Attachment H
Tornado

The Hazard

Nature of the Hazard

A tornado consists of violent whirling wind accompanied by a funnel-shaped cloud. Usually, tornadoes are associated with severe weather conditions such as thunderstorms and hurricanes. Tornadoes are very destructive. The average width of a tornado is 300 to 500 yards. Their path may extend up to fifty miles, and the funnel cloud moves at speeds between 10 and 50 mph. The wind speed within the funnel cloud has been estimated at between 100 and 500 mph. Roughly two percent of all tornadoes are "violent" tornadoes, with wind speeds of 300 mph or more, an average path width of 425 yards, and an average path length of 26 miles. Tornado season runs from March to August in the United States, with peak activity from April to June; however, tornadoes can occur year-round.

Risk Area

Tornadoes have occurred in every State. Historically, they have been most frequent in Texas, Oklahoma, Florida, Kansas, Nebraska, Iowa, South Dakota, Illinois, Missouri, Mississippi, Louisiana, Colorado, Wisconsin, Arkansas, Georgia, North Dakota, Minnesota, Indiana, and Michigan. More than 50 percent of the land mass in the United States is within the area of significant tornado risk.

Tornado Unique Planning Considerations

This section contains a listing of the functional annexes that typically would require the preparation of a hazard-specific appendix for tornadoes. It also identifies many of the unique planning considerations that should be examined by the planning team and used, as appropriate, when preparing tornado-specific appendices.

Direction and Control

For this hazard it is essential for emergency response personnel to take immediate action, as soon as conditions permit, to gather initial damage assessment information in the area that was impacted by the tornado. This information is needed to determine the severity and extent of injuries and damages.

High-risk jurisdictions may want to use a network of trained spotters. This spotting network would be relied on to rapidly communicate information that can be helpful to the appropriate authorities responsible for making the decision for when to upgrade from a Tornado Watch to Tornado Warning. The network can also assist in tracking the tornado's path.

This data gathering effort should provide much of the information decision makers will need to implement and prioritize response actions for: search and rescue activities; access control and re-entry to the impacted area; debris clearance; restoration of utilities and lifeline repairs; and the inspection, condemnation, and/or demolition of buildings and other structures.

Provisions should be made, as appropriate, to address the following planning considerations in one or more appendices to a direction and control annex:

Damage Assessment — Conduct of immediate ground and air surveys to determine the extent of damage, casualties, and the status of key facilities.

Search and Rescue — Use of damage assessment information to identify the facilities and areas where search and rescue operations may need to be conducted and to establish a priority for conduct of these operations. Planning should focus on the actions that need to be carried out in order to remove trapped and injured persons from homes, buildings collapses, and other structural collapses, administer first aid, and assist in transporting the seriously injured to medical facilities.

Access Control and Re-entry — Control of access to the area severely affected by the tornado until the area is safe. Only those directly involved in emergency response operations should be allowed to enter.

Debris Clearance — Actions taken to identify, remove, and dispose of rubble, wreckage, and other material which block or hamper the performance of emergency response functions. Activities may include:

- Demolition and other actions to clear obstructed roads.
- Repairing or temporarily reinforcing roads and bridges.
- Construction of emergency detours and access roads.

Inspection, Condemnation, and Demolition

Actions taken to inspect buildings and other structures to determine whether it is safe to inhabit or use them after a tornado has occurred. Activities may include:

Inspection of buildings and structures which are critical to emergency operations.

- Inspection of buildings and structures that may threaten public safety.
- Inspection of less critically damaged structures. Designate those that may be occupied and identify/mark those that are to be condemned.
- Arrangements for the demolition of condemned structures.

Warning

Warning of the public is critical for this hazard. The NWS will place areas under a Tornado Watch when conditions are particularly favorable for tornadoes and severe storms. NWS will issue a Tornado Warning when a tornado has been visually spotted or picked up on radar. Television, radio, and NOAA tone alert radio are sources of information for the public.

The following planning considerations should be addressed, if appropriate, in one or more appendices to a warning annex:

- Provision for the jurisdiction's central warning point to obtain timely Tornado Watch and Warning information (direct link to area weather stations, continuously monitor NWS and other sources, etc.).
- Provisions for notifying institutions and facilities (e.g., schools, hospitals, nursing homes, jails, prisons, shopping malls, major factories, and sporting events) that a Watch or Warning has been issued.
- Provisions for activating the jurisdiction-wide (if available) warning system to disseminate timely warning to the public and emergency response organization members that a tornado has touched down in the jurisdiction.

Emergency Public Information

The flow of accurate and timely emergency information is critical to the protection of lives and property. This section deals with the provisions made to prepare and disseminate notifications, updates, and instructional messages to follow up on the initial warning.

The following planning considerations should be addressed, if appropriate, in one or more appendices to an EPI annex:

- Survival tips for people on what to do during and immediately after a tornado. During a Tornado Watch information should be disseminated to the public on the appropriate protective actions to take if a Tornado Warning is issued (e.g., encourage people without underground shelter to seek out an interior room or hallway on the lowest floor and there to seek cover under something sturdy, like a table, etc.).

- Warnings and advice on the continuing threat of storms, unsafe areas, buildings and structures, and other hazards.

Evacuation

Evacuation is not a practical option for this hazard since the point of touchdown and the track of a tornado are unpredictable. The typical protective action option for a tornado is shelter-in-place.

Mass Care

A tornado-specific appendix is probably unnecessary, since the mass care functional annex should adequately address the immediate actions to be taken, as soon as conditions permit, in the area that was severely impacted by a tornado. Damaged houses may not be habitable; residents should be dissuaded from entering unsafe buildings and persuaded instead to seek temporary shelter.