VVVV) in statute miles appended by the contraction SM.

When the prevailing visibility is forecast to be less than or equal to six (6) SM, one or more significant weather groups (Section 7.2.2.8) are included in the TAF. However, drifting dust (DRDU), drifting sand (DRSA), drifting snow (DRSN), [shallow fog](#) (MIFG), partial fog (PRFG), and patchy fog (BCFG) may be forecast with prevailing visibility greater than or equal to seven (7) statute miles.

When a whole number and a fraction are used to forecast visibility, a space is included between them (e.g., **1 1/2SM**). Visibility greater than six (6) statute miles is encoded as **P6SM**.

If the visibility is not expected to be the same in different directions, prevailing visibility is used.

When volcanic ash (VA) is forecast in the significant weather group, visibility is included in the forecast, even if it is unrestricted (**P6SM**). For example, an expected reduction of visibility to 10 statute miles by volcanic ash is encoded in the forecast as **P6SM VA**.

Examples

P6SM

Visibility unrestricted

1 1/2SM

Visibility 1 and ½ statute miles.

4SM

Visibility 4 statute miles.

7.2.2.8 Significant Weather Group (w'w' or NSW)

The significant weather group (w'w' or NSW) consists of the appropriate qualifier(s) and weather phenomenon contraction(s) (Section 2) or **NSW** (No significant weather).

If the initial forecast period and subsequent **FM** groups (Section 7.2.2.12.1) are not forecast to have explicit significant weather, the significant weather group is omitted. **NSW** is **not** used in the initial forecast time period or **FM** groups.

Tornadic activity (tornadoes, [waterspouts](#), and funnel clouds) are not forecast in terminal forecasts because the probability of occurrence at a specific site is extremely small. One or more significant weather group(s) is (are) required when the visibility is forecast to be 6SM or less. The exceptions are: volcanic ash (VA), low drifting dust (DRDU), low drifting sand (DRSA), low drifting snow (DRSN), [shallow fog](#) (MIFG), partial fog (PRFG), and patchy fog (BCFG). Obstructions to vision are only forecast when the prevailing visibility is less than 7 statute miles or, in the opinion of the forecaster, is considered operationally significant.

Volcanic ash (VA) is always forecast when expected. When VA is included in the significant weather group, visibility is included in the forecast as well, even if the visibility is unrestricted (**P6SM**).

NSW is used in place of significant weather only in a **TEMPO** group (Section 7.2.2.12.2) to indicate when significant weather (including in the vicinity (**VC**), see below) included in a previous sub-divided group is expected to end.

Multiple precipitation elements are encoded in a single group (e.g., **-TSRASN**). If more than one type of precipitation is forecast, up to three appropriate precipitation contractions can be combined in a single group (with no spaces) with the predominant type of precipitation being first. In this single group, the intensity refers to the total precipitation and can be used with either one or no intensity qualifier, as appropriate. In TAFs, the intensity qualifiers (light, moderate, and heavy) (Section 2.1.3.8.1) refer to the intensity of the precipitation and not to the intensity of any thunderstorms associated with the precipitation.

Intensity is coded with precipitation types, except ice crystals and hail, including those associated with thunderstorms and those of a showery nature (**SH**). No intensity is ascribed to blowing dust (**BLDU**), blowing sand (**BLSA**), or blowing snow (**BLSN**). Only moderate or heavy intensity is ascribed to [sandstorm](#) (**SS**) and duststorm (**DS**).

7.2.2.8.1 Exception for Encoding Multiple Precipitation Types

When more than one type of precipitation is forecast in a time period, any precipitation type associated with a descriptor (e.g., **FZRA**) (Section 2.1.3.8.3) is encoded first in the precipitation group, regardless of the predominance or intensity of the other precipitation types. Descriptors are not encoded with the second or third precipitation type in the group. The intensity is associated with the first precipitation type of a multiple precipitation type group. For example, a forecast of moderate snow and light [freezing rain](#) is coded as **-FZRASN** although the intensity of the snow is greater than the [freezing rain](#).

Examples:

Combinations of one precipitation and one non-precipitation weather phenomena:

-DZ FG

Light [drizzle](#) and fog (obstruction which reduces visibility to less than 5/8 SM – See Section 7.2.2.8.3)

RA BR

Moderate rain and [mist](#) (obstruction which reduces visibility to less than 7 SM but greater than or equal to 5/8 SM – See Section 7.2.2.8.3)

-SHRA FG

Light rain [showers](#) and fog (visibility less than 5/8 statute miles)

+SN FG

Heavy snow and fog

Combinations of more than one type of precipitation:

-RASN FG HZ

Light rain and snow (light rain predominant), fog and [haze](#)

TSSNRA

Thunderstorm with moderate snow and rain (moderate snow predominant)

FZRASNPL

Moderate [freezing rain](#), snow, and ice pellets ([freezing rain](#) mentioned first due to the descriptor, followed by other precipitation types in order of predominance)

SHSNPL

Moderate [snow showers](#) and ice pellets

7.2.2.8.2 Thunderstorm Descriptor

The TS descriptor is treated differently than other descriptors in the following cases:

- When non-precipitating thunderstorms are forecast, TS may be encoded as the sole significant weather phenomenon; and
- When forecasting thunderstorms with freezing precipitation (**FZRA** or **FZDZ**), the **TS** descriptor is included first, followed by the intensity and weather phenomena.

Example:

TS -FZRA

When a thunderstorm is included in the significant weather group (even using vicinity - **VCTS**), the cloud group (**NsNsNshshshs**) includes a forecast cloud type of CB. See the following example for encoding **VCTS**.

Example

-FZRA VCTS BKN010CB

7.2.2.8.3 Fog Forecast

A visibility threshold must be met before a forecast for fog (FG) is included in the TAF. When forecasting a fog-restricted visibility from 5/8SM to 6SM, the phenomena is coded as **BR** ([mist](#)). When a fog-restricted visibility is forecast to result in a visibility of less than 5/8SM, the code **FG** is used. The forecaster never encodes weather obstruction as [mist](#) (**BR**) when the forecast visibility is greater than 6 statute miles (P6SM).

The following fog-related terms are used as described below:

Table 7-7. TAF Fog Terms

TERM	DESCRIPTION
Freezing Fog (FZFG)	Any fog (visibility less than 5/8 SM) consisting predominantly of water droplets at temperatures less than or equal to 32° F/0°C, whether or not rime ice is expected to be deposited. FZBR is not a valid significant weather combination and will not be used in TAFs.
Shallow Fog (MIFG)	The visibility at 6 feet above ground level is greater than or equal to 5/8 SM and the apparent visibility in the fog layer is less than 5/8 SM.
Patchy Fog (BCFG)	Fog patches covering part of the airport. The apparent visibility in the fog patch or bank is less than 5/8 SM, with the foggy patches extending to at least 6 feet above ground level.
Partial Fog (PRFG)	A substantial part of the airport is expected to be covered by fog while the remainder is expected to be clear of fog (e.g., a fog bank). NOTE: MIFG , PRFG and BCFG may be forecast with prevailing visibility of P6SM.

Examples:

1/2SM FG

Fog is reducing visibilities to less than 5/8SM, therefore FG is used to encode the fog.

3SM BR

Fog is reducing visibilities to between 5/8 and 6SM, therefore BR is used to encode the fog.

7.2.2.9 Vicinity (VC)

In the United States, vicinity (**VC**) is defined as a donut-shaped area between 5 and 10SM from the center of the airport's runway complex. The FAA requires TAFs to include certain meteorological phenomena which may directly affect flight operations to and from the airport. Therefore, NWS TAFs may include a prevailing condition forecast of fog, [showers](#) and thunderstorms in the airport's vicinity. A prevailing condition is defined as a greater than or equal to 50% probability of occurrence for more than ½ of the sub-divided forecast time period. **VC** is not included in **TEMPO** or **PROB** groups.

The significant weather phenomena in Table 7-8 are valid for use in prevailing portions of NWS TAFs in combination with **VC**:

Table 7-8: TAF Use of Vicinity (VC)

Phenomenon	Coded
Fog*	VCFG
Shower(s)**	VCSH
Thunderstorm	VCTS

* Always coded as **VCFG** regardless of visibility in the obstruction, and without qualification as to intensity or type (frozen or liquid)

** The **VC** group, if used, should be the last entry in any significant weather group (**w'w'**).

7.2.2.10 Cloud and Vertical Obscuration Groups

The initial time period and any subsequent **FM** groups include a cloud or [obscuration](#) group (**NsNsNshshshs**, **VVhshshs** or **SKC**), used as appropriate to indicate the cumulative amount (**NsNsNs**) of all [cloud layers](#) in ascending order and height (**hshshs**), to indicate vertical visibility (**VVhshshs**) into a surface-based obstructing medium, or to indicate a clear sky (**SKC**). All [cloud layers](#) and [obscurations](#) are considered opaque

7.2.2.10.1 Cloud Group

The cloud group (**NsNsNshshshs**) is used to forecast cloud amount in Table 7-8.

Table 7-9. TAF Sky Cover

SKY COVER CONTRACTION	SKY COVERAGE
SKC	0 oktas
FEW	0 to 2 oktas
SCT	3 to 4 oktas
BKN	5 to 7 oktas
OVC	8 oktas

When zero (0) oktas of sky coverage is forecast, the cloud group is replaced by **SKC**. The contraction **CLR**, which is used in the METAR code, is not used in TAFs. TAFs for sites with [ASOS/AWOS](#) contain the cloud amount and/or [obscurations](#) which the forecaster expects, not what is expected to be reported by an [ASOS/AWOS](#).

Heights of clouds (**hshshs**) are forecast in hundreds of feet [AGL](#).

The lowest level at which the cumulative cloud cover equals 5/8 or more of the celestial dome is understood to be the forecast [ceiling](#) (Section 2.1.3.9). For example, **VV008**, **BKN008** or **OVC008** all indicate an 800 ft [ceiling](#).

7.2.2.10.2 Vertical Obscuration Group

The vertical [obscuration](#) group (**VVhshshs**) is used to forecast, in hundreds of feet [AGL](#), the vertical visibility (**VV**) into a surface-based total [obscuration](#) (Section 2.1.3.9). **VVhshshs** is this [ceiling](#) at the height indicated in the forecast. TAFs do not include forecasts of partial [obscurations](#) (i.e., **FEW000**, **SCT000**, or **BKN000**).

Example:

1SM BR VV008

[Ceiling](#) is 800 feet due to vertical visibility into fog

7.2.2.10.3 Cloud Type

The only cloud type included in the TAF is **CB**. **CB** follows cloud or [obscuration](#) height (**hshshs**) without a space whenever thunderstorms are included in significant weather group (**w'w'**), even if thunderstorms are only forecast in the vicinity (**VCTS**). **CB** can be included in the cloud group (**NsNsNshshshs**) or the vertical [obscuration](#) group (**VVhshshs**) without mentioning thunderstorm in the significant weather group (**w'w'**). Therefore, situations may occur where nearly identical **NsNsNshshshs** or **VVhshshs** appear in consecutive time periods, with the only change being the addition or elimination of **CB** in the forecast cloud type.

Examples:

1/2SM TSRA OVC010CB

Thunderstorms are forecast at the airport

7.2.2.11 Non-Convective Low-Level Wind Shear (LLWS) Group

[Wind Shear](#) (**WS**) is defined as a rapid change in horizontal wind speed and/or direction, with distance and/or a change in vertical wind speed and/or direction with height. A sufficient difference in wind speed, wind direction, or both, can severely impact airplanes, especially within 2,000 feet [AGL](#) because of limited vertical airspace for recovery.

Forecasts of LLWS in the TAF refer only to non-convective LLWS from the surface up to and including 2,000 feet [AGL](#). LLWS is always assumed to be present in convective activity. LLWS is included in TAFs on an “as-needed” basis to focus the aircrew’s attention on LLWS problems which currently exist or are expected. Non-convective LLWS may be associated with the following: frontal passage, [inversion](#), low-level jet, lee side mountain effect, [sea breeze front](#), Santa Ana winds, etc.

When LLWS conditions are expected, the non-convective LLWS code **WS** is included in the TAF as the last group (after cloud forecast). Once in the TAF, the **WS** group remains the prevailing condition until the next **FM** change group or the end of the TAF valid period if there are no subsequent **FM** groups. Forecasts of non-convective LLWS are not included in **TEMPO** or **PROB** groups.

The format of the non-convective low-level wind shear group is:

WShwshwshws / dddffKT

WS - Indicator for non-convective LLWS

hwshwshws - Height of the top of the WS layer in hundreds of feet [AGL](#)

ddd - True direction in ten degree increments at the indicated height

-- **VRB** is not used for direction in the non-convective LLWS forecast group.

ff - Speed in [knots](#) of the forecast wind at the indicated height

KT - Unit indicator for wind

Example:

TAF...13012KT...WS020/27055KT

[Wind shear](#) from the surface to 2,000 feet. Surface winds from 130 (southeast) at 12 [knots](#) changes to 270 (west) at 55 [knots](#) at 2,000 feet.

In this example the indicator **WS** is followed by a three-digit number which is the top of the [wind shear](#) layer. LLWS is forecast to be present from the surface to this level. After the solidus /, the five digit wind group is the wind direction and speed at the top of the [wind shear](#) layer. It is not a value for the amount of shear.

A non-convective LLWS forecast is included in the initial time period or a **FM** group in a TAF whenever:

- One or more PIREPs are received of non-convective LLWS within 2,000 feet of the surface, at or in the vicinity of the TAF airport, causing an indicated air speed loss or

gain of 20 [knots](#) or more, and the forecaster determines the report(s) reflect a valid non-convective LLWS event rather than mechanical [turbulence](#), or

- When non-convective vertical **WS** of 10 [knots](#) or more per 100 feet in a layer more than 200 feet thick are expected or reliably reported within 2,000 feet of the surface at, or in the vicinity of, the airport.

7.2.2.12 Forecast Change Indicator Groups

Forecast change indicator groups are contractions which are used to sub-divide the forecast period (24-hours for scheduled TAFs; less for amended or delayed forecasts) according to significant changes in the weather.

The forecast change indicators, FM, TEMPO, and PROB, are used when a change in any or all of the elements forecast is expected:

7.2.2.12.1 From (FM) Group (FMGGgg)

The change group **FMGGgg** (voiced as “from”) is used to indicate when prevailing conditions are expected to change significantly over a period of less than one hour. In these instances, the forecast is sub-divided into time periods using the contraction **FM**, followed, without a space, by four digits indicating the time (in hours and minutes Z) the change is expected to occur. While the use of a four-digit time in whole hours (e.g. 2100Z) is acceptable, if a forecaster can predict changes and/or events with higher resolution, then more precise timing of the change to the minute will be indicated. All forecast elements following **FMGGgg** relate to the period of time from the indicated time (**GGgg**) to the end of the valid period of the terminal forecast, or to the next **FM** if the terminal forecast valid period is divided into additional periods.

The **FM** group will be followed by a complete description of the weather (i.e., self-contained) and all forecast conditions given before the **FM** group are superseded by those following the group. All elements of the TAF (surface wind, visibility, significant weather, clouds, [obscuration](#)s, and when expected, non-convective LLWS) will be included in each **FM** group, regardless if they are forecast to change or not. For example, if forecast cloud and visibility changes warrant a new **FM** group but the wind does not, the new **FM** group will include a wind forecast, even if it is the same as the most recently forecast wind.

The only exception to this involves the significant weather group. If no significant weather is expected in the **FM** time period group, then significant weather group is omitted. A TAF may include one or more **FM** groups, depending on the prevailing weather conditions expected. In the interest of clarity, each **FM** group starts on a new line of forecast text, indented five spaces.

Examples:

```
TAF
KDSM 022336Z 030024 20015KT P6SM BKN015
    FM0230 29020G35KT 1SM +SHRA OVC005
    TEMPO 0304 30030G45KT 3/4SM -SHSN
    FM0500 31010G20KT P6SM SCT025...
```

A change in the prevailing weather is expected at **0230** UTC and **0500** UTC.

```
TAF
KAPN 312330Z 010024 13008KT P6SM SCT030
```

FM0320 31010KT 3SM -SHSN BKN015
FM0500 31010KT 1/4SM +SHSN VV007...

Note the wind in the **FM0500** group is the same as the previous **FM** group, but is repeated since all elements are required to be included in a **FM** group.

7.2.2.12.2 TEMPO GGGeGe

The change-indicator group **TEMPO GGGeGe** is used to indicate temporary fluctuations to forecast meteorological conditions which are expected to:

- Have a high percentage (greater than 50%) probability of occurrence,
- Last for one hour or less in each instance and,
- In the aggregate, cover less than half of the period **GG** to **GeGe**

Temporary changes described by **TEMPO** groups occur during a period of time defined by a two-digit beginning and two-digit ending time, both in whole hours UTC.

Each **TEMPO** group is placed on a new line in the TAF. The **TEMPO** identifier is followed by a description of all the elements in which a temporary change is forecast. A previously forecast element which has not changed during the **TEMPO** period is understood to remain the same and will not be included in the **TEMPO** group. Only those weather elements forecast to temporarily change are required to be included in the **TEMPO** group.

TEMPO groups will not include forecasts of either significant weather in the vicinity (**VC**) or non-convective LLWS.

Examples:

TAF
 KDDC 221130Z 221212 29010G25KT P6SM SCT025
 TEMPO 1517 30025G35KT 1 1/2SM SHRA BKN010...

In the example, all forecast elements in the **TEMPO** group are expected to be different than the prevailing conditions.

TAF
 KSEA 091125Z 091212 19008KT P6SM SCT010 BKN020 OVC090
 TEMPO 1215 -RA SCT010 BKN015 OVC040...

In this example the visibility is **not** forecast in the **TEMPO** group. Therefore, the visibility is expected to remain the same (P6SM) as forecast in the prevailing conditions group. Also, note that in the **TEMPO 1215** group, all three [cloud layers](#) are included, although the lowest layer is not forecast to change from the initial time period.

7.2.2.12.3 PROB30 GGGeGe

The probability group, **PROB30 GGGeGe**, is only used by NWS forecasters to forecast a low probability occurrence (30% chance) of a thunderstorm or precipitation event and its associated weather and [obscuration](#) elements (wind, visibility and/or sky condition) at an airport.

The **PROB30** group is the forecaster's assessment of probability of occurrence of the weather event which follows it. **PROB30** is followed by a space, then four digits (**GGGeGe**) stating the

beginning and ending time (in hours) of the expected condition. **PROB30** is the only **PROB** group used in NWS TAFs.

NOTE: U.S. military and international TAFs may use the PROB40 (40% chance) group as well.

The **PROB30** group is located within the same line of the prevailing condition group, continuing on the line below if necessary.

The **PROB30** group is not used in the first nine (9) hours of the TAF's valid period, including amendments. **PROB30** groups are six (6) hours or less in length. Only one **PROB30** group is used following any subsequent **FM** groups.

PROB30 groups do not include forecasts of significant weather in the vicinity (**VC**) or non-convective LLWS.

Example:

FM2100 18015KT P6SM SCT050 PROB30 2301 2SM TSRA OVC020CB

7.2.2.13 TAF Examples

TAF

```
KPIR 111140Z 111212 13012KT P6SM BKN100 WS020/35035KT
    TEMPO 1214 5SM BR
    FM1500 16015G25KT P6SM SCT040 BKN250
    FM0000 14012KT P6SM BKN080 OVC150 PROB30 0004 3SM TSRA BKN030CB
    FM0400 14008KT P6SM SCT040 OVC080 TEMPO 0408 3SM TSRA OVC030CB
```

- TAF> Terminal Aerodrome Forecast
- KPIR> Pierre, South Dakota
- 111140> prepared on the 11th at 1140 UTC
- 111212> valid from the 11th at 1200 UTC until the 12th at 1200 UTC
- 13012KT> wind 130 at 12 [knots](#)
- P6SM> visibility greater than 6 statute miles
- BKN100> [ceiling](#) 10,000 broken
- WS020/35035KT [wind shear](#) at 2,000 feet, wind from 350 at 35 [knots](#)
- TEMPO 1214> temporary conditions between 1200 UTC and 1400 UTC
- 5SM> visibility 5 statute miles
- BR> [mist](#)
- FM1500> from 1500 UTC
- 16015G25KT> wind 160 at 15 [knots](#) gusting to 25 [knots](#)
- P6SM> visibility greater than 6 statute miles
- SCT040 BKN2504,000 scattered, [ceiling](#) 25,000 broken
- FM0000> from 0000Z
- 14012KT> wind 140 at 12 [knots](#)
- P6SM> visibility greater than 6 statute miles
- BKN080 OVC150 [ceiling](#) 8,000 broken, 15,000 overcast
- PROB30 0004> 30% probability between 0000 UTC and 0400 UTC
- 3SM> visibility 3 statute miles
- TSRA> thunderstorm with moderate rain [showers](#)
- BKN030CB> [ceiling](#) 3,000 broken with cumulonimbus
- FM0400> from 0400 UTC
- 14008KT> wind 140 at 8 [knots](#)
- P6SM> visibility greater than 6 statute miles
- SCT040 OVC0804,000 scattered, [ceiling](#) 8,000 overcast
- TEMPO 0408> temporary conditions between 0400 UTC and 0800 UTC
- 3SM> visibility 3 statute miles
- TSRA> thunderstorms with moderate rain [showers](#)
- OVC030CB> [ceiling](#) 3,000 overcast with cumulonimbus

TAF AMD

**KEYW 131555Z 131612 VRB03KT P6SM VCTS SCT025CB BKN250
 TEMPO 1618 2SM TSRA BKN020CB
 FM1800 VRB03KT P6SM SCT025 BKN250 TEMPO 2024 1SM TSRA OVC010CB
 FM0000 VRB03KT P6SM VCTS SCT020CB BKN120 TEMPO 0812 BKN020CB**

- TAF AMD**▶ Amended Terminal Aerodrome Forecast
- KEYW**▶ Key West, Florida
- 131555Z**▶ prepared on the 13th at 1555 UTC
- 131612**▶ valid from the 13th at 1600 UTC until the 14th at 1200 UTC
- VRB03KT**▶ wind variable at 3 [knots](#)
- P6SM**▶ visibility greater than 6 statute miles
- VCTS**▶ thunderstorms in the vicinity
- SCT025CB BKN250**▶ 2,500 scattered with cumulonimbus, [ceiling](#) 25,000 broken
- TEMPO 1618**▶ temporary conditions between 1600 UTC and 1800 UTC
- 2SM**▶ visibility 2 statute miles
- TSRA**▶ thunderstorms with moderate rain [showers](#)
- BKN020CB**▶ [ceiling](#) 2,000 broken with cumulonimbus
- FM1800**▶ from 1800 UTC
- VRB03KT**▶ wind variable at 3 [knots](#)
- P6SM**▶ visibility greater than 6 statute miles
- SCT025 BKN250**▶ 2,500 scattered, [ceiling](#) 25,000 broken
- TEMPO 2024**▶ temporary conditions between 2000 UTC and 0000 UTC
- 1SM**▶ visibility 1 statute mile
- TSRA**▶ thunderstorms with moderate rain [showers](#)
- OVC010CB**▶ [ceiling](#) 1,000 overcast with cumulonimbus
- FM0000**▶ from 0000 UTC
- VRB03KT**▶ variable wind at 3 [knots](#)
- P6SM**▶ visibility greater than 6 statute miles
- VCTS**▶ thunderstorms in the vicinity
- SCT020CB BKN120**▶ 2,000 scattered with cumulonimbus, [ceiling](#) 12,000 broken
- TEMPO 0812**▶ temporary conditions between 0800 UTC and 1200 UTC
- BKN020CB**▶ [ceiling](#) 2,000 broken with cumulonimbus

TAF

KCRP 111730Z 111818 19007KT P6SM SCT030
 TEMPO 1820 BKN040
 FM2000 16011KT P6SM VCTS FEW030CB SCT250
 FM0200 14006KT P6SM FEW025 SCT250
 FM0800 VRB03KT 5SM BR SCT012
 FM1500 17007KT P6SM SCT025

- TAF> Terminal Aerodrome Forecast
- KCRP> Corpus Christi, Texas
- 111730Z> prepared on the 11th at 1730 UTC
- 111818> valid from the 11th at 1800 UTC until the 12th at 1800 UTC
- 19007KT> wind 190 at 7 [knots](#)
- P6SM> visibility greater than 6 statute miles
- SCT030> 3,000 scattered
- TEMPO 1820> temporary conditions between 1800 UTC and 2000 UTC
- BKN040> [ceiling](#) 4,000 broken
- FM2000> from 2000 UTC
- 16011KT> wind 160 at 11 [knots](#)
- P6SM> visibility greater than 6 statute miles
- VCTS> thunderstorms in the vicinity
- FEW030CB SCT250> 3,000 [few](#) with cumulonimbus, 25,000 scattered
- FM0200> from 0200 UTC
- 14006KT> wind 140 at 6 [knots](#)
- P6SM> visibility greater than 6 statute miles
- FEW025 SCT250> 2,500 [few](#), 25,000 scattered
- FM0800> from 0800 UTC
- VRB03KT> wind variable at 3 [knots](#)
- 5SM> visibility 5 statute miles
- BR> [mist](#)
- SCT012> 1,200 scattered
- FM1500> from 1500 UTC
- 17007KT> wind 170 at 7 [knots](#)
- P6SM> visibility greater than 6 statute miles
- SCT025> 2,500 scattered

7.2.3 Issuance

Scheduled TAFs prepared by NWS offices are issued four times a day, every six (6) hours, according to the following schedule:

Table 7-10. TAF Issuance Schedule

SCHEDULED ISSUANCE	VALID PERIOD	ISSUANCE WINDOW
0000 UTC	0000 to 2400 UTC	2320 to 2340 UTC
0600 UTC	0600 to 0600 UTC	0520 to 0540 UTC
1200 UTC	1200 to 1200 UTC	1120 to 1140 UTC
1800 UTC	1800 to 1800 UTC	1720 to 1740 UTC

7.2.3.1 Minimum Observational Requirements for Routine TAF Issuance and a Continuation

The NWS WFO forecaster must have certain information for the preparation and scheduled issuance of each individual TAF. Observations or other complementary and/or supplementary data sources must include, at a minimum:

- Wind (speed and direction)
- Visibility
- Weather and obstructions to vision
- Sky condition
- Temperature
- Dewpoint
- [Altimeter setting](#)

All weather elements need not be provided completely and/or at all times in the hourly/special observation itself. Alternative methods of obtaining the required weather elements can be utilized, at the discretion of the forecaster, in order to continue providing TAFs. However, in the event the forecaster believes the absence of one or more observed elements will lead to a degradation of the quality of the TAF, the TAF is limited (e.g., **NIL AMD**, indicating no amendments will be provided) or suspended (**NIL**).

Once a particular TAF has been suspended (**NIL**), a delayed or scheduled TAF for that airport is not issued until two consecutive observations not less than 30 minutes nor more than about one (1) hour apart have been received to establish a trend. The forecaster may also use alternative observations, such as satellite, in addition to a single surface observation to issue a TAF.

7.2.3.2 Sites with Scheduled Part-Time Observations

For TAFs with less than 24-hour observational coverage, or for which part-time TAFs are provided, the TAF is valid to the end of the routine scheduled forecast period even if observations cease prior to that time. The time observations are scheduled to end and/or resume is indicated by expanding the **AMD NOT SKED** statement. Expanded statements will include the observation ending time (**AFT 02Z**), the scheduled observation resumption time (**TIL 12Z**) or the period of observation unavailability (**02Z-12 Z**).

7.2.3.2.1 Examples of Scheduled Part-Time Observations TAFs

TAF AMD

KACV 141410Z 141412 NIL=

The TAF is suspended until a complete data source is available

TAF AMD

KRWF 150202Z 150224 AMD NOT SKED 05Z-18Z=

No amendments will be available between 0500 UTC and 1800 UTC due to lack of a complete observational set between those times.

TAF AMD

KPSP 190230Z 190324

NIL AMD=

No amendments will be made to the TAF.

7.2.3.3 Automated Observing Sites Requiring Part-Time Augmentation

TAFs for [AWOS](#)-III sites which have part-time augmentation are prepared using the procedures for part-time manual observation sites detailed in the previous section, with one exception. This exception is the remark used when the automated system is unattended. Specifically, the time an augmented automated system is scheduled to go into unattended operation and/or the time augmentation resumes is included in a remark unique to automated observing sites: **AMD LTD TO CLD VIS AND WIND (AFT aaZ, or TIL bbZ, or aaZ-bbZ)**, where **aaZ** is the time of the last augmented observation and **bbZ** is the time the second complete observation is expected to be received. This remark, which does not preclude amendments for other forecast elements, is appended to the last scheduled TAF issued prior to the last augmented observation. It will also be appended to all subsequent amendments until augmentation resumes.

The **AMD LTD TO** (elements specified) remark is a flag for users and differs from the **AMD NOT SKED AFT Z** remark for part-time manual observation sites. **AMD LTD TO** (elements specified) means users should expect amendments only for those elements and the times specified.

Example:

```
TAF AMD
KCOE 150202Z 150224 text
AMD LTD TO CLD VIS AND WIND 05Z-18Z=
```

The amended forecast indicates that between 0500 and 1800Z amendments will only be issued for wind, visibility and clouds.

An amendment includes forecasts for all appropriate TAF elements, even those not reported when the automated site is not augmented. If unreported elements are judged crucial to the TAF and cannot be adequately determined (e.g., fog versus moderate snow), the TAF will be suspended (i.e. an amended TAF stating **NIL** may be issued). [AWOS](#)-III systems with part-time augmentation, which the forecaster suspects are providing unreliable information when not augmented, is reported for maintenance and treated the same as part-time manual observation sites. In such cases, the **AMD NOT SKED AFT Z** remark will be used.

7.2.3.4 Non-Augmented Automated Observing Sites

The TAF issued for a non-augmented [ASOS](#) site may be suspended in the event the forecaster is notified of, or strongly suspects, an outage or unrepresentative data. The term **NIL AMD** is appended to the end of an amendment to the existing TAF when appropriate. If the outage occurs within one (1) hour of the next scheduled issuance or if the forecaster believes the existing TAF is unrepresentative of conditions, an amendment or scheduled issuance containing only the statement **NIL** may be issued.

7.3 International Aviation Route Forecasts (ROFOR)

International ROFORs are prepared and issued several hours in advance of regularly scheduled flights. The only NWS office which routinely issues ROFORs is the Weather Forecast Office (WFO) in Honolulu in its capacity as a Meteorological Watch Office (MWO) for ICAO, for routes within its area of responsibility that are underserved by conventional aviation forecasts and products.

7.3.1 ROFOR Criteria

WFO Honolulu honors all ROFOR requests for flights beginning, ending, or having most of the flight path within its area of responsibility within the Pacific Region which is generally the Oakland Oceanic FIR south of 30N and west of 140W.

7.3.2 Issuance

ROFORs are issued for prescribed times, several hours in advance, for regularly scheduled flights. ROFOR requests for unscheduled flights are prepared as soon as time permits.

7.3.2.1 ROFOR Amendments

ROFORs are not amended.

7.3.2.2 ROFOR Corrections

ROFOR corrections are issued as soon as possible when erroneous data has been identified as being transmitted.

7.3.3 ROFOR Content

ROFORs contain some or all of the following forecast parameters:

- a. Winds and temperatures aloft
- b. Significant en-route weather
- c. Zone weather
- d. Weather Synopsis.

At a minimum, ROFORs include a. and b. above. They may contain data for multiple altitudes and include TAFs for destination points and/or alternates.

The core of a ROFOR is formatted as follows: **0iQLL 4hhhTT ddFFF**

Where **i** = 1 for zone up to latitude **L**
i = 2 for zone up to longitude **LL**

Q = 1 east of the dateline in the northern hemisphere
Q = 2 west of the dateline in the northern hemisphere
Q = 6 east of the dateline in the southern hemisphere
Q = 7 west of the dateline in the southern hemisphere

hhh = height to which the temperature and wind refer
TT = air temperature in whole degrees Celsius at hhh
dd = true direction in tens of degrees from which the wind will blow at hhh
fff = wind speed in knots at hhh

01104 4300M31 10010

Decoded as: The 30,000 foot wind (10010) and temperature (M31) are for that zone along the flight path from the equator to 05N east of the dateline.

7.3.4 ROFOR Example

Tarawa to Majuro Route

FROC33 PHFO 291510 (*ICAO Communication Header*)

FOR PKMJYMYX

ROFOR VALID 2008 FOR ROUTE NGTA TO PKMJ

01205 4100P08 06010 4140P00 06015 4180M03 07020

01201 4100P08 09015 4140P00 09020 4180M04 10025

SIGWX...ISOL TCU/VIS 5SM SHRA

PKMJ 221120Z 221212 NIL=

7.4 Wind and Temperature Aloft Forecast (FB)

Wind and Temperature Aloft Forecasts (FB) are computer prepared forecasts of wind direction, wind speed, and temperature at specified times, altitudes, and locations. Forecasts are based on the North American Mesoscale (NAM) forecast model run. FBs are available on the Aviation Weather Center (AWC) web site at: <http://aviationweather.gov/products/nws/winds/>

7.4.1 Forecast Altitudes

The following table contains the altitudes for which winds are forecast. Altitudes up to 15,000 feet are referenced to Mean Sea Level (MSL). Altitudes at or above 18,000 feet are references to flight levels (FL).

Table 7-11. Wind and Temperature Aloft Forecast Levels

Actual Altitudes (MSL)
1,000 feet*
1,500 feet*
2,000 feet*
3,000 feet
6,000 feet
9,000 feet
12,000 feet
15,000 feet*
Pressure Altitudes (Hectopascals)
18,000 feet (500 Hectopascals)
24,000 feet (400 Hectopascals)
30,000 feet (300 Hectopascals)
34,000 feet (250 Hectopascals)
39,000 feet (200 Hectopascals)
45,000 feet (150 Hectopascals)#
53,000 feet (100 Hectopascals)#
* Hawaii and Western Pacific only.
Not available for selected locations in the Contiguous US.

Wind forecasts are not issued for altitudes within 1,500 feet of a location's elevation. Temperature forecasts are not issued for altitudes within 2,500 feet of a location's elevation. Forecasts for intermediate levels are determined by interpolation.

7.4.2 Format

The symbolic form of the forecasts is **DDff+TT** in which **DD** is the wind direction, **ff** the wind speed, and **TT** the temperature.

Wind direction is indicated in tens of degrees (two digits) with reference to true north and wind speed is given in [knots](#) (two digits). Light and variable wind or wind speeds of less than 5 [knots](#) are expressed by **9900**. Forecast wind speeds of 100 through 199 [knots](#) are indicated by subtracting 100 from the speed and adding 50 to the coded direction. For example, a forecast

of 250 degrees, 145 [knots](#), is encoded as **7545**. Forecast wind speeds of 200 [knots](#) or greater are indicated as a forecast speed of 199 [knots](#). For example, **7799** is decoded as 270 degrees at 199 [knots](#) or greater.

Temperature is indicated in degrees Celsius (two digits) and is preceded by the appropriate algebraic sign for the levels from 6,000 through 24,000 feet. Above 24,000 feet, the sign is omitted since temperatures are always negative at those altitudes.

The product header includes the date and time observations were collected, the forecast valid date and time, and the time period during which the forecast is to be used.

Examples

1312+05

The wind direction is from 130 degree (i.e. - southeast), the wind speed is 12 [knots](#) and the temperature is 5 degrees Celsius.

9900+10

Wind light and variable, temperature +10 degrees.

7735-07

The wind direction is from 270 degrees (i.e. west), the wind speed is 135 [knots](#) and the temperature is minus 7 degrees Celsius.

7.4.2.1 Coding Example

Sample winds aloft text message:

```
DATA BASED ON 010000Z
VALID 010600Z   FOR USE 0500-0900Z. TEMPS NEG ABV 24000
FT 3000   6000   9000   12000   18000   24000   30000   34000   39000
MKC 9900 1709+06 2018+00 2130-06 2242-18 2361-30 247242 258848 550252
```

Sample message decoded:

(Line 1) DATA BASED ON 010000Z

Forecast data is based on computer forecasts generated the first day of the month at 0000 UTC.

(Line 2) VALID 010600Z FOR USE 0500-0900Z. TEMPS NEG ABV 24000

The valid time of the forecast is the 1st day of the month at 0600 UTC. The forecast winds and temperature are to be used between 0500 and 0900 UTC. Temperatures are negative above 24,000 feet.

(Line 3)

```
FT 3000   6000   9000   12000   18000   24000   30000   34000   39000
```

FT indicates the altitude of the forecast.

(Line 4)

```
MKC 9900 1709+06 2018+00 2130-06 2242-18 2361-30 247242 258848 550252
```

MKC indicates the location of the forecast. The rest of the data is the winds and temperature aloft forecast for the respective altitudes.

The following table shows data for MKC (Kansas City, MO).

Table 7-12. Wind and Temperature Aloft Forecast Decoding Examples

FT 3000 6000 9000 12000 18000 24000 30000 34000 39000 MKC 9900 1709+06 2018+00 2130-06 2242-18 2361-30 247242 258848 550252			
Altitude (feet)	Coded	Wind	Temperature (°C)
3,000 FT	9900	Light and variable	Not forecast
6,000 FT	1709+06	170 degrees at 9 knots	+06 degrees Celsius
9,000 FT	2018+00	200 degrees at 18 knots	Zero degrees Celsius
12,000 FT	2130-06	210 degrees at 30 knots	-06 degrees Celsius
18,000 FT	2242-18	220 degrees at 42 knots	-18 degrees Celsius
24,000 FT	2361-30	230 degrees at 61 knots	-30 degrees Celsius
30,000 FT	247242	240 degrees at 72 knots	-42 degrees Celsius
34,000 FT	258848	250 degrees at 88 knots	-48 degrees Celsius
39,000 FT	750252	250 degrees at 102 knots	-52 degrees Celsius

7.4.2.2 Example for the Contiguous US and Alaska

DATA BASED ON 091200Z
VALID 091800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

```
FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
ABI 1931+10 1929+10 2024+06 2331-10 2448-23 235239 246348 256056
ABQ 2213+03 2327-04 2253-17 2263-27 227242 236946 245749
ABR 2017 2312+14 2308+09 2615+02 2724-13 2527-26 273641 274051 274562
AGC (etc.)
```

```
FT 45000 53000
ABI 301049 281149
ABQ 235061 244859
ABR 224559 243756
AGC (etc.)
```

Note: 45,000- and 53,000-foot winds are not available for selected locations in the conterminous US.

7.4.2.3 Example for Hawaii and the Western Pacific

DATA BASED ON 091200Z
VALID 091800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

```
FT 1000 1500 2000 3000 6000 9000 12000 15000 18000 24000
LIH 9900 9900 1705 1806 1711+13 2216+10 2520+05 2523+01 2833-07 2937-19
HNL 9900 9900 9900 9900 1407+14 1908+11 2410+05 2612+01 2928-07 2930-18
LNY 9900 9900 9900 9900 1208+14 9900+11 9900+06 2909+01 3024-07 3027-18
OGG (etc.)
```

```
FT 30000 34000 39000 45000 53000
LIH 040734 990044 241055 281666 990072
HNL 051234 010543 250654 301066 990072
```

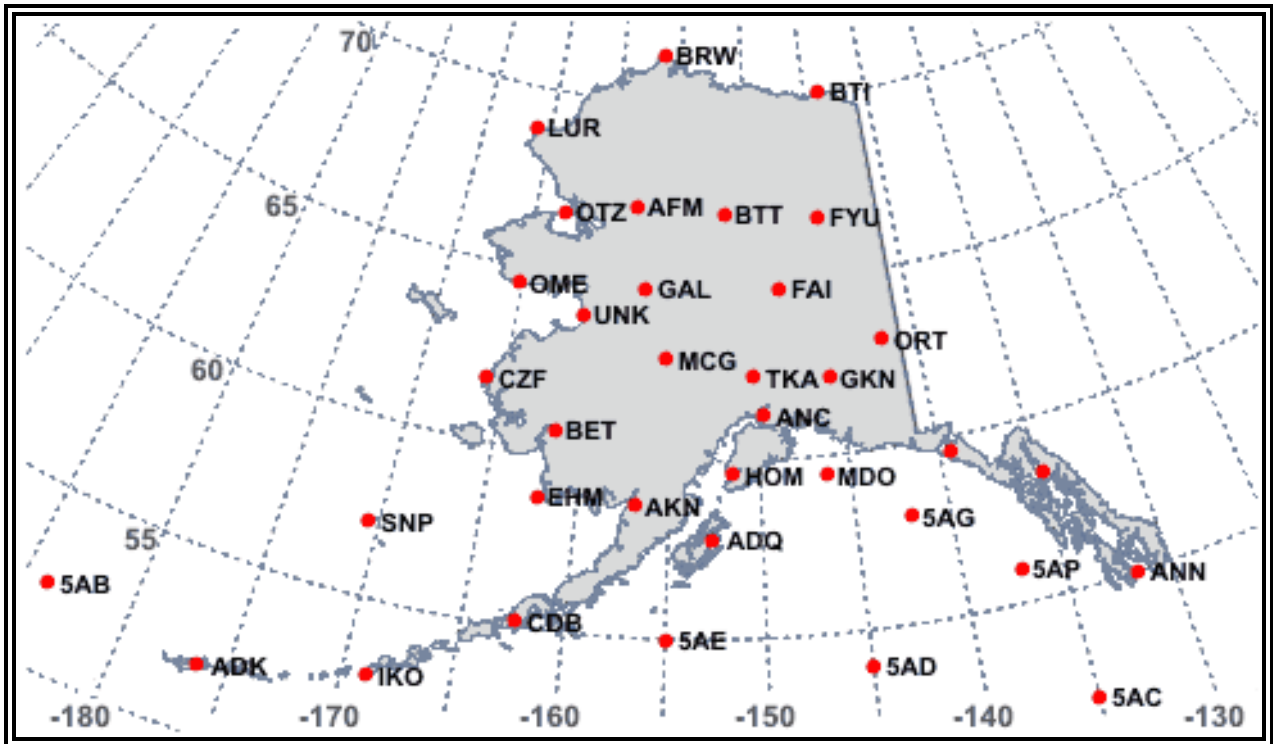



Figure 7-14. Wind and Temperature Aloft Forecast Network - Alaska

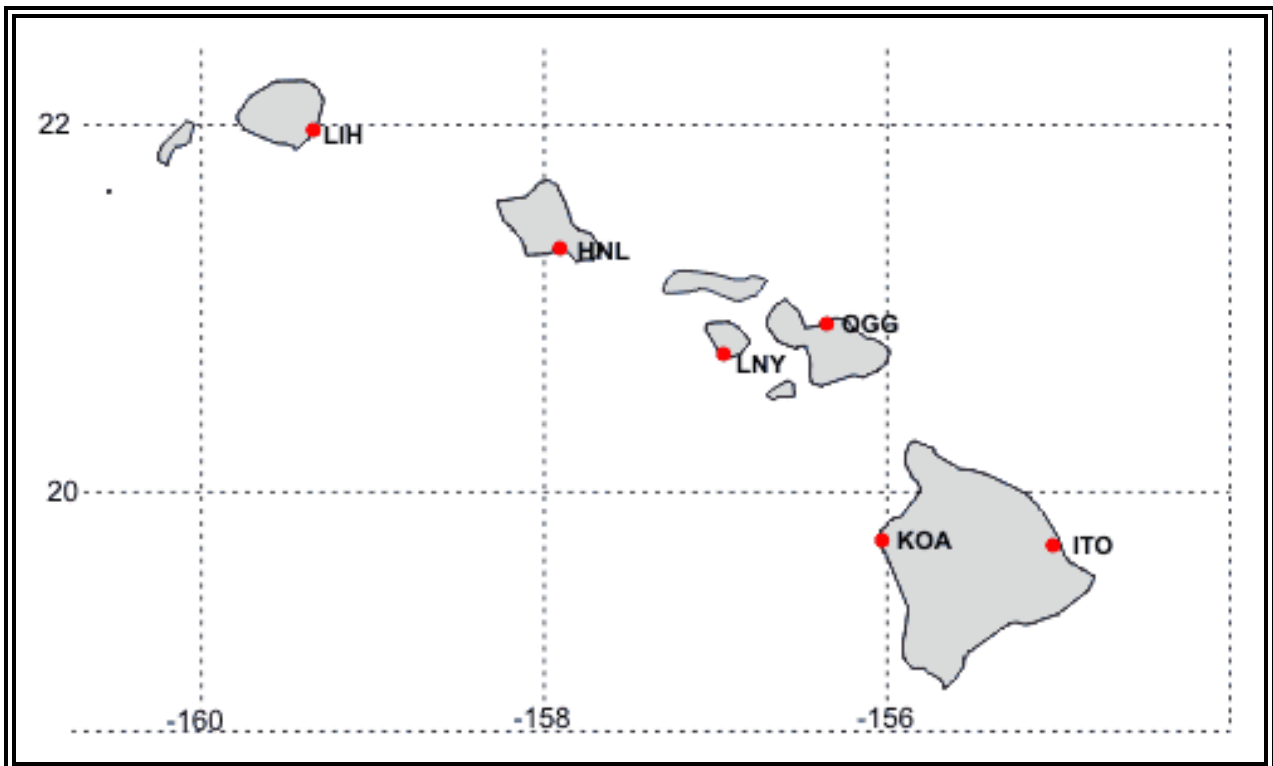


Figure 7-15. Wind and Temperature Aloft Forecast Network - Hawaii

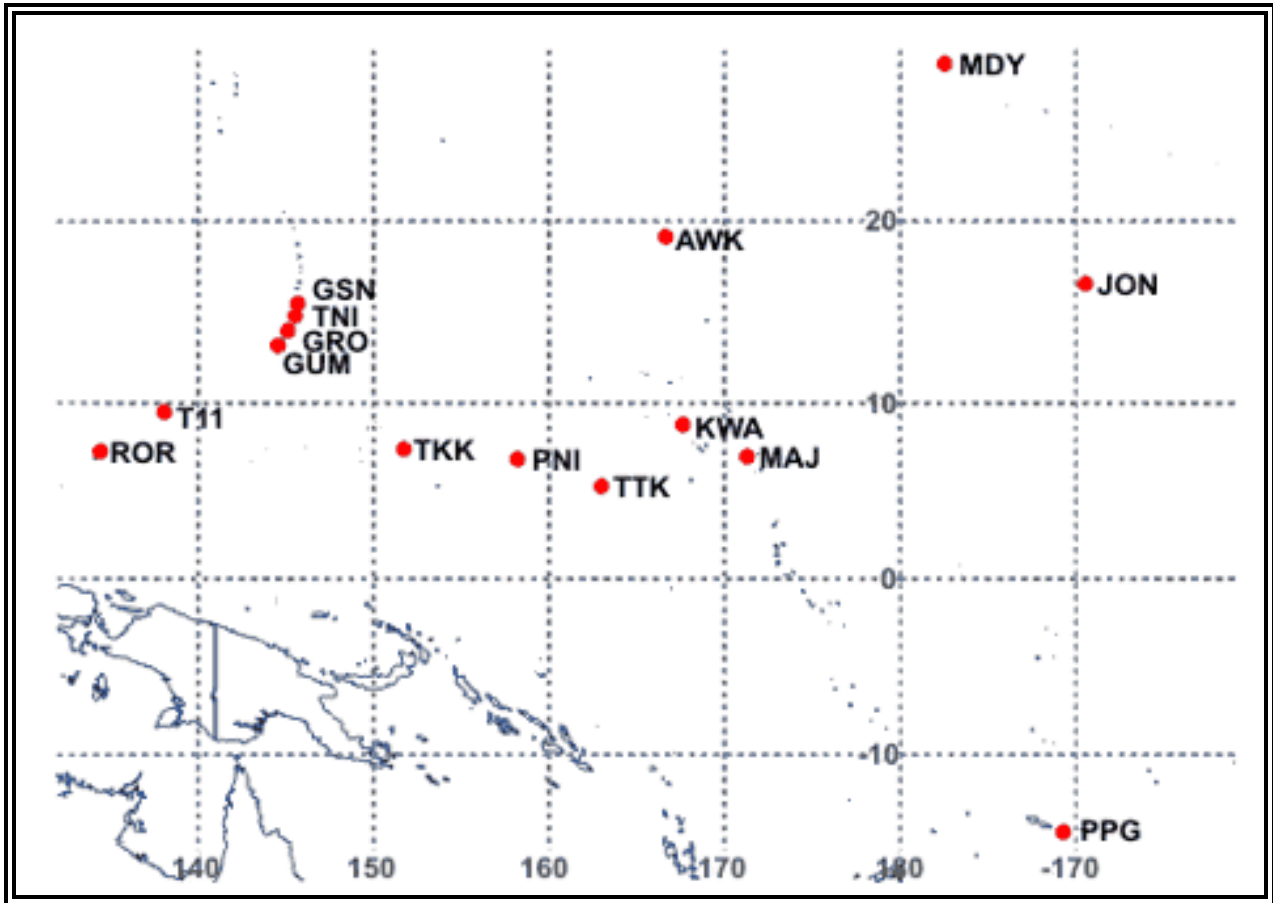


Figure 7-16. Wind and Temperature Aloft Forecast Network - Western Pacific

Table 7-13. Wind and Temperature Aloft Forecast (FB) Periods

Model Run	Product Available	6 hour Forecast		12 hour Forecast		24 hour Forecast	
		Valid	For Use	Valid	For Use	Valid	For Use
0000Z	~0200Z	0600Z	0200-0900Z	1200Z	0900-1800Z	0000Z	1800-0600Z
0600Z	~0800Z	1200Z	0800-1500Z	1800Z	1500-0000Z	0600Z	0000-1200Z
1200Z	~1400Z	1800Z	1400-2100Z	0000Z	2100-0600Z	1200Z	0600-1800Z
1800Z	~2000Z	0000Z	2000-0300Z	0600Z	0300-1200Z	1800Z	1200-0000Z

7.4.4 Delayed Forecasts

If the scheduled forecast transmission is delayed, the existing valid forecast based on the earlier 6-hourly data can be used until a new forecast is transmitted.



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