

April 2, 1976

Mr. Richard L. Valent
Wyoming Public Service Commission
Supreme Court Building
Cheyenne, Wyoming 82002

Dear Mr. Valent:

This is in response to your question concerning the qualification of welders under API Standard 1104 using backing strips (chill rings) at compressor stations. You stated:

"The only section in API 1104 that makes reference to backing strips is section 3.11(g). My question is: Is this type of joint design to be tested as indicated in Table 3 of the 12th addition [sic]? If so, are the requirements of the code for nick break, root bends, etc., sufficient?"

"The reason I asked this last question is that the code requirements make no reference to the amount or penetration the welder's root bead makes with the back-up strip. As you are aware, this initial penetration from the root bead is all that holds the back-up ring in place. If inadequate penetration occurs and the ring breaks loose you can see the damaging effect the ring would have on the compressor."

As Lloyd Ulrich of our staff indicated to you by telephone on December 18, 1975, we consider a welder who welds backing strips at compressor stations to be qualified for butt welding under API Standard 1104 if he has successfully passed one the welder qualification tests of Section 3.0 of the API Standard 1104 using destructive testing, and his test welds are made without a backing strip in place during welding.

To arrive at this opinion, we contacted by telephone, the Chairman and Secretary of the API-AGA Joint Committee on Oil and Gas Pipe Line Field Welding Practices which issues API Standard 1104 to find out whether or not the Committee has considered destructive testing when backing strips are used in qualification. Mr. Ulrich indicated to you by telephone that the Secretary reported the Committee has not made such a consideration in API Standard 1104. It was pointed out in conversations with the Chairman and Secretary that tensile and nick break tests could be conducted but that guided bend tests could not because of the protrusion caused by the metal of the backing strip on the test coupons. It was further pointed out

that radiography could be employed to determine if there was full penetration of the first weld bead which would indicate coalescence of the backing strip to both lengths of pipe being welded.

The Secretary of the Committee further stated by telephone that there is an editorial omission in the 12th and 13th edition of API Standard 1104 concerning Section 3.11(g) which is one of the essential variables listed for requiring requalification if a welder is qualifying under the single qualification portion of the Standard. Section 3.11(g) states: "A change in the joint design (backing strip, V-bevel to U-bevel)." It should read as it did in the 11th edition, "A change in the joint design (backing strip to no backing strip V-bevel to U-bevel)." This editorial omission has the effect of requiring requalification of welders who have been qualified without the use of a backing strip when requalification should be required only when a welder has been previously qualified with a backing strip and then wishes to weld without it, which is a more difficult process.

Section 192.229 of the Federal safety standards does not allow a welder whose qualification is based on nondestructive testing to weld compressor station pipe and components. Therefore, where backing strips are used at compressor stations, welder qualification based on radiography outlined in Section 3.5 of API standard 1104 would not comply with the Federal safety standards. Also, a qualification based on destructive testing using backing strips while the test weld is made would not comply with Section 192.227, Qualification of Welders, because all of the required destructive tests cannot be performed.

We hope this adequately answers your inquiry.

Sincerely,

\signed\

Cesar DeLeon
Acting Director
Office of Pipeline
Safety Operations

February 12, 1975

Mr. Joseph C. Caldwell
Office of Pipeline Safety
TES-30
Department of Transportation
Washington, D.C. 20590

Re: Section 3.11 (g) API Std. 1104

Dear Mr. Caldwell:

Recently I witnessed a welding test in which a company specified the use of backing strips or chill rings. These backup strips are generally used on the suction piping of compressor stations. The main purpose of the ring is to prevent weld splatter and slag build-up on the I.D. of the pipe. This in turn minimizes the amount of damaging particles that enter the compressor (especially turbines).

The only section in API 1104 that makes reference to backing strips is section 3.11(g). My question is: Is this type of joint design to be tested as indicated in Table 3 of the 12th addition? If so, are the requirements of the code for nick break, root bends, etc. sufficient?

The reason I asked this last question is that the code requirements make no reference to the amount of penetration the welder's root bead makes with the back-up strip. As you are aware, this initial penetration from the root bead is all that holds the back-up ring in place. If inadequate penetration occurs and the ring breaks loose you can see the damaging effect the ring would have on the compressor.

Any assistance you can give me in this matter is appreciated.

Best regards,

Richard L. Valent
Engineer

November 7, 1977

Mr. M. Salvatore
Sr. Gas & Petroleum Inspector
Department of Public Service
New York Public Service Commission
State Office Building
65 Court Street
Buffalo, New York 14202

Dear Mr. Salvatore:

In response to your letter of September 20, 1977, the letter to Mr. Coughlin, dated January 21, 1977, states a correct interpretation of §192.229(c) as it relates to a welder qualified by the multiple qualification test. This interpretation was made to clarify the one sent to you and published in Advisory Bulletin 76-8.

Sincerely,

\signed\

Cesar DeLeon
Acting Director
Office of Pipeline
Safety Operations

September 20, 1977

Department of Transportation
Materials Transportation Bureau
Washington, D.C. 20590

ATTN: Cesar DeLeon

Dear Mr. DeLeon:

I am somewhat confused as to which one of these OPS interpretations is correct.

In April, 1976, I inquired as to your interpretation of verifying a multiple qualification. A copy of your reply is enclosed. On September 13, 1976, Mr. Coughlin of National Fuel Gas made the same inquiry [sic]. The answer he received from you was not the same as mine.

Please clarify this situation once and for all. It is very difficult to enforce a code when there are so many different interpretations for the same rule.

Sincerely,

\signed\

M. Salvadore
Sr. Gas & Petroleum Inspector
Department of Public Service