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## 11.0 BELOW-THE-HOOK LIFTING DEVICES

### 11.1 SCOPE

This chapter provides requirements that apply to the marking, construction, installation, inspection, testing, maintenance, and operation of Below-the-Hook (BTH) Lifting Devices for attaching loads to various hoists. The proper and safe use of Below-the-Hook Lifting Devices is governed by the American Society of Mechanical Engineers (ASME) standards and the Occupational Safety and Health Administration (OSHA) regulations. This section implements required criteria from DOE/RL-92-36 and the following standards: ASME B30.20-2006-Below-the-Hook Lifting Devices, ASME BTH-1-2005-Design of Below-the-Hook Lifting Devices, ANSI N14.6-Radioactive Materials – Special Lifting Devices for Shipping Containers Weighing 10,000 pounds (4500 kg) or more, and OSHA 29 CFR 1926.251 Rigging Equipment for Material Handling.

This chapter implements the following criteria and the applicable national standards and/or federal specifications that are mandatory per ASME B30.20-2006-Below-the-Hook Lifting Devices, ASME BTH-1-2005-Design of Below-the-Hook Lifting Devices, and ANSI N14.6:

#### ASME B30.20-2006-Below-the-Hook Lifting Devices

- Chapter 20-0 Scope, Definitions, and References
- Chapter 20-1 Structural and Mechanical Lifting Devices
- Chapter 20-2 Vacuum Lifting Devices
- Chapter 20-3 Close Proximity Operated Lifting Magnets
- Chapter 20-4 Remotely Operated Lifting Magnets
- Chapter 20-5 Scrap and Material Handling Grapples

Each ASME B30.20 chapter above includes the following sections:

- Scope
- Marking, Construction, and Installation
- Inspection, Testing, and Maintenance
- Operation
- Instruction Manuals

#### ASME BTH-1-2008-Design of Below-the-Hook Lifting Devices

- Chapter 1 Scope and Definitions
- Chapter 2 Lifter Classifications
- Chapter 3 Structural Design
- Chapter 4 Mechanical Design
- Chapter 5 Electrical Components

ANSI N14.6-Radioactive Materials – Special Lifting Devices for Shipping Containers Weighing 10,000 pounds (4500 kg) or More.

1. Scope, purpose, and application
2. Normative references
3. Definitions
4. Design
5. Fabrication
6. Acceptance testing, maintenance, and assurance of continuing compliance
7. Special lifting devices for critical loads

## 11.2 GENERAL REQUIREMENTS

Contractors shall access ASME via one of the following options:

1. IHS Engineering Standards, Regulations and Technical Specifications at <http://www.ihs.com/>. The contractor must have paid for access to the specific standard. For access contact The Hanford Technical Library 277 University Dr, Richland WA (372-7430). To print IHS files go to <http://www.ihs.com/>
2. To purchase standards directly from ASME go to <http://www.asme.org/>
3. To access OSHA standards go to the following links
  - 29 CFR 1926.251 Rigging Equipment for Material Handling  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10686](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10686)

## 11.3 IMPLEMENTATION

Contractors shall be compliant to OSHA, ASME, DOE/RL-92-36 and the Below-the-Hook Lifting Device manufacturers' requirements. It is the responsibility of the user of this manual to implement all of the requirements from listed sources. When two standards set forth inconsistent requirements, the user shall adhere to the standard containing the most stringent requirements. ASME standards provide the most comprehensive information. Users should contact a Hanford Hoisting Rigging Committee (HHRC) representative or send an email to ^Hanford Hoisting and Rigging for a formal interpretation. See Chapter 17.0 for process to be followed when requesting an interpretation. Notify the Hanford Site Hoisting and Rigging Committee if any inconsistent standards are identified.

In accordance with design requirements, the responsible engineer may invoke ANSI N14.6 to a below the-hook device. ANSI N14.6 invokes criteria similar to, but not identical to ASME B30.20-2006 and ASME BTH-1-2008.

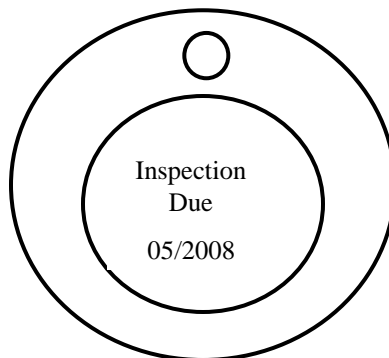
## 11.4 INCONSISTENT STANDARDS

No inconsistencies between standards currently identified.

## 11.5 Hanford Specific Requirements

Below-the-hook lifting devices used at Hanford shall be tagged by any one of the following methods to indicate next periodic inspection due date.

- a Institute a comprehensive marking program (such as color coding) to indicate when the next inspection is required.
- b Mark each below-the-hook lifting device with a tag that indicates when the next periodic inspection is required.

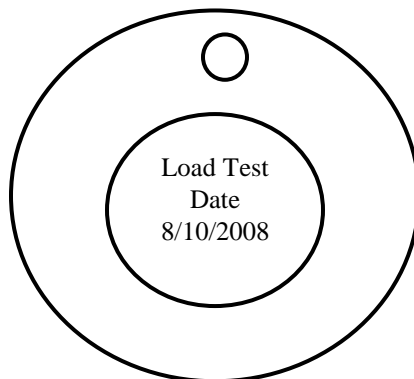
**Figure 11.4.1 – Example of a periodic inspection tag****11.5 1 Load-Test Weight.**

The load-test weight or testing device should be within a tolerance of (+0 percent, -5 percent) and shall be traceable to a recognized standard or verified by engineering calculations. Load test shall never be less than minimum requirements defined in the applicable ASME B30 standard. Any one of the following options will meet this requirement:

1. Use a calibrated (+0 percent, -5 percent) load-measuring device during the load test.
2. Determine the test load with a calibrated load-measuring device before the test.
3. Calculate the test load based on known unit weights and dimensions of the test fixture. Dimensions and calculations must be checked (signed and dated) by a qualified engineer and determined to be accurate within tolerance (+0 percent, -5 percent)

**11.5.2 Load-Test Tag**

After the test is completed, the proof test (load-test) report shall be signed and dated by the person in charge of conducting the load test. The person in charge shall ensure that the test is placed in the lifting device maintenance file. A tag indicating date of load test may be affixed to the device for filed verification.

**Figure 11.5.1 – Example of a Load Test Tag**

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