

Mr. Hines D. Lively
Manager, Piping Design
Brown & Root, Inc.
P.O. Box 3
Houston, TX 77001

Dear Mr. Lively:

This is in response to your letter of January 21, 1976, requesting information concerning the jurisdiction of the Federal standards for the Transportation of Liquids by Pipeline, Part 195 of Title 49 of the Code of Federal Regulations (Part 195), and the ANSI B31.4, Code for Pressure Piping, Liquid Petroleum Transportation Piping Systems.

Under the Transportation of Explosives Act, 18 U.S.C. 831-835, the Department of Transportation (DOT) has jurisdiction over common, contract, and private carriers engaged in interstate or foreign commerce who transport liquid hazardous materials by pipeline. Safety regulations issued under 18 U.S.C. 834 governing the design, construction, operation, and maintenance of interstate liquid pipelines are published in Part 195.

The ANSI B31.4 code is an industry standard developed under the direction of the American National Standards Committee B31 organized under the procedures of the American National Standards Institute, Inc., and is under the administrative sponsorship of the American Society of Mechanical Engineers. ANSI B31.4 is enforceable as a Federal standard only for the specific paragraphs referenced in Part 195.

The following is our response to your specific questions:

Question 1: Does a pipeline as shown in SK-1-20-76 fall under the jurisdiction of DOT or only ANSI B31.4? Please answer separately for sections A, B, and C as shown sketch.

Sections A, B, and C would be subject to the regulations in 49 CFR Part 195 only if they are used in the transportation of liquid hazardous materials by pipeline in interstate or foreign commerce.

The electrical transmission line indicated in the lower part of Sketch SK-1-20-76 is not a part of the pipeline and is not considered when the question of pipeline jurisdiction is determined.

Question 2: When DOT does apply does section 421 apply (which is

not even referred to by Title 49) or does section 195.208 apply?

Section 421, Design of Pipe Supporting Elements, in ANSI B31.4 has not been referenced in Part 195 and is not applicable; however, Section 195,208, Welding of supports and braces, in Part 195 is applicable.

Question 3: If 195.208 applies, is nonintegral support preferred?

The regulations in Part 195 are for the most part performance standards. Where a specific method is neither required nor excluded then the operator has the responsibility of selecting a method of compliance that will conform with the appropriate standards.

Question 4: If not, can "excess thickness" be considered sufficient reinforcement in lieu of a "cylindrical member continuously welded around the pipe."

This question is moot as the answers to questions 2 and 3 indicate that Section 195.208 is applicable.

ANSI B31.4 is not a Federal standard unless it is specifically referenced in Part 195. The Office of Pipeline Safety Operations considers it a useful guide, providing procedures that may be helpful in complying with the performance requirements of the Federal standards. Any questions you might have relative to ANSI B31.4 should be directed to:

Secretary
American National Standards Committee B31
The American Society of Mechanical Engineers
United Engineering Center
345 East 47th Street
New York, New York 10017

We appreciate your interest in pipeline safety. If you have any further questions, do not hesitate to call or write.

Sincerely,

/signed/

Cesar DeLeon
Acting Director
Office of Pipeline
Safety Operations

Mr. Cesar DeLeon, Director
Office of Pipeline Safety
2100 2nd St. Southwest
Washington, D.C. 20590

Dear Mr. DeLeon:

The following questions were posed in a telephone conversation between Messre. Hines Lively, Tom Cairns, and Frank Fulton of your office on January 15, 1976. He requested we direct our questions in writing to your office.

Items needing further clarification:

1. Scope of D.O.T. Jurisdiction (See sketch SK-1-20-76)

Do facilities that are entirely owned by company "X" fall under DOT jurisdiction because other separate facilities owned by same company affect interstate commerce? If not would they fall under B31.4?

2. Regarding Title 49 Paragraphs 195.110 and 195.208:

Paragraph 195.110 refers to Section 419 of USAS B31.4 1966. We assume the 1974 version is valid at this time. The reference is for expansion and flexibility provisions, not design of pipe supporting elements. The latter is found in section 421 which states "(a) Supports shall be designed to support the pipe without imposing excessive local stresses in the pipe and without imposing excessive axial or lateral friction forces that might prevent the desired freedom of movement."

The preceding does not eliminate directly welded shoes (see types A, B, & C Sketch SK-1-19-76) especially if they are free to move in both directions as shown in type A and do not create excessive stresses. Therefore it is probably wise to differentiate between simple supports (downward restraint in minus y

direction), guides (restrained in one horizontal direction x or z), or anchors (restrained in all directions x, y, and z). One might deduce that the above requirements are met in the case of simple supports that the later reference to "welding supports to a separate cylindrical member, continuous welded to pipe" are aimed at guides and anchors. Section 421.1 (c) also indicates a definite preference for nonintegral supports such as Type D SK-1-19-76.

The only reference to the encircling cylinder proposed in the case of the line operating near its stress limit. This is not likely with modern design methods and factors of safety.

Therefore we conclude that if Section 195.110 does intend to include section 421 and b31.4 (which is the only mention of the cylinder reinforcement) it must be second choice to the nonintegral attachment, and then only necessary in the case of anchors and possibly guides. "421.1 (c) All attachments to the pipe shall be designed to minimize the add stresses in the pipe wall because of the attachment." 421.1(c) suggests that local stresses due to uneven application of weld heat may be the source of some objection to direct welding of the pipe to the shoe. Since this would depend somewhat upon the welding procedure and conditions and is therefore quantitatively unpredictable, it may be a valid objection in the case of operating "near the stress limit" but we fail to see how it applies to the 100 psi range.

We feel the 100 psi must assume the pipe wall thickness is not greater than that which would be required under Section 402.3.2, .3, .4, and Section 404 B31.4 1974. Since without reference to wall thickness the pressure alone could not cause overstressing. In any case it still would not eliminate the clamp type o=nonintegral support as shown in SK-1-19-76 type D.

B31.4 recognizes the existence of "excess wall thickness" (see 404.3.1.(i)) in the calculations for branch conns. This consists of any metal in excess of that required for internal pressure, corrosion, mill tolerance, external loads, etc. due to the application of safety factors greater than required by the code and/or by selecting the nearest higher commercially available pipe schedule. This would be equivalent to a "cylindrical member which completely encircles the pipe" but would be much superior as reinforcement since it is

integral to the pipe rather than merely continuously welded at the ends.

Our question is: Would the existence of such "excess thickness" constitute compliance with 421.1 if it meets the conditions of 421.1(a).

The following is a summarization of the questions discussed in the preceding paragraphs.

1. Does a pipeline as shown in Sk-1-20-76 fall under the jurisdiction of DOT or only ANSI B31.4? Please answer separately for sections A, B, and C as shown on sketch.
2. When DOT does apply does section 421 apply (which is not even referred to by Title 49) or does section 195.208 apply?
3. If 195.208 applies, is nonintegral support preferred?
4. If not, can "excess thickness" be considered sufficient reinforcement in lieu of a cylindrical member continuously welded around pipe."

NOTE: If answers are not true of anchors guides and simple supports, please differentiate.

We would appreciate a reply at your earliest convenience.

Very truly yours,

Hines D. Lively
Manager, Piping Design

NOTE: TWO PAGES OF DIAGRAMS ATTACHED