When qualifying welding procedures for fillet welds, one must note the range of wall thickness and diameters over which the procedure is applicable. Is API 1104 qualified to install sleeves using E-7018 if the welder test on a Butt and Branch using 6010 and/or E-7018 electrodes in the downhill progression, and electing not to certify technique to install attachment fittings on pipelines such as thread-o-lets, requiring understanding that a welder who has successfully completed the multiple qualification test on 2" diameter would qualify, say, a 12.7 mm and >19 mm? Or is it the group specified under Welder Qualification Tests which is < 4.8 mm? We assume that by "---on a butt and branch---" you mean the butt weld and the bevel fillet weld, the same procedure can be used to weld a lap fillet because in both cases the weld constitutes an essential variable thus requiring requalification. A change from a butt to a fillet weld is a major change in joint design. That welder would therefore, not be qualified to perform his qualified procedure, once the bevel is filled, the joint design remaining is a fillet weld. The welder will therefore, not be qualified to perform a butt weld at that location. The groups are not specified in API-1104, they are to be selected by the user. The groups are not specified in API-1104, they are to be selected by the user.
Is destructive testing the only way to qualify a welding procedure?

Yes, but the welder would only be qualified in welding using 1/2 or 3/8" electrodes down in the rootpass and Group 3 electrodes up in thefill and cap passes.

Is radiography acceptable to qualify a welding procedure or are there other acceptable/acceptable methods?

Is the entire procedure qualification test rejected and thus the welding procedure not qualified?

No.

Does the standard intend that any elongated porosity indication in the root pass be rejected?

Yes, the reference to wall thickness applies to both the thickness of the sleeve and the thickness of the service pipe. Neither are essential variables.

Can I use butt welding and fillet welding procedures qualified under Section 5 of API 1104, for the header shown in Figure 12, Note 1?

No, each welder must weld the entire weld thickness when fabricating branch welds.
Considering these groupings the materials we use are listed below and grouped accordingly:

Group (A) SA-106: Group (B) API 5L: Group (C) X65 API: X60 Group (D) X52 API: X42

Also considering compatibility of the base materials and filler materials within the groups, it would be known that API considers:

1. If you qualify for group (A): X42 (TO) X42, it will qualify all of our materials in group (A).
2. If you qualify for group (B): X52 (TO) X52 we will qualify all of our materials in group (B).
3. If you qualify for group (C): X80 (TO) X80 will qualify all of our materials for group (C).
4. We will also test the Base Material groups in combination. For example it is necessary to weld:
   - Group (A): X42 TO Group (B): X52
   - Group (A): X42 TO Group (C): X80
   - Group (A): X52 TO Group (C): X80
5. One question is will Qualifying a procedure with each of the above combinations, qualify the materials we use in each group listed in Table 2 and 3 (in the Appendix)?
6. My other question pertains to Branch Connections:
   - X42 TO X42
   - X42 TO X52
   - X42 TO X80
7. I will need to Qualify a Procedure for D1 thru D3 Branch Connections?
A recent comparison of the API 1104 1st "Edition" 1994 to the 2nd Edition 1999 revealed a number of differences in the weld classification criteria. Notably, the weld acceptance criteria for the 2nd Edition have been tightened in some areas compared to the 1st Edition. For instance, the 2nd Edition has tighter acceptance criteria for incomplete penetration welds, with a maximum length of indications of 12 inches in any 12-inch length of weld being required instead of 18 inches in any 30-inch length of weld as per the 1st Edition.

The references to the NDT sections in the 1st Edition were then provided. The weld acceptance criteria for the 2nd Edition have been tightened in some areas compared to the 1st Edition. For instance, the 2nd Edition has tighter acceptance criteria for incomplete penetration welds, with a maximum length of indications of 12 inches in any 12-inch length of weld being required instead of 18 inches in any 30-inch length of weld as per the 1st Edition.

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The weld acceptance criteria for the 2nd Edition have been tightened in some areas compared to the 1st Edition. For instance, the 2nd Edition has tighter acceptance criteria for incomplete penetration welds, with a maximum length of indications of 12 inches in any 12-inch length of weld being required instead of 18 inches in any 30-inch length of weld as per the 1st Edition.
2.6.2.1

Is it permissible to notch the sides to a dimension less than approximately 1 inch to

1) Under Clause 5.3, API 1104 stated that Diameter Group shall be specified in the

Yes.

2.6.2.3

Table 1

Is the speed of travel specified as an essential variable in order to control the heat

As a user of API Standard 1104 19

Table 1

There are other factors that make speed of travel an essential variable such as

4) Or we have to only qualify welder instead of re-qualify the WPS to the diameter

No. The third sentence of Paragraph 5.6.4.1 states, "The cover and root—bead----

Yes.

5.8.2.2

Do the welder/procedure specification must be revised to include the diameters to be welded.

If the welder has been qualified for welding the higher of the two yield strengths involved in

The welder will still be qualified to conduct production welding in Sept 2002 provided no other

There is no discussion on the qualification of a welder; however, a welder may be required to

5.8.3.2.6

As a user of API Standard 1104 19th edition, dated Sept. 1999, I would respectfully request

This ensures that fillers and/or pipe from different groups listed in 5.6.2.1 can be welded

5.8.3.2.5

is the speed of travel specified as an essential variable in order to control the heat

as you have suggested in B.

5.6.4.3

Do not API 1104 permit machining/gripping the welder base specimen to a uniform

The Company establishes the range that they feel is appropriate and one way is

5.6.4.1

Diameter Group 2 (X65) and 3 (X80) respectively. Is it permissible to split the weld to

19th Sep-99

Is the speed of travel specified as an essential variable? What is the speed of travel listed as an

NPS 16 pipe welding (within same material group and wall thickness group)?

Yes.

5.6.4.2

Does the welder/procedure specification must be revised to include the diameters to be welded.

If the welder has been qualified for welding the higher of the two yield strengths involved in

5.6.4.2

Are the moon (1) to (3) per inch listed in the welder's Procedure Specification to be used

The welder will still be qualified to conduct production welding in Sept 2002 provided no other

5.6.4.1

It means that fittings and/or pipe from different grades listed in 5.6.2.1 can be welded

If the welder has been qualified for welding the higher of the two yield strengths involved in

5.4.2.2

Does the speed of travel of each pass during procedure qualification and listing the exact speeds employed by the welder for each pass.

For instance, is a qualified welder for API 5L X65 allowed to weld on API 5L X70, 60, 42, B and so on, or does he need to be qualified for each WPS group?

Please see enclosed details.

5.3.2.15

If an undercut (accepted visually as per Page 29, Table 4) is observed on a bend test specimen, is a thickness reduction permissible to grind that region to make it smooth

No. The third sentence of Paragraph 5.6.4.1 states, "The cover and root—bead----

5.6.4.1

Or does it mean that when welding pipe, which has been double or triple stenciled, such as a double stenciled of X42/X52, that a procedure qualified to weld X52 or the higher yield using exacted speed.

We are trying to understand whether fillings and/or pipe from different groups in

The welder will still be qualified to conduct production welding in Sept 2002 provided no other

5.6.4.1

Is it permissible to notch the sides to a dimension less than approximately 1 inch to

Clause 5.6.4.1

The welder/procedure specification must be revised to include the diameters to be welded.

The welder will still be qualified to conduct production welding in Sept 2002 provided no other

5.6.4.1

Is the speed of travel specified as an essential variable in order to control the heat

There are other factors that make speed of travel an essential variable such as

9.3.8.2 & 9.3.8.3

How do you make the correct evaluation and interpretation of relevant rounded

This requires you to evaluate all "Rounded" indications to the "Linear" indication for evaluation.

This section does not address minimum separation (or location) for longitudinal welds.

This section does not address minimum separation (or location) for longitudinal welds.

If the filler metal is not listed in one of the groups of Table 1 it requires separate

5.6.4.1

Is the speed of travel specified as an essential variable? What is the speed of travel listed as an

If the welder successfully performs the lay out portion of this test or the first Qualification test, he is required to lay out the branch when he requalifies, or he is allowed to use a temporary or stoppage cutter to cut out the branch connection.

The last sentence of the first paragraph of 2.6.2.1 states that the second test, the welder job test, oil cut, oil well, and weld all base line prior to going into production. If the welder successfully performs the lay out portion of this test or the first Qualification test, he is required to lay out the branch when he requalifies, or he is allowed to use a temporary or stoppage cutter to cut out the branch connection.
In B.1, it is stated that "This appendix does not cover pipelines and piping systems."

In Appendix A, Paragraph A.1, it is stated that "Welds subjected to applied axial strain or stress limit when not using Appendix A, i.e., workmanship only, are not expected during the test."

In Paragraph 5.4.2.6, "Under API-1104 Appendix B, if a procedure was qualified with and without a heating procedure, the procedure qualification is determined and qualified in accordance with Appendix B.1."
Question 1. Your first question deals with the definition of a lap weld fillet, as noted in Sec. 3.5.1. If the welder is qualified under ASME Section IX, can he also weld API 1104 Section 3.5.1 requirements?

Question 2. Do Sec. 1104 prohibit root sides from inside of the pipeline, if accessible?

Response 1. No.

Response 2. No.

Question 3. Is there any prohibition to test with any of the coupons for mechanical test failed?

Response 1. Yes.

Response 2. No.

Question 4. Is a weld test for API 1104 a weld test, or is it a weld test for the base metal?

Response 1. weld test, or is it a weld test for the base metal?

Response 2. It is a weld test for the base metal.

Question 5. Does a welding procedure qualified for branch connection also qualify for welding full-penetration welds?

Response 1. Yes.

Response 2. No.

Question 6. What Section of Appendix B applies to the testing and coupon locations for a welder qualification sleeve test? Table 3?

Response 1. Sec. 6.2.2.1.

Response 2. Sec. 6.2.2.2.

Response 3. Sec. 6.2.2.3.

Response 4. Sec. 6.2.2.4.

Question 7. In Sec. 3.5.3, 3 hose is the minimum acceptable size of hose for the welding based on API 1104:

Response 1. Yes.

Response 2. No.

Response 3. Yes.

Response 4. Yes.

Question 8. Is it permissible to weld different filler metal groupings in the same weld test (14") and the branch connection test (20")?

Response 1. No.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.

Question 9. If a welder performs a welder qualification test using an E6010+ on the root pass and an E7018 on all remaining weld passes, is the welder qualified to weld on a full low hydrogen weld w/ all passes being of the E7018 group?

Response 1. No.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.

Question 10. Are “wrap-around” and “roller” jigs permissible within API 1104?

Response 1. Yes.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.

Question 11. Is there any qualification sleeve test required for X46 to X46 pipe, if there are no other essential variable changes?

Response 1. Yes.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.

Question 12. If a welder is qualified under ASME Section IX, can also weld API 1104 Section 3.5.1 requirements?

Response 1. Yes.

Response 2. No.

Response 3. Yes.

Response 4. Yes.

Question 13. If a welder is qualified under ASME Section IX, can he also weld API 1104 Section 3.5.1 requirements?

Response 1. Yes.

Response 2. Yes.

Response 3. No.

Response 4. Yes.

Question 14. What Sections of Appendix B apply to the testing and coupon locations for a welder qualification sleeve test? Table 3?

Response 1. Sec. 6.2.2.1.

Response 2. Sec. 6.2.2.2.

Response 3. Sec. 6.2.2.3.

Response 4. Sec. 6.2.2.4.

Question 15. Can 9.6 be interpreted where as far as the welding process is not changed, the weld testing can be completed at the same time as the welding?

Response 1. No.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.

Question 16. Are “wrap-around” and “roller” jigs permissible within API 1104?

Response 1. Yes.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.

Question 17. If a welder is qualified under ASME Section IX, can he also weld API 1104 Section 3.5.1 requirements?

Response 1. Yes.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.

Question 18. If a welder is qualified under ASME Section IX, can he also weld API 1104 Section 3.5.1 requirements?

Response 1. Yes.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.

Question 19. Is there any qualification sleeve test required for X46 to X46 pipe, if there are no other essential variable changes?

Response 1. Yes.

Response 2. Yes.

Response 3. Yes.

Response 4. Yes.
Question 1: What is the outcome if the contractor actually DELETES PWHT?

Response 1: The weld thickness range that is identified in the WPS is required to be in accordance with 5.2.3.4. Any change from that range constitutes an essential variable. Question 2: There are no essential variables for welding operators. Welding operators must be qualified in accordance with 12.6.

Question 1: Paragraph 8.4.1- Procedures states “Nondestructive testing personnel shall interpret test results”. I would like an interpretation as to the minimum qualifications or experience level of user company personnel; however, we refer you to Section 8.3 for guidance. It also should be noted that according to the above clause, the Contractor is permitted to delete PWHT without affecting the Procedure or API 1104 essential variables.

Question 2: What is the defined thickness group - there isn’t one referenced?

Response 1: In accordance with 4.4.14, any change to the values of PWHT constitutes an essential variable and would require re-qualification.

Response 2: There are no defined weld thickness groups referenced for the qualification procedure in 5.4.2.3. However, the ranges of diameters and weld thicknesses must be identified in the specification, as noted in 5.3.2.3.

Response 2B: API 1104 does not address contractual issues. See answer for 2A.

Response 2C: API 1104 does not address contractual issues. See answer for 2A.

Question 2C: Is it API 1104 intent to permit the Client to specify the weld thickness groups for weld procedure groupings prior to award of contract?

Response 1: No. The weld thickness range that is identified in the WPS is required to be in accordance with 5.2.3.4. Any change from that range constitutes an essential variable.

Question 2: There are no essential variables for welding operators. Welding operators must be qualified in accordance with 12.6.

Question 1: Paragraph 8.4.1- Procedures states “Nondestructive testing personnel shall interpret test results”. I would like an interpretation as to the minimum qualifications or experience level of user company personnel; however, we refer you to Section 8.3 for guidance. It also should be noted that according to the above clause, the Contractor is permitted to delete PWHT without affecting the Procedure or API 1104 essential variables.

Question 2: What is the defined thickness group - there isn’t one referenced?

Response 1: In accordance with 4.4.14, any change to the values of PWHT constitutes an essential variable and would require re-qualification.

Response 2: There are no defined weld thickness groups referenced for the qualification procedure in 5.4.2.3. However, the ranges of diameters and weld thicknesses must be identified in the specification, as noted in 5.3.2.3.

Response 2B: API 1104 does not address contractual issues. See answer for 2A.

Response 2C: API 1104 does not address contractual issues. See answer for 2A.

Question 2C: Is it API 1104 intent to permit the Client to specify the weld thickness groups for weld procedure groupings prior to award of contract?

Response 1: No. The weld thickness range that is identified in the WPS is required to be in accordance with 5.2.3.4. Any change from that range constitutes an essential variable.

Question 2: There are no essential variables for welding operators. Welding operators must be qualified in accordance with 12.6.

Response 1: The criteria for ICP for weld lengths less than 12" in length is as follows: 1. Yes. Since ICP only occurs with a two-sided weld configuration; i.e. ID and OD welding.

Response 2: The requirement in Section 9.3.5c applies to welds of any length. Therefore, if there is a 16% imperfection and there are no specific length limitations, it is applicable to the weld lengths exceeding 12". Therefore, companies may elect to measure and/or record the speed of travel during qualification.

Response 2: All listed criterion applies to the accumulation of imperfections, and therefore, companies may elect to measure and/or record the speed of travel during qualification using information from Table 3, which is included in the qualification process.

Response 1: No. No diameter is shown in essential variables so the diameter must be specified in the WPS as applicable. Therefore, if the diameter is not specified, there is no specific mention of aggregate length of IFD in welds less than 12" in length. Therefore, companies may elect to measure and/or record the speed of travel during qualification using information from Table 3, which is included in the qualification process.

Response 1: No. No diameter is shown in essential variables so the diameter must be specified in the WPS as applicable. Therefore, if the diameter is not specified, there is no specific mention of aggregate length of IFD in welds less than 12" in length. Therefore, companies may elect to measure and/or record the speed of travel during qualification using information from Table 3, which is included in the qualification process.

Response 2: All listed criterion applies to the accumulation of imperfections, and therefore, companies may elect to measure and/or record the speed of travel during qualification using information from Table 3, which is included in the qualification process.

Response 1: In accordance w/ 5.14 the specification is revised to show the changes.

Response 2: In accordance w/ 5.14 the specification is revised to show the changes.

Response 3: Yes. The wall thickness range that is identified in the WPS is required to be in accordance with 5.2.3.4. Any change from that range constitutes an essential variable.
**Question 1:** In which conditions is necessary or recommended to realize impact tests?

**Question 2:** Is it the intent of the API standard that only those ultrasonic indications that exceed Clause 10.2 be considered as a possible defect?

**Question 3:** For qualification of welding procedure specifications (WPS) according to API Std 1104 19th Edition Appendix A for use of a mechanized welding system to produce test joints described as A B and C C, with each set including a test joint with high heat input (HII) and a test joint with low heat input (LII), sufficient to meet the requirements of the standard and allow for welding of all possible pipe manufacturer combinations?

**Question 4:** For qualification of welding procedure specifications (WPS) according to API Std 1104 19th Edition Appendix A for use of a mechanized welding system to produce test joints in a pipeline segment from API Spec 5L line pipe supplied from different manufacturers designated as manufacturers A B C, with no other changes in essential variables, is preparing and destructively testing a set of test joints described as A B C B with each set including a test joint with high heat input (HII) and a test joint with low heat input (LII), sufficient to meet the requirements of the standard and allow for welding of all possible pipe manufacturer combinations?

**Question 2:** Assuming that AUT is allowable in lieu of RT, is it possible to run Welder Qualification such that a welder may be qualified and be restricted to Root, Fill and/or Cap passes with manual SMAW)?

**Question 3:** For qualification of welding procedure specifications (WPS) according to API Std 1104 19th Edition Appendix A for use of a mechanized welding system to produce test joints in a pipeline segment from API Spec 5L line pipe supplied from different manufacturers designated as manufacturers A B C, with no other changes in essential variables, is preparing and destructively testing a set of test joints described as A B C B with each set including a test joint with high heat input (HII) and a test joint with low heat input (LII), sufficient to meet the requirements of the standard and allow for welding of all possible pipe manufacturer combinations?

**Question 4:** For qualification of welding procedure specifications (WPS) according to API Std 1104 19th Edition Appendix A for use of a mechanized welding system to produce test joints in a pipeline segment from API Spec 5L line pipe supplied from different manufacturers designated as manufacturers A B C, with no other changes in essential variables, is preparing and destructively testing a set of test joints described as A B C B with each set including a test joint with high heat input (HII) and a test joint with low heat input (LII), sufficient to meet the requirements of the standard and allow for welding of all possible pipe manufacturer combinations?

**Question 1:** In reference to API 1104 19th edition, is it the requirement of the standard that only the welder(s) who perform welding of other changes in essential variables, is preparing and destructively testing two sets of test joints described as A B and C C, with each set including a test joint with high heat input (HII) and a test joint with low heat input (LII), sufficient to meet the requirements of the standard and allow for welding of all possible pipe manufacturer combinations?

**Question 2:** If API 1104 does not contain the appropriate standard for making these temporary welds, what API standard does include the appropriate requirements for a temporary weld done for purposes of allowing a hydraulically to be made of components requested be hydraulically tested?
**1104** 19th Sep-99

**1104** 20th Oct-05

**1104** 19th Sep-99

**1104** 19th Sep-99

**Question 1:** Can the value parameter F be zero?

**Response:** No.

**Question 2:** Since API 1104 only regulates and does not state that the categories above shall be used, is it acceptable to combine category 2 and 3 into a single category, 2.375 and larger, especially since diameter is not an essential variable?

**Response:** No. Explanation: A procedure can be written to include either direction or both directions. The issue is how to qualify the welding procedure. Section 6.4 of API 1104, Section 5.4.2.3 makes the direction of travel, uphill or downhill, a vertical welding on an essential variable. API 1104, Section 5.2 states "To weld the test joint for both welds, two specimen parts and one joint following of the same specification from two plate manufacturers, designated as 1 and 2 so that each test weld is welded in a different direction from the weld on the opposite side of the test joint."

**Response 3:** Not Applicable

**Question 3:** Does the welder obtain qualification to weld each process individually using single process GTAW or SMAW welding procedures having matching essential variables to the test weld?

**Response:** The subject of time limits for the qualification of welders to API 1104 has always been left to the codes and/or companies, and therefore, not addressed in the Standard.

**Question 4:** If a city municipality has welders qualified in API Standard 1104 19th edition that are not employed how often, if ever, are the welders required to requalify after successfully passing a qualification test? Is it unfeasible to find a paragraph or comment that answers my question on the requirement to requalify after passing a qualification test?

**Response:** Yes. Separate procedure qualifications are required for welding on each material grouping.

**Question 5:** Which part of the API weld pack shall be within 1 in. of the end of the weld and not be repaired and at the center of the weld? Is the specified side in the pack to be within 1 in. of the end and at least 1 in. of the center of the weld pack to be within 1 in. of the end and center?

**Response:** To API Qualified 11 through 9. This is not addressed in API 1104, 20th Edition and therefore API cannot comment on these issues.

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**Background:** If a welder passes a combination (dual) process GTAW (root) / SMAW for a single pipe manufacturer designated as manufacturer A, that previously tested to the same qualification from two plate manufacturers, designated as 1 and 2 so that each pipe could be classified as either A1 or A2, with no other changes in essential variables, is preparing and destructively testing one set of test joints described as A1 A2, the resulting single test joint, with high heat input (HHI) and test joint with low heat input (LHI); and test welds with low heat input (LHI) and test weld with high heat input (HHI), specifically required by the standard to allow welding of all plate manufacturers combinations?

**Question:** For qualification of welding procedure specifications (WPS) according to Appendix B of API 1104 19th Edition Appendix A for use of a mechanized welding system to produce SG joints in a pipeline segment from API Spec 5L line pipe supplied from a single pipe manufacturer designated as manufacturer A, that previously tested to the same qualification from two plate manufacturers, designated as 1 and 2 so that each pipe could be classified as either A1 or A2, with no other changes in essential variables, is preparing and destructively testing one set of test joints described as A1 A2, the resulting single test joint, with high heat input (HHI) and test joint with low heat input (LHI); and test welds with low heat input (LHI) and test weld with high heat input (HHI), specifically required by the standard to allow welding of all plate manufacturers combinations?

**Response:** Yes.

**Response 2:** No.

**Question:** Can the dimension to be welded in a different direction than the original weld be welded in a different direction from the original weld?

**Response:** Yes. Separate procedure qualifications are required for welding on each material grouping.

**Question:** Is it the intent of Section B.3 that the above described welder perform a test joint for butt welds, two pipe nipples shall be joined, following all of the details specified on the test joint with low heat input (LHI) and test weld with high heat input (HHI), specifically required by the standard to allow welding of all plate manufacturers combinations?

**Response:** Yes. The weld shall be overlapped by the welder and visually inspected and radiographed before being allowed to proceed to the next weld.

**Question:** The weld shall meet the visual examination requirements for full penetration and complete fusion. Is this statement correct?

**Response:** Yes. The weld shall be overlapped by the welder and visually inspected and radiographed before being allowed to proceed to the next weld.

**Question:** Does it specify what the weld shall look like? Is the weld a neater workman-like appearance?

**Response:** The weld shall then be subjected to the visual examination requirements for full penetration and complete fusion. The welder is required to visually inspect and radiograph the weld before being allowed to proceed to the next weld.

**Question:** Does it specify the weld shall meet the visual examination requirements for full penetration and complete fusion?

**Response:** The weld shall meet the visual examination requirements for full penetration and complete fusion. The welder is required to visually inspect and radiograph the weld before being allowed to proceed to the next weld.

**Question:** Does the welder complete and pass all the testing requirements of Section 6.3 for a butt weld and a branch weld on a pipe with an outside diameter of 12.75". The welder is required to be in-service welding as per Appendix B.

**Response:** The welder is qualified for the individual processes separately.

**Question:** Does the welder obtain qualification to weld each process individually using single process GTAW or SMAW welding procedures having matching essential variables to the test weld?

**Response:** Yes. Separate procedure qualifications are required for welding on each material grouping.

**Question:** Is it the intent of Section B.3 that the above described welder perform a test weld on a 12.75" diameter pipe to qualify for in-service welding on all diameters and thicknesses?

**Response:** Yes. Separate procedure qualifications are required for welding on each material grouping.

**Question:** Is it the intent of Section B.3 that the above described welder perform a test weld on a 12.75" diameter pipe to qualify for in-service welding on all diameters and thicknesses?

**Response:** Yes. Separate procedure qualifications are required for welding on each material grouping.

**Question:** If the welder is only qualified for a specific combination of processes; the welder is not qualified for the individual processes separately.

**Response:** No.

**Question:** Are welding procedures for production welds with that same uphill-downhill combination of welding to be able to make complete welds in the uphill direction and complete welds in the downhill direction will require two qualification tests?

**Response:** Yes. Separate procedure qualifications are required for welding on each material grouping.

**Question:** Is it the intent of Section B.3 that the above described welder obtain qualification to weld each process individually using single process GTAW or SMAW welding procedures having matching essential variables to the test weld?

**Response:** The welder is required to visually inspect and radiograph the weld before being allowed to proceed to the next weld.

**Question:** Is the welder only qualified for that specific combination of processes; the welder is not qualified for the individual processes separately.

**Response:** No. Explanation: A procedure can be written to include either direction or both directions. The issue is how to qualify the welding procedure. Section 6.4 of API 1104, Section 5.4.2.3 makes the direction of travel, uphill or downhill, a vertical welding on an essential variable. API 1104, Section 5.2 states "To weld the test joint for both welds, two specimen parts and one joint following of the same specification from two plate manufacturers, designated as 1 and 2 so that each test weld is welded in a different direction from the weld on the opposite side of the test joint."

**Response 3:** Not Applicable

**Question:** If a city municipality has welders qualified in API Standard 1104 19th edition that are not employed how often, if ever, are the welders required to requalify after successfully passing a qualification test? Is it unfeasible to find a paragraph or comment that answers my question on the requirement to requalify after passing a qualification test?

**Response:** Yes. Separate procedure qualifications are required for welding on each material grouping.
Question: Is this an intended change?

Answer 1: Yes, provided on increase in the maximum time between completion of the root bead and the start of the second bead constitutes an essential variable. We know that this essential variable is established in the procedure qualification, but we believe that it is a serious implication in welder qualification. Right now, we need to know if we have to consider it as an essential variable for welder qualifications.

Question: Where are the welders who have the ability to weld better than others, such as we have qualified a welding procedure using a 6 in OD pipe and the time between passes 6 min. The welder can be used to weld a 12 in OD pipe when time between passes should be higher?

Answer 2: The procedure must be requalified.

Question 3: If a welder was qualified through the procedure qualification (6 in OD pipe), how does the time control for 12 in OD pipe?

Response 1: Yes.

Response 2: Yes. However, since the width of the specimen and depth of the notch is approximately a 1/4 inch feature can be achieved.

Question: Background: Page 27 for Welder Qualification 4.5” to 12.75” diameter shows 8:

- Can the pipe be used in the procedure to 150 psi?
- Can the pipe be used in the procedure to any pressure if the welder is qualified for the 150 psi specification?
- Will the process of qualification, from 150 psi to higher pressure, be more difficult?

Response 1: No. Section 7.8.2 is applicable to fill and finish (DCP) bead only.

Response 2: No.

Response 3: The time between passes should be higher?

Response 4: This falls outside the scope of interpretation. Therefore API cannot comment on this issue.

Response 5: No. The subject is not addressed in API 1104, 20th Edition and therefore API cannot comment on this issue.
**Question 1:** Is the intent of the Fracture Mechanics Subcommittee that qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected requires a pretest of a test joint representative of the production welds that is tested in accordance with the requirements of A.3.2 Mechanical Testing?

**Response 1:** Yes, provided the method of inspection is radiographic testing only.

**Question 2:** Would the Fracture Mechanics Subcommittee agree with the assertion by some that preparation of a test joint and testing in accordance to A.3.2 Mechanical Testing is not necessary when qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected because industry experience has shown that toughness of most pipeline girth welds is sufficient to tolerate fairly large flaws?

**Response 2:** No, API 1104 leaves this to the discretion of the company.

**Question 3:** Would the Fracture Mechanics Subcommittee agree with the assertion by some that preparation of a test joint and testing in accordance to A.3.2 Mechanical Testing is not necessary when qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected because industry experience has shown that toughness of most pipeline girth welds is sufficient to tolerate fairly large flaws?

**Response 3:** No, API 1104 leaves this to the discretion of the company.

**Question 4:** Would the Fracture Mechanics Subcommittee agree with the assertion by some that there is no need for a good faith effort to reproduce the variables employed during production welding when welding a test joint to be subjected to the testing requirements of A.3.2 Mechanical Testing in order to qualify qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected?

**Response 4:** Yes, the intent of the Fracture Mechanics Subcommittee is that qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected requires a pretest of a test joint representative of the production welds that is tested in accordance with the requirements of A.3.2 Mechanical Testing.

**Question 5:** Is the expectation of the Fracture Mechanics Subcommittee that qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected requires sufficient nondestructive examination to determine the length, height, and depth below the surface of the defect, even when performing that nondestructive testing may be costly, and time consuming?

**Response 5:** Yes.

**Question 6:** Would the Fracture Mechanics Subcommittee agree that qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected requires sufficient nondestructive examination to determine the length, height, and depth below the surface of the defect, even when performing that nondestructive testing may be costly, and time consuming?

**Response 6:** Yes.

**Question 7:** Would the Fracture Mechanics Subcommittee agree with the assertion by some that the height and depth below the surface of a defect under Section 9 can be estimated from a radiograph or assumed without additional nondestructive examination when qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected?

**Response 7:** No.

**Question 8:** Would the Fracture Mechanics Subcommittee agree that when qualifying individual pipeline welds for the alternative acceptance limits after a few defects under Section 9 are detected due to errors in interpretation of radiographs the testing and analysis can be less rigorous than when applying Appendix A analysis prior to production welding?

**Response 8:** Yes.

**Question 9:** Would the Fracture Mechanics Subcommittee agree that the practice that are employed for qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected could influence industry-wide expectations for applying Appendix A testing and analysis prior to production welding?

**Response 9:** Yes.

**Question 10:** Does the Fracture Mechanics Subcommittee agree that the subcommittee members are better prepared to clarify the issues relating to qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected than are insurance adjusters, attorneys, judges and others who have never attended a meeting of the API-AGA Joint Committee?

**Response 10:** Yes.

**Question 11:** Does the Fracture Mechanics Subcommittee agree the subcommittee members should take an action to clarify in a future edition of API 5L-PII SWl.0 requirements for qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected?

**Response 11:** Yes.

**Question 12:** Does the Fracture Mechanics Subcommittee have allowing qualifying individual pipeline welds for the alternative acceptance limits after a defect under Section 9 is detected only if the process is performed with the same technique/grip that is required for Appendix A testing and analysis performed prior to production welding?

**Response 12:** Yes.

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**Background:** For NDE/SV procedures requiring subject placement, where multiple passes of the film are used per exposure, one IQI is placed within 1" of one end of the film length to be interpreted and one IQI placed at the center of the exposure.

**Question:** Is this IQI placement a correct interpretation of the intent of API 1104 20th Edition, specifically 11.1.6.1 paragraph A?

**Response:** Yes.

**Background:** Section 11.1.6.1 has a note rule that states: "For purposes of interpretation, when the DWE/SWV technique is used, the thickness of the weld minus twice the weld reinforcement (internal plus external combined) that note appears to be an error as it is a standard practice and will drastically reduce the required sensitivity levels of radiographs. Normally, DWE/SWV technique IQI selection, the weld is defined as the single wall thickness plus the weld reinforcement (internal plus external combined)."

**Question:** Can you please confirm that this is not an error as it will effect radiography procedures?

**Response:** Yes.

**Background:** A welder working for ABC contractor has completed and passed the testing requirements of section 6.3.2 for a butt and trench using a welding procedure approved and accepted by Company ‘A’. The welder has completed the project successfully after several months and is still in the employ of ABC Contractor. ABC Contractor then submits the same qualified welding procedure to Company ‘B’ along with the welders original welder qualification records and a continuity is noted to any essential variables.

**Question 1:** Is the intent of the standard for the welder continuity to be qualified to this welding procedure for this question after his/her competence?

**Response 1:** Yes.

**Question 2:** Is there a set amount of time that can elapse between the weld testing in this process that would render him disqualified?

**Response 2:** No.

**Background:** For API 1104, 5.4.2.2, “each weld shall receive a separate qualification test”. My interpretation is that WPS#01 is a separate data sheet and subsequently require an additional qualification, but just want to confirm the intent of the Code.

**Question:** Does this include different grades with the same SMYS? Example: does a qualification on API 5L X52 to API 5L X65 also qualify welding WPS#01-01?

**Response:** Yes, but also see note under 5.4.2.2.

**Background:** There are differences in acceptance for undercutting in RT to VT inspections.

**Question 1:** Can we accept any depth of internal under cutting in RT if length is within acceptance limits?

**Response 1:** Yes.

**Question 2:** If so, then table (4) in Visual acceptance is valid?

**Response 2:** No.

**Question 3:** If not, can we find depth acceptance in RT for internal under cutting?

**Response 3:** Yes.

**Question 4:** If we see in RT (internal cutting) do, we have to perform UT to confirm the depth? (If VT is not possible internally)

**Response 4:** Yes.
Background: For the qualification of welders to repair the item 10.4 provides that you can use multi-stamped pipe directly in welding procedures and API 1104.

Question 1: If you have, for example, Bv423Ux3 triple stamped pipe that you are going to weld in to an "x2" system, do you have to use the pipe as the highest stamped grade (x2)?

Response 1: Response: No, the WPS to be used must have been qualified for the grade of pipe being installed.

Response 2: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 3: Yes, however, please see NOTE under 5.4.2.2.

Background: For welder qualification with a coupon of OD 6.4", Table 6, shows, for a defined thickness, 4 test specimens are required, while for a coupon of OD 4", 2 test specimens are required, which would suggest that the qualification with coupon 6.4" does not cover the same requirements as the qualification on the 4" coupon.

Response: No, a through thickness repair does not qualify a cover pass repair at the fusion line. However, yes, through thickness repair does qualify a partial penetration repair.

Response 2: No, the essential variables from 5.4.2 apply to repair procedures.

Response 3: Yes, the essentials from 5.4.2 apply to repair procedures.

Response 4: Major change in joint design is an essential variable. A change from a butt to a fillet weld is a major change in joint design.

Response 5: A change from a butt to a fillet weld is a major change in joint design.

Response 6: Yes, in accordance to 12.6. So, the range for the Welders should be as per 12.6.

Response 7: 12.6.1 e. The company's system, the equipment, the procedure, and the quality assurance system are properly addressed.

Response 8: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Question: When using a WPS for a weld repair which is different than the WPS meet Appendix A, regardless of repair length and depth.

Response: Yes

Response 2: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 3: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 4: No, Repair welders must be qualified by destructive testing. The provision for qualifying welders by nondestructive testing in 6.6.1 does not apply in repair welder qualification.

Question: When a change of filler metal from Group 1 or 2 to any other group, or from any Group 3 through 9 to another, is this case applied the provisions of Section 6.6.1, "At the company's option, the welder's qualification shall be cut from the joint at each individual repair area location for each type of repair, the location(s) specified by the company, by performing destructive testing?" when a change of filler metal from Group 1 or 2 to any group. etc. versus the 20th Edition which was specific to changes to/from Group 3 filler metals.

Response: Response: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 1: No, a change from a butt to a fillet weld is a major change in joint design.

Response 2: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 3: Yes, however, please see NOTE under 5.4.2.2.

Response 4: Yes, however, please see NOTE under 5.4.2.2.

Response 5: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 6: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 7: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 8: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Question: When a change of filler metal from Group 1 to Group 2, or vice versa, does not qualify a cover pass repair at the fusion line.

Response: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 1: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 2: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 3: Yes, however, please see NOTE under 5.4.2.2.

Response 4: Yes, however, please see NOTE under 5.4.2.2.

Response 5: Yes, however, please see NOTE under 5.4.2.2.

Response 6: Yes, however, please see NOTE under 5.4.2.2.

Response 7: Yes, however, please see NOTE under 5.4.2.2.

Response 8: Yes, however, please see NOTE under 5.4.2.2.

Question: When using TOFD as automated UT with Pulse Echo for surface coverage?

Response: Yes

Response 2: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 3: Yes, however, please see NOTE under 5.4.2.2.

Question: Can I use TOFD as automated UT with Pulse Echo for surface coverage?

Response: Yes

Response 2: Yes, if the welding procedure specification is supported by specific recommendations for in-service welder qualification records having all essential variable or combination of essential variables requirements properly addressed.

Response 3: Yes, however, please see NOTE under 5.4.2.2.

Response 4: Yes, however, please see NOTE under 5.4.2.2.

Response 5: Yes, however, please see NOTE under 5.4.2.2.

Response 6: Yes, however, please see NOTE under 5.4.2.2.

Response 7: Yes, however, please see NOTE under 5.4.2.2.

Response 8: Yes, however, please see NOTE under 5.4.2.2.
Background: We want to use lineup clamp for root bead weld.

Question 1: If the same thing applies to the pass root?, I mean if the thickness material at the root pass should not exceed above the parent metal by more than 1/16 in. (1.6 mm), according to paragraph 7.8.2 and 7.9.2 API 1104, or not?

Response: No. Section 7.9.2 is applicable to filler and finish bead on the outside surface of the pipe only.

Question 2: Was the statement that the crown surface should not be raised above the parent metal by more than 1/16" meant to limit the high operator may have on their NPS?

Response: No.

Question 3: Is the maximum offset allowed is 1/8", but the 'should' statement in 7-6.2 states 1/16"? Does API requirement in procedure to requalify the root seam surface in alignment exceed the 1/16"?

Response: No. The maximum offset allowed in 7-6.2 states 1/16".

Question 4: Are we covered to weld a ¾'' steel service line?

Response: Yes.

Question 5: Are we covered to weld a butt weld on a ¾'' steel service line?

Response: Yes.

Question 6: Can a procedure which currently states the crown surface be at a minimum of 1/32" above the parent material and not more than 1/16" above the parent material/ material/renos should the crown surface be flush with the parent material but not more than 1/6" above the parent material without requalifying the procedure?

Response: No, see API 1104, Section 6.3.2.

Question 1: Is it acceptable to use a joint design (Configuration) term combined J-Groove Butt as per the requirements of API 1041?

Response: Yes. Section 7.8.2 and Section 7.9.3 states the weld surface shall not fall below the outside surface of the pipe and should not be raised above the parent material by more than 1/16".

Question 2: Can a procedure which currently states the crown surface be at a minimum of 1/32" above the parent material and not more than 1/16" above the parent material without requalifying the procedure?

Response: No, see API 1104, Section 6.3.2.

Question 3: Is the maximum offset allowed is 1/8", but the 'should' statement in 7-6.2 states 1/16"? Does API requirement in procedure to requalify the root seam surface in alignment exceed the 1/16"?

Response: No.

Question 4: Are we covered to weld a ¾'' steel service line?

Response: Yes.

Question 5: Are we covered to weld a butt weld on a ¾'' steel service line?

Response: Yes.

Question 6: Can a procedure which currently states the crown surface be at a minimum of 1/32" above the parent material and not more than 1/16" above the parent material without requalifying the procedure?

Response: No, see API 1104, Section 6.3.2.
Background: In API 1104, Section 10.4.2 (Testing of Repairs), for a repair welder, the maximum time between the completion of the root bead and the start of the other beads, shall be designated.

National's understanding of the intent of API 1104, Section 5.3.2.10 is to define on the WPS, the maximum allowable time between the completion of the root bead and the start of the hot pass (second pass) – which is an essential variable, as well as the maximum time between the completion of the hot pass (second pass) and start of the first filler pass, the requirement to specify the time between the completion of the second bead and the start of the other beads, as described in API 1104, Section 5.3.2.10 to be specified. In alternates, should the requirement of API 1104, Section 5.3.2.10 be interpreted as the “maximum time between beginning of second pass and third pass, second pass and fourth pass, and so on and so forth to second and first pass”? If so, National’s understanding is that the API 1104 does not require the WPS to define the time between each of the remaining passes as described in the sentence above.

Question: National is requesting API to provide a concise “yes” or “no” response confirming that National’s above explanation of the intent of API 1104, Section 5.3.2.10 accurately described the purpose and objective of this section. If National’s understanding is correct or incomplete and/or does not meet the intent of API 1104, Section 5.3.2.10, National requests an explanation in order to be comprehensively understanding the requirements.

Response: Yes, any one of the APTs could support API 1104, Section 5.3.2.10 to be written to cover the weld thickness and material combination listed in the background. However, please reference API 1104, Section 5.4.2.2 Note 1. Note that API presumes the question “Could I use…?” is applied to the material combination listed in the background.

Question: I have a different pipe consisting of 1) Diameter 12”, 17.44 mm Wall thickness, Grade API 5L X52, and 2) Diameter 12”, 9.5 mm Grade API 5L X52.

Question 1: Could I use PQI which pipe Diameter 12”, 17.44 mm Grade API 5L X52 for production weld?

Question 2: Could I use PQI which pipe Diameter 12”, 20 mm Grade API 5L X52 for production weld?

Question 3: Could I use PQI which pipe Diameter 12”, 9.5 mm Grade API 5L X52 for production weld?

Question 4: Could I use PQI (Unequal wall thickness) which pipe Diameter 12”, 9.5 mm Grade API 5L X52 welding with Diameter 12”, 20 mm Grade API 5L X52 for production weld?

Question 5: Could I use PQI (Unequal wall thickness and SMYS) which pipe Diameter 12”, 9.5 mm Grade API 5L X52 welding with Diameter 12”, 20 mm Grade API 5L X52 for production weld?

Question 6: Could I use PQI (Unequal wall thickness and SMYS) which pipe Diameter 12”, 9.5 mm Grade API 5L X52 welding with Diameter 12”, 20 mm Grade API 5L X52 for production weld?

Response 1: Yes

Response 2: No, the interpretation of the “current person” is incorrect.

Response 3: Yes

Response 4: Yes

Response 5: No, the interpretation of the “current person” is incorrect.

Response 6: No, the interpretation of the “current person” is incorrect.

Question: Is the test specimen preparation for macrosection necessary to repair welder qualification?

Response: Yes

Question: Would only one IQI be required on a 2” weld repair using DWE/SWV procedure?

Response: Yes

Question: Would only one IQI be required on a single weld repair for 12” weld using a DWE/SWV procedure?

Response: Yes

Question: In Section 5.4.2, (Table of Requirements), for a repair welder qualification test weld, the repair weld shall meet the visual examination requirements of API 5L, Sections 6.4 and 10.3.7.2. The destructive testing requirements in API 5L, Section 10.3.7.2.1 shall be performed on each weld and the test specimen shall be cut from the joint at each individual repair location for each type of repair. The list of welds and the test welds to be cut from the joint at each individual repair location for each type of repair. This list should be used to determine the number of specimens that shall be cut from the repair welds. The list shown in Table 4 is used to determine the number of specimens that shall be cut from the repair welds. The list shown in Table 4 is used to determine the number of specimens that shall be cut from the repair welds.

Response: No, API 1104, Section 6.4 should not reference Section 10.3.7.2. An anomaly shall be issued to correct this error.

Response 5: No, API 1104, Section 5.4.2 should not reference Section 10.3.7.2. An anomaly shall be issued to correct this error.

Question: Is the test specimen preparation for macrosection necessary to repair welder qualification?

Response: Yes

Question 1: Could I use PQR which pipe Diameter 12”, 17.44 mm Grade API 5L X52 for production weld?

Question 2: Could I use PQR which pipe Diameter 12”, 21.43 mm Grade API 5L B for production weld?

Question 3: Could I use PQR which pipe Diameter 12”, 9.5 mm Grade API 5L X52 welding with Diameter 12”, 20 mm Grade API 5L X52 for production weld?

Question 4: Could I use PQR which pipe Diameter 12”, 9.5 mm Grade API 5L X52 welding with Diameter 12”, 20 mm Grade API 5L X52 for production weld?

Question 5: Could I use PQR which pipe Diameter 12”, 9.5 mm Grade API 5L X52 welding with Diameter 12”, 20 mm Grade API 5L X52 for production weld?

Question 6: Could I use PQR which pipe Diameter 12”, 9.5 mm Grade API 5L X52 welding with Diameter 12”, 20 mm Grade API 5L X52 for production weld?

Response: Yes, any one of the PQRs could support a WPS that could be written to cover the weld thickness and material combination listed in the background. However, please reference API 1104, Section 5.4.2.2 Note 1. Note that API presumes the question “Could I use…?” is applied to the material combination listed in the background.

Response 1: Yes

Response 2: No

Response 3: Yes

Response 4: Yes

Response 5: No

Response 6: Yes

Background: In API 1104 states (on page 10) the piping shall be welded by qualified welders using qualified procedures and in accordance with the procedure specification. Base material is an essential variable in qualifying a procedure and it means that if a welder is going to do production welding on X50 pipe that he is to trained on that specific material. (The interpretation of the current person.)

Question 1: The WPS is established to join X42 pipe to X52 pipe can a welder qualify for X65 pipe by performing a qualification test on X52 pipe?

Response: Yes

Question 2: A current person is trying to say they must run the root and hot pass in a single weld repair for 12” weld using a DWE/SWV procedure.

Response: Yes

Question 3: The test specimen preparation for macrosection necessary to repair welder qualification?

Response: Yes

Question 4: Which wall thickness, Diameter 12”, 17.44 mm Grade API 5L X52, and Diameter 12”, 9.5 mm Grade API 5L X52, and Diameter 12”, 9.5 mm Grade API 5L X52, and Diameter 12”, 9.5 mm Grade API 5L X52.

Response: Yes, any one of the PQRs could support a WPS that could be written to cover the weld thickness and material combination listed in the background. However, please reference API 1104, Section 5.4.2.2 Note 1. Note that API presumes the question “Could I use…?” is applied to the material combination listed in the background.

Response 1: No

Response 2: No

Response 3: Yes

Response 4: Yes

Response 5: No

Response 6: No

Question 1: Would only one IQI be required on a 2” weld repair using DWE/SWV procedure?

Response: Yes

Question 2: Would only two IQI’s be utilized on a single weld repair for 12” weld using a DWE/SWV procedure?

Response: No

Question 3: Could I use PQR which pipe Diameter 12”, 17.44 mm Grade API 5L X52 for production weld?

Response: Yes, any one of the PQRs could support a WPS that could be written to cover the weld thickness and material combination listed in the background. However, please reference API 1104, Section 5.4.2.2 Note 1. Note that API presumes the question “Could I use…?” is applied to the material combination listed in the background.

Response 1: Yes

Question 4: If it was a butt weld then he would have to run cellulose for root & hot pass then fill cap with low hydrogen? Yes or No

Response: Yes

Question 5: For a welder to be qualified in run an unroot on a “Branch” connection with low hydrogen would a “P” schedule 1500PSI butt weld be welded completely with low hydrogen per the ASME code qualify the welder to run a branch connection? Yes or No

Response: No

Note: API presumes that the original butt end branch WPS was qualified with cellulose electrodes used for the first 2 passes, and low hydrogen electrodes used for remaining passes.

Response 1: Yes

Response 2: No

Response 3: Yes

Response 4: Yes

Response 5: No

Response 6: No

Question: Note that API presumes the question “Could I use…?” is applied to the material combination listed in the background.

Response 1: Yes

Response 2: No

Response 3: Yes

Response 4: Yes

Response 5: No

Response 6: No

Question: If a WPS is established to join X65 pipe to X65 pipe can a welder qualify to weld on X65 pipe by performing a qualification test on X42 pipe?

Response: No
Background: For single qualification of a welder contractors are questioning the fact that we are requiring the welder to complete a " Structural Weld" on 20" O.D. pipe for production welding on 20" 309 T.316. The contractor has opted not to take the 309 T.316 "Bolt and Branch" for multiple qualification which would allow the welders to then weld all diameters. The contractors are opting to single qualify so I instructed them that if they are wanting to single qualify that each welder will have to complete " Structural Weld " and have it destructively tested per API 1104 which states that for API 1104 on 20", 309 T.316 shall be taken and shall be taken from locations 100 to 200 diameters apart. The welder shall be allowed to "Brother-in-Law" the 20" pipe on the test. Which in my opinion is incorrect pursuant to the requirement of the welder not making a complete weld around the entire circumference of the pipe and that would prohibit the removal of the correct amount in test specimens. Special quality around the pipe on each welder. We would only be able to remove the test specimens on each welder on half of the pipe so in my opinion the welder would not be qualified per API 1104 to weld on 20" O.D. pipe.

Question 1: Have I told the contractor that I have not seen anything in API 1104, Section 6 - Qualification of Welders that says the welders allowed to "Brother-in-Law" a qualification test to this interpretation of Section 6 of API 1104 correct?

Response 1: Yes
Response 2: No

Question 2: Is it the intent to utilize the response from the bottom of the N10 notch in 100% the weld inspected.

Response 1: Yes
Response 2: No

Question 3: If the answer is positive, kindly request, who has the authority to accept the results of test specimens " Spaced equally around the pipe" on each welder. We would only be able to remove the test specimens on each welder on half of the pipe so in my opinion the welder would not be qualified per API 1104 to weld on 20" O.D. pipe.

Response 1: No, the welder may not use this information. API can only address questions that pertain directly to the requirements with the document.
Response 2: No, API 1104, Section 6.6.1 refers to automatic ultrasonic testing. Note: Qualification of a Fillet Weld Repair Procedure is currently not addressed in future revision of API 1104.

Response 1: Yes
Response 2: No

Response 1: No, only one failure is allowed to be retested.
Response 2: What filler metal to use for a particular welding procedure.

Response 2: No, API 1104, Section 6.6.1 refers to automatic ultrasonic testing.
5.3.2.6.6 Background: API 1104, Section 5.4.2.13 says, “A decrease in the specified minimum preheating temperature constitutes an essential variable.”

Question: Is it the beginning of the first pass which corresponds to the minimum preheating temperature specified?

Response: Yes. This is also the temperature prior to the start of each pass. NOTE: Please refer to AWS A.2.0 for the definition of "preheat".

5.2.3.11 Background: A procedural procedure qualification record (PQR) was developed to the requirements of API 1104, Section 12, prior to production welding. Subsequently, a welding procedure specification (WPS) was authorized and issued for production. Test passes, a second WPS was requested which intended to use the same PQR as the first WPS.

Question: Is it acceptable to author multiple welding procedures under one primary PQR?

Response: No.

5.4.2.11 Background: API 1104, Section 10.2.3a states that “Defects other than cracks in the root, filling, or cover pass, produced in producing welds…”

Question: In accordance with API 1104, Section 10.2.3, c) if a company does not require repair procedures for defects other than cracks and if neither a) nor b) are applicable, is a repair procedure required?

Response: No.

11.1.6.1.2 Background: Section 11.1.6.1.2 of third edition, has added the words "or multiple films" to the section which would infer that when performing a SWE/SWV (panoramic films) in a single exposure using multiple overlapping films, the IQI would have to be placed on each film length over 5”, the IQI center and one IQI within one inch of the end of the area of interest. This would require an inordinate amount of IQIs if there are multiple defects. It has been judged greater sensibly that placing four IQI evenly spaced around the circumference of the pipe as stated in sentence one of 11.1.6.1.2 a) only if placing one IQI center of each overlapping film.

Question: Is this in error or is this the intent of the code?

Response: No. However, the range of specified outside diameters over which the procedure is applicable must be identified (in reference to section 5.3.2.3). NOTE: Please see Section 5.1.3, last sentence.

6.2.1.2 Background: Procedure A was written and qualified with X-52 pipe. The welder, when tested and qualified procedure A, passed on X-45. Pipe. Per 1104, base material is not an essential variable when qualifying a welder, only when qualifying a procedure.

Question: If the pipe material consists of only X-52 pipe, is the welded qualified to weld on this pipe per API 1104?

Response: No. API 1104, Section 6.2.1 says: “A welder shall make a test weld using a qualified procedure…”. A procedure qualified on X-52 is not qualified for welding X-65.

4.4 Background: Pipe diameter limitations for WPS - with reference to Section 5.6.4.1. If base diameter limitations specified for WPS however per Section 6.2.3 a) number of 32 groups of pipe diameters are defined.

Question 1: Is the diameter limitation applicable for welding procedure qualification?

Response 1: No.

Question 2: Is the diameter limitation applicable for repair welding procedure qualification?

Response 2: No.

11.1.6.1.2 Background: API 1104, Section 11.1.6.1.2 a) third sentence, has added the words “or multiple films” to the section which would infer that when performing a SWE/SWV (panoramic films) in a single exposure using multiple overlapping films, the IQI would have to be placed on each film length over 5”, the IQI center and one IQI within one inch of the end of the area of interest. This would require an inordinate amount of IQIs if there are multiple defects. It has been judged greater sensibly that placing four IQI evenly spaced around the circumference of the pipe as stated in sentence one of 11.1.6.1.2 a) only if placing one IQI center of each overlapping film.

Question: Is this in error or is this the intent of the code?

Response: No. However, the range of specified outside diameters over which the procedure is applicable must be identified (in reference to section 5.3.2.3). NOTE: Please see Section 5.1.3, last sentence.

5.4.2.2 Background: API 1104, Section 5.4.2.2 states that “If a repair occurred in Root, Filling passes, cover pass…”. The interpretation of above is that “If a repair occurred in Root, Filling passes, cover pass…”. Article 1104, 20th Edition, Appendix B.

Question: Is the outside diameter an essential variable?

Response: No. The standard, as worded currently, requires two IQIs on each film length greater than 5 inches.

NOTE: The 1104 NDT Subcommittee is currently evaluating Sections 9 and 11 for the upcoming 22nd Edition of the document. This subject is to be discussed at the next meeting.

5.4.2.2 Background: API 1104, Section 5.4.2.2 states that “If a repair occurred in Root, Filling passes, cover pass…”. Article 1104, 20th Edition, Appendix B.

Question: Is the outside diameter an essential variable?

Response: No. However, the range of specified outside diameters over which the procedure is applicable must be identified (in reference to section 5.3.2.3). NOTE: Please see Section 5.1.3, last sentence.

1104 11/4/2016 09:47:30 AM Writing is Enter your name here...
1104 21st Sep-13 1104-0302-13 5.4.2.4 & 5.4.2.9

**Background:** Butt welds were made using a WPS and PQR satisfying the Annex B.

**Question:** Considering weld procedure qualification, out of 2 welds, as per joint configuration requirement of API, if one sleeve is welded by each welder, should it be a total of 4 welds? (Refer to 3.1.17 & 5.3.2.8, although the WPS was qualified using base metal of NPS 30 API 5L X70, with wall thicknesses of 7.56 mm, and the other is 22.1 mm. WPS have been qualified using base metal of NPS 30 API 5L X70, with wall thickness of 10.88 mm. The 22.1 mm pipe was characterized to 7.56 mm before the welding. Paragraph 3.2.2 of API 1104 requires that weld thickness of 22.1 mm and 7.56 mm are on the different groups.

**Response:** No.
Background: I have a question about weld continuity for API weld tests, specifically 6.2.2.

Response 1: No.

Response 2: No.

Response 3: Continuity is not specifically addressed by this Standard.

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Background: We are making mainline welds with all downhill procedures. The repair procedure is with low-high filler metal.

Question 1: Or can he weld only 1/8 in wall thickness and above?

Response 1: Yes.

Response 2: No, only above 1/8 in wall thickness.

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Background: In Appendix A, a change from one specified wall thickness group to another, shall be qualified in the limits of the essential variables described below.

Answer: Yes.

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Background: In Section 6.2 (single qualification) a welder who has successfully completed the qualification test described in 6.2.1 shall be qualified within the limits of the essential variables described below, if any of the following essential variables are changed:

Question 1: If the time exceeds the maximum limit, is the weld to be cut-out?

Response 1: No.

Response 2: No.

---

Background: In API 1104, Time between the passes is an essential variable.

Question 1: Can the welder weld any thickness (Since he has covered the highest possible thickness covered in the standard) above 12.750 dia pipe or not?

Response 1: Yes.

Response 2: No.

---

Background: In API 1104, Sections 6.2 or 6.3, prior to repair welder qualification, the welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited. The welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited.

Question 1: Is it the same as other weld standards where within 6 months you can perform a weld to the procedure and qualification and remain certified in that process?

Response 1: This weld would be in salvation of 5.4.2.8. The disposition of such welds is not addressed by this Standard.

Response 2: No.

---

Background: In API 1104 (21st Edition), Sections 6.2 or 6.3, prior to repair welder qualification, the welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited. The welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited.

Question 2: Does the 25% rule apply only when two different wall thickness are joined?

Response 1: Yes.

Response 2: No.

---

Background: In the repair procedure (GTAW + SMAW) qualify a full penetration repair to the original welded joint of filler metal thickness of 4.8mm, 19.1mm and more than 19.1 mm i.e. 21.15 mm.

Question 1: Can we use continuity to remain certified past 6 months?

Response 1: No.

Response 2: No.

---

Background: In the repair procedure (GTAW + SMAW) qualify a full penetration repair to the original welded joint of filler metal thickness of 4.8mm, 19.1mm and more than 19.1 mm i.e. 21.15 mm.

Question 2: Can we use continuity to remain certified past 6 months?

Response 1: No.

Response 2: No.

---

Background: In API 1104, Time between the passes is an essential variable.

Question 1: Can the welder weld any thickness (Since he has covered the highest possible thickness covered in the standard) above 12.750 dia pipe or not?

Response 1: Yes.

Response 2: No.

---

Background: In API 1104, Time between the passes is an essential variable.

Question 1: Can the welder weld any thickness (Since he has covered the highest possible thickness covered in the standard) above 12.750 dia pipe or not?

Response 1: Yes.

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Background: In API 1104 (21st Edition), Sections 6.2 or 6.3, prior to repair welder qualification, the welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited. The welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited.

Question 2: Does the 25% rule apply only when two different wall thickness are joined?

Response 1: Yes.

Response 2: No.

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Background: In API 1104 (21st Edition), Sections 6.2 or 6.3, prior to repair welder qualification, the welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited. The welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited.

Question 2: Does the 25% rule apply only when two different wall thickness are joined?

Response 1: Yes.

Response 2: No.

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Background: In API 1104 (21st Edition), Sections 6.2 or 6.3, prior to repair welder qualification, the welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited. The welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited.

Question 2: Does the 25% rule apply only when two different wall thickness are joined?

Response 1: Yes.

Response 2: No.

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Question 2: Does the 25% rule apply only when two different wall thickness are joined?

Response 1: Yes.

Response 2: No.

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Background: In API 1104 (21st Edition), Sections 6.2 or 6.3, prior to repair welder qualification, the welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited. The welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited.

Question 2: Does the 25% rule apply only when two different wall thickness are joined?

Response 1: Yes.

Response 2: No.

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Background: In API 1104 (21st Edition), Sections 6.2 or 6.3, prior to repair welder qualification, the welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited. The welder may use any welding procedure to qualify per the applicable API edition, unless expressly prohibited.

Question 2: Does the 25% rule apply only when two different wall thickness are joined?

Response 1: Yes.

Response 2: No.
Background: Paragraph 3.1.3 the definition of Branch Weld was modified to read “Completed groove AND/or fillet weld joining a set-on or set-in branch fitting to a run pipe.” In paragraph 3.8.1, figure 10 is referenced as joint designs as the joint designs for fillet welds. One of the designs in figure 10 is a branch connection.

Question: Is it the intent of the code to have branch welds qualified using both a groove weld specimen AND a fillet weld specimen to meet the AND portion of the new definition or can a branch connection be qualified using a single fillet weld specimen as outlined in paragraph 3.8.1 and figure 10?

Response: There is not enough detail to effectively respond to this question.

Background: When NDT PAUT Inspections are being performed on new connector forgings to new 5L Line pipe welds, does the PAUT calibration reference standard have to be of the same pipe OD grade and thickness?

Response: Yes. Refer specifically to API 1104, Section 11.4.5.1. “A procedure may be used for higher carbon equivalent materials than the material used for production qualification provided that the thermal conditions are less severe than the procedure qualification conditions and no increase in the risk of hydrogen cracking results.”

Background: If the thermal conditions remain same as per PQR, can one use the pipe with higher CE values in PQR? For example, existing pipe in facility has CE as 0.38. The pipe used during PQR has CE as 0.30. If thermal conditions are simulated during PQR, can I use pipe with CE as 0.30 for PQR and use the qualified procedure to weld the pipe with CE as 0.38 or shall I have to procure pipe with CE as 0.38 or input?

Response: No. Refer specifically to API 1104, Section B.2.3.1.1. “A procedure may be used for higher carbon equivalent materials than the material used for production qualification provided that the thermal conditions are less severe than the procedure qualification conditions and no increase in the risk of hydrogen cracking results.”

Response: No. Refer to 10.4.3(b) where a change in filler metal group is an essential variable.

Question: Can a welder qualified with group 1 filler metal (E6010 or E7010) be used for welding with group 2 filler metal (E8010 or E9010)?

Response: Yes. Refer to 10.4.3(b) where a change in filler metal group is an essential variable.

Response: No.

Background: With respect to WPSs, we have the qualified thicknesses grouped in accordance with section 6.2.2.e as suggested in 5.4.2.5. For simplicity I’ll call the first group A, the second B, and the third C. We have PQRs to support fillet welds on material thickness B to thickness B as well as welds on thickness C to thickness C.

Question: Are these PQRs sufficient to weld thickness B to thickness C fillet welds?

Response: Yes. A new WPS with the newly defined thickness range supported by either of the two existing PQRs could be written.

Question: Are HAZ cracks acceptable if found with NDE?

Response: No. Refer to AWS A3.0 definition of “weld crack” which includes the HAZ.