

ACTION: Request for Interpretation of
Section 192.455(a) Relative to the Use
of Metallic Sleeve Crack Arrestors on
Large Diameter Pipelines

Melvin A. Judah
Acting Associate Director Gas Pipeline Project

Lloyd W. Ulrich
Director, Alaska Natural Gas Pipeline Project, DMT-50

Your memorandum of March 17, 1981, asks whether the crack arrestor sleeves designed for the Northern Border Pipeline Company would affect compliance with sections 192.455(a) and 192.463(a) for segments of pipeline underneath the sleeves.

You have raised a proposition, based on pipeline casings, that once the sleeves are in place, they may shield the pipeline from cathodic protection needed to comply with section 192.455(a) and make it difficult to determine whether protection is at the level required by section 192.463(a).

Regarding pipeline casings, experience shows that if casings are properly installed in a manner which assures that the casing is electrically isolated from the pipeline, and will remain so, and the pipeline in the casing is effectively coated and free of holidays, the pipeline will be protected against corrosion by standard corrosion protection methods. Of course, if casings become electrically shorted, the pipeline beneath the casing will not be cathodically protected as required. We do not know any reason why a crack arrestor sleeve would not behave in this same way.

It seems, therefore, the problem facing Northern Border is verification of electrical isolation through inspection during construction and subsequent operation of the pipeline.

ACTION: Request for Interpretation of §192.455(a) relative to the use of metallic sleeve crack arrestors on large diameter pipelines.

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Alaska Natural Gas Pipeline Project
DMT-50

Melvin A. Judah, Acting Associate Director
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In May 1981, Northern Border Pipeline Company is planning to begin construction of 823 miles of 42-inch pipeline from Phillips County, Montana, to Hancock County, Iowa. This will be part of the eastern leg of the Alaska Natural Gas Transportation System. The line is designed to operate at 1435 psig.

In an effort to minimize the effects of a potential pipeline failure by a longitudinal propagating ductile fracture, Northern Border is planning to install at an even spacing along the pipeline, steel sleeve type crack arrestors loosely fit around the outside of the pipeline. These sleeves are grade X-70 steel, two feet long, with 44.250 inch O.D. and 0.598 inch wall thickness, giving a 43.050 nominal I.D. The crack arrestor will be installed on a precoated nominal 40 feet length of 42-inch O.D. grade X-70 pipe.

The sleeve will be installed by centering the sleeve over one end of the 42-inch line pipe and advancing it until a minimum distance of 10 feet exists from the end of the pipe to the crack arrestor. The sleeve will be supported by five urethane supports at each end and spaced at equal distances around its circumference.

After installation of the centering supports, a seven-inch wide pipeline coating tape will be centered at each end of the crack arrestor sleeve for an end seal. Temporary sealing straps will be installed around the circumference of the tape as a reinforcement.

A 3/8-inch zerk fitting is to be installed in a hole previously taped at the bottom of the sleeve. An asphalt extended urethane will be pumped through the zerk fitting into the annulus between the pipe and the crack arrestor sleeve until liquid urethane vents from a 1/4-inch vent at the top of the crack arrestor.

After the urethane cures to a solid, the temporary end seal straps and the zerk fittings are to be removed. In addition, the vent hole and the fill hole will be filled. Pipeline coating tape will be applied over the entire sleeve extending sufficiently onto the pipeline to a positive seal.

From the above description, it can be seen that the crack arrestor sleeves are similar to pipeline casings that are regularly used on pipelines at road and railroad crossings. It has been well-established that despite the possible shielding of cathodic protection by pipeline casings, they do not cause a corrosion problem provided they are well insulated from the carrier pipe and water is kept out of the casing. However, we are not aware of any studies that have shown that cathodic protection on a pipeline will be effective inside of a casing. As a result, it appears that a segment of a pipeline inside of a casing or crack arrestor sleeve on a pipeline that has a cathodic protection system installed to comply with §192.455(a) may not be "protected in its entirety" as required by §192.455(a)(2).

From a practical standpoint, we believe that there would be no corrosion problem with the crack arrestor sleeves when installed as described above. The mainline pipe coating, in addition to the asphalt extended urethane, and the pipeline coating tape over the entire unit are all high dielectric strength materials and excellent moisture barriers which would virtually eliminate the possibility of corrosion.

Casings and crack arrestor sleeves also make it very difficult to determine the level of cathodic protection as required by §192.463(a).

In view of the above discussion, it is requested that an interpretation be made as to whether the use of the crack arrestor sleeves described would be in compliance with §192.455(a) and 192.463(a).

Because of the short time before construction begins on this pipeline and the possible need for a waiver, it is requested that this interpretation be expedited in compliance with the requirements of Section 9(b) of the Alaska Natural Gas Transportation Act of 1976.

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