

## Design and Construction - Facility Siting

**1. Facility Siting Provisions** *Does the facility siting and layout process require that a site-specific evaluation for potential incidents must be prescribed in accordance with 193.2051?* (DC.SITING.PLANTSITING.P) 193.2051 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.1.1;NFPA 59A (2001), Section 2.1.2;NFPA 59A (2001), Section 2.2.3.4;NFPA 59A (2001), Section 2.2.3.5;193.2017(b);193.2017(c);193.2101(b))

**2. Facility Siting Provisions** *Do records indicate facility siting and layout requirements of NFPA 59A (2001), Sections 2.2.3.2 and 2.2.3.4 were met for all hazardous liquids' (LNG, flammable refrigerants, and flammable liquids) hazards?* (DC.SITING.PLANTSITING.R) 193.2051 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.1.1;NFPA 59A (2001), Section 2.1.2;NFPA 59A (2001), Section 2.2.3.2;NFPA 59A (2001), Section 2.2.3.4;NFPA 59A (2001), Section 2.2.3.5;193.2101(b);)

**3. Facility Siting Provisions** *Do field observations confirm hazardous liquid storage tanks, refrigerant storage vessels, and major equipment were installed at siting locations in accordance with Part 193 and NFPA 59A (2001)?* (DC.SITING.PLANTSITING.O) 193.2051 (193.2301;NFPA 59A (2001), Section 2.1.1, 2.1.2, 2.2.3.4, and 2.2.3.5;NFPA 59A (2001), Section 2.1.2;NFPA 59A (2001), Section 2.2.3.4;NFPA 59A (2001), Section 2.2.3.5)

**4. Thermal Radiation Protection** *Does the siting and layout process require that thermal radiation exclusion zones must be established in accordance with 193.2057?* (DC.SITING.THERMRADPROT.P) 193.2057(a) (193.2017(a);193.2051;NFPA 59A (2001), Section 2.2.3.2;NFPA 59A (2001), Section 2.2.3.5;193.2057(b);193.2057(c);193.2017(b);193.2017(c))

**5. Thermal Radiation Protection** *Do records indicate that thermal radiation exclusion zone(s) for each LNG container and each LNG transfer system were established in accordance with 193.2057 and NFPA 59A (2001), Section 2.2.3.2?* (DC.SITING.THERMRADPROT.R) 193.2057(a) (193.2051;193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.3.2;193.2057(b);193.2057(c);193.2101(b);NFPA 59A (2001), Section 2.2.3.5)

**6. Thermal Radiation Protection** *Do field observations confirm that the distance from the impoundment system(s) to the property line is consistent with the facility plot plans as described in the Hazard Analysis Report?* (DC.SITING.THERMRADPROT.O) 193.2057(a) (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.3.2;NFPA 59A (2001), Section 2.2.3.5;193.2057(b);193.2057(c);193.2101(b))

**7. Flammable Vapor-Gas Dispersion Protection** *Does the siting and layout process require that flammable vapor-gas dispersion exclusion zones must be established in accordance with 193.2059?* (DC.SITING.GASDISPPROT.P) 193.2059(a) (193.2017(a);193.2051;NFPA 59A (2001), Sections 2.2.3.3, 2.2.3.4, and 2.2.3.5;193.2059(b);193.2059(c);193.2017(b);193.2017(c))

**8. Flammable Vapor-Gas Dispersion Protection** *Do records (i.e., plot plans) indicate that flammable vapor-gas dispersion zones were determined in accordance with the requirements of 193.2059 and NFPA 59A (2001), Sections 2.2.3.3 and 2.2.3.4?* (DC.SITING.GASDISPPROT.R) 193.2059(a) (193.2051;193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.3.3;NFPA 59A (2001), Section 2.2.3.4;NFPA 59A (2001), Section 2.2.3.5;193.2059(b);193.2059(c);193.2101(b))

**9. Flammable Vapor-Gas Dispersion Protection** *Do field observations verify that the flammable vapor-gas dispersion zone(s) were determined in accordance with 193.2059 and NFPA 59A (2001), Sections 2.2.3.3 and 2.2.3.4?* (DC.SITING.GASDISPPROT.O) 193.2059(a) (193.2301;193.2303;NFPA 59A (2001), Section 2.2.3.3;NFPA 59A (2001), Section 2.2.3.4;NFPA 59A (2001), Section 2.2.3.5;193.2059(b);193.2059(c))

## Design and Construction - Facility Layout

**1. Storage Tanks Separation Distance and Layout** *Does the design process require minimum distances of LNG and flammable liquids storage tanks from property lines and buildings, and from other storage tanks as required in NFPA 59A (2001), Table 2.2.4.1?* (DC.LAYOUT.TANKDISTANCES.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.2.4.1;193.2101(b);193.2017(b);193.2017(c))

**2. Storage Tanks Separation Distance and Layout** *Do records (i.e., plot plans) indicate the minimum distances of LNG and flammable liquids storage tanks from property lines and buildings, and from other storage tanks are IAW NFPA 59A (2001), Table 2.2.4.1?* (DC.LAYOUT.TANKDISTANCES.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.4.1;193.2101(b))

**3. Storage Tank Isolation Valve Spacing** *Does the design process require a clear space of at least 3 feet for access to all isolation valves serving multiple containers?* (DC.LAYOUT.TANKVALVE.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.2.4.2;193.2017(b);193.2017(c);193.2101(b))

**4. Storage Tank Isolation Valve Spacing** *Do records (i.e., plot plans) indicate at least 3 feet is provided for access to all isolation valves serving multiple storage containers?* (DC.LAYOUT.TANKVALVE.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.4.2;193.2101(b))

**5. Storage Tank Isolation Valve Spacing** *Do field observations verify a clear space of at least 3 feet is provided for access to all isolation valves serving multiple storage containers?* (DC.LAYOUT.TANKVALVE.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.2.4.2)

**6. LNG Storage Tanks Located Outside** *Does the design process require LNG storage containers of greater than 125 gallon capacity to be located external to buildings?* (DC.LAYOUT.TANKOUTSIDE.P) 193.2401 (193.2017(a);193.2301;NFPA 59A (2001), Section 2.2.4.3;193.2017(b);193.2017(c))

**7. LNG Storage Tanks Located Outside** *Do records (i.e., plot plans) indicate the LNG storage containers with greater than 125 gallon capacity are located external to buildings?* (DC.LAYOUT.TANKOUTSIDE.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.4.3;193.2101(b))

**8. Process Equipment Spacing and Layout** *Does the design process require process equipment, fired equipment, loading/unloading connections, and other equipment to be located in accordance with the spacing requirements in NFPA 59A (2001) Sections 2.2.6 and 2.2.7?* (DC.LAYOUT.EQUIPSPACING.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.2.6.1;NFPA 59A (2001), Section 2.2.6.2;NFPA 59A (2001), Section 2.2.7.2;193.2101(b);193.2017(b);193.2017(c))

**9. Process Equipment Spacing and Layout** *Do records (i.e., plot plans) indicate the process equipment, fired equipment, and loading/unloading connections, and other equipment are located IAW NFPA 59A (2001), Sections 2.2.6 and 2.2.7?* (DC.LAYOUT.EQUIPSPACING.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.6.1;NFPA 59A (2001), Section 2.2.6.2;NFPA 59A (2001), Section 2.2.7.2;193.2101(b))

**10. Flammable Refrigerant and Liquids Storage Tanks Layout** *Does the design process require that flammable refrigerants and flammable liquid storage tanks be located outside of an LNG container impounding area?* (DC.LAYOUT.REFRIGERANT.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.2.1.4;193.2017(b);193.2017(c);193.2101(b))

**11. Flammable Refrigerant and Liquids Storage Tanks Layout** *Do records (i.e., plot plans) indicate flammable liquid storage tanks are located outside of the LNG storage impounding area?* (DC.LAYOUT.REFRIGERANT.R) 193.2401 (193.2101(a);193.2101(b);NFPA 59A (2001), Section 2.2.1.4)

**12. Plot Plan - Tanks and Equipment Layout** *Do field observations verify that storage tanks/containers (LNG and flammable liquid storage), equipment, process vessels, transfer facilities, and flammable vapor mitigation measures are installed according to the locations identified in the plot plans?* (DC.LAYOUT.PLOTPLAN.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.2.1.4;NFPA 59A (2001), Section 2.2.4.1;NFPA 59A (2001), Section 2.2.4.2;NFPA 59A (2001), Section 2.2.4.3;NFPA 59A (2001), Section 2.2.6.1;NFPA 59A (2001), Section 2.2.6.2;NFPA 59A (2001), Section 2.2.7.2)

**13. Layout Distance of LNG Storage Tanks to Runway** *Where there is an airport within one mile of the LNG facility, does the layout design process include LNG storage tank location requirements of 193.2155(b)?* (DC.LAYOUT.RUNWAY.P) 193.2155(b) (193.2101(a);193.2017(a);193.2101(b);193.2017(b);193.2017(c))

**14. Layout Distance of LNG Storage Tanks to Runway** *Where there is an airport within one mile of the LNG facility, do records indicate that the LNG storage tank has been constructed at the prescribed minimum distance from the nearest point of a runway in accordance with 193.2155(b)?* (DC.LAYOUT.RUNWAY.R) 193.2155(b) (193.2101(a);193.2301;193.2101(b))

## Design and Construction - Impoundment, Dikes, and Drainage

**1. Siting - Spill Containment** *Does the siting and layout process require that spill containment system(s) must retain spilled LNG, flammable refrigerants, and flammable liquids within the limits of the facility property and for surface water drainage?* (DC.IMPOUND.SPILLCONTROL.P) 193.2051 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.1.2;NFPA 59A (2001), Section 2.2.1.1;NFPA 59A (2001), Section 2.2.1.2(4);193.2017(b);193.2017(c);193.2101(a))

**2. Siting - Spill Containment** *Do records indicate that retention of spilled LNG, flammable refrigerants, and flammable liquids would be within the limits of the facility property and for surface water drainage?* (DC.IMPOUND.SPILLCONTROL.R) 193.2051 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.1.2;NFPA 59A (2001), Section 2.2.1.1;NFPA 59A (2001), Section 2.2.1.2(4);193.2101(b))

**3. Siting - Spill Containment** *Do field observations confirm that spill containment and impoundment systems were installed to retain spilled LNG, flammable refrigerants, and flammable liquids within the limits of facility property and for surface water drainage?* (DC.IMPOUND.SPILLCONTROL.O) 193.2301 (193.2101(a);193.2303;NFPA 59A (2001), Section 2.1.2;NFPA 59A (2001), Section 2.2.1.1;NFPA 59A (2001), Section 2.2.1.2(4);193.2101(b))

**4. Impoundment Capacity** *Does the design process (i.e., specifications) for each impoundment system serving an LNG storage tank meet the capacity requirements of 193.2181?* (DC.IMPOUND.CAPACITY.P) 193.2181(a) (193.2017(a);193.2101(a);193.2181(b);193.2181(c);193.2017(b);193.2017(c);193.2101(b))

**5. Impoundment Capacity** *Do records indicate the impoundment capacity for LNG tanks met the minimum volume capacity requirements of 193.2181?* (DC.IMPOUND.CAPACITY.R) 193.2181(a) (193.2101(a);193.2301;193.2181(b);193.2181(c);193.2101(b))

**6. Covered Impoundment System Design** *Does the impoundment system design process prohibit covered impounding systems or "enclosed drainage channels" for LNG as described in 193.2167 and NFPA 59A (2001) Section 2.2.2.3 with certain exceptions?* (DC.IMPOUND.COVSYSTEM.P) 193.2167 (193.2017(a);NFPA 59A (2001), Section 2.2.2.3;193.2017(b);193.2017(c))

**7. Covered Impoundment System Design** *Do records indicate any covered impounding systems or "enclosed drainage channels for LNG" as prohibited in Part 193 and NFPA 59A (2001) Section 2.2.2.3 with certain exceptions?* (DC.IMPOUND.COVSYSYSTEM.R) 193.2167 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.2.3;193.2101(b))

**8. Covered Impoundment System Design** *Do field observations indicate any covered impounding systems were constructed as prohibited in Part 193 and NFPA 59A (2001) with exceptions?* (DC.IMPOUND.COVSYSYSTEM.O) 193.2167 (193.2303;NFPA 59A (2001), Section 2.2.2.3)

**9. Impounding Area and Drainage System Design 1** *Do records indicate the impounding areas and drainage systems have been designed and constructed in accordance with NFPA 59A (2001) Section 2.2.2.4?* (DC.IMPOUND.DRAINAGEDES1.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 2.2.2.4;193.2101(b))

**10. Impounding Area and Drainage System Design 2** *Do records indicate the structural members of the impoundment systems and/or drainage systems have been designed and constructed as required in 193.2155?* (DC.IMPOUND.DRAINAGEDES2.R) 193.2155(a) (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.2.4;193.2155(b);193.2101(b))

**11. Dike Construction** *Do field observations indicate the outer wall of a dike used as an impounding system is constructed of concrete in accordance with 193.2161?* (DC.IMPOUND.DIKECONSTR.O) 193.2161 (193.2101(a);193.2303;193.2101(b))

**12. Water Removal System** *Does the design process for the water removal system meet the requirements of 193.2173?* (DC.IMPOUND.WATERREMOVAL.P) 193.2173(a) (193.2017(a);193.2101(a);NFPA 59A (2001) Section 2.2.2.7;193.2173(b);193.2173(c);193.2017(b);193.2017(c);193.2101(b))

**13. Water Removal System** *Do records indicate the design of the water removal system meets the requirements of 193.2173?* (DC.IMPOUND.WATERREMOVAL.R) 193.2173(a) (193.2101(a);193.2301;NFPA 59A (2001) Section 2.2.2.7;193.2173(b);193.2173(c);193.2101(b))

**14. Water Removal System** *Do field observations verify that the water removal systems have been constructed in accordance with 193.2173?* (DC.IMPOUND.WATERREMOVAL.O) 193.2173(a) (193.2101(a);193.2303;NFPA 59A (2001) Section 2.2.2.7;193.2173(b);193.2173(c);193.2101(b))

**15. Impoundment Siting for Protection of Marine Carriers** *Do records indicate that radiant heat fluxes from a fire over the LNG storage container impounding area do not extend to any LNG marine carrier per NFPA 59A (2001), Section 2.2.3.6?* (DC.IMPOUND.SITINGMARINE.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.3.6;193.2101(b))

## Design and Construction - LNG Storage Tanks

**1. LNG Storage Tanks - LNG Density** *Does the LNG storage tank design process specify that the density of the LNG liquid shall be assumed to be the actual mass per unit volume at the minimum storage temperatures, except that in no case shall the density assumed be less than 29.3 lb/ft<sup>3</sup> (470 kg/m<sup>3</sup>)?* (DC.TANKS.DENSITY.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.1.2.7;193.2101(b);193.2017(b);193.2017(c))

**2. LNG Storage Tanks - Basic Design Requirements** *Does the LNG storage tank specification incorporate all of the requirements of NFPA 59A (2001), Section 4.1.2, for basic design considerations?* (DC.TANKS.BASICDESIGN.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 4.1.2.1;193.2101(b);193.2017(b);193.2017(c);NFPA 59A (2001), Section 4.1.2.2;NFPA 59A (2001), Section 4.1.2.3;NFPA 59A (2001), Section 4.1.2.5)

**3. LNG Storage Tanks - MAWP** *Do records and basic design documents indicate the maximum allowable working pressure (MAWP) and maximum allowable vacuum for each LNG storage tank?* (DC.TANKS.MAWP.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.2.1;193.2101(b))

**4. LNG Storage Tanks - Materials of Construction** *Do records (ref. tank drawings) indicate that the materials of construction for the parts of the LNG containers that normally are in contact with LNG or cold LNG vapor are compatible with LNG and intended for service at -270°F?* (DC.TANKS.MATERIALS.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.2.2;193.2101(b))

**5. LNG Storage Tanks - Piping Requirements** *Do records (ref. tank piping specifications) indicate that piping internal and external to the LNG container is designed in accordance with the requirements in NFPA 59A (2001), Chapter 6?* (DC.TANKS.PIPING.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.2.3;193.2101(b))

**6. LNG Storage Tanks - Top & Bottom Filling** *Does the LNG storage tank specification(s) address stratification and rollover (i.e., top & bottom filling)?* (DC.TANKS.TOPBOTTOMFILL.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 4.1.2.4;193.2101(a);193.2017(b);193.2017(c))

**7. LNG Storage Tanks - Top & Bottom Filling** *Do records (ref. LNG tank drawings) indicate that both top and bottom fill capability, or other positive means, are provided to prevent stratification and rollover?* (DC.TANKS.TOPBOTTOMFILL.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.2.4;193.2101(b))

**8. LNG Storage Tanks - Low Temp Protection** *Do records (ref. LNG tank drawings) indicate that protection from low temperature was provided for the outer surface areas of an LNG container that could be exposed to leakage of LNG or cold vapor?* (DC.TANKS.LOWTEMPPROT.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.2.5;193.2101(b))

**9. LNG Storage Tanks - Low Temp Protection** *Do field observations confirm that protection from low temperature was provided for the outer surface area of an LNG container that could be exposed to leakage of LNG or cold vapor?* (DC.TANKS.LOWTEMPPROT.O) 193.2101(a) (193.2303;NFPA 59A (2001), Section 4.1.2.5;193.2101(b))

**10. LNG Storage Tanks - Foundations** *For two or more LNG tanks within a common dike, does the LNG storage container design process require foundations to be capable of withstanding contact with LNG or to be protected against contact with an accumulation of LNG that might endanger structural integrity?* (DC.TANKS.FOUNDATIONS.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.1.2.6;193.2101(b);193.2017(b);193.2017(c))

**11. LNG Storage Tanks - Foundations** *For two or more LNG tanks in a common dike, do records (e.g., design drawings and specifications) indicate that LNG storage tank foundations were constructed to be capable of withstanding contact with LNG or to be protected against contact with an accumulation of LNG that might endanger structural integrity?* (DC.TANKS.FOUNDATIONS.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.2.6;193.2101(b))

**12. LNG Storage Tanks - Foundation Design** *Does the design process of stationary LNG storage container foundation(s) meet the requirements of NFPA 59A (2001), Section 4.1.7?* (DC.TANKS.FOUNDATIONDES.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.1.7;193.2101(a);193.2017(b);193.2017(c))

**13. LNG Storage Tanks - Foundation Design** *Do records (i.e., structural drawings and calculations and geotechnical report) indicate that stationary LNG storage container foundation(s) was/were designed and constructed in accordance with the requirements of NFPA 59A (2001), Section 4.1.7 and that a subsurface soils investigation was performed?* (DC.TANKS.FOUNDATIONDES.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.7;193.2101(b))

**14. LNG Storage Tanks - Foundation Design** *Do field observations confirm stationary LNG storage container foundation are installed in accordance with the requirements of NFPA 59A (2001), Section 4.1.7?* (DC.TANKS.FOUNDATIONDES.O) 193.2301 (193.2303;NFPA 59A (2001), Section 4.1.7)

**15. Storage Container - Seismic Design** *Does the project design process require that the seismic design of stationary field-fabricated LNG storage containers and its impoundment system meet the requirements of NFPA 59A (2006), Section 7.2.2?* (DC.TANKS.SEISMIC.P) 193.2101 (193.2017(a);NFPA 59A (2006), Section 7.2.2;193.2101(b);193.2017(b);193.2017(c))

**16. Storage Container - Seismic Design** *Do records (e.g., structural drawing and calculations; ground motion hazard study) indicate the seismic design of stationary LNG storage containers and impoundment systems meet the requirements of NFPA 59A (2006), Section 7.2.2?* (DC.TANKS.SEISMIC.R) 193.2101(a) (193.2301;NFPA 59A (2006), Section 7.2.2;193.2101(b))

**17. Storage Tanks & Structures - Wind and Snow Load Design** *Does the design process for LNG storage tanks and structures include design for wind and snow loads to meet requirements of NFPA 59A (2001), Sections 4.1.4, and ASCE 7?* (DC.TANKS.WINDSNOWDES.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.1.4;ASCE 7;193.2101(b);193.2017(b);193.2017(c))

**18. Storage Tanks & Structures - Wind and Snow Load Design** *Do records (e.g., design drawings, specifications, and calculations) indicate that LNG storage tanks and/or structures were constructed in accordance with the wind and snow load requirements in NFPA 59A (2001), Section 4.1.4, and ASCE 7?* (DC.TANKS.WINDSNOWDES.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.4;ASCE 7;193.2101(b))

**19. LNG Storage Container - Insulation** *Does the process for design of stationary LNG storage tank insulation meet the requirements of NFPA 59A (2001), Section 4.1.5?* (DC.TANKS.INSULATION.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.1.5;193.2101(b);193.2017(b);193.2017(c))

**20. LNG Storage Container - Insulation** *Do records (i.e., tank design documents and drawings) indicate that stationary LNG storage container insulation met the requirements of NFPA 59A (2001), Section 4.1.5?* (DC.TANKS.INSULATION.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.5;193.2101(b))

**21. LNG Storage Container - Insulation** *Do field observations confirm that stationary LNG storage container insulation was installed in accordance with the requirements of NFPA 59A (2001), Section 4.1.5?* (DC.TANKS.INSULATION.O) 193.2301 (193.2303;NFPA 59A (2001), Section 4.1.5)

**22. LNG Concrete Storage Container Design** *Does the design process require concrete storage containers to be designed IAW NFPA 59A (2001), Section 4.3, and ACI 318?* (DC.TANKS.CONCRETECONTDES.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Sections 4.3;API Standard 620;ACI 318;ASME Boiler & Pressure Vessel Code;193.2101(b);193.2017(b);193.2017(c))

**23. LNG Concrete Storage Container Design** *Do records (i.e., tank design specifications) demonstrate concrete storage containers meet the applicable design requirements of NFPA 59A (2001), Section 4.3, and ACI 318?* (DC.TANKS.CONCRETECONTDES.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.3;API Standard 620;ACI 318;ASME Boiler & Pressure Vessel Code;193.2101(b))

**24. LNG Concrete Storage Container Design** *Do field observations confirm concrete LNG storage containers meet the applicable design requirements of NFPA 59A (2001), Section 4.3 and ACI 318?* (DC.TANKS.CONCRETECONTDES.O) 193.2101 (193.2303;NFPA 59A (2001), Section 4.3;API Standard 620;ACI 318;ASME Boiler & Pressure Vessel Code)

**25. LNG Storage Tank - Non-Metallic Membrane Liner** *For LNG storage tanks where nonmetallic membrane liners are used, does the design process specify that they are non-flammable?* (DC.TANKS.NONMETALLINER.P) 193.2187 (193.2017(a);193.2017(b);193.2017(c))

**26. LNG Storage Tank - Non-Metallic Membrane Liner** *Do records indicate that if a nonmetallic membrane liner was installed in an LNG storage tank that it was non-flammable?* (DC.TANKS.NONMETALLINER.R) 193.2187 (193.2119;193.2101(a);193.2301;193.2101(b))

**27. LNG Storage Tank - Non-Metallic Membrane Liner** *Where a nonmetallic membrane liner was installed in an LNG storage tank, do field observations indicate it is non-flammable?* (DC.TANKS.NONMETALLINER.O) 193.2187 (193.2101(a);193.2301;193.2101(b))

**28. LNG Storage Tanks - Barriers** *Does the LNG tank design process require the material of construction for LNG storage tank liquid or vapor barriers shall be of metal classified for either "primary components" or "secondary components" in accordance with API Standard 620 (1990)?* (DC.TANKS.BARRIER.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.3.3.6;API 620 (1990);193.2101(b);193.2017(b);193.2017(c);NFPA 59A (2001), Section 4.3.3.7)

**29. LNG Storage Tanks - Barriers** *Do records (i.e., tank drawings and specifications) indicate that material of construction for nonstructural metallic barriers is selected from API 620 (1990), Appendix Q?* (DC.TANKS.BARRIER.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.3.3.6;API 620 (1990);NFPA 59A (2001), Section 4.3.3.7;193.2101(b))

**30. LNG Storage Tanks - Metal Testing** *Does the design process for concrete LNG storage tanks require construction and testing of the metal components in accordance with API 620 (1990), Appendix Q?* (DC.TANKS.METALTEST.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.3.4.3;API 620 (1990), Appendix Q;193.2101(b);193.2017(b);193.2017(c))

**31. LNG Storage Tanks - Metal Testing** *Do the concrete LNG tank test records indicate metal components were constructed and tested in accordance with API 620 (1990), Appendix Q?* (DC.TANKS.METALTEST.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.3.4.3;API 620 (1990), Appendix Q;193.2101(b))

**32. LNG Storage Tanks - Pressure & Vacuum Relief Devices (1)** *Does the LNG tank design process require pressure and vacuum relief devices in accordance with NFPA 59A (2001), Section 4.7?* (DC.TANKS.PSV1.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.7;API 620;ASME BPVC, Section VIII;193.2101(b);193.2017(b);193.2017(c))

**33. LNG Storage Tanks - Pressure & Vacuum Relief Devices (1)** *Do records (i.e., pressure/vacuum relief valve data sheets) indicate that pressure and vacuum relief devices protecting the LNG storage tanks are in accordance with NFPA 59A (2001) Section 4.7?* (DC.TANKS.PSV1.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.7;API 620;ASME BPVC, Section VIII;193.2101(b))

**34. LNG Storage Tanks - Pressure & Vacuum Relief Devices (2)** *Do records (i.e., tank drawings) indicate the pressure and vacuum relief valves vent directly to the atmosphere?* (DC.TANKS.PSV2.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.7.2;193.2101(b))

**35. LNG Storage Tanks - Pressure & Vacuum Relief Devices (2)** *Do field observations confirm that the pressure and vacuum relief valves serving the LNG storage tanks are installed according to the design specifications?* (DC.TANKS.PSV2.O) 193.2301 (193.2303;NFPA 59A (2001), Section 4.7)

**36. LNG Storage Tanks - Pressure & Vacuum Relief Devices (3)** *Do records (i.e., P&IDs) indicate the isolation valves for LNG storage tank's pressure and vacuum relief valves include a manual full-opening stop valve for testing or maintenance?* (DC.TANKS.PSV3.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.7.2.1;193.2101(b))

**37. LNG Storage Tanks - Pressure & Vacuum Relief Devices (3)** *Do field observations confirm that isolation valves for the LNG storage tank's pressure and vacuum relief valves are installed according to the design?* (DC.TANKS.PSV3.O) 193.2301 (193.2303;NFPA 59A (2001), Section 4.7.2.1)

**38. LNG Storage Tanks - Pressure & Vacuum Relief Devices (4)** *Do records (i.e., tank drawings; P&IDs) indicate that safety relief valves discharge vertically upward?* (DC.TANKS.PSV4.R) 193.2101 (193.2301;NFPA 59A (2001), Section 4.7.2.3)

**39. LNG Storage Tanks - Pressure & Vacuum Relief Devices (4)** *Do field observations confirm that LNG storage tank's safety relief valves are installed according to design, including measures to prevent an accumulation of water, ice, snow, or other foreign matter?* (DC.TANKS.PSV4.O) 193.2301 (193.2303;NFPA 59A (2001), Section 4.7.2.3)

**40. LNG Storage Tanks - Pressure Relief Devices (5)** *Does the LNG storage tank design process require pressure relief devices to be sized in accordance with NFPA 59A (2001), Sections 4.7.3.1, 4.7.3.2, and 4.7.3.4?* (DC.TANKS.PSV5.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.7.3;193.2101(b);193.2017(b);193.2017(c))

**41. LNG Storage Tanks - Pressure Relief Devices (5)** *Do records (i.e., calculation sheets for LNG Storage Tank Relief Valve Capacity) indicate the flow capacity of pressure relief valves was calculated in accordance with NFPA 59A (2001) Section 4.7.3.1, 4.7.3.2, and 4.7.3.4?* (DC.TANKS.PSV5.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.7.3;193.2101(b))

**42. LNG Storage Tanks - Vacuum Relief Devices** *Does the LNG storage tank design specification require vacuum relief devices to be sized in accordance with NFPA 59A (2001) Section 4.7.3.3?* (DC.TANKS.VRV.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.7.3.3;193.2101(b);193.2017(b);193.2017(c))

**43. LNG Storage Tanks - Vacuum Relief Devices** *Do records (i.e., calculation sheets for LNG storage tank relief valve capacity) indicate the flow capacity of vacuum relief valves was calculated in accordance with NFPA 59A (2001) Section 4.7.3.3?* (DC.TANKS.VRV.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.7.3.3;193.2101(b))

**44. LNG Storage Tanks - Vacuum Relief Devices** *Do field observations confirm that LNG storage tank vacuum relief valves were installed according to design specifications?* (DC.TANKS.VRV.O) 193.2301 (193.2303;NFPA 59A (2001), Section 4.7.3.3)

**45. LNG Storage Container - Liquid Level Gauges** *Does the design process require two independent liquid level gauges in LNG containers?* (DC.TANKS.LEVELGAUGES.P) 193.2101(a) (193.2017;NFPA 59A (2001), Section 7.1.1;193.2101(b))

**46. LNG Storage Container - Liquid Level Gauges** *Do records indicate that two liquid level gauges for LNG containers were designed and installed in accordance with NFPA 59A (2001), Section 7.1.1?* (DC.TANKS.LEVELGAUGES.R) 193.2301 (193.2101(a);193.2303;NFPA 59A (2001), Section 7.1.1;193.2101(b))

**47. LNG Storage Container - Liquid Level Gauges** *Do field observations confirm that two independent liquid level gauges are installed in the LNG containers to design specifications?* (DC.TANKS.LEVELGAUGES.O) 193.2301 (193.2303;NFPA 59A (2001), Section 7.1.1)

**48. LNG Storage Container - Pressure Gauges** *Does the design process require the installation of a pressure gauge connected to each storage container at a point above the maximum intended liquid level?* (DC.TANKS.PRESSGAUGES.P) 193.2301 (193.2017(a);193.2401;NFPA 59A (2001), Section 7.2;193.2017(b);193.2017(c))

**49. LNG Storage Container - Pressure Gauges** *Do records (e.g., P&IDs) indicate the installation of a pressure gauge connected to each storage container at a point above the maximum intended liquid level?* (DC.TANKS.PRESSGAUGES.R) 193.2301 (193.2401;193.2101(a);NFPA 59A (2001), Section 7.2;193.2101(b))

**50. LNG Storage Container - Pressure Gauges** *Do field observations confirm the installation of a pressure gauge connected to each storage container at a point above the maximum intended liquid level?* (DC.TANKS.PRESSGAUGES.O) 193.2301 (193.2303;193.2401;NFPA 59A (2001), Section 7.2)

**51. LNG Storage Container - Temperature Monitoring** *Does the LNG storage container design require temperature monitoring equipment to be installed?* (DC.TANKS.TEMPMONITOR.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 7.4;193.2017(b);193.2017(c))

**52. LNG Storage Container - Temperature Monitoring** *Do records indicate that temperature monitoring was installed in accordance with design specifications?* (DC.TANKS.TEMPMONITOR.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 7.4;193.2101(b))

**53. LNG Storage Container - Temperature Monitoring** *Do field observations confirm that temperature monitoring devices were installed in accordance with design specifications?* (DC.TANKS.TEMPMONITOR.O) 193.2301 (193.2303;NFPA 59A (2001), Section 7.4)

**54. Electrical Grounding and Bonding for Storage Tanks** *Does the design process for electrical grounding and bonding for storage tanks meet the requirements of NFPA 59A (2001), Section 7.7?* (DC.TANKS.GROUNDING.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 7.7;193.2017(b);193.2017(c))

**55. Electrical Grounding and Bonding for Storage Tanks** *Do records indicate that electrical grounding and bonding for storage tanks were designed and installed IAW NFPA 59A (2001), Section 7.7?* (DC.TANKS.GROUNDING.R) 193.2301 (193.2101;NFPA 59A (2001), Section 7.7)

**56. Electrical Grounding and Bonding for Storage Tanks** *Do field observations confirm electrical grounding and bonding for storage tanks was installed IAW the design specifications?* (DC.TANKS.GROUNDING.O) 193.2301 (193.2303;NFPA 59A (2001), Section 7.7)

**57. LNG Storage Containers - Weld NDT** *Do the tank design specifications require that non-destructive examinations of welds on metal storage containers be performed in accordance with NFPA 59A (2006), Section 7.3.1.2, and API 620 (2008, 11th Edition), Appendices C and Q (per 193.2321(b))?* (DC.TANKS.NDT.P) 193.2321(b) (193.2017(a);NFPA 59A (2006), Section 7.3.1.2;API 620 (2008), Appendix C;API 620 (2008), Appendix Q;193.2017(b);193.2017(c))

**58. LNG Storage Containers - Weld NDT** *Do records indicate that non-destructive examinations of welds on metal storage containers were performed in accordance with NFPA 59A (2006), Section 7.3.1.2, and API 620 (2008, 11th Edition), Appendices C and Q (per 193.2321b)?* (DC.TANKS.NDT.R) 193.2321(b) (193.2101(a);193.2301;NFPA 59A (2006), Section 7.3.1.2;API 620 (2008), Appendix C;API 620 (2008), Appendix Q;193.2101(b))

**59. LNG Storage Containers - Weld NDT** *Do field observation confirm that non-destructive examinations of welds on metal storage containers were performed in accordance with NFPA 59A (2006), Section 7.3.1.2, and API 620 (2008, 11th Edition), Appendices C and Q (per 193.2321b)?* (DC.TANKS.NDT.O) 193.2321(b) (193.2303;NFPA 59A (2006), Section 7.3.1.2;API 620 (2008), Appendix C;API 620 (2008), Appendix Q)

**60. Installation of Flammable Refrigerant and Process Fluids Storage Tanks** *Does the process for the installation of flammable refrigerants and flammable liquid storage require compliance with NFPA 30, NFPA 58, NFPA 59, API 2510?* (DC.TANKS.FLAMMFLUIDS.P) 193.2101(a) (193.2017(a);NFPA 59A (2001) Section 3.3;NFPA 30;NFPA 58;NFPA 59;API 2510;193.2101(b);193.2017(b);193.2017(c))

**61. Installation of Flammable Refrigerant and Process Fluids Storage Tanks** *Do records indicate that installation of storage tanks for flammable refrigerants and process fluids is in accordance with design and installation specifications?* (DC.TANKS.FLAMMFLUIDS.R) 193.2101(a) (193.2303;NFPA 59A (2001) Section 3.3;NFPA 30;NFPA 58;NFPA 59;API 2510;193.2101(b))

**62. Part 193 Materials Records for Tanks** *Does the process require records of all materials for tanks and tank related components be maintained for the life of the item?* (DC.TANKS.MATERIALRECORDS.P) 193.2119 (193.2017(a);193.2017(b);193.2017(c))

**63. Part 193 Materials Records for Tanks** *Have records of all materials for tanks and tank related components been kept to verify that materials properties have met the requirements of Part 193, and are the records being maintained for the life of the item concerned?* (DC.TANKS.MATERIALRECORDS.R) 193.2119 (193.2101(a);193.2101(b))

**64. LNG Storage Tanks - Leak Testing** *Does the LNG storage tank design process require leak testing of LNG storage tanks in accordance with API 620 (1990), Appendix Q.8?* (DC.TANKS.LEAKTESTING.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.5.1;API 620 (1990), Appendix Q;193.2101(b);193.2017(b);193.2017(c))

**65. LNG Storage Tanks - Leak Testing** *Do the LNG tank test records indicate that LNG storage tanks were tested in accordance with API 620 (1990), Appendix Q?* (DC.TANKS.LEAKTESTING.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.5.1;API 620 (1990), Appendix Q;193.2101(b))

**66. LNG Storage Tanks - Leak Testing** *Do field observations verify that the hydrostatic test and pneumatic pressure test for LNG storage tanks were performed according to test procedures?* (DC.TANKS.LEAKTESTING.O) 193.2301 (193.2303;NFPA 59A (2001), Section 4.5.1;API 620 (1990), Appendix Q)

**67. Cooldown of Components** *Does the process require that the thermal stress of components be kept within design limits during cooldown?* (MO.LO.COOLDOWN.P) 193.2017 (193.2503(g);193.2505(a);193.2505(b))

**68. Cooldown of Components** *Do records indicate that cooldown of components was maintained within design limits?* (MO.LO.COOLDOWN.R) 193.2505(a) (193.2505(b);193.2503(g);193.2101;193.2301)

**69. Cooldown of Components** *Do field observations confirm leak checks were performed on components subject to cryogenic temperatures following stabilization?* (MO.LO.COOLDOWN.O) 193.2505(b) (193.2301;193.2303)

## Design and Construction - Structures

**1. Design for Wind Forces** *Does the design processes specify the wind force requirements for the LNG facility comply with 193.2067?* (DC.STRUCTURE.WINDFORCES.P) 193.2067(a) (193.2017(a);193.2051;193.2067(b);193.2017(b);193.2017(c))

**2. Design for Wind Forces** *Do records (e.g., design specifications) indicate that the wind forces specified for the LNG facility comply with 193.2067?* (DC.STRUCTURE.WINDFORCES.R) 193.2067(a) (193.2051;193.2101(a);193.2067(b);193.2101(b))

**3. Storage Tanks & Structures - Wind and Snow Load Design** *Does the design process for LNG storage tanks and structures include design for wind and snow loads to meet requirements of NFPA 59A (2001), Sections 4.1.4, and ASCE 7? (DC.TANKS.WINDSNOWDES.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.1.4;ASCE 7;193.2101(b);193.2017(b);193.2017(c))*

**4. Storage Tanks & Structures - Wind and Snow Load Design** *Do records (e.g., design drawings, specifications, and calculations) indicate that LNG storage tanks and/or structures were constructed in accordance with the wind and snow load requirements in NFPA 59A (2001), Section 4.1.4, and ASCE 7? (DC.TANKS.WINDSNOWDES.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.4;ASCE 7;193.2101(b))*

**5. Geotechnical and Soils Investigations** *Does the design process require geotechnical (soils) investigations of the facility site? (DC.STRUCTURE.GEOTECH.P) 193.2101(a) (193.2017(a);193.2401;NFPA 59A (2001), Section 2.1.4;193.2101(b);193.2017(b);193.2017(c))*

**6. Geotechnical and Soils Investigations** *Do records indicate that geotechnical (soil) investigation results of the soil conditions for the site were used in the design basis for the facility? (DC.STRUCTURE.GEOTECH.R) 193.2101(a) (193.2301;193.2401;NFPA 59A (2001), Section 2.1.4;193.2101(b))*

**7. Materials of Construction** *Does the design process require buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are handled to be of lightweight, non-combustible construction materials with non-load bearing walls? (DC.STRUCTURE.MATERIALS.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 2.3.1;193.2017(b);193.2017(c))*

**8. Materials of Construction** *Do records indicate buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are handled are built of lightweight, non-combustible construction materials with non-load bearing walls? (DC.STRUCTURE.MATERIALS.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 2.3.1;193.2101(b))*

**9. Materials of Construction** *Do field observations verify buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are handled have been constructed in accordance with the design specifications? (DC.STRUCTURE.MATERIALS.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.3.1)*

**10. Building Design and Ventilation** *Does the design process require buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are handled are designed to meet the requirements of NFPA 59A (2001), Section 2.3.2? (DC.STRUCTURE.BUILDINGDES.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 2.3.2;193.2017(b);193.2017(c))*

**11. Building Design and Ventilation** *Do records (e.g., design drawings) indicate buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are handled are constructed in accordance with NFPA 59A, (2001), Section 2.3.2?* (DC.STRUCTURE.BUILDINGDES.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 2.3.2;193.2101(b))

**12. Building Design and Ventilation** *Do field observations verify buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are handled are constructed in accordance with the design specifications?* (DC.STRUCTURE.BUILDINGDES.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.3.2)

**13. Odorization Requirements** *If odorization is required at the facility, does the design process include container separation distances based on the volume of the odorization container(s) in accordance with NFPA 59A Section 2.2.4.1?* (DC.STRUCTURE.ODORIZATION.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 2.3.5;NFPA 59A (2001) Section 2.2.4.1;193.2017(b);193.2017(c))

**14. Odorization Requirements** *If odorization is required at the facility, do records indicate odorization container separation distances have been met based on the volume of the odorization container(s) in accordance with NFPA 59A Section 2.2.4.1?* (DC.STRUCTURE.ODORIZATION.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 2.3.5;NFPA 59A (2001) Section 2.2.4.1;193.2101(b))

**15. Odorization Requirements** *If odorization is required at the facility, do field observations verify odorization container separation distances have been met based on the volume of the odorization container(s) in accordance with NFPA 59A Section 2.2.4.1?* (DC.STRUCTURE.ODORIZATION.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.3.5;NFPA 59A (2001) Section 2.2.4.1)

**16. Building and Enclosure Layout** *Does the design process require buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are not present to be located to minimize the possibility of entry of flammable gases or vapors?* (DC.STRUCTURE.ENCLOSURELAYOUT.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 2.3.3;193.2017(b);193.2017(c))

**17. Building and Enclosure Layout** *For buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are not present, do records (e.g., plot plans, design drawings) indicate that buildings or structural enclosures are to be located to minimize the possibility of entry of flammable gases or vapors?* (DC.STRUCTURE.ENCLOSURELAYOUT.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 2.3.3;193.2101(b))

**18. Building and Enclosure Layout** *For buildings or structural enclosures in which LNG, flammable refrigerants, and flammable gases are not present, do field observations verify that buildings or structural enclosures have been located to minimize the possibility of entry of flammable gases or vapors?* (DC.STRUCTURE.ENCLOSURELAYOUT.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.3.3)

**19. Soil Protection for Cryogenic Equipment** *Does the design process for structural supports address freezing and frost heaving in the soil for LNG storage tanks, major equipment, and process piping, piping supports, and other cryogenic apparatus?* (DC.STRUCTURE.FROSTHEAVE.P) 193.2101(a) (193.2017;NFPA 59A (2001), Section 2.5;193.2101(b))

**20. Soil Protection for Cryogenic Equipment** *Do records (e.g., design basis, geotechnical report) for structural support address freezing and frost heaving in the soil for LNG storage tanks, major equipment, process piping, piping supports, and other cryogenic apparatus?* (DC.STRUCTURE.FROSTHEAVE.R) 193.2119 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.5;193.2101(b))

**21. Soil Protection for Cryogenic Equipment** *Do field observations verify that freezing and frost heaving in the soil has been accounted for in accordance with the design specifications for LNG storage tanks, major equipment, process piping, piping supports, and other cryogenic apparatus?* (DC.STRUCTURE.FROSTHEAVE.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.5)

**22. Concrete LNG Storage Containers** *Does the design process for concrete LNG storage containers meet the applicable requirements of NFPA 59A (2001), Sections 4.3.2?* (DC.STRUCTURE.CONCRETECONT.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.3.2;ACI 318 – Building Code Requirements for Reinforced Concrete;ASME Boiler & Pressure Vessel Code;193.2101(b);193.2017(b);193.2017(c))

**23. Concrete LNG Storage Containers** *Do records (e.g., design drawings and specifications) indicate that LNG prestressed concrete storage containers meet the applicable requirements of NFPA 59A (2001), Sections 4.3 and 4.5 and ACI 318?* (DC.STRUCTURE.CONCRETECONT.R) 193.2301 (193.2101(a);NFPA 59A (2001), Sections 4.3 and 4.5.1;ACI 318 – Building Code Requirements for Reinforced Concrete;193.2101(b))

**24. Materials Subject to LNG Temperatures** *Does the design process specify that materials subject to LNG temperatures meet the requirements in NFPA 59A (2001), Section 4.3.3?* (DC.STRUCTURE.LNGTEMPMATERIALS.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 4.3.3;193.2017(b);193.2017(c))

**25. Materials Subject to LNG Temperatures** *Do records (e.g., design specs, materials specs) indicate that materials subject to LNG temperatures meet the requirements in NFPA 59A (2001), Section 4.3.3?* (DC.STRUCTURE.LNGTEMPMATERIALS.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 4.3.3;193.2101(b))

**26. Concrete LNG Container Testing and Inspection** *Does the design process for concrete LNG containers specify testing and inspections, as applicable, in accordance with NFPA 59A (2001), Section 4.3.4?* (DC.STRUCTURE.CONCRETECONTTESTING.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 4.3.4;193.2017(b);193.2017(c))

**27. Concrete LNG Container Testing and Inspection** *Do records (e.g., construction drawings and specifications, test and inspection reports) indicate concrete LNG containers testing and inspections, as applicable, were conducted in accordance with NFPA 59A (2001), Section 4.3.4? (DC.STRUCTURE.CONCRETECONTESTING.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 4.3.4;193.2101(b))*

**28. Temporary Use of LNG Portable Equipment** *For the temporary use of LNG portable equipment for peak-shaving applications or for other short-term applications, does the design process specify the requirements in NFPA 59A (2001), Section 2.3.4(b)-2.3.4(j)? (DC.STRUCTURE.TEMPLNGEQUIPMENT.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 2.3.4;193.2017(b);193.2017(c))*

**29. Temporary Use of LNG Portable Equipment** *For the temporary use of LNG portable equipment for peak-shaving applications or for other short-term applications, do records indicate the requirements in NFPA 59A (2001), Section 2.3.4(b)-2.3.4(j) have been met? (DC.STRUCTURE.TEMPLNGEQUIPMENT.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 2.3.4;193.2101(b))*

**30. Temporary Use of LNG Portable Equipment** *For the temporary use of LNG portable equipment for peak-shaving applications or for other short-term applications, do field observations verify the requirements in NFPA 59A (2001), Section 2.3.4(b)-2.3.4(j) have been met? (DC.STRUCTURE.TEMPLNGEQUIPMENT.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.3.4)*

## Design and Construction - Equipment

**1. Equipment and Piping Components MAWP** *Does the design process specify the maximum allowable working pressure (MAWP) for all equipment, components, and piping? (DC.EQUIP.MAWP.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.1.3;193.2017(b);193.2017(c);193.2101(b))*

**2. Equipment and Piping Components MAWP** *Do records (e.g., P&IDs and equipment data sheets) specify the maximum allowable working pressure (MAWP) for all equipment, components, and piping? (DC.EQUIP.MAWP.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.1.3;193.2101(b))*

**3. Equipment and Piping Components MAWP** *Do field observations verify the design parameters/limits (e.g., MAWP, maximum/minimum temperature) on the name plates attached to storage tanks, equipment, vessels, piping, and other components are consistent with the design or data sheets? (DC.EQUIP.MAWP.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.1.3;)*

**4. Materials for Pumps and Compressors** *Does the design process require pumps and compressors to be constructed of materials suitable for the temperature and pressure conditions that might be encountered during service?* (DC.EQUIP.MATERIALS.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.2.1;193.2101(b);193.2017(b);193.2017(c))

**5. Materials for Pumps and Compressors** *Do records (e.g., equipment data sheets) indicate pumps and compressors have been constructed of materials suitable for the temperature and pressure conditions that might be encountered during service?* (DC.EQUIP.MATERIALS.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 3.2.1;193.2101(b))

**6. Isolation Valves for Pumps and Compressors** *Does the design process require isolation valves for pumps and compressors for maintenance purposes?* (DC.EQUIP.ISOLVALVE.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.2.2;193.2017(b);193.2017(c);193.2101(b))

**7. Isolation Valves for Pumps and Compressors** *Do records (e.g., P&IDs) indicate manual isolation valves for each pump and compressor for maintenance purposes?* (DC.EQUIP.ISOLVALVE.R) 193.2401 (193.2101(a);NFPA 59A (2001), Section 3.2.2;193.2101(b))

**8. Check Valves for Pumps and Compressors** *Where pumps or compressors are installed for parallel operation, does the design process require a check valve at each discharge line?* (DC.EQUIP.CHECKVALVE.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.2.2;193.2101(b);193.2017(b);193.2017(c))

**9. Check Valves for Pumps and Compressors** *Where pumps or compressors are installed for parallel operation, do records (e.g., P&IDs) indicate a check valve was installed at each pump and compressor discharge line?* (DC.EQUIP.CHECKVALVE.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 3.2.2;193.2101(b))

**10. Pressure Relieving Safety Devices for Pumps and Compressors** *Does the design process require a pressure safety device to protect pumps and compressors as well as piping and equipment downstream of pumps and compressors?* (DC.EQUIP.PSV.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.2.3;193.2101(b);193.2017(b);193.2017(c))

**11. Pressure Relieving Safety Devices for Pumps and Compressors** *Do the records (e.g., P&IDs) indicate a pressure safety device on the discharge piping of each pump and compressor discharge line?* (DC.EQUIP.PSV.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 3.2.3;193.2101(b))

**12. Pump Overpressure Protection** *Does the design process require a relief valve (PSV) and/or a vent to prevent over-pressuring the pump case or turbine can during the maximum possible rate of cooldown?* (DC.EQUIP.PUMPOVERPRESS.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.2.4;193.2101(b);193.2017(b);193.2017(c))

**13. Pump Overpressure Protection** *Do the records (e.g., P&IDs, equipment data sheets) indicate a PSV and/or vent on each pump and turbine can?* (DC.EQUIP.PUMPOVERPRESS.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 3.2.4;193.2101(b))

**14. Boiler Design and Fabrication** *Does the design process require the design and fabrication of boilers to be in accordance with the ASME Boiler and Pressure Vessel Code (BPVC), Section I?* (DC.EQUIP.BOILERDES.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.4.2;193.2101(b);193.2017(b);193.2017(c))

**15. Boiler Design and Fabrication** *Do records (e.g., equipment data sheets) indicate that boilers have been designed and fabricated in accordance with ASME BPVC, Section I?* (DC.EQUIP.BOILERDES.R) 193.2401 (193.2101(a);NFPA 59A (2001), Section 3.4.2;193.2101(b))

**16. Pressure Vessel Design and Fabrication** *Does the design process require the design and fabrication of pressure vessels in accordance with the ASME Boiler and Pressure Vessel Code (BPVC), Section VIII, Division I or II?* (DC.EQUIP.PRESSVESSELDES.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.4.2;193.2101(b);193.2017(b);193.2017(c))

**17. Pressure Vessel Design and Fabrication** *Do the records (e.g., equipment data sheets) indicate that pressure vessels have been designed and fabricated in accordance with ASME BPVC, Section VIII, Division 1 or 2?* (DC.EQUIP.PRESSVESSELDES.R) 193.2401 (193.2101(a);NFPA 59A (2001), Section 3.4.2;193.2101(b))

**18. Shell and Tube Heat Exchanger Design and Fab** *For LNG facilities that use shell and tube heat exchangers, does the design process require Tubular Exchanger Manufacturers Association (TEMA) for design and fabrication; and ASME Boiler Pressure Vessel Code Section VIII, Division 1 or Division 2 for pressure testing, inspection, and code stamps?* (DC.EQUIP.SHELLTUBEEXCH.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.4.3;193.2101(b);193.2017(b);193.2017(c))

**19. Shell and Tube Heat Exchanger Design and Fab** *For LNG facilities that use shell and tube vaporizers, do records (e.g., equipment data sheets) indicate the design and fabrication was in accordance with Tubular Exchanger Manufacturers Association (TEMA); and pressure testing, inspection, and stamping were in accordance with ASME Boiler Pressure Vessel Code Section VIII, Division 1 or Division 2?* (DC.EQUIP.SHELLTUBEEXCH.R) 193.2401 (193.2101(a);NFPA 59A (2001), Section 3.4.2;193.2101(a))

**20. Engines and Gas Turbines** *Where the LNG facility includes internal combustion engines or gas turbines not exceeding 7,500 horsepower per unit, does the design process require these to conform to NFPA 37?*

(DC.EQUIP.ENGINESTURBINES.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.4.4;NFPA 37;193.2101(b);193.2101(b);193.2101(c))

**21. Engines and Gas Turbines** *Where the LNG facility includes internal combustion engines or gas turbines not exceeding 7,500 horsepower per unit, do records (e.g., equipment data sheets) indicate they conform to NFPA 37?*

(DC.EQUIP.ENGINESTURBINES.R) 193.2401 (193.2101(a);NFPA 59A (2001), Section 3.4.4;NFPA 37;193.2101(b))

**22. Boil-Off and Flash Gas Handling System** *Does the design process require the installation of a boil-off and flash gas handling system?* (DC.EQUIP.BOG.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section

3.4.5;193.2101(b);193.2017(b);193.2017(c))

**23. Boil-Off and Flash Gas Handling System** *Do records (P&IDs; process flow diagrams) indicate a vapor handling system for boil-off gas and flash gas was required/installed in accordance with the specifications?* (DC.EQUIP.BOG.R) 193.2401

(193.2101(a);NFPA 59A (2001), Section 3.4.5;193.2101(b))

**24. Vacuum Conditions Design** *Does the design process require piping and equipment to be designed to withstand the vacuum conditions or identify the provisions to prevent vacuum conditions?* (DC.EQUIP.VACUUMDES.P) 193.2401

(193.2017(a);193.2101(a);NFPA 59A (2001), Section 3.4.6;193.2017(b);193.2017(c);193.2101(b))

**25. Vacuum Conditions Design** *Do records (P&IDs) indicate provisions for protecting piping and equipment from vacuum conditions were designed and installed where needed?* (DC.EQUIP.VACUUMDES.R) 193.2401 (193.2101(a);NFPA 59A

(2001), Section 3.4.6;193.2101(b))

**26. Refrigerant Storage Tank Gauging Device** *Does the process require each refrigerant or flammable process fluid storage tank to be equipped with a liquid level gauging device and a high liquid-level flow cutoff device?*

(DC.EQUIP.REFRIGLEVEL.P) 193.2301 (193.2017(a);NFPA 59A (2001), Sections 7.1.2;193.2017(b);193.2017(c))

**27. Refrigerant Storage Tank Gauging Device** *Do records (e.g., P&IDs) indicate each refrigerant or flammable process fluid storage tank is equipped with a liquid level gauging device and a high liquid-level flow cutoff device?*

(DC.EQUIP.REFRIGLEVEL.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 7.1.2;193.2101(b))

**28. Vacuum Gauges on Vacuum-Jacketed Equipment** *Does the design process require the installation of vacuum gauges on each vacuum jacketed equipment?* (DC.EQUIP.VACGAUGES.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 7.3;193.2017(b);193.2017(c))

**29. Vacuum Gauges on Vacuum-Jacketed Equipment** *Do records (e.g., P&IDs) indicate that the vacuum jacketed equipment was constructed with vacuum gauges?* (DC.EQUIP.VACGAUGES.R) 193.2301 (193.2303;NFPA 59A (2001), Section 7.3)

**30. Vacuum Gauges on Vacuum-Jacketed Equipment** *Do field observations verify vacuum gauges were installed on vacuum-jacketed equipment in accordance with design specifications?* (DC.EQUIP.VACGAUGES.O) 193.2301 (193.2303;NFPA 59A (2001), Section 7.3)

**31. Electrical Equipment and Wiring** *Does the design process for electrical equipment and wiring meet the requirements of NFPA 59A (2001), Section 7.6 and NFPA 70 for hazardous locations?* (DC.EQUIP.ELECEQUIP.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 7.6;NFPA 70 (National Electric Code);193.2017(b);193.2017(c))

**32. Electrical Equipment and Wiring** *Do records indicate that electrical equipment was installed in accordance with design specifications?* (DC.EQUIP.ELECEQUIP.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 7.6;NFPA 70 (National Electric Code);193.2101(b))

**33. Electrical Equipment and Wiring** *Do field observations verify electrical equipment was installed in accordance with design specifications and drawings?* (DC.EQUIP.ELECEQUIP.O) 193.2301 (193.2303;NFPA 59A (2001), Section 7.6;NFPA 70 (National Electric Code))

**34. Electrical Equipment and Tanks Grounding and Bonding** *Does the design process for facility electrical grounding and bonding meet the requirements of NFPA 59A (2001), Section 7.7?* (DC.TD.GROUNDING.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 7.7;193.2017(b);193.2017(c))

**35. Electrical Equipment and Tanks Grounding and Bonding** *Do records indicate facility electrical grounding and bonding meets the requirements of NFPA 59A (2001), Section 7.7?* (DC.TD.GROUNDING.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 7.7;193.2101(b))

**36. Electrical Equipment and Tanks Grounding and Bonding** *Do field observations confirm facility electrical grounding and bonding was installed in accordance with the design specifications?* (DC.TD.GROUNDING.O) 193.2301 (193.2303;193.2401;NFPA 59A (2001), Section 7.7)

**37. Control Center Required Capabilities** *Does the design of the control center meet the requirements of 193.2441?* (DC.EQUIP.CONTRLCNTR.P) 193.2441(a) (193.2017(a);193.2017(b);193.2017(c);193.2441(b);193.2441(c);193.2441(d);193.2441(e))

**38. Control Center Required Capabilities** *Do records indicate that the control center was designed and constructed in accordance with the requirements of 193.2441?* (DC.EQUIP.CONTRLCNTR.R) 193.2441(a) (193.2101(a);193.2101(b);193.2441(b);193.2441(c);193.2441(d);193.2441(e))

**39. Control Center Required Capabilities** *Do field observations verify the control center was designed and installed in accordance with the requirements of 193.2441?* (DC.EQUIP.CONTRLCNTR.O) 193.2441(a) (193.2301;193.2303;193.2441(b);193.2441(c);193.2441(d);193.2441(e))

**40. Communication Systems** *Does the design process require communication systems to meet the requirements of 193.2519?* (DC.EQUIP.COMMSYS.P) 193.2519(a) (193.2017(a);193.2017(b);193.2017(c);193.2519(b);193.2519(c))

**41. Communication Systems** *Do records indicate that the communication systems were designed and constructed in accordance with the requirements of 193.2519?* (DC.EQUIP.COMMSYS.R) 193.2519(a) (193.2101(a);193.2301;193.2101(b);193.2519(b);193.2519(c))

**42. Communication Systems** *Do field observations verify the communication systems were designed and installed in accordance with 193.2519?* (DC.EQUIP.COMMSYS.O) 193.2519(a) (193.2303;193.2519(b);193.2519(c))

**43. Two Sources of Power** *Does the design of the facility power sources meet the requirements of 193.2445?* (DC.EQUIP.POWER.P) 193.2445(a) (193.2017(a);193.2017(b);193.2017(c);193.2445(b))

**44. Two Sources of Power** *Do records (e.g., electrical controls schematics) indicate that the power sources meet the requirements of 193.2445?* (DC.EQUIP.POWER.R) 193.2445(a) (193.2101(a);193.2301;193.2017(b);193.2445(b))

**45. Two Sources of Power** *Do field observations verify the two sources of power were installed on electrical controls and communications systems, emergency lighting, and firefighting systems such that so that failure of one source does not affect the capability of the other source?* (DC.EQUIP.POWER.O) 193.2445(a) (193.2303;193.2445(b))

**46. Part 193 Materials Records for Equipment** *Does the process require records of all materials for equipment, components, buildings, foundations, and support systems be maintained for the life of the item?* (DC.EQUIP.MATERIALRECORDS.P) 193.2119 (193.2017(a);193.2017(b);193.2017(c))

**47. Part 193 Materials Records for Equipment** *Have records of all materials for equipment, components, buildings, foundations, and support systems been kept to verify that materials properties have met the requirements of Part 193, and are the records being maintained for the life of the item concerned?* (DC.EQUIP.MATERIALRECORDS.R) 193.2119 (193.2101(a);193.2101(b))

**48. Receipt and Inspection of Equipment** *Do field observations verify that operator performed the receiving inspections of equipment and related components according to the quality control procedures?* (DC.EQUIP.RECEIVABLES.O) 193.2301 (193.2303)

**49. PID Walkdown** *Do field observations verify that equipment, piping, valves, and instrumentation were installed according to the Issued For Construction (IFC) piping and piping & instrumentation diagrams (P&IDs)?* (DC.EQUIP.PIDWALKDOWN.O) 193.2301 (193.2303)

**50. Protection against Falling Ice** *Does the design process require measures to protect personnel and equipment from falling ice or snow that has accumulated on high structures, where such conditions exist?* (DC.EQUIP.ICEFALL.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.6;193.2101(b);193.2017(b);193.2017(c))

**51. Protection against Falling Ice** *Do records (e.g., design drawings) indicate mitigation measures are in place to protect personnel and equipment from falling ice or snow that has accumulated on high structures?* (DC.EQUIP.ICEFALL.R) 193.2401 (193.2101(a);NFPA 59A (2001), Section 2.6;193.2101(b))

**52. Protection against Falling Ice** *Do field observations verify measures were taken to protect personnel and equipment from falling ice or snow and are constructed according to the design?* (DC.EQUIP.ICEFALL.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.6)

**53. Construction Acceptance** *Does the commissioning process require completion of all inspections and tests required by Part 193 and NFPA 59A (2001) prior to placing the LNG facility in service?* (DC.EQUIP.CONSTRACCEP.T) 193.2303 (193.2017(a);193.2017(b);193.2017(c))

**54. Construction Acceptance** *Do records demonstrate satisfactory completion of all required tests prior to commencement of service?* (DC.EQUIP.CONSTRACCEP.T) 193.2303 (193.2301)

**55. Construction Acceptance** *Do field observations verify pre-commissioning and commissioning inspections and tests were performed according to test procedures?* (DC.EQUIP.CONSTRACCEP.O) 193.2303 (193.2301)

## Design and Construction - Piping Systems

**1. Equipment and Piping Components MAWP** *Does the design process specify the maximum allowable working pressure (MAWP) for all equipment, components, and piping?* (DC.EQUIP.MAWP.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.1.3;193.2017(b);193.2017(c);193.2101(b))

**2. Equipment and Piping Components MAWP** *Do records (e.g., P&IDs and equipment data sheets) specify the maximum allowable working pressure (MAWP) for all equipment, components, and piping?* (DC.EQUIP.MAWP.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.1.3;193.2101(b))

**3. Equipment and Piping Components MAWP** *Do field observations verify the design parameters/limits (e.g., MAWP, maximum/minimum temperature) on the name plates attached to storage tanks, equipment, vessels, piping, and other components are consistent with the design or data sheets?* (DC.EQUIP.MAWP.O) 193.2301 (193.2303;NFPA 59A (2001), Section 2.1.3;)

**4. Piping Systems and Components Design** *Does the piping design process require all piping systems to be in accordance with ASME B31.3?* (DC.PIPING.DESIGN.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.1.1;ASME B31.3;193.2101(b);193.2017(b);193.2017(c))

**5. Piping Systems and Components Design** *Do records indicate process piping is designed, fabricated, and tested in accordance NFPA 59A (2001), Section 6.1.1 and ASME B31.3?* (DC.PIPING.DESIGN.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.1.1;ASME B31.3;193.2101(b))

**6. Piping System Seismic Design** *Does the design process include NFPA 59A (2001), Section 6.1.2 for the seismic ground motion used in the piping design?* (DC.PIPING.SEISMIC.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.1.2;193.2101(b);193.2017(b);193.2017(c))

**7. Piping System Seismic Design** *Do records indicate that seismic ground motion analysis was conducted for piping design IAW NFPA 59A (2001), Section 6.1.2?* (DC.PIPING.SEISMIC.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.1.2;193.2017(b))

**8. Piping System Fatigue Design** *Does the piping design process address the effects of thermal cycling fatigue on piping systems and components in accordance with NFPA 59A (2001), Section 6.1.3?* (DC.PIPING.FATIGUE.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.1.3;193.2101(b);193.2017(b);193.2017(c))

**9. Piping System Fatigue Design** *Do records indicate process piping systems and components are designed to accommodate the effects of thermal cycling fatigue?* (DC.PIPING.FATIGUE.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.1.3;193.2101(b))

**10. Piping System Design for Expansion and Contraction** *Does the piping design process require ASME B31.3 Section 319 for expansion and contraction design of piping?* (DC.PIPING.CONTRACTION.P) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.1.4;ASME B 31.3;193.2101(b))

**11. Piping System Design for Expansion and Contraction** *Do records indicate process piping was designed to accommodate the effects of expansion and contraction in accordance with ASME B 31.3, Section 319?* (DC.PIPING.CONTRACTION.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.1.4;ASME B 31.3;193.2101(b))

**12. Piping System Materials for Temperature Range** *Does the piping design process require ASME B31.3 for determining temperature limitations of pipe materials?* (DC.PIPING.MATERIALTEMP.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.2.1.1;ASME B31.3;193.2101(b);193.2017(b);193.2017(c))

**13. Piping System Materials for Temperature Range** *Do records (e.g., piping specifications) indicate the temperature limit of process piping?* (DC.PIPING.MATERIALTEMP.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.2.1.1;ASME B31.3;193.2101(b))

**14. Piping System Design for Cryogenic Exposure** *Does piping design process meet the cryogenic requirements of NFPA 59A (2001), Section 6.2.1.2, for piping that can be exposed to the cold of a cryogenic liquid release or the heat of an ignited spill?* (DC.PIPING.MATERIALCRYO.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.2.1.2;193.2101(b);193.2017(b);193.2017(c))

**15. Piping System Design for Cryogenic Exposure** *Do records (e.g., piping specifications) indicate piping that can be exposed to the cold of cryogenic liquid release or heat from a fire meets the requirements of NFPA 59A (2001), Section 6.2.1.2?* (DC.PIPING.MATERIALCRYO.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.2.1.2;193.2101(b))

**16. Piping Insulation Requirements** *Does the design process require piping insulation used in areas where the mitigation of fire exposure is necessary to be made of material(s) that cannot propagate fire in the installed condition and maintain any properties that are necessary during an emergency when exposed to fire, heat, cold, or water, as applicable?* (DC.PIPING.INSULATION.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 6.2.1.3;193.2017(b);193.2017(c))

**17. Piping Insulation Requirements** *Do records indicate that piping insulation was installed in accordance with the specifications?* (DC.PIPING.INSULATION.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 6.2.1.3;193.2101(b))

**18. Piping Insulation Requirements** *Do field observations confirm that piping insulation was installed in accordance with the specifications?* (DC.PIPING.INSULATION.O) 193.2301 (193.2303;NFPA 59A (2001), Section 6.2.1.3)

**19. Piping Fittings** *Does the piping design process require all piping related fittings to meet the requirements of NFPA 59A (2001), Section 6.2.3?* (DC.PIPING.FITTINGS.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.2.3;193.2101(b);193.2017(b);193.2017(c))

**20. Piping Fittings** *Do records (e.g., piping design specifications and drawings) indicate all piping related fittings meet the requirements of NFPA 59A (2001), Section 6.2.3?* (DC.PIPING.FITTINGS.R) 193.2101(a) (193.2301;193.2303;NFPA 59A (2001), Section 6.2.3;193.2101(b))

**21. Bolted Connections** *Does the design process for bolted connections include procedures to ensure the tightness of bolted connections and, where required, include provisions to compensate for contraction and expansion of the bolted connections?* (DC.PIPING.BOLTEDCONNECT.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 6.3.1;193.2101(b);193.2017(b);193.2017(c))

**22. Bolted Connections** *Do records indicate bolted connections were installed according to the procedures to ensure tightness and, where required, included provisions to compensate for contraction and expansion of the bolted connections?* (DC.PIPING.BOLTEDCONNECT.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.3.1;193.2101(b))

**23. Piping Joints** *Does the design process for piping joints include the design requirements from NFPA 59A (2001), Section 6.3.2?* (DC.PIPING.JOINTS.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.3.2;193.2101(b);193.2017(b);193.2017(c))

**24. Piping Joints** *Do records (e.g., design specifications) for piping joints include the design requirements from NFPA 59A (2001), Section 6.3.2?* (DC.PIPING.JOINTS.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.3.2;193.2101(b))

**25. Valves** *Does design process require valves to be in compliance with ASME B31.3, Section 307, and either ASME B31.5 or ASME B31.8; or API 6D?* (DC.PIPING.VALVES.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.2.4;ASME B31.3;ASME B31.5;ASME B31.8;API 6D;193.2101(b);193.2017(b);193.2017(c))

**26. Valves** *Do records (e.g., valve specifications) indicate valves are in compliance with ASME B31.3, Section 307, and either ASME B31.5 or ASME B31.8; or API 6D?* (DC.PIPING.VALVES.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.2.4;ASME B31.3;ASME B31.5;ASME B31.8;API 6D;193.2101(b))

**27. Valve Packing Seals** *Does the design process require packing seals for extended bonnet valves?* (DC.PIPING.VLVPACKSEAL.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 6.3.3.1;193.2101(b);193.2017(b);193.2017(c))

**28. Valve Packing Seals** *Do records (e.g., valve specifications) indicate packing seals are used for extended bonnet valves?* (DC.PIPING.VLVPACKSEAL.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.3.3.1;193.2101(b))

**29. Shutoff Valves** *Does the design process (e.g., piping specifications and drawings, P&IDs) require shutoff valves on piping connecting to storage containers, tanks, and vessels?* (DC.PIPING.SHUTOFFVALVE.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.3.3.2;193.2101(b);193.2101(b);193.2101(c))

**30. Shutoff Valves** *Do records (e.g., P&IDs) indicate shutoff valves are provided for storage container, tank, and vessel connections?* (DC.PIPING.SHUTOFFVALVE.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.3.3.2;193.2101(b))

**31. Valve Operation During Icing Conditions** *Does the design process require valves and valve controls to be designed to allow operation under icing conditions, where such conditions may exist?* (DC.PIPING.VALVEFREEZE.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 6.3.3.5;193.2101(b);193.2017(b);193.2017(c))

**32. Piping Thermal Expansion Relief Valves** *Does the design process require thermal expansion relief valves to meet the requirements of NFPA 59A (2001), Section 6.8.2?* (DC.PIPING.THERMRELIEF.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.8.2;193.2101(b);193.2017(b);193.2017(c))

**33. Piping Thermal Expansion Relief Valves** *Do records (e.g., P&IDs, piping specifications) indicate thermal expansion relief valves were designed and installed in accordance with the requirements of NFPA 59A (2001), Section 6.8.2?* (DC.PIPING.THERMRELIEF.R) 193.2101(a) (193.2301;NFPA 59A (2001), Sections 6.8.2;193.2101(b))

**34. ESD Valves Powered Operation** *Does design process require emergency shutoff valves to have powered operators where required?* (DC.PIPING.ESDVALVES.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.3.3.6;193.2101(b);193.2017(b);193.2017(c))

**35. Pressure Relieving Safety Devices** *Does the design process require arrangement of the pressure-relieving safety devices to minimize the possibility of damage to piping or appurtenances?* (DC.PIPING.PSV.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.8.1;193.2101(b);193.2017(b);193.2017(c))

**36. Pipe Marking** *Does the design process require markings on piping in accordance with NFPA 59A (2001) Section 6.3.5?* (DC.PIPING.MARKING.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.3.5;193.2101(b);193.2017(b);193.2017(c))

**37. Pipe Marking** *Do records (e.g., construction specs or drawings, as-builts) demonstrate that pipe markings meet the requirements of NFPA 59A (2001) Section 6.3.5?* (DC.PIPING.MARKING.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 6.3.5;193.2101(b))

**38. Pipe Marking** *Do field observations confirm that pipe markings meet the requirements of NFPA 59A (2001) Section 6.3.5?* (DC.PIPING.MARKING.O) 193.2301 (193.2303;NFPA 59A (2001), Section 6.3.5)

**39. Pipe Supports** *Does the piping design process require protection of pipe supports against fire exposure or cold liquid, or both?* (DC.PIPING.SUPPORT.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.4.1;193.2101(b);193.2017(b);193.2017(c))

**40. Pipe Supports** *Do field observations confirm that protection for piping supports has been installed according to design?* (DC.PIPING.SUPPORT.O) 193.2301 (193.2303;NFPA 59A (2001), Section 6.4.1)

**41. Piping Identification** *Does the piping design process require process piping to be identified by color coding, painting, or labeling?* (DC.PIPING.IDLABEL.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.5;193.2101(b);193.2017(b);193.2017(c))

**42. Piping Identification** *Do field observations confirm that process piping is identified by color-coding, painting, or labeling?* (DC.PIPING.IDLABEL.O) 193.2301 (193.2303;NFPA 59A (2001), Section 6.5)

**43. Piping Pressure Testing** *Does the piping design process specify ASME B31.3, Section 345, for pressure tests?* (DC.PIPING.PRESSTEST.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 6.6.1;ASME B31.3, Section 345;193.2101(b);193.2017(b);193.2017(c))

**44. Piping Pressure Testing** *Do records indicate the pressure test records for process piping demonstrate compliance with NFPA 59A (2001), Section 6.6.2, and ASME B31.3, Section 345?* (DC.PIPING.PRESSTEST.R) 193.2101(a) (193.2301;NFPA 59A (2001), Sections 6.6.2;ASME B31.3, Section 345;193.2101(b))

**45. Purging of Piping Systems** *Does the process require purging of piping systems?* (DC.PIPING.PURGING.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 6.7;193.2017(b);193.2017(c))

**46. Purging of Piping Systems** *Do records indicate that piping systems were purged in accordance with the specifications?* (DC.PIPING.PURGING.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 6.7;193.2101(b))

**47. Purging of Piping Systems** *Do field observations verify that piping purging was conducted in accordance with the specifications?* (DC.PIPING.PURGING.O) 193.2301 (193.2303;NFPA 59A (2001), Section 6.7)

**48. Part 193 Materials Records for Piping** *Does the process require records of all materials for piping and support systems be maintained for the life of the item?* (DC.PIPING.MATERIALRECORDS.P) 193.2119 (193.2017(a);193.2017(b);193.2017(c))

**49. Part 193 Materials Records for Piping** *Have records of all materials for piping and support systems been kept to verify that materials properties have met the requirements of Part 193, and are the records being maintained for the life of the item concerned?* (DC.PIPING.MATERIALRECORDS.R) 193.2119 (193.2101(a);193.2101(b))

**50. Receipt and Inspection of Piping** *Do field observations verify that operator performed the receiving inspections of piping according to the quality control procedures?* (DC.PIPING.RECEIVABLES.O) 193.2301 (193.2303;NFPA 59A (2001), Section 6.1.1)

**51. PID Walkdown** *Do field observations verify that equipment, piping, valves, and instrumentation were installed according to the Issued For Construction (IFC) piping and piping & instrumentation diagrams (P&IDs)?* (DC.EQUIP.PIDWALKDOWN.O) 193.2301 (193.2303)

## Design and Construction - Welding

**1. Welder Qualification** *Does the process require each welder to be qualified in accordance with ASME B31.3, Section 328.2 - Process Piping, and the ASME Boiler and Pressure Vessel Code, Section IX?* (DC.WELDING.WELDERQUAL.P) 193.2301 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 6.3.4;ASME B31.3, Section 328;ASME Boiler and Pressure Vessel Code, Section IX;193.2101(b);193.2017(b);193.2017(c))

**2. Welder Qualification** *Do records indicate each welder was qualified in accordance with ASME B31.3, Section 328.2 - Process Piping, and the ASME Boiler and Pressure Vessel Code, Section IX?* (DC.WELDING.WELDERQUAL.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 6.3.4;ASME B31.3, Section 328;ASME Boiler and Pressure Vessel Code, Section IX;193.2101(b))

**3. Welder Qualification** *Do field observations verify welders are performing welds according to the established procedures?* (DC.WELDING.WELDERQUAL.O) 193.2301 (193.2303;NFPA 59A (2001), Section 6.3.4;ASME B31.3, Section 328;ASME Boiler and Pressure Vessel Code, Section IX)

**4. Welding Procedures** *Does the process require each welding procedure to be qualified in accordance with ASME B31.3, Section 328.2 - Process Piping, and the ASME Boiler and Pressure Vessel Code, Section IX?* (DC.WELDING.WELDPROCEDURE.P) 193.2301 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 6.3.4;ASME B31.3, Section 328;ASME Boiler and Pressure Vessel Code, Section IX;193.2101(b);193.2017(b);193.2017(c))

**5. Welding Procedures** *Do records indicate that each welding procedure was qualified in accordance with ASME B31.3, Section 328.2 - Process Piping, and the ASME Boiler and Pressure Vessel Code, Section IX?* (DC.WELDING.WELDPROCEDURE.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 6.3.4;ASME B31.3, Section 328.2 - Process Piping;ASME Boiler and Pressure Vessel Code, Section IX;193.2101(b))

**6. Welding Procedures** *Do field observations verify welding procedures are being qualified according to welding specifications?* (DC.WELDING.WELDPROCEDURE.O) 193.2301 (193.2303;NFPA 59A (2001), Sections 6.3.4;ASME B31.3, Section 328.2 - Process Piping;ASME Boiler and Pressure Vessel Code, Section IX)

**7. Inspection and Testing of Welded Pipe** *Does the process require pipe welds to be non-destructively tested in accordance with NFPA 59A (2001), Sections 6.6.3 and 6.6.4?* (DC.WELDING.WELDPIPEINSPTEST.P) 193.2301 (193.2017(a);193.2101(a);NFPA 59A (2001), Sections 6.6.3, and 6.6.4;ASME B31.3, Process Piping, Sections 328, 340, and 344;193.2101(b);193.2017(b);193.2017(c))

**8. Inspection and Testing of Welded Pipe** *Do records indicate that the pipe welds inspection and testing requirements of NFPA 59A (2001), Sections 6.6.3 and 6.6.4, were met?* (DC.WELDING.WELDPIPEINSPTEST.R) 193.2301 (193.2101(a);193.2303;NFPA 59A (2001), Sections 6.6.3 and 6.6.4;193.2101(b))

**9. Inspection and Testing of Welded Pipe** *Do field observations verify welded pipe inspections and tests were performed in accordance with the non-destructive test procedures?* (DC.WELDING.WELDPIPEINSPTEST.O) 193.2303 (193.2101(a);193.2301;NFPA 59A (2001), Sections 6.6.3 and 6.6.4;ASME B31.3, Process Piping, Section 328, 340, and 344;193.2101(b))

**10. Welding Requirements** *Does the process state the requirements for conducting welding?* (DC.WELDING.WELDREQUIREMENTS.P) 193.2301 (193.2017(a);193.2101(a);193.2303;NFPA 59A (2001), Section 6.3.4;ASME B31.3, Section 328 - Process Piping;ASME Boiler and Pressure Vessel Code, Section IX;193.2101(b);193.2017(b);193.2017(c))

**11. Welding Requirements** *Do records indicate that welding requirements were adhered to during welding operations?* (DC.WELDING.WELDREQUIREMENTS.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 6.3.4;ASME B31.3, Process Piping, subparagraph 328;ASME Boiler and Pressure Vessel Code, Section IX;193.2101(b))

**12. Welding Requirements** *Do field observations verify welders are complying with all welding requirements to ensure weld quality?* (DC.WELDING.WELDREQUIREMENTS.O) 193.2301 (193.2303;NFPA 59A (2001), Section 6.3.4;ASME B31.3, Process Piping, subparagraph 328;ASME Boiler and Pressure Vessel Code, Section IX)

**13. Welding and Material Records** *Does the process require maintaining welding procedures, welding records, materials records, and certifications related to non-destructive examinations for the life of the piping system?* (DC.WELDING.WELDRECORDS.P) 193.2301 (193.2017(a);193.2101(a);193.2303;NFPA 59A (2001), Section 6.6.5;ASME B31.3, Process Piping, subparagraphs 341.4.1(c) and 341.4.3(d);ASME B31.3, Process Piping, Section 346;193.2101(b);193.2017(b);193.2017(c))

**14. Welding and Material Records** *Are welding procedures, welding records and materials, and certifications records related to non-destructive examinations being maintained?* (DC.WELDING.WELDRECORDS.R) 193.2301 (193.2101(a);193.2303;NFPA 59A (2001), Section 6.6.5;ASME B31.3, Process Piping, subparagraphs 341.4.1(c) and 341.4.3(d);ASME B31.3, Process Piping, Section 346;193.2101(b))

## Design and Construction - Transfer Systems

**1. Transfer Piping System Design** *Does the process require the transfer piping systems for LNG and other hazardous fluids to include the elements specified in NFPA 59A (2001), Section 8.2?* (DC.TRANSFER.PIPINGDES.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Sections 8.2.1, 8.2.2, 8.2.3;193.2101(b);193.2017(b);193.2017(c))

**2. Transfer Piping System Design** *Do records indicate the installation of LNG and other hazardous liquids transfer systems were in accordance with the pre-construction analysis, addressing isolation, cooldown and backflow prevention?* (DC.TRANSFER.PIPINGDES.R) 193.2101(a) (193.2301;NFPA 59A (2001), Sections 8.2.1, 8.2.2, 8.2.3;193.2101(b))

**3. Transfer Piping System Design** *Do field observations verify the LNG and refrigerant transfer piping was installed in accordance with the design drawings?* (DC.TRANSFER.PIPINGDES.O) 193.2301 (193.2303;NFPA 59A (2001), Sections 8.2.1, 8.2.2, 8.2.3)

**4. Transfer Loading and Unloading Facilities** *Does the design process require locating of, and physical protection for, transfer piping, pumps, and compressors from fire and vehicular traffic?* (DC.TRANSFER.LOADFACIL.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Sections 8.5.2, 8.5.3, 8.5.4;193.2101(b);193.2017(b);193.2017(c))

**5. Transfer Loading and Unloading Facilities** *Do records indicate the location and construction of the transfer loading and unloading facilities were designed to prevent vehicle or rail collisions and protection from fire?* (DC.TRANSFER.LOADFACIL.R) 193.2101(a) (193.2301;NFPA 59A (2001), Sections 8.5.2, 8.5.3, 8.5.4;193.2101(a))

**6. Transfer Loading and Unloading Facilities** *Do field observations verify transfer loading and unloading facilities appear to be located and installed with safeguards from fire and vehicle movements?* (DC.TRANSFER.LOADFACIL.O) 193.2301 (193.2303;NFPA 59A (2001), Sections 8.5.2, 8.5.3, 8.5.4)

**7. Transfer Pump and Compressor Controls** *Does the process require transfer pump and compressor controls to provide for remote shutdown in case of an emergency and signal lights to display on/off status?* (DC.TRANSFER.PUMPCOMPCONTR.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 8.3;193.2101(b);193.2017(b);193.2017(c))

**8. Transfer Pump and Compressor Controls** *Do records indicate that transfer pump and compressor controls were constructed in accordance with the design process?* (DC.TRANSFER.PUMPCOMPCONTR.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 8.3;193.2101(b))

**9. Transfer Pump and Compressor Controls** *Do field observations verify transfer pump and compressor controls were installed with adequate shutdown devices and on/off signal lights, per the design drawings?* (DC.TRANSFER.PUMPCOMPCONTR.O) 193.2301 (193.2303;NFPA 59A (2001), Section 8.3)

**10. Bleed and Drain Connections at Loading-Unloading Manifold** *Does the design process require isolation valves and bleed connections at the loading or unloading manifold so that hoses and arms can be blocked off, drained of liquid, and depressurized before disconnecting?* (DC.TRANSFER.BLEEDDRAIN.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 8.5.5;193.2101(a);193.2017(b);193.2017(c))

**11. Bleed and Drain Connections at Loading-Unloading Manifold** *Do the records (e.g., P&IDs) indicate isolation valves and bleed connections are included at the loading or unloading manifold so that hoses and arms can be blocked off, drained of liquid, and depressurized before disconnecting?* (DC.TRANSFER.BLEEDDRAIN.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 8.5.5;193.2101(b))

**12. Bleed and Drain Connections at Loading-Unloading Manifold** *Do field observations verify isolation valves and bleed connections were installed at the loading or unloading manifold so that hoses and arms can be blocked off, drained of liquid, and depressurized before disconnecting?* (DC.TRANSFER.BLEEDDRAIN.O) 193.2301 (193.2303;NFPA 59A (2001), Section 8.5.5)

**13. Emergency Valve and Check Valve at Loading-Unloading Manifold** *Does the design process (e.g., P&IDs) require installation of an emergency valve in each liquid and vapor line?* (DC.TRANSFER.EMERGVALVE.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 8.5.6;193.2101(b);193.2017(b);193.2017(c);NFPA 59A (2001), Section 8.5.7)

**14. Emergency Valve and Check Valve at Loading-Unloading Manifold** *Do records (e.g., design drawings, P&IDs) indicate the installation of an emergency valve in each liquid and vapor line?* (DC.TRANSFER.EMERGVALVE.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 8.5.6;NFPA 59A (2001), Section 8.5.7;193.2101(b))

**15. Emergency Valve and Check Valve at Loading-Unloading Manifold** *Do field observations verify the installation of an emergency valve in each liquid and vapor line in accordance with the design process?* (DC.TRANSFER.EMERGVALVE.O) 193.2301 (193.2303;NFPA 59A (2001), Section 8.5.6;NFPA 59A (2001), Section 8.5.7;)

**16. Transfer Shipping and Receiving by Pipeline** *Does the design process for pipeline shipping and receiving facilities include the elements required in NFPA 59A (2001), Section 8.6.1, 8.6.2, and 8.6.5?* (DC.TRANSFER.BYPIPELINE.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 8.6.1;NFPA 59A (2001), Section 8.6.2;NFPA 59A (2001), Section 8.6.5;193.2101(b);193.2017(b);193.2017(c))

**17. Transfer Shipping and Receiving by Pipeline** *Do records (e.g., P&IDs, design drawings, and pre-commissioning requirements) for pipeline shipping and receiving facilities include the elements required in NFPA 59A (2001), Sections 8.6.1, 8.6.2, and 8.6.5?* (DC.TRANSFER.BYPIPELINE.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 8.6.1;NFPA 59A (2001), Section 8.6.2;NFPA 59A (2001), Section 8.6.5;193.2101(b))

**18. Transfer Shipping and Receiving by Pipeline** *Do field observations of pipeline shipping and receiving facilities verify the elements required in NFPA 59A (2001), Sections 8.6.1, 8.6.2, and 8.6.5 were installed?* (DC.TRANSFER.BYPIPELINE.O) 193.2301 (193.2303;NFPA 59A (2001), Section 8.6.1;NFPA 59A (2001), Section 8.6.2;NFPA 59A (2001), Section 8.6.5)

**19. Transfer Loading and Unloading Hose and Arms** *Does the design process require hoses and arms used for transfer to be designed for the temperature and pressure conditions expected, and to meet other requirements, in accordance with NFPA 59A (2001), Section 8.7?* (DC.TRANSFER.HOSESARMS.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 8.7;193.2101(b);193.2017(b);193.2017(c))

**20. Transfer Loading and Unloading Hose and Arms** *Do records (e.g., design specs) indicate hoses and arms used for transfer were designed for the temperature and pressure conditions expected, and met other requirements, in accordance with NFPA 59A (2001), Section 8.7?* (DC.TRANSFER.HOSESARMS.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 8.7;193.2101(b))

**21. Transfer Loading and Unloading Hose Arms** *Do field observations verify hoses and arms used for transfer were designed for the temperature and pressure conditions expected, and met other requirements, in accordance with the design process?* (DC.TRANSFER.HOSESARMS.O) 193.2301 (193.2303;NFPA 59A (2001), Section 8.7)

**22. Transfer Facilities Communications** *Does the design process for the transfer facility's communications system provide for communications contact between the transfer station personnel and other remotely located personnel associated with the loading or unloading operations?* (DC.TRANSFER.COMMS.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 8.8.1;193.2101(b);193.2017(b);193.2017(c))

**23. Transfer Facilities Communications** *Do records indicate that the transfer facility's communications were constructed or installed to ensure that the personnel at loading and unloading stations can be in communications contact with remotely located personnel who are associated with the transfer operations?* (DC.TRANSFER.COMMS.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 8.8.1;193.2101(b))

**24. Transfer Facilities Communications** *Do field observations verify the transfer facility's communications system was installed and operational in accordance with design specifications?* (DC.TRANSFER.COMMS.O) 193.2301 (193.2303;NFPA 59A (2001), Section 8.8.1)

**25. Transfer Facilities Lighting** *If the LNG facility will be transferring LNG at night, does the design process require facility lighting?* (DC.TRANSFER.LIGHTING.P) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 8.8.2;193.2101(b);193.2017(b);193.2017(c))

**26. Transfer Facilities Lighting** *Do records indicate the transfer facilities' lighting was designed and constructed in accordance with the design specifications?* (DC.TRANSFER.LIGHTING.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 8.8.2;193.2101(b))

**27. Transfer Facilities Lighting** *Do field observations verify the transfer facilities' lighting was installed in accordance with the design specifications?* (DC.TRANSFER.LIGHTING.O) 193.2301 (193.2303;NFPA 59A (2001), Section 8.8.2)

## Design and Construction - Fire Protection

**1. Fire Protection Evaluation** *Does the design process require a Fire Protection Evaluation be performed as required of NFPA 59A (2001), Section 9.1.2?* (FS.FG.FIREPROTEVAL.P) 193.2801 (193.2017(a);NFPA 59A (2001), Section 9.1.2;NFPA 600;NFPA 72;NFPA 1221;193.2017(b);193.2017(c))

**2. Fire Protection Evaluation** *Do records indicate that an adequate fire protection evaluation has been conducted as required by NFPA 59A, Section 9.1.2?* (FS.FG.FIREPROTEVAL.R) 193.2801 (NFPA 59A, Section 9.1.2;NFPA 600;NFPA 72;NFPA 1221)

**3. ESD - Source Shutdown / Isolation** *Does the design process require the ESD system to satisfy the source shutdown or isolation requirements in NFPA 59A (2001), Section 9.2?* (FS.FG.ESDSOURCE.P) 193.2801 (193.2017(a);NFPA 59A (2001), Section 9.2;193.2017(b);193.2017(c))

**4. ESD - Source Shutdown / Isolation** *Do records demonstrate that the emergency shutdown system meets the requirements of NFPA 59A, Section 9.2?* (FS.FG.ESDSOURCE.R) 193.2801 (NFPA 59A, Section 9.2)

**5. ESD - Source Shutdown / Isolation** *Do field observations confirm the emergency shutdown system (ESD) has been installed that meets the requirements of NFPA 59A (2001), Section 9.2, for source shutoff and isolation?* (FS.FG.ESDSOURCE.O) 193.2801 (NFPA 59A, Section 9.2;193.2301;193.2303)

**6. ESD - Instrumentation Design for Failsafe** *Does the design process for emergency shutdown system instrumentation require that the system will proceed to a fail-safe condition in the event of a power or instrument air failure?* (FS.FG.ESDFAILSAFE.P) 193.2801 (193.2101(a);193.2301;NFPA 59A (2001), Sections 9.2.3, 9.2.4, and 9.2.5;NFPA 59A (2001), Section 7.5;193.2101(b))

**7. ESD - Instrumentation Design for Failsafe** *Do records demonstrate that the emergency shutdown system instrumentation will proceed to a fail-safe condition?* (FS.FG.ESDFAILSAFE.R) 193.2801 (193.2101(a);193.2301;NFPA 59A (2001), Section 7.5;NFPA 59A (2001), Section 9.2.3, 9.2.4, and 9.2.5;193.2101(b))

**8. ESD - Instrumentation Design for Failsafe** *Do field observations confirm the Emergency Shutdown System instrumentation was installed in accordance with the design specifications?* (FS.FG.ESDFAILSAFE.O) 193.2801 (193.2301;193.2303;NFPA 59A (2001), Sections 9.2.3, 9.2.4, and 9.2.5;NFPA 59A (2001), Section 7.5)

**9. Flammable Gas, Low Temperature and Fire Detection** *Does the design process require flammable gas detection systems and fire detectors at areas, including enclosed buildings, that have a potential for flammable gas concentrations, LNG, or flammable refrigerant spills/leaks that are determined from the fire protection evaluation?* (FS.FG.FIREDETECT.P) 193.2801 (193.2101(a);193.2301;NFPA 59A (2001), Section 9.3;193.2101(b))

**10. Flammable Gas, Low Temperature and Fire Detection** *Do records indicate that flammable gas and fire detection systems meet the requirements of NFPA 59A (2001), Section 9.3? (FS.FG.FIREDETECT.R) 193.2801 (NFPA 59A, Section 9.3;193.2101(a);193.2301;193.2101(b))*

**11. Flammable Gas, Low Temperature and Fire Detection** *Do field observations confirm that the flammable gas and fire detection systems meet the requirements of NFPA 59A (2001), Section 9.3, by location performance and alarm announcement? (FS.FG.FIREDETECT.O) 193.2801 (NFPA 59A, Section 9.3;193.2303)*

**12. Fire Water Supply and Delivery** *Does the Fire Protection Evaluation include the design of a fire water supply and distribution system for the protection of exposures, for cooling containers, equipment, and piping; and for controlling unignited leaks and spills? (FS.FG.FIREWATERDIST.P) 193.2801 (193.2017(a);NFPA 59A (2001), Section 9.4;193.2017(b);193.2017(c))*

**13. Fire Water Supply and Delivery** *Do records demonstrate that the fire water supply and distribution system meet the requirements of NFPA 59A (2001), Section 9.4? (FS.FG.FIREWATERDIST.R) 193.2801 (NFPA 59A, Section 9.4)*

**14. Fire Water Supply and Delivery** *Do field observations confirm the fire water supply and delivery system meet the requirements of NFPA 59A (2001), Section 9.4? (FS.FG.FIREWATERDIST.O) 193.2801 (NFPA 59A, Section 9.4;193.2303)*

**15. Fire Protection Equipment** *Does the Fire Protection Evaluation include the types of fires and possible magnitude of fires for the determination of staged fire protection equipment? (FS.FG.FIREPROTEQUIP.P) 193.2801 (193.2017(a);NFPA 59A (2001), Section 9.5;NFPA 10;NFPA 1901;193.2017(b);193.2017(c))*

**16. Fire Protection Equipment** *Do records demonstrate the staging of fire protection equipment meets the requirements of NFPA 59A (2001), Section 9.5? (FS.FG.FIREPROTEQUIP.R) 193.2801 (NFPA 59A, Section 9.5;193.2101(a);193.2301;193.2101(b))*

**17. Fire Protection Equipment** *Do field observations confirm the staging of fire protection equipment meets the requirements of NFPA 59A (2001), Section 9.5? (FS.FG.FIREPROTEQUIP.O) 193.2801 (193.2303;NFPA 59A, Section 9.5)*

## Design and Construction - Security and Protective Enclosures

**1. Enclosure Protection and Construction** *Does the design process specify that protective enclosures are to be installed in accordance with 193.2905 requirements?* (FS.FG.PROTECTENCLOSE.P) 193.2905(a)  
(193.2017(a);193.2907(a);193.2017(b);193.2017(c);193.2905(b);193.2905(c);193.2905(d);193.2905(e);193.2907(b))

**2. Enclosure Protection and Construction** *Do records indicate protective enclosures meet the requirements of 193.2905?* (FS.FG.PROTECTENCLOSE.R) 193.2905(a)  
(193.2101(a);193.2301;193.2907(a);193.2101(b);193.2905(b);193.2905(c);193.2905(d);193.2905(e);193.2907(b))

**3. Enclosure Protection and Construction** *Do field observations verify applicable facilities are surrounded by adequate protective enclosures?* (FS.FG.PROTECTENCLOSE.O) 193.2905(a)  
(193.2905(b);193.2905(c);193.2905(d);193.2905(e);193.2907(a);193.2907(b))

**4. Protective Enclosure Construction** *Does the process specify that protective enclosure construction must comply with 193.2907 requirements?* (FS.FG.PROTECTENCLOSURECON.P) 193.2907(a)  
(193.2905(a);193.2017(a);193.2017(b);193.2017(c);193.2905(b);193.2905(c);193.2905(d);193.2905(e);193.2907(b))

**5. Protective Enclosure Construction** *Do records indicate protective enclosures are constructed in accordance with 193.2907?* (FS.FG.PROTECTENCLOSURECON.R) 193.2907(a)  
(193.2905(a);193.2905(b);193.2905(c);193.2905(d);193.2905(e);193.2907(b))

**6. Protective Enclosure Construction** *Do field observations verify that the protective enclosures appear adequate?* (FS.FG.PROTECTENCLOSURECON.O) 193.2907(a)  
(193.2905(a);193.2303;193.2905(b);193.2905(c);193.2905(d);193.2905(e);193.2907(b))

**7. Security Lighting** *Does the process require adequate facility security lighting be provided?* (FS.FG.SECURITYLIGHT.P) 193.2911 (193.2017(a);193.2017(b);193.2017(c))

**8. Security Lighting** *Do records indicate that facility security lighting requirements of 193.2911 have been met?* (FS.FG.SECURITYLIGHT.R) 193.2911 (193.2017(a);193.2017(b);193.2017(c))

**9. Security Lighting** *Do field observations verify adequate security lighting is provided, where applicable?*  
(FS.FG.SECURITYLIGHT.O) 193.2911 (193.2303)

**10. Security Monitoring** *Does the process for security monitoring meet requirements for the facility?*  
(FS.FG.SECURITYMONITOR.P) 193.2913 (193.2017(a))

**11. Security Monitoring** *Do records indicate security monitoring meets the requirements for the facility in accordance with 193.2913?* (FS.FG.SECURITYMONITOR.R) 193.2913 (193.2101(a);193.2301;193.2903(a);193.2905(a);193.2101(b))

**12. Security Monitoring** *Do field observations verify security monitoring meets the requirements applicable to the facility?*  
(FS.FG.SECURITYMONITOR.O) 193.2913 (193.2303;193.2905(a);)

**13. Security System Alternate Source of Power** *Does the process require an adequate alternate (back-up) source of power for security lighting, and security monitoring and warning systems?* (FS.FG.ALTPOWER.P) 193.2915 (193.2445(a);193.2445(b);193.2017(a);193.2017(b);193.2017(c))

**14. Security Systems Alternate Source of Power** *Do records indicate an alternate (back-up) source of power is in place and functions as required?* (FS.FG.ALTPOWER.R) 193.2915 (193.2119;193.2445(a);193.2445(b))

**15. Security System Alternate Source of Power** *Do field observations verify there is an alternate (back-up) power source for security lighting and security monitoring and warning systems?* (FS.FG.ALTPOWER.O) 193.2915 (193.2445(a);193.2445(b))

**16. Warning Signs** *Does the process require the placement of warning signs along the protective enclosure?*  
(FS.FG.WARNSIGN.P) 193.2017(a) (193.2917(b))

**17. Warning Signs** *Do records demonstrate that warning signs were installed and meet the requirements of 193.2917?*  
(FS.FG.WARNSIGN.R) 193.2917(a) (193.2017(a);193.2119;193.2017(b);193.2017(c);193.2917(c))

**18. Warning Signs** *Do field observations verify warning signs are placed about the protective enclosure such that they can be seen from 100 ft at night?* (FS.FG.WARNSIGN.O) 193.2917(a) (193.2907(b))

## Design and Construction - Training and Qualifications

**1. Design and Fabrication Personnel Qualifications** *Does the process require that the design and fabrication of LNG facility components be performed by persons who have demonstrated competence by training or experience in the design and fabrication of comparable components?* (DC.TQ.DESIGNFABQUAL.P) 193.2703(a) (193.2017(a);193.2101(a);193.2301;193.2703(b);193.2017(b);193.2017(c);193.2101(b))

**2. Design and Fabrication Personnel Qualifications** *Do records indicate that only personnel who have demonstrated competence in the design and fabrication of comparable components were used?* (DC.TQ.DESIGNFABQUAL.R) 193.2703(a) (193.2101(a);193.2301;193.2703(b);193.2101(b))

**3. Construction Personnel Qualifications** *Does the process require personnel who are utilized for facility and components construction, installation, inspection, or testing to meet the requirements of 193.2705?* (DC.TQ.CONSTRQUAL.P) 193.2705(a) (193.2017(a);193.2101(a);193.2301;193.2705(b);193.2017(b);193.2017(c);193.2101(b))

**4. Construction Personnel Qualifications** *Do records indicate that personnel used in construction, installation, inspection and testing met the qualifications requirements of 193.2705?* (DC.TQ.CONSTRQUAL.R) 193.2705(a) (193.2101(a);193.2301;193.2705(b);193.2101(b))

**5. Construction Personnel Qualifications** *Do field observations confirm that selected individuals performing construction, installation, inspection, and/or testing activities are approved to perform the activities based on experience and accomplishments?* (DC.TQ.CONSTRQUAL.O) 193.2705(a) (193.2301;193.2303;193.2705(b))

## Design and Construction - Time Dependent Threats

**1. Corrosion Control Reviewer** *Does the process require a person qualified under 193.2707(c) to review the applicable design drawings and materials specifications from a corrosion control viewpoint to determine that the materials involved will not impair the safety or reliability of all components?* (DC.TD.CORRREVIEWER.P) 193.2304(a) (193.2017(a);193.2101(a);193.2707(c);NFPA 59A (2001), Section 6.9;193.2017(b);193.2017(c);193.2101(b))

**2. Corrosion Control Reviewer** *Do records indicate that the person reviewing material specifications, plans, and drawings to ensure the integrity of the corrosion control applications has met the criteria specified in the corrosion control process?* (DC.TD.CORRREVIEWER.R) 193.2304(a) (193.2101(a);193.2301;193.2707(c);NFPA 59A (2001), Section 6.9;193.2101(b))

**3. Corrosion Control Reviewer** *Do field observations verify the reviewer of material specifications, plans, and drawings appeared to be knowledgeable with respect to corrosion equipment, its impact on other components, and external forces which may interfere with corrosion control or other components?* (DC.TD.CORRREVIEWER.O) 193.2304(a) (193.2101(a);193.2303;193.2707(c);NFPA 59A (2001), Section 6.9;193.2101(b))

**4. Atmospheric Corrosion Control** *Does the process require review of the metallic components exposed to the atmosphere with respect to protecting the components from atmospheric corrosion?* (DC.TD.CORRATMOS.P) 193.2627(a) (193.2017(a);193.2101(a);193.2625(a);193.2101(b);193.2627(b);193.2017(b);193.2017(c);193.2625(b))

**5. Atmospheric Corrosion Control** *Do records indicate that corrosion control measures and equipment provide adequate protection from atmospheric corrosion?* (DC.TD.CORRATMOS.R) 193.2627(a) (193.2101(a);193.2119;193.2301;193.2625(a);193.2639(a);NFPA 59A (2001), Section 6.9;193.2627(b);193.2101(b);193.2639(b);193.2639(c))

**6. Atmospheric Corrosion Control** *Do field observations verify corrosion protection is being applied to vulnerable metallic components to protect them from atmospheric corrosion?* (DC.TD.CORRATMOS.O) 193.2627(a) (193.2301;193.2303;193.2101(a);193.2304(a);193.2625(a);193.2627(b);193.2101(b))

**7. External Corrosion Control** *Does the process require the installation of external corrosion control measures to protect each buried or submerged component?* (DC.TD.CORREXTURNAL.P) 193.2629(a) (193.2017(a);193.2101(a);193.2625(a);193.2629(b);193.2017(b);193.2017(c);193.2101(b))

**8. External Corrosion Control** *Do records indicate adequate planning and follow-up to satisfy the analysis and the material and equipment requirements for external corrosion control?* (DC.TD.CORREXTURNAL.R) 193.2629(a) (193.2101(a);193.2301;193.2304(a);193.2633(a);NFPA 59A (2001), Section 6.9;193.2629(b);193.2101(b);193.2304(b);193.2633(b);193.2633(c))

**9. External Corrosion Control** *Do field observations verify the prescribed equipment was installed and meets the requirements for cathodic protection of buried or submerged pipe during the construction process?* (DC.TD.CORREXTURNAL.O) 193.2629(a) (193.2301;193.2303;193.2629(b))

**10. Internal Corrosion Control** *Does the process require review of the metallic components and the transported fluids to determine potential areas of internal corrosion along with the applications to prevent or minimize the problem?*

(DC.TD.CORRINTERNAL.P) 193.2635(e) (193.2017(a);193.2101(a);193.2301;193.2631(a);NFPA 59A (2001), Section 11.5.6.4(e);193.2017(b);193.2017(c);193.2101(b);193.2631(b))

**11. Internal Corrosion Control** *Do records indicate that measures were applied during design and construction to provide for internal corrosion control?* (DC.TD.CORRINTERNAL.R) 193.2635(e) (193.2101(a);193.2301;193.2631(a);NFPA 59A (2001), Section 11.5.6.4(e);193.2101(b);193.2631(b))

**12. Internal Corrosion Control** *Do field observations verify the operator's process and records agree with the internal corrosion installations reviewed on the site?* (DC.TD.CORRINTERNAL.O) 193.2635(e) (193.2301;193.2303;193.2631(a);NFPA 59A (2001), Section 11.5.6.4(e);193.2631(b))

**13. Electrical Equipment and Tanks Grounding and Bonding** *Does the design process for facility electrical grounding and bonding meet the requirements of NFPA 59A (2001), Section 7.7?* (DC.TD.GROUNDING.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 7.7;193.2017(b);193.2017(c))

**14. Electrical Equipment and Tanks Grounding and Bonding** *Do records indicate facility electrical grounding and bonding meets the requirements of NFPA 59A (2001), Section 7.7?* (DC.TD.GROUNDING.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 7.7;193.2101(b))

**15. Electrical Equipment and Tanks Grounding and Bonding** *Do field observations confirm facility electrical grounding and bonding was installed in accordance with the design specifications?* (DC.TD.GROUNDING.O) 193.2301 (193.2303;193.2401;NFPA 59A (2001), Section 7.7)

## Design and Construction - Vaporizers

**1. Vaporizer Layout and Spacing** *Does the design process require vaporizer spacing to meet the requirements of NFPA 59A (2001), Section 2.2.5?* (DC.VAPORIZER.LAYOUT.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.2.5;193.2017(b);193.2017(c);193.2101(b))

**2. Vaporizer Layout and Spacing 1** *Do records (e.g., plot plans) indicate the distance requirements between vaporizers that use flammable heat transfer fluid and the nearest ignition source have been met?* (DC.VAPORIZER.LAYOUT1.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.5.1;193.2101(b))

**3. Vaporizer Layout and Spacing 2** *For LNG facilities that use integral heated vaporizers, do records (e.g., plot plans) indicate that vaporizer spacing meets the requirement of NFPA 59A (2001), Section 2.2.5.2?* (DC.VAPORIZER.LAYOUT2.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.5.2;193.2101(b))

**4. Vaporizer Layout and Spacing 3** *Do records (e.g., plot plans) indicate the distance from the heat source of remote heated vaporizers (shell-and-tube vaporizers) relative to the property line, impoundment system, flammable fluids storage system, unfired process equipment, loading/unloading connections, and critical building structures meets the requirements of Section 2.2.5.3?* (DC.VAPORIZER.LAYOUT3.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.5.3;193.2101(b))

**5. Vaporizer Layout and Spacing 4** *Do records (e.g., plot plans) indicate the distance from remote heated, ambient, and process vaporizers to the property line is a minimum of 100 feet?* (DC.VAPORIZER.LAYOUT4.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.5.4;193.2101(b))

**6. Vaporizer Layout and Spacing 5** *Do records (e.g., plot plans) indicate the clearance between vaporizers is at least 5 feet?* (DC.VAPORIZER.LAYOUT5.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.5.5;193.2101(b))

**7. Vaporizer Layout and Spacing - All** *Do field observations confirm that all vaporizer layout and spacing requirements from NFPA 59A (2001), Section 2.2.5 have been met?* (DC.VAPORIZER.LAYOUTALL.O) 193.2401 (193.2301;193.2303;NFPA 59A (2001), Section 2.2.5)

**8. Vaporizer Design and Materials of Construction** *Does the design process for vaporizers include the design and materials requirements in accordance with the design, fabrication, and inspection requirements in ASME BPVC, Section VIII, Division 1?* (DC.VAPORIZER.CODESTAMP.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Sections 5.2.1 and 5.2.2;ASME BPVC, Section VIII, Division 1;193.2017(b);193.2017(c);193.2101(b))

**9. Vaporizer Design and Materials of Construction** *Do records (e.g., equipment data sheets) confirm vaporizers are designed, fabricated and inspected in accordance with ASME Boiler Pressure Vessel Code, Section VIII, Division 1?* (DC.VAPORIZER.CODESTAMP.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.2.1;ASME BPVC, Section VIII, Division 1;193.2101(b))

**10. Vaporizer Maximum Working Pressure** *Do records (e.g., equipment data sheets) confirm vaporizers were designed for the maximum working pressure of the upstream LNG pump or pressurized container supplying them, whichever is greater?* (DC.VAPORIZER.MAWP.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.2.2;193.2101(b))

**11. Vaporizer Inlet and Discharge Block Valves** *Do records (e.g., P&IDs) indicate block valves at each vaporizer inlet and outlet?* (DC.VAPORIZER.BLOCKVALVE.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.1;193.2101(b))

**12. Vaporizer Discharge Valve and Piping Design** *Do records indicate the material of construction for the vaporizer discharge valve and the piping components and relief valves installed upstream of the discharge valve are designed for LNG operation temperature (-260F)?* (DC.VAPORIZER.DISCHVALVE.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.2;193.2101(b))

**13. Vaporizer Discharge Valve and Piping Design** *Do field observations verify that the piping components, pressure relief valves and discharge valve of each vaporizer are constructed with material designed in accordance with the design specification and for operation at LNG temperature (-260F)?* (DC.VAPORIZER.DISCHVALVE.O) 193.2301 (193.2303;NFPA 59A (2001), Section 5.3.2)

**14. Heated Vaporizers - Heat Source Shutoff** *For LNG facilities that use heated vaporizers, do records indicate that the cause and effect diagram(s) include the shutdown logic for the heat source?* (DC.VAPORIZER.HEATED1.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.5;193.2101(b))

**15. Heater Vaporizers - Shutoff Valve** *For LNG facilities that use heated vaporizers, do records (e.g., P&IDs) indicate the shutoff valve was installed on the LNG line (vaporizer inlet) and show that the valve was installed at least 50 feet from the vaporizer?* (DC.VAPORIZER.HEATED2.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.6;193.2101(b))

**16. Heated Vaporizers - Automatic Shutoff Valve** *For LNG facilities that use ambient or heated vaporizers within 50 feet of an LNG container, do records (e.g., P&IDs) indicate an automated shutoff valve on the LNG line (vaporizer inlet) and show that the valve must be installed at least 10 feet from the vaporizer?* (DC.VAPORIZER.HEATED3.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.7;193.2101(b))

**17. Heated Vaporizers - Automatic Shutoff Valve Triggers** *For LNG facilities that include ambient or heated vaporizers within 50 feet of an LNG container, do records (e.g., P&IDs) indicate the automated shutoff valve on the LNG line (vaporizer inlet) would automatically close due to loss of line pressure, high temperature due to fire in the vicinity, or low temperature in the vaporizer discharge line?* (DC.VAPORIZER.HEATED4.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.7;193.2101(b))

**18. Vaporizer Temperature Detection for Shutdown** *Do records (e.g., cause and effect diagrams) indicate the detection and isolation sequences used to prevent the discharge of LNG or vaporized gas into the distribution system at a temperature either above or below the design temperatures?* (DC.VAPORIZER.TEMPDETECT.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.3;193.2101(b))

**19. Vaporizer Equipment for Temperature Detection Shutdown** *Do records (e.g., P&IDs) indicate the instrumentation and the automatic isolation valve to prevent the discharge of LNG or vaporized gas into the distribution system at a temperature either above or below the design temperatures?* (DC.VAPORIZER.TEMPEQUIP.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.3;193.2101(b))

**20. Vaporizer Isolation** *Do records (e.g., P&IDs) indicate two inlet valves to prevent leakage of LNG into a vaporizer?* (DC.VAPORIZER.ISOLATION.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.4;193.2101(b))

**21. Vaporizer Isolation Thermal Relief** *Do records (e.g., P&IDs) indicate a safe means to relieve pressure buildup of the LNG or gas accumulated between the two isolation valves at the inlet to a vaporizer is provided?* (DC.VAPORIZER.THERMRELIEF.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.4;193.2101(b))

**22. Heated Vaporizers - Flammable Intermediate Fluids** *For LNG facilities that use a flammable intermediate fluid with a remote heated vaporizer, do records (e.g., P&IDs) indicate the remotely controlled shutoff valves on the hot and cold lines of the intermediate fluid system?* (DC.VAPORIZER.HEATED5.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.3.8;193.2101(b))

**23. Heated Vaporizers - All Observations** *For LNG facilities that use heated vaporizers, do field observations verify the vaporizer inlet and discharge valves and the shutdown devices are installed according to the design drawings?* (DC.VAPORIZER.HEATEDALL.O) 193.2301 (193.2303;NFPA 59A (2001), Sections 5.3.5, 5.3.6, and 5.3.7)

**24. Heated / Process Vaporizers - Safety Relief Valves** *For LNG facilities that use heated or process vaporizers, do records (e.g., design specifications, relief valve data sheets) indicate the relief valve capacity calculations used to confirm the relief valves serving the vaporizers were sized for 110% of the rated flow without allowing the pressure to raise more than 10% above the vaporizer MAWP?* (DC.VAPORIZER.HEATEDPSV1.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.4.1;193.2101(b))

**25. Ambient Vaporizers - Safety Relief Valves** *For LNG facilities that use ambient vaporizers, do records indicate the relief valve capacity calculations used to confirm the relief valves serving the vaporizers were sized for at least 150% of the rated flow without allowing the pressure to raise more than 10% above the vaporizer MAWP?* (DC.VAPORIZER.AMBIENTPSV.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.4.1;193.2101(b))

**26. Heated Vaporizers - Safety Relief Valves** *For LNG facilities that use heated vaporizers, do records (e.g., P&IDs, relief valve data sheets) indicate the safety relief valves are located such that they are not subjected to temperatures exceeding 140F unless designed to withstand higher temperatures?* (DC.VAPORIZER.HEATEDPSV2.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 5.4.2;193.2101(b))

**27. Heated Vaporizers - Combustion Air Supply** *For LNG facilities that use heated vaporizers, does the process specify the combustion air required for the operation of integral heated vaporizers or the primary heat source for remote heated vaporizers be taken from outside a completely enclosed structure or building?* (DC.VAPORIZER.AIRSUPPLY.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 5.5;193.2017(b);193.2017(c))

**28. Heated Vaporizers - Combustion Air Supply** *For LNG facilities that use heated vaporizers, do records (e.g., design drawings) indicate the combustion air required for the operation of integral heated vaporizers or the primary heat source for remote heated vaporizers is taken from outside a completely enclosed structure or building?* (DC.VAPORIZER.AIRSUPPLY.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 5.5;193.2101(b))

**29. Heated Vaporizers - Combustion Air Supply** *For LNG facilities that use heated vaporizers, do field observations verify the combustion air is taken from outside a completely enclosed structure or building?* (DC.VAPORIZER.AIRSUPPLY.O) 193.2301 (193.2303;NFPA 59A (2001), Section 5.5)

**30. Heated Vaporizers - Products of Combustion** *For LNG facilities that use heated vaporizers or the primary heat source for remote heated vaporizers is installed in-building, does the process require provisions to prevent the accumulation of hazardous products of combustion?* (DC.VAPORIZER.COMBUSTION.P) 193.2301 (193.2303;NFPA 59A (2001), Section 5.6)

**31. Heated Vaporizers - Products of Combustion** *For LNG facilities that use heated vaporizers or the primary heat source for remote heated vaporizers is installed in building, do records indicate provisions were included to prevent the accumulation of hazardous products of combustion?* (DC.VAPORIZER.COMBUSTION.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 5.6;193.2101(b))

**32. Heated Vaporizers - Products of Combustion** *For LNG facilities that use heated vaporizers or the primary heat source for remote heated vaporizers is installed in building, do field observations verify provisions were made to prevent the accumulation of hazardous products of combustion?* (DC.VAPORIZER.COMBUSTION.O) 193.2301 (193.2303;NFPA 59A (2001), Section 5.6)

**33. Vaporizer Temperature Monitoring** *Does the design process require temperature monitoring equipment to be installed at the inlet and outlet of each vaporizer?* (DC.VAPORIZER.TEMPMONITOR.P) 193.2301 (193.2017(a);NFPA 59A (2001), Section 7.4.1;193.2017(b);193.2017(c))

**34. Vaporizer Temperature Monitoring** *Do records (e.g., P&IDs) indicate that vaporizer temperature monitoring was installed in accordance with design specifications?* (DC.VAPORIZER.TEMPMONITOR.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 7.4.1;193.2101(b))

**35. Vaporizer Temperature Monitoring** *Do field observations verify vaporizer temperature monitoring was installed in accordance with design specifications?* (DC.VAPORIZER.TEMPMONITOR.O) 193.2301 (193.2303;NFPA 59A (2001), Section 7.4.1)

**36. Part 193 Materials Records** *Does the process require records of all materials for components (e.g., vaporizers) be maintained for the life of the component?* (DC.VAPORIZER.MATERIALRECORDS.P) 193.2119 (193.2017(a);193.2017(b);193.2017(c))

**37. Part 193 Materials Records** *Do records indicate all materials for components (e.g., vaporizers) are being maintained for the life of the component?* (DC.VAPORIZER.MATERIALRECORDS.R) 193.2119 (193.2101(a);193.2101(b))

**38. Vaporizer Block Valve Function Testing** *Do field observations verify that the valve functional tests are properly conducted during commissioning?* (DC.VAPORIZER.VALVETEST.O) 193.2301 (193.2303;NFPA 59A (2001), Section 5.3.2)

## Design and Construction - ASME LNG Tanks

**1. ASME Storage Container - Separation Distances** *Does the design process for LNG storage tanks of 70,000 gallons or less reference the spacing requirement in accordance with NFPA 59A (2001), Table 2.2.4.1?* (DC.ASMELNGTANK.DISTANCES.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.2.3.7;NFPA 59A (2001), Section 2.2.4.1;193.2017(b);193.2017(c);193.2101(b))

**2. ASME Storage Container - Separation Distances** *For LNG facilities that use LNG storage tank of aggregate volume of greater than 70,000 gal, do records (e.g., plot plans) show that spacing is in accordance with NFPA 59A (2001), Table 2.2.4.1?* (DC.ASMELNGTANK.DISTANCES.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.3.7;NFPA 59A (2001), Section 2.2.4.1;193.2101(b))

**3. ASME Storage Container - General Design Requirements** *Does the design process require that stationary ASME LNG storage containers be designed in accordance with Part 193 and NFPA 59A (2001)?* (DC.ASMELNGTANK.DESIGN.P) 193.2101(a) (193.2017(a);193.2017(b);193.2017(c);193.2101(b))

**4. ASME Storage Container - General Design Requirements** *Do records indicate stationary ASME LNG storage containers were designed in accordance with Part 193 and NFPA 59A (2001)?* (DC.ASMELNGTANK.DESIGN.R) 193.2101 (193.2301)

**5. Storage Tanks & Structures - Wind and Snow Load Design** *Does the design process for LNG storage tanks and structures include design for wind and snow loads to meet requirements of NFPA 59A (2001), Sections 4.1.4, and ASCE 7?* (DC.TANKS.WINDSNOWDES.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 4.1.4;ASCE 7;193.2101(b);193.2017(b);193.2017(c))

**6. Storage Tanks & Structures - Wind and Snow Load Design** *Do records (e.g., design drawings, specifications, and calculations) indicate that LNG storage tanks and/or structures were constructed in accordance with the wind and snow load requirements in NFPA 59A (2001), Section 4.1.4, and ASCE 7?* (DC.TANKS.WINDSNOWDES.R) 193.2101(a) (193.2301;NFPA 59A (2001), Section 4.1.4;ASCE 7;193.2101(b))

**7. ASME Storage Container - Spill Containment** *Does the process specify that spill containment for Chapter 10 ASME LNG tanks meets the requirements of Part 193 and NFPA 59A (2001)?* (DC.ASMELNGTANK.SPILLCONT.P) 193.2101(a) (193.2017(a);193.2155(a);193.2161;193.2167;193.2173(a);193.2181(a);NFPA 59A (2001), Section 10.2.1;NFPA 59A (2001), Section 10.8;193.2101(b);193.2017(b);193.2017(c);193.2155(b);193.2173(b);193.2173(c);193.2181(b);193.2181(c))

**8. ASME Storage Container - Spill Containment** *Do records indicate that spill containment for Chapter 10 ASME LNG tanks meets the requirements of Part 193 and NFPA 59A (2001)?* (DC.ASMELNGTANK.SPILLCONT.R) 193.2301 (193.2155(a);193.2161;193.2167;193.2173(a);193.2181(a);NFPA 59A (2001), Section 10.2.1;NFPA 59A (2001), Section 10.8;193.2155(b);193.2173(b);193.2173(c);193.2181(b);193.2181(c))

**9. ASME Storage Container - Spill Containment** *Do field observations confirm that spill containment(s) for Chapter 10 ASME LNG tanks meet the requirements of Part 193 and NFPA 59A (2001)?* (DC.ASMELNGTANK.SPILLCONT.O) 193.2301 (193.2167;193.2173(a);NFPA 59A (2001), Section 10.2.1;NFPA 59A (2001), Section 10.8.1;NFPA 59A (2001), Section 10.8.2;NFPA 59A (2001), Section 10.8.4;193.2173(b);193.2173(c))

**10. ASME Field Fabricated Storage Container - Foundation and Supports** *Do processes specify that field-fabricated stationary ASME LNG storage containers and foundations and support systems meet the design requirements of Part 193?* (DC.ASMELNGTANK.FFCONFFOUND.P) 193.2101(a) (193.2017(a);193.2067(a);NFPA (2001) Section 4.1.4;NFPA (2001) Section 4.1.7.1;NFPA (2001) Section 4.1.7.2;NFPA (2001) Section 4.1.7.3;NFPA (2001) Section 4.1.7.4;NFPA (2001) Section 4.1.7.5;NFPA (2001) Section 4.1.7.6;NFPA (2001) Section 10.3.7.2;NFPA (2001) Section 10.3.7.3;NFPA (2001) Section 10.5.1;NFPA 59A (2006) Section 7.2.2;193.2067(b);193.2017(b);193.2017(c);193.2101(b))

**11. ASME Field Fabricated Storage Container - Foundation and Supports** *Do records indicate that field-fabricated stationary ASME LNG storage containers and foundations and support systems were designed and constructed in accordance with Part 193?* (DC.ASMELNGTANK.FFCONFFOUND.R) 193.2101(a) (193.2017(a);193.2067(a);193.2067(b)(2);NFPA 59A (2001) Section 4.1.4;NFPA 59A (2001) Section 4.1.7.1;NFPA 59A (2001) Section 4.1.7.2;NFPA 59A (2001) Section 4.1.7.3;NFPA 59A (2001) Section 4.1.7.4;NFPA 59A (2001) Section 4.1.7.5;NFPA 59A (2001) Section 4.1.7.6;NFPA 59A (2001) Section 10.3.7.2;NFPA 59A (2001) Section 10.3.7.3;NFPA 59A (2001) Section 10.5.1;NFPA 59A (2006) Section 7.2.2;193.2017(b);193.2017(c);193.2101(b))

**12. ASME Field-Fabricated Storage Container - Foundation and Supports** *Do field observations confirm that field-fabricated ASME LNG containers and their supports and foundations were constructed and installed in accordance with Part 193?* (DC.ASMELNGTANK.FFCONFFOUND.O) 193.2301 (193.2303;NFPA 59A (2001) Section 4.2.2.3(g);NFPA 59A (2001) Section 10.5.1;NFPA 59A (2001) Section 10.5.2)

**13. ASME Shop-Built Storage Container - Foundation and Supports** *Does the process specify that shop-built stationary ASME LNG storage containers and foundations and support systems meet the design requirements of Part 193?* (DC.ASMELNGTANK.SBCONFFOUND.P) 193.2101(a) (193.2017(a);193.2067(a);193.2067(b)(1);193.2067(b)(2);193.2017(b);193.2017(c);193.2101(b))

**14. ASME Shop-Built Storage Container - Foundation and Supports** *Do records indicate that shop-built stationary ASME LNG storage containers and foundations and support systems were designed and constructed in accordance with Part 193?* (DC.ASMELNGTANK.SBCONFFOUND.R) 193.2301 (193.2067(a);193.2067(b)(1);193.2067(b)(2);193.2101(a);193.2101(b))

**15. ASME Shop-Built Storage Container - Foundation and Supports** *Do field observations confirm that shop-built stationary ASME LNG containers and their supports and foundations were constructed and installed in accordance with Part 193?* (DC.ASMELNGTANK.SBCONFFOUND.O) 193.2301 (193.2303;NFPA 59A (2001) Section 4.2.2.3(g);NFPA 59A (2001) Section 10.5.1;NFPA 59A (2001) Section 10.5.2)

**16. ASME Storage Container - Installation** *Does the process specify that stationary Chapter 10 ASME containers be designed for installation in accordance with Part 193 and NFPA 59A (2001), Section 10.6?* (DC.ASMELNGTANK.INSTALL.P) 193.2101(a) (193.2017(a);193.2155(b);NFPA 59A (2001) Section 10.6.1;NFPA 59A (2001) Section 10.6.2;NFPA 59A (2001) Section 10.6.3;NFPA 59A (2001) Section 10.6.4;NFPA 59A (2001) Section 10.6.5;NFPA 59A (2001) Section 10.6.6;NFPA 59A (2001) Section 10.6.7;NFPA 59A (2001) Section 10.6.8;NFPA 59A (2001) Section 10.6.9;193.2017(b);193.2017(c);193.2101(b))

**17. ASME Storage Container - Installation** *Do records indicate that stationary Chapter 10 ASME containers were installed in accordance with NFPA 59A (2001), Section 10.6?* (DC.ASMELNGTANK.INSTALL.R) 193.2301 (193.2101(a);193.2155(b);NFPA 59A (2001) Section 10.6.1;NFPA 59A (2001) Section 10.6.2;NFPA 59A (2001) Section 10.6.3;NFPA 59A (2001) Section 10.6.4;NFPA 59A (2001) Section 10.6.5;NFPA 59A (2001) Section 10.6.6;NFPA 59A (2001) Section 10.6.7;NFPA 59A (2001) Section 10.6.8;NFPA 59A (2001) Section 10.6.9;193.2101(b))

**18. ASME Storage Container - Installation** *Do field observations confirm that stationary Chapter 10 ASME containers were installed in accordance with NFPA 59A (2001), Section 10.6?* (DC.ASMELNGTANK.INSTALL.O) 193.2301 (193.2303;NFPA 59A (2001) Section 10.1;NFPA 59A (2001) 10.6.1;NFPA 59A (2001) 10.6.2;NFPA 59A (2001) 10.6.3;NFPA 59A (2001) 10.6.4;NFPA 59A (2001) 10.6.5;NFPA 59A (2001) 10.6.6;NFPA 59A (2001) 10.6.7;NFPA 59A (2001) 10.6.8;NFPA 59A (2001) 10.6.9)

**19. ASME Storage Container - Instrumentation** *Does the process specify that stationary ASME LNG storage containers include instrumentation as required by NFPA 59A (2001)?* (DC.ASMELNGTANK.INSTRUMENT.P) 193.2101(a) (193.2017(a);193.2017(b);193.2017(c);193.2101(b))

**20. ASME Storage Container - Instrumentation** *Do records indicate that stationary ASME LNG storage containers have instrumentation as required by NFPA 59A (2001)?* (DC.ASMELNGTANK.INSTRUMENT.R) 193.2301 (193.2101(a);193.2101(b))

**21. ASME Storage Container - Instrumentation** *Do field observations confirm that stationary ASME LNG storage containers have instrumentation as required by NFPA 59A (2001)?* (DC.ASMELNGTANK.INSTRUMENT.O) 193.2301

**22. ASME Storage Container - Pressure Control** *Does the process specify that stationary ASME LNG storage containers include pressure controls that meet the requirements of NFPA 59A (2001)?* (DC.ASMELNGTANK.PRESSCONTROL.P) 193.2101(a) (193.2017(a);NFPA 59A (2001) Section 4.7.1(b);NFPA 59A (2001) Section 4.7.2;NFPA 59A (2001) Section 4.7.2.1;NFPA 59A (2001) Section 4.7.2.3;NFPA 59A (2001) Section 4.7.3;NFPA 59A (2001) Section 10.12.4.1;NFPA 59A (2001) Section 10.12.4.2;NFPA 59A (2001) Section 10.12.4.4;193.2017(b);193.2017(c);193.2101(b))

**23. ASME Storage Container - Pressure Control** *Do records indicate that stationary ASME LNG storage containers have pressure controls that meet the requirements of NFPA 59A (2001)?* (DC.ASMELNGTANK.PRESSCONTROL.R) 193.2301 (193.2101(a);NFPA 59A (001), Section 4.7;NFPA 59A (001), Section 4.7.2;NFPA 59A (001), Section 4.7.2.1;NFPA 59A (001), Section 4.7.2.3;NFPA 59A (001), Section 4.7.3;NFPA 59A (001), Section 10.12.4;NFPA 59A (001), Section 10.12.4.1;NFPA 59A (001), Section 10.12.4.4;193.2101(b))

**24. ASME Storage Container - Fail Safe Automatic Valves** *Does the process for designing LNG storage tanks of 70,000 gallons or less require automatic fail-safe valves for all connections?* (DC.ASMELNGTANK.FSVALVE.P) 193.2401 (193.2017(a);193.2101(a);NFPA 59A (2001), Section 2.2.3.7(a);193.2017(b);193.2017(c);193.2101(b))

**25. ASME Storage Container - Fail Safe Automatic Valves** *Do records (e.g., P&IDs) show the fail-safe valves on piping connections to LNG containers of 70,000 gallons or less?.* (DC.ASMELNGTANK.FSVALVE.R) 193.2401 (193.2101(a);193.2301;NFPA 59A (2001), Section 2.2.3.7(a);193.2101(b))

**26. ASME Storage Container - Product Retention Valves** *Does the process specify that stationary Chapter 10 ASME storage containers include product retention valves and connections?* (DC.ASMELNGTANK.PRODRETVALVES.P) 193.2101(a) (193.2017(a);NFPA 59A (2001) Section 10.7;193.2017(b);193.2017(c);193.2101(b))

**27. ASME Storage Container - Product Retention Valves** *Do records indicate that Chapter 10 ASME storage containers include product retention valves and connections that comply with NFPA 59A (2001), Section 10.7?* (DC.ASMELNGTANK.PRODRETVALVES.R) 193.2301 (193.2101(a);NFPA 59A (2001), Section 10.7;193.2101(b))

**28. ASME Storage Container - Piping** *Do processes specify that Chapter 10 ASME container piping meet the requirements of NFPA 59A (2001), Section 10.11?* (DC.ASMELNGTANK.PIPING.P) 193.2101(a) (193.2017(a);NFPA 59A (2001), Section 10.11;ASME B31.3 (1996);193.2017(b);193.2017(c);193.2101(b))

**29. ASME Storage Container - Piping** *Do records indicate that Chapter 10 LNG container piping was designed and constructed in accordance with NFPA 59A (2001) Section 10.11?* (DC.ASMELNGTANK.PIPING.R) 193.2101(a) (193.2017(a);193.2301;NFPA 59A (2001), Section 10.11;193.2017(b);193.2017(c);193.2101(b))

**30. ASME Storage Container - Pressure Control and Liquid Level Devices** *Do field observations confirm that stationary ASME LNG storage containers include pressure control and liquid level devices as required of NFPA 59A (2001)?* (DC.ASMELNGTANK.PRESSFILLCONTROL.O) 193.2301 (193.2303)

**31. ASME Storage Container - Inspections and Tests** *Does the process require stationary ASME LNG storage containers be inspected and tested in accordance with Part 193 and NFPA 59A (2001)?* (DC.ASMELNGTANK.INSPECTTEST.P) 193.2101(a) (193.2017(a);193.2303;193.2321(a);193.2321(c);193.2321(d);193.2705(a);NFPA 59A (2001) Sections 4.1.1, 4.5.2, 6.6, 10.9, 10.10.4;193.2017(b);193.2017(c);193.2101(b))

**32. ASME Storage Container - Inspections and Tests** *Do records indicate that stationary ASME LNG storage containers were inspected and tested in accordance with Part 193 and NFPA 59A?* (DC.ASMELNGTANK.INSPECTTEST.R) 193.2303 (193.2101(a);193.2301;NFPA 59A (2001), Section 4.1.1;NFPA 59A (2001), Section 10.9;193.2101(a))

**33. ASME Storage Container - Pressure Testing** *Do records indicate that stationary ASME LNG storage containers were pressure tested in accordance with Part 193 and NFPA 59A?* (DC.ASMELNGTANK.PRESSURETEST.R) 193.2301 (193.2303;NFPA 59A (2001), Section 4.5;NFPA 59A (2001), Section 10.10)

**34. ASME Storage Containers - Construction Observation** *Do field observations confirm that ASME LNG storage containers were constructed in accordance with Part 193 and NFPA 59A (2001)?* (DC.ASMELNGTANK.CONSTRUCTALL.O) 193.2301 (193.2303;193.2321(a);193.2321(b);193.2321(c);193.2321(d))

## CRM, SCADA, and Leak Detection - Control Room Management

**1. Control Center** *Does the control center have the required capabilities and characteristics, and does it monitor components and buildings?* (CR.CRM.CONTROLCENTER.O) 193.2441(a) (193.2441(b);193.2441(c);193.2441(d);193.2441(e);193.2507)

## Emergency Preparedness and Response - Emergency Response Liquids

**1. Responding to Non-Fire Emergencies** *Does the process identify the types and locations of non-fire emergencies that may be expected to occur?* (EP.ERL.EMEROPS.P) 193.2017(a) (193.2509(a))

**2. Responding to Controllable Emergencies** *Do emergency procedures contain provisions for responding to controllable emergencies?* (EP.ERL.CONTREMERG.P) 193.2017(a) (193.2509(b)(1))

**3. Responding to Uncontrollable Emergencies** *Do emergency procedures contain provisions for responding to uncontrollable emergencies?* (EP.ERL.UNCONTREMERG.P) 193.2017(a) (193.2509(b)(2))

**4. Responding to Emergencies** *Do records convey that operator adequately responded to emergencies and followed its emergency response procedures?* (EP.ERL.EMERG.R) 193.2509(b)(1) (193.2509(b)(2))

**5. Coordination of Evacuation Plans** *Do emergency procedures require a process for coordinating evacuation plans with local officials?* (EP.ERL.EVACUATION.P) 193.2017(a) (193.2509(b)(3))

**6. Coordination of Evacuation Plans** *Do records show that evacuation plans were coordinated with local authorities?* (EP.ERL.EVACUATION.R) 193.2509(b)(3)

**7. Cooperating on Mutual Assistance** *Do emergency procedures require cooperating with local officials in evacuations and emergencies requiring mutual assistance?* (EP.ERL.MUTUALASSIST.P) 193.2017(a) (193.2509(b)(4))

**8. Cooperating on Mutual Assistance** *Do records show cooperation with local officials on mutual assistance?* (EP.ERL.MUTUALASSIST.R) 193.2509(b)(4)

**9. Emergency Personnel Protective Clothing and Equipment** *Does the process require that protective clothing and equipment be provided to personnel performing emergency response duties?* (EP.ERL.EMERPERSONPROT.P) 193.2017(a) (193.2509(b)(1);193. 2511(a))

**10. Personnel Protective Clothing and Equipment** *Is emergency protective clothing and equipment at the locations and of the type specified?* (EP.ERL.EMERPERSONPROT.O) 193.2511(a)

**11. Protection from Thermal Radiation** *Does the process require that personnel on duty at fixed locations be provided protection from thermal radiation or a means of escape?* (EP.ERL.THERMRADPROT.P) 193.2017(a) (193.2511(b))

**12. Protection from Thermal Radiation** *Is a means of protection from thermal radiation or a means of escape provided at applicable fixed duty locations?* (EP.ERL.THERMRADPROT.O) 193.2511(b)

**13. First-aid Material Availability** *Does the process require that first-aid material be readily available and properly marked?* (EP.ERL.FIRSTAID.P) 193.2511(c)

**14. First-Aid Material Availability** *Is first aid material readily available and clearly marked?* (EP.ERL.FIRSTAID.O) 193.2511(c)

## Facilities and Storage - Facilities General

**1. Fire Protection Evaluation** *Do records indicate that an adequate fire protection evaluation has been conducted as required by NFPA 59A, Section 9.1.2?* (FS.FG.FIREPROTEVAL.R) 193.2801 (NFPA 59A, Section 9.1.2;NFPA 600;NFPA 72;NFPA 1221)

**2. ESD - Source Shutdown / Isolation** *Do records demonstrate that the emergency shutdown system meets the requirements of NFPA 59A, Section 9.2?* (FS.FG.ESDSOURCE.R) 193.2801 (NFPA 59A, Section 9.2)

**3. ESD - Source Shutdown / Isolation** *Do field observations confirm the emergency shutdown system (ESD) has been installed that meets the requirements of NFPA 59A (2001), Section 9.2, for source shutoff and isolation?* (FS.FG.ESDSOURCE.O) 193.2801 (NFPA 59A, Section 9.2;193.2301;193.2303)

**4. Flammable Gas, Low Temperature and Fire Detection** *Do records indicate that flammable gas and fire detection systems meet the requirements of NFPA 59A (2001), Section 9.3?* (FS.FG.FIREDETECT.R) 193.2801 (NFPA 59A, Section 9.3;193.2101(a);193.2301;193.2101(b))

**5. Flammable Gas, Low Temperature and Fire Detection** *Do field observations confirm that the flammable gas and fire detection systems meet the requirements of NFPA 59A (2001), Section 9.3, by location performance and alarm announcement?* (FS.FG.FIREDETECT.O) 193.2801 (NFPA 59A, Section 9.3;193.2303)

**6. Fire Water Supply and Delivery** *Do records demonstrate that the fire water supply and distribution system meet the requirements of NFPA 59A (2001), Section 9.4?* (FS.FG.FIREWATERDIST.R) 193.2801 (NFPA 59A, Section 9.4)

**7. Fire Water Supply and Delivery** *Do field observations confirm the fire water supply and delivery system meet the requirements of NFPA 59A (2001), Section 9.4?* (FS.FG.FIREWATERDIST.O) 193.2801 (NFPA 59A, Section 9.4;193.2303)

**8. Fire Protection Equipment** *Do records demonstrate the staging of fire protection equipment meets the requirements of NFPA 59A (2001), Section 9.5?* (FS.FG.FIREPROTEQUIP.R) 193.2801 (NFPA 59A, Section 9.5;193.2101(a);193.2301;193.2101(b))

**9. Fire Protection Equipment** *Do field observations confirm the staging of fire protection equipment meets the requirements of NFPA 59A (2001), Section 9.5?* (FS.FG.FIREPROTEQUIP.O) 193.2801 (193.2303;NFPA 59A, Section 9.5)

**10. Protective Clothing** *Do records demonstrate that protective clothing was available in accordance with NFPA 59A, Sections 9.7.1 and 9.7.2?* (FS.FG.PROTCLOTHING.R) 193.2801 (NFPA 59A, Section 9.7)

**11. Protective Clothing** *Is protective clothing available as required by NFPA 59A, Section 9.7.1 and 9.7.2?* (FS.FG.PROTCLOTHING.O) 193.2801 (NFPA 59A, Section 9.7)

**12. Entering Confined or Hazardous Space** *Do the written practices and procedures for the entry of personnel into confined or hazardous space meet the requirements of NFPA 59A, Section 9.7.3?* (FS.FG.CONFINEDSPACE.P) 193.2017(a) (193.2801)

**13. Entry Into Confined or Hazardous Space** *Are written practices and procedures adequately implemented for the entry of personnel into confined or hazardous spaces?* (FS.FG.CONFINEDSPACE.O) 193.2801 (NFPA 59A, Section 9.7)

**14. Availability of Gas Detectors** *Are at least three portable gas detectors readily available at the plant in accordance with NFPA 59A, Section 9.7.4?* (FS.FG.GASDETECTORS.O) 193.2801 (NFPA 59A, Sections 9.7)

**15. Venting in Case of Emergency** *Does the process for depressurizing the plant or venting LNG in the event of an emergency meet the requirements of NFPA 59A, Section 9.9.1?* (FS.FG.VENTING.P) 193.2017(a) (193.2801; NFPA 59A, Sections 9.7)

**16. Taking an LNG Container Out of Service** *Does the process for taking an LNG container out of service meet the requirements of NFPA 59A, Section 9.9.2?* (FS.FG.OUTOFSERVICE.P) 193.2017(a) (193.2801)

**17. Taking an LNG Container Out of Service** *Do records demonstrate that an LNG container taken out of service was performed in accordance with NFPA 59A, Section 9.9.2?* (FS.FG.OUTOFSERVICE.R) 193.2801 (NFPA 59A, Section 9.9)

**18. Security Procedures** *Is the security process adequate?* (FS.FG.SECPROCEDURES.P) 193.2017(a) (193.2903(a); 193.2903(b); 193.2903(c); 193.2903(d); 193.2903(e); 193.2903(f); 193.2903(g))

**19. Protective Enclosure Construction** *Do records indicate protective enclosures are constructed in accordance with 193.2907?* (FS.FG.PROTECTENCLOSURECON.R) 193.2907(a)  
(193.2905(a);193.2905(b);193.2905(c);193.2905(d);193.2905(e);193.2907(b))

**20. Enclosure Protection and Construction** *Do field observations verify applicable facilities are surrounded by adequate protective enclosures?* (FS.FG.PROTECTENCLOSE.O) 193.2905(a)  
(193.2905(b);193.2905(c);193.2905(d);193.2905(e);193.2907(a);193.2907(b))

**21. Security Communication** *Does the process require an effective means of security communications?*  
(FS.FG.SECURITYCOMM.P) 193.2909(a) (193.2909(b))

**22. Security Communications** *Are there adequate security communication capabilities?* (FS.FG.SECURITYCOMM.O)  
193.2909(a) (193.2909(b))

**23. Security Lighting** *Does the process require adequate facility security lighting be provided?* (FS.FG.SECURITYLIGHT.P)  
193.2911 (193.2017(a);193.2017(b);193.2017(c))

**24. Security Lighting** *Do field observations verify adequate security lighting is provided, where applicable?*  
(FS.FG.SECURITYLIGHT.O) 193.2911 (193.2303)

**25. Security Monitoring** *Does the process for security monitoring meet requirements for the facility?*  
(FS.FG.SECURITYMONITOR.P) 193.2913 (193.2017(a))

**26. Security Monitoring** *Do field observations verify security monitoring meets the requirements applicable to the facility?*  
(FS.FG.SECURITYMONITOR.O) 193.2913 (193.2303;193.2905(a);)

**27. Security System Alternate Source of Power** *Does the process require an adequate alternate (back-up) source of power for security lighting, and security monitoring and warning systems?* (FS.FG.ALTPOWER.P) 193.2915  
(193.2445(a);193.2445(b);193.2017(a);193.2017(b);193.2017(c))

**28. Security System Alternate Source of Power** *Do field observations verify there is an alternate (back-up) power source for security lighting and security monitoring and warning systems?* (FS.FG.ALTPOWER.O) 193.2915 (193.2445(a);193.2445(b))

**29. Sources of Power** *Does the process require at least two sources of power for communication, emergency lighting, and firefighting systems?* (FS.FG.POWERSOURCES.P) 193.2445(a) (193.2445(b))

**30. Sources of Power** *Are there at least two sources of power for communication, emergency lighting, and firefighting systems?* (FS.FG.POWERSOURCES.O) 193.2445(a) (193.2445(b))

**31. Warning Signs** *Does the process require the placement of warning signs along the protective enclosure?* (FS.FG.WARNSIGN.P) 193.2017(a) (193.2917(b))

**32. Warning Signs** *Do field observations verify warning signs are placed about the protective enclosure such that they can be seen from 100 ft at night?* (FS.FG.WARNSIGN.O) 193.2917(a) (193.2907(b))

**33. ESD - Instrumentation Design for Failsafe** *Does the design process for emergency shutdown system instrumentation require that the system will proceed to a fail-safe condition in the event of a power or instrument air failure?* (FS.FG.ESDFAILSAFE.P) 193.2801 (193.2101(a);193.2301;NFPA 59A (2001), Sections 9.2.3, 9.2.4, and 9.2.5;NFPA 59A (2001), Section 7.5;193.2101(b))

**34. ESD - Instrumentation Design for Failsafe** *Do records demonstrate that the emergency shutdown system instrumentation will proceed to a fail-safe condition?* (FS.FG.ESDFAILSAFE.R) 193.2801 (193.2101(a);193.2301;NFPA 59A (2001), Section 7.5;NFPA 59A (2001), Section 9.2.3, 9.2.4, and 9.2.5;193.2101(b))

**35. ESD - Instrumentation Design for Failsafe** *Do field observations confirm the Emergency Shutdown System instrumentation was installed in accordance with the design specifications?* (FS.FG.ESDFAILSAFE.O) 193.2801 (193.2301;193.2303;NFPA 59A (2001), Sections 9.2.3, 9.2.4, and 9.2.5;NFPA 59A (2001), Section 7.5)

## Facilities and Storage - Tanks and Storage

**1. LNG Storage Tanks** *Does the process require that LNG storage tanks be inspected or tested to verify tank safety and structural integrity?* (FS.TS.LNGSTRGTANK.P) 193.2017(a) (193.2605(b);193.2623(a);193.2623(b);193.2623(c);193.2623(d))

**2. LNG Storage Tanks** *Do records show that LNG storage tanks have been adequately inspected?* (FS.TS.LNGSTRGTANK.R) 193.2639(a) (193.2623(a);193.2623(b);193.2623(c);193.2623(d))

**3. LNG Storage Tanks** *Do LNG storage tanks appear structurally sound and safe?* (FS.TS.LNGSTRGTANK.O) 193.2623(a) (193.2623(b);193.2623(c);193.2623(d))

## Maintenance and Operations - Liquid Pipeline Maintenance

**1. Status of Components** *Does the process meet the general requirements for the condition and status of components?* (MO.LM.CMPNTSTATUS.P) 193.2017(a) (193.2603(a);193.2603(b);193.2603(d);193.2603(e);193.2605(b))

**2. Status of Components** *Do records show that the status of out of service components was documented as required?* (MO.LM.CMPNTSTATUS.R) 193.2639(a) (193.2603(c);193.2603(d))

**3. Maintenance Procedures** *Does the operator have procedures for the maintenance of each component, including any required corrosion control?* (MO.LM.MAINTPROCEDURES.P) 193.2017(a) (193.2605(a);193.2605(b))

**4. Recognizing Safety-related Conditions** *Does the maintenance process contain instructions for recognizing a reportable safety-related condition?* (MO.LM.MAINTSRC.P) 193.2017(a) (193.2605(a);193.2605(c))

**5. Control of Foreign Material and Debris** *Does the process require that the facility be free from the presence of foreign material and debris?* (MO.LM.FOREIGNMAT.P) 193.2017(a) (193.2607(a);193.2607(b);193.2605(b))

**6. Control of Foreign Material and Debris** *Is the facility free of foreign material or debris that presents a fire hazard?* (MO.LM.FOREIGNMAT.O) 193.2607(a) (193.2607(b))

**7. Physical Support Systems** *Does the process require that foundations and support systems be inspected for changes that could impair their support?* (MO.LM.PHYSICALSUPPORT.P) 193.2017(a) (193.2605(b);193.2609)

**8. Physical Support Systems** *Do records show that foundations and support systems have been inspected?* (MO.LM.PHYSICALSUPPORT.R) 193.2639(a) (193.2609)

**9. Physical Support Systems** *Are foundations and support systems structurally sound?* (MO.LM.PHYSICALSUPPORT.O) 193.2609

**10. Maintain Fire Protection Equipment** *Has a maintenance program been established for all plant fire protection equipment in accordance with NFPA 59A, Section 9.6?* (MO.LM.MAINTAINFIREPROTEQ.P) 193.2017(a) (193.2801;NFA 59A, Section 9.6)

**11. Maintain Fire Protection Equipment** *Do records demonstrate an adequate maintenance program for plant fire protection equipment in accordance with NFPA 59A Section 9.6?* (MO.LM.MAINTAINFIREPROTEQ.R) 193.2801 (NFPA 59A Section 9.6)

**12. Fire Protection Out of Service** *Does the process require that the amount of fire control equipment out of service at any one time be minimized?* (MO.LM.FIREPROTOOS.P) 193.2017(a) (193.2611(a))

**13. Fire Protection Out of Service** *Do records show that maintenance activities on fire protection equipment are scheduled to minimize downtime and ensure a minimum amount of equipment is available?* (MO.LM.FIREPROTOOS.R) 193.2639(a) (193.2611(a))

**14. Maintain Access Routes** *Does the process require that access routes for movement of fire protection equipment be kept clear?* (MO.LM.FIREPROTACCESS.P) 193.2017(a) (193.2605(b);193.2611(b))

**15. Maintain Access Routes** *Are access routes for movement of fire control equipment clear of snow and other obstacles?* (MO.LM.FIREPROTACCESS.O) 193.2611(b)

**16. Testing Auxiliary Power Sources** *Does the process require that auxiliary power sources be tested monthly for operational capability and annually for capacity?* (MO.LM.AUXPOWERTEST.P) 193.2017(a) (193.2605(b);193.2613)

**17. Testing Auxiliary Power Sources** *Do records show that auxiliary power systems have been tested monthly for operational capability and annually for capacity?* (MO.LM.AUXPOWERTEST.R) 193.2639(a) (193.2613)

**18. Testing Auxiliary Power Sources** *Are monthly or annual tests performed as required by the process?* (MO.LM.AUXPOWERTEST.O) 193.2613

**19. Isolating and Purging** *Does the process require purging of components handling flammable liquids prior to maintenance or, if the component or maintenance activity provides an ignition source, isolation of the component?* (MO.LM.ISOPURGE.P) 193.2017(a) (193.2605(b);193.2615(a);193.2615(b))

**20. Repair of Components** *Does the process require that repairs conform to the requirements of 193 Subpart D (Construction) and assure integrity/operational safety?* (MO.LM.REPAIRS.P) 193.2017(a) (193.2605(b);193.2617(a);193.2617(b))

**21. Repair of Components** *Do records show that repairs of components were made in accordance with 193 Subpart D (Construction) and assured integrity/operational safety?* (MO.LM.REPAIRS.R) 193.2639(a) (193.2617(a);193.2617(b))

**22. Control Systems** *Does the process require that control systems meet the requirements of 193.2619?* (MO.LM.CONTROLSYS.P) 193.2017(a) (193.2605(b);193.2619(a);193.2619(b);193.2619(c);193.2619(d);193.2619(e))

**23. Control Systems** *Do records show that control systems, relief valves, and other components were inspected or tested in accordance with 193.2619?* (MO.LM.CONTROLSYS.R) 193.2639(a) (193.2619(b);193.2619(c);193.2619(d);193.2619(e))

**24. Control Systems** *Are control systems operating within design limits?* (MO.LM.CONTROLSYS.O) 193.2619(a)

**25. Transfer Hoses** *Does the process require the testing and inspection of transfer hoses before use and annually?* (MO.LM.TXHOSE.P) 193.2017(a) (193.2605(b);193.2621(a);193.2621(b))

**26. Transfer Hoses** *Do records show that transfer hoses have been tested once each calendar year and inspected before each use?* (MO.LM.TXHOSE.R) 193.2639(a) (193.2621(a);193.2621(b))

**27. Transfer Hoses** *Are transfer hoses inspected before each use?* (MO.LM.TXHOSE.O) 193.2621(b)

**28. Maintaining Maintenance Records** *Are records of each inspection, test and investigation maintained in accordance with 193.2639?* (MO.LM.MAINTENANCERECORDS.R) 193.2639(a)

## Maintenance and Operations - Liquid Pipeline Operations

**1. General Process Review and Update Requirements** *Are there adequate requirements for review and update of plant plans and procedures?* (MO.LO.PROCESSUPDATE.P) 193.2017(c)

**2. General Process Review and Update Requirements** *Do records show that plans and procedures have been reviewed and updated as necessary?* (MO.LO.PROCESSUPDATE.R) 193.2017(c)(2)

**3. Monitoring Operations** *Does the process require the monitoring of operating components and buildings for leaks, fires, and malfunctions that could cause a hazardous condition?* (MO.LO.MONITOR.P) 193.2017(a) (193.2503(a), 193.2507)

**4. Monitoring Operations** *Do records show that the operator monitored operating components and buildings for leaks, fires, and malfunctions that could cause a hazardous condition?* (MO.LO.MONITOR.R) 193.2507 (193.2503(a))

**5. Monitoring Operations - Buildings and Components** *Are operating components and buildings monitored for leaks, fire, and malfunctions that could cause a hazardous condition?* (MO.LO.MONITOR.O) 193.2507

**6. Startup and Shutdown** *Does the process require performance testing to demonstrate that components will operate satisfactory in service during startup and shutdown?* (MO.LO.STARTUPSHUTDOWN.P) 193.2017(a) (193.2503(b))

**7. Startup and Shutdown** *Do records show that startup and shutdown procedures, including initial testing, were followed?* (MO.LO.STARTUPSHUTDOWN.R) 193.2521 (193.2503(b))

**8. Startup and Shutdown** *Is performance testing being conducted to demonstrate that components will operate satisfactorily in service during startup and shutdown?* (MO.LO.STARTUPSHUTDOWN.O) 193.2503(b)

**9. Abnormal Operating Conditions** *Does the process include provisions for recognizing abnormal operating conditions?* (MO.LO.ABNORMALOPS.P) 193.2017(a) (193.2503(c))

**10. Abnormal Operating Conditions** *Do records show personnel responded to indications of abnormal operations as required by the AOC procedures?* (MO.LO.ABNORMALOPS.R) 193.2521 (193.2503(c))

**11. Purging and Inerting** *Does the process require that components that could accumulate significant amounts of combustible mixtures be adequately purged?* (MO.LO.PURGEINERT.P) 193.2017(a) (193.2503(d);193.2517)

**12. Purging and Inerting** *Do records show that components that could accumulate significant amounts of combustible mixture were adequately purged?* (MO.LO.PURGEINERT.R) 193.2517 (193.2503(d))

**13. Purging and Inerting** *Is purging of components that can accumulate significant amounts of combustible mixture conducted in accordance with procedures?* (MO.LO.PURGEINERT.O) 193.2517

**14. Vaporization Design Limits** *Does the process require that vaporizers operate within design limits?* (MO.LO.VAPORIZATION.P) 193.2017(a) (193.2503(e))

**15. Vaporization Design Limits** *Do records show that vaporizers operated within their design limits?* (MO.LO.VAPORIZATION.R) 193.2503(e)

**16. Liquefaction Design Limits** *Does the process require that liquefaction units operate within their design limits?*  
(MO.LO.LIQUEFACTION.P) 193.2017(a) (193.2503(f))

**17. Liquefaction Design Limits** *Do records show that components operated within their liquefaction design limits?*  
(MO.LO.LIQUEFACTION.R) 193.2503(f)

**18. Cooldown of Components** *Does the process require that the thermal stress of components be kept within design limits during cooldown?* (MO.LO.COOLDOWN.P) 193.2017 (193.2503(g);193.2505(a);193.2505(b))

**19. Cooldown of Components** *Do records indicate that cooldown of components was maintained within design limits?*  
(MO.LO.COOLDOWN.R) 193.2505(a) (193.2505(b);193.2503(g);193.2101;193.2301)

**20. Cooldown of Components** *Do field observations confirm leak checks were performed on components subject to cryogenic temperatures following stabilization?* (MO.LO.COOLDOWN.O) 193.2505(b) (193.2301;193.2303)

**21. Transfer of LNG** *Is the process adequate for the transfer of LNG or other hazardous fluids?* (MO.LO.LNGTRANS.P) 193.2017(a) (193.2513(a);193.2513(b))

**22. Transfer of LNG** *Do records show that LNG transfers were conducted in accordance with requirements?*  
(MO.LO.LNGTRANS.R) 193.2513(a) (193.2513(b))

**23. Transfer of LNG** *Are LNG transfers conducted in accordance with the process?* (MO.LO.LNGTRANS.O) 193.2513(b)

**24. Cargo Transfer Process** *Does the process require the cargo transfer procedures be located at the transfer area and contain the provisions of 193.2513(c)?* (MO.LO.CARGOTRANS.P) 193.2017(a) (193.2513(a);193.2513(c))

**25. Cargo Transfer Process** *Do records show that cargo transfers were conducted in accordance with the process?*  
(MO.LO.CARGOTRANS.R) 193.2513(c)

**26. Cargo Transfer Process** *Are cargo transfers conducted in accordance with the process?* (MO.LO.CARGOTRANS.O) 193.2513(c)

**27. Investigation of Failures** *Does the process require that failures be investigated?* (MO.LO.FAILINVESTIGATE.P) 193.2515(a) (193.2515(b);193.2515(c))

**28. Investigation of Failures** *Do records show that the operator adequately investigated failures?* (MO.LO.FAILINVESTIGATE.R) 193.2521 (193.2515(a);193.2515(b);193.2515(c))

**29. Communication Systems** *Does the process require an adequate communication system?* (MO.LO.COMMSYS.P) 193.2519(a) (193.2519(b);193.2519(c);193.2445(a);193.2445(b))

**30. Communication Systems** *Does the communication system meet all of the requirements of 193.2519?* (MO.LO.COMMSYS.O) 193.2519(a) (193.2519(b);193.2519(c);193.2445(b))

**31. Maintaining Operating Records** *Is there an adequate process for maintaining the records of each inspection, test and investigation required by Part 193?* (MO.LO.OPERATINGRECORD.P) 193.2017(a) (193.2521)

**32. Maintaining Operating Records** *Are records of each inspection, test and investigation maintained in accordance with 193.2521?* (MO.LO.OPERATINGRECORDS.R) 193.2521

## Reporting - Regulatory Reporting (Traditional)

**1. Immediate Reporting: Incidents** *Does process require incidents to be immediately reported to the National Response Center?* (RPT.RR.IMMEDREPORT.P) 193.2011 (191.3;191.5(a);191.5(b);191.7(a);191.7(d))

**2. Immediate Reporting: Incidents** *Do records indicate immediate reports of incidents were made in accordance with 193.2011?* (RPT.RR.IMMEDREPORT.R) 193.2011 (191.3;191.5(a);191.5(b);191.7(a);191.7(d))

**3. Incident Reports** *Does the process require preparation and filing of an incident report as soon as practicable but no later than 30 days after discovery of a reportable incident?* (RPT.RR.INCIDENTREPORT.P) 193.2011 (191.15(b))

**4. Incident Reports** *Do records indicate reportable incidents were identified and reports were submitted on DOT Form PHMSA 7100.3 within the required timeframe?* (RPT.RR.INCIDENTREPORT.R) 193.2011 (191.15(b))

**5. Supplemental Incident Reports** *Does the process require preparation and filing of supplemental incident reports?* (RPT.RR.INCIDENTREPORTSUPP.P) 193.2011 (191.15(d))

**6. Supplemental Incident Reports** *Do records indicate accurate supplemental incident reports were filed and within the required timeframe?* (RPT.RR.INCIDENTREPORTSUPP.R) 193.2011 (191.15(d))

**7. Annual Report Records** *Have complete and accurate Annual Reports been submitted?* (RPT.RR.ANNUALREPORT.R) 193.2011 (191.17(b))

**8. NPMS: Annual Updates** *Do records indicate: NPMS submissions are completed each year, on or before March 15, representing all plants as of December 31 of the previous year, and if no modifications occurred an email to that effect was submitted?* (RPT.RR.NPMSANNUAL.R) 191.29(a) (191.29(b))

**9. National Registry of Pipeline and LNG Operators (OPID)** *Does the process require the appropriate control of Operator Identification Numbers (OPIDs) and notification of applicable changes to the National Registry of Pipeline and LNG Operators?* (RPT.RR.REGISTRY.P) 193.2011 (191.22(a);191.22(b);191.22(c);191.22(d))

**10. National Registry of Pipeline and LNG Operators (OPID)** *Do records indicate appropriate control of Operator Identification Numbers (OPIDs) and the National Registry of Pipeline and LNG Operators has been notified of applicable changes, including changes in entity, acquisition/divestiture, and construction in accordance with 191.22?* (RPT.RR.REGISTRY.R) 193.2011 (191.22(a);191.22(b);191.22(c))

**11. Safety Related Condition Reports** *Does the process require preparation and filing of safety related condition reports?* (RPT.RR.SRCR.P) 193.2011 (191.23(a);191.23(b);191.25(a);191.25(c))

**12. Safety Related Condition Reports** *Do records indicate safety-related condition reports were filed as required?* (RPT.RR.SRCR.R) 193.2011 (191.23(a);191.23(b);191.25(a);191.25(c))

## Time-Dependent Threats - External Corrosion - Atmospheric

**1. Atmospheric Corrosion** *Does the process require that components subject to atmospheric corrosive attack are made of corrosion-resistant materials or are coated/jacketed?* (TD.ATM.ATMCORROSION.P) 193.2017(a) (193.2605(b); 193.2627(a);193.2627(b))

**2. Monitoring for Atmospheric Corrosion** *Does the process require that each component that is protected from atmospheric corrosion be inspected at intervals not to exceed 3 years?* (TD.ATM.ATMCORRMONITOR.P) 193.2017(a) (193.2605(b);193.2635(d))

**3. Monitoring for Atmospheric Corrosion** *Do records show that inspections for atmospheric corrosion were completed at the required intervals?* (TD.ATM.ATMCORRMONITOR.R) 193.2639(b) (193.2635(d);193.2639(a))

**4. Monitoring for Atmospheric Corrosion** *Are certain components subject to atmospheric corrosive attack coated or jacketed?* (TD.ATM.ATMCORRMONITOR.O) 193.2635(d)

## Time-Dependent Threats - External Corrosion - Cathodic Protection

**1. Buried or Submerged Components** *Does the process require that buried components are made of a corrosion-resistant material, or protected by coating and cathodic protection?* (TD.CP.BURIEDCOMP.P) 193.2017(a) (193.2605(b);193.2629(a);193.2629(b))

**2. Buried or Submerged Components** *Do records show that applicable buried and submerged components are protected from external corrosion?* (TD.CP.BURIEDCOMP.R) 193.2639(b) (193.2629(a))

**3. Interference Currents** *Does the process give sufficient guidance and detail for identifying areas of potential interference currents and minimizing the detrimental effects of such currents?* (TD.CP.INTERCURRENT.P) 193.2017(a) (193.2605(b);193.2633(a))

**4. Interference Currents** *Do records show that the operator has a continuing program to minimize the detrimental effects of interference currents?* (TD.CP.INTERCURRENT.R) 193.2639(b) (193.2633(a))

**5. Isolation of Adjacent Metal Components and Systems** *Does the process require that cathodic protection be installed to minimize the detrimental effects on adjacent metal components and communication and control systems?* (TD.CP.ISOLATE.P) 193.2017(a) (193.2605(b);193.2633(b);193.2633(c))

**6. Monitoring for External Corrosion** *Does the process require that each buried or submerged component be tested for cathodic protection adequacy at least once each calendar year not to exceed 15 months?* (TD.CP.EXTCORRMONITOR.P) 193.2017(a) (193.2605(b);193.2635(a))

**7. Monitoring for External Corrosion** *Do records show that buried or submerged components cathodic protection adequacy was tested once each calendar year not to exceed 15 months?* (TD.CP.EXTCORRMONITOR.R) 193.2639(b) (193.2635(a);193.2639(a))

**8. Monitoring for External Corrosion** *For certain buried or submerged components, does the cathodic protection meet the requirements of 192.463?* (TD.CP.EXTCORRMONITOR.O) 193.2635(a)

**9. Rectifiers, Bonds, Diodes and Reverse Current Switches** *Does the process require making electrical checks of rectifiers or other impressed current power source, interference bonds, reverse current switches and diodes at the code specified frequencies?* (TD.CP.CURRENTTEST.P) 193.2017(a) (193.2605(b);193.2635(b);193.2635(c))

**10. Rectifiers, Bonds, Diodes and Reverse Current Switches** *Do records show adequate electrical checks of rectifiers or other impressed current power source, interference bonds, reverse current switches and diodes and at the required intervals?* (TD.CP.CURRENTTEST.R) 193.2369(b) (193.2635(b);193.2635(c);193.2639(a))

**11. Rectifiers, Bonds, Diodes and Reverse Current Switches** *Are rectifiers, interference bonds, diodes, and reverse current switches properly maintained and are they functioning properly?* (TD.CP.CURRENTTEST.O) 193.2635(b) (193.2635(c))

**12. Prompt Remedial Action** *Does the process require that prompt remedial action be taken whenever corrosion control deficiencies are found?* (TD.CP.REMEDIATE.P) 193.2017(a) (193.2605(b);193.2637)

**13. Prompt Remedial Action** *Do records show that prompt corrective or remedial action was taken whenever corrosion control deficiencies were found?* (TD.CP.REMEDIATE.R) 193.2639(b) (193.2637;193.2639(a))

**14. CP Maps and Records** *Does the operator have records showing cathodically protected components, structures bonded to the CP system, and corrosion protection equipment?* (TD.CP.RECORDS.R) 193.2639(b) (193.2639(c))

## Time-Dependent Threats - Internal Corrosion - Preventive Measures

**1. Internal Corrosion** *Does the process require that components subject to internal corrosive attack be made of corrosion-resistant material or be otherwise protected?* (TD.ICP.INTCORR.P) 193.2017(a) (193.2605(b);193.2631(a);193.2631(b))

**2. Monitoring for Internal Corrosion** *Does the process require that internal corrosion monitoring devices be checked at least twice each calendar year, not to exceed 7.5 months?* (TD.ICP.INTCORRMONITOR.P) 193.2017(a) (193.2605(b);193.2635(e))

**3. Monitoring for Internal Corrosion** *Do records show that internal corrosion monitoring devices were checked twice per calendar year, not to exceed 7.5 months?* (TD.ICP.INTCORRMONITOR.R) 193.2639(b) (193.2635(e);193.2639(a))

## Time-Dependent Threats - Time Dependent Threats: General

**1. Corrosion** *Does the process require that components that can be adversely affected by corrosion be identified, and protected, or inspected and replaced?* (TD.GEN.CORROSION.P) 193.2017(a) (193.2605(b);193.2625(a);193.2625(b))

**2. Corrosion** *Do records show that components that can be adversely affected by corrosion are identified, and protected, or inspected and replaced?* (TD.GEN.CORROSION.R) 193.2639(b) (193.2625(a);193.2625(b))

## Training and Qualification - Operator Qualification

**1. Qualifications and Training of Operations and Maintenance Personnel** *Does the process define the qualifications and training requirements for personnel who operate and maintain components?* (TQ.OQ.OMQUAL.P) 193.2707(a) (193.2707(b))

**2. Qualifications and Training of Operations and Maintenance Personnel** *Do records show that operations and maintenance of components was conducted by personnel who met the qualifications and training requirements?* (TQ.OQ.OMQUAL.R) 193.2719(a) (193.2707(a);193.2707(b))

**3. Qualifications and Training of Operations and Maintenance Personnel** *Do individuals conducting operations and maintenance of components demonstrate their capability to perform their assigned functions?* (TQ.OQ.OMQUAL.O) 193.2707(a) (193.2707(b))

**4. Qualifications and Training of Corrosion Control Personnel** *Does the process require that corrosion control of cathodic protection systems be carried out by, or under the direction of, personnel qualified by training or experience in corrosion control technology?* (TQ.OQ.CORRCONTRPERS.P) 193.2707(c)

**5. Qualifications and Training of Corrosion Control Personnel** *Do records demonstrate that personnel who perform corrosion control, or supervise unqualified individuals, are qualified in corrosion control technology?* (TQ.OQ.CORRCONTRPERS.R) 193.2719(a) (193.2707(c))

**6. Qualifications and Training of Corrosion Control Personnel** *Do individuals conducting, or directing, corrosion control activities demonstrate adequate skills and knowledge?* (TQ.OQ.CORRCONTRPERS.O) 193.2707(c)

**7. Personnel Health** *Is there an adequate plan for evaluating the health and physical condition of personnel assigned operations, maintenance, security, or fire protection duties?* (TQ.OQ.PERSONHEALTH.P) 193.2017(a) (193.2711)

**8. Personnel Health** *Do records show that the health and physical condition of personnel assigned operations, maintenance, security, or fire protection duties have been evaluated?* (TQ.OQ.PERSONHEALTH.R) 193.2711

**9. Training of Operations, Maintenance, and Supervisory Personnel** *Does the plan require that operations, maintenance, and supervisory personnel receive the mandatory initial training?* (TQ.OQ.TRAINOM.P) 193.2017(a) (193.2713(a))

**10. Training of Operations, Maintenance, and Supervisory Personnel** *Do records show that operations, maintenance, and supervisory personnel have received the mandatory initial training?* (TQ.OQ.TRAINOM.R) 193.2713(a) (193.2719(a);193.2719(b))

**11. Retraining of Operations, Maintenance, and Supervisory Personnel** *Does the plan require that operations, maintenance, and supervisory personnel receive refresher training at intervals not to exceed two years?* (TQ.OQ.RETRAINOM.P) 193.2017(a) (193.2713(b))

**12. Retraining of Operations, Maintenance, and Supervisory Personnel** *Do records show that operations, maintenance, and supervisory personnel received refresher training every two years?* (TQ.OQ.RETRAINOM.R) 193.2713(b) (193.2719(a))

**13. Training of Security Personnel** *Does the plan require that security personnel receive the mandatory initial training?* (TQ.OQ.TRAINSECURITY.P) 193.2017(a) (193.2715(a))

**14. Training of Security Personnel** *Do records show that security personnel received mandatory initial training?* (TQ.OQ.TRAINSECURITY.R) 193.2715(a) (193.2719(a))

**15. Retraining of Security Personnel** *Does the plan require that security personnel receive refresher training at intervals not to exceed two years?* (TQ.OQ.RETRAINSECURITY.P) 193.2017(a) (193.2715(b))

**16. Retraining of Security Personnel** *Do records show that security personnel received refresher training every two years?* (TQ.OQ.RETRAINSECURITY.R) 193.2715(b) (193.2719(a))

## Training and Qualification - Training of Personnel

**1. Training Fire Protection Personnel** *Does the plan require that operations, maintenance, and supervisory personnel receive initial fire protection training that meets the requirements of 193.2717(a)?* (TQ.TR.TRAINFIREPROT.P) 193.2017(a) (193.2717(a);193.2717(c);193.2801)

**2. Training Personnel in Fire Protection** *Do records show that operations, maintenance, and supervisory personnel have been adequately trained in fire protection, including plant fire drills?* (TQ.TR.TRAINFIREPROT.R) 193.2717(a) (193.2717(a)(1);193.2717(a)(2);193.2717(a)(3);193.2717(c);193.2719(a);193.2719(b))

**3. Retraining of Personnel in Fire Protection** *Does the plan require that operations, maintenance, and supervisory personnel receive refresher fire protection training at intervals not to exceed two years and that training includes fire drills?* (TQ.TR.RETRAINFIREPROT.P) 193.2017(a) (193.2717(b);193.2717(c))

**4. Retraining of Personnel in Fire Protection** *Do records show that operations, maintenance, and supervisory personnel received refresher fire protection training every two years, including plant fire drills?* (TQ.TR.RETRAINFIREPROT.R) 193.2717(b) (193.2717(c);193.2719(a);193.2719(b))

**5. Plant Fire Drills** *Do personnel demonstrate adequate fire protection skills during a fire drill?* (TQ.TR.FIREDRILLS.O) 193.2717(c)

Except as required to be disclosed by law, any inspection documentation, including completed protocol forms, summary reports, executive summary reports, and enforcement documentation are for internal use only by federal or state pipeline safety regulators. Some inspection documentation may contain information which the operator considers to be confidential. In addition, supplemental inspection guidance and related documents in the file library are also for internal use only by federal or state pipeline safety regulators (with the exception of documents published in the federal register, such as advisory bulletins). Do not distribute or otherwise disclose such material outside of the state or federal pipeline regulatory organizations. Requests for such information from other government organizations (including, but not limited to, NTSB, GAO, IG, or Congressional Staff) should be referred to PHMSA Headquarters Management.