PUGET SOUND ENERGY
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Puget Sound Energy
P.O. Box 97034
Bellevue, WA 98009-9734
PSE.com

Alan Rathbun
Chief Pipeline Safety Engineer
Washington Utilities and Transportation Commission
PO Box 47250
Olympia, WA 98504

October 5, 2015

Re: Waiver for Covered Systems - 49 CFR 193.2167

Dear Mr. Rathbun;

Puget Sound Energy (PSE) respectfully requests a state waiver of 193.2167 for a buried LNG transfer system to deliver LNG product from PSE's LNG facility to a customer for use as transportation fuel.

Title 49 CFR 193.2167 "Covered Systems" currently states, "*A covered impounding system is prohibited except for concrete wall designed tanks where the concrete wall is an outer wall serving as a dike"*.

Background

PSE intends to construct an LNG facility in the city of Tacoma, Pierce County, Washington. The facility is interconnected within PSE's intrastate natural gas distribution system. The facility will receive gas from the distribution system, produce LNG, and store it for use during times of peak demand. The facility will also supply LNG to Totem Trailer Ocean Express (TOTE) shipping vessels for use as a transportation fuel. The TOTE terminal is located immediately across the street from PSE's planned LNG facility. To deliver LNG product to the TOTE facility, PSE proposes to use a buried LNG transfer system approximately 800 feet in length.

Scope of This Request

The scope of this waiver request is for a buried LNG transfer system which will extend from PSE's LNG facility to the TOTE shipping terminal. This buried transfer system will be installed beneath Port of Tacoma properties which are leased by TOTE and PSE, in addition to a public right of way and railroad tracks owned by the City of Tacoma. The system is located in an industrial sea port, which contains no residences or parks. PSE intends to construct this system with several safety measures that could be construed as a 'covered impounding system'.

Please refer to the attached schematic and cross section for more detail. The LNG transfer system is composed of two vacuum jacketed LNG lines, and a vacuum jacketed vapor return line, installed on a pipe rack that will be inserted into a buried enclosed drainage channel (as referenced in NFPA 59A 2.2.2.3). The enclosed drainage channel is continually purged with nitrogen and includes monitoring for

hydrocarbons at the nitrogen vent, as well as cold temperature detection in the base of the channel. In addition, the vacuum in each pipe is continuously monitored. The channel will be placed approximately 10 feet below grade and will be approximately 800 feet in length.

While the code does not specifically address buried LNG pipelines serving this function, the fact that the system's pipelines will be vacuum jacketed, and enclosed in a channel with a nitrogen purge, leads PSE to believe this may be construed as a "covered impoundment system". We therefore request a waiver of 193.2167 which prohibits such systems.

Explanation of Unique Circumstances which make the Regulation Unnecessary or Inappropriate

The LNG facility will be providing fuel to vessels at a very active shipping terminal with tight shipping schedules. The current contracted fuel use cannot be met with tanker trucks (each fueling session would require 45 tanker loads that could not be facilitated within the required timeframe).

Alternatively, an LNG bunker barge could be used to supply the vessels, but this also requires additional connections and disconnections, as well as transit of the barge from the PSE facility to the terminal facility.

Additionally, fueling operations must occur simultaneously with offloading and onloading in order to meet shipping schedules. This means there will be a significant amount of traffic at the terminal during fueling periods. Offloading and onloading involves up to 600 trailers and 200 cars each way. There are at least two shipments per week, so up to 2,400 trailers and 800 cars per week may be transiting the terminal at full capacity.

PSE believes that transferring the LNG via a buried transfer system provides much less risk to the public than placing the pipelines above ground or using intermediary transfer systems such as trucks or barges.

Design, and Alternate Safety Measures Applied

The proposed below-grade LNG piping system is designed consistent with the requirements of NFPA 59A (2013) Section 9.11. While the design requirements of NFPA 59A Section 9 to LNG process piping systems, PSE believes these design requirements can be applied to transfer piping, or systems, currently covered by NFPA Section 11. The system consists of two vacuum-jacketed liquid lines and one vacuum-jacketed vapor return line on a pipe rack which is inserted into an enclosed drainage channel (see attached schematic). The channel is proposed to be a 48 inch diameter casing pipe with a 1 inch wall thickness. The casing pipe is carbon steel A56 Grade B and will be externally coated, likely with epoxy. The vacuum jacketed pipe is proposed to be Schedule 10S ASTM A312 Type 304 stainless steel (both inner and outer pipes). The system has a design pressure of 129 psia with an MAOP of 160 psig and will be pneumatically tested to 176 psig per ASME B31.3 testing requirements.

In addition to the benefits of the vacuum jacketed pipe as a containment mechanism, the enclosed drainage channel would also function as a secondary containment system. The channel is under

continuous nitrogen purge, with temperature and hydrocarbon sensing to detect a breach of the inner and outer pipes. The channel is intended to be buried, or directionally bored, with a minimum of 10 feet of clearance between the top of channel and grade. The depth provides a very conservative level of clearance beneath the roadway, rail road tracks, and existing underground utilities in the pipeline alignment.

Positive Impacts to Public Safety

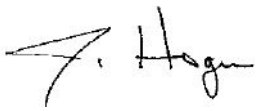
PSE believes the pipeline design will enhance public safety by minimizing LNG transfers and avoiding an above ground pipe rack in a heavily trafficked shipping terminal. The vacuum space will be monitored to detect a breach of LNG, and the channel atmosphere will also be monitored to detect a breach of either nitrogen or LNG. The entire pipeline is continuously monitored locally by control room staff at the Tacoma LNG facility (which is staffed twenty four hours a day, year round). The channel and vacuum jacket provide two additional layers of protection for the LNG pipelines. This level of monitoring exceeds that which would be present on an open pipe rack. A pipe rack would not have direct thermal monitoring under the entire length of pipe, nor would it have immediate detection of a methane release – since any atmospheric release would be subject to ambient wind conditions.

Certification

PSE certifies that the design, construction and operation of the buried LNG transfer system under state waiver will be in the best interest of pipeline safety.

If you have any questions, please feel free to contact me.

Sincerely,



Jim Hogan
Puget Sound Energy
jim.hogan@pse.com
425-462-3957

Enclosures (3):

2015-04-21 LNG Pipeline Schematic
2015.0108.18 Alternative Routes Considered
2015.03.23 Piping & Instrumentation Diagram