PI-81-0115

October 2, 1981

Mr. Thomas D. McMenamin
American Society of Mechanical Engineers
United Engineering Center
145 E. 47th Street
New York, NY 10017

Dear Mr. McMenamin:

Your letter of June 25, 1981, requests that we amend §192.719(a)(2) to refer to §192.241 rather than 192.243 so that the exceptions from the requirement for nondestructive testing of new girth welds will apply to nondestructive testing of tie-in welds made when a damaged segment of a transmission line is cut out and replaced.

The request is supported by several arguments in favor of the suggested rule change, one of which challenges the basis for an "Advisory Bulletin No. 75-11." We have reexamined the basis for this interpretation and found the interpretation invalid. As a result, a new interpretation of §§192.719(a)(2) and 192.241(b), which supersedes the earlier one, is enclosed.

This new interpretation declares that the exceptions under §192.241(b) were intended to apply to tie-in welds made in repairing damaged pipe sections. Because of the significance of this action, the interpretation will be published in the Advisory Bulletin. We also believe that changing the rule as you suggest would clarify this issue and eliminate the need for an interpretation. Therefore, we will schedule a rulemaking action to so amend §192.719(a)(2).

We appreciate your concern for correct application of the Federal pipeline safety standards.

Sincerely,

Melvin A. Judah
Acting Associate Director for
Pipeline Safety Regulation
Materials Transportation Bureau

DEPARTMENT OF TRANSPORTATION

RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION

MATERIALS TRANSPORTATION BUREAU

PIPELINE SAFETY REGULATORY INTERPRETATION

Note: A pipeline safety regulatory interpretation applies a particular rule to a particular set of facts and circumstances, and, as such, may be relied upon only by those persons to whom the interpretation is specifically addressed.

SECTION: 192.241(b) and 192.719(a)(2)

SUBJECT: Nondestructive testing of tie-in welds

FACTS: None

Question: Do the exceptions from the requirement for nondestructive testing of welds under §192.241(b) also apply to tie-in welds which must be tested under §192.719(a)(2)?

Interpretation: This question was addressed first by an interpretation issued January 20, 1971, and again by an interpretation published in Advisory Bulletin 75-11 (November 1975), both of which held that the exceptions do not apply. The rationale was that §192.719(a)(2) established a specific requirement for nondestructive testing because of the greater need to ensure weld quality when a damaged pipeline segment is replaced. This need was based on the difficulties encountered in making tie-in welds under repair conditions as compared to new pipeline construction.

A review of the history of §192.719(a)(2) shows no evidence in the record for this initial interpretation. In fact, the record creates a strong inference that the §192.241(b) exceptions apply equally to nondestructive tests of tie-welds made either as required by §192.241 for new construction or by §192.719(a)(2) for repairs to existing transmission lines.

Section 192.241(b) sets forth two exceptions (for pipe less than 6 inches in diameter and pipe operated at less than 40 percent of SMYS where testing is impractical) from the construction requirement that girth welds on pipelines to be operated at 20 percent or more at SMYS must be nondestructively tested under §192.243. For the excepted conditions, visual inspection alone is sufficient to qualify a girth weld. In general, §192.243 governs the procedures of testing and the percentage of welds that must be tested. In addition to the testing requirements of §192.241(b), which apply to new replaced, or relocated pipelines, §192.719(a)(2) provides that any field girth butt weld made in replacing a damaged segment of transmission line but not strength tested (paragraph(a)(2) allows pre-installation strength tests for the replacement pipe), must be nondestructively tested under §192.243.

Since Part 192 contains two rules, §§192.241(b) and 192.719(a)(2), that pertain to testing girth welds on replacement pipe, the one, a general requirement with exceptions and the other, rule without exceptions specifically directed to replacements made in repair situations, absent any other information, the specific rule would have priority. However, the historical development of these two rules clarifies their apparent conflict.

Section 192.719(a)(2) was adopted in final form essentially as it was proposed in Notice 70-5 (35 FR 5482, April 2, 1970). Likewise, the requirements of §192.241(b) are essentially as they were proposed in Notice 70-1 (35 FR III2, January 28, 1970). As noted in both Notice 70-1 and Notice 70-5, the proposed versions of §§192.719(a)(2) and 192.241(b) were derived from counterpart standards in the USAS B31.8 Code (1968 ed.). In Notice 70-1, the major differences between the B31.8 document and the proposed regulations were said to be for purposes of organization and regulatory language (style and enforceability). No substantive differences were noted between the proposed version of §192.241(b) and its counterpart in the B31.8 document, section 828.2(a) and (e). In Notice 70-5, although the previous reference to organizational and regulatory differences was not repeated, substantive changes between the B31.8 version of proposed rules and the proposed rules were expressly stated. There were no substantive changes discussed between the proposed version of §192.719(a)(2) and its counterpart in B31.8, section 851.81.

Section 851.81 of B31.8 stated that nondestructive tests meeting the requirements of section 828 were to be made for all field girth butt welds on replacement segments for damaged pipelines. The relevant provision of this reference to section 828 was section 828.2, which specified the standards for nondestructive testing. These standards contained exceptions in paragraph (e) for particular pipe, which Notice 70-1 used as a basis for the proposed version of §192.241(b). The remaining provisions of section 828.2 served as a basis for §192.243. Thus, under B31.8, the exceptions how provided by §192.241(b) (originally section 828.2(e) were applicable to the nondestructive testing requirement for damaged pipe under section 851.81. Since the rulemaking notices, Notices 70-1 and 70-5, did not announce any intent to substantively after these provisions (i.e., the section 951.81 incorporation of section 828.2 exceptions), we must conclude that the current reference in §192.719(a)(2) to §192.243 mistakenly omitted the §192.241(b) exceptions; and, therefore, they apply under Part 192 as they did under B31.8.

It could be argued in opposition to this view that the proposed verbiage of §192.719(a)(2) clearly omitted any reference to the §192.241(b) exceptions, showing an intent that they should not be applied. Support for such an argument is as indicated by the prior interpretation, that tie-in welds in repair situations are difficult to make, and thus there is a greater need to ensure the integrity of the welds by testing. This argument is countered, however, first, by the lack of any discussion of such an intent or welding difficulties, which would have amounted to a substantive change, particularly when other substantive changes were highlighted in Notice 70-5, and secondly, by the historic lack of girth weld problems in the small diameter and low stress level pipe to which the §192.241(b) exceptions apply. A better explanation for the failure of the proposed version of §192.719(a)(2) to include the exceptions is that when Notice 70-1 was prepared, the nondestructive testing requirements of section 828.2 of B31.8 were reorganized into the proposed versions of §192.241(b) and §192.243. Later, when §192.719(a)(2) was proposed by Notice 70-5, the original reference in section 851.81 to section 828 was continued, but as §192.243, without regard for the prior reorganization of section 828 which relocated the paragraph (e) exceptions to §192.241(b).

A further reason to support this new interpretation of §§192.241(b) and 192.719(a)(2) is that tie-in welds made in the replacement of a damaged segment of transmission line (governed by §192.719(a)(2) would not be subject to greater stresses than other girth welds made for new construction or in replacing a pipe segment for any other reason (governed by §192.241(b). Moreover, the need for the exceptions stated in §192.241(b) occurs whether girth welds are made in a repair situation or otherwise. In fact, the need for quick action in repair situations, particularly emergencies, in order to maintain gas flow and the lack readily available nondestructive testing services make the §192.241(b) exceptions perhaps more important under the requirements of §192.719(a)(2).

Melvin A. Judah
Acting Associate Director
for Pipeline Safety Regulation
Materials Transportation Bureau

June 25, 1981

Mr. Melvin A. Judah
Acting Associate Director for
Pipeline Safety Regulation Materials
Transportation Bureau U.S. Dept. of Transportation
400 Seventh Street S.W.
Washington, D.C. 20590

Dear Mr. Judah:

Subject: Interpretation of 49 CFR Paragraph 192.241 and 192.719

The Office of Pipeline Safety Operations Advisory Bulletin No. 75-11 (November, 1975) contains an interpretation of Paragraph 192.241 and Paragraph 192.719 which we believe merits additional consideration. The interpretation states that all tie-in welds for replacement sections of transmission main must be radiographically inspected, without reference to the exceptions listed in Paragraph 192.241(b). It is a good general practice to radiographically inspect tie-in welds. However, there are operating conditions which fully justify the application of the exceptions in Paragraph 192.241(b) and that their use is just as valid for a tie-in weld on a replacement section of transmission line, as as for any other tie-in weld.

A girth weld made for a replacement section of transmission line is not subject to stresses which are different, or greater, than those imposed on any other girth weld. While a damaged pipeline could have been subjected to additional stresses at the time the damage occurred, these would have been relieved at the time the damaged section of pipe was cut out. The tie-in girth welds would not be subjected to any residual stress. Therefore, there appears to be no justification for the statement that there is a "greater need to ensure weld quality" under these conditions, than there is for any other weld.

Section 192.719 refers to the replacement of a damaged section of transmission line. Experience has shown that transmission line damage most frequently is the result of construction, land leveling or agricultural equipment. When a transmission line is damaged, it is often critical that it is repaired and returned to service as rapidly as possible to maintain continuity of service. For this reason, many companies maintain a stock of pretested pipe which can be used to replace a section of damaged main in an emergency. It is frequently not possible to obtain a radiographer in time to inspect the tie-in welds prior to returning such a line to service after an emergency repair.

The exceptions to radiographic inspection in Section 192.241(b) cover only small diameter pipe (under six inches) and pipe to operate at low stress levels (less than 40% SMYS). The exceptions were permitted because of the low incidence of girth weld failures in these sizes and stress levels. Girth weld failures do not normally occur in small diameter steel pipe. A review of published data on "Reportable Incidents for Transmission Lines" for the 1970-73 period confirms the low incidence of girth weld failures. Some significant figures include:

1. Only 6.2% of the total incidents resulted from girth weld failures (Table 8 - Report prepared by Battelle).
2. Only 5.3% of the incidents resulted from construction defects (Table 1 - Report prepared by

Battelle).

3. Only 9.2% of the leaks in transmission mains were on pipelines operating at pressures under 40% SMYS (table 2.49, University of Oklahoma, Analysis of Leak Reports).

4. Nearly 80% of the failures occur in rural or undeveloped areas where a leak would involve a minimum risk to public safety (Figure 4, Report by Battelle).

More meaningful would be a comparison of girth weld failures by pipe size and by stress level. However, this statistical information is not available to us.

There should not be a blanket exemption for the radiographic examination of tie-in welds for replacement section of transmission mains. However, an operator should be able to use a visual inspection of tie-in welds for replacement sections of line, under the same conditions provided for in Paragraph 192.241. We firmly believe that there is no reduction in ublic safety by permitting an operator to exercise this option. This is bortOut by the excellent safety record of the industry with respect tsmall diameter girth weld failures.

On the basis of the above information, we respectfully request that the reference in Section 192.719(a)(2) be changed from Section 192.243 to 192.241, to permit the exemptions from radiographic inspection to apply to tie-in welds for replacement sections of transmission lines.

Very truly yours,
Thomas D. McMenamin
Secretary, GPSC
(212) 644-7809