

**DEPARTMENT OF  
TRANSPORTATION**

**Research and Special Programs  
Administration**

[Docket No. 80-10W; Notice 1]

**Transportation of Liquids by Pipeline;  
Petition for Waiver From  
Compliance With Requirements for  
Repair of Weld Defects**

LOOP, Inc., petitioned the Materials Transportation Bureau (MTB) on November 25, 1980 (Petition No. 80-10W), for a waiver from compliance with Part 195 on certain crude oil piping girth welds made on LOOP's marine terminal pumping platform.

In October 1980, LOOP discovered during construction that repairs had been made to girth welds in the pumping platform piping which were not in compliance with Part 195. While the repairs were in compliance with API 1104 and would be in compliance with Part 195 if made on pipe installed from a pipeline vessel, the repairs were not in compliance with §§195.230 and 195.232. These sections do not allow repair of welds containing cracks nor multiple repairs of welds containing other defects. The LOOP petition sought a waiver from compliance with §§195.230 and 195.232 on 5 welds which had contained cracks before repair and 105 welds which had been repaired more than once. Three of the welds with cracks were repaired once and two such welds were repaired twice. Weld repairs were made on pipe ranging from 1 inch to 48 inches in diameter.

The LOOP petition argued that the 5 welds which had cracks repaired and the 105 welds repaired more than once were repaired in such a manner that the completed welds have the same level of safety as welds made under literal compliance with Part 195.

In making its decision on this matter, the MTB considered the following:

1. *Comparison of Allowable Weld Repairs of Part 195 With Industry Codes.* 49 CFR Part 195, "Regulations for the Transportation of Liquids by Pipeline," does not allow the repair of a crack in a weld or any repair to a weld segment more than once.

API 1104, "Standards for Welding Pipelines and Related Facilities," allows company authorization of multiple repairs and repair of cracks less than 8 percent of weld length.

ANSI B31.3, "Chemical Plant and

Petroleum Refinery Piping," and ASME "Boiler and Pressure Vessel Code," Section VIII, Division 1, make no limitation on the number of times a weld defect can be repaired or between types of repairs (i.e., cracks or other types).

ANSI B31.4, "Liquid Petroleum Transportation Piping Systems," and ANSI B31.8, "Gas Transmission and Distribution Piping Systems," require repairs to be in accordance with API 1104.

Thus, Part 195 is much more stringent than industry codes concerning the repair of defective welds. Part 195 prohibits the repair of cracks, while all industry codes mentioned allow repair of cracks. Similarly, Part 195 allows a one-time repair of defects other than cracks, while the industry codes allow multiple repair of these defects. Judging from the industry codes and experience with their application, the MTB believes that it is feasible to make an acceptable repair to a crack in a weld or to make acceptable multiple repairs on a weld if adequate precautions are taken to assure the integrity of the weld.

2. *Repair Welding Procedure and Test.* The welds were repaired using the original welding procedure in accordance with the ASME code. Radiographic film for the repaired welds was examined by an independent expert consultant, and the results of his review confirmed the removal of the defects within the acceptance standards of Part 195. Comprehensive laboratory tests were performed to duplicate the actual repair conditions. The results of these tests demonstrated that the conditions under which the welds were repaired provided welds having mechanical properties (i.e., strength, ductility, and hardness) and soundness that meet the requirements of API 1104 prescribed by Part 195, including tensile test, nick break test, radiography, guided bend test, and hardness of weld metal, heat affected zone, and base metal.

Further, impact testing was performed to assure that fracture toughness of the heat affected zone was retained. Based on this finding, an industry expert using fracture mechanics analysis concluded that the repaired welds should be considered acceptable.

3. *Difficulty of Removing Repaired Welds.* The repaired welds are located throughout the pumping platform, and any work performed to remove these welds would have to be done in an off-shore environment. Replacing the repaired welds with short sections of pipe as required by Part 195 would require

making two welds for each repaired weld removed. Further, many of the repaired welds connect pipe to valves and fittings, and replacing these welds would be difficult because new bevels on the fittings and valves would be thicker than the pipe. Under these circumstances, the MTB believes that it is highly unlikely that new welds would be of better quality than the existing repaired welds.

4. *Impact of Removing Repaired Welds.* The time required to procure materials and replace the welds would be from 3 to 5 months. The direct construction cost is estimated by LOOP to be from \$1.5 million to \$2.5 million. Indirect costs are estimated at \$8 million for each month of delay.

In consideration of the above, the MTB believes that the repaired welds have the same level of safety as welds made under literal compliance with Part 195. The MTB further believes that to require removal of the repaired welds would burden LOOP with unnecessary delays and needless additional costs without enhancing the safety of the facility. Therefore, the MTB grants to LOOP the requested waiver from compliance with the welding requirements of Part 195 for the repaired welds contained in Petition No. 80-10W, effective May 1, 1981.

MTB has postponed the effective date of the waiver until May 1, 1981, to provide notice and opportunity for public review and comment as required by Sec. 203 of the Hazardous Liquid Pipeline Safety Act of 1979 (49 U.S.C. 2002). Should public comments disclose any new information that would bear on the safety of the subject welds, MTB will reconsider the waiver, and if warranted, further postpone the effective date until a final decision is made.

Comments should identify the docket number and be submitted to the Docket Branch, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590. All comments will be available for public review at the Dockets Branch, Room 8426, 400 Seventh Street, S.W., Washington, D.C., between the hours of 8:30 a.m. and 5:00 p.m. (49 U.S.C. 2002; 49 CFR 1.53(a), Appendix A to Part 1, and Appendix A to Part 106)

Issued in Washington, D.C., on April 10, 1981.

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*Petition for Waiver, #1, 80-10W*

*Regulation, Materials Transportation Bureau.*

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