

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 10-229**

**15 OCTOBER 2003**



**Operations**

**RESPONDING TO SEVERE WEATHER  
EVENTS**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction details a standard set of requirements to ensure Air Force bases and facilities are ready to respond to severe weather events. Air Force units that support Army installations are required to work with their customer to establish required severe weather response procedures. This instruction covers the entire spectrum of actions required to protect resources and personnel to the maximum extent possible from severe weather and outlines the reporting and crossfeed of information necessary to support these actions. It applies to all Air Force organizations including the Air National Guard and US Air Force Reserve units. Any organization may supplement this instruction. Major commands, field operating agencies, and direct reporting units send one copy of their supplement to HQ AF/XOO, 1480 Air Force Pentagon, Washington DC 20330-1480.

### ***SUMMARY OF REVISIONS***

**This document is substantially revised and must be completely reviewed.**

This instruction has been changed to reflect changed roles and responsibilities of Air Force Weather (AFW) organizations under AFW reengineering, and to update references to new publications. “Mandatory” severe weather criteria have been changed to “Standard” severe weather criteria to allow installation commanders flexibility in determining actions taken as owners of the Operational Risk Management process.

## Chapter 1

### INTRODUCTION

**1.1. General.** Each year Air Force and Army installations, equipment, and personnel are threatened by severe weather. When severe weather occurs, it can affect readiness and the ability to accomplish Air Force and Army missions. Severe weather is defined as any weather phenomena requiring a special severe weather notice from an Air Force Weather unit. The severe weather notice is designed to give the designated agency advance notification (with sufficient time to implement protective actions) of expected weather conditions that pose a hazard to personnel, resources, and property. When notified of the potential for severe weather, the agency will normally take subsequent preventative actions. **Table 3.1.** contains standard watch and warning criteria.

**1.2. General Information.** Successful preparation and response to severe weather events require an integrated approach among operations, logistics, and support units on a base. The key aspects to ensuring units optimally protect people and equipment lie in ensuring all base elements fully understand their role in either the prediction, notification, preparation, or response to severe weather. Bases must identify how they will respond to severe weather that affects the installation and geographically separated operating locations and ensure these plans are exercised. Key actions to consider in protecting people and equipment are: identifying mission limiting/damaging weather criteria; forecasting specific severe weather events by issuing watches and warnings; disseminating the watches and warnings in a timely manner; and taking required protective actions based on the watches and warnings (See **Attachment 2**). Finally, by documenting and crossfeeding lessons learned, severe weather resource protection is enhanced.

## Chapter 2

### RESPONSIBILITIES

#### 2.1. Headquarters Air Force:

##### 2.1.1. AF/XOO:

2.1.1.1. Will serve as 24 hour point-of-contact for receipt of information (e.g., via fax, message, phone, or e-mail) concerning severe weather occurrences at Air Force and Army installations supported by Air Force weather units.

2.1.1.2. Will collect severe weather operational reports and crossfeed to XOW for analysis and action as necessary.

##### 2.1.2. AF/XOW:

2.1.2.1. Will review all installation severe weather reports from a functional weather perspective to monitor technical ability, equipment status, and adequacy of training.

2.1.2.2. Will crossfeed severe weather forecasting lessons learned.

2.1.2.3. Will assist in determining cross-MAJCOM/FOA/DRU severe weather notification responsibilities as necessary for geographically separated installations requiring such support.

##### 2.1.3. AF/ILC:

2.1.3.1. Will assist MAJCOM/FOA/DRUs in developing and maintaining reliable primary and back-up severe weather information (weather watches and warnings) dissemination capabilities.

##### 2.1.4. AF/SE (AFSC) :

2.1.4.1. Will assist MAJCOM/DRU/FOAs with procedures and checklists via the Air Force Occupational Safety and Health (AFOSH) standards and other guidance documents for safeguarding personnel and equipment during severe weather.

#### 2.2. Major Commands/Direct Reporting Units (DRUs)/Field Operating Agencies (FOAs):

2.2.1. Will review all installation severe weather reports from a functional weather perspective to monitor technical ability, equipment status, and adequacy of training and forward after-action reports and applicable lessons-learned received from their units to HQ USAF/XOO.

2.2.2. Will designate OWSs to provide severe weather notification to installations requiring such support.

2.2.3. Will review base-wide preparedness activities during MAJCOM/DRU/FOA-selected wing/base inspections to ensure compliance with this instruction and will make recommendations to their installation commanders on areas for improvement to enhance the effectiveness of resource and personnel protection during severe weather events.

2.2.4. Will assist weather units in meeting requirements that exceed the unit's capabilities (e.g., arranging back-up support, exploiting technology, and enhancing severe weather forecasting techniques).

2.2.5. Will ensure subordinate units report severe weather events in accordance with this instruction and AFMAN 10-206.

2.2.6. Will assist OWSs and CWTs supporting the Army with developing procedures to provide severe weather notification to Army units.

### 2.3. The Installation Commander:

2.3.1. Will chair meetings as required, but not less than annually, to review installation severe weather preparedness, capabilities, requirements, and procedures. Meetings will be attended by representatives of base agencies responsible for developing protective action plans, CWT, guard and reserve components, tenant organizations, local off-base units, and others organizations with severe weather notification requirements. Other attendees will include installation agencies responsible for disseminating the information (e.g., base communication squadron and Command Post). Meetings will address at a minimum the following issues:

2.3.1.1. Severe weather observing and forecasting capabilities and corresponding user requirements to identify the weather phenomena for which notification is required to include threshold values and desired lead-times.

2.3.1.2. Primary and back-up dissemination procedures.

2.3.1.3. Protective action procedures and resources.

2.3.1.4. Severe weather awareness training and exercise procedures.

2.3.2. Will ensure installation personnel are educated on the local severe weather threat and applicable protective measures, as well as on the purpose, applicability, and operating procedures of the watch-warning system (IAW AFI 10-2501). The training will ensure personnel authorized to issue “back to work” orders following a stop work order are properly equipped to assess weather hazards and appropriate precautions. Educational information can be included in newcomer orientation briefings, base newspaper articles, commander’s call briefings, the base web site, and other forums deemed appropriate by the installation commander.

2.3.3. Will ensure base agencies develop and document pre-severe weather protective measures and post-severe weather response plans. Requirements and support will be documented and recertified annually for each phenomenon in weather support documents, wing instructions, host-tenant support agreements, or similar documents (e.g., base annexes). These plans/agreements will include a base warning notification pyramid structure diagram. The notification pyramid structure will include all on and off-base agencies (e.g., swimming pools, golf courses, child care centers) requiring support.

2.3.4. Will ensure CWT leadership is available to assist in the severe weather management process by prioritizing the assignment of additional and temporary duties not related to weather (i.e., security forces augmentees, squadron safety manager, etc.).

2.3.4.1. Will ensure sufficient CWT personnel are available to provide “eyes forward” support to the OWS during severe weather episodes. The CWT will provide back-up weather watch and warning support to their installation on behalf of the OWS (IAW AFMAN 15-129). Providing “eyes forward” support and base resource protection has a higher priority of duty than assignment to base details and additional duties out of the weather facility. AFMAN 15-135 and AFMAN 15-129, further discuss the utilization of weather personnel.

2.3.5. Will ensure the appropriate alternate weather observing site is available with necessary work-space to meet customer specified required notification timelines.

2.3.6. Will ensure OWSs and/or CWTs are required to telephonically contact as few agencies as possible to relay severe weather information. The use of a pyramid-type reporting system should be employed whenever possible and maximum use of technology is encouraged (i.e., the use of local area networks, e-mail) to facilitate the relay of information.

2.3.7. Will conduct periodic exercises tailored to upcoming seasonal weather or other environmental concerns in order to evaluate the timeliness of personnel notification and response capability for both on and off-base agencies and geographically separated units. Include a test of the primary and back-up dissemination systems not tested as a result of real world events. Integration of these exercises with base/post disaster preparedness response exercises is encouraged.

2.3.8. Will report severe weather events at the installation IAW OPREP-3 reporting procedures in AFMAN 10-206.

2.3.9. Will forward base-wide after-action reports to their MAJCOM/FOA/DRU following severe weather events and exercises if lessons learned offer valuable cross-feed information which highlights:

2.3.9.1. Quality and timeliness of the forecast.

2.3.9.2. Dissemination and notification successes and/or shortfalls.

2.3.9.3. Base-wide resource protection response (e.g., protection checklists).

2.3.9.4. Applicable lessons learned.

2.3.10. Will report problems or concerns with the technical capabilities of the OWS, and/or CWT. If appropriate, request MAJCOM assistance in assessing their technical capabilities.

#### **2.4. All supported on- and off-base agencies:**

2.4.1. Will develop procedures to notify all activities and personnel of impending severe weather events and ensure understanding of appropriate weather terminology.

2.4.2. Will create and document pre-severe weather protective measures, as well as post-severe weather response plans, for their operations. As a minimum, procedures developed will address:

2.4.2.1. Actions to safeguard personnel, including severe weather shelter locations.

2.4.2.2. Actions to safeguard aircraft, equipment, and other supplies stored outdoors.

2.4.2.3. Actions to protect facilities.

2.4.2.4. Actions to take prior to resuming operations following a severe weather episode.

#### **2.5. Supporting Exercise Evaluation Team (EET):**

2.5.1. Will assist the installation commander by developing and executing exercise scenarios. OWS participation in installation exercises is highly desirable, depending on workload priority.

#### **2.6. Supporting Civil Engineer Readiness Unit:**

2.6.1. Will provide guidance and advice to the EET Chief (reference AFI 10-2501).

**2.7. Supporting Communications Unit:**

2.7.1. Will assist the local installation commander and CWT by ensuring primary and back-up communication systems are available to facilitate timely dissemination of weather information to on-base and supported off-base customers/agencies.

**2.8. The Supporting OWS and CWT Together:**

2.8.1. Will coordinate requirements for and ensure the timely issuance of weather watches and warnings with supported customers IAW AFMAN 15-129.

2.8.2. Will establish procedures to manage severe weather threats, to include recalling of weather personnel as required IAW AFMAN 15-129.

2.8.3. Will perform formal reviews of severe weather events IAW AFMAN 15-129. The OWS is OPR for the formal review; the relevant CWT will provide inputs and coordination.

2.8.4. Will provide the information listed below to the installation agency (usually the unit command post) that prepares OPREP-3 reports for the unit commander.

2.8.4.1. The actual severe weather conditions experienced.

2.8.4.2. The forecast valid at the time of the occurrence to include any watches or warnings issued.

2.8.4.3. The operational status of meteorological and communication equipment (e.g., radar, wind sensors, NIPRNET, etc.) at the time of the event.

2.8.5. Will conduct and document periodic severe weather refresher seminars for weather personnel which cover upcoming seasonal forecasting and observation techniques, expected threats, and response procedures.

2.8.6. Will assist the installation commander and disaster preparedness personnel in thoroughly educating base/post agencies on the purpose, applicability, and operating procedures of the weather watch and warning system.

2.8.7. Will request assistance through their MAJCOM/FOA/DRU on severe weather forecasting problems not resolvable at the local level or for severe weather forecasting seminars, as required.

Chapter 3

WEATHER WATCHES AND WARNINGS

**3.1. Criteria.** Table 3.1. outlines the standard criteria which normally require weather watches and warnings. This list is not all inclusive and customers have the responsibility to make their individual requirements known at the local severe weather preparedness meeting or following the procedures outlined in AFMAN 15-129. Customer requirements must be identified in the WSD (or equivalent documentation). In addition, the CWT documents the requirements with the supporting OWS via a MOA (or equivalent document).

**Table 3.1. Standard Watch and Warning Criteria.**

<b>Standard Weather Watch Criteria</b> Weather watches are issued when the following severe weather conditions are possible, but occurrence, location and/or timing is still uncertain. Watches are issued as a special notice that the potential exists for the development of customer-specified severe weather within the forecast area during the specified valid time. Watches normally precede a weather warning.	<b>Standard Weather Warning Criteria</b> Weather warnings are issued when the following severe weather conditions exist, are imminent, or are highly likely to occur. Warnings are issued for customer-specified operationally significant severe weather conditions for the forecast area which constitute a threat to personnel or property.
<b>CRITERIA</b>	<b>CRITERIA</b>
Tornadoes	Tornadoes
High Winds ( $\geq 50$ knots, or locally established severe criteria).	High Winds ( $\geq 50$ knots, or locally established severe criteria).
Hail ( $\geq 3/4$ inch diameter, or locally established severe criteria).	Hail ( $\geq 3/4$ inch diameter, or locally established severe criteria).
Heavy Rain/Snow ( $\geq 2$ inches in $\leq 12$ hours or locally established criteria).	Heavy Rain/Snow ( $\geq 2$ inches in $\leq 12$ hours or locally established criteria).
Freezing Precipitation (any intensity).	Freezing Precipitation (any intensity).
Blizzard Conditions (Duration $\geq 3$ hours, sustained winds or gust $\geq 30$ knots, considerable fallings and/or blowing snow, with prevailing visibility frequently $\leq 1/4$ mile/0400 meters -all criteria must be met)	Blizzard Conditions (Duration $\geq 3$ hours, sustained winds or gust $\geq 30$ knots, considerable fallings and/or blowing snow, with prevailing visibility frequently $\leq 1/4$ mile/0400 meters -all criteria must be met)
Lightning Within 5 Nautical Miles (or locally established severe criteria).	Lightning Within 5 Nautical Miles (or locally established severe criteria).

**NOTE:** Lighting watches and warnings are mandatory IAW AFOSH Standard 91-100

**3.2. Minimum Desired Lead-time.** Agencies require advance notice prior to the onset of a particular weather phenomenon. This is the minimum time required to take action to protect resources, property, and personnel. CWTs will coordinate and establish the actual values and timing for watches and warnings

according to supported agency requirements. AFMAN 15-129 contains further information on standard watches and warnings, lead-times, and severe weather processes and procedures.

**3.3. Weather Watch** . This is special notice provided by an OWS or CWT to supported agencies alerting them to the potential for weather conditions of such intensity to pose a hazard to life or property. The weather watch can be thought of as a "heads up", at which time agencies need to consider implementing required protective actions should a subsequent weather warning be issued.

3.3.1. Upon issuance of a weather watch, all key personnel and agencies in high risk activities and operations should be notified of the potential of severe weather. Activities include, but are not limited to, agencies having aircraft, missiles, spacecraft, explosives, or petroleum; those performing open-air work, recreational activities, and underground utility work.

3.3.2. Upon receipt of a weather watch, operations may continue. However, personnel in high risk areas should be prepared to implement corresponding required protective actions without delay if and when a subsequent weather warning is issued.

**3.4. Weather Warning**. A special notice by an OWS or CWT to supported agencies giving them advance notification (with sufficient time for protective actions) of expected weather conditions of such intensity to pose a hazard to personnel, resources, and property.

3.4.1. Upon issuance of a weather warning, all key personnel and agencies in high risk activities and operations should be notified of predicted mission impacting or operationally significant weather conditions. Activities include, but are not limited to, those agencies having aircraft, missiles, spacecraft, explosives, or petroleum; open-air work, those performing recreational activities, and underground utility work.

3.4.2. Upon receipt of a weather warning, required protective actions corresponding to the weather event will be immediately implemented to safeguard personnel and equipment.

RONALD E. KEYS, Lt Gen, USAF  
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**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFMAN 10-206, *Operational Reporting*

AFMAN 15-129, *Aerospace Weather Operations-Processes and Procedures*

AFMAN 15-135, *Combat Weather Team Operations*

AFI 10-2501, *Full Spectrum Threat Response (FSTR) Planning and Operations (when published)*

AFI 32-4001, *Disaster Preparedness and Operations*

AFMAN 32-4004, *Emergency Response Operations*

AFOSH Standard 91-100, *Aircraft Flight Line - Ground Operations and Activities*

JP 1-02, *Dictionary Of Military and Associated Terms*

***Abbreviations and Acronyms***

**AFOSH**—Air Force Occupational Safety and Health

**AFW**—Air Force Weather

**CWT**—Combat Weather Team (installation weather unit)

**DRU**—Direct Reporting Unit

**EET**—Exercise Evaluation Team

**FOA**—Field Operating Agency

**IAW**—In Accordance With

**MAJCOM**—Major Command

**MOA**—Memorandum of Agreement

**OPR**—Office of Primary Responsibility

**OWS**—Operational Weather Squadron

**WSD**—Weather Support Document

Attachment 2

SEVERE WEATHER RESPONSE PROCESS

