API Subcommittee on Inspection
Technical Inquiries – Fall 06

APPROVED RESPONSES

510-I-02/05

Background:

As per API 510, 7.2.5 note: Before local PWHT is used, a metallurgical review must be conducted to determine if the vessel was postweld heat treated due to the characteristics of the fluid contained in it.

Question 1:

Please clarify what does it mean by a metallurgical review to determine if the vessel was postweld heat treated due to the characteristics of the fluid contained in it?

Proposed Reply 1:

A metallurgical review to assess whether interaction between the contained fluid and vessel components might be the reason why a postweld heat treatment was originally required.

Question 2:

If a vessel was previously stress relieved for the fluid characteristics, does it mean that local postweld heat treatment is not advisable for such a vessel after the local repair work?

Proposed Reply 2:

Not necessarily, depending on the result of the metallurgical review. A local postweld heat treatment may or may not be acceptable.

Action item: Take out a scorecard item to change "metallurgical" review to "materials and corrosion" review.

510-I-05/05

Background

Longitudinal crack in fillet weld, made to fit an appurtenance to shell, found by PT during pressure vessel internal inspection. In order to stop it, one ¼ in. hole is drilled at the end of the crack.

Question 1:

Is this procedure acceptable by API 510?

Question 2:

May this procedure be used as temporary, being mandatory welding reparation after?

Reworded Questions:

Question 1:

Does API 510 address use of the technique of drilling a hole at the end of a longitudinal crack in a weldment to arrest the crack as a temporary repair before making a weld reparation?

Reply 1:

No. To evaluate crack-like flaws, a fitness for service assessment should be performed in accordance with API 579 Section 9 Crack-Like Flaws

Rationale:

API 510 (nor API RP 572) does not identify or endorse this technique or allude to it in the section on temporary repairs. API 510 refers owner-users to API 579 to evaluate crack-like flaws.

510-I-01/06

Background

API 510, Section, 5.7b Widely scattered pits may be ignored as long as the remaining thickness below the pit is greater than one-half the required thickness (1/2 $t_{required}$).

Question:

Does the required thickness ($t_{required}$) mean the design thickness (with corrosion allowance) of thickness by pressure?

Reworded Question:

Question:

What is the definition of $t_{required}$ as used in API 510, Section 5.7b, in conjunction with the criteria for widely scattered pits?

Reply:

$t_{required}$ is the minimum thickness without corrosion allowance for each element of a pressure vessel based on the appropriate design code calculations and code allowable stress that consider pressure, mechanical and structural loadings.

Rationale:

Response definition comes directly from definition for required thickness in API 510 9th edition Section 3.55

570-I-01/06

Question:

Is the use of a full-encirclement split tee considered a temporary repair as defined by 8.1.3.1 per API 570?

Reply:

The use of any type of full-encirclement, split fitting (tee or sleeve) is considered temporary per API 570 if it used in the context of a repair (i.e. repair locally thinned area). A full encirclement split-tee can be used as a permanent installation when making branch connections/tie-ins to existing piping (i.e. in-service hot tap, or cold tie-in) that is inspected and found to be acceptable for the given service, per the applicable code.

570-I-02/06

Background:

Per Section 9.2.7, leak testing using liquid is permitted but we have some limitation in using certain liquids for the leak testing of the subject buried pipe line. Per section 5.7 and ASME B 31.8, a pneumatic pressure test can be substituted when it is difficult to carry out a hydrostatic test.

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Question:

Can we do leak test of the buried pipe line using the service medium (natural gas) or with nitrogen, in lieu of leak test using liquid?

Reply:

As long as the buried pipe line is located within a facility not covered by other jurisdictional requirements (such as US Department of Transportation), the answer is yes. Due consideration should be given to the following:

- Safety precautions for pneumatic testing (such as those in AMSE B31.2)
- Inherent difficulties of accurately evaluating the recorded pressure for the 8-hour required leak test period using pneumatic testing with potential atmospheric temperature changes.