



Forecasts and Advisories

NEXT



Usually, the first notification a controller will receive of hazardous weather developing or moving into their area will be from a National Weather Service forecast or advisory.

LEARN MORE

It is essential that you know the purpose and contents of each product so that you can avoid directing air traffic into hazardous weather.



Purpose

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This lesson will teach you about National Weather Service (NWS) forecasts and advisories.



Objectives

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In this lesson, you will identify the purpose of and decode the following National Weather Service products:

1. Terminal Aerodrome Forecast (TAF)
2. Significant Meteorological Information (SIGMET)
3. Convective SIGMET (WST)
4. Airman's Meteorological Information (AIRMET)
5. Center Weather Advisory (CWA)
6. Meteorological Impact Statement (MIS)
7. Wind and Temperatures Aloft Forecast (FB)

You will meet the objectives in accordance with the following references:

- AC 00-45, Aviation Weather Services
- FAA Order JO 7110.10, Flight Services





Terminal Aerodrome Forecast (TAF)

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A TAF is a concise statement of the expected meteorological conditions significant to aviation for a specified time period within 5 SM of an airport.

- Used by ATC to anticipate weather changes that will affect aircraft operations at specified terminals

AC 00-45, sec 7



Terminal Aerodrome Forecast (TAF)

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```
TAF
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT
FM010930 07006KT 1 1/2SM BR OVC008
TEMPO 0110/0114 1/2SM DZ FG VV005
FM011600 11012KT 5SM BR SCT015 BKN030
FM012100 09015KT 3SM -SHRA BR OVC010 PROB30 0121/0124
VRB24G35KT 1SM +TSRA BR OVC008CB
FM020100 02018G25KT 3/4SM -SN BR OVC008
FM020300 34024G30KT 3SM BR BKN010
FM020500 33016KT P6SM SKC
```

TAF: Overview of Contents

TAFs issued by the National Weather Service (NWS) provide a forecast of the following meteorological elements:

- Wind
- Visibility
- Significant Weather
- Cloud and Vertical Obscuration
- Non-Convective Low-Level Wind Shear (LLWS)

The wind, visibility, significant weather, cloud, and vertical obscuration groups follow the same basic format as METAR/SPECI.

NOTE: Temperature/Dewpoint, Altimeter, and Remarks are not included in the forecast.

AC 00-45, sec. 7



Terminal Aerodrome Forecast (TAF)

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TYPE OF REPORT

```
TAF  
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT  
...
```

TAF	Routine forecast
TAF AMD	Amended forecast
TAF COR	Corrected forecast

Type of Report

The report type header always appears as the first element in the TAF and is produced in three forms:

- Routine forecast - TAF
 - Routine TAFs are issued four (4) times per day: 0000, 0600, 1200, and 1800Z.
- Amended forecast - TAF AMD
 - TAFs are amended whenever they become, in the forecaster's judgment, unrepresentative of existing or expected conditions.
- Corrected forecast - TAF COR

AC 00-45, sec. 7



Terminal Aerodrome Forecast (TAF)

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LOCATION IDENTIFIER

```
TAF  
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT  
...
```

REGION/COUNTRY	ICAO PREFIX	REGION/COUNTRY	ICAO PREFIX
Contiguous United States of America	K	Marianas Islands (including Guam)	PG
Alaska	PA	Canada	C
Hawaii	PH	Central America and Mexico	M
		Caribbean	T

Location Identifier

Location identifiers are decoded the same as the Station Identifier in METAR/SPECI.

AC 00-45, sec. 7



Terminal Aerodrome Forecast (TAF)

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DATE AND TIME OF FORECAST ORIGIN GROUP

```
TAF  
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT  
...
```

010534Z	
01	Day of the month
05	Hour (UTC)
34	Minute (UTC)
Z	Universal Time Coordinated (UTC)

Date and Time of Forecast Origin Group

The Date and Time of Forecast Origin Group is decoded the same as the Date and Time of Report in METAR/SPECI.

AC 00-45, sec. 7



Terminal Aerodrome Forecast (TAF)

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```
TAF
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT
...
```

VALID PERIOD

0106/0206	
01	Beginning day of the month
06	Beginning hour (UTC)
02	Ending day of the month
06	Ending hour (UTC)

Valid Period

The Valid Period is the time period during which the TAF is valid.

The format is:

- 01 - First two digits indicate the beginning day of the month
- 06 - The second two digits indicate the beginning hour (UTC)
- / - Solidus
- 02 - Next two digits – Ending day of the month
- 06 - Last two digits – Ending hour (UTC)
- If the ending hour is midnight UTC, it's coded as "24."

Routine TAFs are valid for either 24- or 30-hour time periods.

NOTE: In the U.S., 30-hour TAFs are only issued for airports with significant international traffic.

AC 00-45, sec. 7



Terminal Aerodrome Forecast (TAF)

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Valid Period Examples

1512/1612

Valid from the 15th at 12Z until the 16th at 12Z

2306/2412

Valid from the 23rd at 06Z until the 24th at 12Z

0121/0218

Valid from the 1st at 21Z until the 2nd at 18Z

0600/0624

Valid from the 6th at 00Z until the 6th at 24Z

NOTE: Whenever an amended TAF (TAF AMD) or corrected TAF (TAF COR) is issued, it supersedes the previous TAF. That is, users should not wait until the start of the valid period indicated within the TAF AMD to begin using it.



Terminal Aerodrome Forecast (TAF)

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WIND GROUP

```
TAF  
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT  
...
```

15010G16KT	
150	Wind direction (relative to true north)
10	Wind speed
G16	Maximum instantaneous wind speed gust
KT	Units of measurement (knots)

Wind Group

The Wind Group is decoded the same as the Wind Group in METAR/SPECI.

AC 00-45, sec. 7



Terminal Aerodrome Forecast (TAF)

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```
TAF  
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020  
WS020/18040KT  
...
```

VISIBILITY GROUP

6SM	
6	Prevailing visibility
SM	Units of measurement (statute miles)

Visibility Group

The Visibility Group is decoded the same as the Visibility Group in METAR/SPECI except:

- P6SM – Indicates visibility more than six (6) statute miles

AC 00-45, sec. 7



Terminal Aerodrome Forecast (TAF)

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SIGNIFICANT WEATHER GROUP

```
TAF
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT
FM010930 07006KT 1 1/2SM BR OVC008
TEMPO 0110/0114 1/2SM DZ FG VV005
FM011600 11012KT 5SM BR SCT015 BKN030
FM012100 09015KT 3SM -SHRA BR OVC010 PROB30 0121/0124
VRB24G35KT 1SM +TSRA BR OVC008CB
FM020100 02018G25KT 3/4SM -SN BR OVC008
FM020300 34024G30KT 3SM BR BKN010
FM020500 33016KT P6SM SKC
```

Significant Weather Group

The Significant Weather group is decoded the same as the Present Weather Group in METAR/SPECI except:

- NSW – No Significant Weather
 - Significant weather from a previous period is expected to end

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Terminal Aerodrome Forecast (TAF)

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CLOUD AND VERTICAL OBSCURATION GROUPS

```
TAF
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT
FM010930 07006KT 1 1/2SM BR OVC008
TEMPO 0110/0114 1/2SM DZ FG VV005
...
FM020500 33016KT P6SM SKC
```

SCT020	SCT	Amount of sky cover (FEW, SCT, BKN, or OVC)
	020	Height of the layer (hundreds of feet AGL)
VV005	VV	Indicates vertical visibility ("indefinite ceiling")
	005	Vertical visibility (hundreds of feet AGL)
SKC	SKC	Sky clear

Cloud and Vertical Obscuration Group

The Cloud and Vertical Obscuration Groups are decoded the same as the Sky Condition Group in METAR/SPECI.

AC 00-45, sec. 7



AIR TRAFFIC BASICS | Lesson 28: Forecasts and Advisories

Terminal Aerodrome Forecast (TAF)

ALL LESSONS FRAME: 15

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NON-CONVECTIVE LOW-LEVEL WIND SHEAR (LLWS) GROUP

TAF
KOKC 010534Z 0106/0206 15010G16KT 6SM BR SCT020 WS020/18040KT

...

WS020/18040KT	
WS	Indicator for wind shear
020	Height of the top of the WS layer (hundreds of feet AGL)
180	Wind direction at top of wind shear layer (hundreds of feet AGL)
40	Wind speed at top of wind shear layer (hundreds of feet AGL)
KT	Units of measurement (knots)

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

A Non-Convective Low-Level Wind Shear (LLWS) group is included whenever LLWS is expected within 2,000 feet of the surface.

- The group is omitted if LLWS is not expected to occur.

NOTE: LLWS is always assumed with convective activity.

[LEARN MORE](#)

The format is:

- **WS** - Indicator for wind shear
- **020** - The following three digits indicate the height of the top of the WS layer in hundreds of feet AGL (can be up to 2,000 feet AGL)
- **/** - Solidus
- **180** -The next three digits indicate the wind direction relative to true north at the indicated height
- **40** - The final two (or three) digits indicate the speed in knots of the forecast wind at the indicated height
- **KT** - Unit indicator for knots

***NOTE:** Low-level wind shear can severely affect airplanes, especially within 2,000 feet AGL because of limited vertical airspace for recovery. The impact is most significant for low powered GA aircraft.*

Reference: AC 00-45, Sec. 7



Terminal Aerodrome Forecast (TAF)

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NON-CONVECTIVE LOW-LEVEL WIND SHEAR (LLWS) GROUP EXAMPLES

WS020/12035KT

Low-level wind shear, wind at two thousand, one two zero at three five

WS020/35040KT

Low-level wind shear, wind at two thousand, three five zero at four zero

WS015/27055KT

Low-level wind shear, wind at one thousand five hundred, two seven zero at five five

WS015/17060KT

Low-level wind shear, wind at one thousand five hundred, one seven zero at six zero


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ALL LESSONS
FRAME: 17

Terminal Aerodrome Forecast (TAF)

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FM CHANGE INDICATOR GROUP

TAF
KOKC 010534Z 0106/0206 15010KT 6SM BR SCT020 WS020/18040KT
FM010930 07006KT 1 1/2SM BR OVC008

FM010930	
FM	FM change indicator group identifier
01	Day of the month the change is expected to occur
09	Hour (UTC) the change is expected to occur
30	Minute (UTC) the change is expected to occur

FM Change Indicator Group

The FM ("from") change indicator group is used to indicate a significant and rapid change to a new set of prevailing conditions. Each FM group starts on a new line of forecast text.

The FM group format is:

- FM - FM change indicator group identifier
- 01 - The first two digits indicate the day of the month the change is expected to occur
- 09 - The next two digits indicate the hour (UTC) the change is expected to occur
- 30 - The final two digits indicate the minute (UTC) the change is expected to occur

LEARN MORE

All elements of the TAF are included in each FM group, regardless of whether they are forecast to change or not.

- Exception: the Significant Weather and Non-convective Low-Level Wind Shear (LLWS) groups are omitted if not expected to occur.
- All forecast conditions listed before a FM group are superseded by those within the FM group at the indicated time.

Reference: AC 00-45, Sec. 7



Terminal Aerodrome Forecast (TAF)

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FM CHANGE INDICATOR GROUP EXAMPLES

```
FM312100 05010KT 2SM -DZ BR OVC008  
FM010100 17012KT P6SM BKN050
```

From the 31st at 2100Z, wind zero five zero at one zero, visibility two, light drizzle, mist, ceiling eight hundred overcast; from the 1st at 0100Z, wind one seven zero at one two, visibility more than six, ceiling five thousand broken

```
FM242300 19012KT P6SM SCT050  
FM250030 26030G40KT 1/4SM BLDU VV003
```

From the 24th at 2300Z, wind one niner zero at one two, visibility more than six, five thousand scattered; from the 25th at 0030Z, wind two six zero at three zero gusts four zero, visibility one-quarter, blowing dust, indefinite ceiling three hundred



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ALL LESSONS
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Terminal Aerodrome Forecast (TAF)

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TEMPO CHANGE INDICATOR GROUP

```

TAF
KOKC 010534Z 0106/0206 15010KT 6SM BR SCT020 WS020/18040KT
FM010930 07006KT 1 1/2SM BR OVC008
TEMPO 0110/0114 1/2SM DZ FG VV005
            
```

TEMPO 0110/0114	
TEMPO	TEMPO change indicator group identifier
01	Day of the month temporary condition is expected to begin
10	Hour (UTC) temporary condition is expected to begin
01	Day of the month temporary condition is expected to end
14	Hour (UTC) temporary condition is expected to end

TEMPO Change Indicator Group

The TEMPO change indicator group is used to indicate temporary fluctuations to forecast meteorological conditions.

Each TEMPO group is placed on a new line in the TAF.

LEARN MORE

The **TEMPO** group format is:

- **TEMPO** - TEMPO change indicator group identifier
- **01** - The first two digits indicate the day of the month the temporary condition is expected to begin
- **10** - The next two digits indicate the hour (UTC) the temporary condition is expected to begin
- **/** - Solidus
- **01** - The next two digits indicate the day of the month the temporary condition is expected to end
- **14** - Final two digits indicate the hour (UTC) the temporary condition is expected to end

Reference: AC 00-45, Sec. 7



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ALL LESSONS FRAME: 20

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TEMPO CHANGE INDICATOR GROUP EXAMPLE

```

FM180300 05022G34KT 3/4SM BLSN VV006
TEMPO 1805/1809 1/4SM SN BLSN VV002
FM181200 35012KT P6SM BKN006
  
```

From the 18th at 0300Z, wind zero five zero at two two gusts three four, visibility three-quarters, blowing snow, indefinite ceiling six hundred; temporarily between the 18th at 05Z and the 18th at 09Z, visibility one-quarter, snow, blowing snow, indefinite ceiling two hundred; from the 18th at 1200Z, wind three five zero at one two, visibility more than six, ceiling six hundred broken

```

FM271900 15008KT P6SM SCT020
TEMPO 2722/2801 6SM -SHRA BKN020
FM280100 34014KT P6SM SKC
  
```

From the 27th at 1900Z, wind one five zero at eight, visibility more than six, two thousand scattered; temporarily between the 27th at 22Z and the 28th at 01Z, visibility six, light rain shower, ceiling two thousand broken; from the 28th at 0100Z, wind three four zero at one four, visibility more than six, sky clear

[LEARN MORE](#)

Only those weather elements forecast to temporarily change are required to be included in the TEMPO group.

- However, when visibility is forecast to be six statute miles or less, the significant weather causing the restriction is also included.
- A previously forecast element which is not expected to change during the TEMPO period is understood to remain the same.



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Terminal Aerodrome Forecast (TAF)

ALL LESSONS FRAME: 21

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PROB30 GROUP

```

TAF
KOKC 010534Z 0106/0206 15010KT 6SM BR SCT020 WS020/18040KT
...
FM012100 09015KT 3SM -SHRA BR OVC010 PROB30 0121/0124
VRB24G35KT 1SM +TSRA BR OVC008CB
...
                    
```

PROB30 0121/0124	
PROB30	PROB30 group identifier
01	Day of the month 30% probability is expected to begin
21	Hour (UTC) 30% probability is expected to begin
01	Day of the month 30% probability is expected to end
24	Hour (UTC) 30% probability is expected to end

PROB30 Group

The **PROB30** group is:

- Used to forecast a low probability (30 percent chance) of a thunderstorm or precipitation event and its associated weather elements (wind, visibility, and/or sky condition)
- Located within the same line as the prevailing condition (i.e., FM) group, continuing on the line below if necessary

LEARN MORE

The **PROB30** group format is:

- **PROB30** - PROB30 group identifier
- **01** - The first two digits indicate the day of the month the 30 percent chance is expected to begin
- **21** - The next two digits indicate the hour (UTC) the 30 percent chance is expected to begin
- / - Solidus
- **01** - The next two digits indicate the day of the month the 30 percent chance is expected to end
- **24** - The final two digits indicate the hour (UTC) the 30 percent chance is expected to end

Reference: AC 00-45, Sec. 7



Terminal Aerodrome Forecast (TAF)

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PROB30 GROUP EXAMPLES

```
FM050130 07017G25KT P6SM OVC020 PROB30 0506/0510  
2SM -SHSN OVC008
```

From the 5th at 0130Z, wind zero seven zero at one seven gusts two five, visibility more than six, ceiling two thousand overcast; a 30 percent probability between the 5th at 06Z and the 5th at 10Z, visibility two, light snow showers, ceiling eight hundred overcast

```
FM121600 13010KT P6SM SCT030 PROB30 1219/1222  
VRB25G35KT 1 1/2SM TSRA OVC010CB
```

From the 12th at 1600Z, wind one three zero at one zero, visibility more than six, three thousand scattered; a 30 percent probability between the 10th at 19Z and the 10th at 22Z, wind variable at two five gusts three five, visibility one and one-half, thunderstorm, rain (shower), ceiling one thousand overcast cumulonimbus

The weather elements directly related to the thunderstorm or precipitation event immediately follow.



AIR TRAFFIC BASICS | Lesson 28: Forecasts and Advisories

ALL LESSONS FRAME: 23

In-Flight Advisories

BACK NEXT

- AIRMET
- SIGMET
- Convective SIGMET



Purpose

LEARN MORE

SIGMETs, Convective SIGMETs, and AIRMETs are “in-flight advisories.”

Controllers use in-flight advisories to:

- Alert pilots of the existence of hazardous weather
- Maintain situational awareness of hazardous weather within their airspace



In-Flight Advisories

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Standards

All in-flight advisories follow these standards:

- All heights are MSL unless otherwise noted in hundreds of feet, consisting of three digits (e.g., 040).
 - "FL" denotes flight levels (e.g., FL180).
- Contractions follow FAA Order JO 7340.2, Contractions.
- Weather and obstructions to visibility formats are identical to METAR/SPECI.

AC 00-45, sec. 6





Significant Meteorological Information (SIGMET)

BACK

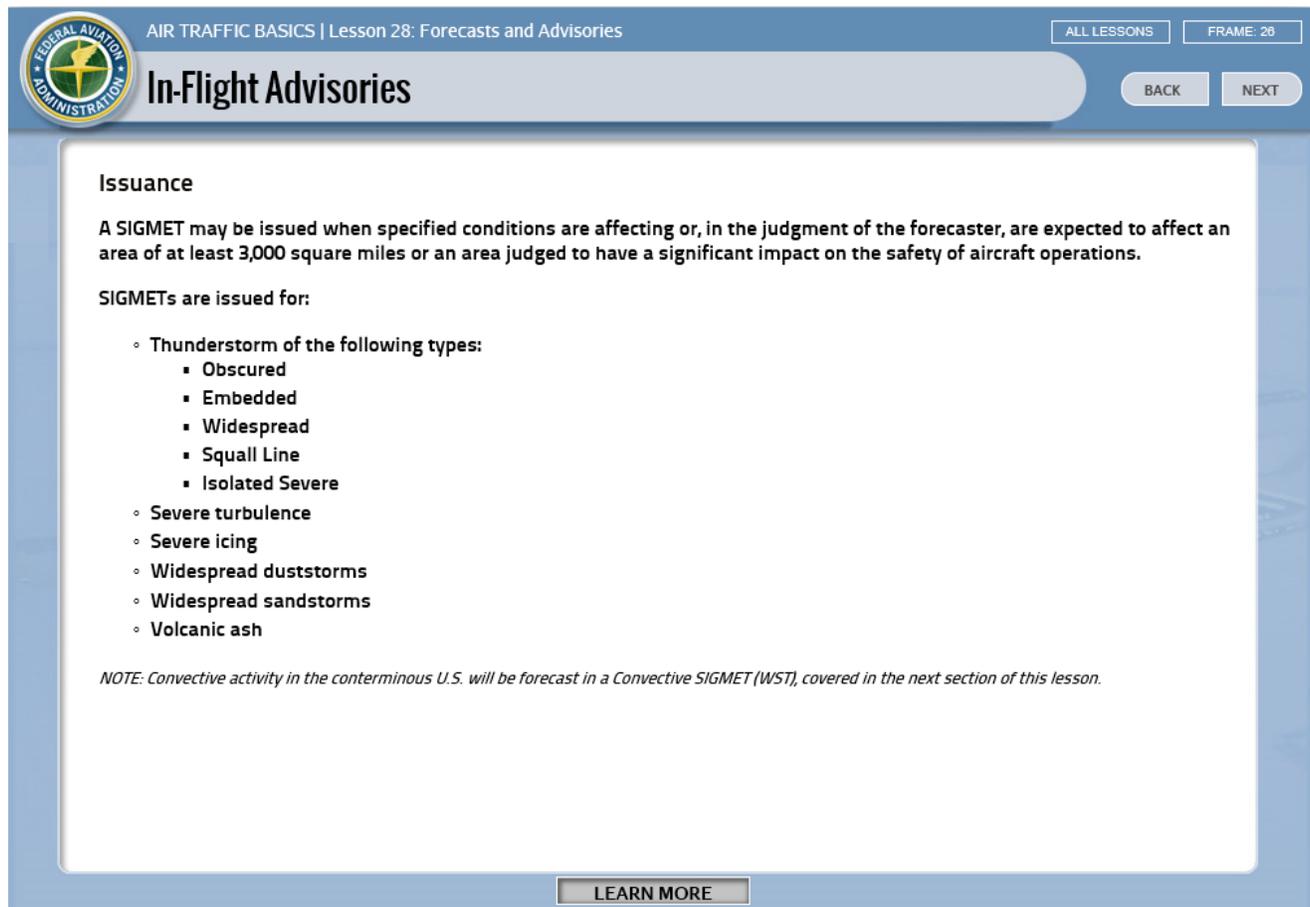
NEXT



Purpose

A SIGMET is a weather advisory concerning weather significant to the safety of all aircraft.

AC 00-45, sec. 6; JO 7110.10, Pilot/Controller Glossary



Issuance

A SIGMET may be issued when specified conditions are affecting or, in the judgment of the forecaster, are expected to affect an area of at least 3,000 square miles or an area judged to have a significant impact on the safety of aircraft operations.

SIGMETs are issued for:

- Thunderstorm of the following types:
 - Obscured
 - Embedded
 - Widespread
 - Squall Line
 - Isolated Severe
- Severe turbulence
- Severe icing
- Widespread duststorms
- Widespread sandstorms
- Volcanic ash

NOTE: Convective activity in the conterminous U.S. will be forecast in a Convective SIGMET (WST), covered in the next section of this lesson.

[LEARN MORE](#)

A SIGMET is an **unscheduled** product issued any time conditions reaching SIGMET criteria are occurring or expected to occur within a four-hour period.

A SIGMET can have a maximum valid period of four hours.

- Except for volcanic ash (VA) and tropical cyclone (TC) SIGMETs outside the conterminous U.S., which can be valid up to six hours.

If conditions are expected to persist after the SIGMET's valid period, a statement to that effect is included in the last line of the text.

SIGMETs for continuing phenomena will be reissued at least every four hours as long as SIGMET conditions are expected to continue.

Reference: AC 00-45, Sec. 6



In-Flight Advisories

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Decoding

```

LINE
1 → BOSR WS 050600
2 → SIGMET ROMEO 2 VALID UNTIL 051000
3 → ME NH VT
4 → FROM CAR TO YSJ TO CON TO MPV TO CAR
5 → SEV TURB OBS AND FCST BLW 080. CONDS CONTG BYD 1000Z.
    
```

	Content	Description
1	BOS	SIGMET area identifier
	R	SIGMET series
	WS	SIGMET product identifier (WS/UWS)
	050600	Issuance date/time
2	SIGMET	Product identifier
	ROMEO 2	Series name and issuance number
	VALID UNTIL 051000	Ending valid date/time
3	ME NH VT	List of affected states
4	FROM CAR TO YSJ TO CON TO MPV TO CAR	Location of phenomenon delineated by high-altitude VORs
5	SEV TURB OBS AND FCST BLW 080. CONDS CONTG BYD 1000Z.	Phenomenon description and ending time

LEARN MORE

“SIGMET Romeo two from Caribou to St. Johns to Concord to Montpelier to Caribou, severe turbulence observed and forecast below eight thousand, conditions continuing beyond one zero zero Zulu.”

Reference: AC 00-45, Sec. 6

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Convective SIGMET (WST)

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Purpose

LEARN MORE

A Convective SIGMET (WST) is a weather advisory concerning convective weather significant to the safety of all aircraft.

Convective SIGMETs are ONLY issued for the conterminous U.S. instead of SIGMETs for thunderstorms.

A Convective SIGMET is issued when any of the following conditions are occurring or, in the judgment of the forecaster, are expected to occur.

- A severe thunderstorm is forecast
- A severe thunderstorm has:
 - Winds of 50 knots or greater
 - Hail $\frac{3}{4}$ inch or greater in diameter
 - Tornadoes
- A line of thunderstorms is at least 60 miles long with thunderstorms affecting 40% of its length
- An active area of thunderstorms affecting 3,000 square miles covers at least 40% of the area concerned

NOTE: Weather phenomena meeting these criteria, which are NOT within the conterminous U.S., would result in a SIGMET being issued.

References:

- AC 00-45, Sec. 6
- JO 7110.10, Pilot/Controller Glossary



Convective SIGMET (WST)

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Issuance

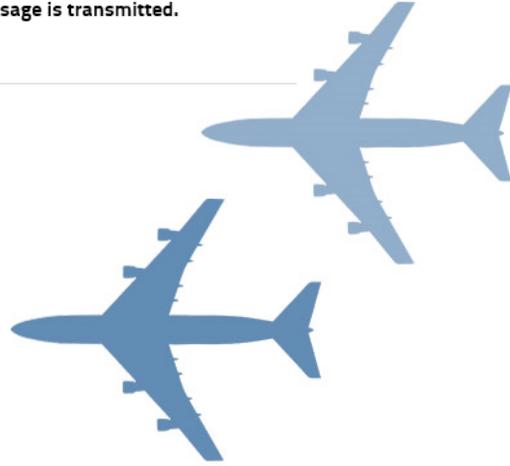
Convective SIGMET bulletins for the eastern (E), central (C), and western (W) regions of the conterminous U.S. are issued hourly at 55 minutes past the hour.

Convective SIGMETs are valid for two hours or until superseded by the next hourly issuance.

When conditions do not meet or are not expected to meet Convective SIGMET criteria within a region at the scheduled time of issuance, a "CONVECTIVE SIGMET...NONE" message is transmitted.

A two-to-six-hour outlook is included at the end of each bulletin.

AC 00-45, sec. 6





Convective SIGMET (WST)

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Convective SIGMET Bulletin Decoding

```

LINE
1 MKCC WST 091855
2 CONVECTIVE SIGMET 21C
3 VALID UNTIL 2055Z
4 AR OK
5 FROM 20S RZC-40SSW FSM
6 DMSHG LINE TS 25 NM WIDE MOV FROM 27025KT. TOPS TO
  FL320.
7
8 OUTLOOK VALID 092055-100055
9 FROM 40NE BUM-60SE SGF-50WSW LIT-40W GGG-60ENE ABI-
  ADM-50WNW BUM-40NE BUM
9 WST ISSUANCES EXPD. REFER TO MOST RECENT ACUS01
  KWNS FROM STORM PREDICTION CENTER FOR SYNOPSIS AND
  METEOROLOGICAL DETAILS.
    
```

	Content	Description
1	MKC	Issuance office
	C	Region (East, Central or West)
	WST	Product identifier
2	091855	Issuance date/time
	CONVECTIVE SIGMET	Product type
	21	Issuance number
3	C	Region (East, Central or West)
	VALID UNTIL 2055Z	Valid ending time (UTC)
4	AR OK	List of affected states
	FROM 20S RZC-40SSW FSM	Location of phenomenon delineated by high-altitude VORs
6	DMSHG LINE TS 25 NM WIDE MOV FROM 27025KT. TOPS TO FL320	Phenomenon description, movement, cloud top, remarks
	OUTLOOK VALID 092055-100055	Outlook valid period date/time
8	FROM 40NE BUM-60SE SGF-50WSW LIT-40W GGG-60ENE ABI-ADM-50WNW BUM-40NE BUM	Location of phenomenon delineated by high-altitude VORs
	WST ISSUANCES EXPD. REFER TO MOST RECENT ACUS01 KWNS FROM STORM PREDICTION CENTER FOR SYNOPSIS AND MET DETAILS	WST issuances possible/expected, Synopsis

AC 00-45, sec. 6



Convective SIGMET (WST)

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Decoding

"Convective SIGMET two one Central-from two zero south of Razorback to four zero south-southwest of Fort Smith, diminishing line of thunderstorms two five miles wide moving east at two five knots. Tops to flight level three two zero."

Convective SIGMET outlook valid from the 9th at two zero five five Zulu to the 10th at zero zero five five Zulu-from four zero northeast of Butler to six zero southeast of Springfield to five zero west-southwest of Little Rock to four zero west of Longview to six zero east-northeast of Abilene to Ardmore to five zero west-northwest of Butler to four zero northeast of Butler, Convective SIGMET issuances expected.



AIR TRAFFIC BASICS | Lesson 28: Forecasts and AdvisoriesALL LESSONSFRAME: 32

Airman's Meteorological Information (AIRMET)

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Purpose

[LEARN MORE](#)

An AIRMET is an in-flight advisory concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications.

AIRMETs concern weather of less severity than that covered by SIGMETs or Convective SIGMETs.

References:

- AC 00-45, Sec. 6
- JO 7110.10, Pilot/Controller Glossary



Airman's Meteorological Information (AIRMET)

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Issuance

AIRMET bulletins, each containing all valid AIRMET messages, are issued on a scheduled basis for each forecast region.

- Bulletins are named according to the alphabetic designator that indicates the forecast hazard(s).
 - AIRMET SIERRA for IFR and extensive mountain obscuration
 - AIRMET TANGO for moderate turbulence, sustained surface winds greater than 30 knots, and non-convective low-level wind shear (LLWS) potential
 - AIRMET ZULU for moderate icing and freezing levels
- A negative statement is issued if no AIRMET messages are valid.
- AIRMET messages are valid for no more than six hours.
 - If conditions are expected to persist after the AIRMET's valid period, a statement to that effect is included in the last line of the text.
 - Bulletins will contain an outlook whenever hazardous weather meeting AIRMET criteria is expected during the preceding six-hour period.

AC 00-45, sec. 6





Airman's Meteorological Information (AIRMET)

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NEXT

```

LINE
1 CHIZ WA 091445
2 AIRMET ZULU UPDT 4 FOR ICE AND FRZLVL VALID UNTIL 092100
3 ...SEE SIGMET QUEBEC SERIES...
4
5 AIRMET ICE...KS IA MO IL
6 FROM FOD TO DBQ TO 50NW DEC TO 50SW FAM TO OSW TO MCI TO FOD
7 MOD ICE BTN FRZLVL AND FL200. FRZLVL 060-100. CONDS ENDG BY 21Z.
8
9 OTLK VALID 2100-0300Z...ICE IA MO WI IL IN KY
10 BOUNDED BY BAE-BVT-PKV-50SW FAM-50NW DEC-DBQ-BAE
11 MOD ICE BTN 080 AND FL200. CONDS CONTG THRU 03Z.
12
13 FRZLVL...RANGING FROM SFC-120 ACRS AREA
14 MULT FRZLVL 015-085 BOUNDED BY INL-YQT-SSM-ASP-FWA-BJI-INL
15 SFC ALG 50NNW ISN-70W FAR-GFK-40NE ODI-40SW DXO
16 040 ALG ISN-70S BIS-30W ABR-30E ABR-60S FAR-30SW ERD-30NE FWA
17 080 ALG GLD-SLN-30W EDF-50S JOT-40SE IND-30SW CVG-40SW LOZ
    
```

AIRMET Bulletin Decoding

	CONTENT	DESCRIPTION
1	CHIZ WA 091445	Forecast area (CHI) and alphabetic designator (Z) AIRMET product identifier Issuance day of the month (09) and time (1445Z)
2	AIRMET ZULU UPDT 4 FOR ICE AND FRZLVL VALID UNTIL 092100	Product identifier Update number (reset to zero at 00z each day) Weather phenomena Ending valid day of the month (09) and time (2100Z)
3	...SEE SIGMET...	Reference to active SIGMETs at time of issuance
4	AIRMET ICE...KS IA MO IL	AIRMET name and list of affected states
5	FROM FOD TO DBQ...	Location using high altitude VORs or other geographic features
6	MOD ICE BTN...	Phenomenon description and ending time
7	OTLK VALID...	Outlook identifier, valid period, phenomenon, and list of states affected
8	BOUNDED BY BAE...	Location using VORs or other geographic features
9	MOD ICE BTN...	Phenomenon description and ending time
10	FRZLVL...RANGING...	Freezing level range across the forecast area
11	MULTI FRZLVL...	Freezing levels

NOTE: Freezing levels are only found in AIRMET Zulu bulletins.

AC 00-45, sec. 6



Airman's Meteorological Information (AIRMET)

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AIRMET Bulletin Decoding

"AIRMET Zulu update four for icing—from Fort Dodge to Dubuque to five zero northwest of Decatur to five zero southwest of Farmington to Oswego to Kansas City to three zero west-southwest of Fort Dodge, moderate icing between the freezing level and flight level two zero zero. Freezing level between six thousand and one zero thousand. Conditions ending by two one zero zero Zulu."

"AIRMET Zulu update four, outlook valid from two one zero zero Zulu to zero three zero zero Zulu-bounded by Milwaukee to Lafayette to Pocket City to five zero southwest of Farmington to five zero northwest of Decatur to Dubuque to Milwaukee. Moderate icing between the freezing level and flight level two zero zero. Freezing level between eight thousand and one zero thousand. Conditions continuing through zero three zero zero Zulu."

"Freezing level ranging from the surface to one two thousand across the area. Multiple freezing levels between one thousand five hundred and eight thousand five hundred, bounded by International Falls to Thunder Bay to Sault Ste Marie to Oscoda to Fort Wayne to Bemidji to International Falls. At the surface along a line from five zero north-northwest of Williston to seven zero west of Fargo to Grand Forks to four zero northeast of Nodine to four zero southeast of Detroit. At four thousand along a line from Williston to seven zero south of Bismarck to three zero west of Aberdeen to three zero east of Aberdeen to six zero south of Fargo to three zero southwest of Brainerd to three zero northeast of Fort Wayne. At eight thousand along a line from Goodland to Salina to three zero west of Bradford to five zero south of Joliet to four zero southeast of Indianapolis to three zero southwest of Covington to four zero southwest of New London."

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 28: Forecasts and Advisories

ALL LESSONS FRAME: 36

Center Weather Advisory (CWA)

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Purpose

LEARN MORE

A CWA is an unscheduled weather advisory issued by CWSU meteorologists for ATC use to alert pilots of existing or anticipated adverse weather conditions within the next two hours.

- It's not a flight planning product because of its short lead time and duration.

References:

- AC 00-45, Sec. 6
- JO 7110.10, Pilot/Controller Glossary



Center Weather Advisory (CWA)

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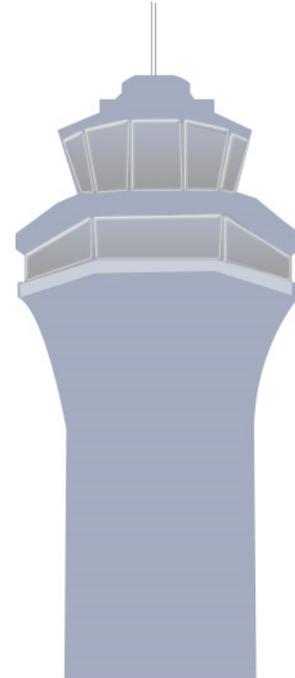
Criteria

Center Weather Advisory criteria include:

- Thunderstorms
 - Severe (SEV TS)
 - Embedded (EMBD TS)
 - Line (LN TS)
 - Area (AREA TS)
- Icing
 - Moderate (MOD ICE)
 - Severe (SEV ICE)
- Turbulence
 - Moderate (MOD TURB)
 - Severe (SEV TURB)
- Heavy precipitation (HVY PCPN)
- Freezing precipitation (FZ PCPN)
- Low Instrument Flight Rules (LOW IFR)

NOTE: Low IFR is defined as ceiling less than 500 feet AGL and/or visibility less than one statute mile.

- Surface wind greater than or equal to 30 knots (STG SFC WND)
- Non-convective low-level wind shear (surface - 2,000 feet AGL)
- Duststorm (DS)
- Sandstorm (SS)
- Volcanic ash (VS)





Decoding

BACK

NEXT

Center Weather Advisory (CWA) Decoding

```

LINE
1 ZNY5 CWA 021400
2 ZNY CWA 502 VALID TIL 021600
3 FROM BGM TO 18WNW JFK TO HAR TO SLT TO BGM
4 NUMEROUS ACFT REP SEV TURB AND WS BLW 020. CONDS EXP
  TO CONT AFT 16Z.
    
```

	Content	Description
1	ZNY	ARTCC identification
	5	Phenomenon number (1-6)
	CWA	Product identifier (CWA/UCWA)
	021400	Beginning/issuance date/time
2	ZNY	ARTCC identification
	CWA	Product identifier
	5	Phenomenon number (1-6)
	02	Issuance number
	VALID TIL 021600	Ending valid date/time
3	FROM BGM TO 18WNW JFK TO HAR TO SLT TO BGM	Location of phenomenon delineated by high-altitude VORs
4	NUMEROUS ACFT REP SEV TURB AND WS BLW 020. CONDS EXP TO CONT AFT 16Z	Phenomenon description

LEARN MORE

New York Center Weather Advisory five, issuance two—from Binghamton to one eight northwest of New York/JF Kennedy to Harrisburg to Slate Run to Binghamton, numerous aircraft report severe turbulence and wind shear below two thousand, conditions expected to continue after one six Zulu.

Reference: AC 00-45, Sec. 6

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 28: Forecasts and Advisories

ALL LESSONS FRAME: 39

Meteorological Impact Statement (MIS)

BACK NEXT



Purpose

LEARN MORE

An MIS is an unscheduled discussion product, issued by CWSU meteorologists, that summarizes anticipated weather conditions with potential impact on air traffic flow control and flight operations in an ARTCC's area of responsibility.

The MIS provides a unique plain language, non-technical description of weather expected to occur over an extended period ranging from several hours up to about two days.

An MIS is distributed to:

- Air Route Traffic Control Center (ARTCC) personnel
 - Including Traffic Management Unit (TMU) personnel
- Other supported centers

An MIS is **not** intended to be used by pilots.

References:

- AC 00-45, Sec. 9
- JO 7110.10, Pilot/Controller Glossary



Meteorological Impact Statement (MIS)

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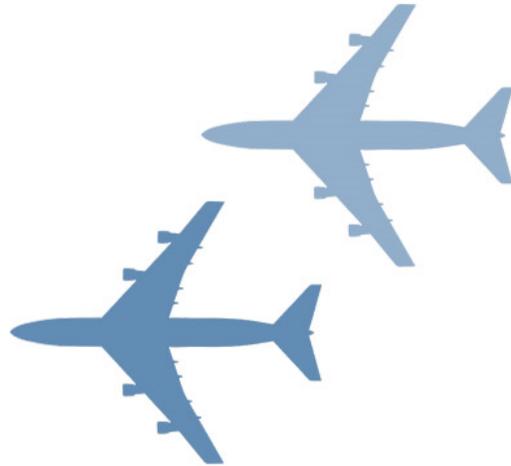
NEXT

Air Traffic Weather Concerns

An MIS enables air traffic control personnel to include the impact of specific weather conditions in their flow control decision making.

Air traffic weather concerns include, but are not limited to:

- Thunderstorms
 - Timing
 - Tops
 - Movement
 - Intensity
 - Character (such as broken lines or large clusters)
- Operationally significant ceilings/visibility
- Cloud tops
- Wind and temperatures (surface and aloft)
- Wind shear
- Operationally significant pressure changes
- Precipitation
- Turbulence
- Icing
- Duststorm, sandstorm, and volcanic ash





Meteorological Impact Statement (MIS)

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NEXT

Meteorological Impact Statement (MIS) Decoding

```

LINE
1 → ZNY MIS 02 VALID 151700-160230
2 → ...FOR ATC PLANNING PURPOSES ONLY...
3 → REROUTE IS EXPECTED AFTER 17Z. SCATTERED LINE OF TS WILL
   DEVELOP FROM WEST VIRGINIA NORTHEAST TO CENTRAL NY STATE.
   JET ROUTES MOST LIKELY AFFECTED WILL BE J60 THROUGH J6;
   LATER J95 AND J36
    
```

	Content	Description
1	ZNY	ARTCC identification
	MIS	Product identifier
	02	Issuance number
	VALID 151700-160230	Valid period dates/times
2	...FOR ATC PLANNING PURPOSES ONLY...	Product use statement
3	REROUTE IS EXPECTED...	Phenomenon description including height, extent, and movement.

Meteorological Impact Statement two-Reroute program is expected after one seven Zulu. Scattered line of thunderstorms will develop from West Virginia northeast to central New York state. Jet routes most likely affected will be J sixty through J six; later J ninety five and J thirty six.

AC 00-45, sec. 9

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 28: Forecasts and Advisories ALL LESSONS FRAME: 42

Wind and Temperature Aloft Forecast (FB)

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Purpose

LEARN MORE

A Wind and Temperature Aloft Forecast (FB) is a computer generated forecast of wind direction, wind speed, and temperature at selected times, altitudes, and locations.

- FBs are used by ATC to vector aircraft.

Reference: AC 00-45, Sec. 7



Wind and Temperature Aloft Forecast (FB)

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```

Line
1 → FDUS1
2 → DATA BASED ON 091200Z
3 → VALID 091800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000
4 → FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
5 → BIH 2910 2920-10 3121-18 3019-32 9900-43 252648 273447 283946
6 → BLH 2326 2437-01 2435-07 2541-13 2683-23 2694-35 760050 269855 269651
7 → FAT 3106 3406-06 3313-13 3115-20 2828-33 2732-44 293745 294046 294647
8 → ONT 2414 2627-04 2637-10 2643-16 2785-25 7706-36 269948 277951 278150
...
    
```

2785-25	
27	Wind direction (tens of degrees)
85	Wind speed (knots)
-25	Temperature (°C)

Wind and Temperature Aloft (FB) Decoding

AC 00-45, sec. 7

	Content	Description
1	FDUS1	WMO Bulletin designator
2	DATA BASED ON 091200Z	Data based on date and time (UTC)
3	VALID 091800Z	Valid date and time (UTC)
	FOR USE 1400-2100Z	For use time period (UTC)
4	TEMPS NEG ABV 24000	Temperatures are negative for levels above 24000 feet (FL240)
	FT 3000 6000 9000...	Forecast levels in feet. <18000=true altitude; >18000=pressure altitudes
5+	BIH...	Forecast location
	2910 2920-10...	Coded forecast wind/temperatures



Wind and Temperature Aloft Forecast (FB)

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Decoding

The format of an FB forecast element is:

- 27 – The first two digits represent the wind direction in tens of degrees relative to true north
- 85 – The next two digits indicate the wind speed in knots
 - 9900 indicates wind light and variable
 - If the coded wind direction is greater than "36," 50 must be subtracted from the wind direction and a one must be added to the hundreds digit for wind speed.
- Example: 6825 is decoded as wind 180 degrees at 125 knots.
 - Wind is not forecast for any altitude within 1,500 feet of station elevation in the contiguous U.S. or Alaska.
- Plus (+) or minus (-) sign for temperature as required
 - Temperature sign is omitted at altitudes above FL240.
- 25 – The final two digits indicate the temperature in whole degrees Celsius
 - Temperature is not forecast at 3,000 feet or any altitude within 2,500 feet of station elevation.





Wind and Temperature Aloft Forecast (FB)

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Wind and Temperature Aloft (FB) Decoding Examples

```

FD1US1
DATA BASED ON 041800Z
VALID 051800Z FOR USE 1200-0000Z. TEMPS NEG ABV 24000
FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
SBA 9900 3609+22 9900+15 1807+07 2112-06 2619-17 283934 284343 274754
WJF 3107+24 2806+16 9900+08 1907-07 2816-18 293734 273543 274554
LKV 2231+12 2242+04 2237-10 2436-22 252438 262947 263857
PDX 2313 2323+07 2333+01 2247-03 2175-16 2383-25 750436 750047 258052
    
```

Location	Level (ft)	Coded	Decoded
SBA	3000	9900	"Three thousand, light and variable"
WJF	9000	2806+16	"Niner thousand, two eight zero at six, temperature one six"
LKV	18000 (FL180)	2237-10	"Flight level one eight zero, two <u>two</u> zero at three seven, temperature minus one zero"
PDX	34000 (FL340)	750047	"Flight level three four zero, two five zero at one zero <u>zero</u> , temperature minus four seven"

NOTE: A high-level forecast product for FL450 and FL530 is also issued.

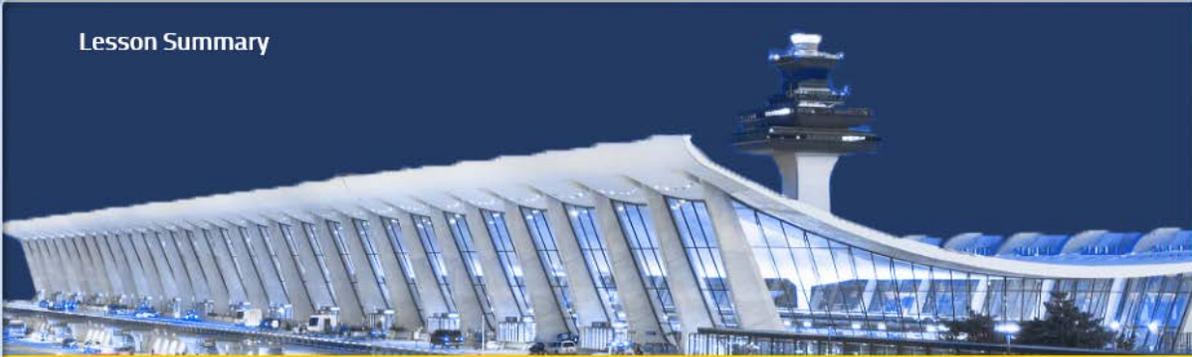


Conclusion

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Lesson Summary



This lesson covered:

- Terminal Aerodrome Forecast (TAF)
- In-flight Advisories
- Airman's Meteorological Information (AIRMET)
- Significant Meteorological Information (SIGMET)
- Convective SIGMET (WST)
- Center Weather Advisory (CWA)
- Meteorological Impact Statement (MIS)
- Wind and Temperature Aloft Forecast (FB)





Resources

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[Click here to access all the Appendices for Lesson 28.](#)

