OCT 24 1979

Mr. C. R. Brashears
6427 Hillcroft #1010
Houston, Texas 77081

Ref: Welds: Repair of Defects Para 195.230(a), (b)

Dear Mr. Brashears:

Thank you for your letter of September 11, requesting the Department's interpretation of §195.230, as you quoted in part. The Materials Transportation Bureau's answers to your questions are as follows:

Question #1

A. What is the Department's definition of "The segment of the weld"?

Answer

A. "Segment" is defined in a dictionary generally as a separate piece of an entity, or one of the constituent parts into which a body or quantity is divided or marked off as if by natural boundaries. Since the language used is "segment of the weld to be repaired," the definition is the natural boundary of that part of the existing weld which would be affected by a repair weld. Or, stated in terms of repair only, it would be the entire repair weld and its heat affected zone.

B. Is this two or three dimension of the segment?

Answer:

B. The "segment" is three-dimensional, having a cross-sectional area and a length.

Question #2

A. What is the Department's definition of "Previously repaired?"

Answer:

A. "Previously repaired" as used in §195.230(a)(2) means that repair has been made by removal of a defect in the original weld metal and deposition of new weld metal to correct a weld found unacceptable by inspection after completion of the original weld.

B. Is it considered a repair if a welder repairs his weld during the process of making the weld?

Ex.: A welder has completed the stringer bead and hot pass (Ref: Attachment A) and is aware of incomplete fusion between stringer bead and hot pass. The welder either grinds out the hot pass and rewelds it from the outside or grinds out the stringer bead and rewelds it from the inside. The welder now completes the weld and the x-ray reveals lack of fusion in the same area, can this weld be repaired a second time?

Answer:

B. It is not considered a repair within the meaning of §195.230 if a welder takes corrective action during the original welding operation to assure acceptability of his weld. However, the requirements of §195.214(b) should be considered in this regard to assure that there is no departure from the written welding procedure in the welder's corrective action and that "sound, ductile welds" are thus produced. In the case that x-ray reveals lack of fusion in the same area, the weld may be repaired as a first repair, since the use of the term "repair" in the regulations means repair of the completed weld, not corrective actions taken in the original welding operation.

C. If the girth weld in Attachment A has a defect in the 1st filler pass and is ground and rewelded from the outside without success, can a repair be made from the inside of the girth weld for the same defect, in the same area?

Answer:

C. We assume that this question relates to the repair of a completed weld which has been found unacceptable by nondestructive testing. Repair of the weld from the inside for the same defect is prohibited by §195.230(a)(2) on the basis that neither the first weld repair or the heat affected zone of the first repair weld would be in the same area as the second weld repair.

D. If the girth weld in Attachment A has a defect in the hot pass and a defect in the stripper pass, in the same segment, can this weld be repaired from the inside for the defect in the hot pass and repaired from the outside for the defect in the stripper.

Answer:

D. If two defects can be identified as being in widely separated beads or different parts of the cross-sectional area, such as to comprise separate "segments," there would be no prohibition against separately repairing the defects. If the two repair welds were in the same segment as stated and not separated such that the two welds or their heat affected zones overlapped, the dual repair would be prohibited by §195.230(a)(2). It appears that the question has presumed the connotation of "segment" to be two-dimensional, which would be incorrect and not intended by the regulations.

E. If the girth weld in Attachment A has a defect in the 1st filler pass and successfully repaired, can additional filler metal be added to the cap pass after it has been x-rayed and interpreted for such indication as external undercut, pin holes, or low cap?

Answer:

E. If repair of the defect in the first filler pass is made after completion and inspection of the weld, and may be assumed to have been made from the outside, §195.230(a)(2) would prohibit a later addition of filler metal to repair the cap pass in that segment of the weld. If, however, the question is interpreted to mean that local repair of the first filler pass was performed as a part of the original welding operation, following which the weld was completed and inspected, there would be no prohibition against adding filler metal to the cap pass as a first or single repair or the completed weld. Since this question may have various interpretations, clarification may be made in restating that single weld repair of any segment of the original completed weld for defects other than cracks is permitted, while a second repair to a segment previously repaired is not permitted.

F. Is adding filler metal to the stringer bead from the inside of pipe (commonly known as a back weld) for visual indications, such as internal undercut, lack of penetration, burn throughs, etc., considered a repair?

Answer:

F. If filler metal is added to the stringer bead as a part of the original welding operation, it is not considered a repair. Since this question may be similar to B. above, the same answer would apply. If filler metal is added, however, after inspection has found the completed weld unacceptable, the deposition of the added metal is considered a repair.

Question #3

A. What is the Department's definition of "inspected after repair?"

Answer:

A. "Inspected after repair" is defined by §195.230(a)(3) and §195.228, which require that the repaired weld must be inspected to assure its acceptability in accordance with certain standards. The method of inspection for repaired welds is generally by nondestructive testing, although visual inspection is considered adequate where the defect for which repair was performed was detected by visual inspection alone. Standards for both visual inspection and nondestructive testing are provided by §195.228(b).

B. If the defect was located by one type of nondestructive testing, can another type of nondestructive testing be substituted, i.e., radiographic for initial inspection and ultrasonic inspection after the repair?

Answer:

B. Part 195 does not prescribe the type of nondestructive inspection that must be used. Paragraph (a) of §195.234, "Welds: nondestructive testing and retention of records," states: "A

weld may be nondestructively tested by any process that will clearly indicate any defects that may affect the integrity of the weld." Although the regulations do not specify the type of nondestructive testing of either the initial weld or after repair, the type of nondestructive testing used must assure acceptability of the weld repair in accordance with §§195.230(a)(3) and 195.228(b).

C. If the defect was located by nondestructive testing (radiographic or ultrasonic), can the weld be accepted by visual inspection without using nondestructive testing such as radiography or ultrasonic?

Answer:

C. No. A weld in which a defect had been located by nondestructive testing cannot be accepted by visual inspection alone after repair. The method of inspection used to inspect the repaired weld must verify that the defect in the original weld has been removed so that the repaired weld meets the acceptability standards of §195.228. For example, if the defect is located when a weld is nondestructively tested and the weld is repaired in accordance with §195.230, it must be nondestructively tested to meet the standards of acceptability of §195.228 to assure that a sound, ductile weld is produced. The need to reinspect the repaired weld by nondestructive testing follows from the requirements of §195.234(g) with regard to the retention of nondestructive testing records. Without a record of nondestructive test of the repaired weld, the retained records would only show that a defect had been found, and not that the defective weld had been satisfactorily repaired.

We greatly appreciate your interest and are pleased to provide the above interpretations. If any additional information is required, do not hesitate to call.

Sincerely,

Cesar De Leon
Associate Director for
Pipeline Safety Regulation
Materials Transportation Bureau

C. R. Brashears
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September 11, 1979

Department of Transportation
Research and Special Programs Administration
Pipeline Safety Regulation
Materials Transportation Bureau
Washington, D.C. 20590

Attention: Mr. Cesar DeLeon

Ref: Welds: Repair of Defects Paragraph 195.230(a), (b)

Gentlemen:

We would appreciate the Department's interpretation of Paragraph 195:230:

a. "Except as provided in paragraph (b) of this section, a weld that is found unacceptable under paragraph 195.288 may not be repaired unless

(1) ----------

(2) The segment of the weld to be repaired was not previously repaired; and

(3) The weld is inspected after repair to assure its acceptability."

Question #1

A. What is the Department's definition of "The segment of the weld…?"

B. Is this two or three dimension of the segment?

Question #2

A. What is the Department's definition of "…previously repaired…?"

B. Is it considered a repair if a welder repairs his weld during the process of making the weld?

Ex: A welder has completed the stringer bead and hot pass (Ref: Attachment A) and is aware of incomplete fusion between stringer bead and hot pass. The welder either grinds out the hot pass and rewelds it from the outside or grinds out the stringer bead and rewelds it from the inside. The welder now completes the weld and the x-ray reveals lack of fusion in the same area. Can this weld be repaired a second time?

C. If the girth weld in Attachment A has a defect in the 1st filler pass and is ground and rewelded from the outside without success, can a repair be made from the inside of the girth weld for the same defect, in the same area?

D. If the girth weld in Attachment A has a defect in the hot pass and a defect in the stripper pass, in the same segment, can this weld be repaired from the inside for the defect in the hot pass and repaired from the outside for the defect in the stripper?

E. If the girth weld in Attachment A has a defect in the 1st filler pass and [is] successfully repaired, can additional filler metal be added to the cap pass, after it has been x-rayed and interpreted for such indication as external undercut, pin holes, or low cap?

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