

**U.S. DEPARTMENT OF ENERGY
NATIONAL NUCLEAR SECURITY ADMINISTRATION
NEVADA SITE OFFICE**

ORDER

NSO O 440.X2

Approved: 11-22-05
Review Date: 11-22-07
Expires: 11-22-09

**SITE-WIDE LIGHTNING DETECTION AND
PROTECTION**



INITIATED BY:
Office of the Assistant Manager
for Site Operations

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1. OBJECTIVE. To establish the requirements for site-wide lightning detection and protection at the National Nuclear Security Administration (NNSA) Nevada Site Office (NNSA/NSO) Nevada Test Site (NTS) to protect property and guard the safety of NTS personnel.
2. CANCELLATION. None.
3. APPLICABILITY.
 - a. The provisions of this Order apply to all NNSA/NSO organizational elements including contractors, National Laboratories, other federal agencies, and other user organizations performing work under the purview of NNSA/NSO.
 - b. Contractor requirements are contained in the Contractor Requirements Document (CRD), Attachment 1. Compliance with the CRD is required to the extent set forth in an NNSA contract.
4. REQUIREMENTS.
 - a. The Air Resources Laboratory/Special Operations and Research Division (ARL/SORD) will maintain the capability to provide NTS weather forecasts.
 - b. ARL/SORD will maintain the capability to detect lightning within 20 miles of the NTS boundary.
 - c. ARL/SORD will notify the Operations Coordination Center when lightning has been detected within 20 miles of the NTS boundary.
 - d. The Operations Coordination Center will maintain the capability for site-wide notification of hazardous weather conditions.
 - e. The Operations Coordination Center will maintain a Hazardous Weather Notification List which identifies specific facilities and project activities meeting the following criteria:
 - (1) Facilities or activities that involve the handling of energetic materials.
 - (2) Hazardous Category II and III nonreactor nuclear facilities.

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- (3) Facilities or activities where personnel may (routinely) be exposed to lightning during the normal course of their duties.
- f. The Operations Coordination Center will maintain the capability to provide live voice communication of hazardous weather conditions to specific facilities and project activities on the Hazardous Weather Notification List.
- g. Facility Managers/Project Managers will establish lightning procedures specific to their facilities and project activities identified on the Hazardous Weather Notification List that include:
 - (1) Establishment of a lightning proximity threshold boundary (minimum 10 miles) that allows sufficient time to halt work and place personnel and vulnerable assets or assemblies in a lightning safe configuration.
 - (2) Lines of communication for live voice notification of the Facility Manager or designee of lightning within the established lightning proximity threshold.
 - (3) Requirements to verify current and forecast weather conditions with ARL/SORD prior to the start of facility or project activities unacceptably impacted by potential lightning hazards.
 - (4) Lightning protection procedures and controls for notifying and protecting both personnel and vulnerable assets including specific criteria for terminating a lightning alert.

5. RESPONSIBILITIES.

- a. Assistant Managers. Ensure facilities and project activities under their purview that meet the criteria in 4e above are included on the Hazardous Weather Notification List and that lightning procedures specific to those facilities and project activities are established.
- b. Assistant Manager for Site Operations (AMSO).
 - (1) Provides oversight and direction to the Operations Coordination Center for maintaining the capability to provide site-wide Hazardous Weather Notifications.

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3 (and 4)

- (2) Provides oversight and direction to the Operations Coordination Center for maintaining the Hazardous Weather Notification List and providing live-voice notification for facilities and project activities included on the Hazardous Weather Notification List.
 - c. Assistant Manager for National Security. Provides oversight and direction to ARL/SORD for maintaining lightning detection capabilities, providing weather forecasts, and notifying the Operations Coordination Center of hazardous weather conditions.
6. REFERENCES. SORD Technical Memorandum, SORD-2005-01, *Analysis of Thunderstorm Forecasts and Cloud-to-Ground Lightning in the Vicinity of the Nevada Test Site*.
7. CONTACT. Questions concerning this Order should be addressed to AMSO at (702) 295-1541.



Kathleen A. Carlson
Manager

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CONTRACTOR REQUIREMENTS DOCUMENT

1. Contractors, National Laboratories, other federal agencies, and other user organizations performing work under the purview of the National Nuclear Security Administration Nevada Site Office (NNSA/NSO) must:
 - a. Identify their facilities and project activities that meet the criteria for inclusion on the Hazardous Weather Notification List.
 - b. Submit facilities and project activities to be included on the Hazardous Weather Notification List to the cognizant NNSA/NSO Assistant Manager for approval.
 - c. Establish lightning procedures specific to their facilities and project activities identified on the Hazardous Weather Notification List that include:
 - (1) Establishment of a lightning proximity threshold boundary (minimum 10 miles) that allows sufficient time to halt work and place personnel and vulnerable assets or assemblies in a lightning safe configuration.
 - (2) A process for live voice notification by the Operations Coordination Center of the facility manager or designee of lightning within the established lightning proximity threshold.
 - (3) Requirements to verify current and forecast weather conditions with the Air Resources Laboratory/Special Operations and Research Division (ARL/SORD) prior to the start of facility or project activities unacceptably impacted by potential lightning hazards.
 - (4) Provisions and controls for notifying personnel of a lightning alert.
 - (5) Provisions and controls that place personnel, vulnerable assets, and/or assemblies in a lightning safe configuration.
 - (6) Specific criteria for terminating a lightning alert.
2. In addition to the requirements above, The NNSA/NSO Performance-Based Management Contractor will:
 - a. Maintain the Hazardous Weather Notification List (HWNL).

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- b. Validate and update the HWNL annually.
 - c. Provide site-wide Hazardous Weather Notifications through the Operations Coordination Center when notified of hazardous weather conditions by ARL/SORD.
 - d. Provide live-voice notification of facilities and project activities included on the HWNL when notified of hazardous weather conditions by ARL/SORD.
3. ARL/SORD will:
- a. Maintain the capability to provide Nevada Test Site (NTS) weather forecasts.
 - b. Maintain the capability to detect lightning within 20 miles of the NTS boundary.
 - c. Notify the Operations Coordination Center when lightning has been detected within 20 miles of the NTS boundary.
 - d. Maintain the capability to provide specialized weather forecasts for facilities and project activities as requested.