Research and Special Programs Administration

49 CFR Part 195

[Amdt. No. 195-19; Docket No. OPSO-48]

Seams on Adjacent Pipe Lengths

AGENCY: Materials Transportation Bureau (MTB).

ACTION: Final rule.

SUMMARY: This final rule revokes § 195.218 which requires that seams on adjacent pipe lengths be offset. This action is taken because the pipe manufacture and welding technology has advanced sufficiently to make the requirement of this section unnecessary.

EFFECTIVE DATE: September 8, 1980.

FOR FURTHER INFORMATION CONTACT: Frank Robinson, (202) 426-2392.

SUPPLEMENTARY INFORMATION: On September 21, 1977, MTB issued a notice of proposed rulemaking (Notice 77-6, 42 FR 48900) proposing to revoke § 195.218, "Welding: Seam Offset." The notice invited comments from interested persons concerning the need to offset weld seams on adjacent pipe lengths as required by § 195.218. MTB initiated this rulemaking proceeding as a result of waivers granted to the Alyeska Pipeline Service Company. Information provided in support of the waivers demonstrated that technological advances in pipe manufacture and welding have minimized the likelihood of weld failure due to residual stresses and have, therefore, made unnecessary the requirement to offset adjacent longitudinal weld seams.

Seven commenters responded to the notice. Six industry commenters, including the American Petroleum Institute and the American National Standards Committee B-31, concurred with MTB's proposed revocation of the offset requirement of § 195.218 for the same reasons given in the notice.

One dissenting industry commenter argued that removal of § 195.218 is not warranted in all cases because much of the pipe that could be installed may not have been manufactured according to the latest technology. This commenter stated that the Alyeska pipeline was built to a specification which included requirements for ductility and notch toughness of weld and pipe metals in the arctic environment. However, Notice 77-6 was not issued on the basis that line pipe available for use in liquid service throughout the U.S. would have material characteristics similar to those on the Alaskan pipeline. Rather, the notice was predicated on the fact that pipe manufacturing and welding technology has advanced in the area of ductility to the point where § 195.218 is no longer necessary. This statement is as true for Grade B pipe, made to standard API 5L, as it is for the higher strengths and grades of pipe. Each of the normally followed API standards for pipe manufacture, API 5L and 5LX, provides for a level of ductility that is high enough to remove the potential, under normal operating conditions, of weld seam failure and propagation that § 195.218 was intended to prevent. Although Grade B pipe may be more brittle under cold conditions than the higher grades of pipe, due to its higher transition temperature from a ductile to brittle condition, § 195.102 requires the carrier to select component materials for the temperature environment in which the component will be used to assure that structural integrity is not impaired. For these reasons, the MTB believes it is not necessary to maintain the requirement to offset weld seams on Grade B pipe or other pipe.

In view of the cost savings that will result from the revocation of this regulation the effective date of this final rule is September 8, 1980.

In consideration of the foregoing, 49 CFR Part 195 is amended as follows:

§ 195.218 [Revoked]

1. By revoking § 195.218 "Welds: Seams Offset."

2. By deleting § 195.218 from the table of sections. (Hazardous Liquid Pipeline Safety Act of 1979 (Title II of Pub. L. 96-219, November 30, 1979); 49 CFR 1.53 and Appendix A of Part 1).

Issued in Washington, D.C., on September 2, 1980.

L. D. Santman,

Director, Materials Transportation Bureau.

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49 CFR Part 195

[Amdt. 195-17; Docket No. PS-55]

Testing Highly Volatile Liquid Pipelines

AGENCY: Materials Transportation Bureau (MTB).

ACTION: Final rule.

SUMMARY: This final rule provides that onshore "interstate pipeline facilities" (as that term is defined in the Hazardous Liquid Pipeline Safety Act of 1979) constructed before January 8, 1971, may not transport highly volatile liquids (HVL) unless they have been hydrostatically tested in accordance with Subpart E of Part 195 or do not operate at a pressure that exceeds 80 percent of any test or operating pressure which has been held for four continuous hours. This rule reduces the potential for severe HVL pipeline accidents caused by latent material and construction defects.

EFFECTIVE DATE: October 8, 1980, except that a longer compliance period is set forth in the final rule for pipelines in HVL service before September 8, 1980.

FOR FURTHER INFORMATION CONTACT: Frank Robinson, 202-426-2392.

SUPPLEMENTARY INFORMATION: Accident reports on file with the MTB show that HVL pipelines have caused a substantially higher percentage of deaths, injuries, and property damage than hazardous liquid pipelines carrying less volatile commodities. The record of hazardous liquid pipeline accidents reported on Form DOT-7000-1 from 1968 through 1977 shows that although HVL pipeline accidents comprise only 10 percent of the total number of accidents involving liquid pipelines, the HVL pipeline accidents caused 66 percent of the deaths, 50 percent of the injuries, and 30 percent of the property damage. These statistics clearly illustrate that an HVL spill presents a much higher risk to safety than spills of other hazardous liquids. This higher potential for damage is due to the fact that when HVL is released to the atmosphere, it forms a gas cloud, which is a markedly different and more insidious hazard than that presented by spills of less volatile liquids.

A definition of a highly volatile liquid has been adopted under Part 195 in Amendment 195-15, Docket PS-51 (44 FR 41197, July 16, 1979), but is repeated here for clarity: a "highly volatile liquid" or "HVL" is "a commodity which will form a vapor cloud when released to the atmosphere and which has a vapor pressure exceeding 276 kpa (40 psia) at 37.8°C (100°F)."

Inside the pipeline, HVL will remain a liquid as long as the pressure is higher than the vapor pressure of the liquid. If a pipeline rupture occurs and the pressure is reduced to atmospheric pressure, some of the liquid will immediately vaporize to a gas. The remainder will turn to gas as it picks up heat from its surroundings. The gas forms a cloud that will move downhill or downwind depending on the terrain, type of liquid involved, and atmospheric conditions. Because it is generally heavier than air, the rapidly expanding gas cloud will tend to hug the ground as it continues to migrate. If a source of ignition is encountered, a petroleum gas cloud will burn or explode. In the case of the lighter anhydrous ammonia vapor, the

greatest danger is that of toxicity or asphyxiation. For either commodity, the hazards are severe.

Analysis of the hazardous liquid pipeline accidents reported on Form DOT-7000-1 shows that one-tenth of the accidents during the years 1968 through 1977 were caused by defective pipe seams, defective girth welds, and defective pipe materials. These types of defects could have been found during an original hydrostatic test.

MTB's further review of 2,883 of these accident reports selected from submissions between 1968 and the first quarter of 1977 showed that 1,364 (47 percent) of the pipelines involved had not been hydrostatically tested. While not all the reports examined involved HVL pipelines, MTB finds it reasonable to conclude that a substantial number of HVL pipelines have not been hydrostatically tested in order to remove potentially harmful latent material and construction defects.

The value of an adequate hydrostatic test is well stated in the study "Transportation of Highly Volatile, Toxic, or Corrosive Liquids by Pipeline" (DOT/OPSO/75/06) by Battelle Columbus Laboratories.
On page 52, this study states:

"The ultimate test for basic structural integrity of a pipeline is the field hydrostatic test * * * within thousands of miles of pipelines tested to a stress level of 90 percent of SMYS, or more, and subsequently operated at a stress level of 72 percent of SMYS there have been no ruptures resulting from original manufacturing or construction defects. This operating experience strongly suggests that of all the steps an operator can take to ensure that his pipeline is initially free of harmful defects, high-pressure hydrostatic testing in the field (to 90 percent of SMYS or more) is the only one that has demonstrated a successful track record. The benefits of such testing are accrued in rehabilitation testing of existing lines, as well as in new pipelines."

Viewed in another way, this information shows that material and construction defects left undiscovered by an initial test have not proven to be harmful if the pipeline is operated at a stress level no higher than 80 percent of the level achieved during the test.

Prior to this final rule, pipelines constructed before January 8, 1971 (the effective date of Subpart E of Part 195), were not required by Federal regulation to be qualified for use by hydrostatic testing. Although qualification testing of existing pipelines was proposed in Notice 68-4 (33 FR 10213), the proposal was withdrawn when Part 195 was adopted (34 FR 15473), primarily on cost benefit grounds. In view of the HVL accident record and the potential for catastrophic accidents, the MTB now believes, however, that either hydrostatically testing onshore HVL pipelines to 1.25 times maximum operating pressure or limiting actual operating stress level to 80 percent of the level achieved by testing or by previous operations is essential to minimize the risk of failures due to material or construction defects.

This final rule requires, therefore, as a condition of operation in HVL service, that onshore steel pipelines constructed before January 8, 1971, be hydrostatically tested in accordance with Subpart E of part 195 or operated at not more than 80 percent of a previous maximum test or operating pressure held for four or more hours.

A notice of proposed rulemaking (NPRM) was published in the Federal Register on November 13, 1978 (43 FR 52504), proposing a requirement to hydrostatically test all onshore HVL pipelines in accordance with Subpart E which have not been previously tested to 1.25 times their maximum operating pressure for at least 24 hours. Several issues were raised in the NPRM, and comments were solicited regarding these issues. The issues, the comments, the responses to the comments, and the development of the final rule follow:

Need for Testing HVL Pipelines Which Have Not Been Tested

Three industry commenters contested the need for hydrostatic testing of untested HVL pipelines, pointing to the relatively small number of deaths and injuries and relatively small amounts of property damage caused by HVL pipelines in relation to other modes of transportation as support for their position. The MTB does not believe that a review of past accidents alone provides an adequate basis for predicting the potential for and effects of future HVL pipeline accidents. A significant pipeline spill of HVL in a populated region could cause a major disaster that would dwarf any previous HVL pipeline accident. It is this inordinate potential for damage, together with the record of past accidents illustrating the hazardous nature of an HVL, that leads the MTB to conclude that accidental spills of HVL are a serious risk to public safety. This final rule reduces that risk by eliminating the harmful effects of latent material and construction defects.

Untested HVL Pipelines Which Have Not Leaked

Two industry commenters recommended that untested HVL pipelines which have never leaked need not be tested until a leak occurs, arguing that a pipeline which has been in service several years without leaks most likely has no latent material or construction defects.

In contrast, the American Petroleum Institute (API), the National Transportation Safety Board (NTSB), and one major carrier recommended that all untested HVL pipelines be tested regardless of leak history, arguing that the leak history of a pipeline does not necessarily indicate the potential for future failures. The MTB agrees with this view because of its knowledge of accidents wherein pipelines failed after a period of satisfactory service. For this reason, the final rule applies to all untested HVL pipelines regardless of leak history.

Test Pressure

The API, the B31.4 Subcommittee on Liquid Petroleum Transportation Piping of the American Society of Mechanical Engineers (ASME) Code Committee on Pressure Piping, and one industry commenter recommended that HVL pipelines previously tested to 110 percent of the maximum operating pressure (MOP) not be retested to 125 percent of the MOP, arguing that the requirement to retest would disrupt normal deliveries and would present additional hazards to the carriers' personnel during the testing period. None of these commenters argued that testing to 110 percent of MOP was adequate to ensure safety.

Three industry commenters and the NTSB recommended that all HVL pipelines not previously tested to 1.25 times MOP be required to be tested to that level, arguing that testing to 1.25 times MOP is essential to ensure safety. The MTB agrees with this view and cites the following statement from the Battelle study "Transportation of Highly Volatile, Toxic or Corrosive Liquids by Pipeline" as support for this position:

"A hydrostatic proof test to 125 percent of MOP is essential to demonstrate the initial structural integrity of a line * * *. Additional evidence documented in the literature shows that natural gas pipelines tested to 125 percent of MOP have much better performance records, from the standpoint of original manufacturing or construction defects, than those * * * not tested to pressure levels significantly in excess of their operating pressure. Furthermore, research on the long term behavior of defects under load indicates that through slow growth at constant load * * * pipe defects can be extended to critical size and cause ruptures at loads of 6 to 10 percent below levels they had previously endured without failing. Hence, margins of less than 110 percent of MOP are unsafe and provide no real assurance that existing defects will not fail in service. On the other hand as experience has shown, a margin of 125 percent of MOP produces excellent serviceability."

The Battelle study goes on to recommend that MTB "reconsider requiring a field pressure test to 125 percent of MOP on existing pipeline systems which have not been tested in this manner."

Prior to 1966, the B31.4 code required testing only to 110 percent of MOP for newly constructed pipelines. Since 1966, the B31.4 code has required testing to 125 percent of MOP in recognition of the necessity to test to this pressure level to ensure safety.

One of the industry commenters who recommended testing to 125 percent of MOP initiated a program in 1975 to retest all its HVL pipelines not previously tested to this level, even though the pipelines had been previously tested to meet the current industry code at the time of construction. This commenter, a major carrier of HVL commodities, stated:

"Our retesting experience shows that pipe defects which cause operating problems are eliminated by tesfing to 1.25 times the maximum operating pressure. Also, this same experience shows that maximum pressure reversal encountered during testing was 15 percent. Therefore, the 1.25 times maximum operating pressure test results in reducing the chances of future failures [due to latent materials and construction defects] to zero. This future zero failure possibility is also confirmed by our operating experience on lines that were tested to 1.25 times the maximum operating pressure."

In view of the research and industry experience quoted in the Batelle study, the requirement of the B31.4 code since 1966, and the comments from industry and the NTSB, the MTB believes that the minimum level of pressure to test pipelines to ensure safety is 1.25 times the MOP. The final rule has been written accordingly. An exception is not provided for pipelines previously tested to 1.10 times the MOP because the record shows this level is not high enough to ensure future operating safety.

Adequate Test Hold Period To Ensure Safety

The NPRM proposed that existing HVL pipelines which had not been tested to 125 percent of MOP for 24 hours be pressure tested in accordance with Subpart E, which requires that the test pressure be held for 24 hours. Most of the commenters disagreed with the 24-hour hold period both as a means to determine which HVL pipelines must be retested and as part of the test required under Subpart E. Most of the commenters argued that a 24-hour hold period was more than necessary to ensure safety.

One industry commenter recommended a 2-hour hold period, arguing that a 2-hour hold period is sufficient to ensure safety.

Five industry commenters recommended an 8-hour hold period, arguing that an 8-hour hold period is adequate to ensure pipeline integrity. These commenters pointed to the 8-hour hold period in Part 192 for natural gas pipelines and the 1974 edition of the B31.4 code for petroleum pipelines as support for their recommendation. These commenters further argued that an 8-hour hold period in lieu of the proposed 24-hour hold period would (1) permit the operator to perform the tests during daylight hours thereby making the test procedures less hazardous, (2) be much less costly, and (3) minimize the time pipelines being tested are out of service.

The API, the B31.4 Subcommittee, and one industry commenter recommended a 4-hour hold period in lieu of the proposed 24-hour period. These commenters argued that a 4-hour hold period was adequate to prove the integrity of a pipeline system. These commenters argued that the 24-hour hold period was initially developed as an industry standard because of the inability to explain the failures which occurred during the hold period and the belief that 24 hours was more than sufficient time to expose defects that might later fail in service. These commenters argued that subsequent research and industry experience have demonstrated that the 24-hour hold period is not necessary to prove the integrity of the pipeline system. References cited supporting this view were: "Pressure Reversal Failures," *Oil and Gas Journal,* January 13, 1975; "Background Behind Proposed Test Pressure Hold Period of Two Hours" developed by Battelle and presented to the ANSI B31.8 Transmission and Compressor Station Sub-group, April 8, 1970; "Hydrostatic Testing Pipelines in Place" *Oil and Gas Journal,* December 2, 1968; and "High Pressure Hydrostatic Testing Eliminates More Line Pipe Defects" *Oil and Gas Journal,* July 11, 1966. Further, the B31.4 Subcommittee stated that although the current edition of the B31.4 code requires an 8-hour hold period at 125 percent of internal design pressure, that requirement will be changed in the next edition. The new requirement in the B31.4 code will include a strength test, consisting of a 4-hour hold period at 125 percent of internal design pressure where all of the pressurized components can be visually inspected, plus, in addition to the strength test, a leak test, consisting of a 4-hour hold period at not less than 110 percent of internal design pressure where the pressurized components cannot be visually inspected.

In view of the above information which demonstrates that a strength test as short as 4 hours is adequate to ensure safety and the pending change in the B31.4 code, the MTB has adopted prior field pressure testing to 1.25 times the MOP for 4 hours as a determinant of which HVL pipelines are to be hydrostatically tested under Subpart E.

Rulemaking Concerning Test Hold Period in Subpart E

As a separate matter, the API submitted a petition (P3) on March 12, 1979, to reduce the test hold period in Subpart E, arguing that a shorter hold time is adequate to ensure safety and would reduce the cost of testing. The API recommended that the test in Subpart E be reduced from 24 hours at 125 percent of MOP to a two part test, consisting of a strength test at 125 percent of internal design pressure for 4 hours where pipeline components can be visually inspected plus, in addition to the strength test, a leak test at 110 percent of internal design pressure for four hours where the pipeline components cannot be visually inspected.

The API petition cited the same references included in its comments to the notice in this docket as support for its petition. In further support of its petition, the API also cited the pending change to the B31.4 code to indicate the industry is responsive to the information contained in the referenced research reports.

As a result of the information contained in the cited research, industry experience, and the comments to the notice in this docket concerning testing HVL pipelines, all of which supports a reduced hold period, together with the obvious cost reductions resulting from a reduced hold period and the lack of any information demonstrating that a 24-hour hold period is necessary to ensure safety, a notice of proposed rulemaking has been published (45 FR 16230, March 13, 1980), proposing to change the test requirements in Subpart E. The notice proposes requirements for a strength test to 125 percent of MOP for 4 hours for pipelines which are visually inspected and an additional leak test to 110 percent of MOP for 4 hours for those pipelines which are not visually inspected. The MTB believes these new test requirements will significantly reduce the time to test and reduce the cost of testing while maintaining adequate safety. The publication of the final rule reducing the test hold period for all pipelines subject to Part 195 is imminent and will be completed before

HVL carriers have to commence any testing as a result of the final rule in this docket.

Appropriate Test Records

One industry commenter recommended that any record of past testing offered by the carrier as evidence that proper testing had been performed should be acceptable because there is no requirement in Part 195 to retain records made prior to the effective date of Subpart E, January 8, 1971. Another industry commenter suggested that the actual pressure device charts should be acceptable. Four industry commenters recommended that records which demonstrate the appropriate pressure has been applied and held for an adequate time should suffice as adequate records. These four commenters argued that detailed test records were not commonly kept prior to the effective date of Subpart E and, as a result, such detailed records are not available, although the pipelines were adequately tested. Further, these same commenters argued that in the transfer of ownership of pipelines, only summary statements of these data are transferred rather than detailed records. Four additional industry commenters recommended that certification by an officer of the carrier be acceptable as proof of testing when other proof of testing is not available.

The MTB recognizes that prior to January 8, 1971, there was no requirement in Part 195 to keep detailed records nor was there an industry standard concerning test records in common use and, as a result, test records vary in content and in detail. The MTB does not believe, however, that a mere transfer statement or current certification should qualify as proof of prior testing, as there should be no doubt about the efficacy of prior tests in determining whether a pipeline must be tested. Although detailed records of the type prescribed by section 195.310 are not required, the MTB believes that test records made at the time of test in sufficient detail to demonstrate that the pipeline has been tested to 1.25 times the maximum operating pressure for four continuous hours are necessary to prove the integrity of the pipeline. Thus, the final rules require carriers who wish to demonstrate that pipelines have been previously tested to 125 percent of MOP to use recording charts or logs made at the time the test was conducted.

Reduction in Operating Pressure and Use of Previous Operating Pressure

The final rule provides as an alternative to testing under Subpart E, the option of reducing a pipeline's MOP to 80 percent of its previous hydrostatic test pressure held for four or more hours. Similarly, a reduction in MOP to 80 percent of a previous operating pressure held for four or more hours will also meet the requirement of this final rule since the same pressure level is achieved in the pipeline, whether during test or actual operation. Both of these options provide the 1.25 safety margin between test and MOP proposed in the notice. These options do not apply, however, to pipelines constructed before January 8, 1971, that are converted to HVL service under § 195.5, since hydrostatic testing is mandatory under that section. In either case, the new MOP must be controlled within the limits prescribed by § 195.406. In the event a reduction in MOP is utilized as an alternative to testing under Subpart E, the carrier shall provide charts or logs in sufficient detail made at the time the previous pressure was achieved and held for four continuous hours. Utilization of a previous test pressure or previous operating pressure to establish MOP is prescribed in a new § 195.406(a)(5). The MTB believes these provisions will be attractive to carriers with HVL pipelines which have not been tested or have not been tested to 125 percent of the current MOP, but have been operated satisfactorily by providing means whereby these HVL pipelines can continue in service at a reduced MOP and avoid the cost of testing.

Test Medium

Although the notice did not specifically mention the use of test mediums other than water, § 195.306(b) provides for the use of liquid petroleum that does not vaporize rapidly as a test medium in lieu of water under certain circumstances. Use of such a medium might be attractive to those carriers who have a supply of liquid petroleum readily available and to those multi-commodity pipelines that transport such a commodity.

One industry commenter recommended that the final rule provide for the use of an inert gas as a test medium in lieu of water. The recommendation was not adopted in the final rule because (1) inert gas is compressible, and its use as a test medium poses the hazard of failure by a propagating sinusoidal brittle fracture that is avoided by the use of water, and (2) the use of inert gas as a test medium would be feasible in only very few instances, and in such instances, approval for the use of inert gas can be sought by filing with MTB a waiver application under section 203 of the Hazardous Liquid Pipeline Safety Act of 1979.

Effect on Environment

The effect on the environment of testing HVL pipelines was not raised as an issue in the notice nor did it become an issue in the comments.

The MTB is aware that some effect on the environment will be caused by installing scraper traps necessary to accomplish the testing. However, this effect will be confined to the pipeline right-of-way and will be minimal. The MTB is also aware that disposing of test water which is contaminated with petroleum products can be troublesome. However, because separators, skimmers, and other reliable equipment are available to perform this task, the MTB does not believe disposal of test water will be a serious problem.

Time for Compliance

Five industry commenters recommended a five-year compliance period for the existing HVL pipelines constructed before January 8, 1971. Three industry commenters recommended three years as the appropriate time for compliance. In support of these recommendations, these commenters argued that a substantial time for compliance would be necessary because (1) pipelines would have to be tested in segments to avoid the need to shut down an entire system, (2) testing can only be performed in the summer months in northern regions of the country, (3) disruption of services must be minimized to avoid creating commodity shortages, and (4) substantial planning and scheduling must be done before the actual testing can commence. The NTSB recommended that the testing be completed within one year, arguing that the risk to the public justifies the short testing period.

The MTB does not believe that the testing requirement can be completed within one year and questions the feasibility of attempting to complete the testing requirement within three years. The MTB believes that: substantial planning, scheduling, and budgeting must be done prior to testing; revisions to pipeline systems such as installation of valves, pig-traps, etc., must be designed and equipment procured and installed where necessary; revisions to the pipeline systems as well as the actual testing must be coordinated with normal pipeline operations to minimize the time pipelines are out of service and to minimize the impact on users of the commodities transported; and the actual testing must be performed in a manner to minimize risks to the public and

pipeline personnel that can be caused by testing. For these reasons, the MTB believes a five-year period to comply with the testing requirement is appropriate for existing pipelines in HVL service. The five-year period is reflected in the new § 195.302(b). To assure compliance within the five-year period, planning and scheduling or reduction in MOP must be completed by Sept. 15, 1981, and at least 50 percent of required testing must be done by Sept. 15, 1983.

Under section 195.302(b), steel onshore liquid pipelines constructed before January 8, 1971, that are to begin HVL service would have to be hydrostatically tested or meet the MOP limitation of § 195.406(a)(5) before transporting HVL, or before the effective date, whichever is later.

Use of Electronic Detection

One industry commenter recommended that electronic detection to locate latent material and construction defects be provided as an alternative to hydrostatic testing for those HVL pipelines which do not have a history of leaks or ruptures due to defective pipe or welds. Three industry commenters, the API, the NTSB, and one individual recommended that electronic detection not be provided as an alternative to hydrostatic testing, arguing that electronic detection techniques will detect anomalies in the pipe wall but will not determine the strength of the pipeline. The MTB believes that the pipeline integrity must be ensured as a result of the testing requirement and that electronic detection will not ensure pipeline integrity. Therefore, use of electronic detection is not provided as an alternative to hydrostatic testing in the final rule.

Occasional Transport of HVL

Four industry commenters recommended that carriers who occasionally transport HVL in a pipeline be exempted from compliance with the proposed rule, arguing that the testing requirement would be burdensome for occasional carriers and that they would choose to discontinue transporting HVL rather than comply with the testing requirements. Among these commenters, there was no consensus for a definition of an occasional carrier. One commenter recommended that carriers transporting HVL equal to 75% or more of the throughput be subject to the rule while another commenter recommended that 33% or more of throughput be the appropriate dividing line, while yet another recommended that 25% or more of throughput be so classified. None of the commenters argued that a spill from a pipeline transporting HVL on an occasional basis would present a lesser hazard than a spill from a dedicated HVL pipeline. The API recommended that no distinction be made between pipelines which are in continuous or intermittent HVL service, but recognized that the testing requirement could cause some carriers to discontinue transporting HVL. The NTSB recognized that a proportionately greater economic burden would be borne by occasional carriers than by carriers who have pipelines dedicated to HVL service, but argued that the hazardous nature of HVL makes testing all HVL pipelines imperative. The MTB agrees with the NTSB assessment because the nature of the hazard presented by an accidental spill of HVL is the same regardless of whether the pipeline is an occasional carrier of HVL or is dedicated to HVL service; hence, the final rule applies to all HVL carriers. The MTB believes the five-year compliance period in the final rule together with the shorter test hold period for identifying pipelines subject to the final rules and the options of reducing MOP will lessen the economic impact sufficiently to permit occasional carriers to continue transporting HVL.

Cost of Compliance

Two industry commenters argued that compliance with the proposed rule would require substantial expense in shutting down the pipeline systems in addition to the actual costs of testing. The MTB believes that the cost of testing to comply with the final rule will be much less than that envisioned by these commenters for several reasons: First, the final rule permits five years for compliance which the MTB believes is sufficient time to plan an orderly testing program that will avoid most of the costs associated with loss of throughput. Second, the final rule provides for a 4-hour hold period in identifying pipelines to be tested instead of the 24-hour period required by the proposed rule, which will require fewer pipelines to be tested. Third, an NPRM was published, proposing to reduce the hold period in Subpart E from 24 hours to 8 hours, or under certain conditions 4 hours. When the proposal becomes a final rule, the shorter hold period will greatly reduce the cost associated with actual testing. Fourth, only those segments of HVL pipelines that have not been tested to 125 percent of MOP must be tested to comply with the final rule. Fifth, carriers will have the option of testing to 125 percent of MOP under Subpart E or reducing the current MOP to 80 percent of the pressure to which the pipeline has been tested or operated. This option might be especially attractive for those pipelines that have been tested to 110 percent of design pressure, as was required by the B31.4 code prior to 1966, and those carriers who do not choose to maintain current MOP by retesting under Subpart E. Finally, carriers will have the option of using liquid petroleum which does not vaporize rapidly in lieu of water as provided in section 195.306. This option might be attractive to those pipelines in multi-commodity service and for testing during the winter months.

One commenter, a major carrier of liquefied petroleum gas and anhydrous ammonia who initiated an extensive program in 1975 to test all its HVL pipelines to 125 percent of MOP, argued that the testing requirement will reap benefits that can pay for the cost of testing. This experience notwithstanding, the MTB believes that the five-year compliance period, the shorter test hold period for identifying pipelines subject to the final rules, the prospect of a shorter hold time for testing under Subpart E, and the options to reduce maximum operating pressure in lieu of conducting a testing program will reduce the cost of compliance such that a major cost to the industry will not result.

The API, the B31.4 Subcommittee on Liquid Petroleum Transportation Piping, and one industry commenter argued that the few accidents on HVL pipelines which would be prevented by hydrostatic testing would be outweighed by the costs involved, but failed to support their argument with computations of costs or benefits.

The Final Evaluation in the docket estimates the annualized cost of this final rule to be $638,000 over a 20-year period. The value of the benefits in lives saved, injuries prevented, and property damage prevented is estimated to be $722,000 a year over the same period. Thus, the benefits outweigh the costs by a ratio of 1.13:1.

The MTB believes the actual benefits will be greater than the estimated benefits because the estimated value of the benefits is based solely on historical accident data over the past decade and does not include the effects of a catastrophic type of accident like that which occurred near Edmonton, Alberta, Canada, on March 2, 1979. Although no fatalities were experienced in that accident, 19,000 persons were evacuated to avoid the hazard created by a spill of LPG. Considering the uncertainties inherent in any attempt to quantify the benefit of preventing a catastrophic accident, the potential for the large loss in lives and property, together with the favorable cost benefit ratio based only

on historical data, the MTB believes the cost of the final rule is warranted as an investment in public safety.

In view of the foregoing, Part 195 of Title 49 of the Code of Federal Regulations is amended as follows:

1. By revising § 195.300 to read as follows:

§ 195.300 Scope.

This subpart prescribes minimum requirements for hydrostatic testing of newly constructed steel pipeline systems; existing steel pipeline systems that are relocated, replaced, or otherwise changed; and onshore steel pipeline systems constructed before January 8, 1971, that transport highly volatile liquids. However, this subpart does not apply to movement of pipe covered by §195.424.

2. In § 195.302, by redesignating paragraph (b) as paragraph (c) and adding a new paragraph (b) to read as follows:

§ 195.302 General requirements.

* * * * *

(b) No person may transport a highly volatile liquid in an onshore steel pipeline constructed before January 8, 1971, unless the pipeline has been hydrostatically tested in accordance with this subpart or, except for pipelines subject to § 195.5, its maximum operating pressure is established under § 195.406(a)(5). Pipelines that were in highly volatile liquid service before September 8, 1980 must meet this requirement according to the following schedule:

(1) Planning and scheduling of hydrostatic testing or actual reduction in maximum operating pressure to meet § 195.406(a)(5) must be completed before Sept. 15, 1981; and

(2) Hydrostatic testing must be completed before Sept. 15, 1985, with at least 50 percent of the testing completed before Sept. 15, 1983.

* * * * *

3. By adding § 195.406(a)(5) as follows:

§ 195.406 Maximum operating pressure.

(a) * * *

(5) In the case of onshore HVL pipelines constructed before January 8, 1971, that have not been tested under Subpart E of this part, 80 percent of the test pressure or highest operating pressure to which the pipeline was subjected for four or more continuous hours that can be demonstrated by recording charts or logs made at the time the test or operations were conducted. (See § 195.302(b) for a compliance schedule for pipelines in HVL service before September 8, 1980.

* * * * *

(Hazardous Liquid Pipeline Safety Act of 1979 (Title II of Pub. L. 96-129, November 30, 1979, 93 Stat. 1003); 49 CFR 1.53(a) and Appendix A to Part 1)

Issued in Washington, D.C., on September 2, 1980.

L. D. Santman,

Director, Materials Transportation Bureau.

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49 CFR Part 195

[Amdt. 195-18; Docket PS-63]

Transportation of Liquids by Pipeline; Hydrostatic Testing

AGENCY: Materials Transportation Bureau (MTB).

ACTION: Final rule.

SUMMARY: This final rule reduces the time and cost of hydrostatic testing in light of studies which show that the currently required 24-hour hydrostatic hold period is unnecessary. A two part test is prescribed for hydrostatically testing liquid pipelines: A strength test of at least 4 hours' duration at a pressure equal to 125 percent or more of the maximum operating pressure is prescribed for all hazardous liquid pipelines subject to Part 195; additionally, a leak test for four hours or more at a pressure equal to 110 percent or more of the maximum operating pressure is prescribed for those pipelines which are not visually inspected for leakage while under the strength test.

DATE: Because this final rule relaxes an existing requirement, resulting in substantial cost savings, the effective date of the final rule is September 8, 1980, for hazardous liquid pipelines currently subject to Part 195. Upon reissuance of Part 195 under the authority of the Hazardous Liquid Pipeline Safety Act of 1979 (Title II of Pub. L. 96-129, November 30, 1979) and in accordance with the notice of proposed rulemaking in this docket, the effective date of this final rule for intrastate liquid pipelines not now subject to Part 195 will be announced.

FOR FURTHER INFORMATION CONTACT: Frank Robinson, 202-426-2392.

SUPPLEMENTARY INFORMATION: A notice of proposed rulemaking (NPRM) was published March 13, 1980 (45 FR 16230), proposing to reduce the 24-hour hydrostatic hold period in § 195.302(c) for all hazardous liquid pipelines. (After publication of the NPRM, § 195.302(b) was renumbered § 195.302(c).) Section 195.302(c) requires that hydrostatic tests be maintained for at least 24 hours without leakage. The MTB believed this requirement was more than adequate to ensure pipeline safety and resulted in greater testing costs than were necessary.

The purpose of a hydrostatic test is to ensure that a pipeline will not later fail in service due to latent material or construction defects. Broadly defined, the hydrostatic test is the maintenance of water pressure above the maximum operating pressure (MOP) under no-flow conditions for a fixed period of time. The hydrostatic test precludes later rupture or leak due to latent material or construction defects by causing these potentially harmful defects to surface during the test period.

The 24-hour hold period for hydrostatic testing evolved as an industry safety practice before it could be explained why failures occurred during the hold period. Further, there was no distinction made between testing the pipeline for strength and testing the pipeline for leakage.

In recent years, scientific research and industry experience have demonstrated that the 24-hour hold period is not necessary to ensure pipeline integrity and that a distinction can be made between a strength test and a leak test. Some of that research and experience was discussed in the NPRM.

Response to the Notice and Development of Final Rule

Nine oil and gas companies, the American Petroleum Institute (API), the Chemical Manufacturers Association (CMA), the Interstate Natural Gas Association of America (INGAA), the Offshore Operators Committee (OOC), the B31.4 Code Section Committee for Liquid Petroleum Transportation of the American Society of Mechanical Engineers, and the National Transportation Safety Board (NTSB) commented on the NPRM. None of the commenters argued that the proposed rule to reduce the hydrostatic test period was not adequate to ensure pipeline safety and most commenters agreed that reduced costs of testing would result.

The INGAA, the OOC, and three oil and gas companies recommended modifying the language of the proposed rule so that prescribed test pressures and hold periods would be clearly stated as minimum requirements in order to avoid the possibility of the rules being interpreted as maximum permissible standards. Further, although these commenters agreed that the rules as proposed are adequate to ensure safety, they argued that there can be other reasons for testing to higher pressures or maintaining longer hold