

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

AIR FORCE INSTRUCTION 10-229

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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.

Chapter 1

INTRODUCTION

1.1. Background Information. Each year Air Force and Army installations, equipment, and personnel are threatened by severe weather. When severe weather occurs it can affect our readiness and our ability to accomplish the Air Force and Army mission. Severe weather is any weather phenomena considered critical enough by a customer to require special notice and subsequent actions to prevent serious damage or injury to resources, property, or personnel. Examples include (but are not limited to): damaging winds, hail, tornadoes, lightning, excessive rain or snowfall, and freezing precipitation (See Attachment 1).

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 which 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 analyze severe weather episode after-action reports for possible operational lessons learned, and crossfeed as appropriate.

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

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/SC:

2.1.3.1. Will assist MAJCOM/FOA/DRUs in developing 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 weather units 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 base weather units in meeting requirements that exceed the unit's capabilities (e.g. arranging "buddy station" support, 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 base weather units 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, including guard and reserve components, tenant organizations, local off-base units, and others with severe weather notification requirements. Other attendees will include installation agencies responsible for developing protective action plans (e.g. safety, disaster preparedness), forecasting the event (e.g. installation weather unit), or 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, lead times desired, and acceptable levels of false alarms.

2.3.1.2. Adequacy of dissemination procedures, both primary and backup.

2.3.1.3. Adequacy of protective action procedures and resources.

2.3.1.4. Adequacy of 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 (ref: AFI 32-4001 and AFMAN 32-4004). 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, and other vehicles deemed appropriate by the installation commander.

2.3.3. Will ensure backup support is established where needed in accordance with AFMAN 15-125. Installation commanders will notify their MAJCOM directorate of operations and numbered air force if severe weather notification support requests received by their installation exceed the capability of the installation.

2.3.4. Will ensure base agencies develop and document pre-severe weather protective measure procedures and post-severe weather response plans. Requirements and support will be documented and recertified annually for each phenomenon in weather support plans, wing instructions, host-tenant support agreements, or similar documents (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.

2.3.5. Will ensure severe weather response procedures address necessary preventive protective actions required to safeguard resources 24-hour a day, 7-days a week.

2.3.6. Will ensure local weather unit leadership is available to assist in the severe weather management process by prioritizing the assignment of additional and temporary duties not related to weather.

2.3.7. Will ensure both primary and backup communications resources and capabilities are available, to include the alternate observing site, to meet customer specified required notification timelines.

2.3.7.1. Will ensure local weather units are not required to telephonically contact more than three agencies to relay severe weather information. The use of a pyramid-type reporting system should be employed whenever possible.

2.3.8. Will periodically test (at least quarterly) the local weather watch-warning dissemination systems, including backup procedures, by sending exercise or test messages. Document receipt verification times by key agencies to identify potential bottlenecks. Dissemination during installation semi-annual severe weather exercises will satisfy part of the testing requirement.

2.3.9. Will conduct periodic exercises (at least semi-annually), tailored to upcoming seasonal weather concerns, to evaluate the timeliness of notification of personnel and response capability to severe weather events for both on- and off-base agencies, as well as another test for geographically separated units. Include in this exercise a test of the primary and back-up dissemination system by sending messages and documenting their receipt by key agencies. Integration of exercises with base/post disaster preparedness response exercises is encouraged.

2.3.10. Will report when the following weather conditions (winds 50 knots or greater (to include gusts), hail \geq inch or greater, or tornadoes) occur at their installation in accordance with OPREP-3 reporting procedures in AFMAN 10-206, regardless of the extent of damage.

2.3.11. Will forward a base-wide after-action report with lessons learned to their MAJCOM/FOA/DRU following all severe weather events, as well as lessons learned during exercises, for crossfeeding to enhance resource and personnel protection during severe weather. Information to relay includes:

2.3.11.1. Quality and timeliness of the forecast.

2.3.11.2. Dissemination and notification successes and/or shortfalls.

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

2.3.11.4. Applicable lessons learned.

2.3.12. Will assess the technical capabilities of the weather unit and upchannel requests for assistance if required.

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. Procedures to safeguard personnel and locations to seek shelter from severe weather when required.

2.4.2.2. Actions for safeguarding and securing aircraft, equipment, and other supplies stored outdoors, as required to minimize damage to the resource as well as nearby facilities.

2.4.2.3. Actions for protection of facilities.

2.4.2.4. Precautions 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.

2.6. Supporting Civil Engineer Readiness Unit:

2.6.1. Will provide guidance and advice to the EET Chief (ref: AFI 32-4001, Chapter 5).

2.7. Supporting Communications Unit:

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

2.8. Supporting Weather Unit:

2.8.1. Will coordinate requirements for, and ensure timely issuance of, weather warnings and watches, in accordance with AFMAN 15-125.

2.8.2. Will establish procedures to manage severe weather threats, to include recalling of personnel as required, in accordance with AFMAN 15-125.

2.8.3. Will perform formal reviews of severe weather events in accordance with AFMAN 15-125.

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. Provide the personnel who prepare the OPREP-3 report:

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 equipment (e.g., radar, wind sensors, etc.) at the time of the event.

2.8.5. Will conduct and document periodic severe weather refresher seminars for weather unit personnel in conjunction with unit meetings which cover upcoming season forecasting and observation techniques, threats to expect, and procedures.

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

2.8.7. Will request assistance through their MAJCOM/FOA/DRU on severe weather forecasting problems not solvable at the local level, or for severe weather forecasting seminars when assistance is deemed necessary by unit management.

2.9. Weather Centers:

2.9.1. Will produce weather warnings and watches to support locations requesting such support. Procedures and criteria for this support are outlined in AFMAN 15-125.

Chapter 3

WEATHER WATCHES AND WARNINGS

3.1. Criteria. Attachment 2 outlines criteria which require weather warnings and watches. 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 15-125.

3.2. Minimum Desired Lead Time. The minimum time needed by the customer between the receipt of the weather product and the first occurrence of the weather phenomenon. This is the minimum time required to take action to protect resources, property, and personnel. Minimum desired lead time must be within the weather unit's forecast capability and within the reactive capability of the supported agency. Procedures for establishing lead times, as well as mandatory lead times for lightning, winds greater than 50 knots, or hail greater than 3/4 inch are outlined in AFMAN 15-125.

3.3. Weather Watch . A special notice that the potential exists for the development of severe weather and/or customer specified operationally significant non-severe weather within the forecast area during the specified valid time. Watches are issued to alert supported agencies to the potential for mission impacting or operational significant weather conditions. Watches normally precede warnings.

3.3.1. Upon issuance of a weather watch, all key personnel and agencies in high weather 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 utility work.

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

3.4. Weather Warning. A special notice to warn of actual or forecast weather conditions for the forecast area. Warnings are issued to alert supported agencies of mission impacting or operationally significant weather conditions that are occurring or forecast to occur.

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

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Attachment 1

MATRIX OF SEVERE WEATHER CATEGORIES REQUIRING MANDATORY WARNINGS OR WATCHES

Severe Weather: Any weather phenomenon considered critical enough by the customer to require advance/special notice and subsequent actions to prevent serious injury or damage to personnel, property, or resources. Required criteria include (but are not limited to): high winds, hail, tornadoes, lightning within 5nm, freezing rain, blizzards, and excessive rain or snowfall.

Mandatory Weather Warning Criteria	Mandatory Weather Watch Criteria
Weather warnings must be 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.	Weather watches must be issued when the following severe weather conditions are possible, but its 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.
CRITERIA	CRITERIA
lightning w/i 5 nm	lightning w/i 5 nm within 30 minutes
high winds (>= 50 knots or local criteria)	high winds (>= 50 knots or local criteria)
hail (>= 3/4" or local criteria)	hail (>= 3/4" or local criteria)
tornado	tornado
freezing rain	freezing rain
excessive rain/snow	excessive snow/rain
blizzards	blizzards

Attachment 2

SEVERE WEATHER RESPONSE PROCESS

