

(b) The water removal system must have adequate capacity to remove water at a rate equal to 25% of the maximum predictable collection rate from a storm of 10-year frequency and 1-hour duration, and other natural causes. For rainfall amounts, operators must use the “Rainfall Frequency Atlas of the United States” published by the National Weather Service of the U.S. Department of Commerce.

(c) Sump pumps for water removal must—

(1) Be operated as necessary to keep the impounding space as dry as practical; and

(2) If sump pumps are designed for automatic operation, have redundant automatic shutdown controls to prevent operation when LNG is present.

[45 FR 9203, Feb. 11, 1980, as amended by Amdt. 193-17, 65 FR 10959, Mar. 1, 2000]

**§§ 193.2175–193.2179 [Reserved]**

**§ 193.2181 Impoundment capacity: LNG storage tanks.**

Each impounding system serving an LNG storage tank must have a minimum volumetric liquid impoundment capacity of:

(a) 110 percent of the LNG tank’s maximum liquid capacity for an impoundment serving a single tank;

(b) 100 percent of all tanks or 110 percent of the largest tank’s maximum liquid capacity, whichever is greater, for the impoundment serving more than one tank; or

(c) If the dike is designed to account for a surge in the event of catastrophic failure, then the impoundment capacity may be reduced to 100 percent in lieu of 110 percent.

[Amdt. 193-17, 65 FR 10960, Mar. 1, 2000]

**§§ 193.2183–193.2185 [Reserved]**

LNG STORAGE TANKS

**§ 193.2187 Nonmetallic membrane liner.**

A flammable nonmetallic membrane liner may not be used as an inner container in a storage tank.

[Amdt. 193-17, 65 FR 10960, Mar. 1, 2000]

**§§ 193.2189–193.2233 [Reserved]**

**Subpart D—Construction**

**§ 193.2301 Scope.**

Each LNG facility constructed after March 31, 2000 must comply with requirements of this part and of NFPA 59A (incorporated by reference *see* §193.2013). In the event of a conflict between this part and NFPA 59A, this part prevails.

[Amdt. 193-17, 65 FR 10960, Mar. 1, 2000, as amended by Amdt. 193-18, 69 FR 11336, Mar. 10, 2004]

**§ 193.2303 Construction acceptance.**

No person may place in service any component until it passes all applicable inspections and tests prescribed by this subpart and NFPA 59A (incorporated by reference, *see* §193.2013).

[45 FR 9203, Feb. 11, 1980, as amended by Amdt. 193-17, 65 FR 10960, Mar. 1, 2000; Amdt. 193-18, 69 FR 11337, Mar. 10, 2004]

**§ 193.2304 Corrosion control overview.**

(a) Subject to paragraph (b) of this section, components may not be constructed, repaired, replaced, or significantly altered until a person qualified under §193.2707(c) reviews the applicable design drawings and materials specifications from a corrosion control viewpoint and determines that the materials involved will not impair the safety or reliability of the component or any associated components.

(b) The repair, replacement, or significant alteration of components must be reviewed only if the action to be taken—

(1) Involves a change in the original materials specified;

(2) Is due to a failure caused by corrosion; or

(3) Is occasioned by inspection revealing a significant deterioration of the component due to corrosion.

[Amdt. 193-2, 45 FR 70404, Oct. 23, 1980]

**§§ 193.2305–193.2319 [Reserved]**

**§ 193.2321 Nondestructive tests.**

(a) The butt welds in metal shells of storage tanks with internal design pressure above 15 psig must be non-destructively examined in accordance

**§§ 193.2323–193.2329**

with the ASME Boiler and Pressure Vessel Code (Section VIII Division 1) (incorporated by reference, *see* §193.2013), except that 100 percent of welds that are both longitudinal (or meridional) and circumferential (or latitudinal) of hydraulic load bearing shells with curved surfaces that are subject to cryogenic temperatures must be nondestructively examined in accordance with the ASME Boiler and Pressure Vessel Code (Section VIII Division 1) (incorporated by reference, *see* §193.2013).

(b) For storage tanks with internal design pressures at 15 psig or less, ultrasonic examinations of welds on metal containers must comply with the following:

(1) Section 7.3.1.2 of NFPA 59A (2006) (incorporated by reference, *see* §193.2013);

(2) Appendices Q and C of API 620 Standard (incorporated by reference, *see* §193.2013);

(c) Ultrasonic examination records must be retained for the life of the facility. If electronic records are kept, they must be retained in a manner so that they cannot be altered by any means; and

(d) The ultrasonic equipment used in the examination of welds must be calibrated at a frequency no longer than eight hours. Such calibrations must verify the examination of welds against a calibration standard. If the ultrasonic equipment is found to be out of calibration, all previous weld inspections that are suspect must be reexamined.

[Amdt. 193–22, 75 FR 48605, Aug. 11, 2010]

**§§ 193.2323–193.2329 [Reserved]**

**Subpart E—Equipment**

**§ 193.2401 Scope.**

After March 31, 2000, each new, replaced, relocated or significantly altered vaporization equipment, liquefaction equipment, and control systems must be designed, fabricated, and installed in accordance with requirements of this part and of NFPA 59A. In the event of a conflict between this part and NFPA 59A (incorporated by

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reference, *see* §193.2013), this part prevails.

[Amdt. 193–17, 65 FR 10960, Mar. 1, 2000, as amended by Amdt. 193–18, 69 FR 11337, Mar. 10, 2004]

**VAPORIZATION EQUIPMENT**

**§§ 193.2403–193.2439 [Reserved]**

**§ 193.2441 Control center.**

Each LNG plant must have a control center from which operations and warning devices are monitored as required by this part. A control center must have the following capabilities and characteristics:

(a) It must be located apart or protected from other LNG facilities so that it is operational during a controllable emergency.

(b) Each remotely actuated control system and each automatic shutdown control system required by this part must be operable from the control center.

(c) Each control center must have personnel in continuous attendance while any of the components under its control are in operation, unless the control is being performed from another control center which has personnel in continuous attendance.

(d) If more than one control center is located at an LNG Plant, each control center must have more than one means of communication with each other center.

(e) Each control center must have a means of communicating a warning of hazardous conditions to other locations within the plant frequented by personnel.

**§ 193.2443 [Reserved]**

**§ 193.2445 Sources of power.**

(a) Electrical control systems, means of communication, emergency lighting, and firefighting systems must have at least two sources of power which function so that failure of one source does not affect the capability of the other source.

(b) Where auxiliary generators are used as a second source of electrical power:

(1) They must be located apart or protected from components so that