

**§ 1919.71 Unit proof test and examination of cranes.**

(a) Unit proof tests of cranes shall be carried out at the following times:

(1) In the cases of new cranes, before initial use and every 4 years thereafter.

(2) In the cases of uncertificated cranes which have been in use, at the time of initial certification and every 4 years thereafter.

(3) After important alterations and renewals and after repairs due to failure of, or damage to major components.

(b) Unit proof load tests of cranes shall be carried out where applicable with the boom in the least stable direction relative to the mounting, based on the manufacturer's specifications.

(c) Unit proof load tests shall be based on the manufacturer's load ratings for the conditions of use and shall, except in the case of bridge type cranes utilizing a trolley, consist of application of a proof load of 10 percent in excess of the load ratings at maximum and minimum radii, and at such intermediate radii as the certificating authority may deem necessary in the circumstances.<sup>1</sup> Trolley equipped cranes shall be subject to a proof load of 25 percent in excess of the manufacturer's load rating. In cases of foreign manufacture, the manufacturer's specifications shall be subject to approval by the certificating authority as being equivalent to U.S. practice. The weight of all auxiliary handling devices such as, but not limited to, magnets, hooks, slings, and clamshell buckets, shall be considered part of the load.

(d) An examination shall be carried out in conjunction with each unit proof load test. The accredited person, or his authorized representative, shall make a determination as to correction of deficiencies found. The examination shall cover the following points as applicable:

<sup>1</sup>The manufacturer's load ratings are usually based upon percentage of tipping loads under some conditions and upon limitations of structural competence at others, as well as on other criteria such as type of crane mounting, whether or not outriggers are used, etc. Some cranes utilizing a trolley may have only one load rating assigned and applicable at any outreach. It is important that the manufacturer's ratings be used.

(1) All functional operating mechanisms shall be examined for improper function, maladjustment, and excessive component wear, with particular attention to sheaves, pins, and drums. The examination shall include operation with partial load, in which all functions and movements, including, where applicable, maximum possible rotation in both directions, are performed.

(2) All safety devices shall be examined for malfunction.

(3) Lines, tanks, valves, drains, pumps, and other parts of air or hydraulic systems shall be examined for deterioration or leakage.

(4) Loose gear components, such as hooks, including wire rope and wire rope terminals and connections, shall be checked with particular attention to sections of wire rope exposed to abnormal wear and to sections not normally exposed for examination. The provisions of § 1919.24 shall apply in wire rope examinations. Cracked or deformed hooks shall be discarded and not reused on any equipment subject to the provisions of part 1918 of this chapter and this part 1919.

(5) Rope reeving shall comply with manufacturer's recommendations.

(6) Deformed, cracked, or excessively corroded members in crane structure and boom shall be repaired or replaced as necessary.

(7) Loose bolts, rivets, or other connections shall be corrected.

(8) Worn, cracked, or distorted parts affecting safe operation shall be corrected.

(9) Brake and clutch system parts, linings, pawls, and ratchets shall be examined for excessive wear and free operation.

(10) Load, boom angle, or other indicators shall be checked over their full range for any significant inaccuracy. A boom angle or radius indicator shall be fitted.

(11) It shall be ascertained that there is a durable rating chart visible to the operator, covering the complete range of the manufacturer's capacity ratings at all operating radii, for all permissible boom lengths and jib lengths, with alternate ratings for optional equipment affecting such ratings. Necessary precautions or warnings shall be included. Operating controls shall be

**§ 1919.72**

marked or an explanation of controls shall be posted at the operator's position to indicate function.

(12) Where used, clamshell buckets or other similar equipment such as magnets, etc., shall be carefully examined in all respects, with particular attention to closing line wires and sheaves. The accredited person may supplement such examination by requesting any operational tests as may be appropriate.

(13) Careful examination of the junction areas of removable boom sections, particularly for proper seating, cracks, deformities, or other defects in securing bolts and in the vicinity of such bolts.

(14) It shall be ascertained that no counterweights in excess of the manufacturer's specifications are fitted.

(15) Such other examination or supplemental functional tests shall be made as may be deemed necessary by the accredited person under the circumstances.

**§ 1919.72 Annual examination of cranes.**

(a) In any year in which no quadrennial unit proof test is required, an examination shall be carried out by an accredited person or his authorized representative. Such examination shall be made not later than the anniversary date of the quadrennial certification and shall conform with the requirements of § 1919.71(d).

**§ 1919.73 Unit proof test and examination of derricks.**

(a) Unit proof tests of derricks shall be carried out at the same times as are specified in § 1919.71(a) for cranes.

(b) Unit proof load tests and safe working load ratings shall be based on the design load ratings at the ranges of boom angles or operating radii. Unit proof loads shall exceed the safe working load as follows:

Safe working load	Proof Load
Up to 20 tons .....	25 percent in excess.
20-50 tons .....	5 tons in excess.
Over 50 tons .....	10 percent in excess.

Proof loads shall be applied at the designed maximum and minimum boom angles or radii, or, if this is impracti-

**29 CFR Ch. XVII (7-1-12 Edition)**

cable, as close to these as practicable. The angles or radii of test shall be stated in the certificate of test. Proof loads shall be swung as far as possible in both directions. The weight of all auxiliary handling devices shall be considered a part of the load.

(c) After satisfactory completion of a unit proof load test, the derrick and all component parts thereof shall be carefully examined in accordance with the requirements of § 1919.71(d), as far as applicable.

**§ 1919.74 Annual examination of derricks.**

(a) In any year in which no quadrennial unit proof test is required, an examination shall be carried out by an accredited person or his authorized representative. Such annual examination shall be made not later than the anniversary date of the quadrennial certification and shall conform in all applicable respect with § 1919.71(d).

**§ 1919.75 Determination of crane or derrick safe working loads and limitations in absence of manufacturer's data.**

(a) In the event neither manufacturer's data nor design data on safe working loads (including any applicable limitations) are obtainable, the safe working load ratings assigned shall be based on the owner's information and warranty that those so assigned are correct. Unit test certificates shall state the basis for any such safe working load assignment.

**§ 1919.76 Safe working load reduction.**

(a) If the operation in which equipment is engaged never utilizes more than a fraction of the safe working load rating, the owner of such equipment may, at his option, have the crane or derrick certificated for and operated at a lesser maximum safe working load in keeping with the use and based on radius and other pertinent factors: *Provided, however,* That the equipment concerned is physically capable of operation at the original load rating and the load reduction is not for the purpose of avoiding correction of any deficiency.