



U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Avenue SE
Washington DC 20590

JUN 18 2018

Mr. Thomas Donaldson
Project Director,
Elba Liquefaction Project
IHI E&C International Corp.
1080 Eldridge Parkway
Suite 1300
Houston, TX 77077

Dear Mr. Donaldson:

In a March 7, 2018, letter to the Pipeline and Hazardous Materials Safety Administration (PHMSA), you requested an interpretation of 49 CFR Part 193. Specifically, you requested an interpretation about whether marking with die-stamping was permitted on a 24-inch diameter, stainless steel pipeline with nominal 1/4-inch wall thickness (NPS 24, schedule 10S) that will be used as LNG vapor lines (i.e. lines 1218 and 1219) designed for -270°F and will operate at approximately -220°F. Though you did not cite to a specific section of Part 193 in your request, PHMSA notes that the marking requirement at issue is incorporated by reference in §§ 193.2013 and 193.2303. You also reference your January 2017 interpretation request regarding the applicability of § 192.63, Marking of Material, and National Fire Protection Association (NFPA) 59A Section 6.3.5, Pipe Marking. PHMSA responded in an email on January 22, 2017 stating that die-stamping is permitted under certain circumstances under Part 192. However, the regulations for Part 192 do not apply to Part 193; therefore, that interpretation does not apply to your current request.

NFPA 59A (2001 ed. incorporated by reference, *see* §§ 193.2013, 2303) incorporates by reference American Society of Mechanical Engineers International (ASME) B31.3 (1996) which requires that pipes be marked. You stated that your position is that the provisions in Section 6.3.5 of NFPA 59A related to pipe marking are not applicable to this pipeline because Section 6.3 is "titled Installation, and as such is reasonably interpreted to apply to activities that occur post manufacture." You have already installed die-stamped pipe and stated that your pipe meets, in addition to the 2001 edition of NFPA 59A, all the applicable requirements of American Society for Testing and Materials (ASTM) A358, ASTM A999 and ASME B31.3.

Section 193.2301 states that "Each LNG facility constructed after March 31, 2000 must comply with requirements of this part and of NFPA-59A-2001... In the event of a conflict between this part and NFPA 59A, this part prevails." Under § 193.2303, construction acceptance, "no person may place in service any component until it passes all applicable inspections and tests prescribed by this subpart and NFPA-59A-2001..." NFPA 59A (2001), Chapter 6, Piping Systems and Components, Section 6.1.1, requires all piping systems to be in accordance with ASME B31.3,

The Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety provides written clarifications of the Regulations (49 CFR Parts 190-199) in the form of interpretation letters. These letters reflect the agency's current application of the regulations to the specific facts presented by the person requesting the clarification. Interpretations do not create legally-enforceable rights or obligations and are provided to help the public understand how to comply with the regulations.

Process Piping (1996), and states that the additional provisions of Chapter 6 apply “to piping systems and components for flammable liquids and flammable gases with service temperatures below -20°F (-29°C).” The other standards referenced in your request, ASTM A358, ASTM A999 and ASME B31.3, have been incorporated by reference into NFPA-59A (2001), however, they do not address die-stamping.

Section 6.3.5 of NFPA 59A-2001 states:

6.3.5 Pipe Marking. Markings on pipe shall comply with the following:

(a) Markings shall be made with a material compatible with the basic material or with a round-bottom, low-stress die.

Exception: Materials less than 1/4-inch (6.35 mm) in thickness shall not be die-stamped.


(b) Marking materials that are corrosive to the pipe material shall not be used. Under some conditions, marking materials containing carbon or heavy metals can cause corrosion of aluminum. Marking materials containing chloride or sulfur compounds cause corrosion of some stainless steels. Chalk, wax-base crayons, or marking inks with organic coloring shall be permitted to be used.

Section 6.3.5 of the 2001 edition of NFPA 59A is applicable for pipe marking when the pipe is used for an LNG Facility under Part 193, which includes pipe manufacturing, installation during original construction or during operations or maintenance activities when the pipe used in piping systems and components for flammable fluids and flammable gases with service temperatures below -20°F . This provision states that when marking a pipeline, any pipe less than 1/4-inch in wall thickness shall not be die-stamped for pipe used in piping systems and components for flammable fluids and flammable gases with service temperatures below -20°F . Die-stamped pipe of less than 1/4-inch in thickness used in piping systems and components for flammable fluids and flammable gases with service temperatures below -20°F is therefore not permitted for use in LNG pipeline facilities subject to Part 193.

You stated that "If Section 6.3.5 of the NFPA 59A were applicable to the project, it is your position that the reference to thickness refers to nominal thickness." Contrary to your statement that "NFPA has been known to specify actual thickness vs. nominal thickness," NFPA 59A (2001) does not reference "nominal thickness." The term "nominal thickness," therefore, does not apply to Section 6.3.5. Nominal wall thickness represents the defined thickness with a plus or minus allowable tolerance. While your pipe has a nominal wall thickness of ¼-inch, there is no guarantee that the actual wall thickness is ¼-inch. The pipe material may be "less than ¼-inch (6.35 mm) in thickness" and therefore die-stamping is not permitted.

If we can be of further assistance, please contact Tewabe Asebe at 202-366-5523.

Sincerely,

A handwritten signature in blue ink, appearing to read "John A. Gale", is positioned above the printed name and title.

John A. Gale
Director, Office of Standards
and Rulemaking



March 7, 2018

Elba Liquefaction Project
IHI Job No: H1502610

Mr. John A. Gale
Director of Standards and Rulemaking
Office of Pipeline Safety
Room 24-310
1200 New Jersey Ave, SE
Washington DC 20590:

Dear Mr. Gale,

IHI E&C International Corporation (IHI) requests a formal written letter of interpretation pursuant to 49 C.F.R. Part 190.11(b) concerning the applicability of the Department of Transportation's (DOT) regulations at 49 C.F.R. Part 193 to the marking of NPS 24, schedule 10S pipe used in the construction of the Elba Island Expansion Facility Project. Additionally, we request expedited treatment of this matter given the project schedule.

BACKGROUND

On January 17, 2017 IHI made an informal request regarding the applicability of Regulations 192.63 (b) and (c); 49 CFR 192.63 Marking of Material; and NFPA 59A Section 6.3.5 Pipe Marking. Specifically, IHI was seeking clarification that field die stamping is a marking applied post manufacture, and that the requirements associated with blunt or rounded edges of the marking only apply when a die stamp marking is applied. IHI also sought clarification regarding the interpretation of the NFPA's use of the wording "materials less than ¼ in. thickness," namely that the measurement of ¼ in. refers to a nominal size not an actual size. On January 22, 2017, IHI received an email from a representative at the DOT identifying when cold die stamping is allowed, as well as, an interpretation regarding thickness to mean nominal wall thickness. On January 29, 2017 IHI sent a letter to Southern LNG Company L.L.C. and Elba Liquefaction Company L.L.C. the Owners of the Elba Island Expansion Facility. This letter was forwarded to the DOT by the Owner. Following, the DOT's receipt of the January 29th letter, IHI received an email from the DOT stating 49 CFR 192 and 195 do not apply to LNG Facilities rather the applicable code is 49 CFR 193. The communication went on to outline the DOT's comments and/or concerns regarding the documentation provided. This letter will respond to the conclusions of that interpretation, the requests for additional documentation and will serve as IHI's request for a formal interpretation on this matter. Section 6.3.5 of the NFPA 59A is not applicable to this project. This section is titled Installation, and as such is reasonably interpreted to apply to activities that occur post manufacture. It is IHI's position that Section 6.3.5 of NFPA 59A-2001 does not apply to marking performed in the process of manufacturing. The pipe in question was embossed marked during the manufacturing process by Butting, please see Appendix 1, the MTR.

- (1) If Section 6.3.5 of the NFPA 59A were applicable to the project, it is IHI's position that the reference to thickness refers to nominal thickness. In regard to the ¼ inch thickness mentioned in Section 6.3.5 of NFPA 59A-2001, it does not state actual measured thickness or nominal

thickness. If it can be agreed that 6.3.5 does not apply to manufacturers marking, the ¼ inch reference to thickness is not relevant. NFPA has been known to specify actual thickness vs. nominal thickness but in this case did not. It is due to this lack of clarity that IHI interprets ¼ inch to be nominal thickness since it is common practice to refer to pipe thickness nominally in accordance with ASME Code.

- (2) Yes there is sufficient thickness for pressure containment after die stamping, if die stamping had been used as the applicable marking. The corrosion allowance used in the B31.3 calculations for the stainless steel pipe in question was determined to be 0.00 inch since the product in the line is not corrosive to 304/304L stainless steel. The calculated wall thickness required is 0.174 inch. The nominal wall thickness of the pipe is 0.250 inch; the mill under-tolerance permitted by ASTM A358 is 0.01 inch and the depth of the embossing is 0.012 inch. Therefore, the thickness of pipe available for pressure containment at the point of the embossing is $0.250 - 0.01 - 0.012 = 0.228$ inch. There is, therefore, sufficient thickness for pressure containment in accordance with ASME B31.3 – 2014.
- (3) The pipe in question was manufactured in accordance with ASTM A358. Material Test Reports (MTRs) are attached as documentation of this point. ASME B31.3-2014 was the design code. ASTM A358 is a listed material in ASME B31.3-2014. ASTM A358 nor ASTM A999 specify the type of marking to be used. Butting, who is the manufacturer of the pipe in question, utilizes embossing of the base material using round bottom low stress letters and digits prior to forming and welding of the base material into pipe. After marking, the pipe is cold formed, welded, solution annealed, pickled and passivated. If the 'passive', chromium-rich, oxide film that forms naturally on the surface of the steel was damaged during the embossing process, it would be restored during the process of heat treating, pickling and passivating. The act of embossing the base material in the mill is non-damaging to the pipe and does not compare to the act of field stamping. Please refer to attached STATEMENT of PIPE MARKING provided by Butting.

Butting is a reputable manufacturer producing approximately 20,000 tons of stainless steel pipe annually made in this manner. They have been marking their pipe by the same means since the 1990s and have supplied pipe to LNG projects around the world including several approved and operating LNG project in the US.

Based on the above facts and the interpretations of the Code, it is the position of IHI and Butting that the embossed pipe in question, as supplied, meets all the applicable requirements of ASTM A358, ASTM A999 and ASME B31.3, as well as, NFPA 59A-2001.

Sincerely,



Thomas Donaldson
Project Director
Elba Liquefaction Project

Cc IHI Eric Kahre, Edward Ramirez, Matthew DeLong, Jason Smith, Tiffany Cawthorne