

API Std 1104 Interpretations - Welding of Pipelines and Related Facilities

Last update: February 2024

Standard	Edition	Section	Inquiry #	Question	Response
1104	21	3	1104-I-1119-15	Background: There is no interpretation or definition in API 1104 on what is a "hot pass" and its limitations. A hot pass is a pipeline terminology for the subsequent welding pass after the root pass is completed. This hot pass is used to burn off any impurities from the root pass. This is usually considered a singular pass and not should be used for buildup in a weld joint. My interpretation is that what a fill weld application is used for. Question: Is a hot pass limited to one pass or can it be used multiple times in the buildup in a weld joint?	"Hot pass" is a term not used in the API 1104 Standard and therefore API has no basis on which to formulate a Response.
1104	21	3.1	1104-I-0309-18	Background: A customer says one cannot reject a HAZ crack in radiography since it is not stated in the API 1104 Standard. Question: Are HAZ cracks acceptable if found with NDE?	No. Section 3.1 refers to AWS A3.0 for definitions. Refer to AWS A3.0 definition of "weld crack" which includes the HAZ.
1104	21	3.1.3	1104-I-1122-17	Background: Section 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 5.8.1 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 5.8.1 and Figure 10?	There is not enough detail to effectively respond to this question.
1104	21	3.1.7 & 5.3.2.8	1104-I-0308-17	Question: Can I weld a pipe fixed horizontal position and go by turning and continue welding in fixed position according to 3.1.17 and 5.3.2.8, although the WPS was described in a fixed position without rotating, keeping all other variables acceptable?	Yes.

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1104	21	4.2	1104-I-0625-16	Background: Base material P11C Procedure qualification test coupon is API 5L Gr. X65 pipe to same pipe, qualification done as per API 1104, base metal Specification and grade in WPS is "API-5L-Grade X65 through ASTM A 859 Gr. A Cl.2, WPHY X65", company representative rejected WPS due to dissimilar material like Pipe -API-5L-Grade X65 is P 1 where as Flange grade-ASTM A 859 Gr. A Cl.2 is P11C . Question: Can we weld Group "C" materials with same group, where impact test requirements are not required do we have refer P no's also?	API is unable to provide a response because ASTM A859, "Standard Specification for Age- Hardening Alloy Steel Forgings for Pressure Vessel Components" is not within the scope of API 1104 (see Section 1) which states this standard only applies to carbon and low alloy steels.
1104	21	4.2.3.2	1104-I-0108-19	Background: Gas mixers are currently utilized and have been utilized for many decades to blend shielding gases at many fabrication sites. They are commercially available and satisfy the blend tolerances required by AWS A5.32 Specification for Welding Shielding Gases. Question: Does 4.2.3.2 prohibit the use of commercially available gas mixers manufactured to blend pure gases into gas mixtures for welding?	No.
1104	21	5	1104-I-1116-15	Background: A WPS was qualified as per API Standard 1104 requirements. The joint design as stated in the WPS is a combined J-Groove Butt. Question: Is it acceptable to use a joint design (Configuration) term combined J-Groove Butt as per the requirements of API 1104?	Yes, provided that the requirements in API 1104, Sections 5.3.2.4 and 5.4.2.3 are satisfied.

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1104	21	5	1104-I-1122-15	Background: I have 2 difference pipes consisting of 1) Diameter 12" , 17.44 mm Wall thickness , Grade API 5L X52, and 2) Diameter 12", 21.43 mm Grade API 5L B From the above, I have to weld unequal wall thickness and SMYS. Questions: 1. Could I use PQR which pipe Diameter 12", 17.44 mm Grade API 5L X52 for production weld? 2. Could I use PQR which pipe Diameter 12", 20 mm Grade API 5L X52 for production weld? 3. Could I use PQR which pipe Diameter 12", 9.5 mm Grade API 5L X52 for production weld? 4. Could I use PQR (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? 5. Could I use PQR (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 B for production weld? 6. Could I use PQR (Unequal wall thickness and SMYS) which pipe Diameter 12", 9.5 mm Grade API 5L B welding with Diameter 12", 20 mm Grade API 5L X52 for production weld?	Yes, any one of the 6 PQRs could support a WPS that could be written to cover the wall 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 questions "Could I use..." is applied to the material combination listed in the background.
1104	21	5	1104-I-1127-15	Question: It is allowed to use of a Standard Welding Procedure Specification (SWPS) of AWS under the requirements of API 1104?	No
1104	21	5	1104-I-0104-19	Background: We have a pre qualified WPS with one layer of E7016 uphill followed by E9045 downhill as second and consecutive layers. Question: If we add one more layer of E7016 uphill during production, does this violate the requirements of the API 1104 specification?	Yes. Conformance to the WPS is required per 1104. Based on the information provided, you would not be following the qualified WPS which appears to limit use of E7016 to a single layer.

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5 Table 1	1104-I-0111-19	Background: A welding procedure qualified as per API 1104 with SMAW process, bevel fillet weld (branch connection), root pass with cellulosic electrodes (Table 1 Group 1, E7010) and low hydrogen electrodes (Table 1 Group 3, e.g. E7018-1) used for the remaining passes. Question: Can this qualified welding procedure be used to support a new WPS for production welds under SMAW process for non-bevel lap fillet weld, using just electrodes (Table 1 Group 1, E7010) for root and remaining passes without changes of other essential variables?	No.
1104	21	5	1104-I-1112-19	Background: For welding procedure qualification, we are looking for the range of qualification for heat input in Sections 5 (Manual and Semiautomatic Welding) and 12 (Automatic welding with filler metal addition). Only Annex A, A.3.2 note q) states that the reference of $\pm 10\%$ from the nominal value registered during the welding of the test coupon. Question: Does this mean that if a welding procedure is qualified according to Section 5 or 12, and Annex A is not used, there is no limitation for minimum and maximum values for the heat input?	Yes.

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5	1104-I-0313-17	Background: I have a question about weld continuity for API weld tests, specifically SMAW 6010 all the way out downward progression on pipe in the 6g position. I see the same welders from utility companies and the city re-certifying every 6 months to the same procedure and qualification. I have been told by a CWI that it is a requirement of the API to recertify no matter how often you weld to that code, which it just simply expires at 6 month intervals. Therefore you must take a practical assessment and weld another coupon. 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? Question 2: Is re-certifying every 6 months to the same procedure an API code requirement or is it at the employer's discretion? Question 3: Can we use continuity to remain certified past 6 months?	Response 1: No Response 2: No Response 3: Continuity is not specifically addressed by this Standard.
1104	21	5	1104-I-1211-19	Question 1: Does API 1104 allow the use to two separate groove qualified welding procedures with the same groupings of diameters and thicknesses be used in a single weld joint? Question 2: Can I use the manual GTAW procedure to weld the root and hot pass and then use my GTAW orbital procedure for the fill and cap on a single weld joint?	Response 1: No Response 2: No

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5	8264	Background: The requirement stated in 10.2.3 a, 10.2.3 b do not address the situation where Welding procedure will be utilized for the first repair of welds originally produced with same welding procedure. For example, a diameter 56 in. joint of thickness 25 mm welded with combination of welding procedure GTAW/SMAW identified with repair such as slag and incomplete root fusion is not requiring separate procedure. The welding procedure used to complete welding was qualified to API 1104, Section 5, in addition with the hardness verification. Question 1: When welding procedure is qualified to API 1104, Section 5, in addition with the hardness verification, is this correct to say that a separate procedure is not required for the weld that subjected to be repaired with same procedure that was utilized to produce original weld? Question 2: When welding procedure is qualified to API 1104, Section 5, is it correct to say that a separate procedure is not required for the weld that subjected to be repaired with same procedure that was utilized to produce original weld? Question 3: Is it correct to say that Section 10.2.3 applies to the conditions specified in 10.2.3 a, b, c?	Response 1: Yes; with prior company authorization, first-time repairs of defects other than cracks may be repaired using the original welding procedure qualified to Section 5. Hardness testing is not required for a Section 5 procedure. Response 2: Yes; with prior company authorization, first time repairs of defects other than cracks may be repaired using the original welding procedure qualified to Section 5. Response 3: This question is unclear; therefore API cannot provide a response.
1104	21	5.1	1104-I-1117-17	Background: In Section 5.1, Procedure Qualification- "Before production welding is started, a detailed welding procedure specification shall be established and qualified to demonstrate that welds with suitable mechanical properties (such as strength, ductility, and hardness) and soundness can be made by the procedure. The quality of the welds shall be determined by destructive testing." Question: Is it correct to use a PQR issued following a previous edition of API 1104 to support a new WPS based on the 21st edition?	This topic is not explicitly addressed in API 1104. NOTE: A PQR must conform to the requirements for the WPS based on the applicable 1104 edition,

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5.1	1104-I-0120-19	Background: Base material API 5L X65 qualification done as per 5.1 of API 1104 considering suitable mechanical destructive test (i.e. Tensile, Bend, Nick break, Hardness, Impact). Impact test done at -18°C as per API 1104. A company wants to use the same procedure (PQR) in another project, in which MDMT is -29°C. Question: Can we do only impact testing at -29°C and attach as an addendum of old PQR? Do we need to make a new WPS attaching old and new both record as a part of supporting WPS to ensure that at -29°C it meets acceptance criteria?	This issue is not addressed in API 1104, Section 5.1.
1104	21	5.3.2.2 & 5.4.2.2	1104-I-0101-19	Background: The material grade for pipeline, flange and fittings were designed as X60 grade. Later the line pipe material is changed to X52 grade. Both the grades belong to material strength group b as per Clause 5.4.2.2 of API Std.1104. As per Clause 5.4.2.2 when the material of separate group is to be welded the PQR qualification shall be done with the Higher strength Groups. Question 1: Is it acceptable to qualify a procedure by welding X52 grade pipe and X60 grade flange for production welding of the pipe (X52) to flanges/fittings of X60 grade? Question 2: Are the acceptance criteria for tensile strength in the above case based on X52 which is lower strength material in the combination? Question 3: Is the PQR sufficient to support WPS for welding of X52 to X52 grade?	Response 1: Yes Response 2: Yes. Please see NOTE 1 in API 1104, Section 5.4.2.2 for additional guidance. Response 3: Yes NOTE: This topic is currently under review by the committee. New, proposed language may result in requirements that could change these replies based on the next edition of API 1104.

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5.3.2.3	1104-I-0621-16	Background: 5.3.2.3 Diameters and Wall Thicknesses - The ranges of specified outside diameters (ODs) and specified wall thicknesses over which the procedure is applicable shall be identified. Examples of suggested groupings are shown in 6.2.2 d) and 6.2.2 e). A PQR was qualified on 40" OD (diameter pipe), hence the qualification range of diameter is supposed to be specified OD greater than 12.750 in. (323.9 mm). But A WPS was received as qualified for all the diameter where the Procedure has been qualified on 40 in. API pipe. Question: Is the outside diameter an essential variable?	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, last sentence.
1104	21	5.3.2.3	7680	Background: Section 5.3.2.3 states that the wall thickness over which the procedure is applicable shall be identified. It gives examples of suggested groupings as per Section 6.2.2, Item e). Question 1: Is the wall thickness grouping of 6.2.2 e) a mandatory grouping for establishing the wall thickness range in a WPS as per section 5.3.2.3? Question 2: Based on the pipe wall thickness range of a project, can a different wall thickness range of that suggested in 6.2.2 e) be specified in a WPS, and establish that wall thickness range as an essential variable as per 5.4.2.5? EXAMPLE: Specified wall thickness range in the WPS: 0.469 in. to 0.875 in.; considering performing the procedure qualification on a pipe with a wall thickness of 0.625 in. to support the specified wall thickness range established in the WPS.	Response 1: No. Response 2: Yes.

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Standard	Edition	Section	Inquiry #	Question	Response
1104	20 & 21	5.3.2.10	1104-I-1121-15	Background: Between passes, API 1104 states “the maximum time between the completion of the root bead and the start of the second bead, as well as the maximum time between the completion of the second bead and the start of the other beads, shall be designated.” Our 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 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 (third pass). We interpret the word “beads” in this section to mean the grouping of all remaining welding passes after the second pass and therefore understands that, if the WPS specifies 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 is specified. Or alternately, should the requirement of API 1104, Section 5.3.2.10 be interpreted to mean the “maximum time between completion of second bead and third pass, second bead and fourth pass, and so on and so forth to second bead and final pass”? It is our understanding that API 1104 does not require the WPS to defined the time between each of the remaining passes as described in the sentence above. Question: We are 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 our understanding is inaccurate or incomplete and/or does not meet the intent of API 1104, Section 5.3.2.10, we request an explanation in order that we comprehensively understand the requirements?	Yes, the intent of API 1104, Section 5.3.2.10 is to identify the maximum time between the 1st pass and 2nd pass and the maximum time between the 2nd pass and 3rd pass.

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5.4	1104-I-0624-16	Background: Pipe diameter limitation for WPS - with reference to Section 5.4, no pipe diameter limitation specified for WPS however as per Section 6.2.2.d) a number of 3 groups of pipe diameters are defined. Question 1: Is the diameter limitation applicable for welding procedure qualification? Question 2: Is the diameter limitation applicable for repair welding procedure qualification?	Response 1: No. Response 2: No, however, the range of specified outside diameters over which the procedure is applicable and must be identified (in reference Section 5.3.2.3). Please see API 1104, Please see section 5.1, last sentence.
1104	21	5.4.2	1104-I-1135-15	Background: Concerning API 1104, Section 5.4.2, "The compatibility of the base material and the filler metal should be considered from the standpoint of mechanical properties". Question 1: Can we say this is a good engineering practice? Question 2: Is acceptable for conformance to API 1104, to adopt one filler metal E6010 classification in the root pass of a butt joints in API 5L X70-PSL 2 piping class (base metal)? Question 3: If the answer is positive, kindly request, who has the authority to accept this use? Question 4: Is it required some specific quality control procedure for the weld made with this filler metal (E6010)?	Response 1: Please see Special Notes in the 1104 Standard. "Users of this Standard should not rely exclusively on the information contained in this document. Sound business, scientific, engineering, and safety judgment should be used in employing the information contained herein." Response 2: API 1104 does not specify what filler metal to use for a particular welding procedure. Response 3: Not applicable, see reply 2. Response 4: Any combination of consumables can be used provided requirements detailed in this Standard are satisfied.

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5.4.2	8576	Background: Referencing Section 5.4.2, our qualified procedure calls for GTAW as the root pass and the remaining passes with SMAW. The approved/qualified WPS calls for welding processes GTAW + SMAW (for weld thickness 6.35 mm). Root pass – GTAW (3 mm) Remaining passes – SMAW (E 7010 P1) (3.35 mm) Question 1: If the weld process with root and first pass is performed by GTAW (as the deposited thickness of root is less than 3 mm) and the remaining passes with SMAW (E 7010 P1) without changing any other parameters, is the weld acceptable to the qualified procedure? Question 2: Is a new qualified procedure required (i.e., GTAW for the root and first pass)?	Response 1: No. Response 2: Yes.
1104	22	5.4.2 Table 2	9437	Table 2 only includes electrode E8010-P1 in Group 2. Can electrodes E8010G and E9010G be included in Group 2 of Table 2 filler metal groups?	No; see 5.4.2.6(f) and Table note (h).
1104	22	5.4.2	9511	Background: A gas pipeline has a branch outlet to the station. The branch was design using a weldolet and it will be welded onto the main line (run pipe). In my interpretation, the single bevel WPS can be used to weld the weldolet. Question: Can the qualified single bevel WPS be used to weld the weldolet since one (1) side groove at weldolet while run pipe (mainline) will not have a groove which is the joint design is similar to single bevel configuration?	Yes.

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5.4.2.1	8047	Background: □ The WPS was qualified with TIG + ER with the first pass TIG (ER-70S6) and all the others with ER (E-8010). The base material was API 5L X70, diameter 24 in. POL, 17 mm thickness. All heat consumables are in accordance with Schedule I level inspection requirements (according to AWS) and all SMYS consumables are above the base material SMYS. This is a single-product pipeline and the weld inspection requirements defined by the designer (owner) required that internal penetrations should be no more than 1.6 mm. Because of this, it was decided to perform the second pass with TIG instead of ER to meet this design requirement on the production weld. Even so, the time between the first and second pass was in accordance with WPS requirements, and all the others passes were according to the WPS. Question: Is the application of the second pass using TIG instead of ER (as stated in the WPS) an essential variable violation? If yes, which one?	Yes, a change in the welding process or method of application requires requalification (see 5.4.2.1). NOTE This issue will be clarified in the 22nd edition of API 1104.
1104	21	5.4.2.2	1104-I-0622-16	Question: Is it allowed to weld the different mechanical properties of material (P1 (API X65) to P11 (ASTM A859)) without requalifying the Procedure if the PQR is qualified with single mechanical properties of material only (API X65 to API X 65)?	No. ASTM A859, "Standard Specification for Age-Hardening Alloy Steel Forgings for Pressure Vessel Components" is not within the scope as defined in Section 1, which states this standard only applies to carbon and low alloy steels.
1104	21	5.4.2.2	1104-I-0626-16	Background: As per clause No: 5.4.2.2, A change in base material constitutes an essential variable. We have qualified PQR with X52 (group "b") materials. Question: Whether this PQR will support other materials (not X52) falls under the same group "b to b" ?	No. API 1104, Section 5.3.2.2 allows materials to be grouped provided that the qualification test is made on the material with the highest SMYS in the group. The highest SMYS in the group that includes X52 (i.e., what is referred to in the inquiry as "Group B") is X60.

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Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5.4.2.2	1104-I-0119-19	Background: While welding materials of two separate material groups, the procedure for the higher strength shall be used. Question 1: If I have to weld two separate material groups (e.g. group-a to group-b), can I qualify the welding procedure using materials from both the groups (i.e. group-a to group-b)? Question 2: Is it mandatory to use welding procedure for higher strength material groups only?	Response 1: Based on the information provided, this question cannot be answered. Response 2: Based on the information provided, this question cannot be answered.
1104	21	5.4.2.2	1104-I-1124-19	Background: In API 1104 5.4.2.2 it states that “the procedure for the higher strength group shall be used”. Question: In order to simplify, minimize the number of weld procedures (and make compliance easier) is it possible to use a single higher strength weld procedure on all lower material groups (for example: X46 to X60 weld procedure used on X42 to Grade B)?	No. The Grade B and X42 are outside of the Group B materials. NOTE This topic is being reviewed currently by the committee and may result in different requirements in a future edition.
1104	22	5.4.2.2	8697	Background: The base material essential variable in Table 1, 5.4.2.2 b) presents a range of pipe wall thickness that require WPS requalification. Category I is for standard WPS. Category II is for WPS hardness and impact test: – pipe: API 5L x60 8 in. x 12.7 mm; – impact test required. Question: In Category II, what is the range of thickness required after qualification?	This issue is not addressed in API 1104, 22nd Edition.
1104	22	5.4.2.2	9928	Background: We created a WPS and PQR using pipe-to-pipe (X65). Question 1: Is this PQR of pipe-to-pipe X65 material qualify production welding of pipe (X65) to fittings (ASTM A860 WPHY 65 or ASTM A694 Gr F65)? Question 2: Is it required to make a new PQR for a pipe to each type of fitting such as (pipe to hot bend, pipe to a bared tee, pipe to a tee, pipe to elbow, and pipe to flange)?	Response 1: Yes; please see Table 1, Footnotes b & c. Response 2: No, provided the “nominal” SMYS is not greater than X65 and all other essential variables remain the same. Also please see Table 1, Footnotes b & c.

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1104	20 & 21	5.4.2.3	8608	Background: Regarding Section 5.4.2.3 on joint design and changes to essential variables, we wish to define the interpretative difference between the single bevel fillet (branch) and lap joint fillet weld, as it relates to a change, minor or major, in essential variables. Question 1: If the WPS details a joint design of a single bevel fillet weld, but a lap joint fillet weld is the specific joint design to be welded, and all other essential variables remain the same, can this WPS be used in the process of fabricating the lap joint fillet? Question 2: Can a WPS which details a lap joint fillet weld be used in the process of fabricating single bevel fillet welds, and all other essential variables remain the same? Question 3: Would these changes be considered a minor or major? Question 4: Do minor changes require a WPS to be rewritten to show the applicable changes?	Response 1: No; production welds shall reflect what is specified on the WPS. Response 2: No; production welds shall reflect what is specified on the WPS. Response 3: A change from a non-bevel lap fillet weld to a bevel fillet weld is a major change (this has been clarified in the Twenty-second Edition). Response 4: Yes; production welds shall reflect what is specified on the WPS.

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1104	22	5.4.2.3 Table 1	8791	Background: As per subsection 5.4.2.3.a) "A change from fillet weld to a groove weld, but not vice-versa" and 5.4.2.3.b) "A major change in joint type". And "Table 1, note e" which defines the major joint types and also that "a change to or from a compound bevel within a major joint type is not considered a major change in joint type". Question 1: According to 5.4.2.3.a) is it correct to qualify with a butt weld to do production welds in T-fillet and / or lap-fillet? Question 2: According to 5.4.2.3.a) is it correct to qualify with a full penetration groove branch connection to do production welds in T-fillet and / or lap-fillet? Question 3: According to 5.4.2.3.b) qualifying with a butt weld single-V with a 60° angle, does it qualify for welding a butt weld single-V with a 50° angle? - (minor change within a joint type) Question 4: According to 5.4.2.3.b) qualifying with a butt weld single-V, does it qualify for welding a full penetration groove branch connection (single-bevel)? - (major change in joint type) Question 5: According to 5.4.2.3.b) qualifying with full penetration groove branch connection (single-bevel), does it qualify for welding a butt weld single-V? - (major change in joint type).	Response 1: Yes, this is acceptable per 5.4.2.3(a). Response 2: Yes, this is acceptable per 5.4.2.3(a). Response 3: Yes, this is acceptable per 5.4.2.3(b). See note e. Response 4: No, this is not acceptable per 5.4.2.3(b). See note e. Response 5: No, this is not acceptable per 5.4.2.3(b). See note e.

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1104	21	5.4.2.4 & 5.4.2.9	1104-I-0309-17	Background: API 1104, 5.4.2.4 (Position) "A change in position from roll to fixed, or vice versa, constitutes an essential variable". API 1104, 5.4.2.9 (Direction of Welding) "A change in the direction of welding from vertical downhill to vertical uphill, or vice versa, constitutes an essential variable". We have a WPS qualified to weld a pipe with a fixed horizontal axis, vertical upward progression, the other variables being equal, also a qualified welder for this purpose. Question: If we want to make a weld with the same WPS and same welder but in a fixed vertical axis pipe welding in a horizontal position, do we need to qualify a new WPS and welder mentioned for this new situation?	No for the WPS; yes for the welder.
1104	21	5.4.2.5	1104-I-0305-17	Background: Our company is currently planning to perform butt welding on two (2) NPS 30 API 5L X70 line pipe with different thickness. One of the line pipe thicknesses is 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 will be chamfered to 7.56 mm before the welding. Paragraph 6.2.2 (e) stated that wall thickness of 22.1 mm and 7.56 mm are on the different groups. Question: Can we use the qualified WPS for NPS 30 API 5L X70 with wall thickness of 10.88 mm pipe to perform butt weld on NPS 30 API 5L X70 (with wall thickness of 22.1 mm) with NPS 30 API 5L X70 (with wall thickness of 7.56 mm)?	Yes.
1104	21	5.4.2.5	1104-I-0308-18	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 materials thickness B to thickness B as well as fillet welds on thickness C to thickness C. Question: Are these PQRs sufficient to weld thickness B to thickness C fillet welds?	Yes. A new WPS with the newly defined thickness range supported by either of the two existing PQRs could be written.

API Std 1104 Interpretations - Welding of Pipelines and Related Facilities

Last update: February 2024

Standard	Edition	Section	Inquiry #	Question	Response
1104	21	5.4.2.6	1104-I-0301-17	Background: A welding procedure qualified as per API 1104 with SMAW process, bevel fillet weld (branch connection), root pass with cellulosic electrodes (Table 1 Group 1) and low hydrogen electrodes (Table 1 Group 3, eg E7018-1) used for the remaining passes. Question: Can the above qualified welding procedure be used to support a new WPS for production welds under SMAW process for non-bevel lap fillet weld, using exclusively low hydrogen electrodes (Table 1 Group 3 e.g., E7018-1) for root and remaining passes without changes of other essential variables?	Yes.
1104	21	5.4.2.8	1104-I-0314-17	Background: In API 1104, Time between the passes is an essential variable. Question 1: If the time exceeds the maximum limit, is the weld to be cut-out? Question 2: If the time exceeds the maximum limit, can one heat the pipe to certain (preheat) temperature and continue the second pass?	Response 1: This weld would be in violation of 5.4.2.8. The disposition of such welds is not addressed by this Standard. Response 2: No

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Last update: February 2024

Standard	Edition	Section	Inquiry #	Question	Response
1104	22	5.4.2.9	8995	Background: Changes in preheat requirements in API 1104 latest edition mandates preheating only when WPS specifies it, or only when base metal is below 16 deg. For cellulosic electrodes, since moisture is between 3-7%, as mandated by electrode the manufacturer, preheat is recommended regardless of ambient temperature/base metal grade to avoid possible hydrogen induced cracking. As you are aware about the fact that pipe preheating is required in case of higher carbon content, and in some cases with lower base metal temperature as mandated by ASME B31.8, along with this with possible hydrogen induced cracking in metal with Cellulosic Electrode (as they have moisture for deeper penetration and better operation) Similar preheating recommendations are mandated by TWI, UK and EN 1101-2. These electrodes can't be baked as well therefore to avoid Hydrogen diffusion Pre- Heating is a required phenomenon however with this latest edition our vendors/subcontractors are getting confused and requesting for waiver which can set up a precedence in entire welding industry. Question: Does 5.4.2.9 require preheating only when base metal temperature goes below 16 deg when it is not mentioned in WPS?	No. The WPS shall list the minimum preheat temperature per 5.3.2.13. When preheat is not applied during qualification, the minimum preheat temperature shall be per 5.4.2.9(b).
1104	21	5.4.2.13	1104-I-0224-16	Background: API 1104, Section 5.4.2.13 says, "A decrease in the specified minimum preheat temperature constitutes an essential variable". Question: It is the beginning of the first pass which corresponds to the minimum preheating temperature specified?	Yes, it is also the temperature prior to the start of each pass. NOTE: Please refer to AWS A3.0 for the definition of "preheat".
1104	22	5.6.1 Table 3	9582	A PQR was qualified in accordance with Table 3 without doing Nick break test by doing RT. Does the welder qualification (same welder used in PQR) required Nick break test as per Table 7?	No; see 6.6.