

# CHAPTER 5

## HOSTILE ENVIRONMENTS

This chapter describes provisions for hoisting and rigging operations in hostile work environments.

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## 5.1 GENERAL

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- a. This chapter contains special provisions for hoisting and rigging operations and equipment in hostile environments where standard operating, maintenance, inspection, or test procedures cannot be followed as a result of radiation or radioactive contamination, toxic/hazardous chemicals or gases, or temperature extremes. Hostile environments are environments that have been rendered inaccessible to workers during hoisting or rigging operations due to these health hazards.
- b. Hoisting and rigging activities can usually be accomplished where the environment will allow normal operations with access for hands-on equipment contact. In those situations, operations, maintenance, inspections, and tests shall be done in accordance with the balance of this standard or other applicable regulatory requirements. Applicable regulations include, but are not limited to, 29 CFR 1910.179 and 29 CFR 1910.184.
- c. Hoisting and rigging equipment or operations shall be reviewed by a designated person to determine compliance with the requirements of this standard or other applicable regulatory requirements. If it is determined to be impossible or unreasonable for the requirements of the balance of this standard or other regulatory requirements to be met as a result of hostile environmental conditions, a hostile environment plan shall be prepared to document alternative compliance methods and procedures.
- d.. Alternate compliance methods and procedures shall be consistent with a facility's safety basis documents (i.e., Documented Safety Analysis and Technical Safety Requirements).
- e. All hoisting and rigging operations shall be consistent with DOE's policy of as-low-as-reasonably achievable (ALARA) radiation exposure per the provisions of 10 CFR 835, Occupational Radiation Protection.
- f. Safety of personnel shall remain the first priority.

## 5.2 HOSTILE ENVIRONMENT PLAN

- a. A hostile environment plan shall be prepared by a designated person and shall cover operations, equipment, inspection, testing, and maintenance. See Exhibit I, Hostile Environment Plan, at the end of this chapter.
- b. At a minimum, the plan shall be reviewed and approved by responsible DOE contractor management at the facility where the crane, hoist, or other equipment is located and by responsible management of the appropriate DOE contractor oversight organization such as safety or quality assurance.
- c. The plan shall address only those actions or features that require deviation from the requirements of this standard due to a hostile environment. At a minimum, it shall contain the following information:
  - 1. The specific requirements that cannot be met.
  - 2. The difference between the requirement and actual conditions.
  - 3. Justification for not meeting this standard's requirements.
  - 4. A statement of actions or features to be used to compensate for the differences.
  - 5. Specific maintenance, inspections, and tests to be performed whenever access is possible.
  - 6. Replacement or retirement criteria for equipment that is designed to operate with little or no maintenance.
- d. Detailed operation, inspection, testing, and maintenance procedures that state specific requirements and acceptance criteria shall be prepared, based on the hostile environment plan.
- e. The responsible manager shall ensure that the approved hostile environment plan is distributed as follows:
  - 1. DOE Site Office or equivalent
  - 2. Equipment operators, maintenance organizations, and other organizations/personnel affected by the plan.
  - 3. Equipment history file.
- f. Hostile environment plans in the equipment history file shall be readily available to appointed personnel.

### 5.2.1 MARKING AND POSTING

Equipment used under a hostile environment plan shall be posted with the following information: "Special Maintenance and Operating Instructions Required – see Hostile Environment Plan."

### 5.2.2 INSPECTION AND TESTING

- a. Handling fixtures and rigging accessories shall be qualified in accordance with Chapters 11, 12, and 14 ("Wire Rope and Slings," "Rigging Accessories," and "Below-the-Hook Lifting Devices," respectively) of this standard prior to being exposed to the hostile environment.
- b. Lifting equipment, slings, rigging accessories and fixtures that have been removed from hostile environments shall be inspected and maintained per the applicable provisions of this standard prior to their reuse outside of hostile environments.
- c. Nylon (rope or webbing) slings should not be used in a radiation area unless absolutely necessary. When it is necessary to use a nylon or polyester sling in a radiation area, the responsible manager shall ensure that radiation exposure does not exceed 100,000 rad during the life of the sling.

EXHIBIT I

HOSTILE ENVIRONMENT PLAN

Building: \_\_\_\_\_ Location: \_\_\_\_\_

Type crane/hoist: \_\_\_\_\_  
(e.g., overhead top-running bridge and trolley, top-running bridge with underhung hoist, jib crane, monorail hoist, overhead hoist)

Capacity: \_\_\_\_\_ (Auxiliary): \_\_\_\_\_

Power method: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

1.a H&R standard requirement that will not be met  
Section number: \_\_\_\_\_  
(copy the applicable section)  
\_\_\_\_\_  
\_\_\_\_\_

1.b Difference between standard requirement and what is to be allowed by this plan:  
\_\_\_\_\_  
\_\_\_\_\_

1.c Justification for not meeting the standard requirement: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1.d Actions or features to compensate for differences: \_\_\_\_\_  
\_\_\_\_\_

1.e. Actions to be taken (e.g., inspections, maintenance) for lifting equipment, slings, rigging accessories and fixtures that will be removed from hostile environments and subsequently reused to ensure compliance with this standard, applicable regulatory requirements and manufacturer's recommendations prior to their reuse (if applicable):  
\_\_\_\_\_  
\_\_\_\_\_

Include information regarding replacement or retirement criteria for this equipment. Include information regarding any special design, maintenance, or test considerations that apply to this equipment.

\_\_\_\_\_  
\_\_\_\_\_

APPROVAL (Signature/date)

\*Facility Manager: \_\_\_\_\_ Date: \_\_\_\_\_  
\*Manager, Oversight Organization: \_\_\_\_\_ Date: \_\_\_\_\_  
Other: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_ Date: \_\_\_\_\_

\*means approval is mandatory

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