Section 6. Weather Information

2–6–1. FAMILIARIZATION

Become familiar with pertinent weather information when coming on duty, and stay aware of current weather information needed to perform ATC duties.

2–6–2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE (HIWAS)

Controllers must advise pilots of hazardous weather that may impact operations within 150 NM of their sector or area of jurisdiction. Hazardous weather information contained in HIWAS broadcasts includes Airmen's Meteorological Information (AIRMET), Significant Meteorological Information (SIGMET), Convective SIGMET (WST), Urgent Pilot Weather Reports (UUA), and Center Weather Advisories (CWA). Facilities must review alert messages to determine the geographical area and operational impact for hazardous weather information broadcasts. The broadcast is not required if aircraft on your frequency(s) will not be affected.

a. Controllers within commissioned HIWAS areas must broadcast a HIWAS alert on all frequencies, except emergency frequency, upon receipt of hazardous weather information. Controllers are required to disseminate data based on the operational impact on the sector or area of control jurisdiction.

NOTE–
The inclusion of the type and number of weather advisory responsible for the HIWAS advisory is optional.

PHRASEOLOGY–
ATTENTION ALL AIRCRAFT. HAZARDOUS WEATHER INFORMATION (SIGMET, Convective SIGMET, AIRMET, Urgent Pilot Weather Report (UUA), or Center Weather Advisory (CWA), Number or Numbers) FOR (geographical area) AVAILABLE ON HIWAS OR FLIGHT SERVICE FREQUENCIES.

b. Controllers outside of commissioned HIWAS areas must:

1. Advise pilots of the availability of hazardous weather advisories. Pilots requesting additional information should be directed to contact the nearest Flight Service.

2. Apply the same procedure when HIWAS outlets, or outlets with radio coverage extending into your sector or airspace under your jurisdiction, are out of service.

PHRASEOLOGY–
ATTENTION ALL AIRCRAFT. HAZARDOUS WEATHER INFORMATION FOR (geographical area) AVAILABLE FROM FLIGHT SERVICE.

c. Terminal facilities have the option to limit hazardous weather information broadcasts as follows: Tower cab and approach control facilities may opt to broadcast hazardous weather information alerts only when any part of the area described is within 50 NM of the airspace under their jurisdiction.

REFERENCE–
AIM, Chapter 7, Section 1, Meteorology, Para 7–1–5 through Para 7–1–9.

d. *EN ROUTE.* ERAM. Controllers must electronically acknowledge hazardous weather information messages after appropriate action has been taken.

NOTE–
EN ROUTE. While hazardous weather information is commonly distributed via the SIGMET View, it is possible to receive the information via the GI View.

2–6–3. PIREP INFORMATION

Significant PIREP information includes reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, volcanic eruptions and volcanic ash clouds, detection of sulfur gases (SO_2 or H_2S) in the cabin, and other conditions pertinent to flight safety.

REFERENCE–
FAAO JO 7110.65, Para 3–1–8, Low Level Wind Shear/Microburst Advisories.
FAAO JO 7210.3, Para 6–3–1, Handling of SIGMETs, CWAs, and PIREPs.
AIM, Para 7–5–9, Flight Operations in Volcanic Ash.
FAAO JO 7210.3, Para 10–3–1, SIGMET and PIREP Handling.

a. Solicit PIREPs when requested or when one of the following conditions exists or is forecast for your area of jurisdiction:

1. Ceilings at or below 5,000 feet. These PIREPs must include cloud base/top reports when feasible.

TERMINAL. Ensure that at least one descent/climb-out PIREP, including cloud base/s, top/s, and other related phenomena, is obtained each hour.

EN ROUTE. When providing approach control services, the requirements stated in TERMINAL above apply.

2. Visibility (surface or aloft) at or less than 5 miles.

3. Thunderstorms and related phenomena.

4. Turbulence of moderate degree or greater.

5. Icing of light degree or greater.

6. Wind shear.

7. Volcanic ash clouds.

NOTE–
Pilots may forward PIREPs regarding volcanic activity using the format described in the Volcanic Activity Reporting Form (VAR) as depicted in the AIM, Appendix 2.

8. Detection of sulfur gases (SO_2 or H_2S), associated with volcanic activity, in the cabin.

NOTE–
The smell of sulfur gases in the cockpit may indicate volcanic activity that has not yet been detected or reported and/or possible entry into an ash-bearing cloud. SO_2 is identifiable as the sharp, acrid odor of a freshly struck match. H_2S has the odor of rotten eggs.

9. *TERMINAL*. Braking Action Advisories are in effect.

REFERENCE–
FAAO JO 7110.65, Para 3–3–5, Braking Action Advisories.
P/CG Term– Braking Action Advisories.

b. Record with the PIREPs:

1. Time.

2. Aircraft position.

3. Type aircraft.

4. Altitude.

5. When the PIREP involves icing include:

(a) Icing type and intensity.

(b) Air temperature in which icing is occurring.

c. Obtain PIREPs directly from the pilot, or if the PIREP has been requested by another facility, you may instruct the pilot to deliver it directly to that facility.

PHRASEOLOGY–
REQUEST/SAY FLIGHT CONDITIONS.

Or if appropriate,

REQUEST/SAY (specific conditions; i.e., ride, cloud, visibility, etc.) CONDITIONS.

If necessary,

OVER (fix),

or

ALONG PRESENT ROUTE,

or

BETWEEN (fix) AND (fix).

d. Handle PIREPs as follows:

1. Relay pertinent PIREP information to concerned aircraft in a timely manner.

2. *EN ROUTE*. Relay all operationally significant PIREPs to the facility weather coordinator.

3. *TERMINAL*. Relay all operationally significant PIREPs to:

(a) The appropriate intrafacility positions.

(b) The FSS serving the area in which the report was obtained.

NOTE–
The FSS is responsible for long line dissemination.

(c) Other concerned terminal or en route ATC facilities, including non–FAA facilities.

(d) Use the word *gain* and/or *loss* when describing to pilots the effects of wind shear on airspeed.

EXAMPLE–
"Delta Seven Twenty–one, a Boeing Seven Twenty–seven, previously reported wind shear, loss of Two Five knots at Four Hundred feet."

"U.S. Air Seventy–six, a D–C Niner, previously reported wind shear, gain of Twenty–Five knots between Niner Hundred and Six Hundred feet, followed by a loss of Five Zero knots between Five Hundred feet and the surface."

REFERENCE–
AIM, Para 7–1–24, Wind Shear PIREPs.

2–6–4. WEATHER AND CHAFF SERVICES

a. Issue pertinent information on observed/reported weather and chaff areas by defining the area of coverage in terms of azimuth (by referring to the 12-hour clock) and distance from the aircraft or by

3–1–9. USE OF TOWER RADAR DISPLAYS

a. Uncertified tower display workstations must be used only as an aid to assist controllers in visually locating aircraft or in determining their spatial relationship to known geographical points. Radar services and traffic advisories are not to be provided using uncertified tower display workstations. General information may be given in an easy to understand manner, such as "to your right" or "ahead of you."

EXAMPLE–
"Follow the aircraft ahead of you passing the river at the stacks." "King Air passing left to right."

REFERENCE–
FAAO JO 7210.3, Para 10–5–3, Functional Use of Certified Tower Radar Displays.

b. Local controllers may use certified tower radar displays for the following purposes:

1. To determine an aircraft's identification, exact location, or spatial relationship to other aircraft.

NOTE–
This authorization does not alter visual separation procedures. When employing visual separation, the provisions of para 7–2–1, Visual Separation, apply unless otherwise authorized by the Vice President of Terminal Service.

REFERENCE–
FAAO JO 7110.65, Para 5–3–2, Primary Radar Identification Methods.
FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.
FAAO JO 7110.65, Para 5–3–4, Terminal Automation Systems Identification Methods.

2. To provide aircraft with radar traffic advisories.

3. To provide a direction or suggested headings to VFR aircraft as a method for radar identification or as an advisory aid to navigation.

PHRASEOLOGY–
(Identification), PROCEED (direction)–BOUND, (other instructions or information as necessary),

or

(identification), SUGGESTED HEADING (degrees), (other instructions as necessary).

NOTE–
It is important that the pilot be aware of the fact that the directions or headings being provided are suggestions or are advisory in nature. This is to keep the pilot from being inadvertently misled into assuming that radar vectors (and other associated radar services) are being provided when, in fact, they are not.

4. To provide information and instructions to aircraft operating within the surface area for which the tower has responsibility.

EXAMPLE–
"TURN BASE LEG NOW."

NOTE–
Unless otherwise authorized, tower radar displays are intended to be an aid to local controllers in meeting their responsibilities to the aircraft operating on the runways or within the surface area. They are not intended to provide radar benefits to pilots except for those accrued through a more efficient and effective local control position. In addition, local controllers at nonapproach control towers must devote the majority of their time to visually scanning the runways and local area; an assurance of continued positive radar identification could place distracting and operationally inefficient requirements upon the local controller. Therefore, since the requirements of para 5–3–1, Application, cannot be assured, the radar functions prescribed above are not considered to be radar services and pilots should not be advised of being in "radar contact."

c. Additional functions may be performed provided the procedures have been reviewed and authorized by appropriate management levels.

REFERENCE–
FAAO JO 7110.65, Para 5–5–4, Minima.

3–1–10. OBSERVED ABNORMALITIES

When requested by a pilot or when you deem it necessary, inform an aircraft of any observed abnormal aircraft condition.

PHRASEOLOGY–
(Item) APPEAR/S (observed condition).

EXAMPLE–
"Landing gear appears up."
"Landing gear appears down and in place."
"Rear baggage door appears open."

3–1–11. SURFACE AREA RESTRICTIONS

a. If traffic conditions permit, approve a pilot's request to cross Class C or Class D surface areas or exceed the Class C or Class D airspace speed limit. Do not, however, approve a speed in excess of 250 knots (288 mph) unless the pilot informs you a higher minimum speed is required.

NOTE–
14 CFR Section 91.117 permits speeds in excess of

Section 9. Radar Arrivals

5–9–1. VECTORS TO FINAL APPROACH COURSE

Except as provided in para 7–4–2, Vectors for Visual Approach, vector arriving aircraft to intercept the final approach course:

a. At least 2 miles outside the approach gate unless one of the following exists:

1. When the reported ceiling is at least 500 feet above the MVA/MIA and the visibility is at least 3 miles (report may be a PIREP if no weather is reported for the airport), aircraft may be vectored to intercept the final approach course closer than 2 miles outside the approach gate but no closer than the approach gate.

2. If specifically requested by the pilot, aircraft may be vectored to intercept the final approach course inside the approach gate but no closer than the final approach fix.

EXCEPTION. Conditions 1 and 2 above do not apply to RNAV aircraft being vectored for a GPS or RNAV approach.

b. Provide a minimum of 1,000 feet vertical separation between aircraft on opposite base legs unless another form of approved separation is established during turn-on to final approach.

c. For a precision approach, at an altitude not above the glideslope/glidepath or below the minimum glideslope intercept altitude specified on the approach procedure chart.

d. For a nonprecision approach, at an altitude which will allow descent in accordance with the published procedure.

NOTE–
A pilot request for an "evaluation approach," or a "coupled approach," or use of a similar term, indicates the pilot desires the application of subparas a and b.

e. *EN ROUTE.* The following provisions are required before an aircraft may be vectored to the final approach course:

1. The approach gate and a line (solid or broken), depicting the final approach course starting at or passing through the approach gate and extending away from the airport, be displayed on the radar scope; for a precision approach, the line length must extend at least the maximum range of the localizer; for a nonprecision approach, the line length must extend at least 10NM outside the approach gate; and

2. The maximum range selected on the radar display is 150 NM; or

3. An adjacent radar display is set at 125 NM or less, configured for the approach in use, and is utilized for the vector to the final approach course.

4. If unable to comply with subparas 1, 2, or 3 above, issue the clearance in accordance with Para 4–8–1, Approach Clearance.

REFERENCE–
FAAO JO 7110.65, Para 4–8–1, Approach Clearance.
FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.

5–9–2. FINAL APPROACH COURSE INTERCEPTION

a. Assign headings that will permit final approach course interception on a track that does not exceed the interception angles specified in TBL 5–9–1.

TBL 5–9–1
Approach Course Interception Angle

Distance from interception point to approach gate	Maximum interception angle
Less than 2 miles or triple simultaneous approaches in use	20 degrees
2 miles or more	30 degrees (45 degrees for helicopters)

b. If deviations from the final approach course are observed after initial course interception, apply the following:

1. Outside the approach gate: apply procedures in accordance with subpara a, if necessary, vector the aircraft for another approach.

2. Inside the approach gate: inform the pilot of the aircraft's position and ask intentions.

PHRASEOLOGY–
(Ident) (distance) MILE(S) FROM THE AIRPORT, (distance) MILE(S) RIGHT/LEFT OF COURSE, SAY INTENTIONS.

NOTE–
The intent is to provide for a track course intercept angle judged by the controller to be no greater than specified by this procedure.

REFERENCE–
FAAO JO 7110.65, Chapter 5, Section 9, Radar Arrivals, and Section 10, Radar Approaches– Terminal.

c. *EN ROUTE.* When using a radar scope range above 125 NM, the controller must solicit and receive a pilot report that the aircraft is established on the final approach course. If the pilot has not reported established by the final approach gate, inform the pilot of his/her observed position and ask intentions.

NOTE–
It may be difficult to accurately determine small distances when using very large range settings.

5–9–3. VECTORS ACROSS FINAL APPROACH COURSE

Inform the aircraft whenever a vector will take it across the final approach course and state the reason for such action.

NOTE–
In the event you are unable to so inform the aircraft, the pilot is not expected to turn inbound on the final approach course unless approach clearance has been issued.

PHRASEOLOGY–
EXPECT VECTORS ACROSS FINAL FOR (purpose).

EXAMPLE–
"EXPECT VECTORS ACROSS FINAL FOR SPACING."

REFERENCE–
FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.

5–9–4. ARRIVAL INSTRUCTIONS

Issue all of the following to an aircraft before it reaches the approach gate:

a. Position relative to a fix on the final approach course. If none is portrayed on the radar display or if none is prescribed in the procedure, issue position information relative to the navigation aid which provides final approach guidance or relative to the airport.

b. Vector to intercept the final approach course if required.

c. Approach clearance except when conducting a radar approach. Issue approach clearance only after the aircraft is:

1. Established on a segment of a published route or instrument approach procedure, or see FIG 5–9–1 Example 1.

FIG 5–9–1
Arrival Instructions