



July 17, 2017

Jon Manning
Acting Director, Southwest Region
U.S. Department of Transportation, PHMSA
8701 South Gessner, Suite 1110
Houston, Texas 77074

Dear Mr. Manning:

As part of the Corpus Christi Pipeline Project, Cheniere is constructing a 48" diameter pipeline, the Sinton Compressor Station, and three meter stations to deliver gas to Cheniere's Corpus Christi Liquefaction Terminal. The pipeline and associated facilities have been inspected by PHMSA monthly since January of this year. This letter is written in response to the Notice of Amendment (CPF 4-2017-5026M) sent to Cheniere dated June 20, 2017. Cheniere has revised specifications to address findings in the NOA, and are summarized below.

1. §192.303 Compliance with specifications or standards.

Each transmission line or main must be constructed in accordance with comprehensive written specifications or standards that are consistent with this part.

The Cheniere *Field Bending and Alignment of Pipe Specification* document number *ES-PPL-7712-CU-0305* (Revision 0.1, 11/15/2016) does not provide adequate requirements for performing field bends of spiral seam pipe. Cheniere was found to be constructing the Corpus Christi Pipeline using spiral seam pipe but the specifications for bending did not address this type of pipe. Cheniere's procedure provides detailed specifications for bending longitudinal seam pipe but is silent on requirements for spiral seam pipe actually being used to construct the Corpus Christi Pipeline.

Some of the specifications that should be addressed in the Cheniere's procedure include but not limited to: position of bending shoes, whether the bending shoes are permitted to press on the spiral weld-seam, the requirement for test bends, use of a mandrel, maintain the minimum wall thickness requirements after bending, presentation of the cross sectional shape, and no buckling, cracks or mechanical damage. Cheniere must amend its procedure to include the written specifications for bending spiral weld-seam pipe as required in §192.303.

Cheniere Response:

ES-PPL-7712-CU-0305 has been revised to specify field bends of spiral welded pipe must be made using internal mandrels. Additional revisions to section of the specification 2.0 are shown in **Attachment A**.

2. §192.303 Compliance with specifications or standards.

Each transmission line or main must be constructed in accordance with comprehensive written specifications or standards that are consistent with this part.

The Cheniere *Field Bending and Alignment of Pipe Specification* document number *ES-PPL-7712-CU-0305* (Revision 0.1, 11/15/2016) does not provide adequate requirements for offsetting the weld-seam for spiral weld-seam pipe. Cheniere was found to be constructing the Corpus Christi Pipeline using spiral seam pipe but the specifications for positioning the seams, when connecting, only addressed longitudinal strait seam pipe.

Cheniere's procedure provides detailed specifications for offsetting longitudinal strait seam pipe but is silent on requirements for longitudinal spiral seam pipe being used to construct the Corpus Christi Pipeline. Cheniere must amend its procedure to include comprehensive specifications for offsetting the weld seams on spiral weld pipe as required by §192.303.

Cheniere Response:

ES-PPL-7712-CU-0305 has been revised to specify seam separation for spiral welded pipe:

4.0 Position of Longitudinal Seam

- 4.1 In instances where longitudinal seam pipe is welded, seams shall be staggered approximately 90°. Longitudinal weld seams shall have a minimum four-inch circumferential offset between abutting joints. Unless otherwise specified, the longitudinal seams on adjacent pipe shall be staggered, placing one approximately in the 10 o'clock position and the other approximately in the 2 o'clock position.
- 4.2 For pipe with helical (spiral) seam, the pipe weld seams shall have a minimum four-inch circumferential offset between abutting joints.

3. §192.303 Compliance with specifications or standards.

Each transmission line or main must be constructed in accordance with comprehensive written specifications or standards that are consistent with this part.

§192.163 Compressor stations: Design and construction.

- b) **Building construction.** Each building on a compressor station site must be made of noncombustible materials if it contains either—
 - 1) **Pipe more than 2 inches (51 millimeters) in diameter that is carrying gas under pressure; or**
 - 2) **Gas handling equipment other than gas utilization equipment used for domestic purposes.**

The *Cheniere Compressor Building Specification* document number *ES-PPL-7718* does not state that buildings, on a compressor station site, must be made of noncombustible material. Cheniere must amend its procedure to require that all buildings on a compressor station site are made of noncombustible material as required by §192.163.

Cheniere Response:

ES-PPL-7718 has been revised to specify all buildings on a compressor station site are made of noncombustible material as shown below:

5.0 Design Fabrication and Assembly Requirements

- 5.1 The design, materials, fabrication and assembly requirements for the Compressor Building shall be in accordance with the project specific data sheet(s), project specific drawing(s), project specific specification(s), and applicable industry standards and codes. Compressor buildings shall be constructed using non-combustible materials.

Cheniere greatly appreciates the time and efforts of the PHMSA inspectors that have visited the Corpus Christi Pipeline Project. The PHMSA inspections provide valuable input and perspective, and Cheniere is committed to ensuring that potential issues identified by PHMSA inspectors are addressed and/or clarified in a complete and proactive manner. If more information is required or additional clarifications are needed, please let us know.

I sincerely appreciate your attention to this response. If you have any additional comments or questions, please feel free to contact me at (713) 375-5252.

Sincerely,



Jim Privett
Vice President, Project Management

cc: Chris Williams
Albert Girgis
File

Attachment A**Revisions to *ES-PPL-7712-CU-0305: Cheniere Field Bending and Alignment of Pipe*****2.0 Field Bending Requirements****2.1 General**

- 2.1.1 Contractor shall provide equipment and personnel required to make all necessary field pipe bends for installing pipeline. All field bends, including helical pipe bends, shall be made in a manner that shall minimize the distortion of the pipe and shall in no way impair its strength. Where it is necessary to field bend pipe, only cold bends shall be employed. Field produced cold bends shall be of uniform radius without wrinkles, buckles, egging, flattening, cracks reduced thickness or other evidence of mechanical damage to pipe. All bends shall meet the criteria set forth in 49 CFR Part 192.313 or 49 CFR Part 195.212, whichever is applicable.
- 2.1.2 At its option, Company may provide fabricated bends or welded elbow for installing at points where such bends are preferable. Such location will be denoted on pipeline alignment sheets and construction drawings. Contractor shall be responsible for properly fitting such bends or elbows into pipeline in a manner compatible with pipe bent on site.
- 2.1.3 At Contractor request, Company may request and with Company Representative Approval, may determine field bending may be predetermined and completed including Major River and creek crossings, before trenching. Pipe shall conform to the finished trench contour.
- 2.1.4 No pipe bending will be permitted where factory bends have been specified, unless approved by Company Representative.
- 2.1.5 All bending shall be performed by cold smooth method. No fire or wrinkle bends will be allowed.
- 2.1.6 If Company so directs, and before the bending of any pipe, will test specimens of any or all sizes of pipe to be used on the project. Specimens shall be bent to determine the optimum bending and the distortional limitations. For such tests, the Contractor shall furnish labor and equipment and Company will furnish the pipe.
- 2.1.7 Under no circumstances will any bend be straightened (or reduced).
- 2.1.8 Any pipe that is wrinkled or gouged by the bending operations shall be cut out and replaced at the sole expense of the Contractor. Hammering or the use of jacks at any time to attempt to repair buckled or deformed pipe is prohibited.

2.2 Slack, Longitudinal Welds, and Helical Welds

- 2.2.1 On pipe containing a longitudinal weld, the longitudinal seam must be as near as practical to neutral axis of the bend unless the bend is made with an internal bending mandrel or the pipe is 12 in. or less in outside diameter or has a diameter-to-wall thickness ratio less than 70. Helical (spiral) pipe will be bent using internal mandrel.
- 2.2.2 All over-bends sag bends and inside bends shall be made and installed in such a manner that an adequate amount of slack is provided in the line.
- 2.2.3 All over-bends shall be made in such a manner that the mid-point of the bend when installed shall clear the high point of the trench bottom by a minimum of four inches. Side bends shall have a minimum of six inches clearance from the inside curve of the ditch. All sag bends shall be fit snug to the bottom of the ditch.
- 2.2.4 Bending helical (spiral) pipe shall not damage the helical seam of the pipe.

2.3 Bending Machine

- 2.3.1 Each bend shall be made using a Company approved bending machine having a full circle bending shoe with a neoprene or urethane lining to produce a smooth, symmetrical bend, unless specified otherwise by the Company.
- 2.3.2 If the pipe is internally coated, the bearing surfaces of the mandrel shall be constructed to avoid permanently marking or damaging the internal coating. No appreciable stretching or thinning of the pipe wall thickness shall be permitted.

2.4 Bending Limitation

- 2.4.1 Deflection shall be limited to a maximum of one and one-half degrees per pipe diameter measured longitudinally along the pipe. A Company accepted method of measurement shall be used by the Contractor when marking the pipe in preparation for making field bends.
- 2.4.2 The welded longitudinal pipe seam shall be at approximately right angles to direction of bends.
- 2.4.3 On side bends, the weld seam shall be on the top quarter of the pipe.
- 2.4.4 When field bending is required at any point and where space is minimal, a maximum of 1-1/2 degrees bend per pipe diameter in length may be used for pipe below 36 inch diameter. For pipe equal to or greater than 36 inch diameter, a maximum of 1 degree per pipe diameter in length may be used. An accurate method of measurement shall be used.

- 2.4.5 The distance between centerlines of bending points shall be such that there will be no distortion of the pipe of the bend previously made. No bend shall be made nearer than five feet to the end of the pipe joint. When pipe is double-jointed before bending, the bend may not be closer to the weld than one pipe diameter.