U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, D.C. 20590

MAR 2 8 2016

Mr. John K. Arnold, Esq.
WINSTEAD
1100 JP Morgan Chase Tower
600 Travis Street
Houston, TX 77002

Dear Mr. Arnold:

In a letter to the Pipeline and Hazardous Materials Safety Administration (PHMSA) dated October 20, 2015, you requested an interpretation of 49 CFR Part 195. You asked if the requirements of Part 195 exclude the use of mechanical interference connections.

You stated that NOV Tuboscope, a division of National Oilwell Varco LP, is proprietor of a pipeline mechanical connection technology known as Zap-Lok. You stated that Part 192 appears to allow a mechanical connection to steel pipes according to a 1972 interpretation, but there is no similar interpretation for Part 195 that either allows or prohibits the use of such connection method.

You stated that in 2014, a Texas pipeline operator utilized the Zap-Lok mechanical connection to join sections of pipe in a 12-mile condensate pipeline within an area subject to the pipeline safety jurisdiction of the Railroad Commission of Texas (RCT). After the operator completed construction of the 12-mile pipeline, a RCT inspector notified the operator that mechanical interference connections were prohibited for liquids lines under Part 195 of the federal pipeline safety regulations and the Texas pipeline safety regulations. You stated, however, that RCT has never concluded that this is the case in any formal action. You stated that, in order to timely complete and activate the condensate pipeline, the operator was forced to dig up the entire pipeline, cut out the mechanical connections, and weld the joints before putting the pipeline back into place. You stated that, based on the 2014 RCT action, certain operators of liquid pipelines in Texas have expressed a concern to NOV Tuboscope that RCT's actions in this matter constitute an official PHMSA interpretation as to the use or prohibition of mechanical pipeline connections under Part 195.

You pointed out § 195.424(c) is an indicator that a non-welded joint may be permitted under Part 195. In addition, you stated that § 195.8 allows an operator to use a pipeline material other than steel if PHMSA determines its use would not be unduly hazardous and, therefore, the section supports the notion that a mechanical joint is not prohibited where it meets the required pipeline performance standards. Therefore, you request an interpretation whether the federal pipeline safety regulations allow mechanical connection of steel pipelines under Part 195.

You are correct that Subpart F of Part 192 allows joining of materials other than by welding, but not for steel pipe to pipe joining. Also, PHMSA agrees with you that it is the pipeline operator's responsibility to demonstrate that the pipeline material is suitable and the joining procedures are acceptable for the intended service. Subpart E of Part 192 and Subpart D of Part 195 have specific requirements for welding of steel pipe to steel pipe. However, there are no such federal pipeline safety requirements for the Zap-Loc steel pipe to steel pipe connection method.

In addition, the regulations embody the principle long established in the boiler and pressure vessel standards that says any pipe fitting or component must be at least as strong as the pipe itself and able to withstand anticipated loading and stresses without impairment of its serviceability (Part 192, Subpart C and Part 195, Subpart C). Joining steel pipe and fittings by proper welding procedure accomplishes this. Also, joining steel pipe by certain types of mechanical means, such as the use of a flange fitting, also accomplishes this. However, if joining by press-fit would not be as strong as the pipe wall itself, the principle of having a pipe fitting that is at least as strong as the pipe itself would be violated.

The strength requirement includes not only hoop strength, but also strength against longitudinal pullout, or thrust forces causing an axial separation that would result in sudden complete failure or in seepage of gas or hazardous liquid from the connection over time. An operator would need comprehensive test data including data for all of the forces that can be expected to act on the pipe over its entire service lifetime. Such forces include expansion and contraction, cyclic internal loading forces, surge pressures, pressure cycle fatigue, bending forces, dents, corrosion, and maintaining longitudinal strength for the given service in which the pipe would actually be used.

A few specific examples of code requirements that the operator would be faced with include: §§ 192.55 and 195.112(b) and API 5L do not allow for pipe ends to be expanded for up to 10 percent of diameter; §§ 192.105 and 195.106 and API 5L involve limitations on maximum increases (and decreases) in pipe diameter; §§ 192.109 and 195.106 and API 5L involve limitations on maximum increases (and decreases) in wall thickness and uniformity of transition connection thickness; and pipe must be suitable for its intended purpose and pipe ends would need to be analyzed for mechanical and chemical properties, cold expansion effects, cracking, laminations, hardness, diameter change transition effects, and longitudinal friction effects.

Also, with this pipe fitting method, compliance with numerous other code sections including, among other things, corrosion control programs, integrity management impacts, dent remediation, passage of in-line inspection tools, etc., would likely be in question.

Therefore, in the absence of such requirements and/or quality control methods, the Zap-Loc pipe-to-pipe fitting method does not meet the federal pipeline safety regulations.

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

Sincerely,

John A. Gale
Director, Office of Standards
and Rulemaking

1100 JPMorgan Chase Tower
600 Travis Street
Houston, Texas 77002

713.650.8400 OFFICE
713.650.2400 FAX
winstead.com

Via FedEx No. 7815 5241 4468

October 20, 2015

Mr. John A. Gale
Director, Office of Standards and Rulemaking
U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration
1200 New Jersey Ave., SE
Washington, D.C. 20590-0001

Re: Interpretation Request Regarding the Use of Mechanical Interference Connections under 40 C.F.R. Part 195

Dear Mr. Gale:

Pursuant to United States Department of Transportation ("DOT") Pipeline and Hazardous Materials Safety Administration ("PHMSA") regulation 49 C.F.R. Section 190.11, which authorizes PHMSA to provide written regulatory interpretations concerning pipeline safety, NOV Tuboscope, a division of National Oilwell Varco L.P. ("NOV"), requests an official PHMSA interpretation confirming that the federal pipeline safety regulations in 49 C.F.R. Part 195, which govern the transport of hazardous liquid commodities, do not expressly prohibit the permanent joining of steel pipe using mechanical interference connections.

Background

NOV is a leading global provider of equipment and components used in oil and gas exploration and production and oilfield services. NOV Tuboscope is a division of NOV and the proprietor of the pipeline mechanical connection technology known as Zap-Lok. NOV Tuboscope's Zap-Lok mechanical interference pipeline connections have been used in the United States, and abroad, in both onshore and offshore applications for the safe and reliable transportation of crude oil, natural gas, gas liquids, corrosive liquids, carbon dioxide, and water for over forty years. Indeed, the DOT's Office of Pipeline Safety has issued an official interpretation stating that Zap-Lok is a suitable method for joining of steel pipe in accordance with 49 C.F.R. Part 192, pursuant to Section 192.273.[1] Although there is a clear pronouncement as to Part 192, there is no similar interpretation stating affirmatively that the Zap-Lok mechanical pipeline connection method is permitted under the Part 195 regulations. Neither is there any express prohibition.

Railroad Commission of Texas Enforcement

In 2014, a Texas pipeline operator utilized the Zap-Lok mechanical connection to join sections of pipe in a twelve-mile condensate pipeline within an area subject to the pipeline safety

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[1] Office of Pipeline Safety, *Letter from Joseph C. Caldwell, Director of the Office of Pipeline Safety, to Zapata Pipeline Technology, Inc.*, Aug. 23, 1972, PI-72-08-23.

jurisdiction of the Railroad Commission of Texas (the "Commission"). It is NOV Tuboscope's understanding, which it has confirmed with the Commission, that after the operator completed construction of the twelve-mile pipeline, a Commission inspector notified the operator that mechanical interference connections were prohibited for liquids lines under Part 195 of the federal regulations and the Texas pipeline safety regulations, which incorporate the federal standards by reference. In order to timely complete and activate the condensate pipeline, the operator was forced, at great expense, to dig up the entire pipeline, cut out the mechanical connections, and weld the joints before putting the pipeline back into place.

Based on this 2014 event, certain operators of liquids lines in Texas have expressed a concern to NOV that the Commission's actions in this matter constitute an official agency interpretation that Part 195 prohibits mechanical pipeline connections and that PHMSA would thus conclude similarly. To be clear, the Commission has never concluded that this is the case in any formal action. Moreover, nothing in Part 195 seems to expressly prohibit a mechanical connection in liquids lines, and NOV Tuboscope believes that it would be incorrect for an agency to conclude otherwise. For this reason, NOV Tuboscope now solicits PHMSA's guidance on this precise question: Does Part 195 *per se* prohibit the use of mechanical interference connections to join steel pipe for liquids transport?

Legal Analysis

There is a considerable legal basis from which to conclude that mechanical joints are not prohibited for use in hazardous liquids transport. First and foremost is the fact that there is no language within Part 195 that prohibits mechanical connections. While such a joint is not explicitly authorized, neither is it explicitly prohibited. That a mechanical joint is not prohibited makes sense in light of advisory guidance from the Office of Pipeline Safety, indicating that the regulations in Part 195 are intended to serve as "performance standards," so that "[w]here a specific method is neither required nor excluded, the operator has the responsibility of selecting a method of compliance that will conform with the appropriate standard."[2] Accordingly, it's not whether a pipeline joint is welded or whether it is created by mechanical interference — it is whether the pipeline performs to the standards that Part 195 demands for pipelines transporting hazardous liquids.

That a non-welded joint may be permitted under Part 195 is also clear from the fact that Section 195.424(c), which governs the conditions for moving pipe that has already been joined, prohibits an operator from moving any pipeline containing highly volatile liquids "where materials in the line section *are not joined by welding,*" e.g., where they are joined by mechanical interference unless certain conditions are met.[3] In addition, the preamble to the rulemaking pursuant to which Section 195.424 was adopted highlights the conclusion that a non-welded pipeline joint is not prohibited under Part 195, where it states that "the final rule permits movement with continuous flow at reduced pressure for pipelines joined by welding but not for pipelines joined by other means. The existing requirement for isolation of the line section involved is continued in effect for pipelines joined *other than by welding.*"[4] This demonstrates that the Office of Pipeline Safety specifically considered and included pipelines joined by means other than welding when crafting and adopting the regulations constituting Part 195.

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2 Office of Pipeline Safety, *Letter from Cesar De Leon, Acting Director of the Office of Pipeline Safety Operations, to D. Russell Associates, Inc.,* May 20, 1976, PI-76-024.

3 49 C.F.R. § 195.424(c) (emphasis added).

4 39 FED. REG. 19780, 19781 (Jun. 4, 1974) (emphasis added).

Similarly, Section 195.8 supports the notion that a mechanical joint is not prohibited where it meets the required pipeline performance standards. Section 195.8 allows an operator to use a pipeline material other than steel if PHMSA determines its use would not be unduly hazardous. Pursuant to Section 195.8, for example, PHMSA has approved the use of polyethylene for the transport of crude oil. Here, PHMSA's approach remains consistent: "[t]he procedure for joining lengths of pipe must be qualified for both the pipe material and the intended service. It is the responsibility of the pipeline operator to demonstrate that the...joining procedures are acceptable for the intended service."[5] All of this serves to bolster the conclusion that mechanical interference connections are not *per se* prohibited under Part 195.

Request for Guidance

PHMSA's historical policy with regard to the use of a mechanical joining technology in a pipeline regulated under Part 195 is to ensure that the joint continues to meet all of the required performance standards for the pipeline. It has not been to expressly prohibit the mechanical joint. Accordingly, because mechanical joints are explicitly addressed within the scope of Part 195, their use cannot be prohibited so long as they otherwise conform to all of the required performance standards.

For the reasons given above, NOV Tuboscope requests a formal written interpretation from PHMSA confirming that there is no *per se* prohibition of the mechanical connection of steel pipelines used for hazardous liquids transport under Part 195. Please contact me with any questions and direct your response to me at the address given below. Thank you for your attention to and response to this request.

Respectfully,

John K. Arnold

cc: Mr. Ray R. Waters
Attorney
National Oilwell Varco
7909 Parkwood Circle Dr
Houston, Texas 77036
(ph) 713.375.3781
ray.waters@nov.com

[5] Office of Pipeline Safety, *Letter from Cesar De Leon, Director of Regulatory Programs, to Rain Hill Group,* Aug. 5, 1992, PI-92-036.